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Revision of EU Ecolabel criteria for detergent products

Technical report v. 2. 0

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Contents

Abstract

This draft Science for Policy Report is intended to provide the background information for the revision of the existing EU Ecolabel criteria for detergent products (Commission Decisions 2017/1216/EU; 2017/1215/EU; 2017/1218/EU; 2017/1219/EU; 2017/1217/EU and 2017/1214/EU). The study has been carried out by the by the Joint Research Centre (JRC) Unit B.5 Circular Economy and Sustainable Industry with the technical support of Viegand Maagøe A/S. The work is being developed for the European Commission's Directorate General for the Environment.

The EU Ecolabel criteria for detergent products currently in force were adopted on 23 June 2017 and are valid until the 31st December 2026.

The main purpose of this second version of the Technical Report (TR2) is to summarise the outcomes of the analysis of the current criteria following the 1st Ad-Hoc Working Group (AHWG) meeting and subsequent Working Sub-Groups meetings. Three Working Sub-Groups (sub-AHWG) were established after the 1st AHWG meeting focusing on the efficiency of detergent and cleaning products, related to the criterion *Fitness for use* (FfU); packaging-related aspects, particularly addressing the sub-criteria *recycled content* and *design for recycling*; and products containing microorganisms (MCP). These meetings were held with stakeholders that provided their Expression of Interest to participate and exchanges happened after each of the two meetings that took place per sub-AHWG, resulting in the development of working papers on the selected subjects. The background information and minutes of these meetings are also available in the Product Policy Analysis (former Product Bureau) website[1].

The present Technical Report addresses the requirements of Annex I to the EU Ecolabel Regulation (EC) 66/2010 ([2]) for technical evidence to inform about criteria revision and sets the scene for the second ad-hoc working group (2nd AHWG) meeting planned on the 12 and 13th of March 2025. This technical report is supported and complemented by the draft preliminary report 2 (updated after the comments received following the 1st AHWG) which is published in parallel to this draft technical report.

In this second version of the Technical Report, which should be considered as a working document that will evolve into later versions during the project, the first proposal for the revised EU Ecolabel criteria have been revised based on stakeholder inputs received to date and known issues with the existing criteria that were flagged during the 1st AHWG meeting and working sub-group meetings. A rationale is provided within each criterion in this report, to explain why the changes (if any) were proposed and what the potential implications of the new proposal are. These rationales build on different types of evidences (e.g. data, scientific/technical literature, comparison to equivalent criteria in other ecolabels; environmental impacts over the life cycle), which are included if considered relevant.

This second version of the Technical Report includes several proposals, starting with the expansion on the scope of the EU Ecolabel criteria in particular product groups (e.g. products containing microorganisms). Following adjustments on the scope and also considering other criteria proposals, the content and structure of the criteria is revised and presented for stakeholder's consideration. The aim is to replace the current 6 EU Commission Decisions, each specific of one product group, by a single EU Commission Decision composed of 6 Annexes corresponding to each of the 6 product groups. However, since many aspects still remain horizontal for several product groups and would be best discussed together, the structure in this TR2 does not reflect such aim and remains similar to that in TR1, where discussions were arranged by (sub-)criterion under discussion rather than by Annex.

[1] Check in "2023 Revision documents tab" for all documents developed as part of the current revision process: https://susproc.jrc.ec.europa.eu/product-bureau/product-groups/411/documents

[2] Regulation (EC) No 66/2010 of the European Parliament and of the Council of 25 November 2009 on the EU Ecolabel (OJ L 27, 30.1.2010, p. 1–19). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32010R0066

1. Introduction

The EU Ecolabel (hereafter, EUEL) is the official voluntary labelling scheme of the EU that promotes the production and consumption of products (goods and services) with a reduced environmental impact over their life cycle, and is aimed at products with excellent environmental performance. The EU Ecolabel Regulation (EC) 66/2010 ([3]) provides a framework to establish voluntary ecological criteria aiming at reducing the negative impact on the environment, health, climate and natural resources of production and consumption of the defined product group. The setting of EUEL criteria aims to target the environmentally top 10 to 20% of products on the market within a defined product group or service. Accordingly, the EUEL enables suppliers to market their products with a simple label that can be used as an accurate, non-deceptive and science-based proof of the excellent environmental performance of their products.

Established in 1992, the EUEL has become a key policy instrument within the European Commission's Sustainable Consumption and Production and Sustainable Industrial Policy (SCP/SIP) Action Plan (see COM(2008) 397) and the Roadmap for a Resource-Efficient Europe (see COM/2011/0571). It has also links with other policy instruments, such as Green Public Procurement (GPP, see COM(2008) 400), the Eco-Management and Audit Scheme (EMAS) (see Regulation (EC) No 1221/2009 and Regulation (EU) No 2018/2026) and the, now repealed, Ecodesign Directive (see Directive 2009/125/EC). In addition, the EUEL was mentioned as having an important role in the new Circular Economy Action Plan (CEAP) from March 2020, being regarded as an important tool whose criteria will be developed in synergy with future Ecodesign measures. As a part of the circular economy package, the European Commission has adopted the Directive on Empowering consumers for the green transition[4]. This Directive, along with the EUEL, shares the goal of promoting sustainability and empowering consumers to make environmentally conscious choices. The empowering consumers for the green transition Directive is closely linked to the proposed Directive on Green Claims (COM 2023/0085), which promotes reliable claims on the environmental performance of products reducing the risk of greenwashing, and with the now adopted Ecodesign for Sustainable Products Regulation (ESPR)[5]. These initiatives in line with the principles of the EU Ecolabel seek to establish a coherent policy framework to help the EU produce sustainable goods, transform consumption patterns in a more sustainable direction, and significantly reduce the environmental footprint of products to contribute to the EU's policy objective of climate neutrality by 2050.

This Draft Technical Report 2 (hereafter, TR2) addresses the requirements of the EU Ecolabel Regulation (EC) 66/2010 ([6]) and its main purpose is to summarise the results from the 1st AHWG meeting and working sub-group (sub-AHWG) discussions about aspects related to the revision of the EU Ecolabel criteria for detergent (e.g. extension and/or addition of new criteria; revise/set new limits) according to the best evidences available (e.g. stakeholders comments; data; technical/scientific literature).

The revision process takes the existing legal documents (EU Commission Decisions) as the starting point and seeks to analyse its validity, taking into account feedback from Competent Bodies and EU Ecolabel license holders, technological and economic changes in the European market, relevant legislative changes and improved scientific knowledge. The EUEL criteria for detergent products comprise the following product groups:

— Dishwasher detergents, hereinafter DD (Commission Decision 2017/1216/EU) ([7]);

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[3] Regulation (EC) No 66/2010 of the European Parliament and of the Council of 25 November 2009 on the EU Ecolabel (OJ L 27, 30.1.2010, p. 1–19). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32010R0066

[4] OJ L, 2024/825, 6.3.2024. Directive (EU) 2024/825 of the European Parliament and of the Council of 28 February 2024 amending Directives 2005/29/EC and 2011/83/EU as regards empowering consumers for the green transition through better protection against unfair practices and through better information (Text with EEA relevance). Available at: http://data.europa.eu/eli/dir/2024/825/oj

[5] OJ L, 2024/1781, 28.6.2024. Regulation (EU) 2024/1781 of the European Parliament and of the Council of 13 June 2024 establishing a framework for the setting of ecodesign requirements for sustainable products, amending Directive (EU) 2020/1828 and Regulation (EU) 2023/1542 and repealing Directive 2009/125/EC. Available at: http://data.europa.eu/eli/reg/2024/1781/oj

[6] Regulation (EC) No 66/2010 of the European Parliament and of the Council of 25 November 2009 on the EU Ecolabel (OJ L 27, 30.1.2010, p. 1–19). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32010R0066

[7] Commission Decision (EU) 2017/1216 of 23 June 2017 establishing the EU Ecolabel criteria for dishwasher detergents (OJ L 180, 12.7.2017, p. 31–44) https://eur-lex.europa.eu/legal-content/EN/TXT/?toc=OJ%3AL%3A2017%3A180%3ATOC&uri=uriserv%3AOJ.L_.2017.180.01.0031.01.ENG

— Industrial and institutional dishwasher detergents, hereinafter IIDD (Commission Decision 2017/1215/EU) ([8]);

— Laundry detergents, hereinafter LD (Commission Decision 2017/1218/EU) ([9]);

— Industrial and institutional laundry detergents, hereinafter IILD (Commission Decision 2017/1219/EU) ([10]);

— Hard surface cleaning products, hereinafter HSC (Commission Decision 2017/1217/EU) ([11]);

— Hand dishwashing detergents, hereinafter HDD (Commission Decision 2017/1214/EU) ([12]).

This draft TR2 is supported and complemented by the Draft Preliminary Report 2 (hereafter, PR2) published in parallel in February 2025, ahead of the 2nd Ad-Hoc Working Group (AHWG) meeting scheduled on the 12th and 13th of March 2025. This PR2 is an updated version of the 1st draft preliminary report (PR1) which accounts for the latest evidences received since the 1st AHWG meeting held on the 12th and 13th of March 2024. Consequently, it keeps PR1 structure, thus including analyses of the scope and definitions, market analysis, and technical analysis. The main updates in this PR2 happened in the technical analysis chapter, implying further granularity and content on the non-LCA impacts section (e.g. the mapping of CLP hazards in the DID List, and the review of hazards associated with fragrances and surfactants) as well as further refinement of the results of the Life Cycle Assessment (LCA) made for different products under the scope of the EUEL criteria for the identification of the environmental hotspots in the light of new evidences (i.e. data) received.

Bringing together the information in the associated PR2 as well as initial inputs from stakeholders, a second proposal for a set of revised EUEL criteria is presented in this TR2. The entire life cycle of the product is considered (Raw material acquisition->Manufacturing->Use->End-of-life). The EUEL may define criteria that target environmental impacts from any of these life cycle phases, with the aim of encompassing the areas of greatest impact (life cycle hotspots).

Similarly to PR1 and TR1, this TR2 analyses the six product group horizontally, while if deemed necessary, focusing on the areas that are specific to each product group. Consequently, the simultaneous revision of the six product groups is looked at holistically, thus enhancing harmonisation of the criteria sets while focusing on the most relevant environmental aspects

An important part of the process for developing or revising EUEL criteria is the involvement of stakeholders through their consultation on draft criteria proposal and technical reports. This is carried out via AHWG and sub-AHWG meetings, conference calls, email exchanges, forum discussions and written comments submitted via the online platform BATIS[13]. The criteria development process involves engagement with stakeholders, namely technical experts, non-governmental organisations (NGOs), Member State representatives and industry stakeholders, among others. Indeed, to facilitate stakeholders' involvement, this TR2 has been uploaded to the BATIS platform to streamline their comments. In addition, each report (PR2 & TR2) plus any associated document (e.g. draft *Fitness for Use* protocols/frameworks), inclusive from any sub-AHWG carried out (i.e. background paper; minutes, presentation), can also be found on the BATIS platform and on the Product Policy Analysis (formerly Product Bureau) project's website dedicated to the revision of EUEL criteria for detergents [14]

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8 Commission Decision (EU) 2017/1215 of 23 June 2017 establishing the EU Ecolabel criteria for industrial and institutional dishwasher detergents (OJ L 180, 12.7.2017, p. 16–30) https://eur-lex.europa.eu/legal-content/EN/TXT/?toc=OJ%3AL%3A2017%3A180%3ATOC&uri=uriserv%3AOJ.L_.2017.180.01.0016.01.ENG

9 Commission Decision (EU) 2017/1218 of 23 June 2017 establishing the EU Ecolabel criteria for laundry detergents (OJ L 180, 12.7.2017, p. 63–78) https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32017D1218&qid=1678703370910

10 Commission Decision (EU) 2017/1219 of 23 June 2017 establishing the EU Ecolabel criteria for industrial and institutional laundry detergents (OJ L 180, 12.7.2017, p. 79–96). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32017D1219&qid=1678704095676

11 Commission Decision (EU) 2017/1217 of 23 June 2017, establishing the EU Ecolabel criteria for hard surface cleaning products (OJ L 180, 12.7.2017, p. 45–62) https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32017D1217&qid=1678704194237

12 Commission Decision (EU) 2017/1214 of 23 June 2017 establishing the EU Ecolabel criteria for hand dishwashing detergents (OJ L 180, 12.7.2017, p. 1–15) https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32017D1214&qid=1678704405604

13 https://eippcb.jrc.ec.europa.eu/batis/

14 https://susproc.jrc.ec.europa.eu/product-bureau/product-groups/411/documents.

— Introduction (Chapter 1): this section describes the goal of the project and the structure of the document.

— Summary of the draft Preliminary Report 2 (Chapter 2): this section summarises the main findings from the draft Preliminary Report 2, especially with respect to market analysis and technical analysis, including an overview of the results of the LCA screening studies.

— Scope, definitions and criteria structure (Chapter 3): this section reports proposals for potential changes to the product group names, scope and definitions, thus impacting criteria structure.

— Assessment and verification (Chapter 4): this section includes general information on the type of proof required to show compliance with the EUEL criteria, as well as some further general and specific requirements applicable to one or more product groups.

— Reference dosage (Chapter 5): this chapter states the dosage that should be taken as reference for the purposes of compliance with the EUEL criteria.

— Criteria proposals (Chapter 6): this chapter presents the EUEL criteria for each product group (each corresponding to an Annex), in a "horizontal way" (aspects common to one or more EUEL product groups) and discusses the technical rationale for the structure and content of individual criteria. Relevant discussions and inputs that support the revised criteria proposals or changes to those proposals will be mostly reflected here (TR2) and in future versions of the draft Technical Report.

Note that for the sake of transparency and efficiency, a series of documents have been published separately to this draft Technical report (TR2), namely:

— Table of Comments (ToC1) - all comments received during the public consultation periods after the 1st AHWG meeting, alongside responses and explanations on how they have been addressed in the next rounds of criteria proposals, in this case in this 2nd draft criteria version.

— *Fitness for Use* criterion performance frameworks - the protocols/frameworks to show satisfactory performance are published separately in existing EUEL Detergents criteria. The JRC has compiled all of them into a single document and have edited them using the same notation for changes (e.g. blue font) to highlight proposals/changes to existing (in force) version. Given the extension of this document and for ease of consultation alongside TR2, it is published as a standalone document.

— Legal act Annexes - each with the technical requirements (legal text) for a particular product group.

The study has been carried out by the by the Joint Research Centre (JRC) Unit B.5 Circular Economy and Sustainable Industry with the technical support of Viegand Maagøe A/S. The work is being developed for the European Commission's Directorate General for the Environment.

For better reading and interpretation of this TR2, the legal text is presented in boxes which display the latest draft criteria proposal in grey font (in this case, TR1 legal text), together with the new proposals (those made in TR2) which are highlighted in blue colour font. In TR2 text, any text deletion is also marked in blue font and with strikethrough style. To avoid redundancy, if the same legal text is applicable to several product groups, then it is cited only once and it is indicated which products groups share this particular text.

The rationale accompanying each criterion/section presents and discusses the evidences leading to preserving or changing the latest draft criteria proposal (in this case, TR1). Rationales are structured according to relevant aspects addressed (if any) within a particular (sub-)criterion Generally, rationales start with their aim, disclose LCA related considerations and present a summary of changes made in the latest version (in this case TR1) and also on stakeholders comments received (in this case after 1st AHWG). Then, if applicable, they disclose JRC's further research, discussions and conclusions of the latest proposals (those in TR2). In some cases, when stakeholders feedback is sought, the rationale ends with a box containing numbered questions, whose responses aim to contribute improving (sub-)criteria proposals (e.g. setting a particular quantitative threshold).

2. Summary of Preliminary Report

The summary here reflects the updated content of draft Preliminary Report 2 (PR2) for the revision of EU Ecolabel (EUEL) criteria for detergents. Any significant changes to the content of the PR, thus resulting in new draft PR versions, should also be reflected in this summary section of future versions of the draft Technical Reports, as relevant.

This section provides a summary of the findings of the Preliminary Report (PR), thus outlining main background information supporting new criteria proposals (i.e. scope & definitions; legal & policy context, market analysis and technical analysis).

2.1. Background information

Prior to the start and during the EUEL criteria revision process, different stakeholders participate by providing relevant feedback which help shaping and improving the final technical criteria (e.g. data/information provision; comments on criteria proposals).

The previous revision took place between 2014—2017, resulting in the existing criteria structure:

Table 1 - Structure of the current EU Ecolabel criteria for the detergent product groups

Criterion	LD	IILD	DD	IIDD	HSC	HDD
1	Dosage requirement	Toxicity to aquatic organisms	Dosage requirement	Toxicity to aquatic organisms	Toxicity to aquatic organisms	Toxicity to aquatic organisms
2	Toxicity to aquatic organisms	Biodegradability	Toxicity to aquatic organisms	Biodegradability	Biodegradability	Biodegradability
3	Biodegradability	Sustainable sourcing of palm oil, etc.	Biodegradability	Sustainable sourcing of palm oil, etc.	Sustainable sourcing of palm oil, etc.	Sustainable sourcing of palm oil, etc.
4	Sustainable sourcing of palm oil, etc.	Restricted substances	Sustainable sourcing of palm oil, etc.	Restricted substances	Restricted substances	Restricted substances
5	Restricted substances	Packaging	Restricted substances	Packaging	Packaging	Packaging
6	Packaging	Fitness for use	Packaging	Fitness for use	Fitness for use	Fitness for use
7	Fitness for use	Automatic dosing systems	Fitness for use	Automatic dosing systems	User information	User information
8	User information	User information	User information	User information	Information on EU Ecolabel	Information on EU Ecolabel
9	Information on EU Ecolabel	Information on EU Ecolabel	Information on EU Ecolabel	Information on EU Ecolabel	n.a.	n.a.

Source: Boyano et al, 2016 ([15]).

[15] European Commission, Joint Research Centre, Boyano, A.; Kaps, R.; Medyna, G.; Wolf, O, 2016. Revision of six EU Ecolabel criteria for detergents and cleaning products. Final Technical Report. Available at https://susproc.jrc.ec.europa.eu/product-bureau/sites/default/files/contentype/product_group_documents/1581681262/Technical%20background%20report.pdf (Accessed 10/07/23)

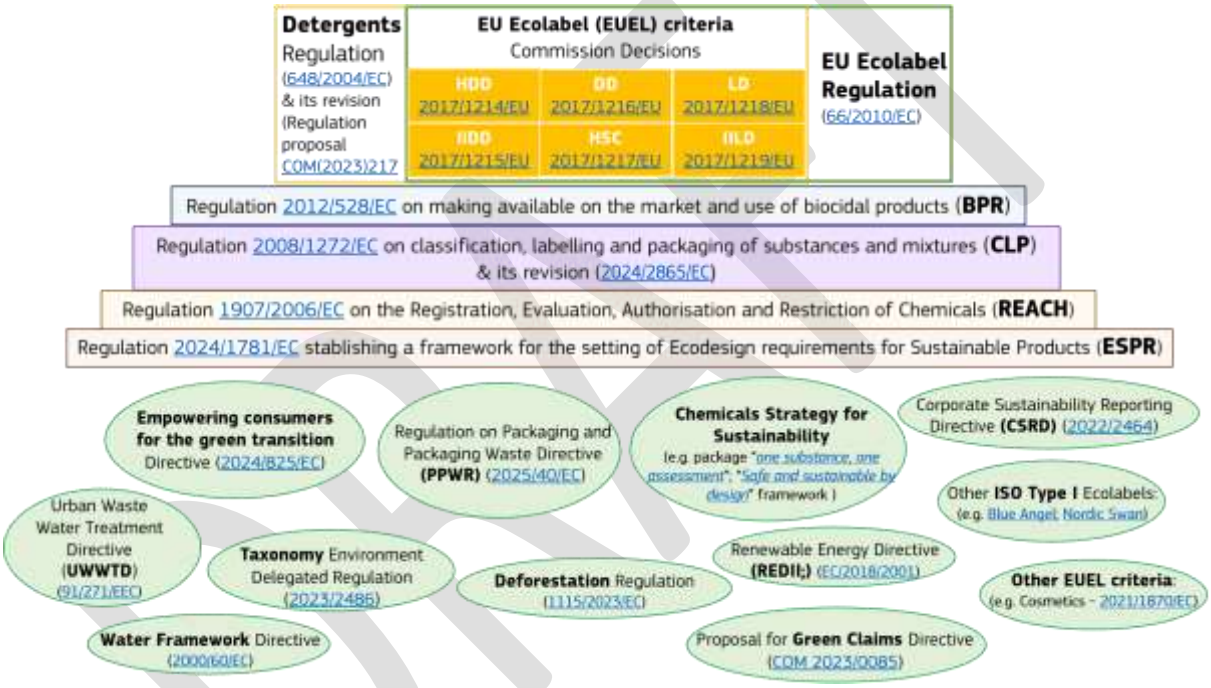
The current EUEL criteria revision has considered the directions provided by stakeholders from the adoption of the existing criteria until now (See PR2, *Chapters 2 & 3*). These included:

- Consider expanding the scope (e.g. in-wash removers) and modifying definitions (e.g. impurities).
- Consider reducing (e.g. preservatives), eliminating (e.g. fragrances in professional HSC) or substituting (E.g. Endocrine disruptors) "problematic" substances.
- Consider improving requirements associated to packaging (e.g. design for recycling).

Overall, stakeholders considered adequate the scope and definitions of existing EUEL criteria and, if revision was suggested, this focused mostly on LD and HSC product groups. Some of the key definitions suggested for improvement were: *"nanomaterials", "microplastics", "impurities"* and *"in-going substances"*.

Detergents and cleaners products, including their ingredients, are subject to sector-specific as well as horizontal (non-specific) EU legislation. Many of these legislation are under revision or has been revised since the last revision of the EUEL criteria for detergents concluded (See Figure 1). The most relevant one is the revision of the Detergent Regulation ([16]), currently in proposal stage ([17]).

Figure 1. Illustration of EU relevant legislative context to the EU Ecolabel criteria for detergent products



Relevant sustainability standards and ecolabelling schemes were consulted to understand better the categorization and relevant sustainability standards applicable to detergent and cleaning products. Special focus was placed on other consolidated, trusted and widely adopted European ISO Type I labels, as Blue Angel and Nordic Swan, since the comparison with EUEL criteria can highlight also areas for consideration during the revision.

The thematic scope areas identified as relevant given the previous streams of information focused on LD and HSC product groups dealt around the inclusion of fabric softeners, in-wash stain removers, products

[16] Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents. (OJ L 104, 8.4.2004, p. 1–35).

[17] COM(2023)217 - Proposal for a regulation of the European Parliament and of the Council on detergents and surfactants, amending Regulation (EU) 2019/1020 and repealing Regulation (EC) No 648/2004. https://single-market-economy.ec.europa.eu/publications/com2023217-proposal-regulation-detergents-and-surfactants_en

containing microorganisms, products effective at low (20C) temperature and the exclusion of Ready-to-Use (RTU) products.

2.2. Market analysis

The product groups considered for the purposes of the market analysis (See PR2 *chapter 4*) were:

- LD Laundry Detergents (including Industrial and Institutional Laundry Detergents).
- DD Dishwasher Detergents (including Industrial and Institutional Dishwasher Detergents).
- HDD Hand Dishwashing Detergents.
- HSC Hard surface Cleaning Products.

The assumption made was that the scope (and market segmentation) of product groups in existing criteria would largely remain valid, even considering the few potential scope changes in LD and HSC highlighted in the preliminary scope analysis.

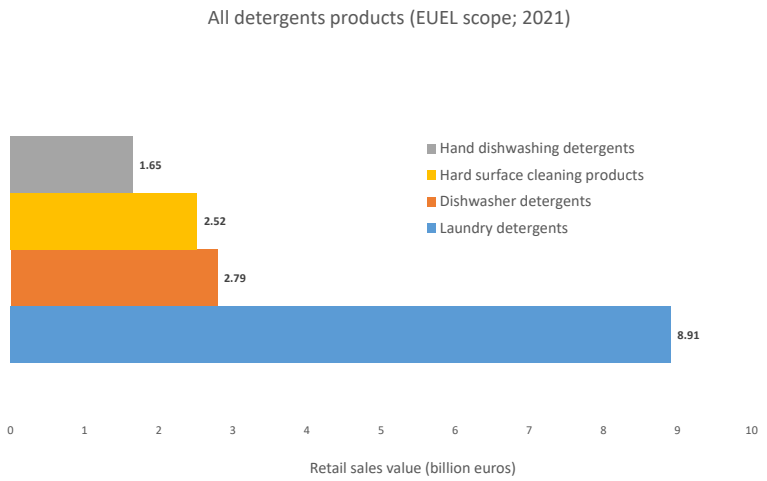
The market analysis aimed to characterise the potential market share attributable to all detergent and cleaning products and to products falling under EUEL scope (thus only EUEL ecolabelled detergent and cleaning products), inclusive of some relevant market segmentations.

PRODCOM data was used as a proxy and for the purposes of understanding the potential market of all detergent and cleaning products (whether falling under EUEL scope or not). Since PRODCOM mostly stands on products composition and/or form but not on other aspects such as functionality or end-user, it does not allow its processing into meaningful categories (categorisation) with regards to the EU ecolabel products scope. Consequently, to understand the potential market of EUEL ecolabelled products, data from Euromonitor International, Home Care, 2022 was used and processed (where necessary) to allow meaningful categorisation according to EUEL scope. The periods considered for the market data analysis are the last 5 years (historic; 2018-2022) and the next 5 years (forecasting; 2023 -2027).

The use (thus market shares) of detergent and cleaning products have been and is expected to continue growing worldwide. In the European market in the last 5 years, an increasing trend was observed, probably owing to an activation of the market due to COVID pandemic effects. The foresight (modelled data) shown that this increase is expected, to highest or lowest extend, to keep increasing. However, whilst the product group potential market share can increase, particular segments could be phasing out (e.g. In LD, decrease/substitution of powder LD format for liquid and tablets).

The most relevant product group resulting from the market analysis were LD and HSC (particularly All-purpose cleaners). In 2021 and in terms of the potential market for EU Ecolabel products by value (billion euros; See Figure), LD is the most successful product (56%), followed by HDD (18%) and HSC (16%). Similarly, in terms of the potential market for EU Ecolabel products by volume (tonnes), LD is also the most successful (49%) followed by HSC (32%).

Figure 2 – Estimation of the potential EU Ecolabel market size for detergent product groups in EU28



Source: Euromonitor

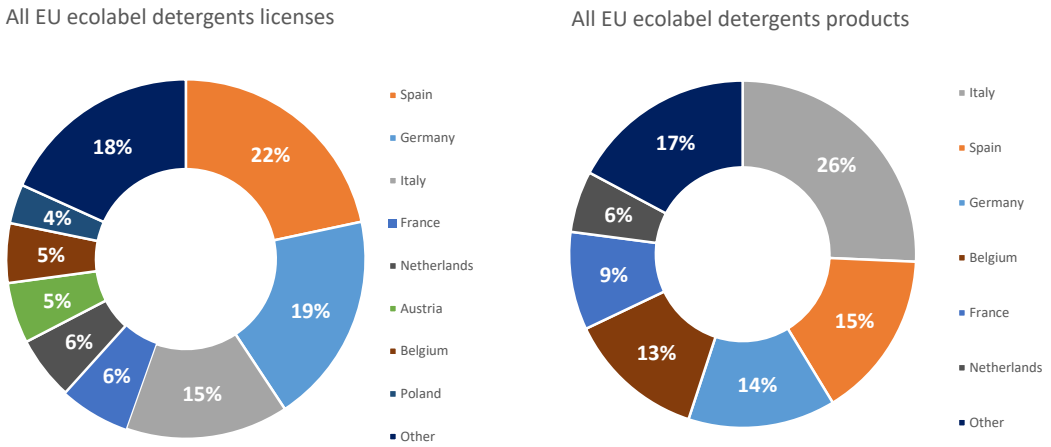
In addition to market analysis (figures and segmentation), relevant trends on innovative products, consumer behaviour and EU Ecolabel uptake were assessed and presented.

Descriptors of the main identified sustainability product innovations are: *Ingredients substitution; Efficient manufacturing; Concentrated products; Biobased products; Refill systems; Enzymes, Microbial containing products; "cold" wash*. Some trends are relevant to all product groups (e.g. ingredients substitution; concentrated products) while others are more important for particular product groups (e.g. "cold" wash for LD).

The main driver for **consumers' behaviour** is functionality, understanding as such primarily cleaning but also contribution to hygiene. Then, under similar price per product (cost as modulator), there is a clear push for more environmentally friendly products ("eco"-products).

The uptake of EU Ecolabel for detergent products has increased steadily for all product groups, especially HSC (+25 licences, +233 products) in the period March 23 – September 23. All EU Ecolabel detergent product groups pooled together represent 34.1% of the total number of licenses (of which 14.6% correspond to the top product group - HSC) and 13.5% of the total number of ecolabelled products. The Member States with the highest share of awarded licences and ecolabelled products for detergents product groups are Spain, Italy, Germany, Belgium and France (See Figure 3).

Figure 3 – Share of EU Ecolabel detergents licenses (A) and products (B) arranged by EU Member State as on September 23 (Total number of licenses = 2584; Total number of ecolabelled products = 88921).



2.3. Technical analysis

The ingredients of detergent and cleaning products need to meet multiple selection criteria such as cost, sustainability, human health, environmental safety and performance. Most of these ingredients are common to all EU Ecolabel product groups, differing each in the type and proportions that are used in their formulation and being: surfactants, preservatives, enzymes, builders, dyes, bleaching agents, fragrances and solvents. Other ingredients are specific to particular product groups (e.g. opacifiers in HDD). Surfactants play a very significant role due to their key role in washing/cleaning mechanisms (thus they are almost ubiquitously present detergent and cleaning product formulations). Consequently, the environmental impacts associated with surfactants is a commonly discussed topic, especially regarding their nature (e.g. degradability) and feedstock source (petrochemical versus oleochemical origin and, more recently, microbial origin).

The manufacturing process for detergent and cleaning products is quite different depending on whether the final product is in a powder or a liquid format. Liquid products manufacturing consists, generally, insimply mixing the ingredients in the correct sequence under controlled conditions and in a reproducible manner. Powder products require the formation of a slurry by mixing dry or wet ingredients with water before rapid drying to form granules in a spray drying tower. If there are any temperature sensitive ingredients (e.g. enzymes), then these are added to the already dried powder afterwards. The manufacturing of laundry detergent sheets is also a fundamentally different process.

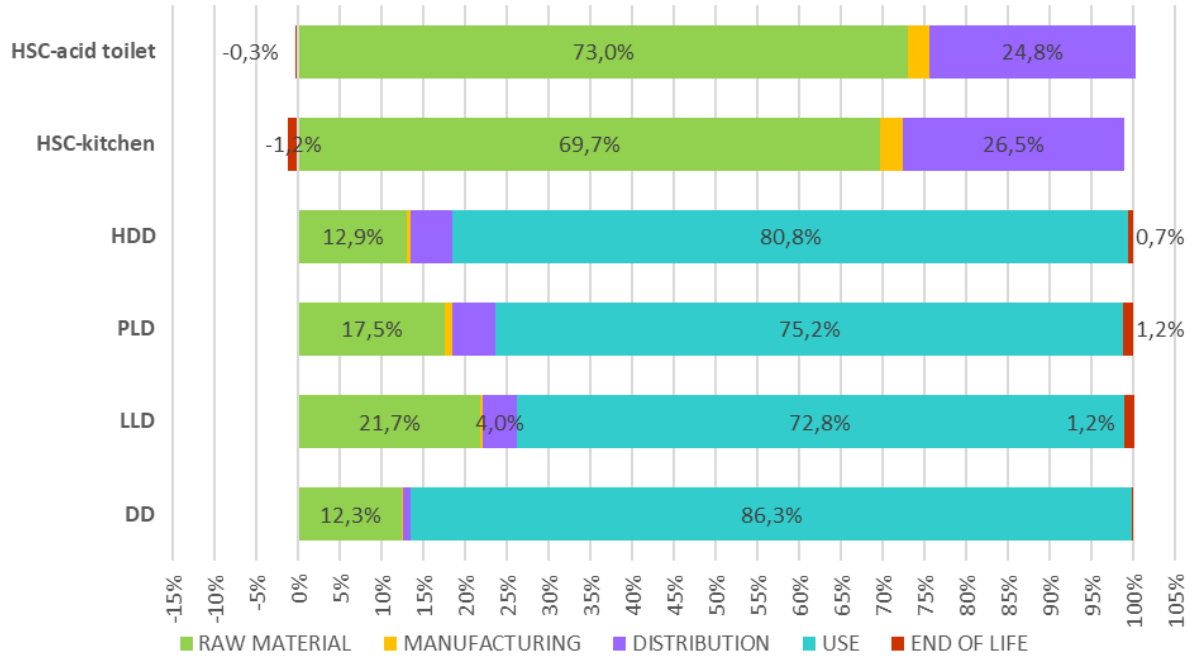
The environmental impacts associated with detergent products from an LCA perspective were firstly evaluated via a comprehensive screening of LCA literature available in the public domain. In total, 44 different papers and reports were screened and scored and a summary of findings were split into: (i) laundry detergents; (ii) dishwasher detergents; (iii) hand dishwashing detergents; (iv) hard surface cleaners; (v) packaging, and (vi) detergent ingredients (especially palm oil and microbial-based biosurfactants). The most relevant literature, both in terms of context and in terms of being able to compare results, were the four reports published by Arendorf et al., (2014a, 2014b, 2014c and 2014d).

The assessment of LCA-based environmental impacts was continued in the preliminary research by carrying out a number of screening studies using PEF methodology and EF datasets. Details of the PEF methodology are set out in Commission Recommendation (EU) 2021/2279 and this involves some of the following factors, amongst others:

- Default life cycle stages of: raw materials and pre-processing; manufacturing; distribution; use and End of life.
- Reporting characterised results for climate change fossil, climate change biogenic, climate change land use and land use change and for the other 15 impact categories in the associated units.
- Reporting normalised results, which are generated by multiplying characterised results by preset normalisation factors.
- Reporting normalised and weighted results as a single PEF score, generated by multiplying normalised results by preset weighting factors and adding them together.
- Using a circular footprint formula for dealing with the use of recycled content and end of life recycling or reuse.

Due to the limited amount of detergent formulation data being provided early in the project, the screening studies presented in PR1 were largely based on formulations already present in the literature. However, more information on formulations was obtained later in the project under NDAs and this allowed the screening studies to be updated, albeit without being able to reveal the full details of the formulations. Following the PEF method, the results of screening studies for 6 different detergent products are compared below in a simplified manner, based on weighted and normalised impacts (See Figure 4).

Figure 4. Comparison of relative life cycle stage contributions to overall PEF scores for six different detergent products (PLD means Powder Laundry Detergent and LLD means Liquid Laundry Detergent)



The varying importance of the use stage: From the spread of data above, the relative importance of the use stage can be seen to vary a huge amount between the different product groups. Use stage impacts were expected to be high for DD products, due to the typically higher washing cycle temperatures used (e.g. 60°C), and for LD products, due to wash cycle temperatures typically being 40°C. An even larger share of use stage impacts can be expected for industrial LD and DD products since cycle temperatures tend to be higher due to the need for faster washing and the added importance of sanitation and hygiene in these contexts. However, use stage impacts may be offset in the industrial setting if dosing is optimised and appliances are also fully loaded for economic reasons.

It was surprising to see the relatively large impacts of the use stage for the HDD product's life cycle. This was because warm water was assumed to be used for manual dishwashing (40°C) and because the detergent formulation has a generally low impact (ca. 94% water).

At the other extreme, use stage impacts were virtually zero with the two HSC products because no energy was needed to heat water and negligible water consumption was also assumed. Any consumption or degradation of auxiliary cleaning materials (cloths, scourers, mop heads etc.) were excluded from the scope.

The varying importance of the raw material stage: this stage consisted of both ingredients and packaging material production. It is interesting to note the relatively higher raw material impacts associated with LLD compared to PLD products, since for these products, the wash cycle energy consumption assumptions were the same. A closer look at the breakdown of detergent ingredients between LLD and PLD products would be necessary in order to be more certain of any improvement potentials.

While some real formulation data was made available for PLD products for this study, the LLD data essentially comes from the PEFCR study, published in 2019 (and formulation data will have been provided several years before 2019). The more formulations that can be provided for a given detergent product type and sub-category, the more accurate and useful will be any improvement potential analysis in the next draft of this PR.

As the use stage influence decreases, other stages come to the fore: A clear pattern emerges of the distribution and end-of-life stages becoming more significant as the use stage becomes less significant. Transport assumptions in the distribution stage can be reduced by minimising the transport of the product, which is mainly water. Distribution impacts can be reduced either by selling in more local and regional markets, or only shipping concentrated formulations.

Oleochemical vs petrochemical origin of surfactants: There has been big effort to shift towards bio-based or plant-based ingredients for detergent products and this is a common green claim made by manufacturers. However, the expected benefits of reduced fossil resource depletion need to be compared against the expected increased impacts that will be associated with land use to product the plant-based oils. The same reports by Arendorf et al., (2014a, 2014b, 2014c, 2014d) showed the following effects of such a change.

Table 2 - Effect of changing from petrochemical to oleochemical sources (CO-Coconut Oil or PKO-Palm Kernel Oil) on cradle-to-grave LCA results of selected impact categories for different detergent products. Sources: Arendorf et al., 2014a, 2014b, 2014c and 2014d.

Impact category*	Laundry Detergent		Dishwasher Detergent		Hand Dishwashing Detergent		Hard Surface Cleaner		
	Petro-	Oleo-	Petro-	Oleo-	Petro-	Oleo-	Petro-	Oleo-CO	Oleo-PKO
POF	100%	100.0%	100%	100.0%	100%	101.3%	100%	110.3%	96.6%
PMF	100%	100.9%	100%	100.0%	100%	100.0%	100%	115.4%	100.0%
TEcoT	100%	157.0%	100%	149.8%	100%	1850.6%	100%	8750.0%	10000.0%
ALO	100%	111.7%	100%	102.8%	100%	284.7%	100%	456.3%	1437.5%
NLT	100%	99.9%	100%	100.0%	100%	665.8%	100%	110.0%	3100.0%
MD	100%	100.0%	100%	100.0%	100%	103.6%	100%	121.7%	117.4%
FD	100%	98.0%	100%	100.0%	100%	95.9%	100%	94.7%	94.7%

* The impact category abbreviations stand for: Photochemical Oxidant Formation (POF); particulate Matter Formation (PMF); Terrestrial Ecotoxicity (TEcoT); Agricultural Land Occupation (ALO); Natural Land Transformation (NLT); Mineral resource Depletion (MD); and Fossil resource Depletion (FD)

All other impact categories not mentioned above had only minor changes between petro- and oleo-chemically sourced surfactants. In general, the changes in impacts caused by moving to oleochemical sources were largest with the Terrestrial EcoToxicity impacts, followed by Natural Land Transformation and the Agricultural Land Occupation. These impacts are clearly linked to potential deforestation impacts caused by palm oil and palm kernel oil production in Indonesia and Malaysia in particular.

Another pattern can be observed when comparing particular impact categories across the different detergent products. Impacts were greatest with HSC products, then HDD products and then, at much less extreme levels, with LD and DD products. This trend follows the pattern of a progressively less energy intensive use phase. As the use phase becomes less significant, the ingredients stage becomes relatively more important, a thus so does the effect of changing the surfactant precursor origin.

However, in terms of benefits of shifting from petrochemical to oleochemical precursors, only a marginal (ca. 5%) benefit was found in reducing fossil resource depletion. These findings should be carefully examined in the in-house LCA studies to be conducted and will also need to be considered when dealing with rationale for any criteria relating to palm oil or requirements for bio-based or plant-based ingredients.

The promise of microbial-based biosurfactants: There is a wealth of literature about the production, properties and potential applications of microbial-based biosurfactants that are generally produced via fermentation processes. One of the main potential applications is use in detergent products. However, very little information is publicly available about the environmental impacts from an LCA perspective and primary data is of low quality and representativeness since the few studies available are focused at laboratory or pilot scale. Despite the lack of data, there is a great potential for environmental improvements, especially if biosurfactants can be co-produced together with other products like enzymes or fatty acids.

The preliminary research also looked at non-LCA environmental impacts, which generally meant an assessment of the human health and environmental hazards associated with detergent ingredients. This involved:

- A review of the CDV values for substances listed on the updated 2023 DID List.
- A screening of the CLP hazards for substances listed on the updated 2023 DID List.
- A closer look at CLP classification status of preservatives (because they have necessarily inherent toxicity hazards and CLP hazards for these substances are often changing).

- A review of CLP hazards appearing in 45 Safety Data Sheets (SDSs) provided for different categories of detergent product covered by the scope of the EU Ecolabel criteria. The review included an average weighting of the CLP hazards that are restricted by EU Ecolabel criteria.
- A closer look at fragrances and the CLP hazards associated with them (because they are not well covered by the DID list).
- A closer look at each of the main categories of surfactant as per the CESIO CLP recommendations and the associated CLP hazards, also calculating the % occurrence of the CLP hazard within each surfactant category.

Finally, the preliminary research concluded with an outline assessment of the improvement potential, at least from an LCA perspective, if certain factors are changed (e.g. wash cycle temperature, recycled content of packaging).

3. Scope and definitions

3.1. Product group names

TR1 Proposed product group names	
DD	Dishwasher detergents
HDD	Hand dishwashing detergents
HSC	Hard surface cleaning products
IIDD	Professional dishwasher detergents
IILD	Professional laundry detergents
LD	Laundry detergents
TR2 Proposed product group names	
DD	Dishwasher detergents
HDD	Hand dishwashing detergents
HSC	Hard surface cleaning products
IIDD	Professional dishwasher detergents
IILD	Professional laundry detergents
LD	Laundry detergents

Rationale for the proposed scope text

The EU Ecolabel product group names should be both as easily comprehensible and as concise as possible, and in line with the terms used in the relevant mandatory legislation, namely the Detergents Regulation (648/2004/EC) ([18]), including its revised proposal([19]), where possible.

In the first technical report (TR1), the main changes within *Product group names* was proposing the substitution of the term "*Industrial and institutional*" by the term "*Professional*" seeking alignment with the revised proposal for a Detergent Regulation ([20]). Full details on the rationale can be found in TR1 (See Section 3, pages 13-14).

Outcomes from and after the 1st AHWG meeting

In total 20 comments were received on this section, which are found in full in the Table of Comments (ToC1). All comments addressed the following question posed to stakeholder in TR1:

[18] Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents. (OJ L 104, 8.4.2004, p. 1–35). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32004R0648https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32004R0648

[19] COM(2023)217 - Proposal for a regulation of the European Parliament and of the Council on detergents and surfactants, amending Regulation (EU) 2019/1020 and repealing Regulation (EC) No 648/2004. https://single-market-economy.ec.europa.eu/publications/com2023217-proposal-regulation-detergents-and-surfactants_en

[20] COM(2023)217 - Proposal for a regulation of the European Parliament and of the Council on detergents and surfactants, amending Regulation (EU) 2019/1020 and repealing Regulation (EC) No 648/2004. https://single-market-economy.ec.europa.eu/publications/com2023217-proposal-regulation-detergents-and-surfactants_en

Question 1 (Q1) – Would you support the substitution of the term "Industrial and Institutional" by "Professional"? If not, why?

All the comments received except for one were in favour of the proposal made in TR1, inclusive of the rationale supporting it (e.g. term more widely acknowledged within the wider public and industry). The stakeholder against it argued that in the latest agreed version of the legislative procedure the term "*Industrial and Institutional"* was used instead of *"professional"*, thus reverting back to the original use of this term (as per in existing Detergent Regulation).

What does JRC's research say on this topic?

The legislative procedure for the revision of the Detergent Regulation started in April 2023, with the publication of the proposal of the European Commission, and it is still underway at the time of writing this TR2[21]. As part of this process, the European Parliament and the Council of the European Union check the proposal, to then propose changes to it (amendments) in their adopted resolutions, thus engaging in "trilogues" with the European Commission. Consequently, the initial proposal does not necessarily end up having exactly the same legal text as initially formulated. Precisely, this seems to be the issue mentioned by the stakeholder with the definitions included in this file, which have changed along the legislative process.

In particular, the stakeholder seems to be referring to the European Parliament adopted resolution[22] that introduced some amendments to the initial European Commission proposal. The main changes proposed affecting *Article 2 – Definitions* are:

- *"(3a) 'hard surface cleaning product' means any all-purpose cleaner, kitchen cleaner, window cleaner or sanitary; [Am. 31]*
- *(3b) 'consumer hand dishwashing detergent' means a detergent used for the cleaning of dishes, cutlery and other kitchen utensils by hand, which is placed on the market for use by non-professionals; [Am.32]*
- *(3c) 'industrial and institutional laundry detergent' means a detergent for laundry placed on the market for use by specialised personnel outside the domestic sphere; [Am. 33]*
- *(3d) 'industrial and institutional dishwasher detergent' means a detergent placed on the market for use by specialised personnel in automatic dishwashers outside of the domestic sphere; [Am. 34]"*

Note that the definition for *"professional detergent"* is still maintained as per original proposal ("*...means a detergent for cleaning outside the domestic sphere, carried out by specialised personnel using specific products;...")* but the aforementioned new definitions are added.

The JRC acknowledges the benefit of s legislative terminology for same concepts across different pieces of legislation, thus seeks alignment with EU legislation, especially that directly applicable as is the revised Detergent Regulation. However, it also acknowledges that there are risks that the proposal content could vary (as per definitions used) and also that shifting to terms more widely adopted by end users (irrespective if professionals or non-professionals) could be beneficial (as already discussed in TR1). Hence, the intention of JRC is to keep the existing proposal (the one in TR1) unless the finally adopted revised Detergent Regulation is in conflict with it. Since the file is still open butis expected to conclude within the lifetime of the revision of the EUEL criteria for detergents, the JRC is holding until the revised Detergent Regulation is adopted to exert all the necessary changes along the lines of the proposal made (changing the terminology from "*Industrial and institutional"* to "*Professional*") unless it finally end up entering in conflict (misalignment) with it. A practical implication is that the terminology used in this TR2 (and any subsequent until final adoption of the revised Detergent Regulation) would still remain as per in existing criteria in respective EU Commission Decisions, thus using the term *"Industrial and Institutional"*.

[21] https://oeil.secure.europarl.europa.eu/oeil/en/procedure-file?reference=2023/0124(COD)#gateway

[22] P9_TA(2024)0091 European Parliament legislative resolution of 27 February 2024. Available at: https://www.europarl.europa.eu/doceo/document/TA-9-2024-0091_EN.html

3.2. Scopes

TR1 proposed scopes	
DD	The product group 'dishwasher detergents' shall comprise any detergent for dishwashers or rinse aid falling under the scope of Regulation (EC) No 648/2004 of the European Parliament and of the Council[23] which is marketed and designed to be used exclusively in household dishwashers and in automatic dishwashers for professional use of the same size and usage as that of household dishwashers.
HDD	The product group 'hand dishwashing detergents' shall comprise any detergent falling under the scope of Regulation (EC) No 648/2004 of the European Parliament and of the Council[24] on detergents which is marketed and designed to be used to wash by hand items such as glassware, crockery and kitchen utensils including cutlery, pots, pans and ovenware. The product group shall comprise products for both private and professional use. The products shall be a mixture of chemical substances and shall not contain micro-organisms that have been deliberately added by the manufacturer
HSC	The product group 'hard surface cleaning products' shall comprise any all-purpose cleaner, kitchen cleaner, window cleaner or sanitary cleaner falling under the scope of Regulation (EC) No 648/2004 of the European Parliament and of the Council[25] which is marketed and designed to be used as one of the following: — all-purpose cleaners, which shall include detergent products intended for the routine indoor cleaning of hard surfaces such as walls, floors and other fixed surfaces, — kitchen cleaners, which shall include detergent products intended for the routine cleaning and degreasing of kitchen surfaces such as countertops, stovetops, kitchen sinks and kitchen appliance surfaces, — window cleaners, which shall include detergent products intended for the routine cleaning of windows, glass and other highly polished surfaces, — sanitary cleaners, which shall include detergent products intended for the routine removal, including by scouring, of dirt or deposits in sanitary facilities, such as laundry rooms, toilets, bathrooms and showers. The product group shall cover products for both private and professional use and sold either in ready-to-use or undiluted form. Products shall be mixtures of chemical substances. Products for private use shall not contain micro-organisms that have been deliberately added by the manufacturer.
IIDD	The product group 'industrial and institutional dishwasher detergents' shall comprise any dishwasher detergent, rinse or pre-soak agent falling under the scope of Regulation (EC) No 648/2004 of the European Parliament and of the Council[26] which is marketed and designed to be used by specialised personnel in professional dishwashers. This product group includes multi-component systems comprised of more than one component used to build up a complete detergent. Multi-component systems may incorporate a number of products such as pre-soak and rinsing agents, and they shall be tested as a whole.

[23] Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents. (OJ L 104, 8.4.2004, p. 1–35). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32004R0648

[24] Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents. (OJ L 104, 8.4.2004, p. 1–35). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32004R0648

[25] Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents. (OJ L 104, 8.4.2004, p. 1–35). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32004R0648

[26] Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents. (OJ L 104, 8.4.2004, p. 1–35). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32004R0648

	This product group shall not comprise dishwasher detergents designed for household dishwashers, detergents intended to be used in washers of medical devices or in special machines for the food industry. Sprays not dosed via automatic pumps are excluded from this product group.
IILD	The product group 'industrial and institutional laundry detergents' shall comprise any laundry detergent falling under the scope of Regulation (EC) No 648/2004 of the European Parliament and of the Council[27] which is marketed and designed to be used by specialised personnel in industrial and institutional facilities. This product group includes multi-component systems comprised of more than one component used to build up a complete detergent or a laundering programme for an automatic dosing system. Multi-component systems may incorporate a number of products such as fabric softeners, stain removers and rinsing agents, and they shall be tested as a whole This product group shall not comprise products which induce textile attributes such as water repellency, waterproofness or fire retardancy. Furthermore, the product group shall not comprise products that are dosed by carriers such as sheets, cloths or other materials, or washing auxiliaries used without subsequent washing such as stain removers for carpets and furniture upholstery. Laundry detergents to be used in household washing machines are excluded from the scope of this product group.
LD	The product group 'laundry detergents' shall comprise any laundry detergent or pretreatment stain remover falling under the scope of Regulation (EC) No 648/2004 of the European Parliament and of the Council[28] which is effective at ~~30~~ 20 °C or below and is marketed and designed to be used for the washing of textiles principally in household machines, but not excluding its use in public laundrettes and common laundries. Pre-treatment stain removers include stain removers used for direct spot treatment of textiles before washing in the washing machine but do not include stain removers dosed in the washing machine and stain removers dedicated to other uses besides pre-treatment. This product group shall not comprise fabric softeners, products that are dosed by carriers such as sheets, cloths or other materials or washing auxiliaries used without subsequent washing such as stain removers for carpets and furniture upholstery.
TR2 proposed scopes	
DD	The product group 'dishwasher detergents' shall comprise any detergent for dishwashers or rinse aid falling under the scope of Regulation (EU) XXXX/XXX([29]) ~~Regulation (EC) No 648/2004 of the European Parliament and of the Council~~[30] which is marketed and designed to be used exclusively in household dishwashers and in automatic dishwashers for professional use of the same size and usage as that of household dishwashers. The products shall not contain micro-organisms that have been deliberately added by the manufacturer. The products claiming a biocidal effect are excluded from this product group.

[27] Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents. (OJ L 104, 8.4.2004, p. 1–35). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32004R0648https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32004R0648

[28] Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents. (OJ L 104, 8.4.2004, p. 1–35). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32004R0648https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32004R0648

[29] Regulation (EU) XXXX/ XXX refers to the final adopted version of the revised Detergent Regulation

[30] Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents. (OJ L 104, 8.4.2004, p. 1–35). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32004R0648https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32004R0648

HDD	The product group 'hand dishwashing detergents' shall comprise any detergent falling under the scope of Regulation (EU) XXXX/XXX([31]) ~~Regulation (EC) No 648/2004 of the European Parliament and of the Council~~[32] on detergents which is marketed and designed to be used to wash by hand items such as glassware, crockery and kitchen utensils including cutlery, pots, pans and ovenware. The product group shall comprise products for both private and professional use. The products shall be a mixture of chemical substances ~~and shall not contain micro-organisms~~ that have been deliberately added by the manufacturer. The products claiming a biocidal effect are excluded from this product group.
HSC	The product group 'hard surface cleaning products' shall comprise any all-purpose cleaner, kitchen cleaner, window cleaner or sanitary cleaner falling under the scope of Regulation (EU) XXXX/XXX([33]) ~~Regulation (EC) No 648/2004 of the European Parliament and of the Council~~[34] which is marketed and designed to be used as one of the following: — all-purpose cleaners, which shall include detergent products intended for the routine indoor cleaning of hard surfaces such as walls, floors and other fixed surfaces, — kitchen cleaners, which shall include detergent products intended for the routine cleaning and degreasing of kitchen surfaces such as countertops, stovetops, kitchen sinks and kitchen appliance surfaces, — window cleaners, which shall include detergent products intended for the routine cleaning of windows, glass and other highly polished surfaces, — sanitary cleaners, which shall include detergent products intended for the routine removal, including by scouring, of dirt or deposits in sanitary facilities, such as laundry rooms, toilets, bathrooms and showers. The product group shall cover products for both private and professional use and sold either in ready-to-use or undiluted form. Products shall be mixtures of chemical substances~~. Products for private use shall not contain micro-organisms~~ that have been deliberately added by the manufacturer. The products claiming a biocidal effect are excluded from this product group.
IIDD	The product group 'industrial and institutional dishwasher detergents' shall comprise any dishwasher detergent, rinse or pre-soak agent falling under the scope of Regulation (EU) XXXX/XXX([35]) ~~Regulation (EC) No 648/2004 of the European Parliament and of the Council~~[36] which is marketed and designed to be used by specialised personnel in professional dishwashers. This product group includes multi-component systems comprised of more than one component used to build up a complete detergent. Multi-component systems may incorporate a number of products such as pre-soak and rinsing agents, and they shall be tested as a whole. This product group shall not comprise dishwasher detergents designed for household dishwashers, detergents intended to be used in washers of medical devices or in special machines for the food industry. Sprays not dosed via automatic pumps are excluded from this product group. The products shall not contain micro-organisms that have been deliberately added by the

[31] Regulation (EU) XXXX/ XXX refers to the final adopted version of the revised Detergent Regulation

[32] Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents. (OJ L 104, 8.4.2004, p. 1–35). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32004R0648

[33] Regulation (EU) XXXX/ XXX refers to the final adopted version of the revised Detergent Regulation

[34] Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents. (OJ L 104, 8.4.2004, p. 1–35). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32004R0648

[35] Regulation (EU) XXXX/ XXX refers to the final adopted version of the revised Detergent Regulation

[36] Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents. (OJ L 104, 8.4.2004, p. 1–35). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32004R0648

	manufacturer. The products claiming a biocidal effect are excluded from this product group.
IILD	The product group 'industrial and institutional laundry detergents' shall comprise any laundry detergent falling under the scope of Regulation (EU) XXXX/XXX([37]) ~~Regulation (EC) No 648/2004 of the European Parliament and of the Council~~[38] which is marketed and designed to be used by specialised personnel in industrial and institutional facilities. This product group includes multi-component systems comprised of more than one component used to build up a complete detergent or a laundering programme for an automatic dosing system. Multi-component systems may incorporate a number of products such as fabric softeners, stain removers and rinsing agents, and they shall be tested as a whole This product group shall not comprise products which induce textile attributes such as water repellency, waterproofness or fire retardancy. Furthermore, the product group shall not comprise products that are dosed by carriers such as sheets, cloths or other materials, or washing auxiliaries used without subsequent washing such as stain removers for carpets and furniture upholstery. Laundry detergents to be used in household washing machines are excluded from the scope of this product group. The products claiming a biocidal effect are excluded from this product group.
LD	The product group 'laundry detergents' shall comprise any laundry detergent or pretreatment stain remover falling under the scope of Regulation (EU) XXXX/XXX([39]) ~~Regulation (EC) No 648/2004 of the European Parliament and of the Council~~[40] which is effective at 30 ~~20~~ –°C or below and is marketed and designed to be used for the washing of textiles principally in household machines, but not excluding its use in public laundrettes and common laundries. Pre-treatment stain removers include stain removers used for direct spot treatment of textiles before washing in the washing machine but do not include stain removers dosed in the washing machine and stain removers dedicated to other uses besides pre-treatment. This product group shall not comprise fabric softeners, products that are dosed by carriers such as sheets, cloths or other materials or washing auxiliaries used without subsequent washing such as stain removers for carpets and furniture upholstery. The products claiming a biocidal effect are excluded from this product group.

Rationale for the proposed scope text

The scope aims to clearly delimit which products are included within the EUEL criteria and which are not, mostly on the grounds of product commonalities but especially on the basis of sharing a common function. In the case of the EUEL criteria for detergent products this function is washing/cleaning.

The main streams of information that have informed about potential directions for scope revision are product innovation (new products/formats that have entered in the market since the last revision); legislative changes (affecting the scope of products eligible for EUEL award; example - Detergents Regulation (648/2004/EC) ([41])

[37] Regulation (EU) XXXX/ XXX refers to the final adopted version of the revised Detergent Regulation

[38] Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents. (OJ L 104, 8.4.2004, p. 1–35). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32004R0648

[39] Regulation (EU) XXXX/ XXX refers to the final adopted version of the revised Detergent Regulation

[40] Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents. (OJ L 104, 8.4.2004, p. 1–35). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32004R0648

[41] Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents. (OJ L 104, 8.4.2004, p. 1–35). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32004R0648

and its revision ([42]); and stakeholders' feedback (providing directions on aspect to consider and feasibility/suitability).

In TR1 a wide outlook with regards to "*Scope and definitions*" was carried, with some aspects further investigated (as proposed in TR1) but with others not further considered as they were considered incompatible with the EUEL award, namely biocidal products (as ecolabelled product can't have biocidal effects), mono-ingredient products (that can't be differentiated based on product characteristics) and outdoors/special cleaning products (that are out of routine-cleaning purpose or context). The aspects considered and a brief outline of the proposals made is shown in Table 3, with full details on *Scope* rationales found in TR1 (pages 18 -28)[43]

Table 3 – Outline of aspects related to EU Ecolabel *Scope* further investigated, inclusive of main proposal in TR1.

Aspects related to Scope	*EU Ecolabel Product groups potentially affected*	*TR1 proposal*	*Remarks/reasoning*
Fabric enhancers (softeners)	Laundry detergents	No inclusion	Arguments that led to softeners exclusion in the previous revision still remain valid/actual (e.g. they do not fulfil an essential functionality) and new evidences that could had supported its inclusion were not made available to the JRC (i.e. formulations), thus not being possible to assess the appropriateness of this case.
In-was stain removers	Laundry detergent	No inclusion (*conditional to new evidences*)	*In-wash* stain removers is potentially add unnecessary chemical load compared to their *pre-wash* format. Inclusion can be considered under analogous reasoning to pre-wash but further evidences are required.
Temperature of laundry efficiency	Laundry detergents (*yet potentially applicable to others*)	Reducing from 30C to 20C (*conditional to fitness for use [efficiency]*)	If a detergent/cleaning product is effective with "cold" (30C ≤) water, there are potential environmental savings associated with reduced energy consumption in the heating of the washing water. However, this depends on consumer behaviour, which unlock such benefits under proper use. In addition, there might be trade-offs which should be accounted for as additional chemical load and, particularly, the impact on washing performance. Hence, keeping this proposal is conditioned to further investigations.
Products containing microorganisms	Laundry detergents	Inclusion	Regulatory changes (revision of Detergent Regulation) and technological/product innovation suggest included microorganisms as ingredient, thus substituting chemical by biological agents whilst maintaining cleaning performance (thus potentially achieving

[42] COM(2023)217 - Proposal for a regulation of the European Parliament and of the Council on detergents and surfactants, amending Regulation (EU) 2019/1020 and repealing Regulation (EC) No 648/2004. https://single-market-economy.ec.europa.eu/publications/com2023217-proposal-regulation-detergents-and-surfactants_en

[43] https://susproc.jrc.ec.europa.eu/product-bureau/sites/default/files/2024-02/Detergents_Draft_Technical%20Report%201_1.pdf

			environmental gains as per EUEL goals).
Exclusion of *Ready-to-use (RTU)* products	Hard surface cleaning products	No exclusion	The exclusion of RTU products from EUEL will likely reduce eligible products and net aggregated environmental benefits achieved at EU market level. However, despite their user-friendliness, RTU products have associated higher environmental footprint (e.g. transport CO_2 emissions), thus advisable to consider alternative solutions as selling undiluted (more concentrated) products and/or refills. Hence, JRC to explore further options to "favour" more concentrated product forms.

Source: JRC

Outcomes from and after the 1st AHWG meeting

In total 74 comments were received on the *Scope* section, which are found in full in the Table of Comments (ToC1). The following sub-sections convey summarily the most relevant topics that are.

- Inclusion of microorganisms (27 comments; feedback to TR1 questions Q2-Q3).
- Change of wash temperature (30C to 20C) at which detergents are efficient (19 comments; feedback to TR1 question Q4).
- Exclusion of HSC RTU products (17 comments; feedback to TR1 question Q5).
- Other topics not related to the previous (11 comments) – containing feedback on general comments (3 comments) and inclusion of additional types of detergent products (8 comments).

Inclusion of microorganisms.

What was the feedback received from stakeholders on this topic?

The questions made in TR1 was:

Question 2 (Q2) – Would you support the inclusion of microorganisms in the scope of LD? If not, why?

Question 3 (Q3) – Should the text of LD scope be modified to reflect that microorganism are included in the scope?

With regards to Q2, the feedback is distributed amongst the following groups:

- *Supporting the proposal (*10 comments*)* -> mostly belonging to industry and on the basis of achievable environmental benefits (cleaning during and after wash by removing organic loads from fibres and washing water), latest legislative changes and the safety guarantees offered by the producers as part of risk assessment procedures (See other comments below).
- *Raising concerns/supporting the proposal under certain conditions* (4 comments)
  - While microbial-based cleaning products and detergents can offer several potential benefits, there are also risks associated with their use, which in the existing HSC criteria seem to be reasonably controlled (such as allergic reactions, pathogen transmission, resistance development). However, according to literature, more research is needed on human exposures to microbes and the effects on the environment (e.g. disrupting local ecosystems, including plants and natural microbial communities).
  - Need for further data/experience, importantly ensuring performance is as good as ordinary detergents. Also, add a requirement that microorganisms shall not be used in spray format, as per other ecolabels (i.e. Nordic Ecolabelling).
  - Need for concrete environmental benefits and possibly consideration of further requirements, as a positive list ("safe organisms for use"). Also consideration for trade-offs (impossibility to use refill in product containing microorganisms according to the proposal for revised Detergent Regulation)

— *Neutral & other comments* (4 comments)

- Several stakeholders had no opinion but highlighted: that existing HSC criteria is too restrictive and could disincentive inclusion of microorganisms despite interest in the matter.
- Suggestion to extend the inclusion to other EUEL product groups additionally to LD and HSC, inclusive those for consumer use. The main argument were latest legislative changes (proposal for revised Detergent Regulation including microorganisms in all PGs under it scope) and safety guarantees provided by manufacturers based on the experience in the cleaning products industry showing that potential risk of adverse effects can be successfully managed by identifying the hazards to be managed, carefully assessing exposure, characterizing the risk and then applying appropriate risk management.

With regards to Q3, the feedback, there were again split views on whether to explicitly mention the inclusion of microorganisms or whether the existing *scope* legal text was already compatible with the use of such ingredient for detergent and cleaning products. In addition, a highlight was made on the stringency of the application/verification procedures for products containing microorganisms, which in many instances impaired such product being awarded the EU Ecolabel. It was also suggested to allow the use of microorganisms in other EUEL product groups (i.e. HDD, DD).

What does JRC's research says on this topic?

The topic on the inclusion of microorganisms as part of the EUEL scope (related to Q2) has been approached by the JRC via different angles (i.e. relevance for EUEL product groups; safety; trade-offs, compatibility/compliance with EU Ecolabel criteria [e.g. *Fitness for Use* criterion]) and evidences gathered from many sources (i.e. scientific literature, stakeholders exchanges, EU commission internal consultations), inclusive of a dedicated working sub-group (sub-AHWG) focused on microbial containing products (MCP). It is precisely in the background/working document of this sub-AHWG on MCP that further evidences and discussions can be found on the most important EUEL criteria aspects related to microorganism used as ingredients: *Existing criteria* (how to improve it, inclusive of draft proposal); *Scope* expansion (to which PGs and why): *Performance* (how to ensure efficacy) inclusive of a discussion on a tentative formulation of the draft criteria legal text of the sub-criterion *Micro-organisms* within the criterion *Excluded and restricted substances*. All the documentation (i.e. background/working document, presentations, supplementary materials and minutes) associated to this (and other) sub-AHWG can be found in the Product Policy Analysis (formerly Product Bureau) website[44].

In particular, the sub-AHWG background/working document discloses the technical discussions from the point left at the 1st AHWG, drafting from TR1 stakeholders feedback a mapping of aspects and a list of potential actions to consider. From there, the JRC carried out further research and experts' engagement via specific questions (as in TR1) in two dedicated meetings. In the 1st meeting questions aimed at complementing JRC's further research are shared with participants, with the feedback received afterwards serving to prepare for the discussions on how to address identified aspects, thus leading to further questions to be shared in the 2nd meeting. After this last meeting, more feedback is received by the JRC, with the goal to consider it for the discussions to be held during the 2nd AHWG. For context and completeness, the JRC encourages readers to consult such background/working document as only relevant (thus not all the information) contained within it is reproduced in this TR2 for the sake of efficiency and conciseness.

Focusing on the topic *Scope expansion*, the evidences gathered echoed the feedback received during the 1st AHWG (See previous sub-section) being:

— *Against* -> Safety guarantees are essential and must be tailored to the characteristics the product in combination with the likely scenario for use. The verification (if preserved as existing) is complex and takes long to conclude, thus impairing novel products development.

[44] Check within this *Documents* website the box corresponding to the ongoing revision (2023 as start date). https://susproc.jrc.ec.europa.eu/product-bureau/product-groups/411/documents

- *In favour* -> MCP are already present in the market (checked for LD & HSC) and growing in their use, especially in the industrial and institutional sector but also in the consumer/private use one. Legislative changes (revised Detergent Regulation) unlocks the use of microorganisms as ingredients with no restriction by product group or end-user under its scope (thus at least HDD and DD are also included). Other ecolabels already have included such ingredients ([45]). Longer cleaning effect (removal of organic load in fibres and water) can be achieved whilst requiring lower chemical load.

The following JRC's comments focus purely on *Scope* and assumes safety measures are in place for MCP (e.g. at the very least having an "appropriate" microbial risk-assessment in place) leaving the in-depth discussion/justification about what means "appropriate" and what are the necessary safety guarantees for later in this TR2 (See criterion X *Microorganisms*):

- Considering exclusively the legislative context, there is no reason to exclude microorganisms from any of the EUEL product groups since its scope is directly aligned with mandatory legislation (former and forthcoming Detergents Regulation) which would neither discriminate by type of end-user.

- In terms of other factors commonly considered as part of EUEL criteria revision, there are other ecolabels which do include within their scope the use of microorganisms, so by aligning with them inclusion of microorganisms could be justified. This would be at least for LD product group, where JRC has sourced evidences on products (or their patents).

- There is no clear information about how efficient are MCP comparatively with their purely chemical counterparts, which is further aggravated by the lack of standardised methods for cleaning efficiency. Furthermore, it is neither part of existing EUEL *Fitness for Use* protocols/frameworks, an ongoing work stream of the current EUEL criteria revision. Hence, it is not possible to affirm that at the time of writing this TR2 there are comparative meaningful evidences that MCP are as efficient as their chemical counterparts, nor in the contrary sense (that are more efficient). Indeed, the mechanisms of biochemical basis for the cleaning effects has also been highlighted as a noticeable information gap[46]. However, this should not necessarily impede the inclusion of this ingredient as part of the EUEL *Scope*, since the criterion on *Fitness for Use* is the one that would account for this and would impede the certification of such product if not able to comply with the minimum performance standards required for any EU Ecolabel products.

- About environmental impacts (either "positive" or "negative"), there is little information especially quantitatively (that JRC accessed so far) while for environmental risks appraisal, the lack of information regarding species/strain as well as their traits (e.g. persistence in environment) prevents from proper assessment[47]. In this last regard, the provision of unequivocal information for microorganisms at strain/species levels (as per ambition within the EUEL TR2 proposal) would enable the assessment of immediate potential risks, then building up evidences to assess long-term effects. Likely/claimed foreseeable environmental benefits refers to the use of less resources (e.g. energy, materials for chemicals production) with the benefit of additional cleaning effects, inclusive of organic load removals (or biodegradation) in washing water.

The aforementioned statements suggest that there are some reasons by which MCP should be included within the scope, with other aspects under reasonable doubts but that would/could be controlled/verified via other EUEL criteria requirements (i.e. efficacy). However, this is not the case for environmental benefits (indeed, neither for detrimental environmental effects) confirmed via evidences accessed by JRC at this stage of the revision process.

To "complete the picture", EUEL TR2 proposals aims to enable safety at certain level but it does not address the already highlighted issue on structural lack of information at system/sector level, possibly related to the

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[45] https://cdn.naturskyddsforeningen.se/uploads/2021/06/22173951/Criteria_Bra_Miljoval_Chemical_Products_2018-1_20181125_0-1.pdf

[46] VKM, Elisabeth Henie Madslien, Nana Asare, Øivind Bergh, Erik Joner, Pål Trosvik, Siamak Yazdankhah, Ole Martin Eklo, Kaare Magne Nielsen, Bjørnar Ytrehus, Yngvild Wasteson (2019). Current knowledge of the health and environmental risks of microbial-based cleaning products. Scientific opinion of the Panel on Microbial Ecology of the Norwegian Scientific Committee for Food and Environment. VKM report 2019:09, ISBN: 978-82-8259-325-0, ISSN: 2535-4019. Norwegian Scientific Committee for Food and Environment (VKM), Oslo, Norway.

[47] La Maestra, S., F. D'Agostini, M. Geretto, and R.T. Micale, 'Microbial-Based Cleaning Products as a Potential Risk to Human Health: A Review', Toxicology Letters, Vol. 353, December 2021, pp. 60–70. DOI 10.1016/j.toxlet.2021.09.013

absence of a pre-existing regulatory mechanisms specific to detergent and cleaning products[48], as is the case for other product sectors/niches (e.g. Food & Feed; European Food Safety Agency). Safety is an aspect of capital importance and in this 2nd draft EUEL criteria the JRC has proposed several new/updated requirements to ensure a minimum level of certainty regarding safety of MCP (i.e. requiring a microbiological risks assessment; unlocking unequivocal microorganisms identification; reinforcing controls to avoid cross-contamination with undesired microorganisms) thus enabling better appraisal of associated risks and potentially preventing impacts to the human health and the environment. In this sense, any ecolabelled detergent/cleaner containing microorganisms would be offering the highest safety standards currently available plus the benefits and guarantees offered by horizontal EUEL criteria (applicable to all ecolabelled products, not only to MCP). However, it is out of the capabilities of the revision of the EUEL criteria for detergents to assess all evidences leading to define/suggest which should be the harmonised procedures and mechanisms to account and control for all the potential scenarios under which detergent and cleaning product could be used. In addition, the evidences accessed by the JRC at this stage of the revision are scarce yet they suggest that MCP may have neutral or positive effects in particular set ups. For example, that the use of certain MCP in health-care setting do not contribute to hospital-acquired infections[49,50] or that may have long-term effects on surfaces, preventing the recontamination, persistence and spread of pathogenic microorganisms and opportunists[51]. In addition, evidence was sourced on comparatively milder effects of MCP all-purpose versus their purely chemical counter-parts in an in vitro inhalation toxicity study, this not being related with microorganisms added as ingredients.

In conclusion, the JRC did not had access to robust evidences fully supporting the inclusion of MCP, meaning conclusive evidence backing-up this proposal in every single aspects considered for EUEL criteria scope expansion. However, note that neither in the contrary sense – to fully backing-up maintaining existing exclusion of MCP. Nevertheless and as discussed earlier, for particular aspects there are some arguments to maintain TR1 proposal on expanding the scope to other EUEL product groups (i.e. LD, HDD), potentially to other end-users (HSC - private use; IILD) where existence and information about MCP was reported/found. MCP belonging to the HSC product group, the proposals made in TR2 aim to maximise safety also for *private use* settings, which would minimise quality issues associated with MCP and would ensure unequivocal microorganisms identification. HDD is consider for inclusion for analogous reasons to HSC. The product groups DD and IIDD are not considered as no data/information was accessed related to MCP and these particular products groups and also because the conditions of washing the dishes, mainly maximum temperature reached and exposure period, would not be favourable (in general terms) for growth/survival and cleaning action of mesophilic microorganisms contained within MCP On what concerns

About modifying EUEL scope to reflect inclusion of microorganisms (related to Q3), the revised Detergent Regulation in its proposal and other official versions of this legislative procedure (e.g. European Parliament Resolution) include microorganisms as part of their scope. Given the direct relationship/influence of the mandatory regulation for detergents over a voluntary one as EU Ecolabel, depicted by direct alignment in existing EUEL criteria scope to existing Detergent Regulation, the JRC proposes alignment with the upcoming revised Regulation. Assuming its scope would still include microorganisms, by referring to this upcoming Regulation the inclusion of microorganism within EUEL criteria scope is implicit, thus not being necessary to explicitly mention it. Conversely, if microorganisms are excluded within the scope of a particular EUEL product group, then an explicit quotation is required. To align with existing criteria, the following wording has been used to indicate that microorganisms are not within the scope of a particular product groups:

"The products shall not contain micro-organisms that have been deliberately added by the manufacturer."

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[48] La Maestra, S., F. D'Agostini, M. Geretto, and R.T. Micale, 'Microbial-Based Cleaning Products as a Potential Risk to Human Health: A Review', Toxicology Letters, Vol. 353, December 2021, pp. 60–70. DOI 10.1016/j.toxlet.2021.09.013

[49] Caselli, E., M. D'Accolti, A. Vandini, L. Lanzoni, M.T. Camerada, M. Coccagna, A. Branchini, et al., 'Impact of a Probiotic-Based Cleaning Intervention on the Microbiota Ecosystem of the Hospital Surfaces: Focus on the Resistome Remodulation', Edited by Y.-F. Chang, PLOS ONE, Vol. 11, No. 2, February 17, 2016, p. e0148857. DOI: https://dx.plos.org/10.1371/journal.pone.0148857

[50] Caselli, E., P. Antonioli, and S. Mazzacane, 'Safety of Probiotics Used for Hospital Environmental Sanitation', Journal of Hospital Infection, Vol. 94, No. 2, October 2016, pp. 193–194. DOI 10.1016/j.jhin.2016.06.021

[51] VKM, Elisabeth Henie Madslien, Nana Asare, Øivind Bergh, Erik Joner, Pål Trosvik, Siamak Yazdankhah, Ole Martin Eklo, Kaare Magne Nielsen, Bjørnar Ytrehus, Yngvild Wasteson (2019). Current knowledge of the health and environmental risks of microbial-based cleaning products. Scientific opinion of the Panel on Microbial Ecology of the Norwegian Scientific Committee for Food and Environment. VKM report 2019:09, ISBN: 978-82-8259-325-0, ISSN: 2535-4019. Norwegian Scientific Committee for Food and Environment (VKM), Oslo, Norway.

So, unless explicitly excluded, microorganisms would be part of EUEL scope. If the revised Detergent Regulation is amended and no longer includes microorganisms as part of its scope, then the EUEL criteria legal text will be updated accordingly.

Given the former, potentially all the product groups within EUEL criteria could consider microorganisms as an ingredient within their scope. The JRC received feedback on existence of products already in the market for HSC, LD and IILD product groups, thus proposing their inclusion within EUEL criteria scope for this reason and in alignment with the aforementioned rationale about the revised Detergent Regulation. For the remaining products groups (HDD, DD and IIDD) the scope could be potentially expanded and not doing so would not be coherent with the regulatory alignment unless justified by further arguments. In the case of DD and IIDD, the wash conditions and typical wash cycle duration in automatic dishwashers, either for private or professional use, would likely impair microorganism biochemical action (even its viability). For this reason the JRC is not considering at this stage to extend the scope to DD and IIDD. However, for the case of HDD products the cleaning action of microorganisms, understanding it as organic matter break-down and mobilisation of soil/dirt, could be potentially foreseen under conventional use (e.g. addition of product to a full sink of warm/cold water where dishes are left soaking for periods of time allowing microorganisms biochemical action). Additionally, the formulation of HDD could be considered analogous to certain HSC, which include as part of its scope microorganisms (at least professional HSC in existing EUEL criteria). Consequently, despite JRC did not find any product HDD product in the market with microorganisms, excluding this ingredient its scope HDD would preclude any future innovation in this field to achieve the EUEL award.

In view of the aforementioned statements, the JRC has decided to extend the scope by proposing not excluding microorganisms as ingredients from the LD, IILD, HSC and HDD product groups.

Laundry wash temperature (30°C to 20°C)

What was the feedback received from stakeholders on this topic?

The questions made in TR1 was:

Question 4 (Q4) – Current scope states that laundry detergents gave to be effective at 30 °C or below. Would you support lowering this temperature (e.g. 20 °C). If not, why? If yes, down to which temperature?

The feedback received can be split into a majority of stakeholders not supporting the proposal (13 comments) and some opened to support it but with reservations and suggestions for further analysis (5). The arguments quoted for each position are:

— *In favour*

- Reducing the washing temperature to 20°C could lead to overall environmental savings, but it is essential to ensure that high performance is still guaranteed and that environmental trade-offs with other dimensions (i.e. need for more chemicals) are accounted for, ideally via gathering more data to support this decision and assessing the global environmental impact.
- Respondents were open to revising the fitness for use criterion to be more relevant for testing temperatures of 20°C, despite 30C is considered as standard concerning consumer behaviour. Also, indicated that lowering dosage level jointly with this decrease in washing temperature efficiency were "in the good direction".

— *Against* ->

- Technical solutions are not available to maintain good performance at 20°C. At this temperature the bleaching action is impaired (less or no efficiency of bleaching agents/activators). Also, dissolution rates are lowered, thus posing particular problems for product forms (i.e. powder) or ingredients (e.g. water-soluble films) with comparatively lower solubility. For some types of dirt, washing at 20°C is insufficient for stain removal. For example, oil and greases; laundry sector as these are removed more efficiently at higher temperatures, being very difficult at 20C due to predominance of (semi-)solid forms. In these cases, more active ingredients and/or longer washing time (contact time) may be needed to achieve the same performance. Consequently, if focusing on energy gains, this would be lost due to this reduction in product efficiency.

- "Cold washing" (meaning 20C≤) is generally not representative of reality, implying existence of products with such claims (inclusive of performance testing); access to a source of water at constant temperature (since it would be dependent on tap water plus washing machines conditions [if applicable]) and/or users may not respect the 20°C recommendation or the recommended dosages, leading to higher energy use or chemical impact.
- Focusing on implications for the EUEL criteria for detergent products, the majority of currently certified products have not been tested at 20°C and still at 30C some products have been criticized for their insufficient efficiency. Also, the current fitness-for-use criterion may not be suitable for testing laundry effectiveness at 20°C and below.

What does JRC's research says about it?

In the updated preliminary report (PR2) new sensitivity analysis were included:

— *Decreasing the temperature of laundry wash from 30C to 20C in a liquid laundry detergent (LLD; See PR2 section 5.4.3.3.2).* Under such scenario, the reduction in the overall LCA impact is 19%. However, as indicated in stakeholders' feedback, decreased wash temperature generally results in decreased efficiency, which is compensated in some instances by adding higher dosage (more detergent). Precisely this aspect was interrogated, by checking which would be the additional mass of detergent that would be required (expressed as percentage of the dosage used at 20C) to cancel out the benefits of lowering the wash temperature. The results indicated that this point was achieved by adding 80% additional mass of detergent, thus close to double of the recommended dosage.

— *Wash cycle temperature effect on addition of "extra enzyme" to powder laundry detergent (PLD; See PR2 section 5.4.3.4.3).* The main conclusions indicated that: a) the use of enzymes allowed for a substantial reduction of the quantity of surfactant required for a given cleaning performance; b) They also allowed to achieve the same washing performance even when wash cycle temperature is the different; c) (following from the last point) the use of enzymes permits the use of smaller doses for PLD. A practical implication of these findings is that the use of enzymes unlocked the possibility of lowering wash temperature whilst still maintaining the measured cleaning performance (in this case, as indicated by reflectance of white swatches after washing according to EUEL protocol in 2007).

Both of the previous cases were dependent on consumer behaviour. In other words, under improper usage (e.g. higher dosage, re-wash/es) the potential benefits would be cancelled out.

Despite some evidences suggest that it could be feasible to achieve optimal washing performance at 20C under certain conditions, it seems this is not applicable to all cases (e.g. not optimal for oil/greases). Furthermore, necessary aspects to realise the potential environmental benefits (i.e. wash water at constant desired temperature) might not be easily attainable by users, thus not offering certainty on the benefits achievable. The former assuming "proper" consumer behaviour, but otherwise potential benefits could be easily offset.

In view of the aforementioned statements, the JRC has decided to withdraw the proposal made in TR1 **to lower LD wash temperature (20C≤) and has reverted back to the original formulation in existing criteria (30C≤).**

Exclusion of RTU products from HSC scope

What was the feedback received from stakeholders on this topic?

The questions made in TR1 was:

Question 5 (Q5) – Do you support maintaining RTU products as part of HSC scope? If not, why?"

The feedback received resulted in a generalised consensus in favour of maintaining RTU products as part of HSC scope (14 comments). The main arguments provided were:

— *Significant market share*-> RTU products represent a significant portion of the HSC detergent category, and removing them would result in many products losing their certification.

- *Practicality and consumer behaviour* -> the convenience of the associated formats (e.g. sprays) and means of use (not requiring dilution) implies widespread use, with likely reticence from consumer to change such behaviours.
- *Essential for consumers*-> RTU products are widely used and essential for consumers, particularly for certain product categories such as glass cleaners, toilet gels, and sanitary sprays.
- *Relevant for the professional sector*-> similarly to RTU products are widely used by cleaning companies in the professional sector.
- *Safety concerns*-> Concentrated products can be dangerous for users if dilutions are not done correctly, and RTU products can mitigate this risk.

Some stakeholders suggested that certain subcategories, such as all-purpose cleaners, could be excluded from the RTU scope, as there are many alternatives available that can be diluted by consumers. However, this is not a unanimous opinion, and many stakeholders believe that no type of product should be excluded from the EU Ecolabel.

Overall, the stakeholders supported maintaining RTU products in the HSC scope.

What does JRC's research says about it?

The market analysis carried by the JRC concurs with importance of HSC with regards to market volume and market value. It also show the importance of this product group within the EUEL criteria for detergents, even compared to other criteria, in terms of ecolabelled products and/or licenses.

The information/data sourced/received by the JRC on EUEL products used for the quantitative analysis leading to TR2 threshold proposals also shown the importance of this product group, as it was by far the EUEL product group where higher data entries were received. Interestingly, it also confirmed as indicated by stakeholders that APC are predominantly found in undiluted form (assuming the sample received by the JRC is representative from whole EUEL landscape) whilst the rest of HSC product sub-groups are eminently RTU form.

In view of the aforementioned statements and in line with TR1 proposal, the JRC does not propose the exclusion of RTU from the scope of HSC products. However, there seem to be alternatives for the case of APC, thus the JRC has included a question on this matter.

<u>*Inclusion of in wash stain removers*</u>

What was the feedback received from stakeholders on this topic?

No question was shared with stakeholders in TR1 and the final conclusion was not to include *in-wash stain removers* as part of EUEL criteria scope. However, the JRC left the possibility for revision of this proposal shall new evidences would made available, which was precisely the case. Consequently, the inclusion of *in-wash stain removers* has been re-assessed in the light of a confidential in-house LCA study provided by an industry stakeholder.

What does JRC's research says about it?

Based on a review of the LCA shared by industry, which compared a conventional laundry detergent to a laundry detergent with an in-wash stain remover, it was decided to continue with the exclusion of in-wash stain removers from the EUEL scope. The study relied on some assumptions about the increased longevity of clothes and decreased wash cycle temperatures due to the use of the laundry detergent with the in-wash stain remover. When discarding the assumptions about the longevity of clothes, the results showed that any reduction in life cycle impacts was fully dependent on assumptions made with the wash cycle temperature chosen for each detergent product. If the same wash cycle temperature is chosen, the detergent with the in-wash stain remover would have shown higher impacts.

There is no guarantee that consumers will consistently use lower wash cycle temperatures just because a laundry detergent has an in-wash stain remover. However, there is a significant risk that consumers will "overuse" the in-wash stain removers in the sense that it is used equally with every dose, regardless of the dirtiness of the laundry load. In-wash stain removers also have a disadvantage of not specifically targeting stained areas more than any other areas of the laundry. Neither of these disadvantages occur when using a dedicated stain remover product which can be manually applied to stained areas immediately prior to placing the laundry load in the washing machine.

Other topics not related to the previous

Feedback on general comments (3 comments) and inclusion of additional types of detergent products (8 comments) were received.

On the general comments, the most relevant suggestion was to explicitly mention in the scope that products claiming a "biocidal effect" are excluded, aimed at enhancing at Competent Bodies level (interpretation and implementation). The JRC already exposed in TR1 that product claiming a biocidal effect were out of the EUEL scope and perceives this is the general understanding but for the sake of clarity and unambiguous interpretation, the following text have been added to the existing in all EUEL product groups:

"The products claiming a biocidal effect are excluded from this product group."

On the inclusion of additional types of detergent product, some comments called for a differentiation between HSC for private and professional use, since the existing "joint" scope could leave some industrial cleaning products out and would not be appealing for industrial users. In addition, the following product types/forms were suggested for inclusion:

- *Ultra-concentrated products* -> which can't be ecolabelled since its concentration could trigger different hazard-classes classifications (e.g. toxic, hazardous to the aquatic environment, respiratory or skin sensitisers, carcinogenic, mutagenic or toxic for reproduction) and by being present in the final product at concentrations above 0.01% are not allowed according the criterion *Excluded and Restricted susbtances>b) Hazardous substances*[52]. Given the environmental benefits associated with this compact format (e.g. lower CO_2 emissions) it is proposed to consider a way to include them (e.g. apply a dilution factor for thresholds triggering classification).
- *Fabric enhancers (softeners)* -> several stakeholders were in favour of including this product group so as to offer a more sustainable alternative to conventional products in the market. Other arguments and/or options for considering including this product type were:
  - Impose a restriction on fragrances used – as this is the main ingredient that would allow differentiation across softeners (not possible based on cationic surfactants). Proposal: minimum TF (acute or chronic) value: 0,02maximum DF value: 0,15Maximum percentage used: 0,2%
  - Washing function – since they exert removal action on alkaline and detergent residues on clothes by decreasing the pH level of the rinsing liquor.
- *Oven/Grill Descalers* – that are requested by hotels and restaurants and that share similarities with Descaler products, which is currently allowed within EU Ecolabel criteria.
- *Bulk ("Loose") detergent products* – as there is interested from applicants/LHs on having this format within the scope.
- *Other products* - as *Car wash detergents, washing powder in wash stain removers, toilet blocks.*

Points for discussion 1 – Scope

Stakeholders are invited to reply the following consultation question:

[52] See Table 2 in EU Ecolabel criteria Commission Decision https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02017D1217-20230329

826 — Question 1 (Q1 – Microorganisms) – Do you support the proposed inclusion of microorganisms
827 within the scope of EUEL criteria (except DD and IIDD)? If not, would you support other configurations
828 (e.g. only for professional use; only particular product groups)? *Please provide a reasoned response*
829 *supporting your answer.*

830 — Question 2 (Q2 – Exclusion of APC RTU) – Do you support excluding APC in RTU form? If so, would
831 you support full ban irrespective of end-use (both private use and professional) or would you limit it
832 to professional use only? *Please provide a reasoned response supporting your answer.*

833 — Question 3 (Q3 – **Exclusion of "biocidal products")** – Do you support excluding products claiming
834 a biocidal effect? If so, do you support the proposed wording? *Please provide a reasoned response*
835 *supporting your answer.*

836

837

3.3. Definitions

Existing definitions		
Product group(s)	Definitions	Legal text
ALL	Not applicable	*For the purpose of this Decision, the following definitions shall apply:*
ALL	Ingoing substances	*'ingoing substances' means all substances in the detergent/cleaner product, including additives (e.g. preservatives and stabilisers) in the raw materials. Substances known to be released from ingoing substances (e.g. formaldehyde from preservatives and arylamine from azodyes and azopigments) shall also be regarded as ingoing substances. Unintended constituents (residuals, pollutants, contaminants, by-products, etc.) from production, incl. production of raw materials, that remain in the raw materials ≥ 1 000 ppm (≥ 0,1000 %w/w ≥ 1 000 mg/kg) are always regarded as ingoing substances, regardless of the concentration in the final product;* *Foil that is not removed before use of the product and that is water soluble is considered as part of the formulation/recipe.*
ALL	Impurities	*'impurities' means unintended constituents (residuals, pollutants, contaminants, by-products, etc.) from production, incl. production of raw materials, that remain in the raw material/ingredient and/or in the in the final product in concentrations less than 100 ppm (0,0100 % w/w, 100 mg/kg) and that were not intentionally added.*
ALL	Packaging	*'packaging' means 'items of any materials that are intended to be used for the containment, protection, handling, delivery or presentation of products and that can be differentiated into packaging formats based on their function, material and design, including:* *(a) items that are necessary to contain, support or preserve the product throughout its lifetime without being an integral part of the product which is intended to be used, consumed or disposed of together with the product;* *(b) components of, and ancillary elements to, an item referred to in point (a) that are integrated into the item;* *(c) ancillary elements to an item referred to in point (a) that are hung directly on, or attached to, the product and that performs a packaging function without being an integral part of the product which is intended to be used, consumed or disposed of together with the product;* *(d) items designed and intended to be filled at the point of sale, provided that they perform a packaging function;* *(e) disposable items sold, filled or designed and intended to be filled at the point of sale, provided that they perform a packaging function;* *In the context and for compliance with this EU Ecolabel criteria, items potentially falling under clause (a) definition that are part of a single dose unit (product and wrappers/films (or equivalent)), that are water-soluble and that are not removed prior to the product use*

		for washing/cleaning purposes, shall not be regarded as packaging but rather as part of the product formulation. Conversely, items potentially falling under clause (a) definition that are part of a single dose unit (product and wrappers/films (or equivalent)), that are water-insoluble and that are removed prior to the product use for washing/cleaning purposes, shall be regarded as packaging but not as part of the product formulation
ALL	Sales packaging	*'sales packaging', also known as 'primary packaging', means packaging conceived so as to constitute the smallest sales unit of products and packaging to the final user or consumer at the point of sale;*
ALL	Grouped packaging	*'grouped packaging', also known as 'secondary packaging', is packaging conceived so as to constitute a grouping of a certain number of sales unit at the point of sale ~~purchase~~ whether the latter is sold as such to the end user or it serves only as a means to replenish the shelves at the point of sale or create a stock-keeping or distribution unit; and which ~~it~~ can be removed from the product without affecting its characteristics.*
ALL	Transport packaging	*'transport packaging', also known as 'tertiary packaging' means ~~is~~ packaging conceived so as to facilitate handling and transport of a number of sales units or grouped packages, including e-commerce packaging but excluding road, rail, ship and air containers, in order to prevent physical handling and transport damage.*
ALL	Composite packaging	*'composite packaging' means a unit of packaging made of two or more different materials, excluding materials used for labels, closures and sealing, which cannot be separated manually and therefore form a single integral unit;*
ALL	Polymer	*'Polymer' means a substance consisting of molecules characterised by the sequence of one or more types of monomer units. Such molecules must be distributed over a range of molecular weights wherein differences in the molecular weight are primarily attributable to differences in the number of monomer units. A polymer comprises the following: (a) a simple weight majority of molecules containing at least three monomer units which are covalently bound to at least one other monomer unit or other reactant; (b) less than a simple weight majority of molecules of the same molecular weight. In the context of this definition, a 'monomer unit' means the reacted form of a monomer substance in a polymer, as defined in Regulation (EC) No 1907/2006*
ALL	Synthetic polymers	*'synthetic polymers' means macromolecular substances intentionally obtained either by:* *(a) a polymerisation process such as polyaddition or polycondensation or a similar process using monomers or other starting substances;* *(b) chemical modification of natural or synthetic macromolecules;* *(c) microbial fermentation*
ALL	Microplastic (Synthetic polymer microparticles)	*'microplastic' means polymers that are solid and which fulfil both of the following conditions:* *a) are contained in particles and constitute at least 1 % by weight of those particles; or build a continuous surface coating on*

		particles; *b) at least 1 % by weight of the particles referred to in point (a) fulfil either of the following conditions*:* *i) all dimensions of the particles are equal to or less than 5 mm;* *ii) the length of the particles is equal to or less than 15 mm and their length to diameter ratio is greater than 3.* **Where the concentration of synthetic polymer microparticles covered by this entry cannot be determined by available analytical methods or accompanying documentation, in order to verify the compliance with the concentration limit referred to in paragraph 1, only the particles of at least the following size shall be taken into account:* *(a) 0,1 µm for any dimension, for particles where all dimensions are equal to or smaller than 5 mm;* *(b) 0,3 µm in length, for particles that have a length that is equal to or smaller than 15 mm and a length to diameter ratio greater than 3.* *The following polymers are excluded from this designation:* *a) polymers that are the result of a polymerisation process that has taken place in nature, independently of the process through which they have been extracted, which are not chemically modified substances;* *b) polymers that are degradable as proved in accordance with Appendix 15;* *c) polymers that have a solubility greater than 2 g/L as proved in accordance with Appendix 16;* *polymers that do not contain carbon atoms in their chemical structure."*
ALL	Nanomaterial	*'nanomaterial' means a natural, incidental or manufactured material consisting of solid particles that are present, either on their own or as identifiable constituent particles in aggregates or as an agglomerates, and where 50 % or more of these particles in the number-based size distribution fulfil at least one of the following conditions:* *(a) one or more external dimensions of the particle are in the size range 1 nm to 100 nm;* *(b) the particle has an elongated shape, such as a rod, fibre or tube, where two external dimensions are smaller than 1 nm and the other dimension is larger than 100 nm;* *(c) the particle has a plate-like shape, where one external dimension is smaller than 1 nm and the other dimensions are larger than 100 nm.* *In the determination of the particle number-based size distribution, particles with at least two orthogonal external dimensions larger than 100 µm need not be considered.* *However, a material with a specific surface area by volume of < 6 m^2/cm^3 shall not be considered a nanomaterial.*

ALL	Substances identified to have endocrine disrupting properties (endocrine disruptors)	*'substances identified to have endocrine disrupting properties', also referred to as endocrine disruptors, means substances which have been identified to have endocrine disrupting properties (human health and/or environment) according to Article 57(f) of Regulation (EC) No 1907/2006 (candidate list of substances of very high concern for authorisation), or Regulation (EU) No 528/2012 of the European Parliament and of the Council or Regulation (EC) No 1107/2009 of the European Parliament and of the Council , or Regulation (EC) No 1272/2008 of the European Parliament and of the Council.*
HSC	Undiluted product	*'undiluted product' means a product that should be diluted in water prior to use;*
HSC	Ready-to-use (RTU) product	*'ready-to-use (RTU) product' means a product not to be diluted in water before use;*
LD	Heavy-duty detergents	*(2) 'heavy-duty detergents' means detergents used for ordinary washing of white textiles at any temperature;*
LD	Colour-safe detergents	*(3) 'colour-safe detergents' means detergents used for ordinary washing of coloured textiles at any temperature;*
LD	Light-duty detergents	*(4) 'light-duty detergents' means detergents intended for delicate fabrics;*
LD	Not applicable	*2. For the purposes of paragraph 1(2) and (3), a detergent shall be considered either a heavy-duty detergent or a colour-safe detergent except where the detergent packaging explicitly states that the product is intended for use on delicate fabrics (i.e. light-duty detergent).*
Proposed definitions		
Product group(s)	Definitions	Legal text
ALL	Not applicable	*For the purpose of this Decision, the following definitions shall apply:*
ALL	Ingoing substances	*'ingoing substances' means all substances ~~in the detergent/cleaner product, including additives (e.g. preservatives and stabilisers) in the raw materials.~~, and regardless of amount, that are intentionally added to achieve or influence certain properties of the final product or its ingredients. Substances known to be released from ingoing substances (e.g. formaldehyde, ~~from preservatives and~~ arylamine from azodyes and azopigments and in-situ generated preservatives) shall also be regarded as ingoing substances. ~~Unintended constituents (residuals, pollutants, contaminants, by-products, etc.) from production, incl. production of raw materials, that remain in the raw materials ≥ 1 000 ppm (≥ 0,1000 %w/w ≥ 1 000 mg/kg) are always regarded as ingoing substances, regardless of the concentration in the final product;~~ Impurities present in the final product in concentrations greater than or equal to 100 ppm (0,0100 % w/w, 100 mg/kg) or in supplied ingredients in concentrations greater than or equal to 1 000 ppm (0,100 %, 1 000 mg/kg), shall also be considered as ingoing substances.*

		Foil that is not removed before use of the product and that is water soluble is considered as part of the formulation/recipe and therefore as an ingoing substance or substances.
ALL	Impurities	*'impurities' means unintended constituents (residuals, pollutants, contaminants, by-products, etc.) ~~from production, incl. production of raw materials~~, that remain in the ~~raw material/ingredient and/or in the in the final product~~EU Ecolabelled product in concentrations less than 100 ppm (0,0100 % w/w, 100 mg/kg) ~~and that were not intentionally added~~. or that remain in the supplied ingredient or raw material in concentrations less than 1 000 ppm (0,100 % w/w, 1 000 mg/kg). Any unintended constituents present above these respective limits for the EU Ecolabelled product or the supplied ingredient or raw material shall instead be considered as ingoing substances.*
ALL	Packaging *(TO BE ADDED TO THE USER MANUAL)*	*'packaging' means 'items of any materials that are intended to be used for the containment, protection, handling, delivery or presentation of products and that can be differentiated into packaging formats based on their function, material and design, including:* *(a) items that are necessary to contain, support or preserve the product throughout its lifetime without being an integral part of the product which is intended to be used, consumed or disposed of together with the product;* *(b) components of, and ancillary elements to, an item referred to in point (a) that are integrated into the item;* *(c) ancillary elements to an item referred to in point (a) that are hung directly on, or attached to, the product and that performs a packaging function without being an integral part of the product which is intended to be used, consumed or disposed of together with the product;* *(d) items designed and intended to be filled at the point of sale, provided that they perform a packaging function;* *(e) disposable items sold, filled or designed and intended to be filled at the point of sale, provided that they perform a packaging function;* *In the context and for compliance with this EU Ecolabel criteria, items potentially falling under clause (a) definition that are part of a single dose unit (product and wrappers/films (or equivalent)), that are water-soluble and that are not removed prior to the product use for washing/cleaning purposes, shall not be regarded as packaging but rather as part of the product formulation. Conversely, items potentially falling under clause (a) definition that are part of a single dose unit (product and wrappers/films (or equivalent)), that are water-insoluble and that are removed prior to the product use for washing/cleaning purposes, shall be regarded as packaging but not as part of the product formulation*
ALL	Sales packaging	*~~'~~sales packaging', also known as ~~'~~primary packaging', means: packaging conceived so as to constitute the smallest sales unit of products and packaging to the final user or consumer at the point of sale;*
ALL	Grouped packaging	*'grouped packaging', also known as ~~'~~secondary packaging', means ~~is~~*

		packaging conceived so as to constitute a grouping of a certain number of sales unit at the point of sale whether the latter is sold as such to the end user or it serves only as a means to replenish the shelves at the point of sale or create a stock-keeping or distribution unit; and which can be removed from the product without affecting its characteristics.
ALL	Transport packaging	*'transport packaging', also known as 'tertiary packaging' means ~~is~~ packaging conceived so as to facilitate handling and transport of a number of sales units or grouped packages, including e-commerce packaging but excluding road, rail, ship and air containers, in order to prevent physical handling and transport damage.*
ALL	Composite packaging	*composite packaging' means a unit of packaging made of two or more different materials~~, excluding materials used for labels, closures and sealing,~~ which are part of the weight of the main packaging material and cannot be separated manually and therefore form a single integral unit, unless one of the materials constitutes an insignificant part of the packaging unit and in any event no more than 5 % of the total mass of the packaging unit and excluding labels, varnishes, paints, inks, adhesives and lacquers; this is without prejudice to Directive (EU) 2019/904;*
ALL	Polymer	*'Polymer' means a substance consisting of molecules characterised by the sequence of one or more types of monomer units. Such molecules must be distributed over a range of molecular weights wherein differences in the molecular weight are primarily attributable to differences in the number of monomer units. A polymer comprises the following: (a) a simple weight majority of molecules containing at least three monomer units which are covalently bound to at least one other monomer unit or other reactant; (b) less than a simple weight majority of molecules of the same molecular weight. In the context of this definition, a 'monomer unit' means the reacted form of a monomer substance in a polymer, as defined in Regulation (EC) No 1907/2006*
ALL	Synthetic polymers	*'synthetic polymers' means macromolecular substances intentionally obtained either by:* *(a) a polymerisation process such as polyaddition or polycondensation or a similar process using monomers or other starting substances;* *(b) chemical modification of natural or synthetic macromolecules;* *(c) microbial fermentation*
ALL	Microplastic (Synthetic polymer microparticles)	*'microplastic' means polymers that are solid and which fulfil both of the following conditions:* *a) are contained in particles and constitute at least 1 % by weight of those particles; or build a continuous surface coating on particles;* *b) at least 1 % by weight of the particles referred to in point (a) fulfil either of the following conditions*:* *i) all dimensions of the particles are equal to or less than 5 mm;* *ii) the length of the particles is equal to or less than 15 mm and their length to diameter ratio is greater than 3.*

		**Where the concentration of synthetic polymer microparticles covered by this entry cannot be determined by available analytical methods or accompanying documentation, in order to verify the compliance with the concentration limit referred to in paragraph 1, only the particles of at least the following size shall be taken into account:* *(a) 0,1 µm for any dimension, for particles where all dimensions are equal to or smaller than 5 mm;* *(b) 0,3 µm in length, for particles that have a length that is equal to or smaller than 15 mm and a length to diameter ratio greater than 3.* *The following polymers are excluded from this designation:* *a) polymers that are the result of a polymerisation process that has taken place in nature, independently of the process through which they have been extracted, which are not chemically modified substances;* *b) polymers that are degradable as proved in accordance with Appendix 15;* *c) polymers that have a solubility greater than 2 g/L as proved in accordance with Appendix 16;* *d) polymers that do not contain carbon atoms in their chemical structure."*
ALL	Nanomaterial	*'nanomaterial' means a natural, incidental or manufactured material consisting of solid particles that are present, either on their own or as identifiable constituent particles in aggregates or as an agglomerates, and where 50 % or more of these particles in the number-based size distribution fulfil at least one of the following conditions:* *(a) one or more external dimensions of the particle are in the size range 1 nm to 100 nm;* *(b) the particle has an elongated shape, such as a rod, fibre or tube, where two external dimensions are smaller than 1 nm and the other dimension is larger than 100 nm;* *(c) the particle has a plate-like shape, where one external dimension is smaller than 1 nm and the other dimensions are larger than 100 nm.* *In the determination of the particle number-based size distribution, particles with at least two orthogonal external dimensions larger than 100 µm need not be considered.* *However, a material with a specific surface area by volume of < 6 m^2/cm^3 shall not be considered a nanomaterial.*
ALL	Substances identified to have endocrine disrupting properties (endocrine disruptors)	*'substances identified to have endocrine disrupting properties', also referred to as endocrine disruptors, means substances which have been identified to have endocrine disrupting properties (human health and/or environment) according to Article 57(f) of Regulation (EC) No 1907/2006 (candidate list of substances of very high concern for authorisation), or Regulation (EU) No 528/2012 of the European Parliament and of the Council or Regulation (EC) No 1107/2009 of the European Parliament and of the Council , or Regulation (EC) No 1272/2008 of the European Parliament and of*

		the Council.
HSC	Undiluted product	*'undiluted product' means a product that should be diluted in water prior to use;*
HSC	Ready-to-use (RTU) product	*'ready-to-use (RTU) product' means a product not to be diluted in water before use;*
LD	Heavy-duty detergents	*(~~2~~1) 'heavy-duty detergents' means detergents used for ordinary washing of white textiles at any temperature;*
LD	Colour-safe detergents	*(~~3~~2) 'colour-safe detergents' means detergents used for ordinary washing of coloured textiles at any temperature;*
LD	Light-duty detergents	*(~~4~~3) 'light-duty detergents' means detergents intended for delicate fabrics;*
LD	Not applicable	*2. For the purposes of paragraph 1(~~2~~1) and (~~3~~2), a detergent shall be considered either a heavy-duty detergent or a colour-safe detergent except where the detergent packaging explicitly states that the product is intended for use on delicate fabrics (i.e. light-duty detergent).*
ALL	Abrasives	*'Abrasives' means substances added to detergent and cleaning products to polish, buff, or scour away soils (e.g. dirt, dust, grime) and which effect their intended function primarily via physical means.*
ALL	Opaque	*'Opaque' means a property of a PET plastic container that prevents the passage of light to such an extent that text placed directly against the container cannot be read. In this context, a container is classified as opaque if, when its walls are pressed together and placed against a white sheet with 5 mm black capital letters, the text is not visible using reflected light. This classification adheres to the UNI 1103801-2010 standard, distinguishing opaque containers from those that allow text readability, which are considered non-opaque.*
ALL	Recycled Material, Recycled Content Post-consumer material	*"The recycled content is the proportion, by mass, of recycled material in a packaging. 'Recycled material' refers to material that has been reprocessed from recovered material by means of manufacturing process and made into a final product or into a component for incorporation into a product.* *Only post-consumer materials shall be considered as recycled content, consistent with the following definition:* *'Post-consumer material' (PCR) means material generated by households or by commercial, industrial and institutional facilities in their role as end-users of the product, which can no longer be used for its intended purpose. This includes returns of material from the distribution chain."*
ALL	Renewable material	*'Renewable material' is a material that is composed of biomass and that can be continually replenished'.*
ALL	Sustainable sourcing	'Sustainable sourcing' means managing all aspects of the supply chain to source the materials, products and services an organization needs from its suppliers in a sustainable manner, that is, by

		ensuring that all management and operations are legal, economically viable, environmentally appropriate and socially beneficial.

Rationale for the proposed definitions

The aim of the *definitions* is to provide clarity and certainty on how to interpret and implement the terms used within the EU Ecolabel legal text. In other words, they define and complement those aspects that the requirements refer to (thus are subject to compliance with EUEL criteria) and which are not

In the 1st draft criteria proposal, contained within TR1, several definitions were updated and/or added in order enhance their clarity, to align with the latest ISO type I ecolabels, standardisation and legislative developments:

- Updated: *Microplastic*, *Ingoing substances*, *Primary packaging*, *Secondary packaging*, *Tertiary packaging*, *Nanomaterials* [All product groups].
- Added: *Impurities; Polymer*, *Synthetic polymer*, *Packaging*, *Composite packaging*, *Substances identified to have endocrine disrupting properties* [All product groups]..
- Unchanged: *"Undiluted product"; "Ready-to-use (RTU) product"* [HSC]. *"Heavy-duty detergents", "Colour-safe detergents", "Light-duty detergents"* [LD]

Outcomes from and after the 1st AHWG meeting

In total 73 comments were received on the *Definitions* section, which are found in full in the Table of Comments (ToC1). The following sub-sections convey summarily the most relevant topics that are.

- About *Ingoing substances* and *impurities* (28 comments; feedback to TR1 questions Q6-Q7).
- About packaging-related definitions (14 comments; feedback to TR1 question Q8).
- About *nanomaterials* (10 comments; feedback to TR1 question Q9).
- About *microplastics* (15 comments; feedback to TR1 question Q10).
- About *Endocrine disruptors* (6 comments)

In this 2nd draft criteria proposal, contained within TR2, several definitions were updated and/or added in order enhance their clarity, to align with the latest ISO type I ecolabels, standardisation and legislative developments:

- Updated: *Ingoing substances*, *Impurities*, *Composite packaging* [All product groups].
- Added: *Abrasives*, *Opaque*, *Recycled Material*, *Recycled Content*, *Post-consumer material*, *Renewable material*, *Sustainable sourcing* [All product groups].
- Unchanged: *Polymer*, *Synthetic polymer*, *Packaging*, *Substances identified to have endocrine disrupting properties* [All product groups]. In addition, *"Undiluted product"; "Ready-to-use (RTU) product"* [HSC]. *"Heavy-duty detergents"; and "Colour-safe detergents", "Light-duty detergents"* [LD]

Ingoing substances and impurities

What was the feedback received from stakeholders on this topic?

The questions made in TR1 were:

Question 6 (Q6 – Ingoing substances) – Do you support the proposed definition? In particular, a) do you support the thresholds mentioned and; b) is the wording used clear?

Question 7 (Q7 – Impurities) – This definition is complementary to "Ingoing substances and aims to provide clarity in its interpretation. Do you support its addition (fit for purpose)? In particular, a) do you support the thresholds mentioned.

These questions were embedded in TR1 to gather opinions on the proposed definitions for "ingoing substances" and "impurities". An analysis of the written responses submitted to BATIS regarding the proposed definitions of "ingoing substances" and "impurities" revealed the following points:

— A total of 4 comments agreed with the definitions as proposed in TR1.

— A total of 23 comments expressed concerns with the definitions as proposed in TR1.

The most commonly cited problem was the uncertainty about the status of an unintended constituent present at a concentration of between 100 and 1 000 ppm in the final product. A number of suggestions were made about how to reword the definitions, with each comment suggesting different ways to adapt the wording. Some comments claimed that the 100 ppm limit for unintended constituents in ingredients was too stringent and requested the same approach as used in the Nordic Swan criteria to be used (which sets a limit of 10 000 ppm instead). Other comments requested that impurities in ingredients should never be considered as ingoing substances because the ingredients, when tested for aquatic toxicity and biodegradability and other hazards, already have these impurities present. Consequently, counted some of the hazards of impurities could be argued as a sort of double counting, especially in the case of the CDV criterion.

About other ecolabels

A review of how ingoing substances and impurities are defined in criteria documents for the different types of detergent products covered by the Nordic Swan and the Blue Angel is presented in Table 4.

Table 4 - Comparison of the definitions "*ingoing substances*" and "*impurities*" in other European ISO Type I ecolabels

Criteria reference	Ingoing substances definition	Impurities definition
Nordic Swan: Laundry detergents and stain removers v.8.10; Dishwasher detergents and rinse aids v7.7 Hand dishwashing detergents v6.10 Cleaning products v6.14	"*all substances in the Nordic Swan Ecolabelled product, including additives (e.g. preservatives and stabilisers) in the raw materials. Substances known to be released from ingoing substances (e.g. formaldehyde, arylamine, in situ-generated preservatives) are also regarded as ingoing substances.*"	"*residuals, pollutants, contaminants etc. from production, incl. production of raw materials that remain in the in the Nordic Swan Ecolabelled product in concentrations less than 100,0 ppm (0,01000 w-%, 100,0 mg/kg) in the Nordic Swan Ecolabelled product.* *Impurities in the raw materials exceeding concentrations of ≥ 10 000 ppm (≥ 1,000 w-%, ≥ 10 000 mg/kg) are always regarded as ingoing substances, regardless of the concentration in the Nordic Swan Ecolabelled product.*"
Blue Angel: Hand dishwashing detergents and hard surface cleaners DE-UZ 194 v1.2. Dishwasher detergents DE-UZ 201 v3. Laundry detergent DE UZ 202 v1.	No definition of "*ingoing substance*", just the term "*substance*" which says: "*a chemical element and its compounds in the natural state or obtained by any manufacturing process, including any additive necessary to preserve its stability and any impurity deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition.*"	"*An unintended constituent present in a substance as manufactured. It may originate from the starting materials or be the result of secondary or incomplete reactions during the manufacturing process. While it is present in the final substance it was not intentionally added.*"

Source: Own elaboration.

The definitions for "*ingoing substances*" and "*impurities*" used in Nordic Swan criteria are very similar to those of the EU Ecolabel, while the Blue Angel definitions are very different, and the latter does not delimit any concentration thresholds between the two terms ("impurities" and "substances").

An important difference between the EU Ecolabel criteria and the Nordic Swan criteria is the limit set for impurities in supplied ingredients or raw materials. The threshold at which an impurity in an ingredient/raw material should be considered as an ingoing substance is 10 times higher in the Nordic Swan than in the proposed EU Ecolabel definition in TR2 (i.e. 1,0% versus 0,10%).

One stakeholder comment explained that the justification for the higher limit of impurities in ingredients/raw materials in the Nordic Swan is linked to the consideration that is given to impurities in ECHA guidance for REACH and CLP on the naming of substances[53]. In the ECHA guidance, the following terms are used to describe substances:

- Main constituent: A constituent, not being an additive or impurity, in a substance that makes a significant part of that substance and is therefore used in substance naming and detailed substance identification.
- Constituent: Any single species present in a substance that can be characterised by its unique chemical identity.
- Additive: A substance that has been intentionally added to stabilise the substance[54].
- Substance: A chemical element and its compounds in the natural state or obtained by any manufacturing process, including any additive necessary to preserve its stability and any impurity deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition.
- Substance that occurs in nature: A naturally occurring substance as such, unprocessed or processed only by manual, mechanical gravitational means; by dissolution in water, by flotation, by extraction with water, by steam distillation or by heating solely to remove water, or which is extracted from air by any means.
- Impurity: An unintended constituent present in a substance as manufactured. It may originate from the starting materials or be the result of secondary or incomplete reactions during the manufacturing process. While it is present in the final substance it was not intentionally added.

The most relevant part of the ECHA guidance document is where it says: "*Normally, impurities present in a concentration ≥ 1% should be specified. However, impurities that are relevant for the classification and/or for PBT assessment shall always be specified, irrespective of the concentration. As a general rule, the compositional information should be completed up to 100%.*"

This text can be considered as the reason why the Nordic criteria justify the threshold of 1 % for impurities in ingredients and raw materials. However, it must be remembered that this guidance document was focused on normal situations and in the context of naming substances. It also leaves room for much lower thresholds for impurities in cases where they could affect the CLP classification of the substance (e.g. H410 classifications classifying the mixture as H412, H411 or H410 at levels less than 1.0%, depending on the M-factor). Consequently, we do not believe that the threshold for impurities should be set as high as 1 % for impurities in supplied ingredients or raw materials used in EU Ecolabel products.

What does JRC says about it?

General rationale and considerations

A clear boundary with no gaps or grey areas has been set in the revised wording for the definitions of "*ingoing substances*" and "*impurities*" in TR2. The proposed definitions in TR1 stated that impurities are unintended constituents present in raw materials or ingredients at concentrations <100 ppm and that if they are present in raw materials or ingredients in concentrations ≥1 000 ppm, they should instead be treated as ingoing substances. However, as pointed out by multiple comments from stakeholders, these conditions left it unclear

[53] See "Guidance for identification and naming of substances under REACH and CLP", published by ECHA in December 2023 (version 3.0) and available online here: https://echa.europa.eu/documents/10162/2324906/substance_id_en.pdf/ee696bad-49f6-4fec-b8b7-2c3706113c7d

[54] The ECHA guidance also states the following here: In other areas an additive can also have other functions, e.g. pH-regulator or colouring agent. However, in the REACH regulation and in this TGD an additive is a stabilising agent.

as to what would be the status of an "*unintended constituent*" present at levels between 100 and 1 000 ppm in the raw materials or ingredients.

The new proposal clarifies that any unintended constituents in this grey area should continue to be considered as impurities, so long as the raw material or ingredient is not used to such a high extent that the impurity would end up accounting for more than 100 ppm of the EU Ecolabelled product. Whenever an ingredient or raw material accounts for more than 10 % of the EU Ecolabelled product, there is a possibility that an unintended constituent that is considered as an impurity in a particular raw material or ingredient becomes an ingoing substance in the final detergent product. This possibility increases as the share of the particular ingredient or raw material increases beyond 10 %.

Although not explicitly stated, it is recommended that each impurity be treated individually. For example, if the same impurity (X) is present in two different ingredients (A and B) at the following levels, the calculation could be done in one of two ways:

Table 5 – Example of a final product containing an impurity X in two different ingredients, A and B

Ingredient	Level of impurity (X)	Quantity of ingredient in final product	Quantity of impurity X in final product
A	500 ppm	8 % w/w	40 ppm
B	800 ppm	9 % w/w	72 ppm

1. The impurity is treated on an individual case basis: In this case, for the example considered above, impurity X is not considered an ingoing substance in the final product because 40 < 100 ppm and 72 < 100 ppm.
2. The impurity is treated considering the total sum of the quantities contained in each of the ingredients: In this case, for the example considered above, impurity X becomes an ingoing substance in the final product because it is treated as 40+72=112 ppm.

We recommend that the impurities be checked for compliance on an individual case basis (i.e. the first calculation approach) The main reason for this is that doing it otherwise would mean a much greater uncertainty of knowing if you comply with the horizontal hazardous substance restrictions until you have cross-checked all the potential combinations of ingredients for their impurities with each other. It would be much easier to be able to screen ingredients and raw materials on a pass/fail basis if the contributions of impurities to the final product are only considered on an ingredient-by-ingredient basis.

<u>Specific reasoning for proposed changes</u>

Any water-soluble foil that is used in detergent products and is not removed prior to use (i.e. some laundry and dishwasher detergent product formats) were stated to be considered as part of the formulation recipe in TR1 and that is still the case in the TR2 proposal. However, due to the fact that these foils may not be pure polymers, but could also contain additives such as plasticisers or stabilisers, some extra words have been added at the end of the definition of ingoing substances to emphasise this probability.

Other changes to the wording of the definitions for "*ingoing substances*" and "*impurities*" have been made for a variety of reasons. For example, with "*ingoing substances*":

- The deletion of the text "*in the detergent/cleaner product, including additives (e.g. preservatives and stabilisers) in the raw materials*" was made so that the definition is more general and can potentially be harmonised more fully with other EU Ecolabel product groups in the future.
- The insertion of the text "*and regardless of amount, that are intentionally added to achieve or influence certain properties of the final product or its ingredients*" is to make it clear that ingoing substances should be known and have been added for a particular reason and that there is no lower limit defined for ingoing substances. Complex mixtures that are added for a general effect (e.g. fragrance formulations) can

contain many individual ingoing substances (sometimes dozens), each deliberately added to give the fragrance formulation its particular properties. This fact, coupled with the low share of a fragrance formulation within a detergent formulation, can mean individual fragrance substances being at the parts per billion level, but they should still be considered as ingoing substances because they were intentionally added.

— The change to the examples of substances known to be released from ingoing substances was made based on specific suggestions from stakeholder comments.

— The replacement of the text "*Unintended constituents (residuals, pollutants, contaminants, by-products, etc.) from production, incl. production of raw materials, that remain in the raw materials ≥ 1 000 ppm (≥ 0,1000 %w/w ≥ 1 000 mg/kg) are always regarded as ingoing substances, regardless of the concentration in the final product;*" with "*Impurities present in the final product in concentrations exceeding 100 ppm (0,0100 % w/w, 100 mg/kg) or in supplied ingredients in concentrations exceeding 1 000 ppm (0,100 %, 1 000 mg/kg), shall instead be considered as ingoing substances.*" was done for various reasons.

- First of all, the term "*impurities*" is used instead of "*unintended constituents*" so that readers will not possibly think that these are two different things (the term "*unintended constituents*" is used in the definition of "*impurities*" already but if readers only read the definition of ingoing substances alone, they might fail to see the connection to the concept of impurities).
- Secondly, by referring directly to the term "*impurities*", it is not necessary to repeat a chunk of the definition of impurities in the text that defines ingoing substances (i.e. the part on "*... residuals, pollutants, contaminants, by-products...*").
- Finally, and most importantly, the new text in this part includes a specific limit of 100 ppm in the final product as a point where impurities would be considered as ingoing substances. So any individual "*impurity*" just needs to comply with either one of the two conditions (being >1 000 ppm in a supplied ingredient or raw material, or being >100 ppm in the final product, for it to be treated as an ingoing substance as far as EU Ecolabel criteria are concerned.

With the definition of "impurities":

— The text has been reworded to try and make the requirements as clear as possible. So the focus is on the need for impurities to "remain" in the final product and it is not considered necessary to state that they have to come from the production process.

— The term "*final product*" is replaced with "*EU ecolabelled product*", just for extra clarity.

— The text "*that were not intentionally added*" has been removed because it is already mentioned that impurities are considered as "*unintended constituents*" earlier in the definition. The second non-intention could also be problematic in cases where a detergent producer uses an ingredient with declared impurities, if they use it without noticing this detail, are they "intentionally" adding that impurity now?

— Most importantly, a new text is inserted that marks the threshold at which impurities in supplied raw materials or ingredients should be considered as ingoing substances (1 000 ppm).

<u>*Packaging-related definitions*</u>

What was the feedback received from stakeholders on this topic?

The questions made in TR1 were:

<u>*Question 8 (Q8 – Packaging)*</u> – "Do you support its addition (fit for purpose)? In particular, a) would you reduce the level of detail of the definitions?; b) do you consider useful the clarification made on what is packaging/product formulation?"

Packaging-related definition were generally supported by stakeholders, which agreed on the convenience and usefulness of the definitions added, particularly "*composite packaging*" and the clarification made about what is considered packaging and what is considered as part of the product formulation.

However, several comments pointed that the level of detail was too high, especially for the "*packaging*" definition. Proposals in this regard were simplifying and/or moving some of them to the user manual. The JRC welcomes these suggestions and proposes to add the "*packaging*" definition to the user manual.

Another aspects raised by the comments is the differentiation between *grouped packaging* and *transport packaging*, as in some instances the same packaging used for transport could be used for storage and to replenish shelves at the points of sale. This could generate different interpretations, thus verification dis-alignment, about whether EU Ecolabel criteria are of application (if *grouped packaging*) or not (if *transport packaging*). Stakeholders suggested to follow a dedicated discussion within the Competent Body Forum on this matter to ensure alignment between the resolution and the ongoing revision on EUEL criteria for detergents, with what the JRC is in agreement.

The JRC draws the attention of stakeholders to the recent adoption of the revised Packaging and Packaging Waste Directive, now as Regulation 2025/40[55], as this could have implications on the definitions proposed if full alignment with mandatory legislation is the objective. The definitions contained in this TR2 are presented alongside the adopted text of Regulation 2025/40 in Table 6.

Table 6 – Packaging-related definitions in TR2 of the revision of EUEL criteria for detergents versus the equivalents in the recently adopted Regulation on Packaging and Packaging Waste. Any difference in wording is marked in red.

Term defined	*TR2 EUEL definitions*	*Regulation 2025/40[56] definitions (Revised PPWD)*
Packaging	*'packaging' means 'items of any materials that are intended to be used for the containment, protection, handling, delivery or presentation of products and that can be differentiated into packaging formats based on their function, material and design, including:* *(a) items that are necessary to contain, support or preserve the product throughout its lifetime without being an integral part of the product which is intended to be used, consumed or disposed of together with the product;* *(b) components of, and ancillary elements to, an item referred to in point (a) that are integrated into the item;* *(c) ancillary elements to an item referred to in point (a) that are hung directly on, or attached to, the product and that performs a packaging function without being an integral part of the product which is intended to be used, consumed or disposed of together with the product;* *(d) items designed and intended to be filled at the point of sale, provided*	*'packaging' means an item, irrespective of the materials from which it is made, that is intended to be used by an economic operator for the containment, protection, handling, delivery or presentation of products to another economic operator or to an end user, and that can be differentiated by packaging format based on its function, material and design, including:* *(a) an item that is necessary to contain, support or preserve a product throughout its lifetime, without being an integral part of the product, and which is intended to be used, consumed or disposed of together with the product;* *(b) a component of, and ancillary element to, an item referred to in point (a) that is integrated into the item;* *(c) an ancillary element to an item referred to in point (a) that is hung directly on, or attached to, the product and that performs a packaging function, without being an integral part of the product, and which is intended to be used, consumed or disposed of together with the product;* *(d) an item that is designed and intended to be filled at the point of sale in order to dispense the product, which is also referred to as 'service packaging';*

[55] OJ L, 2025/40, 22.1.2025. Regulation (EU) 2025/40 of the European Parliament and of the Council of 19 December 2024 on packaging and packaging waste, amending Regulation (EU) 2019/1020 and Directive (EU) 2019/904, and repealing Directive 94/62/EC. Available at: http://data.europa.eu/eli/reg/2025/40/oj

[56] OJ L, 2025/40, 22.1.2025. Regulation (EU) 2025/40 of the European Parliament and of the Council of 19 December 2024 on packaging and packaging waste, amending Regulation (EU) 2019/1020 and Directive (EU) 2019/904, and repealing Directive 94/62/EC. Available at: http://data.europa.eu/eli/reg/2025/40/oj

	that they perform a packaging function; *(e) disposable items sold, filled or designed and intended to be filled at the point of sale, provided that they perform a packaging function;* *In the context and for compliance with this EU Ecolabel criteria, items potentially falling under clause (a) definition that are part of a single dose unit (product and wrappers/films (or equivalent)), that are water-soluble and that are not removed prior to the product use for washing/cleaning purposes, shall not be regarded as packaging but rather as part of the product formulation. Conversely, items potentially falling under clause (a) definition that are part of a single dose unit (product and wrappers/films (or equivalent)), that are water-insoluble and that are removed prior to the product use for washing/cleaning purposes, shall be regarded as packaging but not as part of the product formulation*	*(e) a disposable item that is sold and filled or designed and intended to be filled at the point of sale and which performs a packaging function;*
Sales packaging	*'sales packaging', also known as 'primary packaging', means: packaging conceived so as to constitute the smallest sales unit of products and packaging to the final user or consumer at the point of sale;*	*'sales packaging' means packaging conceived so as to constitute a sales unit consisting of products and packaging to the end user at the point of sale;*
Grouped packaging	*'grouped packaging', also known as 'secondary packaging', means packaging conceived so as to constitute a grouping of a certain number of sales unit at the point of sale whether the latter is sold as such to the end user or it serves only as a means to replenish the shelves at the point of sale or create a stock-keeping or distribution unit; and which can be removed from the product without affecting its characteristics.*	*'grouped packaging' means packaging conceived so as to constitute a grouping of a certain number of sales units at the point of sale, irrespective of whether that grouping of sales units is sold as such to the end user or whether it serves as a means to facilitate the restocking of shelves at the point of sale or to create a stock-keeping or distribution unit, and which can be removed from the product without affecting its characteristics;*
Transport packaging	*'transport packaging', also known as 'tertiary packaging' means packaging conceived so as to facilitate handling and transport of a number of sales units or grouped packages, including e-commerce packaging but excluding road, rail, ship and air containers, in order to prevent physical handling and transport damage.*	*'transport packaging' means packaging conceived so as to facilitate the handling and transport of one or more sales units or a grouping of sales units, in order to prevent damage to the product from handling and transport, but which excludes road, rail, ship and air containers;*
Composite packaging	*'composite packaging' means a unit of packaging made of two or more different materials, excluding materials used for labels, closures and sealing, which cannot be separated manually and therefore form a single integral unit;*	*'composite packaging' means a unit of packaging made of two or more different materials which are part of the weight of the main packaging material and cannot be separated manually and therefore form a single integral unit, unless one of the materials constitutes an insignificant part of the packaging unit and in any event no more than 5*

		% of the total mass of the packaging unit and excluding labels, varnishes, paints, inks, adhesives and lacquers; this is without prejudice to Directive (EU) 2019/904;

The JRC appreciates wording changes (as highlighted) but no significant deviation from the content of the definition ("what is meant"), except for the exclusion of e-commerce from *Transport packaging* definition and the addition of further details to *"composite packaging"* definition. Hence, from the perspective of the intended meaning and its adequacy for the purposes of the EUEL criteria for detergents, it does not perceive the need change TR2 proposed definitions, with the exception of *"composite packaging"*. Consequently, a question is included to understand the views and preferences of stakeholders on whether to keep TR2 definitions or rather fully align with this recent Regulation.

Further to the previous, new definitions related to packaging have been added: *opaque, recycled material, recycled content y post-consumer material.*

Nanomaterials

What was the feedback received from stakeholders on this topic?

The questions made in TR1 was:

Question 9 (Q9 – Nanomaterials) – Do you support the current proposal (alignment with latest EU Commission recommendation)? If not, please could you indicate: a) reasons against this alignment; b) whether you would you consider best to align with the definition in the EUEL criteria for Cosmetics

In total, 10 comments were received with the majority (7) agreeing on the improvement and suitability of the updated definition as it provides further level of detail and because it delimits more clearly how to verify (thus more useful to Competent Bodies).

Indeed, the comments highlighted that it was a better option that the definition of *nanomaterials* in the EUEL criteria for Cosmetics[57], which is directly aligned with the existing EU Regulation on Cosmetics[58]:

- *'nanomaterial' means an insoluble or biopersistant and intentionally manufactured material with one or more external dimensions, or an internal structure, on the scale from 1 to 100 nm, in accordance with Regulation (EC) No 1223/2009*[59]

However, some comments suggested aligning with the *nanomaterial* definition with that found in the ongoing revision of the EU Cosmetic Regulation[60], since it would also be aligned with the latest EU Commission recommendation on the definition of nanomaterial- 2022/C229/01 ([61]). The JRC will consider this as potential source for alignment consideration.

Other comments suggested the possibility of requesting a complete ban on nanomaterials and improving the definition via revision of the quantitative threshold present in the definition. On the former aspect, the EUEL criteria already excludes nanomaterials, being even more explicitly with the TR1 proposal where nanomaterials were specifically quoted in the *Specified excluded substance* list (*See sub-criterion (a) specified excluded and restricted substances*). About improving the nanomaterials definition, the JRC understand that the part of the definition to focus on is the following:

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57 OJ L 379, 26.10.2021, p. 8–48. Commission Decision (EU) 2021/1870 of 22 October 2021 establishing the EU Ecolabel criteria for cosmetic products and animal care products (notified under document C(2021) 7500). http://data.europa.eu/eli/dec/2021/1870/oj

58 OJ L 309, 24.11.2009, p. 1. Regulation (EC) No 1107/2009 of the European Parliament and of the Council of 21 October 2009 concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC. https://eur-lex.europa.eu/legal-content/EN/AUTO/?uri=OJ:L:2009:342:TOC

59 OJ L 309, 24.11.2009, p. 1. Regulation (EC) No 1107/2009 of the European Parliament and of the Council of 21 October 2009 concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC. https://eur-lex.europa.eu/legal-content/EN/AUTO/?uri=OJ:L:2009:342:TOC

60 https://www.europarl.europa.eu/legislative-train/theme-a-european-green-deal/file-revision-of-the-cosmetic-products-regulation

61 Commission Recommendation of 10 June 2022 on the definition of nanomaterial (Text with EEA relevance) 2022/C 229/01. OJ C 229, 14.6.2022, p. 1–5 1–5

— "*...and where 50 % or more of these particles in the number-based size distribution fulfil at least one of the following conditions:...*".

The feedback received highlighted that some EU member states (e.g. France) are applying more restrictive quantitative limits (i.e. 10%) than the 50% included in the EU Commission recommendation on the definition of nanomaterial- 2022/C229/01 ([62]). In practical terms, this implies widening the scope of what is considered a nanomaterial, since it would be "easier" for more materials to meet the particle-size qualification. In other words, it would be"easier" to trigger classification as nanomaterial by surpassing a 10% limit than a 50% one). This is line with some of the recommendations and conclusions shared by ANSES[63] in its Opinion (See section 3.3.2 *Discussion on the main technical criteria for a definition of nanomaterials)*, which about *Dimensional limits and number size distribution threshold* reads:

> *"The new Recommendation on the definition endorses the previously adopted values for the dimensional limits and the number size distribution threshold. In the public consultation, the European Commission only reopened the debate on the size distribution threshold.*
>
> *For the reasons mentioned above, the choice of dimensional limits and number size distribution threshold cannot be based on sound scientific arguments. A certain degree of arbitrariness will be needed to establish these parameters.*
>
> *In order to have the most inclusive definition possible, the CES recommends extending the dimensional limits and advocates a lower value for the size distribution threshold than the one currently used. The CES notes that this may lead to a significant increase in the number of materials considered as nanomaterials. However, this approach is more protective and also less complex than one that automatically excludes too many substances from the scope of the definition."*

Note that further relevant aspects are mentioned in ANSES's opinion (e.g. dimensional criteria; key concepts pending validation/definition; suitability and use of derogations), to the JRC's understanding, aimed at reaching a broader and flexible definition for what is considered as a *nanomaterial* definition and maximising safety guarantees.

The JRC released a guidance on how to implement the nanomaterial definition recommended by the European Commission[64], namely how it should be understood and which are established technologies and measurement practices. In this report, it acknowledges that the definition is horizontal (not-sector specific), based on the only feature common to all nanomaterials (nanoscale external dimensions) and it suggests the possibility of adapting such definition to sector-specific legislation as long as this does not compromise the fundamental concepts underpinning it (See *Conclusions* section).

Considering the former statements, the JRC has included a specific question to stakeholders in order to gather relevant feedback about whether to modify the particle-size percentage, understanding this would not compromise the fundamental concepts in the EC definition but rather would potentially offer a wider scope for what is considered as nanomaterials.

Microplastics

What was the feedback received from stakeholders on this topic?

The questions made in TR1 was:

Question 10 (Q10 – Microplastics) – This definition follows regulatory updates but also implied the addition of complementary terms as "Polymers" and "Synthethic polymers" All together, these definitions clarify very accurately what is considered as "microplastics" but also might imply further complexity in the interpretation. In this sense, do you support the proposed "microplastics" (and associated) definitions? If you do - which

[62] Commission Recommendation of 10 June 2022 on the definition of nanomaterial (Text with EEA relevance) 2022/C 229/01. OJ C 229, 14.6.2022, p. 1–5 1–5

[63] Opinion of the French Agency for Food, Environmental and Occupational Health & Safety relating to the formal request on "Definition of nanomaterials: analysis, challenges and controversies". Anses opinion Collective expert appraisal report. April 2023, https://www.anses.fr/en/system/files/AP2018SA0168RaEN.pdf

[64] European Commission. Joint Research Centre., Guidance on the Implementation of the Commission Recommendation 2022/C 229/01 on the Definition of Nanomaterial., Publications Office, LU, 2023. Available at: https://data.europa.eu/doi/10.2760/143118

details should be in the legal text and which in the User manual (if any)? If you don't, - which would the definition you advocate for?

In total, 15 comments were received and the majority welcomed the definitions introduced (*microplastics, polymers, synthetic polymers)* due to their usefulness, yet some pointed on the convenience on removing *polymers* and/or *synthetic polymers* definitions

Despite the proposed definitions were generally welcomed, a share of the comments raised concerns and/or suggestions for improvements on the following aspects:

- *Including soluble and biodegradable microplastics*-> implying that even if they are deemed as soluble and/or can be (bio-)degraded, they should still be part of the definition, thus excluded from EUEL criteria (given the specific exclusion of microplastics in the sub-criterion *Excluded and restricted substances*). In terms of solubility, it was proposed to set it at 30 g/L rather than as per proposed definition at 2g/L which is considered as *"slightly soluble"* (according to the scale defined by the European Pharmacopeia). In a study testing detergent products in the market, concerns have been raised by the use of *"water-soluble polymer"* (also mentioned as "liquid microplastics"), their presence in detergent products and their potential eco-toxicological effects, advocating for the use of "microplastic-free" alternative already in the market[65]. In particular, several soluble polymers (including PAMs, polycarboxylates) as well as their breakdown products could be persistent and/or toxic; and they can also act like flocculants and detergents in recipient waters and as conditioners of soils and sediments with long lasting ecological effects[66].
- *Decreasing or removing lower limits (particle size; weight)*->some comments called for reducing the mass-based threshold triggering application of the definition from 1% to a lower limit (i.e. 0.01%). In terms of particle size when adequate analytical method are not available, it is suggested not having a lower limit. This would include within the microplastic definition those plastics within the *"nano"* scale range, which are considered of concern, thus also excluding them. There are several countries in their legislation to restrict microbeads in cosmetics, personal care products and/or detergents have defined microplastics according to an upper size limit but without a lower size limit mentioned[67].
- *Not differentiating by source* ->several comments called for not differentiating between polymers derived from petrochemical sources from those from renewable/"natural" origin.

To the former arguments, the JRC's reactions/comments are:

- On *Including soluble and biodegradable microplastics*-> the currently proposed (TR2) EUEL criteria structure aims at holistically approach microplastics by:
    (a) ban them according to definition made+ explicit exclusion via sub-criterion *Excluded and Restricted substances*. The former mostly affects "solid" forms.
    (b) Impose requirement as per EUEL criteria + new specific requirements for water-soluble polymers on biodegradability (See *Biodegradability* criterion; sub-criterion *water-soluble polymers*). The former mostly affects "liquid" (water-soluble) forms.

  Given the former, it is considered that if microplastic are to be used within detergent and cleaning products, then the EUEL criteria would ensure that the most critical aspects are considered. The JRC agrees on the fact that it would be more environmentally relevant to avoid the use of microplastics if possible but is unsure about whether it would be viable to request at this stage a full ban on the use of any microplastic (according to the most restrictive terms of a potential definition as discussed earlier). Consequently, it maintains TR1 proposal with regards to solubility threshold (2 g/L) yet it remains open for discussion on this matter.
- *Decreasing or removing lower limits (particle size; weight)*-> In terms of particle size, the *nanomaterial* definition *(*as in this revision exercise) + the explicit exclusion via sub-criterion *Excluded and Restricted*

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65 PLASTIK IN WASCHMITTELN, TEST 2021 – GLOBAL 2000. Available at: https://www.global2000.at/publikationen/waschmitteltest

66 Phasing out the use of microplastics The road to an effective EU restriction of intentionally-added microplastics. Position paper VERSION 2* – MARCH 2021. Rethink Plastic. Available at: https://eeb.org/wp-content/uploads/2020/11/the_road_to_an_effective_EU_restriction_of_intentionally-added_microplastics.pdf

67 Phasing out the use of microplastics The road to an effective EU restriction of intentionally-added microplastics. Position paper VERSION 2* – MARCH 2021. Rethink Plastic. Available at: https://eeb.org/wp-content/uploads/2020/11/the_road_to_an_effective_EU_restriction_of_intentionally-added_microplastics.pdf

substances should ensure than *nanoplastics* are covered within the EUEL criteria. In any case, the JRC has included as question to gather feedback on this specific aspects. Likewise, in the same question the possibility of reducing the mass-based threshold triggering microplastic classification will be addressed.

— *Not differentiating by source* -> A way to fulfil such request is to remove the *Synthetic polymers* definition and then make reference in the *microplastics* definition to *polymer microparticles* rather than *synthetic polymer microparticles* and removing the following clause from exemptions mentioned in the definition:" *a) polymers that are the result of a polymerisation process that has taken place in nature, independently of the process through which they have been extracted, which are not chemically modified substances*;". Despite several stakeholders expressed their agreement with the usefulness of the proposed definitions, a question is included to determine whether to propose such change.

Note that a new definition for ***"abrasives"*** is proposed for inclusion as part of the TR2 following-up on the feedback received on the criterion *Toxicity to aquatic organisms*. In TR1 version of that criterion, abrasives were proposed for exclusion as part the CDV values calculations. The feedback suggested that as beneficial to provide certainty and clarity about what is considered as an *"abrasive"*, namely which the scope is (what substances are in and which out).

The JRC supported this action and performed searched for definitions that could be suitable for the purposes of the EUEL criteria for detergents. A screening on standards (e.g. ISO) resulted unsuccessful for the desired product niche (as part of detergents and cleaners). Most of the standards found refer to other applications/end-uses (e.g. ISO 8486-1:1996[68]), with no clear definition applicable. When looked at scientific literature, the type of publications were similarly out of the scope of detergent and cleaning products, with definitions found along the lines of:

> *"Abrasive materials can be considered as cutting tools with geometrically unspecified cutting edges that are characterized by high hardness, sharp edges, and good cutting ability"*[69]

When screening for sector-specific resources, the main American industry association for detergent and cleaning products (*American Cleaning Institute*) indicated in its glossary[70]:

> *"Abrasive ingredients are materials that are used to polish, buff, or scour away soils such as dirt and dust. Abrasives can be found in many cleaning products including, but not limited to, pot and pan cleaners, hand wash dish detergents, machine dish detergents, and powder laundry detergents."*

As per previous definition, the main functions that can be attributed to *abrasives* used in detergent and cleaning products are (tough) stains removal and grime and/or cleaning/polishing surfaces. Typical materials used for this purpose are of inorganic nature and with low or no-water solubility (e.g. silica; calcium carbonate). These are often used in combination with a cleaning agent or a solvent to complement and/maximise the cleaning/washing function desired.

No specific definition was found within other ecolabelling schemes (NS, BA) in their criteria related to detergent and cleaning products defining *"abrasives"* or having a similar exemption.

Given the former, the JRC proposes the following definition for discussion during the 2nd AHWG, with the idea to refine it further after stakeholders' feedback:

> *"Abrasives means substances added to detergent and cleaning products to polish, buff, or scour away soils (e.g. dirt, dust, grime) and which effect their intended function primarily via physical means."*

The first part of the definition is aligned with the aforementioned one from the relevant American industry association. The second part (: … *which effect their intended function primarily via physical means."*) aims to differentiate those substances whose "abrasive" function is performed via chemical rather than physical means, also under the understanding that exerting a physical abrasive action implies low or no chemical reactivity with the matrix, thus the effect is not primarily based on chemistry.

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[68] https://www.iso.org/standard/15695.html

[69] Ioan D. Marinescu, W. Brian Rowe, Boris Dimitrov, Ichiro Inasaki; 11 - Abrasives and Abrasive Tools, Editor(s): Ioan D. Marinescu, W. Brian Rowe, Boris Dimitrov, Ichiro Inasaki, Tribology of Abrasive Machining Processes, William Andrew Publishing, 2004, Pages 369-455, ISBN 9780815514909, DOI https://doi.org/10.1016/B978-081551490-9.50012-8.

[70] https://www.cleaninginstitute.org/industry-priorities/science/cpisi/glossary-functional-classes

The JRC considers that abrasives, as per other relatively inert particles, could have impacts on the environment, especially aquatic ones, related to sedimentation and turbidity of such particles and the direct and indirect impact that this could cause on aquatic organisms. However, due to resources constraints, the JRC did not carried out research at this stage on the significance of such impact, meaning considering aspects such as how extensive is the use of abrasives in detergent and cleaning products, at which concentration and with what likely impacts.

New definitions are also proposed for ***"renewable material"*** and ***"sustainable sourcing"*** to addressed the feedback received on the criterion of sustainable sourcing, asking for clarifications on these key concepts. The JRC supported these comments and consulted the literature to propose definitions that could be suitable for the purposes of the EUEL criteria for detergents.

Regarding the concept of "renewable material", the definition provided by the standard on bio-based products EN 16575:2014 ([71]) was considered as relevant for detergents and cleaning products. Based on this standard, the JRC proposes the following definition for "*renewable material*":

> *"Renewable material is a material that is composed of biomass and that can be continually replenished*".

In the case of "sustainable sourcing", no clear definition related to detergents and cleaning products was found in available standards. Some standards do include related terms such as "sustainability" or "sustainable development". For example, EN 16575:2014 ([72]) uses a widespread definition of "sustainable development" stating that it is the "*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*". ISO 13065:2015 ([73]) on sustainability criteria for bioenergy defines "*sustainability*" as the *'goal of sustainable development which encompasses environment, social and economic aspects, in which the needs of the present are met without compromising the ability of future generations to meet their needs'* ([74]).

Other sources in the literature include specific definitions for "sustainable sourcing", such as:

- The definition provided by Lambrechts ([75]):

  > *"Sustainable sourcing: Sourcing the materials, products, and services an organization needs from its suppliers in a sustainable manner, thereby taking into account the environmental and social impact of its supply chain strategies and activities. Sustainable sourcing applies a holistic approach which is critical to business-as-usual (triple) bottom-line thinking and takes into account the environmental and social boundary conditions of sourcing strategies. Sustainable sourcing thereby exceeds formal accountability regarding sustainability as imposed by governments and goes beyond perspectives regarding the Triple Bottom Line as a balancing act."*

- The definition provided by Pagell et al ([76]):

  > *"Sustainable sourcing: Managing all aspects of the upstream component of the supply chain to maximize triple bottom line performance."*

- The definition provided by the Roundtable ([77]):

  > *"Sustainable palm oil production comprises legal, economically viable, environmentally appropriate and socially beneficial management and operations"*

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71 EN 16575 (2014), 'Bio-based products', European Committee for Standardisation, Technical Committee 411 (CEN TC/411). Mandate M/492.

72 EN 16575 (2014), 'Bio-based products', European Committee for Standardisation, Technical Committee 411 (CEN TC/411). Mandate M/492.

73 ISO 13065, (2015), Sustainability criteria for bioenergy. International Organisation for Standardisation.

74 ISO 13065, (2015), Sustainability criteria for bioenergy. International Organisation for Standardisation.

75 Sustainable Supply Chain Management. In: Leal Filho, W., Azul, A., Brandli, L., Özuyar, P., Wall, T. (eds) Decent Work and Economic Growth. Encyclopedia of the UN Sustainable Development Goals. Springer, Cham. https://doi.org/10.1007/978-3-319-71058-7_11-1

76 Sustainable Supply Chain Management. In: Leal Filho, W., Azul, A., Brandli, L., Özuyar, P., Wall, T. (eds) Decent Work and Economic Growth. Encyclopedia of the UN Sustainable Development Goals. Springer, Cham. https://doi.org/10.1007/978-3-319-71058-7_11-1

77 Pagell, M., Wu, Z. and Wasserman, M.E. (2010), Thinking differently about purchasing portfolios: An assessment of sustainable sourcing. Journal of Supply Chain Management, 46: 57-73. https://doi.org/10.1111/j.1745-493X.2009.03186.x

Considering the above-mentioned definitions, the JRC proposes the following definition:

> *"Sustainable sourcing means managing all aspects of the supply chain to source the materials, products and services an organization needs from its suppliers in a sustainable manner, that is, by ensuring that all management and operations are legal, economically viable, environmentally appropriate and socially beneficial."*

Points for discussion 2 – Definitions

Stakeholders are invited to reply the following consultation question:

- Question 4 (Q4 – Ingoing substances & Impurities) – Do you support the update made on the proposed definitions? *Please provide a reasoned response*
- Question 5 (Q5 – Packaging) – Do you support including the *packaging* definition into the User Manual instead than in the legal text? If not, would you prefer to modify it to make it shorter? If so, do you have a proposal?
- Question 6 (Q6 – Packaging) – Do you support full or partial alignment (i.e. certain definitions; *composite packaging)* with Regulation 2025/40 (Revised PPWD) definitions, meaning using literal text in such Regulation [78]? *Please, provide a reason response.*
- Question 7 (Q7 – Nanomaterials) – Do you support lowering the number-based particle-size distribution below the 50% stated in the EU Commission recommendation on the definition of nanomaterial- 2022/C229/01 ([79])? Is so, which target (%) would you support). *Please, provide a reasoned response.*
- Question 8 (Q8 – Microplastics [particle/weight limits]) – Would you support widening the scope of microplastics definition by decreasing the mass-based limit from 1% to a lower limit (i.e. 0.01%)? In addition, would you support decreasing or even not having lower limit based on the particle size? *Please see arguments shared in the main body of the text and provide a reasoned response.*
- Question 9 (Q9 – Microplastics [not differentiating by source]) – Would you support changing the *microplastic*-related definitions to ensure all polymers irrespective of their origin (*synthetic*; *natural*) are included in the scope of it? If so, could you provide a reasoned response/suggestion on how to do so (beyond what proposed in the main body of the text)? *Please, provide a reasoned response.*
- Question 10 (Q10 – Abrasives (new) – Do you support the proposed definition for "*abrasives*"? *Please, provide a reasoned response and if supporting it, ideally providing suggestions for improvement (if any).*
- Question 11 (Q11 – Other – Provide comments that you deem relevant to any aspect of the *Definitions* section.

[78] OJ L, 2025/40, 22.1.2025. Regulation (EU) 2025/40 of the European Parliament and of the Council of 19 December 2024 on packaging and packaging waste, amending Regulation (EU) 2019/1020 and Directive (EU) 2019/904, and repealing Directive 94/62/EC. Available at: http://data.europa.eu/eli/reg/2025/40/oj

[79] Commission Recommendation of 10 June 2022 on the definition of nanomaterial (Text with EEA relevance) 2022/C 229/01. OJ C 229, 14.6.2022, p. 1–5 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.C_.2022.229.01.0001.01.ENG&toc=OJ%3AC%3A2022%3A229%3ATOC1–5 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.C_.2022.229.01.0001.01.ENG&toc=OJ%3AC%3A2022%3A229%3ATOC

4. Assessment and verification

TR1 proposed *Assessment and verification*	
ALL	The EU Ecolabel criteria target the best detergent and cleaning products on the market, in terms of environmental performance. The criteria focus on the main environmental impacts associated with the life cycle of these products and promote circular economy aspects." (a) Requirements For the EU Ecolabel to be awarded to a specific product, the product shall comply with each requirement. The applicant shall provide a written confirmation stating that all the criteria are fulfilled. Specific assessment and verification requirements are indicated within each criterion. Where the applicant is required to provide declarations, documentation, analyses, test reports, or other evidence to show compliance with the criteria, these may originate from the applicant, his/her supplier(s) and/or their supplier(s), as appropriate. Competent bodies shall preferentially recognise attestations which are issued by bodies accredited in accordance with the relevant harmonised standard for testing and calibration laboratories and verifications by bodies that are accredited in accordance with the relevant harmonised standard for bodies certifying products, processes and services. Where appropriate, test methods other than those indicated for each criterion may be used if the competent body assessing the application accepts their equivalence. Where appropriate, competent bodies may require supporting documentation and may carry out independent verifications or site inspections to check compliance with these criteria. Changes in suppliers and production sites pertaining to products to which the EU Ecolabel has been granted shall be notified to competent bodies, together with supporting information to enable verification of continued compliance with the criteria. As a prerequisite, the product shall meet all applicable legal requirements of the country or countries in which the product is intended to be placed on the market. The applicant shall declare the product's compliance with this requirement. The 'Detergent ingredient database' list (DID list), available on the EU Ecolabel website, contains the most widely used ingoing substances in detergents and cosmetics formulations. It shall be used for deriving the data for the calculations of the critical dilution volume (CDV) and for the assessment of the biodegradability of the ingoing substances. For substances not present on the DID list, guidance is given on how to calculate or extrapolate the relevant data. The latest version of the DID list is available from the EU Ecolabel website (1) or via the websites of the individual competent bodies. The list of all ingoing substances shall be provided to the competent body, indicating the trade name (if existing), the chemical name, the CAS No, the DID No (2) (if existing), its function, form and concentration in mass percentage regardless of concentration in the final product formulation. All ingoing substances present in the form of nanomaterials shall be clearly indicated on the list with the word 'nano' written in brackets. For each ingoing substance listed, the safety data sheets (SDSs) in accordance with Regulation (EC) No 1907/2006 of the European Parliament and of the Council[80] shall be provided. Where an

[80] Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council

<table>
<tr><td></td><td>SDS is not available for a single substance because it is part of a mixture, the applicant shall provide the SDS of the mixture.

Notes:

[1] https://circabc.europa.eu/rest/download/933af4c0-1eda-4467-8b4d-22c9e0236bc1?ticket= [2] DID No is the number of the ingoing substance on the DID list.</td></tr>
<tr><td>ALL</td><td>(b) Measurement thresholds

Compliance with the ecological criteria is required for all ingoing substances as specified in Table 1.

Table 1. Threshold levels applicable to ingoing substances by criterion (% weight by weight)
<table>
<tr><th colspan="2">Criterion name</th><th>Surfactants</th><th>Preservatives</th><th>Colouring agents</th><th>Fragrances</th><th>Other (e.g. enzymes)</th></tr>
<tr><td colspan="2">Toxicity to aquatic organisms</td><td>≥ 0,010</td><td>no limit (*1)</td><td>no limit (*1)</td><td>no limit (*1)</td><td>≥ 0,010</td></tr>
<tr><td rowspan="2">Biodegradability</td><td>Surfactants</td><td>≥ 0,010</td><td>N/A</td><td>N/A</td><td>N/A</td><td>N/A</td></tr>
<tr><td>Organics</td><td>≥ 0,010</td><td>no limit (*1)</td><td>no limit (*1)</td><td>no limit (*1)</td><td>≥ 0,010</td></tr>
<tr><td colspan="2">Sustainable sourcing of palm oil</td><td>≥ 0,010</td><td>N/A</td><td>N/A</td><td>N/A</td><td>≥ 0,010</td></tr>
<tr><td rowspan="8">Excluded or limited substances</td><td>Specified excluded and limited subst.</td><td>no limit (*1)</td><td>no limit (*1)</td><td>no limit (*1)</td><td>no limit (*1)</td><td>no limit (*1)</td></tr>
<tr><td>Hazardous subst.</td><td>≥ 0,010</td><td>≥ 0,010</td><td>≥ 0,010</td><td>≥ 0,010</td><td>≥ 0,010</td></tr>
<tr><td>SVHCs</td><td>no limit (*1)</td><td>no limit (*1)</td><td>no limit (*1)</td><td>no limit (*1)</td><td>no limit (*1)</td></tr>
<tr><td>Fragrances</td><td>N/A</td><td>N/A</td><td>N/A</td><td>no limit (*1)</td><td>N/A</td></tr>
<tr><td>Preservatives</td><td>N/A</td><td>no limit (*1)</td><td>N/A</td><td>N/A</td><td>N/A</td></tr>
<tr><td>Colouring agents</td><td>N/A</td><td>N/A</td><td>no limit (*1)</td><td>N/A</td><td>N/A</td></tr>
<tr><td>Enzymes</td><td>N/A</td><td>N/A</td><td>N/A</td><td>N/A</td><td>no limit (*1)</td></tr>
<tr><td colspan="7">(*1) 'no limit' means: regardless of the concentration (analytical limit of detection) for all substances with the exception of impurities, which can be present up to a concentration of 0,010 % by weight in the final formulation

N/A not applicable</td></tr>
</table></td></tr>
<tr><td>ALL</td><td>(c) Product group specificities

If a product can be found both in RTU and undiluted form and both forms are sold as part of a single lot (e.g. one bottle of RTU product and a refill bottle of undiluted product), both types of products shall meet the requirements set out in all the criteria for their respective types.

Undiluted products in packaging designed for the sole purpose of refilling trigger sprays shall meet the packaging requirements for RTU products.</td></tr>
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Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC (OJ L 396, 30.12.2006, p. 1). https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A32006R1907

Proposed assessment and verification	
	The EU Ecolabel criteria target the best detergent and cleaning products on the market, in terms of environmental performance. The criteria focus on the main environmental impacts associated with the life cycle of these products and promote circular economy aspects." (a) Requirements For the EU Ecolabel to be awarded to a specific product, the product shall comply with each requirement. The applicant shall provide a written confirmation stating that all the criteria are fulfilled. Specific assessment and verification requirements are indicated within each criterion. Where the applicant is required to provide declarations, documentation, analyses, test reports, or other evidence to show compliance with the criteria, these may originate from the applicant, his/her supplier(s) and/or their supplier(s), as appropriate. Competent bodies shall preferentially recognise attestations which are issued by bodies accredited in accordance with the relevant harmonised standard for testing and calibration laboratories and verifications by bodies that are accredited in accordance with the relevant harmonised standard for bodies certifying products, processes and services. Where appropriate, test methods other than those indicated for each criterion may be used if the competent body assessing the application accepts their equivalence. Where appropriate, competent bodies may require supporting documentation and may carry out independent verifications or site inspections to check compliance with these criteria.
ALL	Changes in suppliers and production sites pertaining to products to which the EU Ecolabel has been granted shall be notified to competent bodies, together with supporting information to enable verification of continued compliance with the criteria. As a prerequisite, the product shall meet all applicable legal requirements of the country or countries in which the product is intended to be placed on the market. The applicant shall declare the product's compliance with this requirement. The 'Detergent ingredient database' list (DID list), available on the EU Ecolabel website, contains the most widely used ingoing substances in detergents and cosmetics formulations. It shall be used for deriving the data for the calculations of the critical dilution volume (CDV) and for the assessment of the biodegradability of the ingoing substances. For substances not present on the DID list, guidance is given on how to calculate or extrapolate the relevant data. The latest version of the DID list is available from the EU Ecolabel website (1) or via the websites of the individual competent bodies. The list of all ingoing substances shall be provided to the competent body, indicating the trade name (if existing), the chemical name, the CAS No and/or the EC No, the DID No (2) (if existing), its function, form and concentration in mass percentage regardless of concentration in the final product formulation. All ingoing substances present in the form of nanomaterials shall be clearly indicated on the list with the word 'nano' written in brackets. For each ingoing substance listed, the safety data sheets (SDSs) in accordance with Regulation (EC) No 1907/2006 of the European Parliament and of the Council[81] shall be provided. Where an SDS is not available for a single substance because it is part of a mixture, the applicant shall

[81] Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC (OJ L 396, 30.12.2006, p. 1). https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A32006R1907

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<tr><td></td><td>provide the SDS of the mixture.

Notes:

[1] https://circabc.europa.eu/rest/download/933af4c0-1eda-4467-8b4d-22c9e0236bc1?ticket= [2] DID No is the number of the ingoing substance on the DID list.</td></tr>
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N/A not applicable</td></tr>
</table></td></tr>
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Undiluted products in packaging designed for the sole purpose of refilling trigger sprays shall meet the packaging requirements for RTU products.</td></tr>
</table>

Rationale for the proposed assessment and verification

The assessment and verification text appearing at the beginning of the legal Annex generally refers to the different types of evidence (e.g. declarations, test reports) that the competent body shall recognise as relevant proof of compliance for criteria. This text is necessary in order to establish the framework and general rules for verification procedures so that they do not need to be repeated in every individual

assessment and verification text. Such text is included at the beginning of the legal Annex for all EU Ecolabel new or revised criteria and can apply to one or more product groups (as displayed in the Annex).

The main changes/additions made in TR1 affected part *a) requirements* and were:

- Addition of introductory text prior to *a) Requirements*, introducing EUEL criteria target.
- Explicitly requiring compliance with all requirements, being this supported by an applicant's declaration.
- Explicitly requiring notification upon suppliers change to ensure the feasibility of continuous verification.
- All substances regardless of concentration in the final product should be listed.

Outcomes from and after the 1st AHWG meeting

What was the feedback received from stakeholders on this topic?

In total 16 comments were received on the *Assessment and Verification* section, which are found in full in the Table of Comments (ToC1). The following convey summarily the most relevant topics:

- *Notification of supplier changes* – There was concern about high administrative burden if every supplier change needs to be notified to the authority as happening but instead agreed/suggested regular time intervals for CBs to receive such instead.
- *Inclusion of EC number* – for those substances that have not CAS number (No) but that may have been granted and EC No under REACH.
- *Definition of "no limit":* Clearly - this was the most cited and important topic according to comments received, arising from the ambiguity in the interpretation of what *"no limit"* meant and the potential implications with regard to criteria compliance. In particular, how or if appropriate to mention Limit of Detection (LOD), if impurities should be excluded in all cases (e.g. SVHCs) and difference in definition between REACH/CLP and EU Ecolabel.
- *Ingoing substances and impurities* – related to the former topic, it was requested to indicate the threshold from which ingoing substances should be considered (≥0.010%) and the difficulty on identifying all, especially from complex ingredients (e.g. fragrance).
- *Call for harmonization* – referred to criteria interpretation and verification procedures at EU level (e.g. DID list; definition)
- *Other topics* – as anaerobic biodegradability, DID list (e.g. acceptance of alternative testing methods and inclusion of further ingredients [surfactants] ; inclusion of EC number; and Call for harmonization (

Further research and main changes in the proposal for the 2nd AHWG meeting

The JRC considers that adding the EC number could aid in the verification process, thus has incorporated it into the legal text: *"The list of all ingoing substances shall be provided to the competent body, indicating the trade name (if existing), the chemical name, the CAS No and/or the EC No,…]".*

In terms of notifying suppliers change, the JRC understands that current legal text formulation does not necessary requires such notification to happen as the changes occur. Indeed, it understands that under such formulation CBs can organised the verification procedure in a practical way for all parties. Nevertheless and also acknowledging the importance of precise text for efficient verification, the JRC has included a dedicated question to consult stakeholders on this matter.

Regarding Ingoing substances and impurities, the definitions have been revised (See *Definitions* section) and identified concerns have been addressed, specially the quantitative threshold gap derived from TR1 proposal. The rationale for not aligning with REACH/CLP with regards to quantitative threshold (0.1% versus 0.01% in EUEL) is shown in that section.

Moreover, the JRC understands that the changes made in these definitions could also address some of the concerns associated with the definition/footnote on ***"no limit"***. One of such is what is understood as limit of detection (LOD) and its suitability in the context/wording used versus the intended aim. There are several approaches to defining *LOD* and the following is an example to illustrate the intended meaning: "The LOD is defined as the lowest quantity or concentration of a component that can be reliably distinguished from the

Limit of the blank (LOB). It therefore reflects the analyte level at which the likelihood of a low-level sample giving a false-negative result equals the specified Type II error risk"[82] In other words, the lowest quantity that can be reliably measured. Some stakeholders suggested to quote "LOD" instead of "no limit" while other proposed alternative wording to the whole footnote (as shown in dedicated question to this topic). Other aspect to consider is the mismatch on the threshold triggering reporting obligations (e.g. Safety datasheets; SDSs) for REACH/CLP versus ecolabel, being the EUEL lower by one order of magnitude (0.100% versus 0.010%), with the implication that information is not readily available as part of the CLP/REACH database of files, yet this was discussed and proposed to be kept as part of the *Definitions* section. Another concern is related to the inclusion or exclusion of impurities with regards to the "no limit" EUEL concept, meaning that if excluded those substances considered as impurities there could be the case of Substances of Very High Concern (SVHCs) potentially being present in an EU ecolabelled product close to 0.010%. If these are included, then there is no concentration limit of application (not the 0.010%) and (if quantifiable) concentrations below 0.01% would not be admissible unless a EUEL derogation has been granted beforehand. Given the importance for criteria interpretation and also given the changes made in definitions that have cascading effects on the interpretation of the "no limit" footnote, the JRC would like to have further feedback. To do, so a dedicated question is included aimed at getting clarity on which could be an acceptable wording, inclusive if better quoted as *"LOD"* or (kept) as *"no limit"*.

Points for discussion 3 – Definitions

Stakeholders are invited to reply the following consultation question:

- Question 12 (Q12) – Regarding the text: *Changes in suppliers and production sites pertaining to products to which the EU Ecolabel has been granted shall be notified to competent bodies, together with supporting information to enable verification of continued compliance with the criteria.* Do you consider necessary to explicitly mention in it a defined timeline for suppliers change notifications? If so, which should be?
- Question 13 (Q13) – Regarding the text: *'no limit' means: regardless of the concentration (analytical limit of detection) for all substances with the exception of impurities, which can be present up to a concentration of 0,010 % by weight in the final formulation.* What changes/wording would you suggest? Would you remove the term "*no limit*" and use "*LOD*"? Would support including *impurities* in the aforementioned text, thus only allowing quantifiable substances below 0.01% to be present if a derogation supports them? If you support keeping the footnote, would you agree with the following wording? "*no presence of ingoing substances (under detection limits) with the exception/inclusive of impurities, which can be present up to a concentration of 0,010 % by weight in the final formulation*" Please, provide a reasoned response.
- Question 14 (Q14) – Please, provide any other comments that you deem relevant to any aspect of this section.

[82] Pum, J., 'A Practical Guide to Validation and Verification of Analytical Methods in the Clinical Laboratory', Advances in Clinical Chemistry, Vol. 90, Elsevier, 2019, pp. 215–281. DOI: 10.1016/bs.acc.2019.01.006

1383 5. Reference dosage

<table>
<tr><th colspan="3">TR1 proposed reference dosage</th></tr>
<tr><td>DD, HDD, HSC, IIDD</td><td colspan="2">The following dosage shall be taken as the reference dosage for the calculations aiming at documenting compliance with the EU Ecolabel criteria and for testing of cleaning ability.</td></tr>
<tr><td>IILD, LD</td><td colspan="2">The following dosage shall be taken as the reference dosage for the calculations aiming at documenting compliance with the EU Ecolabel criteria and for testing of washing ability:</td></tr>
<tr><td>DD</td><td colspan="2"><table>
<tr><td>Dishwasher detergent</td><td>Highest dosage recommended by the manufacturer to wash 12 normally soiled place settings under standard conditions (‘wash’), as laid down in EN 60436:2020 (indicated in g/wash or ml/wash).</td></tr>
<tr><td>Rinse aid</td><td>3 ml/wash</td></tr>
</table></td></tr>
<tr><td>HDD</td><td colspan="2">The highest dosage recommended by the manufacturer for 1 litre of washing water for cleaning normally soiled dishes (indicated in g/l of washing water or ml/l of washing water).</td></tr>
<tr><td>HSC</td><td colspan="2"><table>
<tr><td>Ready-to-use (RTU) products</td><td>1 litre of RTU product</td></tr>
<tr><td>Undiluted products</td><td>Highest dosage recommended by the manufacturer for preparing 1 litre of cleaning solution for cleaning normally soiled surfaces (indicated in g/l of cleaning solution or ml/l of cleaning solution)</td></tr>
</table></td></tr>
<tr><td>IIDD</td><td colspan="2">The highest dosage recommended by the manufacturer to produce 1 litre of washing solution (indicated in g/l of washing solution or ml/l of washing solution) for three degrees of water hardness (soft, medium, hard).</td></tr>
<tr><td>IILD</td><td colspan="2">The highest dosage recommended by the manufacturer to wash one kilogram of dry laundry (indicated in g/kg of laundry or ml/kg of laundry) for three degrees of soiling (light, medium and heavy) and water hardness (soft, medium, hard).
All products in a multi-component system shall be included with the worst case dosage when assessments of the criteria are made.
Examples of degree of soiling<table>
<tr><td>Soling</td><td>Degree of soiling</td></tr>
<tr><td>Light</td><td>Hotels: bed linen, bedclothes and towels, etc. (towels may be considered heavily soiled)
Cloth hand towel rolls</td></tr>
<tr><td>Medium</td><td>Work clothes: institutions/retail/service, etc.
Restaurants: tablecloths, napkins, etc.
Mops and mats</td></tr>
<tr><td>Heavy</td><td>Work clothes: industry/kitchen/butchering, etc.
Kitchen textiles: clothes, dish towels, etc.
Institutions such as hospitals: bed linen, bedclothes, contour sheets, patient clothing, doctor's coat or scrubs/overall, etc.</td></tr>
</table></td></tr>
<tr><td>LD</td><td colspan="2"><table>
<tr><td>Heavy-duty</td><td>Dosage recommended by the manufacturer for one kilogram of normally</td></tr>
</table></td></tr>
</table>

	detergent, colour-safe detergent	soiled dry laundry (indicated in g/kg of laundry or ml/kg of laundry) calculated on the basis of the dosage recommended for a load of 4,5 kg at a water hardness of 2,5 mmol CaCO3/l.
	Light-duty detergent	Dosage recommended by the manufacturer for one kilogram of normally soiled delicate laundry (indicated in g/kg of laundry or ml/kg of laundry) calculated on the basis of the dosage recommended for a load of 2,5 kg at a water hardness of 2,5 mmol CaCO3/l.
	Stain remover (pre-treatment only)	Dosage recommended by the manufacturer for one kilogram of dry laundry (indicated in g/kg of laundry or ml/kg of laundry) calculated on the basis of 6 applications for a load of 4,5 kg.

ALL	*Assessment and verification*: the applicant shall provide the product label or user instruction sheet that includes the dosing instructions.

TR2 proposed reference dosage	
DD, HDD, HSC, IIDD	The following dosage shall be taken as the reference dosage for the calculations aiming at documenting compliance with the EU Ecolabel criteria and for testing of cleaning ability.
IILD, LD	The following dosage shall be taken as the reference dosage for the calculations aiming at documenting compliance with the EU Ecolabel criteria and for testing of washing ability:

DD

Dishwasher detergent	Highest dosage recommended by the manufacturer to wash 12 normally soiled place settings under standard conditions ('wash'), as laid down in EN 60436:2020 ~~EN 50242~~ (indicated in g/wash or ml/wash).
Rinse aid	3 ml/wash

HDD: The highest dosage recommended by the manufacturer for 1 litre of washing water for cleaning normally soiled dishes (indicated in g/l of washing water or ml/l of washing water).

HSC

Ready-to-use (RTU) products	1 litre of RTU product
Undiluted products	Highest dosage recommended by the manufacturer for preparing 1 litre of cleaning solution for cleaning normally soiled surfaces (indicated in g/l of cleaning solution or ml/l of cleaning solution)

IIDD: The highest dosage recommended by the manufacturer to produce 1 litre of washing solution (indicated in g/l of washing solution or ml/l of washing solution) for three degrees of water hardness (soft, medium, hard).

IILD

~~t~~The highest dosage recommended by the manufacturer to wash one kilogram of dry laundry (indicated in g/kg of laundry or ml/kg of laundry) for three degrees of soiling (light, medium and heavy) and water hardness (soft, medium, hard).

All products in a multi-component system shall be included with the ~~worst case~~ highest dosage for normally soiled textiles and hard water when assessments of the criteria are made.

Examples of degree of soiling

Soling	Degree of soiling
Light	Hotels: bed linen, bedclothes and towels, etc. (towels may be considered heavily soiled)

			Cloth hand towel rolls
		Medium	Work clothes: institutions/retail/service, etc. Restaurants: tablecloths, napkins, etc. Mops and mats
		Heavy	Work clothes: industry/kitchen/butchering, etc. Kitchen textiles: clothes, dish towels, etc. Institutions such as hospitals: bed linen, bedclothes, contour sheets, patient clothing, doctor's coat or scrubs/overall, etc.
LD		Heavy-duty detergent, colour-safe detergent	Dosage recommended by the manufacturer for one kilogram of normally soiled dry laundry (indicated in g/kg of laundry or ml/kg of laundry) calculated on the basis of the dosage recommended for a load of 4,5 kg at a water hardness of 2,5 mmol CaCO3/l.
		Light-duty detergent	Dosage recommended by the manufacturer for one kilogram of normally soiled delicate laundry (indicated in g/kg of laundry or ml/kg of laundry) calculated on the basis of the dosage recommended for a load of 2,5 kg at a water hardness of 2,5 mmol CaCO3/l.
		Stain remover (pre-treatment only)	Dosage recommended by the manufacturer for one kilogram of dry laundry (indicated in g/kg of laundry or ml/kg of laundry) calculated on the basis of 6 applications for a load of 4,5 kg.
ALL	*Assessment and verification*: the applicant shall provide the product label or user instruction sheet that includes the dosing instructions.		

Rationale for the proposed reference dosage

The reference dosage refers to the quantity that manufacturers recommended for a specific application, as described in the Ecolabel text, of their product. It is used to perform calculations that show compliance with its criteria. In the previous revision this criterion was added to ensure there was uniformity in the way in which units and reference dosages should be used for the purpose of assessing criteria compliance (See Table 7).

Table 7 – Outline of texts related to functional unit and reference dosage discussed during the previous EUEL criteria for detergents revision in the final technical report.

Product group	*Functional unit*	*Reference dosage*
DD	Quantity of product required to wash 12 place settings with a standard soil.	Quantity necessary for normally soiled dishes and 12 place settings.
HDD	(Not specific)	Quantity necessary for 1l of washing water for normally soiled dishes.
HSC	(Not specific)	Quantity necessary for 1l of washing water (undiluted products) or 100g (ready-to-use products).
IIDD	grams per litre washing solution (g/l washing solution)	(Not specific)
IILD	grams per kilogram laundry (g/kg laundry)	(Not specific)
LD	grams per kilogram wash (g/kg wash)	Quantity recommended by the manufacturer necessary for: — 4,5kg load (heavy duty detergent) — 2,5kg load (low duty detergent)

Source: Boyano et al. 2016 ([83])

In TR1 only a minor change was made in this criterion, consisting in updating for the DD product group to the standard EN 60436:2020 which superseded all EN 50242 standard series.

Outcomes from and after the 1st AHWG meeting

What was the feedback received from stakeholders on this topic?

In total 3 comments were received on the *Dosage requirement* section, which are found in full in the Table of Comments (ToC1).

The comments suggested to:

- align dosage requirements (in general) with Nordic ecolabelling due to similarities (e.g. used of DID list) and for efficiency (e.g. producers able to apply for EUEL and NS under same administrative burden;
- consider changing the reference dosage for products that need dilution prior use to 1L of in-use-solution ("ready-to-use" after dilution), inclusive of a description on how to handle such products (exclusive of concentrated products used without prior dilution).
- revise an potential inconsistency between reference dosage legal text and the performance framework.

The JRC acknowledges the comments and with regards to the last one, it has proposed a minor wording modification.

[83] European Commission, Joint Research Centre, Boyano, A.; Kaps, R.; Medyna, G.; Wolf, O, 2016. Revision of six EU Ecolabel criteria for detergents and cleaning products. Final Technical Report. Available at https://susproc.jrc.ec.europa.eu/product-bureau/sites/default/files/contentype/product_group_documents/1581681262/Technical%20background%20report.pdf (Accessed 10/07/23)

6. Criteria proposals

This chapter describes current and proposed changes on the structure of the different existing EU Ecolabel criteria for detergents and cleaners product groups.

The proposals for criteria revision are presented by criterion, with dedicated sub-chapters for each of them. Each criterion can also be split into sub-criteria outlining requirements for relevant specific aspects. For each (sub-)criterion thelegal text proposed in TR1, the newly proposed one (TR2) and the accompanying rationale are presented. The legal text and the rationale have dedicated sections for each detergent product group for which a particular (sub-criterion) is of application. To visualise the changes introduced (i.e. deletions, additions), these are marked in blue across the document.

Note that the draft TR2 criteria for each of the EUEL product groups is presented within each of the draft annexes accompanying the draft legal act. Here, the legal text concerning technical requirements is disclosed for a particular product group unlike this TR2 that for the ease of discussion keeps the "horizontal" approach within TR2

6.1. Existing EU Ecolabel criteria structure and proposed changes on it

The aims of this sub-chapter are to add clarity to the applicability of the criteria, to align with proposed changes and to simplify the structure of the criteria.

The structure of the EU Ecolabel criteria for detergents as proposed in TR1 is presented in Table 8. Within these criteria, *Excluded and restricted substances* and *Packaging* criteria present the legal text and accompanying rationales by sub-criterion, addressing there relevant aspects (See Table 9).

Table 8 – EU Ecolabel criteria structure in TR1 in each EUEL criteria detergent product group ([84]).

Criterion number			Criterion
DD, LD	*HDD, HSC*	IIDD, IILD	
1	NA	NA	Dosage requirements
2	1	1	Toxicity to aquatic organisms
3	2	2	Biodegradability
4	3	3	Sustainable sourcing of palm oil, palm kernel oil and their derivatives
5	4	4	Excluded and restricted substances
6	5	5	Packaging
7	6	6	Fitness for use
NA	NA	7	Automatic dosage system
8	7	8	User information
9	8	9	Information appearing on the EU Ecolabel

NA – Not applicable (this criterion is not part of the criteria of the product groups indicated)

Table 9 – EU Ecolabel sub - criteria structure in TR1 in each EUEL criteria detergents product group ([85]).

Criterion	Sub-criterion
Excluded and restricted substances	*Specified excluded and restricted substances*
	Hazardous substances
	Substances of very high concern (SVHCs)
	Fragrances
	Preservatives
	Colouring agents
	Enzymes

[84] DD – Dishwasher detergents; LD – Laundry detergents; HDD – Hand-dishwashing detergents; HSC – Hard surface cleaning products; IIDD – Industrial and institutional dishwasher detergents; IILD – Industrial and institutional laundry detergents;

[85] DD – Dishwasher detergents; LD – Laundry detergents; HDD – Hand-dishwashing detergents; HSC – Hard surface cleaning products; IIDD – Industrial and institutional dishwasher detergents; IILD – Industrial and institutional laundry detergents;

	Corrosive properties (Only for HDD)
	Micro-organisms (Only for LD, IILD, HDD, HSC)
Packaging	*Weight/Utility ration (WUR)*
	Design for recycling
	Products sold in spray bottles (Only for HSC)
	Packaging take-back systems (Only for HSC, IIDD, IILD)

Irrespective of the newly proposed changes and for the sake of clarity, this TR2 follows TR1 product group names (DD, HDD, HSC, IIDD, IILD, LD) and criteria structure, just highlighting the proposals made. The full criteria text solely of a particular EUEL product group can be found within each of the annexes accompanying the legal act. .

6.2. Dosage requirements

<table>
<tr><th colspan="2">TR1 proposed criterion (x) dosage requirements</th></tr>
<tr><td>DD, LD</td><td>The reference dosage shall not exceed the following amounts:</td></tr>
<tr><td>DD</td><td><table><tr><th>Product type</th><th>Dosage (g/wash)</th></tr><tr><td>Single-function dishwasher detergent</td><td>16.0</td></tr><tr><td>Multi-function dishwasher detergent</td><td>18.0</td></tr></table>Rinse aids are exempted from this requirement.</td></tr>
<tr><td>LD</td><td><table><tr><th>Product type</th><th>Dosage (g/kg of laundry)</th></tr><tr><td>Heavy-duty detergent, colour-safe detergent</td><td>12.2</td></tr><tr><td>Light-duty detergent</td><td>12.2</td></tr><tr><td>Stain remover (pre-treatment only)</td><td>2,7</td></tr></table></td></tr>
<tr><td>DD, LD</td><td>Assessment and verification: the applicant shall provide the product label that includes the dosing instructions and documentation showing the density (g/ml) of liquid and gel products.</td></tr>
<tr><th colspan="2">TR2 proposed criterion (x) dosage requirements</th></tr>
<tr><td>DD, LD</td><td>The reference dosage shall not exceed the following amounts:</td></tr>
<tr><td>DD</td><td><table><tr><th>Product type</th><th>Dosage (g/wash)</th></tr><tr><td>Single-function dishwasher detergent</td><td>16.0</td></tr><tr><td>Multi-function dishwasher detergent</td><td>18.0</td></tr></table>Rinse aids are exempted from this requirement.</td></tr>
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<tr><td>DD, LD</td><td>Assessment and verification: the applicant shall provide the product label that includes the dosing instructions and documentation showing the density (g/ml) of liquid and gel products.</td></tr>
</table>

Rationale for the proposed dosage requirements

The importance of dosing correctly, from the perspective of how this criterion was designed, lies in using the right amount of detergent and cleaning products so as to achieve desired function with minimal resources consumed and impacts to the environment. In this sense, overdosing uses more raw materials and enhances

ecotoxicity impacts while under dosing could lead to similar outcome but consuming higher due an extra re-wash step being required.

To ease proper dosage, the EU Ecolabel ensure that relevant information for the realisation of the environmental benefits reaches end-user (criterion *User information*), including via products' label. Then, is up to the users to dose according to manufacturer's recommendations. Precisely this aspect is the one targeted in this criterion *dosage requirements*, aiming to set a maximum dosage than can be recommended end-users. It limits to LD and DD product groups because the disparity of applications, thus dosages (e.g. professional products) and/or user habits (e.g. HDD). Also, the recommended dosages are set for medium water hardness (2.5 mmol of $CaCO_3$/l,).

In TR1 the ambition level of the criterion was raised via reduction of the existing thresholds, as follows:

- [DD-SF] Single-function dishwasher detergent: 19.0g/wash versus 16.0 g/wash in TR1 proposal;
- [DD-MF] Multi-function dishwasher detergent: 21.0g/wash versus 18.0 g/wash in TR1 proposal;
- [LD-HD] Heavy duty laundry detergent / colour safe detergent: 16.0 versus 12.2 g/kg laundry in TR1 proposal;
- [LD-LD] Light duty laundry detergent: 16.0 g/kg laundry versus 12.2 g/kg laundry in TR1 proposal;
- [SR] Stain remover (pre-treatment only): 2.7 g/kg laundry versus no change proposed

Outcomes from and after the 1st AHWG meeting

What was the feedback received from stakeholders on this topic?

In total 23 comments were received on the *Dosage requirement* section, which are found in full in the Table of Comments (ToC1).

The comments split into the following two questions shared in TR1:

Question 11 (Q11) – "Do you support the proposed thresholds? If not, why?

Question 12 (Q12) – "Should any additional product group/format be considered for addition? If so, why?"

Regarding Q11 (16 comments), the majority of comments were supportive of lowering thresholds as proposed, especially for DD products where indication that market reality (i.e. compaction trends) allowed for compliance with such ambition. However, for LD products some comments called for revising the thresholds on the basis that:

- it could imply decreased performance;
- that it could be too ambitious based on current license holder data (significant share not able to make such threshold);
- it could imply additional resources (e.g. testing for EUEL compliance; packaging re-design), thus being an impact of higher magnitude to SMEs.

No relevance/applicability was observed by stakeholders on stain removers, since pre-wash stain removers would be dosed differently.

Stakeholders' specific (quantitative) suggestions for threshold revisions were:

- DD-SF -> Lower to 15 g/wash (based on LHs data)
- DD- MF ->Raise it to 18.5 g/wash (0.5g/wash more to account for water-soluble foil)
- LD-HD -> Raise it to 15 g/kg laundry (based on LHs data)

Other comments received under Q11 were related to:

- *water-soluble foil* – and its inclusion as part of the formulation (thus dosage mass), advocating for its consideration (should threshold be less strict to account for this? Should explicit text clarify that is of application within each criterion?).

— *performance implications* – concerns around how the potential reduction of wash temperature efficiency (30C to 20C) and reduction in dosage could impact on the performance of LD products.

Regarding Q12 (7 comments), comments either not supported setting maximum dosages for other EUEL product groups or commented on aspect more related to scope expansion, as inclusion of further product formats/forms/types. Also, there were suggestion for improvements with regards to information to user in specific product groups (HSC, undiluted; e.g. *do not use more than X caps*) or to aspects enabling proper use of ecolabelled products (e.g. having a dosage cap able to dose according to dosage recommendations by the manufacturer).

Further research and main changes in the proposal for the 2nd AHWG meeting

In terms of water-soluble foils, with the previous (TR1) and current (TR2) wording proposal the JRC understand it is fully clear that it should be considered as an ingoing substance and, as such, it requires full compliance with EUEL criteria requirements. This includes this criterion on *Dosage requirements*. Hence, the JRC do not consider there is need for explicitly indicate in this (or any other criteria) that is of application to water-soluble foil. In terms of the implications of including water-soluble foil as ingoing substance, the JRC acknowledges that it counts towards the total mass of the ecolabelled product but without contributing directly to cleaning/washing performance. In this sense, it could be considered as a factor to consider with regards to threshold settings but still further data would be required to accurately account for this (e.g. which is the mass of water soluble foil used? For which products? etc). The JRC lacks such data to enable a thorough analysis on how to account for this in terms of threshold proposals (yet acknowledges its relevance).

On performance concerns, the decrease on LD wash temperature efficiency is no longer maintained in this TR2, so it should not be counted as a factor contributing negatively to product performance. In terms of dosage in mass basis, if the formulation is kept as is, a decrease in the dosage allowed would imply a direct decrease in the performance (understanding it as the potential to wash/clean). However, as discussed in TR1, compaction trends suggest change in the formulation profile towards more concentrated products (thus less water, less packaging, etc). In addition, consumer behaviour (e.g. washing frequency, degree and type of soil, etc) show a shift towards more frequent wash of clothers that have lower degree of soiling, as indicated by some stakeholders. In this sense, this could imply that lower dosage is required to achieve the desired washing efficiency.

Based on the comments received the JRC understands that the thresholds for LD-LD, DD-MF, RA and SR are viable and do not require further investigation. Consequently, it focused on assessing LD-HD and DD-MF for viability of revising TR1 proposed thresholds.

According to a quantitative data analysis carried out with additional data received from stakeholders after the 1st AHWG (See outline in Table 10), the proposals made in TR1 (12.2 g/kg) are aligned with current ecolabelled products specifications (average of 12.6 g/kg laundry for HD and 11.212.6 g/kg laundry for LD) The variation observed to the averaged data (standard deviation) indicated that most product should fall below 15 g/kg laundry (12.6 + 2.4), which is aligned with the suggestion made by stakeholders. However, conversely it is also possible to have dosages below the 12.2 g/kg proposed. While considering also the concerns raised on the potential impact on performance that TR1 proposal could imply, the JRC is open for discussion on revising this threshold and has included a question on this matter. However, based on the former evidences, the JRC proposes to maintain 12.2g/kg laundry as LD-HD threshold.

Table 10 - Descriptive statistics on reference dosage of Laundry detergent (LD) ecolabelled products Note stain removers is purposely not included

Product (sub-)type	Number (n)	Reference dosage (g/kg laundry)	Standard deviation (g/kg laundry)
Heavy duty/Colour safe (HD)	29	12.6	2.4
Low duty	16	11.2	2.9

Grand Total	*45*	*12.1*	*2.6*

Source: Own elaboration based on data received by the JRC.

In terms of DD, there was wide agreement that TR1 proposal was feasible, being the doubt whether it could be decreased for DD-SF to 15g/wash. According to a quantitative data analysis carried out with additional data received from stakeholders after the 1st AHWG (See outline in Table 11), the proposals made in TR1 for DD-MF (18g/wash) is aligned with the data that JRC had accessed but for DD-SF (16.0 g/wash) it is not possible to conclude due to low number of data points. Given this, the JRC proposes to maintain 16.0 g/wash as DD-MF threshold yet including a question to further assess viability of setting it to 15 g/wash.

Table 11 - Descriptive statistics on reference dosage of dishwasher detergent (DD) ecolabelled products Note rinse aid is purposely not included

Product (sub-)type	Number (n)	Reference dosage (g/wash)	Standard deviation (g/wash)
Multi-function (MF)	12	18.2	2.3
Multi-function (SF)	2	18.0	0.5
Grand Total	*14*	*18.1*	*2.1*

Source: Own elaboration based on data received by the JRC.

Points for discussion 4– Dosage requirements

Stakeholders are invited to reply the following consultation question:

- Question 15 (Q15) – Would you support revising the threshold for LD - Heavy duty/Colour safe from 12.2 to 15.0 g/kg laundry (or a lower value)? Please, provide a reasoned response.
- Question 16 (Q16) – Would you support revising the threshold for DD – Multi-function from 16.0 to 15.0 g/wash? Please, provide a reasoned response.
- Question 17 (Q17) – Please, provide any other comments that you deem relevant to any aspect of this section.

6.3. Toxicity to aquatic organisms

TR1 Proposed criterion (x) toxicity to aquatic organisms

ALL

The critical dilution volume ($CDV_{chronic}$) of the product shall not exceed the following limits for the reference dosage.

DD

Product type	Limit CDV (l/wash)
Single-function dishwasher detergents	20000
Multi-function dishwasher detergents	24000
Rinse aid	5000

HDD

Product type	Limit CDV (l/l of washing water)
Hand dishwashing detergents	1500

HSC

Product type	Limit CDV (l/l of cleaning solution)
All-purpose cleaners, RTU	350 000
All-purpose cleaners, undiluted	18 000
Kitchen cleaners, RTU	600 000
Kitchen cleaners, undiluted	45 000
Window cleaners, RTU	48 000
Window cleaners, undiluted	18 000
Sanitary cleaners, RTU	600 000
Sanitary cleaners, undiluted	45 000

IIDD

Water hardness Product type	Soft (< 1,5 mmol $CaCO_3$/l) (l/l of washing solution)	Medium (1,5-2,5 mmol $CaCO_3$/l) (l/l of washing solution)	Hard (> 2,5 mmol $CaCO_3$/l) (l/l of washing solution
Pre-soaks	2 000	2 000	2 000
Dishwasher detergents	1800	3000	4200
Multi-component systems	1800	2400	3000
Rinse aids	3 000	3 000	3 000

IILD

Soft water (< 1,5 mmol $CaCO_3$/l) (l/kg of laundry)

Degree of soiling Product type	Light	Medium	Heavy
Powder	22500	30000	37500
Liquid	37500	45000	52500
Multi-component system	37500	52500	90 000

Medium water (< 1,5-2,5 mmol $CaCO_3$/l) (l/kg of laundry)

Degree of soiling Product type	Light	Medium	Heavy
Powder	30000	45000	60000
Liquid	45000	56250	67500
Multi-component system	45000	60000	75000

Hard water (> 2,5 mmol $CaCO_3$/l) (l/kg of laundry)

	<table><tr><th>Degree of soiling Product type</th><th>Light</th><th>Medium</th><th>Heavy</th></tr><tr><td>Powder</td><td>37500</td><td>56250</td><td>67500</td></tr><tr><td>Liquid</td><td>56250</td><td>67500</td><td>90000</td></tr><tr><td>Multi-component system</td><td>56250</td><td>75000</td><td>90000</td></tr></table>
LD	<table><tr><th>Product type</th><th>Limit CDV (l/kg of laundry)</th></tr><tr><td>Heavy-duty detergent, colour-safe detergent</td><td>23625</td></tr><tr><td>Light-duty detergent</td><td>15000</td></tr><tr><td>Stain remover (pre-treatment only)</td><td>3 500</td></tr></table>
ALL	*Assessment and verification*: the applicant shall provide the calculation of the $CDV_{chronic}$ of the product. A spreadsheet for calculating the $CDV_{chronic}$ value is available on the EU Ecolabel website.
DD, HDD, IIDD, IILD,	The $CDV_{chronic}$ is calculated for all ingoing substances (i) in the product, except abrasive substances, using the following equation:
LD, HSC	The $CDV_{chronic}$ is calculated for all ingoing substances (i) in the product, except abrasive substances and micro-organisms, using the following equation:
ALL	$$\text{CDVchronic} = \sum \text{CDV}(i) = 1000 \cdot \sum \text{dosage}(i) \cdot \frac{\text{DF}(i)}{\text{TFchronic}(i)}$$ Where: $\text{dosage}(i)$: weight (g) of the substance (i) in the reference dose; $\text{DF}(i)$: degradation factor for the substance (i); $\text{TF}_{\text{chronic}}(i)$: chronic toxicity factor for the substance (i);
DD, HDD, HSC, LD	The values $\text{DF}(i)$ and $\text{TF}_{\text{chronic}}(i)$shall be as given in the most updated Part A of the DID list. If an ingoing substance is not included in Part A, the applicant shall estimate the values following the approach described in Part B of that list and attaching the associated documentation.
IIDD, IILD	The values $\text{DF}(i)$and $\text{TF}_{\text{chronic}}(i)$shall be as given in the most updated Part A of the DID list. If an ingoing substance is not included in Part A, the applicant shall estimate the values following the approach described in the Part B of that list and attaching the associated documentation.
IILD	Because of the degradation of certain substances in the wash process, separate rules apply to the following: — hydrogen peroxide (H_2O_2) — not to be included in calculation of CDV, — peracetic acid — to be included in the calculation as 'acetic acid', — ε-phthalimido-peroxy-hexanoic acid (PAP) — to be included in the calculation as ε-phthalimido hexanoic acid (PAC). The values to be used to calculate the CDV[$_{chronic}$] for PAC shall be as follows: $\text{DF}(i)$= 0,05 $\text{TF}_{\text{chronic}}(i)$= 0,256 mg/l Aerobic = R Anaerobic = O
TR2 Proposed criterion (x) toxicity to aquatic organisms	

ALL

The critical dilution volume ($CDV_{chronic}$) of the product shall not exceed the following limits for the reference dosage.

DD

Product type	Limit CDV (l/wash)
Single-function dishwasher detergents	17500 ~~20000~~
Multi-function dishwasher detergents	22000 ~~24000~~
Rinse aid	2500 ~~5000~~

HDD

Product type	Limit CDV (l/l of washing water)
Hand dishwashing detergents	1500

HSC

Product type	Limit CDV (l/l of cleaning solution)
All-purpose cleaners, RTU	250000 ~~350 000~~
All-purpose cleaners, undiluted	13000 ~~18 000~~
Kitchen cleaners, RTU	400000 ~~600 000~~
Kitchen cleaners, undiluted	37000 ~~45 000~~
Window cleaners, RTU	41000 ~~48 000~~
Window cleaners, undiluted	15000 ~~18 000~~
Sanitary cleaners, RTU	350000 ~~600 000~~
Sanitary cleaners, undiluted	25000 ~~45 000~~

IIDD

Water hardness Product type	Soft (< 1,5 mmol $CaCO_3$/l) (l/l of washing solution)	Medium (1,5-2,5 mmol $CaCO_3$/l) (l/l of washing solution)	Hard (> 2,5 mmol $CaCO_3$/l) (l/l of washing solution
Pre-soaks	1800 ~~2 000~~	1800 ~~2 000~~	1800 ~~2 000~~
Dishwasher detergents / Multi-component systems	1000	1250	1500
~~Dishwasher detergents~~	~~1800~~	~~3000~~	~~4200~~
~~Multi-component systems~~	~~1800~~	~~2400~~	~~3000~~
Rinse aids	2000 ~~3 000~~	2500 ~~3 000~~	2750 ~~3 000~~

IILD

Soft water (< 1,5 mmol $CaCO_3$/l) (l/kg of laundry)

Degree of soiling Product type	Light	Medium	Heavy
Powder	22500	30000	37500
Liquid	XXXX ~~37500~~	XXXX ~~45000~~	XXXX ~~52500~~
Multi-component system	37500	52500	68250 ~~90 000~~

Medium water (< 1,5-2,5 mmol $CaCO_3$/l) (l/kg of laundry)

Degree of soiling Product type	Light	Medium	Heavy
Powder	30000	45000	60000
Liquid	45000	56250	67500
Multi-component system	45000	60000	75000

Hard water (> 2,5 mmol $CaCO_3$/l) (l/kg of laundry)

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ALL	*Assessment and verification*: the applicant shall provide the calculation of the $CDV_{chronic}$ of the product. A spreadsheet for calculating the $CDV_{chronic}$ value is available on the EU Ecolabel website.
~~DD,~~ ~~HDD,~~ ~~IIDD,~~ ~~IILD,~~	~~The $CDV_{chronic}$ is calculated for all ingoing substances (i) in the product, except abrasive substances, using the following equation:~~
~~LD,~~ ~~HSC~~ ALL	The $CDV_{chronic}$ is calculated for all ingoing substances (i) in the product, except abrasive substances and micro-organisms (if applicable), using the following equation:
ALL	$$\text{CDVchronic} = \sum \text{CDV}(i) = 1000 \,.\, \sum \text{dosage}(i) \,.\, \frac{\text{DF}(i)}{\text{TFchronic}(i)}$$ Where: $\text{dosage}(i)$: weight (g) of the substance (i) in the reference dose; $\text{DF}(i)$: degradation factor for the substance (i); $\text{TF}_{\text{chronic}}(i)$: chronic toxicity factor for the substance (i);
ALL	The values $\text{DF}(i)$and $\text{TF}_{\text{chronic}}(i)$shall be as given in the most updated Part A of the DID list. If an ingoing substance is not included in Part A, the applicant shall estimate the values following the approach described in the Part B of that list and attaching the associated documentation.
IILD	Because of the degradation of certain substances in the wash process, separate rules apply to the following: — hydrogen peroxide (H_2O_2) — not to be included in calculation of CDV, — peracetic acid — to be included in the calculation as 'acetic acid', — ε-phthalimido-peroxy-hexanoic acid (PAP) — to be included in the calculation as ε-phthalimido hexanoic acid (PAC). The values to be used to calculate the CDV[*chronic*] for PAC shall be as follows: $\text{DF}(i)$= 0,05 $\text{TF}_{\text{chronic}}(i)$= 0,256 mg/l Aerobic = R Anaerobic = O

Rationale for the proposed toxicity to aquatic organisms

The Critical dilution volume (CDV) is used in the EU Ecolabel as an indicator to assess the toxicity of products with respect to the aquatic environment. This criterion is especially relevant for those products which are released to water during the use phase or after use, as is the case for detergent and cleaning products.

The CDV represents a risk-based parameter that combines the amount used, the (aerobic) biodegradability and the aquatic toxicity of all substances present in the formulation of detergent and cleaning products. The CDV expresses the amount of water needed for the hypothetical dilution of a product down to a harmless concentration for the aquatic environment. The unit is expressed in litres per functional unit. It is calculated based on the chronic toxicity and chronic safety factors. If no chronic test results are available, the acute toxicity and safety factor must be used.

The CDV values are dominated by two properties of the ingredients in detergent products: their biodegradability and their aquatic toxicity. These two properties are highly relevant to detergent products given that they all end up going directly or indirectly (via sewerage network and wastewater treatment plant) into natural watercourses. These properties dictate whether an adverse environmental impact is likely to occur in natural watercourses. For example, if a substance has poor biodegradation but simultaneously has low toxicity, it won't likely create toxic effects for aquatic life while reaching natural watercourses. Conversely, if a substance has high toxicity but biodegrades quickly, especially if having to pass through a wastewater treatment plant, it is unlikely that it will impact natural watercourse.

In terms of LCA related findings (See PR; Chapter *Technical analysis)* and regarding the PEF methodology, the impact category that relates to aquatic toxicity (and thus to CDV criteria) is "Ecotoxicity", which refers to toxicity in freshwater ecosystems and is based on the USETox model, with some adaptations.

According to the initial draft PEF screening studies, ecotoxicity was consistently one of the top 3 normalised environmental impact categories for all of the detergent product groups studied (LLD, PLD, DD, HDD, HSC-kitchen cleaner and HSC-acid toilet cleaner).

The importance of the CDV value in LCA results is reflected by the size of ecotoxicity impacts associateded with the disposal stage (specifically in the sub-process relating to wastewater). Although absolute LCALCA impacts between different product groups cannot be compared due to the different functional units involved, in relative terms and with characterised results, the most significant contributions to ecotoxicity from wastewater disposal were: HDD (ca. 56%), LLD56L (ca. 56%), PLD6P (ca. 5151%) and DD (ca. 244%). However, it should be noted that these shares are highly sensitive to the ingredients and their concentrations in individual detergent formulations.

In the first technical report (TR1), the main changes within the *Toxicity to aquatic organisms* criterion were:

- Revising and proposing more stringent CDV thresholds for all product groups in line with market reality, with the exception of HSC where further evidences were required. This initial analysis was based on CDV data from EU Ecolabelled products using DID list 2016 that was received by the JRC from interested stakeholders (i.e. Competent Bodies, industry). Further details can be found in the corresponding rationale for this criterion within TR1[86]. This analysis has been further refined in the light of new evidences received (i.e. CDV data; stakeholders feedback), being the basis for the proposals made in this TR2 (as subsequently shown and discussed below)
- Exempting abrasives from CDV calculation, given their water insolubility and potentially low toxicity profile.

Outcomes from and after the 1st AHWG meeting

In total 78 comments were received on this criterion, which are found in full in the Table of Comments (ToC1). The following sub-sections convey summarily the most relevant topics that are.

[86] Accessible at: https://susproc.jrc.ec.europa.eu/product-bureau/sites/default/files/2024-02/Detergents_Draft_Technical%20Report%201_1.pdf

— Exemption of abrasives from CDV calculations (8 comments; feedback to TR1 Q13).

— Provision of additional CDV data (9 comments; feedback to TR1 question Q14) and support to TR1 proposed CDV threshold (10 + 8 + 9 + 12 + 8 comments; feedback to TR1 Q15 to Q19).

— Other topics not related to the previous (14 comments) – containing feedback on topics as harmonization of verification procedures across CBs; suggestion for improvements of the DID list and comparative disadvantage of undiluted versus RTU products

About the exclusion of abrasives from CDV calculations.

What was the feedback received from stakeholders on this topic?

The question made in TR1 was:

Question 13 (Q13) – Do you support the exclusion of abrasives from CDV calculation, as expressed in criterion legal text? If not but still supporting this exclusion, should it be aligned with EUEL criteria for Cosmetic products (use Active Content –AC)?

All the comments received supported the exclusion proposed and there were few remarks asking:

— To include a definition – to clearly differentiate substance that can be used from those that can't.

— To consider environmental effects – especially detrimental of those abrasives allowed within the EU Ecolabel (as per definition).

— To allow only "inorganic" abrasives – that the JRC understands refers to relatively chemically inert substances with no-/low water solubility.

What does JRC's research say on this topic?

The JRC agrees that having a definition would provide certainty and aid in the verification of this exemption to the CDV calculation. Furthermore, to be consistent with other EU Ecolabel criteria areas, the best place to include such definition is within the *Definitions* section rather than within the rationale of the criterion *Toxicity to aquatic organisms*, thus the definition is included there alongside a short rationale.

About request for further CDV data and support to TR1 proposed thresholds.

What was the feedback received from stakeholders on this topic?

The questions shared in TR1 were:

— Question 14 (Q14) – Can you provide CDV value data to help support the criteria revision process and make sure that new CDV values have an appropriate level of ambition?

— Question 15 (Q15) – Would you support reducing the CDV threshold for DD single-function to 18000 g/wash?

— Question 16 (Q16) – Would you support reducing the CDV threshold for DD rinse aid products to 1650 l/l washing solution?

— Question 17 (Q17) – Would you support proposed IILD limits? In addition, would you support a simplification of the criterion? If so, why/how (e.g. not differentiating by water hardness)?

— Question 18 (Q18) – Would you support aligning with Blue Angel with regards to HSC CDV toxicity limits? In addition, do you have any specific proposal for revision of each of the HSC products sub-groups?

— Question 19 (Q19) – Do you think the EUEL limits for CDV should continue to be nuanced for dosages for soft, medium and hard water? And does this answer vary depending on whether referring to household or industrial and institutional products?

Most of the responses to Q14 mentioned that CDV data was or will be provided directly (some upon request) and others indirectly (via corresponding Competent Body). Others directly provided data points (CDV values supposedly belonging unique ecolabelled products) as part of their response.

About support to DD CDV thresholds proposals (Q15 & Q16), the majority of stakeholders backed-up the proposed limits for DD single-function (n=7), some even suggesting further lowering them, with two with no

opinion and one opposing to it. About rinse aids (Q16), the majority of stakeholders backed-up the proposed limits (n=5), some even suggesting further lowering them (to 2000 l/wash), few with no opinion and one opposing to it.

In terms of IILD, most of the respondents (n=5) supported the proposed limits, with several suggesting even lower CDV limits. About simplifying IILD thresholds, this was generally supported by respondents with differences found on how to do so (irrespective of water hardness and/or degree of soiling). Other remarks were how to extrapolate in terms of fitness for use testing from one level of water hardness /degree of soiling to another if criteria are simplified and the need to still maintaining the requirement that producers need to report dosage by these traits. One stakeholder highlighted potential difficulties of pre-soaks to meet CDV limits, being this potentially the cause for low license numbers.

There was no general support to aligning HSC CDV threshold to those in Blue Angel (Q18) because they were deemed as too strict by stakeholders. Related to this, some also highlighted potential difficulties in compliance in products containing fragrances, also mentioning comparative difficulty in meeting RTU limits for HSC / KC versus their undiluted counterparts. In few cases there was support on the basis of that they were reachable in other ecolabel schemes.

There were split views on the feedback received to Q19. Those against a simplification irrespective of water hardness indicated that thresholds, especially for industrial and institutional products, should account for its different levels (soft/medium/hard), as well as considering the degree of soiling. Within these responses, differences arose on whether all levels should be considered or whether some could be disregarded (i.e. soft). Those in favour of such simplification do not provided detailed explanations beyond indicating that one limit would suffice. Another remark was to ensure that the information requirement about dosage by water hardness (and degree of soiling) should still be in place, irrespective if a simplification in threshold is proposed.

The feedback suggesting specific thresholds, if different from those proposed by JRC in TR1, is shown in Table 12 for reference.

Table 12 - Outline of feedback received on the suitability of TR1 proposed thresholds for CDV presented by product group and split by relevant product categorisation. Data points are presented in italic font while suggestion for threshold values are not. For comments mentioning a range of values, the most stringent value was added to this table. NA = Not applicable

Product Group	*Product sub-group*	*Product categorisation 1*	*Product categorisation 2*	*TR1 EUEL threshold*	*CDV* (suggested threshold; *ecolabelled product value)*		
Laundry detergent (LD)	Heavy-duty	NA	NA	23625	20000		
	Light-duty	NA	NA	15000			
	Stain remover	NA	NA	3500	2800		
Dishwasher detergent (DD)	Single-function	NA	NA	20000		16000	16000
	Multi-function	NA	NA	24000	25000	22000	22000
	Rinse aid	NA	NA	5000			2000
Hand-diswashing detergent (HDD)	NA	NA	NA	1500	1250	*520*	
Hard Surface Cleaning (HSC) products	All-purpose	RTU	NA	350 000		250000	250000
		Undiluted	NA	18 000	*380* *720* *3100*	13000	13000
	Kitchen cleaners	RTU	NA	600 000	*165000*	250000	250000
		Undiluted	NA	45 000	*270*		
	Window cleaners	RTU	NA	48 000	*17000*	35000	35000
		Undiluted	NA	18 000			

Product Group	*Product sub-group*	*Product categorisation 1*	*Product categorisation 2*	*TR1 EUEL threshold*	*CDV* (suggested threshold; *ecolabelled product value)*		
	Sanitary cleaners	RTU	NA	600 000	*200000* *580000* *560000*	290000 375000	290000 375000
		Undiluted	NA	45 000	*5000*	20000	20000
Industrial and Institutional dishwasher detergent (IIDD)	Pre-soaks	Soft	NA	2000			
		Medium	NA	2000			
		Hard	NA	2000			
	Dishwasher detergent	Soft	NA	1800	1000	*1160* *1000*	
		Medium	NA	3000	1250		
		Hard	NA	4200	1500		
	Multi-component systems	Soft	NA	1800	1000		
		Medium	NA	2400	1250		
		Hard	NA	3000	1500		
	Rinse aids	Soft	NA	3000	2000		
		Medium	NA	3000	2500	*350* *340*	
		Hard	NA	3000	2750		
Industrial and Institutional laundry detergent (IILD)	Powder	Soft	Light	22500			
			Medium	30000			
			Heavy	37500			
	Liquid		Light	37500		20000	20000
			Medium	45000	30000	30000	30000
			Heavy	52500	50000	50000	50000
	Multi- component systems		Light	37500			
			Medium	52500			
			Heavy	90000	72500	72500	72500
	Powder	Medium	Light	30000			
			Medium	45000			
			Heavy	60000			
	Liquid		Light	45000	30000	30000	30000
			Medium	56250	50000	50000	50000
			Heavy	67500	60000	60000	60000
	Multi- component systems		Light	45000			
			Medium	60000			
			Heavy	75000	77500	77500	77500
	Powder	Hard	Light	37500			
			Medium	56250			
			Heavy	67500			
	Liquid		Light	56250		50000	50000
			Medium	67500	60000	60000	60000
			Heavy	90000	80000	85000	85000
	Multi- component systems		Light	56250	52500	52500	52500
			Medium	75000	70000	70000	70000
			Heavy	90000			

Source: JRC's elaboration with TR1 feedback provided by stakeholders.

What does JRC's research say on this topic?

The JRC carried an analysis on the critical dilution volume (CDV) data received from stakeholders and used its results as another stream of evidences leading to new EUEL quantitative thresholds proposals. Details on the type of data received and how it was processed prior to its use for results acquisition can be found in Annex 1.

On what follows, tables containing the descriptive statistic descriptive results and plots displaying the data points received (factored by the corresponding EUEL threshold) are presented by EUEL product group. In addition, remarks might be made about how other ecolabel schemes (Nordic Swan and Blue Angel) approach this aspect. Each sub-section, corresponding to each of EUEL PGs, closes with a conclusion, indicating whether there are new EUEL criteria thresholds proposals and, if so, which are these.

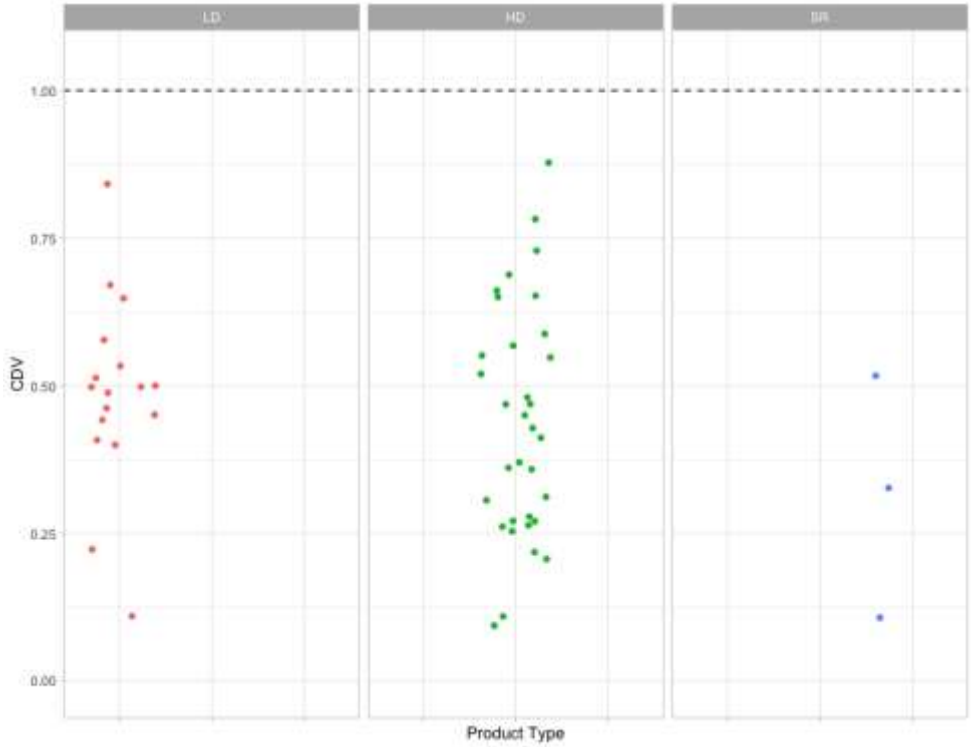
Laundry detergent (LD)

Table 13 - Laundry detergent descriptive statistics on critical dilution volume (CDV) values [l/kg laundry].

Product type	*Data points (n)*	*Minimum (l/kg)*	*1st quartile (l/kg)*	*Median (l/kg)*	*Mean (l/kg)*	*3rd quartile (l/kg)*	*Maximum (l/kg)*	*Existing Threshold (l/kg)*
Light-duty	17	2200	8800	10000	9718	10600	16800	20000
Heavy-duty	33	2835	8505	13545	13803	17955	27720	31500
Stain remover	3	385	770	1155	1120	1488	1820	3500

Source: JRC's elaboration with data provided by stakeholders.

Figure 5 - Laundry detergent critical dilution volume (CDV). Each data point has been factored by its corresponding EUEL threshold, thus being unit less and ranging from "0" to "1", which corresponds to the existing EUEL threshold (depicted by the dashed line). Red dots -> HD = Heavy duty detergent; Green dots ->LD = Light duty detergent; Blue dots ->SR = Stain remover.



Source: JRC's elaboration with data provided by stakeholders.

About other ecolabels:

Table 14 - Limits for critical dilution volume (CDV) in Nordic Ecolabelling Laundry Detergents and Stain Removers

Product Type	*Water Hardness (dH)*	*CDV (g/kg wash)*
Heavy-duty laundry detergent	5.5°dH	31500
Light-duty laundry detergent	5.5°dH	15000
Stain-removers (in-wash)	Not applicable	7500
Stain-removers (pre-treatment)	Not applicable	3500

Source: Criterion O13, 006, v8.10[87]

[87] Criterion 013; 006 Laundry detergents and Stain Removers; version 8.10; Nordic Ecolabelling. Available at: https://www.nordic-swan-ecolabel.org/criteria/laundry-detergents-and-stain-removers-006/

Table 15 - Limits for critical dilution volume (CDV) in Blue Angel criteria Laundry Detergents and Stain Removers

Product Type	*CDV (g/kg laundry)*
Heavy-duty laundry detergent, colour-safe laundry detergent	25000
Low-duty laundry detergent	18000
Stain remover	3500
Laundry detergent booster	7500

Source: Section 3.5, DE-UZ 202, v1.10[88]

The discussions and conclusions about CDV threshold proposals, structured by product type and derived from the former evidences, are:

— *Heavy duty detergent*

The majority (75%) of the data points fell below 17955 l/kg laundry (thereafter quoted as l/kg), almost half of the existing threshold (31500 l/kg). BA threshold is also set at 31500 l/kg while NS one is set at 25000 l/kg. Stakeholder comments received suggest feasibility for 20000 l/kg. Since TR1 proposal was 23625 l/kg, data suggest there is room for making the existing limit more stringent. Hence, the JRC proposes 20000 l/kg based on data analysis and stakeholders feedback.

— *Light duty detergent*

The majority (75%) of the data points fell below 10600 l/kg, almost half of the existing threshold (20000 l/kg). BA threshold is set at 15000 l/kg while NS one is set at 18000 l/kg. No stakeholder comments were received on this threshold. Since TR1 proposal was 15000 l/kg, data suggest there is slight room for making the existing limit more stringent but considering also the limit proposed for heavy-duty, the JRC proposes to maintain TR1 proposal (15000 l/kg). This is aligned with BA and, based on the descriptive statistical analysis, would potentially exclude a marginal share of ecolabelled products (those with highest CDV).

— *Stain removers (in-wash)*

There were few data points (n=3) for this product type, all below 1820 l/kg. BA and NS threshold are equal to EUEL one, being 3500 l/kg[89]. Stakeholders' comments suggested feasibility for 2800 l/kg. Given data uncertainty and feedback received, the JRC proposes 2500 l/kg as new threshold.

Dishwasher detergent (DD)

In the analysis made for DD, not all the data entries received for CDV data indicated whether the DD product corresponded to single-function (SF) or multi-function (MF). In these cases a pragmatic approach was taken, by assigning the class with the most stringent limit, which in this case is SF, under the logic that if it can pass the most stringent limit (for SF) then it should be possible for such product to pass for the less stringent (for MF). From a total of 35 data entries, 14 of them were classed in this was as SF. Consequently, bear this in mind in terms of interpreting the results presented below.

[88] Criterion *Biodegradability of organic substances*; DE-UZ 202 Laundry detergents; version 1.1; January 2022; Blue Angel. Available at: https://www.blauer-engel.de/en/productworld/laundry-detergent

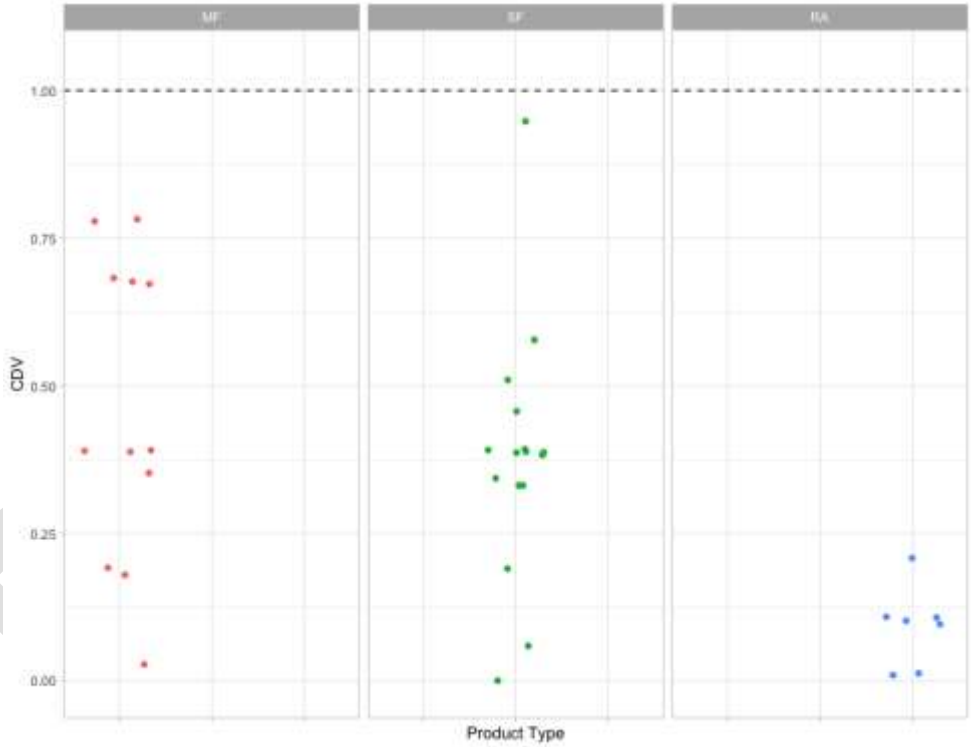
[89] Note that categories "*stain removers in-wash*" and "*stain removers pre-treatment*" are quoted in Nordic Swan while "*stain remover*" and "*laundry detergent booster*" are quoted in Blue Angel. In this occasion, the JRC assumed that NS "*stain removers in-wash*" and BA "*stain remover*" were equivalent to EUEL "*stain remover (pre-treatment only)*"

1733 Table 16 - Dishwasher detergent (DD) descriptive statistics on critical dilution volume (CDV) values.

Product type	*Data points (n)*	*Minimum (l/wash)*	*1st quartile (l/wash)*	*Median (l/wash)*	*Mean (l/wash)*	*3rd quartile (l/wash)*	*Maximum (l/wash)*	*Existing Threshold (l/wash)*
DD single-function	16	675	6975	8775	10332	15300	17550	22500
DD multi-function	12	0	8910	10530	10260	11003	25650	27000
Rinse aid	7	75	413	750	696	825	1575	7500

1734 *Source:* JRC's elaboration with data provided by stakeholders.

1735 Figure 6 - Dishwasher detergent (DD) critical dilution volume (CDV). Each data point has been factored by its
1736 corresponding EUEL threshold, thus being unit less and ranging from "0" to "1", which corresponds to the existing EUEL
1737 threshold (depicted by the dashed line). Red dots -> MF = DD multi-function; Green dots -> SF = DD single-function; Blue
1738 dots ->RA = Rinse aid.



1739 *Source:* JRC's elaboration with data provided by stakeholders.

1740

1741 About other ecolabels:

1742 Table 17 - Limits for critical dilution volume (CDV) in Nordic Ecolabelling Dishwasher detergents and Rinse aids

Product Type	*CDV (g/wash)*
Dishwasher detergents (multi-function)	25500
Dishwasher detergents (single-function)	22500

Stain-removers (pre-treatment)	5000

Source: Criterion O12, 017, v7.7[90]

Table 18 - Limits for critical dilution volume (CDV) in Blue Angel criteria Dishwasher detergents

Product Type	*CDV (g/cleaning cycle)*
Monofunctional diswasher detergent	20000
Multifunctional diswasher detergent	24000
Rinse aid	5000

Source: Section 3.5, DE-UZ 201, v3.1[91].

The discussions and conclusions about CDV threshold proposals, structured by product type and derived from the former evidences, are:

— Dishwasher detergents (single-function)

The majority (75%) of the data points fell below 15300 l/wash, with all of them being under 17550 l/wash. The existing threshold (22500 l/wash) is found between BA (20000 l/wash) and NS (25500 l/wash) ones. Stakeholders' comments received suggested feasibility for 16000 l/wash. Since TR1 proposal was 20000 l/wash and evidences (data analysis + stakeholders feedback) suggested room for making the existing limit more stringent, the JRC proposes 17500 l/wash.

— Dishwasher detergents (multi-function)

The majority (75%) of the data points fell below 11003 l/wash, with all of them being under 25650 l/wash. The existing threshold (27000 l/wash) is less stringent than BA (24000 l/wash) and NS (22500 l/wash) ones. Stakeholders' comments received suggested feasibility for 22000 l/wash, but others also called for increasing it to 25000 l/wash. Since TR1 proposal was 24000 l/wash and evidences (data analysis + stakeholders feedback) suggested room for making the existing limit more stringent, the JRC proposes 22000 l/wash.

— *Rinse aid*

The majority (75%) of the data points fell below 825 l/wash, with all of them being under 1575 l/wash. The existing threshold (7500 l/wash) is less stringent than BA and NS, which are set at 5000 l/wash. Stakeholders' comments received suggested feasibility for 2000 l/wash. Since TR1 proposal was 5000 l/wash and evidences (low data entries + stakeholders feedback) suggested there was room for further increasing the ambition level, the JRC proposes 2500 l/wash. Given considerable change in the threshold and the limited data available, the JRC welcomes comments on its suitability to ensure feasibility.

Hand-dishwashing detergent (HDD)

[90] Criterion *012 Critical Dilution Volume*; 017 Dishwasher detergent and rinse aids. V7.7. Nordic Ecolabelling. August 2024. Available at: https://www.nordic-swan-ecolabel.org/4a98a7/contentassets/4c39b5c28cb344a6ad02643a27094f28/criteria-document_017_dishwasher-detergents-and-rinse-aids-017_english.pdf

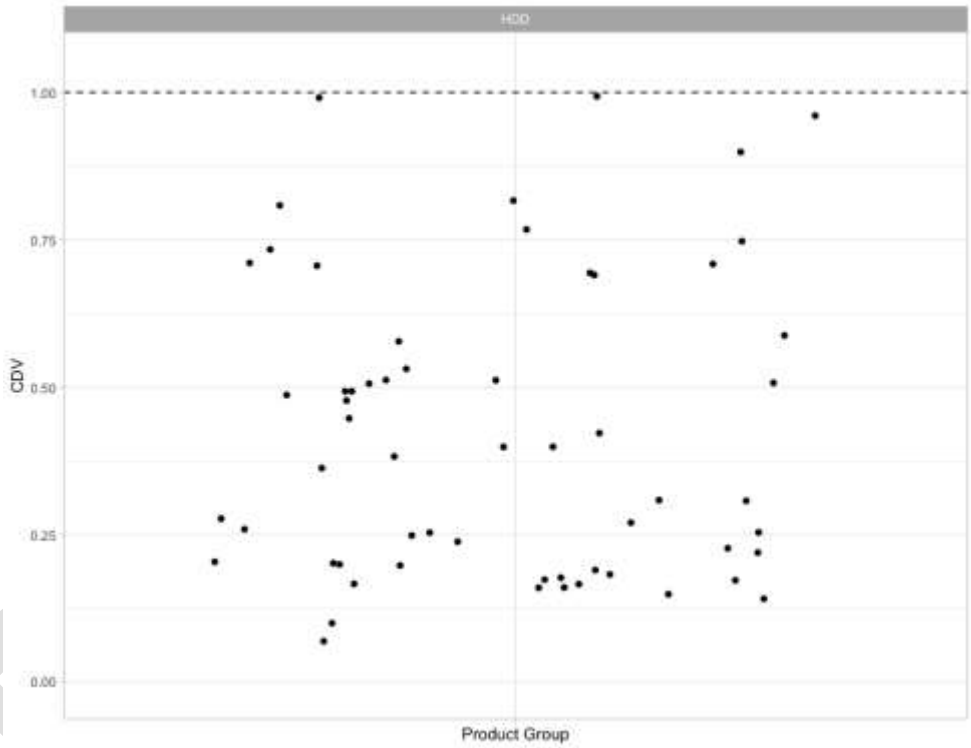
[91] Criterion *Biodegradability of organic substances*; DE-UZ 201 Dishwasher detergents; version 3.1; September 2023 Blue Angel. Available at: https://produktinfo.blauer-engel.de/uploads/criteriafile/en/DE-UZ%20201-202201-en%20criteria-V3.1.pdf

Table 19 – Hand-dishwashing detergent (HDD) descriptive statistics on critical dilution volume (CDV) values [l/l washing water].

Product type	*Data points (n)*	*Minimum (l/l)*	*1st quartile (l/l)*	*Median (l/l)*	*Mean (l/l)*	*3rd quartile (l/l)*	*Maximum (l/l)*	*Existing Threshold (l/l)*
HDD	59	175	500	950	1060	1463	2475	2500

Source: JRC's elaboration with data provided by stakeholders.

Figure 7– Hand - dishwashing detergent (HDD) critical dilution volume (CDV). Each data point has been factored by its corresponding EUEL threshold, thus being unit less and ranging from "0" to "1", which corresponds to the existing EUEL threshold (depicted by the dashed line).



Source: JRC's elaboration with data provided by stakeholders.

About other ecolabels:

— *Nordic Swan (NS)* - sets threshold limit at ≤1500 litres[92].

— *Blue Angel (BA)* – sets threshold limit at 2000 l/dishwashing water [93].

The discussions and conclusions about CDV threshold proposal derived from the former evidences is:

[92] 011 Hand-dishwashing detergent. V6.10. Nordic Ecolabelling. August 2024. Available at: https://www.nordic-swan-ecolabel.org/4a6c85/contentassets/10f50d7e13a34cfbaf8fc0b66a4fc521/criteria-document-for-product-group-025_025_hand-dishwashing-detergents-025_english2.pdf

[93] Criterion 3.5 *Toxicity to aquatic organisms*; DE-UZ 194 Hand Dishwashing Detergents and Hard Surface Cleaners; version 3.1; January 2022 Blue Angel. Available at: https://produktinfo.blauer-engel.de/uploads/criteriafile/en/DE-UZ%20194-202201-en%20criteria-V1.2.pdf

— The majority (75%) of the data points fell below 1463 l/l washing solution, with all of them being under 2475 l/l. The existing threshold (2500 l/l) is higher than BA (2000 l/l) and NS (1500 l/l) ones. Stakeholders' comments received suggested feasibility for 1250 l/l. Since TR1 proposal was 1500 l/l and this threshold, according to its data analysis, would already imply potentially excluding a share of ecolabelled products (up to 25%; those having higher CDV), the JRC proposes keeping existing thresholds (1500 l/l), as it is considered sufficiently ambitious while feasible.

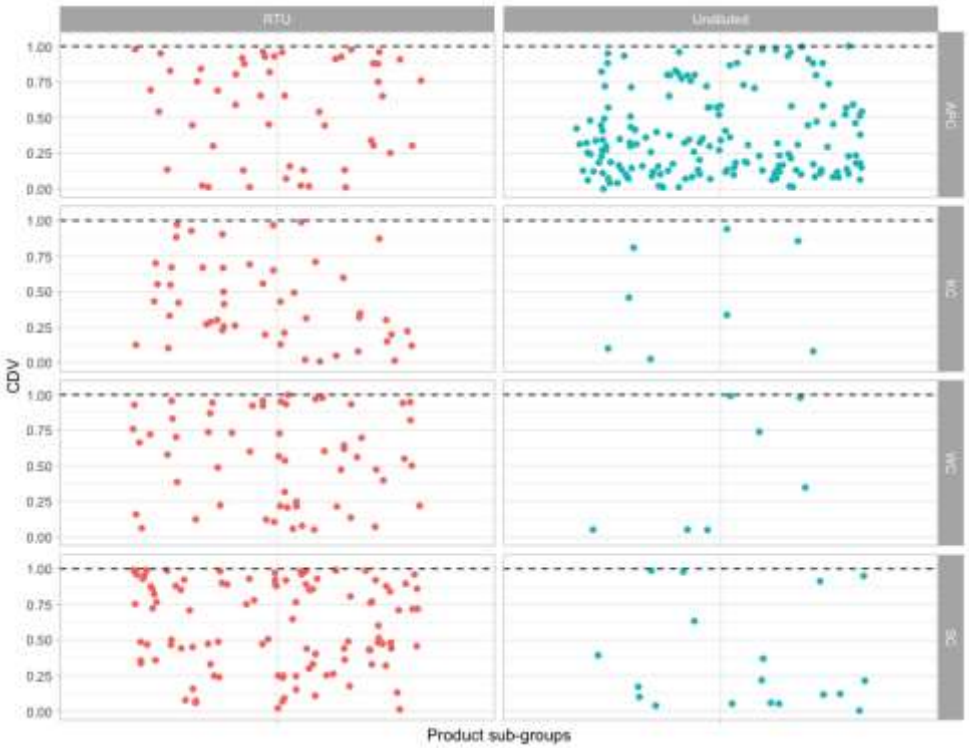
Hard surface cleaning (HSC) products

Table 20 – Hard surface cleaning (HSC) product descriptive statistics on critical dilution volume (CDV) values. APC – all purpose cleaners; KC – kitchen cleaners; WC – window cleaners; SC – sanitary cleaners

Product type	*Product concentration*	*Data points (n)*	*Minimum (l/wash)*	*1st quartile (l/wash)*	*Median (l/wash)*	*Mean (l/wash)*	*3rd quartile (l/wash)*	*Maximum (l/wash)*	*Existing Threshold (l/wash)*
APC	RTU	50	3500	91875	227500	197260	308000	343000	350000
APC	Undiluted	163	0	2340	5400	6581	10260	18000	18000
KC	RTU	49	6000	126000	210000	258000	402000	594000	600000
KC	Undiluted	8	1350	4275	18000	20363	37013	42300	45000
WC	RTU	58	2400	10560	28320	26779	41280	48000	48000
WC	Undiluted	7	900	900	6300	8255	15480	17820	18000
SC	RTU	104	6000	213000	333000	357120	529500	594000	600000
SC	Undiluted	18	0	3150	8550	15899	25650	44550	45000

Source: JRC's elaboration with data provided by stakeholders.

Figure 8– Hard surface cleaning (HSC) cleaning products critical dilution volume (CDV). Each data point has been factored by its corresponding EUEL threshold, thus being unit less and ranging from "0" to "1", which corresponds to the existing EUEL threshold (depicted by the dashed line). Red dots represent products in RTU format while blue dots represent undiluted ones. APC = All purpose cleaners; KC = Kitchen cleaners; WC = Window cleaners; SC = Sanitary cleaners.



Source: JRC's elaboration with data provided by stakeholders.

About other ecolabels:

— *Nordic Swan (NS)* –threshold values are displayed in Table 21. It splits threshold values between consumer and professional product categories, differently from EUEL which only reports one value that is applicable to both private and professional use. It also has "horizontal" limits for concentrated, which is equivalent to *undiluted* in EUEL criteria (e.g. *Concentrated, consumer*), meaning that are applicable to several PGs. Note NS concentrated products have to be diluted, at least, ten times to classify as concentrated. This also includes some RTU types but there are specific threshold for RTU WC (roughly equivalent to SC in EUEL criteria) and RTU windows (WC in EUEL criteria). In addition, NS limits the total amount of H410, H411 and H412 classified substances[94].

Table 21 - Limits for critical dilution volume (CDV) in Nordic Ecolabelling Cleaning products

Product Type	*CDV (g/wash)*
Concentrated, consumer	10500
RTU, WC, consumer	600000
RTU, other, consumer	600000
Concentrated, professional	9500
Foam, professional	100000
RTU, other (incl. WC), professional	3500000
RTU windows, professional, consumer	48000
Façaces and terrace cleaners	20000

Source: Criterion O12, 026, v6.14[95]

— *Blue Angel (BA)* – threshold values are displayed in Table 22. It does not include RTU products for APC within its scope, thus comparison can only be made with APC undiluted. For the rest of product types (KC, WC, SC) the threshold is the same for RTU and undiluted (concentrated) only differing in how the reference dosage is quoted (RTU = 1000 g of end-use product / cleaning solution; Undiluted = dosage of end product required to prepare 1L of cleaning water for normally soiled surface). While EU Ecolabel sets threshold values for undiluted sanitary cleaners, Blue Angel splits this category into toilet cleaner and bathroom cleaner[96].

Table 22 - Limits for critical dilution volume (CDV) in Blue Angel criteria hard surface cleaners

Product Type	CDV	Units

[94] 026 Cleaning products. V6.14. Nordic Ecolabelling. August 2024. Available at: https://www.nordic-swan-ecolabel.org/4a6c7c/contentassets/988cf5d0a3fe4c3fa2f85775d7df4be9/criteria-document-for-product-group-026_026_cleaning-products-026_english.pdf

[95] 026 Cleaning products. V6.14. Nordic Ecolabelling. August 2024. Available at: https://www.nordic-swan-ecolabel.org/4a6c7c/contentassets/988cf5d0a3fe4c3fa2f85775d7df4be9/criteria-document-for-product-group-026_026_cleaning-products-026_english.pdf

[96] Criterion Biodegradability of organic substances; DE-UZ 194 Hand Dishwashing Detergents and Hard Surface Cleaners; version 3.1; January 2022 Blue Angel. Available at: https://produktinfo.blauer-engel.de/uploads/criteriafile/en/DE-UZ%20194-202201-en%20criteria-V1.2.pdf

All-purpose cleaner	10000	l/l cleaning water
Kitchen cleaner	300000	l/ 1000g cleaning solution
Toilet cleaner	300000	l / 1000g cleaning solution
Bathroom cleaner	150000	l / 1000g cleaning solution
Glass cleaner	48000	g / 1000g cleaning solution
Descaler	10000	l / l ready-to-use cleaning solution

Source:; Section 3.5 ; BA DE-UZ 194, v3.1[97]

The discussions and conclusions about CDV threshold proposals, structured by product type and derived from the former evidences, are:

— *All purpose cleaners (RTU)*

The majority of the data points (75%) fell below 308000 l/l cleaning solution (thereafter quoted as l/l). The existing EUEL threshold (350000 g/l) is not comparable with BA (only has concentrated) and is more stringent than NS related ones for consumers (600000 l/l; *RTU, other, consumer)* and professional products (*3500000 l/l; RTU, other, professional*). Stakeholders' comments received suggested feasibility for 250000 l/l. Hence, the JRC proposes 250000 l/l based on data analysis and stakeholders feedback.

— *All purpose cleaners (Undiluted)*

The majority of the data points (75%) fell below 10260 l/l. The existing EUEL threshold (18000 l/l) is less stringent than BA (10000 l/l) and NS related ones for consumers (10500 l/l; *Concentrated, consumer)* and professional products (*9500 l/l; concentrated professional*). Stakeholders' comments received suggested feasibility for 13000 l/l. considering the former and feedback received to Q18, the JRC proposes 13000 l/l as a compromise between ambition level and feasibility of implementation.

— *Kitchen cleaners (RTU)*

The majority of the data points (75%) fell below 402000 l/l. The existing EUEL threshold (600000 l/l) is less stringent than BA (300000 l/l) and is equal to NS related ones for consumers (600000 l/l; *RTU, other, consumer)* and more stringent than that for professional products (*3500000 l/l; RTU, other, professional*). Stakeholders' comments received suggested feasibility for 250000 l/l. The number of data points is fair, but does not allow to differentiate the split between professional and consumer products. Hence, the JRC proposes 400000 l/l as a compromise between feasibility, data analysis results and other ecolabels.

— *Kitchen cleaners (Undiluted)*

The majority of the data points (75%) fell below 37013 l/l. The existing EUEL threshold (45000 l/l) is not directly comparable to BA (300000 l/l) and is less stringent than NS related ones for consumers (10500 l/l; *Concentrated, consumer)* and professional products (*9500 l/l; concentrated professional*). The JRC proposes 37000 l/l as a compromise between feasibility, data analysis results and other ecolabels. Due to the relatively low number of data points comparatively with other combinations, the JRC encourages stakeholders to comment on the feasibility to raise further the ambition level, thus reducing the threshold.

— *Window cleaners (RTU)*

The majority of the data points (75%) fell below 41208 l/l. The existing EUEL threshold (48000 l/l) is equal to its BA (48000 l/l; *glass cleaner*) and NS counterparts (48000 l/l; *RTU, professional, consumer)*.

[97] Criterion Toxicity to aquatic organisms; DE-UZ 194 Hand Dishwashing Detergents and Hard Surface Cleaners; version 3.1; January 2022 Blue Angel. Available at: https://produktinfo.blauer-engel.de/uploads/criteriafile/en/DE-UZ%20194-202201-en%20criteria-V1.2.pdf

Stakeholders' comments received suggested feasibility for 35000 l/l. The number of data points is fair, but does not allow to differentiate the split between professional and consumer products. Hence, the JRC proposes 41000 l/l based on data analysis and stakeholders feedback.

— *Window cleaners (Undiluted)*

The majority of the data points (75%) fell below 15048 l/l. The existing EUEL threshold (18000 l/l) is not directly comparable to BA (48000 l/l) and is less stringent than NS related ones for consumers (10500 l/l; *Concentrated, consumer)* and professional products (*9500 l/l; concentrated professional*). The JRC proposes 15000 l/l based on the data analysis, with the intention to discuss further its feasibility especially in the light of the number of data points available.

— *Sanitary cleaners (RTU)*

The majority of the data points (75%) fell below 529500 l/l. The existing EUEL threshold (600000 l/l) is not directly comparable to BA given its split into toilet (300000 l/l) and bathroom (150000 l/l) cleaners. When compared to NS, is equal for that for consumers (600000 l/l; *RTU, other, consumer)* and more stringent than that for professional products (*3500000 l/l; RTU, other, professional*). Stakeholders' comments received suggested feasibility for setting the threshold proposal within the range 375000 - 290000 l/l. The number of data points is fair, but does not allow to differentiate the split between professional and consumer products. Hence, the JRC proposes 350000 l/l based on data analysis, stakeholders' feedback and considering other ecolabels.

— *Sanitary cleaners (Undiluted)*

The majority of the data points (75%) fell below 25650 l/l. The existing EUEL threshold (45000 l/l) is not directly comparable to BA given its split into toilet (300000 l/l) and bathroom (150000 l/l) cleaners. When compared to NS, is less stringent than NS related ones for consumers (10500 l/l; *Concentrated, consumer)* and professional products (*9500 l/l; concentrated professional*). Stakeholders' comments received suggested feasibility for 20000 l/l. The JRC proposes 25000 l/l based on data analysis, comments received and considering other ecolabels.

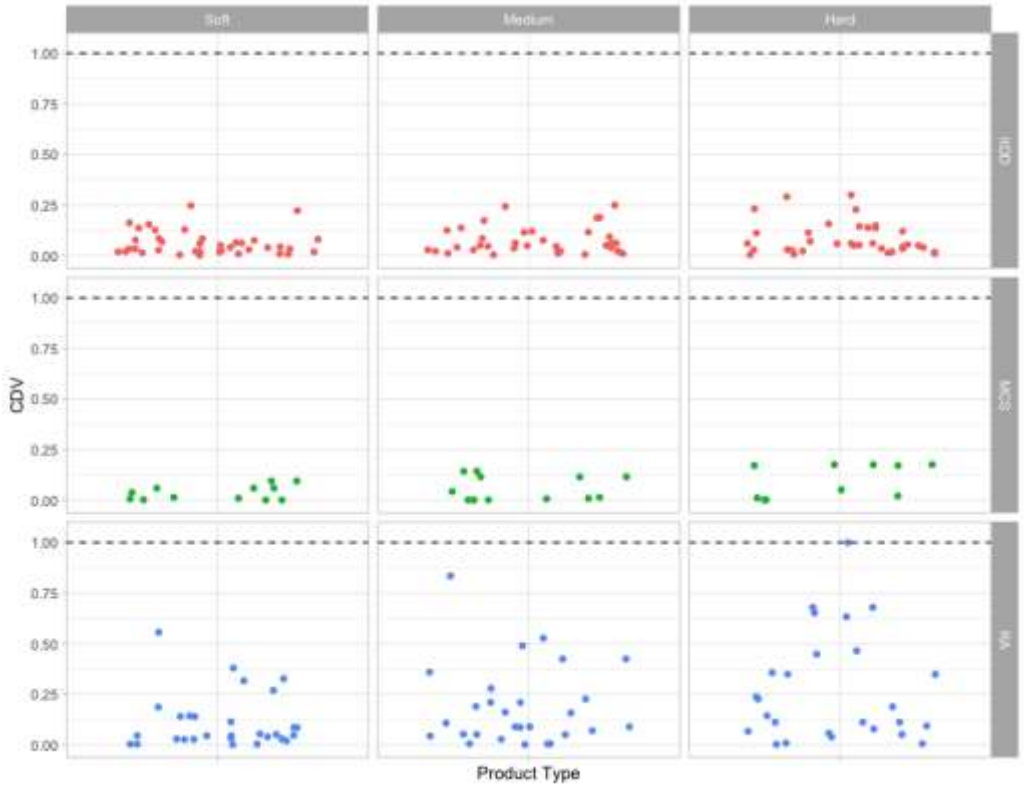
Industrial and Institutional dishwasher detergent (IIDD) products

Table 23 – Industrial and institutional dishwasher detergents descriptive statistics critical dilution volume (CDV) values [l/l washing solution]. "Pre-soaks" is not included as no data was received. IIDD = dishwasher detergents; MCS = multi-component systems; RA = Rinse aids.

Product type	*Water Hardness*	*Data points (n)*	*Minimum (l/l)*	*1st quartile (l/l)*	*Median (l/l)*	*Mean (l/l)*	*3rd quartile (l/l)*	*Maximum (l/l)*	*Existing Threshold (l/l)*
IIDD	Soft	38	7	58	121	185	237	742	*3000*
IIDD	Medium	37	14	95	201	293	460	997	*4000*
IIDD	Hard	35	18	144	275	423	643	1495	*5000*
MCS	Soft	12	2	15	78	110	179	285	*3000*
MCS	Medium	12	5	22	114	236	462	571	*4000*
MCS	Hard	10	9	66	556	479	874	880	*5000*
RA	Soft	29	3	86	140	335	419	1668	*3000*
RA	Medium	28	5	152	295	563	717	2503	*3000*
RA	Hard	26	7	209	497	824	1275	2999	*3000*

Source: JRC's elaboration with data provided by stakeholders.

Figure 9 – Industrial and Institutional dishwasher detergent critical dilution volume (CDV) by water hardness level (Soft, Medium, Hard). Each data point has been factored by its corresponding EUEL threshold, thus being unit less and ranging from "0" to "1", which corresponds to the existing EUEL threshold (depicted by the dashed line). Red dots represent dishwasher detergents; Green dots represent multicomponent systems (MCS); Blue dots represent Rinse aids (RA). "Pre-soaks" is not included as no data was received.



Source: JRC's elaboration with data provided by stakeholders.

About other ecolabels:

— *Blue Angel (BA)* –does not have criteria for professional products.

— *Nordic Swan (NS)* – sets stricter limit values for both aNBO and anNBO and for all product categories compared to the EU Ecolabel (See Table 24). Unlike EU Ecolabel, it sets the threshold values regardless of water hardness and degree of soiling.

Table 24 - Limits for critical dilution volume (CDV) in Nordic Ecolabelling (NS) dishwasher detergent for professional use.

Product Type	*CDV (litres/litre water)*
Dishwasher detergent	1800
Soaking agents	1800
Products used to clean instruments in healthcare	3000
Rinse aids	3000

Dishwasher detergents for aluminium goods	3000

Source: Criterion O12; 0.80, v3.8[98]

The discussions and conclusions about CDV threshold proposals, structured by product type and derived from the former evidences, are:

- *Industrial and institutional dishwasher detergent (all water hardness)*

  The majority of the data points (75%) for soft/medium/hard water fell below 237/460/643 l/litre of washing solution (thereafter quoted as l/l), respectively. The existing EUEL thresholds are 3000/4000/5000 l/l, respectively. The limit set by NS is 1800 l/litre water, roughly half of existing EUEL limit for medium water hardness. The proposals made in TR1 were 1800/3000/4200, thus being the lowest limit (soft water one) aligned with NS threshold. Stakeholders' comments suggested feasibility for 1000/1250/1500 l/l, respectively for each water hardness level. Considering the former evidences, the JRC proposes 1000/1250/1500 l/l for soft/medium/hard water hardness. This proposal could potentially "only" exclude slightly less than 25% of ecolabelled products (those with highest CDV) and would be aligned with stakeholders' comments on feasibility.

- *Multicomponent systems (all water hardness)*

  The majority of the data points (75%) for soft/medium/hard water fell below 179/462/874 l/l respectively. The existing EUEL thresholds are 3000/4000/5000 l/l, respectively. The limit set by NS is 1800 l/litre water, roughly half of existing EUEL limit for medium water hardness. The proposals made in TR1 were 1800/2400/3000, thus being the lowest limit (soft water one) aligned with NS threshold. Stakeholders' comments (as per IIDD case) suggested feasibility for 1000/1250/1500 l/l, respectively for each water hardness level. Considering the former evidences, the JRC proposes 1000/1250/1500 l/l for soft/medium/hard water hardness. This proposal could potentially "only" exclude slightly less than 25% of ecolabelled products (those with highest CDV) and would be aligned with stakeholders' comments on feasibility.

- *Rinse aid (all water hardness)*

  The majority of the data points (75%) for soft/medium/hard water fell below 419/717/1275 l/l respectively. The existing EUEL thresholds are 3000 l/l for all water hardness levels, which is the same as per NS (3000 l/litre water). No proposals were made for rinse aids in TR1. Stakeholders' comments suggested feasibility for 2000/2500/275 l/l, respectively for each water hardness level. Considering the former evidences, the JRC proposes 2000/2500/2750 l/l for soft/medium/hard water hardness.

  .

- *Pre soaks (all water hardness)*

  There is no *pre-soaks* data so it is not possible to have similar orientations as per previous cases based on a statistical descriptive analysis of the data received. Nevertheless, NS limit for *Pre-soaks* is 1800 l/litre water, which is lower than EUEL existing limit (2000 l/l). The JRC proposes 1800 l/l, irrespective of water hardness level (namely, same threshold for soft/medium/hard water hardness) in alignment with NS limit. Due to the lack of data points comparatively with other combinations, the JRC encourages stakeholders to comment on the feasibility to raise further the ambition level, thus reducing the threshold.

Considering stakeholders'' comments on the possibility of simplifying the criteria stricter and NS setting a unique threshold irrespective of water hardness; the JRC is considering the possibility to frame the aforementioned proposals for CDV limits also as limits set regardless of water hardness (See Q21), being based on the highest recommended dose by the manufacturer, as claimed in the product (i.e. label;

[98] 080 Dishwasher detergents for professional use. V3.8. Nordic Ecolabelling. April 2024. Available at: https://www.nordic-swan-ecolabel.org/498b38/contentassets/4fbf7d89969d452097042cd798bfd3d7/background-document-for-product-group-080_080_dishwasher-detergents-for-professional-use-080_english.pdf

accompanying product sheet). In addition, a unique threshold has been set for *IILD* and *MCS* as a way to simplify criteria structure on the basis that, numerically, threshold are the same (1000/1250/1500 l/l) and that no differentiation is made in NS related criteria between these two product types. Furthermore, this would also be aligned with existing EUEL criteria structure (i.e. *Biodegradability* criterion) where no differentiation is made.

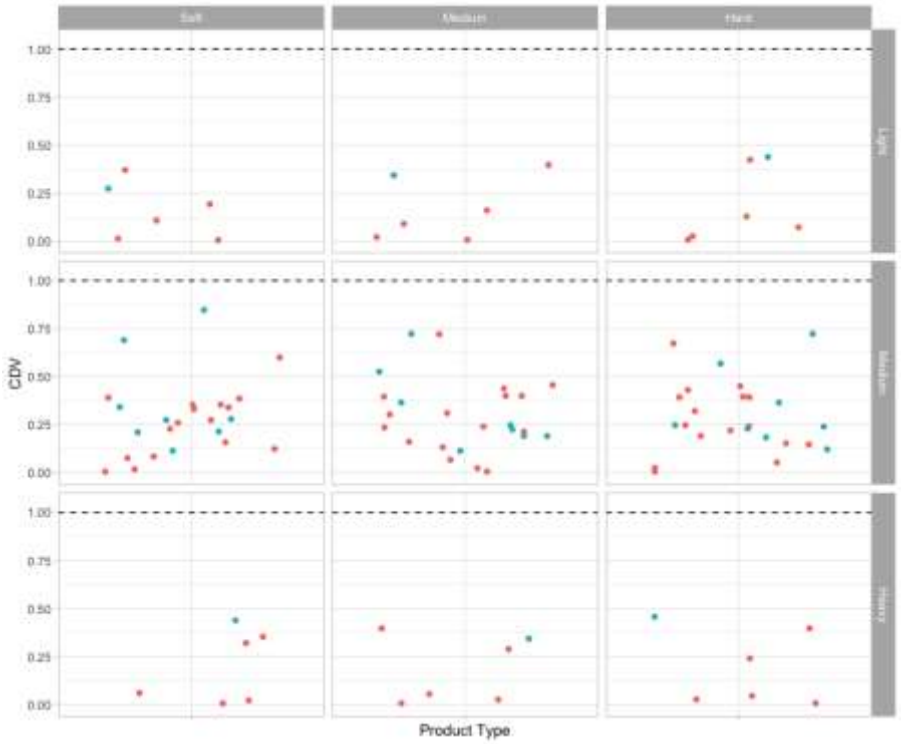
Industrial and Institutional dishwasher detergent (IILD) products

Table 25 – Industrial and institutional laundry detergents descriptive statistics on critical dilution volume (CDV) values [l/kg laundry]. Data did not allowed for discrimination between products in liquid or solid form. For the purposes of this data analysis, these data points were attributed to the type with most stringent limit, thus "solid", under the logic that data points passing this limit would also pass the less stringent associated with liquid products. IILD (solid) = laundry detergents in powder (solid) form; MCS = multi-component systems.

Product type	*Water Hardness*	*Degree of soiling*	*Data points (n)*	*Minimum (g/kg)*	*1st quartile (g/kg)*	*Median (g/kg)*	*Mean (g/kg)*	*3rd quartile (g/kg)*	*Maximum (g/kg)*	*Existing Threshold (g/kg)*
IILD (solid)	Soft	Light	1	8214	8214	8214	8214	8214	8214	30000
IILD (solid)	Soft	Medium	8	4572	8548	11080	14868	17172	33876	40000
IILD (solid)	Soft	Heavy	1	21905	21905	21905	21905	21905	21905	50000
MCS	Soft	Light	5	255	635	5375	6870	9595	18490	50000
MCS	Soft	Medium	16	385	8022	18704	17451	24780	42049	70000
MCS	Soft	Heavy	5	513	1908	5373	13653	28782	31698	90000
IILD (solid)	Medium	Light	1	13688	13688	13688	13688	13688	13688	40000
IILD (solid)	Medium	Medium	8	6858	11490	14214	19380	24312	43362	60000
IILD (solid)	Medium	Heavy	1	27376	27376	27376	27376	27376	27376	80000
MCS	Medium	Light	5	384	1272	5376	8082	9594	23778	60000
MCS	Medium	Medium	16	512	12360	21720	22544	32056	57704	80000
MCS	Medium	Heavy	5	640	2540	5380	15390	28780	39630	100000
IILD (solid)	Hard	Light	1	21905	21905	21905	21905	21905	21905	50000
IILD (solid)	Hard	Medium	8	9143	16335	18323	25118	31185	54203	75000
IILD (solid)	Hard	Heavy	1	41067	41067	41067	41067	41067	41067	90000
MCS	Hard	Light	5	510	1905	5378	9818	9593	31703	75000
MCS	Hard	Medium	16	640	15180	24490	27170	39410	67310	100000
MCS	Hard	Heavy	5	828	3180	5376	17148	28776	47556	120000

Source: JRC's elaboration with data provided by stakeholders.

Figure 10 – Industrial and Institutional laundry detergent critical dilution volume (CDV) by water hardness level (*Soft*, *Medium*, *Hard*) and degree of soiling (*Light*, *Medium*, *Heavy*). Data did not allowed for discrimination between products in liquid or solid form. For the purposes of this data analysis, these data points were attributed to the type with most stringent limit, thus "solid", under the logic that data points passing this limit would also pass the less stringent associated with liquid products. Each data point has been factored by its corresponding EUEL threshold, thus being unit less and ranging from "0" to "1", which corresponds to the existing EUEL threshold (depicted by the dashed line). Blue dots represent multicomponent systems while red dots represent IILD attributed to solid form.



Source: JRC's elaboration with data provided by stakeholders.

About other ecolabels:

— *Blue Angel (BA)* –does not have criteria for professional products.

— *Nordic Swan (NS)* – set limits to IILD based on the degree of soiling (See Table 26). The EU Ecolabel considers degree of soiling too but also others as product type/form (powder, liquid and multi-component system), as well as water hardness. This difficult making a direct comparison between EU Ecolabel and Nordic Swan threshold and advices focusing only on the degree of soiling. Unlike EU Ecolabel, it sets the threshold values regardless of water hardness.

Table 26 - Limits for critical dilution volume (CDV) in Nordic Ecolabelling (NS) laundry detergent for professional use.

Degree of soiling	*CVD (l/kg laundry)*
Light	10000

Medium	18000
Hard	28000

Source: Criterion O9; 0.93, v4.1[99]

The discussions and conclusions about CDV threshold proposals, structured by product type and derived from the former evidences, are:

— *Industrial and institutional laundry detergent (liquid + solid;)*

Due to limitations of this analysis, it was not possible to allocate data available to one product form (liquid) or another (solid), thus all data points with no clear form attribution were labelled as "solid" since it had the most stringent limits. Consequently, any conclusion drawn on these data should be understood to be both applicable to solid and liquid formats, yet threshold mentions focused on solid as are the most stringent limit. The number of data points available mostly related to medium degree of soiling (n=8) with very few data points for other degree of soiling. This implied a certain degree of certainty available only for medium degree of soiling. Focusing at this level and for soft water, all the data points fell below 33876 l/kg laundry (thereafter quoted as l/kg), below the existing EUEL threshold (40000 l/kg). Whilst not directly comparable, the limit set by NS at this degree of soiling (medium; 18000 l/kg) is more stringent that any existing EUEL limit set for soft/medium/hard water hardness (40000/60000/75000 l/kg, respectively) at the same degree of soiling. Stakeholders' comments suggested feasibility for compliance with limits set at 30000/50000/60000 l/kg for soft/medium/hard water at medium degree of soiling. These thresholds were similar to those proposed in TR1 at each of these water hardness level for medium degree of soiling, namely 30000/45000/56250 l/kg, respectively.

In addition, stakeholders' feedback suggested to consider a simplification of this sub-criterion, by considering whether limits could be set irrespective of water hardness. While checking data available and existing EUEL limits, it was observed that taking as reference the value for medium water hardness, the corresponding value for the other water hardness levels (soft, hard) within the same degree of soiling ranged from 0.7 to 1.2. In other words and expressed as a percentage, the values for soft water were approximately 70% and the values for hard water were 120% of the values for medium water. In all cases, the data that JRC had access for soft and hard water hardness within the same degree of soiling were far below this range (70% - 120%) suggesting feasibility for compliance with a unique value set using the conclusions drawn for medium water hardness. In principle, the proposal made in TR1 for *medium* water hardness and degree of soiling (45000 l/kg) would be pretty much aligned with what the results of the data analysis and stakeholder's comment indicated as feasible, thus this values could be used as reference. Since the number of data entries available is low but it appears as feasible to adopt a simplification via disregarding water hardness level former, the JRC has included a specific question to gather feedback on this matter (See Q24) and it proposes to keep existing limits as per TR1 proposal until further evidences are gathered.

— *Industrial and institutional laundry detergent (Multi-component systems - MCS)*

The number of data points available mostly related to medium degree of soiling (n=16) with few data points for other degree of soiling. This implied a certain degree of certainty available only for medium degree of soiling. Focusing at this level and for soft water, all the data points fell below 42049 l/kg, below the existing EUEL threshold (70000 l/kg). Whilst not directly comparable, the limit set by NS at this degree of soiling (medium; 18000 l/kg) is more stringent that any existing EUEL limit set for soft/medium/hard water hardness (70000/80000/100000 l/kg, respectively) at the same degree of soiling. Stakeholders' comments suggested feasibility for 70000 l/kg for medium degree of soiling at hard water hardness. The thresholds proposed in TR1 at each of these water hardness level for medium degree of soiling were 52500/60000/75000 l/kg, respectively.

[99] 093 Laundry detergents for professional use. V4.1, Nordic Ecolabelling. April 2024. Available at: https://www.nordic-swan-ecolabel.org/498c09/contentassets/090178265c62418dbb02c80d0c72d351/criteria-document-for-product-group-093_093_laundry-detergents-for-professional-use-093_english2.pdf

In addition, stakeholders' feedback suggested to consider a simplification of this sub-criterion, by considering whether limits could be set irrespective of water hardness. While checking data available and existing EUEL limits, it was observed that taking as reference the value for medium water hardness, the corresponding value for the other water hardness levels (soft, hard) within the same degree of soiling ranged from 0.7 to 1.2. In other words and expressed as a percentage, the values for soft water were approximately 70% and the values for hard water were 120% of the values for medium water. In all cases, the data that JRC had access for soft and hard water hardness within the same degree of soiling were far below this range (70% - 120%) suggesting feasibility for compliance with a unique value set using the conclusions drawn for medium water hardness. In principle, the proposal made in TR1 for *medium* water hardness and degree of soiling (60000 l/kg) would be pretty much aligned with what the results of the data analysis and stakeholder's comment indicated as feasible, thus this values could be used as reference. Since the number of data entries available is low but it appears as feasible to adopt a simplification via disregarding water hardness level former, the JRC has included a specific question to gather feedback on this matter (See Q24). Finally, the JRC proposes to keep existing limits as per TR1 proposal until further evidences are gathered, with the exception of *MCS (soft water; heavy degree of soiling)* where a new threshold of 68250 l/kg has been proposed.

Considering the former statements, the JRC has proposed to keep the criterion *Toxicity to aquatic organisms* thresholds structure as in TR1. However, the JRC still intends to simplify it and has formulated proposals in this sense: set only limit for IILD irrespective of product form (if *powder/liquid*; as shown and discussed in Q23); and/or setting limits regardless of water hardness (as shown and discussed in Q24). Note the former is also related to the lack of ability to discriminate between *powder/liquid* forms and considering alignment with Nordic ecolabelling.

About other comments received

There were other 14 comments received not strictly related to T1 Q13 to Q19 that are comprised within the following topics:

— *Inconsistencies between RTU & Undiluted products* – by which RTU calculation for CDV considers the "in-use solution" as is but the undiluted (concentrated) counterpart is assessed in its concentrated form rather in its "in-use solution" (after dilution as recommended). This is considered to impair the development of concentrated and "ultra-concentrated" products which could play an important role in refills.

— *Issues associated with harmonization at CB level* – some stakeholders reported that there is lack of harmonization at CB level at the time of determining relevant Toxicity Factors (TF) that are required for CDV calculation, ultimately resulting in accepting some applications in certain EU member states but not in others. Also, that the use of different instrument/tools at verification stage could result in lack of harmonisation leading to distortions of competitions.

— *Issues associated with DID list* – some stakeholders highlighted the need to:

- increase the inventory of substances in the DID list;
- clearly identify them via INCI/CAS/EC numbers (ideally according ECHA's guidance[100]) compulsory for industry) and;
- harmonise toxicity, biodegradability and classification values with those published on the ECHA website and those used in the EU Product Environmental Footprint (PEF)).

— *Call for "holistic assessment" while setting of CDV thresholds* – meaning that such limits should not be set in isolation to other criteria and other factors conditioning products use by end users. In particular, reducing further CDV values could result in lower product performance, implying trade-offs to obtain

[100] European Chemicals Agency., Guidance for Identification and Naming of Substances under REACH and CLP: Version 3.0, December 2023., Publications Office, LU, 2023. https://data.europa.eu/doi/10.2823/87416

similar performances (e.g. higher wash temperature with enhance CO2 / electricity consumption), and/or in re-washes

Summary of changes

The main change made in this 2nd draft criteria, compared to the previous version is revising and updating most CDV thresholds in EUEL product groups, in the light of new evidences (mostly data) made available to the JRC after the 1st draft criteria proposal (TR1).

Points for discussion 5 – Criterion *Toxicity to aquatic organisms*.

Stakeholders are invited to reply the following consultation questions:

- Question 18 (Q18) –*Would you support excluding APC RTU from the scope of EUEL HSC? Please, provide a reasoned response.* There are environmental benefits associated with more concentrated products, as potentially lower environmental footprint (e.g. CO_2) or lower material consumption due to packaging reduction. In this sense, the JRC intends to approach options to achieve such environmental gains, being one of them restricting to the category "*undiluted*" within the EUEL detergents criteria. This was already discussed in the 1st draft version, concluding that RTU should still be eligible. However, it was mentioned that it could be possible to consider for APC, as is currently the case in Blue Angel[101]. The data analysis carried out by the JRC indicated that APC were reported to be predominantly in *undiluted* form (x3 higher than RTU). Given the former, the JRC would like to confirm/cross-check the feasibility of such change in the existing criteria.
- Question 19 (Q19) –*Would you support setting the same CDV thresholds for HSC undiluted and RTU, meaning newly proposed limits for RTU would be used as reference for both? Please, provide a reasoned response. If you support it, ideally indicating if any further change within the EUEL detergent criteria would be necessary to effect such change, inclusive of criteria text proposal. If you don't, then highlighting main reasons against.* Several stakeholder indicated a comparative disadvantage within HSC *undiluted* products versus their diluted counterparts (RTU), by which compliance was more stringent thus impairing wide uptake of recent market trends towards more concentrated products. As mentioned earlier, this has environmental advantages which JRC acknowledged and would like to enable. Also, other ecolabels, as Blue Angel[102], do not differentiate between *RTU & Undiluted* in terms of CDV thresholds compliance. In case of wide reasoned support to this change, the JRC understand the threshold to be set should the RTU one, thus having a single threshold for *RTU & Undiluted* set at the in this TR2 proposal for RTU products.
- Question 20 (Q20) –*Please, provide reasoned comments on the feasibility of the proposed CDV threshold for the different product groups. Due to comparatively low data entries and/or need for further evidences, the JRC especially welcomes comments on the following EUEL (sub-) groups:* HSC (KC – undiluted; WC – undiluted); LD (Stain remover); DD (Rinse aid); IIDD (Pre-soaks);
- Question 21 (Q21) –*Do you support the proposed simplification of the IIDD CDV thresholds (merging dishwasher detergent with multi-component systems? In addition, do you support a simplification by setting thresholds regardless of water hardness (See below)? Please, provide a reasoned response.* The feedback provided by stakeholders generally agreed on the convenience of simplifying the *Toxicity to aquatic organisms* criteria structure. However, it differed on how to do so, being a possibility not set threshold for all water hardness level or even to set a unique limit for all of them

[101] Criterion Toxicity to aquatic organisms; DE-UZ 194 Hand Dishwashing Detergents and Hard Surface Cleaners; version 3.1; January 2022 Blue Angel. Available at: https://produktinfo.blauer-engel.de/uploads/criteriafile/en/DE-UZ%20194-202201-en%20criteria-V1.2.pdf

[102] Criterion Toxicity to aquatic organisms; DE-UZ 194 Hand Dishwashing Detergents and Hard Surface Cleaners; version 3.1; January 2022 Blue Angel. Available at: https://produktinfo.blauer-engel.de/uploads/criteriafile/en/DE-UZ%20194-202201-en%20criteria-V1.2.pdf

(as is the case in NS[103]). The JRC already proposed revised limits under the existing criterion structure, inclusive of a simplification, but would like to consult stakeholders on their view about proposing threshold irrespective of water hardness, in particular as follows [units are "*l/l washing solution*"]: *Pre-soaks* = 1250; *Dishwasher detergents / Multi-component systems* = 1500; *Rinse aids* = 2750.

- Question 22 (Q22) –*Would you support a simplification of the IIDD CDV thresholds by having a unique threshold for dishwasher detergents (DD) and multi-component systems (MCS)? Please, provide a reasoned response.* The EUEL CDV thresholds for DD and MCS in existing criteria are the same and in the feedback received from stakeholders the proposals for DD and for MCS are alike concerning their quantitative range. In addition, Nordic Ecolabelling does not set differentiated limits for MCS (yet it does for other product categories for healthcare instrument and aluminium goods). Considering the former, the JRC would like to have stakeholders' views on the convenience of this proposal made in TR2.
- Question 23 (Q23) –*Would you support a simplification of the IILD CDV thresholds by setting threshold irrespective of product form (by merging "powder" and "liquid")? Please, provide a reasoned response.* The EUEL CDV thresholds for *powder* and *liquid* in existing criteria are very similar and Nordic Ecolabelling does not set different limits for products based on these forms (solid/liquid) but on the degree of soiling. Note that, conditioned to its feasibility, the threshold would be set based on the most stringent set of limits, thus in the IILD case, based on "*powder*" ones contained in this TR2 (which explains why threshold for *liquid* are marked as "*XXXX*") Considering the former, the JRC would like to have stakeholders' views on the convenience of this potential proposal.
- Question 24 (Q24) –*Further to Q23, would you support a simplification of the IILD CDV thresholds by setting them regardless of water hardness, thus solely based on degree of soiling?* Please, provide a reasoned response. As discussed, stakeholders agreed on the convenience of simplifying the criterion structure but differed in how to do so. In addition, the number of data entries only allowed to draw relatively robust conclusions for the category Medium within degree of soiling (as discussed in the rationale) with further data required, especially for IILD (solid and/or liquid). Given this, the JRC has kept TR1 threshold as proposal for TR2, which were 45000/56250/75000 l/kg for soft/medium/hard water respectively. Based on JRC data analysis, the average of the maximum values of IILD (solid) recorded for all water hardness (33876/43362/54203 l/kg) resulted in 43814 l/lg. Based on stakeholders feedback on the same product type and form, feasible limits are 3000/50000/60000 l/kg that results in an average of 46667 l/kg. These suggest 45000 l/kg as likely feasible option for medium degree of soiling. Then, for the other degrees of soiling, the low number of data points available did not allow for a robust/clear proposal but generally values for light and heavy degree of soiling accounted for 0.7 to 1.3 of the value for medium degree of soiling. Given this, the lower (that for *light* soiling) and upper (that for *heavy* soiling) would be 31500 l/kg and 58500 l/kg. For the sake of brevity, the same logic is applied to *MCS* products, with the results suggesting 52500 l/kg as feasible threshold for medium degree of soiling. Consequently, the proposal once simplified regardless water hardness, irrespective of IILD product form (*solid/liquid)* and presented by degree of soiling (in the order *light/medium/heavy)* would be [units are "*l/kg laundry*"]: *IILD* = 31500/45000/58500; *Multi-component systems* = 36750/52500/68250.
- Question 25 (Q25) –Please, share any other comments/suggestions you deem relevant about this criterion providing reasons supporting them.

[103] 080 Dishwasher detergents for professional use. V3.8. Nordic Ecolabelling. April 2024. Available at: https://www.nordic-swan-ecolabel.org/498b38/contentassets/4fbf7d89969d452097042cd798bfd3d7/background-document-for-product-group-080_080_dishwasher-detergents-for-professional-use-080_english.pdf

6.4. Biodegradability

<table>
<tr><th colspan="2">TR1 Proposed criterion (x) biodegradability</th></tr>
<tr><td>ALL</td><td>(a) Biodegradability of surfactants

All surfactants shall be readily degradable (aerobically).

All surfactants classified as hazardous to the aquatic environment: Acute Category 1 (H400) or Chronic Category 3 (H412), in accordance with Regulation (EC) No 1272/2008 of the European Parliament and of the Council([104]) shall be in addition anaerobically biodegradable.</td></tr>
<tr><td>DD, HDD, IIDD, IILD, LD</td><td>(b) Biodegradability of organic compounds

The content of organic substances in the product that are aerobically non-biodegradable (not readily biodegradable, aNBO) or anaerobically non-biodegradable (anNBO) shall not exceed the following limits for the reference dosage:</td></tr>
<tr><td>HSC</td><td>(b) Biodegradability of organic compounds

The content of organic substances in the product, except micro-organisms, that are aerobically non-biodegradable (not readily biodegradable, aNBO) or anaerobically non-biodegradable (anNBO) shall not exceed the following limits for the reference dosage.</td></tr>
<tr><td>DD</td><td>
<table>
<tr><td>Product type</td><td>aNBO (g/wash)</td><td>anNBO (g/wash)</td></tr>
<tr><td>Dishwasher detergents</td><td>1,00</td><td>3,00</td></tr>
<tr><td>Rinse aids</td><td>0,15</td><td>0,50</td></tr>
</table>
</td></tr>
<tr><td>HDD</td><td>
<table>
<tr><td>Product type</td><td>aNBO (g/l of washing water)</td><td>anNBO (g/l of washing water)</td></tr>
<tr><td>Hand dishwashing detergents</td><td>0,03</td><td>0,08</td></tr>
</table>
</td></tr>
<tr><td>HSC</td><td>
<table>
<tr><td>Product type</td><td>aNBO (g/l of cleaning solution)</td><td>anNBO (g/l of cleaning solution)</td></tr>
<tr><td>All-purpose cleaners, RTU</td><td>3,00</td><td>55,00</td></tr>
<tr><td>All-purpose cleaners, undiluted</td><td>0,20</td><td>0,50</td></tr>
<tr><td>Kitchen cleaners, RTU</td><td>5,00</td><td>35,00</td></tr>
<tr><td>Kitchen cleaners, undiluted</td><td>0,20</td><td>0,50</td></tr>
<tr><td>Window cleaners, RTU</td><td>2,00</td><td>20,00</td></tr>
<tr><td>Window cleaners, undiluted</td><td>0,20</td><td>0,50</td></tr>
<tr><td>Sanitary cleaners, RTU</td><td>5,00</td><td>35,00</td></tr>
<tr><td>Sanitary cleaners, undiluted</td><td>0,20</td><td>0,50</td></tr>
</table>
</td></tr>
<tr><td>IIDD</td><td>aNBO (g/l of washing solution)
<table>
<tr><td>Water hardness
Product type</td><td>Soft
< 1,5 mmol $CaCO_3$/l</td><td>Medium
1,5-2,5 mmol $CaCO_3$/l</td><td>Hard
> 2,5 mmol $CaCO_3$/l</td></tr>
<tr><td>Pre-soaks</td><td>0,40</td><td>0,40</td><td>0,40</td></tr>
<tr><td>Dishwasher detergents/ Multi-component</td><td>0,40</td><td>0,40</td><td>0,40</td></tr>
</table>
</td></tr>
</table>

[104] Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (OJ L 353, 31.12.2008, p. 1). https://eur-lex.europa.eu/eli/reg/2008/1272/oj

systems			
Rinse aids	0,04	0,04	0,04

anNBO (g/l of washing solution)

Water hardness Product type	Soft < 1,5 mmol $CaCO_3$/l	Medium 1,5-2,5 mmol $CaCO_3$/l	Hard > 2,5 mmol $CaCO_3$/l
Pre-soaks	0,40	0,40	0,40
Dishwasher detergents/ Multi-component systems	0,60	1,00	1,00
Rinse aids	0,04	0,04	0,04

IILD

aNBO (g/kg of laundry)

Soft water (< 1,5 mmol $CaCO_3$/l)			
Degree of soiling Product type	Light	Medium	Heavy
Powder	0,70	1,10	1,40
Liquid	0,50	0,60	0,70
Multi-component system	1,25	1,75	2,50

Medium water (< 1,5-2,5 mmol $CaCO_3$/l)			
Degree of soiling Product type	Light	Medium	Heavy
Powder	1,10	1,40	1,75
Liquid	0,60	0,70	0,90
Multi-component system	1,75	2,50	3,75

Soft water (> 2,5 mmol $CaCO_3$/l)			
Degree of soiling Product type	Light	Medium	Heavy
Powder	1,40	1,75	2,20
Liquid	0,70	0,90	1,20
Multi-component system	2,50	3,75	4,80

anNBO (g/kg of laundry)

Soft water (< 1,5 mmol $CaCO_3$/l)			
Degree of soiling Product type	Light	Medium	Heavy
Powder	0,70	1,10	1,40
Liquid	0,50	0,60	0,70
Multi-component system	1,25	1,75	2,50

Medium water (< 1,5-2,5 mmol $CaCO_3$/l)

Degree of soiling Product type	Light	Medium	Heavy
Powder	1,10	1,40	1,75
Liquid	0,60	0,70	0,90
Multi-component system	1,75	2,50	3,75

Soft water (> 2,5 mmol $CaCO_3$/l)			
Degree of soiling Product type	Light	Medium	Heavy
Powder	1,40	1,75	2,20
Liquid	0,70	0,90	1,20
Multi-component system	2,50	3,75	4,80

LD

aNBO

Product type	aNBO (g/kg of laundry) powder/tablets	aNBO (g/kg of laundry) liquid, capsules, gel
Heavy-duty detergent, colour-safe detergent	1,00	0,45
Light-duty detergent	0,55	0,30
Stain remover (pre-treatment only)	0,10	0,10

anNBO

Product type	aNBO (g/kg of laundry) powder/tablets	aNBO (g/kg of laundry) liquid, capsules, gel
Heavy-duty detergent, colour-safe detergent	1,00	0,45
Light-duty detergent	0,55	0,30
Stain remover (pre-treatment only)	0,10	0,10

ALL

Assessment and verification: the applicant shall provide documentation for the degradability of surfactants, as well as the calculation of aNBO and anNBO for the product. A spreadsheet for calculating aNBO and anNBO values is available on the EU Ecolabel website.

For both the degradability of surfactants and the aNBO and anNBO values for organic compounds, reference shall be made to the most updated DID list.

For ingoing substances that are not included in Part A of the DID list, the relevant information from literature or other sources, or appropriate test results, showing that they are aerobically and anaerobically biodegradable shall be provided, as described in Part B of that list.

Water-soluble foil/films (e.g., Polyvinyl Alcohol (PVA) films) shall be readily biodegradable according to test method OECD 301 A-F or 310, as reported in Part B of the DID list.

In the absence of documentation for degradability described above, an ingoing substance other than a surfactant may be exempted from the requirement for anaerobic degradability if one of the following three alternatives is fulfilled:

(1) it is readily degradable and has low adsorption (A<25%);

	(2) it is readily degradable and has high adsorption (D>75%); (3) it is readily degradable and non-bio-accumulating ([105]) Testing for adsorption/desorption shall be conducted in accordance with OECD Guideline 106.
TR2 - Proposed criterion (x) biodegradability	
ALL	(a) *Biodegradability of surfactants* All surfactants shall be *biodegradable under aerobic conditions (*readily biodegradable*) and biodegradable under anaerobic conditions*. ~~All surfactants classified as hazardous to the aquatic environment: Acute Category 1 (H400) or Chronic Category 3 (H412), in accordance with Regulation (EC) No 1272/2008 of the European Parliament and of the Council([106]) shall be in addition anaerobically biodegradable.~~
~~DD, HDD, IIDD, IILD, LD~~	~~(b) *Biodegradability of organic compounds*~~ ~~The content of organic substances in the product that are aerobically non-biodegradable (not readily biodegradable, aNBO) or anaerobically non-biodegradable (anNBO) shall not exceed the following limits for the reference dosage:~~
ALL	(b) *Biodegradability of water-soluble film/foil* Every water-soluble films/foil (e.g. Polyvinyl Alcohol (PVA) films) and/or each synthetic polymer within each water-soluble film/foil, must be biodegradable under aerobic conditions according to: — test methods OECD 301 A-F or 310, inclusive of enhanced biodegradation screening test performed as a modification of OECD 301B or OECD 301F with longer incubation and continued biodegradation measurements up to 60 days, with pass target ≥60% biodegradation; — or test methods ISO 14851:2019[107] or ISO 14852:2021[108], inclusive of a carbon balance and reporting the total degree of biodegradation, with pass target ≥60% biodegradation; — equivalent methods to any of the previous and/or equivalent wealth of evidence, as indicated in the latest DID list Part B and if approved by the relevant Competent Body.
ALL	(~~c~~b) *Biodegradability of organic compounds* The content of organic substances in the product, except micro-organisms, that are aerobically non-biodegradable (not readily biodegradable, aNBO) or anaerobically non-biodegradable (anNBO) shall not exceed the following limits for the reference dosage.
LD, DD, HDD, HSC, IIDD	The calculation must be based on the highest recommended dose by the manufacturer as claimed in the product (i.e. label; accompanying product sheet), irrespective of water hardness and degree of soiling.
IILD	The calculation must be based on the highest recommended dose by the manufacturer as

[105] A substance is considered to be not bio-accumulating if the BCF is < 100 or log K_{ow} is < 3,0. If both the BCF and log K_{ow} values are available, the highest measured BCF value shall be used.

[106] Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (OJ L 353, 31.12.2008, p. 1). https://eur-lex.europa.eu/eli/reg/2008/1272/oj

[107] International Standard ISO 14851:2019 Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium — Method by measuring the oxygen demand in a closed respirometer Edition 2 2019-03. https://www.iso.org/standard/70026.html.

[108] International Standard ISO 14852:2021 Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium — Method by analysis of evolved carbon dioxide Edition 3 2021-06 https://www.iso.org/standard/80303.html.

claimed in the product (i.e. label; accompanying product sheet), irrespective of water hardness.

DD

Product type	aNBO (g/wash)	anNBO (g/wash)
Dishwasher detergents	0.90 ~~1,00~~	1.20 ~~3,00~~
Rinse aids	0,15	0.30 ~~0,50~~

HDD

Product type	aNBO (g/l of washing water)	anNBO (g/l of washing water)
Hand dishwashing detergents	0.01 ~~0,03~~	0.02 ~~0,08~~

HSC

Product type	aNBO (g/l of cleaning solution)	anNBO (g/l of cleaning solution)
All-purpose cleaners, RTU	1.00 ~~3,00~~	5.00 ~~55,00~~
All-purpose cleaners, undiluted	0.05 ~~0,20~~	0.25 ~~0,50~~
Kitchen cleaners, RTU	1.00 ~~5,00~~	5.00 ~~35,00~~
Kitchen cleaners, undiluted	0.10 ~~0,20~~	0,50
Window cleaners, RTU	0.70 ~~2,00~~	2.00 ~~20,00~~
Window cleaners, undiluted	0.10 ~~0,20~~	0,50
Sanitary cleaners, RTU	1.50 ~~5,00~~	5.00 ~~35,00~~
Sanitary cleaners, undiluted	0.10 ~~0,20~~	0,50

~~IIDD~~

~~aNBO (g/l of washing solution)~~

~~Water hardness Product type~~	~~Soft < 1,5 mmol $CaCO_3$/l~~	~~Medium 1,5–2,5 mmol $CaCO_3$/l~~	~~Hard > 2,5 mmol $CaCO_3$/l~~
~~Pre-soaks~~	~~0,40~~	~~0,40~~	~~0,40~~
~~Dishwasher detergents/ Multi-component systems~~	~~0,40~~	~~0,40~~	~~0,40~~
~~Rinse aids~~	~~0,04~~	~~0,04~~	~~0,04~~

~~anNBO (g/l of washing solution)~~

~~Water hardness Product type~~	~~Soft < 1,5 mmol $CaCO_3$/l~~	~~Medium 1,5–2,5 mmol $CaCO_3$/l~~	~~Hard > 2,5 mmol $CaCO_3$/l~~
~~Pre-soaks~~	~~0,40~~	~~0,40~~	~~0,40~~
~~Dishwasher detergents/ Multi-component systems~~	~~0,60~~	~~1,00~~	~~1,00~~
~~Rinse aids~~	~~0,04~~	~~0,04~~	~~0,04~~

IIDD

Product type	aNBO (g/l of washing solution)	anNBO (g/l of washing solution)
Pre-soaks	0.20	0.25
Dishwasher detergents/ Multi-component systems	0.20	0.25
Rinse aids	0,04	0,04

~~IILD~~

~~aNBO (g/kg of laundry)~~

~~Soft water (< 1,5 mmol $CaCO_3$/l)~~			
~~Degree of soiling~~	~~Light~~	~~Medium~~	~~Heavy~~

	~~Product type~~			
	~~Powder~~	~~0,70~~	~~1,10~~	~~1,40~~
	~~Liquid~~	~~0,50~~	~~0,60~~	~~0,70~~
	~~Multi-component system~~	~~1,25~~	~~1,75~~	~~2,50~~

~~Medium water (< 1,5-2,5 mmol $CaCO_3$/l)~~			
~~Degree of soiling Product type~~	~~Light~~	~~Medium~~	~~Heavy~~
~~Powder~~	~~1,10~~	~~1,40~~	~~1,75~~
~~Liquid~~	~~0,60~~	~~0,70~~	~~0,90~~
~~Multi-component system~~	~~1,75~~	~~2,50~~	~~3,75~~

~~Hard Soft water (> 2,5 mmol $CaCO_3$/l)~~			
~~Degree of soiling Product type~~	~~Light~~	~~Medium~~	~~Heavy~~
~~Powder~~	~~1,40~~	~~1,75~~	~~2,20~~
~~Liquid~~	~~0,70~~	~~0,90~~	~~1,20~~
~~Multi-component system~~	~~2,50~~	~~3,75~~	~~4,80~~

~~anNBO (g/kg of laundry)~~

~~Soft water (< 1,5 mmol $CaCO_3$/l)~~			
~~Degree of soiling Product type~~	~~Light~~	~~Medium~~	~~Heavy~~
~~Powder~~	~~0,70~~	~~1,10~~	~~1,40~~
~~Liquid~~	~~0,50~~	~~0,60~~	~~0,70~~
~~Multi-component system~~	~~1,25~~	~~1,75~~	~~2,50~~

~~Medium water (< 1,5-2,5 mmol $CaCO_3$/l)~~			
~~Degree of soiling Product type~~	~~Light~~	~~Medium~~	~~Heavy~~
~~Powder~~	~~1,10~~	~~1,40~~	~~1,75~~
~~Liquid~~	~~0,60~~	~~0,70~~	~~0,90~~
~~Multi-component system~~	~~1,75~~	~~2,50~~	~~3,75~~

~~Hard Soft water (> 2,5 mmol $CaCO_3$/l)~~			
~~Degree of soiling Product type~~	~~Light~~	~~Medium~~	~~Heavy~~
~~Powder~~	~~1,40~~	~~1,75~~	~~2,20~~
~~Liquid~~	~~0,70~~	~~0,90~~	~~1,20~~
~~Multi-component system~~	~~2,50~~	~~3,75~~	~~4,80~~

IILD

aNBO (g/kg of laundry)

Degree of soiling Product type	Light	Medium	Heavy
Powder	X.XX	X.XX	X.XX
Liquid	0,50	0,70	0.85
Multi-component system	0.60	1.00	1.40

<table>
<tr><td></td><td>
anNBO (g/kg of laundry)
<table>
<tr><th>Degree of soiling
Product type</th><th>Light</th><th>Medium</th><th>Heavy</th></tr>
<tr><td>Powder</td><td>X.XX</td><td>X.XX</td><td>X.XX</td></tr>
<tr><td>Liquid</td><td>0,50</td><td>0,70</td><td>0.85</td></tr>
<tr><td>Multi-component system</td><td>0.60</td><td>1.00</td><td>1.40</td></tr>
</table>
</td></tr>
<tr><td>LD</td><td>
aNBO
<table>
<tr><th>Product type</th><th>aNBO
(g/kg of laundry)
powder/tablets</th><th>aNBO
(g/kg of laundry)
liquid, capsules, gel</th></tr>
<tr><td>Heavy-duty detergent, colour-safe detergent</td><td>0,50 ~~1.00~~</td><td>0,35 ~~0.45~~</td></tr>
<tr><td>Light-duty detergent</td><td>0.40 ~~0,55~~</td><td>0.20~~0,30~~</td></tr>
<tr><td>Stain remover (pre-treatment only)</td><td>0,10</td><td>0,10</td></tr>
</table>
anNBO
<table>
<tr><th>Product type</th><th>anNBO
(g/kg of laundry)
powder/tablets</th><th>anNBO
(g/kg of laundry)
liquid, capsules, gel</th></tr>
<tr><td>Heavy-duty detergent, colour-safe detergent</td><td>1.00 ~~1,10~~</td><td>0,55</td></tr>
<tr><td>Light-duty detergent</td><td>0.40 ~~0,55~~</td><td>0.20 ~~0,30~~</td></tr>
<tr><td>Stain remover (pre-treatment only)</td><td>0,10</td><td>0,10</td></tr>
</table>
</td></tr>
<tr><td>ALL</td><td>
Assessment and verification: the applicant shall provide documentation for the biodegradability of surfactants and the water soluble films/foils or each synthetic polymer contained within, as well as the calculation of aNBO and anNBO for the product. A spreadsheet for calculating aNBO and anNBO values is available on the EU Ecolabel website.

For ~~both~~ the biodegradability of surfactants, the water soluble films/foils or each synthetic polymer contained within and the aNBO and anNBO values for organic compounds, reference shall be made to the most updated DID list.

For ingoing substances that are not included in Part A of the DID list, the relevant information from literature or other sources, or appropriate test results, showing that they are aerobically and anaerobically biodegradable shall be provided, as described in Part B of that list. For the case of ingoing substances tested following ISO 14851:2019[109] or ISO 14852:2021[110] methods, the testing documentation must also include the carbon balance calculations and the total degree of biodegradation results.

~~Water soluble foil/films (e.g., Polyvinyl Alcohol (PVA) films) shall be readily biodegradable according to test method OECD 301 A-F or 310, as reported in Part B of the DID list~~.

In the absence of documentation for biodegradability described above, an ingoing substance other than a surfactant may be exempted from the requirement for anaerobic biodegradability if not toxic to aquatic organisms (NOEC/ECx > 0.1 mg/l or LC50/EC50/IC50>10 mg/l) and if one of the following three alternatives is fulfilled:
</td></tr>
</table>

[109] International Standard ISO 14851:2019 Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium — Method by measuring the oxygen demand in a closed respirometer Edition 2 2019-03. https://www.iso.org/standard/70026.html.

[110] International Standard ISO 14852:2021 Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium — Method by analysis of evolved carbon dioxide Edition 3 2021-06 https://www.iso.org/standard/80303.html.

	(1) it is readily degradable and has low adsorption (A<25%); (2) it is readily degradable and has high ~~ad~~desorption (D>75%); (3) it is readily degradable and non-bio-accumulating ~~(~~[111]~~)~~ Testing for adsorption/desorption shall be conducted in accordance with of the Organisation for Economic Co-operation and Development (OECD) Guideline 106. A substance is considered to be not bio-accumulating if the BCF is < 100 (according to OECD 305) or log K_{ow} is < 3,0.(according to OECD 107 or 117) If both the BCF and log $_{Kow}$ values are available, the highest measured BCF value shall be used.

Rationale for the proposed biodegradability

The nature of the ingredients use in detergent products not only conditions its performance but also the environmental impacts attributed to these products. As mentioned in rationale of the criterion *Toxicity to aquatic organisms,* detergent and cleaning products are discharged to the aquatic ecosystems, normally after undergoing treatment to decrease pollutant load at a wastewater treatment plant, and have an inherent load that can potentially contribute to the pollution of these ecosystems. The other aspects of importance with regards to environmental detrimental impacts is how long these potential pollution load would remain – the sooner is degraded, the less likely that negative impact will be amplified. Consequently, this criterion aims to ensure that main ingredients (surfactants) are biodegradable under aerobic conditions and also under anaerobic. In addition, all the other potentially polluting load is considered via requesting aerobic biodegradability of especially impacting substances (i.e. water-soluble films/ synthetic polymers) and via restricting the amount of organic substances that are non-biodegradable (NBO) under aerobic (aNOB) or anaerobic (anNBO) conditions.

Prior to the 1st technical (AHWG) meeting, stakeholder called for the consideration of the following aspects:

— Full ban to surfactants that are anaerobically non-biodegradable - aiming at decreasing the likelihood of recalcitrant substances by-passing wastewater treatment plants and reaching the (aquatic) environment.

— (linked with previous) The necessity to maintain a derogation for hazard codes H400 and H412.

— Assess and, if applicable, propose for inclusion, alternative biodegradability testing methods for particular substances (e.g. water-soluble films/foil; QSAR).

— Consider stricter limits for aNBO and anNBO.

In the first technical report (TR1), the main change within the *Biodegradability* criterion was requesting water-soluble foil/films (e.g. Polyvinyl Alcohol (PVA) films) to be readily biodegradable according to test method Organisation for Economic Co-operation and Development (OECD) 301 A-F or 310 (as in DID list, Part B). In addition, a clarification was made in the *Definitions* criterion by which water soluble "foil/films" are explicitly considered ingoing substances. In addition, the JRC primed the discussion about requiring all surfactants to be biodegradable under aerobic and anaerobic conditions by presenting the following findings derived from a preliminary analysis:

— The main advantage of surfactants being biodegradable under anaerobic conditions is that they would be broken down in anaerobic sewage sludge digesters, anaerobic zones of advanced activated sludge processes and, in the wider environment, in sediments or landfill if ending up there via wastewater effluents or improper disposal of packaging.

— No significant change from previous version of the relevant OECD methods to test biodegradability.

— The comparison with other Ecolabel schemes (i.e. Nordic Swan and Blue Angel) and/or other EUEL criteria (i.e. Cosmetics) shown that:

- both ecolabels require all surfactants, regardless of hazard classification, to be both aerobically and anaerobically biodegradable.

[111] ~~A substance is considered to be not bio-accumulating if the BCF is < 100 or log K_{ow} is < 3,0. If both the BCF and log K_{ow} values are available, the highest measured BCF value shall be used.~~

- differences arise on which exceptions are allowed under each label, whether by hazard classification (e.g. Nordic Swan; H410/ H411/ H412 and H410) or by exempted substance (e.g. Blue Angel; carboxymethylcellulose).
- the requirement is already in place for the EUEL criteria for Cosmetics and Animal Products[112].

— From an LCA perspective, impacts that are directly related to biodegradability are not well captured. Poor biodegradability has to be linked to some sort of toxic effect in order to be reflected in the ecotoxicity impacts (as is the case with the CDV criteria).

— In the DID List (Part A) the number of surfactants meeting ready aerobic AND anaerobic degradation criteria was 50%< (as follows):

Table 27 – Comparison of the total number of surfactants vs the number of surfactants that are both aerobically and anaerobically biodegradable

Type of surfactant	Total number (n)	Total number both aerobically and anaerobically biodegradable (n)	Potentially compliant with proposal versus total (n/n)
Anionic	32	10	0.31
Non-ionic	54	26	0.48
Amphoteric	7	4	0.57
Cationic	4	1	0.25
GRAND TOTAL	97	41	0.42

Outcomes from and after the 1st AHWG meeting

In total 42 comments were received on this sub-criterion, which are found in full in the Table of Comments (ToC1). The following sections convey summarily the most relevant comments, arranged by aspect to which they are related to. The majority of comments clustered around requiring surfactants to be aerobically and anaerobically biodegradable (currently, only H400 & H412 classified surfactants have to be anaerobically biodegradable). The second topic with highest number of comments was about analytical methods, with special focus on how "water soluble foil/films" (namely, polymeric compounds) biodegradability could/should be assessed. The rest of comments touch upon the following topics: derogations/exemptions; organic substances non-biodegradable thresholds (aerobic – aNBO; anaerobic – anNBO).

Further research and main changes in the proposal for the 2nd AHWG meeting

About requiring all surfactants to be biodegradable under aerobic and anaerobic conditions.

What was the feedback received from stakeholders on this topic?

Most of the feedback received on this topic directly address the question included in TR1 on this topic:

Question 20 (Q20) – Would you support aligning existing EUEL criteria with EUEL Cosmetics? It would imply the following addition to the text in existing criterion Biodegradability (changes marked in blue font): "*All*

[112] Commission Decision (EU) 2021/1870 of 22 October 2021 establishing the EU Ecolabel criteria for cosmetic products and animal care products (notified under document C(2021) 7500) (Text with EEA relevance). OJ L 379, 26.10.2021, p. 8–48; Accessible at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32021D1870

surfactants shall be readily ~~degradable (aerobically)~~ biodegradable under aerobic conditions and biodegradable under anaerobic conditions."

Several stakeholders opposed to the ban of anaerobically non-biodegradable surfactants because:

1. Aerobic biodegradation is the dominant process of interest for surfactants
2. Chemical regulatory framework (REACH) does not require data on anaerobic biodegradability, thus such data is not readily available and it will be difficult for industry to source it to confirm whether used surfactants fall under the scope of this proposed ban.
3. Degradation could occur with and without microorganisms (e.g. UV light), thus all mechanisms should be recognized in the EU Ecolabel text.
4. They help to reduce temperature in the washing process and the amount of detergent used.
5. The new DID-List (published in March 2024) does not provide much new data for surfactants biodegradability under anaerobic conditions (from 97 surfactants, 8 are identified as "N" [non-biodegradable] and more than 40 as "o" [not tested]) so it should be difficult to comply the proposed change.

Amongst the former, stakeholders disagreed with this proposal and indicated that stringent requirements regarding anaerobic biodegradability without proving accompanying environmental benefits could be challenging. They further suggested, based on SCHEER (2008)[113], that the risk to freshwater ecosystem is related to aerobic biodegradability rather than due to poor anaerobic biodegradation in wastewater treatment plants (WWTPs). They affirmed that surfactants in cosmetics and detergents can't be fully compared, as the latter need higher efficacy. However, one suggested that if such criteria must be considered, then other relevant testing methods must also be included in the DID list part B, as the AnBUSDIC test.

Contrastingly, several other stakeholders supported aligning with EUEL Cosmetics criteria in requiring all surfactants to be biodegradable under anaerobic conditions. Summarily, the rationale for supporting this change is that substances that are not anaerobically biodegradable may accumulate in environmental anoxic zones and cause toxic effects there, with these being not well characterized. In this regard, a relevant vector is sewage sludge, where surfactants with such potential may accumulate. Further comments related to this topic were:

- One stakeholder called for maintaining surfactants with low anaerobic biodegradability, given its relevance for the IILD sector, in particular for fat removal and foam attenuation.
- One stakeholder mentioned that for some product (sub-)groups might be easier to replace (e.g. HSC>windows cleaner) while for other it might be more complex due to the combination of several surfactants.
- One stakeholder called for aligning any forthcoming change with surfactants manufacturers to confirm feasibility and inquired about if the potential alignment with EUEL Cosmetic criteria could result in surfactants needing to be biodegradable under anaerobic conditions too, regardless of the assigned hazard classification.
- One stakeholder flagged that Ecolabel forms should mention that suppliers must provide the required data.

What does JRC's research say on this topic?

In terms of scientific literature, Khuntia et al. (2021)[114] acknowledged that the degradation assessment of surfactants and other xenobiotics is primarily done under aerobic conditions, being this the most commonly

[113] Scientific Committee on Health and Environmental Risks (SCHER), "Opinion on Anaerobic Degradation of Surfactants and Biodegradation of Non Surfactant Organic Ingredients", November 2008. Accessible at: https://ec.europa.eu/health/ph_risk/committees/04_scher/docs/scher_o_109.pdf

[114] Khuntia, H.K., N. Janardhana, and H.N. Chanakya, 'Household Discharge of Chemical Products and Its Classification Based on Anaerobic Biodegradability', Environmental Monitoring and Assessment, Vol. 193, No. 1, January 2021, p. 39. DOI 10.1007/s10661-020-08835-9

regulated and enforced case. Conversely, authors highlighted that it is uncommon or absent requiring mandatory degradation test to be performed under anaerobic conditions, despite such requirement could be deemed as reasonable regarding its human and environmental impacts[115]. They further stressed the importance of considering inhibitory effects in the biological methane potential (BMP) assays in its various modifications used to measure the anaerobic degradability of compounds (i.e. methods as DIN 38414-8: 1985, OECD 311 and the ECETOC TR-028), since they differently "shape" the initial lag period until when cumulative CH4 gas yield is appreciable.

As mentioned, surfactants discharged via wastewater would normally be treated in a wastewater treatment plant, being primarily degraded by heterotrophic catalysis under oxygen rich conditions. However, either due to their intrinsic properties and/or via by-passing this aerobic degradative step, surfactants and/or their by-products might ultimately reach and be dispersed in the environment via waste water effluents and/or sewage sludge application to land[116]. Furthermore, surfactants have relatively high sorption on sludge, sediment and soil (thus being key environmental compartments to assess their fate) and their sorption is in the order of: cationic > nonionic > anionic[117]. Waste water treatment plants generate significant quantities of biosolids (sewage sludge) and its disposal/utilisation (i.e. incineration, application to land, composting and landfill) depends upon nationally policy requirements which might differ from one country to another. Upon application to land and subsequent degradation, the sewage sludge can release poorly degradable substances, which are considered a significant exposure route for terrestrial to groundwater leaching potential[118]. In this sense, a screening risk assessment of organic pollutants (inclusive of surfactants) from sewage sludge management (e.g. application to land) the JRC found that a relatively small set may cause significant risks to both humans and soil organism when present in typical sewage sludge concentration[119]. Amongst these, the main organic pollutant group related to detergents and/or cleaners products life cycle are Alkylphenols (APs) and their ethoxylates (APEOs), particularly Nonylphenol (NP) and octylphenol (OP) and its derivatives[120]. However, these substances are not allowed in EU Ecolabel criteria for detergents (e.g. LD [121]), as indicated in the *Excluded and Restricted substances>Excluded substances* sub-criterion, being quoted as "*Alkyl phenol ethoxylates (APEOs) and other alkyl phenol derivatives*".

In terms of biodegradability requirements in EU legislation, the most direct reference is the Detergent Regulation, being the latest development the proposal for its revision. The EU Commission proposal, in its article 4 requires surfactants and surfactants in detergents to comply with biodegradability criteria set in Annex I, which refers to ultimate biodegradation, thus biodegradation under aerobic conditions. Other relevant legislation refer to those Commission decisions of relevant EU Ecolabel criteria. The EU Ecolabel criteria for Cosmetics[122] also has a *Biodegradability* criterion, largely mirroring that found in the EUEL detergents but that differs in requiring: "*All surfactants shall be readily biodegradable under aerobic conditions and biodegradable under anaerobic conditions…*". The scientific rationale for such requirements is based on the arguments presented during 2013 revision[123], which were similar to those presented in the last revision of the EU

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115 Khuntia, H.K., N. Janardhana, and H.N. Chanakya, 'Household Discharge of Chemical Products and Its Classification Based on Anaerobic Biodegradability', Environmental Monitoring and Assessment, Vol. 193, No. 1, January 2021, p. 39. DOI 10.1007/s10661-020-08835-9

116 Ying, G.-G., 'Fate, Behavior and Effects of Surfactants and Their Degradation Products in the Environment', Environment International, Vol. 32, No. 3, April 2006, pp. 417–431. DOI 10.1016/j.envint.2005.07.004

117 Ying, G.-G., 'Fate, Behavior and Effects of Surfactants and Their Degradation Products in the Environment', Environment International, Vol. 32, No. 3, April 2006, pp. 417–431. DOI 10.1016/j.envint.2005.07.004

118 ECETOC Technical Report No. 139 Persistent chemicals and water resources protection. European Centre for Ecotoxicology and Toxicology of Chemicals (ECETOC). Brussels, May 2021. ISSN-2079-1526-139. Accessible at: https://www.ecetoc.org/wp-content/uploads/2021/10/ECETOC-TR-139-Persistent-chemicals-and-water-resources-protection-2.pdf

119 European Commission. Joint Research Centre., Screening Risk Assessment of Organic Pollutants and Environmental Impacts from Sewage Sludge Management: Study to Support Policy Development on the Sewage Sludge Directive (86/278/EEC)., Publications Office, LU, 2022. https://data.europa.eu/doi/10.2760/541579

120 European Commission. Joint Research Centre., Screening Risk Assessment of Organic Pollutants and Environmental Impacts from Sewage Sludge Management: Study to Support Policy Development on the Sewage Sludge Directive (86/278/EEC)., Publications Office, LU, 2022. https://data.europa.eu/doi/10.2760/541579

121 Commission Decision (EU) 2017/1218 of 23 June 2017 establishing the EU Ecolabel criteria for laundry detergents. OJ L 180, 12.7.2017, p. 63–78. Available at: http://data.europa.eu/eli/dec/2017/1218/oj

122 European Commission. Joint Research Centre., Revision of EU Ecolabel Criteria for Cosmetic Products and Animal Care Products (Previously Rinse-off Cosmetic Products): Final Technical Report : Final Criteria., Publications Office, LU, 2021. Accessible at: https://data.europa.eu/doi/10.2760/014175

123 European Commission. Joint Research Centre. Institute for Prospective technological studies (IPTS). Revision of EU Ecolabel Criteria for Soaps, Shampoos and Hair Conditioners. 2013. Accessible at: https://susproc.jrc.ec.europa.eu/product-

Ecolabel criteria for Detergent[124]. The main points discussed in these criteria in favour and against of requiring surfactants to be anaerobically biodegradable were:

In Favour

- Environmental relevance: Anaerobic biodegradability is crucial, as surfactants may not undergo aerobic biodegradation in all environmental situations, such as in sewage sludge or sediment.
- Precautionary principle: The precautionary principle suggests that, in the absence of conclusive evidence, it is better to err on the side of caution and require anaerobic biodegradability to prevent potential negative effects on the environment.
- Protection of aquatic life: Some stakeholders believe that anaerobic biodegradability is necessary to protect aquatic life in situations where sewage treatment plants are not effective or are overwhelmed.
- Existence of anaerobically biodegradable surfactants: The DID-list shows that there are surfactants that are anaerobically biodegradable, making it feasible to require this property.
- Inhibitory effects: certain surfactants, such as cationic surfactants, have been shown to have inhibitory effects on other compounds and processes, highlighting the importance of anaerobic biodegradability.
- Consistency with other schemes: Some ecolabel schemes require anaerobic biodegradability of surfactants, suggesting that it is a desirable property for environmental protection.

Against

- Aerobic biodegradability suffices: Many studies suggest that aerobic biodegradability is sufficient to prevent adverse environmental impact, as most surfactants will be degraded in aerobic environments.
- Limited environmental risk: The Scientific Committee on Health and Environmental Risks (SCHER) and other studies have found that the lack of anaerobic biodegradability is not correlated with any apparent risk for environmental compartments.
- Rapid degradation in soil: Even if surfactants are not anaerobically biodegradable, they will likely be rapidly degraded in soil, reducing the risk of environmental harm.
- Limited impact on sediments: Research has shown that aerobically biodegradable surfactants, such as LAS, do not accumulate in sediments over time, suggesting that anaerobic biodegradability is not necessary to prevent environmental harm.
- Industry constraints: The industry argues that requiring anaerobic biodegradability would be too restrictive, as some widely used surfactants, such as LAS, are not anaerobically biodegradable.

As final outcome, the evidences gathered and presented by the JRC suggested no conclusive evidence of significant detrimental effects associated with the lack of surfactants' anaerobic biodegradability and the criterion legal text ultimately remained unchanged, thus requiring surfactants to be both aerobically and anaerobically biodegradable.

Other ecolabel schemes with biodegradability requirements shared this approach on requiring surfactants being anaerobically biodegradable:

- *Nordic Swan (NS)* -> Within the requirement *Surfactants* NS requires all surfactants to be readily biodegradable and anaerobically biodegradable, according to OECD 301 A-F or 310 and ISO 11734, ECETOC n28, OECD 311 or equivalent testing method. This is applicable to LD (006, v8.10), IILD (093, v4.1), IIDD (080; v3.8), HDD (025; v6.1) and HSC (026, v6.14). However, for DD (017; v7.7) this

bureau/sites/default/files/contentype/product_group_documents/1581684261/Rinse-off%20cosmetics-TECHNICAL%20REPORT_after%20ISC%20consultation_20.05.2013.pdf

[124] European Commission, Joint Research Centre, Boyano, A.; Kaps, R.; Medyna, G.; Wolf, O, 2017. Revision of six EU Ecolabel criteria for detergents and cleaning products. Final Technical Report. Available at https://susproc.jrc.ec.europa.eu/product-bureau/sites/default/files/contentype/product_group_documents/1581681262/Technical%20background%20report.pdf

requirement restricts to surfactants classified as hazardous to the aquatic environment, chronic (namely H410, H411, H412, H413)

- *Blue Angel* (*BA*) -> Within the requirement *Biodegradability* > *Biodegradability of surfactants* BA requires all surfactants to be readily biodegradable and anaerobically biodegradable following pretty much the same methods quoted for NS above. This is applicable to LD (DE-UZ 202, Jan22, v1), HDD and HSC (DE-UZ 194, Jan22, v1.2) and DD (DE-UZ 201, Jan22, v3).

The JRC had accessed to a limited set of different formulations (n=30) across different products groups (DD=2; HDD = 2, LD=6, HSC=20; IILD =0, IIDD = 0) which were shared by stakeholders as part of this revision process. In all cases all the surfactants used were aerobically biodegradable and anaerobically biodegradable. Despite this limited set of data does not allow for reliable extrapolations extensive to all EU Ecolabelled products cases, especially concerning industrial and institutional products, it certainly shows that there are already EU ecolabelled products in the market able to comply with requiring surfactant to be anaerobically biodegradable. Likewise, the fact that other ecolabel schemes (i.e. NS, BA) have the same requirement with regards to surfactants biodegradability with their license holders being able to comply with it, also supports the feasibility stating such requirement.

Based on the former evidences and associated discussions, especially the application of precautionary principle; the alignment with other ISO Type I labels; and the technical feasibility/availability of surfactants aerobically and anaerobically biodegradable, the JRC proposes requiring anaerobic biodegradability of all surfactants used in EU Ecolabelled products complying with the detergent and cleaners criteria.

About testing methods - "water soluble foil/films" biodegradability.

What was the feedback received from stakeholders on this topic?

The main clause introduced in the draft criteria text in TR1 was:

Water-soluble foil/films (e.g., Polyvinyl Alcohol (PVA) films) shall be readily biodegradable according to test method OECD 301 A-F or 310, as reported in Part B of the DID list.

Several stakeholders proposed alternative methods to demonstrate the biodegradability of water soluble foils (i.e. EN ISO 14851[125], EN ISO 14852[126]) for inclusion in the list of methods allowed. They also indicated that OECD guidelines are developed for rather simple chemicals, thus not being appropriate for polymers. Furthermore, some highlighted that "water soluble foil/films" are typically mixtures while the EU ecolabel criteria focus on evaluating only ingoing substances. Given the former, they concluded that the methods indicated in the EU Ecolabel criteria (OECD 301 A-F / 310) are not appropriate since their test target are substances and not mixtures biodegradation. The specific suggestions for improvement proposed by stakeholders were:

- If using just one polymer, using ISO 14852 with target biodegradability of 90%.
- Amending the wording according to the option best matching the intention of the criteria: *"All Ingredients"* OR *"All synthetic polymers" of water-soluble foil/films (e.g., Polyvinyl Alcohol (PVA) films) shall be "readily" or "inherently" biodegradable according to test method OECD 301 A-F or 310, as reported in Part B of the DID list.*

What does JRC's research say on this topic?

[125] International Standard ISO 14851:2019 Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium — Method by measuring the oxygen demand in a closed respirometer Edition 2 2019-03. https://www.iso.org/standard/70026.html.

[126] International Standard ISO 14852:2021 Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium — Method by analysis of evolved carbon dioxide Edition 3 2021-06 https://www.iso.org/standard/80303.html.

The existing EU Ecolabel criterion on biodegradability refers to the latest DID list part A[127] to source relevant data to prove compliance with it. In the absence of a DID list entry suitable for a particular substance, the DID list part B[128] outlines the methods that can be used to prove its biodegradability, namely:

- *Aerobic biodegradability*: OECD 301 A-F or 310 (readily biodegradable) or 302 A-C (inherently biodegradable) or equivalent test methods
- *Anaerobic biodegradability*: OECD 311, ISO 11734, or ECOTEC nr. 28 (June 1988) or equivalent test methods.

It is worth noting that *primary biodegradation* is a measure of the initial breakdown of the compound, whereas *ultimate biodegradation* is a measure of the complete mineralization of the compound, thus measurement of indirect parameters such as CO_2 production, decrease of dissolved organic carbon (DOC) and/or oxygen consumption (e.g. BOD). Also, that in terms of biodegradability testing there is "transference" (acceptance) of methods developed by OECD to ISO and vice versa[129], as is the case with ISO 11734 being the base for the guidance provided by OECD 311. In addition, note the ECETOC work about *Evaluation of Anaerobic biodegradation (ECETOC Report n28)*[130], as method development/validation exercise, contributed to the development of the former methods.

The previously quoted methods correspond to screening tests, which are conservative testing approaches utilising indirect quantification of the extent of mineralisation, commonly via O_2 consumption and CO_2 evolution as endpoints. These endpoints are generally applicable to the evaluation of polymers[131]. In these biodegradation test it is important to have accurate theoretical O_2 demand (ThO_2) or CO_2 evolution ($ThCO_2$), being ThO_2 the stoichiometric amount of O_2 required to oxidise a compound to end products and $ThCO_2$ calculated amount of CO_2 that can evolve during ultimate biodegradation.

The anaerobic biodegradability methods ISO 11734-1995[132] and OECD 311-2006 test model the "ultimate" biodegradation in digesters of municipal WWTPs. These methods are useful for compounds that are not biodegradable under aerobic conditions but adsorb onto activated sludge flocs, which are finally digested in an anaerobic reactor. The tests can also be used for biological waste treated in anaerobic treatment plants, and for highly contaminated wastewaters with a high load of organic substances. The principle of these tests are based on the measurement of biogas production (CH_4/CO_2) during up to 60 days at 35C in a static anaerobic test system, with an inoculum from an anaerobic digester, a mineral salt solution, the test compound, and a reference compound (e.g. sodium benzoate, phenol, or polyethylene 400). As highlighted by stakeholders feedback, these tests requires specialized equipment and expertise, and may be more time-consuming and costly compared to other biodegradation tests.

There are different methods for the assessment of the biodegradability of polymers, some being specifically develop for the combination of certain environmental compartments (e.g. soil, water), presence or absence of oxygen, polymer properties, etc[133].The methods suggested by stakeholders, ISO 14851[134] and ISO 14852[135],

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127 DID list Part A 2023. Available at: https://circabc.europa.eu/ui/group/0e3024d9-38be-415b-b141-c05d5d31dd92/library/057790be-097a-4f45-b0e3-21b81580ec60/details

128 DID list Part B 2023. Available at: https://circabc.europa.eu/ui/group/0e3024d9-38be-415b-b141-c05d5d31dd92/library/9560fcf6-07e3-44c8-b63c-614e0f0704b8/details

129 Strotmann, U., G. Thouand, U. Pagga, S. Gartiser, and H.J. Heipieper, 'Toward the Future of OECD/ISO Biodegradability Testing-New Approaches and Developments', Applied Microbiology and Biotechnology, Vol. 107, No. 7–8, April 2023, pp. 2073–2095. DOI: 10.1007/s00253-023-12406-6

130 Birch, R. R., Biver, C., Campagna, R., Gledhill, W.E., Pagga,U., Steber, J., Reust, H. and Bontinck, (1989) W.J. Screening of chemicals for anaerobic biodegradation. Chemosphere 19, 1527-1550. (Also published as ECETOC Technical Report No. 28, June 1988). Available at: https://www.ecetoc.org/publication/tr-028-evaluation-of-anaerobic-biodegradation/

131 Strotmann, U., G. Thouand, U. Pagga, S. Gartiser, and H.J. Heipieper, 'Toward the Future of OECD/ISO Biodegradability Testing-New Approaches and Developments', Applied Microbiology and Biotechnology, Vol. 107, No. 7–8, April 2023, pp. 2073–2095. DOI: 10.1007/s00253-023-12406-6

132 ISO 11734:1995 Water quality — Evaluation of the "ultimate" anaerobic biodegradability of organic compounds in digested sludge — Method by measurement of the biogas production. International standard organisation (ISO) Ed 1. Accessible at: https://www.iso.org/standard/19656.html

133 Strotmann, U., G. Thouand, U. Pagga, S. Gartiser, and H.J. Heipieper, 'Toward the Future of OECD/ISO Biodegradability Testing-New Approaches and Developments', Applied Microbiology and Biotechnology, Vol. 107, No. 7–8, April 2023, pp. 2073–2095. DOI: 10.1007/s00253-023-12406-6

134 International Standard ISO 14851:2019 Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium — Method by measuring the oxygen demand in a closed respirometer Edition 2 2019-03. https://www.iso.org/standard/70026.html.

were specifically developed to assess the ultimate aerobic biodegradation of plastic materials in the aquatic compartment, being based on the OECD 301F and OECD 301B, thus focusing on measuring O_2 consumption and CO_2 evolution, respectively[136]. One comparative advantage of these ISO methods versus their OECD counterparts (i.e. 301 and 310 series) is that the reference material used are well-defined biodegradable polymers in addition to or instead of rapidly degradable substances (e.g. aniline, sodium acetate and/or sodium benzoate). These reference compounds are used to ensure validity of the testing procedure (performed "correctly") and the quality of the inoculum used, via characterization of the extent of mineralisation and degradation kinetics, recently being proposed for the estimation of the biodegradation adaptation potential of an inoculum[137]. A summary of relevant biodegradation methods, with a focus on those currently used within the EU Ecolabel and Nordic Swan as part of the DID list, is shown in Table 28.

Table 28 – Biodegradability testing – list of methods (with focus on OECD and ISO), their principles and additional remarks.

Type of Biodegradability	Test	Method	Test principle	Remarks
Ready biodegradability	DOC-die-away-test	OECD 301 A (1992), ISO 7827 (2010)	Static aerobic test system, measurement of DOC removal	Non-volatile water-soluble compounds
Ready biodegradability	CO2 evolution test	OECD 301 B (1992), ISO 9439 (1999)	Static aerobic test system, measurement of CO2 production	Non-volatile water-soluble compounds
Ready biodegradability	Continuous CO2 evolution test	OECD 301 B (1992), ISO 9439 (1999)	Static aerobic test system, online measurement of CO2 production by conductivity measurement	Volatile/non-volatile water-soluble compounds, applied both as open and closed system
Ready biodegradability	Modified MITI (I) test	OECD 301 C (1992)	Static aerobic test, BOD determination, specific analysis possible	Non-volatile, water-soluble compounds; Closed bottle test
Ready biodegradability	Modified OECD screening test	OECD 301 E (1992), ISO 7827 (2010)	Static, aerobic test, measurement of DOC removal	Non-volatile water-soluble compounds at Low inoculum concentration
Ready biodegradability	Manometric respirometry test	OECD 301 F (1992), ISO 9408 (1999)	Static, aerobic test, measurement of BOD, and comparison to COD and ThOD of the test substance	Poorly water-soluble, non-volatile, and volatile compounds
Ready biodegradability	CO2 headspace test	OECD 310 (2014), ISO 14593 (1999)	Static aerobic test, measurement of CO2 evolution	Volatile compounds, comparable to the CO2 evolution test
Ready biodegradability	Biodegradability in seawater	OECD 306 H (1992), ISO 16221 (2001)	Static aerobic test system, measurement of DOC removal	Non-volatile water-soluble compounds,

[135] International Standard ISO 14852:2021 Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium — Method by analysis of evolved carbon dioxide Edition 3 2021-06 https://www.iso.org/standard/80303.html.

[136] ECETOC Technical Report No. 133-2 Applicability of Analytical Tools, Test Methods and Models for Polymer Risk Assessment. European Centre for Ecotoxicology and Toxicology of Chemicals (ECETOC). Brussels, May 2020. Accessible at: https://www.ecetoc.org/wp-content/uploads/2021/10/ECETOC-TR133-2.Polymers-Risk-Asessment.pdf

[137] Strotmann, U., G. Thouand, U. Pagga, S. Gartiser, and H.J. Heipieper, 'Toward the Future of OECD/ISO Biodegradability Testing-New Approaches and Developments', Applied Microbiology and Biotechnology, Vol. 107, No. 7–8, April 2023, pp. 2073–2095. DOI: 10.1007/s00253-023-12406-6

Type of Biodegradability	Test	Method	Test principle	Remarks
Inherent biodegradability	Modified SCAS Test (Semi-continuous activated sludge)	OECD 302 A (1981), ISO 9887 (1992)	Semi-static, aerobic test system, fill- and draw method, measurement of DOC removal, test period up to 26 weeks	Non-volatile, water-soluble compounds, pre-adaptation and specific analysis to determine primary biodegradation possible
Inherent biodegradability	Zahn-Wellens/EMPA Test	OECD 302 B (1992), ISO 9888 (1999)	Static, aerobic test system, high test compound, and inoculum concentration, measurement of DOC removal	Non-volatile, water-soluble compounds
Inherent biodegradability	Modified MITI (II) Test	OECD 302 C (1981)	Static, aerobic test system, comparable to OECD 302 B (1992) but a specially prepared inoculum is required	Non-volatile, water-soluble compounds
Inherent biodegradability	Inherent biodegradability in soil	OECD 304 A (1981)	Static, aerobic test, addition of 14C labeled test compound, determination of 14CO2	Closed system; volatile/non-volatile and soluble/non-soluble compounds
Simulation test	Aerobic sewage treatment	OECD 303 A (2001), OECD 303 B (2001)	Static, aerobic test system, measurement of DOC or COD decrease	Non-volatile, water-soluble, or dispersible compounds
Simulation test	Aerobic and anaerobic transformation in soil	OECD 307 (2002)	Static aerobic/anaerobic test, use of 14C labeled compounds, measurement of 14CO2 formation	Volatile water-soluble and poorly water-soluble compounds
Simulation test	Aerobic and anaerobic transformation in aquatic sediment systems	OECD 308 (2002)	Static aerobic/anaerobic test, use of labeled/unlabeled compounds, analysis of original compound, and transformation products	Non-volatile and slightly volatile compounds
Simulation test	Aerobic mineralisation in surface water	OECD 309 (2004)	Static/semi-continuous aerobic test system, use of labeled (14C)/unlabeled compounds, determination of primary/ultimate biodegradation	Non-volatile/slightly volatile compounds. water-soluble/poorly water-soluble compounds
Simulation test	Simulation tests to assess the biodegradability of chemicals discharged in waste water	OECD 314 (2008) A- Biodegradation in Sewer system B- Biodegradation in activated sludge test C - Biodegradation in anaerobic digester sludge test D- Biodegradation in treated effluent-surface water mixing zone test E - Biodegradation in untreated wastewater-surface water mixing zone test	Open/closed gas flow-through static systems, determination of primary/ultimate biodegradability, determination of transformation products, use of radiolabeled compounds recommended, but non labeled compounds permitted when an analytical procedure is given	All stages of wastewater treatment plant, volatile/non-volatile compounds, assessment of a mass balance

Type of Biodegradability	Test	Method	Test principle	Remarks
Other biodegradability test	Anaerobic biodegradation test	OECD 311 (2006), ISO 11734 (1995)	Static, anaerobic test system, measurement of biogas production (CH4/CO2), test duration up to 60 days, inoculum:anaerobic sludge	Compounds in concentrations of 20 - 100 mg L-1 organic carbon
Other biodegradability test	Aerobic composting test	ISO 14855-1 (2012)	Static aerobic test system, use of an adsorbing material (Vermiculite) possible, measurement of CO2 production or oxygen depletion, extended test duration, higher test temperature	Solid polymeric compounds
Other biodegradability test	Biodegradation of polymers in aquatic environment	ISO 14851 (2019) - Oxygen depletion ISO 14852 (2021) - CO2 evolution	Static aerobic test system, measurement of CO2 production or oxygen depletion, medium with a higher buffer capacity, extended test duration	Miscible and water soluble polymeric compounds
Other biodegradability test	Low concentration tests in water	ISO 14592 (2002)	Guideline to perform biodegradation tests at very low concentrations	
Other biodegradability test	Guidance for poorly water-soluble compounds	ISO 10634 (2018)	Guideline to perform biodegradation tests with poorly water-soluble compounds	
Other biodegradability test	Guidance for selection of biodegradation tests	ISO 15462 (2006)	Tests in the aquatic environment	

Source: Strotman et al. (2023) [138]

About other ecolabel schemes:

— *Nordic Swan (NS)* - includes and specific criterion (*Water soluble films*) within their equivalent product groups to EUEL DD[139]and IIDD[140]. This requirement guarantees that water-soluble films (e.g. PVA films) are readily biodegradable according to OECD 301A-F and OECD 310 or other equivalent test methods evaluated by an independent body and controlled by Nordic Ecolabelling. It also allows methods adaptations (i.e. enhanced biodegradation screening tests performed as OECD 301B and OECD 301F modifications, with longer incubation times and continuous measurements up to 60 days), inclusive of the type of data and cases accepted (i.e. substance-based approached or water-soluble film approach).

— *Blue Angel (BA)* – requires all of the synthetic polymers in the end product to be at least inherently biodegradable under aerobic conditions in all product groups' (LD[141], HDD/HSC[142] and DD[143]) criteria,

[138] Strotmann, U., G. Thouand, U. Pagga, S. Gartiser, and H.J. Heipieper, 'Toward the Future of OECD/ISO Biodegradability Testing-New Approaches and Developments', Applied Microbiology and Biotechnology, Vol. 107, No. 7–8, April 2023, pp. 2073–2095. DOI: 10.1007/s00253-023-12406-6

[139] 017 Dishwasher detergents and rinse aids, version 7.7, 13 August 202. Nordic Ecolabelling. Available at: https://www.nordic-swan-ecolabel.org/4a98a7/contentassets/4c39b5c28cb344a6ad02643a27094f28/background-document_017_dishwasher-detergents-and-rinse-aids-017_english.pdf

[140] 080 Dishwasher detergents for professional use, version 3.8, 16 April 2024. Available at: https://www.nordic-swan-ecolabel.org/498b38/contentassets/4fbf7d89969d452097042cd798bfd3d7/background-document-for-product-group-080_080_dishwasher-detergents-for-professional-use-080_english.pdf

[141] DE-UZ 202 Laundry Detergent. Edition January 2022. Blue Angel. Available at: https://produktinfo.blauer-engel.de/uploads/criteriafile/en/DE-UZ%20202-202201-en%20criteria-V1.1.pdf

[142] DE-UZ 194 Edition January 2022 BLUE ANGEL Hand Dishwashing Detergents and Hard Surface Cleaners. Available at: https://produktinfo.blauer-engel.de/uploads/criteriafile/en/DE-UZ 194-202201-en criteria-V1.2.pdf

[143] DE-UZ 201 Edition January 2022 Dishwasher Detergents. Blue Angel. Available at: https://produktinfo.blauer-engel.de/uploads/criteriafile/en/DE-UZ%20201-202201-en%20criteria-V3.1.pdf

except for carboxymethyl cellulose (LD & DD) and dye transfer inhibitors made of PVP, PVOH, PVP/VI, PVNO or PVNO/PVP (only LD). The reference test for inherent degradability under aerobic conditions is OECD 302C (MITI II test) or an equivalent test method with pass criteria ≥60% expressed as $ThCO_2$ production within 28 days. In addition, the Zahn-Wellens test according to OECD 302 B is recognized as comparable if it is modified and supplemented by respirometric measurements and the OECD 301 B, C, D or F test or CO_2 headspace test with duration up to 60 days are recognized as comparable if achieving ≥60% within this period.

Both NS and BA coincide in allowing readily biodegradation screening test adapted to the nature of the test substances (i.e. testing period extended up to 60 days) with pass level as per the original OECD methods (≥60%). They differ in the target (NS - water soluble film; BA – all polymers in end product) and in allowed testing methods (BA- allows inherent biodegradability tests - OECD 302C; NS – restrict only to readily biodegradable tests).

Based on the former evidences and discussion, the JRC has modified substantially the draft criteria text, starting by creating a new dedicated sub-section setting biodegradability requirements to water soluble films/foils, the current proposal is characterized by:

- Enabling biodegradability assessment at water soluble film/foil level (as test subject) or via individual test of the synthetic polymers contained within a water soluble film/foil.
- Alignment with other ecolabels schemes in accepting modifications of OECD 301 test series leading to improved conditions for water-soluble films testing (i.e. continuous biodegradation; up to 60 days).
- Inclusion of ISO 14851:2019[144] or ISO 14852:2021[145] as test methods accepted alongside those in DID list (OECD 301 series) already explicitly accepted, given its suitability for synthetic polymers biodegradability testing.
- In addition to the former, enhancing test validity by requesting a carbon balance and the results expressed as total biodegradation.
- Explicit quotation to the target pass level (biodegradation ≥60%).
- Addition of explicit wording opening the door for using equivalent scientifically proven test methods and/or alternative wealth of evidences as per DID list and if approved by CBs as relevant verification institutions.

Based on the former, the JRC proposes to adopt the ISO 14851 and 14852 methods as an additional way to assess water-soluble polymers biodegradability, further to existing biodegradability methods quoted in the DID list.

About testing methods - Quantitative structure-activity relationships (QSAR)

Non-testing approaches based on the *similarity principle* (i.e. hypothesis that similar compounds should have similar biological activities), as (quantitative) structure-activity relationships ((Q)SARs), can contribute to the evaluation of intrinsic properties of chemicals, inclusive of REACH information requirements[146]. SARs and QSARs, collectively referred to as (Q)SARs, are theoretical models that can be used to predict in a qualitative or quantitative manner the physico-chemical, biological (e.g. toxicological) and environmental fate properties of compounds from a knowledge of their chemical structure[147]. (Q)SARs can be used to fill data gaps, thus not generating the required evidence from direct testing, or to provide supplementary data to experimental data.

[144] International Standard ISO 14851:2019 Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium — Method by measuring the oxygen demand in a closed respirometer Edition 2 2019-03. https://www.iso.org/standard/70026.html.

[145] International Standard ISO 14852:2021 Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium — Method by analysis of evolved carbon dioxide Edition 3 2021-06 https://www.iso.org/standard/80303.html.

[146] ECHA 2008. Guidance on information requirements and chemical safety assessment. Chapter R.6: QSARs and grouping of chemicals. May 2008. European Chemicals Agency (ECHA). Available at: https://echa.europa.eu/documents/10162/17224/information_requirements_r6_en.pdf/77f49f81-b76d-40ab-8513-4f3a533b6ac9

[147] ECHA 2008. Guidance on information requirements and chemical safety assessment. Chapter R.6: QSARs and grouping of chemicals. May 2008. European Chemicals Agency (ECHA). Available at: https://echa.europa.eu/documents/10162/17224/information_requirements_r6_en.pdf/77f49f81-b76d-40ab-8513-4f3a533b6ac9

These are one of the options considered to gather all existing information while preventing unnecessary animal (i.e. vertebrate) testing, as required by REACH. (Q)SARs also have a role when framed and interpreted within a particular endpoint-specific of the Integrated Testing Strategies (ITS), as for example the assessment of PBT (Persistence Bioaccumulation and Toxicity). Generally, but especially for such tailored applications, the validity of the (Q)SAR results rely on the evaluation of the model (i.e. relevance, reliability, applicability to target chemical, context-specific adequacy of information). In this sense, the OECD has developed principles for the validation of (Q)SARs for regulatory purposes, inclusive of an accompanying guidance document[148]. Likewise, the context of application and interpretation of such (Q)SAR results, especially for regulatory purposes is very relevant. The OECD indicated that "*...not all predictions produced by a valid model are acceptable for all regulatory purposes. When a (Q)SAR prediction or a result generated from multiple predictions is used for a given regulatory purpose, it needs to be verified in the context of the specific application...*"[149]. To generalise and harmonise the principles for assessing (Q)SAR models and predictions, making them applicable irrespective of the modelling technique, predicted endpoint and regulatory purposes, the OECD recently published an Assessment Framework for (Q)SARs, in a "Checklist" format type, which also provides information about the reporting format for the models and derived predictions[150].

The field of computational toxicology has and is rapidly evolving, with impact on the development, improvement and validation of (Q)SAR models. Several studies have applied machine learning algorithms (e.g. partial least squares discriminant analysis, multiple linear regression, logistic regression, naïve Bayes, k-nearest neighbours, support vectors machines) with new techniques (e.g. graph neural networks) emerging as artificial intelligence tools and methods become available[151][152]. Similarly, as the field defining the target endpoint (e.g. persistence>biodegradation) evolves, further (quality) data becomes available as input to the (Q)SAR models. Several resources (e.g. models, databases) are available for consultation and use within a (Q)SAR context (e.g. toolboxes[153]; alternative to animal testing[154]), inclusive of specific applications defined by desired endpoint (e.g. biodegradation[155][156], with models as MITI (I), VEGA, TOPCAT, BIOWIN and START). A testing strategy using (Q)SAR models for biodegradability testing suggested by Strotman et al. (2023)[157] was to distinguish test compounds that are likely to be readily biodegradable from those that are not, meaning that compounds with high likelihood should preferably be submitted to readily biodegradability testing and others to more resource intensive testing (e.g. inherent or simulation tests). In principle, this testing strategy would have little added value within the EU Ecolabel, since requirements already request testing for readily biodegradability.

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148 OECD, Guidance Document on the Validation of (Quantitative) Structure-Activity Relationship [(Q)SAR] Models, OECD Series on Testing and Assessment, OECD, 2014. Available at: https://www.oecd-ilibrary.org/environment/guidance-document-on-the-validation-of-quantitative-structure-activity-relationship-q-sar-models_9789264085442-en

149 OECD, (Q)SAR Assessment Framework: Guidance for the Regulatory Assessment of (Quantitative) Structure Activity Relationship Models and Predictions, OECD Series on Testing and Assessment, OECD, 2023. Available at: https://www.oecd-ilibrary.org/environment/q-sar-assessment-framework-guidance-for-the-regulatory-assessment-of-quantitative-structure-activity-relationship-models-and-predictions_d96118f6-en

150 OECD, (Q)SAR Assessment Framework: Guidance for the Regulatory Assessment of (Quantitative) Structure Activity Relationship Models and Predictions, OECD Series on Testing and Assessment, OECD, 2023. Available at: https://www.oecd-ilibrary.org/environment/q-sar-assessment-framework-guidance-for-the-regulatory-assessment-of-quantitative-structure-activity-relationship-models-and-predictions_d96118f6-en

151 Lee, M., and K. Min, 'A Comparative Study of the Performance for Predicting Biodegradability Classification: The Quantitative Structure–Activity Relationship Model vs the Graph Convolutional Network', ACS Omega, Vol. 7, No. 4, February 1, 2022, pp. 3649–3655. DOI: 10.1021/acsomega.1c06274

152 Zubrod, J.P., N. Galic, M. Vaugeois, and D.A. Dreier, 'Bio-QSARs 2.0: Unlocking a New Level of Predictive Power for Machine Learning-Based Ecotoxicity Predictions by Exploiting Chemical and Biological Information', Environment International, Vol. 186, April 2024, p. 108607. DOI: 10.1016/j.envint.2024.108607

153 http://www.qsartoolbox.org/

154 European Commission. Joint Research Centre., JRC QSAR Model Database: EURL ECVAM Database Service on Alternative Methods to Animal Experimentation : Guideline for Authors and Editors., Publications Office, LU, 2017. Available at: https://data.europa.eu/doi/10.2760/419511

155 Worth, A.P. and Pavan, M. 2006. Review of QSAR models for ready biodegradation. Institute. For Health and Consumer Protection (Joint Research Centre). Available at: https://op.europa.eu/en/publication-detail/-/publication/9b58daec-9ec8-4e53-8e91-cea3ae555ce9/language-en

156 European Chemicals Agency., Guidance on Information Requirements and Chemical Safety Assessment: Chapter R.7b : Endpoint Specific Guidance : Version 5.0., Publications Office, LU, 2023. DOI 10.2823/161062

157 Strotmann, U., G. Thouand, U. Pagga, S. Gartiser, and H.J. Heipieper, 'Toward the Future of OECD/ISO Biodegradability Testing-New Approaches and Developments', Applied Microbiology and Biotechnology, Vol. 107, No. 7–8, April 2023, pp. 2073–2095. DOI: 10.1007/s00253-023-12406-6

(Q)SAR (*data*) models are explicitly accepted by Nordic Swan it its Appendix *Test methods and analysis laboratories*[158]. It quotes as example *BioWin*, also indicating that in the instances that model resulted are close to NS limits or if NS holds contradictory data, higher degree of information certainty would be required.

In terms of assessment and verification, it could be useful to include a mention to (Q)SARs, particularly to the OECD framework for (Q)SAR assessment[159]. as a way to harmonise principles considered, completeness of the information provided and the format (template) for it. Such a mention/clause should enhance the use of valid and reliable (Q)SAR models but still remains the matter of whether results are fit-for-purpose. In the EUEL case, this would still be dependent on regulatory requirements (*which criteria aspects)* and how the verification using this framework occurs (e.g. competent bodies directly and/or via third-party experts declarations).

Given the aforementioned statements and as conclusion, (Q)SAR models are regarded as useful supporting tools which could aid in the supporting EUEL criteria verification but its acceptance should ideally be considered case-by-case. Consequently, the draft criteria text has been not been modified but a discussion has been included as part of the supporting rationale.

About non-biodegradable organic substances thresholds (aNBO, anNBO)

What was the feedback received from stakeholders on this topic?

About anNBO / aNBO thresholds, some stakeholders supported them in its current form while others called for aligning anNBO thresholds to match other ecolabelling schemes with more ambitious thresholds (e.g. Nordic Swan; DD related criteria).

What does JRC's research say on this topic?

The JRC carried an analysis on the aNBO and anNBO data received from stakeholders and used its results as another stream of evidences leading to new EUEL quantitative thresholds proposals. Details on the type of data received and how it was processed prior to its use for results acquisition can be found in Annex 1.

On what follows, tables containing the descriptive statistic descriptive results and plots displaying the data points received (factored by the corresponding EUEL threshold) are presented by EUEL product group. In addition, remarks are made about how other ecolabel schemes (Nordic Swan and Blue Angel) approach aNBO and anNBO. Each sub-section, corresponding to each of EUEL PGs, closes with a conclusion, indicating whether there are new EUEL criteria thresholds proposals and, if so, which are these.

[158] 080 Dishwasher detergents for professional use. V3.8. Nordic Ecolabelling. April 2024. Available at: https://www.nordic-swan-ecolabel.org/498b38/contentassets/4fbf7d89969d452097042cd798bfd3d7/background-document-for-product-group-080_080_dishwasher-detergents-for-professional-use-080_english.pdf

[159] OECD, (Q)SAR Assessment Framework: Guidance for the Regulatory Assessment of (Quantitative) Structure Activity Relationship Models and Predictions, OECD Series on Testing and Assessment, OECD, 2023. Available at: https://www.oecd-ilibrary.org/environment/q-sar-assessment-framework-guidance-for-the-regulatory-assessment-of-quantitative-structure-activity-relationship-models-and-predictions_d96118f6-en

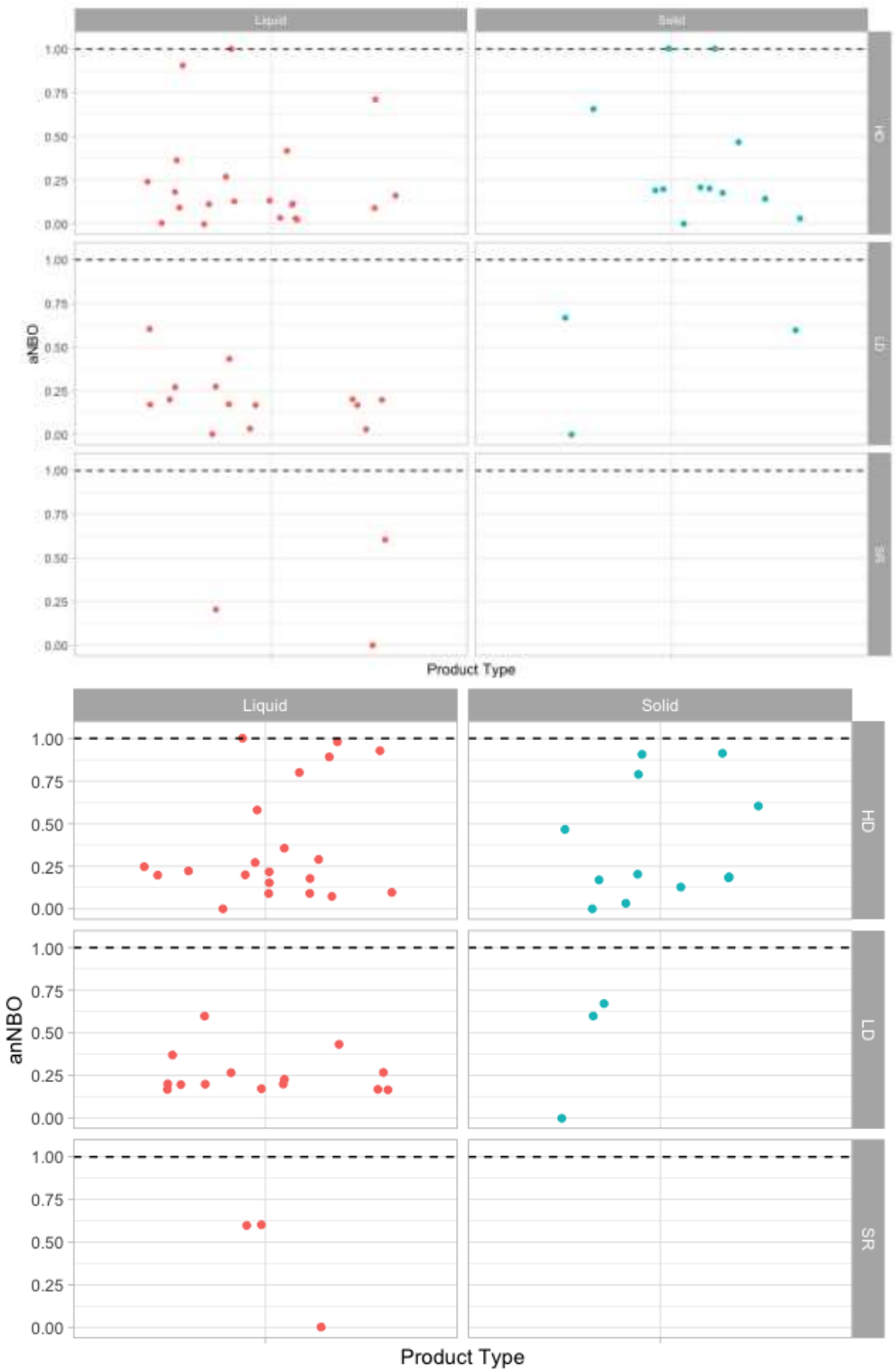
2537 Laundry detergent (LD)

2538 Table 29 - Laundry detergent descriptive statistics on the content of non-biodegradable organic substances under aerobic
2539 (aNBO) and anaerobically (anNBO) conditions. Grey empty fields indicates that it is not applicable or absence of data.

Product type	*Product form / format (Solid = powder/tabs; liquid = liquid/gel/capsules)*	*Data points (n)*	*Minimum (g/kg)*	*1st quartile (g/kg)*	*Median (g/kg)*	*Mean (g/kg)*	*3rd quartile (g/kg)*	*Maximum (g/kg)*	*Existing Threshold (g/kg)*
aNBO									
Heavy duty detergent	Solid	12	0.00	0.17	0.20	0.36	0.52	1.00	*1.00*
Heavy duty detergent	Liquid	21	0.00	0.04	0.06	0.11	0.12	0.45	*0.45*
Light duty detergent	Solid	3	0.00	0.17	0.33	0.23	0.35	0.37	*0.55*
Light duty detergent	Liquid	14	0.00	0.05	0.06	0.06	0.08	0.18	*0.30*
Stain removers		3	0.00	0.01	0.02	0.03	0.04	0.06	*0.10*
anNBO									
Heavy duty detergent	Solid	12	0.00	0.18	0.21	0.42	0.71	1.00	*1.10*
Heavy duty detergent	Liquid	21	0.00	0.08	0.12	0.21	0.32	0.55	*0.55*
Light duty detergent	Solid	3	0.00	0.17	0.33	0.23	0.35	0.37	*0.55*
Light duty detergent	Liquid	14	0.05	0.05	0.06	0.08	0.08	0.18	*0.30*
Stain removers		3	0.00	0.03	0.06	0.04	0.06	0.06	*0.10*

2540 *Source:* JRC's elaboration with data provided by stakeholders.

Figure 11 - Laundry detergent content of non-biodegradable organic substances under aerobic (aNBO) and anaerobic (anNBO) conditions. Each data point has been factored by its corresponding EUEL threshold, thus being unit less and ranging from "0" to "1", which corresponds to the existing EUEL threshold (depicted by the dashed line).Red dots represent products in liquid format while blue dots represent solid ones. HD = Heavy duty detergent; LD = Light duty detergent; SR = Stain remover.



Source: JRC's elaboration with data provided by stakeholders.

About other ecolabels:

Table 30 - Limits for the content of non-biodegradable organic substances under aerobic (aNBO) and anaerobic (anNBO) conditions in Nordic Ecolabelling (NS) Laundry Detergents and Stain Removers

Product Type	*Water Hardness (dH)*	*aNBO (g/kg wash)*	*anNBO (g/kg wash)*
Heavy-duty laundry detergent	5.5°dH	0.50	1.00
Light-duty laundry detergent	5.5°dH	0.30	0.30
Stain-removers (in-wash)	Not applicable	0.10	0.10
Stain-removers (pre-treatment)	Not applicable	0.10	0.10

Source: Criterion O13, 006, v8.10[160]

Table 31 - Limits for the content of non-biodegradable organic substances under aerobic (aNBO) and anaerobic (anNBO) conditions in Blue Angel (BA) criteria Laundry Detergents and Stain Removers

Product Type	*aNBO (g/kg wash)*	*anNBO (g/kg wash)*
Heavy-duty laundry detergent, colour-safe laundry detergent (solid)	0.75	1.00
Heavy-duty laundry detergent, colour-safe laundry detergent (liquid)	0.40	0.55
Low-duty laundry detergent (solid)	0.40	0.40
Low-duty laundry detergent (liquid)	0.25	0.25
Stain remover (solid, liquid)	0.10	0.10
Laundry detergent booster (solid, liquid)	0.10	0.10

Source: Section 3.4.3 biodegradability of organic substances, DE-UZ 202, v1.10[161]

The discussions and conclusions about aNBO threshold proposals, structured by product type and derived from the former evidences, are:

— *Heavy duty detergent (Solid)*

The majority (75%) of the data points fell below 0.52 g/kg, almost half of the existing threshold (1 g/kg). BA threshold is set at 0.75 g/kg while NS one is set at 0.5 g/kg (note – same threshold for solid/liquid). Hence, there is room for making the existing limit more stringent, in particular within the range 0.75 –

[160] Criterion 013; 006 Laundry detergents and Stain Removers; version 8.10; Nordic Ecolabelling. Available at: https://www.nordic-swan-ecolabel.org/criteria/laundry-detergents-and-stain-removers-006/

[161] Criterion *Biodegradability of organic substances*; DE-UZ 202 Laundry detergents; version 1.1; January 2022; Blue Angel. Available at: https://www.blauer-engel.de/en/productworld/laundry-detergent

0.50 g/kg. JRC proposes 0.5 g/kg, which is in alignment with NS and, based on the descriptive statistical analysis, would "only" potentially exclude 25% of ecolabelled products (those with highest aNBO).

— *Heavy duty detergent (Liquid)*

The majority (75%) of the data points fell below 0.12 g/kg, one third of the existing threshold (0.45 g/kg). BA threshold is set at 0.40 g/kg while NS one is set at 0.5 g/kg (note – same threshold for solid/liquid). Hence, there is room for making the existing limit more stringent, in particular within the range 0.12 – 0.40 g/kg. The JRC proposes 0.35 g/kg, which enhances the ambition level (is lower than BA by 0.05 g/kg) and with which most of the ecolabelled products that JRC had data access should be already possible to comply with, thus should not represent additional significant burden.

— *Light duty detergent (Solid)*

There were few data points (n=3) for this product sub-category, being all of them below 0.37 g/kg, which is 0.18 g/kg lower that the existing threshold (0.55 g/kg). BA threshold is set at 0.40 g/kg while NS one is set at 0.3 g/kg (note – same threshold for solid/liquid). There could be room for making the existing limit more stringent. Given data uncertainty, a conservative approach is taken and the JRC proposes to align with BA, thus setting the limit at 0.40 g/kg.

— *Light duty detergent (Liquid)*

The majority (75%) of the data points fell below 0.08 g/kg, roughly one quarter of the existing threshold (0.30 g/kg). BA threshold is set at 0.25 g/kg while NS one is set at 0.3 g/kg (note – same threshold for solid/liquid). Hence, there is room for making the existing limit more stringent, in particular within the range 0.08 – 0.25 g/kg. The JRC proposes 0.20 g/kg, which enhances the ambition level (is lower than BA by 0.05 g/kg) and with which most of the ecolabelled products that JRC had data access should be already possible to comply with, thus should not represent additional significant burden.

— *Stain removers*

There were few data points (n=3) for this product type, all below 0.06 g/kg. BA and NS threshold are equal to EUEL one, being 0.10 g/kg. Given data uncertainty and proximity to existing ecolabel limits, the JRC does not proposes any change to the existing threshold.

The discussions and conclusions about anNBO threshold proposals, structured by product type and derived from placing the former evidences, are:

— *Heavy duty detergent (Solid)*

The majority (75%) of the data points fell below 0.71 g/kg. Therefore, data does not suggest potential for setting stricter limits without potentially excluding a share (25%) of existing ecolabelled products. BA and NS threshold are equal at 1.00 g/kg while EUEL one is 1.10 g/kg. Hence, JRC proposes 1.0 g/kg in alignment with other ecolabels.

— *Heavy duty detergent (Liquid)*

The majority (75%) of the data points fell below 0.32 g/kg, 0.13 g/kg below the existing threshold (0.55 g/kg). Therefore, data does not suggest potential for setting stricter limits without potentially excluding a share (25%) of existing ecolabelled products. BA threshold is equal to EUEL one, while NS is 1.00 g/kg (note – same threshold for solid/liquid). The JRC proposes to keep existing threshold (0.55 g/kg).

— *Light duty detergent (Solid)*

There were few data points (n=3) for this product sub-category, being all of them below 0.37 g/kg, which is 0.18 g/kg lower that the existing threshold (0.55 g/kg). BA threshold is set at 0.40 g/kg while NS one is set at 0.3 g/kg (note – same threshold for solid/liquid). There could be room for making the existing limit more stringent. Given data uncertainty, a conservative approach is taken and the JRC proposes to align with BA, thus setting the limit at 0.40 g/kg.

— *Light duty detergent (Liquid)*

The majority (75%) of the data points fell below 0.08 g/kg, roughly one quarter of the existing threshold (0.30 g/kg). BA threshold is set at 0.25 g/kg while NS one is set at 0.3 g/kg (note – same threshold for solid/liquid). Hence, there is room for making the existing limit more stringent, in particular within the range 0.08 – 0.25 g/kg. The JRC proposes 0.20 g/kg, which enhances the ambition level (is lower than BA

by 0.05 g/kg) and with which most of the ecolabelled products that JRC had data access should be already possible to comply with, thus should not represent additional significant burden.

— *Stain removers*

There were few data points (n=3) for this product type, all below 0.06 g/kg. BA and NS threshold are equal to EUEL one, being 0.10 g/kg. Given data uncertainty and proximity to existing ecolabel limits, the JRC proposes to keep existing threshold (0.10 g/kg) to the existing threshold.

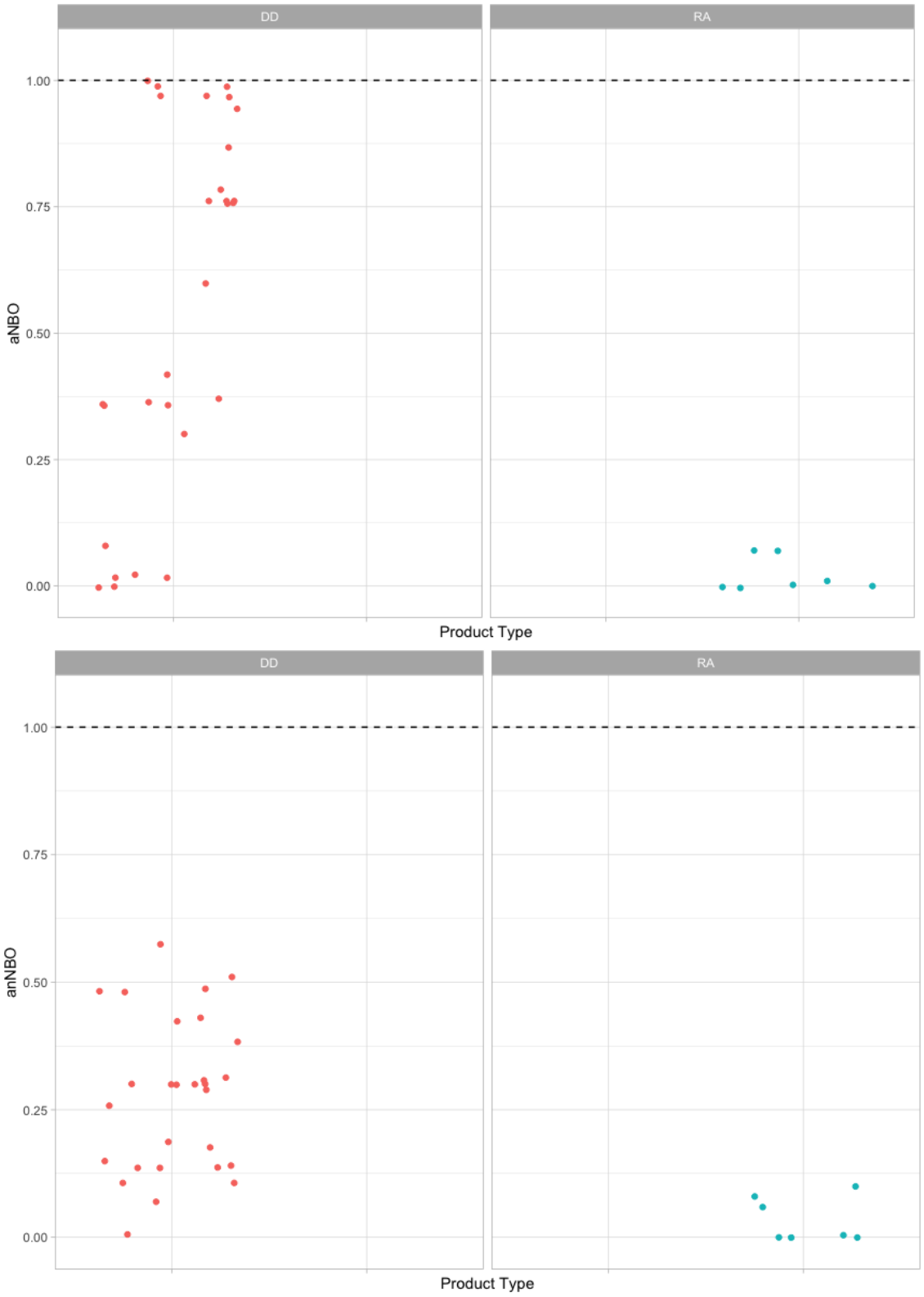
Dishwasher detergent (DD)

Table 32 - Dishwasher detergent descriptive statistics on the content of non-biodegradable organic substances under aerobic (aNBO) and anaerobically (anNBO) conditions.

Product type	*Data points (n)*	*Minimum (g/wash)*	*1st quartile (g/wash)*	*Median (g/wash)*	*Mean (g/wash)*	*3rd quartile (g/wash)*	*Maximum (g/wash)*	*Existing Threshold (g/wash)*
aNBO								
Dishwasher detergent	28	0.00	0.35	0.68	0.56	0.89	1.00	*1.00*
Rinse aid	4	0.00	0.00	0.00	0.00	0.01	0.01	*0.15*
anNBO								
Dishwasher detergent	28	0.02	0.42	0.90	0.83	1.18	1.72	*3.00*
Rinse aid	4	0.00	0.00	0.00	0.02	0.04	0.05	*0.50*

Source: JRC's elaboration with data provided by stakeholders.

Figure 12- Dishwasher detergent content of non-biodegradable organic substances under aerobic (aNBO) and anaerobic (anNBO) conditions. Each data point has been factored by its corresponding EUEL threshold, thus being unit less and ranging from "0" to "1", which corresponds to the existing EUEL threshold (depicted by the dashed line).Red dots represent dishwasher detergent (DD) while blue dots represent rinse aid (RA).



Source: JRC's elaboration with data provided by stakeholders.

About other ecolabels:

- *Nordic Swan (NS)* - unlike EU ecolabel, sets threshold limits only for anaerobic biodegradability of organic substances (anNBO)[162]. These values are more stringent compared with EU Ecolabel for both dishwasher detergent (≤ 1.2 g/wash in Nordic Swan, 3.00 g/wash in EU Ecolabel) and rinse aid (≤ 0.30 g/wash in Nordic Swan, 0.5 g/wash in EU Ecolabel).
- *Blue Angel (BA)* – has the same limit values as per EUEL criteria for detergents[163].

The discussions and conclusions about aNBO threshold proposals, structured by product type and derived from the former evidences, are:

- *Dishwasher detergents (Multi-and single-function)*

  Data received did not allow to draw conclusions on differences between multi- and single-function dishwasher detergents, thus data was pooled and analyzed together, with conclusions referring DD as product type. The majority (75%) of the data points fell below 0.89 g/wash, close to existing threshold (1 g/wash). BA threshold is equal to EUEL one while NS one does not set a limit to aNBO. JRC proposes 0.90 g/wash, which would "only" potentially exclude 25% of ecolabelled products (those with highest aNBO).

- *Rinse aid*

  There were few data points (n=4) for this product type. All data points fell below 0.01 g/wash, less than one-tenth of the existing threshold (0.15 g/wash). BA threshold is equal to EUEL one while NS one does not set a limit to aNBO. The JRC proposes to keep existing threshold.

The discussions and conclusions about anNBO threshold proposals, structured by product type and derived from placing the former evidences, are:

- *Dishwasher detergents (Multi-and single-function)*

  Data received did not allow to draw conclusions on differences between multi- and single-function dishwasher detergents, thus data was pooled and analyzed together, with conclusions referring DD as product type. The majority (75%) of the data points fell below 1.18 g/wash, less than half of the existing threshold (3.00 g/wash). BA threshold is equal to EUEL one while NS sets aNBO limit at 1.20 g/wash. JRC proposes 1.20 g/wash, which would be in alignment with NS and also would "only" potentially exclude 25% of ecolabelled products (those with highest aNBO).

- *Rinse aid*

  There were few data points (n=4) for this product type. All data points fell below 0.05 g/wash, less than one-tenth of the existing threshold (0.50 g/wash). BA threshold is equal to EUEL one while NS one sets aNBO limit at 0.30 g/wash. The JRC proposes to 0.30 g/wash), in alignment with NS.

[162] Criterion *015 Anaerobic biodegradability*; 017 Dishwasher detergent and rinse aids. V7.7. Nordic Ecolabelling. August 2024. Available at: https://www.nordic-swan-ecolabel.org/4a98a7/contentassets/4c39b5c28cb344a6ad02643a27094f28/criteria-document_017_dishwasher-detergents-and-rinse-aids-017_english.pdf

[163] Criterion *Biodegradability of organic substances*; DE-UZ 201 Dishwasher detergents; version 3.1; September 2023 Blue Angel. Available at: https://produktinfo.blauer-engel.de/uploads/criteriafile/en/DE-UZ%20201-202201-en%20criteria-V3.1.pdf

Hand - dishwashing detergent (HDD)

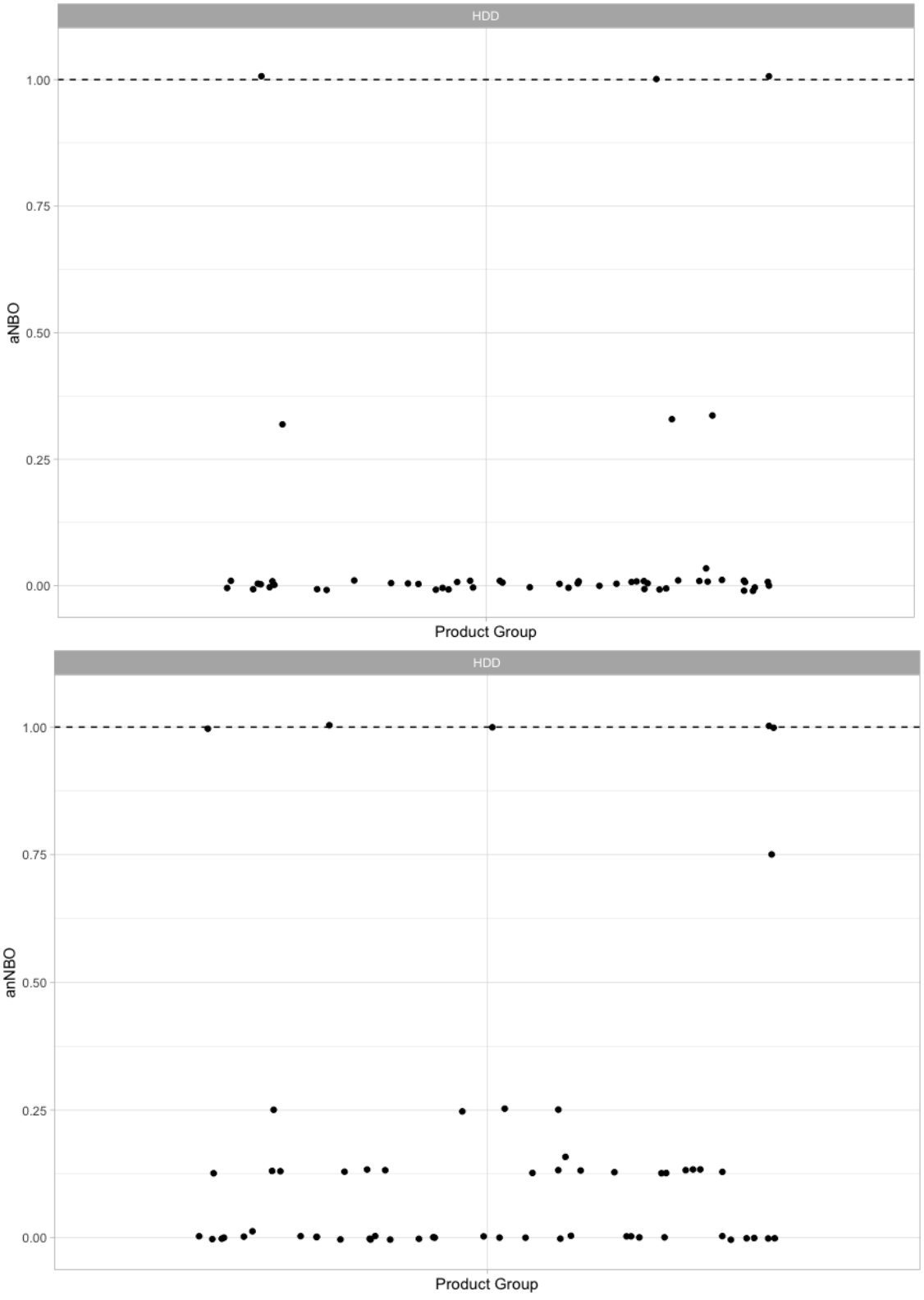
Table 33 – Hand-dishwashing detergent descriptive statistics on the content of non-biodegradable organic substances under aerobic (aNBO) and anaerobically (anNBO) conditions.

Product type	*Data points (n)*	*Minimum (g/l)*	*1st quartile (g/l)*	*Median (g/l)*	*Mean (g/l)*	*3rd quartile (g/l)*	*Maximum (g/l)*	*Existing Threshold (g/l)*
aNBO	59	0.000	0.000	0.000	0.002	0.000	0.030	*0.030*
anNBO	59	0.000	0.000	0.000	0.012	0.010	0.080	*0.080*

Source: JRC's elaboration with data provided by stakeholders.

Figure 13– Hand-dishwashing detergent content of non-biodegradable organic substances under aerobic (aNBO) and anaerobic (anNBO) conditions. Each data point has been factored by its corresponding EUEL threshold, thus being unit less and ranging from "0" to "1", which corresponds to the existing EUEL threshold (depicted by the dashed line).

Source: JRC's elaboration with data provided by stakeholders.



About other ecolabels:

— *Nordic Swan (NS)* - unlike EU ecolabel, NS does not set threshold limits only for aNBO or anNBO yet it limits the total amount of H410, H411 and H412 classified substances[164].

— *Blue Angel (BA)* – has lower limits that EUEL criteria, being 0.02 g/l of dishwashing solution for both aNBO and anNBO[165].

The discussions and conclusions about aNBO threshold proposals, structured by product type and derived from the former evidences, are:

— The majority of the data points suggest no or negligible content of aNBO substances, far below existing EUEL threshold (0.03 g/l dishwashing solution). BA threshold is lower than EUEL one (0.02 g/l dishwashing solution) while NS one does not set a specific limit to aNBO. JRC proposes 0.010 g/l dishwashing solution, which would potentially "only" exclude a marginal share (approx 5-10%) of existing ecolabelled products (those with highest aNBO) and would set slightly more stringent limit than BA.

The discussions and conclusions about anNBO threshold proposals, structured by product type and derived from placing the former evidences, are:

— The majority (75%) of the data points fell below 0.010 g/l dishwashing solution, one eighth of the existing threshold (0.080 g/dishwashing solution). BA threshold is lower than EUEL one (0.02 g/l dishwashing. In alignment with BA, the JRC proposes 0.020 g/l dishwashing solution which would "only" potentially exclude less than 25% of ecolabelled products (those with highest aNBO).

[164] 025 Hand-diswashing detergent. V6.10. Nordic Ecolabelling. August 2024. Available at: https://www.nordic-swan-ecolabel.org/4a6c85/contentassets/10f50d7e13a34cfbaf8fc0b66a4fc521/criteria-document-for-product-group-025_025_hand-dishwashing-detergents-025_english2.pdf

[165] Criterion Biodegradability of organic substances; DE-UZ 194 Hand Dishwashing Detergents and Hard Surface Cleaners; version 3.1; January 2022 Blue Angel. Available at: https://produktinfo.blauer-engel.de/uploads/criteriafile/en/DE-UZ%20194-202201-en%20criteria-V1.2.pdf

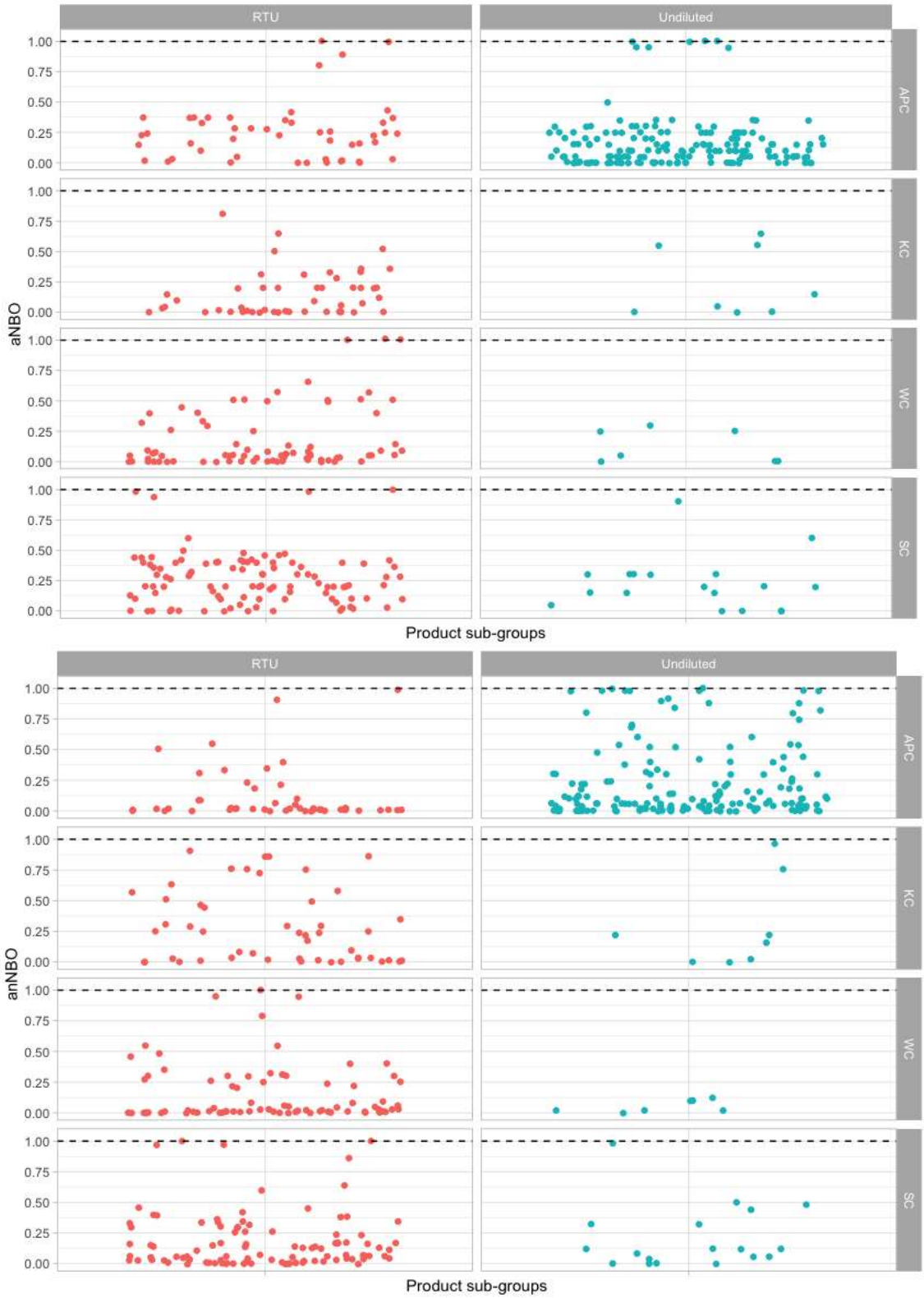
Hard Surface Cleaning (HSC) products

Table 34 – Hard-surface cleaning products descriptive statistics on the content of non-biodegradable organic substances under aerobic (aNBO) and anaerobically (anNBO) conditions. APC = All purpose cleaners; KC = Kitchen cleaners; WC = Window cleaners; SC = Sanitary cleaners.

Product type	*Product concentration*	*Data points (n)*	*Minimum (g/l)*	*1st quartile (g/l)*	*Median (g/l)*	*Mean (g/l)*	*3rd quartile (g/l)*	*Maximum (g/l)*	*Existing Threshold (g/l)*
aNBO									
APC	RTU	49	0.00	0.09	0.69	0.76	1.05	3.00	*3.00*
APC	Undiluted	163	0.00	0.00	0.02	0.03	0.04	0.20	*0.20*
KC	RTU	49	0.00	0.00	0.35	0.75	1.00	4.05	*5.00*
KC	Undiluted	8	0.00	0.00	0.02	0.05	0.11	0.13	*0.20*
WC	RTU	105	0.00	0.20	0.44	0.53	0.80	2.00	*2.00*
WC	Undiluted	18	0.00	0.02	0.04	0.05	0.06	0.18	*0.20*
SC	RTU	77	0.00	0.05	0.25	0.89	1.45	5.05	*5.00*
SC	Undiluted	7	0.00	0.00	0.01	0.02	0.05	0.06	*0.20*
anNBO									
APC	RTU	49	0.00	0.55	1.10	6.41	4.95	54.45	*55.00*
APC	Undiluted	163	0.00	0.01	0.05	0.12	0.15	0.60	*0.50*
KC	RTU	49	0.00	0.70	8.40	9.85	17.15	31.85	*35.00*
KC	Undiluted	8	0.00	0.01	0.10	0.15	0.18	0.48	*0.50*
WC	RTU	105	0.00	0.60	1.80	3.60	5.20	20.00	*20.00*
WC	Undiluted	18	0.00	0.02	0.06	0.10	0.16	0.49	*0.50*
SC	RTU	77	0.00	0.35	1.05	5.39	9.10	35.00	*35.00*
SC	Undiluted	7	0.00	0.01	0.01	0.03	0.05	0.06	*0.50*

Source: JRC's elaboration with data provided by stakeholders.

Figure 14– Hard surface cleaning products content of non-biodegradable organic substances under aerobic (aNBO) and anaerobic (anNBO) conditions. Each data point has been factored by its corresponding EUEL threshold, thus being unit less and ranging from "0" to "1", which corresponds to the existing EUEL threshold (depicted by the dashed line). Red dots represent products in RTU format while blue dots represent undiluted ones. APC = All-purpose cleaners; KC = Kitchen cleaners; WC = Window cleaners; SC = Sanitary cleaners.



Source: JRC's elaboration with data provided by stakeholders.

About other ecolabels:

— *Nordic Swan (NS)* – generally sets more stringent threshold values, especially for anNBO, compared with EU Ecolabel (See Table 35). It splits threshold values between consumer and professional product categories, differently from EUEL which only reports one value that is applicable to both private and professional use. It also has "horizontal" limits for concentrated, which is equivalent to *undiluted* in EUEL criteria (e.g. *Concentrated, consumer*), meaning that are applicable to several PGs. Note NS concentrated products have to be diluted, at least, ten times to classify as concentrated. This also includes some RTU types but there are specific threshold for RTU WC (roughly equivalent to SC in EUEL criteria) and RTU windows (WC in EUEL criteria). In addition, NS limits the total amount of H410, H411 and H412 classified substances[166].

Table 35 - Limits for the content of non-biodegradable organic substances under aerobic (aNBO) and anaerobic (anNBO) conditions in Nordic Ecolabelling (NS) cleaning products.

Product Type	*aNBO (g/litre in-use solution)*	*anNBO (g/litre in-use solution)*
Concentrated, consumer	0.10	0.10
RTU, WC, consumer	2.00	5.00
RTU, other, consumer	2.00	2.00
Concentrated, professional	0.05	0.25
Foam, professional	0.70	0.70
RTU, other (incl. WC), professional	2.00	5.00
RTU windows, professional, consumer	0.70	0.70
Façaces and terrace cleaners	0.10	0.10

Source: Criterion O12; 0.26, v6.14[167]

— *Blue Angel (BA)* –does not include RTU products for APC within its scope, thus comparison can only be made with APC undiluted. For the rest of product types (KC, WC, SC) the threshold is the same for RTU and undiluted (concentrated) only differing in how the reference dosage is quoted (RTU = 1000 g of end-use product / cleaning solution; Undiluted = dosage of end product required to prepare 1L of cleaning water for normally soiled surface). Blue Angel sets more stringent values in the case of all-purpose cleaner for both aNBO and anNBO limit values (See Table 36). While EU Ecolabel sets threshold values for undiluted sanitary cleaners, Blue Angel splits this category into toilet cleaner and bathroom cleaner[168].

[166] 026 Cleaning products. V6.14. Nordic Ecolabelling. August 2024. Available at: https://www.nordic-swan-ecolabel.org/4a6c7c/contentassets/988cf5d0a3fe4c3fa2f85775d7df4be9/criteria-document-for-product-group-026_026_cleaning-products-026_english.pdf

[167] 026 Cleaning products. V6.14. Nordic Ecolabelling. August 2024. Available at: https://www.nordic-swan-ecolabel.org/4a6c7c/contentassets/988cf5d0a3fe4c3fa2f85775d7df4be9/criteria-document-for-product-group-026_026_cleaning-products-026_english.pdf

[168] Criterion Biodegradability of organic substances; DE-UZ 194 Hand Dishwashing Detergents and Hard Surface Cleaners; version 3.1; January 2022 Blue Angel. Available at: https://produktinfo.blauer-engel.de/uploads/criteriafile/en/DE-UZ%20194-202201-en%20criteria-V1.2.pdf

Table 36 - Limits for the content of non-biodegradable organic substances under aerobic (aNBO) and anaerobic (anNBO) conditions in Blue Angel criteria Laundry Detergents and Stain Removers.

Product Type	*aNBO*	*anNBO*	*Units*
All-purpose cleaners	0.02	0.02	g/l dishwashing water
Kitchen cleaner	0.02	0.1	g/l cleaning water
Toilet cleaner	5.00	15.00	g / g cleaning solution
Bathroom cleaner	0.50	0.75	g / g cleaning solution
Glass cleaner	0.20	0.50	g / g cleaning solution
Descaler	0.01	0.01	g / g cleaning solution

Source: Criterion *Biodegradability of organic substances*; BA DE-UZ 194, v3.1[169]

The discussions and conclusions about aNBO threshold proposals, structured by product type and derived from the former evidences, are:

— *All purpose cleaners (RTU)*

The majority of the data points (75%) fell below 1.05 g/1000g cleaning solution (thereafter quoted as g/kg), roughly one third of the existing EUEL threshold (3.00 g/kg). There is no BA threshold as APC, RTU is out of its scope. The limit set by NS is 2.00 g/litre in-use solution, below existing EUEL limit.. not set a specific limit to aNBO. JRC proposes 1.00 g/k which would potentially "only" exclude slightly over 25% of ecolabelled products (those with highest aNBO) and would set a more stringent limit than NS.

— *All purpose cleaners (Undiluted)*

The majority of the data points (75%) fell below 0.04 g/kg, roughly one fifth of the existing EUEL threshold (0.20 g/kg). The BA threshold is ten times lower (0.02 g/1000 g cleaning solution). NS sets limit at half (0.10 g/litre in-use solution) for consumer products and roughly a quarter (0.045 g/litre in-use solution) for professional compared to EUEL ones. The JRC proposes 0.05 g/kg which would potentially "only" exclude slightly less than 25% of existing ecolabelled products and it will be aligned with the most stringent NS limit for this product type and product concentration combination.

— *Kitchen cleaners (RTU)*

The majority of the data points (75%) fell below 1.00 g/kg, roughly one fifth of the existing EUEL threshold (5.00 g/kg). The BA threshold is set at 0.20 g/1000 g cleaning solution, while NS sets this limit at 2.00 g/litre in-use solution for consumer and professional products. The JRC proposes 1.00 g/kg which would potentially "only" exclude 25% of existing ecolabelled products.

— *Kitchen cleaners (Undiluted)*

All data points were below 0.13 g/kg, roughly 2/3 of the existing EUEL threshold (0.20 g/kg). The BA threshold is set at 0.20 g/1000 g cleaning solution, while NS sets this limit at 0.100 and 0.045 g/litre in-use solution for consumer and professional products, respectively. The JRC proposes 0.10 g/kg which would potentially "only" exclude slightly over 25% of existing ecolabelled products and would be in alignment with NS KC consumer limit. .

[169] Criterion Biodegradability of organic substances; DE-UZ 194 Hand Dishwashing Detergents and Hard Surface Cleaners; version 3.1; January 2022 Blue Angel. Available at: https://produktinfo.blauer-engel.de/uploads/criteriafile/en/DE-UZ%20194-202201-en%20criteria-V1.2.pdf

— *Window cleaners (RTU)*

The majority of the data points (75%) fell below 0.800 g/kg, two fifth of the existing EUEL threshold (2.00 g/kg). The BA threshold is set at 0.20 g/1000 g cleaning solution, while NS sets is equal as EUEL one for consumer products but is 0.70 g/litre in-use solution for professional ones. The JRC proposes 0.70 g/kg which would potentially "only" exclude slightly over 25% of existing ecolabelled products and it would also be in alignment with NS limits.

— *Window cleaners (Undiluted)*

The majority of the data points (75%) fell below 0.06 g/kg, roughly 1/3 of the existing EUEL threshold (0.20 g/kg). The BA threshold is set at 0.20 g/1000 g cleaning solution, while NS is half of EUEL one for consumer and professional products (0.100 g/litre in-use solution). The JRC proposes 0.100 g/kg in alignment with NS and because it should be potentially compatible with over 75% of existing ecolabelled products.

— *Sanitary cleaners (RTU)*

The majority of the data points (75%) fell below 1.45 g/kg, roughly 1/3 of the existing EUEL threshold (5.00 g/kg). The BA threshold is set at 0.50 and 5.0 g/1000 g cleaning solution for Bathroom and Toilet cleaners, respectively. NS limit is set at 2.00 g/litre in-use solution for consumer and professional ones. The JRC proposes 1.50 g/kg which would potentially "only" exclude slightly over 25% of existing ecolabelled products. Since this could pose challenges to toilet cleaners (according to BA and EUEL threshold) a question is included on the feasibility of this particular threshold with regards to RTU Toilet cleaners.

— *Sanitary cleaners (Undiluted)*

The majority of the data points (75%) fell below 0.05 g/kg, roughly 1/4 of the existing EUEL threshold (0.20 g/kg). The BA threshold is set at 0.50 and 5.0 g/1000 g cleaning solution for Bathroom and Toilet cleaners, respectively. NS limit is set at 0.100 and 0.045 g/litre in-use solution for consumer and professional products, respectively. The JRC proposes 0.100 g/kg in alignment with NS and because it would be potentially compatible with all existing ecolabelled products.

The discussions and conclusions about anNBO threshold proposals, structured by product type and derived from the former evidences, are:

— *All purpose cleaners (RTU)*

The majority of the data points (75%) fell below 4.95 g/1000g cleaning solution (thereafter quoted as g/kg), roughly one tenth of the existing EUEL threshold (55.00 g/kg). There is no BA threshold as APC, RTU is out of its scope. The limit set by NS is 2.00 and 5.00 g/litre in-use solution for consumer and professional products, respectively. The JRC proposes 5.00 g/kg which would potentially "only" exclude 25% of ecolabelled products (those with highest aNBO) and it would be in alignment with NS limit for professional products.

— *All purpose cleaners (Undiluted)*

The majority of the data points (75%) fell below 0.15 g/kg, roughly 1/3 of the existing EUEL threshold (0.50 g/kg). The BA threshold is lower (0.02 g/1000 g cleaning solution), so are. NS limits with 0.100 and 0.250 g/litre in-use solution for consumer and professional products, respectively. The JRC proposes 0.25 g/kg which would potentially "only" exclude less than 25% of existing ecolabelled products and it will be aligned with NS limit for professional products.

— *Kitchen cleaners (RTU)*

The majority of the data points (75%) fell below 17.15 g/kg, roughly half of the existing EUEL threshold (35.00 g/kg). The BA threshold is set at 0.5 g/1000 g cleaning solution. The limits set by NS are 2.00 and 5.00 g/litre in-use solution for consumer and professional products, respectively. The JRC proposes 5.00 g/kg in alignment with NS limit for professional products. However, since the proposed threshold ambition would potentially exclude more than 50% of ecolabelled products (those with highest aNBO), the JRC raised a question to assess the feasibility the proposed limit.

— *Kitchen cleaners (Undiluted)*

All data points received (n=7) fell below 0.48 g/kg, roughly the existing EUEL threshold (0.50 g/kg). The BA threshold is the same as EUEL one, while. NS limits are 0.100 and 0.250 g/litre in-use solution for consumer and professional products, respectively. Given the limited number of data points, the JRC proposes to keep existing limit as a conservative threshold, which is an alignment with BA and that it would potentially not exclude any of the existing ecolabelled products.

— *Window cleaners (RTU)*

The majority of the data points (75%) fell below 5.20 g/kg, roughly one quarter of the existing EUEL threshold (20.00 g/kg). The BA threshold is set at 0.5 g/1000 g cleaning solution. The limit set by NS is 0.70 g/litre in-use solution for consumer and professional products, respectively. The JRC proposes 2.00 g/kg. However, the JRC acknowledges that the proposed threshold ambition would potentially exclude slightly less than 50% of ecolabelled products (those with highest aNBO) and simultaneously having lower ambition than threshold set in NS and BA. Hence, it raised a question to assess the feasibility the proposed limit and also to define the possibility to be more stringent in line other ecolabel schemes. .

— *Window cleaners (Undiluted)*

All data points received (n=7) fell below 0.48 g/kg, roughly the existing EUEL threshold (0.50 g/kg). The BA threshold is the same as EUEL one, while. NS limits are 0.100 and 0.250 g/litre in-use solution for consumer and professional products, respectively. Given the number of data points, the JRC proposes to keep existing limit as a conservative threshold, which is an alignment with BA and that it would potentially not exclude any of the existing ecolabelled products.

— *Sanitary cleaners (RTU)*

The majority of the data points (75%) fell below 9.10 g/kg, roughly one quarter of the existing EUEL threshold (35.00 g/kg). The BA threshold is set at 0.75 and 15.0 g/1000 g cleaning solution for Bathroom cleaners and Toilet cleaners, respectively. The limit set by NS is 5.00 g/litre in-use solution for consumer and professional products, respectively. The JRC proposes 5.00 g/kg, aligned with NS and over the BA threshold for bathroom cleaners. However, the JRC acknowledges that the proposed threshold ambition could potentially exclude a significant share (30-40%) of ecolabelled products (those with highest aNBO) and potentially be restrictive for toilet cleaners (based on BA threshold). Hence, it raised a question to assess the feasibility the proposed limit.

— *Sanitary cleaners (Undiluted)*

All data points received (n=7) fell below the existing EUEL threshold (0.50 g/kg). The BA threshold is set at 0.75 and 15.0 g/1000 g cleaning solution for Bathroom cleaners and Toilet cleaners, respectively. The limit set by NS is 0.100 and 0.250 g/litre in-use solution for consumer and professional products, respectively. Given the limited number of data points (n=7), the JRC proposes to keep existing limit as a conservative threshold, which is a compromise between BA for bathroom cleaners and NS limit for professional products, which would potentially not exclude any of the existing ecolabelled products.

2851 Industrial and Institutional dishwasher detergent (IIDD) products

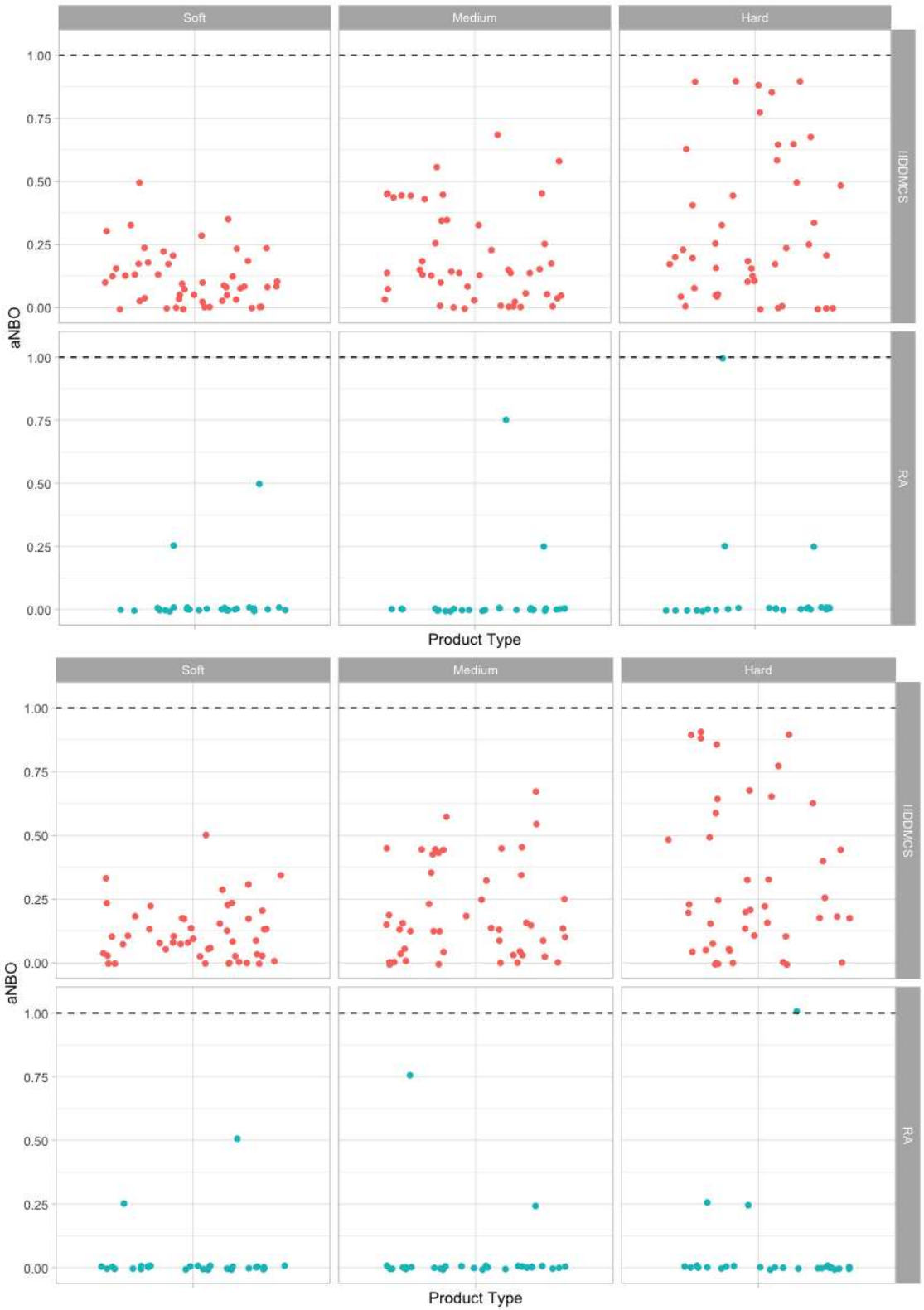
2852 Table 37 – Hard-surface cleaning products descriptive statistics on the content of non-biodegradable organic substances
2853 under aerobic (aNBO) and anaerobically (anNBO) conditions. APC = All purpose cleaners; KC = Kitchen cleaners; WC =
2854 Window cleaners; SC = Sanitary cleaners.

Product type	*Water Hardness*	*Data points (n)*	*Minimum (g/l)*	*1st quartile (g/l)*	*Median (g/l)*	*Mean (g/l)*	*3rd quartile (g/l)*	*Maximum (g/l)*	*Existing Threshold (g/l)*
aNBO									
IIDDMCS	Soft	49	0.00	0.01	0.03	0.05	0.07	0.20	*0.40*
IIDDMCS	Medium	48	0.00	0.02	0.05	0.08	0.14	0.27	*0.40*
IIDDMCS	Hard	44	0.00	0.03	0.08	0.13	0.21	0.36	*0.40*
RA	Soft	29	0.00	0.00	0.00	0.00	0.00	0.02	*0.04*
RA	Medium	28	0.00	0.00	0.00	0.00	0.00	0.03	*0.04*
RA	Hard	26	0.00	0.00	0.00	0.00	0.00	0.04	*0.04*
anNBO									
IIDDMCS	Soft	49	0.00	0.01	0.03	0.07	0.07	0.80	*0.60*
IIDDMCS	Medium	48	0.00	0.02	0.06	0.09	0.17	0.27	*1.00*
IIDDMCS	Hard	44	0.00	0.04	0.08	0.13	0.24	0.36	*1.00*
RA	Soft	29	0.000	0.000	0.000	0.007	0.010	0.02	*0.04*
RA	Medium	28	0.000	0.000	0.015	0.013	0.020	0.03	*0.04*
RA	Hard	26	0.000	0.000	0.015	0.018	0.030	0.05	*0.04*

2855 *Source:* JRC's elaboration with data provided by stakeholders.

2856

Figure 15– Industrial and Institutional dishwasher detergent content of non-biodegradable organic substances under aerobic (aNBO) and anaerobic (anNBO) conditions by water hardness level (*Soft*, *Medium*, *Hard*). Each data point has been factored by its corresponding EUEL threshold, thus being unit less and ranging from "0" to "1", which corresponds to the existing EUEL threshold (depicted by the dashed line). Red dots represent dishwasher detergents and multicomponent systems (*IIDDMCS*) while blue dots represent Rinse aids (*RA*). *"Pre-soaks"* is not included as no data was received.



Source: JRC's elaboration with data provided by stakeholders.

About other ecolabels:

— *Blue Angel (BA)* –does not have criteria for professional products.

— *Nordic Swan (NS)* – sets stricter limit values for both aNBO and anNBO and for all product categories compared to the EU Ecolabel (See Table 38). Unlike EU Ecolabel, it sets the threshold values regardless of water hardness and degree of soiling. In addition, iminodisuccinate (DID No. 2555) and cumene sulfonates (DID No. 2540) are excluded from the calculation of anNBO and polycarboxylates (DID No. 2507 and 2508) are excluded from the calculation of aNBO and anNBO[170].

Table 38 - Limits for the content of non-biodegradable organic substances under aerobic (aNBO) and anaerobic (anNBO) conditions in Nordic Ecolabelling (NS) dishwasher detergent for professional use.

Product Type	*aNBO (g/litre water)*	*anNBO (g/litre water)*
Dishwasher detergent	0.15	0.20
Soaking agents	0.15	0.20
Products used to clean instruments in healthcare	0.15	0.20
Rinse aids	0.04	0.04
Dishwasher detergents for aluminium goods	0.15	0.20

Source: Criterion O12; 0.80, v3.8[171]

The discussions and conclusions about aNBO threshold proposals, structured by product type and derived from the former evidences, are:

— *Industrial and institutional dishwasher detergent and multicomponent systems (all water hardness)*

The majority of the data points (75%) for soft/medium/hard water fell below 0.07/0.14/0.21 g/litre of washing solution (thereafter quoted as g/l), respectively. The highest value (0.21 g/l) was roughly half of the existing EUEL threshold (0.40 g/l), which is common to all water hardness levels. The limit set by NS is 0.150 g/litre water, roughly one third of existing EUEL limit. The JRC proposes 0.20 g/l, which would potentially "only" exclude slightly over 25% of ecolabelled products (those with highest aNBO) on the most stringent case (hard water) and would be more closely aligned with NS limit. In addition, this limit is proposed to be set irrespective of water hardness level.

— *Rinse aid (all water hardness)*

The majority of the data points did not have appreciable aNBO concentrations, with very few points reaching maximums of 0.02/0.03/0.04 g/l for soft/medium/hard water hardness. The EUEL limit is 0.04 g/l, which is equivalent to NS (0.040 g/litre water). The JRC proposes keeping existing threshold and additionally setting this limit irrespective of water hardness level.

— *Pre soaks (all water hardness)*

[170] 080 Dishwasher detergents for professional use. V3.8. Nordic Ecolabelling. April 2024. Available at: https://www.nordic-swan-ecolabel.org/498b38/contentassets/4fbf7d89969d452097042cd798bfd3d7/background-document-for-product-group-080_080_dishwasher-detergents-for-professional-use-080_english.pdf

[171] 080 Dishwasher detergents for professional use. V3.8. Nordic Ecolabelling. April 2024. Available at: https://www.nordic-swan-ecolabel.org/498b38/contentassets/4fbf7d89969d452097042cd798bfd3d7/background-document-for-product-group-080_080_dishwasher-detergents-for-professional-use-080_english.pdf

There is no *pre-soaks* data so it is not possible to have similar orientations as per previous cases based on a statistical descriptive analysis of the data received. Nevertheless, NS limit for *Pre-soaks* is 0.15 g/litre water, the same as per *Dishwasher detergent* and lower the EUEL one (0.40 g/l). Despite the lack of data received, the JRC proposes 0.20 g/l , irrespective of water hardness level, based on the proposal made for IIDD *dishwasher detergents* and in close alignment with NS limit.

The discussions and conclusions about anNBO threshold proposals, structured by product type and derived from the former evidences, are:

— *Industrial and institutional dishwasher detergent and multicomponent systems (all water hardness)*

The majority of the data points (75%) for soft/medium/hard water fell below 0.07/0.17/0.24 g/l, respectively. The highest value (0.24 g/l) was roughly one quarter of the existing EUEL threshold for medium and hard water (1.00 g/l). The limit set by NS is 0.20 g/litre water, roughly one fifth of the cited existing EUEL limit. The JRC proposes 0.25 g/l, which would potentially "only" exclude slightly over 25% of ecolabelled products (those with highest aNBO) on the most stringent case (hard water) and would be

— *Rinse aids (all water hardness)*

The majority of the data points did not have appreciable aNBO concentrations, with very few points reaching maximums of 0.02/0.03/0.04 g/l for soft/medium/hard water hardness. The EUEL limit is 0.04 g/l, which is equivalent to NS (0.040 g/litre water). The JRC proposes keeping existing threshold and additionally setting this limit irrespective of water hardness level.

— *Pre-soaks (all water hardness)*

There is no *pre-soaks* data so it is not possible to have similar orientations as per previous cases based on a statistical descriptive analysis of the data received. Nevertheless, NS limit for *Pre-soaks* is 0.20 g/litre water, the same as per *Dishwasher detergent* and lower the EUEL one (0.40 g/l). Despite the lack of data received, the JRC proposes 0.25 g/l, irrespective of water hardness level, based on the proposal made for IIDD *dishwasher detergents* and in close alignment with NS limit.

Considering the former statements and in alignment with NS, the JRC proposes that the calculation of aNBO and anNBO should be based on the highest recommended dose by the manufacturer, as claimed in the product (i.e. label; accompanying product sheet), regardless of water hardness and/or degree of soiling. Under this proposal, a single threshold is set by product type, which aims to simplify criteria structure/verification

Industrial and Institutional dishwasher detergent (IILD) products

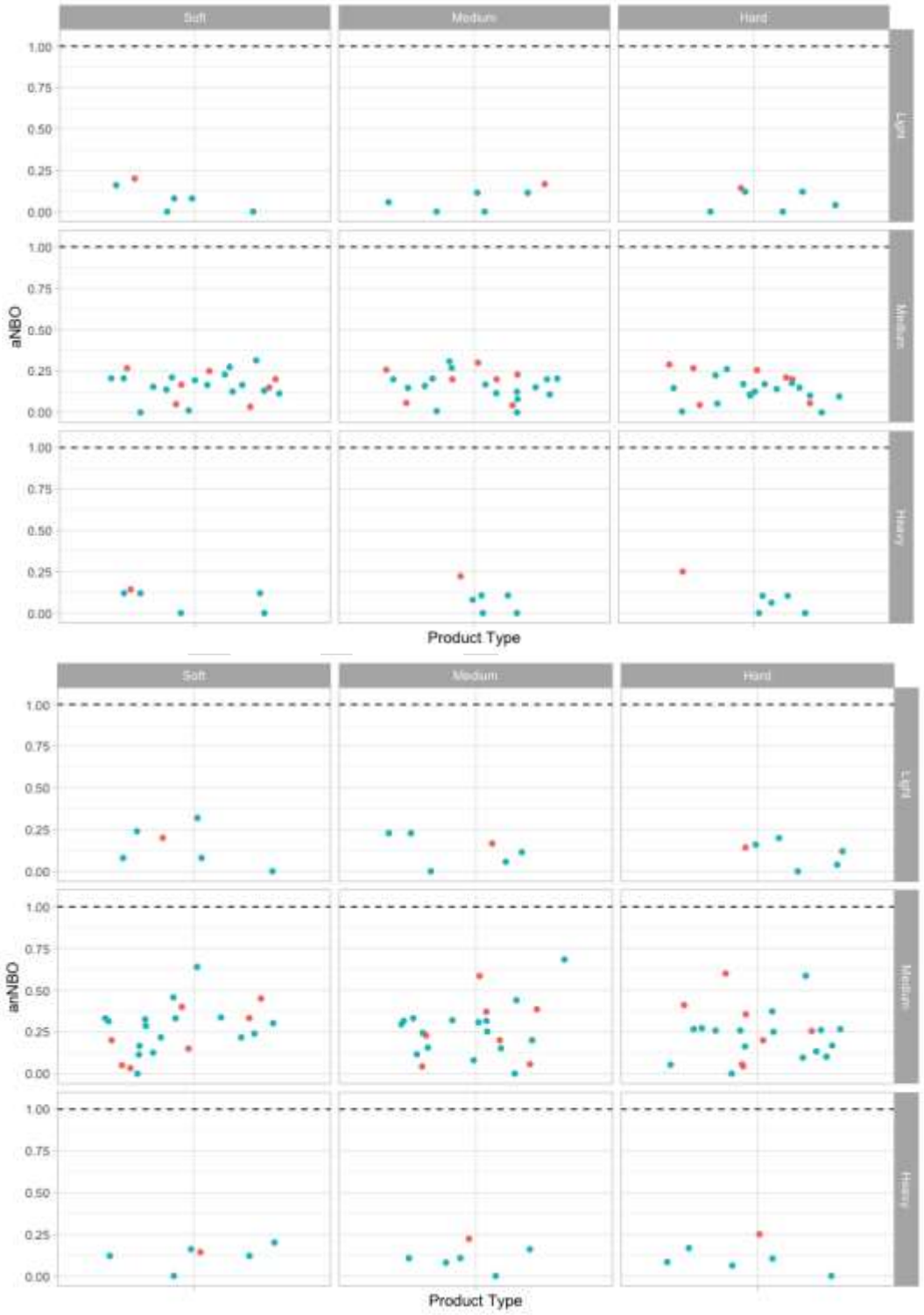
Table 39 – Industrial and institutional laundry detergents descriptive statistics on the content of non-biodegradable organic substances under aerobic (aNBO) and anaerobically (anNBO) conditions. Data did not allowed for discrimination between products in liquid or solid form. For the purposes of this data analysis, these data points were attributed to the type with most stringent limit, thus "liquid", under the logic that data points passing this limit would also pass the less stringent associated with solid products.

Product type	*Water Hardness*	*Degree of soiling*	*Data points (n)*	*Minimum (g/kg)*	*1st quartile (g/kg)*	*Median (g/kg)*	*Mean (g/kg)*	*3rd quartile (g/kg)*	*Maximum (g/kg)*	*Existing Threshold (g/kg)*
aNBO										
IILD (liquid)	Soft	Light	1	0.10	0.10	0.10	0.10	0.10	0.10	*0.50*
IILD (liquid)	Soft	Medium	7	0.02	0.06	0.10	0.10	0.14	0.16	*0.60*
IILD (liquid)	Soft	Heavy	1	0.10	0.10	0.10	0.10	0.10	0.10	*0.70*
MCS	Soft	Light	5	0.000	0.000	0.100	0.080	0.100	0.20	*1.25*
MCS	Soft	Medium	16	0.000	0.228	0.290	0.289	0.362	0.55	*1.75*
MCS	Soft	Heavy	5	0.000	0.000	0.300	0.180	0.300	0.30	*2.50*
IILD (liquid)	Medium	Light	1	0.100	0.100	0.100	0.100	0.100	0.10	*0.60*
IILD (liquid)	Medium	Medium	7	0.030	0.090	0.140	0.129	0.170	0.21	*0.70*
IILD (liquid)	Medium	Heavy	1	0.200	0.200	0.200	0.200	0.200	0.20	*0.90*
MCS	Medium	Light	5	0.000	0.000	0.100	0.100	0.200	0.20	*1.75*
MCS	Medium	Medium	16	0.000	0.285	0.390	0.383	0.503	0.77	*2.50*
MCS	Medium	Heavy	5	0.000	0.000	0.300	0.220	0.400	0.40	*3.75*
IILD (liquid)	Hard	Light	1	0.100	0.100	0.100	0.100	0.100	0.10	*0.70*
IILD (liquid)	Hard	Medium	7	0.040	0.115	0.190	0.170	0.235	0.26	*0.90*
IILD (liquid)	Hard	Heavy	1	0.300	0.300	0.300	0.300	0.300	0.30	*1.20*
MCS	Hard	Light	5	0.000	0.000	0.100	0.140	0.300	0.30	*2.50*
MCS	Hard	Medium	16	0.000	0.375	0.500	0.476	0.640	0.98	*3.75*
MCS	Hard	Heavy	5	0.000	0.000	0.300	0.260	0.500	0.50	*4.80*
anNBO										
IILD (liquid)	Soft	Light	1	0.10	0.10	0.10	0.10	0.10	0.10	*0.50*
IILD (liquid)	Soft	Medium	7	0.02	0.06	0.12	0.14	0.22	0.27	*0.60*
IILD (liquid)	Soft	Heavy	1	0.10	0.10	0.10	0.10	0.10	0.10	*0.70*
MCS	Soft	Light	5	0.000	0.100	0.100	0.180	0.300	0.40	*1.25*

Product type	*Water Hardness*	*Degree of soiling*	*Data points (n)*	*Minimum (g/kg)*	*1st quartile (g/kg)*	*Median (g/kg)*	*Mean (g/kg)*	*3rd quartile (g/kg)*	*Maximum (g/kg)*	*Existing Threshold (g/kg)*
MCS	Soft	Medium	16	0.000	0.358	0.515	0.482	0.580	1.12	*1.75*
MCS	Soft	Heavy	5	0.000	0.300	0.300	0.300	0.400	0.50	*2.50*
IILD (liquid)	Medium	Light	1	0.100	0.100	0.100	0.100	0.100	0.10	*0.60*
IILD (liquid)	Medium	Medium	7	0.030	0.090	0.160	0.187	0.265	0.41	*0.70*
IILD (liquid)	Medium	Heavy	1	0.200	0.200	0.200	0.200	0.200	0.20	*0.90*
MCS	Medium	Light	5	0.000	0.100	0.200	0.220	0.400	0.40	*1.75*
MCS	Medium	Medium	16	0.000	0.388	0.685	0.658	0.793	1.71	*2.50*
MCS	Medium	Heavy	5	0.000	0.300	0.400	0.340	0.400	0.60	*3.75*
IILD (liquid)	Hard	Light	1	0.100	0.100	0.100	0.100	0.100	0.10	*0.70*
IILD (liquid)	Hard	Medium	7	0.040	0.115	0.230	0.247	0.345	0.54	*0.90*
IILD (liquid)	Hard	Heavy	1	0.300	0.300	0.300	0.300	0.300	0.30	*1.20*
MCS	Hard	Light	5	0.000	0.100	0.300	0.260	0.400	0.50	*2.50*
MCS	Hard	Medium	16	0.000	0.470	0.955	0.822	1.000	2.20	*3.75*
MCS	Hard	Heavy	5	0.000	0.300	0.400	0.400	0.500	0.80	*4.80*

Source: JRC's elaboration with data provided by stakeholders.

Figure 16– Industrial and Institutional laundry detergent content of non-biodegradable organic substances under aerobic (aNBO) and anaerobic (anNBO) conditions by water hardness level (*Soft*, *Medium*, *Hard*) and degree of soiling (*Light*, *Medium*, *Heavy*). Data did not allowed for discrimination between products in liquid or solid form. For the purposes of this data analysis, these data points were attributed to the type with most stringent limit, thus "liquid", under the logic that data points passing this limit would also pass the less stringent associated with solid products. Each data point has been factored by its corresponding EUEL threshold, thus being unit less and ranging from "0" to "1", which corresponds to the existing EUEL threshold (depicted by the dashed line). Blue dots represent multicomponent systems while red dots represent IILD attributed to liquid form.



Source: JRC's elaboration with data provided by stakeholders.

About other ecolabels:

- *Blue Angel (BA)* –does not have criteria for professional products.
- *Nordic Swan (NS)* – set limits to IILD based on the degree of soiling (See Table 40). The EU Ecolabel considers degree of soiling too but also others as product type/form (powder, liquid an multi-component system) and water hardness. This difficult making a direct comparison between EU Ecolabel and Nordic Swan threshold and advices focusing only on the degree of soiling. Unlike EU Ecolabel, it sets the threshold values regardless of water hardness and degree of soiling. In addition, iminodisuccinate (DID No. 2555) and cumene sulfonates (DID No. 2540) are excluded from the calculation of anNBO and polycarboxylates (DID No. 2507 and 2508) are excluded from the calculation of aNBO and anNBO[172].

Table 40 - Limits for the content of non-biodegradable organic substances under aerobic (aNBO) and anaerobic (anNBO) conditions in Nordic Ecolabelling (NS) laundry detergent for professional use.

Degree of soiling	*aNBO (g/kg laundry)*	*anNBO (g/kg laundry)*
Light	0.40	0.40
Medium	0.70	0.70
Hard	1.00	1.00

Source: Criterion O12; 0.80, v3.8[173]

The discussions and conclusions about aNBO threshold proposals, structured by product type and derived from the former evidences, are:

- *Industrial and institutional laundry detergent (liquid + solid;)*

  The number of data points available mostly related to medium water hardness at medium degree of soiling (n=7) with very few points for other combination of water hardness and degree of soiling. This implied a certain degree of certainty available only for medium water hardness. Focusing at this level, all the data points fell below 0.21 g/kg laundry (thereafter quoted as g/kg), which was far below the existing EUEL threshold (0.70 g/kg). Whilst not directly comparable, the limit set by NS at this water hardness level (medium; 0.70 g.kg) is the same as EUEL one. Due to limitations of this analysis, it was not possible to allocate data available to one product form (liquid) or another (solid), thus all data points with no clear form attribution were labelled as "liquid" since it had the most stringent limits. Consequently, any conclusion drawn on these data should be understood to be both applicable to solid and liquid formats.

  In addition, stakeholders' feedback suggested to consider a simplification of this sub-criterion, by considering whether limits could be set irrespective of water hardness. While checking data available and existing EUEL limits, it was observed that taking as reference the value for medium water hardness, the corresponding value for the other water hardness levels (soft, hard) within the same degree of soiling ranged from 0.8 to 1.2. In other words and expressed as a percentage, the values for soft water were approximately 80% and the values for hard water were 120% of the values for medium. In all cases, the data that JRC had access for soft and hard water hardness within the same degree of soiling were far below this range (80% - 120%) suggesting feasibility for compliance with a unique value set using the

[172] 080 Dishwasher detergents for professional use. V3.8. Nordic Ecolabelling. April 2024. Available at: https://www.nordic-swan-ecolabel.org/498b38/contentassets/4fbf7d89969d452097042cd798bfd3d7/background-document-for-product-group-080_080_dishwasher-detergents-for-professional-use-080_english.pdf

[173] 080 Dishwasher detergents for professional use. V3.8. Nordic Ecolabelling. April 2024. Available at: https://www.nordic-swan-ecolabel.org/498b38/contentassets/4fbf7d89969d452097042cd798bfd3d7/background-document-for-product-group-080_080_dishwasher-detergents-for-professional-use-080_english.pdf

conclusions drawn for medium water hardness. Hence, it appears as feasible to adopt a simplification via disregarding water hardness level. Given the former, the JRC proposes a threshold of 0.70 g/l for medium degree of soiling which would be applicable irrespective of water hardness level.

Then, for the other degrees of soiling, the low number of data points available did not allow for a robust/clear proposal but generally values for light and heavy degree of soiling accounted for 0.7 to 1.5 of the value for medium degree of soiling. Hence, based on the evidences available, the JRC proposes 0.50 g/kg and 0.85 g/kg for light and heavy degree of soiling, respectively. These thresholds proposal would require/widely benefit from stakeholders on feasibility and/or on how to raise the ambition level to a technically feasible extent.

— *Industrial and institutional laundry detergent (Multi-component systems - MCS)*

The number of data points available mostly related to medium water hardness at medium degree of soiling (n=16) with few points for other combination of water hardness and degree of soiling. This implied a certain degree of certainty available only for medium water hardness. Focusing at this level, all the data points fell below 0.77 g/kg laundry (thereafter quoted as g/kg), which was far below the existing EUEL threshold (2.50 g/kg). Whilst not directly comparable, the limit set by NS at this water hardness level (medium; 0.70 g/kg) is lower than EUEL one. Due to limitations of this analysis, it was not possible to allocate data available to one product form (liquid) or another (solid), thus all data points with no clear form attribution were labelled as "liquid" since it had the most stringent limits. Consequently, any conclusion drawn on these data should be understood to be both applicable to solid and liquid formats.

Likewise for IILD, stakeholders' feedback suggested to consider a simplification of this sub-criterion for MCS by considering whether limits could be set irrespective of water hardness. While checking data available and existing EUEL limits, it was observed that taking as reference the value for medium water hardness, the corresponding value for the other water hardness levels (soft, hard) within the same degree of soiling ranged from 0.8 to 1.2. In other words and expressed as a percentage, the values for soft water were approximately 80% and the values for hard water were 120% of the values for medium. In all cases, the data that JRC had access for soft and hard water hardness within the same degree of soiling were far below this range (80% - 120%) suggesting feasibility for compliance with a unique value set using the conclusions drawn for medium water hardness. Hence, it appears as feasible to adopt a simplification via disregarding water hardness level. Given the former, the JRC proposes a threshold of 1.00 g/l for medium degree of soiling which would be applicable irrespective of water hardness level.

Then, for the other degrees of soiling, the number of data points available did not allow for a robust/clear proposal but generally values for light and heavy degree of soiling accounted for 0.7 to 1.5 of the value for medium degree of soiling. Hence, based on the evidences available, the JRC proposes 0.60 g/kg and 1.40 g/kg for light and heavy degree of soiling, respectively. These thresholds proposal would require/widely benefit from stakeholders on feasibility and/or on how to raise the ambition level to a technically feasible extent.

The discussions and conclusions about anNBO threshold proposals mirror those presented for aNBO. Indeed, the existing EUEL thresholds are the same within the same degree of soiling and water hardness, Similarly, NS has the same limits for aNBO and anNBO. Consequently, the same thresholds as per aNBO are proposed for anNBO, in other words, the JRC proposes:

— *Industrial and institutional laundry detergent (liquid + solid;)*

- The thresholds for soft /medium /heavy degree of soiling are 0.50 /0.70 /0.85 g/kg, respectively.
- Threshold proposed are set/applicable irrespective of water hardness level.

— *Industrial and institutional laundry detergent (Multi-component systems - MCS)*

- The thresholds for soft /medium /heavy degree of soiling are 0.60 /1.00 /1.40 g/kg, respectively.
- Threshold are set/applicable irrespective of water hardness level.

Considering the former statements and in alignment with NS, the JRC proposes that the calculation of aNBO and anNBO should be based on the highest recommended dose by the manufacturer, as claimed in the product (i.e. label; accompanying product sheet), regardless of water hardness. Under this proposal, a single threshold is set by product type and degree of soiling, which aims to simplify criteria structure/verification.

About other related topics

— About derogations for H-classified substances (surfactants; H400, H412).

The JRC received feedback within the *Biodegradability* criterion from stakeholders indicating that it could be technically feasible to remove the derogation for H400 classified substances (mainly related to surfactants) adducing that effective alternatives are available. Indeed, this was the conclusion that the JRC reached after performing further research on the topic, as shown in the preliminary report (See Chapter 5.2.6. *A closer look at surfactants*) and the criterion *Excluded and Restricted substances* rationale (See sub-criterion *Hazardous substances*).

— (Bioaccumulation)

With regards to the following text found in the assessment and verification of the biodegradability criterion, one stakeholder supported keeping these alternatives while another inquired about which methods are accepted for "log K_{ow}" and "BCF" determination (OECD 107 and OECD 305, respectively):

> *"In the absence of documentation for degradability described above, an ingoing substance other than a surfactant may be exempted from the requirement for anaerobic degradability if one of the following three alternatives is fulfilled:*
>
> *(1) it is readily degradable and has low adsorption (A<25%);*
>
> *(2) it is readily degradable and has high adsorption (D>75%);*
>
> *(3) it is readily degradable and non-bio-bioaccumulating ([174])"*
>
> *Testing for adsorption/desorption shall be conducted in accordance with OECD Guideline 106.*

Summary of changes

The main changes made in this 2nd draft criteria, compared to the previous version, are:

— Requesting all surfactants to be also anaerobically biodegradable, irrespective of its hazardous classification.

— Adding an explicit requirement on the biodegradability of water-soluble films, inclusive of the polymers contained within, requiring them to be biodegradable under aerobic conditions. This should be proven using the methods described in the most updated DID list, ISO 14851:2019[175] or ISO 14852:2021[176], or equivalent scientific method. If using the ISO methods, then carbon balance calculations and total degree of biodegradation results must be provided.

— Introducing a general exemption excluding microorganisms from the aNBO and anNBO calculation that is applicable to all product groups.

— Specifying via explicit text ("*highest recommended dose*") how the aNBO and anNBO calculation must be done.

— Significantly tightening the ambition level of aNBO and anNBO thresholds, according to best available evidences that JRC accessed.

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[174] A substance is considered to be not bio-accumulating if the BCF is < 100 or log K_{ow} is < 3,0. If both the BCF and log K_{ow} values are available, the highest measured BCF value shall be used.

[175] International Standard ISO 14851:2019 Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium — Method by measuring the oxygen demand in a closed respirometer Edition 2 2019-03. https://www.iso.org/standard/70026.html.

[176] International Standard ISO 14852:2021 Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium — Method by analysis of evolved carbon dioxide Edition 3 2021-06 https://www.iso.org/standard/80303.html.

— Adding another condition for an ingoing substance other than a surfactant to be exempted from the anaerobic biodegradability requirement (*not toxic to aquatic organisms (NOEC/ECx > 0.1 mg/l or LC50/EC50/IC50>10 mg/l*)

Points for discussion 6 – Biodegradability

Stakeholders are invited to reply the following consultation questions:

— Question 26 (Q26) – Do you support test methods ISO 14851:2019 or ISO 14852:2021, inclusive of the requirement on performing a carbon balance and reporting the total degree of biodegradation?

— Question 27 (Q27) – For IILD, would you support disregarding the existing categorisation by product form ("*solid*", "*liquid*") and instead set a unique limit applicable to both? Note this limit would be set according to the strictest limit, thus corresponding to existing "*liquid*" category.

— Question 28 (Q28) – Would you support having exemptions to the requirements on all surfactants to be aerobic and anaerobic biodegradable? If so, which could these be and, especially, under the scope of which product groups? The feedback received stresses that replacing some surfactants for equivalently efficient counterparts would be challenging, especially in particular product groups (IILD)

— Question 29 (Q29) – Please, could you share feedback on the feasibility of the aNBO and anNBO thresholds proposed, particularly for HSC and IILD product groups? The data available did not allow in particular cases to draw robust conclusions, thus it is critical to receive further feedback/data to ensure feasibility and proportionality.

— Question 30 (Q30) – Do you support the additional condition for an ingoing substance other than a surfactant to be exempted from the anaerobic biodegradability requirement ("*not toxic to aquatic organisms (NOEC/ECx > 0.1 mg/l or LC50/EC50/IC50>10 mg/l*")

— Question 31 (Q31) – Please, share any other comments/suggestions you deem relevant about this criterion providing reasons supporting them.

6.5. Sustainable sourcing of palm oil, palm kernel oil and their derivatives.

TR1 Proposed criterion (x) - Sustainable sourcing of raw materials.	
ALL	The requirements does not include raw materials < 1% (w/w) in the final product a) Palm oil, palm kernel oil and their derivatives In the specific case of renewable ingredients from palm oil or palm kernel oil, or derived from palm oil or palm kernel oil, 100 % w/w of the renewable ingredients used shall meet the requirements of a certification scheme for sustainable production that is based on multi-stakeholder organizations that has a broad membership, including NGOs, industry and government and that addresses environmental impacts including on soil, biodiversity, organic carbon stocks and conservation of natural resources. b) Other biobased raw materials than palm oil, palm kernel oil and their derivatives. Biobased raw materials used to produce ingredients included in the final product, shall be covered by chain of custody certificates issued by an independent third-party certification scheme officially recognised by the European Commission [1]
ALL	*Assessment and verification:* To demonstrate compliance, evidence through third-party chain of custody certificating that the raw materials used in the product or in its manufacturing originate from sustainably managed plantations shall be provided. The chain of custody certificates shall be valid for the whole duration of the EU Ecolabel license. Competent bodies shall check the certificates again twelve months after the awarding of the EU Ecolabel license. [2]. To demonstrate compliance with a): — For palm oil and palm kernel oil, Roundtable for Sustainable Palm Oil (RSPO) or certificates of any equivalent or stricter sustainable production scheme demonstrating compliance to any of the following models shall be accepted: identity preserved or segregated. — For palm oil and palm kernel oil derivatives, RSPO certificates or certificates of any equivalent or stricter sustainable production scheme demonstrating compliance to any of the following models shall be accepted: identity preserved, segregated, and mass balance. — For palm oil, palm kernel oil and their derivatives, a mass balance calculation and/or invoices/delivery notes from the raw material producer shall be provided, showing that the proportion of certified raw material corresponds to the amount of certified palm oil, palm kernel oil and/or their derivatives. Alternatively, a declaration from the producer of raw materials shall be provided, showing that all purchased palm oil, palm kernel oil and/or their derivatives are certified. To demonstrate compliance with b): — For other biobased raw materials than palm oil, palm kernel oil and their derivatives, the applicant shall provide a declaration of compliance supported by a valid, independently certified chain of custody certificate for the suppliers of all biobased raw materials used to produce ingredients included in the final product. — In case the certification scheme does not specifically require that all virgin material is sourced from non-GMO species, additional evidence shall be provided to demonstrate this. Notes: [1] In line with the sustainability requirements related to the sourcing of biobased raw material as per the review of the Renewable Energy Directive (RED III). The certification schemes officially recognised by the European Commission are available at: https://energy.ec.europa.eu/topics/renewable-energy/bioenergy/voluntary-schemes_en [2] - The verification can be done via RSPO website, where the status of the certificate is showed in real time: https://www.rspo.org/certification/search-for-supply-chain-certificate-holders

Proposed criterion (x) – Renewable and ~~S~~sustainable sourcing of raw materials.	
ALL	The use of renewable raw materials shall be reported. The sustainable sourcing of relevant raw materials shall be certified. The requirements ~~does not include~~ only apply to raw materials ~~<~~ ≥ 1% (w/w) in the final product a) Renewable raw materials The applicant shall report the proportion of raw material, constituent part of raw material or ingredient that originates from renewable sources. The proportion of the raw material/constituent part of the raw material/ingredient that comprises renewable raw material or originates from renewable raw material shall be calculated on an annual basis. Quantitative, time-based targets to increase the use of renewable materials shall be set. b) ~~a)~~ Palm oil, palm kernel oil and their derivatives In the specific case of renewable ingredients from palm oil or palm kernel oil, or derived from palm oil or palm kernel oil, 100 % w/w of the renewable ingredients used shall meet the requirements of a certification scheme for sustainable production that is based on multi-stakeholder organizations that has a broad membership, including NGOs, industry and government and that addresses environmental impacts including impacts on soil organic carbon stocks, biodiversity~~, organic carbon stocks~~ and conservation of natural resources. ~~c) Other biobased raw materials than palm oil, palm kernel oil and their derivatives.~~ ~~Biobased raw materials used to produce ingredients included in the final product, shall be covered by chain of custody certificates issued by an independent third-party certification scheme officially recognised by the European Commission [1]~~
ALL	*Assessment and verification:* To demonstrate compliance with a): — The calculation of the proportion of the renewable material may be done using the following formula: Used amount renewable material / (used amount renewable material + used amount non-renewable material) x 100% Amounts in kg, molar weight or carbon atoms can be used in the calculation. Average carbon chain lengths can be used. — The increase targets relating to the use of renewable raw material shall be enforced on a yearly basis. A written evaluation shall be done by a responsible staff member. Upon request, the evaluation shall be provided to the competent body. To demonstrate compliance~~,~~ with b): — E~~e~~vidence through third-party chain of custody certificates ensuring that the ~~raw materials~~ palm oil and palm kernel oil used in the product or in its manufacturing originate from sustainably managed plantations shall be provided. The applicant shall provide a valid certificate for each relevant ingredient during the first application, including the number of the certificate or the number of membership of the certification organisation. The chain of custody certificates shall be valid for the whole duration of the EU Ecolabel license. Competent bodies shall check the validity of the certificates on an annual basis, ~~again~~ starting twelve months after the date of awarding of the EU Ecolabel license.~~ [2].~~ ~~To demonstrate compliance with a):~~ — For palm oil~~ and palm kernel oil~~, certificates of sustainable sourcing such as the Roundtable for Sustainable Palm Oil (RSPO) certificate [1], or certificates of any equivalent or stricter sustainable production scheme demonstrating compliance ~~to any of the following~~ with identity preserved or segregated chain of custody models shall be accepted.~~: identity preserved or~~

	~~segregated~~. Mass balance and book and claim models shall not be accepted. — For palm kernel oil, and palm oil and palm kernel oil derivatives, certificates of sustainable sourcing such as RSPO certificates or certificates of any equivalent or stricter sustainable production scheme demonstrating compliance to any of the following models shall be accepted: identity preserved, segregated, and mass balance. Certificates using book and claim model shall not be accepted. — For palm oil, palm kernel oil and their derivatives, a mass balance calculation and/or invoices/delivery notes from the raw material producer shall be provided, showing that the proportion of certified raw material corresponds to the amount of certified palm oil, palm kernel oil and/or their derivatives. Alternatively, a declaration from the producer of raw materials shall be provided, showing that all purchased palm oil, palm kernel oil and/or their derivatives are certified. ~~To demonstrate compliance with b):~~ ~~— For other biobased raw materials than palm oil, palm kernel oil and their derivatives, the applicant shall provide a declaration of compliance supported by a valid, independently certified chain of custody certificate for the suppliers of all biobased raw materials used to produce ingredients included in the final product.~~ ~~— In case the certification scheme does not specifically require that all virgin material is sourced from non-GMO species, additional evidence shall be provided to demonstrate this.~~ Notes: [1] ~~In line with the sustainability requirements related to the sourcing of biobased raw material as per the review of the Renewable Energy Directive (RED III). The certification schemes officially recognised by the European Commission are available at: https://energy.ec.europa.eu/topics/renewable-energy/bioenergy/voluntary-schemes_en~~ ~~[2] -~~ The verification can be done via RSPO website, where the status of the certificate is showed in real time: https://www.rspo.org/certification/search-for-supply-chain-certificate-holders

Rationale for the proposed sustainable sourcing of raw materials

This criterion aims to ensure that the renewable ingredients derived from biogenic raw material used in the production of EU Ecolabelled detergent products meet specific sustainability standards certifications from responsible and traceable sources.

A common environmental claim in detergent products is that of plant-based or bio-based ingredients. Such claims are possible due to the use of oleochemical-derived versions of organic ingredients instead of petrochemical-derived ones. The final chemicals may have the same properties, but they were just sourced from different raw materials.

An in-depth analysis of the current situation of the global market for oleochemical raw materials and their potential environmental effects compared to petrochemical counterparts was presented in TR1. The main conclusions were:

— Global vegetable oil production has exponentially increased in the last 40 years and is projected to further expand in the next decade ([177], [178], [179]).

[177] Ritchie, H. (2021) "Palm Oil" Published online at OurWorldInData.org. Retrieved from: 'https://ourworldindata.org/palm-oil' [Online Resource] https://ourworldindata.org/grapher/vegetable-oil-production?time=earliest..2020. (Accessed 22/12/23).

[178] OECD and Food and Agriculture Organization of the United Nations, OECD-FAO Agricultural Outlook 2023-2032, OECD-FAO Agricultural Outlook, OECD, 2023. DOI: 10.1787/08801ab7-en

[179] Krautgartner R. et al. 02/05/23.. European Union: Oilseeds and Products Annual. Report E42023-0015. USDA; Office of Agricultural Affairs; Vienna. https://www.fas.usda.gov/data/european-union-oilseeds-and-products-annual-3

- Palm oil (PO), palm kernel oil (PKO) and coconut oil (CO) are the most common vegetable oils used for surfactants production with equivalent technical characteristics, lower costs and higher productivities than other alternatives ([177], [180], [181]).
- Shifting from petrochemical to oleochemical sources may result in modest reductions of fossil resource depletion while considerably increasing other environmental impacts such as land use and ecotoxicity.
- Despite concerns of deforestation and other environmental impacts related to palm oil, no alternative vegetable oil from both economic and environmental perspectives seems currently viable. Hence, the focus should be on strengthening sustainability of the palm oil sector.
- Several pieces of EU legislation exist that deal with some of the above-mentioned concerns and sustainability principles in general and could be understood as tools to enhance sustainability sourcing but do not replace more specific and mature voluntary sustainability certification schemes, such as the Roundtable for Sustainable Palm Oil (RSPO) Standards, specific to palm oil ([182]). A list of sustainability certifications related to palm oil, the main vegetable oil used for detergents and cleaners production, is shown in Table 41.
- Voluntary schemes have been criticised, mostly on the grounds of clarity and enforceability, but also they have been recognised as responsible of positive environmental effects. Among them, the RSPO scheme was identified as the most relevant one ([182]).
- RSPO covers about 20% of palm oil mills and global palm oil production. Palm oil or palm oil derivatives certified by the RSPO can be sourced through four different supply chain models, namely identity preserved, segregated, mass balance and RSPO credits (i.e. book and claim) ([183]).
- Additional revenue ("premium") paid for certified sustainable palm oil ranged, in 2019, between USD 2.50-3.50 per tonne for book and claim, USD 6-17 per tonne for mass balance and 25-30 per tonne for segregated or identity preserved RSPO- compliant palm oil.

The relevance of RSPO scheme was also confirmed by responses of industrial stakeholders and competent bodies to the focused questionnaire carried out by the JRC, as explained in TR1. Respondents highlighted the need for increased availability and affordability of identity preserved and segregated certified palm oil.

A comparison with other ISO Type I ecolabels (i.e. Nordic Swan and Blue Angel) served to identify new requirements related to the sustainability of raw materials and the enhancement of renewable material share in detergents and cleaning products (See Annex I). Those requirements include:

- Renewable and/or sustainable requirements consisting in either documenting work of applicants and their suppliers to increase the purchase of sustainable and renewable raw materials ([184], [185], [186]) or stating the carbon content from renewable origin ([187], [188]).
- Specific requirements for *Certified raw materials from oil palms*, similar to the criterion *Sustainable sourcing of palm oil, palm kernel oil and their derivatives* in EU Ecolabel Cosmetics or Detergents criteria.

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180 Parsons, S., S. Raikova, and C.J. Chuck, 'The Viability and Desirability of Replacing Palm Oil', Nature Sustainability, Vol. 3, No. 6, March 9, 2020, pp. 412–418. DOI 10.1038/s41893-020-0487-8

181 Voora, V.; Bermúdez, S.; Farrell, J.J.; Larrea, C. and Luna, E.; Global Market Report: Palm oil prices and sustainability. June 2023. Available at: https://www.iisd.org/publications/report/2023-global-market-report-palm-oil (Accessed on 26/12/23)

182 https://rspo.org/ (Accessed 28/12/23)

183 https://rspo.org/as-an-organisation/certification/supply-chains/ (Accessed 28/12/23)

184 006 Laundry Detergents and Stain Removers, version 8.7, 24 October 2023. Nordic Swan, https://www.nordic-swan-ecolabel.org/48d85f/contentassets/70445c77678f46db9a850528cb7398d5/criteria-document_006_laundry-detergents-and-stain-removers-006_english2.pdf (Accessed 23/01/25).

185 025 Hand dishwashing detergents, version 6.8, 07 November 2023. Nordic Swan, https://www.nordic-swan-ecolabel.org/4aefdd/contentassets/10f50d7e13a34cfbaf8fc0b66a4fc521/criteria-document_025_hand-dishwashing-detergents-025_english.pdf (Accessed 23/01/25).

186 026 Cleaning products, version 6.13, 24 October 2023 Nordic Swan, https://www.nordic-swan-ecolabel.org/4acea6/contentassets/988cf5d0a3fe4c3fa2f85775d7df4be9/criteria-document_026_cleaning-products-026_english2.pdf. (Accessed 23/01/25)

187 DE-UZ 202, Laundry detergent. V1.1. January 2022. BLUE ANGEL The German Ecolabel. https://produktinfo.blauer-engel.de/uploads/criteriafile/en/DE-UZ%20202-202201-en%20criteria-V1.1.pdf

188 DE-UZ 194, Hand Dishwashing Detergents and Hard Surface Cleaners. V1.2. January 2022. BLUE ANGEL The German Ecolabel. https://produktinfo.blauer-engel.de/uploads/criteriafile/en/DE-UZ%20194-202201-en%20criteria-V1.2.pdf

— More detailed compliance verification steps than in existing EU Ecolabel criteria for detergents. For example, Blue Angel sets different steps depending on RSPO status (Ordinary member or user of RSPO certified raw materials) and amount of RSPO oil sourced (whether above or below 500 tonnes of palm oil products).

Other renewable materials are not explicitly included as they are either considered less relevant or there is not yet a sustainability standard available (e.g. coconut oil) ([189]). However, sustainability certification is required for sugarcane when it is used as renewable raw materials, not as secondary raw materials ([190]).

These requirements show that there is an interest in:

(a) increasing the amounts of renewable materials used in the product, either generally in the product via self-commitment or specifically (e.g. in surfactants systems);

(b) promoting sourcing of raw materials with sustainability certifications, yet still at this stage primarily focused on palm oil (and its derivatives) via RSPO mandatory requirements.

Table 41 – Overview of palm oil sustainability certification schemes

Standard	*Foundation*	*Certification*	*Principal focus of standard*	*Supply chain coverage*	*Palm oil only*	*Consumer label on packaging*	*Uptake in palm oil sector[1]*
Bio Suisse Organic	1981	Yes, requires companies to be RSPO certified	Food	From Processors & refiners to Manufacturers and Retailers & Food service	No	No	Low
High Carbon Stock Approach (HCSA)	2014	No	Covers all palm oil produced	From Millers to Processors & refiners and Manufacturers	No	No	Low
Indonesian Sustainable Palm Oil (ISPO)	2011	Yes	Covers all palm oil produced	From Millers to Processors & refiners	Yes	No	High
Malaysian Sustainable Palm Oil (MSPO)	2013	Yes	Covers all palm oil produced	From Millers to Processors & refiners	Yes	No	High
Roundtable on Sustainable Palm Oil (RSPO)	2004	Yes	Food, feed, home & personal	From Millers to Processors & refiners, Manufacturers and Retailers & Food service	Yes	Yes	High

[189] 006 Laundry Detergents and Stain Removers, version 8.7, 24 October 2023 Background to Ecolabelling. Nordic Swan https://www.nordic-swan-ecolabel.org/4ac25f/contentassets/70445c77678f46db9a850528cb7398d5/background-document_006_laundry-detergents-and-stain-removers-006_english.pdf

[190] 006 Laundry Detergents and Stain Removers, version 8.7, 24 October 2023. Nordic Swan https://www.nordic-swan-ecolabel.org/4ac25f/contentassets/70445c77678f46db9a850528cb7398d5/criteria-document_006_laundry-detergents-and-stain-removers-006_english.pdf

[1] *Uptake in palm oil sector is based on indicators such as MT of palm oil traded under this certification or hectares of plantation certified*

Source: Own elaboration based on EPOA, IDH, RSPO (2022) ([191])

Considering the analysis of the information presented in TR1, several changes and additions were proposed within the *Sustainable sourcing* criterion of the EU ecolabel for detergents and cleaning products, including the following:

- Expansion of the scope of the criterion, by requiring that all renewable raw materials are sustainably sourced, similarly to currently required for palm oil, palm kernel oil and/or their derivatives.
- Given this new provision, change of the name of the criterion to *Sustainable sourcing of raw materials.* Also, the requirements were split in two parts: a) when referring to palm oil, palm kernel oil and their derivatives (mostly as per existing criterion text); b) when referring to other renewable raw materials than palm oil, palm kernel oil and their derivatives (new provisions).
- However, the previous provision would only apply to the most relevant raw materials, thus reducing administrative. This in practice implied the inclusion of a cut-off limit ("*The requirement does not include raw materials < 1% in the final product*").
- Alignment with EUEL criteria for Cosmetic products ([192]), both in terms of the wording used in the legal texts and some provisions, especially with regards to the Assessment and Verification of palm oil and palm kernel oil and their derivatives sustainability certificates.
- Also, alignment with the EUEL criteria for Absorbent Hygiene products ([193]) with regard to biobased raw materials (wording and A&V), mostly on requirements to biobased raw materials other than palm oil, palm kernel oil and their derivatives, but also some horizontal ones (applicable to any raw material) related to validity of the certificates and when Competent Bodies should check it.
- Related to the chain of custody model, proposal of designation of identify preserved and segregated models for palm oil and palm kernel oil as the only valid models for compliance with EUEL criteria. This proposal was aligned with EUEL criteria for cosmetics products and stakeholders feedback received by the JRC.

Outcomes from and after the 1st AHWG meeting

In total 47 comments were received on this sub-criterion, which are found in full in the Table of Comments (ToC1). The general comments received (16 comments) were mainly related to the practical barriers for the verification of the sub-criterion of sustainable sourcing of bio-based raw materials other than palm oil, palm kernel oil and their derivatives. Some stakeholders commented on the need for clarifications on the assessment and verification of sustainable sourcing of palm oil and palm kernel oil derivatives and related chain of custody models, while others asked for the addition of definitions for relevant terms such as *sustainable raw material*, *bio-based raw material* and *sustainable sourcing*.

A significant number of comments were received on the specific aspects addressed by Q21 (17 comments) and Q22 (14 comments), namely chain of custody models and carbon accounting.

The main aspects addressed by the comments are explained in the following sections.

[191] EPOA, IDH, RSPO (2022), Sustainable Palm Oil: Europe's Business. Facts, analysis, and actions to leverage impact. https://www.idhsustainabletrade.com/publication/report-sustainable-palm-oil-europes-business/

[192] Commission Decision (EU) 2021/1870 of 22 October 2021 establishing the EU Ecolabel criteria for cosmetic products and animal care products (notified under document C(2021) 7500). OJ L 379, 26.10.2021, p. 8–48.

[193] Commission Decision (EU) 2023/1809 of 14 September 2023 establishing the EU Ecolabel criteria for absorbent hygiene products and for reusable menstrual cups (notified under document C(2023) 6024). OJ L 234, 22.9.2023, p. 142–189.

Further research and main changes in the proposal for the 2nd AHWG meeting

About sub-criterion a) Palm oil, palm kernel oil and their derivatives, on the sustainable sourcing of these raw materials, the assessment and verification of the sub-criterion and the validity of chain of custody models.

What was the feedback received from stakeholders on this topic?

Several stakeholders addressed aspects related to chain of custody models in the general comments. Additional feedback on this topic was received through the specific question included in TR1:

Question 21 (Q21) – Would you support limiting the chain of custody models to identity preserved and segregated? JRC acknowledges that evidence gathered suggested potential difficulties with compliance, thus it encourages stakeholders commenting on the feasibility of this provision.

Based on the gathered feedback, the main concerns raised by stakeholders were:

1. Low availability of identity preserved and segregated grades in the market, which makes the compliance challenging if mass balance model is excluded.
2. Potentially unclear description of accepted chain of custody models, and more explicit indication of whether transfer claims via MB Claim Transfer Cross referencing is or is not possible.
3. Confidentiality of the information requested in the assessment and verification proposed in TR1, to demonstrate compliance with the sub-criterion on palm oil, palm kernel oil and derivatives, related to the proportion of certified raw materials. This confidential information is part of the audit performed under the RSPO certification.
4. Additional clarification on the control to be conducted by competent bodies the year after the awarding of the ecolabel

What does JRC's research say on this topic?

As discussed in detail in TR1, vegetable oil production has experienced an exponential increase in the last 40 years ([194]), and is projected to expand further in the coming years ([195], [196]). Palm oil is the vegetable oil with the largest production volume. World production of vegetable oil was 215 million t in 2022, with the sum of palm oil and palm kernel oil representing up to 40% (87 million t). About 20% of this palm oil and palm kernel oil (16 million t) is certified sustainable palm oil ([197],[198]), that is, palm oil produced by individuals or organisations that are committed and comply with sustainability requirements. Sustainable palm oil production involves *'legal, economically viable, environmentally appropriate and socially beneficial management and operations'* ([199], [200]). Certified palm oil and palm kernel oil represent, hence, 8% of total vegetable oil production in the world. In 2023, the supply of certified palm oil increased by 4.2% ([201]).

[194] Ritchie, H. (2021) "Palm Oil" Published online at OurWorldInData.org. Retrieved from: https://ourworldindata.org/palm-oil (Accessed 24/01/25)

[195] OECD and Food and Agriculture Organization of the United Nations, OECD-FAO Agricultural Outlook 2023-2032, OECD-FAO Agricultural Outlook, OECD, 2023. DOI: 10.1787/08801ab7-en

[196] Krautgartner R. et al. 02/05/23.. European Union: Oilseeds and Products Annual. Report E42023-0015. USDA; Office of Agricultural Affairs; Vienna. https://www.fas.usda.gov/data/european-union-oilseeds-and-products-annual-3

[197] Food and Agriculture Organization of the United Nations, (FAO), (2025), 'FAOSTAT – Crops and livestock products', https://www.fao.org/faostat/en/#data/QCL (Accessed 24/01/25)

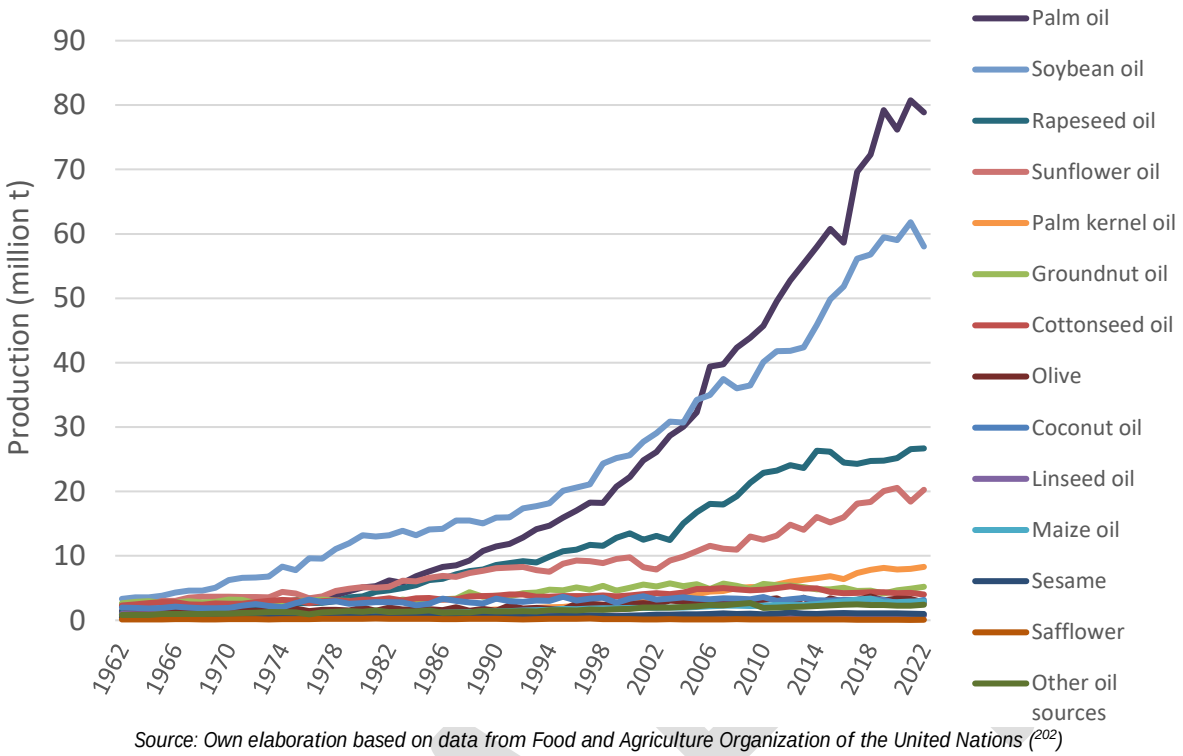
[198] Roundtable on Sustainable Palm oil (RSPO), (2024), 'Impact Report 2024', https://rspo.org/wp-content/uploads/RSPO_ImpactReport_2024.pdf (Accessed 24/01/25)

[199] Roundtable on Sustainable Palm oil (RSPO), https://rspo.org/as-an-organisation/certification/ (Accessed 24/01/25)

[200] Roundtable on Sustainable Palm oil (RSPO), (2018), RSPO Principles and Criteria for the production of sustainable palm oil', https://rspo.org/wp-content/uploads/rspo-principles-criteria-for-production-of-sustainable-palm-oil-2018revised-01-february-2020-with-updated-supply-chain-requirements-for-mills.pdf

[201] Roundtable on Sustainable Palm oil (RSPO), (2024), 'Impact Report 2024', https://rspo.org/wp-content/uploads/RSPO_ImpactReport_2024.pdf (Accessed 24/01/25)

Figure 17. Evolution of world vegetable oil production, 1962-2022



Source: Own elaboration based on data from Food and Agriculture Organization of the United Nations ([202])

Palm oil and palm kernel oil have a wide range of applications in industry, including for food, personal care and energy applications. Estimated market shares for the different types of products using palm oil and palm kernel oil vary considerably depending on the consulted source, though all studies agree on identifying the food sector as the main consumer, using about two thirds of the total palm oil produced ([203], [204], [205], [206]). Industrial applications and consumer products including detergents and cleaning products together with personal care products (e.g. soaps, cosmetics), paints, varnishes, pharmaceuticals, etc, are responsible for about 10-30% of the consumption, while the share for bioenergy is estimated in 5-15%. In the case of palm kernel oil, the consumption of the oleochemical industry represents about 70% of the total production ([207]).

Regarding the availability of certified palm oil and palm kernel oil for the different chain of custody models, it should be noted that, indeed, mass balance certification is currently the most common one. In December 2024, from the 2270 known pall oil mills, 535 were RSPO certified and, within these, the supply chain models predominantly used were mass balance (337 mills) followed by identity preserved (141 mills), with further 57 certified under both mass balance and identity preserved models ([208]). This results in non-negligible differences of price between RSPO-compliant palm oil using mass balance, segregated and identity preserved models, presented in TR1.

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202 Food and Agriculture Organization of the United Nations, (FAO), (2025), 'FAOSTAT – Crops and livestock products', https://www.fao.org/faostat/en/#data/QCL (Accessed 24/01/25)

203 Grand View Research, (2024), 'Palm Oil Market Size, Share & Growth Analysis Report, 2030', https://www.grandviewresearch.com/industry-analysis/palm-oil-market (Accessed 23/01/25).

204 Economics, climate, environment (efeca), (2018), 'Palm oil in the oleochemical sector', https://efeca.com/wp-content/uploads/2019/12/Briefing-note-Oleochemicals_Efeca_09.08.18.pdf (Accessed 24/01/25)

205 Rijk, G., Wiggs, C. and Piotrowski, M. (2021), 'FMCGs, retail earn 66% of gross profits in palm oil value chain Chain Reaction Research', https://chainreactionresearch.com/wp-content/uploads/2021/06/FMCGs-Retail-Earn-66-of-Gross-Profits-in-Palm-Oil-Value-Chain.pdf (Accessed 24/01/25).

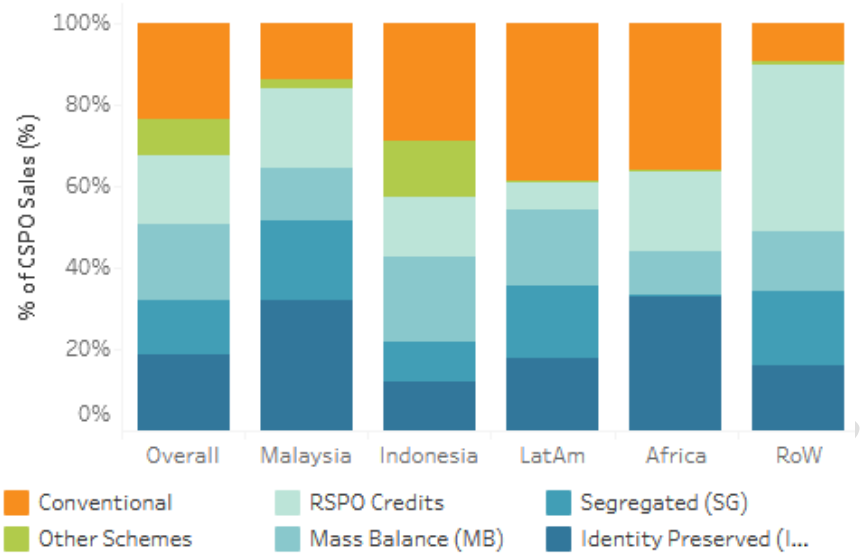
206 Ritchie, H. (2021) 'Palm Oil', Published online at OurWorldInData.org. Retrieved from: https://ourworldindata.org/palm-oil (Accessed 24/01/25).

207 Economics, climate, environment (efeca), (2018), 'Palm oil in the oleochemical sector', https://efeca.com/wp-content/uploads/2019/12/Briefing-note-Oleochemicals_Efeca_09.08.18.pdf (Accessed 24/01/25).

208 Rainforest Alliance, (2025), 'The Universal Mill List' https://www.rainforest-alliance.org/business/certification/the-universal-mill-list/ (Accessed 24/01/25).

Nearly 50% of certified sustainable palm oil produced in 2023 was sold by mills certified under RSPO according to one of the three physical chain of custody models ([209]). In particular, mass balance represented 18.9% of total certified palm oil sales, segregated represented 13.5% and identity preserved represented 18.5%, as shown in Figure 18 ([210]). Another 16% was sold as RSPO credits by mills or certified independent smallholder (ISH) groups, with the remaining 34% coming from ISCC-certified volumes or as conventional palm oil.

Figure 18. Breakdown of certified sustainable palm oil sales by supply chain model in 2023



Source: RSPO ([211]).

Potential limitations due to the scarcity of certificates using segregated and identity preserved models have been confirmed by involved stakeholders. According to discussions between the JRC and stakeholders involved in the palm oil and palm kernel oil supply chain certification, palm oil market in Europe is a mature market, while palm kernel oil market is less well established. The European Union consumes about 4.5 million t of palm oil and 0.6 million t of palm kernel oil ([212], [213]). Close to 90% of European palm oil imports are certified, with segregated certification being the predominant. This estimate is in line with the level reported in the literature ([214], [215]). For palm kernel oil, the supply chain is more complex because the kernel is not process by the companies owning the mills but by other companies to which it is transported. Overall, RSPO certifies approximately 60% of the palm kernel oil that enters Europe, and the mass balance model dominates in this case.

[209] Roundtable on Sustainable Palm oil (RSPO), (2024), 'Impact Report 2024', https://rspo.org/wp-content/uploads/RSPO_ImpactReport_2024.pdf (Accessed 24/01/25).

[210] Roundtable on Sustainable Palm Oil (RSPO), (2025), 'Annual Communication of Progress (ACOP)', https://rspo.org/as-an-organisation/membership/acop/ (Accessed 24/01/25).

[211] Roundtable on Sustainable Palm Oil (RSPO), (2025), 'Annual Communication of Progress (ACOP)', https://rspo.org/as-an-organisation/membership/acop/ (Accessed 24/01/25).

[212] Statista, (2025), 'Palm oil consumption in the European Union from 2011/12 to 2023/24', https://www.statista.com/statistics/489370/palm-oil-consumption-european-union/ (Accessed 24/01/25).

[213] Statista, (2025), 'Palm kernel oil consumption in European Union-27 countries from 2000 to 2023', https://www.statista.com/statistics/489404/palm-kernel-oil-consumption-european-union/ (Accessed 24/01/25).

[214] European Palm Oil Alliance, IDH – the sustainable trade initiative, (2021), 'State of play: Role of Europe in driving ustainable palm oil, 2020 palm oil report', https://www.idhsustainabletrade.com/uploaded/2021/11/2021-Palm-Oil-Report-21.6-Small.pdf (Accessed 24/01/25).

[215] Roundtable on Sustainable Palm oil (RSPO), (2024), 'Impact Report 2024', https://rspo.org/wp-content/uploads/RSPO_ImpactReport_2024.pdf (Accessed 24/01/25).

About other ecolabels:

— *Nordic Swan (NS)* has a similar requirement on palm oil, palm kernel oil and their derivatives. Licence holders for all NS detergent and cleaning products' product groups, including LD ([216]), IILD ([217]), DD ([218]), IIDD ([219]), HSC ([220]) and HDD ([221]), must be certified according to RSPO. Mass balance, segregated and identity preserved models are accepted as traceability systems.

— *Blue Angel (BA)* requires that raw materials produced from palm oil and palm kernel oil are certified at least in accordance with the mass balance model. Detailed compliance verification steps are provided for palm oil and palm kernel oil criterion, and set differently according to RSPO status (Ordinary member or user of RSPO certified raw materials) and amount of RSPO oil sourced (whether above or below 500 tonnes of palm oil products).

The research conducted and the discussion presented by the JRC about palm oil, palm kernel oil and their derivatives leads to the following conclusions:

— Palm oil market in Europe is mature 90% of imports correspond to palm oil certified under the segregated model.

— Palm kernel oil supply chain is more complex and the European market is less mature. Only 60% of the palm kernel oil that enters the European market is certified, and most of it under the mass balance scheme.

— NS and BA ecolabels have a similar requirement on the certification of palm oil, palm kernel oil and their derivatives. Both refer to RSPO certification, and accept mass balance, segregated and identity preserved models.

Based on the evidences gathered and presented by the JRC, some modification in the assessment and verification text are proposed, to ensure the feasibility of the compliance. The modifications consist in:

— Clarifying the process to check the validity of certificates by competent bodies, by requesting a certificate for each relevant ingredient and an annual verification of the validity of the certificates by the competent body.

— Allowing the mass balance model to be accepted for the certification of palm kernel oil, together with the identity preserved and segregated models.

About sub-criterion b) Other biobased raw materials than palm oil, palm kernel oil and their derivatives, related to sustainable sourcing of these raw materials.

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[216] 006 Laundry Detergents and Stain Removers, version 8.11, 10 December 2024. Nordic Ecolabelling. Available at: https://www.nordic-swan-ecolabel.org/48d85f/contentassets/70445c77678f46db9a850528cb7398d5/criteria-document_006_laundry-detergents-and-stain-removers-006_english2.pdf (Accessed 23/01/25).

[217] 093 Laundry detergents for professional use, version 4.1, 16 April 2024. Nordic Ecolabelling. Available at: https://www.nordic-swan-ecolabel.org/498c09/contentassets/090178265c62418dbb02c80d0c72d351/criteria-document-for-product-group-093_093_laundry-detergents-for-professional-use-093_english2.pdf (Accessed 23/01/25).

[218] 017 Dishwasher detergent and rinse aids, V7.7, 13 August 2024. Nordic Ecolabelling. Available at: https://www.nordic-swan-ecolabel.org/4a98a7/contentassets/4c39b5c28cb344a6ad02643a27094f28/criteria-document_017_dishwasher-detergents-and-rinse-aids-017_english.pdf (Accessed 23/01/25).

[219] 080 Dishwasher detergents for professional use, version 3.9, 10 December 2024. Nordic Ecolabelling. Available at: https://www.nordic-swan-ecolabel.org/4aefda/contentassets/4fbf7d89969d452097042cd798bfd3d7/criteria-document_080_dishwasher-detergents-for-professional-use-080_english.pdf (Accessed 23/01/25).

[220] 026 Cleaning products, version 6.15, 20 December 2024. Nordic Ecolabelling. Available at: https://www.nordic-swan-ecolabel.org/4acea6/contentassets/988cf5d0a3fe4c3fa2f85775d7df4be9/criteria-document_026_cleaning-products-026_english2.pdf (Accessed 23/01/25).

[221] 025 Hand dishwashing detergents, version 6.12, 12 November 2024. Nordic Ecolabelling. Available at: https://www.nordic-swan-ecolabel.org/490396/contentassets/10f50d7e13a34cfbaf8fc0b66a4fc521/criteria-document_025_hand-dishwashing-detergents-025_english2.pdf (Accessed 23/01/25).

What was the feedback received from stakeholders on this topic?

Many stakeholders shared concerns in the general comments about the scarcity of valid certification schemes for biobased raw materials other than palm oil, palm kernel oil and their derivatives, as well as other possible consequences of the implementation of this sub-criterion. The barriers for the inclusion of this sub-criterion are:

1. Lack of valid chain of custody certificates for the assessment and verification of the sub-criterion.
2. Lack of clarity and precise definition of the requirement, including lack of clear definition of the term "biobased".
3. Uncertainties on how to deal with evolving certification schemes and their recognition by the European Commission.
4. Issues with certification schemes that have no requirements related to genetically modified origin (GMO).
5. Potential negative effects on prices and availability of these raw materials.
6. Risk of shift towards fuel-based surfactants.

Some stakeholders suggested that current agricultural production rules may already align with sustainability criteria for products manufactured in the European Union (EU). In this case, the sub-criterion could make more sense for raw materials from outside Europe and compliance for raw materials originated in EU could be based on a certificate of origin.

What does JRC's research say on this topic?

According to EN 16575:2014 ([222]), the term bio-based means "*derived from biomass*". Thus, bio-based products "*are products which are wholly or partly derived from biomass*". The term "*product*" may refer to "*an intermediate, material, semifinished or final product*". Bio-based materials may either occur naturally or be synthesized by undergoing physical, chemical or biological treatments ([223], [224]). The term may also refer to products made by processes that use biomass ([225]). The biomass leading to these bio-based materials may originate from plants, animals and their waste, including forest and mill residues, agricultural crops and wastes, wood and wood wastes, animal wastes, livestock operation residues, aquatic plants and some municipal and industrial wastes. Biomass also includes other organisms and microorganisms that transform these plants, animals and their organic wastes into bio-based products.

Bio-based materials are considered to be an alternative to petroleum-based materials. The interest in replacing petroleum-based materials by their bio-based counterparts lies in the capacity of the latter to exert the same function while avoiding or reducing some environmental concerns of petrochemicals. These concerns include higher toxicity of petroleum-based over their life cycle, from the production to the final disposal, negative effects on biodiversity, and higher resistance to biodegradability than those of bio-based materials, together with resource depletion ([226], [227], [228], [229], [230]).

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[222] EN 16575 (2014), 'Bio-based products', European Committee for Standardisation, Technical Committee 411 (CEN TC/411). Mandate M/492.

[223] EN 16575 (2014), 'Bio-based products', European Committee for Standardisation, Technical Committee 411 (CEN TC/411). Mandate M/492.

[224] Curran, M. A. (2010), 'Biobased Materials', in: Kirk-Othmer (ed.), *Kirk-Othmer Encyclopedia of Chemical Technology*, 1st edition, Wiley, pp. 1–19, https://doi.org/10.1002/0471238961.biobcurr.a01.

[225] Curran, M. A. (2010), 'Biobased Materials', in: Kirk-Othmer (ed.), *Kirk-Othmer Encyclopedia of Chemical Technology*, 1st edition, Wiley, pp. 1–19, https://doi.org/10.1002/0471238961.biobcurr.a01.

[226] EN 16575 (2014), 'Bio-based products', European Committee for Standardisation, Technical Committee 411 (CEN TC/411). Mandate M/492.

[227] Curran, M. A. (2010), 'Biobased Materials', in: Kirk-Othmer (ed.), *Kirk-Othmer Encyclopedia of Chemical Technology*, 1st edition, Wiley, pp. 1–19, https://doi.org/10.1002/0471238961.biobcurr.a01.

Using raw materials of biological origin, however, does not automatically guaranty lower environmental impacts or greater *'sustainability'*, the latter being defined as the *'goal of sustainable development which encompasses environment, social and economic aspects, in which the needs of the present are met without compromising the ability of future generations to meet their needs'* ([231]). The environmental, economic and social sustainability of raw materials are dependent on the particular case being evaluated ([232], [233], [234], [235]). On the other hand, bio-based materials are mostly considered "renewable", though this term should be used carefully. Indeed, biomass production requires some non-renewable inputs and other finite resources such as land and water ([236]). Moreover, some feedstocks are undoubtedly bio-based but cannot be considered renewable materials according to the definition provided by EN 16575:2014 ([237], [238]). This standard defines a "*renewable material*" as *"a material that is composed of biomass and that can be continually replenished*". Sources of bio-based materials such as marine fish from overfished stocks or tropical wood from virgin forests are, indeed, biomass feedstocks, but cannot be continually replenished.

Bio-based materials are gaining increasing attention in the sector of detergents and cleaning products. Among relevant sources of bio-based ingredients in these products are enzymes, plant oils, sugars and starch ([239], [240], [241]). Enzymes are obtained through fermentation of fungi, yeast and bacteria, and aid in the removal of stains or dirt by breaking up molecules such as fats, proteins or starch. Plant oils can be used to replace petrochemicals in the production of ingredients such as surfactants, though petrochemicals are still the source of 75-80% of these compounds ([242]). The most frequently used sources of bio-based surfactants are palm oil, palm kernel oil and coconut oil ([243]). Sugar-based surfactants mainly come from sugar beet or sugarcane, starch derivatives and other carbohydrate-based residues from hemicellulose ([244]). Among them are, for example, alkyl polyglycosides (APG) and caboxymethyl starch ([245], [246]). APGs, typically produced from starch and derivatives of vegetable oil, are the largest group of sugar-based surfactants in terms of

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228 EN 16575 (2014), 'Bio-based products', European Committee for Standardisation, Technical Committee 411 (CEN TC/411). Mandate M/492.

229 Inès, M., Mouna, B., Marwa, E. et al. (2023), 'Biosurfactants as Emerging Substitutes of Their Synthetic Counterpart in Detergent Formula: Efficiency and Environmental Friendly', *Journal of Polymers and the Environment*, Vol. 31, Issue 7, pp. 2779–2791, https://doi.org/10.1007/s10924-023-02778-1.

230 Isikgor, F. H. and Becer, C. R. (2015), 'Lignocellulosic biomass: a sustainable platform for the production of bio-based chemicals and polymers', *Polymer Chemistry*, Vol. 6, Issue 25, pp. 4497–4559, https://doi.org/10.1039/C5PY00263J.

231 ISO 13065, (2015), Sustainability criteria for bioenergy. International Organisation for Standardisation.

232 EN 16575 (2014), 'Bio-based products', European Committee for Standardisation, Technical Committee 411 (CEN TC/411). Mandate M/492.

233 Curran, M. A. (2010), 'Biobased Materials', in: Kirk-Othmer (ed.), *Kirk-Othmer Encyclopedia of Chemical Technology*, 1st edition, Wiley, pp. 1–19, https://doi.org/10.1002/0471238961.biobcurr.a01.

234 Ladu, L. and Morone, P. (2021), 'Holistic approach in the evaluation of the sustainability of bio-based products: An Integrated Assessment Tool', *Sustainable Production and Consumption*, Vol. 28, pp. 911-924e6, https://doi.org/10.1016/j.spc.2021.07.006.

235 Shah, J., Arslan, E., Cirucci, J. et al. (2016), 'Comparison of Oleo- *vs* Petro-Sourcing of Fatty Alcohols via Cradle-to-Gate Life Cycle Assessment', *Journal of Surfactants and Detergents*, Vol. 19, Issue 6, pp. 1333–1351, https://doi.org/10.1007/s11743-016-1867-y.

236 Curran, M. A. (2010), 'Biobased Materials', in: Kirk-Othmer (ed.), *Kirk-Othmer Encyclopedia of Chemical Technology*, 1st edition, Wiley, pp. 1–19, https://doi.org/10.1002/0471238961.biobcurr.a01.

237 EN 16575 (2014), 'Bio-based products', European Committee for Standardisation, Technical Committee 411 (CEN TC/411). Mandate M/492.

238 Pauer, E. (2021), 'Sustainability Assessment of Packaging: a Holistic Approach Including Life Cycle Assessment, Circularity Assessment and Consideration of the Packaged Product', TU Wien, p. 62 pages, https://doi.org/10.34726/HSS.2021.70161.

239 'Bio-Based Cleaning Products: What Can I Expect from Them?' (2018), https://cordis.europa.eu/article/id/122834-biobased-cleaning-products-what-can-i-expect-from-them. (Accessed 22/01/25).

240 IP TECH INSIDER (2024), 'Bio-based detergents', https://iptechinsider.com/bio-based-detergents/. (Accessed 22/01/25).

241 Kitamoto, D., Morita, T., Fukuoka, T. et al. (2009), 'Self-assembling properties of glycolipid biosurfactants and their potential applications', *Current Opinion in Colloid & Interface Science*, Vol. 14, Issue 5, pp. 315–328, https://doi.org/10.1016/j.cocis.2009.05.009.

242 Inès, M., Mouna, B., Marwa, E. et al. (2023), 'Biosurfactants as Emerging Substitutes of Their Synthetic Counterpart in Detergent Formula: Efficiency and Environmental Friendly', *Journal of Polymers and the Environment*, Vol. 31, Issue 7, pp. 2779–2791, https://doi.org/10.1007/s10924-023-02778-1.

243 Hayes, D. G. and Smith, G. A. (2019), 'Biobased Surfactants: Overview and Industrial State of the Art', in: *Biobased Surfactants*, Elsevier, pp. 3–38, https://doi.org/10.1016/B978-0-12-812705-6.00001-0.

244 Bois, R., Abdellahi, B., Mika, B. et al. (2020), 'Physicochemical, foaming and biological properties of lowly irritant anionic sugar-based surfactants', *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, Vol. 607, p. 125525, https://doi.org/10.1016/j.colsurfa.2020.125525.

245 Van Ginkel, C. G. (2007), 'Ultimate Biodegradation of Ingredients Used in Cleaning Agents', in: *Handbook for Cleaning/Decontamination of Surfaces*, Elsevier, pp. 655–694, https://doi.org/10.1016/B978-044451664-0/50020-6.

246 Spekreijse, J., Lammens, T., Parisi, C., Ronzon, T. and Vis, M. (2019), 'Insights into the European market for bio-based chemicals', EUR 29581 EN, Publications Office of the European Union, Luxembourg, ISBN 978-92-76-01500-0, doi:10.2760/739561, JRC112989.

production volume ([247], [248]), with an expected compound annual growth rate between 3-6% for the period 2023-2030 ([249], [250]). Common bio-based ingredients from all these sources in laundry detergents and cleaning products are glycolipids, such as rhamnolipid and sophorolipid, and lipopeptides, such as surfactins and iturins ([251], [252]).

The shift towards bio-based production of these types of ingredients is a relevant trend to consider, given that surfactants are major components in laundry detergents (15-40%) with environmental concerns associated to those of synthetic origin ([253]). As previously mentioned, this shift does not automatically guarantee a reduction in environmental impacts. For example, oleochemical ingredients proposed as an alternative to replace petrochemicals have been found to have, in some cases and for some environmental indicators, higher impacts than their petrochemical counterpart (see details in TR1). Some of the environmental impact categories that need to be carefully considered are terrestrial ecotoxicity impacts, natural land transformation and agricultural land occupation. Improvements can be observed in other environmental impacts such as resource depletion, but they may be too marginal to compensate the higher impacts of the above-mentioned categories (see details in PR). Results, however, can significantly vary dependent on the conditions and operation practices, especially due to the variances in agricultural and forestry practices including fertilizers and pesticides application, properties of soil, plants' growth rate (and, hence CO_2 absorption) and handling of co-products ([254]), as shown

Figure 19. Furthermore, some studies claim that environmental assessments of fossil feedstocks may be significantly underestimated ([255], [256], [257], [258]). These uncertainties in the environmental profiles of both fossil and bio-based products may affect the conclusions of their comparison.

[247] Van Ginkel, C. G. (2007), 'Ultimate Biodegradation of Ingredients Used in Cleaning Agents', in: *Handbook for Cleaning/Decontamination of Surfaces*, Elsevier, pp. 655–694, https://doi.org/10.1016/B978-044451664-0/50020-6.

[248] Spekreijse, J., Lammens, T., Parisi, C., Ronzon, T. and Vis, M. (2019), Insights into the European market for bio-based chemicals, EUR 29581 EN, Publications Office of the European Union, Luxembourg, ISBN 978-92-76-01500-0, doi:10.2760/739561, JRC112989.

[249] Grand View Research, (2023), 'Alkyl Polyglucosides Market Size And Share Report, 2030'. https://www.grandviewresearch.com/industry-analysis/alkyl-polyglucosides-market (Accessed 23/01/25).

[250] Mordor Intelligence, (2025), 'Alkyl Polyglycoside Market Size & Share Analysis - Growth Trends & Forecasts (2025 - 2030)'. https://www.mordorintelligence.com/industry-reports/alkyl-polyglycoside-apg-market (Accessed 23/01/25).

[251] El-Khordagui, L., S.E. Badawey, and L.A. Heikal, 'Application of Biosurfactants in the Production of Personal Care Products, and Household Detergents and Industrial and Institutional Cleaners', In: Green Sustainable Process for Chemical and Environmental Engineering and Science, Elsevier, 2021, pp. 49–96. ISBN 978-0-12-823380-1.

[252] Darwiche, N., Dufresne, C., Chartier, A. et al. (2024), 'Glycolipid and Lipopeptide Biosurfactants: Structural Classes and Characterization—Rhamnolipids as a Model', *Critical Reviews in Analytical Chemistry*, pp. 1–21, https://doi.org/10.1080/10408347.2024.2441428.

[253] El-Khordagui, L., S.E. Badawey, and L.A. Heikal, 'Application of Biosurfactants in the Production of Personal Care Products, and Household Detergents and Industrial and Institutional Cleaners', In: Green Sustainable Process for Chemical and Environmental Engineering and Science, Elsevier, 2021, pp. 49–96. ISBN 978-0-12-823380-1.

[254] Shah, J., Arslan, E., Cirucci, J. et al. (2016), 'Comparison of Oleo- *vs* Petro-Sourcing of Fatty Alcohols via Cradle-to-Gate Life Cycle Assessment', *Journal of Surfactants and Detergents*, Vol. 19, Issue 6, pp. 1333–1351, https://doi.org/10.1007/s11743-016-1867-y.

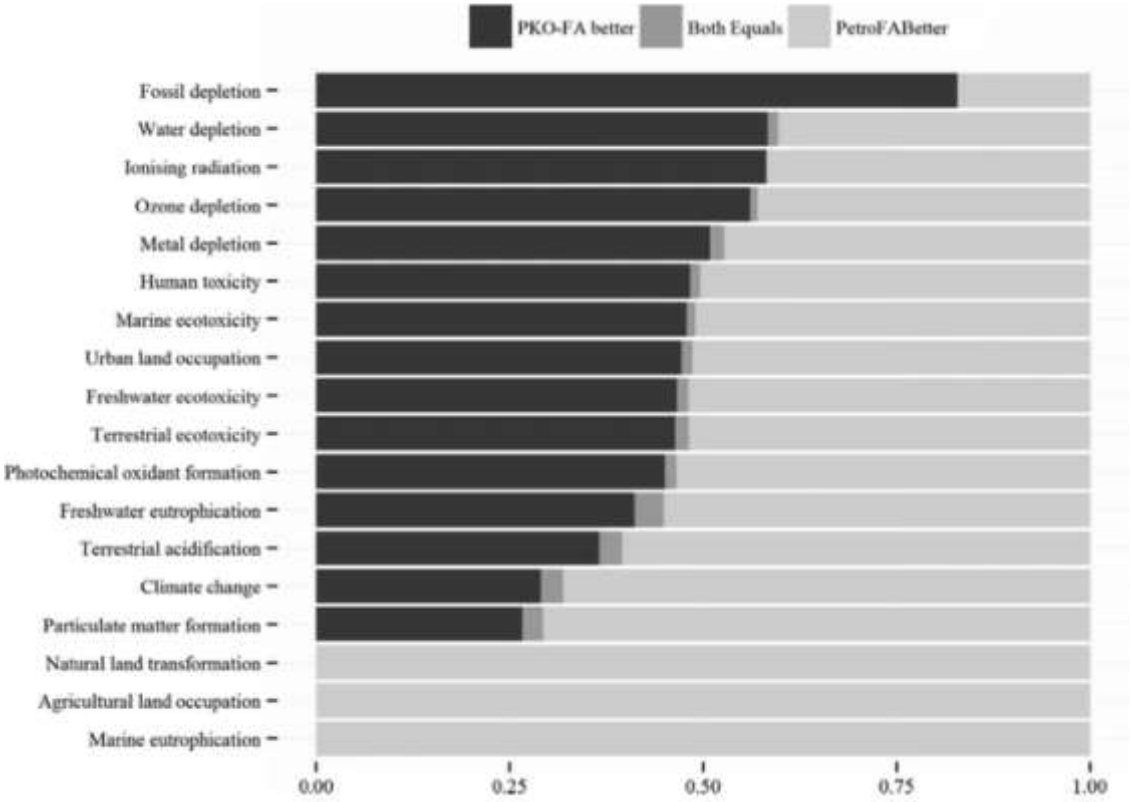
[255] Masnadi, M. S. and Brandt, A. R. (2017), 'Climate impacts of oil extraction increase significantly with oilfield age', *Nature Climate Change*, Vol. 7, Issue 8, pp. 551–556, https://doi.org/10.1038/nclimate3347.

[256] Masnadi, M. S., El-Houjeiri, H. M., Schunack, D. et al. (2018), 'Global carbon intensity of crude oil production', *Science*, Vol. 361, Issue 6405, pp. 851–853, https://doi.org/10.1126/science.aar6859.

[257] Meili, C., Jungbluth, N. and Bussa, M., (2022). Life cycle inventories of crude oil and natural gas extraction. ESU-services Ltd. Commissioned by ecoinvent, Schaffhausen, Switwerland, https://esu-services.ch/fileadmin/download/publicLCI/meili-2022-LCI%20for%20the%20oil%20and%20gas%20extraction.pdf (Accessed 24/01/25).

[258] vom Berg, C. and Carus, M. 2024: Non-level playing field for renewable materials vs. fossil in Life Cycle Assessments. Critical aspects of the JRC Plastics LCA methodology and its policy implications. Editor: Renewable Carbon Initiative (ed.), Hürth 2024; (vom Berg & Carus 2024), https://renewable-carbon.eu/publications/product/rci-non-level-playing-field-for-renewable-materials-vs-fossil-in-lcas/ (Accessed 24/01/25).

Figure 19. Comparison of environmental performance of palm kernel oil (PKO) vs petrochemical (Petro) source of fatty acids (FA) based on the results of an uncertainty analysis (1000 runs of Monte Carlo using the in-built function in Simapro 8.0)



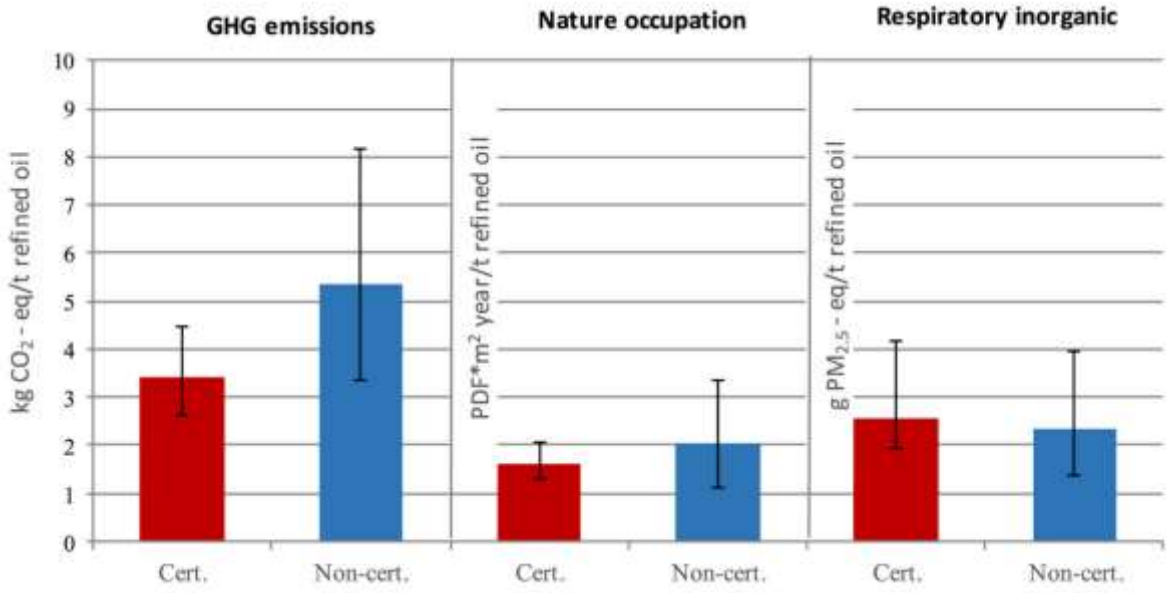
Source: Shah et al. ([259])

In this regard, some studies have shown potential benefits of certified vegetable oils compared to non-certified ones in categories such as greenhouse gas emissions (35% lower emissions for certified oil) and natural occupation (20% lower impact for certified oil), with natural occupation representing environmental impacts on biodiversity linked to land use and land use changes ([260]).

[259] Shah, J., Arslan, E., Cirucci, J. et al. (2016), 'Comparison of Oleo- *vs* Petro-Sourcing of Fatty Alcohols via Cradle-to-Gate Life Cycle Assessment', *Journal of Surfactants and Detergents*, Vol. 19, Issue 6, pp. 1333–1351, https://doi.org/10.1007/s11743-016-1867-y.

[260] Schmidt, J. and De Rosa, M. (2020), 'Certified palm oil reduces greenhouse gas emissions compared to non-certified', *Journal of Cleaner Production*, Vol. 277, p. 124045, https://doi.org/10.1016/j.jclepro.2020.124045.

Figure 20. Comparison of environmental performance of certified vs non-certified palm oil



Source: Schmidt and De Rosa ([261])

While comparing environmental performance of oleochemical and petrochemical surfactants is feasible because data are available and the final substance is effectively the same, assessing other bio-based ingredients is more difficult. This is the case for microbial-based surfactants. Data for these bio-based ingredients are scarce and available LCA studies are limited ([262], [263], [264], [265]). Moreover, primary data are mainly associated with laboratory or pilot scale systems ([266], [267], [268]), which may fail to accurately represent full industrial scale processes (expected to be more efficient) and, thus, lead to overestimate LCA results ([269], [270]).

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[261] Schmidt, J. and De Rosa, M. (2020), 'Certified palm oil reduces greenhouse gas emissions compared to non-certified', *Journal of Cleaner Production*, Vol. 277, p. 124045, https://doi.org/10.1016/j.jclepro.2020.124045.

[262] Baccile, N., Babonneau, F., Banat, I. M. et al. (2017), 'Development of a Cradle-to-Grave Approach for Acetylated Acidic Sophorolipid Biosurfactants', *ACS Sustainable Chemistry & Engineering*, Vol. 5, Issue 1, pp. 1186–1198, https://doi.org/10.1021/acssuschemeng.6b02570.

[263] Guilbot, J., Kerverdo, S., Milius, A. et al. (2013), 'Life cycle assessment of surfactants: the case of an alkyl polyglucoside used as a self emulsifier in cosmetics', *Green Chemistry*, Vol. 15, Issue 12, p. 3337, https://doi.org/10.1039/c3gc41338a.

[264] Kopsahelis, A., Kourmentza, C., Zafiri, C. et al. (2018), 'Gate-to-gate life cycle assessment of biosurfactants and bioplasticizers production via biotechnological exploitation of fats and waste oils', *Journal of Chemical Technology & Biotechnology*, Vol. 93, Issue 10, pp. 2833–2841, https://doi.org/10.1002/jctb.5633.

[265] Briem, A.-K., Bippus, L., Oraby, A. et al. (2022), 'Environmental Impacts of Biosurfactants from a Life Cycle Perspective: A Systematic Literature Review', in: Hausmann, R. and Henkel, M. (eds), *Biosurfactants for the Biobased Economy*, Springer International Publishing, Cham, pp. 235–269, https://doi.org/10.1007/10_2021_194.

[266] Baccile, N., Babonneau, F., Banat, I. M. et al. (2017), 'Development of a Cradle-to-Grave Approach for Acetylated Acidic Sophorolipid Biosurfactants', *ACS Sustainable Chemistry & Engineering*, Vol. 5, Issue 1, pp. 1186–1198, https://doi.org/10.1021/acssuschemeng.6b02570.

[267] Kopsahelis, A., Kourmentza, C., Zafiri, C. et al. (2018), 'Gate-to-gate life cycle assessment of biosurfactants and bioplasticizers production via biotechnological exploitation of fats and waste oils', *Journal of Chemical Technology & Biotechnology*, Vol. 93, Issue 10, pp. 2833–2841, https://doi.org/10.1002/jctb.5633.

[268] Briem, A.-K., Bippus, L., Oraby, A. et al. (2022), 'Environmental Impacts of Biosurfactants from a Life Cycle Perspective: A Systematic Literature Review', in: Hausmann, R. and Henkel, M. (eds), *Biosurfactants for the Biobased Economy*, Springer International Publishing, Cham, pp. 235–269, https://doi.org/10.1007/10_2021_194.

[269] Baccile, N., Babonneau, F., Banat, I. M. et al. (2017), 'Development of a Cradle-to-Grave Approach for Acetylated Acidic Sophorolipid Biosurfactants', *ACS Sustainable Chemistry & Engineering*, Vol. 5, Issue 1, pp. 1186–1198, https://doi.org/10.1021/acssuschemeng.6b02570.

[270] Pérez-López, P., González-García, S., Jeffryes, C. et al. (2014), 'Life cycle assessment of the production of the red antioxidant carotenoid astaxanthin by microalgae: from lab to pilot scale', *Journal of Cleaner Production*, Vol. 64, pp. 332–344, https://doi.org/10.1016/j.jclepro.2013.07.011.

Promoting the incorporation of sustainable bio-based materials is in line with two of the five objectives of the EU Bioeconomy Strategy, first adopted in 2012 ([271]) and updated in 2018 ([272]), namely *managing natural resources sustainably* and *reducing dependence on non-renewable, unsustainable resources*. These objectives are in line with the targets of the European Green Deal and the Bioeconomy Strategy plays an important role in achieving climate neutrality and environmental, economic and social sustainability ([273]). Thus, the EU Bioeconomy Strategy Progress Report published in 2022 acknowledges that bioeconomy policies should be built on all three *sustainability* dimensions, defined as:

- *environmental sustainability*: management of land and biological resources within ecological boundaries;
- *economic sustainability*: sustainable value chains and consumption; and
- *social sustainability*: social fairness and just transition.

As discussed in TR1, the sustainable sourcing of materials derived from biomass, with a special focus on the environmental dimension, has been addressed in EU legislation for uses such as bioenergy ([274]) or materials production (bioplastics) ([275]). Though this aspect is not addressed in the current Detergents Regulation (648/2004/EC) ([276]), some of the materials derived from biomass used for these applications may have common sources (e.g. vegetable oils such as palm oil), being the impacts associated to the production and management of these sources also common (e.g. deforestation; soil degradation). Consequently, considering the requirements and/or principles of the EU Sustainability criteria (also the EU framework for bio-based, biodegradable and compostable plastics) could result in enhanced sustainability on the sourcing of raw materials used in detergent and cleaning products. However, this should be understood as a generic and horizontal way of enhancing sustainable sourcing which should be in place only in the absence of a better alternative, as could be a more specific (raw material oriented) and mature voluntary sustainability certification scheme (e.g. RSPO specific to palm oil ([277])).

The changes proposed in TR1 related to the sustainable sourcing of raw materials included the expansion of the scope to bio-based raw materials other than palm oil, palm kernel oil and their derivatives. These changes were aligned with EUEL criteria for Cosmetic products ([278]), This provision would require all relevant bio-based materials other than palm oil and/or palm kernel oil to hold a sustainability certificate. After conducting further research, several certification schemes related to bio-based products have been identified and analysed thanks, to a large extent, to the findings of the EU funded project SUSTCER4BIOBASED ([279]), as well as the study by Majer et al ([280]). A list of sustainability certifications related to bio-based products relevant for detergents and cleaning products is shown in Table 42. The table exclude specific certification schemes for palm oil (already presented in Table 41) and those applicable to bio-based products not linked to detergents and cleaning products (e.g. Textile Exchange Global Recycled Standard, Better cotton).

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[271] COM(2012)60. A sustainable bioeconomy for Europe: Strengthening the connection between economy, society and the environment, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52012DC0060.

[272] COM(2018) 673 final. Innovating for Sustainable Growth: A Bioeconomy for Europe, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52018DC0673.

[273] European Commission. Directorate General for Research and Innovation. (2022), *European Bioeconomy Policy: Stocktaking and Future Developments : Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions*, Publications Office, LU, https://data.europa.eu/doi/10.2777/997651.

[274] Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources. OJ L 328, 21.12.2018, p. 82–209, 82–209, .

[275] COM(2022) 682 final. https://environment.ec.europa.eu/publications/communication-eu-policy-framework-biobased-biodegradable-and-compostable-plastics_en (Accessed 28/12/23).

[276] Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources. OJ L 328, 21.12.2018, p. 82–209, 82–209, .

[277] https://rspo.org/ (Accessed 28/12/23).

[278] Commission Decision (EU) 2021/1870 of 22 October 2021 establishing the EU Ecolabel criteria for cosmetic products and animal care products (notified under document C(2021) 7500). OJ L 379, 26.10.2021, p. 8–48.

[279] SUSTCERT4BIOBASED. Sustainability Certification for Biobased Systems, https://cordis.europa.eu/project/id/101059785. DOI DOI https://doi.org/10.3030/101059785.

[280] Majer, S., Wurster, S., Moosmann, D. et al. (2018), 'Gaps and Research Demand for Sustainability Certification and Standardisation in a Sustainable Bio-Based Economy in the EU', *Sustainability*, Vol. 10, Issue 7, p. 2455, https://doi.org/10.3390/su10072455.

3442 Table 42 – Overview of sustainability certification schemes for relevant bio-based products for detergents and cleaning products (excluding specific certificates for palm oil, listed in Table
3443 41)

Standard	*Foundation*	*Certification*	*Principal focus of standard*	*Supply chain coverage*	*Chain of custody model*	*Number of certificate holders(1)*	*Geographical coverage*	*Consumer label on packaging*	*Approved by EU under RED II* ([281])	*Relevance for bio-based materials for detergents and cleaning products*
Better Biomass	2011	Yes	Energy, fuels and bio-based products	All elements of the supply chains. Biomass production, feedstock processing, intermediary and final product production	Mass balance and segregation	172 valid certificates ([282])	Global	Yes	Yes	Low
Bonsucro	2009	Yes	All sugarcane products and derivatives – sugar, ethanol, molasses, and bagasse in traditional and newer market sectors, from sugar and alcohol to biofuels and bioplastics	Production, processing and trade around the world	Mass balance	264 valid certificates ([283])	Global	Yes	Yes	Intermediate
Forest Stewardship Council (FSC) forest management certification	1993	Yes	Forestry and wood based manufactured products	Whole supply chain from production, to manufacturing, distribution	Segregation	63 834 chain of custody certificates 1 588 Forest Management	Global	Yes	No	Low

[281] European Commission (2025), 'Voluntary schemes', https://energy.ec.europa.eu/topics/renewable-energy/bioenergy/voluntary-schemes_en (Accessed 24/01/25)
[282] Better Biomass (2025), 'Certificate holders', https://betterbiomass.nl/en/certificate-holders/ (Accessed 24/01/25)
[283] Bonsucro, (2025), 'Certificate holders', https://bonsucro.com/certified-members/ (Accessed 24/01/25)

						certificates ([284])				
International Sustainability & Carbon Certification (ISCC) PLUS	2012	Yes	Bioeconomy and circular economy for food, feed, chemicals, industrial applications (e.g., plastics or packaging) and energy from renewable sources used outside of the European Union (i.e. markets that are not regulated by the RED II ([285]))	All elements of the supply chain	Mass balance and physical segregation	5 375 valid certificates ([286])	Global	Yes	Yes	Intermediate
Rainforest Alliance Certified Coconut Oil	2018	Yes	Coconut and coconut oil	Coconut farming and coconut oil processing	Mass balance	NA	Global	No	No	High relevance but too immature
REDcert[2]	2015	Yes	Biomass for food, animal feed and as material in chemical industry	All phases - from the farmer to supply and trade	Mass balance, product segregation, identity preserved and book & claim	143 valid certificates, with 64 of them corresponding to chemical industry ([287])	Mainly Germany and Europe	Yes	No[(2)]	Intermediate
Roundtable on Sustainable Biomaterials (RSB) Global Advanced Products Certification	2013	Yes	Any industrial application of non-energy products such as plastics, textiles, pharmaceuticals, packaging, tableware, cosmetics, nutritional supplements, food, feed, pulp, paper and many others	All elements of the supply chains: biomass production, feedstock processing, intermediary and final product production	Mass balance, product segregation, identity preserved, content ratio accounting and book & claim	21 valid certificates ([288])	Global	Yes	No[(3)]	Intermediate

[284] Forest Stewardship Council (FSC), (2025), 'Facts & Figures', https://connect.fsc.org/impact/facts-figures (Accessed 24/01/25)

[285] Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (recast) OJ L 328, 21.12.2018, p. 82–209. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02018L2001-20240716

[286] International Sustainability and Carbon Certification (ISCC), (2025), 'Valid ISCC Certificates', https://www.iscc-system.org/certification/certificate-database/valid-certificates/ (Accessed 24/01/25)

[287] REDcert, (2025), https://redcert.eu/ZertifikateDatenAnzeige.aspx (Accessed 24/01/25)

[288] Roundtable on Sustainable Biomaterials (RSB), (2025), 'RSB Certificates', https://rsb.org/certification/rsb-certificates/ (Accessed 24/01/25)

Round Table on Responsible Soy (RTRS) Certificate	2010	Yes	Soybean and corn production and their derivatives	Full supply chain, including cultivation, harvesting, transport, storage and processing	Mass balance, segregation and country material balance	143 valid certificates ([289])	Global (though most holders located in South America)	Yes	Yes	Intermediate
Sustainable Coconut Charter	2020	No	Coconut and coconut products	Aim to have full traceability to the origin	NA	NA	Global	No	No	High relevance but too immature

(1) Number of licenses on 24/01/25.
(2) REDcert does provide a certification scheme approved by EU under RED II, but it is not the REDcert² for food, animal feed and materials for chemical industry. The EU approved certificate is the REDcert-EU for the biofuels sector.
(3) RSB does provide a certification scheme approved by EU under RED II, but it is not the RSB Global Advanced Products Certification. The EU approved certificate is the RSB EU RED Fuel Certification, specific of energy products.

Source: Own elaboration based on WR – WFBR ([290]), Majer et al ([291]), the Rainforest Alliance ([292], [293]), REDcert ([294]), the Round Table on Responsible Soy ([295]) and the Sustainable Coconut Partnership ([296]).

289 Round Table on Responsible Soy (RTRS), (2025), 'Certified volumes and producers', https://responsiblesoy.org/volumenes-y-productores-certificados?lang=en (Accessed 24/01/25)
290 WR – WFBR, (2023). 'D1.2 Catalogue of sustainability certification schemes and labels', SUSTCERT4BIOBASED project, Sustainability Certification for Biobased Systems, https://sustcert4biobased.eu/wp-content/uploads/2024/12/D1.2_Catalogue-of-sustainability-certification-schemes-and-labels_final_compressed-1.pdf (Accessed 23/01/25)
291 Majer, S., Wurster, S., Moosmann, D. et al. (2018), 'Gaps and Research Demand for Sustainability Certification and Standardisation in a Sustainable Bio-Based Economy in the EU', *Sustainability*, Vol. 10, Issue 7, p. 2455, https://doi.org/10.3390/su10072455.
292 Rainforest Alliance (2024), 'Rainforest Alliance Certified Coconut Oil', https://www.rainforest-alliance.org/insights/certified-coconut-oil/ (Accessed 24/01/25)
293 Rainforest Alliance (2022), 'Best for Business. Rainforest Alliance Certified Coconut Oil', https://www.rainforest-alliance.org/wp-content/uploads/2020/04/Better-for-business-Coconut-oil-A4.pdf (Accessed 24/01/2)
294 REDcert, https://www.redcert.org/en/redcert-systems/system-documents.html (Accessed 24/01/25)
295 Round Table on Responsible Soy (RTRS) Association, https://responsiblesoy.org/?lang=en (Accessed 24/01/25)
296 Sustainable Coconut Partnership, https://www.coconutpartnership.org/ (Accessed 24/01/25)

Considering the most common bio-based ingredients currently used for the production of detergents and cleaning products, the most relevant standards are those related to coconut and coconut oil production. However, as shown in Table 42, these are also the least developed ones, and their lack of penetration in the market makes it challenging to incorporate certified coconut oil derivatives in detergents and cleaning products. Other relevant schemes that are currently more developed are Bonsucro, for sugarcane products and derivatives, RSB Global Advanced Products, for wide range of bio-based materials, and RTRS, for soybean, corn and their derivatives. The current presence of these specific bio-based materials in the market may be too marginal to justify a sub-criterion on each of them.

About other ecolabels:

- *Nordic Swan (NS)*
  - Unlike EU ecolabel, NS requests licence holders for LD ([297]), HSC ([298]) and HDD ([299]) to document that they work to increase their purchasing of sustainable and renewable raw materials and/or that they require their manufacturer to work on increasing their purchasing of sustainable renewable raw materials, including quantitative, time-based targets. Other detergent and cleaning products' NS ecolabels, including IILD ([300]), DD ([301]) and IIDD ([302]) do not have an equivalent criterion.
  - Sustainability certification is required for palm oil, but not for other renewable materials in all NS product groups. Only licence holders for IILD ([303]) are requested to use certified sugarcane complying with Bonsucro certification. It should be noted that a sustainability certification is required for sugarcane for LD ([304]) and DD ([305]) when it is used for bio-based plastics as a renewable raw material other than a secondary raw material (i.e. residual product from other production processes) but this requirement is not related to the criterion under discussion in this subsection. No similar criterion is present in NS Ecolabels for the other detergents and cleaning products' product groups.
- *Blue Angel (BA)*
  - BA requires a minimum 50% threshold of total carbon originating from renewable sources within the total carbon of surfactant systems for LD ([306]).

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297 006 Laundry Detergents and Stain Removers, version 8.11, 10 December 2024. Nordic Ecolabelling. Available at: https://www.nordic-swan-ecolabel.org/48d85f/contentassets/70445c77678f46db9a850528cb7398d5/criteria-document_006_laundry-detergents-and-stain-removers-006_english2.pdf (Accessed 23/01/25).

298 026 Cleaning products, version 6.15, 20 December 2024. Nordic Ecolabelling. Available at: https://www.nordic-swan-ecolabel.org/4acea6/contentassets/988cf5d0a3fe4c3fa2f85775d7df4be9/criteria-document_026_cleaning-products-026_english2.pdf (Accessed 23/01/25).

299 025 Hand dishwashing detergents, version 6.12, 12 November 2024. Nordic Ecolabelling. Available at: https://www.nordic-swan-ecolabel.org/490396/contentassets/10f50d7e13a34cfbaf8fc0b66a4fc521/criteria-document_025_hand-dishwashing-detergents-025_english2.pdf (Accessed 23/01/25).

300 093 Laundry detergents for professional use, version 4.1, 16 April 2024. Nordic Ecolabelling. Available at: https://www.nordic-swan-ecolabel.org/498c09/contentassets/090178265c62418dbb02c80d0c72d351/criteria-document-for-product-group-093_093_laundry-detergents-for-professional-use-093_english2.pdf (Accessed 23/01/25).

301 017 Dishwasher detergent and rinse aids, V7.7, 13 August 2024. Nordic Ecolabelling. Available at: https://www.nordic-swan-ecolabel.org/4a98a7/contentassets/4c39b5c28cb344a6ad02643a27094f28/criteria-document_017_dishwasher-detergents-and-rinse-aids-017_english.pdf (Accessed 23/01/25).

302 080 Dishwasher detergents for professional use, version 3.9, 10 December 2024. Nordic Ecolabelling. Available at: https://www.nordic-swan-ecolabel.org/4aefda/contentassets/4fbf7d89969d452097042cd798bfd3d7/criteria-document_080_dishwasher-detergents-for-professional-use-080_english.pdf (Accessed 23/01/25).

303 093 Laundry detergents for professional use, version 4.1, 16 April 2024. Nordic Ecolabelling. Available at: https://www.nordic-swan-ecolabel.org/498c09/contentassets/090178265c62418dbb02c80d0c72d351/criteria-document-for-product-group-093_093_laundry-detergents-for-professional-use-093_english2.pdf (Accessed 23/01/25).

304 006 Laundry Detergents and Stain Removers, version 8.7, 24 October 2023. Nordic Swan, https://www.nordic-swan-ecolabel.org/48d85f/contentassets/70445c77678f46db9a850528cb7398d5/criteria-document_006_laundry-detergents-and-stain-removers-006_english2.pdf (Accessed 23/01/25).

305 017 Dishwasher detergent and rinse aids, V7.7, 13 August 2024. Nordic Ecolabelling. Available at: https://www.nordic-swan-ecolabel.org/4a98a7/contentassets/4c39b5c28cb344a6ad02643a27094f28/criteria-document_017_dishwasher-detergents-and-rinse-aids-017_english.pdf (Accessed 23/01/25).

306 DE-UZ 202, Laundry detergent. V1.1. January 2022. BLUE ANGEL The German Ecolabel, https://produktinfo.blauer-engel.de/uploads/criteriafile/en/DE-UZ%20202-202201-en%20criteria-V1.1.pdf (Accessed 23/01/25).

- For HDD/HDD, BA requires applicants to state the amount of carbon from renewable sources in the total carbon in the surfactant system ([307]).
- Details on the calculation approach are provided in the annexes.

The research conducted and the discussion presented by the JRC about bio-based raw materials other than palm oil, palm kernel oil and their derivatives leads to the following conclusions:

- Some studies suggest that the increase of bio-based materials can enhance biodegradability and reduce toxicity-related impacts compared to other alternatives.
- No conclusive evidence of benefits of replacing petrochemical raw materials by oleochemical counterparts has been found. Trade-offs exist between environmental impact categories. Some studies highlight the significant influence of operation practices in the performance of oleochemical sourcing.
- Potential environmental benefits of microbial-based ingredients could not be appropriately assessed due to the lack of studies based on primary data of full scale processes.
- Despite not necessarily reducing all environmental impacts, the increased use of bio-based sources contributes to the objectives of the EU Bioeconomy strategy by reducing dependence on '*non-renewable, unsustainable sources'*.
- Certificates on biomass sources other than palm oil and palm kernel oil exist, although some are in early stages of development (e.g. coconut oil) and the current availability of these certified bio-based products in the EU market may be limited.
- Similar ecolabels are incorporating requirements to increase the amounts of renewable materials used in detergents and cleaning products, though specific requirements on sustainable sourcing certifications are primarily focused on palm oil and its derivatives.

Considering the former statements, the JRC proposes:

- to add a new sub-criterion, *a) Renewable raw materials*, on the increase of renewable raw materials, in line with other ecolabel schemes.
- to remove sub-criterion *b)* on *Other biobased raw materials than palm oil, palm kernel oil and their derivatives*, due to the lack of widely-accepted certification schemes for most relevant bio-based raw materials other than palm oil, palm kernel oil and their derivatives (e.g. coconut oil).

It would be possible to propose additional sub-criteria on specific bio-based raw materials for which a mature sustainability certification scheme is available (e.g. sugarcane, soybean and corn products), but this has not been considered a priority, as the presence and environmental contribution of these raw materials are considered to be marginal in the current market.

About inclusion of specific provisions targeting achieving positive environmental effects via Carbon accounting.

What was the feedback received from stakeholders on this topic?

Feedback on this topic was mainly collected via the responses of the stakeholders to the question included in TR1:

Question 22 (Q22) – Would [you] suggest considering the inclusion of specific provisions targeting achieving environmental positive effects via Carbon accounting? If so, could you share specific proposals? For example, requiring a minimum share of in carbon from renewable origin from surfactants systems (as per Blue Angel

[307] DE-UZ 194, Hand Dishwashing Detergents and Hard Surface Cleaners. V1.2. January 2022. BLUE ANGEL The German Ecolabel. https://produktinfo.blauer-engel.de/uploads/criteriafile/en/DE-UZ%20194-202201-en%20criteria-V1.2.pdf (Accessed 23/01/25).

ecolabel) OR set follow a particular C-footprint methodology to ensure net LCA reduction in C-footprint in ingredients and/or final product

Several stakeholders were in favor of including a criterion to promote the use of a minimum share of renewable/non-fossil material in ingredients. In addition, one stakeholder proposed to award a benefit to manufacturers using renewable energy sources for manufacturing their products.

Other stakeholders were against this proposal and found it too demanding.

The main concerns raised by the respondents were:

1. Difficulty to meet the requirements when too ambitious targets are set, as shown from the experience of other ecolabels.
2. Difficulty to find renewable sources of raw materials, especially when raw materials come from outside Europe.
3. Lack or scarcity of certifications for bio-based raw materials other than palm oil and palm kernel oil, which hinders the possibility to ensure their sustainability.
4. Lack of guidelines to help manufacturers to work in the aimed direction.
5. Need for clear definition of '*sustainability*' and '*renewable*' before introducing targets on this aspect.
6. Need for a widely recognized methodology to ensure a common framework for all applicants.

What does JRC's research say on this topic?

Most of the aspects raised by the stakeholders in their answers to question Q22 have already been addressed in the discussion on sub-criterion b) on bio-based raw materials. Thus, definitions of key concepts such as '*sustainability*' and '*renewable*' materials have been provided, together with information on sources and sustainable sourcing certificates for bio-based raw materials other than palm oil and palm kernel oil.

Based on the conducted research, no conclusive evidence of environmental benefits of replacing some non-renewable raw materials by their renewable and/or bio-based counterparts has been found. Nevertheless, the increased use of bio-based sources contributes to the objectives of the EU Bioeconomy strategy by reducing dependence on *"non-renewable, unsustainable sources"*.

Regarding carbon accounting, in particular, several studies in the literature highlight the strong influence of the evaluating metrics on the assessment results ([308], [309], [310]). Potential benefits of bio-based materials and bioenergy relate to their role in their ability to delay greenhouse gas emissions or sequester carbon temporarily after the carbon uptake during the biomass source growth ([311]). This temporary storage of biogenic carbon can contribute to slowing the short-term rate of warming, thus allowing time for ecosystems and societies to adapt to climate change, as well as to decarbonize energy and industrial systems in the meantime, although there is no consensus whether this may result in mitigation benefits in the long term or not.

[308] Brandão, M., Kirschbaum, M. U. F. and Cowie, A. L. (2024), 'Evaluating metrics for quantifying the climate-change effects of land-based carbon fluxes', *The International Journal of Life Cycle Assessment*, Vol. 29, Issue 2, pp. 328–343, https://doi.org/10.1007/s11367-023-02251-0.

[309] Pscherer, T. and Krommes, S. (2024), 'LCA standards for environmental product assessments in the bioeconomy with a focus on biogenic carbon: A systematic review', *The International Journal of Life Cycle Assessment*, https://doi.org/10.1007/s11367-024-02387-7.

[310] Tonini, D., Schrijvers, D., Nessi, S. et al. (2021), 'Carbon footprint of plastic from biomass and recycled feedstock: methodological insights', *The International Journal of Life Cycle Assessment*, Vol. 26, Issue 2, pp. 221–237, https://doi.org/10.1007/s11367-020-01853-2.

[311] Brandão, M., Kirschbaum, M. U. F. and Cowie, A. L. (2024), 'Evaluating metrics for quantifying the climate-change effects of land-based carbon fluxes', *The International Journal of Life Cycle Assessment*, Vol. 29, Issue 2, pp. 328–343, https://doi.org/10.1007/s11367-023-02251-0.

As for the metrics used, numerous standards and evaluation frameworks exist. A selection of 19 relevant frameworks to account for biogenic carbon in LCAs of bio-based products and bioenergy is shown in Table 43. A comprehensive comparison between these standards can be found in Pscherer and Krommes ([312]). These metrics differ regarding several aspects that include:

1. Objective

   Some of the frameworks aim to provide the main requirements and guidance to conduct environmental assessments that include, but may not be limited to, impact categories related to greenhouse gas emissions and climate change. This is the case, for example, of ISO 14040:2006 and ISO 14044:2006 standards. Other frameworks mainly aim to i) set the elements for an Environmental Product Declaration or an environmental level (e.g. ISO 14025, EN 15804:2012+A2:2019/AC:2021), ii) specify product category rules (PCR), or iii) simply provide guidelines for the application of the methods. Furthermore, there are differences in the scope, as some frameworks are applicable to any product or process, regardless of their origin, while others are specific of all bio-based products or of a specific group of bio-based product.

2. System boundary

   Ideally, all the life cycle phases and modules of a system should be accounted for in an environmental assessment, according to a cradle to grave perspective. However, depending on the goal and scope, some standards and evaluation frameworks consider cradle-to-gate or gate-to-gate system boundaries.

3. Accounted resources and emissions in the Life Cycle Inventory (LCI)

   Some standards provide few instructions on the flows of resources and emissions to air, water and soil to be included in the assessment, while others indicate them more explicitly. In particular, some standards highlight the importance of accounting for resources related to land use and land use change, as well as forestry and water resources.

4. Accounting of biogenic carbon in the LCI

   Most approaches separately consider biogenic and non-biogenic carbon in the LCI. However, they may differ in the modelling of the biogenic carbon. Thus, some approaches consider both the uptake or sequestrated biogenic carbon and its emission (by considering a negative flow value for uptake and a positive flow value for emission), while others do not account for the biogenic carbon (considering 0 flows for both uptake and emission.

5. Calculation of biogenic carbon content

   Different methods to calculate the biogenic carbon content exist, including evaluations based on i) stoichiometry, ii) radiocarbon or iii) elemental analysis (e.g. EN 16760:2015, ISO 22526-4:2023). Other standards use the mass of biogenic and non-biogenic components and the calorific values (e.g. EN 16214-4:2013+A1:2019), or consider the content of biogenic carbon in wood products (e.g. EN 16449 (draft))

6. Temporal duration of biogenic carbon storage and delayed emissions

   A key factor explaining differences in carbon accounting results is the consideration of the timing of emissions and removals. Thus, most climate-change metrics neglect the influence of time, but there is a trend of recent studies to increasingly recognise its importance. Thus, some standards start recommending the application of dynamic LCA (e.g. prEN 18027 (draft)) to better account for the effect of removing and emitting carbon at different moments.

7. Modelling of the impact category 'climate change' in the life cycle impact assessment

   The most common metric to assess the impact category of climate change in LCA is the global warming potential (GWP), which quantifies contributions of emissions by integrating the radiative

[312] Pscherer, T. and Krommes, S. (2024), 'LCA standards for environmental product assessments in the bioeconomy with a focus on biogenic carbon: A systematic review', *The International Journal of Life Cycle Assessment*, https://doi.org/10.1007/s11367-024-02387-7.

forcing over a chosen time horizon, compared of that of CO_2. However, some standards and evaluating frameworks propose instead to use the global temperature potential (GTP). Furthermore, when using GWP, several sub-categories exist, including climate change-fossil, climate change-biogenic and climate change-land use and land use change. Some standards ask to report the results of the different categories separately, while others do not specify this.

8. Allocation of biogenic carbon to products and by-products

   Another challenge relate to the approach to allocate the environmental burdens in the (common) case of having intermediate co-products and by-products. Several standards such as ISO 14040 and 14044, ISO 14067, the PAS 2050 and the GHG protocol propos a hierarchy for the selection of the appropriate approach, including 1) the recommendation of subdividing processes or applying system expansion to avoid allocation, 2) physical allocation and 3) economic allocation. However, they do not specifically address biogenic carbon. The PEF method includes a forth approach stating that allocation based on other relationships shall be used, but specifies that biogenic carbon shall be allocated by mass. All in all, standards do not, in general, restrict the allocation to be applied to a single option, and the allocation choice may significantly affect the results.

9. Modelling of the substitution effect (i.e. displacement factor), that is, the impact of substituting fossil with bio-based products

   Different approaches exist to account for the potential of bio-based products to reduce greenhouse gas emissions when replacing fossil alternatives. The displacement factor indicates the amount of fossil emissions that may be avoided by using one unit of bio-based product in a specific end use, but this estimate varies depending on the considered evaluation metric.

10. Reporting of biogenic carbon

    Lastly, different standards present different requirements on how to report biogenic and non-biogenic carbon emissions and uptakes.

About other ecolabels:

— *Nordic Swan (NS)* requests licence holders for LD ([313]), HDD ([314]) and HSC ([315]) to report renewable material by calculating a ratio between the total amount of renewable material used divided by the sum of the amounts of renewable and non-renewable material used, with the amounts being expressed in kg, molar weight or carbon atoms, and the use of average carbon chain lengths being accepted:

$$\frac{Used\ amount\ renewable\ material}{(used\ amount\ renewable\ material + used\ amount\ non-renewable\ material)} \times 100\%$$

— *Blue Angel (BA)*

  - BA requires a minimum 50% threshold of total carbon originating from renewable sources within the total carbon of surfactant systems for LD ([316]).
  - For HDD/HDD, BA requires applicants to state the amount of carbon from renewable sources in the total carbon in the surfactant system ([317]).

[313] 006 Laundry Detergents and Stain Removers, version 8.7, 24 October 2023. Nordic Swan, https://www.nordic-swan-ecolabel.org/48d85f/contentassets/70445c77678f46db9a850528cb7398d5/criteria-document_006_laundry-detergents-and-stain-removers-006_english2.pdf (Accessed 23/01/25).

[314] 025 Hand dishwashing detergents, version 6.8, 07 November 2023. Nordic Swan, https://www.nordic-swan-ecolabel.org/4aefdd/contentassets/10f50d7e13a34cfbaf8fc0b66a4fc521/criteria-document_025_hand-dishwashing-detergents-025_english.pdf (Accessed 23/01/25).

[315] 026 Cleaning products, version 6.13, 24 October 2023 Nordic Swan, https://www.nordic-swan-ecolabel.org/4acea6/contentassets/988cf5d0a3fe4c3fa2f85775d7df4be9/criteria-document_026_cleaning-products-026_english2.pdf (Accessed 23/01/25).

[316] DE-UZ 202, Laundry detergent. V1.1. January 2022. BLUE ANGEL The German Ecolabel, https://produktinfo.blauer-engel.de/uploads/criteriafile/en/DE-UZ%20202-202201-en%20criteria-V1.1.pdf (Accessed 23/01/25).

- To assess compliance with this criterion, a declaration from the manufacturer or supplier of the surfactant shall be enclosed for every surfactant added to the product. The amount of carbon shall be calculated using the following formula, where G(i) is the proportional weight of the surfactant /surfactant raw material i, and R(i) is the proportion of renewable carbon in the total carbon for the surfactant or surfactant raw material i. If the surfactant system changes during the term of the contract, an amendment is needed and a declaration from the new manufacturer of the surfactant needs to be submitted.

$$\frac{\sum G(i) + R(i)}{G(i)}$$

Given the wide range of methodologies available for carbon accounting considering biogenic carbon and the lack of consensus to assign priority to one approach in particular, proposing a threshold value for renewable content based on carbon accounting is considered to be challenging at this stage. The evaluation of requests may be affected by unfair comparisons if different applicants use different evaluation metrics, but no evidence was found to justify selecting one approach over the others. An alternative to this may be to ask applicants for credible targets to increase the content of renewable raw materials over time. This proposal is in line with current criteria from other ecolabels (e.g. Nordic Swan).

[317] DE-UZ 194, Hand Dishwashing Detergents and Hard Surface Cleaners. V1.2. January 2022. BLUE ANGEL The German Ecolabel. https://produktinfo.blauer-engel.de/uploads/criteriafile/en/DE-UZ%20194-202201-en%20criteria-V1.2.pdf (Accessed 23/01/25).

3652 Table 43 – Relevant standards and evaluation frameworks for biogenic carbon accounting in the environmental assessment of bio-based products and bioenergy using LCA

Standard/Evaluation framework	*Title*	*Focus of the standard*				*Targeted product*				
		Method	*Environmental Product Declaration (EPD)/ Environmental label*	*Product Category Rules*	*Guidelines/ Recommendations*	*Both bio-based and non-bio-based products*	*Bio-based products (in general)*	*Construction products*	*Biofuels*	*Bioplastics*
ISO 14040:2006+A1:2020	Life cycle assessment – Principles and framework	X				X				
ISO 14044:2006 +A1:2018+A2:2020	Life cycle assessment – Requirements and guidelines (complementary to ISO 14040, 2006)	X				X				
ISO 14025:2006	Environmental labels and declarations – Type III environmental declarations – Principles and procedures		X			X				
ISO 14027:2018	Environmental labels and declarations – Development of product category rules			X		X				
ISO 14067:2018	Greenhouse gases – Carbon footprint of products – Requirements and guidelines for quantification	X				X				
EN 16760:2015	Bio-based products – Life Cycle Assessment	X					X			
EN 16785-2:2018	Biobased products – Biobased content – Part 2: Determination of biobased content using the material balance method	X					X			
CEN/TR 16957:2016	Biobased products – Guidelines for Life Cycle Inventory (LCI) for the End-of-life phase				X		X			

FprEN 18027 (draft)	Bio-based products – Life cycle assessments – Additional requirements and guidelines for comparing the life cycles of bio-based products with their fossil-based counterparts	X					X			
EN 16214-4:2013+A1:2019	Sustainability criteria for the production of biofuels and bioliquids for energy applications – Principles, criteria, indicators and verifiers – Part 4: Calculation methods of the greenhouse gas emission balance using a life cycle analysis approach	X							X	
ISO 22526-3:2020	Plastics – Carbon and environmental footprint of biobased plastics – Part 3: Process carbon footprint, requirements and guidelines for quantification	X								X
ISO 22526-4:2023	Plastics – Carbon and environmental footprint of biobased plastics – Part 4: Environmental (total) footprint (Life cycle assessment)	X								X
EN 15804:2012+A2:2019/AC:2021	Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products		X					X		
prEN 16485 (draft)	Round and sawn timber – Environmental Product Declarations – Product category rules for wood and wood-based products for use in construction			X				X		
prEN 16449 (draft)	Wood and wood-based products – Calculation of the biogenic carbon content of wood and conversion to carbon dioxide	X						X		
PEF method (2021)	Commission Recommendation (EU) 2021/2279 of 15 December 2021 on the application of the environmental	X				X				

	footprint calculation methods for measuring and disclosing the environmental performance of products and organisations along their life cycle Annex I. Product Environmental Footprint Method Annex II. Part A: Requirements to develop PEFCRs and perform PEF studies in compliance with an existing Product Environmental Footprint Category Rule; Part B: PEFCR Template; Part C: List of default CFF parameters									
ILCD framework	ILCD Handbook (2012) – Towards more sustainable production and consumption for a resource-efficient Europe ILCD Specific guide for LCI (2010) ILCD General guide for LCA (2010)				X	X				
PAS 2050 (2011)	Specification for the assessment of the life cycle greenhouse gas emissions of goods and services	X				X				
GHG Protocol (2011)	Product Life Cycle Accounting Reporting Standard - Product Standard.	X				X				

Source: Own elaboration based on Pscherer and Krommes ([318]) and cited standards.

[318] Pscherer, T. and Krommes, S. (2024), 'LCA standards for environmental product assessments in the bioeconomy with a focus on biogenic carbon: A systematic review', *The International Journal of Life Cycle Assessment*, https://doi.org/10.1007/s11367-024-02387-7.

Considering the evidence gathered, the JRC proposes to add a new sub-criterion, *a) Renewable raw materials*, on the increase of renewable raw materials, in line with other ecolabel schemes. For the sake of simplification and avoidance of challenging requirements, no specific threshold is proposed as a minimum share of renewable raw material. Instead, applicants are requested to calculate the share of total carbon from renewable origin and to propose quantitative time-based targets to demonstrate their work on increasing their purchasing of sustainable and renewable raw materials.

Summary of changes

The main changes made in this 2nd draft criteria, compared to the previous version, are:

- Change of the name of the criterion to *'Renewable and Sustainable sourcing of raw materials'*.
- Requesting applicants to report on quantitative, time-based targets to demonstrate their work on increasing the amount of renewable materials in the product.
- Modify the assessment and verification for the palm oil and palm kernel oil sub-criterion to provide clearer details on the process to update the verification of the validity of certificates by competent bodies, and to allow mass balance model to be accepted for the certification of palm kernel oil.
- Removing the sub-criterion on sustainable sourcing of bio-based raw materials other than palm oil and palm kernel oil due to the lack of mature certification schemes to assess and verify the compliance for some relevant raw materials (e.g. coconut oil) and/or to the consideration that the use in detergents and cleaning products is not relevant enough to justify the requirement (e.g. sugarcane).

Points for discussion 7 – Renewable and sustainable sourcing of raw materials (formerly *"Sustainable sourcing of palm oil, palm kernel oil and their derivatives)*

Stakeholders are invited to reply the following consultation question:

- Question 32 (Q32) – Do you support the addition of sub-criterion a) to request applicants to commit to the increase of the share of raw material from renewable origin, following the same rational as other European ecolabel schemes?
- Question 33 (Q33) – Do you support to maintain the requirement to restrict valid chain of custody models to identity preserved and segregated for palm oil and to allow mass balance, identity preserved and segregated models for palm kernel oil?
- Question 34 (Q34) – Would you support the addition of a sub-criterion to promote sustainable sourcing of coconut oil?
- Question 35 (Q35) – Would you support the addition of a sub-criterion to promote sustainable sourcing of sugarcane?
- Question 36 (Q36) – Would you support the addition of a sub-criterion to promote sustainable sourcing of soybean, corn and their derivatives?
- Question 37 (Q37) – Please, share any other comments/suggestions you deem relevant about this criterion providing reasons supporting them.

6.6. Excluded and restricted substances

The technical analysis included in the preliminary report showed that the chemicals used in the formulation of detergent products significantly contribute to overall environmental impacts. The aim of this criterion is to exclude or limit toxic or harmful substances, thereby ensuring that the EU Ecolabel is only awarded to the least environmentally impactful products. Limiting the presence of environmentally harmful substances in detergents is essential, as they are released into the aquatic environment after use. While detergent wastewater generally undergoes treatment, in the worst case scenario, ingredients may be released directly into the aquatic environment. The Detergent Regulation does not prohibit the use of substances in detergent products on the basis of their environmental properties, but the EU Ecolabel Regulation sets out general requirements for substances.

The information is presented separately for each sub-criteria, following the order of the existing criteria legal text:

- (a) Specified excluded and restricted substances
- (b) Hazardous substances
- (c) Substances of very high concern (SVHCs)
- (d) Fragrances
- (e) Preservatives
- (f) Colouring agents
- (g) Enzymes
- (h) (Only for HDD) Corrosive properties
- (x) (Only for LD, IILD,HDD, HSC) Micro-organisms

6.6.1. Specified excluded and restricted substances

This sub-criterion presents the list of substances that are specifically excluded (*sub-criterion (i)*) or restricted (*sub-criterion (il)*) from the formulation of detergent and cleaning products.

Substances are restricted based on: a) their chemical function (i.e. fragrances); b) their chemical composition (i.e. total content of phosphorus).

TR1 Proposed sub-criterion (a) specified excluded and restricted substances (*i*) Excluded substances	
ALL	The substances indicated below shall not be included in the product regardless of concentration, neither as part of the formulation, as part of any mixture included in the formulation, nor as impurities: — Alkyl phenol ethoxylates (APEOs) and other alkyl phenol derivatives, — Atranol, — Chloroatranol, — Diethylenetriaminepentaacetic acid (DTPA), — Ethylenediaminetetraacetic acid (EDTA) and its salts, — Formaldehyde and its releasers (e.g. 2-bromo-2-nitropropane-1,3-diol, 5-bromo-5-nitro-1,3-dioxane, sodium hydroxyl methyl glycinate, diazolidinylurea), with the exception of impurities of formaldehyde in surfactants based on polyalkoxy chemistry up to a concentration of 0,010 % weight by weight in the ingoing substance, — Glutaraldehyde, — Hydroxyisohexyl 3-cyclohexene carboxaldehyde (HICC),

	— Methylisothiazolinone (MIT), — Microplastics, — Nanomaterials, — Nitromusks and polycyclic musks, — Per- and polyfluoroalkyl substances (PFAS), — Quaternary ammonium salts not readily biodegradable, — Reactive chlorine compounds, — Rhodamine B, — Substances identified to have endocrine disrupting properties, — Substances considered to be potential endocrine disruptors in category 1 or 2 on the EU's priority list of substances that are to be investigated further for endocrine disruptive effects. — Triclosan, — 3-iodo-2-propynyl butylcarbamate.
DD, HDD, HSC, LD	— Phosphates, — Alkyl phosphonic acid derivatives (e.g. ATMP, HEDP, DTPMP) and their salts
HDD	— (only for professional products) Fragrances
HSC	— Aromatic hydrocarbons — Halogenated hydrocarbons
DD, HDD, HSC, IILD, LD	*Assessment and verification:* the applicant shall provide a signed declaration of compliance supported by declarations from suppliers, if appropriate, confirming that the listed substances have not been included in the product formulation regardless of concentration.
IIDD	*Assessment and verification:* the applicant shall provide a signed declaration of compliance supported by declarations from suppliers, if appropriate, confirming that the listed substances have not been included in the product formulation.
TR2 Proposed sub-criterion (a) specified excluded and restricted substances (*i*) Excluded substances	
ALL	The substances indicated below shall not be included as ingoing substances in the final product or as ingoing substances to the ingredients used to make the final product: ~~regardless of concentration, neither as part of the formulation, as part of any mixture included in the formulation, nor as impurities:~~ — Substances listed in Annexes I or II to Regulation (EU) 2019/1021 on persistent organic pollutants; — Mercury and mercury compounds as defined in Article 2 of Regulation (EU) 2017/852 on Mercury; — Substances listed in Annexes I or II to Regulation (EC) No 1005/2009 on ozone layer depleting substances; — Substances listed in Annex XVII to Regulation (EC) No 1907/2006, unless in full compliance with the relevant conditions specified in that Annex and only if also explicitly permitted for use in criterion *Excluded and Restricted substances* in its sub-criterion *Hazardous substances* and compliant with associated derogation conditions;

	— Alkylphenols, ~~A~~alkyl phenol ethoxylates (APEOs) and their ~~other alkyl phenol~~ derivatives, as referred to in entry 43 to Annex XIV or entry 46 to Annex XVII of Regulation (EC) 1907/2006; — Atranol (CAS No 526-37-4); — Chloroatranol (CAS No 57074-21-2); — Diethylenetriaminepentaacetic acid (DTPA, CAS No 67-43-6); — Ethylenediaminetetraacetic acid ~~(EDTA)~~ and its salts (EDTA, CAS Nos: 60-00-4, 64-02-8, 15708-41-5, 21265-50-9 etc.); — Formaldehyde and ~~its~~ preservatives that are formaldehyde releasers, such as: o ~~(e.g.~~ 2-bromo-2-nitropropane-1,3-diol (Bronopol, CAS No 52-51-7); o 5-bromo-5-nitro-1,3-dioxane (Bronidox, CAS No 30007-47-7); o sodium hydroxyl methyl glycinate (CAS No 70161-44-3); o diazolidinylurea~~)~~ (CAS No 78491-02-8); o DMDM-Hydantoin (CAS No 6440-58-0); o Quaternium-15 (CAS No 4080-31-3), and o Tetramethylolglycoluril (CAS No 5395-50-6). ~~with t~~The only exception to this restriction shall be for ~~of~~ impurities of formaldehyde in surfactants based on polyalkoxy chemistry up to a concentration of 0,010 % weight by weight in the supplied surfactant~~ingoing substance,~~ — Glutaraldehyde (CAS No 111-30-8), — Hydroxyisohexyl 3-cyclohexene carboxaldehyde (HICC, CAS No 31906-04-4); — Methylisothiazolinone (MIT, CAS No 2682-20-4); — 5-chloro-2-methyl-4-isothiazolin-3-one/2-methyl-4-isothiazolin-3-one (CMIT/MIT, CAS No 55965-84-9); — Microplastics (Synthetic Polymer Microparticles), — Nanomaterials, — Nitromusks and polycyclic musks, — Organic chlorine compounds and hypochlorites, — Per- and polyfluoroalkyl substances (PFAS), — Quaternary ammonium salts which are not readily biodegradable and/or classified with any of the hazards listed in Article 57 to Regulation (EC) 1907/2006; — Reactive chlorine compounds, — Rhodamine B, ~~— Substances identified to have endocrine disrupting properties,~~ — Substances classified as ~~considered to be potential~~ category 1 or category 2 endocrine disruptors for human health or the environment in accordance with CLP Regulation (EC) 1272/2008, substances included in the candidate list referred to in Article 59(1) of REACH Regulation (EC) 1907/2006 as having endocrine-disrupting properties for human health or the environment, substances identified as having endocrine-disrupting properties in accordance with Regulation (EU) No 528/2012 or Regulation (EC) No 1107/2009~~in category 1 or 2 on the EU's priority list of substances that are to be investigated further for endocrine disruptive effects~~. — Triclosan (CAS No 3380-34-5); — 3-iodo-2-propynyl butylcarbamate (IPBC, CAS No 55406-53-6).
DD, HDD, HSC, LD	— Phosphates, ~~— Alkyl phosphonic acid derivatives (e.g. ATMP, HEDP, DTPMP) and their salts~~
HDD	— (only for professional products) Fragrances
HSC	— Aromatic hydrocarbons — Halogenated hydrocarbons
~~DD, HDD,~~	*Assessment and verification:* the applicant shall provide a signed declaration of compliance, supported by declarations from suppliers, ~~if appropriate,~~ confirming that the listed substances have

~~HSC,~~ ~~IILD,~~ ~~LD~~ ~~IIDD~~ ALL	not been included as ingoing substances in the product formulation or supplied ingredients or raw materials, regardless of concentration.
~~IIDD~~	~~*Assessment and verification:* the applicant shall provide a signed declaration of compliance supported by declarations from suppliers, if appropriate, confirming that the listed substances have not been included in the product formulation.~~

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TR1 - Proposed sub-criterion (a) specified excluded and restricted substances (*ii*) Restricted substances	
DD, IIDD, IILD, LD	The substances listed below shall not be included in the product formulation above the concentrations indicated: — 1,2-Benzisothiazol-3(2H)-one: 0,0050 % weight by weight,
HDD, HSC	The substances listed below shall not be included in the product formulation above the concentrations indicated: — 1,2-Benzisothiazol-3(2H)-one: 0,0050 % weight by weight,
DD	The total phosphorus (P) content calculated as elemental P shall be limited to: — 0,20 g/wash for dishwasher detergents, — 0,030 g/wash for rinse aids Fragrance substances subject to the declaration requirement provided in Regulation (EC) No 648/2004 shall not be present in quantities ≥ 0,010 % weight by weight per substance.
HDD	The total phosphorus (P) content calculated as elemental P shall be limited to 0,01 g/l of washing water. Fragrance substances subject to the declaration requirement provided in Regulation (EC) No 648/2004 shall not be present in quantities ≥ 0,010 % weight by weight per substance.
HSC	The total phosphorus (P) content calculated as elemental P shall be limited to the following values for the reference dosage. Product type: P content All-purpose cleaners, RTU: 0,01 g/l of RTU product All-purpose cleaners, undiluted: 0,01 g/l of cleaning solution Kitchen cleaners, RTU: 0,10 g/l of RTU product Kitchen cleaners, undiluted: 0,10 g/l of cleaning solution Window cleaners, RTU: 0,00 g/l of RTU product Window cleaners, undiluted: 0,00 g/l of cleaning solution Sanitary cleaners, RTU: 0,10 g/l of RTU product Sanitary cleaners, undiluted: 0,10 g/l of cleaning solution Fragrance substances subject to the declaration requirement provided in Regulation (EC) No 648/2004 shall not be present in quantities ≥ 0,010 % weight by weight per substance. VOCs shall not be present above the limits specified below (VOCs means any organic compound having a boiling point lower than 150 °C). Product type: VOC limit All-purpose cleaners, RTU: 1 g/l of RTU product All-purpose cleaners, undiluted: 1 g/l of cleaning solution

<table>
<tr><td></td><td>
<table>
<tr><td>Kitchen cleaners, RTU</td><td>10 g/l of RTU product</td></tr>
<tr><td>Kitchen cleaners, undiluted</td><td>10 g/l of cleaning solution</td></tr>
<tr><td>Window cleaners, RTU</td><td>100 g/l of RTU product</td></tr>
<tr><td>Window cleaners, undiluted</td><td>100 g/l of cleaning solution</td></tr>
<tr><td>Sanitary cleaners, RTU</td><td>10 g/l of RTU product</td></tr>
<tr><td>Sanitary cleaners, undiluted</td><td>10 g/l of cleaning solution</td></tr>
</table>
</td></tr>
<tr><td>IIDD</td><td>The total phosphorus (P) content calculated as elemental P shall be limited to:
<table>
<tr><td rowspan="2">Product type
(in g/l of washing solution)</td><td colspan="3">Water hardness (mmol $CaCO_3$/l)</td></tr>
<tr><td>Soft (< 1,5)</td><td>Medium (1,5-2,5)</td><td>Hard (> 2,5)</td></tr>
<tr><td>Pre-soaks</td><td>XX</td><td>XX</td><td>XX</td></tr>
<tr><td>Dishwasher detergents</td><td>XX</td><td>XX</td><td>XX</td></tr>
<tr><td>Rinse aids</td><td>XX</td><td>XX</td><td>XX</td></tr>
<tr><td>Multicomponent system</td><td>XX</td><td>XX</td><td>XX</td></tr>
</table>
</td></tr>
<tr><td>IILD</td><td>The total phosphorus (P) content calculated as elemental P shall be limited to:
— XX g/kg of laundry for light soil,
— XX g/kg of laundry for medium soil,
— XX g/kg of laundry for heavy soil.
Fragrance substances subject to the declaration requirement provided in Regulation (EC) No 648/2004 shall not be present in quantities ≥ 0,010 % weight by weight per substance.</td></tr>
<tr><td>LD</td><td>The total phosphorus (P) content calculated as elemental P shall be limited to:
— ~~0,04~~ 0,03 g/kg of laundry for laundry detergents,
— 0,005 g/kg of laundry for stain removers.
Fragrance substances subject to the declaration requirement provided in Regulation (EC) No 648/2004 shall not be present in quantities ≥ 0,010 % weight by weight per substance.</td></tr>
<tr><td>ALL</td><td>Assessment and verification: the applicant shall provide the following documents:
(a) if isothiazolinones are used, a signed declaration of compliance supported by declarations from suppliers, if appropriate, confirming that the content of isothiazolinones used is equal to or lower than the limits set;
(b) a signed declaration of compliance supported by declarations from suppliers, if appropriate, confirming that the total amount of elemental P is equal to or lower than the limits set. The declaration shall be supported by the calculations of the product's total P-content;</td></tr>
<tr><td>DD, IILD, LD, HSC</td><td>(c) a signed declaration of compliance supported by declarations or documentation from suppliers, if appropriate, confirming that the fragrance substances subject to the declaration requirement provided for in Regulation (EC) No 648/2004 are not present above the limits set.</td></tr>
<tr><td>HDD</td><td>(c) a signed declaration of compliance supported by declarations or documentation from suppliers, if appropriate, confirming that the fragrance substances subject to the declaration requirement provided for in Regulation (EC) No 648/2004 are not present above the limits set. For professional products, a signed declaration of non-presence of fragrances shall be provided.</td></tr>
<tr><td>HSC</td><td>(d) A signed declaration of compliance supported by declarations from the suppliers, if appropriate, confirming that the total amount of VOCs is below the set limits. This declaration shall be supported by test reports or calculations of the VOC content based on the list of ingredients.</td></tr>
<tr><td colspan="2">TR2 – Proposed sub-criterion (a) specified excluded and restricted substances
(ii) Restricted substances</td></tr>
</table>

<table>
<tr><td>~~HDD, HSC~~ ALL</td><td>The substances listed below shall not be included in the product formulation above the concentrations indicated:
— 1,2-Benzisothiazol-3(2H)-one: 0,0050 % weight by weight,</td></tr>
<tr><td>DD</td><td>The total phosphorus (P) content calculated as elemental P shall be limited to:
— ~~0,20~~ 0.01 g/wash for dishwasher detergents,
— ~~0,030~~ 0.005 g/wash for rinse aids
Fragrance substances subject to the declaration requirement provided in Regulation (EC) No 648/2004 shall not be present in quantities ≥ 0,010 % weight by weight per substance.</td></tr>
<tr><td>HDD</td><td>The total phosphorus (P) content calculated as elemental P shall be limited to ~~0,01~~ 0.00g/l of washing water.
Fragrance substances subject to the declaration requirement provided in Regulation (EC) No 648/2004 shall not be present in quantities ≥ 0,010 % weight by weight per substance.</td></tr>
<tr><td>HSC</td><td>The total phosphorus (P) content calculated as elemental P shall be limited to the following values for the reference dosage.
<table>
<tr><td>Product type</td><td>P content</td></tr>
<tr><td>All-purpose cleaners, RTU</td><td>~~0,01~~ 0.00 g/l of RTU product</td></tr>
<tr><td>All-purpose cleaners, undiluted</td><td>~~0,01~~ 0.00 g/l of cleaning solution</td></tr>
<tr><td>Kitchen cleaners, RTU</td><td>~~0,10~~ 0.01g/l of RTU product</td></tr>
<tr><td>Kitchen cleaners, undiluted</td><td>~~0,10~~ 0.01g/l of cleaning solution</td></tr>
<tr><td>Window cleaners, RTU</td><td>0,00 g/l of RTU product</td></tr>
<tr><td>Window cleaners, undiluted</td><td>0,00 g/l of cleaning solution</td></tr>
<tr><td>Sanitary cleaners, RTU</td><td>~~0,10~~ 0.01 g/l of RTU product</td></tr>
<tr><td>Sanitary cleaners, undiluted</td><td>~~0,10~~ 0.01 g/l of cleaning solution</td></tr>
</table>
Fragrance substances subject to the declaration requirement provided in Regulation (EC) No 648/2004 shall not be present in quantities ≥ 0,010 % weight by weight per substance.
VOCs shall not be present above the limits specified below (VOCs means any organic compound having a boiling point lower than 150 °C).
<table>
<tr><td>Product type</td><td>VOC limit</td></tr>
<tr><td>All-purpose cleaners, RTU</td><td>~~1~~ 15 g/l of RTU product</td></tr>
<tr><td>All-purpose cleaners, undiluted</td><td>1 g/l of cleaning solution</td></tr>
<tr><td>Kitchen cleaners, RTU</td><td>~~10~~ 30 g/l of RTU product</td></tr>
<tr><td>Kitchen cleaners, undiluted</td><td>10 g/l of cleaning solution</td></tr>
<tr><td>Window cleaners, RTU</td><td>~~100~~ 60 g/l of RTU product</td></tr>
<tr><td>Window cleaners, undiluted</td><td>~~100~~ 30g/l of cleaning solution</td></tr>
<tr><td>Sanitary cleaners, RTU</td><td>10 g/l of RTU product</td></tr>
<tr><td>Sanitary cleaners, undiluted</td><td>~~10~~ 5 g/l of cleaning solution</td></tr>
</table></td></tr>
<tr><td>IIDD</td><td>The total phosphorus (P) content calculated as elemental P shall be limited to:
<table>
<tr><td rowspan="2">Product type
(in g/l of washing solution)</td><td colspan="3">Water hardness (mmol $CaCO_3$/l)</td></tr>
<tr><td>Soft (< 1,5)</td><td>Medium (1,5-2,5)</td><td>Hard (> 2,5)</td></tr>
<tr><td>Pre-soaks</td><td>XX</td><td>XX</td><td>XX</td></tr>
<tr><td>Dishwasher detergents</td><td>~~0,15~~ 0.01</td><td>~~0,30~~ 0.03</td><td>~~0,50~~ 0.05</td></tr>
<tr><td>Rinse aids</td><td>~~0,02~~ 0.00</td><td>~~0,02~~ 0.00</td><td>~~0,02~~ 0.00</td></tr>
<tr><td>Multicomponent system</td><td>~~0,17~~ 0.01</td><td>~~0,32~~ 0.03</td><td>~~0,52~~ 0.05</td></tr>
</table></td></tr>
<tr><td>IILD</td><td>The total phosphorus (P) content calculated as elemental P shall be limited to:
— ~~0,50~~ 0.01 g/kg of laundry for light soil,
— ~~1,00~~ 0.03 g/kg of laundry for medium soil,</td></tr>
</table>

	— ~~1,50~~ 0.1 g/kg of laundry for heavy soil. Fragrance substances subject to the declaration requirement provided in Regulation (EC) No 648/2004 shall not be present in quantities ≥ 0,010 % weight by weight per substance.
LD	The total phosphorus (P) content calculated as elemental P shall be limited to: — ~~0,03~~ 0.015 g/kg of laundry for laundry detergents, — 0,005 g/kg of laundry for stain removers. Fragrance substances subject to the declaration requirement provided in Regulation (EC) No 648/2004 shall not be present in quantities ≥ 0,010 % weight by weight per substance.
ALL	*Assessment and verification:* the applicant shall provide the following documents: (a) if isothiazolinones are used, a signed declaration of compliance supported by declarations from suppliers, if appropriate, confirming that the content of isothiazolinones used is equal to or lower than the limits set; (b) a signed declaration of compliance supported by declarations from suppliers, if appropriate, confirming that the total amount of elemental P is equal to or lower than the limits set. The declaration shall be supported by the calculations of the product's total P-content;
DD, IILD, LD, HSC	(c) a signed declaration of compliance supported by declarations or documentation from suppliers, if appropriate, confirming that the fragrance substances subject to the declaration requirement provided for in Regulation (EC) No 648/2004 are not present above the limits set.
HDD	(c) a signed declaration of compliance supported by declarations or documentation from suppliers, if appropriate, confirming that the fragrance substances subject to the declaration requirement provided for in Regulation (EC) No 648/2004 are not present above the limits set. For professional products, a signed declaration of non-presence of fragrances shall be provided.
HSC	(d) A signed declaration of compliance supported by declarations from the suppliers, if appropriate, confirming that the total amount of VOCs is below the set limits. This declaration shall be supported by test reports or calculations of the VOC content based on the list of ingredients.

In the below sections the rationale and relevant changes to the single criteria are presented separately for each sub-criterion.

Rationale for the proposed sub-criterion (a) specified excluded and restricted substances

This criterion lists substances that shall not be included as ingoing substances in the final product or as ingoing substances to the ingredients used to make the final product.

A list of specific exclusions of hazardous substances permits very strong and very clear signals to be sent to suppliers because it is effectively a ban on the intentional use of the excluded substances at any level, whether in the final product or ingredients.

CAS numbers have been included to avoid potential misunderstandings and to facilitate consistent screening of substances within the supply chain.

The criterion also includes four clauses inserted that make it explicit the EU Ecolabel detergents are compliant with the general EU Taxonomy requirements relating to pollution prevention and control.

On EU Taxonomy alignment

This is a completely new proposal that had not previously been discussed with stakeholders. It comes from a general cross-cutting request that EU Ecolabel products should aim to align with EU Taxonomy requirements on the general clause for pollution prevention and control. This clause, which can appear as a guarantee of do no significant harm (DNSH) for various economic activities, is set out in Appendix C of the Commission Delegated Regulation (EU) 2021/2139 for the Climate Change Mitigation goal (page 143) and again in the same Regulation on page 348 for the Climate Change Adaptation goal (page 348). The same DNSH

requirements also appear in Commission Delegated Regulation (EU) 2023/2486 on pages 25, 87 and 349 for the Sustainable use and protection of water, transition to a circular economy and protection and restoration of biodiversity and ecosystems goals, respectively. These requirements are as shown in the screenshot below.

Figure 21. The cross-cutting EU Taxonomy DNSH requirements for the pollution prevention and control.

Generic criteria for DNSH to pollution prevention and control regarding use and presence of chemicals

The activity does not lead to the manufacture, placing on the market or use of:

(a) substances, whether on their own, in mixtures or in articles, listed in Annexes I or II to Regulation (EU) 2019/1021, except in the case of substances present as an unintentional trace contaminant;

(b) mercury and mercury compounds, their mixtures and mercury-added products as defined in Article 2 of Regulation (EU) 2017/852;

(c) substances, whether on their own, in mixture or in articles, listed in Annexes I or II to Regulation (EC) No 1005/2009;

(d) substances, whether on their own, in mixtures or in articles, listed in Annex II to Directive 2011/65/EU, except where there is full compliance with Article 4(1) of that Directive;

(e) substances, whether on their own, in mixtures or in an article, listed in Annex XVII to Regulation (EC) No 1907/2006, except where there is full compliance with the conditions specified in that Annex;

(f) substances, whether on their own, or in mixtures or in an article, in a concentration above 0,1 % weight by weight (w/w), and meeting the criteria laid down in Article 57 of Regulation (EC) No 1907/2006 and that were identified in accordance with Article 59(1) of that Regulation for a period of at least 18 months, except if it is assessed and documented by the operators that no other suitable alternative substances or technologies are available on the market, and that they are used under controlled conditions ([1]).

In addition, the activity does not lead to the manufacture, presence in the final product or output, or placing on the market, of other substances, whether on their own, or in mixtures or in an article, in a concentration above 0,1 % weight by weight (w/w), that meet the criteria of Regulation (EC) No 1272/2008 for one of the hazard classes or hazard categories mentioned in Article 57 of Regulation (EC) No 1907/2006, except if it is assessed and documented by the operators that no other suitable alternative substances or technologies are available on the market, and that they are used under controlled conditions ([2]).

There are 6 specific points in the EU Taxonomy requirements plus a general one at the end. The precise wording of the introductory sentence to the EU Taxonomy is very broad and open to legal interpretation about the direct and indirect consequential impacts of using certain chemicals or materials (including how they in turn are made and likewise any upstream feedstock they are based on). Focusing more on the "use" part of the EU Taxonomy requirement, how these compare to the proposed requirements in TR2 (and the previous proposal in TR1) is summarised below:

- Point (a) in the EU Taxonomy refers to persistent organic pollutants subject to the Stockholm Convention and/or to the Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution. It can be assumed that all or almost all of these substances would be limited to 0,010% w/w by criterion 'SVHC restrictions', but it is necessary to go further and require their non-use at any level as an ingoing substance in both the final product or its ingredients. Consequently, it was deemed necessary to insert a new requirement on this prohibition in criterion 'Specified excluded and restricted substance' in the TR2 proposals.
- Point (b) focuses clearly the restriction of mercury. The term "Mercury-added products" refers to products that are articles and not mixtures like paints and varnishes, so this particular part is not applicable. As with point (a), all the relevant hazardous substances will be screened down to 0,010% w/w by criterion 'Hazardous substances', but an explicit ban is needed in criterion 'Specified excluded and restricted substance' in order to match with the EU Taxonomy requirements. So this point was also added to criterion 'Specified excluded and restricted substance' in this TR2 proposals.
- Point (c) refers to substances that contribute to the depletion of the ozone layer and in general to the Montreal Protocol. While the H420 hazard is listed in criterion 'Hazardous substances' and should be a

common hazard to these substances, as with points (a) and (b), it only limits the presence of these substances in the final product formulation to 0,010% w/w. It is therefore necessary to add a specific exclusion for these substances as ingoing substances in ingredients and the final product under criterion 'Specified excluded and restricted substance'

— Point (d) refers to the Restriction of Hazardous Substances (RoHs) in electrical and electronic equipment. This requirement is completely irrelevant to paints and varnishes and can therefore be ignored.

— Point (e) refers to substances that end up on REACH Annex XVII, where their use is only permitted for certain uses and so long as certain conditions are complied with. Due to the text "except where there is full compliance with the conditions specified in that Annex", the EU Taxonomy requirement is tantamount to compliance with EU law and little else. Therefore, it can be argued whether it is necessary for the EUEL criteria to specify anything here or not. For the sake of clarity, a clause on this requirement has been inserted in the TR2 proposal, but it should be carefully considered, especially in terms of potential conflicting signals with other restrictions. For example, in the same criterion 'Specified excluded and restricted substance', alkylphenols and APEOs in Annex XVII are not allowed, but the EU Taxonomy clause would imply that they are allowed (up to 0,010% w/w at least), so long as the comply with any relevant Annex XVII conditions.

— Point (f) from the EU Taxonomy DNSH is effectively already covered by criterion on SVHC restrictions. In fact, criterion 'SVHC restrictions' goes further because it sets a limit at 0,010% w/w instead of the 0,1% w/w mentioned for the EU Taxonomy.

Finally, the general requirement at the end on Article 57 substances can be considered to be already covered by criterion 'Hazardous substances' because all of the Article 57 hazards are restricted there (and to 0,010% instead of just to 0,1%). Should a substance with Article 57 properties be derogated in criterion 'Hazardous substances', this is still considered as EU Taxonomy compliant because scope is made in point (f) for exemptions which are very similar to the basis for derogations defined in Article 6(7) of the EU Ecolabel Regulation.

About the exclusion of additional substances which are prohibited by other ISO Type I

A consultation was conducted to gather stakeholder feedback on the potential exclusion of specific substances from the EU Ecolabel for detergents, which are not currently excluded but are prohibited by other ISO Type I schemes such as Nordic Swan and Blue Angel. The substances under consideration include organic chlorine compounds, hypochlorites, hypochlorous acid, methyldibromo glutaronitrile, phthalates, BHT (butylated hydroxytoluene), benzalkonium chloride, 34 bisphenols, halogenated flame retardants, DADMAC, benzotriazole and its derivatives, parabens, formic acid, and butylphenyl methylpropional (Lysmeral or Lilial).

Outcomes from and after the 1st AHWG meeting

In total 15 comments were received on this topic, which are found in full in the Table of Comments (ToC1).

The stakeholder responses varied in their opinions regarding the exclusion of these substances. Approximately 60% of respondents supported the exclusion of certain substances on the list, citing alignment with other ecolabels and potential health and environmental risks. Another 30% opposed the exclusions, highlighting the lack of alternatives or questioning the relevance of certain exclusions, while 10% provided neutral or no specific position regarding the exclusion.

In addition, some stakeholders highlighted additional substances for consideration beyond those initially listed. Concerns were raised about hexyl salicylate, with stakeholders pointing to its potential allergenic properties and impact on human health, suggesting its exclusion with precautionary measures regarding fragrance allergens in consumer products. Limonene and linalool were also mentioned due to their allergenic properties. Conversely, there was opposition to the exclusion of certain substances such as hexyl salicylate, sodium laureth sulfate, and sodium lauryl sulfate, reflecting the complexity of balancing functional product performance with health and environmental considerations.

Additional research and proposal

The JRC analysis for potential exclusion is still ongoing. It is important to consider the interrelation of these substances with other EU Ecolabel criteria. For example, formic acid, noted for its relatively favorable hazard profile, is permitted by the Blue Angel up to a concentration of 0.50% free acids in the final product. Therefore, a targeted question remains as to whether formic acid should be explicitly allowed in EU Ecolabel

products as a preservative. More information on this is included in the following paragraph related to preservatives. The JRC will continue to evaluate the implications of excluding these substances, ensuring that any decision is well-informed, balanced, and considers the broader context of existing criteria with a holistic approach

Isothiazolinones and other preservatives

For preservative exclusions, now CMIT/MIT is explicitly mentioned alongside MIT as not being permitted at any level as ingoing substances. The list of example formaldehyde releasers has been split into a non-exhaustive list, together with some more examples taken from the Blue Angel criteria and also including some abbreviations or short-hand names and CAS numbers. The main point of the CAS numbers is to avoid any potential misunderstandings and to facilitate the consistent screening for these substances in the supply chain. The conditional exemption for quaternary ammonium salts (if they are readily biodegradable) has been extended to also require that they are not classified with any Article 57 substances because some of these substances have a CMR classification according to the ECHA C&L inventory and the aim is not to allow them to be used up to 0,010% in the final product if they are CMR but also happen to be readily biodegradable.

A closer look at the CLP classifications of the different excluded preservatives is presented below.

Other ecolabels

A review of the equivalent criteria in the Nordic Swan and Blue Angel product groups is summarised in the table below, together with some remarks about how the requirements relate to the EU Ecolabel criteria.

Table 44 - Nordic Swan and Blue Angel preservative criteria requirements, with additional remarks related to EU Ecolabel criteria.

Criteria reference	Preservative requirements	Remarks
Nordic Swan: Laundry detergents and stain removers v.8.10;	O5: Ingoing substances in the product must not be classified with any of the hazard classes described in Table O5: [Table refers to: H350, H351, H340, H342, H360, 361, H362, H317 and H334].	Very non-prescriptive approach to preservative restrictions. The list of restricted CLP hazards is much smaller than the horizontal list of hazards used in the EU Ecolabel criteria. No exemptions made for preservatives in LD products and they are not explicitly mentioned in criterion O6 on prohibited substances. The ban on MIT is at least similar to the EU Ecolabel proposal, but the rest of the approach is very different. Generally very different to the EU Ecolabel approach and also with some differences even amongst the individual detergent product groups.
Nordic Swan: Dishwasher detergents and rinse aids v7.7	O4: same as O5 for Nordic Swan laundry detergents but with an exemption made for "preservatives in colours". O5: MIT is explicitly excluded in the prohibited substances list, but not organochlorine compounds that are used as preservatives.	
Nordic Swan: Hand dishwashing detergents v6.10	O5: same as for Nordic Swan laundry detergents. O6: only quaternary ammonium salt preservatives are exempted from the list of prohibited substances and only in the case that they are readily biodegradable.	
Nordic Swan Cleaning products v6.14	O6: Same as requirement O5 for laundry detergents except that preservatives used in enzymes and sensitising preservatives are exempted. O7: Quaternary ammonium salts (so long as they are not readily biodegradable) and MIT are explicitly included in the prohibited substance list.	
Blue Angel:	3.7. Exclusion of substances	Criteria on preservatives are the same for all detergent

Criteria reference	Preservative requirements	Remarks

Hand dishwashing detergents and hard surface cleaners DE-UZ 194 v1.2.
 	
Dishwasher detergents DE-UZ 201 v3.
 	
Laundry detergent DE UZ 202 v1.
	[…]
	• Triclosan.
	• 3-Iodo-2-proppinylbutylcarbamate.
	• Glutaral (glutaraldehyde).
	• Quaternary organic ammonium compounds and polyquaternium compounds that are not readily biodegradable.
	• Formaldehyde and formaldehyde releasers (****), e.g. (INCI designations):
	  ○ 5-bromo-5-nitro-1,3-dioxane
	  ○ Diazolidinyl urea
	  ○ Sodium hydroxymethylglycinate
	  ○ Dimethylol glycol
	  ○ Dimethylol urea
	  ○ DMDM-Hydantoin
	  ○ Quaternium-15
	  ○ Tetramethylolglycoluril
	• Formic acid (up to a total concentration in the end product of 0.50 % free acids)
	
	(****) Except for impurities of formaldehyde in surfactants based on polyalkoxy compounds up to a concentration of 0.010 % by mass in the ingredient
	
	3.8.1. d) Isothiazolinone
	
	2-methyl-4-isothiazolin-3-one (MIT) and 5-chlor-2-methyl-4-isothiazolin-3-one/2-methyl-4-isothiazolin-3-one (CIT/MIT) may only be added up to the maximum permitted limits stated in Annex V (List of preservatives allowed in cosmetic products) of Regulation (EC) No. 1223/2009 of the European Parliament and of the Council of 30 November 2009 on cosmetic products.
	
	- 5-chlor-2-methyl-4-isothiazolin-3-one/2-methyl-4-isothiazolin-3-one: 0.0015 % by mass.
	
	- 2-methyl-4-isothiazolin-3-one: 0.0015 % by mass.
	
	If the permissible value according to Annex V of Regulation (EC) No. 1223/2009 at the time of application is lower, this lower value applies.
	
	The content of 1,2-benzisothiazol-3(2H)-one (BIT) must not exceed the following content in the product:
	
	- 1,2-benzisothiazol-3(2H)-one: 0.0050 % by mass
		products covered by the Blue Angel.
		
		The preservative restrictions are broadly the same as the EU Ecolabel, but the Blue Angel additionally mentions some extra examples of formaldehyde-releasing preservatives and also has conditional exclusions for quaternary ammonium compounds and formic acid.
		
		The only restriction on isothiazolines that is not simply a reflection of the CLP rules of mixtures is the limit of 0.0050 % for BIT (when under CLP rules this could actually have been added up to 0.050 % or soon 0.036 % without classifying the product as H317). These requirements are more lenient that the EU Ecolabel proposals.
		
		Was not clear exactly what substances were "dimethylol glycol" and "dimethylol urea", so these are not proposed to be added directly to the list of examples in the EU Ecolabel restrictions.

3841

3842 *First Proposal*

In the first proposal, the exclusion of Methylisothiazolinone (MIT) and the mixture of chloromethylisothiazolinone (CMIT) and MIT from all EU Ecolabel detergent product groups was proposed, due to the difficulty in preserving products with the new MIT and CMIT/MIT (3:1) concentration limit of 0.0015% w/w, as set by the 13th Adaptation to Technical Progress (ATP). This exclusion was also in line with other ecolabels, such as Nordic Swan, and the EU Ecolabel criteria for absorbent hygiene products, reusable menstrual cups, cosmetic products, and animal care products, which exclude all isothiazolinones regardless of concentration.

As for benzisothiazolinone (BIT), it was decided to maintain the current requirements, which include limiting the concentration in the formulation to 0.005% w/w."

Outcomes from and after the 1st AHWG meeting

A total of 27 comments were submitted regarding this sub-criterion, with comprehensive details provided in the Table of Comments (ToC1).

The questions were about (i) support for the exclusion of MIT and CMIT/MIT; (ii) about extending that exclusion to all isothiazolines, and (iii) about the potential of phenoxyethanol to substitute for isothiazolines.

Split views were expressed by stakeholders about further bans on isothiazolines. While some industry stakeholders confirmed that it was possible to produce detergent products without isothiazolines, others considered that since the reclassification of the main isothiazolines used in the last few years, the limits for MIT, CMIT/MIT and OIT are effectively only 0,0015 % in the EU Ecolabel, since any higher concentration would trigger classification of the whole detergent product as H317.

The main argument in favour of isothiazolines being permitted was to maintain a range of preservation options that could be varied in order to minimise the risk of resistant microbial strains emerging – and especially for products in pH ranges where there are fewer alternative preservation options. Several stakeholders were willing to accept the absolute bans on MIT and CMIT/MIT so long as BIT continued to be permitted.

In terms of the limitations of alternative preservatives to isothiazolines, which are often used over a pH range of 5 to 8, it was mentioned that sodium benzoate and sodium sorbate are only active in their acidic form and thus require the product to be at a pH below 6 (working best at around pH 4-5). Phenoxyethanol is a useful alternative to isothiazolines that is stable over a broad pH range, but is not effective at pH 10 or higher. The use of sodium pyrithione is greatly restricted by the CLP rules of mixtures due to its M-factor of 100 associated with aquatic toxicity hazards. Lactic acid was considered to show insufficient preservation activity and DBPNA is unlikely to be a viable option if its ongoing assessment for endocrine disrupting properties concludes with a positive result. Despite its better hazard profile, some stakeholders informed that phenoxyethanol was currently be assessed for its safety when used in baby products.

Clarity was also requested on preservatives that can be currently used in EU Ecolabel detergents, and specifically with regards to the situation with formic acid.

Other concerns about changes to the excluded preservatives was the need to rely upon and collaborate with suppliers in order to be sure that they do not use excluded preservatives either. This point is clear now because it is understood that ingoing substances in ingredients effectively become ingoing substances in the final product, unless they are chemically modified.

Additional research

In order to compare the different preservatives that are excluded or restricted, the table below provides some details about the classification status of the different substances that are referred to. Any hazard codes highlighted in red are examples of hazards that are restricted in the horizontal CLP criteria for EU Ecolabel products. Hazard codes in bold red and highlighted in yellow are CMR hazards. Finally, the initials "H", "J" and "S" stand for the type of CLP classification for that substance, where "H" means a harmonised classification, "J" stands for "Joint entry" and "S" stands for Self-classifications.

Table 45 - CLP classification of preservatives

Criteria reference	Substance name	CAS number	CLP classification(s)	Remarks
Exclusions of	Bronopol	52-51-7	H: H301, H312, H314,	Expected to be

specific preservative substances (a) (i)			H317, H318, H335, H400 (M=100), H410 (M=100)	these classifications if RAC opinion is adopted
	Bronidox	30007-47-7	J: H302, H314, H318, H373, H400, H410	Explicitly banned in Blue Angel criteria
	Sodium hydroxymethyl glycinate	70161-44-3	H: 302, H315, H317, H319, H332, H335, H341, H350	
	Diazolidinylurea	78491-02-8	J: H319	Explicitly banned by Blue Angel, but hazards do not seem so important.
	DMDM-Hydantoin	6440-58-0	J: H302	
	Quaternium-15	4080-31-3	S: H301, H302, H311, H315, H317, H319, H400, H412	Explicitly banned in Blue Angel criteria
	Tetramethylolglycoluril	5395-50-6	J: H317, H350, H411	
	Glutaraldehyde	111-30-8	H: H301, H314, H317, H330, H334, H335, H400 (M=10), H411	
	MIT	2682-20-4	H: H301, H311, H314, H317 (0.0015%), H318, H330, H400 (M=10), H410	
	Quaternary ammonium salts	63393-96-4	J: H301, H314, H318, H360FD, H361d, H373, H400, H410	Under assessment as PBT. Blue Angel allows them if readily biodegradable.
	CMIT/MIT	55965-84-9	H: H301, H310, H314, H317 (0.0015%), H318, H330, H400 (M=100), H410 (M=100)	
	Triclosan	3380-34-5	H: H315, H318, H400, H410 (M=100)	Under assessment as endocrine disruptor and PBT
	IPBC	55406-53-6	H: H302, H317, H318, H331, H372, H400 (M=10), H410	Under assessment as endocrine disruptor
Restricted preservatives (a) (ii)	BIT	2634-33-5	H: H302, H317 (0.036%), H318, H335, H400, H410	New classification applicable from Sept. 2025. Only allowed up to 0.0050%.

	OIT	26530-20-1	H: H301, H311, H314, H317 (0.0015%), H318, H330, H400 (M=100), H410 (M=100)	Only allowed up to 0.0015%.
Examples of non-restricted preservatives	Sodium benzoate	532-32-1	J: H319	
	Phenoxyethanol	122-99-6	H: H302, H318, H335	
	Formic acid	64-18-6	H: H314	Only allowed in Blue Angel up to 0.5% of free acids
	EGForm	3586-55-8	J: H302, H315, H318	Technically a formaldehyde releaser, but has no restricted hazards
	(benzyloxy)methanol	14548-60-8	S: H302, H312, H315, H318	

Relevant findings about preservatives from a life cycle assessment perspective

The in-house LCA studies revealed that the levels of preservatives used were generally very small and made similarly small contributions to LCA impacts of the detergent products they were used in. The three main environmental impacts associated with preservatives were actually climate change, non-renewable energy resources and metal/mineral resources.

In terms of contribution to the total PEF score for the entire life cycle impacts associated with preservatives, these were around 0.005 %, 0.008 % and 0.003 % for LLD, DD and HDD products, respectively. No specific preservatives were flagged in the HSC-kitchen cleaner, the HSC-toilet cleaner or the PLD products. One important drawback for the LCA findings with the lack of matching datasets for the actual preservative substances used. All results were based on proxy datasets only.

Points for discussion 8 **–** Excluded & Restricted Substances (preservatives)

Stakeholders are invited to reply the following consultation questions:

- Question 38 (Q38) **–** Would you be able to help define a more exhaustive list of formaldehyde-releasing preservatives?
- Question 39 (Q39) – Would you be able to help construct a list of preservatives that can currently be used and which cannot be used in EU Ecolabel detergents (based on the current proposals)?
- Question 40 (Q40) – Is formic acid considered as a formaldehyde preservative or formaldehyde-releasing preservative? Should it be permitted in the same way that the Blue Angel criteria permit it (i.e. up to 0.5%)?
- Question 41 (Q41) – Based on the very different CLP classifications listed in the relevant Table 45, should all potentially formaldehyde-releasing preservatives be treated equally in terms of exclusions? Or should the least hazardous ones be permitted? (e.g. diazolidinyl urea (CAS No 78491-02-8), DMDM-Hydantoin (CAS No 6440-58-0), formic acid (CAS No 64-18-6), EGForm (CAS No 3586-55-8) or (benzyloxy)methanol (CAS No 14548-60-8).
- Question 42 (Q42) – Please, share any other comments/suggestions you deem relevant about this criterion providing reasons supporting them.

Endocrine disruptors

Endocrine disruptors, also known as EDs, are chemical compounds that interfere with the proper functioning of the endocrine system, leading to adverse effects on the health of both humans and animals. These impacts can take various forms, such as negative effects on reproductive health or potential contribution to the

development of hormone-related cancers. These disruptors can have synthetic or natural origins, and people can be exposed to them through different means, including residues of pesticides or everyday consumer products. One significant contributor to the spread of endocrine disruptors is their release into the aquatic environment. The fate of EDs in the environment varies. Some are persistent and can accumulate in soils, sediments, or fatty tissues, while others are more soluble in water and break down rapidly. Additionally, in some cases the effects of exposure to these disruptors may only become apparent long after the initial contact([319]).

The growing recognition of the potential risks posed by EDs is evident in the revised Regulation on classification, labelling, and packaging of chemicals (CLP). In December 2022, the European Commission proposed a revised CLP Regulation with the specific objective of addressing concerns related to EDs by appropriately classifying and labeling these chemicals ([320]). The EC established two categories of endocrine disruptors: known or presumed endocrine disruptors (category 1) and suspected endocrine disruptors (category 2), for both human health and for the environment Additionally, the Commission adopted a Delegated Act to introduce new hazard classes for EDs. The introduction of these new hazard classes aims to strengthen the protection of human health and the environment from the potential risks associated with these chemicals ([321]).

First proposal

In the stakeholder consultation preliminary survey,[322] the exclusion of identified and potential endocrine disruptors (category 1 and 2) received favourable feedback from the majority of respondents. Therefore, the exclusion of both identified and potential endocrine disruptors (categories 1 and 2) was proposed to ensure a strict policy on EDs, preventing their negative effects on the environment, humans, and animals. This exclusion was also consistent with other ecolabelling schemes such as Nordic Swan, the EU Ecolabel for Absorbent Hygiene Products group (Commission Decision (EU) 2023/1809), EU Ecolabel for Cosmetic products and animal care products (Commission Decision (EU) 2021/1870), which excluded identified EDs and 17 specific potential EDs substances[323].

Outcomes from and after the 1st AHWG meeting

A total of 6 comments were received on this sub-criterion section, which are found in full in the Table of Comments (ToC1). The stakeholder feedback on the proposal to exclude endocrine disruptors from ecolabeled products raised different issues and suggestions. While there was consensus on excluding substances identified as endocrine disruptors, there was opposition to the exclusion of "potential" endocrine disruptors due to their lack of clear definition, which could lead to premature bans. Stakeholders recommended that exclusions focus solely on substances with confirmed endocrine-disrupting effects. They pointed out that current EU Ecolabel guidelines for cosmetics only prohibit identified endocrine disruptors. To enhance clarity, it was suggested to provide links to authoritative lists of endocrine disruptors, such as the European Chemicals Agency's (ECHA) assessment list and other recognized sources.

Additional research

In 2023, endocrine disruption was incorporated into the CLP Regulation as a hazard class with two categories:

- Category 1: Known or presumed endocrine disruptors for human health (ED HH 1) and environment (ED ENV 1).
- Category 2: Suspected endocrine disruptors for human health (ED HH 2) and environment (ED ENV 2).

[319] State of the Science of Endocrine Disrupting Chemicals – 2012 Edited by Åke Bergman, Jerrold J. Heindel, Susan Jobling, Karen A. Kidd and R. Thomas Zoeller; https://echa.europa.eu/hot-topics/endocrine-disruptors.

[320] https://ec.europa.eu/commission/presscorner/detail/en/IP_22_7775

[321] https://environment.ec.europa.eu/system/files/2022-12/Delegated%20Regulation%20amending%20Regulation%2012722008.pdf.

[322] European Commission, Joint Research Centre, La Placa, M.G.,; Vidal Abarca Garrido, C.; Wolf, O, 2022. Assessment of the EU Ecolabel criteria for six Detergent Product Groups. Internal. Document prepared for the European Union Ecolabelling Board (EUEB)

[323] Ethylhexyl methoxycinnamate, Resorcinol, Benzopehenone, Benzopehenone-1, Benzopehenone-2, Benzopehenone-3, Benzopehenone-4, Benzopehenone-5, Homosalate, Octocrylene, Butylphenyl metylpropional, Benzylsalicylate, Triphenyl phosphate, Daidzein, Deltamethrin, Genistein, Kojic acid and Triclocarban;

Substances in Category 2 are defined as endocrine disruptors with sufficient but weaker evidence compared to Category 1. Classification in Category 2 may also result from inconclusive data preventing Category 1 classification, but current data supporting Category 2.

A mixture is classified as an endocrine disruptor for the environment or human health if at least one component is a Category 1 or Category 2 endocrine disruptor and is present at or above the generic concentration limits as outlined in Table 46.

Table 46 - Generic concentration limits of components of a mixture classified as endocrine disruptor for the environment and for human health that trigger classification of the mixture

Component classified as:	Generic concentration limits triggering classification of a mixture as:	
	Category 1 endocrine disruptor for the environment and for human health	Category 2 endocrine disruptor for the environment and for human health
Category 1 endocrine disruptor for the Environment and for Human Health	≥ 0,1 %	
Category 2 endocrine disruptor for the Environment and for Human Health		≥ 1 %

Source: Adapted from Commission Delegated Regulation (EU) 2023/707, which amends Regulation (EC) No 1272/2008 concerning hazard classes and criteria for classification, labelling, and packaging of substances and mixtures (CLP)[324].

There are transitional periods after the Delegated Regulation's entry into force, during which manufacturers, importers, downstream users, and distributors are not required to classify their substances or mixtures according to the new hazard classes. During these periods, classification can be applied voluntarily. After these periods, all parties must comply with the new hazard classes.

According to Regulation (EU) 2024/2865[325] amending Article 37 of the CLP Regulation, an endocrine disruptor identified under other regulations, such as the Biocidal Product Regulation (EU) 528/2012[326], the Plant Protection Products Regulation (EC) No 1107/2009[327], and listed on the REACH[328] candidate list by 11 June 2025, will be directly transferred under CLP[329] Annex IV by 11 June 2026 as Category 1.

Further provisions consider substances under evaluation in BPR, PPPR, and REACH, ensuring that both currently identified substances and those under evaluation are included in CLP Annex VI based on established criteria and timelines.

New proposal

Based on these regulatory developments, the JRC proposes excluding substances classified as Endocrine Disruptors in Category 1 (Known or Presumed EDs) and Category 2 (Suspected EDs).

The official list of EDs Category 1 and Category 2 is Annex VI of the CLP Regulation. However, during the transition to listing new substances in Annex VI, references to the REACH candidate list, BPR, and PPPR remain relevant. No reference is proposed to other lists, such as ECHA's ED assessment list, as these assessments reflect the evaluating authority's views, not necessarily ECHA or Member States, and hold no legal value. The outcomes of substances in the assessment list are uncertain, and conclusions on potential endocrine

[324] Commission Delegated Regulation (EU) 2023/707, which amends Regulation (EC) No 1272/2008 concerning hazard classes and criteria for classification, labelling, and packaging of substances and mixtures
[325] Regulation (EU) 2024/2865
[326] Biocidal Product Regulation (Regulation (EU) 528/2012)
[327] Plant Protection Products Regulation (EC) No 1107/2009
[328] Regulation concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (EC) 1907/2006
[329] Regulation on classification, labelling and packaging of substances and mixtures (EC) 1272/2008

disruption properties could be negative. Similarly, no reference is proposed to ED lists by National Competent Authorities[330].

Phosphorus restrictions

Increased levels of soluble and readily available forms of phosphorus (P) are a leading cause of eutrophication in streams, rivers, and lakes worldwide (Richards et al., 2015; Metson et al., 2017). Phosphorus, often in conjunction with nitrogen emissions, can lead to nutrient enrichment, prompting harmful changes in aquatic ecosystems, such as algae overgrowth and increased biomass. In severe cases, this can result in oxygen depletion and the collapse of aquatic life. Algal blooms caused by high phosphorus levels can also lead to increased water turbidity and create taste and odor issues.[331] It is important to limit the use of phosphorus in a wide range of detergents to reduce environmental impact and preserve the long-term availability of phosphate rock (Álvarez et al., 2018). Phosphorus is a non-renewable resource with increasing demand that can only be extracted from phosphate rock, primarily found in a few countries, such as China and Morocco. Detergents currently account for approximately 4% of total phosphate rock consumption. As the quality and economic availability of this resource continue to decline, phosphate rock was added to the fifth European list of critical raw materials in 2023. This list is published in Annex II of the Proposal for a Regulation establishing a framework for ensuring a secure and sustainable supply of critical raw materials and amending Regulations (EU) 168/2013, (EU) 2018/858, 2018/1724, and (EU) 2019/1020[332].

The primary phosphorus compounds significant in environmental and biological contexts are phosphates. The four main sources of phosphates in the environment are fertilizers, metabolic waste from humans and livestock, and detergents. Phosphates are used in detergents to combat water hardness, adjust pH, and increase dirt-carrying capacity. The most commonly used phosphate in detergents is sodium tripolyphosphate (STPP), which is effective in sequestering hardness salts, removing and preventing encrustation on fibers, and acting as a carrier for other detergent ingredients[333].

To mitigate the environmental impact of phosphorus-containing compounds, numerous measures have been implemented at the European level. Regulation (EU) No 259/2012[334], amending Detergent Regulation (EC) No 648/2004, introduced harmonized rules on the content of phosphates and other phosphorus compounds in detergents for household laundry and automatic dishwashing machines. It sets limitations of 0.5 grams of total phosphorus content per recommended dosage in laundry detergents and 0.3 grams per standard dosage in consumer automatic dishwasher detergents. Furthermore, the Urban Waste Water Treatment Directive[335] and the Water Framework Directive[336] provide a legal framework to protect the environment from the adverse effects of urban wastewater discharges and discharges from specific industrial sectors. The aim of these directives is to restore clean water across Europe and ensure its sustainable long-term use.

The concentration of phosphates in detergents has decreased drastically in the last two decades[337]. The European Union has made significant progress in promoting the availability and use of phosphate-free and P-free detergent products through the implementation of the Detergent Regulation, which restricts phosphates and other phosphorus compounds. The report from the Commission to the European Parliament and the

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330 https://edlists.org/

331 Human & Environmental Risk Assessment on ingredients of European household cleaning products https://www.heraproject.com/files/13-F-04-%20HERA%20STPP%20full%20web%20wd.pdf

332 Proposal for a Regulation of the European Parliament and of the Council establishing a framework for ensuring a secure and sustainable supply of critical raw materials and amending Regulations (EU) 168/2013, (EU) 2018/858, 2018/1724 and (EU) 2019/1020:https://eur-lex.europa.eu/resource.html?uri=cellar:903d35cc-c4a2-11ed-a05c-01aa75ed71a1.0001.02/DOC_2&format=PDF

333 SWD SEC(2010) 1277 https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=SEC:2010:1277:FIN:EN:PDF

334 REGULATION (EU) No 259/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Regulation (EC) No 648/2004 as regards the use of phosphates and other phosphorus compounds in consumer laundry detergents and consumer automatic dishwasher detergents: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:094:0016:0021:EN:PDF

335 Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment: https://eurlex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31991L0271

336 Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy: https://eur-lex.europa.eu/legalcontent/EN/TXT/?uri=CELEX:32000L0060

337 https://www.ikw.org/fileadmin/IKW_Dateien/downloads/Haushaltspflege/2021_IKW_Nachhaltigkeitsbericht.pdf

Council (COM(2015) 229)[338] highlights the progress and confirms the technical feasibility of phosphate-free detergents, noting a large number of patents filed since 2012 for substitution approaches to replace phosphates. Since phosphates provide a variety of functions, alternative substances need to address each of these functions. Therefore, it normally takes several different ingredients to achieve the same results. The alternatives for phosphate replacement include chelating agents, dispersant polymers, surfactants, and enzymes. Polycarboxylates are used as co-builders for water softening. Phosphonates are mainly used as chelating agents and/or scale inhibitors[339]. Sodium citrate has water-softening properties. Sodium silicates have builder properties, stabilize the bleach system, and inhibit the corrosion of stainless steel and aluminum by synthetic detergents. Other chemicals used in phosphate-free detergents and as environmentally friendly chelating agents include glutamic acid diacetic acid (GLDA), hydroxyethyl amino diacetic acid (HEIDA), methyl glycine diacetic acid (MGDA), and L-aspartic acid N,N-diacetic acid (ASDA).

The shift towards P-free detergents and market innovation was also influenced by ecolabelled products, which generally contain less phosphorus than regular detergents (Richards et al., 2015). The EU Ecolabel has proposed a ban on phosphate from laundry detergents (LD), dishwasher detergents (DD), hard surface cleaning products (HSC), and hand dishwashing detergents (HDD), as well as different restrictions on total phosphorus content for these product groups. Additionally, it restricts the total phosphorus content for industrial and institutional laundry detergents (IILD) and industrial and institutional dishwashing detergents (IIDD), depending on the type of product and the water hardness. Other ISO Type I schemes, such as Nordic Swan and Blue Angel, have stricter limitations on the use of phosphorus content for all product groups compared to the EU Ecolabel.

Other ecolabels

The Nordic Swan and Blue Angel set a total phosphorus content limit of 0.03 g/kg for laundry detergents LD. Additionally, Blue Angel bans alkyl phosphonic acid derivatives and their salts, alongside phosphates.
For HSC and HDD, Nordic Swan prohibits phosphates, phosphonates, phosphoric acid, and phosphonic acids. Blue Angel also bans phosphates and alkyl phosphonic acid derivatives and their salts, in addition to setting specific limit values for the total phosphorus content of elemental phosphorus.
For IIDD and IILD, Nordic Swan prohibits the use of phosphates, with an exemption for those used to stabilize H_2O_2 (allowed in concentrations of less than 0.0100 w-% in the final products) in the case of IILD. Additionally, the Nordic Ecolabel sets specific limitations for phosphonates and phosphonic acids. As an alternative to phosphates as a complexing agent, Nordic Swan considers the use of polycarboxylates. Immunosuccinate and cumene sulphonates are used, but because they significantly contribute to anaerobic biodegradability (anNBO), they are excluded from the calculation of anNBO
Details of the comparison are provided in Annex I.

First Proposal

In the first proposal for TR1, in alignment with both the Nordic Swan and Blue Angel, it was proposed to set a total phosphorus content limit for laundry detergents (LD) of 0.03 g/kg of laundry. Additionally, it was proposed to ban alkyl phosphonic acid derivatives and their salts, alongside phosphates, in alignment with Blue Angel. The same exclusion of alkyl phosphonic acid is proposed for dishwasher detergents (DD).

In the case of HDD and HSC, considering that the EU Ecolabel only excludes the use of phosphates in formulations and has less strict limits on total elemental phosphorus content, it was proposed to align with Blue Angel by banning phosphonic acids and their derivatives, as well as lowering the limits on total elemental phosphorus content. Regarding IILD and IIDD, in light of the restrictions set by Nordic Swan, it was deemed reasonable to consider extending the limitations on phosphates to industrial and institutional detergents, as well as to all other product groups.

In order to assess the potential ban of phosphates from IIDD and IILD, and the further reduction of P-content for all product groups, information and evidence from the industry were required

[338] Report from the Commission to the European Parliament and the Council (COM(2015) 229) https://www.europarl.europa.eu/RegData/docs_autres_institutions/commission_europeenne/com/2015/0229/COM_COM(2015)0229_EN.pdf

[339] Human & Environmental Risk Assessment (HERA) on ingredients of European household cleaning products – Phosphonates https://www.heraproject.com/files/30-F-04-%20HERA%20Phosphonates%20Full%20web%20wd.pdf

Outcomes from and after the 1st AHWG meeting

A total of 19 comments were submitted regarding this sub-criterion, with comprehensive details provided in the Table of Comments (ToC1).

Question 27 (Q27) – Would you support proposed LD, DD, HDD, HSC limits? In addition, would you support a further reduction of the limits?

Question 28 (Q28) – Can you provide P-content value data for IILD and IIDD to help support the criteria revision process and make sure that new values have an appropriate level of ambition?

Question 29 (Q29) – Would you support the exclusion of phosphate from IILD and IIDD in line with Nordic Swan?

Overall, stakeholders expressed diverse view, with a significant portion having supported the proposed limits and exclusions, there was also strong opposition related to concerns about product efficacy and the crucial role of phosphorus compounds due to their unique properties and the difficulty of finding alternatives. Stakeholders argued that phosphates should have remained allowed in professional detergents, emphasizing the difference between consumer and professional product needs. They stressed the importance of balancing environmental goals with maintaining effective cleaning capabilities, particularly in industrial and professional settings. Concerns were raised about the potential consequences of excessive restrictions, which could have undermined product efficacy. Specifically, stakeholders pointed out that the proposed limits for HDD and HSC were too strict and could have reduced the effectiveness of finished products.

Some stakeholders expressed concerns regarding the exclusion of alkyl phosphonic acid derivatives and their salts, highlighting their important role and minimal environmental impact. They emphasized that these compounds, distinct from phosphates, are utilized at low concentrations and degrade slowly, thus having an insignificant impact on eutrophication and algal growth. It was argued that the phosphorus content of phosphonates is negligible compared to other sources and that they are largely removed during sewage treatment processes, with ongoing projects aimed at phosphorus recovery further mitigating any potential concerns. Stakeholders suggested imposing limits rather than a complete ban, as alkyl phosphonic acid derivatives are still widely used in the industry and are crucial for Ecolabel registration. In professional settings such as healthcare and food processing, derivatives like ATMP, HEDP, and DTPMP are deemed essential for stabilizing bleaches and ensuring uniform bleaching in washing processes. Stakeholders stated that phosphonates offer unmatched properties, including complexation, anti-scaling, dispersing insoluble metals, and corrosion inhibition, which are vital for preventing mineral deposits, reducing dirt re-deposition, stabilizing peroxide bleaches, protecting fragrances, and preventing color fading. They further noted that available alternatives do not offer the same performance level, even at higher dosages, potentially leading to increased chemical use and environmental impact. Overall, stakeholders stressed that the technical necessity and efficacy of phosphonic acids and their derivatives, coupled with the challenges of identifying suitable alternatives, warrant their continued use.

Some stakeholders suggested specific P-content limits in industrial and institutional detergents products.

Table 47 - Stakeholder Suggestions for Phosphorus Content thresholds in IILD and IIDD

Product Type	Suggestions P-content
IILD Multi-component System	— < 0.01 g/kg regardless of water hardness — Light soil: 0.1 g/kg — Medium soil: 0.2 g/kg — Heavy soil: 0.3 g/kg
IILD Laundry Detergents	— Mean value of 0.01 g/L — Light soil: 0 g/kg; 0.01 g/kg — Medium soil: 0.05 g/kg; 0.02 g/kg — Heavy soil: 0.1 g/kg; 0.03 g/kg

IIDD Dishwasher Detergents	— < 0.01 g/L regardless of water hardness — Soft water: 0.01 g/L; 0.02 g/L — Medium water: 0.02 g/L; 0.04 g/L — Hard water: 0.03 g/L; 0.06 g/L
IIDD Rinse Aids	— P-free — Soft water: 0.01 g/L — Medium water: 0.02 g/L — Hard water: 0.03 g/L
IIDD Multi-component System	— Soft water: 0.04 g/L — Medium water 0.06 g/L — Hard water 0.08 g/L

Additional research and new proposal

The JRC conducted an analysis of all P-content anonymised data received from stakeholders, utilizing the results as a key source of evidence for developing new EU Ecolabel (EUEL) quantitative threshold proposals. Detailed information on the types of data received and the methods used for processing prior to results generation can be found in Annex 1. The following sections include tables presenting descriptive statistics and analysis results. Plots illustrating the data points received, categorized by the corresponding EUEL threshold, are displayed for each EUEL product group. Additionally, observations are provided regarding how other ecolabel schemes, such as Nordic Swan and Blue Angel, address P-content limits. Each subsection, corresponding to each EUEL product group, concludes with a summary indicating whether new EUEL criteria thresholds are proposed, and if so, specifying those proposals.

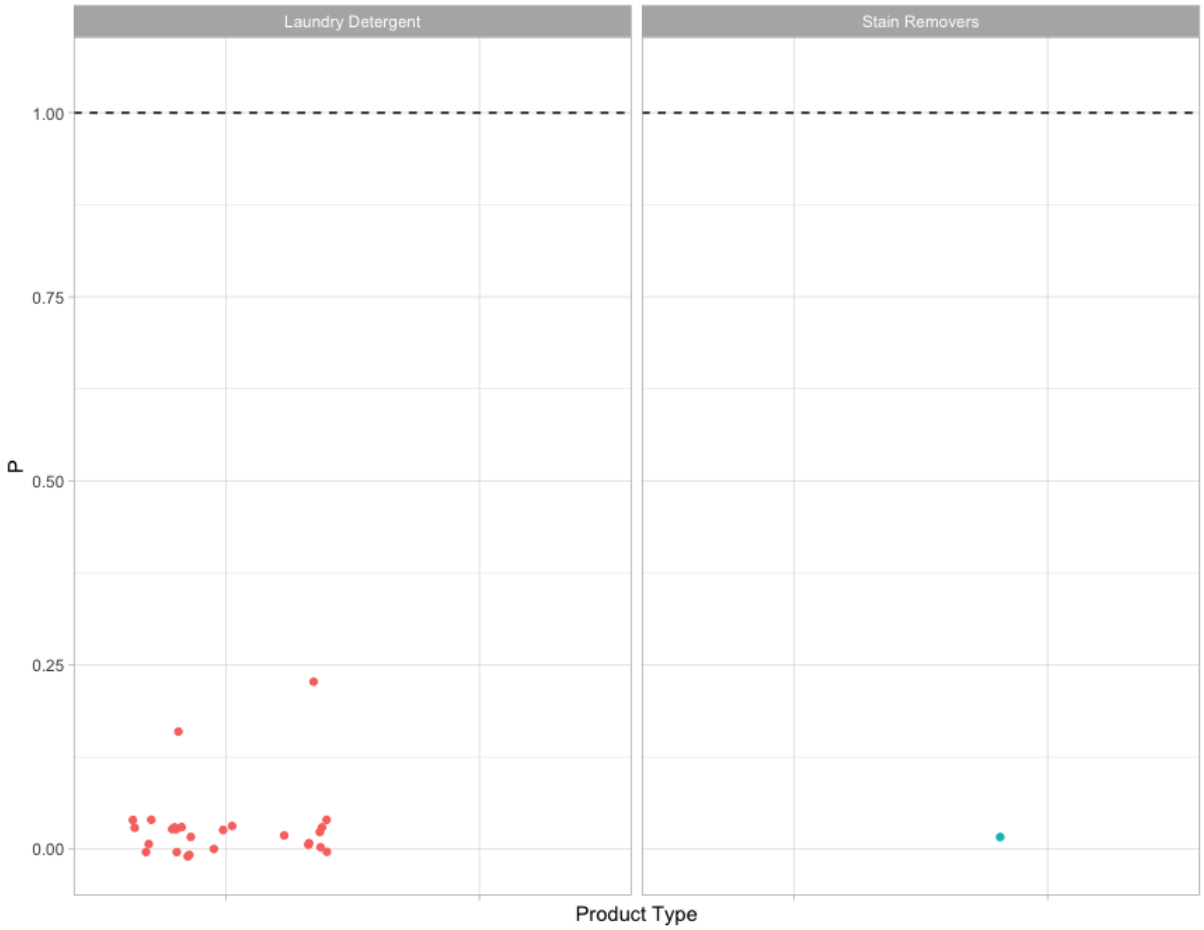
Laundry detergent (LD)

Table 48 - Laundry detergent descriptive statistics of total phosphorus (P) content (as elemental P) values.

Product type	*Data points (n)*	*Minimum (g/kg)*	*1st quartile (g/kg)*	*Median (g/kg)*	*Mean (g/kg)*	*3rd quartile (g/kg)*	*Maximum (g/kg)*	*TR1 proposed threshold (g/kg)*	*Existing Threshold (g/kg)*
Laundry detergent	40	0.0000	0.0000	0.0000	0.0004	0.0000	0.0100	*0.03*	*0.04*
Stain removers	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.005	*0.005*

Source: JRC's elaboration with data provided by stakeholders.

Figure 22- Laundry detergent total phosphorus (P) content (as elemental P) values. Each data point has been factored by its corresponding EUEL threshold, thus being unit less and ranging from "0" to "1", which corresponds to the existing EUEL threshold (depicted by the dashed line). Red dots represent laundry detergent products while blue dots represent stain remover (SR).



Source: JRC's elaboration with data provided by stakeholders.

About other ecolabels:

Blue Angel and Nordic Swan include the same limits as the EU Ecolabel for stain removers (pre-treatment) of 0.005 g/kg wash. For LD, both Blue Angel and Nordic Swan set the limit to 0.03 g/kg wash, a threshold that was proposed in the TR1.

The discussions and conclusions about total phosphorus (P) content threshold proposals, structured by product type and derived from the former evidences, are:

Laundry detergent

The data indicate that more than 75% of the data points for laundry detergent have a phosphorus content that is equal to or very close to zero. The maximum phosphorus content among the 40 data points was 0.01 g/kg, which is significantly lower than the current proposal of 0.03 g/kg. This suggests that almost all of the analyzed laundry detergent products either do not contain phosphorus or contain it in very limited amounts. Some stakeholders have suggested a target of either 0.03 g/kg (the current TR1 proposal) or 0.01 g/kg for laundry detergents. Additionally, Blue Angel and Nordic Swan have set the limit at 0.03 g/kg. However, considering the data, it appears there is room to set a more ambitious target than the current proposal of 0.03 g/kg. Therefore, taking into account the stakeholders suggestion and feedback on the need for P-content, others ISO Type I scheme limits and the analyzed data, the JRC proposes setting a limit of 0.015 g/kg as a compromise.

Stain Remover

The data, although limited to only two data points, show that the analyzed stain removers already achieve a phosphorus content of zero. This suggests that phosphorus-free formulations are possible. However, with only two data points, the sample size is too small to fully understand the market or the variability in phosphorus content among stain removers and to determine if phosphorus-free stain removers are already common practice.

Given the limited data (n=2) the JRC proposes to keep existing limit as a conservative threshold. The proposed 0.005 g/kg threshold for stain remover is in line also with Blue Angel and Nordic Swan limits. Nevertheless, the JRC is inclined to explore the possibility of further reducing this limit as more comprehensive data becomes available and technological advancements allow. Once additional data is collected, a re-evaluation can be conducted to determine if the existing limit is appropriate or if adjustments are needed.

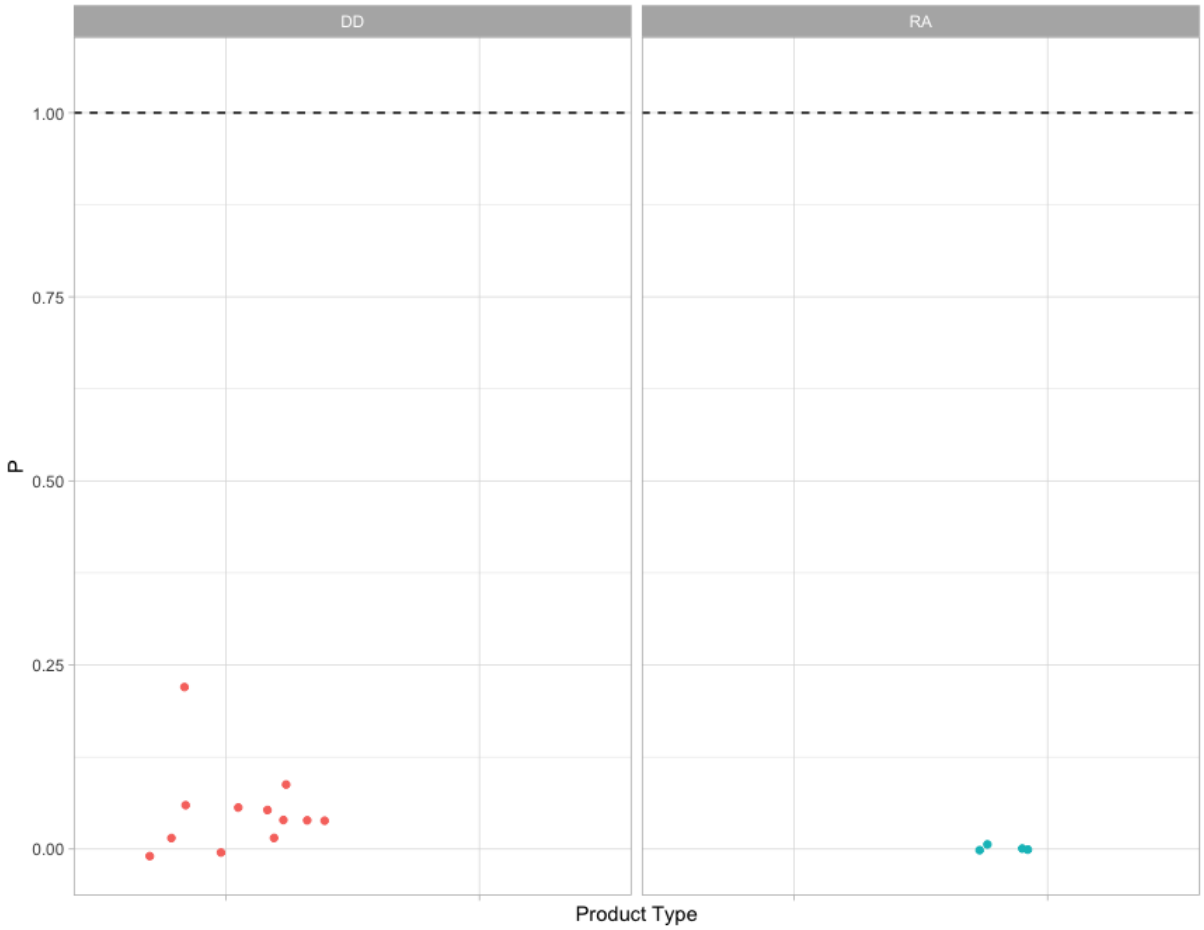
Dishwasher detergent (DD)

Table 49 - Dishwasher detergent descriptive statistics of total phosphorus (P) content (as elemental P) values.

Product type	*Data points (n)*	*Minimum (g/wash)*	*1st quartile (g/ wash)*	*Median (g/ wash)*	*Mean (g/ wash)*	*3rd quartile (g/ wash)*	*Maximum (g/ wash)*	*Existing Threshold (g/ wash)*
Dishwasher detergent	14	0.0000	0.0000	0.0100	0.0086	0.0100	0.0400	0.20
Rinse Aid	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.03

Source: JRC's elaboration with data provided by stakeholders.

Figure 23- Dishwasher detergent total phosphorus (P) content (as elemental P) values. Each data point has been factored by its corresponding EUEL threshold, thus being unit less and ranging from "0" to "1", which corresponds to the existing EUEL threshold (depicted by the dashed line). Red dots represent dishwasher detergent products (DD) while blue dots represent rinse aid (RA).



Source: JRC's elaboration with data provided by stakeholders.

About other ecolabels:

Blue Angel and Nordic Swan include the same limits as the EU Ecolabel for DD (0.20 g/was) and rinse aid (0.03 g/wash).

The discussions and conclusions about total phosphorus (P) content threshold proposals, structured by product type and derived from the former evidences, are:

Dishwasher detergent

The majority (75%) of data points show a phosphorus content of 0.01 g/wash or below, which is well beneath the existing threshold of 0.20 g/wash. This new limit demonstrates the feasibility of significantly reducing phosphorus content, aligning with environmental objectives and encouraging the industry to innovate towards even lower phosphorus formulations. The 0.01 g/wash threshold is also in line with some stakeholders' suggestions. Therefore, the JRC proposes setting the limit to 0.01 g/wash.

Rinse aid

All four data points for rinse aid products indicate zero phosphorus content, suggesting that phosphorus-free formulations are already being achieved in the current market.

However, given the limited data (n=4) and the too small sample size to determine if phosphorus-free rinse aid are already common practice in the EU Ecolabel products, JRC proposes setting the limit to 0.005 g/wash. This approach aims to drive reductions in phosphorus content in rinse aid while recognizing

the limitations of the current data set for rinse aid. However, if additional data becomes available, a re-evaluation can be conducted to determine if this requirement is appropriate or if adjustments are necessary.

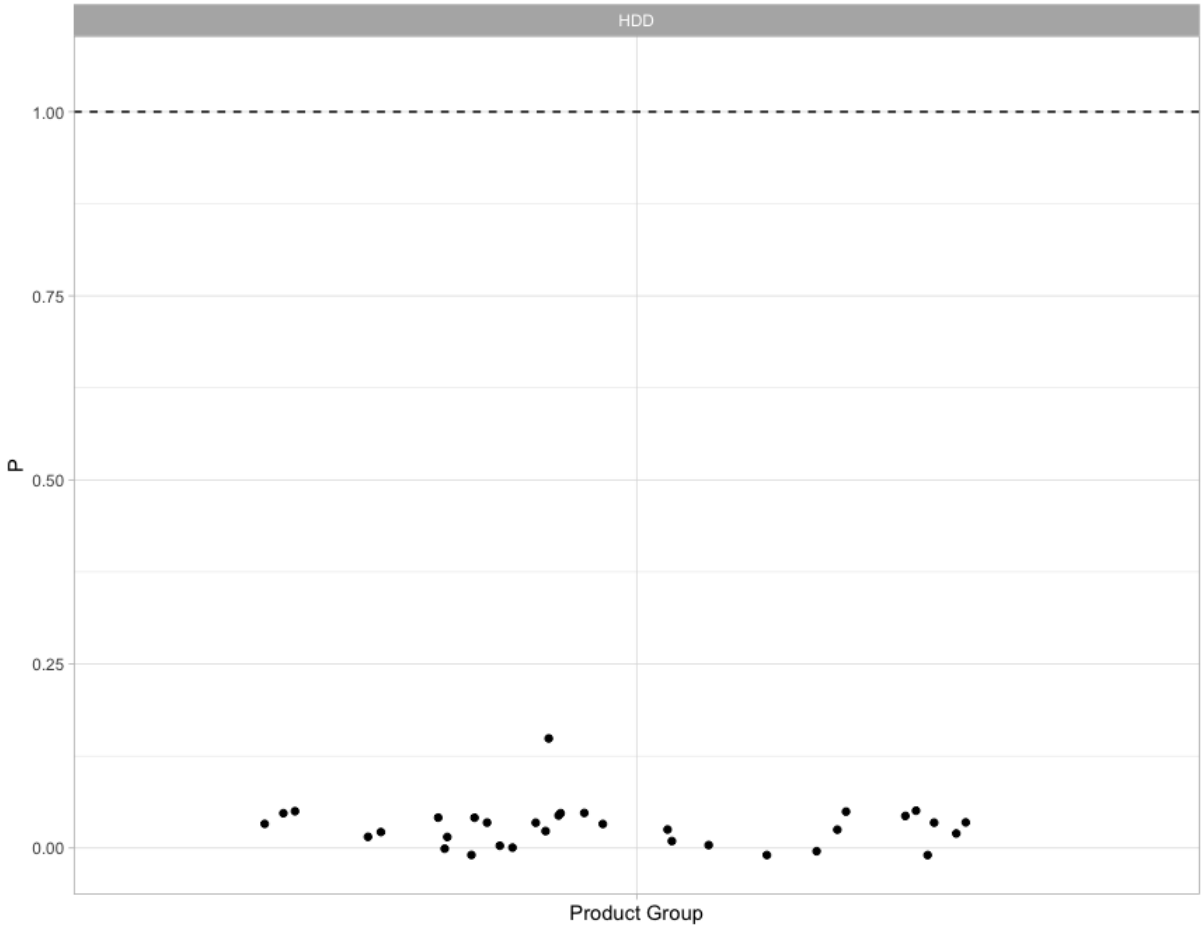
Hand dishwashing detergent (HDD)

Table 50 - Hand-dishwashing detergent descriptive statistics of total phosphorus (P) content (as elemental P) values.

Product type	*Data points (n)*	*Minimum (g/wash)*	*1st quartile (g/ wash)*	*Median (g/ wash)*	*Mean (g/ wash)*	*3rd quartile (g/ wash)*	*Maximum (g/ wash)*	*TR1 proposed threshold (g/ wash)*	*Existing Threshold (g/ wash)*
Hand-dishwashing detergent	51	0.0000	0.0000	0.0000	0.0002	0.0000	0.0104	0.01	0.08

Source: JRC's elaboration with data provided by stakeholders.

Figure 24- Hand-dishwashing detergent total phosphorus (P) content (as elemental P) values. Each data point has been factored by its corresponding EUEL threshold, thus being unit less and ranging from "0" to "1", which corresponds to the existing EUEL threshold (depicted by the dashed line).



Source: JRC's elaboration with data provided by stakeholders.

About other ecolabels:

The Blue Angel ecolabel sets a limit of 0.01 g/l dishwashing water, which was the limit proposed in the EU Ecolabel (EUEL) in TR1. The Nordic Swan ecolabel does not specify a limit for phosphorus content but prohibits the use of phosphonates, phosphonic acid, and phosphoric acid.

The discussions and conclusion about total phosphorus (P) content proposal, derived from the former evidences, is:

Hand-dishwashing detergent

The data indicate that more than 75% of the data points for hand-dishwashing detergent have a phosphorus content equal to zero. Only one out of 51 data points indicates a concentration of phosphorus above zero. This suggests that phosphorus-free formulations are not only possible but may already be common practice. Based on this evidence, the JRC proposes to further reduce the threshold compared to the previous TR1 proposal of 0.01 g/wash. The JRC proposes setting a phosphorus-free requirement for hand-dishwashing detergent.

Hard Surface Cleaning (HSC) products

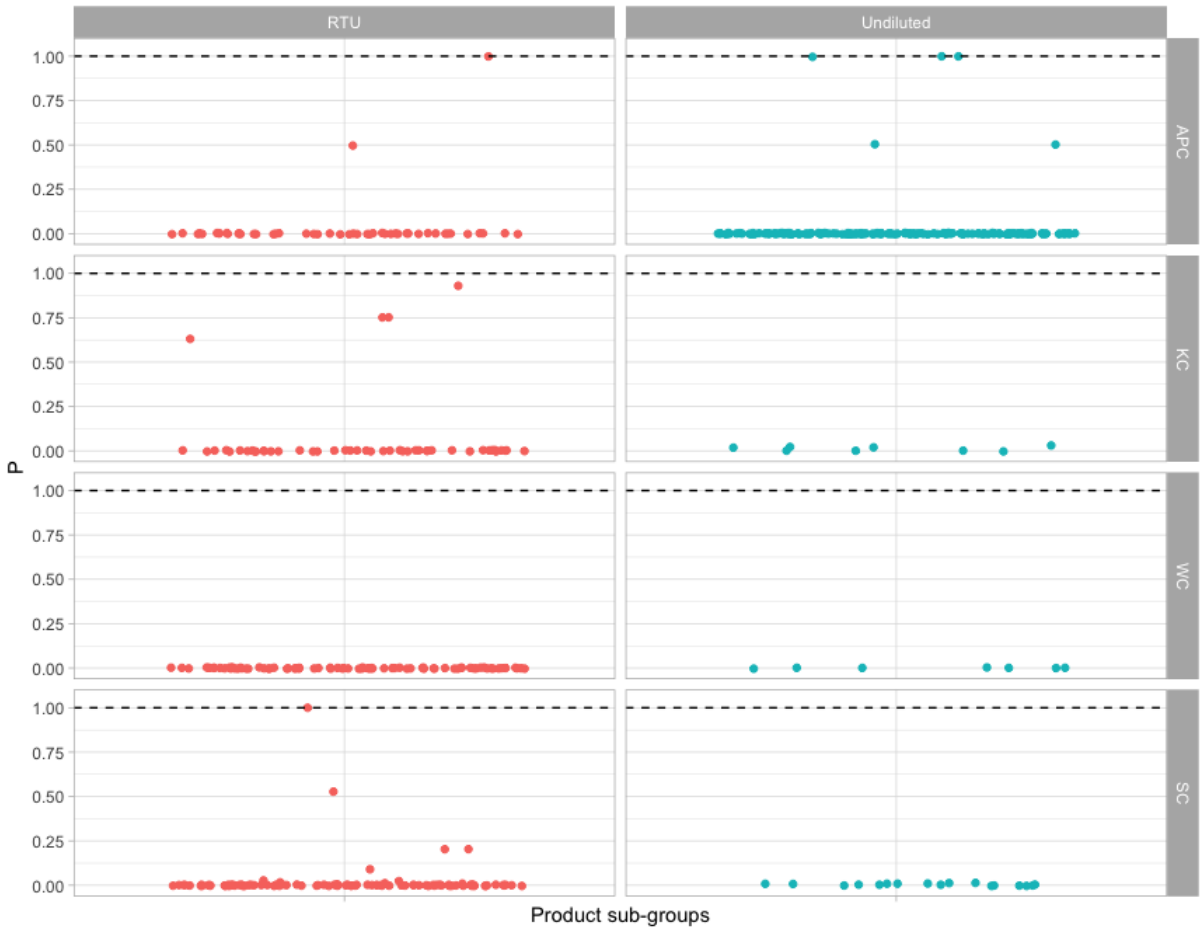
Table 51 - Hard-surface cleaning products descriptive statistics of total phosphorus (P) content (as elemental P) values.

Product type	*Product format/ concentration*	*Data points (n)*	*Minimum (g/l)*	*1st quartile (g/l)*	*Median (g/l)*	*Mean (g/l)*	*3rd quartile (g/l)*	*Maximum (g/l)*	*TR1 proposed threshold (g/l)*	*Existing Threshold (g/l)*
All-purpose cleaners (APC)	Ready-to-Use (RTU)	49	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.02
All-purpose cleaners (APC)	Undiluted	158	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.02
Kitchen cleaners (KC)	Ready-to-Use (RTU)	49	0.00	0.00	0.00	0.06	0.00	0.93	0.10	1.00
Kitchen cleaners (KC)	Undiluted	8	0.00	0.00	0.01	0.01	0.02	0.03	0.10	1.00
Window cleaners (WC)	Ready-to-Use (RTU)	77	0.00	0.00	0.00	0.00	0.00	0.00		0.00
Windows cleaners (WC)	Undiluted	7	0.00	0.00	0.00	0.00	0.00	0.00		0.00
Sanitary cleaners (SC)	Ready-to-Use (RTU)	105	0.00	0.00	0.00	0.02	0.00	1.00	0.10	1.00
Sanitary cleaners (SC)	Undiluted	17	0.00	0.00	0.00	0.00	0.01	0.01	0.10	1.00

Source: JRC's elaboration with data provided by stakeholders.

Figure 25- Hard-surface cleaning products total phosphorus (P) content (as elemental P) values. Each data point has been factored by its corresponding EUEL threshold, thus being unit less and ranging from "0" to "1", which corresponds to the

existing EUEL threshold (depicted by the dashed line). Red dots represent products in Ready-to-Use (RTU) format, while blue dots represent undiluted format for all HSC sub-products (All-purpose cleaners (APC), Kitchen cleaners (KC), Window cleaners (WC), Ready-to-Use (RTU)).



Source: JRC's elaboration with data provided by stakeholders.

About other ecolabels:

The Blue Angel ecolabel sets a limit of 0.01 g/l cleaning water for all-purpose cleaners, 0.1/1000g cleaning water for kitchen, toilet and bathroom cleaner, and 0.0010g/1000g cleaning for glass cleaner. The Nordic Swan ecolabel does not specify limit for phosphorus content but prohibits the use of phosphonates, phosphonic acid, and phosphoric acid.

The discussions and conclusion about total phosphorus (P) content proposal, derived from the former evidences, is:

Based on the analyzed data for hard-surface cleaning products, it is evident that the use of phosphorus is negligible across most product groups, with only 16 out of a total of 470 data points showing any phosphorus content. This suggests that phosphorus-free formulations are both feasible and prevalent. Therefore, the following proposals are made for each product group, aligning with current industry practices and promoting environmental sustainability:

- *HSC, All-Purpose Cleaners (APC) (Ready-to-Use (RTU) and Undiluted)*

  Both formats show that more than the majority (75%) of the data points are equal to 0.00 g/L, with very few maximum values of only 0.02 g/L. Considering also the high number of data points

assessed, the JRC proposes to set a phosphorus-free requirement for these products, reducing the threshold to 0.00 g/L from the first proposal (TR1) of 0.01 g/L.

- *HSC, Kitchen Cleaners (KC) (Ready-to-Use (RTU) and Undiluted)*

The majority of data points are at 0.00 g/L. For RTU products, the majority (75%) of the data points are equal to zero. For undiluted products, the 3rd quartile is 0.02 g/L, although in this case, only 8 data points were available. Considering these results, the JRC proposes to lower the threshold to 0.01 g/L to encourage further reduction while acknowledging current variations.

- *HSC, Window Cleaners (WC) (Ready-to-Use (RTU) and Undiluted)*

Both formats consistently show no phosphorus content across all data points, supporting the establishment of a phosphorus-free requirement with a threshold of 0.00 g/L in line with the existing threshold.

- *HSC, Sanitary Cleaners (SC) (Ready-to-Use (RTU) and Undiluted)*

Despite a few higher values, the majority of data points remain at 0.00 g/L. For undiluted products, the 3rd quartile is 0.01 g/L. Based on this evidence, the JRC proposes a revised threshold of 0.01 g/L to reflect the potential for phosphorus-free products while allowing some flexibility for current formulations.

Industrial and Institutional dishwasher detergent (IIDD) products

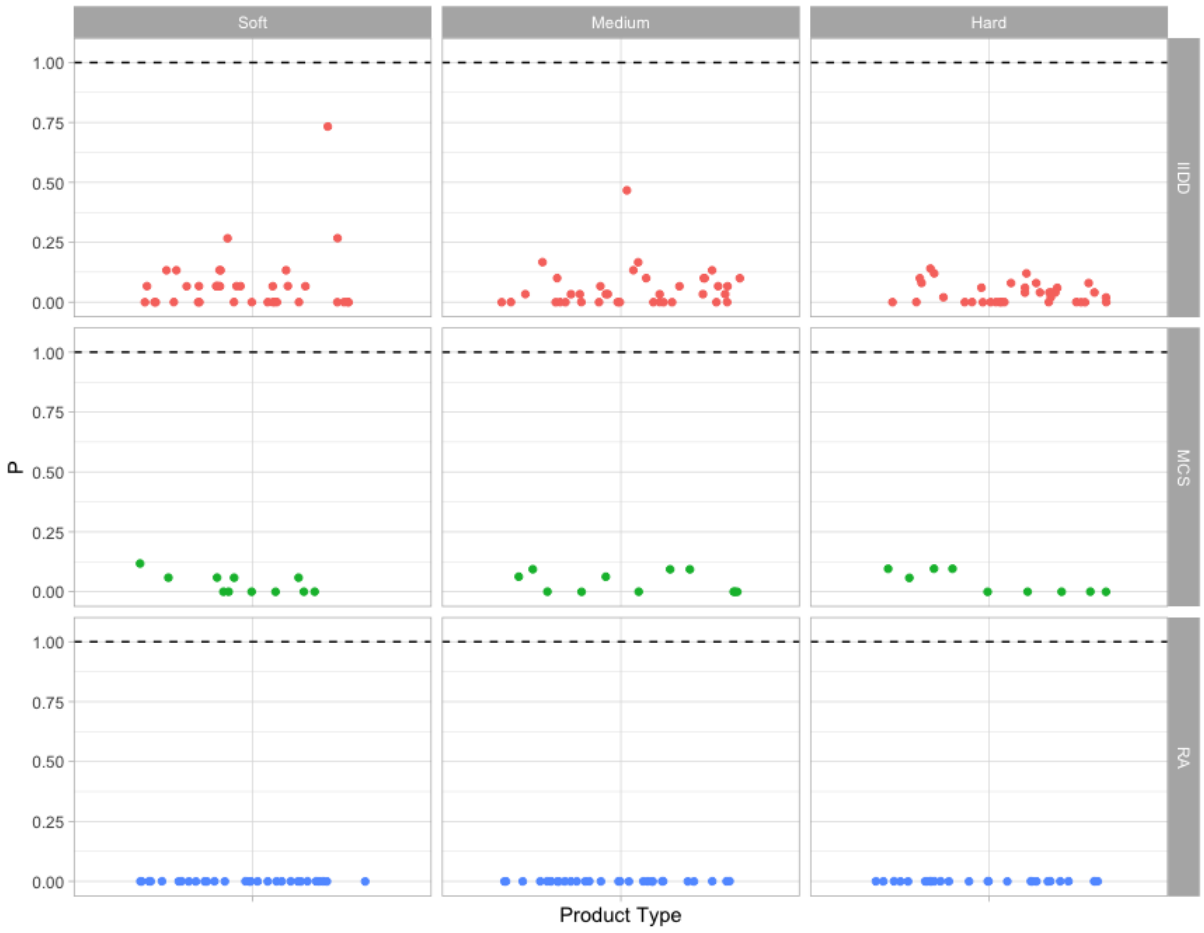
Table 52 - Industrial and Institutional dishwasher detergent (IIDD) descriptive statistics of total phosphorus (P) content (as elemental P) values.

Product type	*Water Hardness*	*Data points (n)*	*Minimum (g/l)*	*1st quartile (g/l)*	*Median (g/l)*	*Mean (g/l)*	*3rd quartile (g/l)*	*Maximum (g/l)*	*Existing Threshold (g/l)*
IIDD	Soft	37	0.000	0.000	0.010	0.011	0.010	0.110	0.15
IIDD	Medium	37	0.000	0.000	0.010	0.017	0.030	0.149	0.3
IIDD	Hard	35	0.000	0.000	0.010	0.018	0.030	0.070	0.5
Multicomponent system	Soft	11	0.000	0.000	0.000	0.005	0.010	0.020	0.17
Multicomponent system	Medium	11	0.000	0.000	0.000	0.012	0.025	0.030	0.32
Multicomponent system	Hard	9	0.000	0.000	0.000	0.020	0.050	0.050	0.52
Rinse aids	Soft	29	0.000	0.000	0.000	0.000	0.000	0.000	0.02
Rinse aids	Medium	28	0.000	0.000	0.000	0.000	0.000	0.000	0.02

Rinse aids	Hard	26	0.000	0.000	0.000	0.000	0.000	0.000	0.02

Source: JRC's elaboration with data provided by stakeholders.

Figure 26 - Industrial and Institutional dishwasher detergent total phosphorus (P) content (as elemental P) values. Each data point has been factored by its corresponding EUEL threshold, thus being unit less and ranging from "0" to "1", which corresponds to the existing EUEL threshold (depicted by the dashed line). Red dots represent IIDD products, green dots represent multicomponent system (MCS) while blue dots represent rinse aids (RA).



Source: JRC's elaboration with data provided by stakeholders.

About other ecolabels:

Blue Angel does not include IIDD products in its scope. Nordic Swan includes threshold values for content of phosphonates and phosphonic acid regardless of water hardness, as follow:

- Professional dishwasher detergents 0.01 g/litre water
- Rinse aid 0.006 g/litre water

The discussions and conclusions about total phosphorus (P) content proposal, structured by product type and derived from the former evidences, are:

Based on the analysis of phosphorus (P) content in Industrial and Institutional Dishwasher Detergent (IIDD) and related products, it is clear that there is potential to lower the existing P content limits. The data shows that a significant portion of products have phosphorus levels well below current thresholds. Note that stakeholders did not provide data specific to pre-soaks. This lack of information prompts consideration of the feasibility of eliminating the phosphorus content requirement for this sub-product.

— *Industrial and Institutional dishwasher detergent (all water hardness)*

For *soft water*, the majority (75%) of data points fall below 0.01 g/L. This limit was also suggested by various stakeholders, as reported in the Table of Contents (ToC) and is the same limit proposed by Nordic Swan regardless of water hardness. The JRC proposes a threshold of 0.01 g/L for soft water. This threshold would potentially exclude only a small fraction (25%) of existing ecolabelled products.

For *medium water*, the majority (75%) of data points fall below 0.03 g/L. This value aligns with some stakeholder suggestions. In line with this data, the JRC proposes a threshold of 0.03 g/L, allowing for a reduction that matches some stakeholder suggestions while potentially excluding only 25% of existing ecolabelled products.

For *hard water*, the majority (75%) of data points fall below 0.03 g/L. Although some stakeholders proposed this limit, others suggested 0.06 g/L or higher content. The JRC proposes a threshold of 0.05 g/L as a compromise between the data analysis, stakeholder input, and taking into account the trend that phosphorus content is expected to increase with water hardness.

— *Multicomponent system (all water hardness)*

For *soft water*, the majority (75%) of data points fall below 0.01 g/L. This limit is also in line with some stakeholder suggestions, while others indicated 0.04 g/L or higher limit, as reported in the Table of Contents (ToC). The JRC proposes a threshold of 0.01 g/L for soft water, in line with the analysis of data. This threshold would potentially exclude only a small fraction (25%) of existing ecolabelled products examined. However, considering that the data provided are relatively limited, if additional data become available a re-evaluation can be conducted to determine if this requirement is appropriate or if adjustments are necessary.

For *medium water*, the majority (75%) of data points fall below 0.025 g/L, which and corresponds roughly to one-tenth of the existing threshold of 0.3 g/L. The 0.025 g/L value aligns with some stakeholder suggestions. In line with this data, the JRC proposes a threshold of 0.03 g/L, allowing for a reduction that matches some stakeholder suggestions while potentially excluding only 25% of existing ecolabelled products.

For *hard water*, the majority of data points fall below 0.05 g/L, which is also the maximum reported value and corresponds to one-tenth of the existing threshold of 0.5 g/L. Additional stakeholder feedback received suggested lower limits, while some suggested more ambitious thresholds, such as 0.08 g/L. The JRC proposes a threshold of 0.05 g/L as a compromise, balancing data analysis, stakeholder input, and the expectation that phosphorus content tends to increase with water hardness. However, given that only nine data points were shared by stakeholders for this water hardness level, a re-evaluation may be conducted if additional data become available to determine if this requirement is appropriate or if adjustments are necessary.

— Rinse aid *(all water hardness)*

All data provided by stakeholders, regardless of water hardness, consistently show zero phosphorus content in rinse aids. This indicates that phosphorus-free formulations are not only feasible but may already be standard practice. Additionally, feedback from some industry stakeholders suggests that rinse aids are phosphorus-free, while others report thresholds of 0.01 g/L, 0.02 g/L, and 0.03 g/L for soft, medium, and hard water hardness, respectively, as reported in the Table of Comments (ToC). Based on the current data evidence available at this stage of the revision process, the JRC proposes establishing a phosphorus-free requirement (0.00 g/L) for this product subgroup.

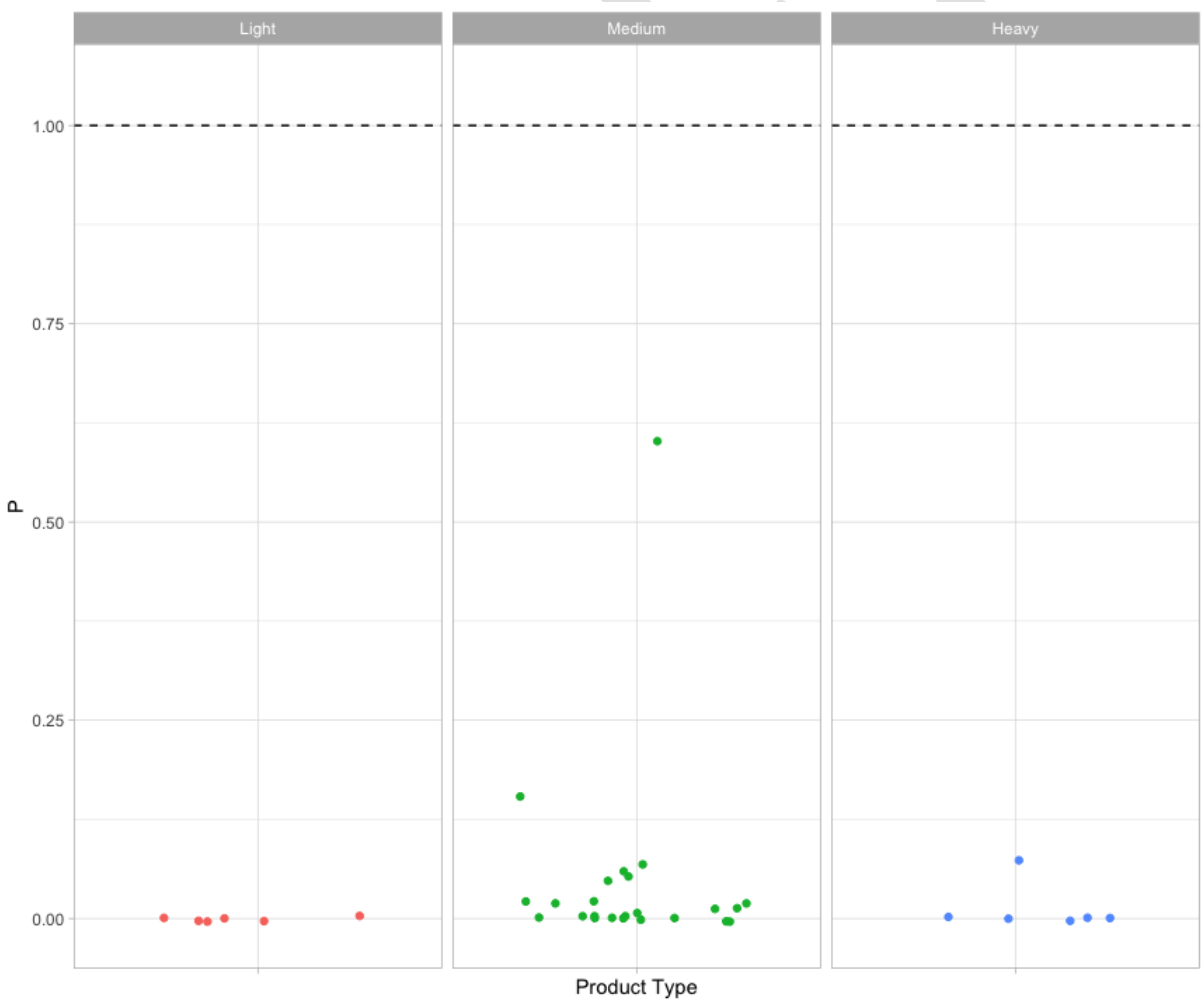
Industrial and Institutional laundry detergent (IILD) products

Table 53 - Industrial and Institutional laundry detergent (IILD) descriptive statistics of total phosphorus (P) content (as elemental P) values.

Product type	*Degree of soiling (e.g. light, medium, heavy)*	*Data points (n)*	*Minimum (g/kg)*	*1st quartile (g/kg)*	*Median (g/kg)*	*Mean (g/kg)*	*3rd quartile (g/kg)*	*Maximum (g/kg)*	*Existing Threshold (g/kg)*
IILD	Light	6	0.000	0.000	0.000	0.000	0.000	0.000	0.5
IILD	Medium	24	0.000	0.000	0.010	0.045	0.028	0.600	1
IILD	Heavy	6	0.000	0.000	0.000	0.018	0.000	0.105	1.5

Source: JRC's elaboration with data provided by stakeholders.

Figure 27 - Industrial and Institutional laundry detergent total phosphorus (P) content (as elemental P) values. Each data point has been factored by its corresponding EUEL threshold, thus being unit less and ranging from "0" to "1", which corresponds to the existing EUEL threshold (depicted by the dashed line). Red dots represent IILD in light soil, green dots represent IILD in medium soil while blue dots represent IIDD in heavy soil.



Source: JRC's elaboration with data provided by stakeholders.

About other ecolabels:

Blue Angel does not include IIDD products in its scope. Nordic Swan includes threshold values for content of phosphonates and phosphonic acid in professional laundry detergents and multicomponent system for different degree of soiling, as follow:

- Light soiling 0.075 g/kg laundry
- Medium soiling 0.10 g/kg laundry
- Heavy soiling 0.15 g/kg laundry

The discussions and conclusions about total phosphorus (P) content proposal, structured by product type and derived from the former evidences, are:

— *Industrial and Institutional laundry detergent (all degree of soiling)*

For *soft soiling*, only limited data (n=6) were available for analysis. This limited data showed that IILD products are phosphorus-free. Other stakeholders also suggest a low phosphorus content, ranging from 0.01 g/kg to 0.00 g/kg. The Nordic Swan sets a threshold of 0.075 g/kg for phosphonates and phosphonic acid. All the suggested limits and the Nordic Swan value are more ambitious than the existing limit of 0.5 g/kg. For this reason, and based on the limited data available, the JRC proposes a limit of 0.01 g/kg as a compromise, in line with stakeholders' inputs. A re-evaluation may be conducted if additional data become available to determine if this requirement is appropriate or if adjustments are necessary.

For *medium soiling*, the majority (75%) of data points fall below 0.028 g/kg of laundry, which is 2.8% of the current threshold for this degree of soiling, set at 1 g/kg. This indicates that products with low phosphorus content are already available in the market. Other stakeholders' suggestions indicated a range between less than 0.01 g/kg and a maximum of 0.05 g/kg. The Nordic Swan sets the limit for phosphonates and phosphonic acid content at 0.1 g/kg. Based on the data evidence, the JRC proposes a threshold of 0.03 g/kg, in line with stakeholders' input and more ambitious than the Nordic Swan scheme.

For *heavy soiling*, only limited data (n=6) were available for analysis. This limited data showed that IILD products are phosphorus-free. Other stakeholders also indicated a phosphorus content, ranging from less than 0.01 g/kg to 0.1 g/kg. The Nordic Swan sets a threshold of 0.15 g/kg for phosphonates and phosphonic acid. All the suggested limits and the Nordic Swan value are more ambitious than the existing limit of 1.5 g/kg. For this reason, and based on the limited data available, the JRC proposes a limit of 0.1 g/kg as a compromise, between stakeholders' inputs and Nordic swan threshold. A re-evaluation may be conducted if additional data become available to determine if this requirement is appropriate or if adjustments are necessary.

Alkyl phosphonic acid derivatives (e.g. ATMP, HEDP, DTPMP) and their salts

Based on the information received, in the context of detergent formulation, alkyl phosphonic acid derivatives such as ATMP, HEDP, and DTPMP, along with their salts, play a critical role due to their unique functional properties that are challenging to match with alternatives. Unlike phosphates, phosphonates are utilized at significantly lower concentrations while delivering similar results, particularly in addressing water hardness. Based on industry association information, when dealing with water hardness, phosphonates are much more efficient compared to phosphates and therefore, they are used at 20-30 times smaller concentrations to achieve the same results. They are essential in preventing mineral deposits in washing machines and dishwashers, which in turn prolongs the lifespan of these appliances. By modifying the properties of calcium and magnesium salt deposits in hard water, phosphonates prevent these deposits from adhering to surfaces, thus protecting clothes and tableware. Additionally, they reduce the re-deposition of dirt on cleaned textiles, stabilize peroxide bleaches, and contribute to stain removal in bleach-free detergents. The environmental impact of phosphonates is considered minimal compared to phosphates, largely due to their low concentration usage.

Given these properties, the JRC proposes to withdraw the initial proposal to ban alkyl phosphonic acid derivatives and their salts. Instead, the JRC proposes to set more ambitious requirements for the P-content, significantly lowering the threshold of phosphorus content in all detergent product groups. This modification recognizes the role of phosphonates in maintaining the functionality of detergents while addressing environmental considerations.

Restrictions of Phosphates in Industrial and Institutional Detergents

A study conducted by the Öko-Institut e.V. and published by the Federal Environment Agency (UBA) in 2021[340], estimated that professional cleaning products contribute between 3,000 to 5,000 tonnes of phosphorus per year from phosphates and phosphoric acid and between 120 to 1,332 tonnes per year from phosphonates to wastewater. This accounts for approximately 0.7% to 1.6% of all phosphorus inputs into water bodies. According to A.I.S.E., the Industrial and Institutional (I&I) sector has already replaced phosphates where technically feasible, reducing phosphorus-based substances released in Europe by 18% from 2014 to 2020.

Representatives of manufacturers of professional detergents, cleaning agents, and disinfectants have reported the technical necessity and environmental considerations of phosphorus compounds and phosphates in professional cleaning products. They suggest that reducing these compounds might not yield significant benefits in terms of water quality improvement. Phosphates are used in dishwashing and textile detergents as hardness stabilizers and detergency enhancers. They are typically used in additional washing aids, such as detergency boosters, rather than in basic detergents for heavily soiled workwear. Phosphates contribute to reduced water, energy, and detergent consumption by allowing for greater concentration of dirt dispersion.

Based on the IHO report[341], alternatives to phosphates and phosphonates in professional cleaning agents present a multifaceted challenge, requiring a balance between environmental, performance, and economic factors. It is reported that alternative substitutes like MGDA-Na3, GLDA-Na4, or IDS-Na4, while biodegradable, demand higher concentrations or increased costs and post-wash rates, leading to greater resource consumption, including water, energy, and detergent. This increase not only exacerbates the environmental footprint but also complicates wastewater management due to elevated COD (Chemical Oxygen Demand) and BOD (Biochemical Oxygen Demand) levels.

Trade-offs regarding the properties of phosphates from environmental, performance, and economic perspectives are also discussed in a study of the German Federal Environmental Agency[342],. As translated and reported by AISE[343], the inclusion of phosphates is considered highly beneficial in professional applications where performance is a key concern due to the specific and challenging conditions in which they operate. In these areas, several influencing factors should be considered, such as temperature, water quantity, time, sanitizing/whitening effects, corrosion protection, amount of detergent, and professional washing machine technologies.

An environmental assessment conducted by Van Hoof et al ([344]) compared the performance of two automatic dishwashing detergents, with one of them containing sodium tripolyphosphate (STPP) and the other replacing this ingredient with methyl glycine diacetic acid (MGDA). The study found important reductions of impact in most impact categories, including fossil energy consumption, climate change, freshwater eutrophication and water depletion for the dishwashing detergent that had no phosphate compared to the one containing phosphate. The results were confirmed after an uncertainty analysis that found that scenarios using the phosphate-free alternative had above 90% probability of presenting a better performance for most categories than the phosphate-containing counterpart.

For toxicity-related categories, results were found to be sensitive to the impact assessment method applied. Thus, while impacts seemed to be slightly higher for phosphate-free detergent when using ReCiPe characterisation method, further analysis using USEtox method instead show a better performance for it. Regarding these categories, it should be noted that there is a quite wide consensus within the LCA community

[340] https://www.umweltbundesamt.de/sites/default/files/medien/5750/publikationen/2021-06-24_texte_98-2021_gewerbliche_phosphateintraege.pdf

[341] IHO, Factsheet on the Relevance of phosphate and other phosphorus compounds in professional cleaning chemistry https://www.iho.de/wp-content/uploads/2022-02-07-Relevance-Phosphates_Final-1.pdf

[342] https://www.umweltbundesamt.de/sites/default/files/medien/5750/publikationen/2021-06-24_texte_98-2021_gewerbliche_phosphateintraege.pdf

[343] https://www.aise.eu/newsroom/aise-news/paper-by-umweltbundesamt-on-the-relevance-of-professional-laundry-and-machine-dishwashing-on-the-entry-of-phosphate-and-other-phosphorus-compounds-p-into-wastewater.aspx

[344] Van Hoof, G., Fan, M. and Lievens, A. (2017), 'Use of product and ingredient tools to assess the environmental profile of automatic dishwashing detergents', *Journal of Cleaner Production*, Vol. 142, pp. 3536–3543, https://doi.org/10.1016/j.jclepro.2016.10.114.

about the very large uncertainty their characterisation methods present. Such uncertainty is mainly explained by the large number of substances with a toxicity potential (i.e. there is a factor of >1000 between the number of elementary flows of substances covered by toxicity categories compared to other impact categories), as well as the significant differences between the approaches used to deduce ecotoxicological effect factors (dependent on environmental fate and exposure) ([345], [346]). Overall, the uncertainty of these methods makes it hard to support one conclusion over the other. However, it should also be highlighted that USEtox was developed as a consensus model in the context of the UNEP-SETAC (United Nations Environmental programme – Society of Environmental Toxicology and Chemistry) Life Cycle Initiative and is currently recommended by widely recognised methods including the PEF method ([347], [348]).

As mentioned earlier, Nordic Swan prohibits the use of phosphates in IIDD and IILD products, except for those used to stabilize H_2O_2, which are permitted in concentrations of less than 0.0100 w-% in the final IILD products. Currently, Nordic Swan has awarded its label to 1033 IILD and 626 IIDD products, indicating a well-developed market for phosphate-free professional detergents in Nordic countries."

In conclusion, while a P-free requirement for IILD and IIDD could offer environmental benefits, it needs to be carefully designed to address technical, economic, and market considerations. Proposing a phosphate-free requirement for Industrial and Institutional Detergents involves weighing several critical factors, such as:

- Environmental Benefits: A P-free requirement could significantly reduce phosphorus contributions to water bodies, helping to mitigate eutrophication and associated ecological issues. Life Cycle Assessment (LCA) studies indicate potential reductions in various environmental impact categories when using phosphate-free alternatives.
- Technical Feasibility: While the industry has developed some effective phosphate-free alternatives (e.g., MGDA-Na3, GLDA-Na4), these may require higher dosages or involve performance trade-offs. It's crucial to ensure that these alternatives can meet the performance standards necessary for professional cleaning tasks under varied conditions.
- Economic Viability: Implementing a P-free requirement could lead to increased costs due to more expensive raw materials or the need for higher concentrations.
- Market Readiness and Innovation: The existence of a well-developed market for phosphate-free products in regions like the Nordic countries suggests that a shift is possible. Encouraging innovation and providing incentives for research into more cost-effective and efficient alternatives could facilitate broader adoption.
- Phased Implementation: A gradual or phased approach to implementing P-free requirements might allow the industry time to adapt and innovate. Setting interim targets or providing exemptions for specific conditions could ease the transition.

Overall, the intended course of action of the JRC is to enhance the environmental benefits of detergent products. Based on data analysis and evidence, it is proposed to increase the stringency of the requirements for phosphorus content in all detergent products, including industrial and institutional products. This will, of course, affect phosphate content as well. At this stage, it is difficult to assert that a complete ban on phosphates in professional products is feasible. It is essential to ensure that any new requirements are realistic and supported by key stakeholders across Europe.

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[345] Owsianiak, M., Hauschild, M. Z., Posthuma, L. et al. (2023), 'Ecotoxicity characterization of chemicals: Global recommendations and implementation in USEtox', Chemosphere, Vol. 310, p. 136807, https://doi.org/10.1016/j.chemosphere.2022.136807.

[346] Rosenbaum, R. K., Hauschild, M. Z., Boulay, A.-M. et al. (2018), 'Life Cycle Impact Assessment', in: Hauschild, M. Z., Rosenbaum, R. K. and Olsen, S. I. (eds), *Life Cycle Assessment*, Springer International Publishing, Cham, pp. 167–270, https://doi.org/10.1007/978-3-319-56475-3_10.

[347] Saouter, E., Biganzoli, F., Ceriani, L., Versteeg, D., Crenna, E., Zampori, L., Sala, S, Pant, R. (2020). Environmental Footprint: Update of Life Cycle Impact Assessment Methods – Ecotoxicity freshwater, human toxicity cancer, and non-cancer. EUR 29495 EN, Publications Office of the European Union, Luxembourg, ISBN 978-92-76-17143-0, doi:10.2760/300987, JRC114227.

[348] Fazio, S. Biganzioli, F. De Laurentiis, V., Zampori, L., Sala, S. Diaconu, E. Supporting information to the characterisation factors of recommended EF Life Cycle Impact Assessment methods, version 2, from ILCD to EF 3.0, EUR 29600 EN, European Commission, Ispra, 2018, ISBN 978-92-79-98584-3, doi:10.2760/002447, PUBSY No. JRC114822.

Points for discussion 9 – Excluded & Restricted Substances (Phosphorus (P) content)

Stakeholders are invited to reply the following consultation questions:

- Question 43 (Q43) – Do you agree with the proposed phosphorus content thresholds for the different detergent product groups? If not, please specify which product group(s) you disagree with and provide your reasons for disagreement.
- Question 44 (Q44) – Would you support reducing the phosphorus limit for stain removers to below 0.005 g/kg, possibly even to phosphorus-free formulations? Additionally, could you provide data on phosphorus content in consumer stain remover products to assist in revising the criteria and ensuring that any new limits are appropriately ambitious?
- Question 45 (Q45) – Would you support reducing the phosphorus limit for rinse aids to below 0.005 g/wash, possibly even to phosphorus-free formulations? Additionally, could you provide data on phosphorus content in consumer rinse aid products to assist in revising the criteria and ensuring that any new limits are appropriately ambitious?
- Question 46 (Q46) – For Industrial and Institutional dishwasher detergents (IIDD), do you think it would be feasible to implement a single phosphorus content threshold regardless of water hardness, in alignment with the Nordic Swan standard?
- Question 47 (Q47) – For IIDD: given the absence of specific data on pre-soaks, do you consider it feasible to eliminate the phosphorus content requirement for this sub-product? Please share any insights or considerations that could inform this decision
- Question 48 (Q48) – Considering that the proposed phosphorus content thresholds for Industrial and Institutional Dishwasher Detergents (IIDD) and Multicomponent Systems are the same across all water hardness levels, do you believe it is necessary to separate thresholds between IIDD and Multicomponent Systems? Please provide your rationale and any supporting data or insights.
- Question 49 (Q49) – Is a phased approach to implementing a complete ban on phosphates in industrial and institutional detergent products feasible for your organization? If yes, what timeline would be realistic for transitioning to phosphate-free products without disrupting operations?
- Question 50 (Q50) – Please, share any other comments/suggestions you deem relevant about this criterion providing reasons supporting them.

VOCs restriction

One of the most significant classes of potentially toxic indoor air chemicals is Volatile Organic Compounds (VOCs), which encompass a range of chemical compounds including aromatic hydrocarbons, alkane hydrocarbons, aldehydes, aliphatic hydrocarbons, terpenes, chlorinated hydrocarbons, glycol and glycol ethers, and esters (Halios et al., 2022) ([349]). Exposure to these chemicals has been associated with various adverse effects on the respiratory, nervous, and cardiovascular systems, as well as allergic sensitization/irritation and carcinogenicity, with the severity depending on the duration and level of exposure (Halios et al., 2022) ([350]). Additionally, VOCs have been identified as a significant contributor to global warming, altering the concentration of ozone through the formation of ground-level ozone ([351]). Indoor sources of VOCs in residential environments include construction and building materials such as paints, glues, and furnishings, as well as consumer products like air fresheners, personal care products, detergents, cleaning and polishing products (Halios et al., 2022; Paciência et al., 2016; Shrubsole et al., 2019). In particular, detergents and general-purpose cleaners have been identified as sources of diethanolamine, formaldehyde, N-methyl-2-

[349] European Commission, "Screening study to identify reduction in VOC emission due to the restrictions in the VOC content of products", BIPro, 2002

[350] WHO, 2021. Literature review on chemical pollutants in indoor air in public settings for children

[351] https://www3.epa.gov/airnow/mediakits/ozone/facts.pdf

pyrrolidone, trichloroethylene, methanol, methyl isobutyl ketone, ethylbenzene, benzene, ethylene glycol, toluene, acetone, ethanol, isopropyl alcohol, naphthalene, α-pinene, limonene, and xylenes (Knox et al., 2023; Halios et al., 2022). These VOCs in cleaning products serve various purposes, including as solvents, fragrances, preservation or for disinfection ([352]).

Other ecolabels

Nordic Swan defines VOC in accordance with Directive 1999/13/EC on the limitation of emissions of volatile organic compounds with steam pressure > 0.01 kPa at 20°C. The Nordic ecolabel excludes the use of VOC from cleaning products, with exemptions for isopropanol, ethanol (including denaturing agents) and fragrances (including solvents used in fragrance formulations). Whereas the other European ISO Type I scheme Blue Angel, sets requirements considering VOCs as any organic compound with a boiling point lower than 150 °C in line with the EU Ecolabel. A direct comparison of VOC limits between Blue Angel and the EU Ecolabel was feasible, as they share the same VOC definition. The stringency and thresholds of the criterion depend on the cleaner's function. Blue Angel sets thresholds for the total concentration of VOCs as follows:

- 1 g/l of cleaning water for all-purpose cleaners,
- 10 g/1000 g cleaning solution for kitchen cleaners,
- 10 g/1000 g for toilet and bathroom cleaners,
- 100 g/1000 g for glass cleaners.

First Proposal

In the initial proposal for TR1, informed by stakeholder feedback from the focus questionnaire, the observed reduction in VOCs in the detergent industry over the years, and the aim to align with the higher ambitions set by Blue Angel, it was proposed to lower the VOC limits for both Ready-to-Use and undiluted products as follows:

- From 30 to 1 g/L in All Purpose Cleaners.
- From 60 to 10 g/L in kitchen cleaners.
- From 60 to 10 g/L in sanitary cleaners.

Outcomes from the 1st AHWHG

A total of 27 comments were submitted regarding this sub-criterion, with comprehensive details provided in the Table of Comments (ToC1).

Question 30 – Would you support alignment with Directive 2004/42/EC and change the current VOC definition from 150°C to 250°C VOC?

Question 31 - Do you support proposed limits? If not, why? In addition, would you support a further reduction of the limits?

Question 32 – Would you support the inclusion of VOC limit for HDD products in line with Blue Angel?

VOC definition: A split opinion was expressed regarding whether or not to change the definition of VOCs (i.e. increasing the boiling point range from 150 to 250 °C). Stakeholders in favour felt that the criteria would be more ambitious this way, even if this was the only change and same VOC limits from the 2017 criteria were to be maintained. Stakeholders against the change of the VOC definition presented more arguments for their position. The redefinition of VOCs would mean that all detergent ingredients would have to be checked for their boiling points under these conditions. However, there are some ingredients that are only supplied in liquid form (e.g. alkyl polyglucosides in a 50% aqueous solution) and the boiling point of the pure substance is not known. Although this is an existing problem, it would simply be exacerbated if the proposed definition was to be used. The higher boiling point limit would also greatly affect the potential to use fragrances (note that Nordic Swan criteria exempt fragrances from their VOC ban) and solvents (not that the Nordic Swan exempts

[352] European Commission, "Screening study to identify reduction in VOC emission due to the restrictions in the VOC content of products", BIPro, 2002

ethanol and isopropanol from their VOC ban). Regardless of the VOC definition used, several requests were made to exempt ethanol from being counted as a VOC, especially for use in glass cleaners. The higher limit of 100 g/L for VOCs in existing criteria (in-force) for window cleaners already reflects the recognised value of ethanol in these products.

VOC limits: Again there was a split opinion expressed by stakeholders, with most stakeholders expressing concern about the limits being too strict. Ethanol was an important issue because it is considered as both an important solvent and helps stabilise certain ingredients when used in the detergent formulation. If non-VOC alternatives or lower concentrations of VOC alternatives are needed, the issue that several of them have less established aquatic toxicity and biodegradability than ethanol was raised.

Especially constructive feedback from a leading Competent Body with this product group suggested a new set of limits that could be applied if the VOC definition was changed to a boiling point of 250 °C, on the condition that ethanol is not counted, and generally based on the spread of data for licenses currently awarded. These suggestions were as follows:

Table 54 - Suggested VOC limits from stakeholders

Product Type	Suggested Limit (RTU)	Suggested Limit (Undiluted)
All-Purpose Cleaners (APC)	15g/l (if VOC < 250°C and ethanol exempted); consider excluding if not feasible	1g/l is supported by most, with suggestions for a more ambitious limit
Kitchen Cleaners	30g/l (if VOC < 250°C and ethanol exempted); typically above 10g/l	N/A
Window Cleaners	25g/l (if VOC < 250°C and ethanol exempted); suggestion to lower from 100g/l to 90g/l	N/A
Bathroom Cleaners	40g/l (if VOC definition not set at < 250°C and ethanol exempted)	5g/l
WC Cleaners	30g/l (if VOC definition not set at < 250°C and ethanol exempted)	N/A

VOC limits for HDD: Split opinions were also expressed on this issue and again it was stakeholders against the setting of limits, which were the majority that provided more reasons for their position. One of the main arguments against VOC limits was the very limited exposure levels of users to VOCs from these products. Some comments in favour recommended the use of a separate approach for household HDD and for professional HDD products since the exposure risks would be different. However, as with separate approaches to fragrances and other requirements for household and professional products, this would just make the criteria more difficult to read and apply.

Additional research and new proposal

Why no change in VOC definition proposed?

While broadly similar, there are a number of different definitions of "VOC" used in different contexts. Some of the best-known examples of the different VOC definitions include:

— Directive 1999/13/EC: volatile organic compound (VOC) shall mean any organic compound having at 293,15 K a vapour pressure of 0,01 kPa or more, or having a corresponding volatility under the particular conditions of use. For the purpose of this Directive, the fraction of creosote which exceeds this value of vapour pressure at 293,15 K shall be considered as a VOC;

- Directive 2010/75/EU: 'volatile organic compound' means any organic compound as well as the fraction of creosote, having at 293,15 K a vapour pressure of 0,01 kPa or more, or having a corresponding volatility under the particular conditions of use;
- In EN ISO 11890-2.2020 and ISO 4618.2014: 'volatile organic compound' means any organic liquid and/or solid that evaporates spontaneously at the prevailing temperature and pressure of the atmosphere with which it is in contact.
- In Directive 2004/42/CE: 'volatile organic compound' means any organic compound having an initial boiling point less than or equal to 250°C measured at a standard pressure of 101,3 kPa.
- In EN 16402.2013: 'volatile organic compound' means all volatile organic compounds eluting between and including n-hexane and n-hexadecane on a gas chromatographic column

The exact definition of VOCs for EUEL detergents will affect what substances are counted as VOCs and thus will also affect the limit-setting process. This has led to difficulties also in the past, as there is no unique or overarching VOC definition, neither at EU level nor at international level, making it challenging to determine the maximum amount allowed.

In the current EU Ecolabel criteria for detergents, VOCs are defined as any organic compound with a boiling point lower than 150 °C at 1 atm. During the stakeholder consultation in the last criteria revision, there was a proposal to align the VOC definition with Directive 1999/13/EC, in which VOC means any organic compound having at 293.15 K a vapour pressure of 0.01 kPa or more, or having a corresponding volatility under the particular conditions of use. However, the proposal did not receive favourable feedback. Furthermore, Directive 1999/13/EC is no longer in force, but was repealed by Directive 2010/75/EU. Therefore, at this stage, an alignment with the Directive 1999/13/EC VOC definition is not being proposed.

The definition in Directive 2010/75/EU introduces a new aspect which links the vapour pressure to a particular condition of use. This could be problematic for the consideration of detergent products because the definition of VOC could vary depending on the temperature of the cleaning solution used in the cases of undiluted HSC products.

The first point in the list above continues with the same issue as noted in the Directive 2010/75/EU definition, namely that the definition of a VOC becomes context dependent. The second definition uses a similar definition to that currently used in the EU Ecolabel criteria for paints, but the boiling point is 100 °C higher. The third definition is specific for the measurement of VOCs using gas chromatography and is widely acknowledged to equate to substances with a boiling point of around 68 to 287 °C (presumably at atmospheric pressure of 101,3 kPa).

Alignment to Directive 2004/42/CE, i.e. a change in the current definition from 150 °C to 250 °C, would broaden the scope of organic compounds that would fall under the provisions of the VOC criterion for hard surface cleaning products. For example, leading to the restriction of various glycol ethers that have a higher boiling point than low molecular weight alcohols. To fully understand the impact of this change, it would be important to conduct a thorough analysis of the detergent formulations currently on the market to analyse the chemical and physical properties of the different detergent ingredients.

The limited amount of formulation data and various Safety Data Sheets (SDS) provided by stakeholders was considered as insufficiently representative of the multitude of detergent products awarded with the EU Ecolabel. Furthermore, the SDS do not contain all the necessary information required for our analysis.

Another aspect that should be taken into account is that the VOC criterion is also complemented by other criteria requirements, such as restricted hazard classifications and the ban of aromatic hydrocarbons, halogenated hydrocarbons, and formaldehyde and its releasers through the excluded substances criterion. These additional criteria further contribute to VOC restrictions.

Why no VOC limit for HDD?

The primary reason for not setting a VOC limit for these products is the limited exposure of users to VOCs from these products, which is not considered a significant exposure risk. Additionally, regarding the possibility of separating the approach for household and professional products, any attempts to distinguish between these categories can quickly become complicated. This complexity affects both the readability of the criteria document and the practical assessment and verification processes.

Relevant findings from a life cycle assessment perspective

The in-house LCA studies did not focus on the comparison of high and low VOC content detergent products because no such comparable formulas were provided and it would have been difficult to compare actual cleaning performance in any case. However, since VOCs can be considered as major contributor to the Photochemical Ozone Formation (POF), the share of these impacts associated with the raw materials stage gives an indirect indication of the contribution of VOCs to overall environmental impacts across the detergent product life cycle.

Generally speaking, the contribution of POF impacts from the raw material stage accounted for 0.41 %, 1.47 % and 1.70 % of the total PEF score for the representative HDD, KC-HSC and acid toilet-HSC cleaner, (i.e. the total life cycle impacts of all normalised and weighted environmental and human health impacts).

Data analysis

Data collected from existing EU Ecolabel licenses has been plotted and statistically analysed in order to determine how easily licensed products were complying with the limits set out in the 2017 criteria and what room there might be for lowering the limits further in the TR2 proposals.

Hard Surface Cleaning (HSC) products

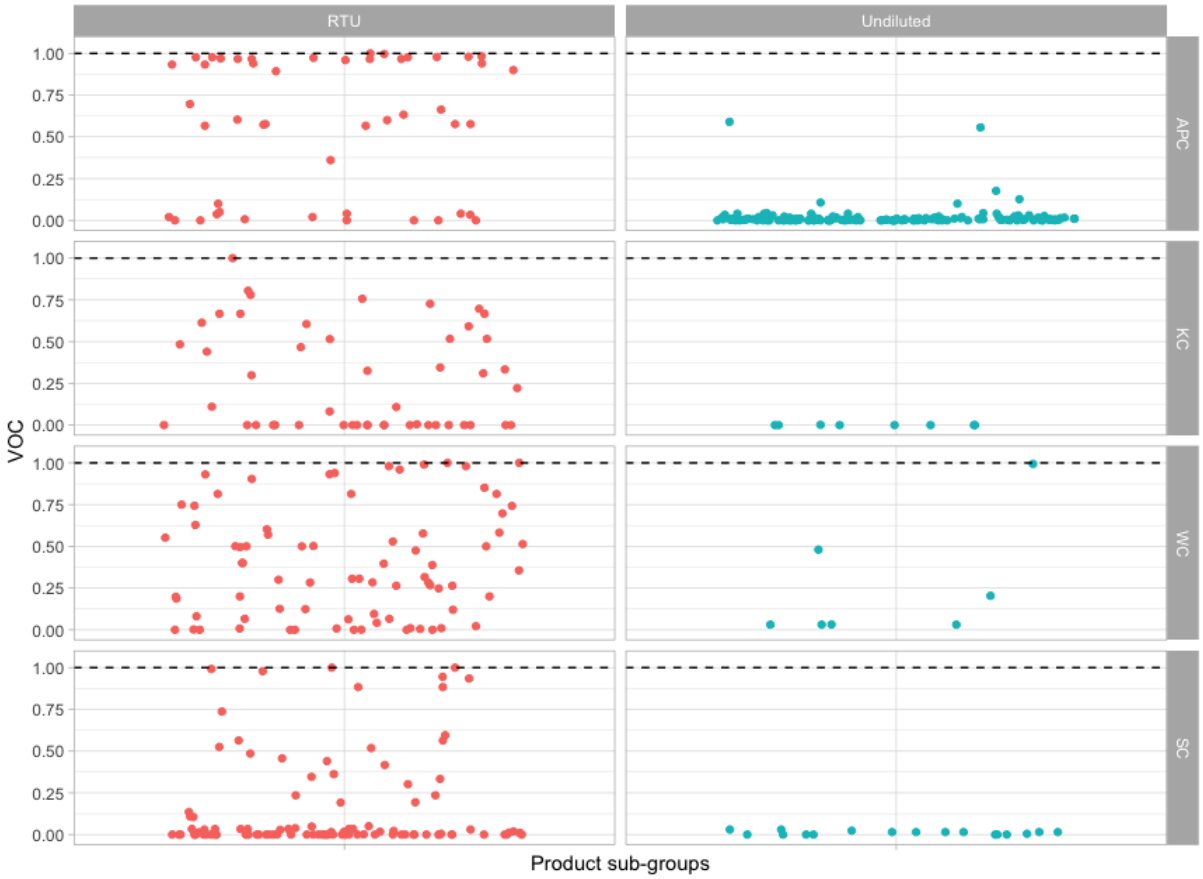
Table 55 - Hard-surface cleaning products descriptive statistics of Volatile Organic Compounds (VOC) values.

Product type	*Product format/ concentration*	*Data points (n)*	*Minimum (g/l)*	*1st quartile (g/l)*	*Median (g/l)*	*Mean (g/l)*	*3rd quartile (g/l)*	*Maximum (g/l)*	*TR1 proposed threshold (g/l)*	*Existing Threshold (g/l)*
All-purpose cleaners (APC)	Ready-to-Use (RTU)	48	0.00	1.20	18.55	17.20	29.00	30.00	1	30
All-purpose cleaners (APC)	Undiluted	159	0.00	0.00	0.15	0.55	0.40	17.70	1	30
Kitchen cleaners (KC)	Ready-to-Use (RTU)	49	0.00	0.00	6.60	16.72	31.00	60.00	10	60
Kitchen cleaners (KC)	Undiluted	8	0.00	0.00	0.00	0.01	0.00	0.10	10	60
Window cleaners (WC)	Ready-to-Use (RTU)	77	0.00	8.10	31.60	39.69	60.20	100.00	100	100
Windows cleaners (WC)	Undiluted	7	3.10	3.10	3.20	25.76	34.20	99.40	100	100
Sanitary cleaners (SC)	Ready-to-Use (RTU)	105	0.00	0.00	0.30	9.18	8.10	60.00	10	60
Sanitary cleaners (SC)	Undiluted	17	0.00	0.00	0.90	0.63	0.90	1.80	10	60

Source: JRC's elaboration with data provided by stakeholders.

Figure 28 - Hard-surface cleaning products of Volatile Organic Compounds (VOC) values. Each data point has been factored by its corresponding EUEL threshold, thus being unit less and ranging from "0" to "1", which corresponds to the existing EUEL threshold (depicted by the dashed line). Red dots represent products in Ready-to-Use (RTU) format, while

blue dots represent undiluted format for all HSC sub-products (All-purpose cleaners (APC), Kitchen cleaners (KC), Window cleaners (WC)).



Source: JRC's elaboration with data provided by stakeholders.

The discussions and conclusion about the Volatile Organic Compounds (VOC) proposal, derived from the former evidences, is:

- *HSC, All-Purpose Cleaners (APC) (Ready-to-Use (RTU) and Undiluted)*

  For *RTU products*, the majority (75%) of data points fall below 29 g/l of cleaning water, which is very close to the existing limit of 30 g/l. Blue Angel sets a much stricter limit at 1 g/l, which was the limit proposed in the first proposal (TR1) for the EU ecolabel. Most stakeholders argued that this proposed limit was too strict or unfeasible. Additionally, a stakeholder suggestion indicated 15 g/l as a VOC limit if ethanol is exempted from the requirement. Therefore, taking into account the data available, stakeholder suggestions, and the Blue Angel limit, the JRC proposes setting a limit of 15 g/l for RTU products as a compromise, with the condition that ethanol is exempted from the VOC requirement. This limit is less stringent than the Blue Angel limit but still represents a reduction from the existing 30 g/l limit. It aligns with stakeholder suggestions and reflects a level that a significant portion of products may already meet. This compromise aims to balance environmental objectives with feasibility and industry capabilities, encouraging innovation while acknowledging current product performance levels.

  For *undiluted* products, the majority (75%) of data points fall below 0.40 g/l of cleaning water. This value is significantly lower than the current limit of 30 g/l and is 60% below the initial proposal of 1 g/l. Additionally, Blue Angel sets a limit of 1 g/l for this product category. The JRC proposes maintaining the initial proposed limit of 1 g/l since it aligns with Blue Angel, has received less opposition, and seems more feasible for undiluted formulations.

There is a discrepancy in the VOC values of the data received. The RTU VOC values are much higher than the undiluted VOC values. This could be due to the units and reference dosages considered for RTU and undiluted products. The RTU values are expressed in grams per liter, based on a standard reference dosage of 1000 grams (1 liter), while undiluted values are calculated according to the manufacturer's recommendations. Thus the discrepancy could be related to the unit for undiluted products which refers to the concentrated product and not to the In-use solution.

- *HSC, Kitchen Cleaners (KC) (Ready-to-Use (RTU) and Undiluted)*

For *RTU products*, the majority (75%) of data points fall below 31 g/l of cleaning solution. This value is approximately half of the existing limit of 60 g/l and is three times higher than the initial proposal of 10 g/l, which aligns with the Blue Angel limit. Most stakeholders argued that the initially proposed limit of 10 g/l for RTU was too strict. Additionally, another stakeholder suggested a limit of 30 g/l if ethanol is exempted, as reported in the Table of Comments. Based on the evidence collected, the JRC proposes a limit of 30 g/l for RTU products.

For *undiluted* products, only a few data points (n=8) were available for analysis, with the majority being equal to zero. No additional suggestions regarding thresholds were made by stakeholders. Considering the limited data, the JRC proposes maintaining the initially proposed limit of 10 g/l for undiluted products, which is also in line with Blue Angel.

- *HSC, Window Cleaners (WC) (Ready-to-Use (RTU) and Undiluted)*

For *RTU products*, 75% of data points fall below 60.20 g/l of cleaning solution, which is more stringent than the current limit of 100 g/l. Additionally, stakeholder feedback suggested alternative limits of 90 g/l, and 25 g/l if ethanol is exempted. The JRC proposes setting a limit of 60 g/l for RTU products. However, additional detailed feedback from stakeholders will be essential to refine this requirement, particularly concerning the possibility of further reducing the limit below 60 g/l if ethanol is exempted, also considering the suggestion to set the limit at 25 g/l under such conditions.

For *undiluted products*, only a few data points (n=7) were available for analysis, with the majority being below 34.2 g/l, which is more stringent than the existing limit of 100 g/l and the Blue Angel standard of 100 g/1000 g. No additional suggestions regarding thresholds were made by stakeholders. The JRC proposes a threshold of 30 g/l, although considering the limited data shared by stakeholders, a re-evaluation may be conducted if additional data become available to determine if this requirement is appropriate or if adjustments are necessary.

- *HSC, Sanitary Cleaners (SC) (Ready-to-Use (RTU) and Undiluted)*

For *RTU products*, the majority (75%) of data points fall below 8.10 g/l of cleaning water, which is very close to both the initially proposed limit and the Blue Angel limit of 10 g/l, but more stringent than the existing limit of 60 g/l. Additional stakeholder suggestions indicated limits of 40 g/l or 30 g/l if ethanol is exempted from the requirement. Based on the extensive data points analyzed for this RTU product type, the JRC proposes maintaining the initially proposed limit of 10 g/l of cleaning water.

For *undiluted products*, the majority (75%) of data points fall below 0.90 g/l of cleaning water, which is roughly one-tenth of the initial proposal of 10 g/l and of the Blue Angel limit, but is quite distant from the existing limit of 60 g/l. A stakeholder suggestion indicated a limit of 5 g/l. Given the limited data collected (n=17) and considering the Blue Angel limit and stakeholder suggestion, the JRC proposes a threshold of 5 g/l as a compromise. A re-evaluation may be conducted if additional data become available to determine if this requirement is appropriate or if adjustments are necessary.

In general, across all product groups under analysis, there appears to be a discrepancy in the VOC values of the data received. The RTU VOC values are significantly higher than the undiluted VOC values. This discrepancy could be attributed to the differences in units and reference dosages used for RTU and undiluted

products. The JRC is investigating it and to gain more clarity on this issue, welcomes feedback from stakeholders.

The exemption of ethanol was deemed essential to enable EU Ecolabel HSC products to achieve an acceptable cleaning performance. This raises questions regarding a potential exemption of ethanol from being counted as a VOC in HSC products. Specifically, it prompts consideration of whether this exemption should apply to all HSC products or be limited to specific cleaners where the exemption is more relevant, such as window cleaners.

Points for discussion 10 – Excluded & Restricted Substances (VOC restrictions)

Stakeholders are invited to reply the following consultation questions:

- Question 51 (Q51) – Data provided from EUEL products show that the VOC content in g/L of cleaning water for undiluted products is much lower than that in RTU products. How can the significantly lower VOC content in undiluted products be explained compared to RTU products?
- Question 52 (Q52) What are your views on the potential exemption of ethanol from being counted as a VOC in HSC products, and do you believe this exemption should apply to all HSC products or be restricted to specific cleaners, such as window cleaners, where the exemption might be more relevant?
- Question 53 (Q53) – Would the potential exemption of ethanol from VOC calculations make it feasible to reduce the proposed VOC limit to a lower threshold for HSC ready-to-use and undiluted products? If yes, what changes would you suggest?
- Question 54 (Q54) Please, share any other comments/suggestions you deem relevant about this criterion providing reasons supporting them.

6.6.2. Hazardous substances

TR1 Proposed sub-criterion (b) hazardous substances

ALL

(*i*) Final product

The final product shall not be classified ~~and labelled~~ as being acutely toxic, a specific target organ toxicant, a respiratory or skin sensitiser, carcinogenic, mutagenic or toxic for reproduction, or hazardous to the aquatic environment, as defined in Annex I to Regulation (EC) No 1272/2008 and in accordance with the list in Table 2.

(*i*) Ingoing substances

The product shall not contain ingoing substances at a concentration limit at or above 0,010 % weight by weight in the final product that meet the criteria for classification as toxic, hazardous to the aquatic environment, respiratory or skin sensitisers, carcinogenic, mutagenic or toxic for reproduction in accordance with Annex I to Regulation (EC) No 1272/2008 and in accordance with the list in Table 2.

Where stricter, the generic or specific concentration limits determined in accordance with Article 10 of Regulation (EC) No 1272/2008 shall take precedence.

Table 2 Restricted hazard classifications and their categorisation

Acute toxicity	
Categories 1 and 2	Category 3
H300 Fatal if swallowed	H301 Toxic if swallowed
H310 Fatal in contact with skin	H311 Toxic in contact with skin
H330 Fatal if inhaled	H331 Toxic if inhaled
H304 May be fatal if swallowed and enters airways	EUH070 Toxic by eye contact

Specific target organ toxicity	
Categories 1	Category 2
H370 Causes damage to organs	H371 May cause damage to organs
H372 Causes damage to organs through prolonged or repeated exposure	H373 May cause damage to organs through prolonged or repeated exposure
Respiratory and skin sensitisation	
Categories 1A/1	Category B
H317 May cause allergic skin reaction	H317 May cause allergic skin reaction
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled	H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
Carcinogenic, mutagenic or toxic for reproduction	
Categories 1A and 1B	Category 2
H340 May cause genetic defects	H341 Suspected of causing genetic defects
H350 May cause cancer	H351 Suspected of causing cancer
H350i May cause cancer by inhalation	
H360F May damage fertility	H361f Suspected of damaging fertility
H360D May damage the unborn child	H361d Suspected of damaging the unborn child
H360FD May damage fertility. May damage the unborn child	H361fd Suspected of damaging fertility. Suspected of damaging the unborn child
H360Fd May damage fertility. Suspected of damaging the unborn child	H362 May cause harm to breast fed children
H360Df May damage the unborn child. Suspected of damaging fertility	
Hazardous to the aquatic environment	
Categories 1 and 2	Category 3 and 4
H400 Very toxic to aquatic life	H412 Harmful to aquatic life with long-lasting effects
H410 Very toxic to aquatic life with long-lasting effects	H413 May cause long-lasting effects to aquatic life
H411 Toxic to aquatic life with long-lasting effects	
Endocrine disruptors for human health and the environment	
Category 1	Category 2
EUH380: May cause endocrine disruption in humans	EUH381: Suspected of causing endocrine disruption in humans
EUH430: May cause endocrine disruption in the environment	EUH431: Suspected of causing endocrine disruption in the environment
Persistent, Bioaccumulative and Toxic	
PBT	vPvB
EUH440: Accumulates in the environment and living organisms including in humans	EUH441: Strongly accumulates in the environment and living organisms including in humans
Persistent, Mobile and Toxic	
PMT	vPvM
EUH450: Can cause long-lasting and diffuse contamination of water resources	EUH451: Can cause very long-lasting and diffuse contamination of water resource
Hazardous to the ozone layer	
H420 Hazardous to the ozone layer	

This criterion does not apply to ingoing substances covered by Article 2(7)(a) and (b) of Regulation (EC) No 1907/2006 which set out criteria for exempting substances within Annexes IV and V to that Regulation from the registration, downstream user and evaluation requirements. In order to determine whether that exclusion applies, the applicant shall screen any ingoing substance present at a concentration above 0,010 % weight by weight.

<table>
<tr><td></td><td>Substances and mixtures included in Table 3 are exempted from point (b)(ii) of Criterion 5.

Table 3 Derogated substances</td></tr>
<tr><td>DD, HDD, HSC, IIDD, IILD</td><td>Substance: Surfactants
Hazard statement: H400 Very toxic to aquatic life; H412 Harmful to aquatic life with long-lasting effects</td></tr>
<tr><td>DD, HDD, IIDD, IILD</td><td>Subtilisin
H400 Very toxic to aquatic life; H411 Toxic to aquatic life with long-lasting effects</td></tr>
<tr><td>DD, HDD, HSC, IIDD, IILD</td><td>Enzymes (*1)
H317 May cause allergic skin reaction; H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled</td></tr>
<tr><td>IILD</td><td>ε-phthalimido-peroxy-hexanoic acid (PAP) used as bleaching agent at max concentration of 0,6 g/kg of laundry: H400 Very toxic to aquatic life; H412 Harmful to aquatic life with long-lasting effects
Peracetic acid/hydrogen peroxide used as bleaching agent: H400 Very toxic to aquatic life; H410 Very toxic to aquatic life with long-lasting effects; H412 Harmful to aquatic life with long-lasting effects</td></tr>
<tr><td>DD, HDD, HSC, IIDD, IILD</td><td>NTA as an impurity in MGDA and GLDA (*2): H351 Suspected of causing cancer
(*1) Including stabilisers and other auxiliary substances in the preparations.
(*2) In concentrations lower than 0,2 % in the raw material as long as the total concentration in the final product is lower than 0,10 %.</td></tr>
<tr><td>LD</td><td>
<table>
<tr><th>Substance</th><th>Classification according to Regulation (EC) No 1272/2008</th><th>Hazard statement</th></tr>
<tr><td rowspan="2">Surfactants</td><td>Hazardous to the aquatic environment — Acute Hazard, Category 1</td><td>H400: Very toxic to aquatic life</td></tr>
<tr><td>Hazardous to the aquatic environment — Chronic Hazard, Category 3</td><td>H412: Harmful to aquatic life with long-lasting effects</td></tr>
<tr><td rowspan="2">Subtilisin</td><td>Hazardous to the aquatic environment — Acute Hazard, Category 1</td><td>H400: Very toxic to aquatic life</td></tr>
<tr><td>Hazardous to the aquatic environment — Chronic Hazard, Category 2</td><td>H411: Toxic to aquatic life with long-lasting effects</td></tr>
<tr><td rowspan="2">Enzymes (1)</td><td>Skin Sensitisation, Hazard Category 1, 1A, 1B</td><td>Respiratory Sensitisation, Hazard Category 1, 1A, 1B</td></tr>
<tr><td>Respiratory Sensitisation, Hazard Category 1, 1A, 1B</td><td>H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled</td></tr>
<tr><td>NTA as an impurity in MGDA and GLDA (2)</td><td>Carcinogenicity, Hazard Category 2</td><td>NTA as an impurity in MGDA and GLDA (*2)</td></tr>
</table>
(1) Including stabilisers and other auxiliary substances in the preparations
(2) In concentrations lower than 0,2 % in the raw material as long as the total concentration in the final product is lower than 0,10 %.</td></tr>
</table>

ALL	*Assessment and verification:* the applicant shall demonstrate compliance with this criterion for the final product and for any ingoing substance present at a concentration greater than 0,010 % weight by weight in the final product. The applicant shall provide a signed declaration of compliance supported by declarations from suppliers, if appropriate, or SDS confirming that none of these substances meets the criteria for classification with one or more of the hazard statements listed in Table 2 in the form(s) and physical state(s) in which they are present in the product. For substances listed in Annexes IV and V to Regulation (EC) No 1907/2006, which are exempted from registration obligations under points (a) and (b) of Article 2(7) of that Regulation, a declaration to this effect by the applicant shall suffice to comply. The applicant shall provide a signed declaration of compliance supported by declarations from suppliers, if appropriate, or SDS confirming the presence of ingoing substances that fulfil the derogation conditions.

TR2 proposals for sub-criterion (b) hazardous substances (with changes from TR1 highlighted)

ALL

(*i*) Final product

The final product shall not be classified ~~and labelled~~ as being carcinogenic, mutagenic or toxic for reproduction, acutely toxic, an aspiration hazard, a specific target organ toxicant, a respiratory or skin sensitiser, ~~carcinogenic, mutagenic or toxic for reproduction, or~~ hazardous to the aquatic environment, hazardous to the ozone layer, an endocrine disruptor, persistent, bioaccumulative and toxic (PBT) or persistent, mobile and toxic (PMT) in accordance with ~~as defined in Annex I to~~ Regulation (EC) No 1272/2008 and specifically in terms of ~~in accordance with~~ the hazard classes, categories, codes and hazard statements stated ~~list~~ in Table 2.

(*ii*) Ingoing substances

Unless derogated in Table 3, ~~T~~the final product formulation shall not contain ingoing substances in~~at a~~ concentrations ~~limit~~ at or above 0,010 % weight by weight of~~in~~ the final product formulation that are classified, ~~meet the criteria for classification as hazardous to the aquatic environment, respiratory or skin sensitisers, carcinogenic, mutagenic or toxic for reproduction~~ in accordance with ~~Annex I to~~ Regulation (EC) No 1272/2008, with any of the hazard classes, categories codes and associated hazard statements stated ~~and in accordance with the list~~ in Table 2.

~~Where stricter, the generic or specific concentration limits determined in accordance with Article 10 of Regulation (EC) No 1272/2008 shall take precedence.~~

Table 2 Restricted hazard classes, categories, codes and associated hazard statements ~~classifications and their categorisation~~

Carcinogenic, mutagenic or toxic for reproduction	
Categories 1A and 1B	Category 2
H340: May cause genetic defects	H341: Suspected of causing genetic defects
H350: May cause cancer	H351: Suspected of causing cancer
H350i: May cause cancer by inhalation	
H360: May damage fertility or the unborn child	H361: Suspected of damaging fertility or the unborn child
H360F: May damage fertility	H361f: Suspected of damaging fertility
H360D: May damage the unborn child	H361d: Suspected of damaging the unborn child
H360FD: May damage fertility. May damage the unborn child	H361fd: Suspected of damaging fertility. Suspected of damaging the unborn child
H360Fd: May damage fertility. Suspected of damaging the unborn child.	H362: May cause harm to breast fed children
H360Df: May damage the unborn child. Suspected of damaging fertility.	
Acute toxicity	
Categories 1 and 2	Category 3
H300: Fatal if swallowed	H301: Toxic if swallowed

H310: Fatal in contact with skin	H311: Toxic in contact with skin
H330: Fatal if inhaled	H331: Toxic if inhaled
~~H304: May be fatal if swallowed and enters airways~~	EUH070: Toxic by eye contact
Aspiration hazard	
Category 1	
H304: May be fatal if swallowed and enters airways	
Specific target organ toxicity	
Category 1	Category 2
H370: Causes damage to organs	H371: May cause damage to organs
H372: Causes damage to organs through prolonged or repeated exposure	H373: May cause damage to organs through prolonged or repeated exposure
Respiratory and skin sensitization	
Category 1, 1A and 1B	
H317: May cause an allergic skin reaction	
H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled	
Hazardous to the aquatic environment	
Categories 1 and 2	Categories 3 and 4
H400: Very toxic to aquatic life	H412: Harmful to aquatic life with long-lasting effects
H410: Very toxic to aquatic life with long-lasting effects	H413: May cause long-lasting effects to aquatic life
H411: Toxic to aquatic life with long-lasting effects	
Hazardous to the ozone layer	
H420: Harms public health and the environment by destroying ozone in the upper atmosphere	
Endocrine disruptors for human health and the environment	
Category 1	Category 2
EUH380: May cause endocrine disruption in humans	EUH381: Suspected of causing endocrine disruption in humans
EUH430: May cause endocrine disruption in the environment	EUH431: Suspected of causing endocrine disruption in the environment.
Persistent, Bioaccumulative and Toxic	
PBT	vPvB
EUH440: Accumulates in the environment and living organisms including in humans	EUH441: Strongly accumulates in the environment and living organisms including in humans
Persistent, Mobile and Toxic	
PMT	vPvM
EUH450: Can cause long-lasting and diffuse contamination of water resources	EUH451: Can cause very long-lasting and diffuse contamination of water resources

The hazard statement codes generally refer to substances. However, if information on substances cannot be obtained, the classification rules for mixtures shall apply.

The use of substances or mixtures that are chemically modified during the production process, so that any relevant hazard for which the substance or mixture has been classified under Regulation (EC) No 1272/2008 no longer applies, shall be exempted from the above requirement.

This criterion shall ~~does~~ not apply to ingoing substances covered by points (a) and (b) of Article 2(7)~~(a) and (b)~~ of Regulation (EC) No 1907/2006, which set out criteria for exempting substances within Annexes IV and V to that Regulation from the registration, downstream user and evaluation

requirements. ~~In order to determine whether that exclusion applies, the applicant shall screen any ingoing substance present at a concentration above 0,010 % weight by weight.~~

~~Substances and mixtures included in Table 3 are exempted from point (b)(ii) of Criterion 5.~~

Table 3 Derogated substances

~~DD,~~ ~~HDD,~~ ~~HSC,~~ ~~IIDD,~~ ~~IILD~~

ALL

Substance	Hazard statement
Surfactants	~~H400 Very toxic to aquatic life~~
	H412 Harmful to aquatic life with long-lasting effects

DD, HDD, IIDD, IILD

LD

Subtilisin	H400 Very toxic to aquatic life
	H411 Toxic to aquatic life with long-lasting effects

~~DD,~~ ~~HDD,~~ ~~HSC,~~ ~~IIDD,~~ ~~IILD~~

ALL

Enzymes (*1)	H317 May cause allergic skin reaction
	H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
Titanium dioxide (in a powder form containing 1% or more of particles with aerodynamic diameter ≤ 10µm)	H351 (inhalation) The applicant shall demonstrate that they have systems in place to minimise worker exposure to dry TiO_2 powder in the workplace (e.g. closed dosing systems, ventilated dosing and mixing areas and personal protective equipment).

(*1) Enzymes (H334) ~~i~~including ~~stabilisers and~~ other auxiliary substances in ~~the~~ enzyme preparations (H317).

IILD

ε-phthalimido-peroxy-hexanoic acid (PAP) used as bleaching agent at max concentration of 0,6 g/kg of laundry	H400 Very toxic to aquatic life
	H412 Harmful to aquatic life with long-lasting effects
Peracetic acid/hydrogen peroxide used as bleaching agent	H400 Very toxic to aquatic life
	H410 Very toxic to aquatic life with long-lasting effects
	H412 Harmful to aquatic life with long-lasting effects

~~DD,~~ ~~HDD,~~ ~~HSC,~~ ~~IIDD,~~ ~~IILD~~

ALL

NTA as an impurity in MGDA and GLDA (*2)	H351 Suspected of causing cancer

~~(*1) Enzymes (H334) including stabilisers and other auxiliary substances in the enzyme preparations (H317).~~

(*2) In concentrations lower than 0,2 % in the raw material as long as the total concentration in the final product is lower than 0,10 %.

~~LD~~

~~Substance~~	~~Classification according to Regulation (EC) No 1272/2008~~	~~Hazard statement~~
~~Surfactants~~	~~Hazardous to the aquatic environment – Acute Hazard, Category 1~~	~~H400: Very toxic to aquatic life~~
	~~Hazardous to the aquatic environment – Chronic Hazard, Category 3~~	~~H412: Harmful to aquatic life with long-lasting effects~~
~~Subtilisin~~	~~Hazardous to the aquatic environment – Acute Hazard, Category 1~~	~~H400: Very toxic to aquatic life~~
	~~Hazardous to the aquatic environment~~	~~H411: Toxic to aquatic life~~

		~~— Chronic Hazard, Category 2~~	~~with long-lasting effects~~
	~~Enzymes (1)~~	~~Skin Sensitisation, Hazard Category 1, 1A, 1B~~	~~Respiratory Sensitisation, Hazard Category 1, 1A, 1B~~
		~~Respiratory Sensitisation, Hazard Category 1, 1A, 1B~~	~~H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled~~
	~~NTA as an impurity in MGDA and GLDA (2)~~	~~Carcinogenicity, Hazard Category 2~~	~~NTA as an impurity in MGDA and GLDA (*2)~~

~~(1) Including stabilisers and other auxiliary substances in the preparations~~

~~(2) In concentrations lower than 0,2 % in the raw material as long as the total concentration in the final product is lower than 0,10 %.~~

HSC

Substance	Classification according to Regulation (EC) No 1272/2008	Hazard statement
Sulfamic acid (CAS No 5329-14-6)	Hazardous to the aquatic environment — Chronic Hazard, Category 2	H412: Harmful to aquatic life with long-lasting effects

ALL

Substance	Classification according to Regulation (EC) No 1272/2008	Hazard statement
Benzoic acid (CAS No 65-85-0) (1)	Specific target organ toxicity, repeated exposure— Category 2	H372: Causes damage to organs through prolonged or repeated exposure
Amidoamine residues (2)	Sensitisation, Skin – Category 1, 1A, 1B	H317: May cause an allergic skin reaction

(1) Only derogated as an in-situ generated substance when sodium benzoate is added as a preservative and sodium benzoate shall only be permitted at levels up to 1,0% w/w of the final product formulation.

(2) Only derogated when added as residues in CAPB surfactants and when the total quantity of H317 classified amidoamine residues is less than 0,10% w/w of the final product formulation.

ALL

Assessment and verification: the applicant shall provide a signed declaration of ~~demonstrate~~ compliance with this criterion, supported by declarations and any other relevant documentation from suppliers. A list of all ingoing substances with one or more of the restricted CLP hazards calculated to be present in ~~for~~ the final product formulation ~~and for any ingoing substance present at a~~ in concentrations greater than 0,010 % weight by weight ~~in the final product~~ shall be presented, together with their CAS numbers, CLP (i.e. harmonised, joint entry or self-entries only) the relevant function of the ingoing substance (e.g. surfactant, enzyme etc.). Calculations shall be based on:

— a list of all ingredients, chemicals or raw materials used to make the final product formulation,

— the screening of ingredients, chemicals or raw materials for those ingoing substances with any of the EU Ecolabel-restricted CLP hazards,

— the concentrations of any screened ingoing substances with EU Ecolabel-restricted CLP hazards in the ingredients, chemicals or raw materials used, in the format supplied,

— the weight of each of the ingredients, chemicals or raw materials added to make a known weight of final product formulation.

~~The applicant shall provide a signed declaration of compliance supported by declarations from suppliers, if appropriate, or SDS confirming that none of these substances meets the criteria for classification with one or more of the hazard statements listed in Table 2 in the form(s) and physical state(s) in which they are present in the product.~~

Any screened ingoing substances shall be assumed by default to be 100 % retained in the final product. Justifications for any deviation from a retention factor of 100 % during processing (e.g. solvent evaporation) or for chemical modification of a screened ingoing substance shall be provided. Substances known to be released or to degrade from ingoing substances are considered ingoing substances and not impurities.

	For any screened ingoing substances remaining in the final product formulation in concentrations greater than 0,010 % weight by weight, but which are exempted from this criterion ~~listed in~~ (see Annexes IV and V to Regulation (EC) No 1907/2006) ~~which are exempted from registration obligations under points (a) and (b) of Article 2(7) of that Regulation,~~ a declaration to this effect by the applicant shall suffice to comply. ~~The applicant shall provide a signed declaration of compliance supported by declarations from suppliers, if appropriate, or SDS confirming the presence of ingoing substances that fulfil the derogation conditions.~~ Regarding information requested from suppliers that may be commercially sensitive, evidence from suppliers can also be provided directly to competent bodies without necessarily providing certain details to the applicant.

4782

4783 *Rationale for the proposed sub-criterion (b) hazardous substances*

4784 This sub-criterion is directly linked to the requirements given in the EU Ecolabel Regulation (EC) No 66/2010
4785 which states that:

4786 "*The EU Ecolabel may not be awarded to goods containing substances or preparations/mixtures*
4787 *meeting the criteria for classification as toxic, hazardous to the environment, carcinogenic, mutagenic*
4788 *or toxic for reproduction (CMR), in accordance with Regulation (EC) No 1272/2008 of the European*
4789 *Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of*
4790 *substances and mixtures, nor to goods containing substances referred to in Article 57 of Regulation*
4791 *(EC) No 1907/2006 of the European parliament and the Council of 18 December 2006 concerning*
4792 *the Registration, evaluation, authorization of chemicals (REACH) establishing a European Chemicals*
4793 *Agency*".

4794 The identification of potential sources of hazard is based on a list of hazard classes, categories and hazard
4795 statement codes that are grouped based on the CLP classification and labelling rules and harmonised across
4796 different EU Ecolabel product groups. The list generally refers to substances. However, if information on
4797 substances cannot be obtained, the classification rules for mixtures apply.

4798 The EU Ecolabel Regulation allows derogations to be included for specific substances under strictly defined
4799 conditions:

4800 "*For specific categories of goods containing substances referred to in paragraph 6, and only in the*
4801 *event that it is not technically feasible to substitute them as such, or via the use of alternative*
4802 *materials or designs, or in the case of products which have a significantly higher overall environment*
4803 *performance compared with other goods of the same category, the Commission may adopt measures*
4804 *to grant derogations from paragraph 6*".

4805 Substances and mixtures with endocrine disrupting properties are a significant concern for public health and
4806 the environment. Research has demonstrated that endocrine disruption can lead to a range of human
4807 disorders. Additionally, substances and mixtures with PBT or vPvB properties are of high concern due to their
4808 resistance to breakdown in the environment and their tendency to accumulate in living organisms throughout
4809 the food chain. Similarly, PMT and vPvM substances pose concerns because of their high persistence and
4810 mobility, allowing them to enter the water cycle and spread over long distances, including in drinking water.

4811 The use of these substances in detergents is also prohibited. In fact, in December 2022, the Commission
4812 published a proposal for a revised Regulation on the classification, labelling, and packaging of chemicals
4813 (CLP)([353]) which includes a Delegated Act([354]) to introduce new hazard classes for endocrine disruptors, PBT,
4814 and PMT substances. These new hazard classes are included in the sub-criterion (b): Hazardous substances
4815 and in Table 2 of Restricted hazard classifications and their categorization.

4816 *Rewording of the criterion text*

[353] https://ec.europa.eu/commission/presscorner/detail/en/ip_22_7775
[354] https://environment.ec.europa.eu/publications/clp-delegated-act_en

This horizontal criterion for hazardous substances applies to all EU Ecolabel product groups classified as "goods." To align with the ongoing revisions of EU Ecolabel criteria for paints and varnishes, it is proposed to update the wording for the EU Ecolabel for Detergents accordingly.

The reasons for the main wording changes are briefly explained in the list below:

- In the first paragraph, under the "(i) final product" heading, additional hazards have been included. This change was, prompted by a stakeholder's comment highlighting the inconsistency of mentioning only some hazard classes in the text while excluding others.
- A minor change has been made to refer to "hazard classes, categories, codes, and associated hazard statements" instead of "hazard classifications and their categorization," as the former is more accurate.
- A minor but important change has been implemented to refer to "final product formulation" instead of "final product." This adjustment ensures legal clarity by preventing packaging from being included in the screening for ingoing substances or in the calculations of the 0.010% threshold.
- Several minor changes have been made to the table listing restricted CLP hazard classes, categories, codes, and associated hazard statements. The addition of "H360" and "H361" addresses cases where the appropriate suffix letters are not yet determined. The H304 hazard has been correctly repositioned as a standalone type of hazard (aspiration hazard) rather than under acute toxicity. Furthermore, the category "1" has been added for the H317 and H334 hazards to indicate situations where it is not yet clear if a substance should be classified as 1A or 1B
- Standard clauses for (i) allowing classification of a mixture to be used when classification information for substances cannot be obtained, and (ii) an exemption clause if ingoing hazardous substances are chemically modified during the production process, have been inserted – aligning with the paints proposal.
- Additional changes to the criterion text involve removing redundant words and enhancing the overall readability of the proposed text.

Rewording of Assessment and Verification text

A comprehensive rewording of the assessment and verification (A&V) text has been undertaken simultaneously for both the paints and varnishes criteria and the detergents criteria, resulting in closely aligned proposals. The objective of the revised wording in both product groups is to clarify expectations for applicants and suppliers to assess compliance or non-compliance with CLP restrictions more effectively. Suppliers must provide quantitative information on any substances with CLP hazards restricted by the EU Ecolabel. This data must be combined with quantitative information that only the detergent formulator possesses. While similar procedures may be required when applying the CLP rule of mixtures to final products, the EU Ecolabel approach specifically targets certain CLP hazards and imposes a distinct threshold of 0.010% for all restricted hazards

Rationale for removing H400 derogation for surfactants

In this new version it is included the proposal to remove the derogation of H400 for surfactants in all categories of detergent products. The main reason for this was a comprehensive review of the CLP hazards for hundreds of different types of surfactant. The details of the analysis are presented in the preliminary report, but the main conclusions are presented here for ease of reference. In the table below, the frequency of occurrence of hazards in the different families of surfactant chemicals is presented. Hazards that are coloured mean that they are restricted by the horizontal CLP restrictions and would in principle need a derogation if to be used in an EU Ecolabel detergent product. The colours go from light orange to dark orange to red to reflect the seriousness of the hazard in question.

Table 56 – Screening of CLP hazards associated with surfactants according to the CESIO recommendations

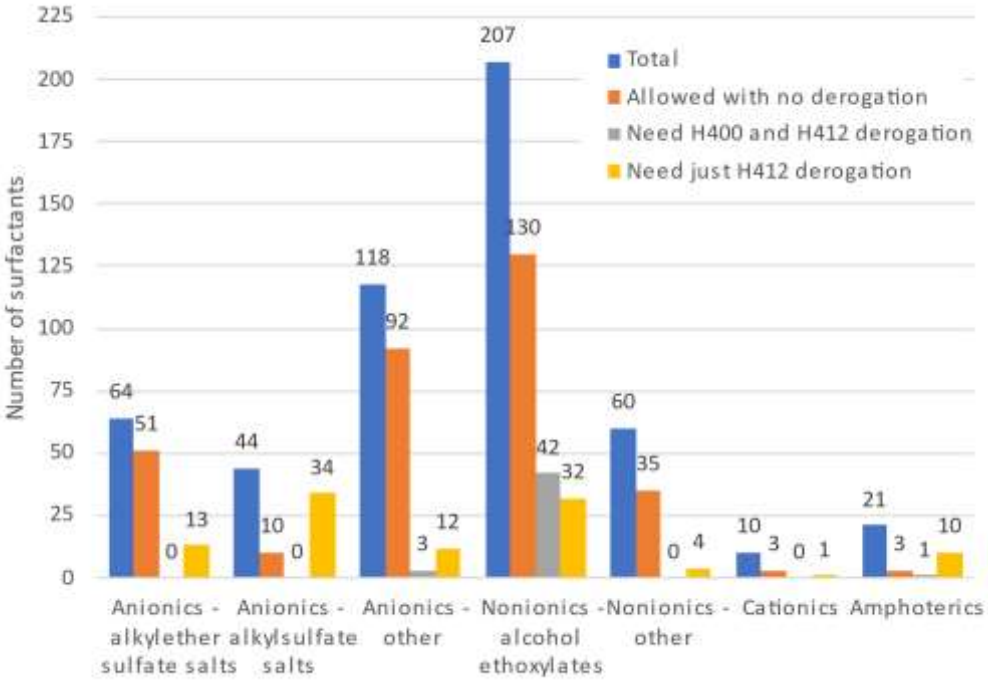
CLP hazards	Anionics			Non-ionics		Cationics (n=10)	Amphoterics (n=21)
	Alkylether sulfate salts (n=64)	Alkylsulfate salts (n=44)	Other (n=118)	Alcohol ethoxylates (n=207)	Other (n=60)		
H413			1 (0.8%)				
H412	13 (20.3%)	34 (77.3%)	15 (12.7%)	74 (35.7%)	4 (6.7%)	1 (10%)	11 (52.4%)
H411			8 (6.8%)	9 (4.3%)	12 (20.0%)	2 (20%)	6 (28.6%)
H410					9 (15.0%)	4 (40%)	
H400			8 (6.8%)	44 (21.3%)	9 (15%)	5 (50%)	7 (33.3%)

CLP hazards	Anionics			Non-ionics		Cationics (n=10)	Amphoterics (n=21)
	Alkylether sulfate salts (n=64)	Alkylsulfate salts (n=44)	Other (n=118)	Alcohol ethoxylates (n=207)	Other (n=60)		
H373							1 (4.8%)
H361					1 (1.7%)		
H335		22 (50%)					
H334		22 (50%)					
H332		15 (34.1%)			1 (1.7%)		
H330					1 (1.7%)		
H319			19 (16.1%)	50 (24.2%)	2 (3.3%)	1 (10%)	2 (9.5%)
H318	18 (28.1%)	44 (100%)	65 (55.1%)	89 (43.0%)	26 (43.3%)	3 (30%)	17 (81%)
H315	18 (28.1%)	44 (100%)	53 (44.9%)	5 (2.4%)	13 (21.7%)	1 (10%)	9 (42.9%)
H314			17 (14.4%)		4 (6.7%)	5 (50%)	
H312			2 (1.7%)				
H311						2 (20%)	
H302		32 (72.7%)	9 (7.6%)	43 (20.8%)	15 (25%)	5 (50%)	9 (42.9%)
None	43 (67.2%)		14 (11.9%)	46 (22.2%)	23 (38.3%)	2 (20%)	1 (4.8%)

From the table, it is clear that the frequency and type of hazards varied significantly between the different types of surfactant. By far the most problematic hazards where the aquatic toxicity hazards (i.e. H400, H410, H411 and H412). This justifies the original criteria having an H400 and H412 derogation.

However, a more detailed analysis looking at how many of the surfactants would be permitted in EU Ecolabel detergents thanks to the H400 and H412 derogations was compared to how the numbers would change with just the H412 derogation or with no derogation at all. These findings are summarised below.

Figure 29 . Analysis of how many surfactants actually need to H400 and H412 derogation, and how many would only need an H412 derogation or no derogation at all.



The importance of the H400 + H412 derogation can be determined by seeing how high the grey and yellow columns are compared to the blue columns. And the higher the orange columns are relative to the blue columns, the less important are the derogations. The need for the H400 part of the derogation is shown by

comparing the grey column with the yellow column. The relatively smaller the grey column, the less important the H400 part of the definition.

It can be deduced from Figure 29 that the H400 part of the derogation is unimportant for all types of surfactant except for non-ionics – alcohol ethoxylates (42 of 207 surfactants would need the derogation). However, it should also be considered that there are another 130 non-ionic alcohol ethoxylates that could still potentially be used and, if the derogation for H412 was at least maintained, then another 32 of this type of surfactants could be used in EU Ecolabel products, totalling 162 of 207, or just over 78%. In fact, maintaining the derogation for H412 is much more important for the anionic alkylsulfate salts (34 of 44) and amphoteric surfactants (10 of 21).

Consequently, it is recommended to remove the derogation for H400 for surfactants.

Relevant findings from a life cycle assessment perspective

Surfactants are central to the cleaning performance of any detergent product. The in-house LCA studies presented in the preliminary report showed that, after solvents in liquid products, surfactants are generally the primary ingredient used in terms of quantity and therefore make important contributions to total life cycle impacts.

In general, the top three LCA impact categories associated with the use of surfactants were climate change, non-renewable energy resources and particulate matter formation. Across the whole life cycle of the detergent products, surfactants had very different shares of contributions to the final PEF score. For example, surfactants accounted for:

- Around 3.5 % of total LCA impacts in LLD products.
- Around 1.1 % of total LCA impacts in PLD products.
- Around 0.5 % of total LCA impacts in DD products.
- Around 5.3 % of total LCA impacts in HDD products.
- Around 15.8 % of total LCA impacts in HSC-kitchen cleaner products.
- Around 5.5 % of total LCA impacts in HSC-acid toilet cleaner products.

The relative contribution of surfactants to total LCA impacts depends on various factors, most importantly the quantity of surfactants used, the environmental impact of other ingredients (and the quantity of those ingredients) and the extent of energy consumption in the use phase. These factors generally explain the ranges of relative shares of LCA impacts attributed to surfactants in the different detergent products in the list above.

Assessment of 3 derogation requests received

Following the 1st AHWG, derogation requests were received for: Sulfamic acid (H412), Benzoic acid (H372), amidoamine impurities (H317) in cocamidopropyl betaine (CAPB) surfactants. Two separate documents were submitted regarding the amidoamine impurities.

Sulfamic acid (H_3NSO_3, (CAS No 5329-14-6): A harmonised CLP classification as H315, H319 and H412 prohibit its use in EU Ecolabel detergent products without an explicit derogation. The request for derogation is based on the fact that this is a proven and widely used acid in sanitary cleaners and that the current harmonised H412 classification, which is what prevents its use in EUEL detergent products, is incorrect. The argument for the incorrect classification of sulfamic acid is presented below.

First of all, the aquatic toxicity data for sulfamic acid is presented in a REACH registration dossier as:

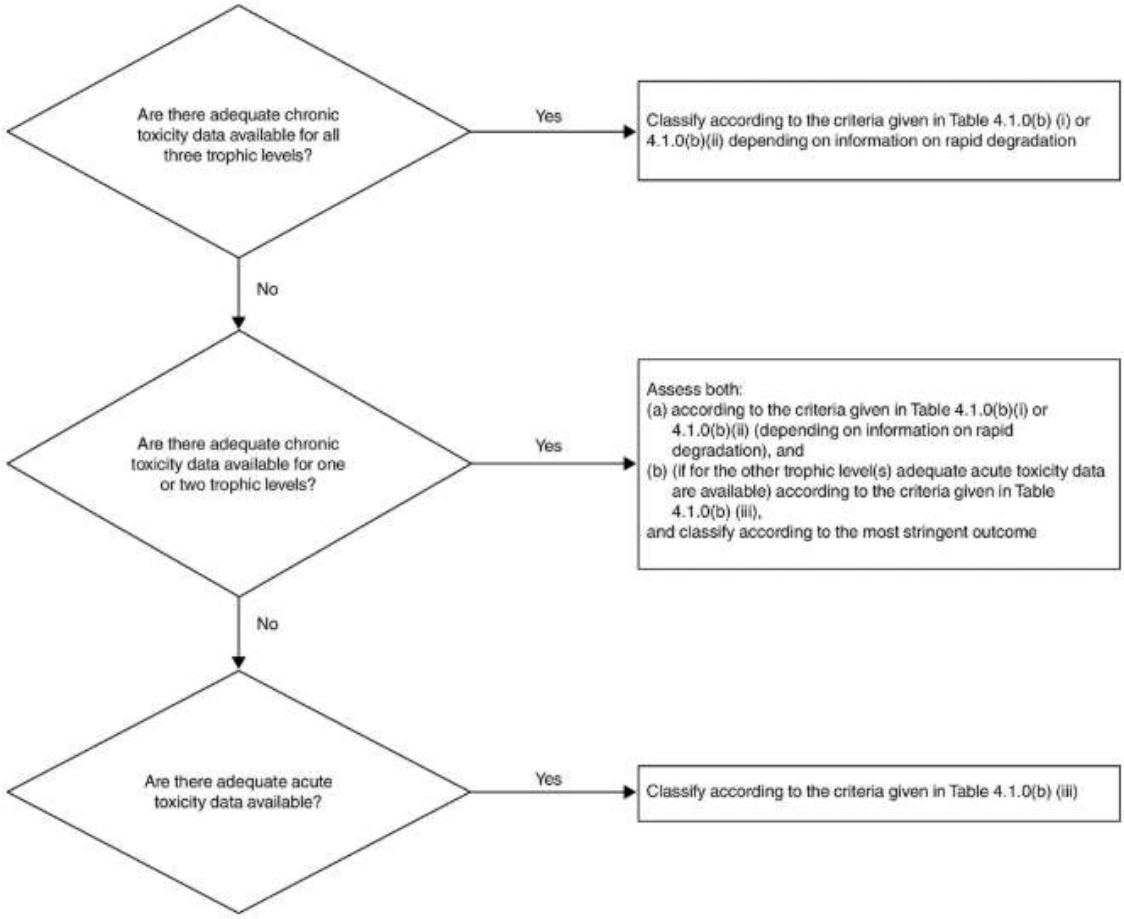
- 96h LC50 - fish (Pimephales promelas) is 70.3 mg/l;
- 48h EC50 - Daphnia magna is 71.6 mg/l;
- 72h ErC50 - algae (Desmodesmus subspicatus) is 48 mg/l, and NOEC of which is 18 mg/l.
- 3h EC50 - microorganisms in sludge is above 200 mg/l, also the NOEC is above 200 mg/l.

Additionally, long term studies for aquatic toxicity have been performed following approval of testing proposals with daphnia and fish. In a fish early life stage test according to OECD 210 (GLP-study) no mortality

or effects on hatching were seen up to the highest concentration tested. Thus, the **NOEC was set to ≥ 60** mg/L in this study.

Following approval of a testing proposal one valid experiment according to OECD 211 was performed using five concentrations (5.6, 11, 19, 34, and 60 mg/L test item) to investigate effects on reproduction to daphnia magna following exposure to sulfamic acid. Significant decrease in the reproduction of the daphnia could not be observed but in the two highest treatments (34 and 60 mg/L respectively). Therefore, the NOEC was set to 19 mg/L and the LOEC to 34 mg/L in this study. The EC50 was found > 60 mg/L.

Figure 30 - in Regulation (EC) No 1272/2008 sets out the following flowchart for deciding on how to use toxicological evidence for the CLP classification of substances with regards to hazards to the aquatic environment.



Since sulfamic acid is an inorganic substance, it cannot be considered as dependent on information relating to rapid degradation. This fact, coupled with the data already available in the REACH registration dossier mentioned above, means that the CLP classification should be based on the thresholds set out in Table 4.1.0(b)(i).

Table 57 - Extract from relevant parts of Table 4.1.0 of the CLP Regulation

(b) Long-term (chronic) aquatic hazard	
(i) Non-rapidly degradable substances (Note 3) for which there are adequate chronic toxicity data available	
Category Chronic 1: (i.e. H410)	
Chronic NOEC or ECx (for fish)	≤ 0,1 mg/L and/or

Chronic NOEC or ECx (for crustacea)	≤ 0,1 mg/L and/or
Chronic NOEC or ECx (for algae or other aquatic plants)	≤ 0,1 mg/L
Category Chronic 2: (i.e. H411)	
Chronic NOEC or ECx (for fish)	≤ 1 mg/L and/or
Chronic NOEC or ECx (for crustacea)	≤ 1 mg/L and/or
Chronic NOEC or ECx (for algae or other aquatic plants)	≤ 1 mg/L
(ii) Rapidly degradable substances (Note 3) for which there are adequate chronic toxicity data available	
Category Chronic 1: (i.e. H410))	
Chronic NOEC or ECx (for fish)	≤ 0,01 mg/L and/or
Chronic NOEC or ECx (for crustacea)	≤ 0,01 mg/L and/or
Chronic NOEC or ECx (for algae or other aquatic plants)	≤ 0,01 mg/L
Category Chronic 2: (i.e. H411)	
Chronic NOEC or ECx (for fish)	≤ 0,1 mg/L and/or
Chronic NOEC or ECx (for crustacea)	≤ 0,1 mg/L and/or
Chronic NOEC or ECx (for algae or other aquatic plants)	≤ 0,1 mg/L
Category Chronic 3: (i.e. H412)	
Chronic NOEC or ECx (for fish)	≤ 1 mg/L and/or
Chronic NOEC or ECx (for crustacea)	≤ 1 mg/L and/or
Chronic NOEC or ECx (for algae or other aquatic plants)	≤ 1 mg/L

From the table above, it is clear that there is no threshold for the substances that are not considered as rapidly degradable substances, so it is not clear how a substance like sulfamic acid, which is not organic and therefore not measurable for biodegradation, could be classified as H412. However, the CLP classification is currently harmonised and the EU Ecolabel criteria revision process has no influence on this.

Based on the above considerations, it was considered appropriate for sulfamic acid to be derogated for use in HSC products..

Benzoic acid (CAS No 65-85-0): This substance has a harmonised classification for H315, H318 and H372. The H372 hazard prevents its use in EU Ecolabel detergents. The derogation request stated that this substance is not added directly to EU Ecolabel detergents, but is a dissociation product of sodium benzoate when the final pH of the detergent product is below 7. According to the definition of ingoing substances, benzoic acid would therefore also be considered as an ingoing substance. In order to permit the use of sodium benzoate (CAS No 532-32-1, joint entry H319) as a much less hazardous alternative to other preservatives. The derogation requested concentrations of up to 1,0% w/w to be used.

Based on the associated hazards and the new definition of ingoing substances, it is considered appropriate for benzoic acid to be derogated for the H372 hazard, under the condition that it is only an indirect product of the

dissociation of sodium benzoate that is used for preservation purposes and that the total amount of sodium benzoate used does not exceed 1,0%.

Amidoamine residues in CAPB: A request was made to derogate for amidoamine impurities that may remain in CAPB surfactants in levels >0,1% which, in accordance with the new definition of impurities, would mean that they are considered as ingoing substances and, depending on the quantity of CAPB added to the final detergent formulation, could result in amidoamines being present in quantities >0,010% w/w of the final product. The derogation request included some examples of CAPB with H317 amidoamine residues that did not trigger any H317 classification upon testing. Implying that the CLP rules of mixtures are conservative in this respect and that not all amidoamines should be considered as H317. Some amidoamines are classified as H317 and, in order to have legal certainty because it is difficult to control exactly which amidoamine impurities are present and which are not, it is proposed to have an H317 derogation for these substances. It is also worth noting that the derogation has also been accepted for EU Ecolabel cosmetics products in a footnote to Decision (EU) 2021/1870.

Based on the associated hazard, the fact that these are impurities in ingredients and the precedent with EU Ecolabel cosmetics products, it is considered appropriate for amidoamine to be derogated for the H317 hazard under the condition that this occurs only via the use of CAPB surfactants, that the concentration of amidoamine impurities from those surfactants does not exceed 0,10% w/w in the final product formulation.

Derogation for Titanium Dioxide

Outcomes from and after the 1st AHWG meeting

In total 18 comments were received regarding the potential use of titanium dioxide in detergent products and if its derogation may be needed. The comments can be found in full in the Table of Comments (ToC1).

Most of the feedback received on this topic directly address the questions included in TR1 on this topic:

— *Question 33 (Q33)* – Is titanium dioxide used in detergent products? If so, in which products, for what purpose and at what levels?

— *Question 34 (Q34)* – Would you support a derogation for TiO2 in EUEL criteria for the classification of H351? If so, please also clarify if your support is only for liquid detergent products or also for powder detergent products. Note that this assumes that the harmonised classification for TiO2 is maintained as a result of the ongoing legal disputes ([355],[356])

Stakeholders indicated that Titanium Dioxide is relevant for laundry detergents and dishwashing detergents in solid form. In these cases, titanium dioxide is used as a pigment for enzyme granulates. Since enzyme granulates are encapsulated, inhalable titanium dioxide is considered to be negligible or very low, according to stakeholders.

The feedback related to the derogation shows a lack of agreement among stakeholders some stakeholders agreeing with the derogation, others being against it. Some stakeholders point out that alternatives are beginning to be proposed by suppliers, thanks, in part, to the prohibition of titanium dioxide in Ecocert products, but they are not available for all references.

[355] Judgment of the General Court (Ninth Chamber, Extended Composition) of 23 November 2022. CWS Powder Coatings GmbH and Others v European Commission. Environment and protection of human health – Regulation (EC) No 1272/2008 – Classification, labelling and packaging of substances and mixtures – Delegated Regulation (EU) 2020/217 – Classification of titanium dioxide in powder form containing 1% or more of particles of a diameter equal to or below 10 µm – Criteria for classification of a substance as carcinogenic – Reliability and acceptability of studies – Substance that has the intrinsic property to cause cancer – Calculation of lung overload in particles – Manifest errors of assessment. Cases T-279/20 and T-288/20. https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:62020TJ0279

[356] Case C-82/23 P: Appeal brought on 14 February 2023 by the European Commission against the judgment of the General Court (Ninth Chamber, Extended Composition) delivered on 23 November 2022 in joined Cases T-279/20 and T-288/20, CWS Powder Coatings and Others v Commission, and in Case T-283/20, Billions Europe and Others v Commission. OJ C 127, 11.4.2023, p. 26–27. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:62023CN0082

Additionally, one stakeholder points out the ongoing legal dispute related to titanium dioxide: "*In particular, it affects the CLP classification of certain forms of titanium dioxide (CAS# 13463-67-7) as a suspected carcinogen (cat. 2) by inhalation. This classification applies only to substances or mixtures in powder form containing 1% or more of titanium dioxide which is in the form of, or incorporated in, particles having an aerodynamic diameter ≤10 µm. Nonetheless, the classification of certain forms of titanium dioxide "Category 2 Carcinogen by inhalation" has been reviewed and annulled by the General Court of the European Union on 22 November 2022 due to an error found in the assessment of the reliability and acceptability of the study on which the classification was based on, and the justification that the classification can only be applied to a substance that has the intrinsic property to cause cancer*". According to the stakeholder, this is not the case for many titanium dioxide products. Titanium Dioxide used in consumer products does not meet CLP definition and it may be used without need for derogation. Therefore, should a restriction/derogation come in place it should only apply to titanium dioxide in powdered form containing 1% or more particles with aerodynamic diameter ≤10 µm. Furthermore, the TDMA requests a pause on the consideration of a restriction of titanium dioxide, as it filled in May 2023 a response to the EU Commission and France's appeal against the EU court decision. Thus, the legal process surrounding the classification of titanium dioxide will probably continue, while the European Court of Justice determine merits of the appeal.

Other ecolabels

- *Nordic Swan (NS)* includes among the requirements that titanium dioxide in solid mixtures (e.g. in enzymes) is prohibited by the requirement classification of ingoing substances, in effect from 2021-10-01 (transition period until 2025-03-31).
- *Blue Angel (BA)* includes titanium dioxide in the list of exempted substances regarding the criterion on general exclusion of substances.

Additional information and new proposal

The classification of TiO_2 as a suspected carcinogen (Category 2) by inhalation was successfully appealed by the TiO_2 industry, and the European Court of Justice ruled to reverse the classification as a carcinogen. However, a counter-appeal by the Commission has been lodged, and a decision on the classification status of TiO_2 is pending. In the meantime, the H351 classification remains in force.

Based on the current status of titanium dioxide, particularly related to the ongoing legal dispute, the JRC proposes to include a derogation for titanium dioxide in a powder form containing 1% or more of particles with an aerodynamic diameter ≤ 10µm. In addition, the applicant shall demonstrate that they have systems in place to minimize worker exposure to dry TiO_2 powder in the workplace (e.g., closed dosing systems, ventilated dosing and mixing areas, and personal protective equipment).

This derogation is also in line with the EU Ecolabel for paints and the Blue Angel scheme for detergents.

Points for discussion 11 – Hazardous substances

Stakeholders are invited to reply the following consultation questions:

- Question 55 (Q55) –Do you support the proposed modifications to the criterion for Hazardous Substances? Please provide your reasoning or any additional comments.
- Question 56 (Q56) – Please, share any other comments/suggestions you deem relevant about this criterion providing reasons supporting them.

6.6.3. Substances of very high concern (SVHCs)

TR1 Proposed sub-criterion (c) substances of very high concern (SVHCs)	
ALL	The final product shall not contain any ingoing substances that have been identified in accordance with the procedure described in Article 59(1) of Regulation (EC) No 1907/2006, which establishes the candidate list for substances of very high concern.
ALL	*Assessment and verification:* the applicant shall provide a signed declaration of compliance supported by declarations from their suppliers, if appropriate, or SDS confirming the non-presence

	of all the candidate list substances. Reference to the latest list of substances of very high concern shall be made on the date of application.
TR2 Proposed sub-criterion (c) substances of very high concern (SVHCs)	
ALL	The final product shall not contain any ingoing substances that have been identified in accordance with the procedure described in Article 59(1) of Regulation (EC) No 1907/2006, which establishes the candidate list for substances of very high concern.
ALL	*Assessment and verification:* the applicant shall provide a signed declaration of compliance supported by declarations from their suppliers, if appropriate, or SDS confirming the non-presence of all the candidate list substances. Reference to the latest list of substances of very high concern shall be made on the date of application.

Rationale for the proposed sub-criterion (c) substances of very high concern (SVHCs)

Similarly to sub-criterion (b), sub-criterion (c) is directly linked to the EU Ecolabel Regulation (EC) No 66/2010, which states that no substances of very high concern (SVHC) can be present in EU Ecolabel products. It also specifies that:

> "*no derogation shall be given concerning substances that meet the criteria of Article 57 of Regulation (EC) No 1907/2006 (REACH) and that are identified according to the procedure described in Article 59(1) of that Regulation, present in mixtures, in an article or in any homogeneous part of a complex article in concentrations higher than 0,1 % (weight by weight)*".

Article 57 defines the criteria for the inclusion of substances in Annex XIV of the REACH Regulation (in relation to their classification according to the CLP Regulation) as follows:

> (a) substances meeting the criteria for classification in the hazard class carcinogenicity category 1A or 1B;
> (b) substances meeting the criteria for classification in the hazard class germ cell mutagenicity category 1A or 1B;
> (c) substances meeting the criteria for classification in the hazard class reproductive toxicity category 1A or 1B, adverse effects on sexual function and fertility or on development;
> (d) substances which are persistent, bioaccumulative and toxic;
> (e) substances which are very persistent and very bioaccumulative;
> (f) substances — such as those having endocrine disrupting properties or those having persistent, bioaccumulative and toxic properties or very persistent and very bioaccumulative properties, which do not fulfil the criteria of points (d) or
> (e) — for which there is scientific evidence of probable serious effects to human health or the environment which give rise to an equivalent level of concern to those of other substances listed in points (a) to (e) and which are identified on a case-by-case basis in accordance with the procedure set out in Article 59.

Article 59 sets the procedure for the identification of substances referred to in Article 57. The updated list of SVHCs is available on the European Chemicals Agency website: https://www.echa.europa.eu/candidate-list-table. The applicant is asked to refer to the latest version of this list at the date of application.

This criterion remains unchanged from the previous version in TR1.

6.6.4. Fragrances

TR1 Proposed sub-criterion (d) fragrances

DD, HDD, HSC, IILD, LD	Products marked as "mild/sensitive" shall be fragrance-free. Substances listed under Table 13-1 of the SCCS opinion on 'Fragrance allergens in cosmetic products' ([357]) shall not be present in EU Ecolabel products in concentrations higher than 0,010% (by weight) per substance. Fragrances which are prohibited according to Annex II to the Cosmetics Regulation ([358]) shall not be present in EU Ecolabel products in concentrations ≥ 0,010 % (by weight) per substance. Any ingoing substance added to the product as a fragrance shall be manufactured and handled following the code of practice of the International Fragrance Association (IFRA) ([359]). For such ingoing substances, the recommendations of the IFRA Standards concerning prohibition, restricted use and specified purity criteria for substances shall be followed by the manufacturer.
HDD	Fragrances shall not be used in hand dishwashing detergents for professional use.
IIDD	Industrial and institutional dishwasher products shall not contain any fragrances.
DD, HDD, HSC, IILD, LD	*Assessment and verification:* the applicant shall provide a signed declaration of compliance, supported by a signed declaration of compliance from the supplier or fragrance manufacturer, as appropriate, safety data sheets for any fragrance formulations used and calculations, if necessary, to demonstrate compliance with the 0,010 % thresholds in the detergent product for Table 13-1 or Annex II fragrance substances.
IIDD	*Assessment and verification:* the applicant shall provide a signed declaration of compliance.
TR2 Proposed sub-criterion (d) fragrances	
DD, HDD, HSC, IILD, LD	~~Products marked as "mild/sensitive" shall be fragrance-free.~~ ~~Substances listed under Table 13-1 of the SCCS opinion on 'Fragrance allergens in cosmetic products' ([360]) shall not be present in EU Ecolabel products in concentrations higher than 0,010% (by weight) per substance.~~ ~~Fragrances which are prohibited according to Annex II to the Cosmetics Regulation ([361]) shall not be present in EU Ecolabel products in concentrations ≥ 0,010 % (by weight) per substance.~~ Any ingoing substance added to the product as a fragrance shall be manufactured and handled following the code of practice of the International Fragrance Association (IFRA) ([362]). For such ingoing substances, the recommendations of the IFRA Standards concerning prohibition, restricted use and specified purity criteria for substances shall be followed by the fragrance formulator ~~manufacturer~~. Fragrance substances which are prohibited in cosmetics products according to Annex II to Regulation (EC) No 1223/2009 ([363]) shall not be added as ingoing substances to fragrance formulations used in EU Ecolabel detergent products. Fragrance substances restricted in cosmetics products according to Annex III to ~~the Cosmetics~~ Regulation (EC) No 1223/2009 shall not be present in EU Ecolabel detergent products in

[357] Available at: https://ec.europa.eu/health/scientific_committees/consumer_safety/docs/sccs_o_102.pdf
[358] Regulation (EC) No. 1223/2009 of the European Parliament and of the Council on cosmetic products. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02009R1223-20231201
[359] Available at the IFRA website http://www.ifraorg.org
[360] Available at: https://ec.europa.eu/health/scientific_committees/consumer_safety/docs/sccs_o_102.pdf
[361] Regulation (EC) No. 1223/2009 of the European Parliament and of the Council on cosmetic products. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02009R1223-20231201
[362] Available at the IFRA website http://www.ifraorg.org
[363] Regulation (EC) No. 1223/2009 of the European Parliament and of the Council on cosmetic products. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02009R1223-20231201

	concentrations ≥ 0,010 % (by weight) per substance. In addition, any EU Ecolabel detergent p~~P~~roducts marked as "mild/sensitive" shall only use fragrance formulations that do not contain any ingoing substances that are classified as category 1 skin sensitisers (H317), category 1 respiratory sensitisers (H334) or fragrance allergens included in Annex III to Regulation (EC) No. 1223/2009 ~~be fragrance free~~.
HDD	Fragrances shall not be used in hand dishwashing detergents for professional use.
IIDD	Industrial and institutional dishwasher products shall not contain any fragrances.
DD, HDD, HSC, IILD, LD	*Assessment and verification:* the applicant shall provide a signed declaration of compliance, supported by a signed declaration of compliance from the supplier or fragrance manufacturer, as appropriate, a certificate of conformity to the IFRA Standards, safety data sheets for any fragrance formulations used and calculations, if necessary, to demonstrate compliance with the 0,010 % thresholds for Annex II and Annex III fragrance substances present in the detergent product. ~~for Table 13-1 or Annex II fragrance substances~~.
IIDD	*Assessment and verification:* the applicant shall provide a signed declaration of compliance with the non-use of fragrances, supported by signed declarations of the non-use of fragrances from their suppliers.

5062

5063 *Rationale for the proposed (d) fragrances*

5064 Although not essential for the cleaning function of detergent products, fragrances are considered as an
5065 important ingredient that affects consumer perception and sensory awareness of a hard surface or laundry
5066 item "smelling clean". In household dishwasher detergents, fragrances can also be used in small amounts to
5067 mask the odour of chemicals used in the product.

5068 The four major changes to the proposals for fragrance restrictions between the TR1 and TR2 proposals are: (i)
5069 the conditional allowance of fragrances in products marked as "mild/sensitive"; (ii) the replacement of the
5070 reference to Table 13-1 of the SCCS opinion by a reference to Annex III to the Cosmetics Regulation, (iii) the
5071 exclusion of Annex II fragrance substances as ingoing substances in fragrance formulations, and (iv) the
5072 requirement for certificates of compliance with IFRA standards in the assessment and verification text. Each
5073 of these changes have been driven by stakeholder feedback and/or the consideration of developments in both
5074 the regulatory arena and in the fragrance sector.

5075 Outcomes from and after the 1st AHWG meeting

5076 Regarding the exclusion of fragrances in detergent products marked as "mild/sensitive", only 1 stakeholder
5077 expressed support, 1 expressed doubt and 5 were actively against the proposal. The main argumentation used
5078 against the proposal was that there are many fragrance substances that are not classified as skin sensitisers
5079 or allergens, so why should all fragrance substances be placed in the same basket and banned from products
5080 marketed as "mild/sensitive"? Another relevant point was that the same requirement in EU Ecolabel cosmetic
5081 products, which is where the idea for the proposal originated, has apparently led to a reduction in the number
5082 of cosmetic products carrying the EU Ecolabel and to the odd situation where cosmetic products that are
5083 marked as "mild/sensitive" only very rarely carry the EU Ecolabel.

5084 Regarding the replacement of the reference to Table 13-1 of the SCCS opinion with a reference to Annex III of
5085 the Cosmetics Regulation, all stakeholders who commented on this were in favour of the change. This was
5086 because the SCCS opinion has now been formally incorporated into Annex III to the Cosmetics Regulation via
5087 Regulation (EU) 2023/1545.

5088 One stakeholder requested that certificates of compliance with IFRA standards issued by a third party should
5089 be requested instead of simply declarations from the detergent manufacturer and the fragrance formulation
5090 supplier. Upon further research, this proposal seems plausible and it was confirmed by an IFRA representative

that all IFRA certificates are in fact issued by independent third parties and a list of such parties can be found on the IFRA website[364].

Some feedback provided by stakeholders, via an analysis of EU Ecolabel licenses held by one of the leading Competent Bodies, or by the provision of safety data sheets and EU Ecolabel application forms submitted by industry stakeholders, offered some insights into the typical levels of fragrances used in detergent products. However, it must be noted that there are also cases where fragrances are used but do not need to be declared because the levels are below defined thresholds. The frequency of occurrence of declared fragrances (yes or no) in the 6 different EU Ecolabel detergent products was as shown below.

- LD: 100 % of products have declared fragrances.
- HDD: 82 % of products have declared fragrances.
- HSC: 80 % of products have declared fragrances.
- IILD: 57 % of products have declared fragrances.
- DD: 47 % of products have declared fragrances.
- IIDD: 0 % of products have declared fragrances.

There is clearly a different extent in the use of declared fragrances in different types of EU Ecolabel detergent products. The 0% for IIDD is a direct result of the banning of fragrances in the existing EU Ecolabel criteria for the product group. The 82 % use of fragrances indicates that professional HDD products (where fragrances are current banned) cannot account for any more than 18 % of the licensed products because fragrances were not allowed in that product category. However, the share could be much lower as well, because some household HDD products may simply be fragrance-free.

In terms of the quantity of fragrances present, it was found that the analysis of SDSs provided by stakeholders did not show any useful information regarding fragrance substances or the content of fragrance formulation(s) added in general. The limited number of EU Ecolabel application files provided by stakeholders did however show that total fragrance contents could range as follows:

- LLD: from 0.1 to 0.6 %, but significantly higher in pod or capsule format LD.
- PLD: from 0.1 to 0.4 %.
- DD: up to 0.1 %, but was zero in the rinse aid formulation.
- HDD: around 0.1 %.
- HSC: highly variable depending on the HSC product category in question. Generally lower for glass cleaner and higher for bathroom or all-purpose cleaners. Concentration ranges were generally from 0.01 to 0.13 %.

At the level of detergent products, and considering the typical ranges of fragrance content therein, an individual fragrance formulation would need to be present in significant quantities in the fragrance formulation for it to account for more than 0.010 % of the detergent product. For example, a fragrance substance would need to account for at least 10 % of the fragrance formulation for it to appear on the radar of the EU Ecolabel restrictions for fragrances in cases where the fragrance formulation as a whole accounts for 0.1% of the detergent product.

A look at SDSs provided for 15 different fragrance formulations revealed that there were a total of 212 individual substances declared in section 3 of the SDSs, meaning an average of around 14 substances per fragrance formulation. In terms of the typical concentration of individual substances in fragrance formulations, it is worth noting that only 16 of the 212 individual substances listed in the SDSs were present at levels in excess of 5 % by weight of the fragrance formulation. To conclude, the limited data analysed for fragrance formulations supports the idea that the vast majority of individual fragrance substances would not be restricted by the Annex II and Annex III restrictions for EU Ecolabel detergent products because they are unlikely to reach the 0,010 % level in the final detergent product.

[364] For example see here: https://ifrafragrance.org/safe-use/ifra-certificates

Another interesting point to note in the 15 different fragrance formulation SDSs provided was the frequency of sensitising hazard codes amongst the 212 ingredients. This is important to consider if fragrances are indeed to be allowed in detergent products marked as "mild/sensitive". While none of the 212 fragrance formulation ingredients were classified as a category 1 respiratory sensitiser (H334), more than half of them (around 110) were classified as category 1 skin sensitisers (H317). For this reason, we propose that the conditional allowance of fragrances in detergent products marked as "mild/sensitive" should require that none of the individual substances are classified as H317 or H334 (or identified as a fragrance allergen in Annex III of the Cosmetics Regulation), regardless of their concentration in the fragrance formulation.

Although there was no specific stakeholder input relating to the exclusion of Annex II substances in fragrance formulations, it seems unusual that fragrance substances and other ingredients that are banned in ordinary cosmetics products should be permitted in EU Ecolabel detergent products up to 0,010 % of the final product. For this reason, and considering the above analysis which implies that the majority of fragrance ingredients would come in levels below 0,010 %, it was considered as prudent to propose an explicit ban of Annex II substances in fragrance formulations used in EU Ecolabel detergents.

Additional research

There were previously 26 fragrance allergens listed in Annex III to the Cosmetics Regulation and this has increased substantially following the amendment of Annex III via Regulation (EU) 2023/1545. This latter Regulation was based on the SCCS opinion SCCS/1459/11 published in 2011 and adopted at its 15th plenary meeting of 26-27 June 2012. Specifically in Table 13-1 of the opinion, a list of over 80 fragrance allergens is published together with an indication of the degree of human-based evidence for allergenic properties (indicated by the number of "+" signs in the SCCS column in the table below – more "+" indicates stronger evidence for allergenic properties). The substances were also cross-checked against the ECHA C&L inventory for any associated hazard codes.

Any hazard codes highlighted in red are examples of hazards that are restricted in the horizontal CLP criteria for EU Ecolabel products. Hazard codes in bold red and highlighted in yellow are CMR hazards. Finally, the initials "H", "J" and "S" stand for the type of CLP classification for that substance, where "H" means a harmonised classification, "J" stands for "Joint entry" and "S" stands for Self-classifications. When different types of classifications are available for a given substance, harmonised classifications supersede joint entries and any joint entries supersede self-classifications as far as the application of any EU Ecolabel criteria are concerned.

Table 58 – List of fragrance substances and respective CLP classification

Annex III entry number	Chemical name	CAS number	SCCS extent of human evidence (in 2011)	CLP classification
45	Benzyl alcohol	100-51-6	++	H: H302, H317, H319
46	6-Methylcoumarin	92-48-8	++	S: H302, H315, H317, H319, H334, H335
70	3,7-Dimethyl-2,6-octadienal (Citral)	5392-40-5	+++	H: H315, H317
	(E)-3,7-dimethylocta-2,6-dienal (Geranial)	141-27-5		J: H315, H317, H319
	(Z)-3,7-dimethylocta-2,6-dienal (Neral)	106-26-3		S: H315, H317, H319
73	Phenol, 2-methoxy-4-(1-propenyl) (Isoeugenol)	97-54-1	+++	H: H317 (0.01%)
	(E)-2-methoxy-4-(prop-1-enyl)phenol (trans-Isoeugenol)	5932-68-3		H: H317 (0.01%)
	(Z)-2-methoxy-4-(prop-1-enyl)phenol (cis-Isoeugenol)	5912-86-7		H: H317 (0.01%)
86	Citronellol/ (±) 3,7-Dimethyl-6-octen-1-ol (citronellol)	106-22-9 / 26489-01-0	++	J: H315, H317, H319
	(3R)-3,7-dimethyloct-6-en-1-ol (citronellol)	1117-61-9		J: H315, H317, H319
	(3S)-3,7-dimethyloct-6-en-1-ol (citronellol)	7540-51-4		J: H315, H317, H319
88	1-methyl-4-prop-1-en-2-yl-cyclohexene; dl-limonene (racemic); Dipentene (limonene)	138-86-3 / 7705-14-8	++ (non-ox.) +++ (ox)	H: H226, H315, H317, H400, H410
	(R)-p-mentha-1,8-diene; (d-limonene)	5989-27-5		H: H226, H304, H315, H317, H400, H412

Annex III entry number	Chemical name	CAS number	SCCS extent of human evidence (in 2011)	CLP classification
	(S)-p-mentha-1,8-diene; (l-limonene)	5989-54-8		H: H226, H315, H317, H400, H410
109	Pinus mugo leaf and twig oil and extract	90082-72-7	++	J: H226, H304, H315, H317, H319, H411
114	Pinus pumila leaf and twig oil and extract	97676-05-6		Not classified
122	Cedrus atlantica oil and extract	92201-55-3 / 8023-85-6	++	J: H304, H317, H411
124	Turpentine (gum; oil & rectified oil; steam distilled)	9005-90-7 / 8006-64-2 / 8052-14-0	++++	S: Not classified, H226, H302, H304, H312, H315, H317, H319, H332, H411
131	p-Mentha-1,3-diene (Alpha-Terpinene)	99-86-5		H: H226, H302, H304, H317, H411
133	p-Mentha-1,4(8)-diene (Terpinolene)	586-62-9	+	
154	Myroxylon balsamum var. pereirae; extracts and distillates; Balsam Peru oil, absolute and anhydrol (Balsam Oil Peru)	8007-00-9	++++	S: H302, H315, H317, H411 + others
157	1-(2,6,6-trimethyl-2-cyclohexen-1-yl)-2-buten-1-one (Alpha-Damascone; cis-Rose ketone 1; trans-Rose ketone 1)	43052-87-5 / 23726-94-5 / 24720-09-0	++	S: H302, H317, H411
	1-(2,6,6-Trimethylcyclohexa-1,3-dien-1-yl)-2-buten-1-one((Rose ketone 4 (Damascone))	23696-85-7	+ (rarely tested)	S: H315, H317, H411
	1-(2,6,6-Trimethyl-3-cyclohexen-1-yl)-2-buten-1-one (Rose ketone 3 (delta-Damascone / trans-Rose ketone 3)	57378-68-4 / 71048-82-3	+	S: H302, H315, H317, H400, H410
	(Z)-1-(2,6,6-trimethyl-1-cyclohexen-1-yl)-2-buten-1-one (cis-Rose ketone 2 (cis-beta-Damascone)	23726-92-3	+	S: H315, H317, H411
	(E)-1-(2,6,6-Trimethyl-1-cyclohexen-1-yl)-2-buten-1-one (trans-Rose ketone 2 (trans-beta-Damascone)	23726-91-2		J: H315, H317, H411
175	3-Propylidene-1(3H)-isobenzofuranone; 3-Propylidenephthalide	17369-59-4	+ (rarely tested)	S: H302, H317
196	Verbena absolute	8024-12-2/ 85116-63-8	++	S: H304, H315, H317, H411
324	Methyl 2-hydroxybenzoate (Methyl Salicylate)	119-36-8	+	H: H302, H317, H412, H361d
327	[3R-(3α,3aβ,7β,8aα)]-1-(2,3,4,7,8,8a-hexahydro-3,6,8,8-tetramethyl-1H-3a,7-methanoazulen-5-yl)ethan-1-one (Acetyl Cedrene)	32388-55-9	+	J: H317, H400, H410
328	Pentyl-2-hydroxy-benzoate (Amyl Salicylate)	2050-08-0	+	S: H302, H400, H410, H411
329	1-Methoxy-4-(1E)-1-propen-1-yl-benzene (trans-Anethole) (Anethole)	104-46-1/ 4180-23-8	+ (rarely tested)	S: H317, H412
330	Benzaldehyde	100-52-7	+	H: H302
331	Bornan-2-one; 1,7,7-Trimethylbi-cyclo[2.2.1]-2-heptanone (Camphor)	76-22-2/ 21368-68-3/ 464-49-3/ 464-48-2	+ (rarely tested)	J: H228, H315, H318, H332, H371
332	(1R,4E,9S)-4,11,11-Trimethyl-8-methylenebicyclo[7.2.0]undec-4-ene (Beta-Caryophyllene)	87-44-5	+	H: H304, H317
333	2-methyl-5-(prop-1-en-2-yl)cyclohex-2-en-1-one;(5R)-2-Methyl-5-prop-1-en-2-ylcyclohex-2-en-1-one;(5S)-2-Methyl-5-prop-1-en-2-ylcyclohex-2-en-1-one (Carvone)	99-49-0 / 6485-40-1/ 2244-16-8	+ (rarely tested)	H: H317
334	2-Methyl-1-phenyl-2-propyl acetate;	151-05-3	+	J: H315, H412

Annex III entry number	Chemical name	CAS number	SCCS extent of human evidence (in 2011)	CLP classification
	Dimethylbenzyl Carbinyl Acetate (Dimethyl Phenethyl Acetate)			
335	Oxacyclohepta-decan-2-one (Hexadecanolactone)	109-29-5	+ (rarely tested)	J: Not classified
336	1,3,4,6,7,8-Hexahydro-4,6,6,7,8,8-hexamethylcyclopenta-γ-2-benzopyran (Hexamethylindanopyran)	1222-05-5	++	H: H400, H410
337	3,7-Dimethyl octa-1,6-diene-3-yl acetate (Linalyl Acetate)	115-95-7	+ (non-ox.) ++ (ox.)	J: H315, H317, H319
338	Menthol; dl-menthol; l-menthol; d-menthol	89-78-1 / 1490-04-6 / 2216-51-5 / 15356-60-2	++	J: H315, H319
339	3-Methyl-5-(2,2,3-Trimethyl-3-Cyclopentenyl)pent-4-en-2-ol (Trimethylcyclopentenyl Methylisopentenol)	67801-20-1	++ (rarely tested)	J: H411
340	o-Hydroxy-benzaldehyde (Salicylaldehyde)	90-02-8	++	J: H302, H411
341	5-(2,3-Dimethyl-tricyclo[2.2.1.02,6]-hept-3-yl)-2-methylpent-2-en-1-ol (alpha-Santalol); (1S-(1a,2a(Z),4a))-2-Methyl-5-(2-methyl-3-methylenebicyclo[2.2.1]hept-2-yl)-2-penten-1-ol (beta-Santalol)	11031-45-1/ 115-71-9/ 77-42-9	++	S: H317, Not classified
342	[1R-(1alpha)]-alpha-Ethenyldecahydro-2-hydroxy-a,2,5,5,8a-pentamethyl-1-naphthalenepropanol (Sclareol)	515-03-7	+	J: Not classified
343	2-(4-methylcyclohex-3-en-1-yl)propan-2-ol; p-Menth-1-en-8-ol (alpha-Terpineol); 1-methyl-4-(1-methylvinyl)cyclohexan-1-ol (beta-Terpineol); 1-methyl-4-(1-methylethylidene)cyclohexan-1-ol (gamma-Terpineol) (Terpineol)	8000-41-7/ 98-55-5/ 138-87-4/ 586-81-2	+	S: H304, H315, H317, H319, H411 + others
344	1-(1,2,3,4,5,6,7,8-octahydro-2,3,8,8-tetramethyl-2-naphthyl)ethan-1-one; 1-(1,2,3,4,5,6,7,8-octahydro-2,3,5,5-tetramethyl-2-naphthyl)ethan-1-one; 1-(1,2,3,5,6,7,8,8a-octahydro-2,3,8,8-tetramethyl-2-naphthyl)ethan-1-one; 1-(1,2,3,4,6,7,8,8a-octahydro-2,3,8,8-tetramethyl-2-naphthyl)ethan-1-one (Tetramethyl acetyloctahydronaphthalenes)	54464-57-2/ 54464-59-4/ 68155-66-8/ 68155-67-9/	+	S: H315, H317, H410, H411
345	3-(2,2-Dimethyl-3-hydroxypropyl)toluene (Trimethylbenzenepropanol)	103694-68-4	++	H: H412
346	4-Hydroxy-3-methoxybenz-aldehyde (Vanillin)	121-33-5	++	J: H319
347	Cananga odorata flower oil and extract; Ylang Ylang flower oil and extract	83863-30-3/ 8006-81-3/ 68606-83-7/ 93686-30-7	+++	J: H304, H315, H317, H411, H412
348	Cinnamomum cassia leaf Oil	8007-80-5/ 84961-46-6	++ (rarely tested)	S: H311, H312, H315, H317, H319 + others
349	Cinnamomum zeylanicum bark oil	8015-91-6/ 84649-98-9	++	S: H304, H311, H315, H317, H318, H335, H341, H350, H412
350	Citrus Aurantium Amara Flower Oil	72968-50-4	++	J: H226, H304, H315, H317, H411
	Citrus Aurantium Dulcis Flower Oil	8028-48-6/ 8016-38-4	++	J: H226, H304, H315, H317, H411

Annex III entry number	Chemical name	CAS number	SCCS extent of human evidence (in 2011)	CLP classification
351	Citrus Aurantium Amara Peel Oil	68916-04-1/ 72968-50-4	++	J: H226, H304, H315, H317, H411
	Citrus Aurantium Dulcis Peel Oil; Citrus Sinensis Peel Oil	97766-30-8/ 8028-48-6/ 8008-57-9	++	S: H226, H304, H315, H317, H400, H410
352	Citrus Aurantium Bergamia Peel Oil	8007-75-8 89957-91-5 68648-33-9/ 8007-75-8/ 85049-52-1	+ (rarely tested)	S: H226, H304, H315, H317, H400, H410
353	Citrus Limon Peel Oil	84929-31-7/ 8008-56-8	++	J: H226, H304, H315, H317, H411
354	Cymbopogon Schoenanthus Oil	8007-02-1/ 89998-16-3	++	S: H304, H315, H317, H319, H411 + others
	Cymbopogon Flexuosus Oil	91844-92-7		S: H304, H315, H317, H318, H319, H410, H411
	Cymbopogon Citratus Leaf Oil	8007-02-1/ 91844-92-7		S: H304, H315, H317, H318, H319, H410, H411
355	Eucalyptus Globulus Leaf Oil;	97926-40-4/ 8000-48-4/	++	S: H226, H304, H315, H317, H319, H411
	Eucalyptus Globulus Leaf/Twig Oil	8000-48-4		
356	Eugenia Caryophyllus Leaf Oil	8000-34-8 / 8015-97-2/ 84961-50-2	+++	S: H302, H304, H312, H315, H317, H319 + others
	Eugenia Caryophyllus Flower Oil	84961-50-2		
	Eugenia Caryophyllus Stem oil	84961-50-2		
	Eugenia Caryophyllus Bud oil	84961-50-2		
357	Jasminum Grandiflorum Flower Extract; Jasminum Officinale Oil; Jasminum Officinale Flower Extract	84776-64-7/ 90045-94-6/ 8022-96-6/ 8024-43-9 90045-94-6	+++	S: H302, H315, H317, H319, H360, H400, H410, H411
358	Juniperus virginiana oil	8000-27-9 / 85085-41-2	++	S: H304, H315, H317, H400, H410, H411 + others
359	Laurus Nobilis Leaf Oil	8002-41-3 / 8007-48-5 / 84603-73-6	++	J: H226, H304, H315, H317, H319, H341, H351, H411
360	Lavandula hybrida oil/extract	91722-69-9/ 8022-15-9/ 93455-96-0/ 93455-97-1/ 92623-76-2	+ (rarely tested)	S: H304, H315, H317, H318, H319, H412
	Lavandula intermedia oil/extract	84776-65-8/ 8000-28-0/ 90063-37-9	++	S: H226, H304, H315, H317, H319, H411, H412
	Lavandula angustifolia oil/extract	84776-65-8/ 8000-28-0/ 90063-37-9	++	
361	Mentha Piperita Oil	8006-90-4/ 84082-70-2	++	S: H302, H304, H315, H317, H319, H411, H412
362	Mentha Viridis Leaf Oil	8008-79-5/ 84696-51-5	++	S: H302, H304, H315, H317, H319, H411, H412
363	Narcissus Poeticus Extract	90064-26-9/		S: H317, H412, Not

Annex III entry number	Chemical name	CAS number	SCCS extent of human evidence (in 2011)	CLP classification
		68917-12-4		classified
	Narcissus Pseudonarcissus Flower Extract	90064-27-0		
	Narcissus Jonquilla Extract Narcissus Tazetta Extract	90064-25-8		S: Not classified
364	Pelargonium Graveolens Flower Oil	90082-51-2/ 8000-46-2	++	J: H315, H317, H319
365	Pogostemon Cablin Oil	8014-09-3/ 84238-39-1	++	S: H304, H317, H411, H412
366	Rosa Damascena Flower Oil; Rosa Damascena Flower Extract	8007-01-0/ 90106-38-0/		S: H315, H317, H319, H341, H351
	Rosa Alba Flower Oil; Rosa Alba Flower Extract	93334-48-6		
	Rosa Canina Flower Oil	84696-47-9		S: Not classified, H226, H319
	Rosa Centifolia Flower Oil; Rosa Centifolia Flower Extract	84604-12-6		S: H315, H317, H319, H341, H351
	Rosa Gallica Flower Oil	84604-13-7		
	Rosa Moschata Flower Oil	-		
	Rosa Rugosa Flower Oil	92347-25-6		S: H315, H317, H319, H335
367	Santalum Album Oil	8006-87-9/ 84787-70-2	+++	S: H314, H315, H317, H319, H335, H412, Not classified
368	Eugenyl Acetate	93-28-7		
369	Geranyl Acetate	105-87-3		J: H315, H317, H412
370	Isoeugenyl Acetate	93-29-8		
371	Pinene	80-56-8/ 7785-70-8/ 127-91-3/ 18172-67-3	++	J: H226, H302, H304, H315, H317, H400, H410

The analysis revealed that the majority of fragrance allergens carry the H317 classification but that a few entries had no entry in the C&L inventory, that a few were actually "not classified" and that in general, only very few substances had a harmonised CLP classification. A limited number of fragrance allergens in Annex III also had CMR classifications, which is a concern. A blanket ban on CMR substances as ingoing substances in fragrance formulations would resolve these concerns and this is posed as a question to stakeholders.

Other ecolabels

A review of what criteria are set for fragrances in criteria documents for the different types of detergent products covered by the Nordic Swan and the Blue Angel is presented in the table below.

Table 59 – Fragrances criteria in other ISO type I scheme

Criteria reference	Fragrance requirements	Remarks
Nordic Swan: Laundry detergents and stain removers	a) All fragrances to be IFRA compliant. b) Limit of 100 ppm in final product for any fragrance substances classified as H317, H334 or	Reference to the Detergents Regulation in (b) is not useful since this Regulation is about to be repealed by a new

Criteria reference	Fragrance requirements	Remarks
v.8.10;	subject to declaration according to Detergents Regulation[365]. c) Limit of 100 ppm for a list of around 9 specific fragrance substances (Cananga odorata, ylang-ylang oil, eugenia caryophylilus leaf/flower oil, Jasminum grandiflorum, myroxylon pereirae, Santalum album, turpentine oil, verbena absolute and Cinnamomum cassia leaf oil). d) Exclusion of 5 specific fragrance substances (HICC, chloroatranol, atranol, lilial and benzyl salicylate).	Regulation. Not totally clear which fragrances are referred to when saying "subject to declaration according to EC No 648/2004" because these declarations are concentration dependent.
Nordic Swan: Dishwasher detergents and rinse aids v7.7	Same as above except that fragrances are not permitted in rinse aids and packaging.	Does this refer to packaging of rinse aids only or also dishwasher detergent packaging?
Nordic Swan: Hand dishwashing detergents v6.10	Same as laundry detergents except that fragrances not allowed in professional products and that the exclusion list is only 3 substances instead of 5 (lilial and benzyl salicylate not excluded here).	Sometimes difficult to determine when HDD is "professional" as it could be available to both consumers and professionals.
Nordic Swan Cleaning products v6.14	Same as for hand dishwashing detergents except that when dealing with cleaning products that are undiluted, the concentration limits for fragrances apply to the diluted product so long as the product is designed to be diluted at least by a factor of 10 in water. Fragrances must not trigger classification of the final product either, even for the undiluted products. A tighter limit for sensitising fragrances (twice as low, 50 ppm) is also applied for foam products. Fragrances are not permitted in "professional" foam cleaning products.	Interesting approach to the undiluted HSC products. Sometimes difficult to determine when HDD is "professional" as it could be available to both consumers and professionals.
Blue Angel: Hand dishwashing detergents and hard surface cleaners DE-UZ 194 v1.2.	a) All fragrances to be IFRA compliant. b) Fragrances listed in Annex II to the Cosmetics Regulation cannot be contained in the final product in concentrations ≥0.010% (100 ppm) per substance. c) Fragrances listed in Annex III to the Cosmetics Regulation cannot be contained in the final product in concentrations ≥0.010% (100 ppm) per substance. d) Products marketed as suitable for children under 3 years old or for allergy sufferers shall not contain	Not clear why Annex II and Annex III substances are treated the same. Annex II compounds may be more of a concern. Are there any HDD products marketed as suitable for children under the age of 3? As with Nordic Swan, potential problems defining

[365] Specifically referring to allergenic fragrances the latest version of Regulation (EC) No 648/2004 that would need to be declared if used in quantities exceeding 0,01% or another risk-based concentration limits (higher or lower) established by the Scientific Committee on Consumer Safety (SCCS).

Criteria reference	Fragrance requirements	Remarks
	any fragrances. e) Commercial hand dishwashing detergents are not permitted to contain any fragrances.	when a product is "commercial" and not for consumers.
Blue Angel: Dishwasher detergents DE-UZ 201 v3.	Same as for hand dishwashing detergents but without the exclusion of fragrances for commercial (professional) products and no distinction made for products marketed as suitable for children under 3 years old or for allergy sufferers..	
Blue Angel: Laundry detergent DE UZ 202 v1.	Same as for hand dishwashing detergents but without the exclusion of fragrances for commercial (professional) products.	

For the table above, there are some clear common points between the EU Ecolabel, Nordic Swan and Blue Angel criteria, namely in how they require fragrance formulations to be IFRA-compliant and that substances listed in Annexes II and III of the Cosmetics Regulation are restricted.

While the intention to limit certain individual fragrance substances to 0.010% in the final detergent product is understandable, there are several considerations that may warrant further discussion:

- Firstly, the horizontal CLP restrictions already apply at a 0.010% threshold. Therefore, any individual fragrance substance classified with any of the numerous horizontally restricted CLP hazard codes (e.g., H300, H301, H310, H311, H314, H317, H330, H331, H340, etc.) cannot exceed this level.
- Secondly, there's a question regarding the rationale for applying the same level of restriction to Annex II fragrances (banned in cosmetic products) and Annex III substances, which require consumer notification only when present above a certain concentration, often higher than 0.010%.

- Lastly, given that fragrance formulations are used in relatively small quantities in detergent products, and these formulations are composed of various ingredients, the actual content of individual fragrance substances is likely to be below 0.010% in most cases.

There are also some differences about how fragrances are outright banned in certain detergent products although this is not done in a harmonised way between the three ecolabel schemes. As mentioned in the synopsis of stakeholder feedback, such blanket restrictions were not considered to be a good idea when proposed for detergent products marked as "mild/sensitive".

The Nordic Swan criteria went further in the sense that they set a full exclusion for a limited number of individual fragrance substances (3 or 5 depending on the detergent product in question). A closer look at these particular substances is summarised below:

- HICC (CAS No 31906-04-4): Which has the formal name of 4-(4-hydroxy-4-methylpentyl)cyclohex-3-ene-1-carbaldehyde in the ECHA C&L inventory has a harmonised classification of category 1A H317 since the 9th Adaptation to Technical Progress (ATP) via Commission Regulation (EU) 2016/1179 and this harmonised classification has been in force since March 2018. This substance was added to Annex II of the Cosmetics Regulation via Commission Regulation (EI) 2017/1410, effectively banning its use in cosmetics products, with the reasoning being that it was one of the fragrance allergens which has caused the highest number of contact allergies in past years.
- Chloroatranol (CAS No 57074-21-2): Which has the formal name of 3-chloro-2,6-dihydroxy-4-methylbenzaldehyde in the ECHA C&L inventory has a self-classification as H317. This substance was added to Annex II of the Cosmetics Regulation via Commission Regulation (EI) 2017/1410, effectively banning its use in cosmetics products, with the reasoning being that it was one of the fragrance allergens which has caused the highest number of contact allergies in past years.

- Atranol (CAS No 526-37-4): Which has the formal name of 2,6-dihydroxy-4-methylbenzaldehyde in the ECHA C&L inventory has a self-classification as H315, H317 and H319. This substance was added to Annex II of the Cosmetics Regulation via Commission Regulation (EI) 2017/1410, effectively banning its use in cosmetics products, with the reasoning being that it was one of the fragrance allergens which has caused the highest number of contact allergies in past years.
- Lilial (CAS No 80-54-6): Which has the formal name of 2-(4-tert-butylbenzyl)propionaldehyde on the ECHA C&L inventory has a harmonised classification as a category 1B reproductive toxicant (H360Fd) since the 15th ATP (see Commission Delegated Regulation 2020/1182) and this harmonised classification has been applicable since March 2022.
- Benzyl salicylate (CAS No 118-58-1): Has a harmonised classification of category 1B H317 since the 17th Adaptation to Technical Progress (ATP) via Commission Delegated Regulation (EU) 2021/849 and this harmonised classification has been in force since December 2022.

While the reasoning for the first four substances in the list above is clear, the last substance (benzyl salicylate) does not seem to be particularly concerning and it is not clear why it was singled out by the Nordic Swan criteria.

Relevant findings from a life cycle assessment perspective

The complexity of fragrance formulations and the very broad range of potentially hundreds of substances of which they can be composed, has meant that life cycle inventories are generally inadequate for conducting any precise assessments of the impacts of different fragrance formulations. In the background research conducted using EF datasets, a single proxy fragrance formulation was used (consisting of four different fragrance substances at 15% each, plus a 40% share of solvent/binder which was considered as benzoic acid as a proxy).

In the preliminary report, a sensitivity analysis for the removal of fragrances from LLD products, where the baseline LLD product had a relatively high fragrance content of 0.9%, showed that fragrances had an important share of certain life cycle impacts. For example, removing the 0.9% of the representative fragrance resulted in reductions of 6% in Land Use (LU), 4% in ecotoxicity (ETox), 3% in Acidification Potential (AP), Particulate Matter (PM) and metal and mineral resources (MR) as well as a 2% reduction in a variety of other impacts, including Human Toxicity-cancer (HT-c). These impacts are highly significant considering the fact that the reductions also include impacts from the other life cycle stages, including energy consumption in the use phase, which tended to dominate the overall life cycle impacts of laundry detergents.

Points for discussion 12 – Fragrances

Stakeholders are invited to reply the following consultation question:

- Question 57 (Q57) – Do you think there should be a specific ban on CMRs as ingoing substances in fragrances? If not, then why?
- Question 58 (Q58) – Do you think that Annex II substances should be banned in fragrance formulations used in EU Ecolabel detergents?
- Question 59 (Q59) – Please, share any other comments/suggestions you deem relevant about this criterion providing reasons supporting them.

6.6.5. Preservatives

TR1 Proposed sub-criterion (e) preservatives	
ALL	(i) The product may only include preservatives in order to preserve the product, and in the appropriate dosage for this purpose alone. This does not refer to surfactants which may also have biocidal properties. (ii) The product may contain preservatives provided that they are not bio-accumulating. A

	preservative is considered to be not bio-accumulating if the BCF is < 500 or log K_{ow} is < 4,0. If both the BCF and log K_{ow} values are available, the highest measured BCF value shall be used. (iii) It is prohibited to claim or suggest on the packaging or by any other communication that the product has an antimicrobial or disinfecting effect.
ALL	*Assessment and verification:* the applicant shall provide a signed declaration of compliance supported by declarations from suppliers, if appropriate, along with the SDS of any preservative added and information on its BCF or log K_{ow} values. The applicant shall also provide artwork of the packaging.
TR2 Proposed sub-criterion (e) preservatives	
ALL	(i) The product may only include preservatives in order to preserve the product, and in the appropriate dosage for this purpose alone. This does not refer to surfactants which may also have biocidal properties. The only types of preservatives permitted shall be those that are compliant with Regulation (EU) No 528/2012.* (ii) The product may contain preservatives provided that they are not bio-accumulating. A preservative is considered to be not bio-accumulating if the BCF is < 100 ~~500~~ or log K_{ow} is < 3,0 ~~4.0~~. If both the BCF and log K_{ow} values are available, the highest measured BCF value shall be used. (iii) It is prohibited to claim or suggest on the packaging or by any other communication that the product has an antimicrobial or disinfecting effect. *Note: *For products originating in the Union, it is reminded that it is not sufficient that the active substances contained in the preservative product are approved under Regulation (EU) No 528/2012 for product type 6 (PT6) (in-can preservative), but the preservative product must be authorised under Regulation (EU) No 528/2012 for PT6 or made available on the market according to the transitional measures set out in Article 89(2) of that Regulation.*
ALL	*Assessment and verification:* the applicant shall provide a signed declaration of compliance supported by declarations from suppliers, if appropriate, along with the SDS of any preservative added and information on its BCF or log K_{ow} values. The applicant shall also provide artwork of the packaging.

<u>*Rationale for the proposed sub-criterion (e) preservatives*</u>

According to the Biocidal Product Regulation (BPR (EC) No 528/2012/EC),

"*biocide means any substance or mixture, in the form in which it is supplied to the user, consisting of, containing or generating one or more active substances, with the intention of destroying, deterring, rendering harmless, preventing the action of, or otherwise exerting a controlling effect on, any harmful organism by any means other than mere physical or mechanical action"*

They are used in detergent products for preservation purposes. They prevent the product from spoiling during storage by preventing the growth of microorganism.

There is no definition for biocides/preservatives included in the Detergents Regulation and only a reference to preservation agents and the Council Directive 76/768/EEC (the Cosmetics Directive) is made. However, Article 2 (1) of Regulation (EC) No 1223/2009 on cosmetic products (which substituted the Cosmetics Directive since July 2013) defines:

> '*preservatives' as "substances which are exclusively or mainly intended to inhibit the development of micro-organisms in the cosmetic product*".

A preservative's function is to ensure that products are safe to be used by consumers over a long period of time and to maintain the appearance of the product.

Nevertheless, the use of preservatives can also be cause for concern as they are often toxic to aquatic organisms and can also produce hypersensitivity and allergies. Moreover, the combination of toxicity, poor

degradability and bioaccumulation raises the potential for environmental damage. For this reason it is proposed that the use of preservatives is restricted in EU Ecolabel products.

In accordance with the BPR, preservatives shall only be used only for preservation purposes and properly dosed for this function. This means minimal amounts shall be used and only for the most necessary reasons. Additionally, the sub-criterion requires that the preservatives used shall not be bioaccumulating.

In the existing criteria, the cut-off values (BCF is < 100 or log K_{ow} is < 3,0) derive from the Dangerous Substances Directive (DSD). In addition, it is prohibited to claim or suggest on the packaging or by any other communication that the product has antimicrobial or disinfecting effects in accordance with the common agreed approach on what the EU Ecolabel stands for.

Finally, additional restrictions on the use of preservatives can be found in the list of excluded substances in the sub-criterion (a) and refer to specific substances, which, as agreed along the revision process should not be used for the preservation purposes in the EU Ecolabel. These cover the exclusion of the following preservatives: formaldehyde and its releasers (e.g. 2-bromo-2-nitropropane-1,3- diol, 5-bromo-5-nitro-1,3-dioxane, sodium hydroxyl methyl glycinate, diazolinidyl urea), triclosan and also MIT with the new proposal of its inclusion in the list of excluded substances. In addition, the restrictions also include the exclusion of another isothiazolinones, CMIT, through the ban on organic chlorine compounds, in the new proposal, in line with Nordic Swan.

Preservatives are generally needed in liquid detergent products except in some cases where the alcohol content or certain surfactants that have anti-microbial properties themselves can deliver effective in-can preservation. However, using surfactants for this purpose in order to have biocide-free formulations will also tend to increase the CDV result of the formulation because if their higher toxicity.

While there are only a limited number of preservative compounds used in liquid detergent products, the availability of EF datasets for these substances was low. This restricted the accuracy and precision of any LCA results looking at the effect of changing or reducing preservative concentrations.

A sensitivity analysis on how much replacing a typically used preservative (proxy EF dataset: Benzo[thia]diazole) with less hazardous alternatives (proxies of benzyl alcohol and lactic acid) in laundry detergents showed that normalised LCA results could be reduced by typically 1-2% for most impact categories, but much more (e.g. 6-9%) for mineral and metal resource depletion and human toxicity (carcinogenic). However, those reductions assumed a 1-to-1 replacement of the preservatives, which is unlikely to be the case in real formulations. This uncertainty, coupled with lack of specific EF datasets for individual preservative substances, means that the LCA findings are purely for orientation and highlight that a notable contribution to human toxicity impacts can apply.

Similar to the situation with fragrances, the LCA findings imply that the best approach to take with EU Ecolabel criteria would be to restrict the use of the more toxic varieties of this type of detergent ingredient. This could potentially be applied via specific CLP hazard code restrictions and/or CDV value restrictions.

Other EU Ecolabel

The bioconcentration factor BFC and octanol-water partition coefficient logK_{ow} , to consider that preservatives in the product are not bio-accumulating, are different in the Nordic Swan compared with Blue Angel. In the case of Nordic Swan the BCF is < 500 and logK_{ow}≤4 while in Blue Angel the BCF is < 100 and logK_{ow}< 3.0, in line with the EU Ecolabel.

First proposal

Considering that the DSD Directive was replaced by Regulation EC 1272/2008 (CLP Regulation), which allowed less stringent thresholds, in the first proposal was proposed to align with the CLP Regulation and also with Nordic Swan, and define the bioaccumulating thresholds as BCF < 500 and log Kow < 4.0. This approach was also considered in alignment with the most recent criteria for Cosmetics and Animal Care Products[366].

Outcomes from and after the 1st AHWG meeting

[366] Commission Decision (EU) 2021/1870 https://eur-lex.europa.eu/eli/dec/2021/1870/oj

In total 6 comments were received regarding proposed changes for preservatives, specifically regarding bioaccumulation requirements. The comments can be found in full in the Table of Comments (ToC1).

The stakeholder feedback on the proposed changes to sub-criterion regarding preservatives highlights a range of perspectives. A stakeholder suggest that the criteria should allow the use of existing data from the ECHA substance database for BCF and log Kow, rather than requiring experimental measurements by each supplier. The majority of stakeholders support to maintain the exists BCF threshold (< 100) and log Kow (< 3.0) because they are already easily met by a large number of certified detergents, suggesting no need for change. Only one stakeholder support the increasing of the BCF threshold to < 500 and log Kow to < 4.0.

New proposal

The JRC proposes reinstating the original, more stringent thresholds for bioaccumulation factors (BCF <100) and log octanol-water partition coefficient (log Kow <3.0), considering that these thresholds are easily met by a significant number of certified detergent products.

Points for discussion 13 – Preservatives

Stakeholders are invited to reply the following consultation question:

- Question 60 (Q60) – Do you support the proposal to amend the criteria so that BCF and/or log Kow values do not need to be measured experimentally by each raw material supplier, and instead can rely on existing data from the ECHA substance database? Please share your thoughts and any potential implications you foresee with this approach
- Question 61 (Q61) – Please, share any other comments/suggestions you deem relevant about this criterion providing reasons supporting them.

6.6.6. Colouring agents

TR1 Proposed sub-criterion (f) colouring agents	
ALL	Colouring agents in the product shall not be bio-accumulating. A colouring agent is considered not bio-accumulating if the BCF is < 500 or log K_{ow} is <4,0. If both the BCF and log K_{ow} values are available, the highest measured BCF value shall be used. In the case of colouring agents approved for use in food, it is not necessary to submit documentation of bio-accumulation potential.
ALL	Assessment and verification: the applicant shall provide a signed declaration of compliance supported by declarations from suppliers, if appropriate, along with the SDS of any colouring agent added and information on its BCF or log K_{ow} value, or documentation to ensure that the colouring agent is approved for use in food.
TR2 Proposed sub-criterion (f) colouring agents	
DD, LD	Colouring agents shall not be used in the product.
HDD, HSC	Colouring agents shall only be used in products marketed as professional products.
~~ALL~~ IILD, IIDD HDD (professional) HSC (professional)	Colouring agents in the product shall not be bio-accumulating. A colouring agent is considered not bio-accumulating if the BCF is < 100~~500~~ or log K_{ow} is < 3,0~~ 4,0~~. If both the BCF and log K_{ow} values are available, the highest measured BCF value shall be used. In the case of colouring agents approved for use in food, it is not necessary to submit documentation of bio-accumulation potential.
ALL	Assessment and verification: the applicant shall provide a signed declaration of compliance supported by declarations from suppliers, if appropriate, along with the SDS of any colouring

	agent added and information on its BCF or log K_{ow} value, or documentation to ensure that the colouring agent is approved for use in food.

Rationale for the proposed sub-criterion (f) Colouring agents

Colorants are primarily added to products for aesthetic reasons; however, many of them are toxic. In an effort to minimize the environmental and health-related impacts of these ingredients, the EU Ecolabel excludes colorants that may bioaccumulate. This criterion applies to all EU Ecolabel criteria sets related to detergents and cleaning products, ensuring harmonized requirements across all product groups.

In the existing criteria in force the BCF and log Kow cut-off values come from the Dangerous Substances Directive (DSD). However, the DSD Directive was replaced by Regulation EC 1272/2008 (CLP Regulation), allowing more relaxed thresholds.

Colorants serve no functional purpose in detergent products and are mainly used in small quantities in order to address consumer perception issues associated with the product. A growing market trend in liquid detergent products (laundry detergents, hand dishwashing detergents and hard surface cleaners) is that they are colourant-free. Consequently, a sensitivity analysis on colourants in detergent products was conducted in the background research to see what would be the effect of removing the colourant in a liquid laundry detergent formulation, simply by substituting it for more water in a new, colourant-free hypothetical formulation. This would entail reducing the colourant content from 0.03% to 0.00%.

The normalised LCA impacts in the colourant-free product over its entire life cycle were marginally reduced by 0.1% to 0.2% for most impacts, and notably more for the metal and mineral resource depletion (a 1.7% reduction). However, the findings from this sensitivity analysis are undermined by the fact that a fully representative colourant dataset was not identified in the initial screening studies and instead, a proxy consisting of an equal mix of 6 pigments was used instead. The real impacts of colourants could probably be higher if adequate proxies are defined for substances used to make organic dyes.

Regardless of the uncertainties surrounding the precise impacts of colourant ingredients, it can be assumed that they account for a greater share of the LCA impacts that their simple share in the liquid laundry detergent formulation by a factor of at least 3-4. This factor could be higher still in HDD or HSC products since they have higher water contents, meaning that each % change in non-water ingredients is more significant.

Other ecolabels

- Nordic Swan includes a specific criterion in the case of DD which states that colourant are considered non-bioaccumulative if BCF < 500 or logKow < 4, and if both values are available, the value for the highest measured BCF is to be used. In addition Nordic Swan excludes all the colourant from the IILD.
- Blue Angel considers that colourant are not bioaccumulative if BCF is < 100 and logK_{ow}< 3.0. Also in this case if the values for both the BCF and the log K_{ow} are available, the highest measurement for the BCF is valid.

First proposal

Considering that the DSD Directive was replaced by Regulation EC 1272/2008 (CLP Regulation), which allowed less stringent thresholds, in the first proposal was proposed to align with the CLP Regulation and also with Nordic Swan, and define the bioaccumulating thresholds as BCF < 500 and log Kow < 4.0.

Outcomes from and after the 1st AHWG meeting

In total 4 comments were received on this sub-criterion, which are found in full in the Table of Comments (ToC1).

The feedback on this topic was primarily related to the only modification proposed in TR1, which consisted of increasing the thresholds for bioaccumulation requirements (i.e., BCF changing from <100 to <500, and Log Kow changing from <3.0 to <4.0). Most stakeholders providing feedback supported reverting to the former, stricter thresholds for BCF and Log Kow, noting that the existing criteria are already met by numerous certified detergents. Some stakeholders suggested a total exclusion of coloring agents from ecolabeled products, arguing that these agents do not contribute an essential function and represent an unnecessary chemical load.

However, another stakeholder pointed out that color in professional products has specific practical applications. They indicated that in the professional sanitary sector, color coding such as using red for certain products—facilitates correct product handling during warehousing, refilling, and usage, and is integral to safety protocols, especially in countries where marking corrosive products with color is mandatory. This system ensures that employees can easily identify and use the appropriate product, such as ensuring that a 'red' product concentrate is placed in the corresponding 'red' labeled reservoir. Additionally, color coding helps prevent the mixing of incompatible products and assists in identifying specific products in tubing for dispensing equipment, safeguarding against accidental disconnection and potential exposure to hazardous chemicals.

Additional research and new proposal

As discussed in detail in TR1, colorants seem to have no functional purpose in detergent products, except for some specific cases, and are mainly used in small quantities in order to address consumer perception issues associated with the product. The conducted LCA studies did not found relevant relative contributions from these ingredients and the environmental impact reductions of colourant-free products compared to colourant-containing products over their entire life cycle have been found to be marginal. However, the studies presented data limitations, and the real impacts of colourants could probably be higher if adequate proxies were available for substances used to make organic dyes.

Market segmentation: in 2021, the total market share value of dishwashing care across Europe (EU-27 + CH + NO) was 78.8% for household dishwashing, while professional dishwashing care accounted for the remaining 21.2% ([367]). For the laundry care market across Europe (EU-27 + CH + NO), the market share was 97.4% for household laundry, with professional laundry care comprising the remaining 2.6% ([368]) (AISE, 2022). The total value of the surface care market across Europe (EU-27 + CH + NO) was 89% for household products, while professional surface care represented the remaining 11% ([369]).

The JRC proposes reinstating the original, more stringent thresholds for bioaccumulation factors (BCF <100) and log octanol-water partition coefficient (log Kow <3.0), considering that these thresholds are easily met by a significant number of certified detergent products.

In addition, considering the feedback on the potential role of colorants in professional detergent products and acknowledging that the market volume for professional products is smaller compared to consumer products, it is proposed to prohibit the use of coloring agents in all consumer products, as they do not fulfill an essential function. Meanwhile, professional detergent products should continue to adhere to the requirements of BCF < 100 and log Kow < 3.0.

This proposal addresses the non-essential nature of colorants in consumer products, thereby simplifying formulations and potentially reducing unnecessary chemical use. On the other hand, it acknowledges the potential practical and safety-related benefits of colorants in professional settings, where they may be use for compliance and operational efficiency. By maintaining strict bioaccumulation criteria (BCF < 100 and log Kow < 3.0) for professional products, the proposal also ensures that environmental and safety standards remain high.

Points for discussion 14 – Colouring agents

Stakeholders are invited to reply the following consultation question:

— Question 62 (Q62) – Do you support the ban of colouring agents for all consumer products and the thresholds to consider a colouring agent not bio-accumulating for HSC (professional only), IILD and IIDD?

[367] AISE 2022. International Association for Soaps, Detergents and Maintenance Products (AISE) Activity & Sustainability report 2021-22. https://www.aise.eu/cust/documentrequest.aspx?UID=5783b16f-3bc7-4f65-98df-7f910337c371 (Accessed 22/05/2023)

[368] AISE 2022. International Association for Soaps, Detergents and Maintenance Products (AISE) Activity & Sustainability report 2021-22. https://www.aise.eu/cust/documentrequest.aspx?UID=5783b16f-3bc7-4f65-98df-7f910337c371 (Accessed 22/05/2023)

[369] AISE 2022. International Association for Soaps, Detergents and Maintenance Products (AISE) Activity & Sustainability report 2021-22. https://www.aise.eu/cust/documentrequest.aspx?UID=5783b16f-3bc7-4f65-98df-7f910337c371 (Accessed 22/05/2023)

- Question 63 (Q63) - To better assess the necessity of allowing colorants in professional detergent products, could you provide information on any mandatory regulations in your region that require the use of color coding for safety or operational compliance?
- Question 64 (Q64) - Please, share any other comments/suggestions you deem relevant about this criterion providing reasons supporting them.

6.6.7. Enzymes

TR1 proposed sub-criterion (e) enzymes	
ALL	Only enzyme encapsulated (in solid form) and enzyme liquids/slurries shall be used.
ALL	*Assessment and verification:* the applicant shall provide a signed declaration of compliance supported by declarations from suppliers, if appropriate, along with the SDS of any enzyme added.
TR2 proposed sub-criterion (e) enzymes	
ALL	Only enzyme encapsulated (in solid form) and enzyme liquids/slurries shall be used.
ALL	Assessment and verification: the applicant shall provide a signed declaration of compliance supported by declarations from suppliers, if appropriate, along with the SDS of any enzyme added.

Rationale for the proposed sub-criterion (x) Enzymes

The use of enzymes in detergent formulations is relatively common and brings environmental benefits as it allows better and faster removal of proteins at lower washing temperatures, often after a preliminary soaking. From a formulation perspective, enzymes only make up a small proportion of total laundry detergent formulations. Their use could aid in achieving equivalent cleaning/washing efficiency but at washing/cleaning conditions with lesser environmental impacts (i.e. colder temperatures). Therefore, it could lead to optimised formulations using lesser overall chemical load to yield similar performance, comparatively with that of a product not containing them. The following two examples are used to illustrate this concept:

- *Powder laundry detergent* (Latin American market formulas) surfactant content could be reduced from 15% to 10% when increasing the enzyme content from 0.20% to 0.66%. The higher enzyme formulation delivered improved stain removal performance, lowered the cost of ingredients by 10%, reduced gCO2/wash by 9.0g and reduced CDV by 5.2m3/wash([370]).
- *Liquid laundry detergent* (Asian market formulas) surfactant content could be reduced from 18% to 12.9% while increasing enzyme content from 0.2% to 0.48%. Ther higher enzyme formulation delivered improved stain removal performance, lowered the cost of ingredients by 8%, reduced gCO2/wash by 10.0g and reduced CDV by 11.5m3/wash ([371]).

The former examples should be interpreted with care, since they are not peer-reviewed publications and do not refer to the same geographical scope, thus potentially differing in the context upon which such products are designed and/or used (e.g. consumer behaviour). In any case, they serve to illustrate the concept that when considering the whole product formulation there are ways to design it so as maintain and/or enhance performance for the intended use whilst reducing the total chemical load. In addition, the former examples do not imply a direct correlation of similar benefits with laundry detergent formulations being achievable in the

[370] *Enabling greener detergents with enzymes* – better for cleaning planet and business. A study on powder detergents. Latin America. Novozymes Household care. June 2020. Accessible at: https://nz.engage.novozymes.com/l/701243/2022-12-04/qqq2x/701243/1670208660ihWfyR07/White_paper_surfactan_replacement_LA_powder.pdf?client_id=2092449884.1669631501

[371] *Enabling greener detergents with enzymes* – better for cleaning planet and business. A study on liquid detergents. Asia-Pacific. Novozymes Household care. January 2020. Accessible at: https://nz.engage.novozymes.com/l/701243/2023-01-19/rl6dc/701243/16741277834bRIDzWW/Whitepaper_final_enabling_greener_detergents_liquid.pdf?client_id=2092449884.1669631501

European market. However, they certainly show an aspirational goal aligned with EUEL scope in terms of enhancing the sustainability of such detergent products, namely multi-faceted benefits as reduced ingredient cost, equivalent/improved stain removal and lower aquatic toxicity.

On another note, the use of enzymes can also cause health and environmental problems due to enzyme dust and impurity. The latter is dealt with in Directive 2009/41/EC ([372]), while the former is addressed through this criterion. The scattering of enzymes is reduced as long as they are in a form that cannot be inhaled by employees during the manufacturing process or by end users.

Indeed, enzymes were introduced in detergent products in the mid-1960s and due to the dusty form at that point in time they were causing allergies and irritation to employees during the manufacturing processes. Also some cases among end users were reported. In order to eliminate this issue, dust-free forms of enzymes were developed and are available for detergent formulations. Liquid and slurry forms can also be safely used.

Moreover, in June 2015 the industry association AISE published a revised version of guidelines on the safe handling of enzymes (AISE 2015). These guidelines specify two main forms of enzyme products supplied to detergent manufacturers:

- Enzyme encapsulates (in solid form, coated to reduce enzyme aerosol, for manufacture of powders or tablets),
- Enzyme liquids/slurries.

Powdered enzymes are excluded due to the higher risk of enzyme dust generation and the encapsulated ones must meet a set quality standard on "the level of free enzyme dust present in the bulk material and/or the resistance of the encapsulate to damage within the process".

As enzymes can be used in different detergent and cleaning products, it is proposed to include in all criteria documents the text: *"Only enzyme encapsulates (in solid form) and enzyme liquids/slurries shall be used".*

Points for discussion 15 – Enzymes

Stakeholders are invited to reply the following consultation question:

— Question 65 (Q65) – Please, share any other comments/suggestions you deem relevant about this criterion providing reasons supporting them.

6.6.8. Corrosive properties (Only for HDD)

TR1 Proposed sub-criterion (h) Corrosive properties	
HDD	The final product shall not be classified as a 'Corrosive' (C) mixture with H314 Causes severe skin burns and eye damage, as a 'Skin corrosion/irritating, categories 1A, 1B, 1C' mixture in accordance with Regulation (EC) No 1272/2008.
HDD	*Assessment and verification:* The applicant shall provide the competent body with the exact concentrations of all ingoing substances used in the product, either as part of the formulation or as part of any mixture included in the formulation, that are classified as 'Corrosive' (C) with H314 in accordance with Regulation (EC) No 1272/2008, along with the product SDS.
TR2 Proposed sub-criterion (h) Corrosive properties	

[372] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32009L0041

HDD	The final product shall not be classified as a 'Corrosive' (C) mixture with H314 Causes severe skin burns and eye damage, as a 'Skin corrosion/irritating, categories 1A, 1B, 1C' mixture in accordance with Regulation (EC) No 1272/2008.
HDD	*Assessment and verification:* The applicant shall provide the competent body with the exact concentrations of all ingoing substances used in the product, either as part of the formulation or as part of any mixture included in the formulation, that are classified as 'Corrosive' (C) with H314 in accordance with Regulation (EC) No 1272/2008, along with the product SDS.

5488

5489 *Rationale for the proposed sub-criterion (h) Corrosive properties*

5490 Corrosive properties are assigned to chemicals (mainly acids and bases) that can attack and chemically
5491 destroy exposed body tissues. The inclusion of this criterion of high relevance for hand dishwashing
5492 detergents as they come in direct, and sometimes prolonged, contact with skin.

5493 No changes are proposed for this sub-criterion.

6.6.9. Micro-organisms *(Only for LD, IILD,HDD, HSC)*

TR1 proposed Criterion X *Excluded and Restricted substances;* Sub-criterion X.x micro-organisms	
HSC, LD	(i) Identification: all intentionally added micro-organisms shall have an American Type Culture Collection (ATCC) number, belong to a collection of an International Depository Authority (IDA) or have had their DNA identified in accordance with a 'Strain identification protocol' (using 16S ribosomal DNA sequencing or an equivalent method). (ii) Safety: — All intentionally added micro-organisms shall belong to Risk Group I as defined by Directive 2000/54/EC of the European Parliament and of the Council ([373]) — biological agents at work, — The outcome of a microbial risk assessment should be that the risk associated with the use of a product containing microorganisms is deemed as acceptable. (iii) Absence of contaminants: pathogenic micro-organisms, as defined below, shall not be in any of the strains included in the finished product when screened using the indicated test methods or equivalent: — E. coli, test method ISO 16649-3:2005, — Streptococcus (Enterococcus), test method ISO 21528-1:2004, — Staphylococcus aureus, test method ISO 6888-1, — Bacillus cereus, test method ISO 7932:2004 or ISO 21871, — Salmonella, test method ISO6579:2002 or ISO 19250. (iv) All intentionally added micro-organisms shall not be genetically modified micro-organisms (GMMs). (v) Antibiotic susceptibility: all intentionally added micro-organisms shall be, with the exception of intrinsic resistance, susceptible to each of the five major antibiotic classes (aminoglycoside, macrolide, beta-lactam, tetracycline and fluoroquinolones) in accordance with the EUCAST disk diffusion method or equivalent. (vi) Microbial count: products in their in-use form shall have a standard plate count equal to or greater than 1×10^5 colony-forming units (CFU) per ml in accordance with ISO 4833-1:2014. (vii) Shelf life: the minimum shelf life of the product shall not be lower than 24 months and the microbial count shall not decrease by more than 10 % (measured in logarithmic scale) every 12 months in accordance with ISO 4833-1:2014. (viii) Fitness for use: the product shall fulfil all the requirements set out in Criterion 6 on fitness for use and all claims made by the manufacturer on the actions of the micro-organisms contained in the product shall be documented through third-party testing. (ix) Claims: it is prohibited to claim or suggest on the packaging or by any other communication that the product has an antimicrobial or disinfecting effect. (x) User information: the product label shall include the following information: — that the product contains micro-organisms, — that the product shall not be used with a spray trigger mechanism,

[373] Directive 2000/54/EC of the European Parliament and of the Council of 18 September 2000 on the protection of workers from risks related to exposure to biological agents at work (seventh individual directive within the meaning of Article 16(1) of Directive 89/391/EEC) (OJ L 262, 17.10.2000, p. 21). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32000L0054

	— that the product should not be used on surfaces in contact with food, — an indication of the shelf life of the product.
HSC, LD	*Assessment and verification:* the applicant shall provide: (i) The name (to the strain) and identification of all micro-organisms contained in the product with ATCC or IDA numbers or documentation on DNA identification. (ii)Documentation demonstrating that all micro-organisms belong to Risk Group I and documentation on the microbial risk assessment, certified by an independent third-party expert, where the risk associated with the intended use of the product is deemed as acceptable. (iii) Test documentation demonstrating that the pathogenic micro-organisms are not present in the product. (iv) Documentation demonstrating that all micro-organisms are not GMMs. (v) Test documentation demonstrating that all micro-organisms are, with the exception of intrinsic resistance, susceptible to each of the five major antibiotic classes indicated. (vi) Test documentation of CFU per ml of in-use solution (for undiluted products, the dilution ratio recommended for 'normal' cleaning shall be used). (vii) Test documentation of CFU per ml of in-use solution every 12 months for a product stored until the end of its shelf life. (viii) Test results from a third-party laboratory demonstrating the claimed actions of the micro-organisms and artwork of the packaging or a copy of the product's label highlighting any claims made on the actions of the micro-organisms. (ix) and (x) Artwork of the packaging or a copy of the product's label.
TR2 proposed Criterion X *Excluded and Restricted substances;* Sub-criterion X.x micro-organisms	
HSC, LD, IILD, HDD	(i) Identification: — all intentionally added micro-organisms shall ~~have an American Type Culture Collection (ATCC) number,~~ belong to or be deposited in a collection of an International Depository Authority (IDA) and be maintained by the culture collection for the authorised period of the EU ecolabel license. — all intentionally added micro-organisms shall be identified and characterised using whole genome sequence (WGS) analysis according to *"EFSA Guidance on the characterisation of microorganisms used as feed additives or as production organisms antimicrobial"* ([374]). ~~or have had their DNA identified in accordance with a 'Strain identification protocol' using 16S ribosomal DNA sequencing or an equivalent method.~~ — the following taxonomic information shall be provided considering the latest published information in the International Codes of Nomenclature (ICN): genus, species and strain name or code. (ii) Safety: — All intentionally added micro-organisms shall belong to Risk Group I as defined by Directive 2000/54/EC of the European Parliament and of the Council ([375]) — biological agents at work,

[374] EFSA Panel on Additives and Products or Substances used in Animal Feed (FEEDAP), G. Rychen, G. Aquilina, G. Azimonti, V. Bampidis, M. de L. Bastos, G. Bories, et al., 'Guidance on the Characterisation of Microorganisms Used as Feed Additives or as Production Organisms', EFSA Journal, Vol. 16, No. 3, March 2018. DOI: 10.2903/j.efsa.2018.5206

[375] Directive 2000/54/EC of the European Parliament and of the Council of 18 September 2000 on the protection of workers from risks related to exposure to biological agents at work (seventh individual directive within the meaning of Article 16(1) of Directive 89/391/EEC) (OJ L 262, 17.10.2000, p. 21). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32000L0054

— A safety/risk assessment shall be performed:

(a) at microorganisms (strain) level;

(b) at product level under all foreseeable use conditions as claimed in the product;

(c) considering under its scope human, animal, plant and environmental health;

(d) assessing sensitization (dermal and respiratory) in addition to other relevant end-points, as identified by the safety/risk assessment;

(e) making remarks on potential effects on vulnerable groups (e.g. immunocompromised, elderly, infants, pregnant women, etc).

(f) highlighting information necessary for end-user to enable safer use.

For products where their foreseeable use imply contact with food-surfaces, the safety/risk assessment must additionally consider "ingestion" as exposure route. Microorganisms included in the *Qualified Presumption of Safety* (QPS) status list issued by the *European Food Safety Authority* (EFSA) are exempted from this requirement.

— ~~Any The outcome of a microbial safety/risk assessment made on microbial containing products shall include in its scope human, animal, plant and environmental health. Therefore, considerations shall be made in the different stages of the assessment (e.g. Hazard identification, Hazard characterisation, Exposure assessment, Risk characterisation) to these groups and, particularly, on especially vulnerable groups (e.g. immunocompromised, elderly, infants, pregnant women, etc). should be that the risk associated with the use of a product containing microorganisms is deemed as acceptable.~~

(iii) Absence of contaminants:

— It must be controlled that the product is not contaminated with unintended microorganisms. Alternatively, the product should present a low risk of microbial contamination and/or intended use according to the principles of ISO 29621:2017[376].

— pathogenic micro-organisms, as defined below, shall not be in any of the strains included in the finished product when screened using the indicated test methods or equivalent:

- E. coli, test method ISO 16649-3:2005,
- Streptococcus (Enterococcus), test method ISO 21528-1:2004,
- Staphylococcus aureus, test method ISO 6888-1,
- Bacillus cereus, test method ISO 7932:2004 or ISO 21871,
- Salmonella, test method ISO6579:2002 or ISO 19250.
- any other micro-organisms listed in Annex II, section 2. of Regulation (EU) XXXX/XXX([377]).

(iv) All intentionally added micro-organisms shall not be genetically modified micro-organisms (GMMs).

(v) Hazard/s identification - All intentionally added micro-organisms shall be assessed for ~~A~~antibiotic susceptibility, antimicrobial production and toxigenicity/pathogenicity according to the *"EFSA Guidance on the characterisation of microorganisms used as feed additives or as production organisms"* ([378]). The outcome shall be "no hazard identified", meaning that microorganisms are:

[376] ISO 29621 *Cosmetics – Microbiology – Guidelines for the risk assessment and identification of microbiologically low-risk products.* See https://www.iso.org/standard/68310.html

[377] Regulation (EU) XXXX/ XXX refers to the final adopted version of the revised Detergent Regulation

[378] EFSA Panel on Additives and Products or Substances used in Animal Feed (FEEDAP), G. Rychen, G. Aquilina, G. Azimonti, V. Bampidis, M. de L. Bastos, G. Bories, et al., 'Guidance on the Characterisation of Microorganisms Used as Feed Additives or as Production Organisms', EFSA Journal, Vol. 16, No. 3, March 2018. DOI: 10.2903/j.efsa.2018.5206

	— free from acquired antibiotic resistance determinants and susceptible to each of the five major antibiotic classes (aminoglycoside, macrolide, beta-lactam, tetracycline and fluoroquinolones); — shown not to produce relevant antimicrobial substances and; — shown to be non-pathogenic/non-toxigenic. ~~, with the exception of intrinsic resistance, susceptible. in accordance with the EUCAST disk diffusion method or equivalent.~~ Microorganisms included in the QPS status list issued by EFSA and that fulfil the qualifications provided by it, shall be exempt from the previous [point *(v)*] requirements concerning humans and animals. (vi) Shelf life and ~~M~~microbial count: The minimum shelf life of a product shall be 24 months, during which microorganisms count shall be guaranteed. P~~p~~roducts in their in-use form shall have ~~a standard plate count equal to or greater than~~ ≥1 × 10^5 colony-forming units (CFU) per ml in accordance with ISO 21149 or ISO 4833-1:2014 or equivalent scientifically recognised method for the determination of microorganisms' numbers. .The stability of the product, assessed at room temperature, shall be demonstrated by measuring microorganisms count every 12 months. ~~(vii) Shelf life: the minimum shelf life of the product shall not be lower than 24 months and the microbial count shall not decrease by more than 10 % (measured in logarithmic scale) every 12 months in accordance with ISO 4833-1:2014.~~ (vii~~i~~) Fitness for use: the product shall fulfil all the requirements set out in Criterion X~~6~~ on fitness for use (viii) ~~and A~~all claims made by the manufacturer on the actions or the performance of the micro-organisms contained in the product with appropriate tests, which shall be ~~documented through~~ verified by independent third-party testing. (ix) Claims: it is prohibited to claim or suggest on the packaging or by any other communication that the product has an antimicrobial or disinfecting effect. (x) User information: the product label shall include the following information: — that the product contains micro-organisms, ~~— that the product shall not be used with a spray trigger mechanism,~~ ~~— that the product should not be used on surfaces in contact with food,~~ — an indication of the shelf life of the product. — use instructions or special precautions, where relevant (as identified in safety/risk assessment).
HSC, LD, IILD, HDD	*Assessment and verification:* the applicant shall provide: (i) Per microorganism in the product: — a valid certificate of deposition from the collection, specifying the accession number under which the strain is held. — the taxonomic information: genus, species and strain name or code ~~name (to the strain)~~ and; — identification ~~of all micro-organisms contained in the product~~ with ~~ATCC or~~ IDA numbers or documentation on DNA identification. — Documentation about the minimum set of information for WGS analysis, in accordance with section 2.1.1 of *"EFSA Guidance on the characterisation of microorganisms used as feed additives or as production organisms antimicrobial"* ([379]), (ii) Documentation demonstrating that all micro-organisms belong to Risk Group I and;

[379] EFSA Panel on Additives and Products or Substances used in Animal Feed (FEEDAP), G. Rychen, G. Aquilina, G. Azimonti, V. Bampidis, M. de L. Bastos, G. Bories, et al., 'Guidance on the Characterisation of Microorganisms Used as Feed Additives or as Production Organisms', EFSA Journal, Vol. 16, No. 3, March 2018. DOI: 10.2903/j.efsa.2018.5206

	documentation on ~~the microbial~~ any safety/risk assessment ~~, certified by an independent third-party expert, where the risk associated with the intended use of the product is deemed as acceptable.~~ made at (a) microorganisms (strain) or (b) product level encompassing the scope mentioned in (c) and structured as *Hazard identification, Hazard characterisation, Exposure assessment, Risk characterisation*. The safety/risk assessments shall, at the minimum: contain information on the aspects cited in (d), (e) and (f); discuss/demonstrate why the use of such microorganism/s and/or product/s are deemed safe/of acceptable risk; and highlight areas on uncertainty and their impact on the assessment made. The structure of the assessment and the methods intended to be used to validate it (inclusive of specific claims) shall be approved beforehand by the corresponding Competent Body. For products where their foreseeable use imply contact with food-surfaces, the safety/risk assessment must additionally refer to "ingestion" as exposure route. To be exempted from this requirement, a proof that the microorganisms belongs to the QPS list issued by EFSA, making reference to the most up to date version, shall be provided. iii) Documentation describing how it is controlled that the product is not contaminated with pathogen microorganisms or documentation according to ISO 29621:2017 principles demonstrating that the product can be considered a microbiologically low-risk product. Test documentation demonstrating that the pathogenic micro-organisms are not present in the product. (iv) Documentation demonstrating that all micro-organisms are not GMMs. (v) Test documentation, in accordance with *"EFSA Guidance on the characterisation of microorganisms used as feed additives or as production organisms antimicrobial"* ([380]), demonstrating that all micro-organisms are~~,~~: — free from acquired antibiotic resistance ~~with the exception of~~ (excluding intrinsic resistance) and susceptible to each of the five major antibiotic classes indicated~~:~~ — Not antimicrobial producers and; — Non-pathogenic / non-toxigenic. To be exempted from (v) requirements, a proof that the microorganisms belongs to the QPS list issued by EFSA, making reference to the most up to date version, shall be provided. In addition, the associated "qualifications" alongside reasoning on why these are equivalent to what EUEL criteria shall be provided. (vi) Test documentation of CFU per ml of in-use solution (for undiluted products, the dilution ratio recommended for 'normal' cleaning shall be used), measured every 12 months for a product stored at room temperature, inclusive at the start (t= 0). ~~(vii) Test documentation of CFU per ml of in-use solution every 12 months for a product stored until the end of its shelf life.~~ (vii), (viii) Test results from a third-party laboratory demonstrating the claimed actions of the micro-organisms and artwork of the packaging or a copy of the product's label highlighting any claims made on the actions of the micro-organisms. (vi), (ix) and (x) Artwork of the packaging or a copy of the product's label.

Rationale for the proposed micro-organisms

The aim of this criterion is to ensure that the use of microorganisms as ingredient in detergent and cleaning products is compatible with product cleaning and environmental performance but also, and importantly, with safety.

[380] EFSA Panel on Additives and Products or Substances used in Animal Feed (FEEDAP), G. Rychen, G. Aquilina, G. Azimonti, V. Bampidis, M. de L. Bastos, G. Bories, et al., 'Guidance on the Characterisation of Microorganisms Used as Feed Additives or as Production Organisms', EFSA Journal, Vol. 16, No. 3, March 2018. DOI: 10.2903/j.efsa.2018.5206

In the previous revision this sub-criterion was included in order to accommodate microorganisms as a novel (at that time) ingredient used in HSC products, included in the so called "microbial cleaning products". This also aimed to anticipate to the inclusion of such ingredients as part of the legislative landscape via the Detergents Regulation. For full details on the background details on this matter, please see previous revision final TR ([381]) and current revision PR and TR1[382], as well as the scope section relevant to microorganisms in this TR2.

The main changes in TR1 were:

— In requirement *(ii)*

- Requesting a microbial risk assessment - focused on the use of the product with risk deemed as acceptable.
- Removing Qualified Presumption of Safety (QPS) – in the understanding that this in isolation could not be perceived guaranteeing safety.

— In requirement *(vii)* specify that the scale of measurements is logarithmic.

Outcomes from and after the 1st AHWG meeting

Products containing microorganisms (*microbial containing products – MCP*) is a novel topic and highly technical. In addition, it lacked a clear and dedicated legislative framework for detergent and cleaning products. Considering the former, the JRC organised a working sub-group (sub-AHWG) on this topic within the scope of the revision of the EU Ecolabel criteria for detergent, primarily aimed at gathering the best evidences available (e.g. stakeholders comments; data; technical/scientific literature) but also to consult on potential directions of the draft criteria proposals (e.g. extension and/or addition of new criteria; revise/set new limits).

The sub-AHWG meetings were held with stakeholders that provided their Expression of Interest to participate and exchanges happened after each of the two meetings that took place per sub-AHWG, resulting in the development of working papers on the selected subjects.

These background papers were living documents throughout the life time of the sub-AHWG. They started with the comments received after the 1st AHWG, in total 23 comments found in full in the Table of Comments (ToC1). These jointly with JRC's research were the basis to initiate the technical discussion, leading to mapping aspects of relevance and potential actions, as well as shaping further JRC's research and additional questions to stakeholders, which were shared during the 1st sub-AHWG meeting in the first version of the background document. Consequently, stakeholders feedback to TR1 is found within the background document.

Once feedback provided by stakeholders (EU survey) after the 1st sub-AHWG was processed and JRC carried further work, the background document was updated with new draft proposals, which were shared and discussed during the 2nd sub-AHWG meeting in a new version. The feedback to such proposals was also captured in the background document after this 2nd meeting, thus leading to the completion of the sub-AHWG lifetime and reflecting all discussion held, thus leading to a final version made publicly available.

Consider the former, the minutes of these sub-AHWG meetings are purposely brief and general because the background document contain all relevant technical information as well as discussions held.

All the information on the sub-AHWG on MCP (or any other topic) captured in its different outputs (i.e. background paper; minutes, presentation) can be found on the BATIS platform and on the Product Policy Analysis (formerly Product Bureau) project's website dedicated to the revision of EUEL criteria for detergents [383]

[381] European Commission, Joint Research Centre, Boyano, A.; Kaps, R.; Medyna, G.; Wolf, O, 2016. Revision of six EU Ecolabel criteria for detergents and cleaning products. Final Technical Report. Available at https://susproc.jrc.ec.europa.eu/product-bureau/sites/default/files/contentype/product_group_documents/1581681262/Technical%20background%20report.pdf (Accessed 10/07/23)

[382] Accesible within the *2023 revision documents* tab at https://susproc.jrc.ec.europa.eu/product-bureau/product-groups/411/documents

[383] https://susproc.jrc.ec.europa.eu/product-bureau/product-groups/411/documents.

Given the comprehensive coverage in the sub-AHWG background documents and in order not to extend unnecessarily the TR2, only aspects directly related to changes presented in this TR2 but not covered in the associated background paper will be covered in detail in the subsequent rationale. For the rest of the aspects proposed in TR2 but already discussed as part of these sub-AHWG we kindly invited readers to read the corresponding background paper for further details.

What was the feedback received from stakeholders on this topic?

The questions made in TR1 were:

Question 35 (Q35) – do you support requiring a microbial risk assessment as a proof of safety? If not, do you have any proposal to assess microbial containing products safety?

Question 36 (Q36) – do you have any suggestion to complement the microorganisms list in (iii)

Question 37 (Q37) – do you support the threshold set (equal or greater than 1 × 105 CFU) to prove product performance via microbial counts? If not, could you share reasons?

Question 38 (Q38) – do you support current shelf-life requirements (vi)? Do you consider it represents properly also products falling under LD scope?

As previously indicated, the feedback to these questions was summarily included within the sub-AHWG on MCP and can be consulted in such document.

What are the rationales for JRC's TR2 proposals?

The proposals made in this (sub-)criterion reflect changes compared to TR1 ones. On what follows, only those aspects not previously discussed, either in TR1 or in the subsequent dedicated sub-AHWG on MCP, will be covered in detail. For full details on TR2 proposals already discussed, the JRC kindly refers to the associated background paper resulting from the dedicated sub-AHWG (in this case, about MCP).

General considerations

Microorganisms added to microbial containing products may pose a risk to humans, animals and the environment, via hazards as infection, intoxication, irritation and/or sensitization. Other aspects raising concerns, which are not solely related to microorganisms nature, are associated with the MCP life-cycle (production, use, disposal) as the potential for spreading antimicrobial resistance (AMR), containing undesired microorganisms (contamination), lack of evidences to support the claims made about the product and/or how necessary information to users is transparent and accessible. However, these concerns can be addressed, some being prevented and the majority (if not all) minimised under proper controls set by regulatory frameworks considering safety requirements.

The first step is to delimit which legislation would be of application. The legislation that include microorganisms under their scope are: Detergents Regulation (DR), Cosmetics Regulation (CR), Biocidal Product Regulation (BPR), Regulation setting the general food law (FLR), Regulation on placing plant protection product on the market (PPR)[384]; Directive on the protection of workers from risks related to exposure to biological agents at work and General (DPWBA), Products Safety Directive (GPSD). To provide a brief outlook: the DR and CR only set information requirements (part of list of ingredients; the DPWBA focus on workers and list microorganisms according to their risk level in different scales (risk 1 is the lowest). The BPR focus on products having a biocidal action, the FLR focus in products such as food/feed and the PPR focus on product aimed at protecting plants. These three regulations have already in place frameworks to assess the safety of microorganisms, inclusive of requirements. The GSPD is the "last safety legislative net" for products that do not fall under the scope of any other legislation. The nature of MCP and the intended uses/claimed effects dictates which particular legislation is of application, namely under its scope of action.

[384] https://eur-lex.europa.eu/eli/reg/2009/1107/oj/eng

The analysis of the JRC, as per other authors[385], concluded that microbial containing products (specifically, cleaning ones), could belong to the BPR scope or rather be part of the DR scope, depending on the composition of the product (e.g. does it contain surfactants?) and the intended function (e.g. biocidal?). Since in the EU Ecolabel products can't claim a biocidal action, this only leads to the option of belonging to the scope of the Detergents Regulation. The "problem" is that BPR has already in place a regulatory framework that includes specific safety requirements on products containing microorganisms while the DR not, yet this might change as a result of a potential adoption of a revised DR (legislative process still ongoing). The practical consequence is there are no specific safety requirements for MCP via the regulatory framework where detergent and cleaning products belong.

Consequently, the safety requirements for microorganisms of other regulatory frameworks (PPR, BPR, GFR) could be considered, as it was the case with the EUEL criteria on detergents adopted in 2017. In it, there is direct mention to EFSA Qualified Presumption of Safety (QPS) list or to the DPWBA while requesting microorganisms to belong to risk group I. In addition, such criteria considered relevant safety aspects as microorganisms identification, the absence of contaminants, anti-microbial resistance, shelf-life, performance, transparency of claims and the information to user. In summary, the EUEL criteria incorporated verifiable and relevant requirements in the absence of a specific (detergents) regulatory framework harmonising the safety/risk assessment of detergent and cleaning products containing microorganisms.

Despite recent legislative developments (revision of the Detergents Regulation) points towards new developments with regards to specific requirements related to the safety of detergent and cleaning products containing microorganisms, at the time of writing this TR2 the situation is similar to that when existing EUEL criteria was adopted: there is no specific regulatory framework for detergents setting requirements for products containing microorganisms. Consequently, the JRC focused its efforts in refining/improving the existing criteria based on existing regulatory frameworks (BPR, PPR, GFR) and stakeholder's exchange (i.e. sub-AHWG MCP).

The JRC identified as an important addition setting the obligation to perform a risk assessment on each MCP, yet it also acknowledged the impossibility of developing such safety framework, specifically the criteria to define when such assessment should be considered as of "acceptable/low risk". Also in the understanding that this could/should be set at sector level by relevant mandatory legislation. The JRC also made other proposals/changes that would maximise its utility if presented/framed in the context of a risk assessment, such the new Whole Genome Technique for microorganisms identification, the specific assessment of end-points (sensitization) and specific routes of exposure (dermal, respiratory, ingestion). These also would justify removing the restriction on not using MCP in surfaces in contact with food and/or MCP in spray format. However, the JRC also acknowledges that there would be some areas where potential gaps would still remain, either due the lack of a specific and precise regulatory framework (e.g. which test methods to appraise/quantify responses) or due absence of information (e.g. lack of harmonised testing methods and/or literature on environmental effects; mechanistic explanations on sensitization effects). However, the JRC also acknowledges that the current set of proposals aim at covering the most important aspects with regards to the safety of product containing microorganisms, being at the time of proposing them at the forefront within sectorial (detergents) legislation.

About *(i) Safety*

In TR1 (and existing legal text) the text is:

— *(i) Identification: all intentionally added micro-organisms shall have an American Type Culture Collection (ATCC) number, belong to a collection of an International Depository Authority (IDA) or have had their DNA identified in accordance with a 'Strain identification protocol' (using 16S ribosomal DNA sequencing or an equivalent method).*

In TR2 the proposal is:

(i) Identification:

[385] Razenberg, L., D. Buitenhuijs, C. Graven, R. de Jonge, and J. Weezenbeek, Microbial Cleaning Products: An Inventory of Products, Potential Risks and Applicable Regulatory Frameworks, [object Object], 2020. https://www.rivm.nl/bibliotheek/rapporten/2020-0160.pdf

- *all intentionally added micro-organisms shall ~~have an American Type Culture Collection (ATCC) number,~~ belong to or be deposited in a collection of an International Depository Authority (IDA) and be maintained by the culture collection for the authorised period of the EU ecolabel license.*
- *all intentionally added micro-organisms shall be identified and characterised using whole genome sequence (WGS) analysis according to "EFSA Guidance on the characterisation of microorganisms used as feed additives or as production organisms antimicrobial" ([386]). ~~or have had their DNA identified in accordance with a 'Strain identification protocol'~~ ~~using 16S ribosomal DNA sequencing or an equivalent method.~~*

Full details for the changes proposed can be found in the background document of the sub-AHWG on MCP. Summarily, the justifications are:

- Ensure that the culture collection is viable and accessible while the product is on the market, in case it is needed. It makes specific reference to the EU Ecolabel license to ensure alignment with EUEL processes.
- Whole Genome Sequencing (WGS) is a state-of-the-art technique whose cost is bearable and dimensioned to the information and accuracy it offers. The benefit of WGS is that it provides unequivocal taxonomic identification as well as it enables to characterise strains regarding their potential functional traits of concern (e.g. virulence factors, production of or resistance to antimicrobials of clinical relevance, production of known toxic metabolites). This fact is acknowledged in upcoming industry guidance for the risk analysis of MCP[387]., indicating that information from multiple genetic elements (e.g. 16S ribosomal gene sequencing, housekeeping genes, etc), or other analysis, may help to make important distinctions between microorganism which can inform and improve the overall hazard identification process, which is especially relevant for certain groups of microorganisms (e.g. *Bacillus* genera).

About *(ii) Safety*

In TR1 the following text was added:

- *The outcome of a microbial risk assessment should be that the risk associated with the use of a product containing microorganisms is deemed as acceptable.*

In the MCP sub-AHWG it was discussed the impossibility within the scope of the revision of the EUEL criteria to define what *"acceptable"* meant given resources constraint and the granularity required in the assessment, in many cases being product group (or even product sub-group; format) specific. To further add complexity, the lack of scientific literature on the environmental effects, made not possible to set (semi-)quantitative thresholds or to proposed scales for a (semi-) qualitative criteria to define "acceptance". In addition, mandatory sectorial legislation once adopted (revised Detergent Regulation) should account for requesting a safety/risk assessment, inclusive of criteria and the minimum fields to consider within it. Failing this, the General Product Safety Directive (GPSR) should ensure there is a minimum "safety guard" in place, verified by Member States. Considering this, the JRC proposed instead, amongst other changes, to ensure that the scope of any risk/safety assessment considered the dimensions that are relevant to the EU Ecolabel scope, thus with emphasis also on environmental aspects.

The proposal to enlarge the scope instead of requiring a safety/risk assessment was received by sub-AHWG MCP stakeholders with neutral or low support. Feedback called for the EU Ecolabel to require a risk assessment to be performed, even in the absence of a qualification criteria for the RA outcome to be acceptable or not. In addition, it indicated that an unspecific risk assessment according to GPSR is not desirable against a more specific one in the event that that mandatory regulation does not require such risk assessment or it does with significant delay from the date of adoption of the revised EUEL criteria.

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386 EFSA Panel on Additives and Products or Substances used in Animal Feed (FEEDAP), G. Rychen, G. Aquilina, G. Azimonti, V. Bampidis, M. de L. Bastos, G. Bories, et al., 'Guidance on the Characterisation of Microorganisms Used as Feed Additives or as Production Organisms', EFSA Journal, Vol. 16, No. 3, March 2018. DOI: 10.2903/j.efsa.2018.5206

387 Boesenberg, D., C. Brueck, C. Chhuon, J. Kim, A.J. Miller, G.J. Stijntjes, H. Vedel, R.C. Whiting, and J.I. Van Trump, 'Risk Analysis Approaches for Microbial Ingredients in Microbial-based Cleaning Products', Risk Analysis, February 5, 2025, DOI 10.1111/risa.17707.

In addition, stakeholders called for the inclusion within the criteria the assessment of *"Sensitization"*, especially via respiratory tracts, as an end-point that should be paid attention to in terms of safety. One important point was that this sensitization (also called, allergenecity) was not part of the QPS assessment (dermal, respiratory routes), thus being advisable to be required for all microorganisms used in MCP. There was wide acknowledgement that some parts of the mechanistic understanding of respiratory sensitization were still lacking (whilst others not) and some participants affirmed that the risks could be controlled/ameliorated via specific studies/testing. The problem with this is that, to the best of JRC's knowledge, currently there are no standardised harmonised methods to test for respiratory sensitization. This was also highlighted by stakeholders and the scientific literature, with new approach methodologies (NAMs) having the potential for identification of respiratory sensitizers, mostly via integrated testing strategies comprising several methods[388]. Indeed, evidences were supplied to the JRC (in-vitro inhalation toxicity test) of comparatively milder effects of MCP all-purpose in spray format versus their purely chemical counter-parts in the market, being the toxicity effects mostly related to certain chemical substances and not to the effects of microorganisms added as ingredients.

Considering the aforementioned discussion, the JRC has re-formulated the proposal in this way:

— *A safety/risk assessment shall be performed:*

- (a) at microorganisms (strain) level;
- (b) at product level under all foreseeable use conditions as claimed in the product;
- (c) considering under its scope human, animal, plant and environmental health;
- (d) assessing sensitization (dermal and respiratory) in addition to other relevant end-points, as identified by the safety/risk assessment;
- (e) making remarks on potential effects on vulnerable groups (e.g. immunocompromised, elderly, infants, pregnant women, etc).
- (f) highlighting information necessary for end-user to enable safer use.

Likewise, the *Assessment and Verification (A&V)* has been modified from. In TR1 was:

— *(ii)Documentation demonstrating that all micro-organisms belong to Risk Group I and documentation on the microbial risk assessment, certified by an independent third-party expert, where the risk associated with the intended use of the product is deemed as acceptable.*

In TR2 the A&V for *(ii)* reads:

— (ii) Documentation demonstrating that all micro-organisms belong to Risk Group I and; documentation on ~~the microbial~~ any safety/risk assessment ~~, certified by an independent third-party expert, where the risk associated with the intended use of the product is deemed as acceptable.~~ made at (a) microorganisms (strain) or (b) product level encompassing the scope mentioned in (c) and structured as *Hazard identification, Hazard characterisation, Exposure assessment, Risk characterisation*. The safety/risk assessments shall, at the minimum: contain information on the aspects cited in (d), (e) and (f); discuss/demonstrate why the use of such microorganism/s and/or product/s are deemed safe/of acceptable risk; and highlight areas on uncertainty and their impact on the assessment made. The structure of the assessment and the methods intended to be used to validate it (inclusive of specific claims) shall be approved beforehand by the corresponding Competent Body.

This implies that a safety/risk assessment is required, containing core elements identified as necessary. The justifications for these changes are:

— (a) and (b) Differentiating that there are two core aspects or scopes to consider (microorganisms and product), facilitates structuring the safety/risk assessment. Despite both should be part of a product risk assessment, suppliers of microorganisms products could take direct responsibility for the safety assessment of the microorganisms they supply, also ensuring relevant information requested by this

[388] Hargitai, R., L. Parráková, T. Szatmári, P. Monfort-Lanzas, V. Galbiati, K. Audouze, F. Jornod, et al., 'Chemical Respiratory Sensitization—Current Status of Mechanistic Understanding, Knowledge Gaps and Possible Identification Methods of Sensitizers', Frontiers in Toxicology, Vol. 6, July 29, 2024, p. 1331803. DOI 10.3389/ftox.2024.1331803.

sub-criterion is available downstream to their clients and/or Competent Bodies. This approach could be useful in the case that commercially sensitive information is dealt with during the verification process.

- In addition, it is important to request that the assessment are made in the context of intended uses and the conditions of use conceived by the manufacturer of the product, thus an explicit quotation is included in (b). This is especially relevant concerning any additional relevant information that the end-user should aware of in order to enable safer use of such products, which now is requested in (f) and would inform/be potentially displayed in clause *(x) User information*.
- Relevant scope aspects are mentioned in (c) and (e), referring to the discussions mentioned previously.
- A specific quotation to *sensitization* as relevant end-point is made in (d), ensuring this aspect is assessed alongside other aspects identified as relevant (even if belonging to the QPS list).
- In terms of A&V, a basic outline of main risk assessment (RA) stages is made, aimed at providing flexibility in the format and in order to be potentially compatible with any format derived from mandatory legislation (revised Detergent Regulation). However, it sets minimum scope and content as per changes made in the criteria and in addition it requires an explicit demonstration of why the outcome of such RA is deemed as safe/of acceptable risk, thus providing understanding on the logic behind. In addition, awareness of areas of uncertainty is relevant in order to appraise how representative/robust is such RA. Finally and importantly, the structure of the RA and, especially the methods intended to be used should be approved by the Competent Body beforehand to ensure efficiency in the application process and appropriate verification.

About *(iv) GMOs*– no changes

About *(v) Hazards identification*– (formerly) Antibiotic susceptibility

In TR1 the text was:

- *(v) Antibiotic susceptibility: all intentionally added micro-organisms shall be, with the exception of intrinsic resistance, susceptible to each of the five major antibiotic classes (aminoglycoside, macrolide, beta-lactam, tetracycline and fluoroquinolones) in accordance with the EUCAST disk diffusion method or equivalent.*

In TR2 the text has been significantly modified, leading to a new heading (*Hazards identification*) and now including also antimicrobial production and toxigenicity/pathogenicity as aspects to consider is the same except that the following clauses have been added:

- *(v) Hazard/s identification - All intentionally added micro-organisms shall be assessed for ~~A~~antibiotic susceptibility, antimicrobial production and toxigenicity/pathogenicity according to the "EFSA Guidance on the characterisation of microorganisms used as feed additives or as production organisms" ([389]). The outcome shall be "no hazard identified", meaning that microorganisms are:*
  - *free from acquired antibiotic resistance determinants and, with the exception of intrinsic resistance, susceptible to each of the five major antibiotic classes (aminoglycoside, macrolide, beta-lactam, tetracycline and fluoroquinolones);*
  - *shown not to produce relevant antimicrobial substances and;*
  - *shown to be non-pathogenic/non-toxigenic.~~, with the exception of intrinsic resistance, susceptible. in accordance with the EUCAST disk diffusion method or equivalent.~~*
- *Microorganisms included in the Qualified Presumption of Safety (QPS) status list issued by the European Food Safety Authority (EFSA) and that fulfil the qualifications provided by it, shall be exempt from the previous [point (v)] requirements concerning humans and animals.*

Then the A&V section in TR2 includes:

[389] EFSA Panel on Additives and Products or Substances used in Animal Feed (FEEDAP), G. Rychen, G. Aquilina, G. Azimonti, V. Bampidis, M. de L. Bastos, G. Bories, et al., 'Guidance on the Characterisation of Microorganisms Used as Feed Additives or as Production Organisms', EFSA Journal, Vol. 16, No. 3, March 2018. DOI: 10.2903/j.efsa.2018.5206

(v) Test documentation, in accordance with "EFSA Guidance on the characterisation of microorganisms used as feed additives or as production organisms antimicrobial" ([390]), demonstrating that all micro-organisms are~~,~~: free from acquired antibiotic resistance ~~with the exception of~~ (excluding intrinsic resistance) and susceptible to each of the five major antibiotic classes indicated~~;~~ ~~–~~Not antimicrobial producers and; non-pathogenic / non-toxigenic. The term "relevant" within the clause "shown not produce relevant antimicrobial substances" should be interpreted and reported in the context of the "WHO List of Medically Important Antimicrobials" (WHO MIA List)[391].

Full details for the changes proposed can be found in the background document of the sub-AHWG on MCP.

The JRC assessed feedback received and carried research about existing technical guidance, primarily at EU level, that could streamline the process of setting and verifying requirements on microbial-containing products, resulting in some compatible elements of an EFSA guidance[392] being proposed. These referred to "core" hazards that should be accounted for, namely antimicrobial resistance (already in existing EUEL criteria); antimicrobials production and toxigenicity/pathogenicity (newly proposed). The intention of the proposed requirements and their structure is to demonstrate that the microorganisms show absence of these "undesirable" traits, thus meeting (as per EFSA's terminology) certain "qualifications", namely: *free from acquired antibiotic resistance*; *Not antimicrobial producers and; non-pathogenic / non-toxigenic*.

An explicit exemption is included for those microorganisms included in the *"…Qualified Presumption of Safety (QPS) status list issued by the European Food Safety Authority (EFSA)…"* that meet equivalent "qualifications" (requirements) as stated in *(v)* for the sake of efficiency, as it is understood that the body of knowledge and assessment of relevant aspects (Toxicogenic/Pathogenicity/Environmental/AMR concerns) is already available. A new addition after the sub-AHWG on MCP is requiring within A&V the proof of belonging to the most up-to-date version of such list currently v22)[393], with specification on the "qualifications" associated to such microorganism and how these are equivalent to those cited in the criteria. In summary, the following text was added: "*To be exempted from (v) requirements, a proof that the microorganisms belongs to the QPS list issued by EFSA, making reference to the most up to date version, shall be provided. In addition, the associated "qualifications" alongside reasoning on why these are equivalent to what EUEL criteria shall be provided*"

A new proposal resulting from the sub-AHWG on MCP is framing the context in which "*relevant*" should be interpreted in the legal text criteria "*shown not to produce relevant antimicrobial substances*", based on the "*WHO List of Medically Important Antimicrobials*" (WHO MIA List)[394]. The WHO MIA List is a risk management tool that can be used to support decision-making to minimize the impact of antimicrobial use in non-human sectors on antimicrobial resistance (AMR) in humans. The list categorizes antimicrobial classes based on their importance for human medicine and according to the AMR risk and potential human health implications of their use in non-human sectors: *critically important, highly important, and important to human medicine*. Even if there is not direct uptake of this terminology to class "relevant" antimicrobials in EUEL criteria, it provides useful technical information, updated throughout time on which antimicrobials should not be produced by microorganisms to avoid potential AMR transference of human medically important antimicrobials. Consequently, the following clause is proposed in this TR2: "*The term "relevant" within the clause "shown not*

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390 EFSA Panel on Additives and Products or Substances used in Animal Feed (FEEDAP), G. Rychen, G. Aquilina, G. Azimonti, V. Bampidis, M. de L. Bastos, G. Bories, et al., 'Guidance on the Characterisation of Microorganisms Used as Feed Additives or as Production Organisms', EFSA Journal, Vol. 16, No. 3, March 2018. DOI: 10.2903/j.efsa.2018.5206

391 WHO's List of Medically Important Antimicrobials: a risk management tool for mitigating antimicrobial resistance due to non-human use. Geneva: World Health Organization; 2024. Licence: CC BY-NC-SA 3.0 IGO. Accessible at: https://cdn.who.int/media/docs/default-source/gcp/who-mia-list-2024-lv.pdf?sfvrsn=3320dd3d_2

392 EFSA Panel on Additives and Products or Substances used in Animal Feed (FEEDAP), G. Rychen, G. Aquilina, G. Azimonti, V. Bampidis, M. de L. Bastos, G. Bories, et al., 'Guidance on the Characterisation of Microorganisms Used as Feed Additives or as Production Organisms', EFSA Journal, Vol. 16, No. 3, March 2018. DOI: 10.2903/j.efsa.2018.5206;

393 EFSA BIOHAZ Panel, Allende, A., Alvarez-Ordonez, A., Bover-Cid, S., Chemaly, M., De Cesare, A., Nauta, M., Peixe, L., Ru, G., Skandamis, P., Suffredini, E., Cocconcelli, P. S., Fernández Escámez, P. S., Maradona, M. P., Querol, A., Sijtsma, L., Suarez, J. E., Sundh, I., Barizzone, F., … Ottoson, J. (2025). Updated list of QPS-recommended microorganisms for safety risk assessments carried out by EFSA [Data set]. Zenodo. https://doi.org/10.5281/zenodo.14748925

394 WHO's List of Medically Important Antimicrobials: a risk management tool for mitigating antimicrobial resistance due to non-human use. Geneva: World Health Organization; 2024. Licence: CC BY-NC-SA 3.0 IGO. Accessible at: https://cdn.who.int/media/docs/default-source/gcp/who-mia-list-2024-lv.pdf?sfvrsn=3320dd3d_2

produce relevant antimicrobial substances" should be interpreted and reported in the context of the "WHO List of Medically Important Antimicrobials" (WHO MIA List)[395]*."*

One aspects challenged was the requirement on being "*susceptible to each of the five major antibiotic classes (aminoglycoside, macrolide, beta-lactam, tetracycline and fluoroquinolones*". The feedback suggested that this may be impossible to achieve for some relevant bacterial species due to their intrinsic resistance phenotype and suggested to align for consistency with the following wording from an EU technical guidance[396]: "*Susceptibility shall be demonstrated for compounds of at least two classes of antimicrobials selected among medically important antimicrobials*". Given that this requirement is already in place in existing criteria and that there products containing microorganism awarded with the EU Ecolabel, the JRC understand that it should be feasible to comply with it. In any case and also considering the possibility of AMR being developed, it includes specifics question to stakeholders to cross-check for this aspect, as well as the new text added framing the term "relevant"

About (vi) Shelf-life and microbial counts; (formerly (vi) Microbial count and *(vii) Shelf-life*)

In TR1 the text was:

— *(vi) Microbial count: products in their in-use form shall have a standard plate count equal to or greater than 1 × 105 colony-forming units (CFU) per ml in accordance with ISO 4833-1:2014.*

— *(vii) Shelf life: the minimum shelf life of the product shall not be lower than 24 months and the microbial count shall not decrease by more than 10 % (measured in logarithmic scale) every 12 months in accordance with ISO 4833-1:2014.*

In TR2 the text in clauses *(vi)* and *(vii)* have been merged and some text has been removed not to constrain the type of microbial enumeration and not to impose potentially burdensome technical requirements associated with the maximum decay in viability allowed (formerly, 10% every 12 months). In addition, ISO method 21149([397]) is added as suitable method and the clause "*...or equivalent ...*" is included to allow for further equivalent methods tailored to the nature of the microorganisms and/or needs of the applicant if considered equivalent. The resulting text in TR2 is:

> *(vi) Shelf life and ~~M~~microbial count: The minimum shelf life of a product shall be 24 months, during which microorganisms count shall be guaranteed. P~~p~~roducts in their in-use form shall have ~~a standard plate count equal to or greater than~~ ≥1 × 10^5 colony-forming units (CFU) per ml in accordance with ISO 21149 or ISO 4833-1:2014 or equivalent scientifically recognised method for the determination of microorganisms' numbers. The stability of the product, assessed at room temperature, shall be demonstrated by measuring microorganisms count every 12 months.~~ the microbial count shall not decrease by more than 10 % (measured in logarithmic scale) every 12 months in accordance with ISO 4833-1:2014~~.*

In the A&V it is added "*...measured every 12 months for a product stored at room temperature, inclusive at the start (t= 0).*" to further define the conditions and frequency of (re-)assessing microbial counts.

About *(vii) Fitness for use* and *(viii) associated claims* (formerly part of *(viii) Fitness for use)*

The legal text remains exactly the same in *(vii)* as in existing criteria [formerly *(viii)*]. Then, in *(viii)* it is required that, if a claim related to performance made, it has to be proven not only via appropriate tests verified by an independent third-party testing.

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395 WHO's List of Medically Important Antimicrobials: a risk management tool for mitigating antimicrobial resistance due to non-human use. Geneva: World Health Organization; 2024. Licence: CC BY-NC-SA 3.0 IGO. Accessible at: https://cdn.who.int/media/docs/default-source/gcp/who-mia-list-2024-lv.pdf?sfvrsn=3320dd3d_2

396 SANTE/2020/12260. Guidance on the approval and low-risk criteria linked to antimicrobial resistance, applicable to microorganisms used for plant protection in accordance with Regulation (EC) No 1107/2009. https://food.ec.europa.eu/system/files/2020-11/pesticides_ppp_app-proc_guide_180652_microorganism-amr_202011.pdf

397 ISO 21149:2017 Cosmetics — Microbiology — Enumeration and detection of aerobic mesophilic bacteria. Available at: https://www.iso.org/standard/72240.html.

About *(ix) Claims:* – no changes

About *(x) User information*

In TR1 (and existing legal text) the text reads:

— *(x) User information: the product label shall include the following information:*

- *that the product contains micro-organisms,*
- *that the product shall not be used with a spray trigger mechanism,*
- *that the product should not be used on surfaces in contact with food,*
- *an indication of the shelf life of the product.*

In TR2 the text is:

— (x) User information: the product label shall include the following information:

- that the product contains micro-organisms,
- ~~that the product shall not be used with a spray trigger mechanism,~~
- ~~that the product should not be used on surfaces in contact with food,~~
- an indication of the shelf life of the product.
- use instructions or special precautions, where relevant (as identified in safety/risk assessment).

Despite widely discussed during the sub-AHWG on MCP, only one change was proposed to *(x) Information to user*: ensuring that instructions for proper/safer use of the product. Discussion focused around the impossibility (ban) to use spray products with products containing microorganisms and MCP in contact with food surfaces. In both cases one of the main arguments to support such restrictions was the application of a precautionary principle.

On the topic about food-contact surfaces, the proposals made in TR2 should ensure (as discussed previously) that there are minimum safety guarantees in place. During the sub-AHWG MCP stakeholders agreed on allowing such use conditioned to have a safety/risk assessment specifically accounting for ingestion as exposure route. In line with this, a proposal is made to specifically assess "ingestion" as exposure route in the safety/risk assessment to account for any foreseeable exposure and associated health effects.

— *For products where their foreseeable use imply contact with food-surfaces, the safety/risk assessment must additionally consider "ingestion" as exposure route. Microorganisms included in the Qualified Presumption of Safety (QPS) status list issued by the European Food Safety Authority (EFSA) are exempted from this requirement.*

Those microorganisms in the QPS list have been submitted to a pre-assessment of safety with particular focus on the oral route of exposure (ingestion). Consequently, the JRC propose to exempt these from the requirement on including "ingestion" as part of the risk assessment.

One of the main topics of concern was the potential sensitization, particularly via respiratory tracts, induced in end-users by microorganisms' metabolites, generally enzymes. It is considered an immunological process that under repeated exposure, normally in the context of chemical substance exposure, could lead to

hypersensitivity and frequently has resulted in occupational asthma[398]. According to ECHA[399] and referred to chemical substances and respiratory sensitization:

> *"...there is evidence that for respiratory sensitisation the dose-response relationships exist, although these are frequently less well defined. Nothing or little is known about the dose-response relationships in the development of respiratory hypersensitivity by non- immunological mechanisms..."*
>
> *"At present there are no validated or widely accepted animal or in vitro test protocols to detect respiratory sensitisation or to determine the induction or elicitation thresholds..."*
>
> *"Due to the lack of an appropriate predictive animal study, at present hazard identification is based on human data..."*
>
> *Currently available methods do not allow determination of threshold and establishment of a DNEL. Therefore for substances classified as respiratory sensitizers only qualitative assessment as described in Section E.3.4 can be performed.*

When consulting the ECHA guidance, *Section E.3.4.2* for respiratory sensitization[400] it reads:

> *"There is evidence from both human and animal studies, which indicate that effective sensitisation of the respiratory tract can result from dermal contact with a chemical respiratory allergen (see Section R.7.3). Thus, it is thought, that the effective prevention of respiratory sensitisation requires appropriate protection of both respiratory tract and skin. The generic advice is that appropriate strategies to control the risk of sensitisation to chemical allergens will require consideration of providing protection for all routes of exposure."*

The strategies to control the risk of sensitization firstly imply having in place an appropriate risk assessment. As part of it, relevant routes of exposure should be considered, being the main ones for the case of sensitization dermal and inhalation. Other aspects to consider is reduced likelihood of exposure via technical means. For example – the joint consideration of the formulation and the nozzle, as determinants of aspects affecting exposure such as droplet volume median diameter that could be designed to target coarser droplets that would remain shorter periods in the air before being deposited and that would impact majorly in the upper respiratory tract. Other controls could as well be considered, as protective equipment that would impede dermal and/or respiratory contact In addition, specific guides on how to perform inhalation safety assessment for spray products are already in place[401]. Despite all the former is on the context of chemical substances, several of the principles, effects and mechanisms could be of analogous application to sensitization induced by proteins derived from microorganisms.

During the sub-AHG on MCP, stakeholders majorly agreed on accepting the use of MCP in spray format conditioned to be microbial risk assessment being in place jointly with other actions as precautionary labelling (e.g. *do not breathe*) or having an inhalation exposure assessment on the product. Also, some participants shared some studies carried out on the assessment of microbial-derived enzymes and that some approaches (i.e. Berg et al. 2018[402]) to study exposure in MCP in spray format could be adapted. In addition, they highlighted that in the ongoing revision of the Detergent Regulation the MCP in spray format have been

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398 Hargitai, R., L. Parráková, T. Szatmári, P. Monfort-Lanzas, V. Galbiati, K. Audouze, F. Jornod, et al., 'Chemical Respiratory Sensitization—Current Status of Mechanistic Understanding, Knowledge Gaps and Possible Identification Methods of Sensitizers', Frontiers in Toxicology, Vol. 6, July 29, 2024, p. 1331803. DOI: 10.3389/ftox.2024.1331803.

399 Guidance on information requirements and chemical safety assessment Chapter R.8: Characterisation of dose [concentration]-response for human health. APPENDIX R. 8-1. V2.1. ECHA. 2012. Accessible at: https://echa.europa.eu/documents/10162/17224/information_requirements_r8_en.pdf/e153243a-03f0-44c5-8808-88af66223258?t=1353935239897#%5B%7B%22num%22%3A364%2C%22gen%22%3A0%7D%2C%7B%22name%22%3A%22XYZ%22%7D%2C0%2C751%2Cnull%5D

400 Guidance on Information Requirements and Chemical Safety Assessment Part E: Risk Characterisation. Section E.3.4.2 Health endpoints for which a qualitative assessment may be necessary. V3.0. ECHA. 2016. https://echa.europa.eu/documents/10162/17224/information_requirements_part_e_en.pdf/1da6cadd-895a-46f0-884b-00307c0438fd?t=1463491823908

401 Guide on Inhalation Safety Assessment for Spray Products. European Federation of Aerosols; 2013. Accessible at: https://aeda.org/wp-content/uploads/2015/02/20131115-Guide-on-Inhalation-Safety-Assessment-for-Spray-Products-Corrections.pdf

402 Berg, N.W., M.R. Evans, J. Sedivy, R. Testman, K. Acedo, D. Paone, D. Long, and T.G. Osimitz, 'Safety Assessment of the Use of Bacillus -Based Cleaning Products', Food and Chemical Toxicology, Vol. 116, June 2018, pp. 42–52. DOI 10.1016/j.fct.2017.11.028

proposed to be allowed if complying with certain conditions related to safety. This is reflected in the latest amendments to the proposed for a revised Detergent Regulation[403], particularly amendment 130:

> *7. Detergents containing micro-organisms shall be allowed to be placed on the market in a spray format after appropriate non-animal approaches to testing the respiratory sensitisation properties of micro-organisms have been established in accordance with Article 26(6a)*

In terms of alternative to animal testing for sensitization, the JRC found some already available but for skin as exposure route and in the context of chemical substances, based on OECD TG 442C, OECD TG 442D and OECD TG 442E[404].

To the best of JRC's knowledge, there are no test methods validated for regulatory use for respiratory sensitization. Consequently, qualitative rather quantitative outcomes from in a risk assessment can be expected. In this regard, there are proposals to provide structured, systematic and robust *Weigh of Evidences (WoE)*, ideally via formal framework that facilitates transparent analysis of the uncertainties and identification of critical data gaps to permit or refine assessment[405]. However, even counting with the evaluation of the evidences available, this might resolve fundamental uncertainties (e.g. pathophysiology of respiratory sensitisation). Hargitai et al. (2024)[406] affirms in the context of chemical respiratory sensitization that currently there are neither in vivo nor in silico or in vitro assays available universally accepted and validated and that with regard to New Approach Methodology (NAMs) a single test would not suffice for a comprehensive assessment, recommending an integrated testing strategy. They in addition describe some *in vitro* and *in vivo* tests developed for skin sensitization as methods being explore due to the urgent need for methods to univocally identify respiratory sensitizers.

Most of the aforementioned discussion about sensitization is set in the context of current regulatory framework for chemical substances. Despite the source of such effect is different (microorganisms/by-products), the effects induced (sensitization) and potential mechanisms could be shared. In other words, the approaches to testing and safety/risk assessment could be transferable/applicable to MCP in spray format. Hence, it should be possible to set a risk assessment that would account for and aim to minimise any potential sensitization effect derived from such products, even if of (semi-) qualitative nature. Under this logic the restriction on not using MCP in spray format is proposed to be removed and the following additions are proposed in relation to MCP products in spray format:

- clause *(ii) Safety* - requires mandatorily including sensitization (dermal, respiratory) as part of the microbial risk assessment.
- clause *(x) User information* now requires that any necessary precaution or instruction shall be included as information to the user. This could take the form of special labelling aimed at minimisation of exposure to potentially sensitizing agents. For example: *do not breathe directly; wear protective equipment (e.g. gloves)*.

In sum, the TR2 proposal aims at consider the minimum key elements identified as necessary to enable safer use but does not tackle the issues on lack of standardised methods and/or understanding of the underlying mechanism inducing such sensitization, inclusive of the link to responses that could be induced by microorganisms.

Points for discussion 16 – Micro-organisms Stakeholders are invited to reply the following consultation question:

[403] https://www.europarl.europa.eu/doceo/document/TA-9-2024-0091_EN.html

[404] https://joint-research-centre.ec.europa.eu/reference-measurement/european-union-reference-laboratories/eu-reference-laboratory-alternatives-animal-testing-eurl-ecvam/alternative-methods-toxicity-testing/validated-test-methods-health-effects/skin-sensitisation_en

[405] Meek, B., J.W. Bridges, A. Fasey, and U.G. Sauer, 'Evidential Requirements for the Regulatory Hazard and Risk Assessment of Respiratory Sensitisers: Methyl Methacrylate as an Example', Archives of Toxicology, Vol. 97, No. 4, April 2023, pp. 931–946. DOI 10.1007/s00204-023-03448-w

[406] Hargitai, R., L. Parráková, T. Szatmári, P. Monfort-Lanzas, V. Galbiati, K. Audouze, F. Jornod, et al., 'Chemical Respiratory Sensitization—Current Status of Mechanistic Understanding, Knowledge Gaps and Possible Identification Methods of Sensitizers', Frontiers in Toxicology, Vol. 6, July 29, 2024, p. 1331803. DOi 10.3389/ftox.2024.1331803

- Question 66 (Q66) – Do you support the reference to the *"WHO List of Medically Important Antimicrobials" (WHO MIA List)*[407] to interpret the term "*relevant*" within the criteria text when referring to antimicrobial substances? *Please, provide a reasoned response inclusive of suggestion for improvement.*
- Question 67 (Q67) – Would you support the substitution of the requirement "*susceptible to each of the five major antibiotic classes (aminoglycoside, macrolide, beta-lactam, tetracycline and fluoroquinolones*" by the following text from an EU technical guidance[408]: "*Susceptibility shall be demonstrated for compounds of at least two classes of antimicrobials selected among medically important antimicrobials*". Please, provide a reasoned response.
- Question 68 (Q68) – Do you consider relevant to add a requirement to verify periodically that the antimicrobial resistance profile has not varied throughout time (not only at the time of application to the EU Ecolabel award) under microorganisms' supplier industrial practice? *Please, provide a reasoned response.*
- Question 69 (Q69) – Stakeholders are invited to provide comments on the general updated of this criteria on aspect not covered by previous questions. *Please, provide a reasoned response ideally containing suggestion for improvement.*

6.7. Packaging

Packaging is an increasingly critical environmental concern, with the EU generating an estimated 186.5 kg of packaging waste per inhabitant in 2022[409]. The most common materials for packaging waste are paper and cardboard, representing 40.3% of total packaging waste in 2021, followed by plastic (19%), glass, wood, and metal. The waste stream has grown by 23.5% since 2010, with a 6% increase in packaging waste in 2021 compared to 2020 .

Despite this, packaging is essential for reducing potential product damage from the environment, facilitating content identification, and providing important information such as ingredients, safety, and dosage advice. From a life cycle perspective, packaging is not the most significant environmental impact for detergent products. However, environmental aspects related to packaging have improvement potential and can be addressed in the EU Ecolabel criteria.

The policy tool that currently harmonizes national measures for managing packaging and packaging waste at the EU level is the new (EU)2025/40 Packaging and Packaging Waste Regulation (PPWR), which repeals the Packaging and Packaging Waste Directive (PPWD) 94/62/EC. Its primary objective is to reduce the environmental impact of packaging and packaging waste by promoting the use of recyclable and reusable materials and encouraging the recycling and recovery of packaging waste to prevent final disposal.

The EU Ecolabel aims to address the environmental challenges associated with packaging waste and sees a potential contribution in setting ambitious requirements. The packaging provisions proposed in the packaging criterion goes above and beyond the requirements set out in the PPWR.

The packaging criterion is structured into various sub-criteria, each serving different and complementary objectives, which will be detailed in the subsequent sections in the following order:

1. (X) Recycled materials content ~~(for LD, DD, HDD, HSC)~~

[407] WHO's List of Medically Important Antimicrobials: a risk management tool for mitigating antimicrobial resistance due to non-human use. Geneva: World Health Organization; 2024. Licence: CC BY-NC-SA 3.0 IGO. Accessible at: https://cdn.who.int/media/docs/default-source/gcp/who-mia-list-2024-lv.pdf?sfvrsn=3320dd3d_2

[408] SANTE/2020/12260. Guidance on the approval and low-risk criteria linked to antimicrobial resistance, applicable to microorganisms used for plant protection in accordance with Regulation (EC) No 1107/2009. https://food.ec.europa.eu/system/files/2020-11/pesticides_ppp_app-proc_guide_180652_microorganism-amr_202011.pdf

[409] https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Packaging_waste_statistics

2. (X) Design for recycling

3. (X) Weight/utility ratio (WUR)

4. (X) Packaging take-back systems ~~(Only for HSC, IIDD, IILD)~~

5. (X) Products sold in spray bottles (Only for HSC)

6.7.1. Recycled materials content

TR1 - Proposed sub-criterion (x) recycled materials content	
LD DD HDD HSC	The criterion sets requirements for sales packaging (primary packaging) and grouped packaging (secondary packaging). a) Paper/cardboard used for packaging Sales packaging (primary packaging) made of paper and/or cardboard shall contain a minimum 80 % of recycled material. Grouped packaging (secondary packaging) made of paper and/or cardboard shall contain a minimum 70 % of recycled material. Cardboard packaging, used as sales packaging for liquid products is exempt from this requirement. The remaining share (100% minus recycled content percentage) of paper and/or cardboard used for the sales and grouped packaging shall be covered by valid Sustainable Forestry Management certificates issued by an independent third-party certification scheme such as FSC, PEFC or equivalent. The certification bodies issuing Sustainable Forestry Management certificates shall be accredited/recognised by that certification scheme. b) Plastic used for packaging Sales packaging (primary packaging) made of PET shall contain a minimum of 70% recycled material (PCR - recycled plastic made from post-consumer recycled), other plastics (e.g. HDPE) shall contain a minimum of 50% recycled material (PCR). All closures and trigger closures (e.g. removable closures and pump dosers) and pouches are exempted from this requirement. Recycled content and recyclability of sales packaging (primary packaging) and grouped packaging (secondary packaging) shall be indicated on the sales packaging. The recycled content stated on the packaging shall refer to the total weight (body, closure, label/sleeve and trigger closure). *Assessment and verification*: The applicant shall submit: (1) a signed declaration of compliance specifying the percentages of recycled content in the sales (primary) and grouped (secondary) packaging when relevant; (2) a high resolution photograph of the sales packaging where information regarding recycled content appear clearly. The applicant shall provide audited accounting documents that demonstrate that the remaining share (100% minus recycled content percentage) of the paper and/or cardboard used for the sales and grouped packaging is defined as certified material according to valid FSC, PEFC or equivalent schemes. The audited accounting documents shall be valid for the whole duration of the EU Ecolabel license. Recycled content shall be verified by complying with the EN 45557 or ISO 14021. Plastic recycled content in the packaging shall comply with chain of custody standards such as ISO 22095 or EN 15343. Equivalent methods may be accepted if considered equivalent by a third-party, and shall be accompanied by detailed explanations showing compliance with this requirement and related supporting documentation. Invoices demonstrating the purchase of the recycled material shall be provided.

TR2 - Proposed sub-criterion (x) recycled materials content	
	The criterion sets requirements for sales packaging (primary packaging) and grouped packaging (secondary packaging). a) Paper/cardboard used for packaging (for consumer and professional detergent products) — Sales packaging ~~(primary packaging)~~ made of paper and/or cardboard shall contain a minimum ~~80~~ 85 % of recycled material. — Grouped packaging ~~(secondary packaging)~~ made of paper and/or cardboard shall contain a minimum ~~70~~ 80 % of recycled material. *Exemptions from requirement:* Cardboard packaging, used as sales packaging for liquid products ~~is exempt from this requirement.~~ The remaining share (100% minus recycled content percentage) of paper and/or cardboard used for the sales and grouped packaging shall be covered by valid Sustainable sourcing certifications ~~Forestry Management~~ issued by an independent third-party certification scheme (e.g FSC, PEFC or equivalent). The certification bodies issuing Sustainable ~~Forestry Management~~ certificates shall be accredited/recognised by that certification scheme. b) Plastic used for packaging (for consumer products and professional detergent products) (i) Sales packaging — Until 31 December 2029, sales packaging made of PET shall contain a minimum of 60% recycled material, other plastics (e.g. PP, HDPE) shall contain a minimum of 35% recycled material. — From 1 January 2030, sales packaging made of PET shall contain a minimum of 70% recycled material, other plastics (e.g. PP, HDPE) shall contain a minimum of 50% recycled material.
ALL	~~Sales packaging (primary packaging) made of PET shall contain a minimum of 70% recycled material (PCR - recycled plastic made from post-consumer recycled), other plastics (e.g. PP, HDPE) shall contain a minimum of 50% recycled material (PCR).~~ ~~All closures and trigger closures (e.g. removable closures and pump dosers) and pounches are exempt from this requirement.~~ *Exemptions from the requirement:* • Pouches • Any plastic part representing less than 5% of the total weight of the whole packaging unit • Packaging used for the transport of dangerous goods in accordance with Directive 2008/68/EC • Products delivered in a plastic package that is part of a take-back system (ii) Grouped packaging — Single-use plastic packaging shall not be used in grouped packaging. — Other types of plastics used in grouped packaging shall have a minimum recyclability performance grade of 95%. c) Additional requirements Recycled content and recyclability of sales packaging (primary packaging) and grouped packaging (secondary packaging) shall be indicated on the sales packaging. The recycled content stated on the packaging shall refer to the total weight of the whole packaging unit. ~~(body, closure, label/sleeve and trigger closure).~~

	Assessment and verification: The applicant shall submit: (1) a signed declaration of compliance specifying the percentages of recycled content in the sales (primary) and grouped (secondary) packaging when relevant; (2) A declaration of compliance specifying that single-use plastic packaging is not utilized in grouped packaging and a declaration of compliance specifying the recyclability performance grade of grouped plastic packaging; (3) a high resolution photograph of the sales packaging where information regarding recycled content and recyclability appears clearly. Competent bodies shall check the declaration of compliance specifying the percentages of plastic recycled content for sales packaging again after 1 January 2030. The applicant shall provide audited accounting documents that demonstrate that the remaining share (100% minus recycled content percentage) of the paper and/or cardboard used for the sales and grouped packaging is defined as certified material according to valid scheme such as FSC, PEFC or equivalent schemes. The audited accounting documents shall be valid for the whole duration of the EU Ecolabel license. Recycled content shall be verified by complying with the EN 45557 or ISO 14021. Plastic recycled content in the packaging shall comply with chain of custody standards such as ISO 22095 or EN 15343. Equivalent methods may be accepted if considered equivalent by a third-party, and shall be accompanied by detailed explanations showing compliance with this requirement and related supporting documentation. Invoices demonstrating the purchase of the recycled material shall be provided. Recyclability of plastic grouped packaging shall be verified by complying with the CEN 'Design for Recycling of Plastic Packaging' standards or equivalent testing methods, such as RecyClass. Equivalent testing methods may be accepted if deemed comparable by an independent third-party certification for plastic packaging. Once the CEN 'Design for Recycling of Plastic Packaging' standards are implemented, they will supersede all other equivalent testing methods.

Rationale for the proposed (x) recycled materials content

This criterion aims at the introduction of certain percentages of recycled content and recyclability in the packaging of detergents and cleaning products in order to support EU's goal on circular economy.

The European Union has implemented a circular economy action plan that focuses on sectors that consume most resources and have a high potential for circularity, such as packaging.

The new Packaging and Packaging Waste Regulation (PPWR) aims to reduce the environmental impact of packaging and packaging waste by promoting the use of recyclable and reusable materials, and by encouraging recycling and recovery of packaging waste. The Regulation includes new proposals for recycling targets to promote a more circular economy and decrease the amount of packaging waste sent to landfills.

The new PPWR, formally adopted by the Council on December 16, 2024, and published in the EU's Official Journal on January 22, 2025[410], includes mandatory minimum targets for recycled content recovered from post-consumer plastic waste. These targets vary by packaging type (polymer used) and are calculated as an average per manufacturing plant and year.

These targets are specified in Article 7, as follows:

By 1 January 2030:

— 30 % for contact-sensitive packaging, made from polyethylene terephthalate (PET) as the major component; except single use beverage bottles,

[410] REGULATION (EU) 2025/40 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 19 December 2024 on packaging and packaging waste, amending Regulation (EU) 2019/1020 and Directive (EU) 2019/904, and repealing Directive 94/62/EC

— 10 % for contact-sensitive packaging made from plastics other than PET, excluding single-use plastic beverage bottles

— 30 % for single-use plastic beverage bottles

— 35 % for plastic packaging other than those mentioned above

By 1 January 2040:

— 50 % for contact-sensitive packaging, made from polyethylene terephthalate (PET) as the major component; except single use beverage bottles,

— 25 % for contact-sensitive packaging made from plastics other than PET, excluding single-use plastic beverage bottles

— 65 % for single-use plastic beverage bottles

— 65 % for plastic packaging other than those mentioned before

It is worth noting that the recycled content should be calculated as an average per manufacturing plant per year, rather than on a per-unit basis, as was reported in the initial EU Commission proposal of the PPWRr[411].

Relevant findings from a life cycle assessment perspective

The importance of packaging on the overall life cycle impacts of the different detergent product categories covered by the EU Ecolabel was assessed using a combination of values for packaging weights found in LCA literature and in EU Ecolabel license applications. To start with, assuming that all packaging materials were of virgin origin, the packaging impacts (of primary packaging and secondary packaging material production) were as follows.

Table 60 - Relative contributions of packaging materials to total life cycle impacts (characterisation results) of detergents and cleaning products for Environmental Footprint (EF) impact categories

	LLD	PLD	DD	HDD	HSC-KC*	HSC-ATC**
AP	2,5%	1,1%	0,3%	3,1%	11,7%	4,9%
CC	1,9%	0,7%	0,3%	1,9%	33,8%	11,9%
CC-fossil	2,0%	0,8%	0,3%	2,0%	33,9%	11,9%
CC-biogenic	0,1%	0,0%	0,0%	0,1%	35,2%	-23,3%
CC-LULUC	2,0%	7,5%	2,8%	2,3%	9,1%	3,2%
ETox	1,9%	0,3%	0,6%	5,1%	34,9%	29,2%
PM	4,4%	1,5%	0,2%	4,5%	10,1%	3,2%
E-Ma	1,4%	0,8%	0,3%	1,3%	8,4%	2,6%
E-Fr	0,2%	0,1%	0,1%	0,2%	4,0%	3,5%
E-Te	3,5%	1,7%	0,4%	2,8%	9,9%	3,8%
HTox-c	1,2%	0,2%	0,5%	3,6%	27,6%	17,9%
HTox-nc	0,8%	0,3%	0,3%	1,8%	19,8%	7,8%
IR	0,6%	0,2%	0,1%	9,0%	49,1%	10,7%
LU	136,8% ***	-1655%***	20,6%	-6,8%	4,9%	1,1%
OD	0,1%	0,0%	0,0%	0,1%	0,8%	0,3%
POF	3,6%	2,2%	0,6%	3,1%	14,3%	7,8%
ER	3,2%	0,6%	0,4%	4,0%	47,6%	25,2%

[411] COM(2022) 667 - Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on packaging and packaging waste, amending Regulation (EU) 2019/1020 and Directive (EU) 2019/904, and repealing Directive 94/62/EC. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52022PC0677

MR	3,9%	0,3%	0,2%	70,8%	99,0%	1,4%
WU	0,2%	0,1%	0,0%	0,2%	7,2%	-0,4%

*KC stands for Kitchen Cleaner. **ATC stands for Acid Toilet Cleaner. ***some results can be unusually high, even exceeding 100% in cases where the total impacts also included larger negative contributions from other life cycle stages (which, when positive and negative are added together, the total life cycle impacts can cancel out and be similar to or even less than those of just the packaging stage).The next part of the LCA research involved conducting a sensitivity analysis to see what would happen if the plastic packaging was changed to 100% recycled content and cardboard to 88% recycled content (with the same packaging weights as before). The sensitivity analysis showed some common traits amongst all detergent products but also some notable differences. The % changes in normalised impacts were as follows:

Table 61 - Change in LCA characterisation results of detergents and cleaning impact category results when shifting to recycled content packaging

	LLD	PLD	DD	HDD	HSC-KC*	HSC-ATC**
AP	-0,5%	-0,4%	-0,1%	-0,6%	-1,1%	-1,1%
CC	-0,3%	-0,2%	0,0%	-0,3%	-5,4%	-1,7%
ETox	-0,7%	-0,1%	-0,3%	-1,9%	-8,2%	-11,4%
PM	-0,4%	-0,5%	-0,1%	-0,6%	-1,5%	-0,3%
E-Ma	-0,3%	-0,3%	-0,1%	-0,3%	-1,3%	-0,6%
E-Fr	0,0%	0,0%	0,0%	-0,1%	-0,2%	-1,2%
E-Te	-0,8%	-0,6%	-0,1%	-0,6%	-1,6%	-0,9%
HTox-c	-0,3%	-0,1%	-0,1%	-1,2%	-8,3%	-5,4%
HTox-nc	-0,1%	0,0%	-0,1%	-0,4%	-2,7%	-1,6%
IR	0,1%	-0,1%	0,0%	3,5%	12,0%	4,8%
LU	-56,6%	-22,0%	-8,6%	-25,0%	1,5%	1,4%
OD	0,0%	0,0%	0,0%	0,0%	0,3%	0,2%
POF	-1,0%	-0,8%	-0,2%	-0,9%	-2,5%	-2,4%
ER	-1,0%	-0,1%	-0,1%	-1,4%	-10,8%	-8,9%
MR	-0,1%	-0,1%	0,0%	-38,2%	-53,4%	-0,2%
WU	0,1%	0,0%	0,0%	0,3%	-0,3%	0,6%

*KC stands for Kitchen Cleaner. **ATC stands for Acid Toilet Cleaner. ***some results can be unusually high, even exceeding 100% in cases where the total impacts also included larger negative contributions from other life cycle stages (which, when positive and negative are added together, the total life cycle impacts can cancel out and be similar to or even less than those of just the packaging stage).

All product categories (except for HSC) showed substantial reductions, from -8% to -57%, in land use impacts thanks to the use of recycled content in packaging, especially linked to the shift from virgin cardboard to recycled cardboard. As no cardboard was included in the modelling of HSC's, it makes sense that no reduction in impact for these were seen. When PET was the main primary packaging material (i.e with HDD and HSC-KC products) the use of recycled content triggered major reductions in metal and mineral resource depletion (MR), of -38% and -53%, respectively. This benefit was not seen when going from virgin HDPE to recycled HDPE (i.e. the HSC-ATC product).

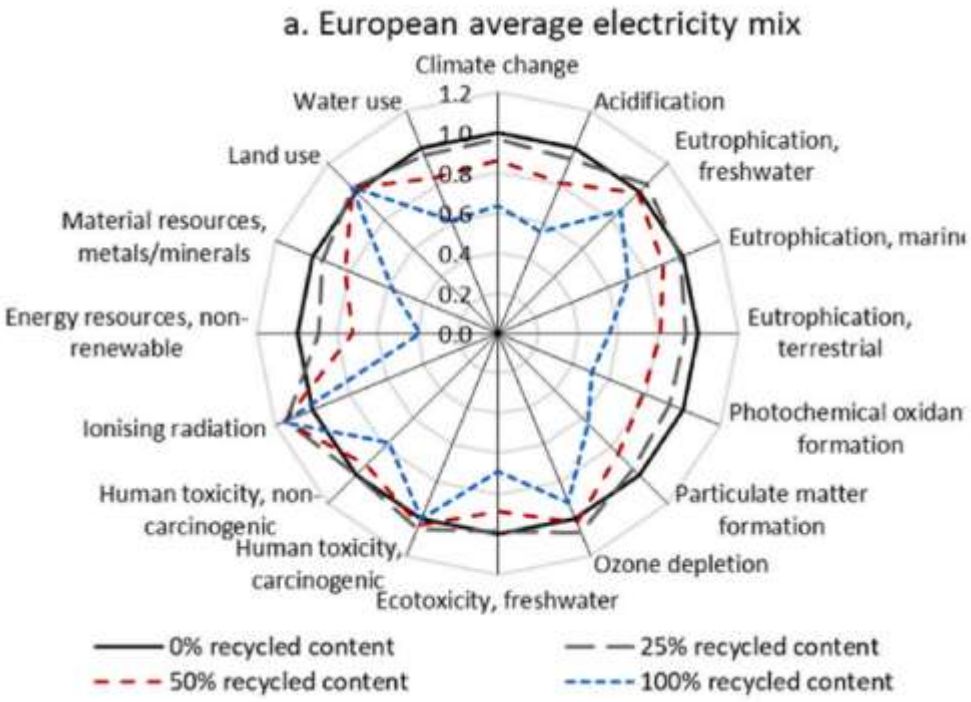
It was interesting to note that not all the changes were beneficial. All of the detergent products showed some small increases in some of the impact categories when shifting to recycled content packaging. In some cases, these increases were more substantial, especially for the IR impacts for both HSC products (+12% and +4,8%).

In contrast to the first version of this technical report, slightly bigger reductions and lower increases in impacts are seen in this report when shifting from virgin materials to materials with recycled content. These differences are due to a minor change in the modelling approach for the PEF-studies. This is mainly related to the fact that several approaches depending on different sets of parameters exist to model recycling in LCA. Both the choice of the modelling approach and the assumptions linked to the parameters can affect the results to some extent. Furthermore, some uncertainties related to the end of life modelling approach for EF

database datasets were identified, which could have and still can have effect on the results. For this reason, other sources of information on the environmental impact of recycled materials have been sought out, ultimately confirming that reductions in environmental impacts can generally be seen when including more recycled materials in the packaging.

In this sense, a recent study by Blanco et al (2024) investigates the environmental impact of using recycled HDPE in HDPE milk bottles. The study uses the EF methodology, although not with EF datasets. The HDPE milk bottles are assumed to be comparable with detergent bottles, at a material level. In the study, it is found that the inclusion of 25% of recycled HDPE results in reduced impacts in half of the 16 impact categories. For a milk bottle of 100% recycled HDPE the impact was reduced in 13 out of 16 impact categories. However, in some impact categories the change to recycled material increases the impact slightly or is more or less the same. These impact categories are land use, human toxicity carcinogenic and ionizing radiation. Some of the results of the study by Blanco et al (2024) can be seen in the Figure 31.

Figure 31 - The impact of recycled content in the case of HDPE bottles. 100% virgin bottles are marked with the black line. Figure by Blanco et. al (2024).



Other ecolabels

As a matter of comparison with other ecolabels in the market, both the Nordic Swan and Blue Angel have introduced requirements to promote the use of recycled materials and preserve virgin resources. Additionally, the latest EU Ecolabel criteria for absorbent hygiene products also consider such requirements.

The *Blue Angel* (BA) scheme, for Dishwasher Detergent (DD), Laundry Detergent (LD), Hand Dishwashing Detergent (HDD), and Hard Surface Cleaning products (HSC), requires that paper/cardboard used in sales packaging must be manufactured using at least 80% recycled materials, and secondary packaging that also serves as transport packaging must contain at least 70% recycled materials. In the case of plastics, BA requires that sales packaging made of PET be manufactured using at least 70% recycled plastic from post-consumer waste (PCR), while other plastics must contain at least 50% PCR. All closures, trigger closures, and foil bags are exempt from these requirements.

The *Nordic Swan* (NS) scheme for DD and LD requires that all hard/rigid plastic packaging contain a minimum of 50% PCR. For DD, the cardboard for solid products must contain a minimum of 90% recycled material, while corrugated board packaging must contain 70% recycled material. For cardboard packaging for liquid products, at least 90% by weight of the primary packaging must be made from bio-based material, post-consumer/commercial recycled material, or a combination of these. For LD, the cardboard must contain 90% PCR, while corrugated board must contain a minimum of 50% PCR. Cardboard packaging for liquid products and paper bags for powdered LD products must contain a minimum of 70% paper/cardboard sourced from forestry certified under the FSC or PEFC schemes. Alternatively, the raw material can be recycled (PCR) or a combination of the two. In the case of Industrial and Institutional Dishwasher Detergent products (IIDD), cardboard packaging must contain a minimum of 90% by weight of recycled material in the wood raw material used, while corrugated board must contain at least 70%. For Industrial and Institutional Laundry Detergent (IILD), the wood raw material must be covered by the FSC/PEFC control schemes, and for corrugated board packaging, a minimum of 50% by weight of the wood raw material used must be made of recycled material.

The *EU Ecolabel criteria for absorbent hygiene products* require that sales packaging made of cardboard and/or paper shall contain a minimum of 40% recycled material, while grouped packaging must contain a minimum of 80% recycled material. For plastic packaging, until 31 December 2026, sales packaging made of plastic must contain a minimum of 20% recycled material. From 1 January 2027, sales packaging made of plastic must contain a minimum of 35% recycled material.

First proposal (TR1)

During the revision process, in light of all the above and based on the information and data gathered through the focus questionnaire and bilateral meetings with stakeholders, it was proposed to include this new sub-criterion, introducing specific percentages of recycled content for paper/cardboard and plastics, with provisions that exceed the PPWR. This is to ensure greater environmental ambition and the ability to respond to new industrial/technical innovations and developments in the political landscape.

The proposal was aligned with Blue Angel's requirements, specifying a minimum of 80% recycled material content for paper/cardboard in sale (primary) packaging and a minimum of 70% recycled material content for paper/cardboard in grouped (secondary) packaging. In the first proposal included in the first technical report (TR1), cardboard packaging for liquid products was exempt from this requirement. Additionally, it was proposed that the remaining share of paper and/or cardboard must be covered by valid Sustainable Forestry Management certificates issued by an independent third-party certification scheme such as FSC, PEFC, or equivalent.

For plastics, a minimum of 70% recycled material content for PET was required, and a minimum of 50% recycled material content for other plastics was required, with specific exclusions for closures, triggers, dosers, and pouches.

Outcomes from and after the 1st AHWG meeting

In total 26 comments were received on this sub-criterion, which are found in full in the Table of Comments (ToC1). In general, the comments reflect a mix of support for increased recycled content in paper and cardboard, as well as recyclability requirements for grouped plastic packaging, alongside significant concerns regarding the feasibility of the proposed requirements, the need for exemptions and clarification in the guidelines, and the market availability of recycled materials. The following convey summarily the most relevant comments, arranged by aspect to which they are related to. The majority of comments focused on the ambitious nature of the proposed recycled content thresholds for plastics—70% for PET and 50% for HDPE—highlighting market constraints, potential supply chain challenges, and the potential migration of contaminants in recycled materials, particularly for HDPE plastic. Additionally, there is a recognized need for virgin materials in certain applications, especially for professional detergent products, due to safety reasons. Another topic of comments concerned the clarification and possible exemption of recycled content requirements for certain packaging and components, such as closures, triggers, labels, and pouches. On the other hand, some comments support the requirements and even advocate for an increase in recycled content for paper and cardboard, as well as the ban of single-use packaging and the inclusion of a recyclability requirement for plastics grouped packaging with the highest grade A.

Sub-Ad Hoc working group

After the 1st Ad Hoc Working Group (AHWG), a Sub-Ad Hoc working group (sub-AHWG) on Packaging was organized as part of the revision process. This sub-group aimed to refine, cross-check, and enhance draft criteria proposals, particularly regarding recycling materials content and design for recycling. Two sub-AHWG meetings were held, involving 34 interested stakeholders, with varying participation across the two meetings.

As outputs from the sub-AHWG meetings, a background discussion document was produced. This document outlines and lists all aspects required further attention and assessment, as identified after the 1st AHWG. It also presents potential actions and results to improve the first criterion proposal.

During the sub-AHWG meetings, 33 different questions were shared with the participating stakeholders to gather specific feedback, enabling the fine-tuning of the draft criterion proposals. Although the full content of the background document is not included in the 2nd Technical Report, it is publicly available and can be accessed on the JRC webpage.

The outline below highlights the key areas and aspects that the sub-AHWG meetings concentrated on, along with areas identified for further evaluation.

Criterion wording

The initial criterion wording proposal was revised to ensure consistency and coherence across both paper/cardboard and plastic requirements, enhancing clarity for better comprehension of all provisions.

The original proposal for the requirements of both packaging types, paper/cardboard and plastic, specifies percentage of recycled material. In addition, for plastic packaging the term 'PCR - recycled plastic made from post-consumer recycled' was included in the wording criterion. To maintain consistency throughout the provisions, the term PCR has been removed from the plastic requirements. Instead, a definition of Recycled Material and Recycled Content, considering only post-consumer materials, in accordance with ISO 14021:2016, is now proposed as follows:

> *"The recycled content is the proportion, by mass, of recycled material in a packaging. 'Recycled material' refers to material that has been reprocessed from recovered material by means of manufacturing process and made into a final product or into a component for incorporation into a product.*
>
> *Only post-consumer materials shall be considered as recycled content, consistent with the following definition:*
>
> *'Post-consumer material' (PCR) means material generated by households or by commercial, industrial and institutional facilities in their role as end-users of the product, which can no longer be used for its intended purpose. This includes returns of material from the distribution chain."*

This definition is now included in the 'Definitions' section of this technical report. To address the criterion of Recycled Material Content, reference should be made to the 'recycled material' definition, which includes the 'PCR' definition.

The proposed wording aligns with the Packaging criterion of the EU Ecolabel for absorbent hygiene products (Commission Decision (EU) 2023/1809), intending to harmonize the wording across different EU Ecolabel criteria for various products.

During the sub-AHWG stakeholders consultation, it was noted that ISO 14021:2016 is under revision. A stakeholder suggested aligning the 'Recycled Material' definition with the 'Secondary Raw Materials' definition included in the PPWR. For the 'post-consumer waste' definition, it was recommended to adjust the 'post-consumer plastic waste' definition from the implementing decision (EU) 2023/2683 of the Single Use Plastic Directive to broaden its scope beyond just plastic.

According to the CEN work program[412], ISO 14021 is currently being drafted with a forecasted voting date in September 2025. This date aligns with the EU Ecolabel revision timeline, allowing for alignment or potential modifications to the new ISO 14021 text where appropriate.

[412] https://standards.cencenelec.eu/dyn/www/f?p=205:22:0::::FSP_ORG_ID,FSP_LANG_ID:6339,25&cs=110FFC8F9AD72F9A5158895F0434C4C7F

Therefore, at this stage, no modifications to the proposed definition are anticipated. Additionally, modifying the 'Recycled Material' definition to 'Secondary Raw Materials' is not proposed to ensure consistency across sub-criteria and all other EU Ecolabel criteria products (e.g., absorbent hygiene products - Commission Decision (EU) 2023/1809). Considering that the "Post-consumer material" definition in the ISO 14021 standard is broader, encompassing all types of materials, not just plastic, and to avoid altering the established definition of "Post-consumer plastic waste" in the Single Use Plastic Directive, it is proposed to maintain the broader PCR definition of ISO 14021, which also covers paper and cardboard.

Paper and cardboard packaging - Scope and ambition level requirements

During the sub-AHWG consultation, discussions were held on whether to increase the minimum recycled content in paper/cardboard for sales packaging (above 80%) and grouped packaging (above 70%), in order to ensure feasibility and identify any potential technical barriers to implementation. Most stakeholders supported increasing the minimum recycled content. However, some stakeholders highlighted that higher levels could potentially compromise meeting the technical specifications, such as strength and thickness. They also expressed concerns that an increase might hamper innovation in paper/cardboard packaging and hinder the transition from fossil-based plastic packaging. Additional concerns were related to the humidity sensitivity of the product inside the paper packaging and the fact that kraft paper may not incorporate high levels of recycled content due to durability issues, which might cause it to fail the 90% threshold.

The Impact Assessment accompanying the PPWR proposal[413] stated that:

- Relatively high levels of recycled content uptake are possible in most other paper/card packaging applications because recycling rates for cardboard and/or paper are high in the EU (84.6% in 2017), meaning there is a good supply of secondary material[414].
- It is technically possible to include a significant proportion of recycled content in cardboard and/or paper packaging, although the recycling process does gradually shorten and weaken the fibres, and so for certain applications virgin fibres must also be used to achieve the performance requirements of the packaging. As a general estimate, fibres can be recycled between 4 and 7 times before they can no longer be used in the paper manufacturing process[415].

The European Paper Recycling Council (EPRC) has released its "Monitoring Report 2023"[416], which details paper and board recycling rates across Europe. In 2023, the recycling rate reached 79.3%, a significant rise from the previous year's 71.1%. This improvement is primarily due to a considerable 12.0% reduction in the consumption of new paper and board, now at 67.7 million tonnes. The collection and recycling of Paper for Recycling (PfR) experienced a slight decrease of 1.9% to 53.7 million tonnes compared to 2022. However, this figure still represents an increase from the 52.4 million tonnes recorded in 2021.

Europe remains a global leader in paper recycling, with each fibre undergoing an average of 4.8 recycling and usage cycles in 2023, compared to the global average of 2.5 cycles in 2022. Within the EU-27, 19 countries surpassed a 70% recycling rate in 2023, up from 15 in 2022. Moreover, paper and board are the most recycled packaging materials in Europe. In fact, in the EU, paper and cardboard packaging are recycled more than all other materials combined, largely due to the well-functioning market for secondary raw materials in the paper and cardboard industry.

New proposal

The JRC analysed data related to paper and cardboard recycled content provided by stakeholders through a focused questionnaire, as well as other data mainly shared by Competent Bodies. Table 62 below presents

413 Impact Assessment PPWR: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A01994L0062-20180704
414 EUROSTAT Recycling rates for packaging waste: https://ec.europa.eu/eurostat/databrowser/view/ten00063/default/table?lang=en
415 Australian Packaging Covenant Design Smart Material Guide: Fibre-Based Packaging: https://www.australianpackagingassessment.com.au/wp-content/uploads/2017/11/2.-Fibre_DSMG.pdf
416 European Paper Recycling Council - Monitoring report 2023: https://www.paperforrecycling.eu/

data points related to the recycled content analysis of EU Ecolabel detergent products, categorized by type of material packaging.

A total of 35 data points were included in the analysis, of which only four pertain to professional products. The analysis indicated that EU Ecolabel products contain an average of 80.9% recycled content in their paper/cardboard packaging.

Given the high recycling rates in Europe and the availability of recycled material content for paper and cardboard, as well as data gathered during consultations with stakeholders, the following requirements are proposed at this stage of the revision process:

— Sales packaging made of paper and/or cardboard shall contain a minimum of 85% recycled material.

— Grouped packaging made of paper and/or cardboard shall contain a minimum of 80% recycled material.

For sales packaging, a slight increase in recycled content to 85% is proposed. This adjustment balances ambition with feasibility, encouraging progress while acknowledging the industry's current constraints and readiness. The proposed increase surpasses the initial proposal and aligns with Europe's high recycling rates and robust supply of secondary materials. It also takes into account the technical challenges associated with higher levels of recycled material content, such as maintaining strength, durability, and moisture resistance.

For grouped packaging, it is proposed to increase the recycled content to 80% and align with the EU Ecolabel for absorbent hygiene products. This alignment would help in harmonizing standards across different EU Ecolabel products. The 80 % value is also in alignment with what some stakeholders described as the current practice for outer boxes (as reported in the background document of the sub-AHWG).

In the first proposal, an exemption was included specifying that the minimum recycled content requirement does not apply to cardboard packaging for liquid products. This exemption addresses concerns that higher recycled content might compromise packaging integrity due to humidity sensitivity. However, further detailed feedback from stakeholders will be necessary to refine this requirement, particularly concerning the use of kraft paper, to make an informed decision.

While the initial proposal (TR1) focused on consumer products in order to contribute to greater environmental benefits and align with Nordic Swan's requirements, it is also proposed to extend the recycled material content requirements for paper and cardboard to include professional products, in addition to household products. In this context, detailed feedback from stakeholders in the professional products sector is necessary to gather insights on the proposed changes and assess the feasibility of meeting the recycled content targets.

Plastic packaging - Scope and ambition level requirements

After the first proposal (TR1), stakeholders expressed divided opinions. Some were in favour of the new requirement for recycled material content in plastic packaging, while others highlighted concerns about the feasibility of implementing the proposed requirements for PET and other plastics, especially HDPE and PP.

Some of the frequently mentioned concerns include:

— Availability of recycled plastics and challenges within the supply chain.

— The price of recycled plastics, which exceeds virgin materials by 10-30%, particularly for HDPE.

— Quality and safety issues, especially for PE and PP plastics, which can absorb contaminants during their previous lifecycle, potentially releasing them during the secondary use of the recycled material.

— Proposed targets that are considered overly ambitious and unachievable, given the current range of certified EU Ecolabel products.

In addition, during the sub-AHWG, in consideration of the EU Ecolabel's objective to promote products with superior environmental performance within the European market, and the importance of aligning with mandatory legislation, it was proposed to extend the recycled content requirement to all professional, industrial, and institutional products (e.g., HSC professional, IILD, and IIDD).

A divergence of opinions was expressed among stakeholders regarding the expansion of the recycled content requirements to include all industrial and professional products. Concerns about this expansion highlighted unique requirements and challenges associated with professional cleaning products, as opposed to household versions, that contain recycled materials, including:

— Higher concentration rates needed to ensure performance for their intended use (e.g., hospital care, food catering).

— Increased vulnerability to stress crack effects induced by surfactants combined with other common ingredients, especially with longer contact times.

— Reduced performance attributes of packaging compared to using virgin resin, potentially leading to packaging failure.

— Stringent targets that could increase value chain complexity and result in a higher environmental footprint.

Conversely, stakeholders supporting the inclusion argued that the manufacturing processes, raw materials, including virgin plastic granules, and suppliers for professional products are largely similar to those for consumer products. They suggested that it is feasible to apply the same recycled content requirements to both sectors.

The full list of comments can be consulted in the Table of Comments and the background document of the sub-AHWG.

Additional information

PET

The latest "PET Market in Europe: State of Play"[417], published in 2024 and referring to data from 2022, reported that the PET collection rate increased to 60%, reflecting an enhanced recycling value chain and growth in the adoption of recycled PET (rPET).

In 2022, nearly 2.7 million tonnes (Mt) of collected PET waste were sorted for recycling and the sorted for recycling rate stood at 54%. Packaging was identified as the dominant end-use for rPET that year. Additionally, rPET production accounted for approximately 40% of the total PET production in the EU27+3 region, up from around 30% in 2020. In 2022, the recycled production of rPET in the EU27+3 region reached 1.6 Mt, marking an increase compared to previous years. Furthermore, PET polymer recycling capacity for flake production, had the highest average recycling capacity per plant among all polymers.

HDPE and PP

The 2020 Plastics Recyclers Europe (PRE) report on the state of the HDPE and PP market in Europe[418] included data from 2018, indicating that Eurostat reported a net demand of 6.2 Mt for HDPE and 10.5 Mt for PP. Together, HDPE and PP constituted almost a third of the total converter demand for polymer resins in the EU28 at that time. In 2018, recyclate from post-consumer rigid product applications within the EU28 met approximately 8% of the HDPE demand and 3% of the PP demand (increasing to 12% for HDPE and 5% for PP when pre-consumer recyclate was included). The packaging sector had the largest share of HDPE and PP usage, accounting for an estimated 62% of rigid HDPE products by weight and 37% of rigid PP products by weight. Collection rates for recycling rigid HDPE and PP packaging were reported as 49% for HDPE and 47% for PP, while the overall EU28 plastic packaging recycling rate was reported by Eurostat as 41.9%, considering losses in sorting. In 2018, the EU28 had the capacity to recycle 1.7 Mt of rigid HDPE and PP, with 1.2 Mt coming from post-consumer material. However, the 2020 report noted an increase in recycling capacity after 2018, with continued growth expected.

The report also highlighted that the Polyolefin Circular Economy Platform (PCEP) had announced an industry-wide commitment to create a roadmap for achieving 60% recycling and reuse of collected polyolefin packaging by 2030. A more recent 2023 PCEP position paper stated that 71.4% of plastic packaging in Europe was made of polyolefins, accounting for 71% of collected plastic waste. This collected material was transformed into 84.7% post-consumer recycled polyolefins, which were used in European products across various sectors, including building and construction, packaging, agriculture, automotive, and electronics.

417 PET Market in Europe. state of play. Production collection recycling data. 2024.
418 HDPE and PP Market in Europe. state of play. Production. collection and recycling data. 2020.

According to PCEP's data, out of 25 Mt of all polyolefins demand in Europe in 2021, packaging was the largest market with 14 Mt.

PE and PP flexible films

The 2023 report by Plastics Recyclers Europe (PRE) on the state of the Flexible Films Market in Europe[419] indicates that in 2020, a total of 13.7 million tonnes of flexible films were placed on the EU27+3 market. This total included 11 million tonnes from polyethylene (PE) and polypropylene (PP) streams, with the remainder from multi-layers and other materials. The report anticipates that the combined demand for PP and PE will grow from 2020 to 2025, reaching over 28 million tonnes by 2025, while production is expected to increase by approximately 1.5 million tonnes by 2025. In 2020, the consumption of PE and PP for flexible film production was about 11 million tonnes. Additionally, in 2020, 5.7 million tonnes of flexible films were collected for recycling in Europe through separate collection schemes, but only 2.4 million tonnes were processed by recyclers in the EU27+3, resulting in a recycling rate of 18% of the total films placed on the market. In the non-food sector, the demand for film and foil was 3,364 kilotonnes (Kt), with 614 Kt of recycled material used.

Despite the implementation of separate collection systems for flexible films in most countries, their coverage remains limited, with only an estimated 40% of films placed on the European market collected for recycling. PE flexible films made up the majority of this collected volume. Other film types, such as PP films and multilayers, were also collected but in limited quantities, and due to design and processing limitations, these often ended up as rejected fractions, eventually incinerated. While countries like Germany, France, and Italy have established collection systems, other countries are in the process of overhauling their collection and sorting systems to support more efficient management of film waste.

Mechanical and Chemical recycling: advancing plastics circularity

To enhance the circularity of plastics and meet specific recycled content targets in packaging, the development and expansion of recycling technologies is crucial. Two leading technologies are mechanical and chemical recycling, with mechanical recycling currently being the most widely used. However, chemical recycling is expected to gain significant scale in the coming years, playing a pivotal role in advancing plastics circularity. This is particularly important for polymers like PET, PE, and PP, where chemical recycling can effectively complement mechanical recycling. Unlike mechanical recycling, which can downgrades plastics (except for PET bottles), chemical recycling allows for the continuous recycling of plastics without loss in quality. This process converts polymer chains back into monomers, yielding recycled materials that match the quality of virgin materials, thus maintaining a technical substitution ratio of 1[420].

To bridge the gap between the demand and supply of recycled materials, especially for flexible films, it is essential to increase collection rates across all plastic types. Developing a robust and sustainable value chain in Europe will require overcoming challenges related to insufficient collection and sorting and the lack of recycling-friendly designs. By addressing these issues and expanding chemical recycling capacities, the plastics industry can significantly improve its circularity and sustainability.

Chemical recycling is especially valuable when mechanical recycling cannot meet market demands for specific applications, offering a complementary approach. For instance, it can produce individual PE and PP polymers from mixed polyolefin wastes, including laminates, and efficiently recycle degraded or contaminated polyolefin streams[421]. The installed capacity for chemical depolymerisation in 2022 was around 12 Kt, with plans to increase to approximately 482 Kt by 2027, particularly in the chemical recycling of PET[422].

Data analysis

The JRC analysed data related to recycled content provided by stakeholders through a focused questionnaire, as well as other data mainly shared by Competent Bodies. The data reported in Table 62 pertains exclusively

[419] Flexible Films Market in Europe, state of play. Production collection recycling data, 2023.

[420] Roosen, M., Tonini, D., Albizzati, P. F., Caro, D., Cristóbal, J., Lase, I. S., Ragaert, K., Dumoulin, A., & De Meester, S. (2023). Operational Framework to Quantify "Quality of Recycling" across Different Material Types. Environmental Science and Technology, 57(36), 13669–13680. https://doi.org/10.1021/acs.est.3c03023

[421] Polyolefin Circular Economy Platform (PCEP) Recycling Position Paper

[422] PET Market in Europe, state of play. Production collection recycling data, 2024.

to EU Ecolabel detergent products. The analysis indicated that EUEL products containing recycled material are already on the market, although the recycled PET industry appears more mature than other plastic packaging sectors. For professional products, the JRC received limited data, mostly related to PET and cardboard packaging. Four data points were provided for cardboard packaging in professional packaging products, seven data points for PET, and one for HDPE.

Table 62. Recycled content analysis of EUEL products by type of material packaging

Type of Material Packaging	Data Points	Average Recycled Content (%)	Median* Recycled Content (%)
Paper/ Cardboard	35	80.9	98.0
PET	35	65.6	61.9
PP	13	51.2	59.4
HDPE	16	34.7	34.6

Source: JRC's elaboration with data provided by stakeholders.

*The median is the middle value of a data set when it is ordered from smallest to largest. If the number of data points is odd, the median is the middle value. If it is even, the median is the average of the two middle values.

New proposal

Based on the analysis conducted, the best evidence available at the time of consultation, and discussions held during the sub-AHWG meetings, as well as the highlighted concerns, barriers, and the availability of secondary raw materials for recycled content, the JRC proposes implementing a step-wise incremental approach to the recycled material content requirements for plastics.

In the new JRC proposal the plastics used for packaging shall meet the following step-wise incremental approach:

— Until 31 December 2029, sales packaging made of PET shall contain a minimum of 60% recycled material, other plastics (e.g. PP, HDPE) shall contain a minimum of 35% recycled material.

— From 1 January 2030, sales packaging made of PET shall contain a minimum of 70% recycled material, other plastics (e.g. PP, HDPE) shall contain a minimum of 50% recycled material.

The feasibility of reaching these targets is based on the evidence reported in Table 62, which details the recycled material content already incorporated in the licensed products for which data was received. Overall, a compromise between ambition and feasibility is reflected in the short-term targets, setting the ambition level at 60% recycled content for PET and 35% for other plastics. The latter, particularly concerning plastic packaging types that have raised higher concerns, such as polyolefins (HDPE and PP), aligns with the proposals of the revised PPWR. At the same time, considering the EU Ecolabel's objective to promote products with the best environmental performance within the European market and to exceed the minimum provisions set by mandatory legislation, the target requirements should be achieved earlier in time compared to the PPWR and for units of packaging rather than as an average per manufacturing plant per year, as requested in the new PPWR.

For PET, given the higher maturity of its recycling industry and the already high average recycled content included in the analysed EUEL detergent products, a higher target than that in the PPWR is proposed, although it remains below the initial proposal of 70% recycled content. This approach ensures short-term feasibility, increased environmental ambition, and adaptability to the latest industrial, technical innovations, and policy developments.

The proposed higher mid-term targets, that should be effective from 1 January 2030, are set at 70% for PET and 50% for other plastics. These are based on:

— ambition levels in other ecolabel schemes, such as Blue Angel, where licenses have been awarded;

— data on recycled content received that, although limited, suggests higher recycled content can be incorporated, at least for PET (average of 65.6%) and PP (average of 51.2%);

— future developments and expansions in recycling technologies, such as chemical recycling, that will enhance the circularity of plastics.

During the sub-AHWG, stakeholders were asked to indicate feasible target levels of recycled content for professional plastic packaging used in HSC, IILD, and IIDD sectors. However, with the exception of one stakeholder, no others suggested targets that would not compromise the functionality of the packaging. Despite this, limited data previously gathered through focus questionnaires and Competent Bodies indicates that the recycled material content in professional, industrial, and institutional products is comparable to that in household and consumer products. Based on this evidence, it is proposed to apply the same recycled content requirements to both consumer and professional plastic packaging.

Moreover, considering that professional products are often distributed in large barrels and bulk containers, which can hold several thousand liters, and given that the EU's waste hierarchy prioritizes reuse over recycling, it is important to recognize the strength and durability of this packaging, which allows for multiple reuses. Therefore, it is proposed that products delivered in plastic packaging as part of a take-back system be exempted from the recycled material content requirement, aligning with the principles of maximizing reuse in the EU's waste management strategy.

The new PPWR does not include a specific exemption from the recycled content requirement for industrial or professional detergent packaging. Nonetheless, packaging used for the transport of dangerous goods, as regulated by Directive 2008/68/EC, is exempt from the PPWR. This directive refers to the Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) and its packaging provisions for road transport.

In pursuit of harmonization with the PPWR's scope and exemptions, the JRC proposes that the EU Ecolabel's recycled material content criterion will not extend to packaging designated for the transport of dangerous goods under Directive 2008/68/EC. It should be noted that in the ADR, the criteria for classification as dangerous goods include the assignment of dangerous goods to a class and a packing group based on their properties. The classification of substances and mixtures generally depends on their hazardous properties, such as toxicity, flammability, corrosiveness, and environmental hazards. There is no specific reference to detergents being classified as dangerous goods per se.

To ensure harmonization with PPWR derogations, it is also proposed that any plastic part accounting for less than 5% of the total weight of the entire packaging unit should be exempt from the plastic packaging requirements. This means that previous exemptions for closures, pump dispensers, and additional closure components are now eliminated.

The case is different for pouches, for which the exemption considered in the first criterion proposal in TR1 is maintained.

The recycled material content requirement for flexible plastics is currently not considered due to the limited availability of recycled material for monomaterial plastic pouches. Developing a robust and sustainable value chain for flexible plastic films in Europe requires addressing challenges related to insufficient collection and sorting. Additionally, improving the quality of sorting for flexible films and the recycling process is essential to increase the use of recyclate and meet specific recycled content targets. For these reasons, it is proposed not to include a recycled material content requirement at this stage. Instead, the focus should be on the Design for Recycling criterion, which ambitiously requires the use of only monomaterial pouches. This involves transitioning from laminated to monomaterial designs to enhance the collection of high-quality flexible packaging, overcome the limitations of circularity, and meet the growing demand.

About plastic grouped packaging

Different proposal for the inclusion of requirements addressing plastic grouped packaging were discussed during the dub-AHWG meetings. After stakeholders consultation the JRC proposed to ban single-use plastics

for grouped packaging also in line with the PPWR new rule to restrict the single-use packaging (as reported in the PPWR, Annex V)[423].

Furthermore, it is proposed that other types of plastics (non-single-use plastics) used for grouped packaging must achieve a recyclability performance grade of at least 95%. The recyclability performance grades are referenced in the new PPWR, specifically in Table 3. Packaging recyclability is expressed in performance grades A, B, or C, where grade A indicates a recyclability of 95% or higher, grade B indicates a recyclability of 80% or higher, and grade C indicates a recyclability of 70% or higher. The assessment of these recyclability rates must be conducted using design for recycling criteria.

About Assessment and Verification'

The recycled content must be verified by adhering to EN 45557 (General method for assessing the proportion of recycled material content in energy-related products), ISO 14021 (Environmental labels and declarations — Self-declared environmental claims), or equivalent methods. EN 45557 has been proposed as the standardization request for ecodesign requirements on material efficiency aspects for energy-related products, supporting the implementation of Directive 2009/125/EC of the European Parliament and of the Council. ISO 14021 specifies the requirements for self-declared environmental claims regarding products and describes a general evaluation and verification methodology for these claims, along with specific methods for selected claims.

Additionally, plastic recycled content in packaging shall comply with chain of custody standards such as ISO 22095—Chain of custody—General terminology and models. This standard applies to all materials and products (excluding services or final outputs) and can be used by any organization operating at any stage in a supply chain, as well as by standard-setting organizations as a reference point for specific chain of custody standards. It enhances the transparency of specific claims regarding materials or products, thereby supporting the reliability of these claims. Plastic recycled content in packaging can also comply with EN 15343—Plastics—Recycled Plastics—Plastics recycling traceability and assessment of conformity and recycled content, which specifies the procedures needed for the traceability of recycled plastics.

During the sub-AHWG meetings, stakeholders were consulted about verifying the recyclability of plastic grouped packaging by complying with EN 13430 (Packaging - Requirements for packaging recoverable by material recycling) or the ISO 18604 standard (Packaging and the environment — Material recycling), also in alignment with the assessment and verification of EU Ecolabel criteria for absorbent and hygiene products.

EN 13430 specifies the requirements for packaging to be classified as recoverable through material recycling, considering the ongoing development of both packaging and recovery technologies. It also sets out procedures for assessing conformity with these requirements. This standard is the second standardization mandate to CEN related to the packaging and packaging waste directive 94/62/EC. Similarly, ISO 18604 outlines the requirements for packaging to be classified as recoverable through material recycling, accommodating technological advancements and detailing the procedures for assessing compliance with its requirements.

Stakeholders expressed divided opinions regarding these standards. Given that verifying recyclability according to EN 13430 or ISO 18604 standards is considered complicated and potentially subject to different interpretations, as highlighted by stakeholder feedback, the JRC proposes referring to the CEN 'Design for Recycling of Plastic Packaging' standards currently under development, which are expected to be published in August 2025, or to equivalent testing methods, such as the RecyClass recyclability methodology. Once the CEN 'Design for Recycling of Plastic Packaging' standards are implemented, they will supersede all other equivalent testing methods.

[423] REGULATION (EU) 2025/40 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 19 December 2024 on packaging and packaging waste, amending Regulation (EU) 2019/1020 and Directive (EU) 2019/904, and repealing Directive 94/62/EC

Points for discussion 17 – Recycled materials content

Stakeholders are invited to reply the following consultation questions:

- Question 70 (Q70) – Do you support the new requirement for sales packaging to have at least 85% recycled paper or cardboard, and for grouped packaging to have at least 80%?
- Question 71 (Q71) – What types of paper are commonly used for packaging liquid products? Is kraft paper the predominant choice?
- Question 72 (Q72) – What are the typical applications of kraft paper, and how might these influence the setting of recycled content requirements in various packaging contexts?
- Question 73 (Q73) – What percentage of recycled material can be effectively incorporated into flexible paper packaging without compromising quality?
- Question 74 (Q74) – Do you support applying the proposed recycled content requirements for paper and cardboard to professional products (HSC, IILD, and IIDD)? If not, what specific challenges do you foresee for professional product packaging? Can you suggest changes that would address these issues while maintaining a minimum level of recycled content?
- Question 75 (Q75) – Do you agree with the newly proposed requirements for plastic packaging and the step-wise approach? If not, what challenges or suggestions do you have regarding this proposal?
- Question 76 (Q76) – Are there any comments on the *Assessment and Verification* requested for compliance with this criterion?
- Question 77 (Q77) – Please, share any other comments/suggestions you deem relevant about this criterion providing reasons supporting them.

6.7.2. Design for recycling

<table>
<tr><th colspan="4">TR1 Proposed sub-criterion (x) design for recycling</th></tr>
<tr><td>ALL</td><td colspan="3">Plastic packaging shall be designed to facilitate effective recycling by avoiding potential contaminants and incompatible materials that are known to impede separation or reprocessing or to reduce the quality of recyclate. The label or sleeve, closure and, where applicable, barrier coatings shall not comprise, either singularly or in combination the materials and components listed in Table 4. Pump imechanisms (including in sprays) are exempted from this requirement.</td></tr>
<tr><td rowspan="3">ALL</td><td></td><td>Packaging element</td><td>Excluded materials and components (*1)</td></tr>
<tr><td></td><td>Body/Material</td><td>— Dyed black, using soot-carbon-based pigments
— Pouch/bag laminates with layer of different materials (composite packaging)</td></tr>
<tr><td></td><td>Label or sleeve</td><td>— PS label or sleeve in combination with a PET, PP or HDPE packaging
— PVC label or sleeve in combination with a PET, PP or HDPE packaging
— PETG label or sleeve in combination with a PET packaging
— PET label or sleeve (except LDPET (< 1 g/cm3)) in combination with a PET ~~bottle~~ packaging
— Any other plastic materials for sleeves/labels with a density > 1 g/cm^3 used with a PET packaging
— Any other plastic materials for sleeves/labels with a density < 1 g/cm3 used with a PP or HDPE packaging (except for PP labels and polyolefins (PO) sleeves used in combination with a PP packaging or PE labels and</td></tr>
</table>

			PE sleeves used in combination with a HDPE packaging) — Labels or sleeves that are metallised or are welded to a packaging body (in mould labelling) — Glued cellulose-based labels for PP, HDPE, LDPE, PS packaging, that cannot be removed in cold washing — Non-removable washable adhesive applications (in water or alkaline at 80° C) for PET bottle
		Closure	— PS closure in combination a with a PET, HDPE or PP ~~bottle~~ packaging — PVC closure in combination with a PET, PP or HDPE ~~bottle~~ packaging — PETG closures or closure material with a density > 1 g/cm^3 in combination with a PET packaging — Closures made of metal, glass, EVA which are not easily separable from the packaging — Closures made of silicone. Silicone closures with a density < 1 g/cm^3 in combination with a PET packaging and silicone closures with a density > 1 g/cm^3 in combination with HDPE or PP packaging are exempted. — Metallic foils or seals which remain fixed to the ~~bottle~~ packaging or its closure after the product has been opened
		Barrier coatings	Polyamide, functional polyolefins, EVOH provided with tie layers made by a polymer different that the one used for the packaging body, metallised and light blocking barriers
		(*1) EVA — Ethylene Vinyl Acetate, EVOH — Ethylene vinyl alcohol, HDPE — High-density polyethylene, LDPET – Low Density Polyethylene terephthalate, PET — Polyethylene terephthalate, PETG — Polyethylene terephthalate glycol-modified, PP — Polypropylene, PS — Polystyrene, PVC — Polyvinylchloride, PO - Polyolefins	
ALL	*Assessment and verification:* the applicant shall provide a signed declaration of compliance specifying the material composition of the packaging including the container, label or sleeve, adhesives, closure and barrier coating, as appropriate, along with photos or technical drawings of the primary packaging.		

TR2 Proposed sub-criterion (x) design for recycling			
ALL	Plastic packaging shall be designed to facilitate effective recycling by avoiding potential contaminants and incompatible materials that are known to impede separation or reprocessing or to reduce the quality of recyclate. The label or sleeve, closure and, where applicable, barrier coatings shall not comprise, either singularly or in combination the materials and components listed in Table 4. Pump mechanisms (including in sprays) are exempted from this requirement.		
ALL		Packaging element	Excluded materials, components and treatment (*1)
		Main Body/ Material composition	For fibre-based packaging — Lacquered surface *(Exception: clear protective lacquer up to a thickness of ≤ 5 µm)* — Plastic-coated surface For pouches/plastic bags and other laminates — Multilayer structure composed of different polymers/materials *(Exceptions: PP up to 5 wt% in PE flexibles and PE up to 10 wt% in PP flexibles)* For all plastic packaging

			— Fluorination treatment — Electrobeam treatment
		Colours	<u>For all plastic packaging</u> — Non-NIR detectable colours — Black, carbon black, inner black layer, fluorescent, <u>For PET packaging</u> — opaque
		Label or sleeve	<u>For all plastic packaging</u> — Metallised labels or sleeves — Non-releasable or welded to a packaging body (in mould labelling) — Paper labels with fibre loss — Label/sleeve on container > 500 ml covering more than 70% of the container. Label/sleeve on container ≤ 500 ml covering more than 50% of the container[424]. <u>For PET packaging</u> — PS, PVC, PETG, C-PET, POM, PET *(Exception: LDPET (< 1 g/cm3))* labels/sleeves or any other plastic materials for sleeves/labels with a density > 1 g/cm^3 <u>For HDPE/PE and PP packaging</u> — PS, PVC, PET, PETG, C-PET, PLA, PE-X (crosslinked PE), or any other plastic materials for sleeves/labels with a density < 1 g/cm^3 *(Exceptions: for PO, PE, PP labels/sleeves)* <u>For PE and PP flexible films packaging</u> — Labels of a different material to the main material *(Exceptions: PP up to 5 wt% in PE flexibles and PE up to 10 wt% in PP flexibles)* — PE-X (cross-linked PE), — Fibre-based (paper) labels
		Adhesives	<u>For PET packaging</u> — Alkali/water non-soluble adhesive — Alkali/water non-releasable adhesive at 60-80°C <u>For HDPE/PEpackaging</u> — Non-releasable in the recycling process for HDPE packaging <u>For PP packaging</u> — Non-releasable in the recycling process for PP packaging

[424] The calculation of the percentage shall be based on the two-dimensional profile of the container i.e., the area of the top and bottom of the packaging and the sides of a box/ container/bottle/can shall not be included in the calculation.

			For PE and PP flexible films packaging — Non-soluble in water or non-releasable in water at less than 40°C
		Closure	For all plastic packaging — Closures made of metal, glass~~, EVA which are not easily separable from the packaging~~ — Closures made of silicone. ~~Silicone closures with a density < 1 g/cm³ in combination with a PET bottle packaging and silicone closures with a density > 1 g/cm³ in combination with PEHD HDPE or PP bottle packaging are exempted.~~ — Metallic foils or any seals which remain fixed to the bottle or its closure after the product has been opened For PET packaging — PS, PVC, C-PET, POM, PETG closures with a density > 1 g/cm³ and any other materials and blends with density >1 g/cm³ — EVA- containing component (e.g. liner or valve) with density ≥1 g/cm³ For HDPE/PE packaging — PS, PVC closures, — PET, PETG, PLA (all with density > 1 g/cm³) — PP >10%, PE-X (cross-linked PE), — Non-PO-plastics with a density of < 1 g/cm³ — Foams with density < 1 g/cm³ For PP packaging — PS, PVC closures, — PET, PETG, PLA (all with density > 1 g/cm³) — HDPE, LDPE, LLDPE, MDPE, PE-X (cross-linked PE), — Non-PO-plastics with a density of < 1 g/cm³ — Foams with density < 1 g/cm³ For PE and PP flexible films packaging — Closure of a different material to the main material — Aluminium, PVC, PET, PETG, PS, PLA, nonPO — Foams with density < 1g/cm³
		Barrier coatings	For all plastic packaging — Polyamide (PA) — Functional polyolefins — Metallised and light blocking barriers For PET packaging — EVOH — PGA For HDPE and PP packaging — EVOH ≥ 6 wt% provided with tie layers ratio ≥ 2 made by a polymer

			different that the one used for the packaging body — PVDC — PVOH For PE and PP flexible films packaging — EVOH ≥ 5 wt% provided with tie layers made by a polymer different that the one used for the packaging body — PVC, PVDC, PE-X (cross-linked PE), — PVOH, AlOx coating with PVOH primer — Aluminium
		Additives	For all polyolefin plastic packaging — Additives that do increase the density higher than 0,97 g/cm³ (e.g.$CaCO_3$, etc.) — Bio-/oxo-/photodegradable additives; For PET packaging — Nanocomposites — Bio-/oxo-/photodegradable additives — UV stabilizers; Acetaldehyde (AA) blockers; Optical brighteners; Oxygen scavengers For HDPE and PP packaging — Flame-retardant additives, plasticizers For PE and PP flexible films packaging — Foaming agents used as expanding chemical agents
		Inks/Printing	For all packaging — Direct print (*Exceptions: production codes, date codes and UFI codes*[425]) — Inks non-compliant with EuPIA Exclusion Policy for Printing Inks and Related Products[426] — Bleeding inks — De-inking/washable inks — NC and PVC binders For PET packaging — Metallic inks For HDPE and PP packaging — PVC copolymers and terpolymer binders and any other chlorinated binders

[425] The UFI (Unique Formula Identifier) code is used to uniquely identify hazardous mixtures in order to enable poison control centres to administer first aid faster. The code is found on products classified as hazardous to health or physical hazards under EU Regulation (EC) 1272/2008 (CLP Regulation).

[426] EuPIA Exclusion Policy for Printing Inks and Related Products

			For PE and PP flexible films packaging — Direct print *(Exceptions: a) production codes, date codes and UFI codes*[427]*; b) inks (without NC and PVC binders) up to a maximum 5% of total packaging structure weight)*
		(*1) AlOx — Aluminium oxide, $CaCO_3$ — calcium carbonate, C-PET — crystallised polyethylene terephthalate), EVA — Ethylene Vinyl Acetate, EVOH — Ethylene vinyl alcohol, HDPE — High-density polyethylene, LDPE — Low Density Polyethylene, LLDPE — Linear Low Density Polyethylene, LDPET – Low Density Polyethylene terephthalate, MDPE — Medium density polyethylene, NC — Nitrocellulose, NIR — Near-Infrared, PA — Polyamide, PE — Polyethylene, PET — Polyethylene terephtalate, PETG — Polyethylene terephthalate glycol-modified, PE-X — cross-linked polyethylene, PGA — poly(glycolic) acid, PLA — Polylactic acid, PO — Polyolefins, POM — Polyoxymethylene, PP — Polypropylene, PS — Polystyrene, PVC — Polyvinylchloride, PVDC — Polyvinylidene chloride, PVOH — Polyvinyl alcohol	
ALL	*Assessment and verification:* the applicant shall provide a signed declaration of compliance specifying the material composition of the packaging including the container, label or sleeve, adhesives, closure, barrier coating, Main Body/ Material composition, Colours, Adhesives , Additives, Inks/Printing, as appropriate, along with photos or technical drawings of the primary packaging.		

Rationale for the proposed (x) Design for Recycling sub-criterion

The "Design for Recycling" criterion, consistent with the objectives of the Packaging and Packaging Waste Regulation (PPWR), underscores the need for thoughtful packaging design that bolsters high-quality recycling. This criterion emphasizes the importance of designing packaging to facilitate efficient recycling by reducing impurities and avoiding material combinations that hinder the separation of different materials or diminish the quality of the recycled material. While monomaterial packaging is the easiest to recycle, it is not always feasible or preferable. Therefore, for packaging composed of different materials, a table is proposed to detail material combinations and treatments to avoid, ensuring that recycling efforts are not impeded. Through these measures, the criterion seeks to enhance the development of reusable packaging and propel the recycling industry forward.

First proposal (TR1)

In the first proposal the main changes from the existing Design for Recycling criteria requirements were mainly related to the following:

— Pouches requirement: exclusion of laminated with layer of different materials

— Labels: alignment with the Commission Decision for Cosmetics and inclusion of a specific requirement for glued cellulose-based labels in alignment with the Blue Angel.

— Colour: exclusion of carbon black pigment

— Barrier coating: exclusion of EVOH provided with tie layers made by a polymer different that the one used for the packaging body.

Outcomes from and after the 1st AHWG meeting

[427] The UFI (Unique Formula Identifier) code is used to uniquely identify hazardous mixtures in order to enable poison control centres to administer first aid faster. The code is found on products classified as hazardous to health or physical hazards under EU Regulation (EC) 1272/2008 (CLP Regulation).

A total of 45 comments were received on this sub-criterion, which are found in full in the Table of Comments (ToC1). As a general observation regarding changes to the existing Design for Recycling criterion, stakeholders provided feedback on several aspects, including definitions and clarifications of terminology, recyclability challenges related to composite packaging (e.g., pouches), and issues concerning labels and adhesives. Concerns were raised about the feasibility of excluding composite packaging materials due to current market limitations and technical challenges. Stakeholders suggested that label and adhesive requirements need more detailed technical information and alignment with practical recyclability standards. Additional concerns were raised about pigments and detectability, with suggestions that exclusions should be based on detectability rather than color. There were also suggestions for alignment with PPWR, the new CEN-CENELEC standards, and other guidelines and standards such as Recyclass and the German minimum standards.

Other feedback received directly addresses the questions included in TR1:

Question 40 (Q40) – PP labels with HDPE packaging are currently not allowed. Are stakeholders currently utilizing PP labels with HDPE packaging? Do any constraints or considerations exist related to the recycling process for this combination?

Question 41 (Q41) – Do you employ water-soluble adhesives for plastic labels in your products? If not, what type of adhesive is utilized?

Most stakeholders reported widespread use of PP labels with HDPE packaging and no significant recycling issues, citing studies that show PP labels do not interfere with recycling when end-of-life parameters are considered. It was suggested that PP labels could be allowed if they are removable with a density below 1 g/cm³ and use water-soluble adhesive. Others indicated no experience with this combination, using mainly coated paper labels.

The feedback on water-soluble adhesives was largely negative. Stakeholders expressed opposition to the requirement due to conflicts with CLP regulations, emphasizing that existing product safety regulations would conflict with such requirements. It was mentioned that water-soluble adhesives are limited in availability and have technical application challenges. A stakeholder suggested using the term "releasable adhesive," as mechanical friction aids in label removal during recycling

New proposal

The "Design for Recycling" criterion was significantly revised after its initial proposal, which was included in TR1 and presented during the 1st AHWG (Ad Hoc Working Group) meeting.

This revision led to the implementation of more ambitious provisions aimed at preventing characteristics or combinations of materials and components that could downgrade or disqualify packaging recyclability. Feedback was gathered both during and after the first AHWG meetings, as well as from the organized Packaging sub-AHWG group meetings, which focused on refining draft criteria proposals related to specific aspects of packaging. Additionally, extensive consultations with recycling experts and a review of well-established recycling guidelines in Europe, along with ISO Type I ecolabel schemes, were instrumental in shaping the proposed changes. The significant changes compared to the initial proposal in TR1 also aimed to align with the new provisions of the revised PPWR text.

In revising the requirements and parameters to be factored in the setting of design for recycling criteria, various well-established European recycling guidelines were consulted, focusing especially on:

- The RecyClass Design for Recycling guideline[428] developed by Plastic Recyclers Europe (PRE), and supported by various stakeholders throughout the value chain. This guideline addresses design incompatibilities according to the commonly-used technologies of recycling infrastructures in Europe.
- The minimum standard for determining the recyclability of packaging subject to system participation pursuant to section 21(3) of the Verpackungsgesetz (Packaging Act)[429], in consultation with the German

[428] https://recyclass.eu/recyclability/design-for-recycling-guidelines/
[429] https://www.verpackungsregister.org/fileadmin/files/Mindeststandard/Minimum_standard_Packaging-Act_Edition_2023.pdf

Environment Agency (Umweltbundesamt, UBA) and in agreement with the Zentrale Stelle Verpackungsregister (ZSVR), the German authority.

— The CEFLEX Design for a Circular Economy guidelines (D4ACE) for the recyclability of polyolefin-based flexible packaging[430]. CEFLEX, or the Circular Economy for Flexible Packaging, is a collaborative European consortium involving companies and organizations across the flexible packaging value chain.

Additionally, the Nordic Swan and Blue Angel ecolabels have been selected as references due to their status as well-established ISO Type I schemes in the European market, to inform the revision of the ambition level of the criterion.

The subsequent section provides a comprehensive overview of the modifications across various packaging parameters and components, which collectively influence the overall recyclability of packaging products.

List of elements/parameters within the scope of the criterion

The existing criterion delineates a list of materials and components that are prohibited from use in specific packaging elements/parameters, including labels or sleeves, closures, and barrier coatings. During the revision process in the first criterion proposal it was included an additional packaging element/parameter, namely the "Body/Material." After extensive consultations with key stakeholders and the positive responses received, the packaging elements and parameters within the criterion were refined to align with those used for defining design-for-recycling criteria in Article 6 of the PPWR. These elements and parameters, which influence the overall recyclability of packaging, include:

— Main Body/ Material composition

— Colours

— Label or sleeve

— Adhesives

— Closure

— Barrier coatings

— Additives

— Inks/Printing

Additionally, the design-for-recycling requirements have been categorized by packaging type (e.g. fibre-based, pouches/plastic bags) and plastic types (e.g. PET, HDPE, PP, PE and PP flexible films) to enhance accessibility and prevent confusion.

Main Body/ Material composition

The current criterion lacks explicit requirements for fibre-based packaging. Under the German Minimum Standards for Packaging Act, there are clear provisions concerning materials that hinder recycling for paper, paperboard, and cardboard packaging. These specifications and material-specific recycling incompatibilities are informed by the German Environment Agency's annual reviews of sorting and recycling practices[431]. Furthermore, the Blue Angel ecolabel outlines prohibited materials and components for fibre-based packaging, emphasizing the exclusion of certain elements that impede the recycling process. To align with both the German minimum standards and the Blue Angel requirements, it is proposed that fiber-based packaging should not include lacquered surfaces, except for clear protective lacquer with a thickness of ≤ 5 micrometers, and should not have plastic-coated surfaces.

In the initial proposal of the current revision process, the JRC proposed that pouches should be made of monomaterial, meaning they should not be laminates composed of layers of different materials. To enhance

[430] https://guidelines.ceflex.eu/assets/public_docs/D4ACE_guidelines_An_Introduction.pdf

[431] https://www.umweltbundesamt.de/publikationen/praxis-der-sortierung-verwertung-von-verpackungen-0

the quality and quantity of recycled materials, it is essential to transition from multi-material, multilayer films to mono-material, multilayer films.

Multilayers are particularly challenging for recycling and, hence, have been the focus of several design-for-recycling initiatives to encourage the use of monomaterials. Although the separate collection of flexible materials has been implemented in most countries, almost no multilayers were sorted for recycling in 2020 due to design and processing limitations based on the data reported in the 2023 report by Plastics Recyclers Europe (PRE) on the state of the Flexible Films Market in Europe[432]. As a result, multilayers often end up as rejected fractions that are eventually incinerated.

Also, in the Impact Assessment accompanying the PPWR proposal,[433] it is reported that "products such as multi-laminate plastic bags (which may contain two or more different types of polymers, as well as a thin layer of aluminium) cannot be recycled at scale with existing recycling technology."

Bearing this in mind, the JRC proposes an expansion of the requirements to exclude all laminated packaging that incorporates layers of different materials or polymers. However, after consultations and receiving information from recycling experts, it appears that laminated packaging can remain compatible with recycling processes if the types of laminating materials are carefully selected and used in the correct amounts. RecyClass tests have confirmed this compatibility.

The RecyClass Technical Committees examined the effect of polypropylene (PP) on the recyclability of high-density polyethylene (HDPE) rigid packaging, as well as the impact of HDPE on the recyclability of PP rigid packaging. This investigation followed the RecyClass Recyclability Evaluation Protocol for HDPE or PP. According to the study's results, PP content up to 5 wt% in polyethylene (PE) and PE content up to 10 wt% in PP are deemed compatible for recycling purposes.

Following the sub-AHWG meeting some stakeholders expressed concern about the exclusion of 'plastic-coated surfaces' and liquid packaging board, although not directly, from the list of acceptable materials and paper packaging. They highlighted that in Europe, liquid packaging board is efficiently sorted and recycled, with an expanding infrastructure, and suggested aligning with the German minimum standard on recyclability.
In alignment with the German minimum standards, the Blue Angel scheme excludes liquid packaging board for detergent products if its design deviates from the standard structure, such as those not using wet-strength cardboard or PE ± aluminium. This is in addition to the exclusion of lacquered surfaces (except for clear protective lacquer with a thickness of ≤ 5 micrometers) and plastic-coated surfaces from fibre-based packaging. The Nordic Swan excludes paper/cardboard packaging that uses two-sided plastic laminate, PVC, other halogenated plastics, aluminium, and other metals. Stakeholders, referencing the 4evergreen alliance's "Circularity by Design" guidelines[434], highlighted that thermoplastic extrusion barrier coatings on the inside of packaging are considered fully or conditionally compatible with standard recycling processes, although double-sided coatings are not. Thus, they suggested that a single plastic-coated surface should not pose a problem in standard recycling systems, supporting its inclusion in the EU Ecolabel criteria. As noted in the 'Study to support the finalisation of the legal proposal and the impact assessment for the review of the Packaging and Packaging Waste Directive' [435], packaging primarily made of non-plastic materials but containing inseparable plastic results in only the board being recycled in paper recycling processes. Otherwise, more sophisticated separation and recycling processes are needed, which are not yet widespread. Plastics like PE coating adhere very firmly to paper, complicating separation during recycling. As a result, a hydropulping machine is required to remove the PE coating from the paper at the recycling plant. The CEPI EUROKRAFT 2023 report[436] indicates that certain characteristics and designs of kraft paper products may affect recyclability. Wet-strength agents, which reduce the board's susceptibility to wettability, can potentially decrease the yield from the fibre recovery process, as it relies on hydraulic forces to separate fibres. To facilitate recyclability, lamination films must be easily separable from kraft paper; otherwise, fibre yield will be reduced as fibres are lost with the barrier lamination in the reject stream at the recovered paper mill.

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[432] Flexible Films Market in Europe, state of play. Production collection recycling data, 2023.
[433] Impact Assessment PPWR: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A01994L0062-20180704
[434] 4evergreen Circularity by Design guidelines for Fibre-based Packaging, version 2, June 2023
[435] Study to support the finalisation of the legal proposal and the impact assessment for the review of the Packaging and Packaging Waste Directive
[436] CEPI EUROKRAFT 2023, Paper sack-Design for Recycling Guideline

Additionally, some adhesives may soften or plasticize in the heat of the process, forming "stickies" that can spoil the performance and appearance of the finished paper. Given these complexities and the varying practices and standards across regions, in order to make an informed, balanced, and well-considered decision regarding liquid packaging board, further information and insights from organizations representing the paper industry, paper manufacturing, and recycling processes are needed.

After consulting with experts in recycling processes, it has been proposed to exclude the use of both fluorination and electron beam treatments for all plastic packaging because they negatively affect the materials' recyclability. Additionally, fluorination will be further restricted in packaging applications in accordance with the revised regulations on per- and polyfluoroalkyl substances (PFAS) as outlined in the updated Plastic Packaging Waste Regulation (PPWR). Furthermore, electron beam treatment has been found to induce crosslinking in polymers, which complicates the recycling process.

Colour

Transparent and light-coloured plastics are generally the easiest to recycle due to their compatibility with optical sorting technologies. In contrast, darker colours, especially carbon black, complicate automated sorting because they absorb infrared light, reducing the effectiveness of NIR (Near-Infrared) systems. As a result, excluding carbon black from EU Ecolabel detergent packaging has been suggested in the first proposal made during the revision process. As stakeholders advised that exclusion decisions should focus on NIR detectability rather than colour, the JRC proposed to modified the proposal and consider the exclusion of "All non-NIR detectable pigments such as carbon black". The collected feedback predominantly supported the proposed modification on the grounds that it aligns with the terminology established by the industry-recognized RecyClass guidelines, and is in accordance with the German minimum standard. Some respondents also recommended excluding as well dark-colored packaging to improve the quality of the resulting recyclate. Furthermore, additional consultations indicated that materials and components with specific characteristics detrimental to the recycling process, such as fluorescent and opaque plastics, should also be considered for exclusion.

Given the former, the JRC is proposes the exclusion of non-NIR detectable colours and black, carbon black, inner black layer, fluorescent materials from all packaging. In addition it is propose the exclusion of opaque PET since it is not widely recycled in normal recycling streams. During the consultation, stakeholders requested clarification and a definition of the term 'opaque'. In the absence of an official definition of 'opaque' within the given context, and after consultation with recycling experts, the JRC proposes to reference the method and criteria used to classify a container's opacity based on the visibility of text through the PET container[437]:

"*OPAQUE PET TEST: Method for classifying PET plastic containers for liquids (CPL) in order to assess opaqueness*

The PET container to be assessed must be pressed lengthwise so that the internal walls of the container adhere to each other as closely as possible. The PET container shall be classified as opaque if the sample text stated above cannot be read when placed horizontally in contact with this white printed sheet (reading with reflected light and not transparency). The sample test, in accordance with the UNI 1103801-2010 standard is made up of black capital characters, 5 mm body (then again font) on a white sheet. If the text is legible, the container being assessed is considered NON-OPAQUE and therefore selectable (provided that the volume falls between 0.5 and 5 L). Otherwise, the container is considered OPAQUE."

Based on this established method and criteria, the JRC proposes the following definition of "opaque":

Opaque: A property of a PET plastic container that prevents the passage of light to such an extent that text placed directly against the container cannot be read. In this context, a container is classified as opaque if, when its walls are pressed together and placed against a white sheet with 5 mm black capital letters, the text is not visible using reflected light. This classification adheres to the UNI 1103801-2010 standard, distinguishing opaque containers from those that allow text readability, which are considered non-opaque.

[437] https://www.corepla.it/wp-content/uploads/2024/06/general_condition_of_sales_and_attachment-2.pdf

Label or sleeve

The list of materials and components related to labels, which may impact the recycling of various packaging types, was expanded based on insights gathered through stakeholder consultations, consolidated European recycling guidelines, and the requirements of other ISO Type I certification schemes.

Paper labels with fibre loss have been excluded, as residual paper fibres can adversely impact the properties and quality of the recycled material. These fibres contaminate the wash water and may adhere to plastic flakes, reducing overall material quality. Additionally, the hot caustic bath used in PET recycling renders paper labels into pulp that cannot be filtered out. Small fibres remain and carbonize during extrusion, leading to unacceptable quality. Therefore, paper labels must be free of fibre loss.

Labels must be designed so that NIR sorting machinery can identify the bottle polymer even with the label attached. Large labels or sleeves can reduce the efficiency of NIR detection; if the NIR sensor at the sorting facility reads the label instead of the bottle, the bottle may end up in the rejected fraction. To ensure optimal detection efficiency, a requirement has been added to limit label or sleeve coverage to a maximum of 70% of the surface area for containers over 500 ml and a maximum of 50% for containers of 500 ml or less. These limits align with guidelines set by recyclers[438].

The calculation of the percentage shall be based on the two-dimensional profile of the container. The area of the top and bottom of the packaging and the sides of a container/bottle shall not be included in the calculation. If the label on the front of container/bottle and back of container/bottle are of different size, the maximum percentage shall be fulfilled for each side separately. For a cylindrical bottle, the calculation can also be based on the three-dimensional profile exclusive bottom and top of the bottle.

Feedback from stakeholders indicated that PE and PP packaging and labels are compatible for recycling but are currently not permitted under the existing design-for-recycling requirements. For this reason, exceptions were added to allow the use of PE, PP, and PO labels and sleeves with HDPE and PP packaging to support compatibility.

Adhesive

After consulting stakeholders, the JRC proposes to address requirements for labels and adhesives separately, as each affects the recycling process differently. This approach also aligns with the new PPWR and recycler guidelines.

During the first sub-AHWG, it was proposed to revise the requirements to reflect the entire recycling process, not just the washing conditions (cold wash) as currently stated in the EU Ecolabel criteria for cosmetics. This revision also aims to avoid potential conflicts with existing requirements in the CLP regulation for labels to remain firmly attached to packaging. Furthermore, it was suggested to consider specific requirements for PSLs and adhesives, given recent technological advancements in this area.

Feedback received after the first sub-AHWG indicated that the wording of the requirements should align with RecyClass's new guidelines.

Additional information gathered acknowledged that RecyClass tests verified a label removal rate of more than 90% from HDPE packaging due to mechanical stress during grinding and subsequent washing.

Given the former, the JRC proposes to align the requirements with the updated RecyClass guidelines[439], taking into account the complete recycling process, including the critical step of mechanical friction that facilitates label removal, rather than focusing solely on washing conditions, as was previously proposed.

While the benefits of these new requirements are acknowledged, feedback has been received indicating that label suppliers are currently unable to confirm compliance with the proposed adhesive requirements. They

[438] https://recyclass.eu/recyclability/design-for-recycling-guidelines/

[439] https://recyclass.eu/wp-content/uploads/2024/07/REP-HDPE-02.pdf
https://recyclass.eu/wp-content/uploads/2024/01/RecyClass-Recyclability-Evaluation-Protocol-for-adhesives-for-labels-on-PET-bottlesv1.0-FINAL.pdf

have expressed concerns about their readiness and the implementation timeline. Therefore, further information and insights from stakeholders are needed.

Closure

Also in this case additional exclusion have been considered based on the information gathered.

The exclusion of Ethylene Vinyl Acetate (EVA) from all types of packaging was removed following studies by the RecyClass Technical Committee, which demonstrated that EVA is compatible with both flexible and rigid PE and PP[440]. EVA is also compatible with PET when the EVA-containing component (typically a liner or valve) has a density lower than 1 g/cm³. Consequently, a requirement has been added to limit the use of EVA in PET packaging when the EVA-containing component has a density of ≥1 g/cm³.

Based on the information obtained, the exemptions for silicone closures with a density < 1 g/cm³ in combination with PET bottle packaging and those with a density > 1 g/cm³ in combination with HDPE or PP bottle packaging were removed. Since silicone separation is never fully effective, and many alternatives are available on the market, it is recommended to use closures made from alternative materials rather than silicone.

The JRC proposes allowing up to 10% polypropylene (PP) in high-density polyethylene (HDPE) or polyethylene (PE) packaging to accommodate PP caps. This allowance is justified by the widespread use of PP in bottle caps, particularly for customized and hinged types, due to its high stress tolerance. While HDPE is commonly used for standard caps, PP's superior melt flow rate at higher temperatures makes it ideal for injection molding, a technology widely employed for producing precise closures. This ensures both compatibility and performance in packaging applications.

Barriers

The list of materials and components related to barriers, which may impact the recycling of various packaging types, was expanded based on insights gathered through stakeholder consultations, consolidated European recycling guidelines, and the requirements of other ISO Type I certification schemes.

The EVOH (Ethylene Vinyl Alcohol) barrier can impact recyclability in various ways. In the current proposal for recycling criteria, EVOH with tie layers made from a polymer different from that of the packaging body is excluded from all packaging. After gathering insights from recycling guidelines and industry feedback, the proposed requirements have been amended to specify distinct conditions for different types of plastics. This differentiation is due to the fact that concerns regarding EVOH primarily affect the recycling of PET bottles, whereas they have a lesser impact on HDPE or PP containers. For PET bottles, EVOH is problematic as it significantly reduces recyclability quality, causing a yellowing effect.

The newly proposed criterion requirements set the exclusion of EVOH from PET packaging. Additionally, for rigid HDPE and PP, it is proposed to exclude EVOH at levels ≥ 6 wt% when the tie layer has a ratio ≥ 2 and is made from a polymer different from the packaging body. For flexible PE and PP, the exclusion threshold for EVOH is set at levels ≥ 5 wt% when the tie layer is made from a polymer different from that of the packaging body.

Based on insights gathered from recyclers' guidelines, the JRC proposes the exclusion of PVOH (polyvinyl alcohol) due to its use as a barrier in multilayer packaging, as PVOH primers can significantly compromise the quality of recyclates and the stability of the recycling process.

The RecyClass Technical Committee investigated the impact of polyvinyl alcohol primer used with AlOx coating on the recycling of PE films. The results indicated that PVOH primer has low compatibility with both PE and PP film recycling, as demonstrated by multiple quality defects. These included rough surfaces, increased gel formation, black particle presence, and a notable decrease in dart impact resistance. These issues are likely due to PVOH degradation during processing or its interaction with laminating adhesives.

The study also found pronounced discoloration in pellets containing the primer. Although these pellets could be used in blown film production, samples with higher PVOH concentrations exhibited volatiles and odors[441].

[440] https://recyclass.eu/wp-content/uploads/2023/07/Technical-Review-EVA-in-PE-Films.pdf

[441] https://recyclass.eu/wp-content/uploads/2024/01/Technical-Review-PVOH-primer-for-AlOx-coating.pdf

Additive

Regarding additives, it is proposed to align with the recommendations of packaging recycling experts by excluding biodegradable, oxo-degradable, and photodegradable additives. These materials are used in plastic packaging and films to accelerate degradation; however, concerns from the packaging community suggest that degradable additives may negatively impact plastic recycling[442][443].

The new criterion requirements also restrict the use of foaming agents and additives that increase the density above 0.97 g/cm³ (e.g., $CaCO_3$) in polyolefin plastic packaging. This restriction is due to the fact that fillers, foams, and other additives that alter density can adversely affect the proper separation process of plastics based on their intrinsic densities. Certain additives, such as inorganic fillers, can significantly change a polymer's density, leading to material recovery losses or a reduction in recyclate quality.

Additional exclusions relate to nanocomposites, UV stabilizers, flame retardants, plasticizers, and other additive materials in line with recyclers' guideline.

Inks

During the recycling process, flakes are washed to reduce contamination from product residues, but bleeding inks can contaminate the wash water during this phase. To address this, RecyClass has developed the quick test procedure for bleeding inks[444], allowing companies to easily evaluate their inks' behavior. In this procedure, inks are considered "non-bleeding" and pass if no noticeable discoloration is observed in either the wash or flotation water, and if no discoloration of the flakes is visible after drying. To prevent interference with the recycling process and protect recyclate quality, in the first sub-AHWG the JRC proposed integrating specific requirements for inks used in packaging. This proposal was supported by most stakeholders, though some pointed out potential confusion in the current wording and suggested clearer language to avoid misinterpretation. They also noted the need to specify the exact EuPIA document referenced in the criteria to eliminate ambiguity. In response, the JRC proposes updated ink requirements that limit the use of bleeding inks, clarify the language, and specify the EuPIA document referred to in the requirements—namely, the Exclusion Policy for Printing Inks and Related Products. Additionally, the JRC proposes further requirements for the general exclusion of bleeding inks, washable inks, and direct printing, with exceptions for production codes, date codes, and UFI (Unique Formula Identifier) codes.

A stakeholder commented that while restricting direct printing may be suitable for rigid plastic packaging—where alternative methods like sleeves or labels can be used—it poses significant challenges for flexible film packaging, where it is often necessary to print all required information directly on the packaging. Following consultations with recycling experts, it is proposed to allow direct printing on flexible plastic packaging, provided that inks (excluding those with NC and PVC binders) constitute no more than 5% of the total packaging structure weight. This is deemed compatible with the mechanical recycling process, as reported in the Ceflex 2023 Technical Report on the Recyclability of Polyolefin-based Flexible Packaging[445].

The exclusion of NC (nitrocellulose) and PVC (polyvinyl chloride) binders in inks is also considered in the new proposal, as these binders can degrade the quality of recycled plastics. Due to their instability at recycling temperatures, they create volatile compounds, cause a change of colour to black, and lead to defects in new products. Moreover, there are concerns regarding the potential genotoxic and mutagenic effects of NC binders.

Points for discussion 18 –Design for recycling

Stakeholders are invited to reply the following consultation questions:

— Question 78 (Q78) – Do you agree with the modifications proposed for the 'Design for Recycling' criterion? If not, what are the reasons for disagreement?

[442] https://recyclass.eu/recyclability/design-for-recycling-guidelines/

[443] https://plasticsrecycling.org/resources/press-release-apr-updates-formal-position-and-recyclability-category-for-degradable-additives/

[444] https://recyclass.eu/wp-content/uploads/2022/02/RecyClass-QT-Procedure-for-bleeding-inks-on-HDPE-and-PP-Containers_v1.0.pdf

[445] https://guidelines.ceflex.eu/guidelines/

- Question 79 (Q79) – What are the current capabilities of standard recycling processes in effectively separating and recycling all components of liquid packaging board, including paper and plastics, and to what extent is there a need for specialized mills and processes to enhance its recyclability?
- Question 80 (Q80) – How widespread is the adoption of advanced recycling technologies across Europe that can handle the complexities of liquid packaging board recycling?
- Question 81 (Q81) – Are there specific wet-strength agents, adhesives, inks, labels or other components/materials that should be used or avoided to enhance the recyclability of liquid packaging board?
- Question 82 (Q82) – What specific characteristics, including the thickness and content of the PE coating, should liquid packaging board components have to ensure high-quality recycling and effective fiber recovery?
- Question 83 (Q83) – Question for label and adhesive producers/suppliers regarding adhesive requirements: In light of recent technological advancements, do you believe the new requirements can be met with your current capabilities and plans by 2026/2027?
- Question 84 (Q84) – Please, share any other comments/suggestions you deem relevant about this criterion providing reasons supporting them.
- Question DR (QDR) Considering the evolving technologies in recycling, should the exemption for pump mechanisms (including sprays) from the 'Design for Recycling' criterion requirements be maintained, or is it feasible for these components to now meet the recycling design requirements?

6.7.3. Weight/utility ratio (WUR)

TR1 - Proposed sub-criterion (x) weight/utility ratio (WUR)

ALL

The weight/utility ratio (WUR) of the product shall be calculated for the sales packaging (primary packaging) only and shall not exceed the following values for the reference dosage.

DD

Product type	WUR (g/wash)
Dishwasher detergents	2,0
Rinse aids	0,4

HDD

Product type	WUR (g/l of washing water)
Hand dishwashing detergent	0,3

HSC

Product type	WUR (g/l of cleaning solution)
Undiluted products	1,0
RTU products	150
RTU products sold in bottles with trigger sprays	175

IIDD

Water hardness Product type	Soft < 1,5 mmol $CaCO_3$/l (g/l of washing solution)	Medium 1,5-2,5 mmol $CaCO_3$/l (g/l of washing solution)	Hard > 2,5 mmol $CaCO_3$/l (g/l of washing solution)
Powders	0,8	1,4	2,0
Liquids	1,0	1,8	2,5

IILD

Water hardness Product type	Soft < 1,5 mmol $CaCO_3$/l (g/kg of laundry)	Medium 1,5-2,5 mmol $CaCO_3$/l (g/kg of laundry)	Hard > 2,5 mmol $CaCO_3$/l (g/kg of laundry)
Powders	1,5	2,0	2,5
Liquids	2,0	2,5	3,0

LD

Product type	WUR

			(g/kg of laundry)
		Powder laundry detergents Laundry detergents in tablets or capsules	1,0
		Liquid/gel laundry detergents (not in tablets or capsules)	1,1
		Stain remover (pre-treatment only)	1,2
ALL	Sales packaging (primary packaging) made of more than 80 % of recycled materials is exempted from this requirement.		
ALL	*Assessment and verification:* the applicant shall provide the calculation of the WUR of the product. If the product is sold in different packaging (i.e. with different volumes), the calculation shall be submitted for each packaging size for which the EU Ecolabel shall be awarded. The WUR is calculated as follows: $$\mathbf{WUR} = \sum \frac{(W_i + U_i)}{(D_i + R_i)}$$ Where: W_i: weight (g) of the sales packaging (primary packaging) (i); U_i: weight (g) of non-post-consumer recycled packaging in the sales packaging (primary packaging) (i). $U_i = W_i$ unless the applicant can prove otherwise; D_i: number of reference doses contained in the sales packaging (primary packaging) (i); R_i: refill index. R_i = 1 (packaging is not reused for the same purpose) or R_i = 2 (if the applicant can document that the packaging component can be reused for the same purpose and they sell refills). The applicant shall provide a signed declaration of compliance confirming the content of post-consumer recycled material, along with relevant documentation. Packaging is regarded as post-consumer recycled if the raw material used to make the packaging has been collected from packaging manufacturers at the distribution stage or at the consumer stage.		
TR2 - Proposed sub-criterion (x) weight/utility ratio (WUR)			
ALL	The weight/utility ratio (WUR) of the product shall be calculated for the sales packaging (primary packaging) only and shall not exceed the following values for the reference dosage.		
DD		Product type	WUR (g/wash)
		Dishwasher detergents	~~2,0~~ 2.2
		Rinse aids	~~1,5~~ 0.4
HDD		Product type	WUR (g/l of washing water)
		Hand dishwashing detergent	~~0,6~~ 0,3
HSC		Product type	WUR (g/l of cleaning solution)
		Undiluted products	~~1,0~~ 2.0
		RTU products	~~150~~ 140
		RTU products sold in bottles with trigger sprays	~~175~~ 170
IIDD		Water hardness Product type	Soft < 1,5 mmol $CaCO_3$/l (g/l of washing solution)	Medium 1,5-2,5 mmol $CaCO_3$/l (g/l of washing solution)	Hard > 2,5 mmol $CaCO_3$/l (g/l of washing solution)
		Powders	~~0,8~~ 0.08	~~1,4~~ 0.14	~~2,0~~ 0.24
		Liquids	~~1,0~~ 0.15	~~1,8~~ 0.22	~~2,5~~ 0.3
IILD					
		Water hardness Product type	Soft < 1,5 mmol $CaCO_3$/l (g/kg of laundry)	Medium 1,5-2,5 mmol $CaCO_3$/l (g/kg of laundry)	Hard > 2,5 mmol $CaCO_3$/l (g/kg of laundry)

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<tr><td>Liquids</td><td>~~2,0~~ X.XX</td><td>~~2,5~~ X.XX</td><td>~~3,0~~ X.XX</td></tr>
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<table>
<tr><th>Product type</th><th>WUR
(g/kg of laundry)</th></tr>
<tr><td>Powder laundry detergents
Laundry detergents in tablets or capsules</td><td>~~1,0~~ 1.1</td></tr>
<tr><td>Liquid/gel laundry detergents (not in tablets or capsules)</td><td>~~1,4~~ 1.1</td></tr>
<tr><td>Stain remover (pre-treatment only)</td><td>~~1,2~~ 0.7</td></tr>
</table>
</td></tr>
<tr><td>ALL</td><td colspan="2">Sales packaging (primary packaging) made of more than 80 % of recycled materials is exempted from this requirement.</td></tr>
<tr><td>ALL</td><td colspan="2">
Assessment and verification: the applicant shall provide the calculation of the WUR of the product. If the product is sold in different packaging (i.e. with different volumes), the calculation shall be submitted for each packaging size for which the EU Ecolabel shall be awarded.

The WUR is calculated as follows:

$$\mathbf{WUR} = \sum \frac{(W_i + U_i)}{(D_i + R_i)}$$

Where:

W_i: weight (g) of the sales packaging (primary packaging) (i);

U_i: weight (g) of non-post-consumer recycled packaging in the sales packaging (primary packaging) (i). $U_i = W_i$ unless the applicant can prove otherwise;

D_i: number of reference doses contained in the sales packaging (primary packaging) (i);

R_i: refill index. R_i = 1 (packaging is not reused for the same purpose) or R_i = 2 (if the applicant can document that the packaging component can be reused for the same purpose and they sell refills).

The applicant shall provide a signed declaration of compliance confirming the content of post-consumer recycled material, along with relevant documentation. Packaging is regarded as post-consumer recycled if the raw material used to make the packaging has been collected from packaging manufacturers at the distribution stage or at the consumer stage.
</td></tr>
</table>

Rationale for the proposed (x) weight/utility ratio (WUR)

The weight-utility ratio (WUR) serves the purpose of reducing packaging volume and promoting the use of recycled materials, thereby aiding in the reduction of unnecessary transportation and air emissions, leading to lower CO_2 emissions. The WUR measures the amount of packaging used to deliver a specific product benefit.

Generally, lighter packaging costs less to transport and store, and its manufacturing and distribution require less energy and fewer raw materials. However, there are trade-offs. Excessive reduction of packaging can result in flimsy packaging and undesirable consequences, such as product deterioration, spillage, or uncontrolled dosing.

The WUR is a measure of the packaging mass required to deliver the reference dosage for a detergent. This indicator aims to limit packaging use and promote the incorporation of recycled materials. Additionally, the potential for refillability and reusability of the packaging is positively factored into the WUR calculation.

First proposal

The first proposal included in TR1 was based on a subset of the total dataset obtained from stakeholders, and therefore, it was not entirely clear whether this data was fully representative of all ecolabelled sub-products in the various categories. Nevertheless, the analysis was solid in providing a clear direction for the revision (reduction of limits). However, accurately quantifying the extent of the reduction in limits was not always feasible, as the full analysis was still ongoing.

Access to anonymized data on WUR for various EU Ecolabel-awarded detergent products, along with a comparative assessment of Blue Angel (BA) and Nordic Swan (NS) threshold values, enabled the formulation of a preliminary revision proposal. Threshold reductions were proposed for all product groups except IIDD and IILD. Given that the analysis was biased and a comparison with NS and BA was not possible for these detergent products, it was not feasible to precisely quantify the extent to which the limits should be reduced

Outcomes from and after the 1st AHWG meeting

A total of seven comments were submitted regarding this sub-criterion, with comprehensive details provided in the Table of Comments (ToC1). In general, stakeholders raised concerns that the proposed weight-utility ratio (WUR) reductions may be excessively stringent across multiple categories. They provided specific recommendations for adjusted limits to better align with current product capabilities.

- Dishwasher Detergent (DD): Two stakeholders indicated that the proposed thresholds for DD are overly ambitious. One stakeholder proposed a WUR limit of 2.3 g/wash for DD, and of 0.5 g/wash for rinse aids.
- Laundry Detergent (LD): Two stakeholders highlighted that the proposed limits for LD are excessively strict. One stakeholder recommended maintaining a WUR limit of 1.2 g/kg for LD powder and suggested a limit of 1 g/kg for LD liquid. Additionally, for LD Stain Remover, a reduction to 1 g/kg was advised, as the current proposal does not demonstrate sufficient ambition.
- Hand Dishwasher Detergent (HDD): One stakeholder expressed that the proposed HDD limit is too low, while two others asserted that the threshold lacks ambition. They recommended further reducing the limit to 0.2 g/L.
- Hard Surface Cleaning (HSC): For undiluted products, one stakeholder agreed with reducing the limit from 15 g/L to 1 g/L. However, three stakeholders argued that a WUR limit of 1 g/L for undiluted HSC products presents a significant challenge and proposed a limit of 5 g/L, representing a threefold reduction from the current 15 g/L. Another stakeholder proposed increasing the undiluted limit to 1.5 g/L. For HSC ready-to-use (RTU) products, one stakeholder recommended a more ambitious reduction to 140 g/L and 120 g/L for RTU spray.
- Industrial and Institutional Dishwasher Detergent (IIDD): Initially, no reduction was proposed due to insufficient data. However, two stakeholders recommended, based on their data, revising the WUR limits. One stakeholder proposed lowering the WUR limit for IIDD liquid to at least 0.28, 0.3, and 0.4 for soft, medium, and hard water, respectively. Another stakeholder suggested reducing these thresholds to 0.2 or 0.15, 0.21, and 0.3 g/L for soft, medium, and hard water, respectively.
- Industrial and Institutional Laundry Detergent (IILD): No specific comments were received for this product category.

Additional research and new proposal

The JRC conducted an analysis of all WUR anonymised data received from stakeholders, utilizing the results as a key source of evidence for developing new EU Ecolabel (EUEL) quantitative threshold proposals. Detailed information on the types of data received and the methods used for processing prior to results generation can be found in Annex 1. The following sections include tables presenting descriptive statistics and analysis results. Plots illustrating the data points received, categorized by the corresponding EUEL threshold, are displayed for each EUEL product group. Additionally, observations are provided regarding how other ecolabel schemes, such as Nordic Swan and Blue Angel, address WUR limits. Each subsection, corresponding to each EUEL product group, concludes with a summary indicating whether new EUEL criteria thresholds are proposed, and if so, specifying those proposals.

Laundry detergent (LD)

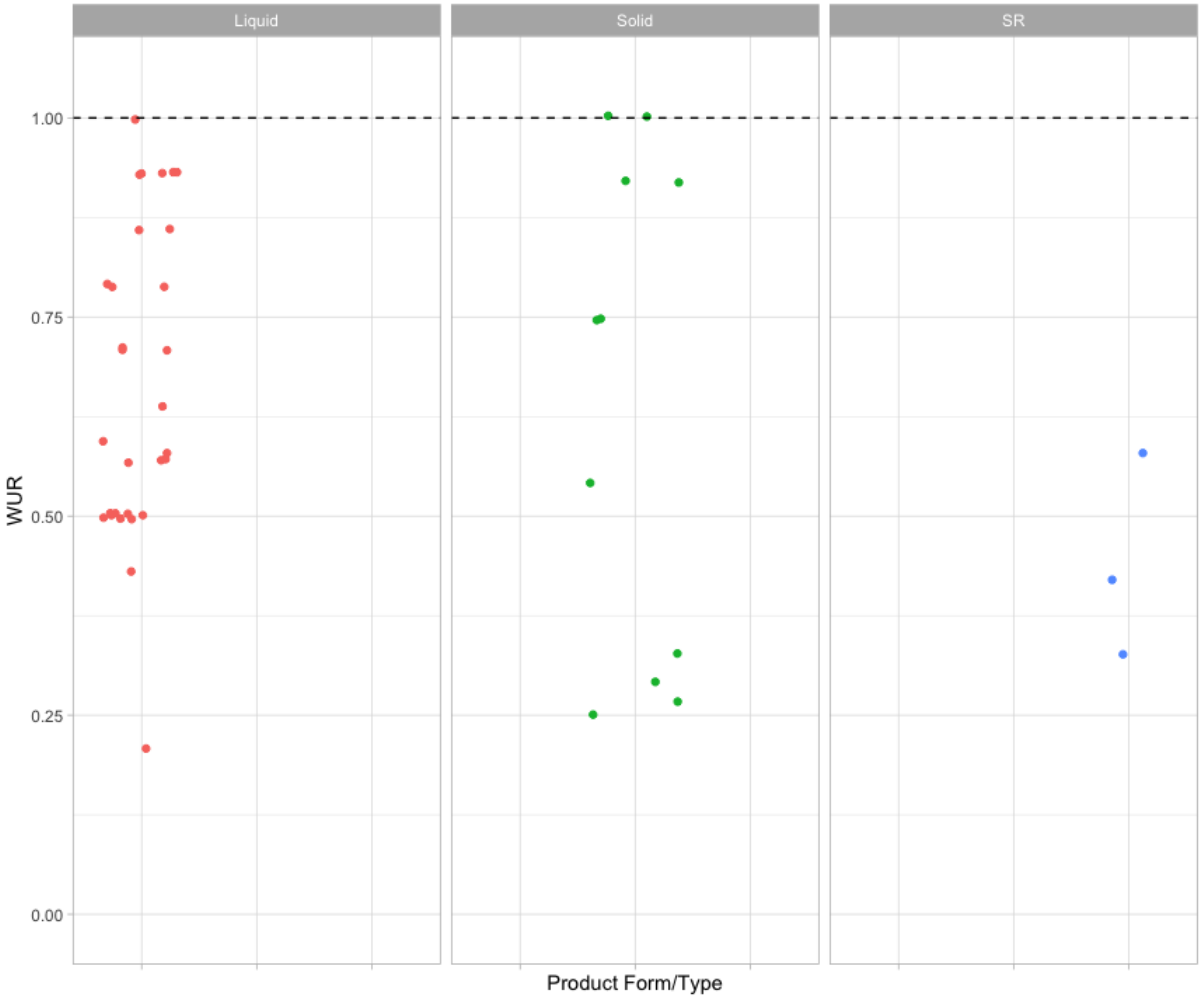
Table 63 - Laundry detergent descriptive statistics of weight-utility ratio (WUR) values.

Product type	*Product form/ format (Solid=powder/ tab;*	*Data points*	*Minimum (g/kg)*	*1st quartile*	*Median (g/kg)*	*Mean (g/k*	*3rd quartile*	*Maximum (g/kg)*	*TR1 proposed thresho*	*Existing Threshold*

	liquid = liquid/gel/capsule)	*(n)*		*(g/kg)*		*g)*	*(g/kg)*		*Id (g/kg)*	*(g/kg)*
Laundry detergent	Solid	11	0.30	0.37	0.90	0.77	1.10	1.20	1.00	*1.20*
Laundry detergent	Liquid	30	0.29	0.70	0.86	0.93	1.18	1.40	1.10	*1.40*
Stain removers		3	0.40	0.45	0.50	0.53	0.60	0.70	1.20	*1.20*

Source: JRC's elaboration with data provided by stakeholders.

Figure 32 - Laundry detergent weight-utility ratio (WUR) values. Each data point has been factored by its corresponding EUEL threshold, thus being unit less and ranging from "0" to "1", which corresponds to the existing EUEL threshold (depicted by the dashed line). Red dots represent products in liquid format while green dots represent solid ones. Blue dots represent stain remover (SR).



Source: JRC's elaboration with data provided by stakeholders.

About other ecolabels:

Table 64- Limits of weight-utility ratio (WUR) in Nordic Ecolabelling (NS) and Blue Angel (BA) for Laundry Detergents and Stain Removers

	Nordic Swan		Blue Angel	
LD	Product type	WUR (g/kg wash)	Product type	WUR (g/kg wash)
	Liquid in plastic packaging	1.1	Solid	1.2
	Solid in cardboard packaging	1.0	Liquid	1.2
	Powder in paper bag packaging	0.5	Stain remover	1.2
	Liquid in cardboard packaging	1.0		
	Stain removers in plastic packaging	0.7		

Source: NS Criterion O22, 006, v8.10[446]; BA DE-UZ 202, v1.10[447]

The discussions and conclusions about WUR threshold proposals, structured by product type and derived from the former evidences, are:

— *Laundry detergent (Solid)*

The majority (75%) of the data points fell below 1.10 g/kg, which is a tenth below the existing threshold of 1.2 g/kg and a tenth above the TR1 proposal. The BA threshold (1.2 g/kg) is equivalent to the EUEL threshold, while NS sets two different and more ambitious limits for solids in cardboard and paper bag packaging at 1.0 and 0.5 g/kg, respectively. Considering that stakeholders highlighted the TR1 proposed limit of 1.0 g/kg as excessively strict, the JRC proposes a limit of 1.1 g/kg. This limit is more ambitious than the existing limit but less stringent than the initially proposed limit and would potentially exclude "only" 25% of ecolabelled products (those with the highest WUR).

— *Laundry detergent (Liquid)*

The majority (75%) of the data points fell below 1.18 g/kg, which is lower than the existing threshold of 1.4 g/kg and slightly above the TR1 proposal of 1.1 g/kg. BA sets a threshold of 1.2 g/kg, while NS establishes two different limits: 1.1 g/kg for plastics packaging and 1.0 g/kg for cardboard packaging.

[446] Criterion 013; 006 Laundry detergents and Stain Removers; version 8.10; Nordic Ecolabelling. Available at: https://www.nordic-swan-ecolabel.org/criteria/laundry-detergents-and-stain-removers-006/

[447] Criterion *Weight utility ratio*; DE-UZ 202 Laundry detergents; version 1.1; January 2022; Blue Angel. Available at: https://www.blauer-engel.de/en/productworld/laundry-detergent

The JRC proposes a limit of 1.1 g/kg, matching the TR1 proposal and aligning closely with a stakeholder's suggestion and NS thresholds. This limit would potentially exclude "only" 25% of ecolabelled products (those with the highest WUR).

— *Stain Remover*

There were only a few data points (n=3) for this product type. All data points were below 0.7 g/kg, which is lower than the existing threshold of 1.2 g/kg. The BA threshold is equivalent to the EUEL threshold, while NS sets a limit of 0.7 g/kg. The JRC proposes a limit of 0.7 g/kg, which enhances the ambition level and aligns with the NS limit.

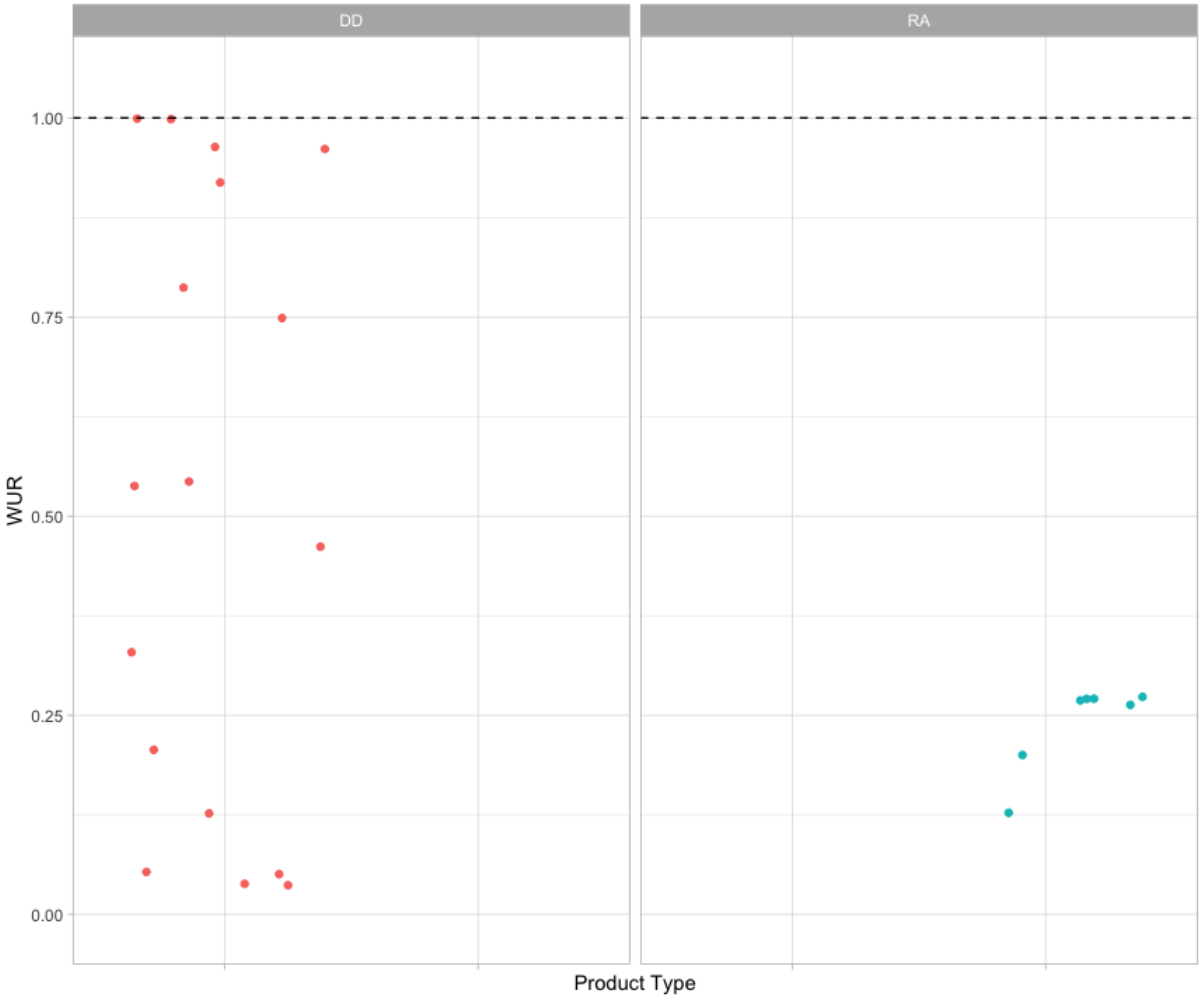
Dishwasher detergent (DD)

Table 65 - Dishwasher detergent descriptive statistics of weight-utility ratio (WUR) values.

Product type	*Data points (n)*	*Minimum (g/wash)*	*1st quartile (g/ wash)*	*Median (g/ wash)*	*Mean (g/ wash)*	*3rd quartile (g/ wash)*	*Maximum (g/ wash)*	*TR1 proposed threshold (g/ wash)*	*Existing Threshold (g/ wash)*
Dishwasher detergent	17	0.10	0.31	1.30	1.24	2.21	2.40	2.00	2.40
Rinse Aid	7	0.20	0.35	0.41	0.36	0.41	0.41	0.40	1.50

Source: JRC's elaboration with data provided by stakeholders.

Figure 33 - Dishwasher detergent weight-utility ratio (WUR) values. Each data point has been factored by its corresponding EUEL threshold, thus being unit less and ranging from "0" to "1", which corresponds to the existing EUEL threshold (depicted by the dashed line). Red dots represent dishwasher detergent products (DD) while blue dots represent rinse aid (RA).



Source: JRC's elaboration with data provided by stakeholders.

About other ecolabels:

Table 66 - Limits of weight-utility ratio (WUR) in Nordic Ecolabelling (NS) and Blue Angel (BA) for Dishwashing Detergents and Rinse Aid

	Nordic Swan		Blue Angel	
DD	Product type	WUR (g/ wash)	Product type	WUR (g/wash)
	DD in rigid plastic-based packaging	1.8	Dishwasher detergent	2.0
	DD in flexible plastic pouches	1.0	Rinse aids	0.4

Solid DD in cardboard and corrugated board packaging	2.1	
Liquid DD in cardboard packaging	1.8	
Rinse aid	0.35 It is calculated at a dose of 3 ml	

Source: NS Criterion O22, 006, v8.10[448]; BA DE-UZ 202, v1.10[449]

The discussions and conclusions about WUR threshold proposals, structured by product type and derived from the former evidences, are:

— *Dishwasher detergent*

The majority (75%) of the data points fell below 2.21 g/wash, which is two-tenths below the existing threshold of 2.40 g/wash and two-tenths above the TR1 proposal of 2.00 g/wash. BA sets a threshold of 2.0 g/wash, while NS establishes four different limits depending on the product type (solid, liquid) and the type of packaging (cardboard, plastic, pouches), which range between 2.1 1.0 and 1.0 g/wash (Table 66), making direct comparison more difficult. Some stakeholders indicated that the TR1 proposal of 2.0 g/wash was too ambitious and suggested a limit of 2.3 g/wash. The JRC proposes a limit of 2.2 g/wash based on the analysis of data provided by stakeholders. However, there may be room to increase the ambition level to align with BA and confirm the TR1 threshold of 2.0 g/wash.

— *Rinse aid*

There were only a few data points (n=7) for this product type. All data points were below 0.41 g/wash, which is one-fourth of the existing threshold of 1.5 g/wash. The BA sets a threshold of 0.4 g/wash, and NS sets a limit of 0.35 g/wash, which is almost equivalent to BA. The JRC proposes to enhance the ambition level by proposing a limit of 0.4 g/wash, which aligns with the data analysis, the BA and NS limits, and is also perfectly equal to the T1 proposed value.

Hand dishwashing detergent (HDD)

Table 67 - Hand-dishwashing detergent descriptive statistics of weight-utility ratio (WUR) values.

Product type	*Data points*	*Minimum (g/wash)*	*1st quartile (g/*	*Median (g/*	*Mean (g/*	*3rd quartile (g/*	*Maximum (g/ wash)*	*TR1 proposed threshold*	*Existing Threshold*

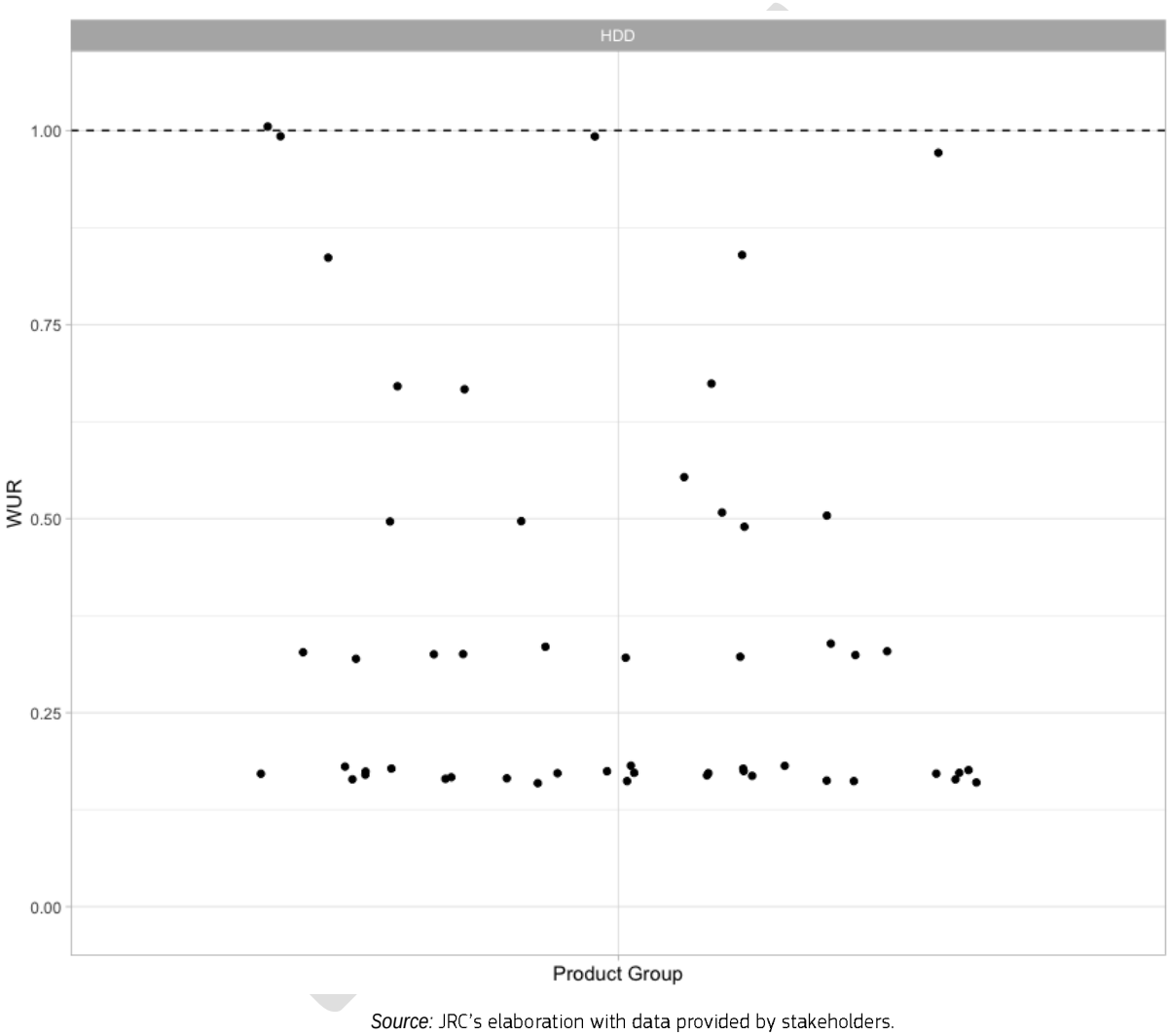
[448] Dishwasher detergent and rinse aids. V7.7. Nordic Ecolabelling. August 2024. Available at: https://www.nordic-swan-ecolabel.org/4a98a7/contentassets/4c39b5c28cb344a6ad02643a27094f28/criteria-document_017_dishwasher-detergents-and-rinse-aids-017_english.pdf

[449] Dishwasher detergents; version 3.1; September 2023 Blue Angel. Available at: https://produktinfo.blauer-engel.de/uploads/criteriafile/en/DE-UZ%20201-202201-en%20criteria-V3.1.pdf

	(n)		wash)	wash)	wash)	wash)		(g/ wash)	(g/ wash)
Hand-dishwashing detergent	53	0.10	0.10	0.10	0.21	0.30	0.60	0.30	0.60

Source: JRC's elaboration with data provided by stakeholders.

Figure 34 - Hand-dishwashing detergent weight-utility ratio (WUR) values. Each data point has been factored by its corresponding EUEL threshold, thus being unit less and ranging from "0" to "1", which corresponds to the existing EUEL threshold (depicted by the dashed line).



Source: JRC's elaboration with data provided by stakeholders.

Table 68 - Limits of weight-utility ratio (WUR) in Nordic Ecolabelling (NS) and Blue Angel (BA) for Hand-dishwashing detergent.

	Nordic Swan		Blue Angel	
HDD	Product type	WUR (g/l of washing	Product type	WUR (g/l of washing

	water)		water)
Liquid HDD	0.1	HDD	0.3
Tablets HDD	30		

Source: NS v6.10[450]; BA *DE-UZ 194*, v1.2[451]

The discussions and conclusion about WUR threshold proposal, derived from the former evidences, is:

Hand-dishwashing detergent

The majority (75%) of the data points fell below 0.3 g/l of washing water, which is half of the existing threshold of 0.6 g/l. Additionally, the 0.3 g/l limit strengthens the proposal made in TR1, as the threshold values are exactly the same. The BA also sets a threshold of 0.3 g/l of washing water, while NS establishes two different limits: 0.1 g/l for liquid HDD and 30 g/l for tablets HDD that must be diluted at least 10 times to reach the finished product. The JRC proposes a limit of 0.3 g/l of washing water, confirming the TR1 proposal and aligning with BA. Based on descriptive statistical analysis, this limit would potentially exclude "only" 25% of ecolabelled products (those with highest WUR).

Hard Surface Cleaning (HSC) products

Table 69 - Hard-surface cleaning products descriptive statistics of weight-utility ratio (WUR) values.

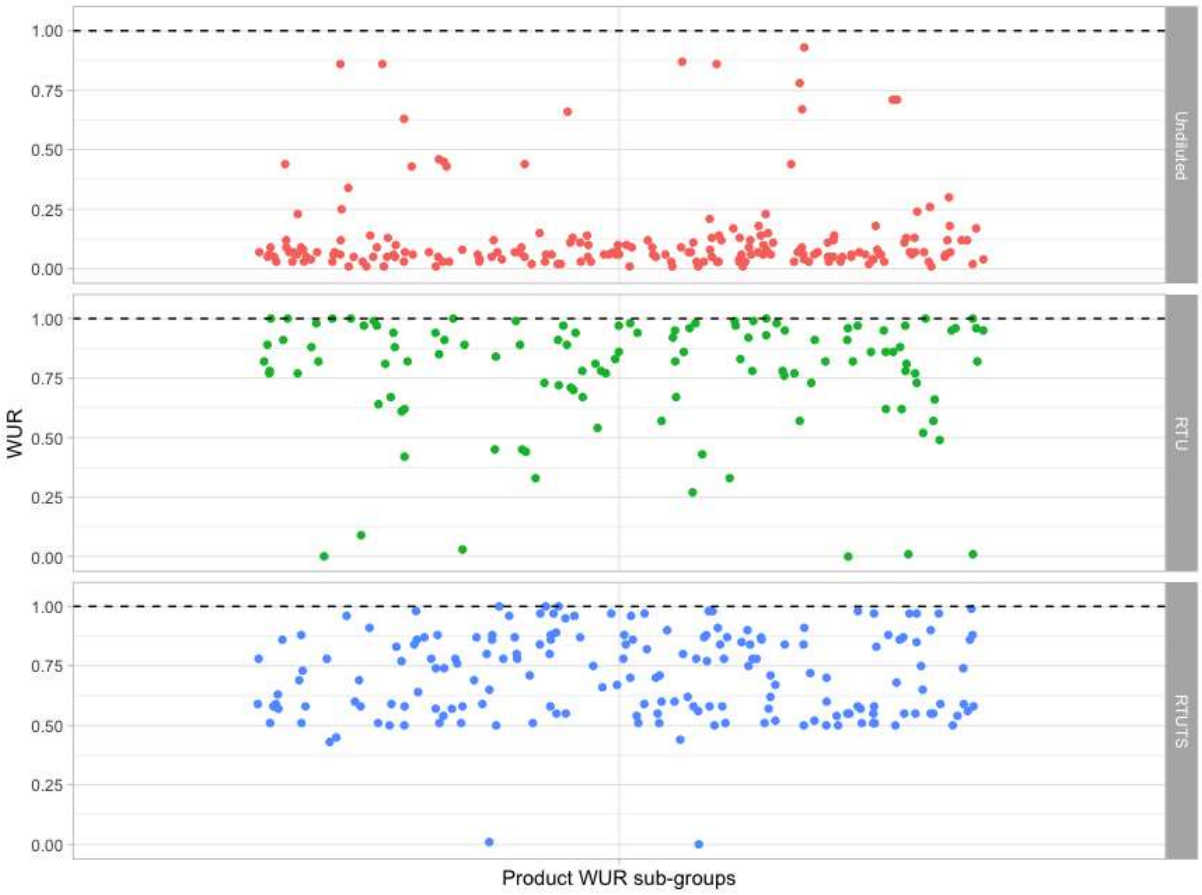
Product type	*Product format/ concentration*	*Data points (n)*	*Minimum (g/kg)*	*1st quartile (g/kg)*	*Median (g/kg)*	*Mean (g/kg)*	*3rd quartile (g/kg)*	*Maximum (g/kg)*	*TR1 proposed threshold (g/kg)*	*Existing Threshold (g/kg)*
Hard-surface cleaning products	Undiluted	197	0.2	0.8	1.1	2.0	1.8	17.6	1.0	15
Hard-surface cleaning products	Ready-to-Use (RTU)	117	0.1	105.0	124.5	115.7	142.5	150.0	150.0	150
Hard-surface cleaning products removers	Ready-to-Use with trigger spray(RTU TS)	182	0.1	114.0	142.0	141.9	172.0	200.0	175.0	200

Source: JRC's elaboration with data provided by stakeholders.

[450] Hand-diswashing detergent. V6.10. Nordic Ecolabelling. August 2024. Available at: https://www.nordic-swan-ecolabel.org/4a6c85/contentassets/10f50d7e13a34cfbaf8fc0b66a4fc521/criteria-document-for-product-group-025_025_hand-dishwashing-detergents-025_english2.pdf

[451] DE-UZ 194 Hand Dishwashing Detergents and Hard Surface Cleaners; version 3.1; January 2022 Blue Angel. Available at: https://produktinfo.blauer-engel.de/uploads/criteriafile/en/DE-UZ%20194-202201-en%20criteria-V1.2.pdf

Figure 35 - Hard-surface cleaning products weight-utility ratio (WUR) values. Each data point has been factored by its corresponding EUEL threshold, thus being unit less and ranging from "0" to "1", which corresponds to the existing EUEL threshold (depicted by the dashed line). Red dots represent products in undiluted format while green dots represent Ready-to-Use (RTU) products. Blue dots represent Ready-to-Use with trigger spray (RTU TS).



Source: JRC's elaboration with data provided by stakeholders.

About other ecolabels:

Table 70 - Limits of weight-utility ratio (WUR) in Nordic Ecolabelling (NS) and Blue Angel (BA) for Hard-surface cleaning products

	Nordic Swan		Blue Angel	
HSC	Product type	VNF (g/l of cleaning solution)	Product type	WUR (g/l of cleaning solution/end product)
	RTU products	150,0	All-purpose cleaner	1.2
	Concentrated products for refill for RTU bottles which are always	30	Kitchen cleaner	150

	diluted at least 10 times by the user to the finished product		Concentrated kitchen cleaner	1.2
			Toilet cleaner	150
			Bathroom cleaner RTU	150
			Concentrated bathroom cleaner	1.2
			Glass cleaner RTU	150
			Concentrated glass cleaner	1.2

Source: NS v6.14[452]; BA *DE-UZ 194*, v1.2[453]

The discussions and conclusions about WUR threshold proposals, structured by product type and derived from the former evidences, are:

— *Hard-surface cleaning products (Undiluted)*

The majority (75%) of the data points fell below 1.8 g/l of cleaning solution, which is almost one-eighth of the existing threshold (15 g/l of cleaning solution). This data indicates that there is room to make the existing limit more stringent. The BA threshold for all undiluted HSC products is set at 1.2 g/l of cleaning solution, while the NS threshold is set at 30 g/l of cleaning solution. In the TR1, a limit of 1.0 g/l of cleaning solution was proposed. Stakeholders expressed mixed views on this proposal, with some suggesting a limit of 5 g/l of cleaning solution. The JRC proposes 2.0 g/l of cleaning solution as a compromise between the BA, the analyzed data evidence, and the suggestion for a less stringent limit than 1 g/l in TR1 expressed by stakeholders. At the same time, with the proposed 2.0 g/l threshold, the ambition level is enhanced compared to the 15 g/l of the current threshold. The proposed limit would potentially exclude less than 25% of eco-labeled products (those with the highest WUR).

— *Hard-surface cleaning products (Ready-to-Use, RTU)*

The majority (75%) of the data points fell below 142.5 g/l of cleaning solution, which is slightly lower than the existing threshold of 150 g/l of cleaning solution. Both the BA and NS thresholds are set at 150 g/l of cleaning solution. The JRC proposes a limit of 140.0 g/l of cleaning solution, which enhances the ambition level and sets a slightly more stringent limit than the BA and NS thresholds. This limit should potentially be compatible with slightly less than 75% of existing eco-labeled products.

— *Hard-surface cleaning products (Ready-to-Use with trigger spray, RTU TS)*

The majority (75%) of the data points fell below 172.0 g/l of cleaning solution, which is 28 units less than the existing threshold of 200 g/l of cleaning solution. BA and NS set no threshold for this product type. The JRC proposes a limit of 170.0 g/l of cleaning solution, which enhances the ambition level and would potentially exclude only about 25% of ecolabeled products (those with the highest WUR).

[452] Cleaning products. V6.14. Nordic Ecolabelling. August 2024. Available at: https://www.nordic-swan-ecolabel.org/4a6c7c/contentassets/988cf5d0a3fe4c3fa2f85775d7df4be9/criteria-document-for-product-group-026_026_cleaning-products-026_english.pdf

[453] DE-UZ 194 Hand Dishwashing Detergents and Hard Surface Cleaners; version 3.1; January 2022 Blue Angel. Available at: https://produktinfo.blauer-engel.de/uploads/criteriafile/en/DE-UZ%20194-202201-en%20criteria-V1.2.pdf

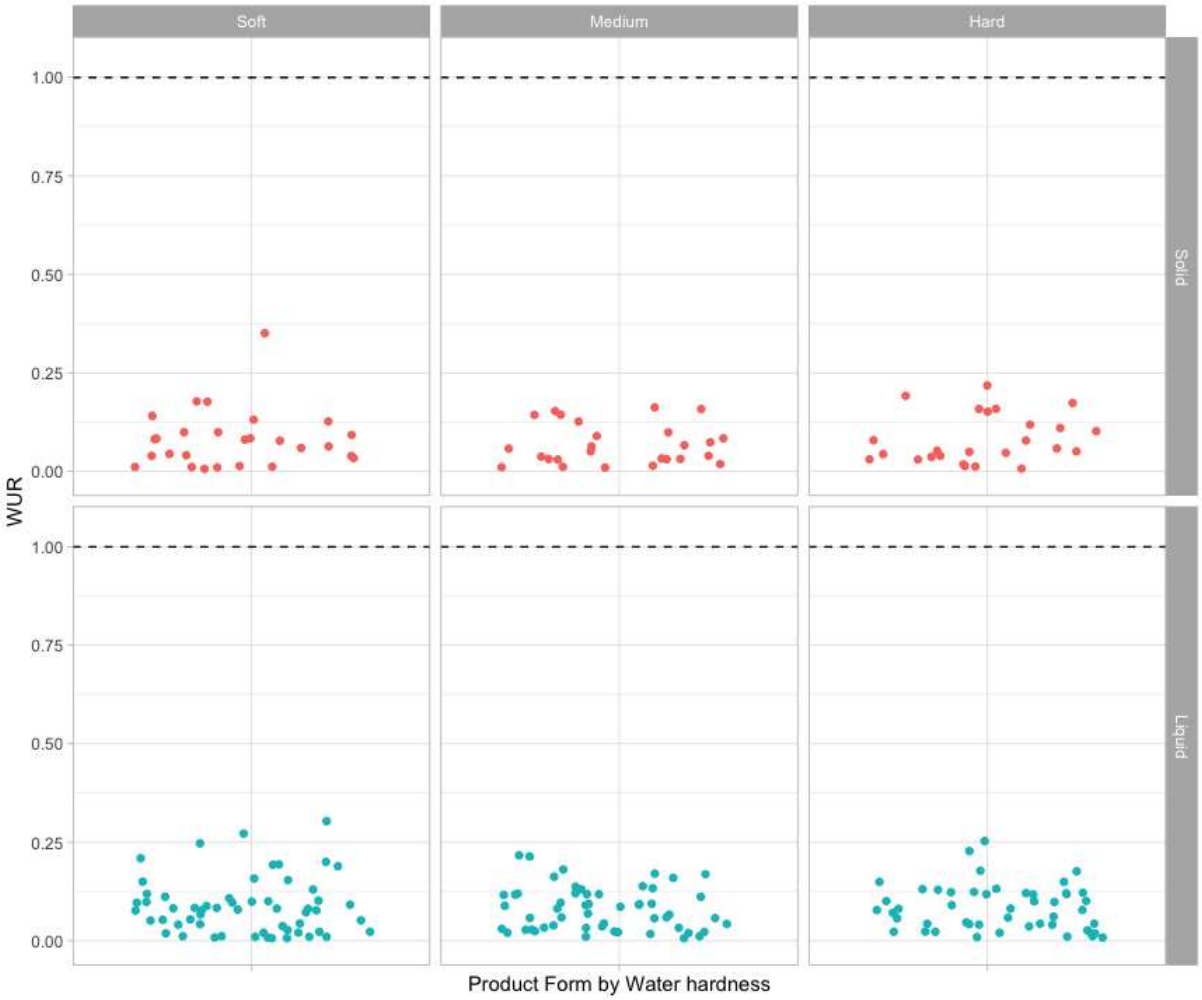
Industrial and Institutional dishwasher detergent (IIDD) products

Table 71 - Industrial and Institutional dishwasher detergent (IIDD) descriptive statistics of weight-utility ratio (WUR) values. Note that when the product format was not specified in the data, it was attributed as solid, as this is the most stringent limit and enables data processing.

Product type	*Water Hardness*	*Data points (n)*	*Minimum (g/l)*	*1st quartile (g/l)*	*Median (g/l)*	*Mean (g/l)*	*3rd quartile (g/l)*	*Maximum (g/l)*	*Existing Threshold (g/l)*
IIDD powder	Soft	27	0.01	0.03	0.06	0.06	0.08	0.28	*0.80*
IIDD powder	Medium	25	0.01	0.04	0.08	0.09	0.14	0.22	*1.40*
IIDD powder	Hard	54	0.02	0.08	0.10	0.16	0.24	0.44	*2.00*
IIDD liquid	Soft	26	0.01	0.03	0.08	0.09	0.11	0.30	*1.00*
IIDD liquid	Medium	57	0.02	0.05	0.14	0.15	0.22	0.40	*1.80*
IIDD liquid	Hard	49	0.03	0.10	0.20	0.21	0.30	0.63	*2.50*

Source: JRC's elaboration with data provided by stakeholders.

Figure 36 - Industrial and Institutional dishwasher detergent weight-utility ratio (WUR) values. Each data point has been factored by its corresponding EUEL threshold, thus being unit less and ranging from "0" to "1", which corresponds to the existing EUEL threshold (depicted by the dashed line). Red dots represent IIDD in solid/powder form while blue dots represent IIDD in liquid form. Note that when the product format was not specified in the data, it was attributed as solid, as this is the most stringent limit and enables data processing.



Source: JRC's elaboration with data provided by stakeholders.

About other ecolabels:

Blue Angel does not include IIDD products in its scope, and although the Nordic Swan includes them, it does not set WUR limit values.

The discussions and conclusions about WUR threshold proposals, structured by product type and derived from the former evidences, are:

— *Industrial and institutional dishwasher detergent in solid form (all water hardness)*

The majority of data point (75%) for soft/medium/hard water fell below 0.08 g/l, 0.14 g/l, and 0.24 g/l of washing solution, respectively (hereafter quoted as g/l). For soft and medium water, these thresholds are one-tenth of the existing 0.8 g/l and 1.4 g/l thresholds, respectively. For hard water, the 0.24 g/l threshold represents a reduction to approximately one-eighth of the existing threshold of 2.0 g/l.

The JRC proposes a threshold of 0.08 g/l for soft water, 0.14 g/l for medium water and 0.24 g/l for hard water,which would potentially "only" exclude 25% of existing ecolabelled products.

— *Industrial and institutional dishwasher detergent in liquid form (all water hardness)*

The majority of data point (75%) for soft/medium/hard water fell below 0.11 g/l, 0.22 g/l, and 0.3 g/l of washing solution, respectively (hereafter quoted as g/l). For soft water, the 0.11 g/l threshold is slightly more than 1/10 of the current limit of 1.0 g/l. One stakeholder suggested reducing the WUR limit for soft water from 1.0 g/l to at least 0.28 g/l, while another proposed reductions to 0.2 or 0.15 g/l.

For medium water hardness, the 0.22 g/l threshold indicates roughly 1/8 of the existing 1.8 g/l limit. Stakeholders also recommended reducing the current limit to at least 0.3 g/l or 0.21 g/l.

For hard water, the 0.3 g/l threshold indicates approximately 1/8 of the current 2.5 g/l limit. Stakeholders suggested reducing the WUR limit, with one proposing a 0.3 g/l threshold and another recommending lowering it to at least 0.4 g/l.

In view of this evidence, the JRC proposes thresholds of 0.15 g/l for soft water, 0.22 g/l for medium water, and 0.30 g/l for hard water. These thresholds would potentially "only" exclude less than 25% of existing ecolabelled products.

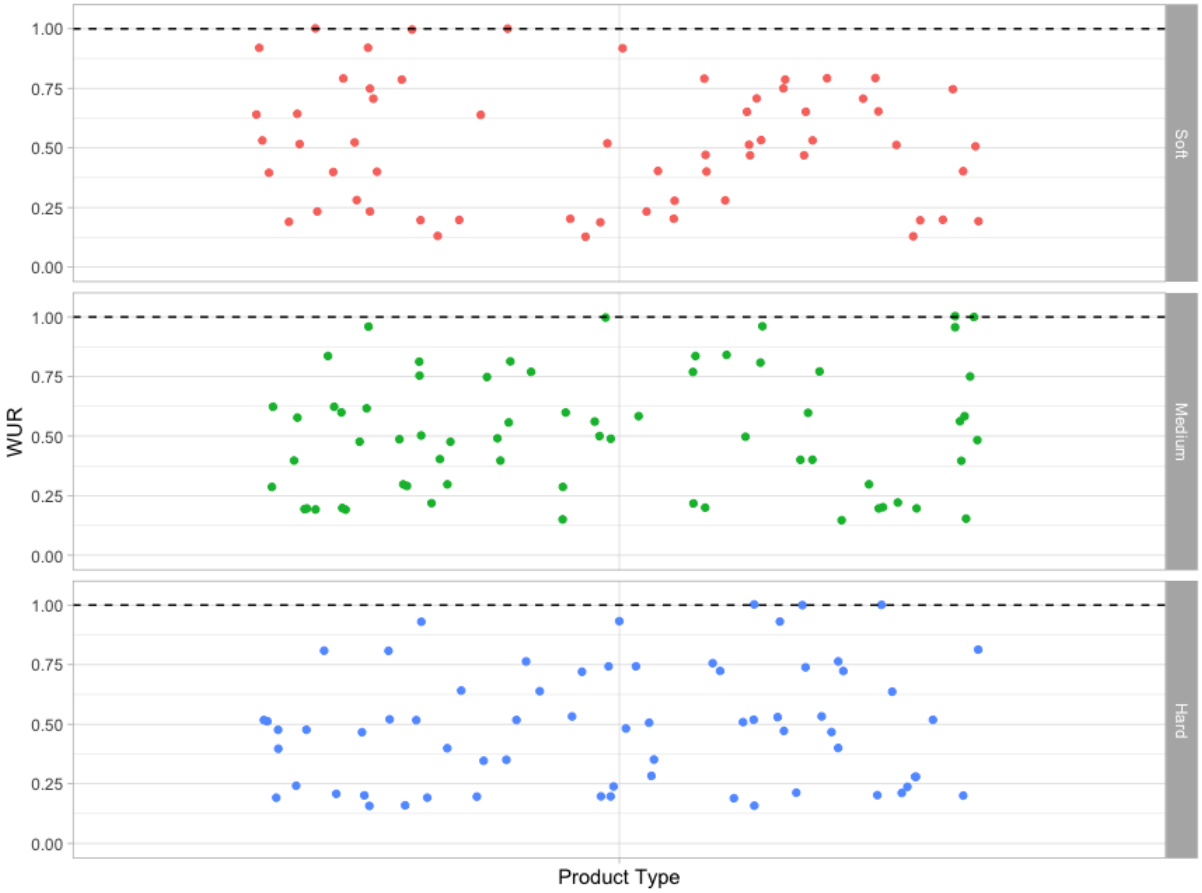
Industrial and Institutional laundry detergent (IILD) products

Table 72 - Industrial and Institutional laundry detergent (IILD) descriptive statistics of weight-utility ratio (WUR) values.

Product type	*Water Hardness*	*Data points (n)*	*Minimum (g/kg)*	*1st quartile (g/kg)*	*Median (g/kg)*	*Mean (g/kg)*	*3rd quartile (g/kg)*	*Maximum (g/kg)*	*Existing Threshold (g/kg)*
IILD	Soft	60	0.2	0.4	0.8	0.8	1.1	1.5	*1.5*
IILD	Medium	66	0.3	0.6	1.0	1.0	1.5	2.0	*2.0*
IILD	Hard	66	0.4	0.6	1.2	1.2	1.8	2.5	*2.5*

Source: JRC's elaboration with data provided by stakeholders.

Figure 37 - Industrial and Institutional laundry detergent weight-utility ratio (WUR) values. Each data point has been factored by its corresponding EUEL threshold, thus being unit less and ranging from "0" to "1", which corresponds to the existing EUEL threshold (depicted by the dashed line). Red dots represent IILD in solid/powder form for soft water, green dots represent IILD solid form for medium water, while blue dots represent IILD in liquid form for hard water. Note that when the product format was not specified in the data, it was classified as solid, as this is the most stringent limit and enables data processing.



Source: JRC's elaboration with data provided by stakeholders.

About other ecolabels:

Blue Angel does not include IIDD products in its scope, and although the Nordic Swan includes them, it does not set WUR limit values.

In the IILD WUR available data, there was no specification on whether they were liquid or solid; consequently, the stringent limit for solids was applied for the analysis.

The discussions and conclusions about WUR threshold proposals, structured by product type and derived from the former evidences, are:

— *Industrial and institutional laundry detergent (all water hardness)*

The analysis shows that the majority of data points (75%) for soft, medium, and hard water conditions have WUR values below 1.1 g/kg, 1.5 g/kg, and 1.8 g/kg of laundry, respectively (all values hereafter are quoted as g/kg). This indicates that, across all levels of water hardness, the majority of WUR data points fall below the existing thresholds, which are currently set at 1.5 g/kg for soft water, 2.0 g/kg for medium water, and 2.5 g/kg for hard water. The observed trend suggests a strong potential for revising these thresholds to better reflect current industry practices. Accordingly, the JRC proposes new thresholds of 1.1 g/kg for soft water, 1.5 g/kg for medium water, and 1.8 g/kg for hard water. Adopting these revised thresholds would potentially exclude only 25% of existing ecolabelled products, thereby maintaining a high standard of environmental performance while aligning with actual usage patterns.

In reviewing the available data for the IILD WUR, it is important to note that a distinction between liquid and solid product forms was not possible. As a result, the analysis applied the more stringent thresholds designated for solids. Consequently, the proposed thresholds primarily pertain to solid forms. The JRC could consider extending these same limits to liquid forms. Although consideration should be made where limits for liquids are generally higher than those for solids as is the case of the existing thresholds for IILD in liquid form (2.0 g/kg for soft water, 2.5 g/kg for medium water, and 3.0 g/kg for hard water). Hence, this raises a question about the feasibility of applying the proposed limits also to IILD in liquid form. However, the data indicate that, irrespective of product form, all WUR values of ecolabelled products accessible to the JRC, would comply even with the most stringent current limit of liquid IILD for soft water (i.e. 2.0 g/kg of laundry). Thus, the highest proposed value for IILD in solid form, set at 1.8 g/kg for hard water, is lower than the most stringent existing threshold for liquid IILD.

Points for discussion 19 – Weight/utility ratio (WUR)

Stakeholders are invited to reply the following consultation questions:

- Question 85 (Q85) – Do you agree with the proposed threshold for the different product groups? If not, please specify the product group(s) and provide the reasons for your disagreement
- Question 86 (Q86) – Would it be possible to increase the ambition level for Dishwasher Detergent by reducing the threshold from 2.2 g/wash to 2.0 g/wash, aligning with the Blue Angel (BA) standards and the initial EU Ecolabel proposal? Please share your thoughts and any concerns you may have regarding this adjustment.
- Question 87 (Q87) – Considering that for IILD the analysis could not differentiate between solid and liquid forms, how feasible is it to apply the proposed WUR thresholds for solid IILD products to liquid forms? Additionally, could you provide data on WUR specific to liquid IILD products to further inform this analysis?
- Question 88 (Q88) – Please, share any other comments/suggestions you deem relevant about this criterion providing reasons supporting them.

6.7.4. Packaging take-back systems

TR1 Proposed sub-criterion (x) packaging take-back systems	
HSC, IIDD, IILD	If the product is delivered in packaging that is part of a take-back system for a product, that product is exempted from the requirements set out in points (*WUR)* and (*Design for Recycling*) of Criterion X.
HSC, IIDD, IILD	*Assessment and verification:* the applicant shall provide a signed declaration of compliance along with relevant documentation describing or demonstrating that a take-back system has been put in place for the packaging.
TR2 Proposed sub-criterion (x) packaging take-back systems	
ALL	If the product is delivered in packaging that is part of a take-back system for a product, that product is exempted from the requirements set out in points (*WUR),* ~~and~~ (*Design for Recycling*) and (Recycled material content) of Criterion X (Packaging).
ALL	*Assessment and verification:* the applicant shall provide a signed declaration of compliance along with relevant documentation describing or demonstrating that a take-back system has been put in place for the packaging.

Rationale for the proposed sub-criterion (x) packaging take-back systems

The WUR approach was developed with consumer products in mind and does not scale up for deliveries made in large barrels or other containers which are retrieved after use by the detergent product manufacturers from their clients. To reflect the state of the market and remove unnecessary burdens on I&I products, products that come in packaging that is part of a take-back system were proposed to be exempted from the WUR and Design for Recycling sub-criteria. In the case of HSC, as the scope covers both consumer and professional products, the same exemption was proposed to be included.

In the current criterion, the take-back system is only defined for IILD, IIDD, and HSC. In contrast, Blue Angel extends this requirement to LD, DD, and HDD in addition to HSC.

During the first stakeholders' consultation (1st AHWG), participants were asked whether they would support extending this criterion to other product groups, such as LD, DD, and HDD

Outcomes from and after the 1st AHWG meeting

In total 9 comments were received on this sub-criterion, which are found in full in the Table of Comments (ToC1). Most stakeholders expressed support for extending the criterion to these additional product groups, highlighting the potential for significant environmental benefits. Despite the support, challenges were identified, such as the underdevelopment of packaging take-back systems in certain countries, which makes implementation difficult. There were calls to keep the criterion optional rather than mandatory, particularly given the varied readiness across different markets.

New proposal

The JRC based on the feedback received proposes the extension of the take-back system sub-criterion to all the detergent products groups and the inclusion of LD, DD and HDD also in alignment with Blue Angel.

In addition, since professional products are often distributed in large barrels and bulk containers capable of holding several thousand litres, and given that the EU's waste hierarchy prioritizes reuse over recycling, it is important to recognize the strength and durability of this packaging, which facilitates multiple reuses. Consequently, it is proposed that products delivered in plastic packaging through a take-back system be exempt not only from WUR and Design for Recycling requirements but also from the new Recycled Material Content requirement, in accordance with the EU's waste management strategy to maximize reuse.

Points for discussion 20 – Packaging take-back systems

Stakeholders are invited to reply the following consultation questions:

- Question 89 (Q89) – Do you agree with the proposed changes and the exemption criteria for products in plastic packaging within the take-back system? If not, what are the reasons for your disagreement?
- Question 90 (Q90) – Please, share any other comments/suggestions you deem relevant about this criterion providing reasons supporting them.

6.7.5. Product sold in spray bottle (only for HSC)

TR1 Proposed sub-criterion (x) products sold in spray bottles	
HSC	Sprays containing propellants shall not be used. Spray bottles shall be refillable and reusable.
HSC	*Assessment and verification:* the applicant shall provide a signed declaration of compliance along with relevant documentation describing or demonstrating how the spray bottles that are part of the packaging can be refilled.
TR2 Proposed sub-criterion (x) products sold in spray bottles	
HSC	Sprays containing propellants shall not be used. Spray bottles shall be refillable and reusable.

HSC	*Assessment and verification:* the applicant shall provide a signed declaration of compliance along with relevant documentation describing or demonstrating how the spray bottles that are part of the packaging can be refilled.

Rationale for the proposed sub-criterion (x) products sold in spray bottles

In the criteria preceding those that came into force in 2017, hard surface cleaning (HSC) products sold in spray bottles were required to be part of a refillable system. The applicant or retailer had to document that refills were available for purchase on the market, i.e. *'Sprays containing propellants must not be used. Products packaged in trigger sprays must be sold as part of a refillable system.' 'Assessment and verification: the applicant or retailer shall document that refills are available for purchase on the market.*'

During the last revision, it was highlighted that this requirement was interpreted differently by various competent bodies, ranging from refills simply being available on the market to requiring proof that refills are sold alongside the original product on supermarket shelves. In many cases, product manufacturers do not have enough influence to dictate to retailers how their products and refills should be sold, especially if it is a new product. To avoid uncertainty and give more flexibility to manufacturers, it was proposed to change the requirement for spray bottles: they must be refillable, meaning they should not be single-use bottles that cannot be refilled and reused. This requirement is important as it ensures that if the end user wants to refill and reuse the bottle to minimize waste, they can do so. Manufacturers should not opt for packaging designs that include anti-tampering/child-proofing parts, which are unnecessary for the types of products covered by the scope of the EU Ecolabel for hard surface cleaning products.

The wording of the requirement was changed to the current one: *'Sprays containing propellants shall not be used. Spray bottles shall be refillable and reusable*.'

Outcomes from and after the 1st AHWG meeting

A total of 2 comments were received on this sub-criterion, which are detailed in full in the Table of Comments (ToC1).

It was pointed out that the EU Ecolabel does not specify that refills must be commercially available. According to the French Consumer Code Regulation, declaring a product as refillable without available refills in the market could be considered misleading claim. As a result, stakeholders suggested removing the requirement to indicate the refillable aspect on spray packaging if refills are not marketed. Additionally, comments were made about the Nordic Swan requirements for spray bottles, which include a permanent aerosol-reducing foaming nozzle and the prohibition of using products containing microorganisms with spray applications

New proposal

The current requirement states that spray bottles must be refillable and reusable, and a declaration of compliance should be provided. However, it does not explicitly mandate that this information be included on the packaging. A stakeholder has raised concerns about potentially misleading claims on the packaging regarding the product being described as refillable.

To address these concerns, we need more detailed feedback from stakeholders to refine this requirement and determine if the issue arises from different interpretations of the current criterion. The criterion itself does not require that the refillable nature of the product be advertised or presented on the packaging. Gathering insights from stakeholders is essential to make an informed decision on whether this criterion needs modification.

Points for discussion 21 – Product sold in spray bottle (only for HSC)

Stakeholders are invited to reply the following consultation questions:

- Question 91 (Q91) – In your experience with the EU Ecolabel, can you provide information on how the current requirement is interpreted?

— Question 92 (Q92) – Do you believe that the current criterion wording should be modified to be clearer and avoid misinterpretation? If yes, what changes would you suggest?

— Question 93 (Q93) – Please, share any other comments/suggestions you deem relevant about this criterion providing reasons supporting them.

6.8. Fitness for use

Existing criterion (x) fitness for use	
HSC	The product shall have a satisfactory cleaning performance at the lowest temperature and dosage recommended by the manufacturer for the water hardness in accordance with the 'Framework for testing the performance of hard surface cleaners' available on the EU Ecolabel website ([454])
DD, HDD, IIDD, IILD, LD	The product shall have a satisfactory wash performance at the lowest temperature and dosage recommended by the manufacturer for the water hardness in accordance with
DD	the most updated IKW standard test ([455]) or the most updated standard EN 50242/EN 60436 as modified in 'Framework performance test for dishwasher detergents' available on the EU Ecolabel website ([456]).
HDD	the 'Framework for the performance test for hand dishwashing detergents' available on the EU Ecolabel website ([457]).
IIDD	the 'Framework performance test for industrial and institutional dishwasher detergents' available on the EU Ecolabel website ([458])
IILD	the 'Framework for performance testing for industrial and institutional laundry detergents' available on the EU Ecolabel website ([459]).
LD	'EU Ecolabel protocol for testing laundry detergents' ([460]) or 'EU Ecolabel protocol for testing stain removers' ([461]), as appropriate, available on the EU Ecolabel website([462])..
ALL	*Assessment and verification:* the applicant shall provide documentation demonstrating that the product has been tested under the conditions specified in
DD	the IKW standard or framework and that the results showed that the product achieved at least the minimum cleaning performance required.
HDD, IILD	the framework and that the results showed that the product achieved at least the minimum wash performance required.
HSC, IIDD,	the framework and that the results showed that the product achieved at least the minimum cleaning performance required.

[454] Available at: https://ec.europa.eu/environment/ecolabel/documents/performance_test_cleaners.pdf

[455] Available at http://www.ikw.org/fileadmin/content/downloads/Haushaltspflege/HP_DishwasherA_B_e.pdf

[456] [URL for protocol on EU Ecolabel website will be inserted later — currently all proposed protocol documents can be found in the Technical Report].

[457] Available at: http://ec.europa.eu/environment/ecolabel/documents/performance_test.pdf.

[458] Available at: [URL for protocol on EU Ecolabel website will be inserted later — currently all proposed protocol documents can be found in the Technical Report].

[459] Available at: [URL for protocol on EU Ecolabel website will be inserted later currently all proposed protocol documents can be found in the Technical Report]

[460] Available at: http://ec.europa.eu/environment/ecolabel/documents/Performance%20Test%20Laundry%20Detergents.pdf

[461] Available at: http://ec.europa.eu/environment/ecolabel/documents/Performance%20Test%20stain%20removers.pdf

[462] Available at: [URL for protocol on EU Ecolabel website will be inserted later currently all proposed protocol documents can be found in the Technical Report]

LD	the protocol and that the results showed that the product achieved at least the minimum wash performance required.
ALL	The applicant shall also provide documentation demonstrating compliance with the laboratory requirements included in the relevant harmonised standards for testing and calibration laboratories, if appropriate. An equivalent test performance may be used if equivalence has been assessed and accepted by the competent body.
Proposed criterion (x) fitness for use	
ALL	The product shall have a satisfactory wash performance at the lowest temperature and dosage recommended by the manufacturer for the water hardness (if a range is provided, the lower end) in accordance with
DD	the most updated IKW standard test ([463]) or the most updated standard EN 50242/EN 60436 as modified in the 'Framework performance test for dishwasher detergents' available on the EU Ecolabel website ([464]).
HDD	the most updated IKW standard test ([465]) as modified in the 'Framework for the performance test for hand dishwashing detergents' available on the EU Ecolabel website ([466]).
IIDD	the 'Framework performance test for industrial and institutional dishwasher detergents' available on the EU Ecolabel website ([467])
IILD	the 'Framework for performance testing for industrial and institutional laundry detergents' available on the EU Ecolabel website ([468]).
LD	'EU Ecolabel protocol for testing laundry detergents' or 'EU Ecolabel protocol for testing stain removers', as appropriate, available on the EU Ecolabel website([469]).
HSC	the 'Framework for testing the performance of hard surface cleaners' available on the EU Ecolabel website ([470])
ALL	*Assessment and verification:* the applicant shall provide documentation demonstrating that the product has been tested under the conditions specified in
DD	the most updated IKW standard or EN 60436 framework as modified in 'Framework performance test for dishwasher detergents' and that the results showed that the product achieved at least the minimum cleaning performance required.

[463] Available at http://www.ikw.org/fileadmin/content/downloads/Haushaltspflege/HP_DishwasherA_B_e.pdf

[464] [URL for protocol on EU Ecolabel website will be inserted later — currently all proposed protocol documents can be found in the Technical Report].

[465] "Recommendation for the quality assessment of the cleaning performance of hand dishwashing detergents"; IKW, SOFW Journal, 128, 5-2002, page 15. Available at: https://www.ikw.org/fileadmin/IKW_Dateien/downloads/IKW-Englisch/HP_EQ-Handgeschirr-e.pdf

[466] [URL for protocol on EU Ecolabel website will be inserted later — currently all proposed protocol documents can be found in the Technical Report].

[467] [URL for protocol on EU Ecolabel website will be inserted later — currently all proposed protocol documents can be found in the Technical Report].

[468] [URL for protocol on EU Ecolabel website will be inserted later currently all proposed protocol documents can be found in the Technical Report]

[469] [URL for protocol on EU Ecolabel website will be inserted later currently all proposed protocol documents can be found in the Technical Report]

HDD	the most updated IKW standard as modified the ~~framework~~ 'Framework for the performance test for hand dishwashing detergents' and that the results showed that the product achieved at least the minimum wash performance required.
IILD	the framework and that the results showed that the product achieved at least the minimum wash performance required.
HSC, IIDD,	the framework and that the results showed that the product achieved at least the minimum cleaning performance required.
LD	the protocol and that the results showed that the product achieved at least the minimum wash performance required.
ALL	The applicant shall also provide documentation demonstrating compliance with the laboratory requirements included in the relevant harmonised standards for testing and calibration laboratories, if appropriate. An equivalent test performance may be used if equivalence has been assessed and accepted by the competent body.

Rationale for the proposed criterion (x) fitness for use

The importance of ensuring that products perform as expected is of paramount importance, including from an environmental perspective. This is acknowledged and ensured in every EU ecolabel criteria, in this particular case via this criterion on "*Fitness for use*", which aims to prove the cleaning efficiency of ecolabelled detergent and cleaning products.

Several stakeholders highlighted the need to update (and potentially extend) the *Fitness for use* testing protocols to ensure that products awarded with EUEL ecolabel are not ranked as non-performant, as in some reported cases. On the contrary, products awarded with the EU Ecolabel are aimed at being part of the best-in-class, both in terms of cleaning and environmental performance.

One of the key aspects for revision consideration is how to set a generic yet representative testing (formulation) profile of an average product in the market. It is important to set a common reference product across Europe so as to ensure that the level of performance is assessed in a homogeneous and reproducible manner. In this regard, an alternative to a generic formulation is the use of a market leader reference formulation profile, but this could also result in sources of variation at the time of making the performance assessment and, especially, there is no unique market leader for the whole Europe. Another layer of complexity is the nature of different product groups (and sub-groups/formats), which requires thorough knowledge of formulation profiles, versus the difficulty in accessing such information due to its commercial sensitivity. All the previous issues were face in the previous revision and, with market evolution, come back as a significant aspect to properly address.

Further to the issue on how to set reference products profile for the purpose of performance testing, other relevant aspects were:

- Revise standards cited/used in *fitness for use* protocols and update according to latest versions.
- Consider expansion of protocols scope – for example consider other fabric materials in addition of cotton able to better or complementary represent current user behaviour with regards to clothing.
- Revise and improve protocols – on aspects such as how representative are the set of stains used.

Outcomes from and after the 1st AHWG meeting

In the TR1 no changes were proposed and instead the JRC deemed as appropriate to carry out dedicated discussion with experts on the performance of detergent and cleaning products. Consequently, all the previously mentioned aspects have been considered in a working sub-group (sub-AHWG) on *Fitness for Use* (FfU), where extensive discussions were held to gather evidences and directions for protocols improvements.

The sub-AHWG meetings were held with stakeholders that provided their Expression of Interest to participate and exchanges happened after each of the two meetings that took place per sub-AHWG, resulting in the development of working papers on the selected subjects.

These background papers were living documents throughout the life time of the sub-AHWG. They started with the comments received after the 1st AHWG, in total 10 comments found in full in the Table of Comments (ToC1). These jointly with JRC's research were the basis to initiate the technical discussion, leading to mapping aspects of relevance and potential actions, as well as shaping further JRC's research and additional questions to stakeholders, which were shared during the 1st sub-AHWG meeting in the first version of the background document. Consequently, stakeholders feedback to TR1 is found within the background document.

Once feedback provided by stakeholders (EU survey) after the 1st sub-AHWG was processed and JRC carried further work, the background document was updated with new draft proposals, which were shared and discussed during the 2nd sub-AHWG meeting in a new version. The feedback to such proposals was also captured in the background document after this 2nd meeting, thus leading to the completion of the sub-AHWG lifetime and reflecting all discussion held, thus leading to a final version made publicly available.

Consider the former, the minutes of these sub-AHWG meetings are purposely brief and general because the background document contain all relevant technical information as well as discussions held.

All the information on the sub-AHWG on FfU (or any other topic) is captured in different outputs (i.e. background paper; minutes, presentation, protocols prosals) which can be found on the BATIS platform and on the Product Policy Analysis (formerly Product Bureau) project's website dedicated to the revision of EUEL criteria for detergents [471]

The proposals for modification of existing EU Ecolabel frameworks/protocols to prove product performance for discussion in the 2nd AHWG, compiled in a single document for ease of access, might differ from those shared during the sub-AHWG. In any case, both can be accessed in the PPA website[472]. The compilation document containing performance frameworks/protocols with TR2 proposals should be read alongside the sub-AHWG FfU working paper and this TR2 rationale on the criterion *Fitness for use* for full awareness of the rationales behind the proposed changes.

Given the comprehensive coverage in the sub-AHWG background documents and in order not to extend unnecessarily the TR2, only aspects directly related to changes presented in this TR2 but not covered in the associated background paper will be covered in detail in the subsequent rationale. For the rest of the aspects proposed in TR2 but already discussed as part of these sub-AHWG we kindly invited readers to read the corresponding background paper for further details.

What was the feedback received from stakeholders on this topic?

No questions were shared in TR1 but several comments were provided, as shown in the Table of Comments (ToC1). As previously indicated, the feedback to these questions was summarily included within the sub-AHWG on FfU and can be consulted in such document.

What are the rationales for JRC's TR2 proposals?

The proposals made in this (sub-)criterion reflect changes compared to TR1, thus versus existing (in-force) criteria as no proposals were made in TR1. On what follows, only those aspects not previously discussed in the sub-AHWG on FfU are covered in detail. For full details on TR2 proposals already discussed, the JRC kindly refers to the associated background paper and compilation of performance protocols/framework resulting from the dedicated sub-AHWG (in this case, about FfU).

[471] https://susproc.jrc.ec.europa.eu/product-bureau/product-groups/411/documents.

[472] Check in "2023 Revision documents tab" for all documents developed as part of the current revision process: https://susproc.jrc.ec.europa.eu/product-bureau/product-groups/411/documents

General (applicable to more than one product groups)

The following is an outline of the proposals alongside brief justifications (if deemed necessary):

- Use of "place-holders" (XXXX/YYYY) for upcoming legislation still with not published (i.e. EU Commission Decisions for EU Ecolabel product/s after the revision; Revised Detergent Regulation once adopted)
- Addition of a disclaimer highlighting that commercial names provided within the protocols/frameworks do not imply an endorsement and that they are provided for convenience of users, with other equivalent products being potentially also available.
- Request all claims that are related to its performance being backed up by testing and associated documentation to verify it, even if not explicitly included within EU Ecolabel performance protocols/frameworks (See in "*0. Background section*"

  Any other claim made on the performance of the product (as displayed in it or in its accompanying product sheet) that is not already specified in this performance framework must also be tested via suitable methods for the function/claim specified and documented.).

  Related to the former, insert the corresponding verification wording:

  In addition to the previous general reporting requirements, if a test product has any other claim on the performance the product the following requirements also apply:

  - *Description of the claim made about performance as displayed in the packaging, inclusive literal wording/content used (e.g. quoting literal sentences; adding pictures).*
  - *Detailed description of the test procedure/methods used for each of the performance effects tested and justification on how each is suitable/relevant for testing a specific performance effect.*
- Align the text in all protocols/frameworks to explicitly indicate that safety under the intended use is the responsibility of the applicant (See in "*0. Background section*" *In addition to the performance test, it is the responsibility of the applicant to ensure that the product is safe to use on the intended use).*
- Propose a common definition for what is understood as *"market reference product"* in the context of detergent and cleaning products performance testing, thus under criterion *Fitness for Use*. This definition, set via specific criteria to meet, has been included in relevant product groups that allow the use of market product as reference (namely, IILD, IIDD, HSC) In particular, the proposed wording to be discussed for criteria that a *market reference product* would need to comply with is (See rationale for full details):

  To be considered suitable as reference detergent for the purposes of EU Ecolabel criteria compliance with performance testing (EUEL criterion Fitness for Use) and with reference to the test product applying for the EU Ecolabel award (if applicable), a market product shall:

  1. *be in the same category; segment (thus end-users) and/or type (e.g. RTU/undiluted);*
  2. *be well-known and part of the leaders with a sufficient sales volume;*
  3. *not hold an ecolabel certification (e.g. EU Ecolabel, Nordic Swan, Blue Angel);*
  4. *have the same claims - primary and (if applicable) secondary ones.*
  5. *not be another product from the applicant (failing this, it must be strongly documented).*
  6. *have comparable physico-chemical characteristics (e.g. pH, concentration of active substances)*
- Requesting approval from Competent Bodies in those performance frameworks using marketed products as reference product against which to compare the test product (namely, IILD, IIDD, HSC) for both *Laboratory* and *User test*.
- Explicitly defining what is understood as *"...market product normally used by the user"* in other EU Ecolabel performance frameworks than HSC (e.g. IILD and IIDD) via defining a set period of time (>12 months).

There are further aspects that the JRC

Note that the former changes, that apply to all product groups, are not mentioned again within the corresponding section for each EUEL product group to avoid redundancy.

Rationale on the proposed changes (All product groups)

The requirement on testing any claim, even if not already specified in EU Ecolabel performance protocols/frameworks stems for the need of verifiable evidence to support such claims. During the revision, JRC intends to set to the best of its capabilities detailed protocols, inclusive of additional claims not present in existing EUEL criteria. However, as innovation progresses and markets develop, new claims might arise that could not had been foreseen or could not be included at the time of the revision. If there is no way to accommodate such type of products, these would automatically be precluded to apply/obtain the EUEL award. Hence, the proposal is formulated having these particular cases as a compromise between the ideal cases (when claims are very clearly delimited via protocols) and what is considered as not acceptable (i.e. having claims in an EU ecolabel product for which there are no way to verify). For this proposal to work, further changes are required, as for example accepting internal testing (e.g. not accredited third-parties) of these secondary claims, which normally are associated with innovative market products, since standardised methods may not be available. This provides necessary flexibility not to impair product development but is at the same compatible with the rigorous verification process exerted by the Competent Bodies.

In terms of what is considered a ***"...market product normally used by the user***" there was general acceptance that a minimum period of twelve months was representative (≥12 months). Thereby, this was included (if meaningful) within the EUEL performance protocols/frameworks

The trade-offs between using a generic formulation or a market product as reference detergent for performance testing has been extensively discussed in TR1 and the sub-AHWG on FfU. The JRC position is to propose generic formulation whenever there is certainty about its relevance, acknowledging that it will always be a compromise given the difficulty in achieving the ideally desirable granularity (e.g. region, product group, type, form, etc) required to account for all products in the European market. However, in the absence of such or even if such generic formulation is proposed/available but further options are advisable to ensure compatibility with market reality, then a market product is the next desirable option as reference product for performance testing. There are already several EUEL product groups with market reference product allowed as part of the performance testing but the definition of what it means ***"market reference product"*** has different granularities depending on the text of the protocol that is consulted. Having a common criteria to delimit/define such products contributes to the harmonisation of the verification process. Therefore, the JRC undertook work (e.g. consultations) to address this and would like to hear from stakeholders their feedback on the proposal and/or whether to adopt it.

Other Ecolabelling schemes have some information/criteria for the selection of a market reference product. Nordic Swan[473] states: the reference product has to be of the same category/area of use as test product; it has to be a well-stablished/-known in the market; it is allowed for manufacturers to use one of its products as reference product in the application process of another (as long as it complies other/previous requirements); and indicates that there is no specific list of approved/suggested reference market products. On the other hand, Blue Angel[474] specifies that: a reference product has to rank amongst 4 top leading product in German market; its selection has to be justified via a report (e.g. with a GF report) but with certain products (non-commercial/industrial) being excluded from such requirement if belonged to any of the companies listed in its criteria document (See appendix C). The former suggest that all ecolabels agree on requesting market products to be representative in the market and be of the same category, while they differ with regards to providing a list or not of reference products (or companies producing them) and requesting or not a justification for the reference product selection. Considering all the former, inclusive stakeholders' feedback, the JRC came up with this proposal, that requires further discussion and agreement on which clauses should remain (and why) and how to verify that a product in the market complies with such criteria. The proposal is:

[473] Background document to criteria "026 Cleaning products", Nordic Swan, version 6.13, 24 October 2023. Available at: https://www.nordic-swan-ecolabel.org/criteria/cleaning-products-026/

[474] Hand Dishwashing Detergents and Hard Surface Cleaners. DE-UZ 194 Edition January 2022. BLUE ANGEL The German Ecolabel. Available at https://www.blauer-engel.de/en/productworld/hand-dishwashing-detergents-and-hard-surface-cleaners

To be considered suitable as reference detergent for the purposes of EU Ecolabel criteria compliance with performance testing (EUEL criterion Fitness for Use) and with reference to the test product applying for the EU Ecolabel award (if applicable), a market product shall:

1. *be in the same category; segment (thus end-users) and/or type (e.g. RTU/undiluted);*
2. *be well-known and part of the leaders with a sufficient sales volume;*
3. *not hold an ecolabel certification (e.g. EU Ecolabel, Nordic Swan, Blue Angel);*
4. *have the same claims - primary and (if applicable) secondary ones.*
5. *not be another product from the applicant (failing this, it must be strongly documented).*
6. *have comparable composition (e.g. pH, concentration of active substances, presence of specific ingredients)*

This proposal could be discussed on two fronts: a) how to define accurately the wording, inclusive of thresholds and or definitions that aid delimiting what needs to be verified; b) which are the necessary verifications means, namely which documents and the fields such documents should show. With regards to the latter aspect, existing protocols require to provide the Competent Body with a description/justification on the product chosen as reference for testing purposes. This, alongside other EUEL applicant's documentation, should suffice to verify the statements proposed as part of the market product criteria, thus not implying any additional burden to currently in-force verification procedures. Stakeholders are invited to comment on this aspect in the generic questions included about this section.

Focusing on the former [a)]:

About statements 1. "be in the same category; segment (thus end-users) and/or type (e.g. RTU/undiluted);" and 6. "have comparable composition (e.g. pH, concentration of active substances)" – this statement is more precise and the information required to verify it is already part of the EUEL application fields (category, segment [private use/professional], (sub-)type (e.g. RTU/Undiluted), thus it would be readily available for the applicant's test product. A product in the market could be identified also based on the categorisations mentioned, being that related to its properties (generally strictly physico-chemical) the one that perhaps that could benefit from further precision in terms of verification harmonisation. This is also related to statement 6. that requires having comparable composition. This is formulated under the aim that the formulation of the products being compared for testing do not divert significantly. Necessarily, this has to be considered alongside the intended function declared, as the understanding is that similar composition would yield similar functions and would (potentially) comparable under similar methods. The JRC uses purposely the term "comparable" because it understand that solely evaluating on the basis on presenting similar traits strictly in quantitative terms, as per the formulation, leaves out the final purpose of such products, as defined by intended function/s expressed via claims. Indeed, via innovation in the formula it could be possible to reach similar (or better) results in terms of performance, thus not necessarily requiring to have the same ingredients and at the same concentration range. At the same time, the JRC acknowledges that presenting higher concentration of particular ingredients (e.g. surfactants) could lead to comparatively better results in terms of performance testing. Considering the former, the JRC has included statement 6. based on stakeholders feedback but it considers that it could be assumed to be implicitly included in statement 1., as well as others (e.g. 4. having the same claims). Even if this statement is considered redundant and is removed, an option could be considering the comparison of products comparison as a factor providing context for the interpretation of the other statements in the definition (e.g. 1. and 4.). The JRC ask stakeholders to make any consideration in the general question included.

— About statement 2. "be well-known and part of the leaders with a sufficient sales volume;" - sales volume is acknowledged as a proxy for "successful"/"well-stablished" product and the assumption would be that such products are performant (as this is a clear driver for consumers). Whilst this could be reasonably assumed, then the questions are how to set the threshold to define "*a market leader*" and what means "*sufficient*" in quantitative/qualitative terms. As per Blue Angel, one way could be using a database as reference (e.g. NIQ[475]) and then select from the top options (e.g. top 5 – 10) to narrow down

[475] https://nielseniq.com/global/en/

what are the eligible market products. However, the next question is – at which granularity? The JRC assumes that it should be at European level but one interpretation (as per HSC EUEL criteria in force) could be that it should be "*... available for purchase at the time of testing, in the intended market segment and in the intended market region of the applicant's product*". If so, then it would not be possible to set beforehand a quantitative threshold (also assuming there is agreement on the database to use) as it would be dependent on the product applying for the EUEL award (where is sold?). Likewise, choosing a market leader, even if using data, would not be possible if there is no definition of which should be, at least, the geographical scope (i.e. European level, member state, etc). Consequently, for clause 2. there is need for agreement on which are the aspects that condition data processing, as these would delimit which are the "top market performers". An alternative approach could be setting the ranking based on performance results but this lead to other discussions on whether such data would be comparable (*can the methodologies used assumed to be equivalent to pool the resulting data?)* or would have the desired coverage (e.g. at EU, Member State). It is likely that any solution found would represent a compromise and might be imperfect for the intended purpose but there is clear need for agreement for harmonisation purposes in terms of verification. Consequently, it is included within one of the questions for discussion.

— About statement 3. "not hold an ecolabel certification (e.g. EU Ecolabel, Nordic Swan, Blue Angel);" – there have extensive arguments against allowing ecolabelled products as reference market products, which are not reproduced here but can be consulted in TR1 and the background document of the sub-AHWG on FfU. In a nutshell: non-ecolabelled products (meeting other conditions as being "market leaders") are acknowledged as being the top-performant or, at least, as being products that other would need "to beat" in order to be perceived by consumers as top range. Also, since they are not constrained by limitations in the ingredients to use (as per ecolabelled products), achieving "higher/better" performance should not be as difficult as per ecolabelled products. The JRC perceived more support on this option, thus the proposed statement. However, the JRC disagrees with the fact that strictly banning all ecolabelled products would be beneficial or would be coherent with the purposes of the EUEL criteria. For example, a product can be awarded the EUEL (applicant A) after comparative testing versus a market product. Hence, it is acknowledged that its performance is comparable to the one of the product already in the market. In this case, what would be the rationale to exclude comparative testing of applicant A ecolabelled product with a test product from another applicant? Another situation that whilst potentially unlikely could happen is that the tope range or market leaders are ecolabelled products. If so, which criteria prevails, being in the top range or not being ecolabelled? All the former examples are share to prime discussion about how to formulate exemptions or how to complement the statement clause to account for these situations. Options along this line could include adding at the end "*...unless duly justified/accepted by the Competent Body*" or "(failing this, it must be strongly documented)." (as in other statements). Also, phrasing it in a conditional way as "3. Preferably, not hold an ecolabel...". Stakeholders are invited to provide comment on this aspects in a dedicated question.

— About statement 4. "*have the same claims - primary and (if applicable) secondary ones.* The JRC considers this as core element for comparative testing purposes, since product design and associated categorisations are directly influence by the intended function, thus the claims made on the product. In this sense, it directly supports it, similarly to feedback received by stakeholders. Perhaps it would be beneficial to set a definition for what is understood as primary and secondary claims. The JRC's understanding is that primary claims relate to those intended functions that can be classed under the "washing/cleaning" scope and that are purposely targeted, thus mainly driving product characteristic. Then, secondary claims correspond to those related to any other functions not being considered under the scope of "washing/cleaning".

— About statement 5 "not be another product from the applicant (failing this, it must be strongly documented)." In the feedback received by the JRC, there was no clear support or rejection about this aspect. The JRC has no considerations to share beyond those already discussed in the consultations carried out and invites stakeholders to provide feedback as replies to the questions section.

Laundry detergent (LD)

The outline of the proposals made is shown in Table 73.

Table 73 – Outline of main proposals for modification the LD protocol to prove compliance with EU Ecolabel criterion *Fitness for Use*.

Section (LD Protocol)	Description/Outline of the change
All/various sections	Wording improvement Inclusion of synthetics/blends as new fabric type (alignment with IEC60456 & AISE LD Protocol).
3.2 *Washing machine types*	Clarification of eligible washing machine types via specification description. Requirements added– Yearly calibration/validation (Alignment with AISE LD protocol). Requirement added – Record & monitor energy and water consumption (alignment with Nordic Swan).
3.5 *Stain set*	(Figure 1 & 3) Not recommending marking of the stains (potential colour donation). Figure 1 removed. Figure 2&3 merged
3.6 *Stain set size*	Merging with Section 3.5.
3.9 *Wash loads*	Addition of synthetics/blends as new fabric type (alignment with IEC60456 & AISE LD Protocol). Target ballast load weight slightly decreased (HDD ->4.5kg to 4.4kg; LDD ->2.5kg to 2.4kg alignment with IEC60456); Removed reference to DIN 53919 (withdrawn status).
3.11 *Reference detergent*	(Table 12) Dosage-> Updated to be coherent with criterion *Dosage* Requirement proposal (12.2 g/kg laundry) and conforming EN60456:2023 (A12) recommended detergent dose for Cotton (20C & 30C). (Table 13) The formulation for HDD has been updated from IEC-A to IEC-P formulation, conforming IEC60456, more specifically the formulation displayed in Table B.1 from the EN60456:2023 (A12). This formulation has been modified according to stakeholders' feedback, by adding further enzymes types, to better reflect the enzymatic profile of current laundry detergents in the market.
3.11 *Pre-treatment*	Clarification on the reference detergent dosage.
3.13. *Wash programme*	Matching the minimum temperature at which a LD claims to that of washing machine water inlet, since generally there are no technical means to set it at a fixed temperature lower than 20C
3.15. and 4.1.1	Ironing no longer allowed as it could be a source of test variability due to stain colour change due to heat applied.

Rationale on the proposed changes (LD)

According to stakeholders' comments, the main aspect to consider is how to update the generic formulations of reference detergents to be closer to market reality, since they were all outdated (e.g. excessive active content). In this sense, the JRC proposes in this TR2 an updated profile for heavy duty laundry detergent (HDD). This formulation based on latest relevant standards (IEC-P; IEC60456) and is modified according to sub-AHWG on FfU feedback to include a more representative enzymatic profile. However, the formulation profile for light duty detergent (LDD) still remains largely unchanged, mainly owing to very limited input on this matter (e.g. formulation) and lack of technical information in this regard in the information the JRC had access to (e.g. standards citing such formulations). The same issue is still in place for LD in liquid format, since stakeholders called for comparison of alike product formats (liquid vs liquid; solid vs solid). In this

consultation, as per previous, the JRC calls for stakeholders input on sourcing proposals for LDD and liquid format LD formulation. In the absence of this and also considering the possibility of keeping up with market developments (e.g. innovative products; new product claims) the JRC would like to prime discussion (via a TR2 question) about the possibility of allowing market products as reference detergent.

Leaving aside general wording and structure updates, other aspects improved are:

- clarification of the washing machine traits and conditions for use;
- inclusion of a new test fabric (synthetics/blends) to come closer to typical clothing used in households;
- alignment of the dosage of the reference detergent with maximum dosage proposed for LD (yet this is still and aspect under discussion);

Other aspects were attention has been flagged by stakeholders but no conclusive evidences for change were found include:

- washing machine cycle – to adapt to market reality and/or come closer to consumer usage conditions.
- Products with microorganisms – no feedback received. However, new requirement on backing up claims/function not specified in EUEL performance protocols should provide evidences for such products.
- Evaluation method/pass criteria – aiming at basing it in inferential statistics (Fisher LSD; Tuckey's HSD).
- Stain set – aiming at ensuring stain validity. AISE stain set was mentioned to be discontinued and new set being available from 2025.

The JRC is planning on keep on working on the identified improvable aspect to the extent feasible. In addition, special attention will be placed on improving the in-wash stain remover protocol.

In this regard, the JRC is following closely relevant developments in terms of LD performance testing, as new IKW recommendations for *Cleaning performance (Stain removal)* expected for publication during 2025.

Industrial and institutional laundry detergent (IILD)

The outline of the proposals made is shown in Table 74.

Table 74 – Outline of main proposals for modification the IILD framework to prove compliance with EU Ecolabel criterion *Fitness for Use*.

Section (IILD Protocol)	Description/Outline of the change
All sections	Wording improvement (inclusive of moving text to footnotes) Explicit mention to scope (covers mono- and multi-functional products) Set minimum testing conditions, namely: — Testing elements and stages defined beforehand and identical for each repetition unless justified as comparable (but not identical). — Testing carried out at medium degree of soiling — Testing according to manufacturer's recommendations, as claimed in the product (e.g. label; product sheet), specifically: ● at the lowest washing temperature and; ● at the highest water hardness and; ● at the recommended dosage considering the former aspects

	(lower end if a range is provided)
Section 1	Reference to standard ISO 15797:2017[476] as a way to standardize the washing procedure at laboratory scale, as practical compromise between real conditions at industrial scale and the laboratory.
Section 1.2	Requesting laboratory machines specifications to comply with ISO 15797:2017 as proof of suitability to generate predictive values correlated towards realistic usage conditions. Specifications explicitly include for convenience. Alternatively, approval by the Competent Body of machine specifications complying with such requirement. In terms of reference product generic formulations: — changing from IEC A to IEC P, following standard updates. — proposing the ISO 15797:2017 as suitable additional option. Explicitly add these formulations as tables for convenience. Specifications of how dosages given in ranges should be considered for testing purposes (lowest for hard water at lowest temperature claimed as effective).
Section 1.3	Assessment of performance based on testing of performance effects, classed as: — primary laundering effects (e.g. dirt removal, stain removal capacity and bleaching effect) — secondary laundering effects (e.g greying of white washing, and colour-fastness and staining of coloured washing) — rinsing agent effects (e.g. drying, ironing or mangling of the washed articles), Primary laundering effects must be tested while other type of performance effects may be tested. The performance test is passed when each performance effect tested is equal or better than that of the reference product used. A performance effect is equal to or better than the reference product if: — 5 repetitions -> the results are equal to or better in 100% of the scores. — 10 repetitions -> the results are equal to or better in 80% of the scores. — Statistical methods -> alternatively to the former, an statistical test with a one-side 95% confidence range shows the results are equal to or better
Section 1.4	Reporting requirements alignment with former aspects modified with the laboratory test, namely: — Testing machine specifications — Evaluation based on the pooled effect of performance effects. In addition, it is required to describe the test procedure/methods by performance effects tested, and to justify why such are suitable/relevant for

[476] ISO 15797: 2017 "*Industrial washing and finishing procedures for testing of workwear*". See: https://www.iso.org/standard/65152.html

	testing such performance effect.
Section 2	Alignment with laboratory test in: — Requesting the reference product to be approved by a Competent Body. — Requesting the reference product to be of the same category as per the test product.
Section 2.1	Explicitly requesting to perform the test under relevant conditions and provide responses according to section 2.5 requirements.
Section 2.2	Testing as per manufacturer's recommendations and specifications of how dosages given in ranges should be considered for testing purposes (See above). Request a minimum period of continuous usage for the reference product to be eligible for testing (>12 months).
Section 2.4	Text structure modified to enhance clarity. Explicit mention about the questions to panellist – they must refer to the comparison of reference product with test product performance. Explicit request of a test report conforming section 2.5 requirements.
Section 2.5	Alignment with laboratory test in: — Testing made at medium degree of soiling at highest water hardness and lowest washing temperature (as claimed in product). — Information about approval of product/s as reference by a Competent Body — Information about product's (reference and tested) recommendations (dosage, lowest washing temperature, highest water hardness, date of purchase and testing). In addition, requirement to justify when testing conditions are not identical but comparable. Also, requirement to specify minimum testing fields (wash program, washing temperature, test duration, water hardness, soiling level).

Rationale on the proposed changes (IILD)

According to stakeholders' comments, the main aspect to consider is definition protocols, inclusive of efficacy targets by relevant product format and/or claim on the product. The main reason was to ensure harmonization of results, thus streamlining the EUEL verification and application process. This can be described in practical terms by the restricted number of laboratories being able to carry out the tests; the time it takes validating targets and protocols; and the need for specific *apparatus* (e.g. machines) used in the methods.

The JRC has performed work (e.g. consultations, research) along this line, resulting in proposals to make more representative laboratory test conditions (via washing machines specification) and proposing potential generic formulations. In addition, the protocol has been improved with regards to wording and structure (e.g. evaluation by type of claim – primary/secondary laundering). However, the proposals made for the laboratory test were not widely supported, adducing lack of applicability to all textiles being laundered (proposal focus on washing conditions for work wear that are harsh for other clothing) and lack of relevance concerning market reality of the generic formulations proposed.

The JRC received the following proposal to structure claims by product rather than by type (primary/secondary; See TR2 proposal text):

— *laundry detergent for any white linen and this must be marked "white linen" on the label: dirt removal and stain removal, bleaching effect and greying of white washing;*

— *laundry detergent for any colored linen (to be tested for all laundry detergents that do not specify "white linen"): dirt removal and stain removal of colored washing, bleaching effect, greying of white washing, color maintenance and dye transfer inhibition;*

— *any stain remover: stain removal on white and colored laundry with more difficult and different types of stains;*

— *softener: softness, ironing (or iron glide);*

— *rinsing agent: mangling of the washed articles;*

— *other products: each effect should be tested.*

The JRC is open for discussing with all stakeholders during the 2nd AHWG the aforementioned proposal (See dedicated question below). In addition, this proposal also requested that the JRC should propose a protocol per type of claim, inclusive of efficacy targets. The JRC did research in this line but it did not find suitable standards on this specific topic harmonised at EU and/or international level. Furthermore, in the dedicated consultations held, the JRC did not receive references directing to specific standards on this field. When cross-checking with other ecolabels criteria (i.e. NS 093; v4.1 *Laundry detergent for professional use*) the JRC observed similarities with regards to the level of detail of the protocols and the type of pass/fail in EUEL criteria. In view of the aforementioned elements and also given limitations associated with the resources allocated to the revision of the EUEL criteria on detergents, the JRC considers that it would not be feasible (meaning, for every single potential claims) to develop such protocols/methods within the life-time of the EUEL revision process, since these would require extensive and dedicated efforts on developing such. Nevertheless, it remains active in engaging with relevant stakeholders and consulting relevant sources, as is the case for other products where (for example) IKW recommendations updates are being followed.

The JRC would like to consult with stakeholders their view on keeping the *laboratory test* in the IILD performance framework or whether it would be advisable to drop it from the EUEL criteria. There are several concerns identified as:

— potential lack of relevance of generic formulations (outdated; use of multi-component systems);

— potentially not scalable - whether laboratory results are directly comparable with real usage conditions. Note that method ISO 15797:2017[477] recommends a cross-check of results under real industrial conditions;

— lack of specific harmonised methods;

— not present in other ecolabels that restrict to user test (e.g. NS 093; v4.1);

— laborious verification – that implies high resources consumption.

Given the aforementioned aspects, the JRC is considering whether it would be best requiring tests to be solely carried out under real usage conditions. In this regard, the EUEL would like to hear from stakeholders (especially CBs) how many IILD products were awarded with the EUEL while passing the performance test using the *Laboratory test*. According to the feedback received, the JRC could propose drop the *Laboratory test*.

Other aspect requiring attention was about how to structure testing conditions to maximise feasibility (e.g. cost, time), thus ensuring efficiency, whilst maintaining the ability to gather required evidences for verification purposes. This could take the form of not testing at each single possible combination of each relevant factor (e.g. water hardness, degree of soiling) and instead use extrapolations. During the sub-AHWG on FfU, feedback to JRC's questions (Q50) suggested in professional laundry systems there are softening system that bring down water hardness (0.5-1 mmol $CaCO_3$/L). Consequently, it suggested to set water hardness at that level ("soft water"; 0.5-1 mmol $CaCO_3$/L.) instead than at "*hard*" water level, while simultaneously adding a complementary test at the highest water hardness to check the ash and the greying

[477] ISO 15797: 2017 "*Industrial washing and finishing procedures for testing of workwear*". See: https://www.iso.org/standard/65152.html

with model fabric to verify that the builder system is working appropriately. The JRC would like to hear from stakeholders on the suitability of such proposal.

The feedback also suggested that it could be problematic testing at each degree of soiling, from the perspective of the number of test required and the availability of testing centres. The EUEL criteria requires at least 5 testing centres, the same as Nordic Ecolabelling (NS 093; v4.1), and a way to cope with this could be to increase the number of "repetitions" (testing centres) required. Another possibility could be not testing at every soiling level, as per current proposal in TR2 that asks for medium degree of soiling.

Dishwasher detergent (DD)

The outline of the proposals made is shown in Table 75.

Table 75 – Outline of main proposals for modification the DD protocol to prove compliance with EU Ecolabel criterion *Fitness for Use*.

Section (DD Protocol)	Description/Outline of the change
All sections	Wording improvement (inclusive of moving text to footnotes) Reference to the latest IKW test/EN 60436 standard (and for the latter, removing quotation to EN 50242)
Section 2	Clarifications -> coverage (mono- & multi-functional products) + directs to section 3 for rinse performance testing. Requirement -> any other performance-related claim must be tested/documented.
Section 2.1	(Re)Moving all text making reference to rinse aid performance testing to the newly created section dedicated to rinse aid testing (See section 3). Specific reference to holding time after reaching the main wash temperature (8 minutes). Cleaning performance testing temperature is set at 45C for both reference detergent and test detergent (currently, 50C is fixed as reference detergent test temperature while tested detergent can be lower), in alignment with other ecolabelling schemes[478] and state-of-the-art literature[479] Specific reference to standard detergent Type D Clarification of the type of dishwasher machine that can be used Requesting a minimum of three attempts.
Section 2.2	The generic formulation is as reference detergent is specified (IEC 60436, Type D) Clarification of the type of dishwasher machine that can be used
Section 3	New section (Rinse aid)– contains aspects related to rinse aid performance

[478] See Section 2.5; Requirement O16; Nordic Swan criteria *017 Dishwasher detergents and rinse aids*, version 7.6, 16 April 2024. Available at: https://www.nordic-swan-ecolabel.org/49f135/contentassets/4c39b5c28cb344a6ad02643a27094f28/background-document_017_dishwasher-detergents-and-rinse-aids-017_english2.pdf

[479] Stamminger, R., 'Modelling Dishwashers' Resource Consumption in Domestic Usage in European Households and Its Relationship to a Reference Dishwasher', Tenside Surfactants Detergents, Vol. 57, No. 6, December 1, 2020, pp. 479–488. https://www.degruyter.com/document/doi/10.3139/113.110714/html

	testing in existing framework protocols + new specifications mostly derived from alignment with other ecolabelling schemes[480] and stakeholders feedback.
Section 4	Structure – now it mainly disclose reporting requirements split by type of function/test, namely: cleaning performance; rinse aid performance and other claims.

Rationale on the proposed changes (DD)

According to stakeholders' comments, the main aspects to update were method specifications (i.e. machine model, cycle time/temperature) and reference detergent generic formulation (considered as outdated). The JRC performed work (research, consultations) on these aspects as part of the sub-AHWG on FfU:

- It consulted on the possibility of dropping the modified EN 60436 method from EUEL performance protocol, given wide prevalence of IKW test method within ecolabels (EUEL and NS, BA), but the feedback received advised not to so on the basis of being the only one defining accurately testing conditions for drying.
- It also updated the generic formulation to IEC 60436 Type D but was warned about this been soon no longer representative of consumer's (i.e. high pH) and that a revised version was expected by the end of 2024, with new IEC Type E reference detergent expected. Furthermore, that the IEC method would also be revised approximately at the same time. Consequently, the JRC remains vigilant on these updates to consider them as part of the revision. Further to this and also related to generic formulations, the JRC searched and asked stakeholders for information about generic formulations but with limited success, especially in formats other than the existing in the protocol.
- It consulted about the use of standardised dishwashing load but feedback was not generally supportive on different fronts (e.g. over cost versus benefits yield).
- It discussed about the suitability of considering the eco-cycle as default for performance testing purposes. There was general support on the fact that this programme profile (that yields environmental benefits via efficiency) matches typical interests' profile of EU Ecolabel products users and that is aligned with EU Ecolabel criteria principles. However, an important counter-argument is that it would not enhance the sensitivity of the methods to detect performance differences arising from the product itself but rather it would reflect the overall result of the combination of the detergent and the washing conditions, as defined by washing cycle configuration, device specification, etc. In other words, the pooled effect yields enhanced performance but this performance can't be attributed to the detergent solely but rather to the combination of washing conditions, especially due to dishwasher action (configuration & specifications). Given the former, the JRC acknowledges that this could yield relevant environmental gains as part of the information provided to users (prime awareness of the environmental desirability of this programme) but would not necessarily contribute to the criterion on performance, *Fitness for use*. Hence, no further work was carried out in this regard.
- Other aspects -> suitability of restricting the detergent testing to using only generic formulation (not supported); re-structuration the protocol for ease of rinse aid testing;

The JRC envisages further work on ensuring rinse aid testing is clear and accurate, aiming to revise its proposal with the feedback received after the 2nd AHWG. Also, follow the latest releases in the field of DD products performance testing (i.e. IEC and IKW update) that, according to stakeholders' feedback, is expected soon.

Industrial and institutional dishwasher detergent (IIDD)

[480] See Section 2.5; Requirement O16; Nordic Swan criteria *017 Dishwasher detergents and rinse aids*, version 7.6, 16 April 2024. Available at: https://www.nordic-swan-ecolabel.org/49f135/contentassets/4c39b5c28cb344a6ad02643a27094f28/background-document_017_dishwasher-detergents-and-rinse-aids-017_english2.pdf

The outline of the proposals made is shown in Table 76.

Table 76 – Outline of main proposals for modification the IIDD protocol to prove compliance with EU Ecolabel criterion *Fitness for Use*.

Section (IIDD Protocol)	Description/Outline of the change
All sections	Wording improvement (inclusive of moving text to footnotes) Explicit mention to scope (covers mono- and multi-functional products) Set minimum testing conditions, namely: — Testing elements and stages defined beforehand and identical for each repetition unless justified as comparable (but not identical). — Testing not to be carried out with plastic cleaning beads. — Testing according to manufacturer's recommendations, as claimed in the product (e.g. label; product sheet), specifically: ● at the normally soiled dishwashing load ● at the lowest washing temperature and; ● at the highest water hardness and; ● at the recommended dosage considering the former aspects
Section 1.2	Reference to generic formulation in standard EN 17735[481] as feasible reference products (See Table A.2 and A.3 in standard; Table 1 & 2 in EUEL framework). Specifications of how dosages given in ranges should be considered for testing purposes (lowest for hard water at lowest temperature claimed as effective). Defining "product category" (products with comparable intended uses, function/s and/or industrial sector/s) and requesting reference product to be of the same product category as the test product, as horizontal alignment with IILD framework.
Section 1.3	Assessment of performance based on testing of performance effects (e.g. cleaning/soil removal; shine, drying time, streak-free performance). The performance test is passed when each performance effect tested is equal or better than that of the reference product used. A performance effect is equal to or better than the reference product if: — 5 repetitions -> the results are equal to or better in 100% of the scores. — 10 repetitions -> the results are equal to or better in 80% of the scores. — Statistical methods -> alternatively to the former, an statistical test with a one-side 95% confidence range shows the results are equal to or better
Section 1.4	Reporting requirements alignment with former aspects modified with the laboratory test, namely:

[481] EN 17735:2022 Commercial dishwashing machines - Hygiene requirements and testing.

	— Testing made for normally soiled dishwashing load at the corresponding water hardness and the lowest recommended cleaning temperature (as per product specifications). — Evaluation based on the pooled effect of performance effects. In addition, it is required: — to describe the test procedure/methods by performance effects tested, and to justify why such are suitable/relevant for testing such performance effect. In addition, requirement to justify identical testing conditions or when these were not identical but comparable. — to inform about approval of product/s as reference products by a Competent Body — Information about product's (reference and tested) recommendations (dosage, lowest washing temperature, highest water hardness, date of purchase and testing).
Section 2	Alignment with laboratory test in: — Requesting the reference product to be approved by a Competent Body. — Requesting the reference product to be of the same category as per the test product.
Section 2.1	Explicitly requesting to perform the test under relevant conditions and provide responses according to section 2.5 requirements.
Section 2.2	Testing as per manufacturer's recommendations and specifications of how dosages given in ranges should be considered for testing purposes (See above). Request a minimum period of continuous usage for the reference product to be eligible for testing (>12 months).
Section 2.4	Text structure modified to enhance clarity. Explicit mention about the questions to panellist – they must refer to the comparison of reference product with test product performance. Explicit request of a test report conforming section 2.5 requirements.
Section 2.5	Alignment with laboratory test in requiring: — describing the test procedure/methods by performance effects tested, and to justify why such are suitable/relevant for testing such performance effect. — informing about approval of product/s as reference products by a Competent Body — informing about product's (reference and tested) recommendations (dosage, lowest washing temperature, highest water hardness, date of purchase and testing). In addition, requirement to justify identical testing conditions or when these were not identical but comparable. Also, requirement to specify minimum testing fields (wash program, washing temperature, test duration, water hardness, soiling level).

Rationale on the proposed changes (IIDD)

According to stakeholders' comments, the main aspect to consider is definition protocols, inclusive of efficacy targets by relevant product format and/or claim on the product. The main reason was to ensure harmonization of results, thus streamlining the EUEL verification and application process. This can be described in practical terms by the restricted number of laboratories being able to carry out the tests; the time it takes validating targets and protocols; and the need for specific *apparatus* (e.g. machines) used in the methods.

The JRC has performed work (e.g. consultations, research) along this line, resulting in proposals to make more representative laboratory test conditions to real usage ones, yet there is still room for improvement (e.g. soil mass, its type and how to apply it). About generic formulations, the JRC has consulted sub-AHWG on FfU participants on the suitability of a generic dishwashing detergent and rinse from EN 17735[482] but no specific feedback was received. In addition, the protocol has been improved with regards to wording and structure.

The JRC received the following proposal to structure claims by product rather than by type (primary/secondary; See TR2 proposal text):

— *dishwasher detergent : cleaning/soil removal and shine ;*

— *rinse aid : drying time and streak-free performance ;*

— *multi-component system : all effects.*

— *other products: each effect should be tested.*

The JRC is open for discussing with all stakeholders during the 2nd AHWG the aforementioned proposal (See dedicated question below). In addition, this proposal also requested that the JRC should propose a protocol per type of claim, inclusive of efficacy targets. The JRC did research in this line but it did not find suitable standards on this specific topic harmonised at EU and/or international level. Furthermore, in the dedicated consultations held, the JRC did not receive references directing to specific standards on this field. When cross-checking with other ecolabels criteria (i.e. NS 080; v3.9 *Dishwasher detergent for professional use*) the JRC observed similarities with regards to the level of detail of the protocols and the type of pass/fail in EUEL criteria. In view of the aforementioned elements and also given limitations associated with the resources allocated to the revision of the EUEL criteria on detergents, the JRC considers that it would not be feasible (meaning, for every single potential claims) to develop such protocols/methods within the life-time of the EUEL revision process, since these would require extensive and dedicated efforts on developing such. Nevertheless, it remains active in engaging with relevant stakeholders and consulting relevant sources.

Hand-dishwashing detergent (HDD)

The outline of the proposals made is shown in Table 77Table .

Table 77 – Outline of main proposals for modification the HDD protocol to prove compliance with EU Ecolabel criterion Fitness for Use.

Section (HDD Protocol)	Description/Outline of the change
All sections	Wording improvements – implying removal, addition or re-location of the text within the document. Explicit reference and alignment with the new/updated IKW recommendation for HDD product performance testing[483].
Section 2	New section 2.1- Controls, adding water and internal detergent. - Water (no detergent) to accurately allocate *cleaning effect* to the use of test/reference products and not to other testing conditions (related to method

[482] EN 17735:2022 Commercial dishwashing machines - Hygiene requirements and testing.

[483] "Recommendation for the quality assessment of the cleaning performance of hand dishwashing detergents"; IKW, SOFW Journal, 128, 5-2002, page 15. Available at: https://www.ikw.org/fileadmin/IKW_Dateien/downloads/IKW-Englisch/HP_EQ-Handgeschirr-e.pdf

	quality). - Internal detergent (detergent used in every test by the laboratory) to accurately delimit the reproducibility/quality of the testing method. Set minimum testing elements and stages defined beforehand and identical for each repetition unless justified as comparable (but not identical).
Section 2.3	Explicit request to measure washing water parameters (temperature, hardness).
Section 2.4	Proposal for inclusion as reference detergent of: - market products, given absence (so far) of accepted generic formulation (based on feedback) and in alignment with other EUEL criteria product groups. - generic formulations, in alignment with EUEL HSC and under similar rationale.
Section 2.5	Inclusion of soil specifications for the claim "*high degreasing efficiency*" (high fat content; ≥60%; w/w). Addition of the possibility to use alternative soiling formulation and conditions if approved by the Competent Body, with comparability based on the profile of carbohydrates/proteins/fats expressed in dry matter basis (%; w/w)
Section 3	Reporting requirements split into: - Section 3.1 - general requirements, applicable to all tested products as per existing HDD framework - Section 3.2 – specific requirements, additional requirement related to specific claims, either explicitly included in EUEL framework (i.e. *High degreasing efficiency)* or not.

Rationale on the proposed changes (HDD)

According to stakeholders' comments, the main aspects to update were the reference detergent generic formulation (considered as outdated) and how to include the assessment of degreasing capacity additionally to the foaming one The JRC performed work (research, consultations) on these (and other) aspects as part of the sub-AHWG on FfU:

— *Degreasing* capacity – stakeholders supported considering its addition and recommended drawing inspiration from (at that time) forthcoming HDD IKW recommendation and the EUEL framework for kitchen cleaners. The JRC identified the *end-point* (conditions where test is considered finalised) as a factor that could be modified to enhance the sensitivity of the performance test but feedback suggested to focus in other parameters (e.g. defining desired end cleaning status; set minimum number of cleaned plates). The next discussion point once discarding the *end-point*, dealt around the method itself (i.e. discussing about suitability of EUEL HSC for kitchen leaners) and, especially, about the type of soil used that should be eminently dominated by fat (grease) to be directly representative of degreasing effects, with scarce feedback received. In December 2024 the revised/new IKW recommendation for HDD was released, thus the JRC considered it and has incorporated into TR2 proposal for discussion. Related to degreasing capacity (how long a dishwashing last), one aspect not specifically covered was the cleaning efficiency (ability to clean as measured by the results). Whilst there are no new addition to TR2 proposals

in this sense, an option could aligning with NS (025 criteria, v6.12)[484] and/or propose alternative methods (e.g. gravimetric; weighting soiled plates before and after washing). The JRC welcomes comments in this regard and has included a question on this matter.

- *Reference detergent & the inclusion of market products/generic formulations* – the JRC did not find a suitable candidate to update the existing generic formulation and the previous had been clearly indicated as not representative of market reality (outdated). In this sense and also considering that market reference products are to be maintained as part of the EUEL criteria in several product groups, it was deemed as a viable compromise to include this option for HDD. Also, this would be in alignment with other ecolabels that do not restrict to a generic formulation (e.g. NS 025 criteria, v6.12)[485]. By analogous reasons to EUEL HSC performance framework, the possibility of using a generic formulation is also included. Therefore, TR2 proposal removes using a single type of generic formulation and instead open the possibility for a market product or generic formulation to be used. However, an alternative approach could be considering the formulation indicated in the new IKW protocol[486]. for internal control of the process as a valid generic formulation for EUEL performance testing purposes, only if stakeholders deem it as representative of market reality. If so, then it can be proposed as generic formulation but still the use of market products as reference would be necessary to account for innovation (new product formats; new claims) since there would be need to compare to alike products, as per the proposed definition/criteria for market reference product (See All product groups rationale). Stakeholders are invited to reply to a dedicated question on this topic.
- *Other aspects* -> suitability of including other product formats (e.g. solid HDD); implications of washing by hand versus via automated means; lowering testing temperature & defining conditions for *"Cold wash"* claim; and inclusion of a control test (only water; no detergent). In this last regard, some feedback from sub-AHWG on FfU considered it as useful as long as the interpretation for the results for such water controls is clearly specified (what does it mean for the analysis? Is valid?) However, other feedback considered it as unnecessary because it would not give meaningful information specifically about the performance of the detergent and it would imply additional resources consumption, thus enhanced burden. The NS (025 criteria, v6.12)[487] includes such control test with only water, setting the minimum number of test at one (n=1). Given this, the JRC would like to gather further feedback in order to conclude on whether to withdraw such proposal or whether to maintain it.

Hard-surface cleaning products (HSC)

The outline of the proposals made is shown in Table 78.

Table 78 – Outline of main proposals for modification the HSC protocol to prove compliance with EU Ecolabel criterion *Fitness for Use*.

Section (HSC Protocol)	Description/Outline of the change
All sections	Wording improvements – implying removal, addition or re-location of the text within the document. Sections re-structuration -> Sub-headings addition to sections 1.2 and 2.2 Restriction of User test – only for professional products Alignment of *User test* with *Laboratory test* with regards to reference products (specifically market reference products) requirements (i.e. requiring

[484] See Appendix 5, section *Assessment of cleaning ability* in 025 Hand dishwashing detergents, version 6.12, Nordic Ecolabelling, 12 November 2024. Available at: https://www.nordic-swan-ecolabel.org/criteria/hand-dishwashing-detergents-025/

[485] 025 Hand dishwashing detergents, version 6.12, Nordic Ecolabelling, 12 November 2024. Available at: https://www.nordic-swan-ecolabel.org/criteria/hand-dishwashing-detergents-025/

[486] "Recommendation for the quality assessment of the cleaning performance of hand dishwashing detergents"; IKW, SOFW Journal, 128, 5-2002, page 15. Available at: https://www.ikw.org/fileadmin/IKW_Dateien/downloads/IKW-Englisch/HP_EQ-Handgeschirr-e.pdf

[487] 025 Hand dishwashing detergents, version 6.12, Nordic Ecolabelling, 12 November 2024. Available at: https://www.nordic-swan-ecolabel.org/criteria/hand-dishwashing-detergents-025/

	CB approval of the reference product). Clarification – products both for consumer/professional use must be tested against a professional use type reference product.
Section 1	Addition of control test (only water, no cleaning product) to accurately allocate *cleaning effect* to the use of test/reference products and not to other testing conditions (related to method quality).
Section 1.2.2, Table 22	Replacement of current all-purpose cleaner generic formulations by that on Appendix C of DE-UZ 194, v1.2[488] Addition of a new generic formulation based on IKW recommendation for window cleaners[489]
Section 1.2.3, Table 23	Soiling reference changed for window cleaners – existing soiling has been replaced by that based on IKW recommendation for window cleaners
Section 1.2.4, Table 24	Procedure for testing added for window cleaners - IKW recommendation for window cleaners
Section 1.3, Table 25	Addition of IKW recommendation for window cleaners as assessment method for window cleaners.
Section 2.2	Re-structuration of this section with sub-headings.
Section 2.2.1	Products containing microorganisms (*microbial cleaning products)* – the reference product shall be without microorganisms.
Section 2.3	For products containing microorganisms (*microbial cleaning products)* and with a claim on *"long-lasting"* cleaning effect – Requirement to include specific questions in the test survey to rate and describe/qualify such effect.

Rationale on the proposed changes (HSC)

According to stakeholders' comments and despite split views, the main aspect to update was the reference detergent generic formulations (outdated), especially with regards to its intended use according to latest consumer behaviour patterns (moving from "stronger" to "milder" formulation more frequently used). The "greatest need" for update was found on window cleaners, lacking appropriate formulation in RTU or Undiluted formats. In this sense, the JRC aligned with the corresponding IKW recommendation [490]. Also, with Blue Angel Ecolabel (See Appendix C of DE-UZ 194, v1.2[491]) for the APC case. These changes were well received by sub AHWG on FfU participants but they still indicated that could get "closer" to market reality formulations. Hence, the JRC invites stakeholders to comment and suggest improvements in the generic formulations displayed in the TR2 proposal.

Related to the former, the type of soils used in kitchen and sanitary cleaners were highlighted as "unrealistic" (too "tough"). Despite covered during the sub-AHWG on FfU, this is one stream of work which the JRC

[488] See Appendix C – Fitness for use of all-purpose cleaners, kitchen cleaners, sanitary cleaners and glass cleaners" within Blue Angel, Basic award criteria "DE-UZ 194. Hand dishwashing detergents and hard-surface cleaners", v1.2. January 2022. Available at: https://produktinfo.blauer-engel.de/uploads/criteriafile/en/DE-UZ%20194-202201-en%20criteria-V1.2.pdf

[489] IKW "Recommendation for the Quality Assessment of Glass Cleaning Agents / Glass Cleaners; SOFW-Journal, 148, pp 26-35, April 2022. Available at: https://www.ikw.org/fileadmin/IKW_Dateien/downloads/Haushaltspflege/2022_EQ_Glasreiniger_EN_final.pdf

[490] IKW "Recommendation for the Quality Assessment of Glass Cleaning Agents / Glass Cleaners; SOFW-Journal, 148, pp 26-35, April 2022. Available at: https://www.ikw.org/fileadmin/IKW_Dateien/downloads/Haushaltspflege/2022_EQ_Glasreiniger_EN_final.pdf

[491] See Appendix C – Fitness for use of all-purpose cleaners, kitchen cleaners, sanitary cleaners and glass cleaners" within Blue Angel, Basic award criteria "DE-UZ 194. Hand dishwashing detergents and hard-surface cleaners", v1.2. January 2022. Available at: https://produktinfo.blauer-engel.de/uploads/criteriafile/en/DE-UZ%20194-202201-en%20criteria-V1.2.pdf

envisage potential further work and to which invites stakeholders to express their view. Another potential stream of work condition to resources available is the consideration of new protocols for other product types (e.g. stainless steel cleaners)

Other aspects covered during the sub AHWG FfU were:

- *Inclusion of a control test (only water*; no detergent) this rationale is analogous to that shared for control (water) within HDD rationale. The JRC would like to gather further feedback in order to conclude on whether to withdraw such proposal or whether to maintain it.
- *"Milder" versus "stronger" formulations* – traits enabling differentiating between these two profiles were quoted (e.g. pH, active content) but there was no notion shared on how to delimit such quantitatively, thus to set threshold defining/separating one to the other.
- *Claims (microorganisms)* – the cleaning mechanisms of microorganisms-containing products could differ from their chemical counter-parts, thus the JRC inquired about stakeholders view to approach this situation. Amongst the responses, the suggestion was to test both "instant" (as per existing EUEL fitness for use protocols/frameworks) and "longer term" cleaning. This is reflected in the TR2 proposal text. Stakeholders are invited also to share their view on this matter via the general question to this criterion.
- *Manual versus mechanically automated* – cleaning "by-hand" could have lower reproducibility due to the human error associated to it, and this was supported by some participants. However, others also indicated that the same could be true for automated cleaning (tailored configurations), suggesting to use records/data to prove repeatability. The JRC considers this could be a suitable compromise and would like to consult with stakeholders via a dedicated question whether reproducibility could be shown via data on internal testing controls (reference cleaner used in all test runs to account for inter-/intra- test variability) could be quoted as acceptable verification mean.
- *User test restriction* – the JRC proposed only allowing user test for professional products. Despite well received by participants, they still suggested to consider a full ban, thus not allowing *User test* at all for the HSC product group. The JRC agree with stakeholders that the *Laboratory test* is the most scientific/robust way of proving compliance and acknowledge concerns about underperforming products passing the performance test via the *User test*. In this sense, the JRC positive to consider such restriction but it would like to count with further stakeholders inputs to approach, discuss and propose on this matter from all angles. Hence, a dedicated questions has been included on this aspect.

Points for discussion 22 – Fitness for Use

Stakeholders are invited to reply the following consultation questions:

- Question 94 (Q94) – Do you support restricting primary claims to external laboratory/testing facilities claims using the wording below for all product groups? Note that under this proposal internal test for secondary claims could be restricted as well to external parties but to be coherent with TR2 proposal should still be possible, at least for certain secondary claims (See rationale on requesting testing in all claims made on the product).

Existing wording:

The manufacturer's test laboratory or/and an external test laboratory can be approved to conduct testing to document effectiveness of

Proposed wording:

With regards to testing to document effectiveness of detergent/cleaning products for compliance with EU Ecolabel criteria:

Primary claims (those related to intended functions that can be classed under the "washing/cleaning" scope and that are purposely targeted, thus mainly driving product characteristic.) can only be performed in external laboratories/testing facilities.

Secondary claims (those related to any function/s not being considered under the scope of "washing/cleaning", thus not being considered primary claims) can be approved to be performed in internal (e.g. manufacturer's) or external test laboratories.

The test should be approved beforehand by the corresponding Competent Body.

primary claims relate to those intended functions that can be classed under the "washing/cleaning" scope and that are purposely targeted, thus mainly driving product characteristic. Then, secondary claims correspond to those related to any other functions not being considered under the scope of "washing/cleaning".

— Question 95 (Q95) – Would you support opening the methods for deviations in terms of devices used conditioning to justifying leading to comparable results? For example, using in LD using an washing machine leading to equivalent function/results as intended in the method. If so, would you support the following wording? *Please provide a reasoned response*

Existing wording:

the test laboratories must be equipped with the devices described in the test method…

Proposed additional wording (just after sentence):

…or equivalent if justification is provided to and accepted by the corresponding Competent Body that their use leads to comparable function/results,

— Question 96 (Q96) – Do you support the proposal made for a criteria/definition on "*market reference product"* (Please see rationale for full details, inclusive the proposal) *For any response, supportive or not, please provide a reasoned response.*

— Question 97 (Q97) – Related to Q96 and referred to the following wording on a potential definition for "*market reference product"* ("*be well-known and part of the leaders with a sufficient sales volume;"*), would you support choosing amongst the top 5 products according to sales volumes using a database? If so, which database would you suggest (e.g. NIQ[492])? In addition, which do you consider should the scope (e.g. European level/EU Member State/other? (Please see rationale for full discussion details.) *For any response, supportive or not, please provide a reasoned response.*

— Question 98 (Q98) – Related to Q96 and referred to the following wording on a potential definition for "*market reference product"* ("*not hold an ecolabel certification (e.g. EU Ecolabel, Nordic Swan, Blue Angel);* would you support having exclusions to it? (Please see rationale for full discussion details.) *Please, provide a reasoned response.*

— Question 99 (Q99) – Would you support raising the number of replicates required for the *User test* of the EUEL performance frameworks where this option is available (IILD, IIDD, HSC) as a way to enhance the accuracy/validity of the results? In particular, would you support raising the current minimum number (n=5) to ten (n=10)? *Please, provide a reasoned response, inclusive of minimum number of test that you would support (if any)*

— Question 100 (Q100) – Please, share any other reasoned feedback you may have on general (applicable to one or more EUEL product groups) aspects on *Fitness for use* by replying to this question.

— Question 101 (Q101) – Do you support setting the minimum temperature at which a LD can be claimed efficient to be equal as the water temperature of the washing machine inlet? Alternatively, would you support setting a fixed minimum temperature for LD efficiency at 20C, thus removing the entry for 15C? *Please provide a reasoned response*

— Question 102 (Q102) – Do you support removing ironing from LD protocol given that it could a source of test variability due to changes in stain colour associated with the heat applied to the test fabric? If not, do you support mandatorily request ironing so all test are performed under the same conditions? *Please provide a reasoned response.*

— Question 103 (Q103) – Would you support allowing market products as reference detergent for LD performance testing as way to keep up with market developments (e.g. novel products; new claims)?

[492] https://nielseniq.com/global/en/

If so, would you support removing from LD protocol those generic formulations considered as outdated (no longer reflecting market reality)? *Please provide a reasoned response*

- Question 104 (Q104) – Please, share any other reasoned feedback you may have on *Fitness for use* related aspects about EUEL LD by replying to this question.
- Question 105 (Q105) – Could you share the number of EUEL ecolabelled products/licenses that passed the performance testing using the *Laboratory test* option?
- Question 106 (Q106) – Would you support setting the testing water hardness at "low" (0.5-1 mmol $CaCO_3$/L) level only, then also performing a reduced confirmatory test (model fabric; ash and greying) that the builder system is effective at "hard" (the highest) water hardness .
- Question 107 (Q107) – Would you support setting structuring claims by product they refer to (See IILD TR2 rationale) rather than by the type of claim (primary/secondary; See TR2 proposal text)? *Please, provide a reasoned response.*
- Question 108 (Q108) – Please, share any other reasoned feedback you may have on *Fitness for use* related aspects about EUEL IILD by replying to this question.
- Question 109 (Q109) – Please, share any other reasoned feedback you may have on *Fitness for use* related aspects about EUEL DD by replying to this question.
- Question 110 (Q110) – Would you support setting structuring claims by product they refer to (See IILD TR2 rationale) rather than by the type of claim (primary/secondary; See TR2 proposal text)? *Please, provide a reasoned response.*
- Question 111 (Q111) – Please, share any other reasoned feedback you may have on *Fitness for use* related aspects about EUEL IIDD by replying to this question.
- Question 112 (Q112) – Do you support the inclusion of market products and generic formulations as suitable reference detergent products? In addition, do you consider that the formulation for the internal detergent control in the IKW test[493] could be used as generic formulation for EUEL HDD performance testing purposes? *Please, provide a reasoned response.*
- Question 113 (Q113) – Would you support alignment with NS (025 criteria, v6.12)[494] with regards to performance testing of the degreasing efficiency (ability to remove fat; See HDD rationale)? *Please provide a reasoned response.*
- Question 114 (Q114) – Do you support the inclusion of a control test (only water, no detergent), as reflected in current TR2 proposal (See HDD rationale for details)? *Please provide a reasoned response.*
- Question 115 (Q115) – Please, share any other reasoned feedback you may have on *Fitness for use* related aspects about EUEL HDD by replying to this question.
- Question 116 (Q116) – Do you support the inclusion of a control test (only water, no detergent), as reflected in current TR2 proposal (See HDD rationale for details)? *Please provide a reasoned response.*
- Question 117 (Q117) – Would you consider as acceptable verification mean to prove HSC performance test reproducibility data on internal testing controls (reference cleaner used in all test runs to account for inter-/intra- test variability)? Please, provide a reasoned response.
- Question 118 (Q118) – Would you consider appropriate to eliminate the possibility of the *User test* from HSC performance framework, thus restricting compliance with the *Fitness for use* criterion solely to laboratory tests? *Please, provide a reasoned response.*

[493] "Recommendation for the quality assessment of the cleaning performance of hand dishwashing detergents"; IKW, SOFW Journal, 128, 5-2002, page 15. Available at: https://www.ikw.org/fileadmin/IKW_Dateien/downloads/IKW-Englisch/HP_EQ-Handgeschirr-e.pdf

[494] See Appendix 5, section *Assessment of cleaning ability* in 025 Hand dishwashing detergents, version 6.12, Nordic Ecolabelling, 12 November 2024. Available at: https://www.nordic-swan-ecolabel.org/criteria/hand-dishwashing-detergents-025/

— Question 119 (Q119) – Please, share any other reasoned feedback you may have on *Fitness for use* related aspects about EUEL HDD by replying to this question.

6.9. Automatic dosing systems (only for IIDD & IILD)

TR1 criterion (x) automatic dosing systems	
IIDD, IILD	For multi-component systems, the applicant shall ensure that the product is used with an automatic and controlled dosing system. In order to ensure correct dosage in the automatic dosing systems, customer visits shall be performed at all premises using the product, at least once a year during the license period, and they shall include calibration of the dosing equipment. A third party can perform these customer visits.
IIDD, IILD	*Assessment and verification:* the applicant shall provide a signed declaration of compliance along with a description of the content of customer visits, who is responsible for them and their frequency.
TR2 proposed criterion (x) automatic dosing systems	
IIDD, IILD	For multi-component systems, the applicant shall ensure that the product is used with an automatic and controlled dosing system. In order to ensure correct dosage in the automatic dosing systems, customer visits shall be performed at all premises using the product, at least once a year during the license period, and they shall include calibration of the dosing equipment. A third party can perform these customer visits.
IIDD, IILD	*Assessment and verification:* the applicant shall provide a signed declaration of compliance along with a description of the content of customer visits, who is responsible for them and their frequency.

Rationale for the proposed criterion (x) automatic dosing systems

Industrial and institutional multi-component systems are difficult to dose as there is more than one product in the system. The use of a well maintained automatic and calibrated dosing system limits the risk of incorrect dosing and, thus, the risk of extra environmental impacts. Performing a system's calibration is both in the interest of the user, as overdosing has increased monetary costs and underdosing might result in bad performance of the product, and of the manufacturer, as correct dosing ensures that the product's optimal performance is achieved.

In the first criteria version, contained in TR1, no changes were proposed to this criterion.

The feedback received after the 1st AHWG suggested that the verification of this requirement was resource intensive or simply not viable (e.g. customers could be "hundreds"), especially with regards to business-to-consumer (B-to-C) cases. Furthermore, it highlighted that, comparatively, the drawbacks of implementing this criterion could offset the potential benefits achieved with it. There were few suggestions as:

- Providing declarations of conformity only during certification and contact of person responsible for the visits, so CBs can require/coordinate directly with it.
- Re-writing or even deleting the requirement.

The JRC considers that simplification of the requirement is possibly the best way to go for but for this it requires specific inputs, ideally in terms of wording suggestions. However, it would like to hear from stakeholders on other options to streamline verification and/or suitability of removing this criterion.Hence, no changes are proposed in this criterion pending to gather further insights from stakeholders (See Q120).

Points for discussion 23– Automatic dosing systems

Stakeholders are invited to reply the following consultation question:

- Question 120 (Q120) – Would you support removing this criterion? If not, could you provide specific suggestion (ideally as legal text wording) on how to simplify this criterion?
- Question 121 (Q121) – Please, provide any other comments that you deem relevant to any aspect of this section.

6.10. User information

TR1 proposed criterion (x) User information	
ALL	The product shall be accompanied by instructions for proper use so as to maximise product performance and minimise waste, and reduce water pollution and use of resources. These instructions shall be legible or include graphical representation or icons and include information on the following:
ALL	(a) Dosing instructions The applicant shall take suitable steps to help consumers respect the recommended dosage, making available the dosing instructions and a convenient dosage system (e.g. caps).
DD	Dosage instructions shall include information on the recommended dosage for a standard load.
HDD	Dosage instructions shall include the recommended dosage for at least two levels of soiling and, if applicable, the impact of the water hardness on the dosing. If applicable, indications of the most prevalent water hardness in the area where the product is intended to be marketed or where this information can be found shall be provided.
HSC	The following text shall appear on the packaging of RTU products: 'This product is not intended for a large-scale cleaning'. Dosage instructions shall include the recommended dosage for at least two levels of soiling and, if applicable, the impact of the water hardness on the dosing. If applicable, indications of the most prevalent water hardness in the area where the product is intended to be marketed or where this information can be found shall be provided.
IIDD, IILD	This requirement does not apply for multicomponent products to be dosed with an automatic system Indications of the most prevalent water hardness in the area where the product is intended to be marketed or where this information can be found shall be provided.
LD	Dosage instructions shall include information on the recommended dosage for a standard load for at least two levels of soiling and on the impact of the water hardness on the dosing. Indications of the most prevalent water hardness in the area where the product is intended to be marketed or where this information can be found shall be provided.
ALL	(b) Packaging disposal information The primary packaging shall include information on the reuse, recycling and correct disposal of packaging.
DD, HDD, HSC, IIDD, IILD	(c) Environmental information A text shall appear on the primary packaging indicating the importance of using the correct dosage and the lowest recommended temperature in order to minimise energy and water consumption and reduce water pollution.
IILD	If the final product contains peracetic acid and hydrogen peroxide as a bleaching agent and is classified and labelled, a text shall appear on the primary packaging or technical product sheet stating that the classification and labelling is due to peracetic acid and hydrogen peroxide which degrade into non-classified substances during the washing process
LD	(c) Environmental information A text shall appear on the primary packaging indicating the importance of using the correct dosage

	and the lowest recommended temperature (which shall not be higher than 20 °C) and full loads in order to minimise energy and water consumption and reduce water pollution.
ALL	*Assessment and verification:* the applicant shall provide a signed declaration of compliance along with a sample of the product label.
TR2 proposed criterion (x) user information	
ALL	The product shall be accompanied by instructions for proper use so as to maximise product performance and minimise waste, and reduce water pollution and use of resources. Unless otherwise specified in the subsequent sub-sections, these instructions shall be provided via sales packaging (on, attached or inside it) or be available via a web-link or QR code directing to a website and/or to a document (e.g. technical datasheet) containing such information. These instructions shall be legible or include graphical representation or icons and include information on the following:
ALL	(a) Dosing instructions The applicant shall take suitable steps to help consumers respect the recommended dosage, making available the dosing instructions and a ~~convenient~~ dosage system (e.g. caps) compatible with such instructions (e.g. caps graduation reflecting dosing instructions).
DD	Dosage instructions shall include information on the recommended dosage for a standard load.
HDD, DD	Dosage instructions shall include the recommended dosage for at least two levels of soiling and, if applicable, the impact of the water hardness on the dosing. If applicable, indications of the most prevalent water hardness in the area where the product is intended to be marketed or where this information can be found shall be provided.
HSC	The following text shall appear on the packaging of RTU products: 'This product is ~~not~~ solely intended for use on ~~a large~~ small-scale cleaning (small surfaces; "spot cleaning")'. Dosage instructions shall include the recommended dosage ~~for at least two levels of soiling~~ and, if applicable, the impact of the water hardness on the dosing. If applicable, indications of the most prevalent water hardness in the area where the product is intended to be marketed or where this information can be found shall be provided.
IIDD, IILD	This requirement does not apply for multicomponent products to be dosed with an automatic system. Indications of the most prevalent water hardness in the area where the product is intended to be marketed or where this information can be found shall be provided.
LD	Dosage instructions shall include information on the recommended dosage for a standard load for at least two levels of soiling and on the impact of the water hardness on the dosing. Indications of the most prevalent water hardness in the area where the product is intended to be marketed or where this information can be found shall be provided.
ALL	(b) Packaging disposal information The ~~primary~~ sales packaging shall include information on the reuse, recycling and correct disposal of this packaging. Information on the reuse, recycling and correct disposal of any other packaging associated with the product shall be made available to users.
~~DD, HDD, HSC,~~	(c) Environmental information A text shall appear on the ~~primary~~ sales packaging indicating the importance of using the correct

IIDD, ~~IILD~~	dosage and the lowest recommended temperature in order to minimise energy and water consumption and reduce water pollution.
HDD, HSC	(c) Environmental information A text shall appear on the ~~primary~~ sales packaging indicating the importance of using the correct dosage ~~and the lowest recommended temperature in order~~ to minimise energy and water consumption and reduce water pollution.
DD	(c) Environmental information A text shall appear on the ~~primary~~ sales packaging indicating the importance of using the correct dosage and the lowest recommended temperature in order to minimise energy and water consumption and reduce water pollution. Related to the former, a text shall indicate the importance of using the dishwasher "eco"-cycle programme for best environmental performance.
IILD	(c) Environmental information A text shall appear on the ~~primary~~ sales packaging indicating the importance of using the correct dosage and the lowest recommended temperature in order to minimise energy and water consumption and reduce water pollution. If the final product contains peracetic acid and hydrogen peroxide as a bleaching agent and is classified and labelled, a text shall appear on the ~~primary~~ sales packaging or technical product sheet stating that the classification and labelling is due to peracetic acid and hydrogen peroxide which degrade into non-classified substances during the washing process
LD	(c) Environmental information A text shall appear on the ~~primary~~ sales packaging indicating the importance of using the correct dosage and the lowest recommended temperature (which shall not be higher than 3~~2~~0 °C) and full loads in order to minimise energy and water consumption and reduce water pollution.
ALL	(d) Special information and/or precautions Precautionary information deemed as conducive to safer use shall appear on the sales packaging (e.g. contains *X ingredient*). Any other information that have been verified and validated by the Competent Body (e.g. claims about the product) may be disclosed/provided to users.
ALL	*Assessment and verification:* the applicant shall provide a signed declaration of compliance along with a sample of the product label. In addition, it should provide all the necessary information to verify the information provided via digital means (e.g. web-link or QR code).

Rationale for the proposed criterion (x) user information

Consumer behaviour cannot be addressed directly in EUEL criteria, but one of the most effective ways to address this indirectly is via the information offered to users, thus the name and importance of this criterion.

Stakeholders proposed to ensure messages were addressing proper dosage and that were easily readable, mostly according to recent CLP revision. In these regards, the initial statement of the legal text is deemed still fit for purpose:

> "*The product shall be accompanied by instructions for proper use so as to maximise product performance and minimise waste, and reduce water pollution and use of resources. These instructions shall be legible or include graphical representation or icons and include information on the following*"

In TR1 a minor change was proposed in aligment with the proposal made in LD scope to consider 20C as the minimum temperature from which ecolabelled products are effective. Given current TR2 proposal to revert back to 30C, then alignment is made in the *User information* criterion to reflect this.

Outcomes from and after the 1st AHWG meeting and proposals for the 2nd criteria version

In total 15 comments were received on the *Dosage requirement* section, which are found in full in the Table of Comments (ToC1).

The topics covered by stakeholders' feedback alongside JRC's comments on them are as follow:

- *Temperature requirements:* Stakeholders suggest removing the minimum temperature requirement for products where water temperature cannot be precisely controlled (e.g., hand washing, multi-surface cleaners) or is not relevant (e.g., WC gel, sprays, ready-to-use products). The JRC considers this requirement appropriate, thus proposed changes to the wording used for HDD and HSC
- For the case of HSC in RTU form stakeholders questioned the purpose of the sentence "*This product is not intended for a large-scale cleaning*", which caused interpretation problems in certain languages, and suggested deleting or harmonizing it across languages. Given this, the JRC is proposing a re-formulated version of this sentence ('*This product is solely intended for use on small-scale cleaning (small surfaces; "spot cleaning")*' and it would like to gather further feedback on its suitability.
- *Dosage instructions and information:* Stakeholders suggest to standardize dosage instructions across EUEL products, inclusive of ensuring that the dosing system provided was truly "convenient: (e.g. graduated according to dosage recommendations to deliver the expect amount). Also, it was highlighted to check the convenience of requiring dosage for twos soiling levels for HSC. The JRC revised the wording of the legal text and it has made a proposal in this regard.
- *Claims and testing requirements* – Some stakeholders asked for certain claims or labels to be only usable conditioned to meeting certain verification conditions. For example, for LD that the claim *"White only"* can only be used if the colour tests have not been carried out. The same applies to other claims (e.g. *degreasing capacity; high performance, ultra-concentrated*). In view of this and also in alignment with recent proposal within *Fitness for Use* criterion on testing any claim made on the performance of the product, the JRC proposes the following wording to ensure verification of the claims made:

  Any other information that have been verified and validated by the Competent Body (e.g. claims about the product) may be disclosed/provided to users.

  The logic of the previous wording is ensuring that only those claims verified by CBs can be disclosed. If so, then EU license holders can provide information about such claims via any channel they consider appropriate.

  - Requiring manufacturers to indicate on labels if the detergent is for white only if colour tests have not been conducted.
  - Modifying the framework to include a black test and obliging manufacturers to indicate on labels that the detergent is for white only if the two "colour" tests have not been carried out.

In order to enable flexibility in the way that information/instructions are provided to user and to account for the growing consumer digital literacy, the JRC proposes the following wording aiming as preamble to *Use information* specific requirements:

"Unless otherwise specified in the subsequent sub-sections, these instructions shall be provided via sales packaging (on, attached or inside it) or be available via a web-link or QR code directing to a website and/or to a document (e.g. technical datasheet) containing such information.

The intention is that this clause defines all the possible channels/ways that an EU ecolabel holder has to ensure necessary/advisable information reaches the intended end-users. Then, if such information is necessary at the time of handling/using the product or having it at this time can be considered as conducing to a safer use (e.g. warning of particular ingredient being present in the product), then it has to be disclosed on the sales packaging. The JRC would like to hear from stakeholder on the suitability of this wording for the disclosed aim.

Following the former changes, another change is requiring that information for correct disposal (point *(b)* is applicable to any packaging of an EUEL product. The logic is that information can be provided via any of the means indicated, except for the case of instructions for disposal of the primary packaging, which must be accessible to user readily to users.

Within the discussion on *Fitness for Use* it become apparent that the eco-cycle might not offer additional benefits while testing for performance but that surely, as pooled effect of the process, it yield environmental gains (reduction in energy consumption) while also resulting in enhanced cleaning performance. In this sense, the JRC considers advisable that a remark is made to users in order to enable behaviours resulting in best environmental performance. Hence, the following text was proposed: *Related to the former, a text shall indicate the importance of using the dishwasher "eco"-cycle programme for best environmental performance.*

The final main change relates to another section (*e) Special precautions/information* which aims to serve for the provision of precautionary (e.g. the product contains *X ingredient*) or additional information (e.g. on product claims). It has been formulated to ensure information that enables a safer use is disclosed on the sales packaging, while any other information that has been submitted to a verification process by the relevant Competent Body can be provided via any of the authorised channels at the discretion of the EU ecolabel license holder. An example of a precautionary information, in alignment with the criterion about *microorganism,* could be disclosing that the product has microorganisms as ingredient. The JRC stakeholders feedback on these changes.

Points for discussion 24– User information

Stakeholders are invited to reply the following consultation question:

- Question 122 (Q122) – Do you support the new wording enabling alternative means to provide information to users?
- Question 123 (Q123) – Do you support addition of section *d) Special information and/or precautions*? Do you have any suggestion for improvement?
- Question 124 (Q124) – Do you support the extension of the scope on requiring information about packaging disposal?
- Question 125 (Q125) – Do you support making reference to the eco-cycle as part of the DD product group *environmental information* section?
- Question 126 (Q126) – Please, provide any other comments that you deem relevant to any aspect of this section.

6.11. Information appearing on the EU Ecolabel

TR1 Proposed criterion (x) information appearing on the EU Ecolabel	
ALL	The logo should be visible and legible. The EU Ecolabel registration/licence number shall appear on the product and it shall be legible and clearly visible. The applicant may choose to include an optional text box on the label that contains the following text:
DD, HDD, HSC, IIDD, IILD	— Limited impact on the aquatic environment, — Restricted amount of hazardous substances, — Tested for cleaning performance.
LD	— Limited impact on the aquatic environment, — Restricted amount of hazardous substances, — Tested for wash performance at 20 °C (*). (*) If the product was tested at 15 °C in Criterion 7, the applicant may change the temperature indicated accordingly.
DD, HDD	*Assessment and verification:* the applicant shall provide a signed declaration of compliance along with a sample of the product label or artwork of the packaging where the EU Ecolabel is placed, together with a signed declaration of compliance.
HSC	*Assessment and verification:* the applicant shall provide a signed declaration of compliance along with a sample of the product label or artwork of the packaging where the EU Ecolabel is placed.
IIDD, IILD, LD	*Assessment and verification:* the applicant shall provide a signed declaration of compliance along with a sample of the product label.
TR2 Proposed criterion (x) information appearing on the EU Ecolabel	
ALL	The logo should be visible and legible. The EU Ecolabel registration/licence number shall appear on the product and it shall be legible and clearly visible. The applicant may choose to include an optional text box on the label that contains the following text:
DD, HDD, HSC, IIDD, IILD	— Limited impact on the aquatic environment, — Restricted amount of hazardous substances, — Tested for cleaning performance.
LD	— Limited impact on the aquatic environment, — Restricted amount of hazardous substances, — Tested for wash performance at ~~32~~0 °C (*). (*) If the product was tested at 15 or 20 °C in Criterion 7, the applicant may change the temperature indicated accordingly.
~~DD, HDD~~ ALL	— *Assessment and verification:* the applicant shall provide a signed declaration of compliance along with a sample of the product label or artwork of the packaging where the EU Ecolabel is placed~~, together with a signed declaration of compliance~~.

~~HSC~~	~~*Assessment and verification:* the applicant shall provide a signed declaration of compliance along with a sample of the product label or artwork of the packaging where the EU Ecolabel is placed.~~
~~IIDD, IILD, LD~~	~~*Assessment and verification:* the applicant shall provide a signed declaration of compliance along with a sample of the product label.~~

Rationale for the proposed criterion (x) information appearing on the EU Ecolabel

According the Article 8 (3b) of the Regulation 66/2010, for each product group, key environmental characteristics (typically three) of the EU Ecolabel product may be displayed in the optional label text box. The guidelines for the use of the optional label with text box can be found in the "*guidelines for the use of the EU Ecolabel logo*" on the website.

No major changes have been proposed for this criterion. The first part refers to the use of the logo and the license number and the second one to the information to be provided.

The proposal made in TR1 regarding the 20°C value for the minimum temperature from which ecolabelled products are effective, is discarded in TR2. The proposal was made to align with the proposal made in TR1 for LD scope, which was also reverted back to the original version in TR2.

Points for discussion 25 – Information appearing on the EU Ecolabel

Stakeholders are invited to reply the following consultation question:

— Question 127 (Q127) – Please, provide any other comments that you deem relevant to any aspect of this section.

List of points for discussion

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Annexes

Annex 1 - Remarks on quantitative data analysis

Background information enabling understanding on the methodology used and associated contextual information for better interpretation of JRC analysis results.

Introduction

The JRC provides recommendations based on the best evidence available at the time of performing its duties. To source such evidences, the JRC use different means, as could be literature/databases search and/or stakeholder engagement. For the particular case of this revision round of the EU Ecolabel criteria for detergents, one significant channel was the focused questionnaire share with all registered stakeholders which concluded during Q1 2023. Besides the direct responses obtained through the survey, several communications followed which lead to data being shared with the JRC, mainly by Competent Bodies but also from License holders (LHs).

As subsequently shown in detail, these data referred to the aspects that are examined with regards to EUEL criteria compliance. Most of the data referred to aspects associated with emissions (CDV, aNBO, anNBO, elemental P, VOC) and also to other traits (i.e. WUR, RSPO type). The minority of it was the full information that a license holder would submit to a Competent Body (in the form of the EUEL applicant's sheets), thus also containing details on the formulation of the ecolabelled product. The JRC checked for quality and processed all the data received into a single curated database which was then used to produce some results used to draw some of the recommendations (alongside other sources of evidences).

The aim of this annex is to provide transparency on how data processing was carried out and to provide context for the interpretation of the relevance of the data sourced. Note that the results, inclusive of further contextual information for their interpretation, for each product group is provided in the TR2 main text.

Type of data

The data was related to aspects required for EUEL criteria for detergents compliance/verification.

Very few sources were complete, meaning inclusive of all aspects verified for EUEL criteria compliance. Nevertheless, some LHs send such information in the form of EUEL calculation sheets (thus inclusive of formulation + other details).

The majority of sources only provided data on particular EUEL criteria aspects, mostly related to variables associated to emissions

The data shared can be split into:

- Quantitative -> refer to variables for which thresholds are set in the EU Ecolabel criteria for detergents, generally associated with emissions. These were: Reference dosage, CDV, aNBO, anNBO, elemental P, VOCs, WUR.
- Qualitative -> refers to data that aids in determining the product (sub-) groups/formats/forms; that shows type of compliance (e.g. Type of RSPO); or that provides complementary information (e.g. packaging variables associated with WUR; packaging composition).

General methodology, data processing and quality checks

As received, data entries (one row within a dataset) were considered to belong to an ecolabelled product.

A data entry is considered valid if it provides data to one or more relevant quantitative variables (i.e. Reference dosage, CDV, aNBO, anNBO, elemental P, WUR.). Therefore, some entries might not have data for some of these variables (empty).

When absent, some levels within categorical variables (e.g. in LD, variable = product form; levels = solid, liquid) were inferred from accompanying data within the same data entry.

"Ecolabelled products" (data as received) is not considered a meaningful unit with regards to data processing and to draw conclusions for the mentioned quantitative variables, since there could be many ecolabelled products which only differ in their packaging format and/or branding but not in their formulation. Consequently, all redundant data entries (same formulation but different branding) were dropped from the dataset. In addition, redundant data entries for packaging (same formulation but different packaging formats) were also removed, preserving only the data entry having the "worst" WUR (the highest value), as a conservative way to analyze how to improve the ambition of WUR thresholds.

Data was submitted to quality checks, mainly the following:

— Within a particular variable (i.e. aNBO) the value was compared against the corresponding EUEL criteria threshold (i.e. for its PG, product form/format). If it was above the threshold that data entry was not considered for data processing.

— If for a particular variable a data entry did not had data on the variable analyzed, then this point was not considered (generally dropped from dataset).

— To avoid double counting derived from same data being provided by two different sources (e.g. CBs and their LHs), suspected redundant entries were compared. Whenever two or more data entries were found equivalent based on the data contained and if matching the same CB, then only one data entry was left and the rest were dropped from the dataset.

After dataset curation, the number of data entries was significantly reduced but each data entry (row) was considered a meaningful unit (unique formulation/packaging). In other words, each entry in the dataset corresponded to a unique formulation in its "worst" WUR.

The descriptive statistics were calculated within each relevant categorical combination used in existing EUEL threshold (e.g. for LD, Heavy duty detergent (HDD) – solid; HDD- liquid; Light duty detergent (LDD) – solid; LDD – liquid; and stain remover. The descriptive statistic parameters were: minimum, 1st quartile, median, mean, 3rd quartile and maximum.

As orientation to propose new thresholds, when few data points were available (10<) the descriptive statistic parameter chosen is the maximum. When >10 data points were available, the 3rd quartile was chosen (meaning that 25% of the data points would be excluded if the limit would be set at this value).

To better appreciate "how far" data points were from existing EUEL limits, all data were factored by their corresponding threshold, dictated by the combination of product (sub-) group plus other categorizations (product (sub-type); product form; water hardness; degree of soiling; etc. In practice this implied that the whole dataset was in the range 0 – 1, with "1" (the maximum) being the limit (matching the EUEL criteria quantitative threshold).

The factored results (ranging 0 – 1) are presented in plots, which display a dashed line at "1" to show the EUEL threshold (the limit). The difference between a data point value (e.g. 0.25) and this limit (i.e. 1) is understood as the potential for setting stricter limits (e.g. 1-0.25 =0.75), which can also be expressed as percentage over the limit (e.g. 0.75 *100 = 75%; *it is possible to decrease the limit by 75% of the existing limit value*).

Plots also display sub-plots arranged according to relevant categorization within EUEL criteria thresholds (e.g. Dishwasher detergent (DD) and Rinse Aid (RA) as separated sub-plots.

To come up with a proposal for revised thresholds, these values were used alongside other ecolabelling schemes information (i.e. threshold for the same/similar product groups/formats/forms), any relevant stakeholder feedback and the existing EUEL limits.

Contextual information for data interpretation

The following tables provides information that aid in interpreting the significance of the data received

Table X3. Outline of the relevance of the data received in the context of EU Ecolabel (EUEL) criteria for detergent and cleaning products, presented by product group.

EUEL Product group (PG)		Total number of ecolabelled products in EUEL records based on CB figures as 2024 (n)	Total number of data entries received ("*Ecolabelled products*") prior to data processing (n)	Share of data entries received ("ecolabelled products") versus EUEL records totals in 2024 within the same PG (%)
Laundry detergent	LD	1330	105	7.9
Dishwasher detergent	DD	611	41	6.7
Hand dishwashing detergent	HDD	1380	102	7.4
Hard surface cleaning products	HSC	7426	870	11.7
Industrial & Institutional laundry detergent	IILD	937	55	5.9
Industrial & Institutional dishwasher detergent	IIDD	1533	155	10.1
	TOTALS	*13217*	*1328*	

The data received by the JRC corresponds to 10% of the total number of ecolabelled products in the market during 2024 (according to EUEL records updated in September 2024). When this share is examined by PG, HSC (11.7 %) and IILD (10.1%) are best represented while IIDD is the least (5.9%). Nevertheless, it can be affirmed that data received and as interpreted by JRC is within a range of -6 to 12%, depending on the PG.

Table X4. Outline of the relevance of the data used for the analysis of aNBO and anNBO data in the context of EU Ecolabel (EUEL) criteria for detergent and cleaning products, presented by product group.

EUEL Product group (PG)		Total number of data entries received ("*Ecolabelled products*") prior to data processing (n)	Total number of data entries ("*Unique formulation*") resulting after data processing (n)	Share of initial data entries dropped after data processing (%)
Laundry detergent	LD	105	53	49.5
Dishwasher detergent	DD	41	35	14.6
Hand dishwashing detergent	HDD	102	59	42.2
Hard surface cleaning products	HSC	870	476	45.3
Industrial & Institutional laundry detergent	IILD	55	29	47.3
Industrial & Institutional dishwasher detergent	IIDD	155	78	49.7
	TOTALS	*1328*	*730*	

The previous table show that, on average, 45% of all data entries received were discarded after data processing, thus not used for data analysis.

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