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Revision of the EU Ecolabel criteria for Indoor and Outdoor Paints and Varnishes

Draft Technical Report v3.0

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Abstract

This draft Science for Policy Report is intended to provide the background information for the revision of the existing EU Ecolabel criteria for indoor and outdoor paints and varnishes (Commission Decision 2014/312/EU[1]). The study has been carried out 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 indoor and outdoor paints and varnishes set out in Decision 2014/312/EU were established in 2014. Commission Decision (EU) 2022/1229 prolonged their validity until 31 December 2025.

The main purpose of this third version of the draft Technical Report is to summarise the outcomes of the analysis of the current criteria following the 2nd Ad-Hoc Working Group (AHWG) meeting. The background information and minutes of this meeting are also available in the Product Policy Analysis (before Product Bureau) website[2].

This third version of the draft Technical Report includes scope adjustments and revised criteria for all 3 Annexes: Decorative paints, varnishes and related product; Performance coatings and related products, and Water-based aerosol spray paints.

The present draft Technical Report addresses the requirements of Regulation (EC) No 66/2010 (EC, 2010) for technical evidence to inform about the criteria revision and sets the scene for the third and final consultation with stakeholders and the EUEB meeting scheduled for March 2025. This draft Technical Report 3 is supported and complemented by the "draft Table of Comments 2" and "draft Legal documents (version 2)". Additionally, a draft Preliminary Report (PR1[3]) and the first draft of the Technical Report (TR1[4]), both published in April 2024 and the second draft of the Preliminary Report 2 (PR2[5]) and the second draft of the Technical Report (TR2[6]), published in October 2024, can be consulted to track the project developments.

In this third version of the Technical Report, which should be considered as a working document that will evolve into later versions during the project, the second 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 2nd AHWG meeting and subsequent comments. With each criterion in this report, rationale is provided to explain why the changes (if any) were proposed and what is the potential implication of the new proposal. A direct comparison to any equivalent criteria in currently valid versions of Nordic Swan and Blue Angel ecolabel criteria sets is also provided. If considered relevant, the relevance of specific criteria to life cycle impacts of paints and varnishes is also mentioned in the rationale.

[1] Commission Decision of 28 May 2014 establishing the ecological criteria for the award of the EU Ecolabel for indoor and outdoor paints and varnishes https://eur-lex.europa.eu/eli/dec/2014/312/oj/eng

[2] 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/461/documents

[3] Preliminary Report 1, PR1, of the current revision process (2024). Draft document available at: https://susproc.jrc.ec.europa.eu/product-bureau/sites/default/files/2024-04/Draft%20Preliminary%20Report%20EUEL%20PV_clean.pdf

[4] Technical Report 1, TR1, of the current revision process (2024). Draft document available at: https://susproc.jrc.ec.europa.eu/product-bureau/sites/default/files/2024-04/Draft%20Technical%20Report%201%20EUEL%20PV_clean.pdf

[5] Preliminary Report 2, PR2, of the current revision process (2024). Draft document available at: https://susproc.jrc.ec.europa.eu/product-bureau/sites/default/files/2024-10/Draft%20Preliminary%20Report%202%20EU%20Ecolabel%20paints%2016%20Oct%202024_PDF.pdf

[6] Technical Report 2, TR2, of the current revision process (2024). Draft document available at: https://susproc.jrc.ec.europa.eu/product-bureau/sites/default/files/2024-10/Draft%20Technical%20Report%202%20EU%20Ecolabel%20paints_updated%2016%20Oct%202024_PDF.pdf

1 Introduction

The EU Ecolabel 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 a high level of environmental performance. The EU Ecolabel Regulation (EC) 66/2010[7] provides a framework to establish voluntary 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 EU Ecolabel criteria aims to target the environmentally top 10 to 20% of products on the market within a defined product group or service. Accordingly, the EU Ecolabel 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 EU Ecolabel 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 also has 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 Ecodesign Directive (see Directive 2009/125/EC). In addition, the EU Ecolabel was mentioned as having an important role in the Circular Economy Action Plan (CEAP) from March 2020, being regarded as an important tool whose criteria would be developed in synergy with future Ecodesign measures. As a part of the circular economy package, the European Commission adopted the Directive on empowering consumers for the green transition[8]. This Directive, along with the EU Ecolabel, 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[9]). 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. Moreover, these initiatives recognize the EU Ecolabel as a reliable third-party certification to prove overall environmental excellence.

This draft Technical Report 3 (hereafter, TR3) addresses the requirements of EU Ecolabel Regulation 66/2010 and its main purpose is to summarise the results from the 2nd AHWG meeting about the scope of the EUEL and the limits proposed in each criteria according to stakeholders acceptance and comments. This TR3 provides elements supporting the revised EU Ecolabel criteria for indoor and outdoor paints and varnishes.

The revision process takes the legal criteria text (Commission Decision 2014/312/EU of 28 May 2014) as the starting point and seeks to analyse its validity, taking into account technological and economic changes in the European market, relevant legislative changes, improved scientific knowledge and feedback from Competent Bodies and license holders.

This report is supported and complemented by the "draft Table of Comments 2" and "draft Legal documents (version 2)". Additionally, the Preliminary Report (hereafter, PR), which includes analyses of the scope and definition, market analysis, and technical analysis. In the PR, the results of a life cycle assessment (LCA) for different products under the scope of the EU Ecolabel criteria is presented for the identification of the environmental hotspots (as published in October 2024).

Bringing together the information in the associated Preliminary Report on the assessment of the current scope and criteria validity, on the market analysis and on the life cycle assessment (LCA) studies (performed using the Product Environmental Footprint method), as well as feedback from stakeholders, a third proposal for a set of revised EU Ecolabel criteria is presented in this TR3. The entire life cycle of the products is considered, from

[7] 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

[8] 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.
Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L_202400825

[9] 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: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32024R1781&qid=1719580391746

the extraction of raw material through production, transport and use, to the disposal phase. The EU Ecolabel criteria address the environmental impacts from any of these life cycle phases, with the aim of encompassing the areas of greatest impact (life cycle hotspots). The EU Ecolabel criteria shall be proposed with the general aim to correspond to the best 10-20% of the products available on the EU market in terms of environmental performance.

An important part of the process for developing or revising EU Ecolabel criteria is the involvement of stakeholders through their consultation on draft criteria proposals and technical reports. This is carried out via Ad-Hoc Working Group (AHWG) meetings, conference calls, email exchanges, forum discussions and written comments submitted via the online platform BATIS. The criteria revision process involves contributions from technical experts, non-governmental organisations (NGOs), Member State representatives and industry stakeholders, among others.

This draft TR3 is structured as follows:

- Introduction (Chapter 1): this section describes the goal of the project and the structure of the document.
- Summary of the Preliminary Report (Chapter 2): this section summarises the main findings from the Preliminary Report, especially with respect to market analysis and technical analysis, including an overview of the results of the LCA screening studies.
- Scope, definitions and criteria restructure (Chapter 3): this section reports proposals for potential changes to the scope, definitions and criteria structure related to the product groups of 'indoor and outdoor paints and varnishes'.
- Annex Preamble (Chapter 4): this section includes general information on the type of proof required to show compliance with the criteria that shall be provided by applicants and approved by competent bodies.
- Criteria proposals for Annex I (Chapter 5): **"**Decorative paints, varnishes and related products**"**, Criteria proposals for Annex II (Chapter 6): **"**Performance coatings and related products**"**, and Criteria proposals for Annex III (Chapter 7): **"**Water-based aerosol spray paints**"**. These sections present the final EU Ecolabel criteria for the 'decorative paints, varnishes and related products', 'performance coatings' and 'water-based aerosol spray paints' product groups as well as the technical rationale for the structure and content of the individual criteria. Relevant discussions and inputs that support the revised criteria proposals or changes to those proposals will be reflected in future versions of the draft Technical Report.
- Other criteria areas that were considered (Chapter 8): summarising discussions and rationales in relation to criteria not included but previously considered for carbon footprint, biobased content and microplastics among other issues.
- Impacts of the changes to the criteria (Chapter 9): this section consists on a summary of the main general changes proposed for the revised criteria including potential implications for current license holders and possible applicants.

For transparency, a table of all comments received during the public consultation period, together with responses and explanations on how they have been addressed in the following set of criteria proposals, is published as a separate document known as "draft Table of Comments 2".

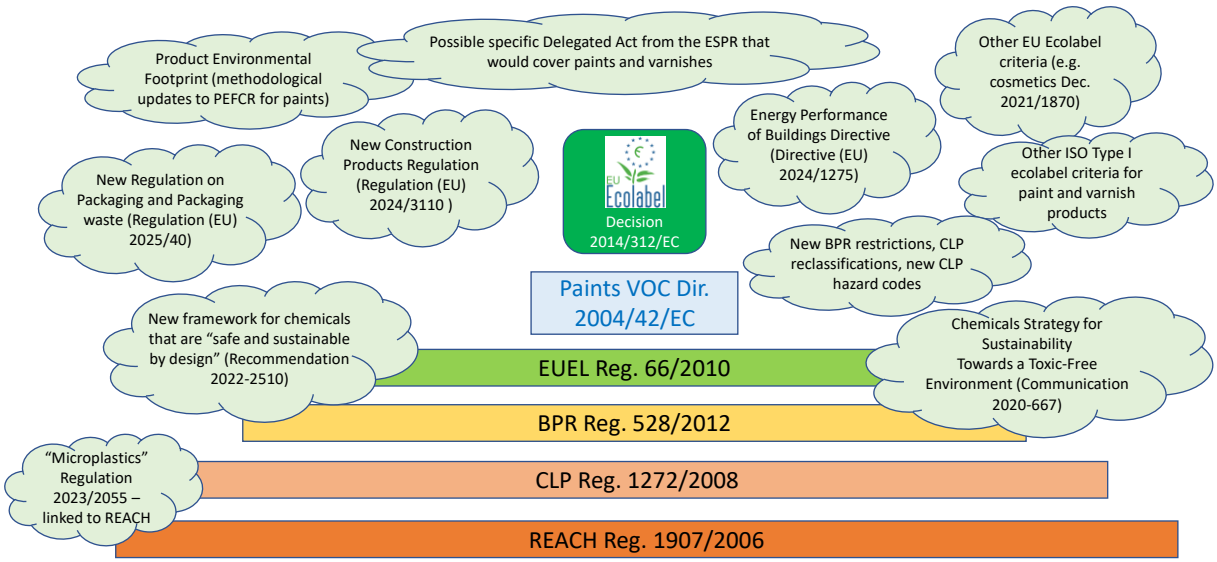
2 Summary of the Preliminary Report

The summary included in this chapter reflects the content of the Preliminary Report. Any significant changes to the content of the PR later on should also be reflected in this summary section of future versions of the Technical Reports, as relevant.

2.1 Legal and policy context

There are a number of relevant EU policy tools, Regulations and Directives that directly or indirectly affect the paints and varnishes sector, as illustrated below.

Figure 1. Illustration of particularly relevant regulatory and EU policy context for EU Ecolabel paint and varnish products



Source: Own elaboration

At the centre of the illustration is Commission Decision 2014/312/EU, which constitutes the legal text for the EU Ecolabel criteria for indoor and outdoor paint and varnish products. The main regulatory frameworks are delineated by sharp boxes and in a hierarchal framework that reflects both their degree of specific relevance to the paint and varnish product group and the general breadth of the regulatory scope.

From Figure 1, the most specific regulatory framework is that of Directive 2004/42/EC on the limitation of Volatile Organic Compounds (VOCs) in different types of paint and varnish. This Directive is exclusively focused on paints and varnishes and defines product categories in a very similar way to the EU Ecolabel criteria.

Another directly relevant regulatory framework is Regulation (EC) No 66/2010 on the EU Ecolabel. While the connection to EU Ecolabel for paints and varnishes is obvious, it is worth noting that the EU Ecolabel applies to 24 other product groups and services listed on the DG ENV website, such as furniture, tissue paper, cosmetic products, textiles and tourist and accommodation services – just to name a few. The EU Ecolabel Regulation stipulates certain horizontal requirements on hazardous substance restrictions and this, in turn, makes relevant the regulatory frameworks set out in:

- Regulation (EU) No 528/2012 on biocidal products (for many different uses);
- Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging (CLP) of substances and mixtures (for a great variety of substances and mixtures, with or without biocidal products). This regulation was revised in 2023 and now includes new hazard classes for chemical compounds and clarification of rules on labelling[10];

[10] See: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02008R1272-20231201

— Regulation (EC) No 1907/2006 on the Registration, Evaluation, Authorisation and restriction of CHemicals (REACH) is the basis for CLP and also resulted in the creation of the European Chemicals Agency and effectively replaced a number of pre-existing regulations on hazardous substances.

Other pieces of legislation relevant for EU Ecolabel license holders are the Directive on Empowering Consumers for the Green Transition (ECGT) and the Ecodesign for Sustainable Product Regulation (ESPR) and the Construction Products Regulation (CPR)[11], which are now adopted. Moreover, the Packaging and Packaging Waste Regulation (PPWR)[12] is now adopted too. Shown in Figure 1 are a number of "clouds" – these represent the less solid but potentially important influences of existing EU policies or near-future developments in such policies. Further details of all these relevant EU policies and legislation are provided in the draft Preliminary Report for interested readers. In cases where they are particularly relevant for criteria rationale, they are mentioned there as well. This is the case with the Construction Products Regulation (CPR) which is an important driver for the new criterion proposal on VOC emissions.

2.2 Market analysis

Sales data: A review of the Eurostat PRODCOM database revealed that product categories in this database are defined by chemistry, whereas the EU Ecolabel scope is defined by application. Consequently, an accurate match between PRODCOM and the EU Ecolabel scope could not be made. Nonetheless, knowing that the VOC content limits for EU Ecolabel paints and varnishes effectively requires formulations to be water-based instead of organic solvent-based, the two most relevant PRODCOM codes could be analysed. The PRODCOM codes listed below were analysed and aggregated for the purpose of this study, for the reasons presented in the Table 1 below.

Table 1. PRODCOM codes considered most relevant to the scope for EUEL paints and varnishes[13]

Code(s)	Description	New aggregated category and reason
20.30.11.50	Paints and varnishes, based on acrylic or vinyl polymers dispersed or dissolved in an aqueous medium (including enamels and lacquers).	Not aggregated, but shortened name of "Acrylic or vinyl polymer-based P&V, aqueous medium" is given. The most popular PRODCOM category amongst EU Ecolabel P&V.
20.30.11.70	Other paints, varnishes dispersed or dissolved in an aqueous medium.	Not aggregated, but shortened name of "Other P&V, aqueous medium" is given. These products are highly likely to fall within the scope of the EU Ecolabel.
20.30.12.25	Paints and varnishes, based on polyesters dispersed/dissolved in a non-aqueous medium, weight of the solvent > 50 % of the weight of the solution including enamels and lacquers.	Aggregated together and given the name "Polyester or acrylic-based P&V, organic solvent medium". None of these categories are expected to be eligible to the EU Ecolabel, due to the high solvent content, but are included for context.
20.30.12.29	Paints and varnishes, based on polyesters dispersed/dissolved in a non-aqueous medium including enamels and lacquers excluding weight of the solvent > 50 % of the weight of the solution.	
20.30.12.30	Paints and varnishes, based on acrylic or vinyl polymers dispersed/dissolved in non-aqueous medium, weight of the solvent > 50 % of the solution weight including enamels and lacquers.	
20.30.12.50	Other paints and varnishes based on acrylic or vinyl polymers	Aggregated together and given the name "Other P&V n.e.c". Uncertain to which extent these products may be included in the scope of the EU Ecolabel, but counted anyway for context.
20.30.12.70	Paints and varnishes: solutions n.e.c.	
20.30.12.90	Other paints and varnishes based on synthetic polymers n.e.c.	

Source: Combination of Eurostat PRODCOM and own elaboration.

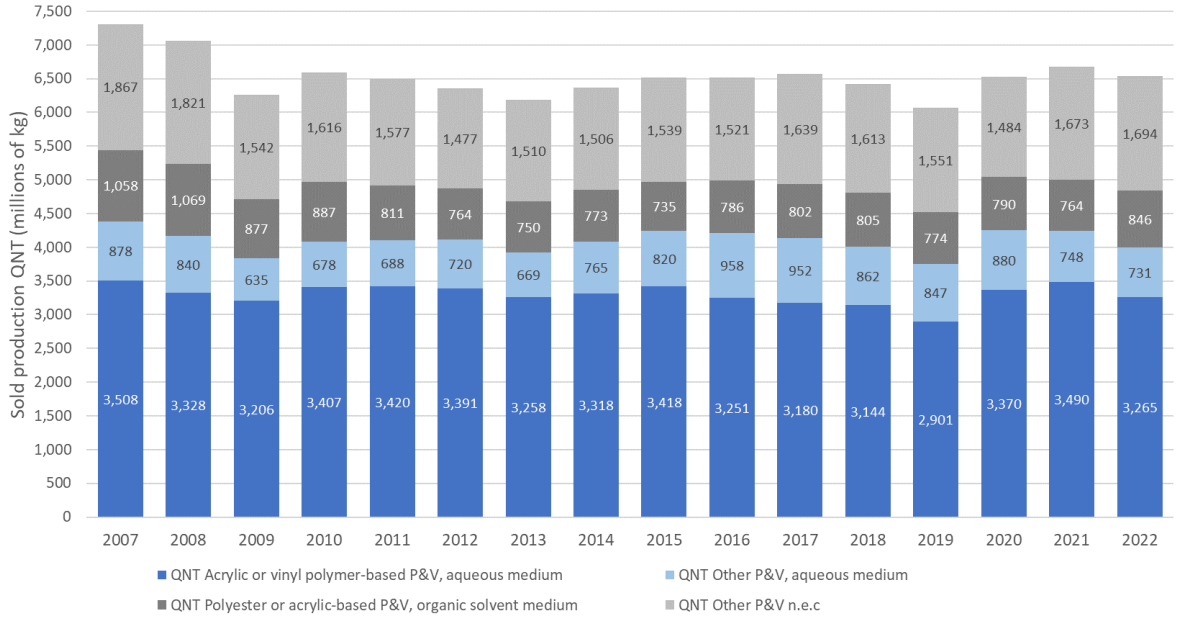
[11] Regulation (EU) 2024/3110 of the European Parliament and of the Council of 27 November 2024 laying down harmonised rules for the marketing of construction products and repealing Regulation (EU) No 305/2011, https://eur-lex.europa.eu/eli/reg/2024/3110/oj/eng

[12] 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, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32025R0040

[13] Source: Database - Prodcom - statistics by product - Eurostat (europa.eu); Dataset: Sold production, exports and imports [DS-056120, custom-8262303], https://ec.europa.eu/eurostat/databrowser/view/ds-056120__custom_8262303/default/table

Trends in sales values show a recent increase in the years 2019 to 2022 for the four aggregated categories shown above. However, since these increases are most likely influenced by increases in product prices, trends in quantities sold in the EU are considered as a better reflection of the market demand.

Figure 2. Sold production quantity (PRODQNT) of EU27 for different aggregated categories of paint and varnish products during the period 2007 to 2022.



Source: Combination of Eurostat PRODCOM and own elaboration.

The darker blue column represents the PRODCOM categories that best match the EU Ecolabel scope. The trends in quantities sold for all of the aggregated categories indicate a mature market in the EU27 over the last 15 years. Quantities sold today have still not returned to levels prior to the global economic crisis of 2008. However, the relatively stability at EU27 level masks some significant changes in sold production quantities at Member State level. For the main PRODCOM category of water-based acrylics, the biggest relative % increases between 2014 and 2022 occurred in Latvia (+394%) and Slovenia (+106%), while the biggest increases in terms of tonnes over the same period occurred in Spain (+130 000 tonnes/yr) and Italy (+100 000 tonnes/yr). Significant decreases occurred in major producers of water-based acrylics between 2014 and 2022, namely in Germany (-180 000 tonnes/yr or -19.1%), Poland (-81 000 tonnes/yr or -25.8%) and France (-64 000 tonnes/yr or -11.6%).

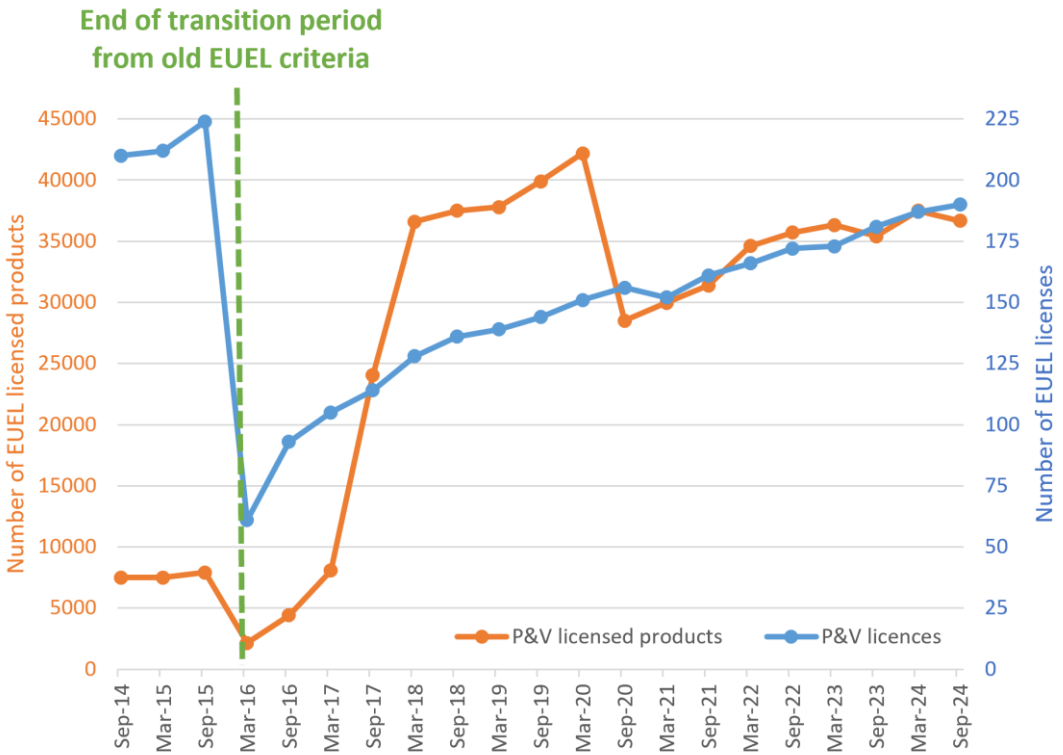
Paint manufacturers rely heavily on the supply of raw materials from other companies and only some of the larger multinational manufacturers also produce (some) of the raw materials they use, which they will also normally sell to competing paint and varnish manufacturers. At global level, there have been a lot of mergers and acquisitions between large multinational companies in recent years. In Europe, the top 4 companies are: AkzoNobel, BASF, Jotun and Hempel, which are all in the top 12 companies at global level in terms of annual revenue. Other important companies are PPG and Sherwin Williams.

Uptake of the EU Ecolabel: Although exact data in terms of sales values and volumes of EU Ecolabel paints is not available, data on the number of licenses granted to paint and varnish producers, as well as the number of products covered by these licenses, is collected every 6 months by the EU Ecolabel helpdesk service.

The current EU Ecolabel criteria were adopted in May 2014, repealing the previous criteria sets that had been adopted in 2009 and which were set out in two Decisions, one for indoor paints and varnishes (Decision 2009/544/EC[14]) and one for outdoor paints and varnishes (Decision 2009/543/EC[15]). There was a 21-month transition period lasting up until February 2016 when products could be licensed in line with the 2009 criteria or the new 2014 criteria.

[14] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32009D0544
[15] https://eur-lex.europa.eu/eli/dec/2009/543/oj

Figure 3. Trends in the uptake of EU Ecolabel paint and varnish products in the EU since 2014.



Source: EU Ecolabel statistics – European Commission[16]

As can be seen in the figure above, the 2009 EU Ecolabel criteria had reached around 225 licenses that covered around 7500 products. When the 2014 criteria came fully into force, there was a sudden drop in licenses (ca. -73%, from 225 to around 60) and licensed products (ca. -73%, from 7500 to 2000). The number of licenses has since steadily increased, as has the number of licensed products carrying the EU Ecolabel. License numbers did not recover to the same levels associated with the previous EUEL criteria, but the amount of licensed products are at least 4 times higher under the current criteria than the previous criteria.

These trends imply that the current criteria can be met by a significant number of producers and that each EU Ecolabel license is now being associated with a greater number of products than before. This may imply that larger companies with more extensive product catalogues are occupying a greater share of EU Ecolabel license holders.

There was a sudden drop in licensed products in 2020 (ca. -33%, from 42000 to 28000). While there has been some recovery since then, it has only been about halfway. This drop in licensed products was generally explained by industry stakeholders to be related to the need to adjust formulations due to CLP reclassifications of commonly used in-can and dry-film preservatives. Not all products could be reformulated in such a way that continued to comply with the EUEL criteria, and that is the main reason why current licensed products in 2024 are still around 5000 lower than 2020 levels.

Other ecolabel schemes: The EU Ecolabel is an example of an ISO 14024 Type I Ecolabel scheme, and the market analysis also looked at other ecolabel schemes to see if they had criteria for paints and varnishes. An initial review identified the following relevant schemes in the table below.

[16] EU Ecolabel Statistics – European Commission: https://ec.europa.eu/environment/ecolabel/facts-and-figures.html

Table 2. Other ISO 14024 Type I Ecolabel schemes

Scheme logo	Scheme name, criteria title, version and, if available, number of licenses awarded.
	Blue Angel. Low-emission and low-pollutant paints and varnishes. DE-UZ 12a, January 2019, v.9.
	Blue Angel. Low-Emission Interior Wall Paints. DE-UZ 102, January 2019, v.5.
	Austrian ecolabel. Varnishes, glazes and wood sealers. UZ-01 (German only) – 2 licenses.
	Austrian ecolabel. Wall paint. UZ 7 – 22 licenses.
	China Environmental Labelling Certification. Green Building Materials Evaluation Wall Coating.
	Nordic Swan. Chemical building products. Version 2.21, March 2014.
	Nordic Swan. Paints and varnishes. Version 4.1, September 2023.
	Umwelt Etikette Ecolabel. I. Interior wall paints. Version 4.2, October 2023. (in FR and DE only).
	Umwelt Etikette Ecolabel. II. Interior paints, wood and floor coatings. Version 2.3, October 2023.
	Umwelt Etikette Ecolabel. IV. Façade paints. Version 2.3, October 2023. (in FR and DE only).
	Umwelt Etikette Ecolabel. V. Exterior varnishes, wood and floor coatings and wood preservatives. Version 2.23, October 2023.

Source: Own elaboration.

2.3 Technical analysis

A technical analysis of existing manufacturing technologies and processes was performed and is included in the draft Preliminary Report. In addition, the environmental impacts were studied through an LCA literature review and by conducting a screening LCA study. As the LCA analyses cannot provide information on the impacts of the products on health, the presence of chemicals of potential concern was also assessed. Finally, based on the results obtained, improvement potentials and best practices were presented.

2.3.1 Literature review of life cycle assessment studies

In addition to the Product Environmental Footprint Category Rules (PEFCR) for Decorative Paints published in 2018, 16 studies and 13 Environmental Product Declarations (EPDs) from three different EPD library (International EPD library, EPD Danmark and EPG Norge) were also analysed.

A check of the 16 studies revealed that only 6 studies were considered suitable for reading in more detail. From the 13 EPDs, 8 concerned indoor paints[17], 2 concerned outdoor paints[18], 1 looked at both indoor and outdoor paints[19] and 2 looked at varnishes[20]. The EPD data was generally limited to information only on the production stages (i.e. modules A1, A2 and A3).

2.3.2 LCA screening studies

In order to be able to explore some sensitivity analyses and to see how changes in paint or varnish formulations affect results, several LCA screening studies were carried out following PEF methodology and using the available EF datasets for the following products:

[17] Smaltoplast paint, Flügger Performance 5, Flügger Performance 10, Dyrup professional, Smaltolux Hydro, Fenomastic Wonderwall Lux, Sigma Wall paints, Isomat Interior matt paint

[18] Jotashied Decor traditional Tex, Dyrup Acryl mellemmalling

[19] Paintlac

[20] Pinturas Macy, Juno varnishes

- indoor wall paint,
- outdoor wall paint,
- indoor wood varnish,
- outdoor wood varnish,
- water-and solvent-based aerosol spray paint.

Details of the assumed formulations are available in the draft Preliminary Report and feedback on the suitability of these formulations would be welcomed (as already obtained after the first Ad-Hoc Working Group meeting from last May). The functional unit was the protection and decoration of 1 m^2 of indoor/outdoor substrate for 50 years at a specified quality level (minimum 98% opacity in the case of paints). Reference flows necessary to meet this functional unit were estimated using the following equation:

kg of paint = 1 (m^2) / Coverage (m^2/L) / Applied paint (-) × Paint density (kg/L) × Maintenance multiplier

The assumptions used for the six product categories were as shown below.

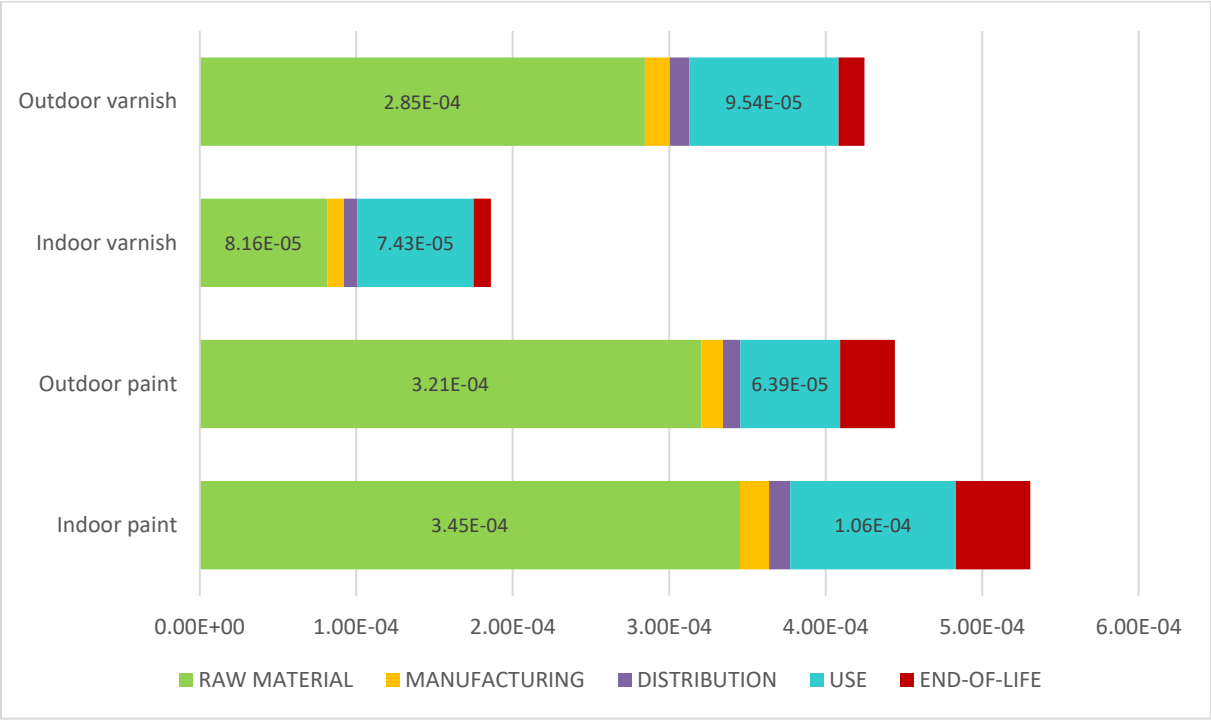
Table 3. Reference flow calculation assumptions.

Parameter	Indoor paint	Outdoor paint	Indoor varnish	Outdoor varnish	Water-based aerosol spray paint	Solvent-based aerosol spray paint
Coverage	9.5 m^2/L	7.0 m^2/L	9.8 m^2/L	9.5 m^2/L	2.9 m^2/L	1.0 m^2/L
Applied paint	0.89	0.89	0.89	0.89	0.97	0.97
Paint density	1.43 kg/L	1.30 kg/L	1.21 kg/L	1.36 kg/L	0.92 kg/L	0.79 kg/L
Maintenance multiplier	8.33	5	5.81	7.46	10	10
Reference flow (kg/FU)	1.409 kg	1.043 kg	0.806 kg	1.200 kg	3.293 kg	7.944 kg

Source: Own elaboration.

A comparison of results generated from the LCA modelling after normalisation and weighting according to the PEF methodology, showed the results in the figure below for the indoor and outdoor paints and varnishes, split by life cycle stage.

Figure 4. Normalised and weighted PEF scores (in micropoints) for indoor and outdoor paints and varnishes, split by life cycle stage.



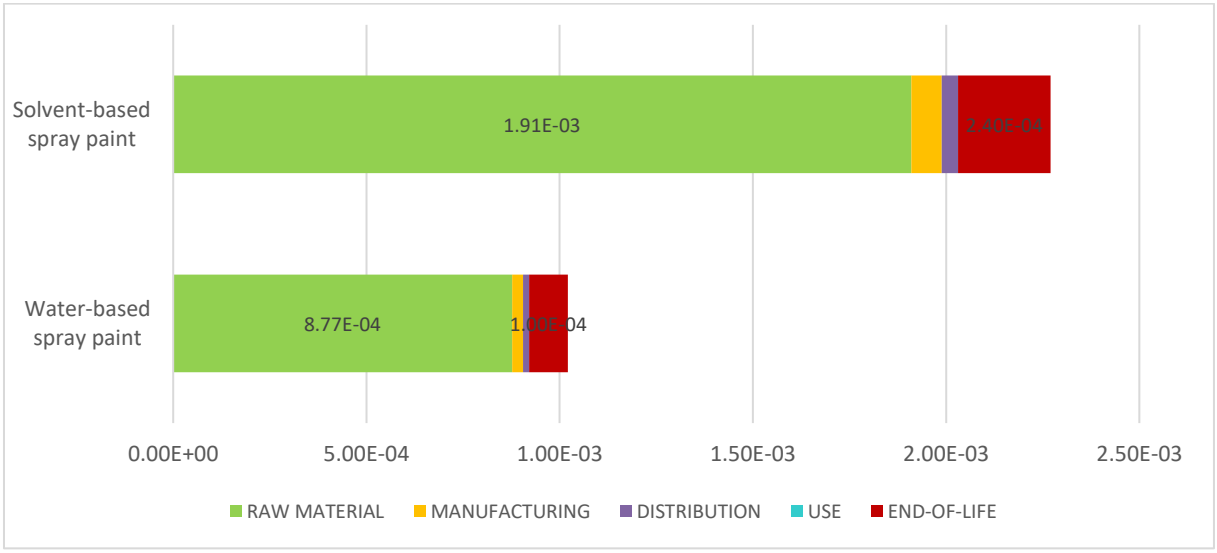
Source: Own elaboration.

The figure above shows that the raw material production is the most significant source of normalised and weighted life cycle impacts for all four indoor and outdoor paint and varnish product categories according to the PEF methodology. Raw material impacts were higher for paint products, primarily due to the production of pigment (titanium dioxide). However, raw material impacts for outdoor varnish were also significant, mainly because of the binder production, which constitutes a substantial portion of the varnish composition.

The next most significant life cycle stage was the use phase. This finding is linked to the transport, which includes both professional and consumer transport, averaged across various activities specifically related to the application process. The use phase is more significant also because of the relatively long time period for the functional unit of 50 years, meaning that multiple applications require periodic transport and use of ancillary materials.

A comparison of results between water- and solvent-based aerosol spray paints was also drawn and is shown in Figure 5.

Figure 5. Normalised and weighted PEF scores (in micropoints) for water- and solvent-based aerosol spray paints, split by life cycle stage.



Source: Own elaboration.

For aerosol spray paints, the raw material stage remains the most significant source of normalized and weighted life cycle impacts. Solvent-based spray paints exhibit higher raw material impacts, primarily due to solvent production, followed by propellant. Similarly, water-based spray paints also show considerable impacts at this stage, largely driven by binder production, which makes up a substantial portion of the paint's composition.

Unlike the four paint and varnish products, the next most significant life cycle stage for spray paints is the end-of-life stage rather than the use stage. This is because spray paints do not require resource consumption, such as materials or energy, during application. However, their disposal, particularly when combined with the substrate in a landfill, leads to considerable environmental impacts.

In terms of individual impact categories and highest impact ingredient, the most significant ones for each product group were:

- Indoor paints: Climate Change (37%) and Energy Resources, non-renewable (23%). Most impactful ingredient: TiO_2.
- Outdoor paints: Climate Change (37%) and Energy Resources, non-renewable (23%). Most impactful ingredient: TiO_2.
- Indoor varnishes: Climate Change (36%) and Energy Resources, non-renewable (24%). Most impactful ingredient: Acrylic copolymer.
- Outdoor varnishes: Climate Change (32%) and Energy Resources, non-renewable (26%). Most impactful ingredient: Acrylic resin.
- Water-based aerosol spray paint: Climate Change (31%) and Energy Resources, non-renewable (18%). Most impactful ingredient: Binder.
- Solvent-based aerosol spray paint: Climate Change (34%) and Energy Resources, non-renewable (24%). Most impactful ingredient: Solvent.

Two particularly relevant sensitivity analyses carried out were: (i) zinc sulphide as an alternative to titanium dioxide, and (ii) paints with and without preservatives. In the first scenario, the key variable is understanding how much extra ZnS is needed to deliver similar performance to TiO_2. A one-to-one substitution would lower the LCA impacts quite significantly, however this is unrealistic. As the amount of ZnS needed increases, the impacts also increase and to achieve the same hiding power as TiO_2, 90% more ZnS would be required, resulting in significantly worse LCA impacts compared to the baseline with TiO_2. Further input is welcome in order to revise this sensitivity analysis in a more realistic way.

The sensitivity analysis between paints with and without biocides assumed that removing biocides would increase spoilage rate from 0.1% to 50% if no preservatives were used, but that spoilage rate could be limited if the preservative-free products were subject to refrigerated storage (at a penalty of 2 MJ/kg product). The effect of no preservatives was also considered to reduce dry film lifetime from 7 years to 3 years. Based on these assumptions, the products with preservatives had a far lower LCA impact.

The LCA screening results for the various paint types offer valuable insights into their environmental impacts across the entire life cycle. Notably, certain components like titanium dioxide, commonly used in both indoor and outdoor paints, have a substantial environmental impact despite making up a small portion of the paint's overall composition. This highlights the need to incorporate criteria that account for environmental impacts. Introducing a criterion focused on carbon footprint would be a significant first step in addressing these concerns.

Non-LCA impacts were also considered, focusing mainly on the hazardous classifications of ingredients, in-can preservatives, health effects associated with VOC emissions in indoor air and the potential contributions to synthetic polymeric microparticles pollution. On these last two points, the initial considerations suggested the potential for setting a criterion on VOC emissions for indoor paints and varnishes, but the lack of potential for meaningful criteria on synthetic polymeric microparticles.

3 Scope, definitions and criteria structure

The third proposal is presented below in a track change style, so that the differences from the second proposed scope, from the second draft Technical Report (TR2) can easily be identified (proposed text in blue). After the proposed scope, a rationale section presents a short explanation of the reasoning behind each change in the different proposals.

3.1 Scope

TR2: Second proposal for product group scope **"Decorative paints and varnishes** and related products, performance coatings and related products and water-**based aerosol spray paints"**
Article 1 1. The product group of 'decorative paints and varnishes and related products' shall comprise indoor and outdoor paints, varnishes, wood stains and primers whose primary purpose is to impart decorative characteristics to buildings, their trim and fittings and associated structures and that fall under the scope of subcategory 1.1. in Annex I to Directive 2004/42/CE of the European Parliament and of the Council (1). Decorative paint products shall include untinted base paints and different colour shades achieved by tinting, either predefined by the manufacturer or at the customised request of consumers (professional or non-professional) to operators of tinting systems. Decorative paints or varnishes not covered by Directive 2004/42/CE which are supplied in powder or granule form, and that are to be diluted and mixed with water prior to use for decorative purposes, are also included in the scope of this product group unless explicitly excluded in paragraph 2. 2. The product group of 'decorative paints and varnishes and related products' shall not include: a) Performance coatings defined in subcategories 1.1(i) and 1.1(j) of Annex I to Directive 2004/42/CE. b) Multicoloured coatings defined in subcategory 1.1(k) of Annex I to Directive 2004/42/CE. c) Decorative effect coatings defined in subcategory 1.1(l) of Annex I to Directive 2004/42/CE. d) Anti-fouling coatings. e) Wood preservatives. f) Coatings and coating systems designed for use in industrial processes, such as powder coatings applied as powders to substrates and coatings that are cured by UV radiation. g) Coatings primarily intended for vehicles. h) Products whose primary function is not to form a continuous film over the substrate, e.g. oils and waxes. i) Fillers, plasters, grouts, sealants and adhesives. j) Cement-based paints where cement is used as a binder in the formulation. k) Aerosol-spray paints l) Road-marking paints
Article 2 1. The product group of 'performance coatings and related products' shall comprise certain one-pack and multi-pack performance coating products whose primary purpose is to impart special performance characteristics to buildings, their trim and fittings and associated structures and that fall under the scope of subcategories 1.1(i) and 1.1(j) in Annex I to Directive 2004/42/CE of the European Parliament and of the Council. The product group shall comprise floor coatings, anti-corrosion coatings, waterproofing coatings, anti-graffiti coatings and radiator paints intended for use by consumers and professional users in buildings, their trim, fittings or associated structures. 2. The product group of 'performance coatings and related products' shall not include: a) Anti-fouling coatings. b) Wood preservatives. c) Coatings and coating systems designed for use in industrial processes, such as powder coatings applied as powders to substrates and coating systems that are cured by UV radiation. d) Coatings primarily intended for vehicles. e) Products whose primary function is not to form a continuous film over the substrate, e.g. oils and waxes. f) Fillers, plasters, grouts, sealants and adhesives g) Cement-based paints where cement is used as a binder in the formulation. h) Coatings designed to impart flame retardancy. i) Coatings used in relation to hygiene standards in the food or drink industry or health services.

j) Road marking paints.

Article 3

1 The product group of 'water-based aerosol spray paints' shall comprise integral ready-to-use metal packages with a valve and a water-based paint formulation which is dispensed by pre-stored pressure in a controlled manner when the valve is operated.

2. The product of 'water-based aerosol spray paints' shall not include aerosol spray paints with an organic solvent-based paint formulation or that would be classified as an extremely flammable aerosol (H222) or a flammable aerosol (H223) accordance with the classification rules for mixtures set out in Regulation (EC) No 1272/2008.

TR3: Third proposal for product group scope **"Decorative paints**, varnishes and related products, performance coatings and related products and water-**based aerosol spray paints"**

Article 1

1. The product group 'decorative paints, ~~and~~ varnishes and related products' shall comprise indoor and outdoor paints, varnishes, wood stains and primers whose primary purpose is to impart decorative characteristics to buildings, their trim and fittings and associated structures and that fall under the scope of subcategor~~y~~ies 1.1(a) to (h) in Annex I to Directive 2004/42/CE of the European Parliament and of the Council ([21]).

Decorative paint products shall include tinting bases ~~untinted base paints~~ and different colour shades achieved by tinting, either predefined by the manufacturer or at the customised request of consumers (professional or non-professional) to operators of tinting systems.

Decorative paints or varnishes not covered by Directive 2004/42/CE which are supplied in powder or granule form, and that are to be diluted and mixed with water prior to use for decorative purposes, are also included in the scope of this product group if marketed for use in line with one of subcategories 1.1(a) to (h) in Annex I to Directive 2004/42/CE. ~~unless explicitly excluded in paragraph 2.~~

2. The product group 'decorative paints, ~~and~~ varnishes and related products' shall not include the following:

a) performance coatings defined in subcategories 1.1(i) and 1.1(j) of Annex I to Directive 2004/42/CE;

b) multicoloured coatings defined in subcategory 1.1(k) of Annex I to Directive 2004/42/CE;

c) decorative effect coatings defined in subcategory 1.1(l) of Annex I to Directive 2004/42/CE;

d) anti-fouling coatings;

e) wood preservatives;

f) any other coating systems marketed as having antimicrobial, antibacterial, antiviral, disinfecting or other primary biocidal effects for the benefit of human health or related to hygiene standards in the food or drink industry, health services or any other sector, that extend beyond in-can preservation and preservation of the dry film (i.e. beyond biocidal product types 6 and 7 defined in Annex V to Regulation (EU) No 528/2012);

~~f~~ g) coatings and coating systems designed for use in industrial processes, such as powder coatings applied as powders to substrates and coatings that are cured by UV radiation;

~~g~~ h) coatings primarily intended for vehicles;

~~h~~ i) ~~Products whose primary function is not to form a continuous film over the substrate, e.g.~~ wood oils and waxes;

~~i~~ j) fillers, plasters, grouts, sealants and adhesives;

~~j~~ k) cement-based paints where cement is used as a binder in the formulation;

~~k~~ l) aerosol spray paints;

~~l~~ m) road-marking paints.

Article 2

1. The product group 'performance coatings and related products' shall comprise certain one-pack and multi-pack performance coating products whose primary purpose is to impart special performance characteristics to buildings, their trim and fittings and associated structures and that fall under the scope of subcategories 1.1(i) and 1.1(j) in Annex I to Directive 2004/42/CE of the European Parliament and of the Council.

The product group shall comprise floor coatings, anti-corrosion coatings, waterproofing coatings, ~~anti-graffiti coatings and~~, radiator paints and any associated primers intended for use by consumers and professional users in buildings, their trim, fittings or associated structures.

2. The product group 'performance coatings and related products' shall not include the following:

[21] Directive 2004/42/CE of the European Parliament and of the Council of 21 April 2004 on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and vehicle refinishing products and amending Directive 1999/13/EC (OJ L 143, 30.4.2004, p. 87).

a) anti-fouling coatings; b) wood preservatives; c) any other coating systems marketed as having antimicrobial, antibacterial, antiviral, disinfecting or other primary biocidal effects for the benefit of human health or related to hygiene standards in the food or drink industry, health services or any other sector, that extend beyond in-can preservation and preservation of the dry film (i.e. beyond biocidal product types 6 and 7 defined in Annex V to Regulation (EU) No 528/2012); d) coatings and coating systems designed for use in industrial processes, such as powder coatings applied as powders to substrates and coating systems that are cured by UV radiation; ~~d~~ e) coatings primarily intended for vehicles; ~~e~~ f) ~~Products whose primary function is not to form a continuous film over the substrate, e.g.~~ wood oils and waxes; ~~f~~ g) fillers, plasters, grouts, sealants and adhesives; ~~g~~ h) cement-based paints where cement is used as a binder in the formulation; ~~h~~ i) coatings designed to impart flame retardancy; ~~i.) Coatings used in relation to hygiene standards in the food or drink industry or health services.~~ j) Coatings designed to impart graffiti resistance; ~~j~~ k) road marking paints.
Article 3 1 The product group 'water-based aerosol spray paints' shall comprise integral ready-to-use metal packages intended for use by consumers and professional users to impart decorative and/or special performance characteristics to buildings, their trim or fittings and associated structures. The metal packages shall be equipped with a valve and a water-based paint formulation which is dispensed by pre-stored pressure in a controlled manner when the valve is operated. 2. The product group 'water-based aerosol spray paints' shall not include the following: a) aerosol spray paints with an organic solvent-based paint formulation; b) aerosol spray paints ~~or~~ that would be classified as an extremely flammable aerosol (H222) or a flammable aerosol (H223) in accordance with the classification rules for mixtures set out in Regulation (EC) No 1272/2008; c) aerosol spray paints marketed as having antimicrobial, antibacterial, antiviral, disinfecting or other primary biocidal effects for the benefit of human health or related to hygiene standards in the food or drink industry, health services or any other sector, that extend beyond in-can preservation and preservation of the dry film (i.e. beyond biocidal product types 6 and 7 defined in Annex V to Regulation (EU) No 528/2012).

Rationale for proposed scope text

Changes have been made to all three articles in this draft TR3 to clarify and enhance their scope and alignment with regulatory requirements and stakeholder feedback. The revisions include the exclusion of any decorative/performance coating or aerosol spray paint marketed as having antimicrobial, antibacterial, or disinfecting effects that extend beyond in-can preservation and the preservation of the dry-film, specifically effects exceeding those of biocidal product-types 6 and 7[22].

For Articles 1 and 2, wording revisions added are used to emphasize the imparting of characteristics to coatings through the formation of continuous films after application. Furthermore, Article 1 has been updated to include subcategories listed under Annex I of Directive 2004/42/CE of the European Parliament and of the Council.

In Article 3, reference to the user area has been incorporated in response to stakeholder requests. These changes ensure that the articles are more comprehensive and better aligned with regulatory standards and stakeholder expectations.

In the first proposal included in TR1, the scope was aligned with the Paints Directive (2004/42/EC), with a more detailed presentation of the individual product categories that were proposed to be included, while maintaining the same overall scope as the current EU Ecolabel. Stakeholders were invited to provide input on which products should be included or excluded from the scope of the EU Ecolabel.

For the second proposal included in TR2, it was proposed to split the scope of the current EU Ecolabel into two annexes (Annexes I and II) in order to clearly distinguish between coating products covered by Directive 2004/42/EC based on whether their primary purpose is "decorative" or "performance." This change was based on feedback from stakeholders during the first AHWG meeting and subsequent working group discussions.

[22]ECHA product-type: https://echa.europa.eu/regulations/biocidal-products-regulation/product-types

Furthermore, it was proposed to expand the scope to include water-based aerosol spray paints (Annex III), which were considered to offer significant reductions in VOC emissions and improvements in safety compared to solvent-based aerosol spray paints, according to stakeholder feedback.

Additionally, updated definitions for the three product groups – 'decorative paints, varnishes and related products', 'performance coatings and related products', and 'water-based aerosol spray paints' – were proposed in Articles 1, 2, and 3. In Article 1, certain subcategories were excluded for technical or environmental reasons. Specifically, products categorized as "performance" coatings were moved to Article 2, and "multi-coloured coatings" were excluded due to the absence of explicit inclusion. The term 'wood preservatives' replaced 'preservation products for wood impregnation', and the exclusion of 'fillers' also extended to 'plasters, grouts, sealants, and adhesives.'

In Article 2, the proposal included the exclusion of flame retardant coatings and hygiene standard coatings due to concerns about likely hazardous substances and regulatory challenges. This article was also aligned with Directive 2004/42/EC subcategories, with expanded terminology for "multi-pack" coatings to include formulas containing more than two components. Oils and waxes were excluded due to limited interest from producers and challenges with the criteria, while road markings were excluded because of their unique application and safety requirements, which did not align with the EU Ecolabel's scope.

Outcome from and after 1st AHWG meeting (May 2024)

A total of 70 comments were received from stakeholders regarding the scope. Although all the comments were documented in the Table of Comments 1 (please see separate published document), the main points are summarized below.

In general, stakeholders disagreed with the removal of the reference to Directive 2004/42/CE from the text and did not find value in having a hierarchical description of the product group scope. Regarding the scope extension, five different types of products were considered for potential inclusion in the expanded scope of paints and varnishes: aerosol paint, road marking paints, cement/powder paints, wood oils, and waterproofing coatings.

For aerosol spray paints, split views were expressed by stakeholders about their inclusion in the scope. While the environmental advantages of such products were not questioned, the main concern was linked to the differences in how they are used and that criteria for aerosol paints would make the EUEL criteria even more complex and difficult to understand than before. Another important concern was the potential for recycling of empty cans due to the presence of residual propellant.

Split views were also expressed about the inclusion of waterproofing coatings in the scope. There was a lack of clarity about how waterproofing coatings are in fact defined and whether or not they fall under the subcategories 1.1(i) and 1.1(j) of Directive 2004/42/CE. It was clarified that masonry coatings that are water resistant are not considered as waterproofing coatings. Water resistant masonry paints are designed to be resistant to the ingression of driving rain hitting vertical walls at an angle, but this is a much lower extent of "*waterproofing*" than for example that of a floor paint designed to make the floor surface completely impermeable to standing water or to make a concrete foundation wall surface impermeable to the ingress of groundwater.

In contrast, road marking paints are excluded from the scope following a decision based on overwhelmingly negative feedback from stakeholders, especially manufacturers, who almost unanimously rejected their inclusion.

Regarding cement and powder paints, there were split views and also a lot of misunderstanding about whether the term "cement paints" referred to paints for cement-based substrates or to paints that contained cement in the formulation (the latter is the correct understanding). There was also some confusion about whether cement-based paints were also "plasters". Cement-based paints, which use cement as a binder, will not be included due to two main reasons: their potential to receive an H317 classification, which is not allowed by EU Ecolabel criteria, and the risk of overlap with products like plasters, grouts, and sealants, which are not intended to be included in the scope.

However, a novel type of paint product, referred to as "just add water" paints, which are sold in powder form and mixed with water before use, is proposed for inclusion so long as they comply with the other EU Ecolabel criteria for decorative paints. These paints offer significant potential environmental advantages, such as:

- reduced paint spoilage due to the fact that microbial activity is not an issue in dry powders;
- no need for in-can preservatives, since there is no aqueous medium in the can that is conducive to microbial activity;
- reduced packaging because the water takes up significant volume in water-based paints; and
- reduced transport impacts because water is supplied at the point of use and does not need to be transported, less weight and smaller packaging means more units per transport volume.

In relation to paints and varnishes referred to as "just add water', the products included under the scope are only those to which water is added. Products **out of the scope would be those to which another "aqueous** solution of a salt**", or "a 2% solution of** ethanol**"** is added. This is because if alcohol solutions were added, it could create issues with potential circumvention of the hazardous substance or VOC criteria. It should be noted that the concept of "just add water" products has been extended to varnishes as well in TR3 in case of product innovation, even though the authors are not aware of such formulations currently being used for purposes that would match with subcategories e) or f) of Annex I to Directive 2004/42/CE.

Wood oils received some support for inclusion, as they are already covered by the Nordic Swan and Blue Angel ecolabels. However, a review revealed that there are very limited environmental criteria for wood oils, particularly non-film forming ones, making it difficult to differentiate products based on their environmental impact. Additionally, the lack of interest from wood oil producers in the EU Ecolabel suggests that these products should continue to be excluded from the scope. For similar reasons, waxes are also proposed to remain excluded.

Outcomes after Working Sub-Group 1 (WSG1) meeting:

During the WSG1 meeting (June 2024), the discussion focused on the application of Directive 2004/42, with a consensus that it applies to products used on-site in building applications, but not those painted off-site (i.e. in industrial processes). Concerns were raised about the clarity of terms like "coatings for particular industrial and professional uses," with suggestions to specify terms such as "reactive" or "chemically curing" coatings, which do not emit VOCs. The distinction between decorative and performance coatings was highlighted, with differing opinions on whether certain performance coatings should be included within the scope or excluded due to their specific criteria.

Participants agreed on including radiator and waterproofing coatings but opposed the inclusion of anti-graffiti paints due to their unique technical requirements. The discussion also touched upon the potential inclusion of thick decorative coatings and aerosol paints, with general support for excluding road marking and cement paints. Members emphasized the need for clear and updated definitions of various paint types and technical terms.

Members concluded that it was very complicated to try to define a hierarchical categorisation of paint and varnish products. Instead of this, a flow diagram for a series of Yes/No questions could perhaps work for determining if the coating product is in the scope or not.

In the written feedback received after the meeting, stakeholders reflected a cautious and pragmatic approach to the scope and definitions of the EU Ecolabel criteria. There was resistance to splitting categories based on 'indoor' versus 'outdoor' coatings, as many products, like wood coatings, are designed for dual use. Similarly, the division between 'paints' and 'varnishes' was opposed, but the proposed split between 'decorative' and 'performance' coatings was seen as more practical and easier to implement.

Stakeholders also suggested specific changes to the definitions: moving the definition of terms linked to product properties, such as "*anti-skinning substances*" to the User Manual, excluding barrier coating materials from the scope, and merging the definitions of two-pack and one-pack performance coatings due to the lack of benefit in maintaining separate categories and the overly restrictive nature of specifying tertiary amine.

While there was general agreement with the proposed rephrasing of the scope and exclusions, stakeholders emphasized the need for further input from producers of aerosol spray paints and waterproofing coatings when considering product group expansions. The definitions for different types of coatings should be aligned with existing standards, though it was noted that Directive 2004/42/CE uses a different definition for VOC limits.

Outcomes from and after 2nd AHWG meeting (November 2024)

During the 2nd AHWG meeting, it was proposed to exclude water-based aerosol spray paints from the scope due to the proposed VOC content thresholds. While some stakeholders supported the inclusion of aerosol paints, they emphasized the need to differentiate between water-based and solvent-based sprays, advocating for stricter VOC limits or restricting eligibility to the most environmentally friendly options.

Following the 2nd AHWG meeting, a total of 30 comments were received from stakeholders regarding the scope. There was a request for justification for the exclusion of linseed paint and for its potential inclusion, alongside wood oils and waterproofing coatings, which are already recognized under the Nordic Swan criteria. Similarly, the inclusion of furniture paints was debated, as they are currently excluded but are perceived as relevant for consumer use and aligned with existing regulations like Directive 2004/42/CE. Some participants suggested explicitly specifying the exclusion of furniture paints in the criteria for clarity.

The scope of aerosol paints raised significant concerns. While water-based aerosol paints were supported for inclusion, stricter VOC limits were recommended to ensure environmental compliance. Others opposed their inclusion altogether, citing high VOC emissions and waste generation, which contradict the objectives of the Green Deal and a zero-pollution Europe. For these products, there was a call for clear definitions of intended user groups and application areas to avoid ambiguity.

There was also a discussion on anti-algal and anti-fungal claims, emphasizing that these are qualities of outdoor paints rather than distinct types of paint. Participants stressed the importance of aligning antimicrobial claims with EU Regulation 528/2012 to avoid conflicts, as antimicrobial paints might require biocide authorization.

Stakeholders also commented on the description of wood stains and waterproofing products, pointing out inconsistencies in terminology and technical criteria. For example, the effectiveness of waterproofing coatings on roofs was linked to specific standards like ETAG 005, with a call to distinguish between typical roof paints and true waterproof coatings, such as polyurethane or polyurea.

Lastly, an additional comment on the introduction of recyclability and recycled content criteria for primary and secondary packaging was received. The stakeholder highlighted that the PPWR mandates harmonized design-for-recycling criteria by 2030 and sets minimum recycled content targets for plastic packaging by 2030 and 2040. They propose that the EU Ecolabel should adopt these targets for recycled plastic content for 2040 and introduce similar requirements for other materials like steel and paper, as already done by other EU Ecolabel groups.

Outcomes from and after EUEB meeting (November 2024)

During the EUEB meeting, stakeholders expressed mixed views on the proposed scope. While some supported the new structure, others raised concerns over the inclusion of water-based aerosol spray paints due to their high VOC emissions. Following the EUEB meeting, two favourable comments were received on this issue, whereby there was unanimous support for the proposed scope.

Further research in the second proposal

Context for a multi-annex approach. The EU Ecolabel is an example of an EN ISO 14024 type I ecolabel and criteria need to be set and revised via the procedures set out in Regulation (EC) No 66/2010. These procedures involve detailed consultation and research tasks and formal voting and legal processes that lend credibility to the EU Ecolabel policy, but which are time- and resource-consuming. In order to streamline the process while also maintaining or increasing the breadth of products covered by the EU Ecolabel, products that have sufficient similarities, but which need different or clearly nuanced criteria, can be grouped together under the same legislative act, but with separate criteria sets provided in dedicated annexes.

The other common EN ISO 14024 type I ecolabels used in the EU have more flexible procedures to setting criteria for different product groups and instead of bundling together similar products, they often set dedicated criteria documents for relatively narrow individual categories of products. This can be seen with a review of the scopes of selected ecolabels in the EU in the Table 4 below.

555 Table 4. Comparison of scopes for other ecolabel schemes (EU) that include paint and varnish products

Ecolabel scheme and product group	Scope	How does it compare to the EU Ecolabel?
Austrian ecolabel UZ-01 Lacke, Lasuren und Holzversiegelungslacke, v9.2, January 2021.	(Criteria only in German). Varnishes, glazes and wood-sealing varnishes. Explicitly excludes: products with preservatives added for dry-film preservation or preservation of wood against wood pests; impregnation products with biocidal active substances or organic flame retardants; two component systems; anti-corrosion coatings; surface treatments containing >10% wax; fillers and wall paints (the latter covered in UZ-17).	Much more limited scope, does not include any paints and unlikely to be suitable for any outdoor products due to the lack of dry-film preservatives.
Austrian ecolabel UZ-17 Wall paints, v9.1, January 2020.	Indoor wall paints. Must have low emissions and limits on organic content for silicate paints, silicate dispersion paints and distemper paints. Explicitly excludes: products with preservatives added for dry-film preservation; fillers and renders (distinction based on thickness), wall paints advertised with certain green claims.	Much more limited scope, does not include any varnishes or outdoor paints.
Blue Angel UZ-12a Low-emission and low-pollutant paints and varnishes, v9, January 2019.	Paints and varnishes and comparable coating substances with paint/varnishing properties for interior and exterior use as architectural paints and as industrial coatings. Explicit inclusion of primers; undercoats; clear and coloured paints and varnishes; thin and high-build glazes; water-thinnable paints and varnishes; ground sealing products; radiator paints and varnishes; window and door paints and varnishes; exterior paints and varnishes; furniture paints and varnishes and wood oils. Explicitly excludes: wood preservatives; varnishes and glazes with (dry?) film protection; pickling solutions; fillers; waxes; wall paints (other criteria); printing inks and other coatings with paint/varnish properties.	A similarly broad scope to the EU Ecolabel. Covers both indoors and outdoors and explicitly includes some categories that are not clearly covered by the EUEL. For example, radiator paints, furniture paints and varnishes and wood oils.
Blue Angel UZ-102 Low-emission interior wall paints, v5, January 2019.	Interior wall and ceiling paints that meet certain technical requirements as defined in EN 1062-1 and EN 13300. Specifically referring to: emulsion paints according to VdL guideline 11 (including in powder form), primers according to EN 13300, silicate emulsion paints according to DIN 18363. The criteria also apply to tinting systems, where tinting pastes must be compliant.	Much more limited scope, only includes certain types of interior wall and ceiling paints (and tinting pastes that might be used).
Blue Angel UZ 198 Low-emission internal plasters, v3, January 2019	Solvent-free pasty plasters (EN 15824), masonry mortar (EN 998-1), earth plasters (DIN 18947) and stabilised earth plasters and "structural wall paints", which are considered as internal plasters (having a thickness >400µm or coverage <2m^2/L). Explicitly excludes external plasters, fillers and adhesives for gypsum boards (EN 13963) and gypsum plasters (EN 13279-1).	None of these products are in the scope of the EU Ecolabel, and it is clearer now due to the exclusion of cement-based paints, plasters, grouts and adhesives.
Blue Angel UZ 233 Building waterproofing with liquid plastics, v1, July 2023	Coating products and systems applied in liquid form to waterproof roofs, balconies and walkways (DIN 18531), concrete areas trafficable by vehicles (DIN 18532) or construction elements in contact with soil (DIN 18533). Explicitly excludes products designed for indoor use.	Not clear if any of these products may be covered by the existing scope (i.e. categories 1.1(i) and 1.1(j).
Nordic Swan Chemical building products, v2.21.	Applies to adhesives; sealants; fillers and screed (and their primers); outdoor paints and varnishes (including their primers); industrial paints and varnishes; impregnating agents for tile, stone and concrete, anti-corrosion paints for industry and infrastructure	Much broader than the EU Ecolabel, overlapping with some products but not including indoor paints and varnishes (other criteria for that).
Nordic Swan indoor paints and varnishes v3.12.	Applies to indoor decorative paints and varnishes, wood stains and related products intended for use by consumers and professional users falling under the scope of Directive	Very, very similar to the scope for EU Ecolabel. Large parts of the text are literally copy-

Ecolabel scheme and product group	Scope	How does it compare to the EU Ecolabel?
	2004/42/CE. Also explicitly includes floor coatings and floor paints, tinted paint products, tinting systems, wood paints, wood and decking stains, masonry coatings and metal finishes primers and undercoats of such product systems. A list of specific exclusions provided too, that are basically identical to the EU Ecolabel except that they also exclude anti-rust paints and outdoor products (in another product group).	pasted, but with some notable differences too, for example with outdoor products and the anti-rust paints.

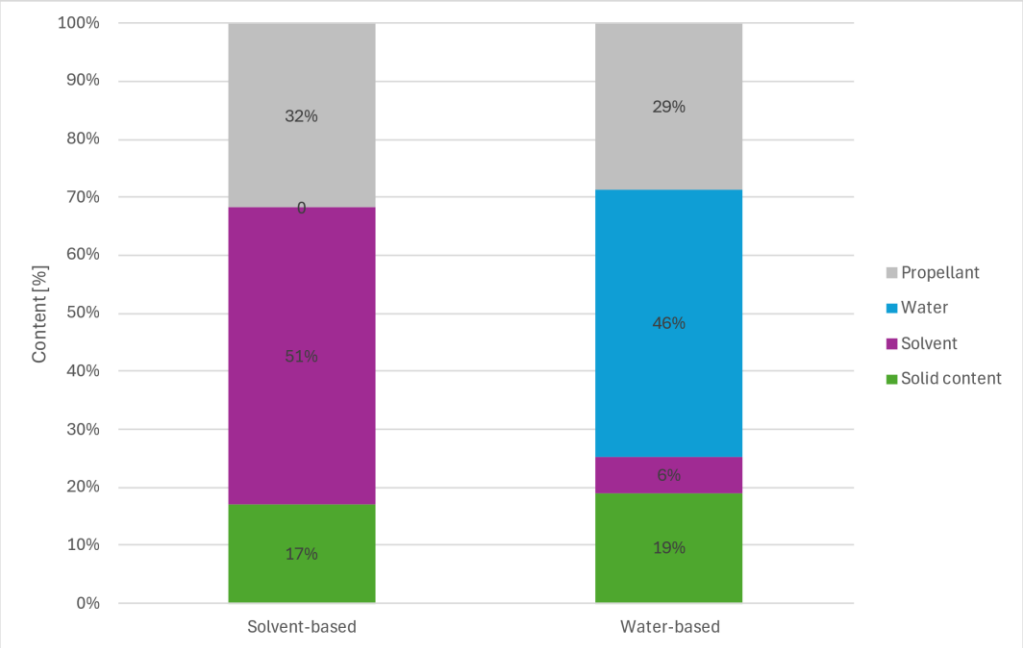
Source: Own elaboration from the various ecolabel criteria documents cited.

From the three main ecolabel schemes listed above, it is suggested that they all of them try to split the product group into at least two different criteria sets. The Austrian Ecolabel makes a distinction between (i) varnishes, glazes and wood-sealing varnishes and (ii) indoor wall paints. The Blue Angel has one very broad product group and then a very specific product group that is limited to certain indoor wall and ceiling paints. The Nordic Swan criteria makes a clear distinction between indoor and outdoor products, where outdoor products are grouped with a larger set of other chemicals used in buildings, like adhesives, sealants etc.

Based on the above observations, and the fact that bundling of similar products into a common EU legislative act offers significant efficiencies, the proposal for a multi-annex approach for paints and varnishes is considered as reasonable.

Environmental benefits of water-based aerosol paints: The main further research conducted since TR1 has focused on a critical assessment of the potential environmental benefits of water-based aerosol paints. Detailed formulations and technical data for both types of aerosol spray paints were obtained from manufacturers. A general comparison of the composition of water- and organic solvent-based aerosol spray paints is presented below.

Figure 6. Composition of solvent- and water-based aerosol spray paints.



Source: Own elaboration based on confidential data from aerosol spray paint producer.

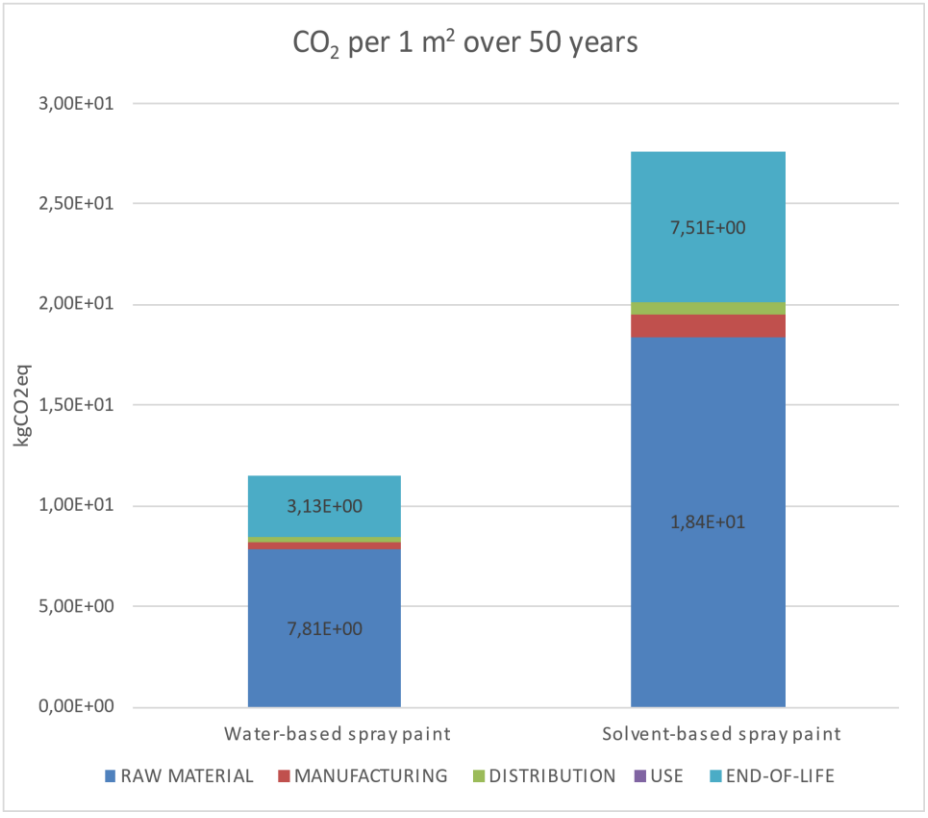
As shown in the Figure 6 above, water-based spray paints result in a remarkable reduction in organic solvent content and can also be associated with a slight reduction in the use of propellants, but the propellant will still be needed. According to information provided, the EN ISO 11890 VOC content is effectively reduced from the 70-85% typical of conventional aerosol spray paints to less than 10% in the water-based aerosol spray paints (VOCs can be included in both the solvent and propellant fractions and possibly in traces in the solid fraction).

Europe is the leading producer of aerosol products worldwide, with over 5 billion cans being produced each year. Aerosol paints and varnishes account for around 5-6% of total aerosol cans produced, meaning that around 300 million cans of aerosol paints and varnish are produced each year in Europe. Of this 300 million, around 20% are for use in the automotive sector while the remaining 80% of aerosol spray paints (around 240 million cans) are for decorative/maintenance purposes. Currently it is estimated that around 98% of all aerosol paints sold are still organic solvent-based.

The main way for the EU Ecolabel to distinguish between aerosol spray paints with a higher or lower environmental footprint would be to simply require products to be water-based. This could be more clearly defined via specific limits on VOC content and/or VOC emissions.

It is also claimed that the CO_2 footprint of the water-based product is around 50% less than the conventional products. To determine the legitimacy of this statement, a comparison of the environmental impacts of these two product formulations was conducted, based on confidential formulation data from an aerosol spray paint producer and results are presented by life cycle stage in Figure 7.

Figure 7. CO_2 footprint per 1 m^2 of substrate over 50 years of water- and solvent-based spray paints



Source: Own elaboration based on the LCA screening results.

The figure above illustrates that switching to a water-based aerosol spray paint reduces CO_2 emissions by 58% compared to a solvent-based spray paint when looking at a 50-year period. The raw material and end-of-life stages achieve each a 58% reduction in CO_2 impacts, while the manufacturing stage sees a 64% reduction. A broader analysis of all 16 PEF impact categories was also conducted (details provided in section 4.3.6 of v2.0 of the updated draft Preliminary Report).

Given the major potential environmental benefits of shifting from organic solvent-based to water-based aerosol spray paints and the fact that there is currently no EN ISO 14024 Type I Ecolabel that covers these types of products, it is considered relevant to include them in the scope of EU Ecolabel paints and varnishes. Although aerosol paints are different in the way they are physically stored and applied, and in the precise applications they are used for, they have a lot in common regarding the ingredients they use and their reaction chemistries. For the sake of increasing the scope of the EU Ecolabel and the fact that a dedicated product group for aerosol paints alone is highly unlikely, it is considered appropriate to bundle aerosol paints into a single EU Ecolabel

criteria set with other paints and to distinguish them by separate annexes within the set of criteria. Consequently, it was considered appropriate to define criteria in a separate annex, hence the need to define aerosol spray paints separately in Article 3 of the proposal.

Rationale for the inclusion of waterproofing products in the scope (Article 2): Performance coatings with high water resistance are clearly included in the current scope, as they are specifically addressed for outdoor use and high-humidity indoor environments. However, impregnating agents and treatments used by professionals have previously been excluded from this scope, as alluded to in Article 1(3c) of the 2014 criteria. Although industry interest in including these products has been limited, they are now recognised by ecolabels like the Nordic Swan (for "impregnating agents for tiles, stone, and concrete"), Blue Angel DE-UZ 12a (for "ground sealing products") and Blue Angel DE-UZ 233 (for "building waterproofing with liquid plastics").

These products span a wide range of categories, depending on the substrate they are applied to and the environmental conditions the substrate faces. Their main purpose is to prevent water and any contaminants it carries from penetrating porous surfaces, which could compromise existing coatings, cause efflorescence, or result in physical or chemical damage. Examples include wood impregnation agents for outdoor environments, "wet room" paints for high-humidity areas like bathrooms, kitchens, and swimming pools, as well as epoxy coatings for metal surfaces or garage floors, where concrete needs protection from water and chemicals.

A review of the Nordic Swan and Blue Angel requirements for criteria that are specific to waterproofing products revealed the following:

- DE UZ 233 requires that waterproofing products are "*technically suitable*" This amounts to the requirement that they comply with relevant German Technical Building Regulations. This involves the documentation of general building inspection test certificates or European Technical Assessments.
- DE UZ 233 explicitly requires the non-use of herbicides.
- DE UZ 233 requires ecotoxicity testing of eluates from glass plates treated with the waterproofing coating. Compliance with limits for test results for luminescent bacteria, algae and crustaceans. The UMU test for genotoxicity of the eluates is also required.
- DE UZ 233 requires that at least 50% of the electricity used to make the Blue Angel product is sourced from renewable energy sources.
- Nordic Swan 097 sets specific limits for the quantities of preservatives that can be used in impregnating agents for tile, stone and concrete.
- Nordic Swan 097 explicitly prohibits the use of Volatile Aromatic Hydrocarbons (VAHs).
- Nordic Swan 097 sets an abrasion resistance quality requirement of AR 1 or lower according to EN 13892-4. Any specific claims about fouling resistance also need to be verified by field tests.

Clarity is needed about whether any of the aforementioned types of products are covered by the existing scope of Directive 2004/42/CE. This uncertainty stems from the non-exhaustive list of performance coatings mentioned in the same Directive, under subcategories 1.1(i) and (j).

New inclusions and exclusions in the third proposal

This third proposal includes changes to all three scope articles aimed at clarifying and enhancing their scope, as well as ensuring alignment with regulatory requirements and stakeholder feedback.

In response to stakeholders' concerns regarding anti-algal and anti-fungal claims, and the need to align antimicrobial claims with EU Regulation 528/2012, the revision excludes any decorative or performance coatings, including aerosol sprays, that are marketed with antimicrobial, antibacterial, or disinfecting effects beyond in-can preservation and dry-film preservation – specifically those effects exceeding the limits of biocidal product types 6 and 7.

Based on stakeholders' feedback over the alignment with Directive 2004/42/CE, Article 1 has been updated to include subcategories listed under Annex I of this directive. In addition, wording revisions were added to Articles 1 and 2 to highlight the imparting of characteristics to coatings through the formation of continuous films after application.

Regarding comments on the inclusion or exclusion of linseed paints and furniture paints, no special provisions were made for these products. As a result, they are included in the scope if they meet the requirements set for other paints within the relevant categories of Directive 2004/42/CE. While stakeholders requested the inclusion of wood oils in the scope of the EUEL, these were not incorporated for several reasons: wood oils are not covered by Directive 2004/42/CE, there are very limited environmental criteria for wood oils, and there has been a distinct lack of interest from wood oil producers in the EU Ecolabel.

Reflecting stakeholders' feedback on the inclusion of waterproofing coatings, these paints fall under Annex II and are explicitly mentioned in Article 2.

Despite concerns over the inclusion of water-based aerosol spray paints due to high VOC limits, Article 3 remained as part of the scope due to the clear environmental benefits over solvent-based aerosol spray paints. These concerns are addressed in Section 7.3, where the VOC limits are set and justified. Nevertheless, Article 3 now includes a reference to the user area, which ensures that the article is more comprehensive and better aligned with regulatory standards and stakeholder expectations.

Article 3 also includes a new referral to users' intention when using these products, i.e. '*intended for use by consumers and professional users to impart decorative and/or special performance characteristics to buildings, their trim or fittings and associated structures*', in order to clarify that under the scope of the Annex I are water-based aerosol spray paints for decorative and for performance use.

Finally, although stakeholders proposed introducing criteria for recyclability and recycled content in primary and secondary packaging, the LCA screening studies indicated that packaging has a minimal environmental impact, and consequently limited benefits from using recycled content. Moreover, incorporating such criteria would significantly increase the administrative burden and costs for applicants. While design-for-recyclability requirements could be a more effective alternative, it remains unclear whether these could be self-declared or would require third-party verification, which would add substantial costs for applicants. As a result, requirements for recycled content and recyclability were not considered.

3.2 Definitions

The second proposed definitions presented below in grey text are from the draft TR2. This is immediately followed by the third proposal of definitions, with track changes like (in blue) reflecting the differences in this draft TR3 proposal.

TR2: Second proposed definitions (reordered alphabetically)
Article 4 For the purposes of this Decision, the following definitions shall apply: (1) 'Aerosol spray paints' means aerosol dispensers which are non-refillable receptacles made of metal, glass or plastics and containing a gas compressed, liquefied or dissolved under pressure, with a paint formulation, and fitted with a release device allowing the contents to be ejected as solid or liquid particles in suspension in a gas, as a paste or in a liquid state. (2) 'Anti-fouling paint' means, according to ISO 4618:2014, coating material applied to the underwater sections of a ship´s hull or to other underwater structures to discourage biological growth (3) 'Anti-rust paints' means paints designed to prevent rust (corrosion) in metal substrates in the presence of oxygen and moisture, through the application of a protective coating. (4) 'Cement-based paints' means powdered paint products containing significant amounts of Portland cement or other cement in the formulation and which need to be carefully mixed with water prior to application. (5) 'Decorative purpose', means treatments with the primary objective to change or restore the appearance of a substrate; (6)'Filler' means, according to ISO 4618:2014, a coating material with a high proportion of extender, intended primarily to even out irregularities in substrates to be painted and to improve surface appearance. (7) 'Floor coatings and floor paints' means coatings and paints specifically formulated to be applied to flooring, with the purpose of protecting and/or colouring the flooring substrate (8) 'Multi-~~two~~-pack performance coatings', according to Directive 2004/42/CE, means coatings with the same use as one-performance coatings, but with a second component (e.g. tertiary amines) added prior to application; (9) 'One-pack performance coatings', according to Directive 2004/42/CE, means performance coatings based on film-forming material, which are designed for applications requiring a special performance, such as primer and topcoats for plastics, primer coat for ferrous substrates, primer coat for reactive metals such as zinc and aluminium, anticorrosion

finishes, floor coatings, including for wood and cement floors, graffiti resistance, flame retardant, and hygiene standards in the food or drink industry or health services;
(10) 'Paint' means a pigmented coating material, supplied in a liquid, paste or powder form, which, when applied to a substrate, forms an opaque film having protective, decorative or specific technical properties and after application dries to a solid, adherent and protective coating;
(11) 'Plasters' shall, for the purpose of this Decision, mean premixed materials designed for plastering of interior or exterior walls and ceilings, including gypsum plasters according to EN 13279, solvent-free pasty plasters according to EN 15824 and masonry mortars according to EN 998-1.
(12) 'Powder coating' means protective or decorative coating formed by the application of a coating powder to a substrate and fusion to give a continuous film;
(13) 'Primers', according to Directive 2004/42/CE, means coatings with sealing and/or blocking properties designed for use on wood or walls and ceilings;
(14) 'Road marking paints' means, in accordance with EN 1436 paint that forms a part of the means for horizontal signalization and require a functional component to provide road safety;
(15) 'Tinting system' means a method for preparing coloured paints by mixing a 'base' with coloured tinting pastes or powders
(16) 'UV curable paint system' means the hardening of coating materials by exposure to artificial ultra-violet radiation;
(17) 'Varnish' means a clear coating material which, when applied to a substrate forms a solid transparent film having protective, decorative or specific technical properties and after application dries to a solid, adherent and protective coating;
(18) 'Waterproofing products' means materials and coatings applied to surfaces to prevent the ingress of water and moisture
(19) 'Waxes' means a group of organic compounds that are typically solid at room temperature and become malleable or liquid upon heating
(20) 'Wood oils' means oils used for the care and protection of wood (e.g. pearling effect) without any cleaning action;
(21) 'Wood preservative', according to ISO 4618:2024, means a product containing a biocide which is intended to inhibit the development of wood-destroying and/or wood-staining organisms in the wood to which it is applied.
(22) 'Wood stain', according to ISO 4618:2024, means a penetrating composition containing a dyestuff that changes the colour of a wood surface, usually transparent and leaving no surface film, the solvent for which may be oil, denatured alcohol or water.

TR3: Third proposal of definitions

Article 4

~~(_) 'White and light coloured' paints are those with a tri-stimulus (Y- value) > 70 %;~~

For the purposes of this Decision, the following definitions shall apply:

(1) 'Aerosol spray paints' means aerosol dispensers which are non-refillable receptacles made of metal and containing a gas compressed, liquefied or dissolved under pressure, with a paint formulation, and fitted with a release device allowing the contents to be ejected as solid or liquid particles in suspension in a gas, as a paste or in a liquid state.

(2) 'Alkylphenols and alkylphenol ethoxylates' means organic compounds obtained by the alkylation of phenols and the ethoxylation of alkylphenols, including all of the compounds listed in entry 43 to Annex XIV or entry 46 to Annex XVII of Regulation (EC) 1907/2006.

(3) 'Anti-algal' refers to marketing claims for a coating product to prevent or reduce the growth of algae on the coating film that are supported by testing according to EN 15458.

(4) 'Anti-fouling paint' means, according to ISO 4618:2014, coating material applied to the underwater sections of a ship´s hull or to other underwater structures to discourage biological growth.

(5) 'Anti-fungal' refers to marketing claims for a coating product to prevent or reduce the growth of mould or fungi on the coating surface that are supported by testing according to EN 15457.

(6) 'Anti-microbial' or 'anti-bacterial' refers to marketing claims and the property of a coating material to inhibit or prevent the growth and proliferation of microorganisms or bacteria on its surface under conditions conducive to microbial colonisation. This term is considered to broadly encompass both preservative and disinfectant product types defined in Annex V to Regulation (EU) No 528/2012.

(7) 'Anti-corrosion~~rust~~ paints' means paints designed to prevent ~~rust (~~corrosion~~)~~ in metal substrates in the presence of oxygen and moisture, through the application of a protective coating.

(8) 'Binding primers', according to Directive 2004/42/CE, means coatings designed to stabilize loose substrate particles or impart hydrophobic properties and/or to protect wood against blue stain.

(9) 'Cement-based paints' means powdered paint products containing significant amounts of Portland cement or other cement in the formulation and which need to be carefully mixed with water prior to application.

(10) 'Coatings for exterior walls of mineral substrate' means, according to Directive 2004/42/CE, coatings designed for application to outdoor walls of masonry, brick, or stucco.

(11) 'Cross-linking agent' means substances that facilitate the establishment of covalent or non-covalent (supramolecular) bonds between separate polymer chains or between non-neighbour parts of the same polymer chain and thus modifying the properties of the coating (e.g. drying, mechanical resistance, chemical resistance, adhesion).
(12) 'Dead matt paints' are those which at an angle of incidence of 85° give ~~show~~ a reflectance of < 5.
(13) 'Decorative purpose' means treatments ~~with the~~ whose primary objective is to change or restore the appearance of a substrate.
(14) 'Dry-film preservatives' are biocidal products within the meaning of Article 3(1)(a) of Regulation (EU) No 528/2012 that are for use in product type 7 as described in Annex V to that Regulation. They are used for the preservation of films or coatings by the control of microbial deterioration or algal growth in order to protect the initial properties of the surface of materials or objects.
(15) 'Elastomeric paint' means a paint product designed to provide a high-quality decorative and protective finish for masonry surfaces by bridging and sealing cracks in the substrate and that, by means of its elastic properties and the use of thicker applied films, can stretch and shrink with thermally driven building movement, thus improving the durability of the underlying masonry material.
(16) 'Filler' means, according to ISO 4618:2014, a coating material with a high proportion of extender, intended primarily to even out irregularities in substrates to be painted and to improve surface appearance.
(17) 'Final product' means decorative paints, varnishes or related products; performance coatings or related products; and water-based aerosol spray paints that are awarded the EU Ecolabel, in the form in which they are sold to customers.
(18) 'Floor coatings and floor paints' means coatings and paints specifically formulated to be applied to flooring, with the purpose of protecting and/or colouring the flooring substrate.
(19) 'Gloss paints' means paints which, at an angle of incidence of 60°, ~~show~~ give a reflectance of ≥ 60.
(20) 'Impurities' means unintended constituents (residuals, pollutants, contaminants, by-products etc.) that remain in the EU ecolabelled product in concentrations less than 100 ppm (0,0100 % w/w, 100 mg/kg)~~. Impurities in ingredients means unintended constituents (residuals, pollutants, contaminants, by-products etc.)~~ 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.
(21) 'In-can preservatives' are biocidal products within the meaning of Article 3(1)(a) of Regulation (EU) No 528/2012 that are for use in product type 6 as described in Annex V to that Regulation, in particular for the preservation of manufactured products during storage by the control of microbial deterioration to ensure their shelf life and used for the preservation of tints that will be dispensed from machines.
(22) 'Ingoing substances' means constituents (as pure substances or as part of a mixture, and regardless of the amount) that are intentionally added to the final product or its ingredients to achieve or influence certain properties of the final product or its ingredients. Substances known to be released from ingoing substances after addition (e.g. formaldehyde from preservatives and arylamine from azodyes and azopigments) shall also be regarded as ingoing substances. Impurities present in the final product or its~~n supplied~~ ingredients in concentrations above the limits permitted for being considered as impurities, shall instead be considered as ingoing substances.
(23) 'Interior/exterior trim and cladding paints for wood, metal or plastic', according to subcategory 1.1(d) of Directive 2004/42/CE, means coatings designed for application to trim and cladding which produce an opaque film. These coatings are designed for either a wood, metal, or plastic substrate;
(24) 'Interior/exterior trim varnishes and wood stains', according to subcategory 1.1(e) of Directive 2004/42/CE, means coatings designed for application to trim which produce a transparent or semi-transparent film for decoration and protection of wood, metal, and plastics.
(25) 'Just add water decorative paints or varnishes' means paints or varnishes that are supplied in powder form, which do not use cement binders and which simply need to be mixed with water prior to their use as any one of the categories defined in subcategories 1.1(a) to 1.1(h) in Annex I to Directive 2004/42/CE;
(26) 'Lasure', according to ISO 4618:2014, means a coating material containing small amounts of a suitable pigment and/or extender and used to form a transparent or semi-transparent film for decoration and/or protection of the substrate.
(27) 'Light-coloured paint', according to ISO 6504-1:2019 and ISO 6504-3:2019, means a coating with tristimulus values Y and Y10 greater than 25, measured with a spectrophotometer on a black and white substrate~~, where tristimulus values are meant, as defined in ISO 11664-2:2007, as amounts of the three reference stimuli, in a given trichromatic system, required to match the colour of the stimulus considered (in CIE standard colorimetric systems, the tristimulus values are represented by the symbols, X, Y, Z, X10, Y10 and Z10~~.

(28) 'Masonry coating' means a coating that produces a decorative and protective film for use on concrete, paintable brickwork, blockwork, rendering, calcium silicate board or fibre-reinforced cement.
(29) 'Matt or glossy coatings for interior walls and ceilings' means coatings designed for application to indoor walls and ceilings, which deliver a dead matt, matt, semi-matt, satin, semi-gloss or gloss finish.
(30) 'Matt paints' are those which at an angle of incidence of 85° give ~~show~~ a reflectance of < 10 and ≥ 5;
~~(28) 'Microplastics' means small pieces of plastic, usually smaller than 5mm.~~
(31) 'Mid-sheen paints' (also referred to as semi-gloss, satin, semi-matt) are those which at an angle of incidence of 60° or of ~~at~~ 85° give ~~show~~ a reflectance of < 60 and ≥ 10.
(32) 'Minimal build wood stains', according to Directive 2004/42/CE, means wood stains which, in accordance with EN 927-1:1996, have a mean thickness of less than 5 µm when tested according to ISO 2808:1997, method 5A.
(33) 'Mixture', according to Regulation (EC) No 1907/2006 of the European Parliament and of the Council, means a mixture or solution composed of two or more substances.
(34) 'Multi-pack performance coatings', according to Directive 2004/42/CE, means coatings with the same use as one-performance coatings, but with a second component (e.g. tertiary amines) added prior to application.
(35) 'Neutralising agent' means a chemical substance or material added to coating formulations that acts as a Bronsted base, Bronsted acid, Lewis base or Lewis acid in order to stabilise the pH of the coating formulation and prevent unwanted reactions or degradations during production, storage and application that would adversely affect the properties of the coating product and the resulting dry-film.
(36) 'One-pack performance coatings', according to Directive 2004/42/CE, means performance coatings based on film-forming material, which are designed for applications requiring a special performance, such as primers and topcoats for plastics, primer coats for ferrous substrates, primer coats for reactive metals such as zinc and aluminium; anticorrosion finishes; floor coatings, including for wood and cement floors; graffiti resistance; flame retardant; and hygiene standards in the food or drink industry or health services.
(37) 'Opaque' means a film with a contrast ratio of ≥ 98 % at 120µm wet film thickness.
(38) 'Organotin compounds' means any organometallic compound with at least one Sn-C covalent bond.
(39) 'Paint' means a pigmented coating material, supplied in a liquid, paste or powder form, which, when applied to a substrate, forms an opaque film having protective, decorative or specific technical properties and after application dries to a solid, adherent and protective coating.
(40) 'PFAS' means per- and polyfluoroalkyl substances (PFASs) defined as: any substance that contains at least one fully fluorinated methyl (CF3-) or methylene (-CF2-) carbon atom (without any H/Cl/Br/I attached to it).
(41) 'Phthalates' means esters of phthalic acid / orthophthalic acid / phthalic acid / 1,2- benzene dicarboxylic acid);
(42) 'Plaster~~s'shall, for the purpose of this Decision,~~ means premixed materials designed for plastering of interior or exterior walls and ceilings, including gypsum plasters according to EN 13279, solvent-free pasty plasters according to EN 15824, ~~and~~ masonry mortars according to EN 998-1 and structural wall paints designed for use indoors as internal plaster with a thickness of >400µm and/or a minimum coverage of <2m^2/l.
(43) 'Powder coating' means protective or decorative coating formed by the application of a coating powder to a substrate and fusion to give a continuous film.
(44) 'Primers', according to Directive 2004/42/CE, means coatings with sealing and/or blocking properties designed for use on wood or walls and ceilings.
(45) 'Road-marking paints' means, in accordance with EN 1436, paints that form a part of the means for horizontal signage and require a functional component to provide road safety.
(46) 'Semi-volatile organic compounds' (SVOCs), for the purpose of calculating the SVOC content of decorative paints, varnishes or related products or performance coatings and related products, means any organic compound having a boiling point greater than 250 °C and less than 370 °C, measured at a standard pressure of 101,3 kPa~~. and which, in a capillary column are eluting with a retention range after n-Tetradecane (C14H30) and up to and including n-Docosane (C22H46)~~.
(47) 'Substance', according to Regulation (EC) No 1907/2006 of the European Parliament and of the Council, means 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.
(48) 'Transparent' and 'semi-transparent' means a film with a contrast ratio of < 98 % at 120 µm wet film thickness.

(49) 'Tinting system' means a method for preparing coloured paints by mixing a 'base' with colour~~ed~~ tint~~ing pastes or powders.~~
(50) 'Trim and cladding' are building elements with functional and aesthetic roles. Trim refers to finishing materials around edges or openings, such as doors and windows, that are used to conceal joints, protect surfaces and enhance design. Cladding is the application of one material over another in a building in order to provide protection of the underlying material, improve building envelope insulation and/or contribute to visual appeal.
(51) 'Tri-stimulus values', according to ISO 11664-1:2019, means the amount of reference colour stimuli, in a given trichromatic system, required to match the colour of the stimulus considered. In the CIE standard colorimetric systems (e.g. CIE 1931 and CIE 1964) the tristimulus values are represented, for example, by the symbols R, G, B; X, Y, Z; R_{10}, G_{10}, B_{10}, or X_{10}, Y_{10}, Z_{10}.
(52) 'Undercoat' is a preparatory layer applied before the final coat of paint or varnish, aimed at improving adhesion, levelling the surface, sealing porosities, colour perception for darker shades and/or providing additional protection to the substrate.
(53) 'UV curable paint system' means the hardening of coating materials by exposure to artificial ultra-violet radiation.
(54) 'Varnish' means a clear coating material which, when applied to a substrate, forms a solid transparent film having protective, decorative or specific technical properties and after application dries to a solid, adherent and protective coating.
(55) 'Volatile organic compounds' (VOCs), for the purpose of calculating the VOC content of decorative paints, varnishes or related products or performance coatings and related products, means any organic compounds having an initial boiling point less than or equal to 250 °C measured at a standard pressure of 101,3 kPa ~~as defined in Directive 2004/42/EC and which, in a capillary column, are eluting up to and including n-Tetradecane (C14H30)~~.
(56) 'Waterproofing coatings~~products~~' means coating products and systems (including any primers and undercoats) applied in liquid form to seal roof surfaces (including green roofs), interior or exterior floor surfaces in a building and building elements in contact with soil~~materials and coatings applied to surfaces to prevent the ingress of water and moisture~~.
(57) 'Waxes' means a group of organic compounds that are typically solid at room temperature and become malleable or liquid upon heating.
~~(55) 'White and light coloured' paints are those with a tri-stimulus (Y- value) > 70 %;~~
(58) 'Wood oils' means oils used for the care and protection of wood (e.g. pearling effect) without any cleaning action.
(59) 'Wood preservative', according to ISO 4618:2024, means a product containing a biocide which is intended to inhibit the development of wood-destroying and/or wood-staining organisms in the wood to which it is applied.
(60) 'Wood stain', according to ISO 4618:2024, means a penetrating composition containing a dyestuff that changes the colour of a wood surface, usually transparent and leaving no surface film, the solvent for which may be oil, denatured alcohol or water.

Rationale for the proposed definitions (appearing in the Act)

Definitions are essential to give legal clarity to the interpretation of technical terms and minimize misunderstandings, especially given the diverse distinctions between paint and varnish products reflected in the EU Ecolabel criteria text.

Note that in this third proposal, it has been decided to include all definitions under Article 4 (i.e. in the draft Act). This means that also the definitions that were set in the annexes in the second proposal (TR2), are now (in TR3) under Article 4. The reasoning behind is that there were no differences among the definitions included in each annex. This reduces the length of the annexes and avoid repetition of the same definitions three times. Also, be aware of a set of definitions to be included in the User Manual and identified at the end of this sub-section, just before sub-section 3.3.

Furthermore, there are additional definitions that are helpful, but which are more technical and not needed to understand the legal text. These definitions are included in the further research section of this draft TR3 but are not intended to appear in the legal text. Instead, they should be flagged for potential inclusion in the User Manual (UM).

Regardless of where a group of definitions is provided, the authors will arrange those lists in alphabetical order of the terms for ease of reference for readers in the future.

With a number of definitions in the draft TR1, additional space was left at the end of some definitions to specify paint and varnishes in terms of their chemistry, specifically the type of binder or resin used. However, stakeholders opposed this inclusion, arguing that it could unintentionally limit future innovations by restricting the development of new products and technologies. This potential extra detail has now been removed. By maintaining broad and flexible definitions, we allow room for advancements and encourage the exploration of new solutions that enhance product performance and sustainability.

Focusing on legally important terms appearing in the Act, definitions are proposed for product categories requested to be included in the scope, such as aerosol spray paints (restricted to metal packaging). The definition of "*wood oils*" was taken from Blue Angel DE-UZ 12a, and the definition of "*wood preservatives*" and "*filler*" were taken from ISO 4618:2024. The definition of aerosol spray paints was adapted from a general definition of for "aerosols" in the 2024 version of the ECHA Guidance on the application of CLP criteria.

For the proposal in TR1, significant attention was given to expanding and refining the existing definitions of the EU Ecolabel. New definitions were introduced for terms such as 'primers', 'anti-rust paints', 'thick decorative coating', 'wood oils' and 'wood preservative'. In addition, several terms were included without accompanying definitions and stakeholders were asked to provide input. These terms included 'driers', 'surfactants', 'mineral raw material', 'optical brightener', 'UV stabiliser', 'binder', 'elastomeric paint', 'undercoat', 'aerosol spray paint', 'road marking paints' and 'cement paints'. Finally, updates were made to the definitions of for 'decorative paints and varnishes', and 'one-pack performance coatings'.

In the proposal in TR2, further definitions were added based on feedback from stakeholders, including for 'aerosol spray paints', 'anti-fouling paint', 'cement-based paints', 'decorative purpose', 'filler', 'plasters', 'primers', 'road marking paints', waterproofing products', 'waxes' and 'wood stain'. The definition of 'tinting system was updated and the term 'two-pack performance coatings' was changed to 'multi-pack performance coatings'. Other definitions that were found to be irrelevant to this EUEL were removed from the definitions. However, some of these definitions for ingredient types and technical properties were flagged for future inclusion in the User Manual, including: 'anti-corrosion pigment', 'anti-foaming agents', 'anti-skinning substances', 'binder', 'crosslinking agent', 'driers', 'mineral raw material', 'neutralising agent', 'optical brightener', 'rheology modifier', 'surfactants', 'UV stabiliser', 'water repellent agents', 'abrasion', 'adhesion', 'gloss', 'hiding power', 'sheen' and 'spreading rate'.

Whenever a specific limit or condition in the criteria applies to a particular category of paint or varnish product, that category should be clearly defined. This allows applicants to declare the relevant categories for each product in their application, ensuring that the applicable criteria are easily identified.

Definitions previously in the Annex preamble, in this draft TR3 are now moved to the definitions section in the Act, in order to avoid the repetition of the definitions in each Annex. In addition to the previous definitions, a review of the existing criteria text identified several paint and varnish categories that were not explicitly defined. To address this, new definitions are proposed for terms such as *"anti-algal", "anti-fungal", "anti-microbial", "mixture", "substances", "trim and cladding", "tri-stimulus"* and *"undercoat".*

The removal of the definition of the term *"Microplastic"* was due to the removal of the requirement to ban synthetic polymeric microparticles (SPM)/microplastics in criterion 4.3. Consequently, there is no reference to microplastics in the text anymore. Reasons for why the proposal to ban microplastics in TR2 was removed in TR3 are provided in the rationale section for criterion 4.3 and in section 8.3.

Few technical definitions needed for applicants and Competent Bodies for the assessments of the applications are proposed to be only defined in the User Manual.

Outcomes from and after 1st AHWG meeting (May 2024)

After the 1st AHWG meeting 30 comments were received from stakeholders about the definitions. As presented above the link of specific binder chemistries in the definitions was reject by stakeholders and therefore not included in this version.

Additionally, in response to stakeholder feedback, the project team has tried to compile potentially relevant definitions from various sources. This effort serves two main purposes. First, it aims to ensure consistency between the terms used in the EU Ecolabel criteria and Directive 2004/42/CE with those found in technical standards, particularly EN ISO 4618. This cross-referencing is essential for maintaining uniformity and clarity across different regulatory frameworks. Second, the initiative seeked to enhance the EUEL User Manual by identifying additional definitions for technical terms and ingredient types.

Outcomes from and after 2nd AHWG meeting (November 2024)

A total of 26 comments were submitted by stakeholders concerning definitions within the EU Ecolabel criteria for paints and varnishes. The feedback emphasized the critical need for clear and consistent definitions to ensure fairness among producers and prevent discrepancies. Stakeholders particularly stressed the importance of distinguishing antimicrobial paints from anti-fungal and anti-algal paints, noting that antimicrobial claims are prohibited for ecolabelled products in certain countries, such as Greece.

The current definition of microplastics was argued to be vague and a suggestion to include soluble and biodegradable microplastics, as well as the unintentional release of microplastics was given. Additionally, the inclusion of a definition for nanoparticles was proposed.

Definitions for "final product" and "ingoing substances" were specifically requested, while stakeholders provided proposed definitions for "neutralizing agents" and "crosslinking agents," as discussed in the TR2 and AHWG meeting. The definition of elastomeric paints was also debated, with some stakeholders advocating their inclusion based on elastic properties, whereas others argued that only specific coatings, such as polyurethane or polyurea, demonstrate true elasticity under all conditions.

Definitions for terms such as "mixture", "tri-stimulus", "trim" and "cladding" were requested, along with further explanations for the terms "ingoing substances" and "impurities". Stakeholders emphasized the need for clear examples to enhance understanding. For product formulations, it was suggested that applicants should declare the specific function of each ingredient, a requirement currently missing in the Annex.

Regarding microplastics, stakeholders noted that the current definition is unclear and not aligned with the EU 2023/2055 regulation. They proposed adopting the term "synthetic polymeric microparticles (SPM)" to reflect intentional additions, avoiding confusion with secondary microplastics. It was also recommended to follow the definitions being developed by CEFIC and ECHA, ensuring consistency across regulations. Clarifications were also sought on how to address polymer emulsions and dispersions that do not remain as solid particles in the final product.

Other comments included suggestions to include only the base paint formulation and packaging for tinting systems, a definition of undercoats as preparatory layers improving adhesion and durability, and practical steps for managing changes to packaging, suppliers, or raw materials. Stakeholders supported the broad restriction of intentionally added microplastics but called for clear linkage to regulatory definitions to avoid redundancy and ensure precision.

One stakeholder proposed a dedicated section at the beginning of the criteria document to house all definitions and standards, complemented by an interactive glossary or linked explanations, to enhance usability and accessibility for applicants.

Further research after 2nd AHWG meeting

Following stakeholder feedback after the 2nd AHWG new definitions were added to Article 4, to improve clarity and align with industry feedback.

New definitions were added in order to distinguish antimicrobial paints from anti-algal and anti-fungal paints, specific definitions for these were introduced. The former is intended to be excluded from the scope with the latter two can continue to be included in the scope. Anti-algal claims must be supported by testing in accordance with EN 15458:2014, while anti-fungal claims must be verified through testing under EN 15457:2014. The definition of antimicrobial paints was refined to cover broader microbial protection that goes beyond the PT6 and PT7 scope, also potentially including some of the disinfecting PTs (especially PT1, PT3 and PT4). For coatings marketed with anti-algal and anti-fungal properties, stakeholders agreed that the biocidal active substances must be limited only to PT6 and PT7 purposes.

In response to requests for greater clarity, the following definitions were added based on input from stakeholders: “crosslinking agent”, “elastomeric paints”, “neutralising agents”, “undercoat” and “just add water decorative paints”. To eliminate confusion, a definition for “final product” was added to Article 4, clarifying that the final product refers to the product supplied to the customer.

Additionally, definitions for “tri-stimulus values” and “trim and cladding” were introduced based on stakeholder requests. The definition for “trim and cladding” provides clarity and consistency in the terminology

related to building construction and materials, whereas the definition of "tri-stimulus values" follows ISO 11664-1:2019.

The newly added definition for "substance" is based on Regulation (EC) No 1907/2006. The definitions for "organotin compounds" and "phthalates" now precisely state the specific compounds when referring to each term. The definition of "alkylphenols and alkylphenol ethoxylates" was introduced to provide greater legal certainty to the hazardous substance exclusions in criterion 4.3 and refer to REACH where practical.

Several other definitions were refined to better reflect stakeholder feedback. For instance, the definition of "plaster" was updated to include coating thickness and minimum coverage, helping to distinguish between paint and plaster. The definition of "ingoing substances" was also refined to highlight the intentional inclusion of substances. Furthermore, the definition of "mixture" now aligns with the REACH Regulation.

The definitions of "SVOC" and "VOC" were nuanced to clarify that they apply specifically to the calculation of SVOC/VOC content in the product categories in scope. This was considered necessary because now there is a requirement on VOC and SVOC emission testing and a different definition is used for the purposes of calculating results from gas chromatography analysis. On the other hand, the term "anti-rust" was updated to "anti-corrosion" because it is a more appropriate term (in English) from a technical perspective.

The definition of "waterproofing products" was revised to "waterproofing coatings" to emphasise the focus on coatings, clarifying that these are liquid-applied products. The updated definition also specifies the surfaces these coatings are intended for, reducing ambiguity.

The definition of "impurities" was changed to distinguish more clearly between impurities in the final EU ecolabelled product and those in ingredients or raw materials. Additionally, the definition clearly states that any unintended constituents exceeding the specified limits are now classified as "ingoing substances"

In addition, as mentioned, all definitions that were previously in the annexes are now included in the Act under Article 4.

As outlined in TR2, the definitions selected for inclusion in the User Manual pertain to both ingredient types and technical properties. Meanwhile, technical property definitions were based on ISO 4618:2024 and include terms such as "abrasion," "adhesion," "gloss," "hiding power," and "sheen."

Definitions for the UM are as follows. Any text in blue or strikethrough indicates changes in the description or an altogether new definition since the drafting of Technical Report 2.

Ingredient type definitions flagged for the User Manual:

- (1) 'Anti-corrosion pigment' means, adapted from ISO 4618:2014, a type of functional pigment which, based on its chemical or physical properties, fulfils the additional function of corrosion protection in addition to its colour;
- (2) 'Anti-foaming agents' (also known as defoaming agents) mean, according to ISO 4618:2014, additives that prevent foaming or reduce the foaming tendency of a coating material;
- (3) 'Anti-skinning substances' mean additives that are added to the coating materials to prevent skinning during production or storage of the coating material;
- (4) 'Binder' means a synthetically produced polymer that is used as the main non-volatile component of the coating, is responsible for the formation of the film and determines its weather, chemical and mechanical resistance;
- (5) 'Driers', also referred to as 'siccatives', means additives that accelerate the oxidative cross-linking of drying oils and alkyd resins [can go in UM instead because it is just an ingredient];
- (6) 'Mineral raw material' means naturally occurring inorganic substances that are mined and processed for use in the production of paints and coatings, including pigments, fillers, and extenders;
- (7) 'Optical brightener' means a fluorescent chemical compound used to enhance the appearance of whiteness and brightness by absorbing ultraviolet light and re-emitting it as visible blue light;

- (8) 'Rheological modifier' means, according to ISO 4618:2014, additives used to adjust the flow properties of a coating material. Examples of rheological modifiers are flow agents, thickening agents and thixotropic agents;
- (9) 'Surfactants' means additives that influence the surface tension of phases, which have an interface in common. They are employed as wetting agents, emulsifiers, levelling agents, defoamers, anti-floating agents, etc.;
- (10) 'UV stabiliser' means an additive that protects the coating film and/or the substrate against the negative effects of UV-beams contained in sunlight;
- (11) 'Water repellent agents' also referred to as 'hydrophobic agents' mean, according to ISO 4618:2014, additives that confers water-repellent properties on a dry-film by increasing the interfacial tension between the dry-film and the incident moisture.

Technical properties flagged for definition in the User Manual:

- (1) 'Abrasion' means, according to ISO 4618:2014, the process of wearing away or deformation of a surface by friction as a result of rubbing;
- (2) 'Adhesion' means, according to ISO 4618:2014, the phenomenon of attachment at the interface between a solid surface and another material caused by molecular forces;
- (3) 'Gloss' means, according to ISO 4618:2014, an optical property of a surface, characterized by its ability to reflect light specularly;
- (4) 'Hiding power' means, according to ISO 4618:2014, the ability of a coating to obliterate the colour or colour differences of the substrate;
- (5) 'Sheen' means, according to ISO 4618:2014, gloss observed on an apparently matt surface at glancing angles of incidence;
- (6) 'Spreading rate' means, according to ISO 4618:2014, surface area that can be covered by a given quantity of coating material to give a dried film of requisite thickness, expressed in m2/L or m2/kg;

3.3 Restructuring of criteria

A reorganization of the criteria was proposed in draft TR2 following indications received during and after 1st AHWG meeting and the later Working Sub-Group 3. In draft TR1, few structural changes were proposed. However, the second proposal in draft TR2 included a complete reorganization of the criteria to align with the new three-annex structure, where the existing criterion 1 on White Pigment Content, was merged with criterion 3 on Efficiency in Use. In addition, one criterion on VOC emissions was added to the proposed criteria.

In this draft TR3, structural changes have been proposed in line with the deletion of criterion 1 on titanium dioxide production. Nevertheless, the three-annex structure remains unchanged. The three annexes are structured as it follows:

- Annex I: Decorative paints, varnishes and related products;
- Annex II: Performance coatings and related products;
- Annex III: Water-based aerosol spray paints.

Rationale for restructuring the criteria

The main arguments for the restructuring into more annexes relate to making the criteria more readable for someone who is only interested in one type of products at a given time (i.e. applicants and Competent Bodies). The restructuring of the criteria follows the new division of the scope in the three Annexes. While the criteria will in some cases be similar, there are many parts within these criteria that will be nuanced for the particular products included in the scope of each annex. The inclusion of the old criterion 1 (on upper limits for high refractive index white pigments) into the old criterion 3 (on efficiency in use) was proposed by a member of the Working Sub-Group 3. The proposal seemed reasonable because the old criterion 1 was putting a limit on the use of high performance (and high environmental impact) pigments depending on one aspect of their technical performance (i.e. wet scrub resistance, WSR).

Outcomes from and after 2nd AHWG meeting (November 2024)

After the 2nd AHWG meeting, 3 comments were submitted by stakeholders concerning the restructuring of the criteria. Concerns were raised about the complexity of managing three annexes, particularly since the differences in some criteria are minimal. They highlighted administrative challenges, such as the need for separate license numbers and fees for similar products, which could increase costs and packaging disruptions for manufacturers.

Overall, stakeholders were not against the restructuring of the criteria in 3 annexes: decorative paints and varnishes, performance coatings and water-based aerosol spray paints.

Table 5. Restructuration of the EU Ecolabel criteria for indoor and outdoor paints and varnishes in TR3

Subject/criteria content	Previous criteria from 2014	Proposed criteria structure		
		Annex I	Annex II	Annex III
Titanium dioxide	Previous criterion 2. Titanium dioxide production	Note that in this proposal this criterion is deleted		
Efficiency in use (including WPC and WSR)	Previous criterion 3. Efficiency in use	Now becomes criterion 1. Efficiency in Use (plus WPC and WSR for categories a) and b), only WPC for categories c) and d))	No WSR and only WPC for opaque coatings (not primers)	Criterion 1. Efficiency in use without WPC defined
VOC and SVOC content	Previous criterion 4. Content of Volatile and Semi-volatile Organic Compounds (VOCs, SVOCs)	Now becomes criterion 2. Content of Volatile and Semi-volatile Organic Compounds (VOCs, SVOCs)		Criterion 2. Content of Volatile Organic Compounds (VOCs)
Restriction of hazardous substances and mixtures	Previous criterion 5. Restriction of hazardous substances and mixtures	Now becomes criterion 3. Restriction of hazardous substances and mixtures (parts 3.1, 3.2 and 3.3)		
VOC emissions	n/a	Now becomes criterion 4. VOC emissions (only for indoor products)		
Consumer information	Previous criterion 6. Consumer information	Criterion 5. Consumer information		Criterion 4. Consumer information
EU Ecolabel information	Previous criterion 7. Information appearing on the EU Ecolabel	Criterion 6. Information appearing on the EU Ecolabel		Criterion 5. Information appearing on the EU Ecolabel

Source: Own elaboration.

Outcomes from and after EUEB meeting (November 2024)

During the EUEB meeting, stakeholders seemed to be in favour of reorganizing the criteria into three annexes but only one comment confirmed it. Following the EUEB meeting, two more comments were received showing support for the restructuring of the criteria as proposed in TR2.

4 Annex preamble

The general text that appears before any EU Ecolabel criteria is a relatively standard text common to all EU Ecolabel product groups. The text has gradually evolved over the years, and it includes the assessment and verification requirements and further definitions of application to the criteria contained within the annex.

TR2: Second Proposed Annex preamble for the revised EU Ecolabel paints and varnishes

The EU Ecolabel criteria target the best paint and varnish 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.

Assessment and verification 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 and/or their supplier(s) as appropriate.

Competent bodies shall preferentially recognise attestations that 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 awarded shall be notified to competent bodies, together with supporting information to enable verification of continued compliance with the criteria.

As pre-requisite, the product shall meet all respective 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 following information shall be provided together with the application for the EU Ecolabel:

(a) A description of the product formulation(s), with a % composition of the ingredients used (this shall be subject to a non-disclosure agreement between the applicant and the Competent Body).

(b) Safety data sheets for the ingredients used in the paint and varnish formulations.

(c) If deemed necessary, details of the ingredient composition of supplied ingredients and materials, or any other information associated with the production of supplied ingredients and materials that is necessary for demonstrating compliance with the EU Ecolabel criteria, shall be provided by the suppliers or producers of those ingredients and materials.

(d) A description of the packaging format(s) used, the volume(s) of product held~~,~~ and the packaging material(s) used

(e) The number of individual products associated with the same base formulation covered by the same EU Ecolabel license shall be clearly stated, for example, each different packaging size shall be counted as an individual product, as shall each individual colour that is based on the same base paint formulation.

For the purpose of this Annex, the following definitions shall apply:

(_) 'Binding primers', according to Directive 2004/42/CE, means coatings designed to stabilize loose substrate particles or impart hydrophobic properties and/or to protect wood against blue stain.
(_) 'Coatings for exterior walls of mineral substrate' means, according to Directive 2004/42/CE, coatings designed for application to outdoor walls of masonry, brick, or stucco;
(_) 'Dead matt paints' are those which at an angle of incidence of 85° show a reflectance of < 5;
(_) 'Dry-film preservatives' are active substances within the meaning of Article 3(1)(c) of Regulation (EU) No 528/2012 that are for use in product-type 7 as described in Annex V to that Regulation, in particular for the preservation of films or coatings by the control of microbial deterioration or algal growth in order to protect the initial properties of the surface of materials or objects;
(_) 'Gloss paints' are those which at an angle of incidence of 60° show a reflectance of ≥ 60;

(_) 'Impurities' means unintended constituents (residuals, pollutants, contaminants, by-products etc.) that remain in the EU Ecolabelled product in concentrations less than 100 ppm (0,0100 % w/w, 100 mg/kg). Impurities in ingredients means unintended constituents (residuals, pollutants, contaminants, by-products etc.) that remain in the supplied ingredient in concentrations less than 1000 ppm (0,100 % w/w, 1000 mg/kg).
(_) 'In-can preservatives' are active substances within the meaning of Article 3(1)(c) of Regulation (EU) No 528/2012 of the European Parliament and of the Council that are for use in product-type 6 as described in Annex V to that Regulation. They are in particular used for the preservation of manufactured products during storage by the control of microbial deterioration to ensure their shelf life and used for the preservation of tints that will be dispensed from machines;
(_) 'Ingoing substances' means constituents (as pure substances or as part of a mixture, 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 after addition (e.g. formaldehyde from preservatives and arylamine from azodyes and azopigments) shall also be regarded as ingoing substances. Impurities present in the final product or in supplied ingredients in concentrations above the limits permitted for being considered as impurities, shall instead be considered as ingoing substances."
(_) 'Interior/exterior trim and cladding paints for wood, metal or plastic', according to Directive 2004/42/CE, means coatings designed for application to trim and cladding which produce an opaque film. These coatings are designed for either a wood, metal, or plastic substrate;
(_) 'Interior/exterior trim varnishes and wood stains', according to Directive 2004/42/CE, means coatings designed for application to trim which produce a transparent or semi-transparent film for decoration and protection of wood, metal, and plastics.;
(_) 'Lasure', according to ISO 4618:2014, means a coating material containing small amounts of a suitable pigment and/or extender and used to form a transparent or semi-transparent film for decoration and/or protection of the substrate;
(_) 'Light-coloured paint', according to ISO 6504-1:2019, means a coating with tristimulus values Y and Y_{10} greater than 25, measured with a spectrophotometer on a black and white substrate, where tristimulus values are meant, as defined in ISO 11664-2.2007, as amounts of the three reference stimuli, in a given trichromatic system, required to match the colour of the stimulus considered (in CIE standard colorimetric systems, the tristimulus values are represented by the symbols, X, Y, Z, X_{10}, Y_{10} and Z_{10}.
(_) 'Masonry coating' means a coating that produce a decorative and protective film for use on concrete, paintable brickwork, blockwork, rendering, calcium silicate board or fibre-reinforced cement;
(_) 'Matt or glossy coatings for interior walls and ceilings' means coatings designed for application to indoor walls and ceilings, which deliver a dead matt, matt, semi-matt, satin, semi-gloss, or gloss finish;
(_) 'Matt paints' are those which at an angle of incidence of 85° show a reflectance of < 10 and ≥ 5;
(_) 'Microplastics' means small pieces of plastic, usually smaller than 5mm.
(_) 'Mid sheen paints' (also referred to as semi-gloss, satin, semi matt) are those which at an angle of incidence of 60° or at 85° show a reflectance of < 60 and ≥ 10;
(_) 'Minimal build wood stains', according to Directive 2004/42/CE, means wood stains which, in accordance with EN 927-1:1996, have a mean thickness of less than 5 µm when tested according to ISO 2808:1997, method 5A;
(_) 'Opaque' means a film with a contrast ratio of ≥ 98 % at 120µ wet film thickness.
(_) 'PFAS' means per- and polyfluoroalkyl substances (PFASs) defined as: Any substance that contains at least one fully fluorinated methyl (CF3-) or methylene (-CF2-) carbon atom (without any H/Cl/Br/I attached to it)
(_) 'Semi volatile organic compounds' (SVOCs) means any organic compound having a boiling point greater than 250 °C and less than 370 °C measured at a standard pressure of 101,3 kPa and which, in a capillary column are eluting with a retention range after n- Tetradecane (C14H30) and up to and including n-Docosane (C22H46);
(_) 'Transparent' and 'semi-transparent' means a film with a contrast ratio of < 98 % at 120µ wet film thickness;
(_) 'Volatile organic compounds' (VOC) means any organic compounds having an initial boiling point less than or equal to 250 °C measured at a standard pressure of 101,3 kPa as defined in Directive 2004/42/EC and which, in a capillary column, are eluting up to and including n-Tetradecane (C14H30);
(_) 'White and light coloured' paints are those with a tri-stimulus (Y- value) > 70 %;

TR3: Third Proposed Annex preamble for the revised EU Ecolabel paints and varnishes

The EU Ecolabel criteria target the best *paint, varnish and related products* [*or performance coatings and related products or water-based spray paints*] 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.

Assessment and verification 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 and/or their supplier(s) as appropriate.

Competent bodies shall preferentially recognise attestations that 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 awarded shall be notified to competent bodies, together with supporting information to enable verification of continued compliance with the criteria.

As pre-requisite, the product shall meet all respective 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 following information shall be provided together with the application for the EU Ecolabel:

(a) A list of all individual paint and varnish products covered by the EU Ecolabel application, grouped into product families and indicating any relevant product characteristics that affect which specific requirements from the EU Ecolabel criteria would apply. A family of products will all have the same base formulation and product category, but may differ in terms of shade and/or packaging format.

(b) A description of the product formulation(s), with a % composition of the ingredients used and the specific function of each ingredient (the composition information ~~this~~ may~~shall~~ be subject to a non-disclosure agreement between the applicant and the competent body or, in some cases, directly between the supplier and the competent body).

(c) Safety data sheets for the ingredients used in the paint and varnish formulations.

(d) ~~If deemed necessary, details of the ingredient composition of supplied ingredients and materials, or a~~Any other information associated with the production of ~~supplied~~ ingredients and materials that is necessary for demonstrating compliance with the EU Ecolabel criteria~~,~~ shall be provided by the suppliers or producers of those ingredients and materials.

(e) A description of the packaging format(s) used, the volume(s) of product held~~,~~ and the packaging material(s) used for each of the paint and varnish products covered by the EU Ecolabel application.

~~(f) The number of individual products associated with the same base formulation covered by the same EU Ecolabel license shall be clearly stated, for example, each different packaging size shall be counted as an individual product, as shall each individual colour that is based on the same base paint formulation.~~

~~For the purpose of this Annex, the following definitions shall apply:~~

~~(_) 'Binding primers', according to Directive 2004/42/CE, means coatings designed to stabilize loose substrate particles or impart hydrophobic properties and/or to protect wood against blue stain.~~
~~(_) 'Coatings for exterior walls of mineral substrate' means, according to Directive 2004/42/CE, coatings designed for application to outdoor walls of masonry, brick, or stucco;~~
~~(_) 'Dead matt paints' are those which at an angle of incidence of 85° show a reflectance of < 5;~~
~~(_) 'Dry film preservatives' are active substances within the meaning of Article 3(1)(c) of Regulation (EU) No 528/2012 that are for use in product-type 7 as described in Annex V to that Regulation, in particular for the preservation of films or coatings by the control of microbial deterioration or algal growth in order to protect the initial properties of the surface of materials or objects;~~
~~(_) 'Gloss paints' are those which at an angle of incidence of 60° show a reflectance of ≥ 60;~~
~~(_) 'Impurities' means unintended constituents (residuals, pollutants, contaminants, by-products etc.) that remain in the EU Ecolabelled product in concentrations less than 100 ppm (0,0100 % w/w, 100 mg/kg). Impurities in ingredients means unintended constituents (residuals, pollutants, contaminants, by-products etc.) that remain in the supplied ingredient in concentrations less than 1000 ppm (0,100 % w/w, 1000 mg/kg).~~
~~(_) 'In-can preservatives' are active substances within the meaning of Article 3(1)(c) of Regulation (EU) No 528/2012 of the European Parliament and of the Council that are for use in product-type 6 as described in Annex V to that Regulation. They are in particular used for the preservation of manufactured products during storage by the control of microbial deterioration to ensure their shelf life and used for the preservation of tints that will be dispensed from machines;~~
~~(_) 'Ingoing substances' means constituents (as pure substances or as part of a mixture, 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 after addition (e.g. formaldehyde from preservatives and arylamine from azodyes and azopigments) shall also be regarded as ingoing substances. Impurities present in the final product or in supplied ingredients in concentrations above the limits permitted for being considered as impurities, shall instead be considered as ingoing substances."~~

~~(_) 'Interior/exterior trim and cladding paints for wood, metal or plastic', according to Directive 2004/42/CE, means coatings designed for application to trim and cladding which produce an opaque film. These coatings are designed for either a wood, metal, or plastic substrate;~~

~~(_) 'Interior/exterior trim varnishes and wood stains', according to Directive 2004/42/CE, means coatings designed for application to trim which produce a transparent or semi-transparent film for decoration and protection of wood, metal, and plastics.;~~

~~(_) 'Lasure', according to ISO 4618:2014, means a coating material containing small amounts of a suitable pigment and/or extender and used to form a transparent or semi-transparent film for decoration and/or protection of the substrate;~~

~~(_) 'Light-coloured paint', according to ISO 6504-1:2019, means a coating with tristimulus values Y and Y10 greater than 25, measured with a spectrophotometer on a black and white substrate, where tristimulus values are meant, as defined in ISO 11664-2:2007, as amounts of the three reference stimuli, in a given trichromatic system, required to match the colour of the stimulus considered (in CIE standard colorimetric systems, the tristimulus values are represented by the symbols X, Y, Z, X10, Y10 and Z10.~~

~~(_) 'Masonry coating' means a coating that produce a decorative and protective film for use on concrete, paintable brickwork, blockwork, rendering, calcium silicate board or fibre-reinforced cement;~~

~~(_) 'Matt or glossy coatings for interior walls and ceilings' means coatings designed for application to indoor walls and ceilings, which deliver a dead matt, matt, semi-matt, satin, semi-gloss, or gloss finish;~~

~~(_) 'Matt paints' are those which at an angle of incidence of 85° show a reflectance of < 10 and ≥ 5;~~

~~(_) 'Microplastics' means small pieces of plastic, usually smaller than 5mm.~~

~~(_) 'Mid sheen paints' (also referred to as semi-gloss, satin, semi matt) are those which at an angle of incidence of 60° or at 85° show a reflectance of < 60 and ≥ 10;~~

~~(_) 'Minimal build wood stains', according to Directive 2004/42/CE, means wood stains which, in accordance with EN 927-1:1996, have a mean thickness of less than 5 µm when tested according to ISO 2808:1997, method 5A;~~

~~(_) 'Opaque' means a film with a contrast ratio of ≥ 98 % at 120µ wet film thickness.~~

~~(_) 'PFAS' means per- and polyfluoroalkyl substances (PFASs) defined as: Any substance that contains at least one fully fluorinated methyl (CF3-) or methylene (-CF2-) carbon atom (without any H/Cl/Br/I attached to it)~~

~~(_) 'Semi-volatile organic compounds' (SVOCs) means any organic compound having a boiling point greater than 250 °C and less than 370 °C measured at a standard pressure of 101,3 kPa and which, in a capillary column are eluting with a retention range after n-Tetradecane (C14H30) and up to and including n-Docosane (C22H46);~~

~~(_) 'Transparent' and 'semi-transparent' means a film with a contrast ratio of < 98 % at 120µ wet film thickness;~~

~~(_) 'Volatile organic compounds' (VOC) means any organic compounds having an initial boiling point less than or equal to 250 °C measured at a standard pressure of 101,3 kPa as defined in Directive 2004/42/EC and which, in a capillary column, are eluting up to and including n-Tetradecane (C14H30);~~

~~(_) 'White and light coloured' paints are those with a tri-stimulus (Y- value) > 70 %;~~

Rationale for proposed annex preamble:

This general preamble text explains some basic horizontal principles that can apply to the assessment and verification of compliance with any particular set of EU Ecolabel criteria for a given product group. It is more efficient to state this one time at the beginning than to repeat it for each criterion. Furthermore, a single common preamble text is considered as suitable for the three different Annexes that have been set out for the different categories of paint and varnish products (i.e. Annex I for decorative paints, varnishes and related products; Annex II for performance coatings and related products, and Annex III for water-based aerosol spray paints).

The first paragraph prior to the assessment and verification section has been greatly reduced compared to the draft presented in TR1 and has been matched with the general text used for the recently adopted EU Ecolabel criteria for absorbent hygiene products set out in Commission Decision (EU) 2023/1809[23]. The next paragraphs are also general conditions that should apply equally for all EU Ecolabel products. Therefore, that text has also been aligned to match the equivalent part of the text for absorbent hygiene products.

The final text with the bullet points (a) to (e) has been tailored according to the nature of paint and varnish products and the specific EU Ecolabel criteria for these products.

Main changes in the Annex preamble

For the first proposal included in TR1, the general text was shortened and aligned with EU Ecolabel criteria for the most recently voted products, such as absorbent hygiene products and reusable menstrual cups. Assessment

[23] See: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32023D1809

and verification text was also standardized accordingly, while a tentative proposal for bullet points (a) to (e) outlined compliance requirements.

In TR2, the text before the assessment and verification section was reduced and aligned with the EU Ecolabel criteria for absorbent hygiene products. Bullet points (a) to (e) were tailored to paint and varnish products, with specific definitions updated or added, such as for "lasure" and various paint categories. In addition, definitions for hazardous substance groups were expanded but proposed for inclusion in the User Manual rather than the main text. This is now explained further in the section about definitions included in Article 4.

In some recent EU Ecolabel decisions, only the definitions of terms appearing in the Act are defined in the Act itself and any other definitions for terms that only appear in the Annex are listed in the Annex preamble. However, after internal consultation, it was confirmed that all the definitions could be placed together in the Act. This adaptation was made in the TR3 draft by moving all of the definitions that were previously included in the Annex preamble to Article 4 of the Act. This change offers better clarity for readers by placing all definitions in one place and in alphabetical order.

Also in TR3, an additional specific point for paints and varnishes (point (a)) has been inserted in order to set the basis for the initial information needed to structure the application file. This should be expanded upon in the User Manual and to best way to compile such information in a manageable and intuitive manner would be to use an excel file with conditional drop-down menus and applicable criteria cells which are dependent on basic inputs regarding the products. This new point (a) effectively replaces the old point (e) in the TR3 draft.

Outcomes from and after 1st AHWG meeting (May 2024)

After the 1st AHWG meeting, four comments were received in relation to the assessment and verification text. Three of them asked for the exclusion of information (e) about packaging, two comments mentioned the exclusion of (d) also about packaging and one comment was about (a) where the definition of how to give the formulation was not clear.

The requirement on packaging is maintained, but with less onerous requirements than the previous proposal. In the new proposal, it is not necessary to mention the precise material composition of the packaging (e.g. just the general material like plastic, not the exact polymer(s) used or plastic formulation). The weight of the packaging does not need to be provided either since this is not required for any of the EU Ecolabel criteria.

However, the general information requirement on packaging is maintained because this will help keep track of the number of products covered by the EU Ecolabel license. These numbers have to be reported twice per year by Competent Bodies to the Commission and the same formulation sold in two different packaging sizes is considered as two products.

For ease of tracking with numbers, it is suggested that information is provided to the Competent Body as follows:

Table 6. Information on products covered within an EU Ecolabel license to be provided to the Competent Body

Formulation	Packaging options	Shade options
X	3 (description of the 3)	e.g. 12 (naming of the 12 shades)
Y	10 (description of the 10)	e.g. 256 (naming of the 256 shades or just a statement that these are customisable combinations from a tinting machine)
Z	5 (description of the 5)	e.g. 1 (white paint)

Source: Own elaboration.

Counting of product numbers within a license should count each formulation and packaging combination, but it is yet to be decided later how exactly numbers of products could be counted in terms of shade variations. Information provided by stakeholders on VOC limits showed that up to 30 000 different product variations could be associated with the same formulation. Clearly, this type of counting is undesirable since it is not a real representation of the number of individual products available to consumers on the shelf.

A definition for 'microplastics' was included according to the Commission Staff Working Document Impact Assessment on 'Combatting microplastic pollution in the European Union' which accompanies the proposal for a regulation on preventing plastic pellet losses to reduce microplastic pollution[24].

[24] See: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52023SC0332&qid=1728631429537

Outcomes from and after 2nd AHWG meeting (November 2024)

A total of 8 comments were received in relation to the Annex Preamble.

Stakeholders expressed concerns and recommendations regarding confidentiality and definition on the annex preamble. Regarding confidentiality, it was emphasized that a non-disclosure agreement (NDA) should not be mandatory since all materials submitted to Competent Bodies (CBs) are already confidential, though an NDA may be used if specifically requested by suppliers or applicants. Stakeholders requested clarity on the information to be provided to CBs, particularly in cases of changes to suppliers, raw materials, or packaging, and suggested including a standardized NDA in the user manual for consistency.

Proposed insights for the User Manual

There are many different requirements for EU Ecolabel paints and varnishes that vary depending on the nature of the product. In this section, some ideas about what type of initial information should be provided by applicants to the EU Ecolabel is presented, together with the logic for what type of requirements and limits would subsequently apply. This is a limited example that should be fully developed in the User Manual and ideally in the format of an excel file.

Table 7. Suggested initial questions to define products covered by the application and corresponding to point a) in the Annex preamble

Family ID*	Individual ID*	Packaging*	Shade*	Product category*	Use environment	>3% TiO2?	Claims?	Etc.
A	A1	[define packaging volume and packaging material for each row, even if the same is entered in multiple rows].	[define shade for each row. In cases of very high numbers of hypothetical shades from tinting machines, a more pragmatic approach could be considered that would limit the number of rows to be filled].	Choose from (*In some limited cases, more than one category may be chosen for a particular product, and in those cases, all relevant requirements must be met*): a) matt coatings for interior walls and ceilings b) glossy coatings for interior walls and ceilings c) coatings for exterior walls of mineral substrate d) interior/exterior trim and cladding paints for wood, metal or plastic e) interior/exterior trim varnishes and wood stains f) minimal build wood stains g) primers (with further request to specify if opaque and if used for masonry) h) binding primers (with further request to specify if opaque and if used for masonry) i) one-pack performance coatings – floor coatings i) one-pack performance coatings – anti-corrosion coatings i) one-pack performance coatings – waterproofing coatings i) one-pack performance coatings – anti-graffiti coatings i) one-pack performance coatings – radiator paints coatings j) multi-pack performance coatings – floor coatings j) multi-pack performance coatings – anti-corrosion coatings j) multi-pack performance coatings – waterproofing coatings j) multi-pack performance coatings – anti-graffiti coatings j) multi-pack performance coatings – radiator paints coatings x) Aerosol spray paints y) Just add water paints (with further request to specify which category it matches from above. E.g. a), b), c) etc.).	For each row, choose from: - Indoors - Outdoors - Both	For each row, choose from: - Yes - No	Options available will vary depending on the product category chosen, but the full list would be: - water vapour permeability - fungal resistance - algal resistance - crack bridging	
A	A2							
A	A3							
B	B1							
B	B2							
B	B3							
B	B4							
…	…							

*A family of products will have the same product category but individual products within a given family will be distinguished by packaging size and/or shade.

Source: Own elaboration

A proposed idea would be that these inputs would be entered into the "inputs" worksheet of a dedicated excel file associated with the User Manual. Depending on the input options chosen for each individual product, the criteria requirements that apply for each individual product or family of products would be automatically generated, together with any associated quantitative limits to meet and declarations or test reports needed. This approach would work for the criteria on TiO2 production, on efficiency in use, on VOC/SVOC content and on VOC emissions.

Another excel worksheet linked to the user manual would also be recommended that deals with restricted hazardous substances that may be present as ingoing substances or impurities in the final product. That worksheet should allow information from suppliers to be built up into information at the level of the final EU ecolabelled paint or varnish product.

5 Criteria proposal for Annex I: Decorative paints, varnishes and related products

In this section, each of the existing criteria are presented together with any proposed changes to the criteria text. Proposals will normally be shown in a track changes style (in blue) so that it will be easy to spot the changes. However, in cases of a complete overhaul of the criteria, the track changes style will not be used since it would be probably more difficult to understand and unnecessarily take up more space in the report. Rationale for proposed changes is provided immediately after each proposal and, in some cases, completely new criteria are proposed.

5.1 Criterion 1. Titanium dioxide production [not proposed anymore]

Annex I: Second Proposal for Criterion 1: Titanium dioxide production

If the product contains more than 3,0 % w/w of titanium dioxide (TiO_2), the emissions to air and water from the production of any titanium dioxide pigment used shall meet the relevant requirements listed below for the respective production processes:

Table 1: Requirements for Titanium Dioxide production

Parameter and analytical method	Sulphate process	Chloride process
Emissions of dust to air (EN 13284)	0,40 kg/t TiO2 pigment	0,66 kg/t TiO2 pigment
Emissions of SO_2 to air (EN 14791)	4,5 kg/t TiO_2 pigment	n/a
Emissions of HCl to air (ISO 15713)	n/a	0,70 kg/t TiO2 pigment
Emissions of SO_4 to water (ISO 22743)	300 kg SO_4^{2-}/t TiO_2 pigment	n/a
Emissions of Cl to water (ISO 9279)	n/a	103 kg Cl^-/t TiO_2 pigment(1) 179 kg Cl^-/t TiO_2 pigment(2) 329 kg Cl^-/t TiO_2 pigment(3)
Low dust working environment	To be demonstrated	To be demonstrated

(1) When ore used is >95% TiO2 content

(2) When ore used is 90-95% TiO2 content

(3) When ore used is <90% TiO2 content

In cases where limits are different depending on the purity of the ore used, and when the ore(s) used vary in percentages during the period that data was reported for, the limit values will apply in proportion to the weighted average % TiO_2 content of the different ores used.

Emissions to air shall be counted from point source(s)[25] where emissions can be continuously or periodically monitored from a fixed sampling point after any exhaust gas abatement system(s). Emissions to water shall be monitored by sampling of the effluent prior to its entry into any natural watercourse or settling lagoon.

A low dust working environment shall, as a minimum, include the follows aspects:

- A risk assessment for the workplace that identifies all the main areas of potential dust emission and worker exposure to dust.
- Storage and handling of dry and powdered raw materials in enclosed areas and/or in closed spaces maintained under a negative air pressure differential and with any suspended dust being collected in cyclones, bag filters or similar dust separation systems.

[25] Point sources for the chloride process are considered as milling, chlorination, oxidation and micronisation stages. Point sources for the sulphate process are considered as the milling, digestion, calcination and micronisation stages.

- Cleaning protocols for regular cleaning of dust from indoor surfaces using either water sprays or vacuum devices for dust removal (sweeping of dry dust should not be carried out). Any vacuum devices should be fitted with HEPA filters[26], not standard filters.
- Provision of an enclosed storage area for all dewatered sludge or filter cake prior to recovery operations, prior to sale, prior to shipment for reuse, prior to reuse onsite or prior to shipment and disposal to landfill.
- Provision of appropriate training to employees about good practice for dust control.
- Provision of adequate personal protective equipment to employees and visitors.

Assessment and verification

The applicant shall declare the content of TiO_2 used in each of the product formulations subject to the EU Ecolabel license application. For any products with more than 3,0 % w/w TiO_2 pigment content, the applicant shall also declare the supplier or suppliers of the TiO_2 used in those products.

The applicant declaration shall be supported by declarations from their TiO_2 supplier(s) (and the original TiO_2 producer(s), if different) stating the measures in place to ensure a low dust working environment, the type of TiO_2 production process used, the applicable TiO_2 content range of ore, if necessary, used and a statement of annual average emissions to air and water for the relevant parameters listed in the table above. If test data for emissions has not been collected using the EN or ISO standards defined in the table above, a statement from the testing laboratory must be provided saying which standard method was used instead and why that method can be considered as equivalent or more comprehensive than the methods listed above.

The declaration from the TiO2 producer shall include a basic calculation about how the annual average emissions for the last complete calendar year or rolling 12-month period were obtained. In cases of continuous monitoring, the annual average emission concentrations shall be derived from daily average concentrations. For periodically monitored emissions, at least 3 samples must be taken in each 12-month period and the average results shall be considered as representative of the production process. Any periodic sampling must be taken during periods of stable operation that are representative of normal performance for the production of the TiO_2 pigments used in the EU Ecolabel paint products.

For emissions to air, concentrations shall be expressed in units of mg/Nm_3 at XX% O_2 content and multiplied by a specific emission air flow rate in units of Nm_3/tonne TiO_2 pigment production for the same time period that the data was collected. If there is more than one exhaust gas abatement system for major point sources of emissions to air, emissions from the clean air from each abatement system shall be counted and added.

For emissions to water, measured concentrations in units of g/m_3 shall be multiplied by a specific wastewater flow rate in units of m_3/tonne TiO_2 pigment production for the same time period that the data was collected.

Rationale for the proposed criterion text on TiO_2 production

The use of TiO_2 is a source of environmental impacts in paint products as suggested by the LCA (more details in sections 4.1.2 and 4.3 of the draft Preliminary Report). It is the white pigment *par excellence* thanks to its very high refractive index. This criterion aimed to address some of the main emissions associated with TiO_2 production.

A preliminary questionnaire was conducted with stakeholders on this criterion and the majority of respondents considered the criterion to be relevant for the EU Ecolabel's overall goal. Most also found the current formulation of the criterion to be precise enough, though a few suggested minor or significant changes. When asked about lowering the limits in the criterion, nearly all respondents opposed to the idea, with some paint manufacturers expressing that the burden of demonstrating compliance should be shifted to TiO_2 manufacturers.

For the second proposal included in the draft TR2, a comparison of the criteria was conducted between other ecolabels, including Blue Angel, the Austrian Ecolabel and Nordic Swan.

The changes to the criterion in TR2 were driven by industry feedback and the need for greater flexibility in the types of ore used in the chloride process.

New requirements for TiO_2 production were added to the TR2 proposal and the reasons why were explained in more detail in the rationale section.

However, the limitations encountered in the shaping of these criterion requirements have led to the removal of this criterion in this draft TR3. Justification reasons are provided in the sections below.

[26] HEPA filter standards for "High Efficiency Particulate Air" filter.

Main changes in the criterion in previous reports

For the first proposal included in TR1, waste limits were shifted to be based on TiO_2 content rather than ore type, reflecting declining ore purity and accommodating various ores like ilmenite and leucoxene. Although industry stakeholders proposed a higher waste limit for chloride processes discharging into saltwater, this limit was not included in the draft criterion, as further discussion was needed.

For the second proposal in the TR2, emission parameters that were missing were added, notably dust emissions to air for both sulphate and chloride processes, and HCl emissions to air for the chloride process. Provisional limits for these emissions were derived from average values in the 2007 BREF report. In addition, the SO_2 limit for the sulphate process was lowered to 4.5 kg/t TiO_2, reflecting stricter EU production limits. For water emissions, the SO_4 limit was set at 300 kg/t TiO_2. These reductions aligned with circular economy principles, encouraging recovery of saleable by-products.

Outcomes from and after the 1st AHWG meeting (May 2024)

After the 1st AHWG meeting, 11 written comments were received regarding the criterion proposal on TiO_2 production. The previous criteria linked emissions to water from the chloride process to the type of ore used (i.e. natural rutile, synthetic rutile or slag). According to industry experts, this distinction is no longer so clear-cut, and it was considered better to distinguish based on % TiO_2 content (split as >95%, 90-95% and <90%). Although this proposal was incorporated into TR1 and was widely accepted, some doubts were expressed about how to verify TiO_2 producer claims about the TiO_2 content of the ore they use. Verification should not be so complicated because TiO_2 producers need to accurately know the TiO_2 content of the ores they use in order to optimise their process parameters. However, in cases where different ores with different % TiO_2 contents are used by the same TiO_2 producer in the same year, a weighted average % TiO_2 content should be calculated. The TR1 proposal already took this situation into account when the limit values should be applied "*in proportion*" to the different types of ore used, but now it has been reworded slightly so that it is instead the weighted average % TiO_2 content that is used.

There was general support for the introduction of requirements for a low dust working environment at the TiO_2 production facilities. However, it was also considered necessary to link this to much more specific measures that could be objectively demonstrated and verified.

The TR1 proposal used misleading wording when it referred to limits in terms of "X kg chloride waste/tonne TiO_2 pigment" and "X kg sulphate waste/tonne TiO_2 pigment". This terminology implies that the limits refer to specific solid waste generation rates. The same terminology was also used in the 2014 criteria. Discussion with industry stakeholders clarified that these limits actually refer to chloride and sulphate emitted to natural watercourses via wastewater effluent. Consequently, the limits have been presented in this TR2 in such a way that it is clear that they refer to emissions to water.

Industry representatives requested that a higher limit of 450 kg Cl/t TiO_2 pigment be added since this limit is also mentioned in Annex VIII to Directive 2010/75/EU. However, such a lowering of the ambition level of EU Ecolabel criteria can only be justified if supported by compelling data and a reason for why this is needed today. Since 2014, the existing limits for chloride emissions to water do not seem to have been a barrier for TiO_2 producers. Despite a relatively high number of EU Ecolabel license holders for paint products, only a few applicants obtained quantitative declarations from TiO_2 suppliers about emissions. Most declarations simply stated that they complied with the limits. Consequently, it was not possible to know precisely how ambitious the current EU Ecolabel limits are.

Outcomes from and after the 2nd AHWG meeting (November 2024)

During the 2nd AHWG meeting, concerns were raised regarding the proposed emission values, particularly regarding the potential consequences for license holders if their TiO_2 supplier fails to meet the limits, especially if these limits are based on averages. There were also suggestions to calculate limits based on the characteristics of the ore used in specific production campaigns.

Questions were raised about whether production plants outside the EU would be required to comply with the same dust values and requirements. Some stakeholders expressed hope that the limits could align with the BREF currently under revision urged to use minimum values rather than averages. Note that the BREF revision, technically called 'drawing up' of the current Large Volume Inorganic Chemicals BREF in a new one, is undergoing.

After the meeting, 25 written comments were received regarding the criterion proposal on TiO_2 production. Moreover, 8 comments were received to each other Annexes, i.e. Annex II and III to the same criterion and referred to comments already made to Annex I criterion 1. The feedback reflects a wide range of concerns and suggestions aimed at improving feasibility, transparency, and environmental impact management. Stakeholders emphasized the complexity of certain requirements in the criterion, noting that they were beyond the control of applicants and lacked clarity on whether manufacturers could provide the required data. Concerns were also raised about overly ambitious thresholds that may not be achievable annually, potentially disrupting certification processes. A pragmatic approach to threshold setting, informed by updated and comprehensive data rather than outdated averages, was strongly recommended.

Industry representatives also shared data on SO_2 emissions to air from TiO_2 manufacturing plants in and outside of the EU, although data for remaining emissions (to air and to water) is still missing. According to the feedback from industry, the methodology for calculating emissions varies across companies. Some calculate emissions based on permitted regulatory limits, using maximum allowed values from operating permits. Others rely on stack testing, where emissions are periodically measured directly, though routine testing is not always required. Some use operational monitoring, tracking indicators like pressure drop and flow rate instead of direct concentration measurements. Others follow national and industry-specific standards, which may or may not align with international ISO/EN standards. Some companies estimate emissions using regulatory databases, such as the US Toxic Release Inventory, which relies on calculated estimates rather than direct measurements. Additionally, some monitor effluent and wastewater emissions, measuring discharge levels daily or periodically, depending on regulatory obligations and production factors.

Stakeholders also provided feedback regarding the methodology to calculate the mass balance and how to articulate it clearly. In addition, industry representatives suggested aligning the text on low dust emissions with the Nordic Swan Ecolabel, which addresses powdered raw materials and low dust emissions. This approach promotes a low-dust working environment through the use of protective equipment.

Ambiguity in terminologies like "natural watercourse" and "settling lagoon" was highlighted, with calls for clearer definitions to avoid misinterpretation.

Regarding emissions, stakeholders proposed a mass balance calculation approach for plants producing both EU Ecolabel and non-EU Ecolabel products to account for complex manufacturing realities. This method would enable a conservative estimation of emissions while maintaining alignment with regulatory standards.

Testing methods based on EN and ISO standards were acknowledged, but stakeholders suggested alignment with national standards under the IED to minimize duplication of effort and costs.

In response to variability in titanium content in ores, stakeholders proposed adding a new category for lower-content ores with adjusted Cl^- emission to water thresholds. This would account for the higher chlorine demand and resulting chloride discharges while recognizing the lower climate impact of such ores in their upstream preparation stages before they reach the TiO_2 pigment production facility. The need to align with ongoing revisions of Best Available Techniques Reference Documents (BREF) for Large Volume Inorganic Chemicals was emphasized to ensure the criteria reflect current industry practices and data.

Finally, stakeholders highlighted the importance of standardized supplier declarations and comprehensive documentation to ensure clarity and compliance with multiple criteria, including hazardous substance restrictions.

Outcomes from and after EUEB meeting (November 2024)

During the EUEB meeting, discussions focused on the proposed limits, calculation methods and alignment with ongoing BREF revisions. While some advocated for stricter limits for titanium dioxide, others welcomed the proposed criterion but urged to update emissions data in line with the BREF revision for Large Volume Inorganic Chemicals, which includes TiO_2 production. Concerns were also raised about the strictness of the assessment calculations. Finally, some requested clarifications on definitions related to watercourses and lagoons, and on low-dust working environments, which are handled differently across member states.

A total of 5 comments were received regarding this criterion, reflecting similar feedback to that shared during the 2nd AHWG meeting. While some stakeholders refrained from commenting due to the criterion's technical complexity, others were divided in their opinions. Some supported the proposed limits, whereas others argued that the current proposal merely aligns the criteria with values that should have been updated in the previous revision, rather than increasing the ambition level. These stakeholders recommended further lowering the limit values to reflect the latest data from the ongoing BREF revision process.

Concerns were also raised regarding the proposed limits. Some stakeholders warned that the new requirements could disrupt certification processes due to variability in compliance and potential misalignment with workplace dust exposure regulations. They highlighted the need to further investigate low dust exposure requirements and called for additional data collection, assessment, and dialogue.

Further concerns were raised about the feasibility of meeting air and water emission requirements, particularly due to uncertainties in aligning the new criteria with existing compliance with regional site permits.

Regarding chloride emissions to water, stakeholders suggested allowing a mass balance approach to demonstrate compliance, particularly for facilities producing both Ecolabel-compliant and non-compliant products. Stakeholders also recommended clarifying that chloride emissions should be measured at the point where wastewater enters surface waterbodies, rather than at earlier stages like settling lagoons, which are part of wastewater treatment and not representative of actual emissions.

Finally, stakeholders expressed concerns that the additional testing requirements could result in significant costs, potentially making EU Ecolabel compliance unfeasible.

Further research and main changes in the second proposal

A comparison of the BREF requirements and the requirements in Decision 2014/312/EU for TiO_2 production showed that the EU Ecolabel requirements were much less comprehensive in terms of emissions that were considered. Furthermore, the actual ambition limits for the emissions for the EU Ecolabel were generally unambitious when compared to the data collected and reported in the 2007 BREF document. Consequently, further research was conducted with a view to making more appropriate the requirements in the EU Ecolabel criteria.

The BREF and EU Ecolabel comparison revealed that some potentially important emissions were missing from the former, namely dust emissions to air for both the sulphate and chloride processes and HCl emissions to air for the chloride process. Monitoring of these emissions in EU production plants from "major sources" should already have been mandatory since 2010 as per the requirements in Annex VIII. Limits for these new emission parameters have provisionally been set according to the following logic:

- Emissions of dust to air for sulphate process: the sum of average values from BREF data collection as reported in the 2007 BREF report (specifically in Tables 3.45 and 3.46 therein), which showed averages of 0.24 kg/t TiO_2, 0.01 kg/t TiO_2 and 0.156 kg/t TiO_2 dust emissions for the calcination, milling and micronisation processes, respectively.
- Emissions of dust to air for chloride process: the sum of average values from BREF data collection as reported in the 2007 BREF report (specifically in Tables 3.21 and 3.23 therein), which showed averages of 0.5 kg/t TiO_2 and 0.158 kg/t TiO_2 dust emissions for the metal chlorides treatment and finishing processes, respectively.
- Emissions of HCl to air for the chloride process: the sum of average values from BREF data collection as reported in the 2007 BREF report (specifically in Tables 3.19, 3.20 and 3.21 therein), which showed averages of 0.10 kg/t TiO_2, 0.0037 kg/t TiO_2 and 0.6 kg/t TiO_2 HCl emissions for the chlorination, acid scrubber from solid separation and metal chlorides treatment processes, respectively.

In addition to these new requirements, the existing limit for emissions of SO_2 to air from the sulphate process had to be lowered as a matter of principle because the limit in the 2014 criteria (7.0 kg/t TiO2) was actually higher than the maximum limit for EU production sites (6.0 kg/t TiO2) as set out in Annex VIII to Directive 2010/75/EU. The limit was reduced following a similar logic to the new emission parameters above.

- Emissions of SO_2 to air for the sulphate process: the sum of average values from BREF data collection as reported in the 2007 BREF report (specifically in Tables 3.43 and 3.45 therein), which showed averages of 0.47 kg/t TiO_2 and 3.5 kg/t TiO_2 SO_2 emissions for the digestion and calcination stages, respectively. An extra margin of 0.53 was added to round up the limit to 4.5 kg/t TiO_2.
- Emissions of sulphates to water for the sulphate process: the average value from BREF data collection as reported in the 2007 BREF report (specifically in Table 3.47), which showed and average value of 274 kg/t TiO_2. An extra margin of 26 kg/t was added to round the limit up to 300 kg/t TiO_2.

Important reasons for reducing emissions of SO_4 emissions to water and air are linked also to circular economy principles in the sense that good process control of wastewater treatment can lead to saleable SO_4-containing by-products being obtained such as copperas ($FeSO_4.7H2O$) and gypsum ($CaSO_4.2H2O$).

With emissions of chloride to water, treatment focuses on the removal of the metals from wastewater rather than chloride, which is highly soluble in most compounds and salts in a water medium. Metal removal depends on precipitation as hydroxides via the addition of lime, which produces insoluble metal hydroxides (which are filtered, settled and/or floated out) and soluble $CaCl_2$, which passes to the wastewater effluent discharge point. The more impurities in the ore, the more metal chlorides will be formed during chlorination, the more lime will be consumed to precipitate the metal chlorides and the higher will be the resulting emissions of chloride to water. This is the main reason why chloride emissions to water are nuanced according to the TiO_2 content of the ore.

Dust exposure controls: Industry representatives were consulted about dust control protocols used in TiO_2 production facilities. According to feedback received, protocols varied according to the legal framework and requirements of the country in which the facility was located. For example, in Germany the MAK values[27] set an annual average workplace limit of 0.3 mg/m^3 for respirable sized particles[28].

Further research and main change in the third proposal

Note that this criterion is now withdrawn. This criterion is included in the current EU Ecolabel for indoor paints and vanishes (Commission Decision 2014/312/EU) but after considering several alternative options and internal discussions with other DGs, it is proposed to remove it.

The main reason for this proposal relates to the difficulties encountered to set adequate emission requirements given the very limited data availability. There were two major issues related to data collection, as detailed below:

(i) Actual emission data were not available from EU Ecolabel licenses holders; and

(ii) The data collection process for the revision of Large Volume Inorganic Chemicals BREF, including TiO_2 production, is currently ongoing. While much of these data are currently confidential, the format (e.g. mg/Nm^3 or kg/day) in which they are supplied cannot be converted to the units current used in EU Ecolabel criteria (kg/t) without knowing TiO_2 pigment production rates, which are considered as confidential business information. This means that also extrapolating the data from the thresholds in the old EU Ecolabel criteria is not possible.

The very limited data in units of kg/t from data submitted to the ongoing BREF process which are not marked as confidential are shown below:

- 3-year average from chloride process Cl^- emissions to water = 266 kg/t (ore type used not specified);
- Annual average from sulphate process SO_4^{2-} emissions to water gradually reducing from around 250 kg/t to around 90 kg/t during the period of 2007 to 2023 in one plant.

Based on feedback from industry representatives, the analysis of SO_2 emissions to air from their members shows variability across years due to factors like production demand, making it challenging to maintain a consistent average of 4.5 kg/tonne TiO_2. Based on SO_2 emissions of several plants, this shows how many plants were above the proposed value for the past 3 years:

- In 2021, 3 out of 7 plants were above 4.5 kg/t TiO_2;
- In 2022, 3 out of 7 plants were above 4.5 kg/t TiO_2;
- In 2023, 2 out of 7 plants were above 4.5 kg/t TiO_2.

As a result, industry recommended setting a higher limit. For context, the current EU Ecolabel limit in Decision 2014/312/EU is 7.0 kg/t and the mandatory limit for EU producers of TiO_2 is 6.0 kg/t, as set out in Annex VIII to IED - Directive 2010/75/EU.

Stakeholders have called for consistency between the EU Ecolabel criteria and the BREF revision (and associated BAT Conclusions) to ensure coherence within the broader regulatory framework in the EU. However, as explained above, the LVIC BREF is currently being revised. New data on TiO_2 production are

[27] MAK stands for - Deutsche Forschungsgemeinschaft, List of MAK and BAT Values 2023, Maximum Concentrations and Biological Tolerance Values at the Workplace, Permanent Senate Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area, Report 59, DOI: https://www.doi.org/10.34865/mbwl_2023_eng (Accessed online 10.02.2025)

[28] .Considered as: "The fraction which enters the alveolar region (respirable fraction) contains those particles which can penetrate into the airway regions which are not ciliated, i.e., the alveoli, the terminal non-ciliated bronchioles and the alveolar ducts; some of this fraction is deposited there. Respirable fraction (R): the curve for this part of the thoracic fraction expresses, as a function of aerodynamic diameter, the mean probability that particles and droplets will enter the alveolar region (fraction which enters the alveolar region)".

being collected and will probably lead to update the values of the existing LVIC-S BREF for TiO_2 production. Consequently, it is far too early to make a proposal in line with the on-going BREF revision. Furthermore, any attempt to derive at this time values for TiO_2, related to those still under analysis under the BREF process, could be not only premature but potentially interfere, and even be seen as pre-empting, the work being done to develop the BREF under the Industrial Emissions Directive.

It is worth noting that the values reported in the current LVIC BREF (published in 2007) date from 2004 and were based on expert judgement. This means that these values were not based on an exhaustive data collection and in-depth analysis (as is the case for BREF revision currently under preparation), but on a consensual definition by a group of experts (MS, industry, NGOs) of the best performances for TiO_2 production at the time. On view of the JRC Team, the use of this outdated data is no longer appropriate, nor comprehensive enough to be included as the requirements in a newly revised EU Ecolabel criterion.

As the LVIC BREF is currently being revised, following a data-driven approach, the values of emissions levels associated to the production of TiO_2 will be set within a couple of years. This timeline is clearly incompatible with that set for the revision of the EU Ecolabel for paints.

Furthermore, the new LVIC BREF will likely set emission limit values expressed in terms of concentration, which differ from the units used in EU Ecolabel thus not being straight-forward to compare values or to convert them in a transparent or verifiable way. Consequently, verification and enforcement seem very difficult based on the current situation where the revised BREF will no longer provide emission values for TiO_2 in terms of product.

Given the current limitations, a comprehensive criterion cannot be proposed at this stage of the revision process, leading to proposing the removal of the criterion on TiO_2 production from the third proposal for the EU Ecolabel for paints and varnishes.

5.2 Criterion 1. Efficiency in use requirements

TR2. Annex I: Second Proposal for Criterion 2: Efficiency in use requirements

In order to demonstrate the efficiency in use of decorative paints and varnishes and related products, the following tests per type of product, as indicated in Table X and detailed in the criterion text later, shall be undertaken.

Table X. Performance requirements for different kinds of decorative paints and varnishes

Criteria	Decorative paint and varnish categories (with their subcategories identified according to the Directive 2004/42/EC)						"Just add water" decorative paints for use on buildings, their trim, fittings or associated structures
	Indoor wall and ceiling paint (a,b)	Outdoor mineral substrate paint (c)	Trim and cladding paints (d)	Varnishes and wood stains (e, f)	Primers (g)	Binding primers (h)	
2(a) Spreading rate	Yes	Yes	Yes	No	Opaque only	Opaque only	Yes
2(b) Wet scrub resistance and white pigment content	Yes	Yes	Yes	No	No	No	Yes
2(c) Resistance to water	No	No	No	Mostly	No	No	No
2(d) Adhesion	No	No	Opaque and undercoats only	No	Opaque and for masonry only	Opaque and for masonry only	No
2(e) Weathering	No	Yes	Outdoor only	Outdoor only	No	No	Outdoor only
2(f) Water vapour permeability	No	If claimed	No	No	No	No	No
2(g) Liquid water permeability	No	Yes	No	No	No	No	No
2(h) Fungal resistance	No	If claimed	If claimed	No	No	No	If claimed
2(i) Algal resistance	No	If claimed	If claimed	No	No	No	If claimed
2(j) Crack bridging	No	If claimed	No	No	No	No	If claimed
2(k) Alkali resistance	For masonry	Yes	No	No	For masonry	For masonry	For masonry

2(a) Spreading rate

Note 1: This requirement does not apply to varnishes, lasures, transparent adhesion primers or any other transparent or semi-transparent coatings.

Note 2. For tinting systems, this criterion applies only to the white base (the base containing the most TiO_2). In cases where the white base is unable to achieve this requirement, the criterion shall be met after tinting the white base to produce the standard colour RAL 9010.

Spreading rate requirements shall apply to white and light-coloured paint products. For paints that are available in more colours in the same family of products, the spreading rate shall apply to the lightest colour. Spreading rates shall be calculated while ensuring a hiding power of at least 98 % according to ISO 6504-1 or ISO 6504-3. The following minimum spreading rate limits apply:

- Indoor white paints and light-coloured paints, including finishing-coats and intermediate coats, shall have a spreading rate of at least 8 m2 per litre of product.
- Outdoor white and light-coloured paints, including finishing-coats and intermediate coats, shall have a spreading rate of at least 6 m2 per litre of product. Products marketed for both indoor and outdoor application shall meet the higher spreading rate requirement of at least 8 m2 per litre.
- Opaque primers and undercoats shall have a spreading rate of at least 8 m2 per litre of product, or of at least 6 m2 per litre of product in the cases of opaque primers with specific blocking, sealing, penetrating, binding or special adhesion properties.
- Opaque elastomeric paints shall have a spreading rate of at least 4 m2 per litre of product.

For paints that are a part of a tinting system, the applicant must advise the end-user on the product packaging and at the point of sale (POS) which shade or primer/undercoat (if possible, bearing the EU Ecolabel) should be used as a basecoat before applying the darker shade.

Assessment and verification: the applicant shall provide a declaration of compliance with the relevant spreading rate limits or a justification of non-applicability of the spreading rate requirement for each of the products covered by the EU Ecolabel license. The declaration shall be supported by test results according to the method ISO 6504-1 or 6504-3. In cases where a result covers multiple products, it shall be clearly indicated which results correspond to which products covered by the EU Ecolabel license application.

For bases used to produce tinted products that have not been evaluated according to the abovementioned requirements, the applicant shall provide evidence of how the end-user will be advised to use a relevant primer and/or grey (or other relevant shade) of undercoat before application of the product.

2(b) Wet scrub resistance and white pigment content

Note: This criterion only applies to paint products and, in the case of families of paint products with multiple shades, only to the base paints. For the purposes of this criterion, the term "white pigment", shall be considered to refer only to pigments with a refractive index higher than 1.8.

Any EU Ecolabel paint products that claim wet scrub resistance must meet the requirements for class 1 or class 2 according to the procedure defined in ISO 11998 and the classification system of EN 13300 and comply with the respective upper limits for white pigment content.

Table X. Requirements for wet scrub resistance and white pigment content for paint products

Wet scrub resistance claim?	Wet scrub resistance	White pigment content
Yes (indoor paints)	Class 1	≤ 40 g/m²*
Yes (outdoor paints)	Class 1 or 2	≤ 38 g/m²*
Yes (indoor paints)	Class 2	≤ 36 g/m²*
No (indoor or outdoor)	n/a	≤ 25 g/m²*

* The m2 refers to 1m2 of dry-film with an opacity of at least 98% according to ISO 6504.

Assessment and verification:

The applicant shall provide a declaration of compliance with the relevant requirement or a justification of the non-applicability of the requirements for each of the products covered by the EU Ecolabel application. In cases of relevant products, the applicant shall declare the total content of white pigments with a refractive index >1,8 in the final product or base paint formulations that are subject to the EU Ecolabel license application. This information shall be provided in terms of the chemical name and CAS number of the white pigment, its declared refractive index, its concentration in g/L of paint product and the density of the paint, in g/L. The spreading rate of the paint product, in L/m² for a dry-film of at least 98% opacity according to ISO 6504, shall also be stated (as per criterion 2(a)). Multiplying the white pigment concentration (in g/L) by the spreading rate (in L/m²) will produce white pigment levels in units of g/m² that can be compared to the limits in the table above.

Except in cases where the content of white pigments is < 25,0 g/m² and no claims of wet scrub resistance are made, the applicant shall also provide results of wet scrub resistance testing according to ISO 11998 that show that the products meet the applicable class 1 or class 2 resistance requirements defined in EN 13300.

2(c) Resistance to water

Note: This requirement applies to all varnish and wood stain products except for minimal build wood stains.

All varnish products shall have resistance to water, as determined by ISO 2812-3, such that after 24 hours of exposure and 16 hours of recovery, no change of gloss or of colour occurs.

No change of gloss shall be considered as the gloss value of the exposed sample not being more than 5% different to the control sample when measured according to ISO 2813. No change of colour shall be considered as a visual rating of exposed samples and control samples, with the exposed sample obtaining a rating of 0 when measured for quantity of defects and a rating of 0 when measured for size of defects according to the classification system of EN ISO 4628-1.

Assessment and verification:

The applicant shall provide a declaration of compliance with the requirement or a justification of the non-applicability of the requirement for each of the products covered by the EU Ecolabel application.

For any varnish or wood stain products included in their license application, the applicant declaration shall be supported by copies of ISO 2812-3 test report(s) that cover the licensed product or family of products, including reported results for change of colour and change of gloss according to EN ISO 4628-1 and ISO 2813, respectively.

If the exemption for minimal build wood stains is applied, the applicant shall justify the exemption by providing test reports according to ISO 2808, method 5A, that show the thickness of the coating layer to be less than 5µm.

2(d) Adhesion

Note: This criterion applies to opaque primers and binding primers for masonry coatings and to undercoats for wood or metal trim and cladding paints. In cases of multiple shades in a family of products, the base paint, an intermediate shade and one of the darkest shades need to be tested.

Pigmented masonry primers for exterior uses shall score a pass in the ISO 4624 pull-off test where the cohesive strength of the substrate is less than the adhesive strength of the paint, otherwise the adhesion of the paint must be in excess of a pass value of 1,5 MPa.

~~Floor coatings, floor paints, floor undercoats,~~ Interior masonry primers, metal and wood undercoats shall score 2 or less in the EN ISO 2409 test for adhesion.

The applicant shall evaluate the primer and/or finish alone or both applied together. When testing the finish alone, this shall be considered the worst-case scenario concerning adhesion.

Assessment and verification:

The applicant shall provide a declaration of compliance with the relevant requirement or a justification of the non-applicability of the requirements for each of the products covered by the EU Ecolabel application. For any opaque masonry primer, binding primer, wood undercoat or metal undercoat products included in their license application, the applicant shall provide copies of EN ISO 2409 or ISO 4624 test reports, as applicable.

2(e) Weathering

Note: This criterion applies to outdoor paints and varnishes.

All outdoor paints or varnishes shall be exposed to artificial weathering in apparatus including fluorescent UV lamps and condensation or water spray according to ISO 16474-3. They shall be exposed to test conditions for 1000 hours with cycling conditions of: UVA 4 h/60 °C + humidity 4 h/50 °C.

Alternatively, outdoor wood finishes and outdoor wood varnishes shall be exposed to weathering for 1000 hours in the QUV accelerated weathering apparatus with cyclic exposure with UV(A) radiation and spraying according to EN 927-6.

After weathering, the exposed films shall comply with the requirements specified in the table below.

Table X. Requirements for wet scrub resistance and white pigment content for paint products

Property	Requirement (after weathering)	Scope of products covered/not covered

Colour change according to ISO 11664-~~64~~	Colour change, ΔE ≤ 4	Not applicable to varnishes and base paints.
Decrease of gloss according to ISO 2813	≤ 30% decrease compared to initial value	Not applicable to mid-sheen or matt finish~~es~~ing coats with initial gloss value of <60% at 60° angle of incidence
Chalking according to EN ISO 4628-6	A score of ≤ 2	Only applicable to outdoor masonry, wood and metal finish~~es~~ing coats.
Flaking according to EN ISO 4628-5	Flake density: ≤ 2 Flake size: ≤ 2	
Cracking according to EN ISO 4628-4	Crack quantity: ≤ 2 Crack size: ≤ 3	
Blistering according to EN ISO 4628-2	Blister density: ≤ 3 Blister size: ≤ 3	

Assessment and verification:

The applicant shall provide a declaration of compliance with the relevant requirement or a justification of the non-applicability of the requirements for each of the products covered by the EU Ecolabel application. For any outdoor decorative paints or varnishes included in their license application, the applicant shall provide copies of test reports that detail the weathering test method used (being in compliance with ISO 16474-3 or EN 927-6) and provide results of changes in properties after weathering, as applicable.

2(f) Water vapour permeability

Note: This criterion only applies to outdoor masonry paints that make "breathable" or "water vapour permeable" claims in their marketing material. In cases of multiple shades within the same family of products, only the base paint needs to be tested.

Relevant paint product(s) shall be tested for water vapour permeability according to EN ISO 7783-2 and generate results that correspond to a medium (class V2) or high (class V1) water vapour permeability as defined in EN 1062-1.

Assessment and verification:

The applicant shall provide a declaration of compliance with the relevant requirement or a justification of the non-applicability of the requirements for each of the products covered by the EU Ecolabel application. For any outdoor masonry paints included in their license application that make relevant marketing claims, the applicant shall provide copies of test reports according to EN ISO 7783-2, with results expressed according to the classification system defined in EN 1062-1.

2(g) Liquid water permeability

Note: This criterion only applies to outdoor masonry paints. In cases of multiple shades within the same family of products, only the base paint needs to be tested.

The paint product(s) shall be tested for liquid water permeability according to EN 1062-3 and meet the following requirements, as appropriate:

- For outdoor masonry paints that make claims about being water repellent or hydrophobic or similar: Low liquid water permeability (Class W3) according to the classification system of EN 1062-1.

- For all other outdoor masonry paints: medium liquid water permeability (Class W2) according to the classification system of EN 1062-1.

Assessment and verification:

The applicant shall provide a declaration of compliance with the relevant requirement or a justification of the non-applicability of the requirements for each of the products covered by the EU Ecolabel application. For any outdoor masonry paints, the applicant shall provide copies of test reports according to EN 1062-3, with results expressed according to the classification system defined in EN 1062-1.

2(h) Fungal resistance

Note: This criterion only applies to outdoor masonry paints or wood paints that have anti-fungal marketing claims. In cases of multiple shades in a family of products, only the base paint needs to be tested.

In accordance with Product Type 7 (PT7) requirements of Regulation (EU) No 528/2012 of the European Parliament and of the Council(1), the following requirements shall be met, as appropriate:

- For outdoor masonry paints: A score of class 1 or lower (class 0, i.e. less than 10% fungal coverage) for fungal resistance according to EN 15457.
- For wood paints: A score of class 0 for fungal resistance according to EN 15457.

Assessment and verification:

The applicant shall provide a declaration of compliance with the relevant requirement or a justification of the non-applicability of the requirements for each of the products covered by the EU Ecolabel application. For any outdoor masonry paints or wood paints that have relevant marketing claims, the applicant shall provide copies of test reports according to EN 15457.

2(i) Algal resistance

Note: This criterion only applies to outdoor masonry paints or wood paints that have anti-algal marketing claims. In cases of multiple shades in a family of products, only the base paint needs to be tested.

In accordance with Product Type 7 (PT7) requirements of Regulation (EU) No 528/2012 of the European Parliament and of the Council, the following requirements shall be met, as appropriate:

- For outdoor masonry paints: A score of class 1 or lower (class 0) for algal resistance according to EN 15458.
- For wood paints: A score of class 0 for algal resistance according to EN 15458.

Assessment and verification:

The applicant shall provide a declaration of compliance with the relevant requirement or a justification of the non-applicability of the requirements for each of the products covered by the EU Ecolabel application. For any outdoor masonry paints or wood paints that have relevant marketing claims, the applicant shall provide copies of test reports according to EN 15458.

2(j) Crack bridging

Note: This criterion only applies to outdoor masonry paints that have elastomeric marketing claims. In cases of multiple shades in a family of products, only the base paint needs to be tested.

The coating shall meet the requirements for crack-bridging performance of class A1 or better at 23 °C (i.e. A2, A3 etc.) according to EN 1062-7.

Assessment and verification:

The applicant shall provide a declaration of compliance with the relevant requirement or a justification of the non-applicability of the requirements for each of the products covered by the EU Ecolabel application. For any outdoor masonry paints that have relevant marketing claims, the applicant shall provide copies of test reports ~~using methodology~~ according to ~~DIN~~ EN 1062-7.

2(k) Alkali resistance

Note: This criterion only applies to masonry coatings, including primers. In cases of multiple shades in a family of products, the base paint, an intermediate shade and one of the darkest shades need to be tested.

The coating shall show no noticeable damage when the coating is spotted for 24 hours with 10 % NaOH solution according to method ISO 2812-4. The evaluation shall be done after 24 hours drying-recovery. No noticeable shall be considered as a rating of 1 or better (i.e. 0 or 1) as defined in ISO 4628-1 following a visual assessment for both the size and quantity of defects for blistering on the surface of the tested coating in accordance with ISO 4628-1.

Assessment and verification:

The applicant shall provide a declaration of compliance with the relevant requirement or a justification of the non-applicability of the requirements for each of the products covered by the EU Ecolabel application. For any outdoor masonry paints or primers, the applicant shall provide copies of test reports according to ~~using methodology~~ ISO 2812-4 with results expressed in terms of the rating system of ISO 4628-1.

TR3. Annex I: Third Proposal for Criterion 1: Efficiency in use requirements

In order to demonstrate the efficiency in use of decorative paints, ~~and~~ varnishes and related products, the following tests per type of product, as indicated in Table 1 and detailed in the criterion text later, shall be undertaken.

Table 1. Performance requirements for different kinds of decorative paints, ~~and~~ varnishes and related products

Criteria	Decorative paint and varnish categories (with their subcategories identified according to the Directive 2004/42/EC)						"Just add water" decorative paints or varnishes for use on buildings, their trim, fittings or associated structures
	Indoor wall and ceiling paint (a,b)	Outdoor mineral substrate paint (c)	Trim and cladding paints (d)	Varnishes and wood stains (e, f)	Primers (g)	Binding primers (h)	
1(a) Spreading rate	Yes	Yes	Yes	No	Opaque only	Opaque only	Paints: Yes Varnishes: No
1(b) Wet scrub resistance (WSR) and white pigment content (WPC)	WSR and WPC ~~Yes~~	WPC only~~Yes~~	WPC only~~Yes~~	Neither ~~No~~	Neither ~~No~~	Neither ~~No~~	~~Yes,~~ Paints: WPC (and WSR if marketed as subcategory a or b) Varnishes: Neither
1(c) Resistance to water	No	No	No	Mostly	No	No	Paints: No Varnishes: Only if marketed as subcategory e or f~~No~~
1(d) Adhesion	No	No	Opaque and undercoats only	No	Opaque and for masonry only	Opaque and for masonry only	No
1(e) Weathering	No	Yes	Outdoor only	Outdoor only	No	No	Only if marketed for o~~O~~utdoor application)~~only~~
1(f) Water vapour permeability	No	If claimed	No	No	No	No	No
1(g) Liquid water permeability	No	Yes	No	No	No	No	No
1(h) Fungal resistance	No	If claimed	If claimed	No	No	No	If claimed
1(i) Algal resistance	No	If claimed	If claimed	No	No	No	If claimed
1(j) Crack bridging	No	If claimed	No	No	No	No	If claimed
1(k) Alkali resistance	~~For masonry~~ No	Yes	No	No	For outdoor masonry systems	For outdoor masonry systems	Only if marketed ~~For~~ as subcategory c ~~masonry~~

1(a) Spreading rate

Note 1: This requirement does not apply to varnishes, lasures, transparent adhesion primers or any other transparent or semi-transparent coatings.

Note 2. For tinting systems, this criterion applies only to the ~~white~~ tinting base ~~(the base~~ containing the most TiO_2~~)~~. In cases where this~~e~~ ~~white~~tinting base is unable to achieve this requirement, the criterion shall be met after tinting the ~~white~~ base to produce the standard colour RAL 9010.

Note 3. This requirement applies to all white paints. For families of paint products available only in preset shades, the spreading rate shall apply to the lightest colour.

~~Spreading rate requirements shall apply to white and light-coloured paint products. For paints that are available in more colours in the same family of products, the spreading rate shall apply to the lightest colour.~~ Spreading rates shall be calculated while ensuring a hiding power of at least 98 % according to ISO 6504-1, ~~or~~ ISO 6504-3 or an equivalent method that can be validated against ISO 6504-1. The following minimum spreading rate limits apply:

- Indoor white paints and light-coloured paints, including finishing-coats and intermediate coats (subcategories a and b), shall have a spreading rate of at least 8 m2 per litre of product.
- Outdoor white and light-coloured paints, including finishing-coats and intermediate coats (subcategory c), shall have a spreading rate of at least 6 m2 per litre of product. Products marketed for both indoor and outdoor application shall meet the higher spreading rate requirement of at least 8 m2 per litre.
- Opaque primers and undercoats (sub-categories g and h) shall have a spreading rate of at least 8 m2 per litre of product, or of at least 6 m2 per litre of product in the cases of opaque primers with specific blocking, sealing, penetrating, binding or special adhesion properties.
- Opaque elastomeric paints (subcategory c, but with crack-bridging claims) shall have a spreading rate of at least 4 m2 per litre of product.

For paints that are a part of a tinting system, the applicant must advise the end-user on the product packaging and at the point of sale (POS) which shade or primer/undercoat (if possible, bearing the EU Ecolabel) should be used as a basecoat before applying the darker shade.

Assessment and verification:

The applicant shall provide a declaration of compliance with the relevant spreading rate limits or a justification of non-applicability of the spreading rate requirement for each of the products covered by the EU Ecolabel license. The declaration shall be supported by test results according to ~~the method~~ ISO 6504-1, ~~or~~ ISO 6504-3 or an equivalent method that can be validated against ISO 6504-1. ~~In cases where a result covers multiple products, i~~It shall be clearly indicated which spreading rate results correspond to which families of products covered by the EU Ecolabel license application.

For bases used to produce tinted products that have not been evaluated according to the abovementioned requirements, the applicant shall provide evidence of how the end-user will be advised to use a relevant primer and/or grey (or other relevant shade) of undercoat before application of the product.

1(b) Wet scrub resistance and white pigment content

Note: This criterion only applies to paint products and white pigment content shall be calculated with the same products for which spreading rate is measured as per the note in criterion 2(a)~~, in the case of families of paint products with multiple shades, only to the base paints.~~ For the purposes of this criterion, the term "white pigment", shall be considered to refer only to pigments with a refractive index higher than 1.8.

Any indoor wall and ceiling ~~EU Ecolabel~~ paint products that claim wet scrub resistance must meet the requirements for class 1 or class 2 according to the procedure defined in ISO 11998 and the classification system of EN 13300 and comply with the respective upper limits for white pigment content defined in the table below. All other relevant products that do not make wet scrub resistance claims must comply with the corresponding white pigment content limit defined in the Table 2.

Table 2. Requirements for wet scrub resistance and white pigment content for paint products

Wet scrub resistance claim? (product subcategory)	Wet scrub resistance	White pigment content
Yes (~~indoor paints~~ a), b), or just add water paints marketed as a) or b))	Class 1	≤ 40 g/m²*

~~Yes (outdoor paints)~~	~~Class 1 or 2~~	~~≤ 38 g/m²*~~
Yes (~~indoor paints~~ a), b), or just add water paints marketed as a) or b))	Class 2	≤ 36 g/m²*
No (~~indoor paints~~ a), b), or just add water paints marketed as a) or b))	n/a	≤ 25 g/m²*
n/a ~~(outdoor paints)~~ (all other relevant subcategories: c), d), g) or h), or just add water paints marketed as c), d), g) or h))	n/a	≤ 38 g/m²*
n/a (varnishes and wood stains: e) or f))	n/a	n/a

* The m^2 refers to $1m^2$ of dry-film with an opacity of at least 98% according to ISO 6504.

Assessment and verification:

The applicant shall provide a declaration of compliance with the relevant requirement or a justification of the non-applicability of the requirements for each of the products covered by the EU Ecolabel application. In cases of relevant products, the applicant shall declare the total content of white pigments with a refractive index >1,8 in the final product, relevant tinting base or white base paint formulations that are subject to the EU Ecolabel license application. This information shall be provided in terms of the chemical name and CAS number of the white pigment, its declared refractive index, its concentration in g/L of paint product and the density of the paint, in g/L. The spreading rate of the paint product, in L/m^2 for a dry-film of at least 98% opacity according to ISO 6504, shall also be stated (as per criterion 2(a)). Multiplying the white pigment concentration (in g/L) by the spreading rate (in L/m^2) will produce white pigment levels in units of g/m^2 that can be compared to the limits in the table above.

Except in cases where the content of white pigments is < 25,0 g/m^2 and no claims of wet scrub resistance are made, the applicant shall also provide results of wet scrub resistance testing according to ISO 11998 that show that the products meet the applicable class 1 or class 2 resistance requirements defined in EN 13300.

1(c) Resistance to water

Note: This requirement applies to all varnish and wood stain products except for minimal build wood stains. In varnish or wood stain coating systems with a primer, either the full coating system or just the finishing layer may be tested.

~~All varnish products~~Cured coatings shall have resistance to water, as determined by ISO 2812-3, such that after 24 hours of exposure and 16 hours of recovery, no change of gloss is observed in transparent or semi-transparent coatings and no change of gloss or of colour occurs in any opaque coatings.

No change of gloss or colour in exposed samples shall be considered as ~~the gloss value of the exposed sample not being more than 5% different to the control sample when measured according to ISO 2813. No change of colour shall be considered as~~ a visual rating of ~~exposed samples and control samples, with the exposed sample obtaining a rating of~~ 0 when measured for quantity of defects and a visual rating of 0 when measured for size of defects according to the classification system of EN ISO 4628-1.

Assessment and verification:

The applicant shall provide a declaration of compliance with the requirement or a justification of the non-applicability of the requirement for each of the products covered by the EU Ecolabel application.

For any varnish or wood stain products included in their license application, the applicant declaration shall be supported by copies of ISO 2812-3 test report(s) that cover the licensed product or family of products, including reported results for change of colour and change of gloss according to EN ISO 4628-1 and ISO 2813~~, respectively~~.

If the exemption for minimal build wood stains is applied, the applicant shall justify the exemption by providing test reports according to ISO 2808, method 5A, that show the thickness of the coating layer to be less than 5µm.

1(d) Adhesion

Note: This criterion applies to opaque primers and binding primers for masonry coatings and to undercoats for wood or metal trim and cladding paints. The adhesion test may be conducted on any opaque primer or undercoat alone, or on the primer/undercoat and finishing coat together, so long as the combination is opaque. In cases of multiple shades in a family of products, only the white base paint or opaque tinting base(s), ~~an intermediate shade and one of the darkest shades~~ need to be tested.

Pigmented masonry primers for exterior uses shall score a pass in the ISO 4624 pull-off test where the cohesive strength of the substrate is less than the adhesive strength of the primer coating~~paint~~, otherwise the adhesion of the primer coating~~paint~~ must be in excess of a pass value of 1,5 MPa.

Interior masonry primers, metal and wood undercoats shall score 2 or less in the EN ISO 2409 test for adhesion.

~~The applicant shall evaluate the primer and/or finish alone or both applied together. When testing the finish alone, this shall be considered the worst-case scenario concerning adhesion.~~

Assessment and verification:

The applicant shall provide a declaration of compliance with the relevant requirement or a justification of the non-applicability of the requirements for each of the products covered by the EU Ecolabel application. For any opaque masonry primer, binding primer, wood undercoat or metal undercoat products included in their license application, the applicant shall provide copies of EN ISO 2409 or ISO 4624 test reports, as applicable.

1(e) Weathering

Note: This criterion applies to outdoor paints and varnishes. In the case of paints, only the white base paint or tinting base(s) need to be tested.

All outdoor paints or varnishes shall be exposed to artificial weathering in apparatus including fluorescent UV lamps and condensation or water spray according to ISO 16474-3. They shall be exposed to test conditions for 1000 hours with cycling conditions of: UVA 4 h/60 °C + humidity 4 h/50 °C.

Alternatively, outdoor wood finishes and outdoor wood varnishes may~~shall~~ be exposed to weathering for 1000 hours in the QUV accelerated weathering apparatus with cyclic exposure with UV(A) radiation and spraying according to EN 927-6.

After weathering, the exposed films shall comply with the requirements specified in the Table 3.

Table 3. Overview of weathering requirements for decorative paints, varnishes and related products~~Requirements for wet scrub resistance and white pigment content for paint products~~

Property	Requirement (after weathering)	Scope of products covered/not covered
Colour change according to ISO 11664-~~4~~	Colour change, ΔE ≤ 4	Not applicable to varnishes and transparent or semi-transparent tinting bases ~~paints.~~
Decrease of gloss according to ISO 2813	≤ ~~3~~50% decrease compared to initial value	Not applicable to mid-sheen or matt finishing coats with initial gloss value of <60% at 60° angle of incidence
Chalking according to EN ISO 4628-6	A score of ≤ 2	Only applicable to finishing coats of coating systems used on outdoor masonry, wood and metal ~~finishing coats~~ substrates
Flaking according to EN ISO 4628-5	Flake density: ≤ 2 Flake size: ≤ 2	
Cracking according to EN ISO 4628-4	Crack quantity: ≤ 2 Crack size: ≤ 3	
Blistering according to EN ISO 4628-2	Blister density: ≤ 3 Blister size: ≤ 3	

Assessment and verification:

The applicant shall provide a declaration of compliance with the relevant requirement or a justification of the non-applicability of the requirements for each of the products covered by the EU Ecolabel application. For any outdoor decorative paints or varnishes included in their license application, the applicant shall provide copies of test reports that detail the weathering test method used (being in compliance with ISO 16474-3 or EN 927-6) and provide results of changes in properties after weathering, as applicable.

1(f) Water vapour permeability

Note: This criterion only applies to outdoor masonry paints that make "breathable" or "water vapour permeable" claims in their marketing material. In cases of multiple shades within the same family of products, only the white base paint or tinting base(s) need~~s~~ to be tested.

Relevant paint product(s) shall be tested for water vapour permeability according to EN ISO 7783-2 and generate results that correspond to a medium (class V2) or high (class V1) water vapour permeability as defined in EN 1062-1.

Assessment and verification:

The applicant shall provide a declaration of compliance with the relevant requirement or a justification of the non-applicability of the requirements for each of the products covered by the EU Ecolabel application. For any outdoor masonry paints included in their license application that make relevant marketing claims, the applicant shall provide copies of test reports according to EN ISO 7783-2, with results expressed according to the classification system defined in EN 1062-1.

1(g) Liquid water permeability

Note: This criterion only applies to outdoor masonry paints. In cases of multiple shades within the same family of products, only the white base paint or tinting base(s) need~~s~~ to be tested.

The paint product(s) shall be tested for liquid water permeability according to EN 1062-3 and meet the following requirements, as appropriate:

- For outdoor masonry paints that make claims about being water repellent or hydrophobic or similar: Low liquid water permeability (Class W3) according to the classification system of EN 1062-1.
- For all other outdoor masonry paints: medium liquid water permeability (Class W2) according to the classification system of EN 1062-1.

Assessment and verification:

The applicant shall provide a declaration of compliance with the relevant requirement or a justification of the non-applicability of the requirements for each of the products covered by the EU Ecolabel application. For any outdoor masonry paints, the applicant shall provide copies of test reports according to EN 1062-3, with results expressed according to the classification system defined in EN 1062-1.

1(h) Fungal resistance

Note: This criterion only applies to outdoor masonry paints or wood paints that have anti-fungal marketing claims. In cases of multiple shades in a family of products, only the white base paint or tinting base(s) need~~s~~ to be tested.

In accordance with Product Type 7 (PT7) efficacy requirements of Regulation (EU) No 528/2012 of the European Parliament and of the Council~~(1)~~, the following requirements shall be met, as appropriate:

- For outdoor masonry paints: A score of class 1 or lower (class 0~~, i.e. less than 10% fungal coverage~~) for fungal resistance according to EN 15457.
- For wood paints: A score of class 0 for fungal resistance according to EN 15457.

Assessment and verification:

The applicant shall provide a declaration of compliance with the relevant requirement or a justification of the non-applicability of the requirements for each of the products covered by the EU Ecolabel application. For any outdoor masonry paints or wood paints that have relevant marketing claims, the applicant shall provide copies of test reports according to EN 15457.

1(i) Algal resistance

Note: This criterion only applies to outdoor masonry paints or wood paints that have anti-algal marketing claims. In cases of multiple shades in a family of products, only the white base paint or tinting bases need~~s~~ to be tested.

In accordance with Product Type 7 (PT7) efficacy requirements of Regulation (EU) No 528/2012 of the European Parliament and of the Council, the following requirements shall be met, as appropriate:

- For outdoor masonry paints: A score of class 1 or lower (class 0) for algal resistance according to EN 15458.
- For wood paints: A score of class 0 for algal resistance according to EN 15458.

Assessment and verification:

The applicant shall provide a declaration of compliance with the relevant requirement or a justification of the non-applicability of the requirements for each of the products covered by the EU Ecolabel application. For any outdoor masonry paints or wood paints that have relevant marketing claims, the applicant shall provide copies of test reports according to EN 15458.

1(j) Crack bridging

Note: This criterion only applies to outdoor masonry paints that have elastomeric (i.e. crack-bridging) marketing claims. In cases of multiple shades in a family of products, only the white base paint or tinting base(s) need~~s~~ to be tested.

The coating shall meet the requirements for crack-bridging performance of class A1 or better at 23 °C (i.e. A2, A3 etc.) according to EN 1062-7.

Assessment and verification:

The applicant shall provide a declaration of compliance with the relevant requirement or a justification of the non-applicability of the requirements for each of the products covered by the EU Ecolabel application. For any outdoor masonry paints that have relevant marketing claims, the applicant shall provide copies of test reports according to EN 1062-7.

1(k) Alkali resistance

Note: This criterion only applies to masonry coatings, including primers. In cases of multiple shades in a family of products, only the white base paint or tinting base(s)~~, an intermediate shade and one of the darkest shades~~ need to be tested.

The coating shall show no noticeable damage when the coating is spotted for 24 hours with 10 % NaOH solution according to method ISO 2812-4. The evaluation shall be done after 24 hours drying-recovery. No noticeable damage shall be considered as a rating of 1 or better (i.e. 0 or 1) as defined in ISO 4628-1, following a visual assessment for both the size and quantity of defects for blistering on the surface of the tested coating in accordance with ISO 4628-1.

Assessment and verification:

The applicant shall provide a declaration of compliance with the relevant requirement or a justification of the non-applicability of the requirements for each of the products covered by the EU Ecolabel application. For any outdoor masonry paints or primers, the applicant shall provide copies of test reports according to ISO 2812-4 with results expressed in terms of the rating system of ISO 4628-1.

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Rationale for the proposed criterion text on efficiency in use

The efficiency in use criteria have been set to ensure that the EU ecolabelled paint and varnish products will perform adequately both in terms of covering a specific area of substrate to be coated (2a on spreading rate) and in terms of resistance to various environmental exposures (2b to 2k). Not all criteria are relevant to all product categories, but some criteria do apply to multiple product categories. For this reason, it was considered most effective to still present an overview of the requirements in a matrix format.

The proposals presented in draft TR1 reflected a combination of: (i) updates to the existing criteria based on mistakes noticed by stakeholders; (ii) clarifications about whether a limit was an upper or lower limit; (iii) the insertion of additional details, and (iv) merging of adjacent cells with the same requirement. The remaining criteria text had only minor changes except for the spreading rate text, where the text was mainly reordered or some duplicate text removed because it was already clearly understood from the table.

Even when making these clarifications, the matrix in draft TR1 was still difficult to read. There was simply not enough space to explain the different nuances for when the criteria apply and do not apply and to also mention the limits and test standards at the same time.

In draft TR2, the proposal was to make a much simpler matrix which only focuses on applicability (i.e. what products have these requirements). By not specifying the limits and standards in the matrix, readers will pay more attention to the actual criteria text and specifics of the assessment and verification requirements. The matrix is also less crowded thanks to the removal of thick decorative coatings from the scope in draft TR2 and the shifting of requirements on performance coatings to Annex II. This allows space for requirements on "just add water" decorative paints to be included in the scope.

The wording of the assessment and verification criteria has been better harmonised so that a declaration of conformity or non-applicability is required for each individual criterion under efficiency in use. Such an approach will help support a single declaration form for this criterion.

Specifically about white pigment content and Wet Scrub Resistance: Another major change to the efficiency in use criterion in TR2 was the insertion of the previous criterion 1 on white pigment content and wet scrub resistance (WSR) into the list of requirements under the "efficiency in use" criterion here (now criterion 2). The white pigment and WSR criterion focuses on balancing the use of high environmental impact white pigments, like titanium dioxide (TiO_2), with the enhanced durability they provide to paints. High refractive index white pigments, such as TiO_2, improve paint opacity and allow for higher spreading rates, contributing to better coverage with less paint. Titanium dioxide with a refractive index of 2.6 to 2.7, is the most commonly used pigment partly because it also enhances Wet Scrub Resistance (WSR), ensuring the paint's durability and ability to withstand physical scrubbing. However, TiO_2 significantly impacts the overall environmental footprint of paints. To balance this, limits on white pigment content are set based on WSR performance claims, with higher TiO_2 contents allowed for paints that achieve better WSR (Class 1 or 2). The limits are expressed in grams per square meter at 98% opacity, rewarding formulations that also deliver a good spreading rate. The WSR is tested according to ISO 11998, and paints are classified based on their resistance to scrub cycles, with stricter limits for higher performance classes (Class 1 being the best).

In this draft TR3, the criterion now 1 has been kept to TR2 similar with some clarifications and wording changes for the purpose to adjust the criterion according to stakeholders' comments.

Main changes in the criterion

For the first proposal included in TR1, the main changes made were to simplify the requirements and make it easier to understand and to spell out the different information required for assessment and verification. The same approach has been maintained in TR2, but with the insertion of limits for outdoor paints, which had accidentally been removed when heavily restructuring the criterion.

One of the major changes in TR3 was the removal of WSR requirements for all paints except indoor wall and ceiling paints due to a lack of validated correlation with white pigment content. WPC requirements remain for specific subcategories to prevent misunderstandings. The term "base paint" was replaced with "tinting base" to better reflect industry practices, as tinting systems use bases with varying TiO_2 content. A new alignment ensures that products tested for WPC match those tested for spreading rate, improving clarity. Lastly, the gloss decrease limit per ISO 2813 was raised from 30% to 50% based on industry feedback.

Outcomes from and after 1st AHWG meeting and Working Sub-Group 3 (WSG3) meeting about *efficiency in use* (May and June 2024)

In total, 31 comments were received in written form to Criterion 2 (before Criterion 3) on efficiency in use after the 1st AHWG meeting. Stakeholders provided comprehensive feedback on several aspects of the criterion, highlighting concerns and suggesting areas for improvement. One of the key points raised was the need to maintain the existing exception for opaque primers to have a lower spreading rate of 6 m2/L if they possess "special properties", which many stakeholders strongly supported. Additionally, there were widespread concerns about the lack of clarity in defining key terms such as "*light-coloured paints*", "*opaque primers*", "*undercoats*", and "*trim and cladding*". Stakeholders requested more precise definitions for these terms to avoid confusion.

A significant issue identified was that applicants tend to focus primarily on tables rather than the accompanying text. To address this, some stakeholders suggested moving the table to an Annex, encouraging readers to pay more attention to the criterion text itself. As explained above, an alternative solution to this is proposed.

Regarding testing requirements being explained in more detail in the User Manual, opinions were divided. While many stakeholders supported the inclusion of detailed explanations, arguing that they provide much-needed guidance where existing standards fall short, others preferred to keep the manual concise and opposed adding too much detail.

Some corrections were requested for the efficiency in use criteria. In particular, the scoring requirements for chalking were incorrect because scores are presented as integer values according to the standard (i.e. 0, 1, 2 etc.) while the EU Ecolabel criteria were requesting scores of 1.5 or better, which did not match the scores possible. Another minor correction required was the citation of the standards ISO 16474-3 instead of 16474-1 and ISO 11664-4 instead of 11664-6 when referring to laboratory weathering conditions and colour change measurements under criterion 2(e). Also about the weathering requirements, one industry stakeholder asked for the decrease in gloss after weathering to be allowed up to 50% instead of the current 30%.

For alkali resistance, stakeholders sought clarification on what constitutes a rating of "no noticeable damage", noting that current standards rely heavily on visual assessments rather than numerical ratings. Specific feedback was provided on the values to be used in this context.

Questions were also raised about the rationale behind changing the spreading rate for primers and undercoats with "specific properties", with recommendations for clearer phrasing of this criterion. Similarly, the weathering requirements were discussed, with stakeholders recommending that it be clearly stated that these requirements are limited to outdoor products. They pointed out that incorrect values had been used for some properties and stressed the importance of adhering to standards that use integral numbers for weathering and chalking values. There was also confusion regarding the UV artificial weathering standards applied and about the exact type and level of information to be included in test reports.

The inclusion of fungal resistance characteristics in the criterion was contested by some stakeholders, who argued that such features are inappropriate for an ecolabel. They suggested that paints containing dry-film preservatives should be excluded from the Ecolabel's scope – supporting their case with anecdotal experience that they were not aware of any such products currently being able to obtain the EU Ecolabel.

Finally, there were comments on the claims made on licensed products. While claims related to high or low liquid water vapour permeability are common and there are some products with elastomeric claims, those concerning anti-fungal/anti-algal properties are rare, but some do exist with the EU Ecolabel apparently, mainly for façade paints.

During the Working Sub-Group 3 meeting, it was proposed to merge the current Criterion 1 (on white pigment content and WSR) into the broader group of requirements on "*efficiency in use*" which was the then Criterion 3 (now proposed Criterion 2). This suggestion emerged because the calculations for white pigment content and wet scrub resistance are connected to the spreading rate calculation, which is already included in the efficiency in use criterion, and the fact of limiting high refractive index pigments according to the degree of WSR imparted is a sort of efficiency in use principle. Another question raised was whether it would be better to only permit the ISO 6504-1 method to be used as part of spreading rate calculations instead of allowing either ISO 6504-1 or ISO 6504-3 (more details in further research section).

Further research and main changes in the second proposal

Effect of scope changes: With the proposal to remove thick decorative effect coatings from the scope and to move performance coatings into Annex II, the criterion on efficiency in use is less complex and easier to follow despite the fact that the white pigment content and WSR criterion has been moved here. In Annex I, the

efficiency in use criterion includes performance requirements for 6 specific product subcategories according to Directive 2004/42/EC:

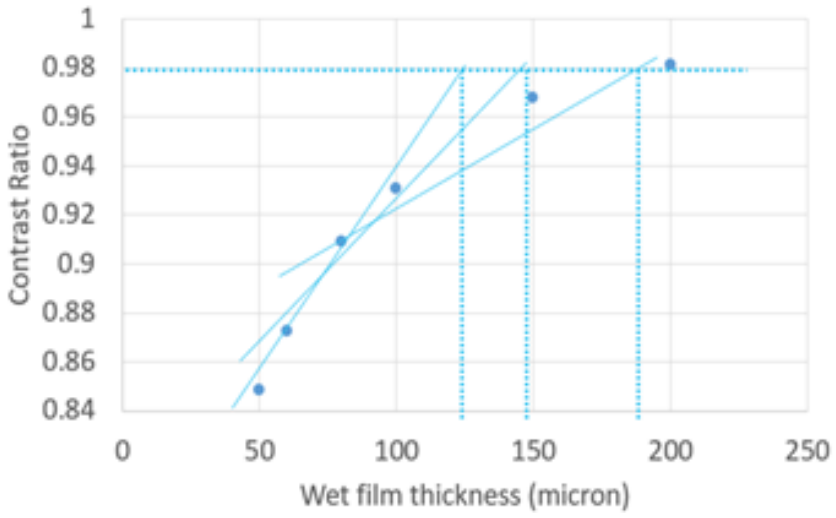
- indoor wall and ceiling paint (a, b);
- outdoor mineral substrate paint (c);
- trim and cladding paints (d);
- varnishes and wood stains (e,f);
- primers (g);
- binding primers (h); and one additional category
- "just add water" decorative paints (for use on buildings, their trim, fittings or associated structures).

The requirement for abrasion has been removed from Annex I because it only applied to floor coatings, which are all considered as performance coatings under Directive 2004/42/EC and thus addressed in Annex II.

Choice of method for measuring spreading rate: Regarding the potential removal of ISO 6504-3 as an option for calculating spreading rate, it was explained that the spreading rate is defined as the amount of coating material used per m2 to deliver an exact hiding power of 98%. In real life laboratory tests, the precise hiding power achieved in a standard coating application will deviate somewhat from this precise hiding power. The main difference between ISO 6504-1 and ISO 6504-3 is the way in which they adjust results or actual hiding power to this theoretical 98% hiding power.

The ISO 6504-3 method requires at least 2 data points and the assumption that hiding power is an approximately linear function of the reciprocal of the spreading rate, at least over a limited coating thickness range that is relevant for the normal application of white or light-coloured paints. However, ISO 6504-3 relies very much on the correct choice of data points, as illustrated below.

Figure 8. Example of relationship between wet film thickness and contrast ration (hiding power).



Source: ISO 6504-3.

With the 6 real data points presented in the graph above, depending on which 2 or 3 data points you choose to apply the linear interpolation to, very different results for the necessary wet film thickness for achieving the theoretical 98% hiding power are estimated (e.g. ca. 125µm, 150µm, 185µm in the example above).

On the other hand, the ISO 6504-1 method only requires a measurement of the reflectance (R_B) and the reflectivity (R_∞) of a pigmented film of thickness (t) on a black background. and using complex equations to relate scattering and absorption coefficients to the optical properties of the film. While there is no room for error in choosing data points as with ISO 6504-3, the Kubela-Munk equations only apply for white or light-coloured paints with a tri-stimulus value of $Y \geq 70$ and hiding power >80%.

For TR2, it is proposed to keep both options for measurement open and to ask which measurements are most commonly used by EU Ecolabel license holders and if there is support for only requiring measurement according to ISO 6504-1.

Definition of terms "undercoat" and "opaque primer": Definition of these terms were required by one Competent Body to assist with the correct assessment and verification of license applications. Regarding the term "opaque primer", it is considered straightforward enough to consider these products as being "primers" according to the definition in Article 4 that also meet the definition of "opaque" according to the definition that will appear at the end of the Annex preamble in the TR2 proposals. Specifically, the definition of opaque would mean a primer that shows a contrast ratio of ≥ 98 % at 120µ wet film thickness (the method is not defined in the definition of "opaque", this could be added).

For the term "undercoat", this could be understood as any coat layer that is not the top coat (finishing coat). According to ISO 4618:2014, relevant definitions to take into account for defining what an undercoat is would be:

- 2.54. Coating system. Combination of all coats of coating materials which are to be applied or which have been applied to a substrate. Note 1 to entry: The actual system can be characterised by the number of coats involved. Note 2 to entry: see also "coating";
- 250.1. Coating. Layer formed from a single or multiple application(s) of a coating material to a substrate;
- 2.207. Priming coat. First coat of a coating system;
- 2.145. Intermediate coat. Any coat applied between the priming coat and the finishing coat;
- 2.112. Finishing coat (top coat). Final coat of a coating system.

Based on these definitions, an undercoat could be either the priming coat or an intermediate coat of a coating system, since both of these types of coat would sit "under" the finishing coat.

Outcomes from and after 1st AHWG meeting and Working Sub-Group 3 (WSG3) meeting about *white pigment content* and WSR (May and June 2024)

A total of 16 comments were received in written form after the 1st AHWG meeting concerning WSR and white pigment content requirements for paints. Concerns were raised about the removal of the 38 g/m² threshold for outdoor paints, with some suggesting it should be reinstated to maintain clarity and consistency across product types. This was an unintentional mistake when restructuring the criterion in the TR1.

There was general support for the proposed criterion, but many emphasized the need for clearer wording, with one suggestion to transfer more of the textual values into the table format (it was not clear to the authors how this could be done any more than was already the case). Other comments focused on a lack of clarity about when a product would be exempt from the requirement. Several comments highlighted the importance of accuracy in WSR measurements and called for these to align with measurement uncertainties.

Some participants suggested that the concept of "washable" (WSR Class 2) and "scrubbable" (WSR Class 1) needs clearer definitions, with a request to specify allowable claims based on WSR class results. There is no universal set of EU rules for paint products regarding these claims and there are other factors involved that contribute to claims like "washable" beyond WSR, for example stain repellency/absorption, compatibility with detergents and so on – meaning that the term "washable" should not be conflated with WSR alone. Overall, there was a strong call for more specific and clearly defined criteria that accurately reflect the performance and real-world applicability of different paint products. However, no specific proposals or potential combinations of tests and required results were provided along with these general comments.

On the topic of high refractive index white pigments, stakeholders questioned how Competent Bodies would verify the accuracy of refractive index declarations. For WSR claims, there was criticism of the current washability tests (EN 13300 and ISO 11998), with some manufacturers arguing they do not accurately reflect real-world performance. In response to stakeholder concerns about how to identify which pigments are high refractive index pigments (RI >1.8) , the list from draft TR1 is maintained here.

- Titanium dioxide (TiO_2): RI = 2.6 to 2.7
- Zinc sulphide (ZnS): RI = 2.4
- Zinc oxide (ZnO): RI = 2.0 to 2.1
- Lithopone ($BaSO_4$+ZnS): RI = 1.8 to 2.1

- Calcium carbonate ($CaCO_3$): RI = 1.65
- Barium sulphate ($BaSO_4$): RI = 1.64

Consequently, the only white pigments that should be counted as contributing to the limits are the top four in the list above.

Stakeholders noted that most products claim WSR as Class 1 or 2 but questioned the relevance of this criterion for product types not typically tested for WSR, such as façade paints, pigmented primers, and paints for wood and metal. Between the new matrix at the beginning of the efficiency in use criterion and the new proposed 2(b) text in TR2, it should be clear that the white pigment content and WSR requirements do not apply to these products.

A WSG meeting on technical performance requirements of paints and varnishes was conducted with all interested parties, where stakeholders were asked to share their insights into 16 prepared working questions. Key points included the ambiguity in defining "light-coloured" paints and the applicability of spreading rates, especially for wood stains and binding primers, with a consensus that further clarification is needed but not urgent. The general idea of linking spreading rate requirements to coatings suitable opacity (≥98%) of a 120 µm thick wet film was considered appropriate.

Participants questioned the utility of the existing criteria table, with suggestions to simplify or remove it. There was general agreement that the spreading rate should not apply to opaque wood stains, and that water resistance requirements should exclude minimal build wood stains. Confusion over the terms “undercoats” and “primers” was acknowledged, as was the need for clearer categorization of coating products, especially furniture and radiator paints. Discussions also covered specific testing standards for masonry coatings, concerns about microplastic release, and the importance of updating criteria to reflect revised standards. No conclusive decisions were taken on some issues, but participants were generally supportive of further refinements to the criteria. Based on the insights from stakeholders, additional clarification was asked from stakeholders in the form of new working questions.

Outcomes from and after 2nd AHWG meeting (November 2024)

During the 2nd AHWG meeting, stakeholders inquired regarding the inclusion of furniture paints in Annex I. In addition, some stakeholders were against including anti-fungal and anti-algal if additional derogations were required.

Concerns were also raised regarding the wet scrub resistance requirement, which is a property only relevant to indoor wall paints and therefore should not apply to other types of paints. In addition, stakeholders argued that primers and binding primers are used in both decorative and performance coatings and should therefore be included in both Annex I and Annex II.

In total, 25 comments were received in written form on Criterion 2 on efficiency in use after the 2nd AHWG meeting. One of the key concerns was the lack of clear definitions within the criteria. For instance, the term “just add water” decorative paints, mentioned in Table 2 (p.6), is not defined in Article 4, where definitions are provided. To address this ambiguity, it was recommended to include a clear definition of this term to ensure uniform understanding and application.

The criterion 2(d) Adhesion, as it currently stands, lacks clarity regarding its applicability to transparent primers. Specifically, it does not state explicitly that it excludes transparent primers, nor does it clarify whether the criterion applies to primers and finishes separately or in combination. Similarly, the criterion 2(e) Weathering in is imprecise, as it missing to specify which colours should be tested. While previous criteria required tests on tintometric bases, the current text leaves this aspect open to interpretation, leading to unnecessary or excessive testing. It is recommended to refine this criterion by providing clear guidance on the selection of colours for testing.

In relation to comments around the inclusion of anti-fungal and anti-algal coatings were received, while some stakeholders argued for their exclusion due to the environmental risks associated with biocides, others emphasized their value in high-humidity regions and their ability to enhance paint durability. To balance these perspectives, it is suggested to retain these products within the scope while imposing stricter biocide-use restrictions and encouraging research into safer, natural alternatives. It should also be explicitly clarified that these coatings are not antimicrobial, as misleading claims can conflict with the Ecolabel's purpose.

A comment in favour of including anti-graffiti coatings in Annex II was received. These products should have specific performance standards to ensure they meet the criteria. Furthermore, a comment pointing out that wet

scrub resistance is only relevant for interior wall paints was raised. Requiring this test for other paint categories, such as varnishes, wood stains, or exterior paints, would be inappropriate and burdensome.

Comments about the technical standards were also raised. The method used to calculate the spreading rate of paints, currently restricted to ISO 6504-1, raises concerns about limiting innovation in testing methods. Newer technologies, such as optical and spectral methods, offer faster and more accurate results, potentially reducing the burden on manufacturers, particularly SMEs. It was recommended to allow validated alternative methods alongside ISO 6504-1 to enhance flexibility while maintaining reliability. Two stakeholders expressed to be in favour of keeping the ISO 6504-3 together with ISO 6504-1 for these criteria. Stakeholders raised that the ISO 6504-3 requires a more careful look to linearity of the function wet film thickness and contrast ratio using 2 data points.

The definition of "opaque" is another area requiring attention. The current requirement, specifying a contrast ratio of ≥98%, is considered overly stringent. Allowing multiple validated methods for measuring opacity, rather than mandating a single method, would ensure broader applicability and better alignment with real conditions.

For the testing protocols, the criterion for resistance to water presents challenges when applied to wood stains and varnishes. Changes in gloss and colour are currently evaluated visually, which is subjective and imprecise under the ISO 4628 series. Given the difficulty in measuring gloss accurately for different finishes (e.g., matte, satin, and gloss), it was recommended to retain the previous criteria for water resistance testing, which were more practical.

The requirements for alkali resistance have been expanded to include indoor paints, introducing additional testing that is unnecessary for less durable products, such as those not claiming wet scrub resistance. It is suggested to restrict alkali resistance testing to exterior paints and to evaluate only the base paints in tinting systems, as different shades can yield variable results based on pigment composition.

For weathering tests and gloss retention, the proposed increase in the gloss reduction limit from ≤30% to ≤50% is supported as it aligns with practical feasibility. However, further clarification is needed for base paints, as the current text introduces inconsistencies regarding the applicability of colour change evaluations.

Further research and main changes in third proposal

Due to confusion of the authors with the use of terms like "base paint", "colour tints", "tints", "white base paint" and so on, further discussion with selected experts to clarify the situation. After exchanges on this matter, it has been decided to replace the term "base paint" with **"tinting base"** because a tinting system will normally have three or four different "bases", each with differing amounts of TiO2 (down to 0%).

The lower TiO2 bases are used to produce darker shades and the higher TiO2 content bases are used for the lighter shades. The lower TiO2 content bases can be transparent or semi-transparent and thus would the term "base paint" will not always align with the definition of "paint" set out in Article 4, which refers to an opaque property ("*'Paint' means a pigmented coating material, supplied in a liquid, paste or powder form, which, when applied to a substrate, forms an opaque film [...]*").

Following on from this explanation, it is evident that specifying the base paints with the highest TiO2 content or at least a white paint tinted to RAL 9010 or the lightest shade available, means that the requirement on spreading rate can be consistently interpreted at a common ambition level between different families of products.

A summary of the main changes in now criterion 1 are as follows:

- In the summary table, the column for "just add water" decorative paints or varnishes has a number of responses that are dependent on what subcategory the product is marketed as. Whatever the subcategory is (because there has to be one for it to enter in the scope of the EU Ecolabel), then it has the same efficiency in use requirements as any other product with that subcategory.
- The term "base paint" is generally replaced by "white base paint" and/or "tinting bases" throughout.
- The note for the spreading rate requirement (criterion 1a) also clearly states that it requires to all white paints or the lightest available shade in a given family of products.
- Allowance is made for equivalent methods to ISO 6504-1 that can be validated against that standard for measuring spreading rate to allow for possible newer and more accurate testing technologies.

- For added clarity, product subcategories have been added when listing the specific spreading rate limits for different products in criterion 1a).
- The table indicating the applicability of WSR and WPC requirements has been heavily reworked and now provides a lot more detail, including reference to specific product subcategories directly in the table. This was necessary since the WSR requirements were mistakenly applied also to other product categories that were not indoor wall and ceiling paints in the TR2 proposals, as pointed out by several stakeholders.
- The scope of requirements to measure white pigment content (WPC) in criterion 1(b) is matched to those products for which a spreading rate must be declared under criterion 1(a). This will facilitate the compilation of data in application files because spreading rate is needed in order to calculate WPC. The worst-case WPCs can be assumed to be covered because spreading rates are to be associated with the lightest shades only or with tinting bases with the highest TiO2 content (being tinted to RAL 9010 if needed).
- The updated criterion 1(c) on resistance to water clarifies that in varnish or wood stain coating systems with a primer, either the full coating system or just the finishing layer may be tested. This allows more flexibility in testing, depending on the product configuration.
- Also with criterion 1(c), the TR3 updated proposal now clearly distinguishes that if the coating is opaque, gloss and colour change is measures, but if the coating is transparent or semi-transparent, only changes in gloss are to be measured. The 5% change threshold for no observable change in gloss has been removed because it was impractical. Now the only rating for degree of change is the visual rating classification system of EN ISO 4628-1, for both size and quantity of defects.
- With criterion 1(d) on adhesion, stakeholders pointed out that the note to the criterion should state that the test can be carried out on the primer alone or the in combination with a finishing coat. This detail has been incorporated into the note in TR3.
- In criterion 1(e) on weathering, some minor clarifications were made the applicability/non-applicability of the specific tests for weathered coatings (i.e. no colour change for transparent or semi-transparent tinting bases and that flaking/cracking/blistering is only applicable to finishing coats, even if part of a coating system).
- Also with criterion 1(e), the maximum decrease of gloss according to ISO 2813 was increased from maximum 30% to maximum 50% as per industry stakeholder feedback stating that the 30% level was very challenging.
- In the remaining efficiency in use criteria, only common minor wording changes such as the reference to tinting bases have been applied and very minor single word changes have been inserted just to improve clarity.

5.3 Criterion 2. Content of Volatile and Semi-volatile Organic Compounds (VOCs, SVOCs)

TR2: Annex I: Second Proposal for Criterion 3: Content of Volatile and Semi-volatile Organic Compounds

The maximum content of Volatile Organic Compounds (VOCs) and Semi-Volatile Organic Compounds (SVOCs) shall not exceed the limits given in Table X.

The content of VOCs and SVOCs shall be determined for the ready to use product and shall include any recommended additions prior to application such as colourants and/or thinners.

Products with a VOC content that is in accordance with the limits in Table X may display the text 'reduced VOC content' and the VOC content in g/l next to the EU Ecolabel.

Table X: VOC and SVOC content limit

VOC and SVOC content limits		
Product description (with subcategory denotation according to Directive 2004/42/EC)	VOC limits (g/l including water)	SVOC limits (g/l including water)
a. Interior matt walls and ceilings (Gloss < 25@60°)	5	25 (1) / 28 (2)
b. Interior glossy walls and ceilings (Gloss > 25@60°)	20	15 (1) / 24 (2)
c. Exterior walls of mineral substrate	15	30
d. Interior/Exterior trim and cladding paints for wood and metal	40	30 (1) / 20 (2)
e. Interior trim varnishes and wood stains, including opaque wood stains	60	10
e. Exterior trim varnishes and wood stains, including opaque wood stains	35	25
f. Interior and Exterior minimal build wood stains	35	25
g. Primers	10	24 (1) / 28 (2)
h. Binding primers	9	9 (1) / 12 (2)
(1) SVOC limit applies to indoor white paints and varnishes		
(2) SVOC limit applies to indoor tinted paints/outdoor paints and varnishes		

The VOC content shall be determined either by calculation based on the ingredients and raw materials or by using the methods given in ISO 11890-2 or, alternatively for products with a VOC content of less than 1.0 g/L, the methods given in ISO 17895. The SVOC content shall be determined using the method given in ISO 11890-2. In the case of products used both indoors and outdoors the strictest SVOC limit value for indoor paints and varnishes shall prevail.

Assessment and verification: the applicant shall provide a declaration of compliance supported by calculations of VOC and SVOC contents based on the ingredients and raw materials used in the ready to use product. Alternatively, the VOC and SVOC contents of the ready to use product shall be communicated via a representative test report or reports using the methods given in ISO 11890-2 or ISO 17895 and results shall demonstrates compliance with the relevant limits.

TR3: Annex I: Third Proposal for Criterion 2: Content of Volatile and Semi-volatile Organic Compounds

The maximum content of Volatile Organic Compounds (VOCs) and Semi-Volatile Organic Compounds (SVOCs) shall not exceed the limits given in Table X.

The content of VOCs and SVOCs shall be determined for the ready to use product and shall include any recommended additions prior to application such as colourants and/or thinners.

Products with a VOC content that is in accordance with the limits in Table 4 may display the text 'reduced VOC content' and the VOC content in g/l next to the EU Ecolabel.

Table 4: VOC and SVOC content limit

VOC and SVOC content limits		
Product description (with subcategory denotation according to Directive 2004/42/EC)	VOC limits (g/l of ready to use product ~~including water~~)	SVOC limits (g/l of ready to use product ~~including water~~)
a. Interior matt walls and ceilings (Gloss < 25@60°)	~~5~~ 10	25 (1) / ~~28~~ 30 (2)
b. Interior glossy walls and ceilings (Gloss > 25@60°)	~~20~~ 30	~~15~~ 25 (1) / ~~24~~ 30 (2)
c. Exterior walls of mineral substrate	~~15~~ 20	~~30~~ 35
d. Interior/Exterior trim and cladding paints for wood and metal	~~40~~ 60	~~30~~ 40(1) / ~~20~~ 50(2)
e. Interior trim varnishes and wood stains, including opaque wood stains	60	~~10~~ 30
e. Exterior trim varnishes and wood stains, including opaque wood stains	~~35~~ 60	~~25~~ 50
f. Interior and Exterior minimal build wood stains	~~35~~ 40	~~25~~ 30(1) / 40 (2)
g. Primers	10	~~24~~ 25 (1) / ~~28~~ 30 (2)
h. Binding primers	~~9~~ 10	~~9~~ 25 (1) /~~12~~ 30 (2)

(1) SVOC limit applies to indoor white paints and varnishes

(2) SVOC limit applies to indoor tinted paints/outdoor paints and varnishes

The VOC content shall be determined either by calculation based on the ingredients and raw materials or by using the methods given in ISO 11890-2 or, alternatively for products with a VOC content of less than 1.0 g/L, the methods given in ISO 17895. The SVOC content shall be determined using the method given in ISO 11890-2. In the case of products used both indoors and outdoors the strictest SVOC limit value for indoor paints and varnishes shall prevail.

Assessment and verification:

The applicant shall provide a declaration of compliance supported by calculations of VOC and SVOC contents based on the ingredients and raw materials used in the ready to use product. Alternatively, the VOC and SVOC contents of the ready to use product shall be communicated via a representative test report or reports using the methods given in ISO 11890-2 or ISO 17895, as appropriate, and results shall demonstrate compliance with the relevant limits.

Rationale for the proposed criterion text

The VOC and SVOC content of paints and varnishes have clear health effects on exposure to professionals in all types of application and on exposure to building occupants in the case of indoor paints and varnishes. Health impacts can be headaches and eye, throat, and nose irritation caused by short-term exposure, while long-term exposures can cause serious kidney damage and even cancer. The emission of VOCs to outdoor ambient air can also contribute to photochemical smog formation. The importance of these health and environmental issues is reflected by Directive 2004/42/CE[29], known as the 'Paints Directive', which set mandatory upper limits for VOC content for various types of paint and varnish products. This Directive aimed to limit the total content of volatile organic compounds (VOCs*) due to the use of organic solvents in certain paints and varnishes and vehicle refinishing products. This would prevent or reduce air pollution resulting from the contribution of VOCs to forming ozone in the troposphere, the lowest layer of the earth's atmosphere.

In setting new limits, it was considered that the 'Paints Directive' dates back to 2004 and advancements in paint production technologies have occurred over the past 20 years. Collected data confirmed that the limits

[29] Directive 2004/42/CE of the European Parliament and of the Council of 21 April 2004 on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and vehicle refinishing products and amending Directive 1999/13/EC (OJ L 143, 30.4.2004, p. 87).

established by the Directive are higher than the product-specific data limits obtained from stakeholders. Therefore, the EU Ecolabel is establishing lower limits based on this product-specific data.

The EU Ecolabel criterion proposes to go further by setting lower limits than those in the 'Paints Directive' and by also setting limits for SVOC contents.

Main changes in the criterion

In the draft TR1, no changes were proposed for this criterion. However, in the draft TR2, several adjustments were introduced. These included a reduction in the limits for VOC and SVOC content. Additionally, the categories of (i) One-pack performance coatings and (j) Two-pack reactive performance coatings, which are intended for specific end uses such as flooring and anti-rust applications, were moved to Annex II for performance coatings. Furthermore, the category (l) Decorative effect coatings was removed from the criteria altogether. In this draft TR3, the proposed values for VOC and SVOC were increased, but not back to the original levels of the 2014 criteria. Specific stakeholder comments were taken into consideration to justify the new limits.

Outcomes from and after 1st AHWG meeting and Working Sub-Group 2 (WSG2) meeting (May and June 2024)

After the 1st AHWG meeting, 26 written comments were received regarding the existing criteria for VOC/SVOC content. Opinions on the existing criterion were mixed. Some stakeholders opposed lowering VOC and SVOC thresholds, arguing that reducing VOC limits requires increasing SVOCs and vice versa. They highlighted that these substances are crucial for effective film formation in paints and varnishes and noted that current VOC limits are already stricter than EU regulations, suggesting that further reductions might not be appropriate.

In contrast, other stakeholders advocated for setting stricter limits, citing health and environmental benefits. They noted that the previous limits, established in 2014, do not reflect advancements in paint formulations over the past decade. These stakeholders recommended aligning the criteria with those of other European ecolabels, such as the Austrian and Blue Angel ecolabels.

There was also a suggestion to use average data from current EU Ecolabel licenses to assess the feasibility of changing thresholds. Support was expressed for implementing both in-can and emission testing requirements for VOCs/SVOCs to protect consumers and professionals, as VOC/SVOC content and emissions are separate issues. Additionally, a holistic analysis of stricter VOC/SVOC limits was urged, considering factors like climate variations, storage stability, and impacts on paint durability and performance. Stakeholders also noted the challenges in calculating VOC/SVOC content due to limited available data, recommending that measurements be preferred over calculations.

Questions were raised about whether products approved for the EU Ecolabel need to be re-measured and resubmitted if new substances are added to the LCI-list. Regarding SVOC testing methodology, there was debate over whether mandatory SVOC and VOC testing is necessary, with some advocating for reliance on raw material suppliers' data and calculations based on concentration. ISO/TR 5601:2023 was referenced, recommending ISO 11890-2 as the primary method and ISO 17895 as a backup. There were also requests to define g/l including water and preferences for units like Gew% or mg/kg.

On the feasibility of "VOC-free" or "zero-VOC" claims, stakeholders noted that such claims are not practical due to regulatory standards and limitations in paints. While low-VOC paints are available, achieving truly VOC-free or zero-VOC paints is not feasible due to trace amounts that inevitably remain.

A subsequent WSG meeting on license data presented the current VOC and SVOC content of licensed paints and aimed to gather stakeholder insights on potential limit changes. However, no feedback was received. Consequently, stakeholders were asked to provide VOC and SVOC data on licensed products to assess the feasibility of tighter limits.

Written comments after the WSG2 meeting highlighted significant challenges in meeting the EU Ecolabel criteria while maintaining paint quality. Concerns were raised about how reducing VOC and SVOC levels might impact key performance aspects such as applicability, film formation, and freeze-thaw stability. Stakeholders noted that stricter VOC/SVOC limits could be particularly problematic in Southern Europe, where hot and dry climates could cause paints to dry too quickly, leading to poor film formation and reduced durability. This might result in increased paint usage to correct defects, counteracting environmental benefits. Additionally, reducing VOCs alongside biocide content could heighten the risk of microbial contamination, especially given the lack of temperature control in storage environments. High summer temperatures further complicate paint performance and shelf life.

Overall, stakeholders expressed scepticism about the real environmental benefits of further reducing VOC/SVOC limits. They suggested that focusing on indoor air quality criteria might lead to more meaningful environmental improvements than simply lowering these chemical contents.

Outcomes from and after 2nd AHWG meeting (November 2024)

During the 2nd AHWG meeting, opinions were split on the limit values proposed. Some expressed support for the new limits, while others argued that a considerable share of the French products would no longer comply with the new limits.

An inquiry on whether the cumulative effects of the different requirements across criteria were analysed by the project team to determine how many licenses would fail to comply with the multiple requirements. In addition, concerns were raised regarding category e), which has very few data points and inquired whether this data was sufficiently representative to justify the use of the proposed limits.

Following the meeting, a total of 19 written comments were received concerning the existing criteria for VOC/SVOC content. The majority of the feedback highlighted concerns that the proposed thresholds were overly ambitious and that the limits were set too low.

Stakeholders emphasized that such low thresholds could compromise the quality and durability of EU Ecolabel paints. They noted that reduced durability could result in more frequent reapplications, ultimately increasing the environmental impact of EUEL paints.

Specific concerns were raised regarding certain paint categories, such as *d. Interior/Exterior trim and cladding paints for wood and metal*, stating that the proposed limits may not be feasible for Mediterranean climates. Comments also suggested that aligning the criteria with standards such as the Austrian Ecolabel or the Blue Angel label is not entirely relevant, as these labels do not account for the diverse climate conditions across all European countries.

Additionally, some stakeholders expressed that lowering VOC/SVOC limits might compromise other EUEL parameters. They pointed out that reducing VOC levels often necessitates the use of more in-can preservatives to maintain product stability, which could lead to increased formulation complexity to meet other Ecolabel requirements.

Overall, the feedback reflected widespread concern regarding the proposed lower VOC/SVOC levels. Stakeholders also provided suggestions for alternative threshold values to address these concerns while maintaining the balance between environmental impact and product performance.

Outcomes from and after EUEB meeting (November 2024)

During the EUEB meeting, stakeholders expressed split opinions on this criterion. While some were in favour of the limits proposed, others expressed concerns over the emission levels of VOC and highlighted that some of their license holders would not be able to comply with the new limits.

Following the EUEB meeting, 3 comments were received on this criterion, reflecting split opinions. While some stakeholders supported the proposed VOC and SVOC limit values, others argued that the changes were too drastic and, in some cases, unfeasible. VOC reductions for categories a, b, c, d, and e1 were considered achievable, but the proposed limits for category e2 and beyond were viewed as too strict. Similarly, the SVOC limits, particularly for category h, were described as too restrictive, approaching the detection limits of current measurement techniques.

Stakeholders also questioned the need for labelling products with the phrase "reduced VOC content," suggesting that compliance with the revised criteria should be sufficiently indicated by the EU Ecolabel itself.

Other stakeholders argued that most license holders already meet the proposed VOC and SVOC limits but raised concerns about the potential impact on product performance and market acceptance. Reduced solvent levels can compromise the application performance of paints, particularly in hot and dry climates, where achieving uniform application becomes more challenging, leading to lower-quality finishes. This could affect consumer perception and competitiveness, as products might be seen as offering inferior finishes compared to alternatives.

Stakeholders urged that the analysis of the proposed criteria revisions take into account the specific challenges associated with product performance in hot and dry climates to avoid unintended barriers for future applicants.

Further research and main changes in the second proposal

Based on the data received before and after the WSG2, graphs were drawn for VOC and SVOC content, to determine if new limits could be set (further details included below and in Appendix 2 in TR2).

Data from five different CBs were collected and analysed to establish new VOC and SVOC limits for criterion 3. Emissions from the EU Ecolabel formulations provided by the CBs were used to calculate potential reductions. Reductions ranging from 10% to 50% were evaluated to determine how many products would no longer comply with the EUEL under the proposed limits. Table 8 shows the number of products and licenses used in the calculation of the new VOC and SVOC limits.

Table 8. Data received from CB on licence and licenced products

Products	Licences	Licensed products
a. Interior matt walls and ceilings (Gloss <25@60°)	280	213 864
b. Interior glossy walls and ceilings (Gloss >25@60°)	20	241
c. Exterior walls of mineral substrate	16	93
d. Interior/Exterior trim and cladding paints for wood and metal	103	330 909
e. Interior trim varnishes and wood stains, including opaque wood stains	4	27
e. Exterior trim varnishes and wood stains, including opaque wood stains	3	245
f. Interior and Exterior minimal build wood stains	0	0
g. Primers	36	142
h. Binding primers	18	6
I. Decorative effect coatings	1	12

Source: Own elaboration using information received from CBs.

A more detailed analysis of the data received was presented in Appendix 2 of TR2. For products in category *(a) Interior matt walls and ceilings (Gloss <25@60°),* 18% of the formulations would exceed the new proposed EUEL limit. In category *(b) Interior glossy walls and ceilings (Gloss >25@60°)* and category *(c) Exterior walls of mineral substrate*, 24% and 22% of the formulations, respectively, would be excluded under the new limit. Category *(d) Interior/Exterior trim and cladding paints for wood and metal* would see an 8% exclusion from the existing EUEL, while for category *(e) Interior trim varnishes and wood stains, including opaque wood stains*, the exclusion rate would be 4%. For category (e) Exterior trim varnishes and wood stains, including opaque wood stains, no products would be excluded based on the received data.

No data were available for category *(f) Interior and Exterior minimal build wood stains*; thus, the assumption for the new limit was based on data from category *(e).* However, there was no information on the percentage of products that would be excluded from the EUEL under the new limit for this category. In category *(g) Primers*, 12% of the existing EUEL products would be excluded under the new limit, while 17% would be excluded in category *(h) Binding primers.*

Data received for category *(I) Decorative effect coatings*, was insufficient to set a new limit, with only one formulation available. To establish new limits for this category, assumptions were made based on the characteristics of the paints and their similarities with other categories. It was assumed that category *(I)* would adopt the same limits as category *(b)*, however no information on the exclusion of existing products is possible due the lack of information.

Further research and main changes in the third proposal

Following the comments received after the 2nd AHWG meeting, new graphs were prepared to reflect updated VOC and SVOC content limits and included in a new Appendix 2 in this TR3. Stakeholder feedback on the proposed limits was integrated with previously submitted data from five different CBs. This combined information was analysed to establish revised thresholds for now renumbered criterion 2.

When determining the new limits, several factors were taken into account. These included formulation data provided by CBs, stakeholder insights on regional climate variations and the durability. Stakeholders also proposed alternative limits, which were considered during the analysis. It was assumed that if a paint fails to meet either the VOC or SVOC limit, it would no longer qualify for the EU Ecolabel. To comply, paints must meet

both the VOC and SVOC thresholds. Since no new data were submitted by CBs or stakeholders, Table 8 shown above summarizes the number of products and licenses included in the calculations.

A comprehensive analysis of the data received is provided again in Appendix 2 of this report indicating the new limits set in this TR3 compared to the limits in the current 2014 criterion. For products in category (a) *Interior matt walls and ceilings (Gloss <25@60°)*, 6% of formulations received are expected to exceed the newly proposed EUEL limit. In category (b) *Interior glossy walls and ceilings (Gloss >25@60°)*, the limits were adjusted in response to stakeholder feedback, resulting in only one product from the analysed data being non-compliant. While the number of non-compliant products remains unchanged, the new limits represent a substantial reduction of approximately 38% in VOC content, and reductions of 17% and 25% in SVOC content for indoor white paints and varnishes and indoor tinted paints/outdoor paints and varnishes, respectively, compared to the 2014 EU Ecolabel limits.

For category (c) *Exterior walls of mineral substrate*, 6% of products would no longer meet the EU Ecolabel under the revised limits. Similarly, category (d) *Interior/Exterior trim and cladding paints for wood and metal* shows a 5% exclusion rate, while category (e) *Interior trim varnishes and wood stains, including opaque wood stains* sees a 4% exclusion rate. For category (e) *Exterior trim varnishes and wood stains, including opaque wood stains*, none of the products in the dataset would be excluded under the new limits.

For category (f) *Interior and Exterior minimal build wood stains*, no data were available. As a result, the proposed limits were developed based on stakeholder feedback from the 2nd AHWG meeting, but the exclusion percentage for this category remains unknown. In category (g) *Primers*, 12% of current EUEL products are expected to exceed the new limit, while category (h) *Binding primers* shows a 6% exclusion rate.

Table 9. Comparison of current EUEL Limits and proposed limit reductions (2014 EU Ecolabel and TR3 proposal)

Products	Limit reduction (%)	
	VOC	SVOC
a. Interior matt walls and ceilings (Gloss <25@60°)	No reduction	17% (1)/ 25% (2)
b. Interior glossy walls and ceilings (Gloss >25@60°)	38%	17% (1)/ 25% (2)
c. Exterior walls of mineral substrate	28%	13%
d. Interior/Exterior trim and cladding paints for wood and metal	25%	20% (1)/ 17% (2)
e. Interior trim varnishes and wood stains, including opaque wood stains	8%	No reduction
e. Exterior trim varnishes and wood stains, including opaque wood stains	20%	17%
f. Interior and Exterior minimal build wood stains	No data available	No data available
g. Primers	33%	17% (1)/ 25% (2)
h. Binding primers	33%	17% (1)/ 25% (2)

Overall, Table 9 provides a summary of the reduction percentages between the current EU Ecolabel limits and the proposed new limits. VOC reductions range from 8% to 38%, while SVOC reductions span from 13% to 25%. Although the 3rd proposal raised the limits compared to the 2nd proposal, the revised thresholds still represent a reduction from the current limits, maintaining the goal of minimizing VOC and SVOC content in alignment with the criteria's environmental objectives.

5.4 Criterion 3. Restriction of hazardous substances and mixtures

5.4.1 Sub-criterion 3.1 on horizontal SVHC restrictions

TR2: Annex I: Second Proposal for Criterion 4: Restriction of hazardous substances and mixtures

Note: These criteria apply to the final product and any components therein and, unless specified otherwise, applies equally to all paint and varnish products included in the scope.

4.1. Restrictions on Substances of Very High Concern (SVHCs)

The final product formulation shall not contain any ingoing substances or mixtures that meet the criteria referred to in Article 57 of Regulation (EC) No 1907/2006 that have been identified according to the procedure described in Article 59 of that Regulation and included in the candidate list for substances of very high concern for authorisation.

Assessment and verification:

The applicant shall provide a signed declaration that the final product and any supplied ingredients therein do not contain any SVHCs as ingoing substances. The declaration shall be supported by safety data sheets of all supplied ingredients used to produce the final product and declarations from the chemical suppliers

The list of substances identified as SVHCs and included in the candidate list in accordance with Article 59 of Regulation (EC) No 1907/2006 can be found here:

https://www.echa.europa.eu/candidate-list-table

Reference to the list shall be made on the submission date of the EU Ecolabel application.

For impurities identified as SVHCs in ingredients, the concentration of the impurity and an assumed retention factor of 100%~~,~~ shall be used to estimate the quantity of the SVHC impurity remaining in the final product. Impurities that are SVHCs cannot be present in the paint or varnish product above 0,0100% w/w or in any ingredient in concentrations exceeding 0,100% w/w. Any deviation from a retention factor of 100% for an SVHC impurity (e.g. solvent evaporation~~)~~ or ~~for~~ chemical modification) must be supported by adequate justifications.

TR3: Annex I: Third Proposal for Criterion 3: Restriction of hazardous substances and mixtures

Note: These criteria apply to the final product and any components therein and, unless specified otherwise, applies equally to all paint and varnish products included in the scope.

3.1. Restrictions on Substances of Very High Concern (SVHCs)

The final product formulation shall not contain any ingoing substances ~~or mixtures~~ that meet the criteria referred to in Article 57 of Regulation (EC) No 1907/2006 that have been identified according to the procedure described in Article 59 of that Regulation and included in the candidate list for substances of very high concern for authorisation.

Assessment and verification:

The applicant shall provide a signed declaration that the final product and any supplied ingredients therein do not contain any SVHCs as ingoing substances. The declaration shall be supported by safety data sheets of all supplied ingredients used to produce the final product and declarations from the chemical suppliers.

The list of substances identified as SVHCs and included in the candidate list in accordance with Article 59 of Regulation (EC) No 1907/2006 can be found here:

https://www.echa.europa.eu/candidate-list-table

Reference to the list shall be made on the submission date of the EU Ecolabel application.

For impurities identified as SVHCs in ingredients, the concentration of the impurity and an assumed retention factor of 100%~~,~~ shall be used to estimate the quantity of the SVHC impurity remaining in the final product. Impurities that are SVHCs cannot be present in the paint or varnish product above 0,0100% w/w or in any ingredient in concentrations exceeding 0,100% w/w. Any deviation from a retention factor of 100% for an SVHC impurity (e.g. solvent evaporation) or chemical modification) must be supported by adequate justifications.

Rationale for the proposed wording of criterion 3.1: Restrictions on SVHCs

The restriction of SVHCs is a cross-cutting requirement for all EU Ecolabel product groups that are “goods” and is rooted in Articles 6(6) and 6(7) of Regulation (EU) 66/2020 on the EU Ecolabel, which in particular say:

"[...] The EU Ecolabel may not be awarded to goods containing substances or preparations/mixtures meeting the criteria for classification as toxic, hazardous to the environment, carcinogenic, mutagenic or toxic for reproduction (CMR), [...] nor to goods containing substances referred to in Article 57 of Regulation (EC) No 1907/2006 [...]"

"[...] No derogation shall be given concerning substances that meet the criteria of Article 57 of Regulation (EC) No 1907/2006 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). [...]"

All SVHCs have REACH Article 57 hazardous properties (i.e. CMR, PBT, vPvB or endocrine disrupting) and have gone through the process defined in REACH Article 59 in order to end up on the Candidate List[30]. Consequently, Articles 6(6) and 6(7) are effectively a cross-cutting restriction on Substances of Very High Concern (SVHCs) and with no possibility to derogate for the presence of SVHCs above levels of 0,10% in the final product.

Since 2010, the precise interpretation of these Articles into criterion text for SVHC restrictions has evolved into different wordings in different sets of EU Ecolabel criteria for different product groups, also being influenced by the recommendations of the two EU Ecolabel Chemical Task Forces (CTF 1[31] and CTF2[32]). The wording used in recent EU Ecolabel Decisions is different to what was agreed upon back in 2014 for paints and varnishes.

A general agreement is that there should be allowance for potential SVHC impurities up to 0,010% in EU Ecolabel product groups that are mixtures and that this can be verified by setting a limit of 0,10% in all ingredients. The 0,10% limit for impurities in ingredients is considered reasonable because it aligns with the same level of legal obligations, under Articles 7(2) and 33 of REACH, for any producer or importer to notify about the presence of SVHCs (in articles) to ECHA or to downstream customers or end user who make a request.

Main changes in the first proposal

Therefore, the first proposal in draft TR1 involved a restructuring of the requirement. The precise wording was mostly copied from the most recently voted EU Ecolabel criteria, which was "absorbent hygiene products and reusable menstrual cups" in Decision (EU) 2023/1809.

The concept of a "retention factor" was inserted in TR1 as well, where any impurities are by default assumed to fully remain in the final product unless an adequate justification can be provided for the retention factor to be less than 100%. This approach is considered as a conservative approach that does not burden applicants and suppliers with the need to provide detailed explanations about the behaviour of individual SVHCs, but gives at the same time freedom for such explanations to be provided if and when deemed necessary.

Outcomes from and after 1st AHWG meeting (May 2024)

A total of 9 written comments were submitted to BATIS regarding the SVHC restrictions proposed in TR1, 6 of which were also covering other areas too. Stakeholders questioned the use of terms like "unavoidable impurities", "components" and "chemical product" in sub-criterion 4.1 (then actually 5.1). In TR2, the term "component" was removed because this is only appliable to products that are articles, not mixtures. The term "unavoidable impurity" was replaced by "impurity" because demonstrating the unavoidable nature of an impurity is uncertain from a legal perspective. The term "chemical product" was replaced by "supplied ingredient" especially since perhaps the final paint or varnish itself can be considered as a chemical product. Another important distinction was the term "ingoing substances", a term that was also defined in recent EU Ecolabel criteria for other product groups and which refers to substances that are intentionally added to the product, regardless of the amount added. The intentional addition is the key principle that distinguishes "ingoing substances" from "impurities". All substances in any mixture can be split into ingoing substances and impurities.

Definitions of the terms "ingoing substances" and "impurities" were added to TR2 to add legal certainty about the application of the SVHC restrictions. These definitions are similar to those used for recently adopted EU Ecolabel product groups but not the same, since it was considered that the wording should be adapted to the paint and varnish product group.

[30] Candidate List of substances of very high concern for Authorisation https://echa.europa.eu/candidate-list-table
[31] Chemical Task Force 1 (2014) https://environment.ec.europa.eu/document/78ee171e-c4b9-4319-995a-7ee937ffb468_en
[32] Chemical Task Force 2 (2018) https://environment.ec.europa.eu/document/5f7c68a7-7188-4f49-9b68-f432a9ae408e_en

Outcomes after 2nd AHWG meeting (November 2024)

A total of 8 written comments were submitted regarding to sub-criterion 43.1 on SVHC restrictions in TR2. With regards to the retention factor of 100%, mentioned in both the TR1 and TR2 proposals, one stakeholder asked what would constitute an "adequate justification" for deviations from a 100% retention factor. In response to the comment, it was answered that it should constitute an explanation of *"how a hazardous substance can be physically removed or chemically modified during a particular manufacturing or reaction process to an extent that can be verified by testing for the hazardous substance before and after said process and/or be based on known reaction chemistries and kinetics under the typical process conditions"*. Such an explanation could potentially be inserted as a footnote into the legal text or simply left for the User Manual. In any case, the answer is recorded both here in this rationale section of the TR3 and in the response column for the 2nd Table of Comments.

A request was made to remove reference to "mixtures", again mentioned in both the TR1 and TR2 proposals, because it is incorrect to refer to "mixtures on the Candidate List for substances of very high concern". This change was applied in this TR3, although technically speaking, a few of the entries on the SVHC Candidate List could be considered as mixtures of reaction products and so on, for example, the SVHC: "Oligomerisation and alkylation reaction products of 2-phenylpropene and phenol" which is registered by ECHA with EC/List No 700-960-7.

A repeated request was made from a stakeholder to delete the text in sub-criterion 3.1 that refers to Article 59. As mentioned before, for a substance to become an SVHC, it first needs to be classified with Article 57 hazards and then it has to go through a process defined in Article 59. There are many Article 57 substances that have not gone through the Article 59 process. The consequence of removing any reference to Article 59 would be to increase the scope of the restriction from the 247 chemicals on the SVHC Candidate List[33] to around 1404 substances that are present on the SIN List. Around 473 of those 1404 substances are tagged in the SIN List as being of relevance to the paints and pigments sector. However, such an expansion of the restrictions would have been a deviation from how this requirement is applied in all EU Ecolabel product groups and, upon checking the SIN List, it could be seen that the majority of substances had not been tagged as having alternatives available. Furthermore, the restriction also applies to suppliers, and thus the full consequences of removing references to Article 59 from criterion 3.1 are likely to be unforeseen. Therefore reference to Article 59 remains in criterion 3.1 in TR3.

Another comment was made (common to both SVHC restrictions and the CLP restrictions in criterion 3.2), that a horizontal restriction set at the same level for all substances with any one of a broad list of restricted CLP hazards of differing severity was not scientific and that a risk-based approach should be used instead. While such an approach seems reasonable at first glance, it would greatly increase the complexity of assessment and verification for EU Ecolabel applicants and Competent Bodies and would be a major deviation from the established procedure for all EU Ecolabel product groups that are goods. The established EU Ecolabel procedure is hazard classification based and is purely quantitative in terms of how much of the hazardous substance is present. The established approach also sends a much clearer signal to supply chains and formulators and so no shift to a risk-based approach is proposed in TR3.

Further research and main changes in the third proposal

Consequently, the only change to the sub-criterion 3.1 in this third proposal has been to delete the **work "mixtures"** from the text because only "substances" are included in the Candidate List for substances of very high concern.

5.4.2 Sub-criterion 3.2 on horizontal CLP restrictions

TR2: Annex I: Second Proposal for Criterion 4: Restriction of hazardous substances and mixtures
4.2. General restrictions based on classifications according to specific hazard classifications defined in Regulation (EC) No 1272/2008. (a) Final product The final product shall not be classified 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 and associated

[33] At the time of writing this report, 247 entries are included in the SVHC list https://echa.europa.eu/-/echa-adds-five-hazardous-chemicals-to-the-candidate-list-and-updates-one-entry (last consulted on 28 January 2025)

with any of the hazard statement codes stated in Table X. The only exception permitted to this rule shall be the H412 and H413 hazards, and only in the case of outdoor paints or varnishes and only due to levels of dry-film preservatives needed.

(b) Ingoing substances

Unless derogated in Table Y, any ingoing substances or mixtures that are present in concentrations exceeding 0,010 % weight bye weight of the final product formulation shall not have been assigned any of the hazard classes, categories and associated hazard statement codes stated in Table X, in accordance with Regulation (EC) No 1272/2008.

Table X. Excluded hazard classes, categories and associated hazard statement codes

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.	
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	
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 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

Table Y. Derogations to restrictions on ingoing substances and mixtures that are classified with one or more of the restricted hazards listed in Table X and are present in concentrations greater than 0,010% (weight by weight) of the final product formulation.

Substance type, substance name and CAS number	Derogated hazard code(s)	Derogation conditions
Preservatives and preservative stabilisers		
Note for combined preservative limits: the maximum quantity of any combination of in-can preservatives that are approved or that have an initial application for approval in progress under Regulation (EC) No 528/2012 for Product Type 6 applications shall be 0,080 % weight by weight of the final product. *Any permitted use of dry-film preservatives shall be considered as being independent of the allowance for in-can preservatives.*		
In-can preservative: N-(3-aminopropyl)-N-dodecylpropane-1,3-diamine (CAS No 2372-82-9)	H301, H373, H400, H410	*See horizontal derogation condition at foot of table Cannot be present in the final product formulation in quantities exceeding 0,050 % (weight by weight).
In-can preservative: Sodium pyrithione (CAS No 3811-73-2)	H311, H317, H331, H372, H400, H411, EUH070	*See horizontal derogation condition at foot of table Can only be used up to 0,050 % weight by weight in the final product.
In-can preservative: Bronopol (CAS No 52-51-7);	H301, H317, H331, H400, H411	*See horizontal derogation condition at foot of table The use of any formaldehyde releasing preservatives must be declared by the applicant. Bronopol cannot be added in concentrations >0,030 % weight by weight in the final product. Limits of free formaldehyde, as measured in the final product, shall not exceed the relevant limits defined in criterion 4.3(i).
In can preservative: Isothiazoline or izothiazoline-releasing substances:	H317, H330, H400, H410	*See horizontal derogation condition at foot of table The total quantity of all isothiazoline substances added to the final product shall not exceed 0,040 % weight by weight in the final product. In cases where isothiazoline preservatives are actively added by the paint or varnish manufacturer, the final product shall be tested for isothiazoline content to verify compliance with the combined limit.
Tinting machine preservatives: Same derogations as listed above for in-can preservative apply, plus: 3-iodo-2-propynyl butylcarbamate (IPBC, CAS No 55406-53-6)	H317, H330, H331, H372, H400, H410	Applicable to tinting systems. The combined sum of in-can preservatives used in the tinting machine shall not exceed 0,20% weight by weight in the colour tints. The concentration of IPBC shall not exceed 0,10% weight by weight. When mixed with base paint, the overall concentrations of in-can preservatives shall be low enough to demonstrate compliance with any individual limits in the rows above in the final tinted paint product as well as the horizontal derogation condition*.
Dry-film preservatives:	H330, H400, H410, H411, H412 and H317 (Additionally, and only for IPBC: H331 and H372)	Only applies to outdoor products and indoor products for use in high humidity areas. *See horizontal derogation condition at foot of table The sum total of dry-film preservatives with any of these derogated hazards shall: Not exceed 0,10 % weight by weight in indoor products for use in high humidity areas

		Be less than 0,50% weight by weight in outdoor products. Higher concentrations may be permitted in the case of slow release, encapsulated forms of dry-film preservatives, but only in cases where the formulation can be tested to demonstrate that the specific formulation of the final product, or read-across formulations, would not be classified with any of the hazards listed in Table X. Any dry-film preservatives classified as H400 or H410 must be non-bioaccumulative, demonstrated by having an octanol-water coefficient (Log K_{ow}) of ≤ 3.2 or a bioconcentration factor (BCF) of ≤ 100.
Preservative stabiliser: Zinc oxide (CAS No 1314-13-2)	H400, H410	*See horizontal derogation condition at foot of table Permitted to be used as a preservative stabiliser, in concentrations up to 0,040 % weight by weight of the final product, when used to stabilise tinting paste, in-can or dry-film preservative~~ons~~ combinations that require 1,2-Benzisothiazol-3(2H)-one (BIT).
Drying and anti-skimming agents		
Anti-skimming agents	H317, H412, H413	*See horizontal derogation condition at foot of table The sum total anti-skimming agent content shall not exceed 0,40 % weight by weight in the final product.
Driers (siccatives)	H301, H317, H373, H400†, H410†, H412, H413	*See horizontal derogation condition at foot of table The sum total drier content shall not exceed 0,10 % weight by weight in the final product. † The derogation for H400 and H410 only applies to cobalt-based drier compounds and such compounds can only be used up to 0,050 % weight by weight in the final product.
Corrosion inhibitors		
Anti-corrosion pigments	H410, H411, H412, H413.	*See horizontal derogation condition at foot of table Only allowed in quantities up to 8,0 % weight by weight in interior/exterior trim and cladding paints. Allowed in quantities up to 2,0 % in all other product categories.
Other, miscellaneous		
Adipic acid dihydrazide (CAS No 1071-93-8)	H317, H411	*See horizontal derogation condition at foot of table Only allowed up to 1,0 % weight by weight and when used as an adhesion promoter or as a crosslinking agent.
Methanol (CAS No 67-56-1)	H301, H311, H331, H370	*See horizontal derogation condition at foot of table Only permitted as a residual reaction product of other substances in the product formulation. Allowable residual concentration increases as a function of binder content in the following manner: - Binder content of 10-20%: allowable residual methanol is 0,020 % weight by weight in the final product. - Binder content of 20-40%: allowable residual methanol is 0,030 % weight by weight in the final product. - Binder content of >40%: allowable residual methanol is 0,050 % weight by weight in the final product.
Mineral raw materials, including fillers	H373	*See horizontal derogation condition at foot of table Only applies to mineral raw materials and leucophyllite minerals that naturally contain crystalline silica.

Neutralising agents	H301, H311, H331, H400, H410, H411, H412, H413	*See horizontal derogation condition at foot of table Only allowed up to 1,0 % weight by weight in varnishes ~~and floor paints~~, and up to 0,50 % in all other products.
Optical brighteners	H413	*See horizontal derogation condition at foot of table Only allowed up to 0,10 % weight by weight of the final product.
Silicon resin	H412, H413	*See horizontal derogation condition at foot of table Only allowed up to concentrations of 2,0 % weight by weight in the final product.
Solvents	H304	*See horizontal derogation condition at foot of table Only allowed up to concentrations of 1,0 % weight by weight in the final product.
Surfactants	H411, H412, H413	*See horizontal derogation condition at foot of table Only allowed up to 1,0 % weight by weight in transparent, semi-transparent, white or light-coloured products or up to 3,0 % weight by weight in all other colours of products.
Titanium dioxide (in a powder form containing 1% or more of particles with aerodynamic diameter ≤ 10μm)	H351 (inhalation)	*See horizontal derogation condition at foot of table The applicant shall demonstrate that they have systems in place to minimise worker exposure to dry TiO2 powder in the workplace (e.g. closed dosing systems, ventilated dosing and mixing areas and personal protective equipment).
Trimethylolpropane	H361fd	*See horizontal derogation condition at foot of table Only when used as an additive in supplied pigments and only up to a maximum concentration of 0,50 % weight by weight of the supplied pigment.
Unreacted monomers (in binders)	H400 +???	*See horizontal derogation condition at foot of table Only allowed up to sum total concentrations of 0,050 % weight by weight in the final product.
UV stabilisers	H317, H411, H412, H413	*See horizontal derogation condition at foot of table Only applicable to outdoor products and only up to a maximum concentration of 0,60 % weight by weight to the final product formulation.

*Horizontal derogation condition: none of the derogations above, either individually or in combination, shall be permitted if they result in the final product being classified with any of the hazards defined in Table X, with the notable exception of H412 and H413 for outdoor products due to the presence of dry-film preservatives.

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 not apply to:

— substances not included in the scope of Regulation (EC) No 1907/2006 as defined in Article 2(2) of that Regulation;

— substances covered by Article 2(7)(b) of Regulation (EC) No 1907/2006, which sets out the criteria for exempting substances included in Annex V to that Regulation from the registration, downstream user and evaluation requirements.

Assessment and verification:

The applicant shall provide a signed declaration of compliance with sub-criterion 4.2, a list of all chemicals used, their concentrations in the format supplied, safety data sheets for the chemicals supplied, the quantities added to the final product formulation and any other relevant declarations from suppliers or chemical producers that are necessary in order to demonstrate compliance with the relevant requirements.

Substances known to be released or to degrade from ingoing substances are considered ingoing substances and not impurities.

Any 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% (e.g. solvent evaporation) or for chemical modification of a restricted impurity shall be provided.

For substances exempted from sub-criterion 4.2 (see Annexes IV and V to Regulation (EC) No 1907/2006), a declaration to this effect by the applicant shall suffice to demonstrate compliance.

Since multiple products or potential products using the same process chemicals may be covered by one EU Ecolabel license, the calculation only needs to be presented for each impurity for the worst-case product within a common family of products covered by the same license.

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.

TR3: Annex I: Third Proposal for Criterion 3: Restriction of hazardous substances and mixtures

3.2. General restrictions based on classifications according to specific hazard classifications defined in Regulation (EC) No 1272/2008.

(a) Final product

The final product shall not be classified as being carcinogenic, mutagenic, ~~or~~ toxic for reproduction, acutely toxic, an aspiration hazard, a specific target organ toxicant, a respiratory or skin sensitiser, ~~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 Regulation (EC) No 1272/2008 and specifically in terms ~~associated with any~~ of the hazard statement codes stated in Table X. The only exception permitted to this rule shall be the H412 and H413 classification~~hazards~~, and only if due to levels of dry-film preservatives in the case of outdoor paints or varnishes ~~and only due to levels of dry film preservatives needed~~.

(b) Ingoing substances

Unless derogated in Table Y, the final product formulation shall not contain any ingoing substances ~~or mixtures~~ in concentrations at or above ~~exceeding~~ 0,010 % weight by weight of the final product formulation that are classified, in accordance with Regulation (EC) No 1272/2008, with ~~shall not have been assigned~~ any of the hazard classes, categories and associated hazard statement codes stated in Table X~~, in accordance with Regulation (EC) No 1272/2008~~.

Table X. ~~Excluded~~ Restricted hazard classes, categories, codes and associated hazard statements~~ codes~~

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 not apply to:

~~— substances not included in the scope of Regulation (EC) No 1907/2006 as defined in Article 2(2) of that Regulation;~~

— ingoing substances covered by points (a) and (b) of Article 2(7)~~(b)~~ of Regulation (EC) No 1907/2006, which sets~~s~~ out ~~the~~ criteria for exempting substances within ~~included in~~ Annexes IV and V to that Regulation from the registration, downstream user and evaluation requirements.

Table Y. Derogations to restrictions on ingoing substances ~~and mixtures~~ that are classified with one or more of the restricted hazards listed in Table X and are present in concentrations greater than 0,010% (weight by weight) of the final product formulation.

Substance type, substance name and CAS number	Derogated hazard code(s)	Derogation conditions
Preservatives and preservative stabilisers		
Note ~~for combined~~ on preservatives~~ limits~~: all preservatives added to ingredients must be declared by suppliers and all preservatives added directly to the final product must be declared by the paint or varnish producer. The only types of preservatives permitted in ingredients and the final product shall be those ~~The maximum quantity of any combination of in-can preservatives~~ that are compliant with Regulation (EU) No 528/2012. For final 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) or for product type 7 (PT7) (dry-film preservative), but the preservative product must be authorised under Regulation (EU) No 528/2012 for PT6 or PT7 or made available on the market according to the transitional measures set out		

in Article 89(2) of that Regulation. The combined total limits for PT6 and PT7 preservatives shall apply to these following product categories:

- For indoor products: ~~shall be~~up to 0,080 % weight by weight of PT6 in the final product.

- For colour tints used in tinting systems: up to 0,20 % weight by weight of PT6 in the colour tint.

- For indoor products marketed for use in high humidity areas: up to 0,080 % weight by weight of PT6 and up to 0,10 % weight by weight of PT7 in the final product.

- For outdoor products: up to 0,080 % weight by weight of PT6 and up to 0,50 % weight by weight of PT7 in the final product.

All references to concentrations/limits/levels of preservatives in the section 'Preservatives and preservative stabilisers', shall be understood as referring to the preservative active substances contained in the final product.

Any preservatives which cannot be present in the final product at concentrations exceeding 0,010 %, due to specific concentration limits (SCLs) lower than 0,010 % that would classify the final product with a restricted CLP hazard, are not mentioned in the derogation table below because they cannot be used in concentrations exceeding 0,010 % in the first place and thus do not need a derogation. This does not imply that they cannot be used as ingoing substances in EU Ecolabel products at any level. If not explicitly excluded in criterion 3.3, such preservatives may be used so long as it is at levels below any SCLs that would trigger a restricted CLP classification of the final product. ~~Any permitted use of dry film preservatives shall be considered as being independent of the allowance for in can preservatives.~~

In-can preservatives (PT6) in colour tints or final product:	H301, H311, H317, H330, H331, H372, H373, H400, H410, H411, H412, H413	*See horizontal derogation condition at foot of table The sum total of all PT6 in-can preservatives (those derogated for use above 0,010% plus those that are non-derogated but used in levels < 0,010%) must be within the relevant limits defined in the note above. When preservatives that are formaldehyde donors are used, the relevant limits for free formaldehyde in the final product formulation set out in criterion 4.3(n) must be respected. Specific concentration limits (% weight by weight in the final product formulation) shall apply for the derogated substances listed below: - Bronopol (CAS No 52-51-7): up to 0,030 %. - DBNPA (CAS No 10222-01-2): up to 0,030 %. - Sodium pyrithione (CAS No 3811-73-2): up to 0,030 %. - BIT (CAS No 2634-33-5): up to 0,036 %. - Combined total isothiazolines and isothiazoline releasers (those derogated for use above 0,010% plus those that are non-derogated but used in levels < 0,010%): up to 0,040 % in final product formulations for indoor applications. - Diamine (CAS No 2372-82-9): up to 0,050 %.
~~In-can preservative:~~ ~~N-(3-aminopropyl)-N-dodecylpropane-1,3-diamine (CAS No 2372-82-9)~~	~~H301, H373, H400, H410~~	~~*See horizontal derogation condition at foot of table~~ ~~Cannot be present in the final product formulation in quantities exceeding 0,050 % (weight by weight).~~
~~In-can preservative:~~ ~~Sodium pyrithione (CAS No 3811-73-2)~~	~~H311, H317, H331, H372, H400, H411, EUH070~~	~~*See horizontal derogation condition at foot of table~~ ~~Can only be used up to 0,050 % weight by weight in the final product.~~
~~In-can preservative:~~ ~~Isothiazoline or izothiazoline-releasing substances~~	~~H317, H330, H400, H410~~	~~*See horizontal derogation condition at foot of table~~ ~~The total quantity of all isothiazoline substances added to the final product shall not exceed 0,040 % weight by weight in the final product.~~ ~~In cases where isothiazoline preservatives are actively added by the paint or varnish manufacturer, the final product shall be tested for isothiazoline content to verify compliance with the combined limit.~~

~~In-can preservative:~~ ~~Bronopol (CAS No 52-51-7)~~	~~H301, H317, H331, H400, H411~~	~~*See horizontal derogation condition at foot of table~~ ~~The use of any formaldehyde releasing preservatives must be declared by the applicant. Bronopol cannot be added in concentrations >0,030 % weight by weight in the final product.~~ ~~Limits of free formaldehyde, as measured in the final product, shall not exceed the relevant limits defined in criterion 4.3(i).~~
~~Tinting machine preservatives:~~ ~~Same derogations as listed above for in-can preservative apply, plus:~~ ~~3-iodo-2-propynyl butylcarbamate (IPBC, CAS No 55406-53-6)~~	~~H317, H330, H331, H372, H400, H410,~~	~~Applicable to tinting systems.~~ ~~The combined sum of in-can preservatives used in the tinting machine shall not exceed 0,20% weight by weight in the colour tints.~~ ~~The concentration of IPBC shall not exceed 0,10 % weight by weight.~~ ~~When mixed with base paint, the overall concentrations of in-can preservatives be low enough to demonstrate compliance with any individual limits in the rows above in the final tinted paint product as well as the horizontal derogation condition*.~~
Dry-film preservatives (PT7):	H311, H317, H330, H331, H372, H373 H400, H410, H411, H412 and H413 ~~(Additionally, and only for IPBC: H331 and H372)~~	*See horizontal derogation condition at foot of table Only applies to outdoor products and indoor products for use in high humidity areas. The sum total of all PT7 dry-film preservatives (those derogated for use above 0,010% plus those that are non-derogated but used in levels < 0,010%) must be within the relevant limits defined in the note above. ~~The sum total of dry-film preservatives with any of these derogated hazards shall:~~ ~~- Not exceed 0,10 % weight by weight in indoor products for use in high humidity areas~~ ~~- Be less than 0,50% weight by weight in outdoor products.~~ Higher concentrations may be permitted in the case of slow release, encapsulated forms of dry-film preservatives, but only in cases where the formulation can be tested to demonstrate that the specific formulation of the final product, or read-across formulations, would not be classified with any of the hazards listed in Table X. Any dry-film preservatives classified as H400 or H410 must be non-bioaccumulative, demonstrated by having an octanol-water coefficient (Log K_{ow}) of ≤ 3.2 or a bioconcentration factor (BCF) of ≤ 100.
Preservative stabiliser: Zinc oxide (CAS No 1314-13-2)	H400, H410	*See horizontal derogation condition at foot of table Permitted to be used as a preservative stabiliser, in concentrations up to 0,040 % weight by weight of the final product formulation, when used to stabilise ~~tintsing paste,~~ in-can or dry-film preservative combinations that require 1,2-Benzisothiazol-3(2H)-one (BIT) or sodium pyrithione.
♦In the section 'Preservatives and preservative stabilisers', references to concentrations/limits/levels of preservatives are to be understood as referred to the preservative active substances contained in the final product.		
Drying and anti-skinn~~mm~~ing agents		
Anti-skinn~~mm~~ing agents	H317, H412, H413	*See horizontal derogation condition at foot of table The sum total anti-skinn~~mm~~ing agent content shall not exceed 0,40 % weight by weight in the final product formulation.
Driers (siccatives)	H301, H317, H373, H400†, H410†, H412, H413	*See horizontal derogation condition at foot of table The sum total drier content shall not exceed 0,10 % weight by weight in the final product formulation. † The derogation for H400 and H410 only applies to cobalt-based drier compounds and such compounds can only be used up to 0,050 % weight by weight in the final product formulation.
~~Corrosion inhibitors~~Pigments and pigments additives		

~~Anti-corrosion pigments~~	~~H410, H411, H412, H413.~~	~~*See horizontal derogation condition at foot of table~~ ~~Only permitted in interior/exterior trim and cladding.~~ ~~allowed in quantities up to 8,0 % weight by weight in one-pack performance coatings, two-pack performance coatings and anti-rust paints.~~ ~~Allowed in quantities up to 2,0 % in all other product categories.~~
Titanium dioxide (in a powder form containing 1% or more of particles with aerodynamic diameter ≤ 10µm)	H351 (inhalation)	*See horizontal derogation condition at foot of table 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).
Trimethylolpropane (CAS No 77-99-6)	H361fd	*See horizontal derogation condition at foot of table Only when used as an additive in supplied pigments and only up to a maximum concentration of 0,50 % weight by weight of the supplied pigment.
Binders and polymer dispersions		
Binders and crosslinking agents: Adipic acid dihydrazide (CAS No 1071-93-8)	H317, H411	*See horizontal derogation condition at foot of table Only allowed up to 1,0 % weight by weight in the binder or polymer dispersion ingredient and when used as an adhesion promoter or as a crosslinking agent.
Unreacted monomers (in binders)	H301, H304, H311, H317, H331, H334, H372, H400, H410, H411, H412 ~~a 222~~	*See horizontal derogation condition at foot of table The ~~Only allowed up to~~ sum total concentration of unreacted monomers needing this derogation shall not exceed ~~of~~ 0,050 % weight by weight in the final product formulation.
Other, miscellaneous		
Methanol (CAS No 67-56-1)	H301, H311, H331, H370	*See horizontal derogation condition at foot of table Only permitted as a residual reaction product of other substances in the product formulation. Allowable residual concentration increases as a function of binder content in the following manner: - Binder content of 10-20%: allowable residual methanol is 0,020 % weight by weight in the final product formulation. - Binder content of 20-40%: allowable residual methanol is 0,030 % weight by weight in the final product formulation. - Binder content of >40%: allowable residual methanol is 0,050 % weight by weight in the final product formulation.
Mineral raw materials, including fillers, anti-sagging agents and matting agents	H372, H373	*See horizontal derogation condition at foot of table Only applies to mineral raw materials and leucophyllite minerals that naturally contain crystalline silica. Only permitted in contents up to 1.0% weight by weight of the final product formulation for H372 materials or up to 10% for H373 materials. In cases where the material is supplied in dry powder form, the applicant shall demonstrate that they have systems in place to minimise worker exposure to dry powder in the workplace (e.g. closed dosing systems, ventilated dosing and mixing areas and personal protective equipment).
Neutralising agents	H301, H311, H331, H400, H410, H411, H412, H413	*See horizontal derogation condition at foot of table Only allowed up to 1,0 % weight by weight in varnish~~es~~ formulations, and up to 0,50 % in all other products.
Optical brighteners	H413	*See horizontal derogation condition at foot of table Only allowed up to 0,10 % weight by weight of the final product formulation.

Silicon resin	H412, H413	*See horizontal derogation condition at foot of table Only allowed up to concentrations of 2,0 % weight by weight in the final product formulation.
Solvents	H304	*See horizontal derogation condition at foot of table Only allowed up to concentrations of 1,0 % weight by weight in the final product formulation.
Surfactants	H411, H412, H413	*See horizontal derogation condition at foot of table Only allowed up to 1,0 % weight by weight in transparent, semi-transparent, white or light-coloured product formulations or up to 3,0 % weight by weight in all other colours of product formulations.
UV stabilisers	H317, H411, H412, H413	*See horizontal derogation condition at foot of table Only applicable to outdoor products and only up to a maximum concentration of 0,60 % weight by weight in~~to~~ the final product formulation.

*Horizontal derogation condition: none of the derogations above, either individually or in combination, shall be permitted if they result in the final product formulation being classified with any of the hazards defined in Table X, with the notable exception of H412 and H413 for outdoor products due to the presence of dry-film preservatives or indoor/outdoor products for metallic substrates due to anti-corrosion pigments.

Assessment and verification:

The applicant shall provide a signed declaration of compliance with sub-criterion 3.2, including compliance with any relevant derogation conditions, supported by declarations from suppliers and any other relevant documentation.

~~a~~A list of all ingoing substances with one or more of the restricted CLP hazards calculated to be present in the final product formulation in concentrations greater than 0,010 % weight by weight shall be presented, together with their CAS numbers, CLP classification status (i.e. harmonised, joint entry or self-entries only) the relevant function of the ingoing substance (e.g. in-can preservative, drier, anti-corrosion pigment, neutralising agents, surfactants, UV stabiliser 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~~ir~~ concentrations of any screened ingoing substances with EU Ecolabel-restricted CLP hazards in the ingredients, chemicals or raw materials used in the format supplied; ~~supported by safety data sheets for the chemicals supplied, the quantities added to the final product formulation and any other relevant declarations from suppliers or chemical producers that are necessary, in order to demonstrate compliance with the relevant requirements;~~

— the weight of each of the ingredients, chemicals or raw materials added to make a known weight of final product formulation.

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 ~~restrict~~screened ingoing substance ~~impurity~~ 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 sub-criterion 3.2 (see Annexes IV and V to Regulation (EC) No 1907/2006)~~,~~ a declaration to this effect by the applicant shall suffice for those substances~~to demonstrate compliance~~.

Since multiple products or potential products (e.g. customised shades from a tinting system) using the same ~~process~~ ingredients, chemicals or raw materials may be covered by one EU Ecolabel license, a worst-case ~~the~~ calculation may be acceptable for each screened ingoing substance ~~only needs to be presented for each impurity for the worst-case product~~ within a common family of products covered by the same license.

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.

Rationale for the proposed wording of criterion 3.2 on horizontal CLP restrictions

The restrictions in both sub-criteria 3.1 and 3.2 are rooted in Articles 6(6) and 6(7) of Regulation (EU) 66/2010 on the EU Ecolabel. Article 6(6) makes the restrictions and Article 6(7) leaves scope for derogations from those

restrictions in certain cases. While the SVHC restrictions are substance specific, criterion 3.2 on CLP restrictions is general, because these restrictions are based on CLP hazard classifications rather than specific substances.

Another important difference is that Article 6(7) caps any derogation for an SVHC at 0,10% but there is no upper limit defined for derogations to the CLP restrictions. Nonetheless, any derogations to the CLP restrictions in criterion 3.2 need to be linked to specific substances or substance groups, the derogated hazard codes specified and any relevant derogation conditions that need to be respected should be stated.

Since 2010, the wording for the horizontal CLP restrictions has evolved considerably, being influenced by changes in the REACH and CLP Regulations, by discussions with stakeholders in successive criteria revision processes for different EU Ecolabel product groups, and by the recommendations from the EU Ecolabel Chemicals Task Forces.

The general understanding of the CLP restrictions is that the final product cannot be classified with any of the restricted CLP hazards and that ingoing substances with restricted CLP hazards cannot be present at levels exceeding 0,10% in product groups that are articles, or 0,010% in product groups that are mixtures. Paints, varnishes and related products are considered as mixtures. Consequently, any substance with one of the restricted CLP classifications cannot be present in the final product at levels exceeding 0,010% unless it is derogated.

Main changes in the first proposal

The horizontal CLP restrictions in the 2014 criteria for paints and varnishes were set out in an unusual manner, with the derogations being placed in a large table in an Appendix and that table containing a mixture of derogations and specific substance exclusions and sometimes not citing the derogated hazard codes at all and sometimes permitting derogations at levels that would have classified the final product with one of the restricted CLP hazards (e.g. anti-corrosion pigments and IPBC as a dry-film preservative). The structure and readability of the CLP restrictions was not helped by multiple amendments to this criterion due to the reclassification of essential ingredients in paint and varnish products that either necessitated a derogation to be inserted or an existing derogation to be adapted. It was also discovered that the upper limit for IPBC allowed as a dry-film preservative was high enough to classify the final product as H412 and that the upper limit of 8,0% allowed for anti-corrosion pigments could lead to H400, H410, H411 or H412 classifications of the final product depending on the M factor of the individual derogated anti-corrosion pigment(s).

In draft TR1, the whole structure of the criterion was rearranged to align with the way that this cross-cutting criterion had been dealt with in more recent EU Ecolabel criteria sets for product groups that are mixtures. The changes were so extensive that it was not practical to create a track changes version. All reference to risk phrases were removed, since the transition to their replacement by hazard codes was completed in 2015. The hazard code for "hazardous to the ozone layer" had evolved from EUH059 to the globally harmonised H420. In line with recent developments in CLP classifications and associated approaches in recently adopted EU Ecolabel criteria, new restricted CLP classifications were applied for the following hazards:

- Endocrine disruptors for human health: EUH380 and EUH381.
- Endocrine disruptors for the environment: EUH430 and EUH431.
- Persistent, Bioaccumulative and Toxic (PBT): EUH440 and EUH441.
- Persistent, Mobile and Toxic (PMT): EUH450 and EUH451.

In order to reduce the need to amend the legal text when CLP reclassifications affect the ability of substances to comply with specific derogations, a horizontal derogation was created that states the following:

"Horizontal derogation condition: none of the derogations above, either individually or in combination, shall be permitted if they result in the final product being classified with any of the hazards defined in Table X, with the notable exception of H412 and H413 for outdoor products due to the presence of dry-film preservatives."

Derogations for preservatives and other hazardous substances that were no longer valid because of CLP reclassifications and the lack of timely amendment to the EUEL criteria were either removed (e.g. Zinc Pyrithione) or updated to insert the correct CLP hazards (e.g. IPBC). In-can preservatives were listed in groups based on their chemical family or mode of preservation action (e.g. formaldehyde-releasing or isothiazoline/isothiazoline releasing). The separate requirement on free-formaldehyde content in the CLP restrictions was incorporated into the derogation conditions that had to be met when using any formaldehyde-releasing preservatives.

Due to some consumer studies finding excessive quantities of isothiazolines in consumer paints and varnishes, and that manufacturers laid the blame on a lack of communication from suppliers about isothiazoline added by them to preserve the ingredients they supply, it was considered as a good idea to request testing for isothiazoline content whenever these are known to be ingoing substances.

Any requirements in the 2014 derogated table that were considered to be more suitable in the criterion on specific excluded substances were moved to that criterion (criterion 5.3 in TR1). This was the case for the entries about the non-use of APEOs and perfluorinated surfactants.

It was also decided to convert the CLP restrictions and derogations on plasticisers into a specific exclusion criterion instead of a non-specified hazard derogation up to 0,010% for DEHP, BBP, DBP, DMEP, DIBP, DIHP, DHNUP and DHP. Another change was to try and combine the unspecified CLP hazard derogations for "metals and their compounds" and part of the requirement on "metal pigments" into a single specific restriction on heavy metals from pigments.

Outcomes from and after 1st AHWG meeting (May 2024)

A total of 105 comments were received in writing on BATIS that focused entirely on criterion 4.2. While the structure was generally considered much clearer, stakeholders pointed out the accidental deletion of derogations for solvents (up to 2,0%), unreacted monomers (up to 0,050%) and volatile aromatic hydrocarbons & halogenated solvents (up to 0,010%). This was due to an accidental deletion in the consolidated version of the legal text of Decision 2014/312/EU during one of the various amendments. These accidental omissions were all reincorporated into the draft TR2 except for the derogation for volatile aromatic hydrocarbons and halogenated solvents because the derogation limit was the same as the horizontal CLP restriction limit (both 0,010%) which renders the derogation completely ineffective. Due to this consideration, it was concluded that this particular derogation would be no longer needed.

In general, stakeholders stated that it was not often easy to obtain appropriate information from suppliers in relation to the hazardous substance restrictions defined in the EU Ecolabel. Great improvements could potentially be made in the sense of having a single supplier declaration file that is easy to fill out and process.

One frequent comment was a lack of clarity about whether or not "ingoing mixtures" were being restricted as well. This uncertainty stemmed from the following text in TR1:

"*the final product and any ingoing substances or mixtures that are present in concentrations exceeding 0,010 % weight be weight of the final product formulation shall not have been assigned any of the hazard classes*".

The TR1 wording left this interpretation open and such an interpretation, if applied universally, could effectively render almost all EU Ecolabel paints and varnishes non-compliant.

The point is that often ingredients that are mixtures are classified with restricted CLP hazards, but that classification is only due to small amounts of hazardous substances, and then the ingredient is diluted down when added to the paint or varnish, such that the final concentration of the hazardous substance is too low to classify the final product, but it was high enough to classify the ingredient. An example could be the presence of 0,040% of BIT in a supplied binder. The binder would be classified as H317, but If it accounted for e.g. 10% of the final product, the BIT concentration would be reduced to 0,0040%, being below the SCL of 0,036% that applies for BIT and the H317 hazard.

So if the criterion literally says that an ingoing mixture cannot be classified with any of the restricted CLP hazards (which include H317), then the binder could not be used in the EU Ecolabel product because the whole binder accounted for 10% of the EU Ecolabel product (much more than the horizontal 0,010% limit). However, if we focus on the classifications of ingoing substances, the opposite conclusion is reached, because the BIT is present below 0,010% in the final product, which means that no derogation is needed, and because the total of 0,0040% present is lower than the SCL of 0,036% for BIT, the final product is not classified either.

This point was not fully understood at the time and was not changed in the TR2 proposals but has been changed now in TR3, where reference to ingoing mixtures is no longer mentioned.

On definitions: In order to improve legal certainty, a proposed wording was put together for the terms "impurity" and "ingoing substance", with general idea that an ingoing substance is always intentionally added and has no lower limit in terms of the concentration added, while "impurity" is not intentionally added and does have an upper concentration limit. If an impurity should exceed this upper concentration limit, then it is treated as if it was an ingoing substance.

A review of existing definitions of these terms in different ecolabel criteria was necessary before deciding on the precise wording of these definitions in the criteria for paints and varnishes. A comparison of definitions from different sources is provided in the tables below, starting with the term "*impurities*".

Table 10. Definition of the term "impurities"

Source	Definition - **"impurities"**	Remarks
Decision 2023/1809 on EUEL AHP	'impurities' means residuals, pollutants, contaminants etc. from production, including the production of raw materials, that remain in the raw material/ingredient and/or in the chemical product (used in the final product and any component therein) in concentrations less than 100 ppm (0,0100 % w/w, 100 mg/kg);	The most recently adopted set of EU Ecolabel criteria. Wording is adapted to products that are articles because Absorbent Hygiene Products are such.
Decision 2021/1870 on EUEL cosmetics	'impurities' means 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) in the rinse-off product and less than 10 ppm (0,0010 % w/w, 10,0 mg/kg) in the leave-on product;	The most recently adopted set of EU Ecolabel criteria for a product group that is a mixture. A two-tier threshold is applied, with a stricter limit for leave-on cosmetics.
First proposal for revision of EUEL detergents (TR1)	'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.	A first proposal for the definition of the term "impurities" in the context of detergent products, products which are another example of mixtures.
Nordic Swan criteria (096) on paints and varnishes (v4.2)	"Impurities": Residuals, pollutants, contaminants etc. from production, incl. production of raw materials, that remain in the Nordic Swan Ecolabelled product in concentrations less than 100 ppm (0.0100%). Impurities in the raw materials exceeding concentrations of 10 000 ppm (1.0000%) are always regarded as ingoing substances, regardless of the concentration in the Nordic Swan Ecolabelled product. Examples of impurities are residues of the following: residues or reagents incl. residues of monomers, catalysts, by-products, scavengers, and detergents for production equipment and carry-over from other or previous production lines.	The definition seems to be based on the definition used for EUEL cosmetics but has been tailored for paints and varnishes. It also makes a distinction between impurities in raw materials (a higher limit allowed) and defines the point at which they become ingoing substances. One stakeholder suggested to align fully with this definition.

Source: Own elaboration.

Based on the definitions above, it was decided that the Nordic Swan criteria distinction between impurities in the final product and impurities in supplied ingredients was important, but that the upper limit for impurities was too high. For example, if 0.99% of an H350 carcinogenic 1A substance was present in an ingredient that comprised 12.5% of the total paint mass, it would be considered as an impurity in the ingredient, but would be present in the final product at a level of 0.124%, enough to classify the whole paint formulation as carcinogenic.

Given the above, the proposed definition for the term impurities is:

"*Impurities means unintended constituents (residuals, pollutants, contaminants, by-products, etc.) that remain in the EU ecolabelled product in concentrations less than 100 ppm (0,0100 % w/w, 100 mg/kg) 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.*"

Regarding the term "ingoing substances", the following definitions are available:

Table 11. Definition of the term "ingoing substances"

Source	Definition - **"ingoing substances**	Remarks
Decision 2023/1809 on EUEL AHP	'ingoing substance' means all substances included in the chemical product (used in the final product and any component therein), including additives (e.g. preservatives and stabilisers) in the raw materials. Substances known to be	The most recently adopted set of EU Ecolabel criteria. Wording is adapted to products that are

Source	Definition - **"ingoing substances**	Remarks
	released from ingoing substances in stabilized manufacturing conditions (e.g. formaldehyde and arylamine) are also considered as ingoing substances;	articles because Absorbent Hygiene Products are such.
Decision 2021/1870 on EUEL cosmetics	'ingoing substances' means all substances in the cosmetic 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. 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;	The most recently adopted set of EU Ecolabel criteria for a product group that is a mixture. Also sets a limit for defining when an "impurity" in a supplied ingredient would be considered as an "ingoing substance" in the cosmetic product.
First proposal for revision of EUEL detergents (TR1)	'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.	A first proposal for the definition of the term "ingoing substances" in the context of detergent products, products which are another example of mixtures. The last part about foils is highly specific to certain types of detergent product.
Nordic Swan criteria (096) on paints and varnishes (v4.2)	"Ingoing substances" means all substances in the Nordic Swan Ecolabelled product regardless of amount, including additives (e.g., preservatives and stabilizers) 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.	The definition seems to be based on the definition used for EUEL cosmetics but adds the term "regardless of amount". Could be very difficult to implement literally.
Stakeholder suggestion	"Ingoing substances" means substances added to the product as such or as part of a mixture to achieve or influence certain product properties and those required as chemical cleavage products for achieving the product properties.	An interesting suggestion that links ingoing substances to their intentional addition, regardless of concentration.

Source: Own elaboration.

Based on the definitions in the table above, a hybrid proposal that takes inspiration from different versions is proposed to be used. It is considered important to also clarify the distinction between impurities and ingoing substances in terms of their intentional presence.

The proposed definition for the term ingoing substances is:

"*Ingoing substances means constituents (as pure substances or as part of a mixture, and regardless of the 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 after addition (e.g. formaldehyde from preservatives and arylamine from azodyes and azopigments) shall also be regarded as ingoing substances. Impurities present in the final product or in supplied ingredients in concentrations above the limits permitted for being considered as impurities, shall instead be considered as ingoing substances.*"

Regarding the term "*unavoidable impurities*", it has been decided to remove the term due to the fact that this could be interpretated in different ways depending on the perspective of the interpreter. This term was only used in the EU Ecolabel criteria for Absorbent Hygiene Products (AHP) but not for EU Ecolabel cosmetics, not for Nordic Swan paints and varnishes and not for the proposals for new EUEL criteria for detergents. The horizontal hazardous substance criteria will now focus purely on impurities and ingoing substances and no longer refer to the term "*unavoidable*".

A request was made to have an introductory text at the beginning of criterion 4.2 that explains the purpose of the criterion and any horizontal conditions that apply. It was requested that the introductory text should have

two clauses, one at the level of the final product and one at the level of ingoing substances. An introductory text to this effect was inserted in the TR2 proposals.

One comment about missing CLP hazards in the "Table X" for criterion 4.2 were flagged. This led to the insertion of one part of the hazard statement for H361fd, which had been missing. It was also requested to insert the hazards H360 and H361, which are hazards that apply when it is still unclear which of the toxic for reproduction effects are applicable. This request was not addressed in the draft TR2 due to an oversight, but has not been applied in TR3.

A general comment about the CLP derogation conditions was that often it was not clear if the % concentration limit allowed applied to the final product or to the ingredient. Stakeholders were consulted on this topic and some points were clarified and others assumed by the authors based on common sense thinking about how the limit compared to CLP classifications with the rules of mixtures and also on the practical steps that would need to be taken to get the information. The wording about the limits should ideally be so specific that interpretation is not possible or needed.

There were many comments about preservatives, about the need for additional derogated hazard codes due to recent or imminent reclassifications of relevant preservatives (both PT6 and PT7). The comments about preservatives can be broadly grouped as follows:

- On isothiazolines: many stakeholders asked if the three isothiazoline preservatives listed in the derogation table (DTBMA, BIT and BBIT) were the only ones derogated and if CMIT/MIT, MIT, OIT and so on would be permitted if present below SCLs. It was also not clear if the sum total 0,040% limit for isothiazolines only referred to DTBMA, BIT and BBIT or also to other isothiazolines not listed. Split views (mainly negative) were expressed about the requirement to test isothiazoline contents in the final product. A compromise offered was to make the test optional. Some comments were made about the 0.040% limit for isothiazolines being too high as it would trigger classification of the mixture as H317 – but this is not the case because the H317 substances are not additive in the CLP rule of mixture calculations.
- On dry-film preservatives (PT7): an inconsistency in TR1 was highlighted where two concentrations for IPBC had been mentioned (0,50% and 0,25%) and it was not sure which was intended to apply, especially since IPBC, the most commonly used dry-film preservative, was due to be reclassified with an M factor of 10 for H410 (before the M factor was 1), which sets an effective limit of 0,25% on IPBC. The intention was to have a sum total limit for all PT7 substances and IPBC would be within that sum total limit up to the point allowed by the CLP rules of mixtures. It was also requested to add the H330 derogation in order to permit the use of DCOIT and OIT as dry-film preservatives. The H330 derogation was incorporated into TR2.
- Free-formaldehyde and formaldehyde releasers: an error about DBDCB being grouped with the formaldehyde-releasers in TR1 was flagged. There was some confusion about the new placement of the requirement to measure free formaldehyde only when bronopol or formaldehyde-releasing preservatives were used. Previously it was also required when certain binders were used and that the requirement should go back to this approach. This was effectively done in TR2 by creating a specific restriction in criterion 4.3. The limitation of bronopol to 0,020% was challenged, and it was stated that higher concentrations of bronopol could still be used without exceeding the allowed residual free-formaldehyde. A new limit of 0,030% was requested and this was incorporated into TR2, but without any increase in the free-formaldehyde limits. Another stakeholder expressed concern that too much of these preservatives would compromise compliance with the formaldehyde limit of 10 ppm for VOC emissions tested in a chamber according to EN 16402, which is a new EU Ecolabel criterion.
- Zinc oxide: the importance of the derogation for zinc oxide as a preservative stabiliser with BIT was highlighted by several stakeholders. An error in TR1 was also flagged where the application of this derogation was only stated for tinting paste or PT7 preservatives, when in the 2014 criteria it was also permitted for PT6 preservatives. A request to extend the use of Zinc oxide as a stabiliser to sodium pyrithione combinations was made and, although this was not incorporated into TR2, it was eventually incorporated into TR3. A complaint was made from one stakeholder that ZnO was appearing in paint products under multiple functions (e.g. some as an anti-corrosion pigment, some as a neutralising agent and some as a preservative stabiliser) and that this could lead to much higher contents than originally foreseen.

- Neutralising agents: A derogation request was also submitted for the use of triethylamine as a neutralising agent, which has the restricted hazards H301, H311 and H331 according to its harmonised classification in the ECHA C&L inventory. This would mean the additional derogated hazard of H301 compared to the existing derogations and was considered as an accepted request, especially since it could reduce the use of ZnO for this purpose (because ZnO may also be needed for other purposes like anti-corrosion pigments or preservative stabilisers).

- Adipic acid (ADH): it was requested to add H317 for the derogated hazards since some producers were self-classifying their products with H317 now, but not all. This was confirmed after double checking the ECHA C&L inventory. In order to have a level playing field, the derogation has been extended. One stakeholder wanted the text "binders and cross-linking agents" to be deleted in order to ensure that ADH could not be used under multiple different roles like "Zinc oxide". This change was incorporated in to TR2 but later it was reversed in TR3 because it is important to try and nuance any derogations to the function they are permitted for.

- Surfactants: A specific request was to reinsert the 3% level derogation for paints that are not white or light-coloured. It had been deleted in the TR1 proposal, but it was argued that darker pigments need more surfactants for adequate dispersion. The 3% derogation was reinserted in TR2.

- Unreacted monomers and solvents: stakeholders flagged that these derogations were missing and that they were important due to residuals in binders. The original derogations from the 2014 criteria were reinserted in TR2.

- Titanium dioxide: some corrections to the derogation entry were requested, specifically to state the hazard code as "H351 (inhalation)" instead of "H350i" and to specific the physical form of TiO2 that this classification (and thus derogation) applies to. Clarity was sought about whether national OSH requirements were suitable proof of compliance with the derogation condition. This last comment was not addressed until TR3, where it is now matched with the low dust requirements cited in criterion 1.

- Encapsulated preservatives: stakeholders were not clear about the text relating to the potential allowance of higher quantities of PT7 preservatives when used in encapsulated form. The text says: *"Higher concentrations may be permitted in the case of slow release, encapsulated forms of dry-film preservatives, but only in cases where the formulation can be tested to demonstrate that the specific formulation of the final product, or read-across formulations, would not be classified with any of the hazards listed in Table X"*. They claimed to simply rely on "free" concentrations declared by suppliers. Further discussion is needed to clarify how the CLP rules of mixtures should be applied in these cases.

Due to the long list of derogations in the 2014 criteria and the relatively large number of EU Ecolabel licensed products, it was deemed relevant to ask about which derogations were being commonly used as part of an evaluation of the continued relevance of such derogations. Based on stakeholder feedback received, the commonly used derogations were: in-can preservatives; zinc oxide; driers (with alkyd paints); surfactants; crystalline silica; neutralising gents; solvents; heavy metals; IPBC as dry-film preservative; unreacted monomers; TiO2 and TMP, methanol, UV stabiliser, free-formaldehyde due to binders. The

Outcomes from and after 2nd AHWG meeting (November 2024)

Around 74 comments were received in writing on BATIS in relation to the sub-criterion 4.2 published in TR2 (now renumbered as sub-criterion 3.2). One recurring comment was that the requirements, although clearer, may be a particular burden on SMEs. Some stakeholders requested that the technical necessity and lack of alternatives for each derogation be investigated.

Some comments were made to align with ecolabel criteria from other schemes (mainly the Nordic Swan ecolabel, but also the Austrian ecolabel). Opportunities for alignment terms of the CLP restrictions and derogations was hampered by the full scope of coating products covered by these criteria being different. And one stakeholder pointed out that the Nordic Swan does not restrict the same hazard codes on ingoing substances as the EU Ecolabel (i.e. compare Table X in criterion 43.2 with Table 4 of the Nordic Swan criteria for paints and varnishes, under their criterion O3 on classification of ingoing substances). The Nordic Swan criteria do not restrict H300, H301, H310, H311, H317, H330, H331, H400, H410, H411, H412 or H413, while the EU Ecolabel does. Consequently, alignment on the derogations cannot be fairly compared.

A major shift from the general approach was requested by one Member State representative, where hazard codes would not be specified for derogation, but just the individual substance. While this approach would resolve the issues associated with the excessive need to amend the EU Ecolabel criteria due to CLP

reclassifications. This proposal seems to stem from unsatisfactory experience with Zinc oxide, which is claimed for multiple uses, even within the same product. Other comments along the same line requested the derogation of substances be based on their individual merits (e.g. functionality) but not pinning them to their hazard classification today. Future changes in classifications, especially for substances that still do not have a harmonised CLP classification, creates many challenges for paint and varnish formulators to continue to demonstrate compliance with the EU Ecolabel criteria. Unfortunately, a more dynamic approach to adapting hazardous substance derogations has not been possible to roll out for EU Ecolabel product groups and any adaptations to reclassifications need to be addressed via amendments. The EU Ecolabel framework Regulation (EC) No 66/2010 already sets in place the requirement that derogations must be hazard based (see Article 6(6) therein). When setting derogations for self-classified substances, all of the main self-declared classifications should be accounted for.

This request to move away from CLP hazard-specific derogations was not explored further since it is the CLP hazards that are the very core of criterion 3.2 on horizontal CLP restrictions.

A request to modify the text that refers to the general hazards linked to the CLP restrictions, so that it better reflects the actual hazards listed in Table X of criterion 3.2, was accepted. Now terms like PBT, PMT and endocrine disrupting are used along with the CMR, acutely toxic and hazardous to the environment terms. These changes are incorporated into TR3. Some corrections to the list of CLP hazards were requested again, this time the H304 hazard on aspiration toxicity was moved to a standalone position instead of being grouped with acute toxicity hazards.

A few comments questioned why the total amount of PT6 preservatives was increasing from 0,060% in the 2014 criteria to 0,080% in the proposals. The main reason for this was because the most efficacious PT6 preservatives (e.g. MIT) are now restricted to only very low levels and the alternatives that are less restricted also tend to be less efficacious, meaning that more quantity is needed for a given preservation effect.

A repeated request by several stakeholders was made to place all in-can preservatives under a pooled derogation, with a common set of hazard codes and derogation conditions.

It was asked if the requirement for PT7 preservatives with H400 or H410 classifications to be non-bioaccumulative should also apply to PT6 preservatives. We do not yet have full information on the impact that such a requirement would have on the degree of restriction of PT6 preservatives. However, the general logic for only setting this requirement for PT7 preservatives is that they are permitted in maximum concentrations just over 6 times higher than PT6 preservatives and are used in outdoor and high humidity area products, and thus are much more likely to leach to the aquatic environment.

It was pointed out that the reclassification (ATP 23) of Iodopropynyl Butyl Carbamate (IPBC), as H410 with an M factor of 10 instead of 1 means that there is an effective maximum limit of 0,25% on the total amount of IPBC in the final mixture. Any IPBC above 0,25% would classify the final product as H411 and require the aquatic toxicity pictogram to be placed on product packaging. Since the chronic aquatic toxicity hazards (H410, H411, H412) are treated as additive (albeit with cut-off conditions) in the CLP rules of mixtures, it is possible that other substances will mean that the realistic limit for IPBC is considerably less than 0.25%. A consultation with CBs confirmed that this IPBC reclassification would affect a significant share of EU ecolabelled outdoor coatings and that alternative combinations of PT7 preservatives would be needed in order to deliver dry film preservation for these products.

The issue regarding whether or not to permit testing of isothiazoline content in the final product was not resolved in draft TR2 and further comments were received on this matter. After careful consideration, the requirement and also even just the option of testing for isothiazoline content was removed from the derogation condition for isothiazolines. The main reasons for this were:

- There is no suitably harmonised test standard for measuring isothiazolines in all of the products covered by the scope of the EU Ecolabel.
- If accepting test results, which products should be tested and how often?
- Test results tend to always be lower than the known added amounts, because some of the isothiazoline is reacted or somehow unavailable after being mixed into the paint or varnish matrix. So allowing testing could actually offer a route to using more isothiazolines than before.

Similar comments as received to draft TR1 were also made about the limits for total isothiazolines needing to be 0.036 instead of the 0.040% proposed – but this suggestion was ignored because the H317 classification rules for mixtures do not treat the concentrations of individual H317 classified substances in an additive way.

Continued doubts about the derogation condition for encapsulated preservatives were expressed in response to TR2 (as they were to TR1 as well). This is an evolving area of innovative solutions and clarity on the requirements for CLP classification of mixtures is needed. In the meantime, the EU Ecolabel criteria focus on actual testing of the final product mixture or a suitable read-across mixture for the restricted classifications that would otherwise be triggered by the total quantity of the encapsulated preservative.

In response to targeted questions embedded in TR2, stakeholders generally expressed their support for category 2 endocrine disruptor hazards to be included in the table of horizontally restricted CLP hazards and confirmed that it was straightforward to distinguish any ZnO used as a preservative stabiliser from other sources of ZnO because it is already incorporated into the preservative before being supplied to paint or varnish producers. The use of ZnO as a preservative stabiliser was also extended from BIT to also NaPT and the accidental deletion of reference to PT6 preservatives was reinserted.

Finally, in terms of unreacted monomers, the request to identify relevant hazards to derogate was greatly helped thanks to the following feedback received on the known unreacted monomers and their associated CLP hazards that would be restricted by the EU Ecolabel at levels greater than 0,010% in the final product:

- Acrylic acid: H400
- Methyl acrylate: H301, H311, H331, H412
- Ethyl Acrylate: H411
- Butyl acrylate: H317, H411
- 2-Ethylhexyl acrylate: H317, H411
- Styrene: H361d, H372
- Vinyl acetate: H351
- Acrylonitrile: H301, H311, H317, H331, H350, H411
- Methacrylic acid: none (but apparently some self-classifications with H311 and H330)
- Methyl methacrylate: H317
- Vinyl chloride: H350

Other stakeholders, without referring to specific unreacted monomers, cited the hazards H301, H304, H310, H311, H317, H330, H334, H351, H361, H372 (benzoic acid), H400, H410, H411, H412. Overall, it was decided to derogate for the non-CMR hazards only. This means that any unreacted monomers with CMR classifications can only be present in the final product at levels of 0,010% and not 0,050%.

The aforementioned table for all PT6 and PT7 preservatives that aims to give readers an overview of their current classification status and extent of allowance in EU Ecolabel paint and varnish products is provided below. Expert input on the accuracy of the information in the table would be welcome.

Further research in the third proposal

A general request was made to review the continued validity of the existing derogations set out in criterion 3.2, because the list is quite long and the EU Ecolabel criteria are 10 years old already. While this review has been carried out and is summarised in this section, it is worth highlighting one general response from industry to this request, which basically said that the fundamental chemistry of water-borne paints has not changed much in the last 10 years but that many of the substances used, even if they are the same substances as before, now have more CLP hazards or more severe categories of existing hazards. In addition, that innovation into finding non-hazardous or less hazardous alternatives is a slow process and even such alternatives may simply not be classified because they have not been studied in enough detail yet. Feedback from stakeholders about the following derogations was received. The feedback from stakeholders, together with further research, is summarised below:

Anti-skinning agents (to be derogated for H317, H412, H413): the term should be "anti-skinning", not "anti-skimming". These substances are essential in air-drying paints (e.g. based on alkyd resins, epoxide ester or urethane-alkyd) to prevent skin formation when the coating surface comes into contact with atmospheric oxygen (oxidation) and triggers crosslinking reactions and the premature formation of a film (or a skin) on the surface of the product in contact with the oxygen. The risk of skinning is increased by formulations with driers, since these speeds up the oxidation reaction. Anti-skinning agents are essentially antioxidants and help ensure

uniform drying of the coating and avoiding shrinkage and other defects that would affect the performance of the coating. Anti-skinning agents also prevent the formation of a skin in the can, improving the shelf life of products and reducing the likelihood of wasting paint once the can is opened. Anti-skinning agents are generally volatile compounds that evaporate to air during the application process and mainly come from one of the following substance groups: animes, lactones, phosphites, phenolics, thioethers and nitrogen derivatives (e.g. MEKO, which is not technically an antioxidant, is the most widely used anti-skinning agent in coatings). Specific anti-skinning agents used and their associated CLP hazards include:

- Methyl ethyl ketone oxime (MEKO) (CAS No 96-27-9, EC List No 202-496-6): Harmonised H301, H312, H315, H317, H318, H336, H350, H370, H373.
- 2-Pentanone Oxime (CAS No 623-40-5): Joint entry H302, H319, H373 (has recently been evaluated for carcinogenic properties under the Community Rolling Action Plan, CoRAP).
- Cyclohexanone oxime (CAS No 100-64-1): Self-classifications H228, H302, H319, H373, H412.
- 4-methylpentan-2-one oxime (CAS No 105-44-2): Joint entry H302, H315, H319.

The existing derogation of H317, H412 and H413 does not permit the use of the anti-skinning agents of most concern (e.g. MEKO and some of the related oxime compounds). However, the consultation did not uncover exactly which anti-skinning agents needed each of the derogated hazards. From the list above, the currently derogated hazards would have no effect (i.e. 3 of the substances would be screened out and 1 would pass through, and this would be the same with or without the derogated hazards).

It is important to optimise the combination of driers with anti-skinning agents since driers are a factor in the skin formation process and the right balance has to be struck.

Driers (to be derogated for H301, H317, H373, H412, H413, and for Co-based driers, also H400, H410): these additives are used in coatings based on alkyl or alkyd-modified resins and are essential to speed up, or catalyse the crosslinking process so that the coating will dry in a matter of hours, instead of weeks, after application. The correct drying of an alkyd-based coating is essential for its later durability. A combination of driers is normally necessary to ensure optimal drying, with a primary (surface) drier supported by auxiliary (through) driers. The chemistry of drier compounds is mostly metal carboxylate-based, with octoates or neodecanoates. The primary driers are mostly based on Co, Mn or Fe salts, while auxiliary driers can be based on combinations of Zr, Ba, Li, Ca or Zn salts. Cobalt-based driers are the most widely used primary driers, but a shift to Cobalt-free alternatives has begun in Europe after Cobalt metal was classified as a carcinogen in the 14th ATP (H317, H334, H341, H350, H360F, H413). The main alternative to Cobalt-based driers are the Mn-based salts, but according to stakeholder feedback they do not deliver as good a performance as Co-based salts and need to be used in combination with other CLP classified substances to compensate. Some of the main driers used and their associated CAS numbers are:

- Neodecanoic acid, cobalt salt (CAS No 27253-31-2): Joint entry H302, H317, H372, H412.
- Zinc neodecanoate (CAS No 27253-29-8): Joint entry H412.
- Lithium neodecanoate (CAS No 27253-30-1): Joint entry H302, H315, H318.
- Manganese neodecanoate (CAS No 27253-32-3): Joint entry H302, H373, H412.
- Iron(1+), chloro[dimethyl 9,9-dihydroxy-3-methyl-2,4-di(2-pyridinyl-kN)-7-[(2-pyridinyl-kN)methyl]-3,7-diazabicyclo[3.3.1]nonane-1,5-dicarboxylate-kN3,kN7]-, chloride (CAS No 478945-46-9): Joint entry H301, H317, H373, H412.
- Neodecanoic acid, zirconium salt (CAS No 39049-04-2): Joint entry H302.
- Calcium bis(2-ethylhexanoate) (CAS No 136-51-6): Joint entry H302, H318, H360D.

When comparing the above listed compounds to the derogated hazards in TR3, it is clear that the derogations are well matched to allow the Co-free alternatives to be used but the current derogations do not match well with the Co-neodecanoate (i.e. extra derogations for H400 and H410 for Co-driers are not needed here but the compound cannot be used above 0.010% because H372 is not derogated).

One issue flagged was about Zn-neodecanoate and the need for clarification about whether it is an anti-corrosion additive or a drier. Based on the quantities that were being discussed (i.e. around 0.030% in the final product formulation) it should be considered as a drier.

Zinc oxide as preservative stabiliser: this particular derogation was consulted on with stakeholders due to concerns about the misuse of the allowance here to allow the use of more zinc oxide for other purposes that are not necessarily derogating ZnO to be used. Zinc oxide (CAS No 1314-13-2), classified with H400 and H410, can also be used as a UV stabiliser, anti-corrosion pigment or neutralising agent in coatings in general but the UV stabiliser and anti-corrosion pigment derogations do not extend to H400 in the EU Ecolabel criteria. Stakeholders confirmed that when ZnO is used as a preservative stabiliser, it is supplied already in combination with the preservative and so it should be straightforward, based on declarations and SDSs, to determine whether ZnO is entering to final product formulation in this manner or not.

Anti-corrosion pigments (currently derogated for H410, H411, H412, H413): no input or feedback was received from stakeholders about the use of anti-corrosion pigments and the application of EU Ecolabel derogations for such pigments. This could be due to one of three possibilities: (i) anti-corrosion coating producers are not interested in the EU Ecolabel; (ii) the derogation conditions are not flexible enough for anti-corrosion pigments, or (iii) the derogations are not needed. Due to the lack of feedback received, it was not possible to determine which of these options was the case. Further research into anti-corrosion pigments used in waterborne coatings revealed three general groups of compounds: borosilicates, phosphosilicates, phosphates and chromates. Apart from chromates, which can be discarded due to carcinogenic classifications, some of the specific compounds that were identified are listed below. These substances can often be used in combinations with each other (and also with ZnO) in commercially available anti-corrosion additives. A broad distinction that is often made in marketing claims is "Zn free", although sometimes SDSs have been found for "Zn-free" can contain up to 5% ZnO as an impurity. According to the definition of "ingoing substances" and "impurities" proposed, any impurities present in ingredients above 0.1% w/w are to be treated as if they were ingoing substances (i.e. needing derogation if possessing restricted CLP hazards). This is an important point because there is no H400 derogation for anti-corrosion pigments and so impurities of ZnO above 0.1% w/w would not be permitted in EUEL products.

- Trizinc bis(orthophosphate) (CAS No 7779-90-0): Harmonised H400, H410.
- Aluminium orthophosphate (CAS No 7784-30-7): Joint entry "Not classified".
- Aluminium dihydrogen triphosphate (CAS No 13939-25-8): Joint entry H315, H319.
- Barium bis(dihydrogenorthophosphate) (CAS No 13466-20-1): Could not find information on CLP classification.
- Strontium Zinc phosphate silicate (CAS No 136200-56-1): Could not find information on CLP classification.
- Calcium hydrogenorthophosphate (CAS No 7757-93-9): Joint entry "Not classified".
- Synthetic amorphous silica (CAS No 7631-86-9) that has been calcium modified: Joint entries as "Not classified" and as "H373". Hazard will depend on physical form of substance.

Overall, the lack of direct input from stakeholders and the availability of a number of anti-corrosion substances without any EUEL-restricted CLP hazards implies that the derogation for anti-corrosion pigments (up to 8.0% of H410, H411, H412 or H413 substances in some products allowed) could be removed. It is presumed that the market situation is the same for decorative coatings for metal substrates (Annex I) as for performance coatings marketed as anti-corrosion (Annex II).

Verdigris prevention (derogated for H412, H413): This derogation was removed from Annex I and only considered as relevant for Annex II in TR2. However, no input or interest has been expressed by any stakeholders about this derogation and therefore it is proposed to remove the derogation due to a lack of interest and the possible inadequacy of the derogation as well.

Titanium dioxide (derogated for H351 (inhalation) and TMP (derogated for H361fd): these derogations were only added to the 2014 criteria via a recent amendment in 2021 and due to the reclassification of TiO2. During the investigation process, it was also discovered that a pigment additive, trimethylolpropane (TMP), was added to the supplied pigments and would require derogation too. In response to the classification, which is dependent on the particle size distribution of the TiO2, the producers of TiO2 have found ways to generally avoid their products needing to be shipped to paint manufacturers with the H351 classification. However, the derogation remains in place for legal certainty since stakeholders confirmed that TiO2 is a fundamental agreement in the vast majority of EU Ecolabelled paint products. The classification of TiO2 was successfully appealed by the TiO2 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 TiO2 is pending. In the meantime, the H351 classification remains in force and so the derogation should too. Discussions with TiO2 suppliers also revealed that the TMP derogation was still relevant in 2025 just as much as it was back in 2021.

Adipic acid dihydrazide (ADH, derogated for H317, H411): the most relevant use of this substance is as a cross-linking agent in water-based acrylics, but the substance can also be used in epoxy resins and polyurethane dispersions and can have other effects such as adhesion promotion and acting as a formaldehyde scavenger. An important property of ADH is its ability to be used with either diacetone acrylamide (DAAM) or acetoacetoxyethyl methacrylate (AAEM) to deliver so-called "keto-hydrazide crosslinking" at ambient temperature, resulting in the evaporation of water as the film-forming process progresses. Considering the classifications of the substances listed below, it is evident that only the ADH-AAEM pair could be permitted in EU Ecolabel products:

- ADH (CAS No 1071-92-8): Joint entry H411 (but self-classifications with H317 too).
- DAAM (CAS No 2873-97-4): Joint entry H302, H361.
- AAEM (CAS No 21282-97-3): Joint entry "Not classified"

Stakeholders provided significant feedback about the necessity of the derogation for ADH. A good degree of cross-linking at ambient temperatures delivers better quality films and myriad associated benefits such as: better water resistance, better chemical resistance, better adhesion, better outdoor durability (e.g. gloss retention, cracking, flaking and UV resistance) and better mechanical resistance (e.g. scratch resistance, abrasion resistance and hardness). Stakeholders also confirmed that the derogation limit should be 1,0% w/w of the binder formulation, so this should be declared by suppliers. It was also added that the binder is a major ingredient in the paint formulations and can account for anywhere between 10 and 80% of the coating formulation.

Unreacted monomers (to be derogated for H301, H304, H311, H317, H331, H334, H372, H400, H410, H411, H412): a commonly cited derogation need from the 2014 criteria was for unreacted monomers. However, the 2014 criteria did not specify which hazards should be derogated, which is not in line with the approach taken to this horizontal CLP restriction in all of the more recent sets of EU Ecolabel criteria, where it is specific CLP hazards that need to be derogated for specific substances or substance groups. Feedback from stakeholders to the TR2 cited a number of specific hazards, all of which are now specified in the TR3 proposal except for the CMR monomers.

Neutralising agents (to be derogated for H301, H311, H331, H400, H410, H411, H412, H413): stakeholders cited the high importance of this derogation, that they were often used in EU Ecolabel applications, and that these substances are essential for keeping the product stable when in the can and have a key role in ensuring a minimum shelf-life. One stakeholder, without citing specific examples, claimed that the alternative neutralising agents to those with the derogated hazards had more severe hazardous properties. Other stakeholders cited some examples of neutralising agents used in the coatings sector:

- Potassium hydroxide (CAS No 1310-58-3): Harmonised H302, H314.
- Sodium hydroxide (CAS No 1310-73-2): Harmonised H314.
- Sodium hydrogencarbonate (CAS No 144-55-8): Joint entry: "Not classified".
- 2,2'-butyliminodiethanol (CAS No 102-79-4): Joint entry H318.
- 2-amino-2-methylpropanol (AMP, CAS No 124-68-5): Harmonised H315, H319, H412.
- Ammonia solution (CAS No 1336-21-6): Harmonised H314, H400 (and H335 when >5%).
- 2-diethylaminoethanol (CAS No 100-37-8): Harmonised H226, H302, H312, H314, H332.
- Diethylamine (CAS No 109-89-7): H225, H302, H312, H314, H332 (and H335 when >1%).
- Diisopropanolamine (DIPA, CAS No 110-97-4): Harmonised H319.

A look at some safety data sheets for commercially available neutralising agents showed that some were unclassified (e.g. sugar amines, aminomethyl propanol). There are a number of suppliers that claim about the ability of ZnO to neutralise acids in paint coatings, but this is always a secondary or tertiary benefit compared to the core purpose of being an anti-corrosive pigment or a UV stabiliser. It could be argued that the use of ZnO as a neutralising agent would not be correct given the various alternatives listed above. Overall, from the data gathered, it is not clear why the derogations for H301 or H331 would be needed.

Methanol (derogated for H301, H311, H331, H370): This derogation was specifically inserted via a 2016 amendment to the criteria set out in Decision 2014/312/EU. The reasons for its need, due to impurities in polymer dispersions (binders) remains valid today.

Mineral raw materials (to be derogated for H372 and H373): The definition of mineral raw materials is not clear, but the derogation seems to refer to forms of silica that can be used for various purposes in coating formulations, such as fillers, matting agents (at levels up to 10% w/w) and anti-sagging agents (at lower levels around 0,5 to 2,0% w/w). In general, the use of these additives can improve the smoothness of coating films and also properties like scratch resistance. A review of additives marketed showed that various forms of silica could be used for this purpose (e.g. amorphous silica, crystalline silica and wax-modified silicas). Some types of silica, namely minerals which occur in nature, may be exempted from REACH registration under Article 2(7) of REACH so long as they are not chemically modified. This makes it questionable what is the added value of the text *"only applies to mineral raw materials and leucophyllite minerals that naturally contain crystalline silica"* in the derogation for from the 2014 criteria.

According to stakeholder feedback, this derogation was very commonly used, but that a reclassification to H372 is upcoming as well. Since the dose toxicity is related to dry dust inhalation and that the paint product is a liquid, it was considered as still suitable for these ingredients to be used, so long as low dust working systems are in place for workers in the coating factory – similar to the approach for TiO2 pigment derogation conditions.

Optical brighteners (derogated for H413): No feedback was received at all from stakeholders about the necessity or frequency of this derogation. Optical brightening agents (OBAs) can help enhance colour perception and mask the yellowing of white coatings. Some examples of potentially relevant OBAs are:

- 2,5-thiophenediylbis(5-tert-butyl-1,3-benzoxazole) (CAS No 7128-64-5): Joint entry: "Not classified", but this can be altered to H413 depending on impurities.
- 2,2'-(p-phenylenediethene-2,1-diyl)bisbenzonitrile (CAS No 13001-39-3): Joint entry H413.
- 2,2'-(naphthalene-1,4-diyl)bis(benzoxazole) (CAS No 5089-22-5): Joint entry: "Not classified", but with some self-entries as H413.
- 2,2'-(vinylenedi-p-phenylene)bisbenzoxazole (CAS No 1533-45-5): Joint entry: H411.
- 2,5-thiophenediylbis(5-tert-butyl-1,3-benzoxazole) (CAS No 7128-64-5): Joint entry: "Not classified".
- benzenesulfonic acid, 2,2'-(1,2-ethenediyl) bis [5-[[4-[bis(2-hydroxyethyl)-amino]-6-phenylamino)-1,3,5,-triazine-2-yl] amino]-, disodium salt (CAS No 12768-92-2): Self-entry: "Not classified".
- Disodium 2,2'-([1,1'-biphenyl]-4,4'-diyldivinylene)bis(benzenesulphonate) (CAS No 27344-41-8): Joint entry H319 (under assessment for PBT properties).

When assessing compliance with criterion 3.2, joint entries in the ECHA C&L inventory take precedence over any self-entries.While the H413 derogation seems justified if self-entries are also considered, the fact that only 1 of the 6 OBAs above with joint entries had no hazards that would need a derogation under criterion 3.2 implies that the OBA derogation is no longer necessary.

Silicon resins (derogated for H412, H413): Should be corrected to "silicone resins". These resins form films with low reactivity due to the greater stability of Si-O bonds instead of C-C bonds, thus imparting better corrosion resistance, UV resistance, water resistance, temperature resistance and other beneficial properties that enhance the durability of coatings in harsh environments. They are also important in waterproofing coatings, which are now included in the scope via Annex II. However, it was not possible to obtain any information on the CLP hazards that might be associated with silicone resins. It is possible that they are considered as REACH exempt if considered as polymers. No information was found about why the H412 and H413 derogations were needed.

Solvents (derogated for H304): Stakeholders confirmed that this derogation was needed in reaction to the TR1 proposal, where the derogation for solvents had been mistakenly deleted. The solvents end up as residuals in the final coating products due to being present as residual in supplied ingredients, mainly pigment dispersions but possibly other additives too.

Surfactants (derogated for H411, H412 and H413: Stakeholders strongly confirmed the need for this derogation and for the extra quantities allowed in darker shades of paints. This is linked to the higher pigment surface wetting requirements associated with darker pigments in order to ensure final colour strength. Although stakeholders did not specify which surfactants were used, a CLP recommendation for surfactants compiled by

CESIO provides a very useful basis for screening the occurrence of particular CLP hazards in different surfactants. The CESIO table provided a summary of over 700 different surfactants, often variations of concentration or degree of ethoxylation or cationic salt of the same base surfactant. A screening of the CLP hazards of these substances, split by surfactant type, is summarised in the table below.

Table 12. Screening of derogated CLP hazards for surfactants according to the CESIO recommendations[34]

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%)
None	43 (67.2%)	0 (0.0%)	14 (11.9%)	46 (22.2%)	23 (38.3%)	2 (20%)	1 (4.8%)

Source: Own elaboration.

The CLP classification landscape varies significantly between different categories of surfactants. For example, the availability of unclassified surfactants was generally low, except for with alkylether sulfate salts. And the share of surfactants needing the H411, H412 or H413 derogation ranged from around 20% to around 80% depending on the surfactant group in question. When taken as an entire group of substances, the need for the H411, H412 and H413 derogations for surfactants is clear.

UV stabilisers (derogated for H317, H411, H412, H413): this group of additives are especially important in outdoor coatings to prevent or reduce the rate of film degradation (e.g. cracking, chalking, loss of gloss and discolouration) caused by photo-oxidative reactions triggered by exposure to natural daylight. Stakeholders confirmed the need for these derogations and further consultation provided the following examples of UV stabilisers used in coatings:

- Zinc oxide (CAS No 1314-13-2): Harmonised H400, H410.
- 2-(4,6-bis(2,4-dimethylphenyl)-1,3,5-triazin-2-yl)-5-(3-((2-ethylhexyl)oxy)-2-hydroxypropoxy)phenol (CAS No 137658-79-8): Harmonised H413.
- 2-(2H-benzotriazol-2-yl)-p-cresol (CAS No 2440-22-4): Joint entry H317, H410 (under assessment as PBT).
- A mixture of branched and linear C7-C9 alkyl 3-[3-(2H-benzotriazol-2-yl)-5-(1,1-dimethylethyl)-4-hydroxyphenyl]propionates (CAS No 127519-17-9): Harmonised H411.

Based on the substances listed, the derogations seem appropriate, by allowing some UV stabilisers but not the more hazardous ones (i.e. ZnO and 2-(2H-benzotriazol-2-yl)-p-cresol).

Preservatives: A high amount of feedback was received about the need for broader derogations for both in-can and dry film preservatives. There was also a lot of confusion about which preservatives are derogated and which are not, with some stakeholders wanting a full list of individual preservatives and their derogated hazards, while others wanted a pooled approach for groups of preservatives. Both approaches have their advantages and disadvantages.

The individual approach is very clear for preservatives used in quantities >0,010% w/w in the final product formulation, but every time an individual substance is reclassified, the legal text may become outdated and may require amendment. Furthermore, the approach with individual substances does not require the listing of those preservatives which, due to specific concentration limits (SCLs) that are below 0.010%.

The grouped approach provides a level playing field for preservatives but does not inform about which specific preservatives are being derogated. In the TR3 proposal, a simple reference to PT6 preservatives is added, and another group for PT7 preservatives. Any specific limits for individual preservatives are specified in the derogation conditions. The advantage of this approach is that there less risk of reclassifications rendering the derogation of an individual preservative as incorrect. However, the disadvantage of the pooled approach is that some stakeholders do not have a simple list of individual substances to refer to. In order to resolve this drawback, the table below has been compiled to give readers a broad overview of which preservative substances can be used in EUEL paints and varnishes and up to what levels in the final product formulation.

[34] See: https://www.cesio.eu/images/content/210526-Cesio-CL_Recommendations_2021-Final.pdf

In-depth research has been conducted to create a single table of all PT6 and PT7 preservatives, including many which may not be suitable for paints and varnishes in order to explain to readers what the effective limits of each of these substances in EUEL paints and varnishes are as per the current criterion 3.2 and associated derogations. Feedback is still pending from industry about some details for the table, which is presented further below.

2450 Table 13. Summary table of current CLP classification and BPR status for PT6 and PT7 preservatives

Chemical name (short version)	CAS No	Current EUEL-restricted classifications (H:, J: or S:)*	Upcoming EUEL-restricted classifications?	Bioaccumulative? (for PT7 only)	BPR status/ effective limit if not derogated / effective limit allowed with TR3 derogations / suitability for paints, varnishes or related products?
In-can preservatives (PT6)					
(benzyloxy)methanol	14548-60-8	S: H317		n/a	In progress / 0,010% / 0,010%
EG Form	3586-55-8	J: None		n/a	In progress / 0,080% / 0,080% (need to respect free formaldehyde limits in criterion 4.3)
BIT	2634-33-5	H: H317 (SCL* 0,036%), H330, H400, H410		n/a	In progress / 0,010% / 0,036%
DMDMH	6440-58-0	J: None		n/a	In progress / 0,080% / 0,080%
DBNPA	10222-01-2	H: H301, H317, H330, H372, H400, H410	Under assessment as endocrine disrupting	n/a	In progress / 0,010% / 0,030%
HHT	4719-04-4	H: H317 (SCL* 0.1%*)		n/a	In progress / 0,080% / 0,080%
DTBMA	2527-58-4	S: H317, H400, H410, H411		n/a	In progress / 0,010% / 0,080%
DBDCB	35691-65-7	S: H317, H400		n/a	Approved until 2027 / 0,010% / 0,080%
MIT.HCl	26172-54-3	J: H301, H317, H400, H410		n/a	In progress / 0,010% / 0,080%
MIT	2682-20-4	H: H301, H311, H317 (SCL* 0.0015%), H400 (M=10*), H410		n/a	In progress / 0,0015% / 0,0015%
OIT	26530-20-1	H: H301, H311, H317 (SCL* 0,0015%), H330, H400 (M=100*), H410 (M=100*)		n/a	In progress / 0,0015% / 0,0015%
2-phenoxyethanol	122-99-6	H: None		n/a	In progress / 0,080% / 0,080%
IPBC	55406-53-6	H: H317, H331, H372, H400 (M=10*), H410	Under assessment as endocrine disrupting; H330 and H410 (M=10) reclassification expected in 23rd ATP	n/a	Approved until 2025 renewal in progress / 0,010% / 0,50% (becoming 0,25% with proposed reclassification)
CIT	26172-55-4	S: H300, H310, H311, H317, H330, H400, H410		n/a	In progress / 0,010% / 0,040%
Benzyl alcohol	100-51-6	H: H317		n/a	In progress / 0,010% / 0,080%
Biphenyl-2-ol	90-43-7	H: H400		n/a	Approved until 2027 / 0,010% / 0,080%
Bronopol	52-51-7	H: H400 (M=10*)	Under assessment as endocrine disrupting; RAC opinion for reclassification including H301, H317, H331, H410 (M=10*) and changing H400 to M=100*	n/a	In progress / 0,010% / 0,030%
CMIT/MIT	55965-84-9	H: H301, H310, H317 (SCL* 0,0015%), H330, H400 (M=100*), H410 (M=100*)		n/a	Approved until 2027 / 0,0015% / 0,0015%
Chlorocresol	59-50-7	H: H317, H400, H412		n/a	Approved until 2028 / 0,010% / 0,080%

Chemical name (short version)	CAS No	Current EUEL-restricted classifications (H:, J: or S:)*	Upcoming EUEL-restricted classifications?	Bioaccumulative? (for PT7 only)	BPR status/ effective limit if not derogated / effective limit allowed with TR3 derogations / suitability for paints, varnishes or related products?
DDAC (C8-10)	68424-95-3	J: H301, H400 (M=10), H411		n/a	In progress / 0,010% / 0,080%
DDAC	7173-51-5	H: None		n/a	In progress / 0,080% / 0,080%
DGH	13590-97-1	S: H330, H400 (M=10*), H410 (M=10*)		n/a	In progress; 0,010%
Ethanol	64-17-5	H: None		n/a	In progress / 0,080% / 0,080%
Formic acid	64-18-6	H: None		n/a	In progress / 0,080% / 0,080%
Glutaral	111-30-8	H: H301, H317, H330, H334, H400, H411		n/a	Approved until 2026 / 0,010% / 0,010% (H334 not derogated)
Hexa-2,4-dienoic acid	110-44-1	J: None		n/a	In progress / 0,080% / 0,080%
Hydrogen peroxide	7722-84-1	H: None		n/a	Approved until 2027 / 0,080% / 0,080%
Lactic acid	79-33-4	H: None		n/a	Approved until 2033 / 0,080% / 0,080%
MBIT	2527-66-4	H: H301, H317 (SCL 0,0015%), H400, H411		n/a	Approved until 2028 / 0,0015% / 0,0015%
Diamine	2372-82-9	J: H301, H373, H400 (M=10), H410		n/a	In progress / 0,010% / 0,080%
Folpet	133-07-3	H: H317, H351, H400 (M=10*)		n/a	Approved until 2025 / not permitted via new criterion 4.3(a)
Peracetic acid	79-21-0	H: H400		n/a	Approved until 2027; 0,010%
Sodium pyrithione	3811-73-2	H; H311, H317, H331, H372, H400 (M=100*), H411		n/a	In progress; 0,010%
Zinc pyrithione	13463-41-7	H: H301, H330, H360D, H372, H400 (M=1000); H410 (M=10)		n/a	In progress / not permitted via new criterion 4.3(a)
Silver chloride	7783-90-6	J: H360D, H400 (M=1000*), H410 (M=1000*)		n/a	In progress / not permitted via new criterion 4.3(a)
Sodium Azide	26628-22-8	H: H300, H400, H410		n/a	In progress; 0,010%
Disodium disulphite	7681-57-4	H: none		n/a	In progress; 0,080%
TMAD	5395-50-6	J: H317, H350, H411		n/a	In progress / not permitted via new criterion 4.3(a)
THPS	55566-30-8	J: H317, H330, H331, H361d, H400, H411		n/a	In progress / not permitted via new criterion 4.3(a)
Dry-film preservatives (PT7) – limits in right-hand column only refer to outdoor products (there is a 0,10% for indoor high humidity area coatings too)					
Propiconazole	60207-90-1 PT7	H317, H360D, H400, H410	Under assessment as endocrine disrupting		Approved until 2026 / not permitted via new criterion 4.3(a)
BBIT	4299-07-4	H: H317, H400, H410			In progress / 0,010% / 0,50%
OIT	26530-20-1	H: H301, H311, H317 (SCL 0,0015%), H330, H400 (M=100*), H410 (M=100*)			In progress / 0,0015% / 0,0015%
Thiabendazole	148-79-8	H: H400, H410			In progress / 0,010% / 0,50%
Isoproturon	34123-59-6	H: H351, H373, H400 (M=10*), H410 (M=10*)			In progress / not permitted via new criterion 4.3(a)
IPBC	55406-53-6	H: H317, H331, H372, H400 (M=10*), H410	Under assessment as endocrine disrupting; H330 and H410 (M=10)		In progress / 0,010% / 0,50% (0,25% when new reclassification with H410, M=10 occurs)

Chemical name (short version)	CAS No	Current EUEL-restricted classifications (H:, J: or S:)*	Upcoming EUEL-restricted classifications?	Bioaccumulative? (for PT7 only)	BPR status/ effective limit if not derogated / effective limit allowed with TR3 derogations / suitability for paints, varnishes or related products?
			reclassification expected in 23rd ATP		
DCOIT	64359-81-5	H: H317 (SCL 0,0015%), H330, H400 (M=100*), H410 (M=100*)			In progress / 0,0015% / 0,0015%
Azoxystrobin	131860-33-8	H: H331, H400 (M=10*), H410 (M=10*)			Approved until 2025 updates in progress / 0,010% / 0,25%
Carbendazim	10605-21-7	H: H317; H340; H360FD, H400 (M=10*), H410 (M=10*)			Approved until 2025 / not permitted via new criterion 4.3(a)
Tolylfluanid	731-27-1	H317 + ???			Approved until 2027 / 0,010% ??
Diuron	330-54-1	H: H350, H373, H400 (M=100*), H410 (M=10*0	Under assessment as endocrine disrupting		In progress / not permitted via new criterion 4.3(a)
Fludioxonil	131341-86-1	H: H400, H410 (M=10*)			Approved until 2028 / 0,010% / 0,25%
Folpet	133-07-3	H: H317, H351, H400 (M=10*)			Approved until 2026 / not permitted via new criterion 4.3(a)
Dimethyloctadecyl[3-(trimethoxysilyl)propyl] ammonium chloride	27668-52-6	J: H400, H410			In progress / 0,010% / 0,50%
Sodium pyrithione	3811-73-2	H; H311, H317, H331, H372, H400 (M=100*), H411			In progress / 0,010% / 0,50%
Zinc pyrithione	13463-41-7	H: H301, H330, H360D, H372, H400 (M=1000); H410 (M=10)			In progress / not permitted via new criterion 4.3(a)
Silver chloride	7783-90-6	J: H360D, H400 (M=1000*), H410 (M=1000*)			In progress / not permitted via new criterion 4.3(a)
Silver phosphate glass	308069-39-8	S: H400 (M=100*), H410 (M=100*)			In progress / 0,010% / 0,025%
Silver phosphoborate glass	2677731-62-1	S: H400 (M=100*), H410 (M=100*)			In progress / 0,010% / 0,025%
Silver zinc zeolite	130328-20-0	H: H361d; H400 (M=100*), H410 (M=100*)	Under assessment as endocrine disrupting		Approved until 2036 / not permitted via new criterion 4.3(a)
Tebuconazole	107534-96-3	H: H361d, H400, H410 (M=10*)			Approved until 2025 / not permitted via new criterion 4.3(a)
Terbutryn	886-50-0	S: H317, H400 (M=10*), H410 (M=10*)	Under assessment as endocrine disrupting		In progress / 0,010% / 0,25%

Source: ECHA website, starting on this particular page and ignoring any entries that are not approved or whose approval process is not in progress.

*H:, J: or S: indicate Harmonised, Joint entry or Self classifications. As far as the EUEL criteria apply, H classifications take precedence over J classifications, and J classifications take precedence over S classifications for a given substance. SCL stands for Specific Classification Limit for a particular H classification. M factors associated with H400 or H410 classifications indicate a higher weighting in CLP rule of mixture classifications. Only when the M factor is not 1 is it mentioned in the table above.

The other main further research has been a consultation with industry experts on the continued relevance (or lack of) of the existing derogations in criterion 3.2.

Main changes in the third proposal

Substantial changes have been made to the wording of sub-criterion 3.2 and some more or less significant changes made to the derogations, as is summarised below:

- As per a stakeholder request, and for the sake of consistency, the general introductory text now mentions all of the main hazard classes listed in Table X instead of just some of them.
- The exemption condition for the classification of the final product as H412 or H413 due to the use of dry film preservatives in outdoor coatings has been extended to also be allowed if due to the use of anti-corrosion pigments in outdoor coatings. This is due to the fact that potentially high amounts (up to 8,0%) of anti-corrosion pigments with H41x hazards. The extension is justified in the sense that both good dry film preservation and good anti-corrosion properties have the common goal of extending the life of the coating before reapplication is needed and of offering better protection to the underlying substrate.
- In Table X, the hazard codes and statements for H360 and H361 have been inserted following a stakeholder request and in recognition that these codes can be used when it is still not clear which letter should go with the code.
- Also in Table X, the H304 hazard has been given its own standalone category because it does not technically fall under the class of "acute toxicity".
- In between Table X and Table Y, a specific wording about the applicability of the hazard codes, exemptions for chemical modification and exemptions according to REACH Article 2(7), points a and b, has been inserted. This is in line with the proposal for detergents and it is well placed here because it comes before the reader starts to look at the derogations table.
- In the derogation table, an extensive note for preservatives has been inserted to clarify all relevant concentration limits for the different types of products and to explain that the derogation applies only to substances present in the final product >0,010% and that preservatives with restricted CLP hazards can still be used at levels below this threshold so long as they comply with the any specific restrictions in criterion 4.3.
- Also in the derogation table, the derogations for PT6 preservatives have been pooled together based on the hazards associated with the derogated preservatives from TR2. A similar approach has been applied for PT7 preservatives.
- An additional derogation for zinc decanoate, with a specific limit of 0,030%, has been added to the derogations for anti-corrosion pigments, which is now referred to as "anti-corrosion pigments and additives". This was based on input from industry stakeholders and it was deemed acceptable because no new hazards needed to be derogated and the quantities used are much smaller than the pure pigments.
- The allowance for ZnO as a preservative stabiliser for BIT has been extended to preservatives based on sodium pyrithione too.
- The structure of the derogation table has been slightly altered now, with a group just for pigments and pigment additives, where TiO2 and TMP are now below where anti-corrosion pigments used to be.
- A series of CLP hazards have now been specified for derogation of unreacted monomer residues (previous these were just derogated but without any hazards specified).
- The H372 derogation has been added to the H373 derogation for silica mineral compounds due to an upcoming reclassification.
- The A+V text has been heavily reworked in order to better spell out the steps that the applicant has to take in order to demonstrate compliance with criterion 3.2.

5.4.3 Sub-criterion 3.3 on specific hazardous substance exclusions

TR2: Annex I: Second Proposal for Criterion 4: Restriction of hazardous substances and mixtures

4.3. Specific hazardous substance restrictions for ingoing substances.

The substances indicated below shall not be included as ingoing substances in the product formulation or as ingoing substances to the ingredients used to make the final product:

(a) Akylphenolethoxylates (APEOs) and their derivatives.

(b) Perfluorinated and polyfluorinated compounds (PFAS).

(c) Phthalates.

(d) Organotin compounds.

(e) Fragrances.

(f) Bisphenols that have been identified by ECHA for further EU regulatory risk management that are known or potential endocrine disruptors for the environment or for human health, or that can be identified as toxic for reproduction.

(g) Microplastics.

(h) The following metals shall not be present in the final product formulation in quantities exceeding 0,010 % weight by weight (per metal): Cadmium, Lead, Chromium (VI), Mercury, Arsenic, Barium, Selenium, Antimony and Cobalt. The only exceptions shall be when the limits are exceeded due to the use of:

- Cobalt compounds used in driers that comply with the derogation conditions in criterion 4.2,
- the Barium-containing mineral nepheline syenite, and
- the use of the following pigments: Barium sulphate; Antimony Nickel within an insoluble TiO2 lattice; Cobalt aluminate blue spinel and Cobalt chromite blue-green spinel.

(i) Free formaldehyde shall not be intentionally added to the final product. The final product shall be tested in order to determine its free formaldehyde content. Worst-case samples for testing shall selected for the white base or transparent tinting base and colour tint predicted to have the highest theoretical amount of formaldehyde content. The following sum total limits of free formaldehyde shall be permitted:

- Up to 0,0010 % weight by weight permitted when bronopol or preservatives that are formaldehyde donors are required as an in-can preservative to protect a specific type of paint or varnish and where the formaldehyde donor is used in the place of isothiazolinone preservatives.
- Up to 0,010 % weight by weight permitted when polymer dispersions (binders) provide, through residual levels of formaldehyde, the function of formaldehyde donors instead of in-can preservatives.

Assessment and verification:

(a to g) The applicant shall declare the non-use of APEOs, PFAS, phthalates, organotin compounds, relevant bisphenols, fragrances and microplastics as ingoing substances in their formulation, supported by declarations from their suppliers about the non-use of APEOs/PFAS and listed phthalates as ingoing substances in the ingredients supplied and that are used in formulations subject to the EU Ecolabel license application procedure.

(h) In the case of the metal restrictions, the product formulation(s) should be tested for metal content via a standard laboratory procedure for digesting powder, liquid or paste samples prior to analysis for metal content via methods such as atomic absorption spectroscopy or inductively coupled plasma spectroscopy.

For demonstrating compliance with exemptions from certain metal content restrictions, the applicant shall declare the content of any metal containing ingredients added to the formulation, supported by a declaration from their supplier(s). In the case of demonstrating that a restricted metal is bonded within a crystal lattice in an insoluble form, compliant results from testing according to DIN 53770-1 or an equivalent standard shall be accepted.

(i) The applicant shall declare which of their products should have the highest theoretical free formaldehyde content. This declaration shall be based on the choice of the paint formulator to use formaldehyde donors as in-can preservatives and declarations from suppliers regarding the amounts of formaldehyde donors used to preserve supplied ingredients (especially bonders). The addition of these substances (and any other ingredients that release formaldehyde) to the worst-case formulations shall not result in the content of free formaldehyde in the final product exceeding 0,010%, as measured by the Merckoquant method, the VdL RL 03 method or HPLC analysis in accordance with UNI 11775 or an equivalent standard.

TR3: Annex I: Third Proposal for Criterion 3: Restriction of hazardous substances and mixtures

3.3. Specific hazardous substance restrictions for ingoing substances.

The substances indicated below shall not be included as ingoing substances in the final product ~~formulation~~ or as ingoing substances to the ingredients used to make the final product:

(a) Substances listed in Annexes I or II to Regulation (EU) 2019/1021 on persistent organic pollutants,

(b) Mercury and mercury compounds as defined in Article 2 of Regulation (EU) 2017/852 on Mercury,

(c) Substances listed in Annexes I or II to Regulation (EC) No 1005/2009 on ozone layer depleting substances,

(d) 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 3.2 of this Decision and compliant with associated derogation conditions.

(e) Preservatives or driers classified as carcinogenic, mutagenic or toxic for reproduction.

(f) Substances classified as category 1 or category 2 endocrine disruption 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, except for DBNPA (CAS No 10222-01-2) when used as an in-can preservative.

(~~a~~g) Akylphenols, alkylphenol ethoxylates (APEOs) and their derivatives, as referred to in entry 43 to Annex XIV or entry 46 to Annex XVII of the Regulation (EC) 1907/2006.

(h~~b~~) Perfluorinated and polyfluorinated compounds (PFAS), as defined in Article 4(41).

(i~~c~~) Phthalates, as defined in Article 4(42), that are classified with any of the hazards listed in Article 57 to Regulation (EC) 1907/2006.

(j~~d~~) Organotin compounds, as defined in Article 4(39), that are classified with any of the hazards listed in Article 57 to Regulation (EC) 1907/2006.

(k~~e~~) Fragrance~~s~~ substances which are prohibited or restricted in cosmetic products and listed in Annexes II or III to Regulation (EC) No 1223/2009, or that are classified with H317 or H334 hazards.

(l~~f~~) Bisphenols that have been identified by ECHA in their 2021 Assessment of Regulatory Needs report on Bisphenols for further EU regulatory risk management that are known or potential endocrine disruptors for the environment or for human health, or that can be identified as toxic for reproduction.

~~(g) Microplastic~~

(m~~h~~) Pigments used shall not be based on Cadmium, Lead, Chromium (VI), Mercury, Arsenic, Selenium, Antimony or Cobalt. Impurities~~The following metals~~ from any pigments used shall not be present in the final product formulation in quantities exceeding 0,010 % weight by weight (per metal): Cadmium, Lead, Chromium (VI), Mercury, Arsenic, ~~Barium,~~ Selenium, Antimony and Cobalt. The only exceptions to pigment use and the 0,010 % limit for impurities shall be ~~when the limits are exceeded due to the use of~~:

- ~~Cobalt compounds used in driers that comply with the derogation conditions in criterion 4.2 or .~~
- Cobalt: due to the use of Cobalt aluminate blue spinel and Cobalt chromite blue-green spinel pigments.
- ~~Barium: due to the use of Barium-containing mineral nepheline syenite or Barium sulphate pigments., and~~
- Antimony: due to the use of pigments based on ~~the following pigments:~~ Antimony Nickel within an insoluble TiO2 lattice.

(n~~i~~) Free formaldehyde shall not be intentionally added to the final product. The final product shall be tested in order to determine its free formaldehyde content. Worst-case samples for testing shall be selected for each family of products based on which product is ~~the white base or transparent tinting base and colour tint~~ predicted to have the highest theoretical amount of formaldehyde content. Under the conditions defined below, ~~T~~the following sum total limits of free formaldehyde shall be permitted:

- Up to 0,0010 % weight by weight permitted when bronopol or preservatives that are formaldehyde donors are required as an in-can preservative to protect a specific type of paint or varnish ~~and where the formaldehyde donor is used in the place of isothiazolinone preservatives~~.
- Up to 0,010 % weight by weight permitted when polymer dispersions (binders) provide, through residual levels of formaldehyde, the function of formaldehyde donors instead of in-can preservatives.
- Up to 0,010 % when both conditions listed above apply in the same product.

Assessment and verification:

(a to l~~g~~) The applicant shall declare the non-use of relevant persistent organic pollutants, mercury, mercury compounds, ozone layer depleting substances, Annex XVII substances, CMR preservatives, CMR driers, endocrine disruptors (except DBNPA), alkylphenols and APEOs, PFAS, phthalates, organotin compounds, fragrances and ~~relevant~~ bisphenols fragrances ~~and microplastic~~ as ingoing substances in their formulation, supported by declarations from their suppliers about the non-use of the same hazardous substance groups ~~APEOs/PFAS and listed phthalates~~ as ingoing substances in the ingredients supplied and that are used in formulations covered by ~~subject to~~ the EU Ecolabel license application procedure.

(m~~h~~) In the case of the heavy metal restrictions from pigments, the pigment supplier shall provide a declaration stating that neither the pigment itself nor any ingoing substances that may be incorporated into the pigment product are based on the listed heavy metals. The pigment supplier shall also provide a test report with of the heavy metal impurity levels of representative samples of the pigment supplied. The applicant shall then use these results, together with the % of pigment(s) used in the final product, to calculate the concentration of heavy metals from pigments remaining in the final product. In the case of exempted pigments, the pigment supplier shall declare which pigment(s) have the exemption (i.e. cobalt aluminate blue spinel, cobalt chromite blue-green spinel or antimony nickel in an insoluble TiO2 lattice). ~~product formulation(s) should be tested for metal content via a standard laboratory procedure for digesting powder, liquid or paste samples prior to analysis for metal content via methods such as atomic absorption spectroscopy or inductively coupled plasma spectroscopy.~~

~~For demonstrating compliance with exemptions from certain metal content restrictions, the applicant shall declare the content of any metal containing ingredients added to the formulation, supported by a declaration from their supplier(s). In the case of demonstrating that a restricted metal is bonded within a crystal lattice in an insoluble form, compliant results from testing according to DIN 53770-1 or an equivalent standard shall be accepted.~~

(n~~i~~) The applicant shall declare which of their products should have the highest theoretical free formaldehyde content within each family of products. This declaration shall be based on the choice of the paint formulator to use formaldehyde donors as in-can preservatives and declarations from suppliers regarding the amounts of formaldehyde donors used to preserve supplied ingredients (especially bi~~o~~nders). The addition of these substances (and any other ingredients that release formaldehyde) to the worst-case formulations shall not result in the content of free formaldehyde in the final product exceeding the relevant concentration limit ~~0,010%~~, as measured by the Merckoquant method, the VdL RL 03 method or HPLC analysis in accordance with UNI 11775 or an equivalent standard.

Rationale for the proposed wording of criterion 3.3: specific hazardous substance restrictions

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 (i.e. a ban on these substances becoming "ingoing substances"). Some allowance is always made for impurities as these cannot be fully controlled. This approach means that there are no fixed quantitative limits, which avoids the complicated assessment and verification efforts where non-use might be equated to non-presence and then the discussion begins about what test methods to use and what are the limits of detection of those test methods. The criterion also includes four clauses inserted that make it explicit the EU Ecolabel paints and varnishes are compliant with the general EU Taxonomy requirements relating to pollution prevention and control.

Main changes in the first proposal

As previously mentioned with criteria 4.1 and 4.2, the whole structure of the specific substance exclusions in the 2014 criteria was changed so much that it was not practical to show a track changes comparison in the draft TR1. The main differences were as follows:

- The creation of a clear standalone criterion on specific excluded substances and substance groups.
- Bringing the APEOs from the large CLP derogation table in the 2014 criteria into a specific exclusion requirement.
- Doing the same for PFAS as for APEOs, although the restriction of PFAS was actually broader than what was mentioned in the 2014 criteria, which referred only to "perfluorinated surfactants".
- Taking the allowed residues of DEHP, BBP, DBP, DMEP, DIBP, DIHP, DHNUP or DHP phthalates at levels up to 0,010% (in plasticisers or in final product? It was not clear) and requiring them to not be intentionally used, either in the final product or supplied ingredients without any limit being specified.
- The conversion of old requirements of the miscellaneous limits of 0,010% for cadmium, lead, chromium VI, mercury, arsenic, barium, selenium, antimony and cobalt into a specific exclusion

requirement because it was not possible to flag which specific CLP hazards would need to be derogated.

In general, the wording in draft TR1 simply said "shall not be used" or "shall not be intentionally added", and this was understood to apply to both the final product and the ingredients.

Outcomes from and after 1st AHWG meeting (May 2024)

Around 20 written comments were submitted on BATIS that were directly or indirectly relevant to the specific hazardous substance exclusions (criterion 5.3 at the time) in TR1. One stakeholder requested that an introductory sentence be used to help explain the general purpose of the criterion. This was incorporated into the revised proposal in draft TR2.

Another request that was made was to align with the specific hazardous substance exclusions set out in the Nordic Swan criteria, which are more extensive. This was investigated and a partial shift towards better alignment was proposed in draft TR2.

With phthalates, some stakeholder wanted a broad ban on all phthalates while other stakeholders claimed this would be difficult to implement due to the high number of phthalate substances and difficulties in being able to get detailed enough information from suppliers on traces of phthalates that might remain in their supplied ingredients. For the 8 specific phthalates listed in TR1, it was pointed out that their CAS numbers were missing.

With PFAS, most comments highlighted that this was a large group of substances and that the correct definition needed to be used. The REACH definition was recommended. It was also pointed out the TR1 proposal was unclear if it simply referred to non-intentional use or to specific levels of impurities allowed in ingredients used in the final product. It was considered very important to distinguish between PFAS impurities and PFAS intentionally used. This distinction was improved in TR2 not only for PFAS but for hazardous substances in general by including definitions of the terms "ingoing substances" and "impurities".

Other suggestions were to set much tighter limits for heavy metals that align with the Austrian ecolabel or the Toys Directive, and that a restriction on the use of microplastics should be added. The heavy metal limits were not adjusted due to a lack of information about the levels of heavy metal impurities in supplied pigments but a proposal to restrict microplastics was inserted into TR2.

Table 14. Overall the list of specific exclusions changed as follows between TR1 and TR2

TR1 specific exclusions	TR2 specific exclusions
a) Non-use of APEOs and their derivatives	a) Non-use of APEOs and their derivatives
b) Non-use of PFAS	b) Non-use of PFAS
c) Non-use of the following phthalates: DEHP, BBP, DBP, DMEP, DIBP, DIHP, DHNUP and DHP	c) Non-use of Phthalates
d) Non-presence of the following heavy metals at >0,010%: Cd, Pb, Cr(VI), Hg, As, Ba, Se, Sb and Co. With exceptions for Co, Ba and Sb.	d) Non-use of Organotin compounds
	e) Non-use of Fragrances
	f) Non-use of Bisphenols (specific ones)
	g) Non-use of Microplastics
	h) Non-presence of the following heavy metals at >0,010%: Cd, Pb, Cr(VI), Hg, As, Ba, Se, Sb and Co. With exceptions for Co, Ba and Sb.
	i) Non-use of free formaldehyde in final product, with acceptable limits when formaldehyde releasing preservatives or binders are used.

Source: Own elaboration.

Outcomes from and after 2nd AHWG meeting (November 2024)

Around 29 written comments were submitted to BATIS in response to sub-criterion 4.3 (now 3.3) on specific hazardous substance exclusions in TR2. One general comment received was on the preference to not make blanket exclusions on whole groups of substances where hundreds or thousands of individual chemicals could belong to those groups. If doing so, then a clear definition of what these substance groups are is needed in

order to provide legal certainty and help communicate to suppliers what they are checking for exactly. If possible, CAS numbers should be provided. Definitions were requested for:

- Phthalates.
- APEOs.
- Microplastics.
- Organotin compounds.

Definitions for phthalates, APEOs and organotin compounds have been added, but while a definition of microplastics was explored (the term should be synthetic polymer microparticles), it was later decided not to exclude microplastics for reasons further detailed below.

A request was made to explicitly exclude any preservatives that are CMRs (as part of the comments on criterion 3.2) and this has been brought forward into the TR3 proposals under criterion 3.3.

Another request was to ban List I, List II and List III endocrine disruptors.

Another comment requested some more clarity on the bisphenol reference, which should refer directly to the 34 bisphenols listed in the Assessment of Regulatory Needs report on bisphenols (see table in further research section). An unsubstantiated request to exclude organophosphates was made, but further information would be needed such as are these compounds used in paints and varnishes in the first place, how many compounds are involved in this group (roughly), some examples of them and what are the hazard profiles of this group of substances.

The restriction of fragrances was initially considered to be an exclusion of low relevance, but stakeholders later responded, citing that fragrances are indeed used in some paints as part of an impression of quality and general consumer experience. It was stated by one producer that often EU Ecolabel paints are of lower technical quality than conventional paints due to the VOC/SVOC and hazardous substance restrictions. To compensate for this lower technical quantity, sometimes fragrances are added to improve consumer perception of the product quality. Consequently, a blanket ban on fragrances could have unforeseen consequences on EU Ecolabel uptake. The hazard profiles of fragrances can also vary widely within a substance groups that easily extends to hundreds of individual substances and many more combinations of those substances. However, some sort of ban on the fragrances with the most relevant hazards was considered to be of added value because these substances will often not be filtered out by the horizontal CLP restriction threshold of 0,010% in the final product. It was decided to focus on excluding fragrances that have also been excluded in the cosmetics Regulation (Annex II) or that have been restricted due to their allergenic properties (considered to be any fragrances listed in Annex III to the cosmetics Regulation or classified with H317 or H334 hazards).

A restriction on nanoparticles was requested, but it was decided only to investigate this for aerosol spray paints, where the exposure risk is much higher, so this issue was the subject of further research.

Regarding heavy metal restrictions, the current requirements were considered as unclear and this was due to a poor combination of the previous requirements. Now a much more direct approach is taken with a direct focus on pigments, meaning that trace amounts of heavy metals do not need to be counted from lots of different ingredients or each family of products be tested. Instead, testing is limited to the main source of heavy metal impurities, which are the pigments. A much more ambitious approach to heavy metal contents allowed in the final product was requested, citing the Austrian ecolabel. However, the scope of the Austrian ecolabel is much narrower than the EUEL and there are a lot less licensed products, so it is not clear what impact aligning with the very low heavy metal limits in the Austrian ecolabel would be. Information on theoretical heavy metal contents in the final product (due to a 100% of heavy metal impurities from pigments to the final product) will deliver more insights into what a suitable ambition level would be in the next revision of the criteria.

A number of comments were received on PFAS, especially about the recommendation to better align the definition with that of REACH. This would entail changing the current definition in Article 4:

"per- and polyfluoroalkyl substances (PFASs) defined as: Any substance that contains at least one fully fluorinated methyl (CF3-) or methylene (-CF2-) carbon atom (without any H/Cl/Br/I attached to it)" to

"per- and polyfluoroalkyl substances (PFASs) defined as: Any substance that contains at least one fully fluorinated methyl (CF3-) or methylene (-CF2-) carbon atom (without any H/Cl/Br/I attached to it)A substance that only contains the following structural elements is excluded from the scope of the proposed restriction: CF3-X or X-CF2-X', where X = -OR or -NRR' and X' = methyl (-CH3), methylene (-CH2-), an aromatic group, a carbonyl

group (-C(O)-), -OR'', -SR'' or –NR''R''', and where R/R'/R''/R''' is a hydrogen (-H), methyl (-CH3), methylene (-CH2-), an aromatic group or a carbonyl group (-C(O)-).”

The latter definition seems very complex and easy to misunderstand by suppliers that are not expert chemists. Consequently, the simpler and broader definition is maintained in TR3. Other comments regarding PFAS focused on the importance of any restriction being applied to ingoing substances only. This way, the non-use can be completely verified via declarations. Any attempts to control PFAS levels by also including impurities would be difficult to implement given the ubiquitous nature of PFAS and the lack of a suitable harmonised test method for PFAS for paints and varnishes. However, test methods are developing rapidly (e.g. see ASTM E3302-21) and this could change in the next few years.

Further research in the third proposal

On EU Taxonomy alignment: A general request was made for EU Ecolabel products to 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 9. The cross-cutting EU Taxonomy DNSH requirements for the pollution prevention and control.

Appendix C

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]).

Source: Commission Delegated Regulation (EU) 2021/2139.

There are a total of six specific requirements and one general requirement on hazardous substances in the EU Taxonomy Appendix on PPC. Four of the specific points have been inserted in the revised criterion 3.3 (a to d)

in this TR3. One of the specific points is not applicable because it refers to electrical and electronic equipment. The last specific point is dealt with in criterion 3.1 and 3.2 combined, and the broader general point is addressed in criterion 3.2.

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 feedstocks they are based on). Focusing more on the "use" part of the EU Taxonomy requirement, how these compare to the proposed requirements in TR3 (and the previous proposal in TR2) 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. While many of these substances. It can be assumed that all or almost all of these substances would be limited to 0,010% w/w by criterion 4.2, 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 4.3 in the TR3 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 4.2, but an explicit ban is needed in criterion 4.3 in order to match with the EU Taxonomy requirements. So this point was also added to criterion 4.3 in the TR3 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 4.2 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 4.3.
- 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 TR3 proposal, but it should be carefully considered, especially in terms of potential conflicting signals with other restrictions. For example, in the same criterion 4.3, 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 4.1 on SVHC restrictions. In fact, criterion 4.1 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 3.2, 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 3.2 (e.g. TMP), 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.

On endocrine disruptors (EDs): In response to a request to have an explicit ban on EDs in criterion 3.3 by referring to List I, List II and List III EDs.

The difference between these lists is as follows:

- List I: This list contains substances that have undergone an evaluation of endocrine disrupting properties, as regulated in the EU in PPPR, BPR or REACH, and which are identified and legally adopted as endocrine disruptors.

- List II: This list contains substances that are currently under evaluation in an EU legislative process due to explicit concerns for possible endocrine disrupting properties. This could be due to a Member State or ECHA having included the compound on the CoRAP list (REACH), or due to an ongoing evaluation of endocrine disrupting properties under the Cosmetics Products Regulation. Pesticides and biocides which are concluded as endocrine disruptors in the scientific committees are placed on List II until legally adopted, at which time they are transferred to List I.
- List III: This list contains substances that are considered as endocrine disruptors at the national level in one of the participating Member States, due to e.g. ED properties or structural similarities with known EDs. It should be noted that these compounds are not necessarily considered as suspected EDs at the EU level. The European Commission or Member States may decide at a later stage on the need for further evaluation of these substances.

The exclusion to EDs in sub-criterion 3.3, is included following the latest CLP Regulation update. This inclusion is aligned with current revision for the EU Ecolabel for detergents products (Technical Report 2).

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).

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 15.

Table 15. 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)[35].

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.

[35] 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

According to Regulation (EU) 2024/2865[36] amending Article 37 of the CLP Regulation, an endocrine disruptor identified under other regulations, such as the Biocidal Product Regulation (EU) 528/2012[37], the Plant Protection Products Regulation (EC) No 1107/2009[38], and listed on the REACH[39] candidate list by 11 June 2025, will be directly transferred under CLP[40] Annex IV by 11 June 2026 as Category 1.

Further provisions consider substances under evaluation in BPR, PPPR[41], and REACH, ensuring that both currently identified substances and those under evaluation are included in CLP Annex VI based on established criteria and timelines.

On bisphenols: To help inform readers, potential applicants about the exact bisphenols that are being referred to in the specific exclusion in criterion 3.3(f), and because such a list could change over time, the list being referred to is reproduced in the table below.

Table 16. Section 2.1 from Assessment of Regulatory Needs report: referring to the 34 bisphenols to be excluded in EUEL paints and varnishes via criterion 3.3(f)

Substance name (abbreviation)	EC Number	CAS Number	Human health hazard	Environmental hazard
BPB	201-025-1	77-40-7	Known or potential hazard for reproductive toxicity and/or ED: all substances	Known or potential hazard for ED all substances Known or potential hazard for PBT/vPvB: EC/List 204-279-1, 201-618-5. Known or potential hazard for aquatic toxicity: 201-025-1, 201-250-5, 201-240-0, 201-245-8, 201-618-5, 204-279-1, 210-658-2, 216-036-7, 217-121-1, 227-033-5, 248-607-1, 278-305-5, 401-720-1, 411-570-9, 425-060-9, 443-330-4, 468-740-0, 469-080-6, 479-100-5, 500-607-5, 701-362-9, 931-252-8, 943-265-6, 943-503-9, 947-368-7
BPC	201-240-0	79-97-0		
BPA	201-245-8	80-05-7		
BPS	201-250-5	80-09-1		
	201-618-5	85-60-9		
TBMD	204-279-1	118-82-1		
BPF	210-658-2	620-92-8		
BPAF	216-036-7	1478-61-1		
DAB	217-121-1	1745-89-7		
TMBPA	227-033-5	5613-46-7		
	242-895-2	19224-29-4		
	248-607-1	27689-12-9		
	277-962-5	74665-14-8		
BPAF-salt	278-305-5	75768-65-9		
4,4'- Isobutylethylidene diphenol	401-720-1	6807-17-6		
D8	405-520-5	95235-30-6		
TG-SA	411-570-9	41481-66-7		
BPAF-salt	425-060-9	Not Found		
BPAF-salt	443-330-4	--		
BPAF-salt	468-740-0	--		
BPAF-salt	469-080-6	921213-47-0		
BPAF-salt	479-100-5	Not Found		
	500-086-4	35238-34-7		
	500-263-6	77138-45-5		
	500-607-5	161278-17-7		
	701-362-9	--		
	904-653-0	--		
	908-912-9	1333-16-0		
	926-571-4	--		
	931-252-8	--		
	941-992-3	--		
BPAF-salt	943-265-6	--		
	943-503-9	Not Found		
BPAF-salt	947-368-7	--		

Source: Own elaboration.

In relation to microplastics, it is not proposed to ban microplastics at this stage due to a lack of legal clarity over what is considered a microplastic in a paint product. In addition, there is a potential case that a ban on microplastics is not effective given the legal wording about the definition of a microplastics. More background information is provided in section 8 of this report.

[36] Regulation (EU) 2024/2865
[37] Biocidal Product Regulation (Regulation (EU) 528/2012)
[38] Plant Protection Products Regulation (EC) No 1107/2009
[39] Regulation concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (EC) 1907/2006
[40] Regulation on classification, labelling and packaging of substances and mixtures (EC) 1272/2008
[41] Plant Protection Products Regulation

Main changes in the third proposal

A summary of the main changes to criterion 3.3 are as follows:

- Four new points inserted (a to d) to ensure compliance with EU Taxonomy DNSH requirements for the pollution prevention and control goal.
- New points on the explicit ban of CMR preservatives or driers (point e), on EDs (point f) included.
- Deletion of the exclusion on microplastics.
- The A+V text that corresponds to the two points above has been updated accordingly.

5.5 Criterion 4. VOC emissions - New

TR2: Annex I: Second Proposal for Criterion 5: VOC emissions

Note: only applicable to indoor paints, ~~and~~ varnishes and related products

Emissions of VOCs and SVOCs shall not exceed the limits defined in the table below.

Table X: VOC emission limits

Parameter	3-day test results	28-day test results
TVOC*	< 3000 µg/m³	< 300 µg/m³
TSVOC*		< 100 µg/m³
R value**		≤ 1.0
Formaldehyde		< 20 µg/m³
Sum of any other Carcinogenic 1A or 1B VOCs apart from formaldehyde	< 10 µg/m³	< 1 µg/m³

** TVOC and TSVOC are as defined in EN 16402 and including quantification of any non-target compounds*

*** R value, as defined in EN 16402*

Assessment and verification:

The applicant shall submit a copy of an EN 16402 test report for each of the products being covered by the EU Ecolabel license application. In cases of products with identical formulations but different packaging volumes or types, one test report shall suffice. In cases of products based on the same formulation but with multiple different shades, a test report for the worst-case formulation shall suffice, so long as it is clearly explained why that particular product formulation represents the worst-case.

For the calculation of the R value, reference should be made to the latest set of agreed EU LCI values available at the time of testing. These values can be consulted here on the European Commission website: https://single-market-economy.ec.europa.eu/sectors/construction/eu-lci-subgroup/eu-lci-values_en

TR3: Annex I: Third Proposal for Criterion 4: VOC emissions

Note: only applicable to indoor decorative paints, varnishes and related products

Emissions of VOCs ~~and SVOCs~~ shall not exceed the limits defined in the table below.

Table X: VOC emission limits

Parameter	~~3-day test results~~	28-day test results
TVOC*	~~< 3000 µg/m³~~	~~<~~ ≤ 300 µg/m³
~~TSVOC*~~		~~< 100 µg/m³~~
R value**		≤ 1.0
Formaldehyde		~~< 2~~ ≤ 10 µg/m³
~~Sum of a~~Any other ~~Carcinogenic~~ category 1A or 1B carcinogenic VOCs not covered by EU LCI values~~apart from formaldehyde~~***	~~< 10 µg/m³~~	~~<~~ ≤ 1 µg/m³ per substance

** TVOC shall be measured as defined in EN 16402 and including quantification of any non-target compounds*

*** R value, as defined in EN 16402. Results for the cumulative R value shall be rounded to one decimal place before determining compliance or non-compliance with the limit of 1.0.*

**** Does not apply to formaldehyde, which is a VVOC and is covered by a specific individual limit. Does not apply to any other carcinogenic VVOCs or VOCs that have an EU-LCI value, since these are already covered by the R-value limit.*

Assessment and verification:

The applicant shall submit a copy of an EN 16402 test report for ~~each of the products~~ the worst-case product formulation within each of the relevant families of products being covered by the EU Ecolabel license application. Any

changes to the formulations that would create a higher worst-case VOC content shall trigger the requirement to submit an updated VOC emission test report. ~~In cases of products with identical formulations but different packaging volumes or types, one test report shall suffice. In cases of products based on the same formulation but with multiple different shades, a test report for the worst-case formulation shall suffice, so long as it is clearly explained why that particular product formulation represents the worst-case.~~ When relevant, a clear explanation of the distinctions made between families of products (e.g. binder chemistry, product category etc.) shall be provided, together with a justification of the worst-case product within each family of products.

In cases where a coating system has multiple layers, the full system should be applied to the test substrate according to manufacturer instructions prior to emission testing.

For the calculation of the R value, reference should be made to the latest set of agreed EU LCI (Lowest Concentration of Interest) values available at the time of testing. These values can be consulted on the European Commission website (1). ~~The total R value should be rounded up or down to the nearest decimal place.~~

If chamber air concentrations can be shown to comply with the 28-day limits before the 28 day period has been completed but after a period of at least 3 days, then those results can be accepted as proof of compliance and the test can be halted at that point.

(1) See: https://single-market-economy.ec.europa.eu/sectors/construction/eu-lci-subgroup/eu-lci-values_en

Rationale for the proposed criterion text

There is a strong case for setting requirements on VOC emissions for paints and varnishes, at least for indoor products where occupant health is an issue. Exposure to VOCs has been linked with a variety of health and allergy impacts and there are a number of national VOC labels that aim to help consumers to select low VOC emission products. This aspect was already raised during the final stages of the previous revision process but could not be taken into account back in 2014, with previous discussions recommending the reassessment of the feasibility of setting criteria for indoor air quality requirements based on emission rates in the next revision of the EU Ecolabel criteria.

As buildings become more energy efficient, they also tend to become more airtight, and this exacerbates any issues with emissions of pollutants into the indoor air. To some extent, these concerns are reflected in the adopted Construction Products Regulation (CPR), where "*construction works and any part of them shall be [...] used, maintained [...] in such a way that they, throughout their life cycle, do not adversely affect the hygiene or health and safety of construction workers, occupants, visitors or neighbours as a result of*" several emissions included among others "*volatile organic compounds*". .

Thanks to the developments with the CPR, and the existing EN 16402 standard "Assessment of emissions of substances from coatings into indoor air. Sampling, conditioning and testing", there is a well-defined standard procedure in place for testing VOC emissions from coating products. A common criticism of testing for total VOC emissions is that not all VOCs are equally harmful to human health. This valid critique can now be addressed to some extent by comparison of emissions of individual VOCs against agreed EU LCI (Lowest Concentration of Interest) values, as published on the European Commission website for over 100 individual VOCs. By comparing individual VOC emission results against its EU LCI value, a coefficient can be generated (R_i) and the sum of these coefficients leads to the total R value.

Considering the cost of VOC emission testing and the high number of very similar product formulations that can exist, it was deemed reasonable to allow for testing of worst-case formulations to ensure compliance with the same family of products. As per the general assessment and verification requirements set out in the preamble to the Annex of the draft legal text, Competent Bodies reserve the right to request further testing in case of any doubts about the worst-case representation.

This criterion aims to provide a safeguard to distinguish and encourage products that do not only have a low VOC and SVOC content, but which emit only low levels of VOCs when applied, and especially low levels of those individual VOC substances that are considered to be especially problematic for human health (i.e. the separate limits for carcinogenic VOCs, for formaldehyde and for over 100 specific VOCs via the R value).

Comparison with other ecolabels (and national regulations)

There are a number of initiatives in Europe that set requirements on VOC emissions from paint and varnish products, including nationally mandated labelling systems and voluntary ecolabels. Some of these initiatives set requirements after 3 days and all of them set requirements after 28 days. Just focusing on the 28-day values, it is also possible to compare the scope and ambition level of the requirements in the table below.

Table 17. Comparison of similar 28-day VOC emission limits with EU Ecolabel paints and varnish proposal

Parameter	EU Ecolabel	Blue Angel*	Nordic Swan*	AgBB 2024	Belgian VOC label	French VOC label	Italian decree
TVOC	≤ 300 µg/m³	< 300 µg/m³	≤ 300 µg/m³	≤ 1000 µg/m³	≤ 1000 µg/m³	< 1000 µg/m³	< 1500 µg/m³
TSVOC	-	< 100 µg/m³	To be reported	≤ 100 µg/m³	≤ 100 µg/m³	-	-
R value	≤ 1.0	≤ 1.0	-	≤ 1	≤ 1	-	-
Formaldehyde	≤ 10 µg/m³	< 20 µg/m³	-	≤ 100 µg/m³	≤ 100 µg/m³	< 10 µg/m³	< 60 µg/m³
Category 1 carcinogenic substances	≤ 1 µg/m³	< 1 µg/m³	≤ 1 µg/m³	≤ 1 µg/m³	≤ 1 µg/m³	< 1 µg/m³ for benzene, trichloroethylene, dibutylphthalate (DBP) and diethylhexylphthalate (DEHP)	

**Blue Angel refers to "DE-UZ 12a on low-emission and low-pollutant paints and varnishes (v.9)"; Nordic Swan refers to "096 Paints and varnishes, v4.2"; AgBB, Belgian VOC label and French VOC limits refer to a summary webpage of Eco-Institut (see here: https://www.eco-institut.de/en/portfolio/belgische-voc-verordnung/) and the Italian Decree known as the CAM regulation (mentioned here: https://www.eurofins.com/consumer-product-testing/services/certifications-international-approvals/voc/legal-requirements/).*

Source: Own elaboration.

The table above shows some major differences in both the coverage of parameters tested and the applicable limits for common parameters. For example, no limits for the R-value or TSVOC emissions are set in the Nordic Swan ecolabel or the French or Italian regulations. In terms of limits for a given parameter, limits for TVOC emissions range from 300 to 1500 µg/m³ after 28 days, and limits for formaldehyde from 10 to 100 µg/m3. However, a true comparison of the ambition level of these limits would also require a closer look at the specific loading rates and air flow exchange rates for each test method.

Other schemes not listed in the table above include the Finnish M1 emission classification and the Danish Indoor Climate label. Both of these schemes include a requirement on testing of odour. The Finnish M1 classification is a two-tier system (M1 and M2) of limits relating to the emission of TVOC, formaldehyde, ammonia and carcinogenic compounds (except for formaldehyde and acetaldehyde). The Finnish system does not require compliance with a total R value, but simply that each VOC with an EU-LCI value is not present at concentrations exceeding their respective EU-LCI values. The Danish system is very similar to AgBB and both of these schemes set a limit on "non-assessable VOCs", which are basically VOC compounds that do not have an assigned EU-LCI value. It is not clear how many VOCs these "non-assessable" VOCs could correspond to.

The limits proposed for the EU Ecolabel criteria generally align with the most ambitious values after 28 days, although no requirement for odour has been proposed since it is a more subjective quality. In order to simplify testing, the requirements for emissions after 3 days have been removed in the TR3 proposal.

What do Green Building Certification schemes say?

Another important potential market driver is the potential for gaining points (or meeting mandatory requirements) for paints and varnishes that have a low VOC content and/or low VOC emissions that help ensure low VOC concentrations in indoor air.

Table 18. Examples of VOC related requirements for green building schemes

Scheme	Requirements - method and limits
BREEAM Indoor Air Quality criteria	1. The total volatile organic compound (TVOC) concentration in indoor air has to be measured post-construction but should be measure pre-occupancy. Sampling should be performed in rooms that will be occupied for long periods such as bedrooms, living rooms, classrooms, offices, etc. The TVOC has and does not exceed 300 µg/m³, the emissions are related to an averaged over 8 hours, according to the European Concerted Action on Indoor Air Quality and its Impact on Man Report No.11: Guidelines for Ventilation Requirements in buildings (1992), from the Commission of the European Communities.
	2. Additionally, the TVOC sampling and analysis has to be performed in accordance with ISO 16000-57 and ISO 16000-68 or ISO 16017-19 to be accepted as an earned criterion by BREEAM.

Scheme	Requirements - method and limits	
DGNB Office building and residential	Evaluation of incomparable VOC measurements (measured more than four weeks after completion)	ISO 16000: TVOC of ≤3000 or ≤300 µg/m³ US EPA TO-1, TO-15, TO-17 and TO-11A: ≤3000 or ≤300 µg/m³ ASHRAE 189-1 and California Department of Public Health) Standard Method V1.1: ≤500 or ≤200 µg/m³
LEED Credit for VOC emissions for materials used in the building interior.	For the VOC emissions evaluation, 2 options to meet the criteria are presented: (1) First it is focused on the California Department of Public Health (CDPH) Standard Method; and (2) Second it is to be carried out according to CEN TS 16516 which complies with the LCI values from Table 1 of the German AgBB Testing and Evaluation Scheme (2015) and a formaldehyde limit of 10 micrograms per cubic meter. Additionally, the range of total VOCs after 28 days has to be measured as specified in EN 16516 and reported (TVOC ranges: 0.5 mg/m³ or less, between 0.5 and 5 mg/m³, or 5 mg/m³ or more).	
	For the VOC content evaluation products should meet the VOC content limits outlined in one of the applicable standards and additionally, for projects in North America, methylene chloride and perchloroethylene may not be intentionally added.	

Source: Own elaboration.

Main changes in the criterion

In draft TR1, the VOC emission criterion was initially proposed to encourage the development and use of products that not only have low VOC and SVOC content but also emit minimal levels of VOCs during application. The aim was to prioritize the reduction of substances particularly harmful to human health. This criterion was developed through a comparison of VOC standards across various ecolabels.

In draft TR2, the VOC content criterion was further refined and incorporated into Annexes I and II. To enhance clarity, the term "related products" was introduced to more explicitly define the applicable product categories.

In this draft TR3, in the footnote to the table regarding the R value, it was clarified that the cumulative R value result should first be rounded to one decimal place before checking compliance with the cumulative limit. This clarification was inserted because in discussions with testing experts, it became apparent that results are treated this way in the laboratory before being compared to the cumulative limit. For example, if the measured total R value was 1.043, and the limit is ≤ 1.0, the measured value would actually comply because rounded the measured result to the least significant figure of the limit (i.e. to one decimal place in this case) would give a result of: 1.043 at 3 decimal places, 1.04 at two decimal places or 1.0 at one decimal place.

Also in TR3, the criterion text was adjusted to make a clear distinction between any category 1 carcinogenic VOCs that are covered by the R-value requirement and others that are not. If a category 1 carcinogenic VOC has an EU LCI value, then it is considered as already being addressed by the requirements on the R-value and does not need to meet a second requirement on specific individual limits of 1 µg/m³. A cross-check of the substances with EU-LCI values with their CLP classifications was carried out and presented in Appendix 3 and the main findings are summarised in the further research section of this rationale. While the requirement on the TSVOC is deleted from this proposal.

A different wording has been proposed to explain in the assessment and verification text how testing should be limited only to the worst-case products.An additional clause has been inserted into the assessment and verification text to allow for test results to be accepted if the limits can be met before 28 days. This is because the time element is a major contributor to testing costs, meaning that applicants could potentially save money and laboratories could run more tests for a given laboratory testing capacity. Finally, due to uncertainties about the levels of SVOC emission, a fixed limit of 100 µg/m3 after 28 days has been replaced by a requirement to simply report the result. A similar approach to reporting only on SVOC has been adopted by the Nordic Swan ecolabel (specifically in criterion O13 of product group 096, paints and varnishes, version 4.2 from September 2023).

Outcomes from and after 1st AHWG meeting (May 2024)

In total, 21 comments were received on the potential criterion on VOC emissions after the 1st AHWG meeting. Opinions on the inclusion of a VOC emission criterion were divided. Some supported this criterion, believing it to be the most effective method for addressing the impact of paints on indoor air quality. Others, however, argued

that the added complexity and costs of mandatory testing could significantly reduce the number of certified products and pose challenges for license holders needing to modify formulations and submit renewal requests.

In particular, many argued that the proposed criterion is more challenging than current French regulations, which mandate a 28-day test with an optional provision that is widely used and provides consistent results. In addition, a comment on the strictness of TVOC, as many water-based paints and varnishes for wood would not satisfy the requirements.

According to stakeholders, the strict thresholds could potentially disqualify three-quarters of the EU Ecolabel products sold in France. In addition, some stakeholders questioned the benefit of measuring VOC emissions after 3 days, arguing that this test is not relevant. As a result, stakeholders suggested making the EU criterion optional and aligning it with the French test to avoid additional burdens. Others proposed adopting the existing mandatory system in France for Indoor Air Quality, as it is less expensive and less demanding.

To simplify testing, it was proposed to perform only one air sampling after 28 days to reflect true exposure, rather than sampling after 3 days. It was also suggested to allow sampling before 28 days, for example after 14 days, if VOC emissions are below limits, as emissions typically decrease rapidly. Additionally, it was recommended to group paints by categories and only test the worst-case products to reduce the testing burden.

Some stakeholders advocated for a comprehensive study to set realistic limits, noting significant formulation differences between countries like Germany and France. They recommended initiating tests based on product destination and application area, highlighting the need for different scenarios. There was a warning that overly restrictive thresholds for technical products, such as floor varnishes and renovation paints, could limit coalescent and polymer choices, degrading performance, and a suggestion was made to set thresholds by product category. Concern was expressed about the lack of data to ensure products meet the R value requirements. There was also a point raised about the potential reduction in the number of products certified by the European Ecolabel, particularly for white paints and certain shades, if the criterion is adopted.

A particular challenge raised by most stakeholders was the cost of VOC emissions testing. Most currently measure TVOC emissions using ISO 16000, and switching to EN 16402 would lead to redundant testing and unnecessary additional costs, estimated between €1250 - 2500 per product. There is also concern regarding laboratory capacity: if the entire paint industry is required to conduct VOC emission tests, there is an increased risk that the limited number of analysis laboratories may struggle to meet demand, causing delays and increased testing prices. However, some stakeholders argued that there is sufficient capacity, and the inclusion of this criterion would not be problematic for laboratories. Additionally, stakeholders reported inconsistencies in results from different laboratories, questioning the reliability and uniformity of the testing process. Due to the high costs of the test, stakeholders argued that there must be an additional market gain to get it, such as approval for use by green building certification schemes and question how this connection could take place.

Outcomes from and after 2nd AHWG meeting (November 2024)

In total, 17 comments were received on the criterion on VOC emissions after the 2nd AHWG meeting. Some stakeholders expressed support for the proposed limit values and suggested further lowering them. However, others raised concerns regarding the costs of testing due to the double testing period proposed (i.e. at 3 and 28 days) and the general uncertainty of knowing how many currently EU ecolabelled products will comply. This uncertainty was based in both a general lack of VOC emission test data and the fact that knowing the VOC/SVOC content is not always a reliable predictor or actual emissions because the latter is affected by reaction chemistries, layer porosities and evaporation rates. Further clarity was requested regarding how to deal with carcinogenic VOCs that also have EU LCI values.

The main request to tighten limits was focused on reducing the 28-day limit for formaldehyde from 20 to 10 µg/m³, in order to align with the lowest VOC emission label in the French regulation. It was also proposed that total VOC thresholds be made less ambitious in order to sit halfway between the voluntary ecolabel and mandatory national requirements.

The industry again raised concerns regarding the practicality of implementing the new VOC emission criteria, which could necessitate reformulations of certified products. Clarification was requested about testing procedures, specifically regarding "worst-case formulations" and the definition of "family of products". This worst-case approach, supported by several stakeholders, would help reduce the testing burden while ensuring compliance.

Further comments requested product category-specific VOC emission limits for indoor decorative paints and varnishes, reflecting the differences in room coverage. Some participants suggested that for interior wall paints,

the thresholds and testing methodologies should reflect the stricter criteria of systems like Blue Angel and incorporate specific exemptions, such as for compounds with an EU-LCI value.

Lastly, participants called for detailed clarifications in the text, including terms related to tinting systems, carcinogenic compounds, and the testing methodology. They also proposed setting thresholds for indoor products at the 28-day mark, aligning with existing French standards, as opposed to introducing a 3-day testing requirement. Overall, while there was broad support for stricter thresholds, there was an equally strong emphasis on ensuring feasibility and harmonization across regulatory frameworks.

Outcomes from and after EUEB meeting (November)

Following the EUEB meeting, only one comment was received regarding this criterion. Stakeholders raised concerns about the proposed VOC emissions limits, comparing them to existing standards like ISO 16000 and the German AgBB. They pointed out that the proposed value for TVOCs after 3 days and 28 days is much lower than the ISO 16000 standard and the German AgBB. Regarding TSVOCs, they acknowledged the proposed limit matches the German AgBB standard but that the Nordic Swan has not set limits for TSVOCs due to a lack of data available to decide on the appropriate level of ambition.

Further research in the third proposal

This criterion is completely new to the EU Ecolabel criteria for paints and varnishes. In order to help inform readers about the requirements, some aspects of the EN 16402 testing are described in this section together with the latest list of EU LCI values (as of December 2024) and the flagging of some potentially relevant carcinogenic VOCs being provided in Appendix 3 for the interested reader.

Testing details of the EN 16402 method

The test standard involves the insertion of a coated substrate into the test chamber. The actual amount of coated substrate that is placed in the chamber is expressed as the loading rate, in units of m^2 of coated substrate per m^3 volume of the chamber. Different loading rates are defined for different types of coating product, where higher loading rates apply to those products expected to be applied to larger surface areas in a given reference room. The main distinctions in loading rates are as follows:

- Interior wall and ceiling paints: 1.4 m^2/m^3;
- Interior wall paints: 1.0 m^2/m^3;
- Interior ceiling paints: 0.4 m^2/m^3;
- Water-based trim paints and lacquers (intended use only on small surfaces like windows, doors or radiators): 0.05 m^2/m^3;
- Varnishes and wood stains (intended for use on walls): 1.0 m^2/m^3;
- Floor coatings: 0.40 m^2/m^3.

The application rates should be as defined by the manufacturer, in terms of grams of product applied per m2 of coated substrate. However, the EN 16402 standard also defines minimum application rates for each of the aforementioned categories. These minimum application rates are:

- Interior wall and ceiling paints: 150 g/m^2;
- Interior wall paints: 150 g/m^2;
- Interior ceiling paints: 150 g/m^2;
- Trim paints and lacquers (intended use only on small surfaces like windows, doors or radiators): 100 g/m^2;
- Varnishes and wood stains (intended for use on walls): 80 g/m^2;
- Floor coatings: 150 g/m^2.

The test method uses gas chromatography to separate and identify different volatile compounds and therefore the distinction between VVOC (Very Volatile Organic Compounds), VOC and SVOC is marked by where the elution peaks appear on a chromatography column rather than what the boiling point of the substance is at standard atmospheric pressure. While there is a general relationship between the boiling point and the elution time in a gas chromatograph, the match of the definitions is not exact. For example, the distinction between VOC and SVOC when considering VOC content is whether or not the boiling point is higher or lower than 250°C. However, when looking at VOC emissions, the distinction is whether or not the compound elutes before or after n-hexadecane (C-16), which has a boiling point of around 287°C. The EN 16402 standard makes the following distinctions between VVOC, VOC and SVOC:

- VVOCs are compounds that elute before n-hexane on a gas chromatographic capillary column of 5% phenyl/95% methyl polysiloxane, generally corresponding to volatile organic compounds with a boiling point of less than 68°C.
- VOCs are compounds that elute between n-hexane and n-hexadecane (inclusive) on the same type of gas chromatographic capillary column, generally corresponding to volatile organic compounds with a boiling point in the range of 68 to 287°C.
- SVOCs are compounds that elute between n-hexadecane (exclusive) and n-docosane (inclusive) on the same type of gas chromatographic capillary column, generally corresponding to volatile organic compounds with a boiling point exceeding 287°C.

VOCs with ascribed EU-LCI values

One of the requirements in criterion 5 is to calculate the R value, which in turn is based on the concentrations of compounds in chamber air that have been assigned an EU-LCI value. When calculating the R-value, for each substance that is identified, the concentration should be compared to its EU-LCI value and a quotient calculated. For example, if 50 µg/m^3 of toluene was detected, which has an EU-LCI value of 2900 µg/m^3, this would equate to a quotient of (50 / 2900) = 0.017. If another VOC with an EU-LCI value was also detected, for example ethylbenzene at say, 100 µg/m^3, then this quotient would also be calculated (100 / 850) = 0.117. If these were the only VOCs with EU-LCI values detected, the R-Value would be 0.134.

Discussions with testing experts revealed that in cases where a category 1 carcinogenic VOC also has an EU-LCI value, it is not compared with any limit for category 1 carcinogenic VOCs because it is already considered to have been counted in the requirement for the R value. However, this formaldehyde is an exceptional case because it also has its own individual limit. In order to learn more about the potential impact of this confusing situation, the full EU LCI list was cross-checked with the ECHA C&L inventory to see how many of those substances were also category 1 carcinogens (see Appendix 3 for the full table).

According to the screening, there are currently 15 substances with EU-LCI values that are also classified as carcinogenic, 6 of which were category 1 and the other 9 being category 2. The category 1 carcinogenic substances with EU LCI values are:

- Isopropylbenzene (cumene) (CAS No 98-82-8);
- BHT (2,6-di-tert-butyl-4-methylphenol) (CAS No 128-37-0);
- Formaldehyde (CAS No 50-00-0);
- Acetaldehyde (CAS No 75-07-0);
- 1,4-Dioxane (CAS No 123-91-1);
- 2-Butanonoxime (CAS No 96-29-7).

According to the proposed criterion, any emissions of these 6 carcinogenic substances should be counted in the R-value calculation and not against the 1 µg/m^3 limits for individual category 1 carcinogens. It is still not clear if formaldehyde is counted towards the R value as well, or if it is only counted via the individual substance limit.

Carcinogenic VOCs without EU LCI values

In order to improve awareness of carcinogenic VOCs in general, a review was carried out to identify carcinogenic VOCs that do not have EU LCI values. These VOCs may or may not be relevant to the paints and varnish sector, but they could be residuals or impurities associated with the upstream synthesis of some of the feedstock chemicals and intermediates that are used to make the ingredients that go into paint and varnish formulations.

It is important to be aware of these substances because even small amounts of them could trigger non-compliance with the 1 µg/m^3 limit in the EU Ecolabel criteria. Improved awareness of these substances will help paint and varnish manufacturers know what to ask their suppliers to check for regarding impurities in their materials or in chemicals that they receive from their own suppliers further upstream.

The review identified 54 carcinogenic VOCs, 47 of which were category 1 carcinogens. The full list is included in Appendix 3 for interested readers and do give an indication of the number of carcinogenic VOCs that would be screened for in the VOC emission results.

In relation to TSVOCs, exchanges with colleagues in GROW informed that despite the use in very few MSs, the analytical value is still not very reliable. In this case, it is decided to postpone the introduction of such a class until the whole approach can be based on more stable parameters and therefore it is not requested anymore.

Main changes in the third proposal

The main changes in TR3 regarding the VOC emission criterion can be summarised as follows:

- Insertion of a table footnote to clarify how to round results for the cumulative R value calculation before comparison to the limit.
- Insertion of text in a table footnote to better explain how to deal with category 1 carcinogenic substances that also have an EU LCI value.
- Adaptation of the wording about how to refer to testing for worst-case products in a family of products.
- A clause to allow testing to be concluded before 28 days if emissions are already compliant before the 28 day period.
- The removal the total SVOC limit due to a general uncertainty about the results that may be generated.
- All these changes apply equally to criterion 4 in Annex II as they do for criterion 4 in Annex I.

5.6 Criterion 5. Consumer information

TR2: Annex I: Second Proposal for Criterion 6: Consumer information
6(a) The following texts shall appear on or be attached to the packaging: — 'Minimise paint wastage by estimating how much paint you will need before buying' — 'Recover unused paint for re-use'. — 'Reuse of paint can effectively minimise the products' life cycle environmental impact' 6 (b) The following general information and advice shall be provided on or be attached to the packaging or be available via a web-link or QR code: — How to estimate the amount of paint needed prior to purchase in order to minimise paint wastage and a recommended amount as a guideline (e.g. for 1 m^2 of wall, X litres of paint is needed). — How to deal with the 'leftover paint'. 6(c) The following advice and recommendations on how to handle the paint shall be provided on or be attached to the packaging or be available via a web-link or QR code: — Safety measures for the user. This shall include basic recommendation on personal protective equipment that should be worn. It shall also include additional measures that should be taken when using spray equipment. — The use of cleaning equipment and appropriate waste management (in order to limit water and soil pollution). For example, text advising that unused paint requires specialist handling for safe environmental disposal and therefore it should not be thrown away with household or commercial waste (e.g. 'Do not put residual paint down the kitchen sink or toilet, or into a waste bin'). — Storage of the paint in appropriate conditions (before and after opening), including, where appropriate, safety advice. Assessment and verification: the applicant shall declare that the product complies with the requirement and provide the competent body with the artwork or samples of the user information and/or a link or QR code to a manufacturer's website containing this information as part of the application. The recommended amount of paint given as a guideline shall be provided.
TR3: Annex I: Third Proposal for Criterion 5: Consumer information
5(a) The following texts shall appear on or be attached to the packaging: — 'Minimise paint wastage by estimating how much paint you will need before buying' — 'Recover unused paint for re-use'. — 'Reuse of paint can effectively minimise the products' life cycle environmental impact' 5(b) The following general information and advice shall be provided on or be attached to the packaging or be available via a web-link or QR code: — How to estimate the amount of paint needed prior to purchase in order to minimise paint wastage and a recommended amount as a guideline (e.g. for 1 m^2 of wall, X litres of paint is needed). — How to deal with the 'leftover paint'. 5(c) The following advice and recommendations on how to handle the paint shall be provided on or be attached to the packaging or be available via a web-link or QR code: — Safety measures for the user. This shall include basic recommendation on personal protective equipment that should be worn. It shall also include additional measures that should be taken when using spray equipment. — The use of cleaning equipment and appropriate waste management (in order to limit water and soil pollution). For example, text advising that unused paint requires specialist handling for safe environmental disposal and therefore it should not be thrown away with household or commercial waste (e.g. 'Do not put residual paint down the kitchen sink or toilet, or into a waste bin'). — Storage of the paint in appropriate conditions (before and after opening), including, where appropriate, safety advice.

Assessment and verification:

The applicant shall declare that the product complies with the requirement and provide the competent body with the artwork or samples of the user information and/or a link or QR code to a manufacturer's website containing this information as part of the application. The recommended amount of paint given as a guideline shall be provided.

Rationale for the proposed criterion text

Consumer information should be easily accessible, either through labelling on the packaging or via website or QR code. This allows consumers to access relevant product information, along with advice and recommendations on how to handle paint and varnish products sustainably.

Initially, no proposal for this criterion was provided in TR1 due to potential changes to the product group scope. As such, a review of this criterion was postponed until the scope was agreed upon with stakeholders. However, there was a suggestion to ensure consumer information is also available on the product website and accessible via a QR code, as some products already offer this feature.

Main changes in the criterion

In TR1, no changes were proposed for this criterion. In TR2, a new requirement was introduced to include a weblink or QR code on the product packaging. This proposal aimed to provide consumers with easier access to additional product information and was supported and approved by stakeholders.

Outcomes from and after 1st AHWG meeting (May 2024)

Following the 1st AHWG meeting, only one comment was received regarding consumer information. This comment supported the addition of general information and advice to consumers via an internet website or QR code.

Outcomes from and after 2nd AHWG meeting (November 2024)

During the 2nd AHWG meeting, one stakeholder inquired about how the information available via QR code would complement the Digital Product Passport under the Ecodesign for Sustainable Product Regulation[42].

After the 2nd AHWG meeting, no comments were received in writing regarding this criterion. As a result, no changes were proposed to the criterion.

[42] 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 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32024R1781&qid=1738089683370

5.7 Criterion 6. Information appearing on the EU Ecolabel

TR2: Annex I: Second Proposal for Criterion 7: Information appearing on the EU Ecolabel
The optional label with text box shall contain, where relevant, the following texts: — Minimised content of hazardous substances — Reduced content of volatile organic compounds (VOCs): x g/l — Reduced emissions of volatile organic compounds to indoor air (where indoor criteria have been met) or — Good performance for indoor use (where indoor criteria have been met) or — Good performance for outdoor use (where outdoor criteria have been met) or — Good performance for both indoor and outdoor use (where both indoor and outdoor criteria have been met) The guidelines for the use of the optional label with text box can be found in the 'Guidelines for use of the Ecolabel logo' on the website: http://ec.europa.eu/environment/ecolabel/documents/logo_guidelines.pdf Assessment and verification: the applicant shall provide a sample of the product label or an artwork of the packaging where the EU Ecolabel is placed, together with a declaration of compliance with this criterion.
TR3: Annex I: Third Proposal for Criterion 6: Information appearing on the EU Ecolabel
The optional label with text box shall contain, where relevant, the following texts: — Minimised content of hazardous substances — Reduced content of volatile organic compounds (VOCs): x g/l — Reduced emissions of volatile organic compounds to indoor air (where indoor criteria have been met) or — Good performance for indoor use (where indoor criteria have been met) or — Good performance for outdoor use (where outdoor criteria have been met) or — Good performance for both indoor and outdoor use (where both indoor and outdoor criteria have been met) The guidelines for the use of the optional label with text box can be found in the 'Guidelines for use of the Ecolabel logo' on the website: http://ec.europa.eu/environment/ecolabel/documents/logo_guidelines.pdf Assessment and verification: The applicant shall provide a sample of the product label or an artwork of the packaging where the EU Ecolabel is placed, together with a declaration of compliance with this criterion.

Rationale for the proposed criterion text

Information about the EU Ecolabel on the product helps to inform the consumer on the environmental preference of this product and makes an environmentally friendly decision easy. For this reason, this criterion is included in all EU Ecolabels. According to Article 8 (3b) of the EU Ecolabel Regulation 66/2010, for each product group, three key environmental characteristics of the EU Ecolabel product may be displayed in the optional label with text box. The guidelines for the use of the optional label with text box are included in the criterion.

In draft TR1, no changes were proposed for this criterion. In draft TR2, the primary change introduced was the inclusion of an optional label stating, "Reduced emissions of volatile organic compounds to indoor air." This addition aimed to highlight products with lower VOC emissions for improved indoor air quality.

Outcome from and after the 1st AHWG meeting (May 2024) and 2nd AHWG meeting (November 2024)

No comments were received on the criterion on information appearing on the EU Ecolabel after the 1st AHWG meeting. As a result, no substantial changes were made to the existing criterion. Following the 2nd AHWG meeting, no comments were received in writing regarding this criterion. As a result, no changes are proposed to this criterion.

6 Criteria proposal for Annex II: Performance coatings and related products

Annex II was already proposed in draft TR2. As previously, it is based on the same rationale of the criteria used in Annex I. The rationale for why an Annex II is proposed is presented in the "Scope" section of this report. As with Annex I, rationale for any proposed changes is provided immediately after each proposal, together with key parts of stakeholder discussions and any further research. In case the same discussions and further research already presented in Annex I applies, it is not repeated here in Annex II. Instead, a placeholder is inserted to direct the reader to the relevant part in Annex I.

6.1 Criterion 1. Titanium dioxide production [not proposed anymore]

Please refer to section 5.1 of this report for the previous proposal and the rationale for deletion.

6.2 Criterion 1. Efficiency in use requirements

TR2: Annex II: Second Proposal for Criterion 2: Efficiency in use requirements

"In order to demonstrate the efficiency in use of performance coatings and related products, the following tests per type of product, as indicated in Table 2 and detailed in the criterion text later, shall be undertaken."

Table X. Performance requirements for different kinds of paints and varnishes

Criteria	Performance coating categories (with their subcategories identified according to the Directive 2004/42/EC)				Waterproofing coatings
	Floor covering paints (i,j)	Floor covering varnishes (i,j)	Anti-corrosion finishing coats (i,j)	Anti-graffiti finishing coats (i,j)	
2(a) Spreading rate	Yes	No	If opaque	If opaque	If opaque
2(b) Wet scrub resistance and white pigment content	Yes	No	If opaque	If opaque	If opaque
2(c) Resistance to water	Yes	Yes	Yes	Yes	Yes
2(d) Adhesion	If opaque	If opaque	If opaque	If opaque	If opaque
2(e) Abrasion	Yes	Yes	If for metal flooring	No	If for floors
2(f) Weathering	If outdoors	If outdoors	If outdoors	If outdoors	If outdoors
2(g) Corrosion resistance	No	No	Yes	If for metal substrate	If for metal substrate

2(a) Spreading rate

Note: This requirement does not apply to transparent or semi-transparent coatings.

Spreading rate requirements shall apply to white and light-coloured performance coatings. For coatings that are available in more colours in the same family of products, the spreading rate shall apply to the lightest colour.

White and light-coloured performance coatings, including finishing-coats and intermediate coats, shall have a spreading rate of at least 8 m2 per litre of product for indoor coatings and 6 m2 for outdoor coatings while ensuring a hiding power of at least 98 % according to ISO 6504-1 or ISO 6504-3. Products marketed for both indoor and outdoor application shall meet the higher spreading rate requirement of at least 8 m2 per litre.

Any opaque primers shall have a spreading rate of at least 8 m2 per litre of product. A lower spreading rate of 6 m2 per litre of product applies to opaque primers with specific blocking, sealing, penetrating, binding or-special adhesion properties.

Assessment and verification: the applicant shall provide a declaration of compliance with the relevant spreading rate limits or a justification of non-applicability of the spreading rate requirement for each of the products covered by the EU Ecolabel license. The declaration shall be supported by test results according to the method ISO 6504-1 or 6504-3. In cases where a result covers multiple products, it shall be clearly indicated which results correspond to which products covered by the EU Ecolabel license application.

2(b) Wet scrub resistance and white pigment content

Note: This criterion only applies to paint products and, in the case of families of paint products with multiple shades, only to the base paints. For the purposes of this criterion, the term "white pigment", shall be considered to refer only to pigments with a refractive index higher than 1.8.

Any EU Ecolabel paint products that claim wet scrub resistance must meet the requirements for class 1 or class 2 according to the procedure defined in ISO 11998 and the classification system of EN 13300 and comply with the respective upper limits for white pigment content.

Table X. Requirements for wet scrub resistance and white pigment content for paint products

Wet scrub resistance claim?	Wet scrub resistance	White pigment content
Yes (indoor paints)	Class 1	≤ 40 g/m²*
Yes (outdoor paints)	Class 1 or 2	≤ 38 g/m²*
Yes (indoor paints)	Class 2	≤ 36 g/m²*
No (indoor or outdoor)	n/a	≤ 25 g/m²*

* The m2 refers to 1m2 of dry-film with an opacity of at least 98% according to ISO 6504.

Assessment and verification:

The applicant shall provide a declaration of compliance with the relevant requirement or a justification of the non-applicability of the requirements for each of the products covered by the EU Ecolabel application. In cases of relevant products, the applicant shall declare the total content of white pigments with a refractive index >1,8 in the final product or base paint formulations that are subject to the EU Ecolabel license application. This information shall be provided in terms of the chemical name and CAS number of the white pigment, its declared refractive index, its concentration in g/L of paint product and the density of the paint, in g/L. The spreading rate of the paint product, in L/m² for a dry-film of at least 98% opacity according to ISO 6504, shall also be stated (as per criterion 2(a)). Multiplying the white pigment concentration (in g/L) by the spreading rate (in L/m²) will produce white pigment levels in units of g/m² that can be compared to the limits in the table above.

Except in cases where the content of white pigments is < 25,0 g/m² and no claims of wet scrub resistance are made, the applicant shall also provide results of wet scrub resistance testing according to ISO 11998 that show that the products meet the applicable class 1 or class 2 resistance requirements defined in EN 13300.

2(c) Resistance to water

Note: This requirement applies to all performance coatings.

All performance coatings shall have resistance to water, as determined by ISO 2812-3, such that after 24 hours of exposure and 16 hours of recovery, no change of gloss or of colour occurs.

Assessment and verification:

The applicant shall provide a declaration of compliance with the requirement for performance coatings included in their license application.

The applicant declaration shall be supported by copies of ISO 2812-3 test report(s) that cover the licensed product or family of products, including reported results for change of colour and change of gloss according to EN ISO 4628-1 and ISO 2813, respectively.

No change of gloss shall be considered as the gloss value of the exposed sample not being more than 5% different to the control sample when measured according to ISO 2813.

No change of colour shall be considered as a visual rating of exposed samples and control samples, with the exposed sample obtaining a rating of 0 when measured for quantity of defects and a rating of 0 when measured for size of defects according to the classification system of EN ISO 4628-1.

2(d) Adhesion

Note: This criterion applies to opaque performance coatings. In cases of multiple shades in a family of products, the base paint, an intermediate shade and one of the darkest shades need to be tested.

Floor coatings, floor paints, floor undercoats shall score 2 or less in the EN ISO 2409 test for adhesion.

The applicant shall evaluate the primer and/or finish alone or both applied together. When testing the finish alone, this shall be considered the worst-case scenario concerning adhesion.

Assessment and verification:

The applicant shall provide a declaration of compliance with the requirement for any opaque floor coating, floor paint or floor undercoat products included in their license application. The declaration shall be supported by copies of EN ISO 2409 test reports.

2(e) Abrasion

Note: This criterion applies to floor coatings. In cases of multiple shades in a family of floor covering paints, the base paint, an intermediate shade and one of the darkest shades need to be tested.

A weight loss of ≤ 70 mg shall be observed when floor coatings are exposed to 1000 test cycles with a 1000 g load and a CS10 wheel according to EN ISO 7784-2.

Assessment and verification:

The applicant shall provide a declaration of compliance with the requirement for floor coating products included in their license application. The declaration shall be supported by copies of EN ISO 7784-2 test reports.

2(f) Weathering

Note: This criterion applies to outdoor performance coatings.

All outdoor performance coatings shall be exposed to artificial weathering in apparatus including fluorescent UV lamps and condensation or water spray according to ISO 16474-3. They shall be exposed to test conditions for 1000 hours with cycling conditions of: UVA 4 h/60 °C + humidity 4 h/50 °C.

After weathering, the exposed films shall comply with the requirements specified in the table below.

Table X. Requirements for wet scrub resistance and white pigment content for paint products

Property	Requirement (after weathering)	Scope of products covered/not covered
Colour change according to ISO 11664-6	Colour change, ΔE ≤ 4	Not applicable to primers or intermediate coats in performance coating systems
Decrease of gloss according to ISO 2813	≤ 30% decrease compared to initial value	Not applicable to performance coatings with initial gloss value of <60% at 60° angle of incidence
Chalking according to EN ISO 4628-6	A score of 1,5 or better (0,5 or 1,0) ≤ 2	Only applicable to finishing coats of performance coating systems used on outdoor masonry, wood and metal substrates.
Flaking according to EN ISO 4628-5	Flake density: ≤ 2 Flake size: ≤ 2	
Cracking according to EN ISO 4628-4	Crack quantity: ≤ 2 Crack size: ≤ 3	
Blistering according to EN ISO 4628-2	Blister density: ≤ 3 Blister size: ≤ 3	

Assessment and verification:

The applicant shall provide a declaration of compliance with the relevant requirement or a justification of the non-applicability of the requirements for each of the products covered by the EU Ecolabel application. For any outdoor decorative paints or varnishes included in their license application, the applicant shall provide copies of test reports that detail the weathering test method used (being in compliance with ISO 16474-3 or EN 927-6) and provide results of changes in properties after weathering, as applicable.

2(f) Corrosion resistance

Note: This criterion only applies to anti-corrosion performance coatings and related products.

Anti-corrosion paints and coating systems shall be exposed to simulated corrosion stresses on the metallic substrates and use environments (e.g. C2, C3, C4 or C5 as per EN 12944-6) for which their use is recommended. Corrosion stresses applied in testing shall correspond to the "high" level for each category, which is as follows:

Table X. Requirements for corrosion resistance testing for anti-corrosion paints and coating systems

Corrosivity category	Test regime 1		Test regime 2
	ISO 6270-1 (water condensation, hours)	ISO 9227 (neutral salt spray, hours)	Annex B (cyclic ageing test, hours)
C2 (high)	120	-	-
C3 (high)	240	480	-
C4 (high)	480	720	-
C5 (high)	720	1440	1680

After exposure, the coated surfaces shall be examined and be found to comply with the following requirements:
- A rating of 3 or better (i.e. 0, 1 or 2) for size of blisters according to EN ISO 4628-2.
- A rating of 3 or better (i.e. 0, 1 or 2) for quantity of blisters according to EN ISO 4628-2.
- A rating of Ri2 or better (i.e. Ri0 or Ri1) for degree of rusting according to EN ISO 4628-3.

Assessment and verification:

The applicant shall provide a declaration of compliance with the relevant requirement or a justification of the non-applicability of the requirements for each of the products covered by the EU Ecolabel application. Any declaration of compliance shall be supported by copies of test reports according to EN 12944-6, EN ISO 4628-2 and EN ISO 4628-3.

TR3: Annex II: Third Proposal for Criterion 1: Efficiency in use requirements

"In order to demonstrate the efficiency in use of performance coatings and related products, the following tests per type of product, as indicated in Table 1 and detailed in the criterion text later, shall be undertaken."

Table 1. Performance requirements for different kinds of performance coatings and related products ~~paints and varnishes~~

Criteria	Performance coating categories (with their subcategories identified according to the Directive 2004/42/EC)						
	Floor covering paints (i,j)	Floor covering varnishes (i,j)	Anti-corrosion products ~~finishing coats~~ (i,j)	~~Anti-graffiti finishing coats (i,j)~~	Primers (within i) and j) systems)	Binding primers (within i) and j) systems)	Waterproofing coatings (i, j)

2(a) Spreading rate	Yes	No	If opaque	~~If opaque~~	If opaque	If opaque	If opaque, report
2(b) ~~Wet scrub resistance and w~~White pigment content	Yes	No	If opaque	~~If opaque~~	No	No	If opaque, report
2(c) Resistance to water	Yes	Yes	Yes	~~Yes~~	No	No	Yes + ETA
2(d) Adhesion	If opaque	If opaque	If opaque	~~If opaque~~	If opaque	If opaque	If opaque
2(e) Abrasion	Yes	Yes	If for metal flooring	~~No~~	No	No	If for trafficked floors
2(f) Weathering	If outdoors	If outdoors	If outdoors	~~If outdoors~~	No	No	If outdoors
2(g) Corrosion resistance	If claimed~~No~~	No	Yes	~~If for metal substrate~~	If claimed	If claimed	If claimed~~for metal substrate~~
2(h) Ecotoxicity	No	No	Yes		No	No	Yes

1(a) Spreading rate

Note 1: This requirement does not apply to transparent or semi-transparent coatings.

Note 2. For tinting systems, this criterion applies only to the tinting base containing the most TiO2. In cases where this tinting base is unable to achieve this requirement, the criterion shall be met after tinting the base to produce the standard colour RAL 9010.

Note 3. This requirement applies to all white paints. For families of paint products available only in preset shades, the spreading rate shall apply to the lightest colour.

~~Spreading rate requirements shall apply to white and light-coloured performance coatings. For coatings that are available in more colours in the same family of products, the spreading rate shall apply to the lightest colour.~~

Spreading rates shall be calculated while ensuring a hiding power of at least 98 % according to ISO 6504-1, ISO 6504-3 or an equivalent method that can be validated against ISO 6504-1. The following minimum spreading rate limits apply:

- Indoor performance coatings shall have a spreading rate of at least 8 m2 per litre of product.
- Outdoor performance coatings shall have a spreading rate of at least 6 m2 per litre of product.
- Performance coatings marketed for both indoor and outdoor application shall meet the higher spreading rate requirement of at least 8 m2 per litre.
- Any opaque primers used in performance coating systems shall have a spreading rate of at least 8 m2 per litre of product. A lower spreading rate of 6 m2 per litre of product applies to opaque primers with specific blocking, sealing, penetrating, binding or special adhesion properties.

~~White and light-coloured performance coatings, including finishing coats and intermediate coats, shall have a spreading rate of at least 8 m2 per litre of product for indoor coatings and 6 m2 for outdoor coatings while ensuring a hiding power of at least 98 % according to ISO 6504-1 or ISO 6504-3. Products marketed for both indoor and outdoor application shall meet the higher spreading rate requirement of at least 8 m2 per litre.~~

Assessment and verification:

The applicant shall provide a declaration of compliance with the relevant spreading rate limits or a justification of non-applicability of the spreading rate requirement for each of the products covered by the EU Ecolabel license. The declaration shall be supported by test results according to ~~the method~~ ISO 6504-1, ~~or~~ ISO 6504-3 or an equivalent method that can be validated against ISO 6504-1. ~~In cases where a result covers multiple products, i~~It shall be clearly indicated which spreading rate results correspond to which families of products covered by the EU Ecolabel license application.

1(b) ~~Wet scrub resistance and~~ White pigment content

Note: This criterion only applies to paint products and white pigment content shall be calculated with the same products for which spreading rate is measured as per the note in criterion 1(a), ~~in the case of families of paint products with multiple shades, only to the base paints.~~ For the purposes of this criterion, the term "white pigment", shall be considered to refer only to pigments with a refractive index higher than 1.8.

The white pigment content shall not exceed:

- 36 g/m2 for performance coatings marketed for indoor use only.
- 38 g/m2 for performance coatings marketed for outdoor use only.
- 36 g/m2 for performance coatings marketed for both indoor and outdoor use. Any EU Ecolabel paint products that claim wet scrub resistance must meet the requirements for class 1 or class 2 according to the procedure defined in ISO 11998 and the classification system of EN 13300 and comply with the respective upper limits for white pigment content.

~~Table X. Requirements for wet scrub resistance and white pigment content for paint products~~

~~Wet scrub resistance claim[2]~~	~~Wet scrub resistance~~	~~White pigment content~~
~~Yes (indoor paints)~~	~~Class 1~~	~~≤ 40 g/m²*~~
~~Yes (outdoor paints)~~	~~Class 1 or 2~~	~~≤ 38 g/m²*~~
~~Yes (indoor paints)~~	~~Class 2~~	~~≤ 36 g/m²*~~
~~No (indoor or outdoor)~~	~~n/a~~	~~≤ 25 g/m²*~~

~~* The m2 refers to 1m2 of dry film with an opacity of at least 98% according to ISO 6504.~~

Assessment and verification:

The applicant shall provide a declaration of compliance with the relevant requirement or a justification of the non-applicability of the requirements for each of the products covered by the EU Ecolabel application. In cases of relevant products, the applicant shall declare the total content of white pigments with a refractive index >1,8 in the final product, relevant tinting base or white base paint formulations that are subject to the EU Ecolabel license application. This information shall be provided in terms of the chemical name and CAS number of the white pigment, its declared refractive index, its concentration in g/L of paint product and the density of the paint, in g/L. ~~The spreading rate of the paint product, in L/m² for a dry film of at least 98% opacity according to ISO 6504, shall also be stated (as per criterion 2(a)). Multiplying the white pigment concentration (in g/L) by the spreading rate (in L/m²) will produce white pigment levels in units of g/m² that can be compared to the limits in the table above.~~

~~Except in cases where the content of white pigments is < 25,0 g/m² and no claims of wet scrub resistance are made, the applicant shall also provide results of wet scrub resistance testing according to ISO 11998 that show that the products meet the applicable class 1 or class 2 resistance requirements defined in EN 13300.~~

1(c) Resistance to water

Note: This requirement applies to all performance coatings. In coating systems with a primer or undercoat(s), either the full coating system or just the finishing layer may be tested.

All performance coatings shall have resistance to water, as determined by ISO 2812-3, such that after 24 hours of exposure and 16 hours of recovery, no change of gloss is observed in transparent or semi-transparent coatings and no change of gloss or of colour occurs in any opaque coatings.

No change of gloss or colour in exposed samples shall be considered as a visual rating of 0 when measured for quantity of defects and a visual rating of 0 when measured for size of defects according to the classification system of EN ISO 4628-1.

Additionally for waterproofing coatings, compliance with any relevant European Technical Approval Guideline (ETAG) stipulations shall also be demonstrated.

Assessment and verification:

The applicant shall provide a declaration of compliance with the requirement or a justification of the non-applicability of the requirement for each of the products covered by the EU Ecolabel ~~for performance coatings included in their~~ license application.

For any applicable products included in their license application, t~~T~~he applicant declaration shall be supported by copies of ISO 2812-3 test report(s) that cover the licensed product or family of products, including reported results for change of colour and change of gloss according to EN ISO 4628-1 and ISO 2813~~, respectively~~.

~~No change of gloss shall be considered as the gloss value of the exposed sample not being more than 5% different to the control sample when measured according to ISO 2813.~~

~~No change of colour shall be considered as a visual rating of exposed samples and control samples, with the exposed sample obtaining a rating of 0 when measured for quantity of defects and a rating of 0 when measured for size of defects according to the classification system of EN ISO 4628-1.~~

For waterproofing coatings, the applicant shall additionally provide a European Technical Approval (ETA) certificate that has been issued by an approved Technical Assessment Body (e.g. a certificate according to ETAG 005 when the product is a liquid applied roof waterproofing kit). In cases where there is no relevant ETAG to follow, the applicant shall declare this and provide a technical description of the product, including compliance with any relevant EN, ISO or national standards and a description of the intended uses of the product and how it should be used correctly.

1(d) Adhesion

Note: This criterion applies to opaque primers or undercoats for performance coatings. The adhesion test may be conducted on any opaque primer or undercoat alone, or on the primer/undercoat and finishing coat together, so long as the combination is opaque. In cases of multiple shades in a family of products, only the white base paint or opaque tinting base(s)~~, an intermediate shade and one of the darkest shades~~ need to be tested.

Primers for exterior masonry uses shall score a pass in the ISO 4624 pull-off test where the cohesive strength of the substrate is less than the adhesive strength of the primer coating~~paint~~, otherwise the adhesion of the primer coating~~paint~~ must be in excess of a pass value of 1,5 MPa.

Floor primers or~~coatings, floor paints,~~ floor undercoats shall score 2 or less in the EN ISO 2409 test for adhesion.

~~The applicant shall evaluate the primer and/or finish alone or both applied together. When testing the finish alone, this shall be considered the worst-case scenario concerning adhesion.~~

Assessment and verification:

~~The applicant shall provide a declaration of compliance with the requirement for any opaque floor coating, floor paint or floor undercoat products included in their license application. The declaration shall be supported by copies of EN ISO 2409 test reports.~~

The applicant shall provide a declaration of compliance with the relevant requirement or a justification of the non-applicability of the requirements for each of the products covered by the EU Ecolabel application. For any opaque masonry primer, binding primer or undercoat products included in their license application, the applicant shall provide copies of EN ISO 2409 or ISO 4624 test reports, as applicable.

1(e) Abrasion

Note: This criterion applies to floor coatings. In cases of multiple shades in a family of floor covering paints, only the white base paint or tinting base(s)~~, an intermediate shade and one of the darkest shades~~ need to be tested.

A weight loss of ≤ 70 mg shall be observed when floor coatings are exposed to 1000 test cycles with a 1000 g load and a CS10 wheel according to EN ISO 7784-2.

Assessment and verification:

The applicant shall provide a declaration of compliance with the requirement for floor coating products included in their license application. The declaration shall be supported by copies of EN ISO 7784-2 test reports.

1(f) Weathering

Note: This criterion applies to outdoor performance coatings. In the case of paints, only the white base paint or tinting base(s) need to be tested.

All outdoor performance coatings shall be exposed to artificial weathering in apparatus including fluorescent UV lamps and condensation or water spray according to ISO 16474-3. They shall be exposed to test conditions for 1000 hours with cycling conditions of: UVA 4 h/60 °C + humidity 4 h/50 °C.

Alternatively, outdoor performance coatings for wooden substrates may be exposed to weathering for 1000 hours in the QUV accelerated weathering apparatus with cyclic exposure with UV(A) radiation and spraying according to EN 927-6.

After weathering, the exposed films shall comply with the requirements specified in the table below.

Table X. Overview of weathering requirements for decorative paints, varnishes and related products ~~Requirements for wet scrub resistance and white pigment content for paint products~~

Property	Requirement (after weathering)	Scope of products covered/not covered
Colour change according to ISO 11664-4~~6~~	Colour change, ΔE ≤ 4	Not applicable to primers or intermediate coats in performance coating systems nor to transparent or semi-transparent performance coating systems
Decrease of gloss according to ISO 2813	≤ 30% decrease compared to initial value	Not applicable to performance coatings with initial gloss value of <60% at 60° angle of incidence
Chalking according to EN ISO 4628-6	A score of 1,5 or better (0,5 or 1,0) ≤ 2	Only applicable to finishing coats or the full ~~of~~ performance coating system~~s~~ used on outdoor masonry, wood and metal substrates.
Flaking according to EN ISO 4628-5	Flake density: ≤ 2 Flake size: ≤ 2	
Cracking according to EN ISO 4628-4	Crack quantity: ≤ 2 Crack size: ≤ 3	
Blistering according to EN ISO 4628-2	Blister density: ≤ 3 Blister size: ≤ 3	

Assessment and verification:

The applicant shall provide a declaration of compliance with the relevant requirement or a justification of the non-applicability of the requirements for each of the products covered by the EU Ecolabel application. For any outdoor performance coatings ~~decorative paints or varnishes~~ included in their license application, the applicant shall provide copies of test reports that detail the weathering test method used (being in compliance with ISO 16474-3 or EN 927-6) and provide results of changes in properties after weathering, as applicable.

1(g) Corrosion resistance

Note: This criterion only applies to anti-corrosion performance coatings and related products.

Anti-corrosion primers~~paints and~~ or coating systems shall be exposed to simulated corrosion stresses on the metallic substrates and use environments (e.g. C2, C3, C4 or C5 as per EN 12944-6) for which their use is recommended. Corrosion stresses applied in testing shall correspond to the "high" level for each category, which is as follows:

Table X. Requirements for corrosion resistance testing for anti-corrosion primers and performance~~paints and~~ coating systems

Corrosivity category	Test regime 1		Test regime 2
	ISO 6270-1 (water condensation, hours)	ISO 9227 (neutral salt spray, hours)	Annex B (cyclic ageing test, hours)

C2 (high)	120	-	-
C3 (high)	240	480	-
C4 (high)	480	720	-
C5 (high)	720	1440	1680

After exposure, the coated surfaces shall be examined and be found to comply with the following requirements:
- A rating of 3 or better (i.e. 0, 1 or 2) for size of blisters according to EN ISO 4628-2.
- A rating of 3 or better (i.e. 0, 1 or 2) for quantity of blisters according to EN ISO 4628-2.
- A rating of Ri2 or better (i.e. Ri0 or Ri1) for degree of rusting according to EN ISO 4628-3.

Assessment and verification:

The applicant shall provide a declaration of compliance with the relevant requirement or a justification of the non-applicability of the requirements for each of the products covered by the EU Ecolabel application. Any declaration of compliance shall be supported by copies of test reports according to EN 12944-6, EN ISO 4628-2 and EN ISO 4628-3.

1(h) Ecotoxicity

Note, this criterion only applies to anti-corrosion or waterproofing performance coating systems that are marketed for use in outdoor environments. In the case of a family of products, only the worst-case product needs to be tested. The worst-case product should be chosen based on the total estimated quantity of H400 and H410/H411/H412 classified ingredients present.

Ecotoxicity shall be measured by the testing the ecotoxicity of eluate obtained contact of water with two glass plates that have been coated with the complete coating system, including any primer coats, undercoats, intermediate coats and finishing coat. The test procedure is:

- Prepare two glass plates with roughened surfaces and apply the coating to the plates in accordance with manufacturer instructions. Each plate shall present a coated surface area of between 250 and 500 cm3. Make sure that the primer layer does not protrude from beyond the finished layer.

- In parallel, prepare a blind test where the roughened glass plates are not coated at all but are treated and then tested in an identical way exact for the coating procedure.

- Allow the coating to cure and be pre-conditioned for a period of 72 hours at a temperature of 19 to 25°C and a relative humidity of 40 to 60 %.

- Elute the coated glass plates (and blind control samples) in accordance with CEN/TS 16637-2 for 24 hours (if the primer does not stick to the surface or the coating becomes detached from the surface during the leaching test, the manufacturer and the testing institution should agree on another environmentally safe surface instead of glass plates with a roughened surface).

- The ratio of water volume to coated surface area of the test specimen shall be between 25 and 30 L/m2. A suitable vessel shall be used that the water level can always remain at least 20mm above the upper surface of the test specimen.

- Measure the pH, conductivity and, optionally, dissolved organic carbon prior to starting the ecotoxicity tests, which are defined in the table below together with their pass requirements.

Table X. Ecotoxicity testing and requirements

Test species	Test standard	Endpoint	Requirement

Luminescent bacteria (Vibrio fischeri)	EN ISO 11348-1	Light	$G_L \leq 8$
Algae (Raphidocelis subcapitata /Desmodesmus subspicatus)	EN ISO 8692	Growth	$G_A \leq 4$
umu test	EN 13829	Genotoxicity	$G_{EU} \leq 1,5$

Assessment and verification:

The applicant shall provide a declaration of compliance with the relevant requirement or a justification of the non-applicability of the requirements for each of the products covered by the EU Ecolabel application. Any declaration of compliance shall be supported by copies of test reports according to EN ISO 11348-1, EN ISO 8692 and EN 13289.

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Rationale for the proposed criterion text

The separation of performance coatings from decorative paints and varnishes meant the separation of efficiency in use requirements into Annexes I and II.

Main changes in this criterion

In the initial TR1 proposal, Annex II was not included. In TR2, the primary change was to move the efficiency in use requirements for performance coatings to Annex II. The remaining changes were aligned with those outlined in section 5.2.

In this draft TR3, the major new change has been to introduce a requirement on ecotoxicity testing applicable to waterproofing coatings and also to outdoor anti-corrosion coatings.

The reason for testing ecotoxicity for waterproofing coatings is because due to their very nature, they can be expected to come into contact with significant quantities of water in their normal use environment. Contact with water will create leachate and any chemicals leaching out from such contact will entire the natural aquatic environment and may remain in surrounding saturated soils for a period as well where the leachate will potentially have an effect on aquatic microorganisms.

The reason for testing ecotoxicity of outdoor anti-corrosion coatings is partly for the same reason as waterproofing coatings (i.e. a use environment that will produce leachate entering the aquatic environment) but also because anti-corrosion pigments are associated with aquatic toxicity hazards and are derogated for use up to high amounts in the final product (i.e. 8,0%).

The precise requirements for ecotoxicity testing are taken from the Blue Angel criteria for "Building waterproofing with liquid plastics" as set out in version 1 of DE UZ 233 from 2023, specifically in criterion 3.7. The only difference is that the proposal in TR3 ignores the testing on crustaceans, preferring to limit the testing to lower order life forms (bacteria and algae). The same test standards and limits taken used in the Blue Angel are applied and there was no real reason to consider why a different limit should be set for anti-corrosion coatings since the endpoint is the same – the extent of toxic effect of the leachate on microorganisms.

Outcomes from and after the 2nd AHWG meeting (November 2024)

After the 2nd AHWG meeting, 15 written comments were received regarding the criterion proposal on Efficiency in Use to Annex II criteria. Stakeholders raised the need for clear definitions and accurate descriptions in the criteria, such as a proper definition of "waterproof coatings" and correct references in adhesion and weathering tests. Specific concerns were highlighted about unrealistic requirements, such as spreading rates for waterproof coatings, which should align with their thicker application needs.

Other comments addressed the criteria's applicability. Adhesion testing was recommended for all relevant product categories, not just floor coatings, while abrasion resistance was deemed applicable solely to floor-specific products. Resistance to water was suggested to remain focused on finishing paints, evaluated visually for gloss and colour changes. For corrosion resistance, testing should only apply to claims related to anticorrosion performance, covering both primers and finishing paints.

Regarding white pigment content and wet scrub resistance, stakeholders affirmed their relevance to paint performance, particularly for indoor wall paints where these attributes directly affect durability, quality, and environmental impact. However, they recommended limiting wet scrub resistance testing to interior wall paints, excluding specialized coatings like floor, anticorrosion, anti-graffiti, and waterproofing paints. Suggestions included simplifying criteria for white pigment content and adjusting spreading rate requirements to address both decorative and performance coatings.

Finally, for weathering tests, stakeholders proposed aligning with standards for decorative coatings, limiting testing to outdoor topcoats and excluding primers, undercoats, and varnishes. These recommendations aim to refine the criteria for better feasibility and alignment with realistic applications.

6.3 Criterion 2. Content of Volatile and Semi-volatile Organic Compounds (VOCs, SVOCs)

TR2: Annex II: Second proposal for Criterion 3: Content of Volatile and Semi-volatile Organic Compounds

The maximum content of Volatile Organic Compounds (VOCs) and Semi-Volatile Organic Compounds (SVOCs) shall not exceed the limits given in Table X.

The content of VOCs and SVOCs shall be determined for the ready to use product and shall include any recommended additions prior to application such as colourants and/or thinners.

Products with a VOC content that is in accordance with the limits in Table X may display the text 'reduced VOC content' and the VOC content in g/l next to the EU Ecolabel.

Table X: VOC and SVOC content limit

VOC and SVOC content limits		
Product description (with subcategory denotation according to Directive 2004/42/EC)	VOC limits (g/l including water)	SVOC limits (g/l including water)
i. One-pack performance coatings	40	44
j. Multi-pack reactive performance coatings for specific end use such as floors	65	45
Anti-rust paints	70	50
Waterproofing coatings	??	??

The VOC content shall be determined either by calculation based on the ingredients and raw materials or by using the methods given in ISO 11890-2 or, alternatively for products with a VOC content of less than 1.0 g/L, the methods given in ISO 17895. The SVOC content shall be determined using the method given in ISO 11890-2. In the case of products used both indoors and outdoors the strictest SVOC limit value for indoor paints and varnishes shall prevail.

Assessment and verification: the applicant shall provide a declaration of compliance supported by calculations of VOC and SVOC contents based on the ingredients and raw materials used in the ready to use product. Alternatively, the VOC and SVOC contents of the ready to use product shall be communicated via a representative test report or reports using the methods given in ISO 11890-2 or ISO 17895 and results shall demonstrates compliance with the relevant limits.

TR2: Annex II: Third proposal for Criterion 2: Content of Volatile and Semi-volatile Organic Compounds

The maximum content of Volatile Organic Compounds (VOCs) and Semi-Volatile Organic Compounds (SVOCs) shall not exceed the limits given in Table X.

The content of VOCs and SVOCs shall be determined for the ready to use product and shall include any recommended additions prior to application such as colourants and/or thinners.

Products with a VOC content that is in accordance with the limits in Table X may display the text 'reduced VOC content' and the VOC content in g/l next to the EU Ecolabel.

Table X: VOC and SVOC content limit

VOC and SVOC content limits		
Product description (with subcategory denotation according to Directive 2004/42/EC)	VOC limits (g/l of ready to use product ~~including water~~)	SVOC limits (g/l of ready to use product ~~including water~~)
i. One-pack performance coating products mentioned in Article 2(1), including waterproofing coatings but excluding anti-corrosion coatings	~~40~~ 65	~~44~~ 45 (1) / 55 (2)

j. Multi-pack reactive performance coating products mentioned in Article 2(1), including waterproofing coatings but excluding anti-corrosion coatings~~for specific end use such as floors~~	65	45
(part of i or j) Anti-corrosion~~rust~~ coating products and primers~~aints~~	~~70~~ 65	50
~~Waterproofing coatings~~	~~22~~	~~22~~

The VOC content shall be determined either by calculation based on the ingredients and raw materials or by using the methods given in ISO 11890-2 or, alternatively for products with a VOC content of less than 1.0 g/L, the methods given in ISO 17895. The SVOC content shall be determined using the method given in ISO 11890-2. In the case of products used both indoors and outdoors the strictest SVOC limit value for indoor paints and varnishes shall prevail.

Assessment and verification:

The applicant shall provide a declaration of compliance supported by calculations of VOC and SVOC contents based on the ingredients and raw materials used in the ready to use product. Alternatively, the VOC and SVOC contents of the ready to use product shall be communicated via a representative test report or reports using the methods given in ISO 11890-2 or ISO 17895 and results shall demonstrate compliance with the relevant limits.

Rationale for the proposed criterion text

The rationale for this criterion follows the same foundational principles as Annex I for decorative paints, varnishes and related products in section 5.3.3.

The categories "Anti corrosion paint" is included under the i) and j) categories but with their own VOC limits are presented in the criteria table. Waterproofing products is deleted from the table as these products fall under the category (i) One-pack performance coatings and shall follow the limits presented in that category.

Main changes in the criterion

In TR1, no changes were proposed for this criterion. In TR2, significant updates were introduced. A reduction in the limits for VOC and SVOC was proposed to align with stricter environmental and health standards. The criterion was also reorganized into two sections, Annex I and Annex II, to better address specific product categories. Categories such as (i) One-pack performance coatings, (j) Two-pack reactive performance coatings designed for specific end uses like flooring and anti-rust applications, were reassigned to Annex II under performance coatings. Additionally, the category (l) Decorative effect coatings was removed from the criteria entirely. In TR3, an update was introduced in line with stakeholders' comments, which highlighted the impossibilities to comply. Some limits were slightly raised but still are lower than the values from 2014 criteria.

Further research and main changes in the second proposal

Based on the data received before and after the Working Sub-Group 2 (WSG2), several graphs were drawn for VOC and SVOC content, to determine if new limits could be set (Appendix 2 in TR2).

Data from five different CBs were collected and analysed to establish new VOC and SVOC limits for Criterion 3. Emissions from the EU Ecolabel formulations provided by the CBs were used to calculate potential reductions. Reductions ranging from 10% to 50% were evaluated to determine how many products would no longer comply with the EUEL under the proposed limits. Table 19 shows the number of products and licenses used in the calculation of the new VOC and SVOC limits.

Table 19. Data received from CB on licence and licenced products

Products	Licences	Licensed products
i. One-pack performance coatings	20	144
j. Multi-pack reactive performance coatings for specific end use such as floors	2	144
Anti-rust paint	0	0

Source: Own elaboration using information received from CBs.

A more detailed presentation of the data points was given in Appendix 2 of TR2. For products in category *(i) One-pack performance coatings*, 22% of the formulations would exceed the new proposed EUEL limit. Data received for category *(j) Multi-pack reactive performance coatings for specific end uses such as floors* was insufficient to set a new limit, with only two formulations available. To establish new limits for this category, assumptions were made based on the characteristics of the paints and their similarities with other categories. It was assumed that category *(j)* will follow the same limit as category *(i)*, however no information on the exclusion of existing products is possible due the lack of information. For the *Anti-rust paint* category, no data was available, so an assumed reduction of 12% in VOC emissions and 15% in SVOC emissions was applied.

Outcomes from and after 2nd AHWG meeting (November 2024)

After the 2nd AHWG meeting, 3 written comments were received regarding the existing criteria for VOC/SVOC content in Annex II. Comments emphasised the low VOC and SVOC limit proposed for the criteria. One stakeholder suggested a VOC limit of 65 for both category *(i) One-pack performance coatings* and *(j) Multi-pack reactive performance coatings for specific end use such as floors*. The same stakeholder also pointed out that Anti-rust paint belongs to the category (i) or (j) and waterproofing paint to category (j).

Outcomes from and after EUEB meeting (November 2024)

For comments provided to this criterion please refer to section 5.3 of this TR3.

Main changes in the third proposal

Given the feedback provided by stakeholders some changes were deemed necessary in this new proposal. The VOC and SVOC limits for categories *(i) One-pack performance coatings* and *(j) Multi-pack reactive performance coatings for specific end use such as floors* were increased as suggested by stakeholders. The new VOC limit increased compared to the second proposal limit but still have a reduction when compared with the current EU Ecolabel limit for these categories. The SVOC limit was also increased for category (i) additionally the separation between (1) indoor white paints and varnishes and (2) indoor tinted paints/outdoor paints and varnishes in the SVOC limit is included back for this category.

Furthermore, the category Anti-rust paint and waterproofing paints were included in the category (i) and (j), with anti-rust being under both categories while water proofing is under (j) *Multi-pack reactive performance coatings for specific end use such as floors*, as informed by stakeholders.

Overall, Table 20 summarizes the reduction percentages between the current EUEL limits and the proposed new thresholds, showing a 19% reduction in VOC and an 8% to 10% reduction in SVOC respect values established by the 2014 criteria. While the 3rd proposal slightly increased the limits compared to the 2nd proposal, the revised thresholds still reflect a significant decrease from the current limits, supporting the objective of reducing VOC and SVOC content in line with the criteria's environmental goals.

Table 20. Comparison of current EUEL Limits and proposed limit reductions (2014 EU Ecolabel and TR3 proposal)

Products	Limit reduction (%)	
	VOC	SVOC
i. One-pack performance coatings	19%	10% (1) / 8% (2)
j. Multi-pack reactive performance coatings for specific end use such as floors	19%	10%

Source: Own elaboration.

6.4 Criterion 3. Restriction of hazardous substances and mixtures

6.4.1 Sub-criterion 3.1 on horizontal SVHC restrictions

Please refer to section 5.4.1 of this report for the previous and current proposals and the rationale section.

6.4.2 Sub-criterion 3.2 on horizontal CLP restrictions

Please refer to section 5.4.2 of this report for the previous and current proposals and the rationale section.

Now that the derogations for anti-corrosion pigments are considered as unnecessary and that no interest was expressed in the existing derogation for verdigris prevention, criterion 3.2 is identical in Annexes I and II in terms of derogations.

6.4.3 Sub-criterion 3.3 on specific hazardous substance exclusions

Please refer to section 5.4.3 of this report for the previous and current proposals and the rationale section.

6.5 Criterion 4. VOC emissions - New

TR2: Annex II: Second Proposal for Criterion 5: VOC emissions

Note: only applicable to indoor professional coatings

Emissions of VOCs and SVOCs shall not exceed the limits defined in the table below.

Table X: VOC emission limits

Parameter	3-day test results	28-day test results
TVOC*	< 3000 µg/m³	< 300 µg/m³
TSVOC*		< 100 µg/m³
R value**		≤ 1.0
Formaldehyde		< 20 µg/m³
Sum of any other Carcinogenic 1A or 1B VOCs apart from formaldehyde	< 10 µg/m³	< 1 µg/m³

** TVOC and TSVOC are as defined in EN 16402 and including quantification of any non-target compounds*

*** R value, as defined in EN 16402*

Assessment and verification:

The applicant shall submit a copy of an EN 16402 test report for each of the products being covered by the EU Ecolabel license application. In cases of products with identical formulations but different packaging volumes or types, one test report shall suffice. In cases of products based on the same formulation but with multiple different shades, a test report for the worst-case formulation shall suffice, so long as it is clearly explained why that particular product formulation represents the worst-case.

For the calculation of the R value, reference should be made to the latest set of agreed EU LCI values available at the time of testing. These values can be consulted here on the European Commission website: https://single-market-economy.ec.europa.eu/sectors/construction/eu-lci-subgroup/eu-lci-values_en

TR3: Annex II: Third Proposal for Criterion 4: VOC emissions

Note: only applicable to indoor ~~professional~~ performance coatings

Emissions of VOCs ~~and SVOCs~~ shall not exceed the limits defined in the table below.

Table X: VOC emission limits

Parameter	~~3-day test results~~	28-day test results
TVOC*	~~< 3000 µg/m³~~	~~<~~ ≤ 300 µg/m³
~~TSVOC*~~		~~< 100 µg/m³~~
R value**		≤ 1.0
Formaldehyde		~~< 2~~ ≤ 10 µg/m³
~~Sum of a~~Any other ~~Carcinogenic~~ category 1A or 1B carcinogenic VOCs not covered by EU LCI values~~apart from formaldehyde~~***	~~< 10 µg/m³~~	~~<~~ ≤ 1 µg/m³ per substance

** TVOC shall be measured as defined in EN 16402 and including quantification of any non-target compounds*

*** R value, as defined in EN 16402. Results for the cumulative R value shall be rounded to one decimal place before determining compliance or non-compliance with the limit of 1.0.*

**** Does not apply to formaldehyde, which is a VVOC and is covered by a specific individual limit. Does not apply to any other carcinogenic VVOCs or VOCs that have an EU-LCI value, since these are already covered by the R-value limit.*

Assessment and verification:

The applicant shall submit a copy of an EN 16402 test report for ~~each of the products~~ the worst-case product formulation within each of the relevant families of products being covered by the EU Ecolabel license application. Any changes to the formulations that would create a higher worst-case VOC content shall trigger the requirement to submit an updated VOC emission test report. ~~In cases of products with identical formulations but different packaging volumes or types, one test report shall suffice. In cases of products based on the same formulation but with multiple different shades, a test report for the worst-case formulation shall suffice, so long as it is clearly explained why that particular product formulation represents the worst-case.~~ When relevant, a clear explanation of the distinctions made between families of products (e.g. binder chemistry, product category etc.) shall be provided, together with a justification of the worst-case product within each family of products.

In cases where a coating system has multiple layers, the full system should be applied to the test substrate according to manufacturer instructions prior to emission testing.

For the calculation of the R value, reference should be made to the latest set of agreed EU LCI (Lowest Concentration of Interest) values available at the time of testing. These values can be consulted on the European Commission website (1). ~~The total R value should be rounded up or down to the nearest decimal place.~~

If chamber air concentrations can be shown to comply with the 28-day limits before the 28 day period has been completed but after a period of at least 3 days, then those results can be accepted as proof of compliance and the test can be halted at that point.

(1) See https://single-market-economy.ec.europa.eu/sectors/construction/eu-lci-subgroup/eu-lci-values_en

Rationale for the proposed criterion text on VOC emissions

The proposed criterion for performance coatings presented here is identical to that proposed in criterion 4 of Annex I for decorative paints, varnishes and related products. The same limits are justified because both groups of product have the same endpoint in mind, namely indoor air quality. Consequently, the same rationale as already presented in criterion 4 in Annex I can be referred to.

The only specific change made was to change the reference to the product type in the note to the criterion from "professional coatings" to "performance coatings". It was a mistake to use the term "professional" in TR2 because the subcategories from Directive 2004/42/CE do not distinguish between who uses the product (e.g. DIY or professionals), but rather on what purpose the coating is used for.

6.6 Criterion 5. Consumer information

TR2: Annex II: Second Proposal for Criterion 6: Consumer information
6(a) The following texts shall appear on or be attached to the packaging: — 'Minimise paint wastage by estimating how much paint you will need before buying' — 'Recover unused paint for re-use'. — 'Reuse of paint can effectively minimise the products' life cycle environmental impact' 6 (b) The following general information and advice shall be provided on or be attached to the packaging or be available via a web-link or QR code: — How to estimate the amount of paint needed prior to purchase in order to minimise paint wastage and a recommended amount as a guideline (e.g. for 1 m^2 of wall, X litres of paint is needed). — How to deal with the 'leftover paint'. 6(c) The following advice and recommendations on how to handle the paint shall be provided on or be attached to the packaging or be available via a web-link or QR code: — Safety measures for the user. This shall include basic recommendation on personal protective equipment that should be worn. It shall also include additional measures that should be taken when using spray equipment. — The use of cleaning equipment and appropriate waste management (in order to limit water and soil pollution). For example, text advising that unused paint requires specialist handling for safe environmental disposal and therefore it should not be thrown away with household or commercial waste (e.g. 'Do not put residual paint down the kitchen sink or toilet, or into a waste bin'). — Storage of the paint in appropriate conditions (before and after opening), including, where appropriate, safety advice. Assessment and verification: the applicant shall declare that the product complies with the requirement and provide the competent body with the artwork or samples of the user information and/or a link or QR code to a manufacturer's website containing this information as part of the application. The recommended amount of paint given as a guideline shall be provided.
TR3: Annex II: Third Proposal for Criterion 5: Consumer information
5(a) The following texts shall appear on or be attached to the packaging: — 'Minimise paint wastage by estimating how much paint you will need before buying' — 'Recover unused paint for re-use'. — 'Reuse of paint can effectively minimise the products' life cycle environmental impact' 5(b) The following general information and advice shall be provided on or be attached to the packaging or be available via a web-link or QR code: — How to estimate the amount of paint needed prior to purchase in order to minimise paint wastage and a recommended amount as a guideline (e.g. for 1 m^2 of wall, X litres of paint is needed). — How to deal with the 'leftover paint'. 5(c) The following advice and recommendations on how to handle the paint shall be provided on or be attached to the packaging or be available via a web-link or QR code: — Safety measures for the user. This shall include basic recommendation on personal protective equipment that should be worn. It shall also include additional measures that should be taken when using spray equipment. — The use of cleaning equipment and appropriate waste management (in order to limit water and soil pollution). For example, text advising that unused paint requires specialist handling for safe environmental disposal and therefore it should not be thrown away with household or commercial waste (e.g. 'Do not put residual paint down the kitchen sink or toilet, or into a waste bin'). — Storage of the paint in appropriate conditions (before and after opening), including, where appropriate, safety advice.

Assessment and verification:

The applicant shall declare that the product complies with the requirement and provide the competent body with the artwork or samples of the user information and/or a link or QR code to a manufacturer's website containing this information as part of the application. The recommended amount of paint given as a guideline shall be provided.

Rationale for the proposed criterion text

Identical to criterion 5 in Annex I. Please refer to section 5.6 of this report for the previous and current proposals and the rationale section.

6.7 Criterion 6. Information appearing on the EU Ecolabel

TR2: Annex II: Second Proposal for Criterion 7: Information appearing on the EU Ecolabel
The optional label with text box shall contain, where relevant, the following texts: — Minimised content of hazardous substances — Reduced content of volatile organic compounds (VOCs): x g/l — Reduced emissions of volatile organic compounds to indoor air (where indoor criteria have been met) or — Good performance for indoor use (where indoor criteria have been met) or — Good performance for outdoor use (where outdoor criteria have been met) or — Good performance for both indoor and outdoor use (where both indoor and outdoor criteria have been met) The guidelines for the use of the optional label with text box can be found in the 'Guidelines for use of the Ecolabel logo' on the website: http://ec.europa.eu/environment/ecolabel/documents/logo_guidelines.pdf Assessment and verification: the applicant shall provide a sample of the product label or an artwork of the packaging where the EU Ecolabel is placed, together with a declaration of compliance with this criterion.
TR3: Annex II: Third Proposal for Criterion 6: Information appearing on the EU Ecolabel
The optional label with text box shall contain, where relevant, the following texts: — Minimised content of hazardous substances — Reduced content of volatile organic compounds (VOCs): x g/l — Reduced emissions of volatile organic compounds to indoor air (where indoor criteria have been met) or — Good performance for indoor use (where indoor criteria have been met) or — Good performance for outdoor use (where outdoor criteria have been met) or — Good performance for both indoor and outdoor use (where both indoor and outdoor criteria have been met) The guidelines for the use of the optional label with text box can be found in the 'Guidelines for use of the Ecolabel logo' on the website: http://ec.europa.eu/environment/ecolabel/documents/logo_guidelines.pdf Assessment and verification: The applicant shall provide a sample of the product label or an artwork of the packaging where the EU Ecolabel is placed, together with a declaration of compliance with this criterion.

Rationale for the proposed criterion text

Identical to criterion 6 in Annex I. Please refer to section 5.7 of this report for the previous and current proposals and the rationale section.

7 Criteria proposal for Annex III: Water-based aerosol spray paints

The inclusion of water-based aerosol spray paint was addressed during the WSG1 meeting in relation to the scope extension. Stakeholders provided feedback on the inclusion of these criteria; however, no specific feedback on the requirements was discussed.

Annex III was already proposed in draft TR2. As previously, it is based on the same rationale of the criteria used in Annex I when possible. The rationale for why an Annex III is proposed is presented in the "Scope" section of this report. As with Annex I and II, rationale for any proposed changes is provided immediately after each proposal, together with key parts of stakeholder discussions and any further research. In case the same discussions and further research already presented in Annex I applies, it is not repeated here in Annex III. Instead, a placeholder is inserted to direct the reader to the relevant part in Annex I.

These criteria were also discussed in detail during the 2nd AHWG meeting. The criteria are designed to award the EU Ecolabel to water-based spray paints that demonstrate the highest performance standards.

7.1 Criterion 1. Titanium dioxide production [not proposed anymore]

Please refer to section 5.1 of this report for the previous proposal and the rationale for deletion.

7.2 Criterion 1. Efficiency in use requirements

In order to demonstrate the efficiency in use of aerosol spray paints the following tests and requirements shall be undertaken:

TR2: Annex III: First Proposal for Criterion 2: Efficiency in use requirements
2(a) Spreading rate Aerosol spray paints shall have a spreading rate of at least 2,0 m^2 per litre of product while ensuring a hiding power of at least 98 % according to ISO 6504-1 or ISO 6504-3. Assessment and verification: The applicant shall provide a declaration of compliance with the spreading rate limits or a justification of non-applicability of the spreading rate requirement for each of the products covered by the EU Ecolabel license. The declaration shall be supported by test results according to the method ISO 6504-1 or 6504-3. In cases where a result covers multiple products, it shall be clearly indicated which results correspond to which products covered by the EU Ecolabel license application. 2(b) Efficiency in spraying Aerosol spray paints shall have an efficiency in spraying, considered as the fraction of contents that can be sprayed from the can under acceptable spray performance, of 97% according to [INSERT TEST STANDARD HERE]. Assessment and verification: the applicant shall provide a test report according to [INSERT TEST STANDARD HERE]. In cases of families of products, test data for a worst-case product can be used to cover the entire family of products if a suitable justification can be provided for why that product is the worst-case example.
TR3: Annex III: Second Proposal for Criterion 1: Efficiency in use requirements
1(a) Spreading rate *Note 1: This requirement does not apply to any aerosol products that are designed to apply transparent or semi-transparent coatings.* *Note 2. If tinting systems are used to make different aerosol paint shades, only to the tinting base containing the most TiO2 needs to be tested. In cases where this tinting base is unable to achieve this requirement, the criterion shall be met after tinting the base to produce the standard colour RAL 9010.* *Note 3. This requirement applies to white aerosol spray paints. For families of aerosol spray paints available only in preset shades, the spreading rate shall apply to the lightest colour.* Aerosol spray paints shall have a spreading rate of at least 2,0 m^2 per litre while ensuring a hiding power of at least 98 % according to ISO 6504-1 or ISO 6504-3. The volume unit in the spreading rate calculation shall refer to the declared volume of the ready to use spray can. Assessment and verification: The applicant shall provide a declaration of compliance with the spreading rate limits or a justification of non-applicability of the spreading rate requirement for each of the products covered by the EU Ecolabel license. The declaration shall be supported by test results according to the method ISO 6504-1 or 6504-3. In cases where a result covers multiple products, it shall be clearly indicated which results correspond to which products covered by the EU Ecolabel license application. 1(b) Efficiency in spraying Aerosol spray paints shall have an efficiency in spraying of at least 97 %. considered as the fraction of product in the ready to use can ~~contents~~ that can be sprayed from the can. ~~under acceptable spray performance, of 97% according to an.~~ The test method shall consist of a calculation of the total content of product contained in the ready to use spray can that has not yet been operated. Prior to the test, the ready to use spray can shall be weighed. During the test, the contents of the can shall be continuously discharged onto a weighed surface at a steady rate in order to monitor the discharge rate. After the test, the spray can shall be weighed again to determine the total content of product discharged. The efficiency in spraying rate shall be calculated as $$Efficiency\ in\ spraying\ (\%) = \frac{total\ weight\ of\ product\ discharged\ during\ test(g)}{total\ weight\ of\ product\ in\ can\ at\ beginning\ of\ test\ (g)} x100\%$$

Assessment and verification:

The applicant shall provide a test report ~~according to [INSERT TEST STANDARD HERE]. In cases of families of products, test data for a worst-case product can be used to cover the entire family of products if a suitable justification can be provided for why that product is the worst-case example~~ demonstrating the calculation of the efficiency in spraying rate. The report shall include the initial aerosol spray can weight, a plot of discharge rate versus time and the weight of the spray can at the end of the test. The total weight of product discharged shall be considered as the difference between the initial weight and the final weight of the can.

1(c) Adhesion

Note 1: This requirement does not apply to any aerosol products that are designed to apply transparent or semi-transparent coatings.

Aerosol spray paint shall achieve an adhesion score of 2 or less in the EN ISO 2409 test for adhesion.

Assessment and verification:

The applicant shall provide a declaration of compliance with the relevant requirement or a justification of the non-applicability of the requirements for each of the products covered by the EU Ecolabel application. The declaration shall be supported by test results according to the method ISO 2409, as applicable.

1(d) Corrosion resistance

Aerosol spray paint, when applied to blasted steel panels with a dry-film thickness of at least 60µm, shall ensure adequate corrosion resistance after being subjected to a salt spray test of 240 hours duration according to ISO 9227.

After exposure, the coating shall meet the following criteria:

- A rating of 3 or better (i.e. 0, 1 or 2) for size of blisters according to ISO 4628-2.
- A rating of 3 or better (i.e. 0, 1 or 2) for quantity of blisters according to ISO 4628-2.
- A rating of Ri2 or better (i.e. Ri0 or Ri1) for degree of rusting according to ISO 4628-3.
- A delamination result of 4mm or less according to ISO 4628-8.
- An adhesion score of 2 or less according to ISO 2409.

Assessment and verification:

The applicant shall provide a declaration of compliance supported by test results according to the method ISO 9227 for salt spray test, for rust according to the method ISO 4628-3, for blistering according to the method ISO 4628-2, for delamination according to the method ISO 4628-8 and adhesion according to the method ISO 2409

1(e) Weathering

Aerosol spray paint, when applied to blasted steel panels with a dry-film thickness of at least 60µm, shall ensure adequate weathering resistance after being subjected to 500 hours of weathering cycles according to ISO 16474-2.

After exposure, the coating shall meet the following criteria:

- Colour change of $\Delta E \leq 4$ according to ISO 11664-4.
- Decrease of gloss of ≤ 30 % according to ISO 2813.
- Degree of flaking of ≤ 2 in terms of flake density and ≤ 2 in terms of flake size according to ISO 4628-5.
- Degree of blistering of ≤ 3 in terms of blister density and ≤ 3 in terms of blister size according to ISO 4628-5.
- Degree of cracking of ≤ 2 in terms of crack size according to ISO 4628-4.

Assessment and verification:

The applicant shall provide a declaration of compliance supported by test results of coated substrates before and after the weathering exposure: for colour deviation according to the method ISO 11664-4; for gloss level deviation according to the method ISO 2813; for degree of flaking according to the method ISO 4628-5; for degree of cracking according to the ISO 4628-4, and for degree of blistering according to the method ISO 4628-2.

Rationale for the proposed criterion text

The aim of this criterion on efficiency in use is to ensure that water-based aerosol spray paint products can deliver adequate quality coatings with a minimum degree of efficiency. To determine these requirements, data were collected from manufacturers of water-based aerosol spray paints which provided information on which requirements were deemed necessary to assess the quality performance of a water-based aerosol spray paint. Several requirements are set in this criterion as explained as follows:

— spreading rate;

- efficiency in spraying;
- adhesion;
- corrosion resistance; and
- weathering resistance.

With sub-criterion 1(a) on the spreading rate, the value in this draft TR3 is the same as proposed before in TR2 with the explanation of 2.0 m^2 per litre of aerosol can, but with clarifications about what is meant by the volume unit (i.e. it is the declared volume of the spray can).

With sub-criterion 1(b) the efficiency in spraying threshold was kept the same as before, but with many more details provided about how the test should be done. This was considered as essential because there is no international standardised method for this metric, and it is generally carried out in-house by spray paint manufacturers.

New requirements have been added on 1(c) adhesion and on the resistance of aerosol spray paint coatings to corrosion (d) and weathering (e). These particular technical qualities were considered as the most important in order to ensure a minimum level of performance and consumer satisfaction with the product.

Criterion 1(c) on adhesion is critical to the durability and performance of the coating and helps ensure that the paint remains functional and visually appealing over time, reducing the need for reapplication. The inclusion of adhesion as a criterion is due the fact that a poor adhesion can impact the lifespan of the paint which will impact the reflect on the need of repainting increasing the environmental impact of aerosol spray paint. Requiring a maximum adhesion score of ≤ 2 (ISO 2409 - Paints and varnishes — Cross-cut test) ensures that the coating remains functional under daily conditions, preventing premature failure and unnecessary product reapplication.

Corrosion resistance in sub-criterion 1(d) is considered as essential for aerosol paints used on metal surfaces, particularly in challenging environments. The specified salt spray test and limits on rusting, blistering, delamination, and adhesion ensure the product provides long-lasting protection, reducing maintenance and replacement costs while enhancing sustainability. Many aerosol spray paints are used on metal surfaces that are highly susceptible to rust and degradation. Without adequate corrosion protection, painted metal surfaces can deteriorate rapidly, leading to structural weaknesses and increasing maintenance costs. Requiring performance thresholds for corrosion resistance ensures that aerosol coatings provide reliable protection against environmental factors, extending the lifespan of coated surfaces and reducing waste.

Weathering resistance in sub-criterion 1(e) ensures that the coating will retain its aesthetic and protective properties under prolonged exposure to sunlight, moisture, and temperature variations. By specifying limits on colour deviation, gloss level, flaking, cracking, and blistering, the criterion ensures consistent performance, reducing environmental impact from repainting or material degradation.

Main changes in the criterion

In the initial TR1 proposal, Annex III was not included. In TR2, the spreading rate and efficiency in spraying requirements for water-based aerosol spray paints were set using feedback from stakeholders.

In TR3, clarifications have been made to the spreading rate and efficiency in spraying requirements while new requirements on adhesion, corrosion resistance and weathering resistance were added.

Outcomes from and after 1st AHWG meeting and Working Sub-Group 1 (WSG1) meeting (May and June 2024)

Other potential performance criteria that could be applied for aerosol spray paint coatings include: pencil hardness (EN ISO 15184), adhesion (EN ISO 2409), chemical resistance (EN ISO 2812-3), salt spray resistance (EN ISO 9227), blistering (EN ISO 4628-2), corrosion (EN ISO 4628-3), cracking (EN ISO 4628-4), flaking (EN ISO 4628-5), infiltration (EN ISO 4628-8), colour deviation (EN ISO 11664) and gloss level deviation (EN ISO 2813).

Outcomes from and after 2nd AHWG meeting (November 2024)

In total, three comments were received regarding the criterion for efficiency in use requirements. One stakeholder asked for clarification on whether the 98% hiding power applies to all gloss levels and quantity for which it is valid. One stakeholder suggested additional efficiency in use requirements for aerosol spray paints

including transfer efficiency, coverage rate, chemical resistance, colour and gloss retention, impact resistance and flexibility. Finally, one stakeholder argued that there are no standard methods for measuring "efficiency in spraying" universally established but suggested two methodologies that could be used: ASTM D5286-20, which evaluates the transfer efficiency; and EN 13699-1, which specifies methods for determining transfer efficiency on both manual and automated spraying systems.

Further research and main changes in third proposal:

Significant changes were introduced in the third proposal to the previously set requirements on:

- spreading rate;
- efficiency in spraying;

This proposal now includes the addition of three new requirements:

- adhesion;
- corrosion resistance; and
- weathering resistance.

These additional requirements include assessment and verification methods and are designed to ensure that high-quality water-based aerosol paints are eligible for inclusion in the EU Ecolabel.

7.3 Criterion 2. Content of Volatile Organic Compounds (VOCs)

TR2: Annex III: First Proposal for Criterion 3: Content of Volatile Organic Compounds

a) Aerosol spray paints shall not have VOC contents higher than 300 g/L, as determined by either the calculation based on the ingredients and raw materials, or by using the methods given in ISO 11890-2.

Aerosol spray paint products may display the text 'reduced VOC content' and the actual VOC content in g/l next to the Ecolabel.

Assessment and verification: The applicant shall provide a declaration of compliance supported by calculations of VOC content based on the ingredients and raw materials used in the ready to use product. Alternatively, the VOC content of the ready to use product shall be communicated via a representative test report or reports using the methods given in ISO 11890-2 and containing results that demonstrate compliance with the relevant limit.

b) Aerosol spray paints shall not contain more than 28% (weight by weight) flammable ingredients.

Assessment and verification: The applicant shall provide a declaration of compliance with the requirement supported by a calculation based on the list of ingredients, their relative masses used in the formulation and a statement about whether they are flammable or not. These statements shall be supported by safety data sheets for each of the ingredients.

TR3: Annex III: Second Proposal for Criterion 2: Content of Volatile Organic Compounds

The maximum VOC content permitted in ~~for A~~aerosol spray paints shall not exceed the limits defined in the Table X. ~~have VOC contents higher than 300 g/L.~~ The VOC content shall be ~~as~~ determined separately for each component and then added together.

The VOC content for the liquid paint component shall first be determined either by calculation based on the ingredients and raw materials or by using the methods given in ISO 11890-2. Then the VOC content for the paint component (in g/L liquid paint) shall be converted to units of g/L of ready to use product by multiplying by the aerosol spray paint volume ratio, defined as:

$$Aerosol\ spray\ paint\ volume\ ratio = \frac{X\ Litres\ of\ liquid\ paint}{Y\ Litres\ of\ declared\ aerosol\ spray\ can\ volume}$$

Unless otherwise demonstrated, the propellant, whether it is an individual substance or mixture, shall be assumed to be 100 % VOC. The amount of propellant VOC in the ready to use product shall be calculated based on a declared propellant content (in units of g propellant /L volume of the aerosol can). The mass of propellant added per litre of aerosol shall be calculated by the manufacturer. ~~according to the equation below (all in common units of mass) or by another suitable method.~~

~~$Propellant\ added = ready\ to\ use\ can - (open\ can + liquid\ paint\ component + closure\ components)$~~

Table X: VOC and SVOC content limit

VOC content limits		
Liquid paint component	Propellant	Final product
VOC limits (expressed in terms of g/L per litre of aerosol)		
60 g/L	290 g/L	350 g/L

Aerosol spray paint products may display the text 'reduced VOC content' and the actual VOC content in g/l next to the Ecolabel.

Assessment and verification:

The applicant shall provide a declaration of compliance supported by calculations of VOC content.

For the liquid paint component, the declaration of compliance shall be supported by calculations of VOC content based on the ingredients and raw materials used in the liquid paint component. Alternatively, the VOC content of the liquid paint component shall be communicated via a representative test report or reports using the methods given in ISO 11890-2 and results, when corrected for the aerosol spray paint volume ratio, shall demonstrate compliance with the limit.

For the propellant component, the applicant shall declare the propellant(s) used and provide details of the calculation ~~according to the equation for "propellant added". If an alternative method to calculate the VOC content of propellant in the ready to use product is used, this method must be explained and deemed appropriate by the Competent Body.~~ ~~based on the ingredients and raw materials used in the ready to use product. Alternatively, the VOC content of the ready to use~~

~~product shall be communicated via a representative test report or reports using the methods given in ISO 11890-2 and containing results that demonstrate compliance with the relevant limit~~.

~~a) Aerosol spray paints shall not contain more than 28% 35% (weight by weight) flammable ingredients (propellant + solvent).~~

~~Assessment and verification: The applicant shall provide a declaration of compliance with the requirement supported by a calculation based on the list of ingredients, their relative masses used in the formulation and a statement about whether they are flammable or not. These statements shall be supported by safety data sheets for each of the ingredients.~~

Rationale for the proposed criterion text

The VOC content in aerosol spray paints has clear health impacts on professionals across various applications, as well as building occupants when used indoors. Only water-based aerosol spray paints are considered for the EU Ecolabel criteria. These water-based aerosol spray paints are designed as more environmentally friendly alternatives to traditional organic-solvent-based aerosol spray paints and represent around 2% of the market of the whole spray paints providing a safer option to consumers. Although not entirely VOC-free, the VOC emissions are reduced compared to organic solvent-based spray paints, making them a more sustainable and healthy choice.

VOCs emitted into outdoor air also contribute to the formation of photochemical smog. The significance of these health and environmental concerns is recognized by Directive 2004/42/CE, which sets mandatory upper limits for VOC content in various types of paint and varnish products, though aerosol paints were not covered by the Directive (except for as part of vehicle refinishing products). The EU Ecolabel criteria address this gap by setting limits specifically for water-based aerosol spray paints, which have only recently become commercially relevant, reflecting both technical breakthroughs and the growing consumer demand for water-based aerosols as more people seek products that are less harmful to the environment. Additionally, these products are often marketed as low-odour and easy to clean up with soap and water, further appealing to eco-conscious consumers.

The proposed VOC limit for water-based aerosol paints is divided into two components: the VOC limit for the paint and the VOC limit for the propellant, with their combined total forming the overall VOC limit for the aerosol spray paint. This division is suggested because the majority of VOC emissions from aerosol spray paints originate from the propellant rather than the paint itself and because the actual data needs to be collected separately. The proposed limits align the VOC limits for the liquid paint component of water-based aerosol paints with those established for the *d. Interior/Exterior trim and cladding paints for wood and metal* category. This category closely reflects the typical uses of aerosol spray paint, which are commonly applied to wood and metal surface. These new VOC limits for both paint and propellant were developed based on stakeholder feedback and supporting data.

Main changes in the criterion

This criterion was not included in TR1. In TR2, a VOC limit for water-based aerosol spray paints was introduced, based on data provided by stakeholders without the differentiation of propellant and paint VOC. Additionally, a limit for flammable ingredients in these paints was proposed to enhance safety and environmental performance.

In TR3, the VOC content has been broken down into the contribution from the liquid paint component and that from the propellant. After clarification that the volume considered in the VOC limits (in g/L) corresponded to the volume of the aerosol can in the ready to use product, the whole criterion text was reworked to spell out the steps required to carry out the calculation in a consistent and transparent manner. It was also decided to remove the limit on the flammable component content because this was considered as being of no added value since the overall product itself cannot be flammable as defined in Article 3 regarding the scope of EU Ecolabel aerosol spray paints.

Outcomes from and after 2nd AHWG meeting (November 2024)

During the 2nd AHWG meeting, stakeholders raised concerns that EU ecolabelled water-based aerosol spray paints would be banned in California due to stricter VOC limits.

Following the 2nd AHWG meeting, 5 comments were received regarding this criterion. One stakeholder proposed raising the VOC limits to 350 g/L, arguing that it would allow more flexibility in formulations and facilitate a quicker market transition to reduce air pollution. They also suggested increasing the flammable ingredient limit from 28% to 35% pointing out that the 28% limit contradicts the Draft Preliminary Report, which accounts for

29% propellant and 6% solvent. They argued that the definition of flammable components should include only propellants and solvents, not organic resins, as resins do not contribute to emissions or pollution.

Some stakeholders argued that the proposed VOC limit of 300 g/L was too high and inconsistent with the stricter requirements in other annexes. Some stated again that these products would likely be illegal in California due to the state's stricter VOC limits (≤ 80 g/L) and suggested that water-based aerosols should be excluded from the scope of the EU Ecolabel to avoid conflicts with these regulations.

Some stakeholders questioned whether sufficient safety measures are in place for users, particularly regarding packaging.

Stakeholders also raised concerns regarding the suitability of the ISO 11890-2:2020 test method for measuring VOC content in spray paints. They pointed out that this method does not address how to sample paint from the can or include the propellant in VOC calculations. In addition, they noted the method does not clarify whether the VOC limit refers to the compressed or expanded volume of the paint after spraying.

Some stakeholders proposed setting different VOC limits for Very Volatile Organic Compounds, VVOCs (<C6) and Volatile Organic Compounds VOCs (≥C6) and suggested that certain aerosols should be excluded from the scope. However, they emphasized the need for clearer definitions of which aerosols should be included or excluded and specific VOC limits for each type.

Further research and main changes in third proposal:

After the 2nd AHWG meeting, a comparison between the limits allowed in California for VOC limits and the proposed were analysed. However, it was found that the VOC limits set in California are measured using Maximum Incremental Reactivity (MIR) which measures how much ground-level ozone a compound can form relatively to other compounds. In the European market the VOC limits follow the Directive 2004/42/EC. MIR-based limits are not widely used in European regulations. Instead, the focus is on VOC content limits defined by boiling points and emissions. Reactivity metrics like MIR are less emphasized, as European regulations prioritize total VOC reduction over individual reactivity considerations Therefore, the comparison highlighted during the 2nd AHWG meeting could not be considered. A division between emissions from the paint and from the propellant were proposed in order to make the VOC emissions of paint comparable to the paints in the Annex I for Decorative Coatings.

7.4 Criterion 3. Restriction of hazardous substances and mixtures

7.4.1 Sub-criterion 3.1 on horizontal SVHC restrictions

Please refer to section 5.4.1 of this report for the previous and current proposals and the rationale section to follow the sub-criterion 3.1 in Annex I which is identical in this Annex III.

7.4.2 Sub-criterion 3.2 on horizontal CLP restrictions

TR2: Annex III: Second Proposal for Criterion 4: Restriction of hazardous substances and mixtures

4.2. General restrictions based on classifications according to specific hazard classifications defined in Regulation (EC) No 1272/2008.

(a) Final product

The final product shall not be classified 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 and associated with any of the hazard statement codes stated in Table X. The only exception permitted to this rule shall be the H412 and H413 hazards, and only in the case of outdoor paints or varnishes and only due to levels of dry-film preservatives needed.

(b) Ingoing substances

Unless derogated in Table Y, any ingoing substances or mixtures that are present in concentrations exceeding 0,010 % weight by weight of the final product formulation shall not have been assigned any of the hazard classes, categories and associated hazard statement codes stated in Table X, in accordance with Regulation (EC) No 1272/2008.

Table X. Excluded hazard classes, categories and associated hazard statement codes

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.	
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	
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 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

Table Y. Derogations to restrictions on ingoing substances and mixtures that are classified with one or more of the restricted hazards listed in Table X and are present in concentrations greater than 0,010% (weight by weight) of the final product formulation.

Substance type, substance name and CAS number	Derogated hazard code(s)	Derogation conditions
Preservatives and preservative stabilisers		
Note for combined preservative limits: the maximum quantity of any combination of in-can preservatives that are approved or that have an initial application for approval in progress under Regulation (EC) No 528/2012 for Product Type 6 applications shall be 0,080 % weight by weight of the final product. *Any permitted use of dry-film preservatives shall be considered as being independent of the allowance for in-can preservatives.*		
In-can preservative: N-(3-aminopropyl)-N-dodecylpropane-1,3-diamine (CAS No 2372-82-9)	H301, H373, H400, H410	*See horizontal derogation condition at foot of table Cannot be present in the final product formulation in quantities exceeding 0,050 % (weight by weight).
In-can preservative: Sodium pyrithione (CAS No 3811-73-2)	H311, H317, H331, H372, H400, H411, EUH070	*See horizontal derogation condition at foot of table Can only be used up to 0,050 % weight by weight in the final product.
In-can preservative: Bronopol (CAS No 52-51-7);	H301, H317, H331, H400, H411	*See horizontal derogation condition at foot of table The use of any formaldehyde releasing preservatives must be declared by the applicant. Bronopol cannot be added in concentrations >0,0320 % weight by weight in the final product. Limits of free formaldehyde, as measured in the final product, shall not exceed the relevant limits defined in criterion 4.3(i).
In can preservative: Isothiazoline or izothiazoline-releasing substances:	H317, H330, H400, H410	*See horizontal derogation condition at foot of table The total quantity of all isothiazoline substances added to the final product shall not exceed 0,040 % weight by weight in the final product. In cases where isothiazoline preservatives are actively added by the paint or varnish manufacturer, the final product shall be tested for isothiazoline content to verify compliance with the combined limit.

Tinting machine preservatives: Same derogations as listed above for in-can preservative apply, plus: 3-iodo-2-propynyl butylcarbamate (IPBC, CAS No 55406-53-6)	H317, H330, H331, H372, H400, H410	Applicable to tinting systems. The combined sum of in-can preservatives used in the tinting machine shall not exceed 0,20% weight by weight in the colour tints. The concentration of IPBC shall not exceed 0,10% weight by weight. When mixed with base paint, the overall concentrations of in-can preservatives shall be low enough to demonstrate compliance with any individual limits in the rows above in the final tinted paint product as well as the horizontal derogation condition*.
Dry-film preservatives:	H330, H400, H410, H411, H412 and H317 (Additionally, and only for IPBC: H331 and H372)	Only applies to outdoor products and indoor products for use in high humidity areas. *See horizontal derogation condition at foot of table The sum total of dry-film preservatives with any of these derogated hazards shall: Not exceed 0,10 % weight by weight in indoor products for use in high humidity areas Be less than 0,50% weight by weight in outdoor products. Higher concentrations may be permitted in the case of slow release, encapsulated forms of dry-film preservatives, but only in cases where the formulation can be tested to demonstrate that the specific formulation of the final product, or read-across formulations, would not be classified with any of the hazards listed in Table X. Any dry-film preservatives classified as H400 or H410 must be non-bioaccumulative, demonstrated by having an octanol-water coefficient (Log K_{ow}) of ≤ 3.2 or a bioconcentration factor (BCF) of ≤ 100.
Preservative stabiliser: Zinc oxide (CAS No 1314-13-2)	H400, H410	*See horizontal derogation condition at foot of table Permitted to be used as a preservative stabiliser, in concentrations up to 0,040 % weight by weight of the final product, when used to stabilise tinting paste, in-can or dry-film preservative combinations that require 1,2-Benzisothiazol-3(2H)-one (BIT).
Drying and anti-skimming agents		
Anti-skimming agents	H317, H412, H413	*See horizontal derogation condition at foot of table The sum total anti-skimming agent content shall not exceed 0,40 % weight by weight in the final product.
Driers (siccatives)	H301, H317, H373, H400†, H410†, H412, H413	*See horizontal derogation condition at foot of table The sum total drier content shall not exceed 0,10 % weight by weight in the final product. † The derogation for H400 and H410 only applies to cobalt-based drier compounds and such compounds can only be used up to 0,050 % weight by weight in the final product.
Corrosion inhibitors		
Anti-corrosion pigments	H410, H411, H412, H413.	*See horizontal derogation condition at foot of table Only allowed in quantities up to 8,0 % weight by weight in ~~interior/exterior trim and cladding paints for metal,~~ one-pack performance coatings, two-pack performance coatings and anti-rust paints. Allowed in quantities up to 2,0 % in all other product categories.
Verdigris prevention	H412, H413	*See horizontal derogation condition at foot of table

		Only allowed in quantities up to 0,50 % weight by weight.
Other, miscellaneous		
Adipic acid dihydrazide (CAS No 1071-93-8)	H317, H411	*See horizontal derogation condition at foot of table Only allowed up to 1,0 % weight by weight and when used as an adhesion promoter or as a crosslinking agent.
Methanol (CAS No 67-56-1)	H301, H311, H331, H370	*See horizontal derogation condition at foot of table Only permitted as a residual reaction product of other substances in the product formulation. Allowable residual concentration increases as a function of binder content in the following manner: - Binder content of 10-20%: allowable residual methanol is 0,020 % weight by weight in the final product. - Binder content of 20-40%: allowable residual methanol is 0,030 % weight by weight in the final product. - Binder content of >40%: allowable residual methanol is 0,050 % weight by weight in the final product.
Mineral raw materials, including fillers	H373	*See horizontal derogation condition at foot of table Only applies to mineral raw materials and leucophyllite minerals that naturally contain crystalline silica.
Neutralising agents	H301, H311, H331, H400, H410, H411, H412, H413	*See horizontal derogation condition at foot of table Only allowed up to 1,0 % weight by weight in varnishes and floor paints, and up to 0,50 % in all other products.
Optical brighteners	H413	*See horizontal derogation condition at foot of table Only allowed up to 0,10 % weight by weight of the final product.
Silicon resin	H412, H413	*See horizontal derogation condition at foot of table Only allowed up to concentrations of 2,0 % weight by weight in the final product.
Solvents	H304	*See horizontal derogation condition at foot of table Only allowed up to concentrations of 1,0 % weight by weight in the final product.
Surfactants	H411, H412, H413	*See horizontal derogation condition at foot of table Only allowed up to 1,0 % weight by weight in transparent, semi-transparent, white or light-coloured products or up to 3,0 % weight by weight in all other colours of products.
Titanium dioxide (in a powder form containing 1% or more of particles with aerodynamic diameter ≤ 10µm)	H351 (inhalation)	*See horizontal derogation condition at foot of table The applicant shall demonstrate that they have systems in place to minimise worker exposure to dry TiO2 powder in the workplace (e.g. closed dosing systems, ventilated dosing and mixing areas and personal protective equipment).
Trimethylolpropane	H361fd	*See horizontal derogation condition at foot of table Only when used as an additive in supplied pigments and only up to a maximum concentration of 0,50 % weight by weight of the supplied pigment.
Unreacted monomers (in binders)	H400 +???	*See horizontal derogation condition at foot of table Only allowed up to sum total concentrations of 0,050 % weight by weight in the final product.
UV stabilisers	H317, H411, H412, H413	*See horizontal derogation condition at foot of table

		Only applicable to outdoor products and only up to a maximum concentration of 0,60 % weight by weight to the final product formulation.

*Horizontal derogation condition: none of the derogations above, either individually or in combination, shall be permitted if they result in the final product being classified with any of the hazards defined in Table X, with the notable exception of H412 and H413 for outdoor products due to the presence of dry-film preservatives.

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 not apply to:

— substances not included in the scope of Regulation (EC) No 1907/2006 as defined in Article 2(2) of that Regulation;

— substances covered by Article 2(7)(b) of Regulation (EC) No 1907/2006, which sets out the criteria for exempting substances included in Annex V to that Regulation from the registration, downstream user and evaluation requirements.

Assessment and verification:

The applicant shall provide a signed declaration of compliance with sub-criterion 4.2, a list of all chemicals used, their concentrations in the format supplied, safety data sheets for the chemicals supplied, the quantities added to the final product formulation and any other relevant declarations from suppliers or chemical producers that are necessary in order to demonstrate compliance with the relevant requirements.

Substances known to be released or to degrade from ingoing substances are considered ingoing substances and not impurities.

Any 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% (e.g. solvent evaporation) or for chemical modification of a restricted impurity shall be provided.

For substances exempted from sub-criterion 4.2 (see Annexes IV and V to Regulation (EC) No 1907/2006), a declaration to this effect by the applicant shall suffice to demonstrate compliance.

Since multiple products or potential products using the same process chemicals may be covered by one EU Ecolabel license, the calculation only needs to be presented for each impurity for the worst-case product within a common family of products covered by the same license.

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.

TR3: Annex III: Second proposal for Criterion 3: Restriction of hazardous substances and mixtures

3.2. General restrictions based on classifications according to specific hazard classifications defined in Regulation (EC) No 1272/2008

(a) Final product

The final product shall not be classified as being carcinogenic, mutagenic, ~~or~~ toxic for reproduction, acutely toxic, an aspiration hazard, a specific target organ toxicant, a respiratory or skin sensitiser, ~~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 Regulation (EC) No 1272/2008 and specifically in terms ~~associated with any~~ of the hazard statement codes stated in Table X. The only exception permitted to this rule shall be the H412 and H413 classification~~hazards~~, and only if due to levels of dry-film preservatives in the case of outdoor paints or varnishes~~and only due to levels of dry film preservatives needed~~.

(b) Ingoing substances

Unless derogated in Table Y, the final product shall not contain any ingoing substances ~~or mixtures~~ in concentrations exceeding 0,010 % weight by weight of the final product formulation ~~or mixtures that are present~~ that are classified as being carcinogenic, mutagenic, toxic for reproduction, acutely toxic, an aspiration hazard, a specific target organ toxicant, a respiratory or skin sensitiser, 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 Regulation (EC) No 1272/2008 and specifically in terms ~~shall not have been assigned any~~ of the hazard classes, categories and associated hazard statement codes stated in Table X~~, in accordance with Regulation (EC) No 1272/2008~~.

Table X. ~~Excluded~~ Restricted hazard classes, categories and associated hazard statement codes

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

Table Y. Derogations to restrictions on ingoing substances ~~and mixtures~~ that are classified with one or more of the restricted hazards listed in Table X and are present in concentrations greater than 0,010% (weight by weight) of the final product formulation.

Substance type, substance name and CAS number	Derogated hazard code(s)	Derogation conditions
Preservatives and preservative stabilisers		
Note ~~for combined~~ on preservatives ~~limits~~: all preservatives added to ingredients must be declared by suppliers and all preservatives added directly to the final product must be declared by the paint or varnish producer. The only types of preservatives permitted in ingredients and the final product shall be those ~~The maximum quantity of any combination of in-can preservatives~~ that are compliant with Regulation (EU) No 528/2012. For final 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) or for product type 7 (PT7) (dry-film preservative), but the preservative product must be authorised under Regulation (EU) No 528/2012 for PT6 or PT7 or made available on the market according to the transitional measures set out in Article 89(2) of that Regulation. The combined total limits for PT6 and PT7 preservatives shall apply to these following product categories: *- For indoor products: ~~shall be~~up to 0,080 % weight by weight of PT6 in the final product.* *- For colour tints used in tinting systems: up to 0,20 % weight by weight of PT6 in the colour tint.* *- For indoor products marketed for use in high humidity areas: up to 0,080 % weight by weight of PT6 and up to 0,10 % weight by weight of PT7 in the final product.* *- For outdoor products: up to 0,080 % weight by weight of PT6 and up to 0,50 % weight by weight of PT7 in the final product.* *All references to concentrations/limits/levels of preservatives in the section 'Preservatives and preservative stabilisers', shall be understood as referring to the preservative active substances contained in the final product.* *Any preservatives which cannot be present in the final product at concentrations exceeding 0,010 %, due to specific concentration limits (SCLs) lower than 0,010 % that would classify the final product with a restricted CLP hazard, are not mentioned in the derogation table below because they cannot be used in concentrations exceeding 0,010 % in the first place and thus do not need a derogation. This does not imply that they cannot be used as ingoing substances in EU Ecolabel products at any level. If not explicitly excluded in criterion 3.3, such preservatives may be used so long as it is at levels below any SCLs that would trigger a restricted CLP classification of the final product. ~~Any permitted use of dry film preservatives shall be considered as being independent of the allowance for in-can preservatives.~~*		
In-can preservatives (PT6) in colour tints or final product:	H301, H311, H317, H330, H331, H372, H373, H400, H410, H411, H412, H413	*See horizontal derogation condition at foot of table The sum total of all PT6 in-can preservatives (those derogated for use above 0,010% and those that are non-derogated but allowed in levels < 0,010%) must be within the relevant limits defined in the note above. When preservatives that are formaldehyde donors are used, the relevant limits for free formaldehyde in the final product set out in criterion 3.3(h) must be respected. Specific concentration limits (% weight by weight in the final product) shall apply for the derogated substances listed below: - Bronopol (CAS No 52-51-7): up to 0,030 %. - DBNPA (CAS No 10222-01-2): up to 0,030 % - Sodium pyrithione (CAS No 3811-73-2): up to 0,030 %. - BIT (CAS No 2634-33-5): up to 0,036 %. - Combined total isothiazolines and isothiazoline releasers (those derogated for use above 0,010% and those that are non-derogated but allowed in levels < 0,010%): up to 0,040 % in final products for indoor applications. - Diamine (CAS No 2372-82-9): up to 0,050 %.
~~In-can preservative:~~ ~~N-(3-aminopropyl)-N-dodecylpropane-1,3-diamine (CAS No 2372-82-9)~~	~~H301, H373, H400, H410~~	~~*See horizontal derogation condition at foot of table~~ ~~Cannot be present in the final product formulation in quantities exceeding 0,050 % (weight by weight).~~

~~In-can preservative:~~ ~~Sodium pyrithione (CAS No 3811-73-2)~~	~~H311, H317, H331, H372, H400, H411, EUH070~~	~~*See horizontal derogation condition at foot of table~~ ~~Can only be used up to 0,050 % weight by weight in the final product.~~
~~In can preservative:~~ ~~Isothiazoline or izothiazoline-releasing substances~~	~~H317, H330, H400, H410~~	~~*See horizontal derogation condition at foot of table~~ ~~The total quantity of all isothiazoline substances added to the final product shall not exceed 0,040 % weight by weight in the final product.~~ ~~In cases where isothiazoline preservatives are actively added by the paint or varnish manufacturer, the final product shall be tested for isothiazoline content to verify compliance with the combined limit.~~
~~In can preservative:~~ ~~Bronopol (CAS No 52-51-7)~~	~~H301, H317, H331, H400, H411~~	~~*See horizontal derogation condition at foot of table~~ ~~The use of any formaldehyde releasing preservatives must be declared by the applicant. Bronopol cannot be added in concentrations >0,030 % weight by weight in the final product.~~ ~~Limits of free formaldehyde, as measured in the final product, shall not exceed the relevant limits defined in criterion 4.3(i).~~
~~Tinting machine preservatives:~~ ~~Same derogations as listed above for in-can preservative apply, plus:~~ ~~3-iodo-2-propynyl butylcarbamate (IPBC, CAS No 55406-53-6)~~	~~H317, H330, H331, H372, H400, H410,~~	~~Applicable to tinting systems.~~ ~~The combined sum of in-can preservatives used in the tinting machine shall not exceed 0,20% weight by weight in the colour tints.~~ ~~The concentration of IPBC shall not exceed 0,10 % weight by weight.~~ ~~When mixed with t base paint, the overall concentrations of in-can preservatives be low enough to demonstrate compliance with any individual limits in the rows above in the final tinted paint product as well as the horizontal derogation condition*.~~
Dry-film preservatives (PT7):	H311, H317, H330, H331, H372, H373 H400, H410, H411, H412 and H413 ~~(Additionally, and only for IPBC: H331 and H372)~~	*See horizontal derogation condition at foot of table Only applies to outdoor products and indoor products for use in high humidity areas. The sum total of all PT7 dry-film preservatives (those derogated for use above 0,010% and those that are non-derogated but allowed in levels < 0,010%) must be within the relevant limits defined in the note above. ~~The sum total of dry-film preservatives with any of these derogated hazards shall:~~ ~~- Not exceed 0,10 % weight by weight in indoor products for use in high humidity areas~~ ~~- Be less than 0,50% weight by weight in outdoor products.~~ Higher concentrations may be permitted in the case of slow release, encapsulated forms of dry-film preservatives, but only in cases where the formulation can be tested to demonstrate that the specific formulation of the final product, or read-across formulations, would not be classified with any of the hazards listed in Table X. Any dry-film preservatives classified as H400 or H410 must be non-bioaccumulative, demonstrated by having an octanol-water coefficient (Log K_{ow}) of ≤ 3.2 or a bioconcentration factor (BCF) of ≤ 100.
Preservative stabiliser: Zinc oxide (CAS No 1314-13-2)	H400, H410	*See horizontal derogation condition at foot of table Permitted to be used as a preservative stabiliser, in concentrations up to 0,040 % weight by weight of the final product, when used to stabilise colour tints~~ing paste~~, in-can or dry-film preservative combinations that require 1,2-Benzisothiazol-3(2H)-one (BIT) or sodium pyrithione.
♦In the section 'Preservatives and preservative stabilisers', references to concentrations/limits/levels of preservatives are to be understood as referred to the preservative active substances contained in the final product.		
Drying and anti-skinn~~mm~~ing agents		

Anti-skinnmming agents	H317, H411, H412, H413	*See horizontal derogation condition at foot of table The sum total anti-skinnmming agent content shall not exceed 0,40 % weight by weight in the final product.
Driers (siccatives)	H301, H317, H373, H400†, H410†, H411, H412, H413	*See horizontal derogation condition at foot of table The sum total drier content shall not exceed 0,10 % weight by weight in the final product. † The derogation for H400, and H410 and H411 only applies to cobalt-based drier compounds or neodecanoic acids and such compounds can only be used up to 0,050 % weight by weight in the final product.
Corrosion inhibitorsPigments and anti-corrosion additives		
Anti-corrosion pigments/ additives	H410, H411, H412, H413. H400, H410	*See horizontal derogation condition at foot of table Only permitted up to a maximum concentration of in interior/exterior trim and cladding. 0,050 % weight by weight in the final product and only for tri-zinc bis(orthophosphate (CAS No 7779-90-0) allowed in quantities up to 8,0 % weight by weight in one pack performance coatings, two pack performance coatings and anti-rust paints. Allowed in quantities up to 2,0 % in all other product categories.
Titanium dioxide (in a powder form containing 1% or more of particles with aerodynamic diameter ≤ 10µm)	H351 (inhalation)	*See horizontal derogation condition at foot of table The applicant shall demonstrate that they have systems in place to minimise worker exposure to dry TiO2 powder in the workplace (e.g. closed dosing systems, ventilated dosing and mixing areas and personal protective equipment).
Trimethylolpropane	H361fd	*See horizontal derogation condition at foot of table Only when used as an additive in supplied pigments and only up to a maximum concentration of 0,50 % weight by weight of the supplied pigment.
Binders and polymer dispersions		
Binders and crosslinking agents: Adipic acid dihydrazide (CAS No 1071-93-8)	H317, H411	*See horizontal derogation condition at foot of table Only allowed up to 1,0 % weight by weight in the binder or polymer dispersion ingredient and when used as an adhesion promoter or as a crosslinking agent.
Unreacted monomers (in binders)	H301, H304, H311, H317, H331, H334, H372, H400, H410, H411, H412 +???	*See horizontal derogation condition at foot of table The Only allowed up to sum total concentration of unreacted monomers needing this derogation shall not exceed of 0,050 % weight by weight in the final product.
Other, miscellaneous		
Methanol (CAS No 67-56-1)	H301, H311, H331, H370	*See horizontal derogation condition at foot of table Only permitted as a residual reaction product of other substances in the product formulation. Allowable residual concentration increases as a function of binder content in the following manner: - Binder content of 10-20%: allowable residual methanol is 0,020 % weight by weight in the final product. - Binder content of 20-40%: allowable residual methanol is 0,030 % weight by weight in the final product. - Binder content of >40%: allowable residual methanol is 0,050 % weight by weight in the final product.

Mineral raw materials, including fillers, anti-sagging agents and matting agents	H372, H373	*See horizontal derogation condition at foot of table Only applies to mineral raw materials and leucophyllite minerals that naturally contain crystalline silica. Only permitted in contents up to 1.0% weight by weight for H372 materials or up to 10% for H373 materials. In cases where the material is supplied in dry powder form, the applicant shall demonstrate that they have systems in place to minimise worker exposure to dry powder in the workplace (e.g. closed dosing systems, ventilated dosing and mixing areas and personal protective equipment).
Neutralising agents	H301, H311, H331, H400, H410, H411, H412, H413	*See horizontal derogation condition at foot of table Only allowed up to 1,0 % weight by weight in varnish productses, and up to 0,50 % in all other products.
Optical brighteners	H413	*See horizontal derogation condition at foot of table Only allowed up to 0,10 % weight by weight of the final product.
Silicon resin	H412, H413	*See horizontal derogation condition at foot of table Only allowed up to concentrations of 2,0 % weight by weight in the final product.
Solvents	H304	*See horizontal derogation condition at foot of table Only allowed up to concentrations of 1,0 % weight by weight in the final product.
Surfactants	H304, H400, H411, H412, H413	*See horizontal derogation condition at foot of table Only allowed up to 1,0 % weight by weight in transparent, semi-transparent, white or light-coloured products or up to 3,0 % weight by weight in all other colours of products.
UV stabilisers	H317, H411, H412, H413	*See horizontal derogation condition at foot of table Only applicable to outdoor products and only up to a maximum concentration of 0,60 % weight by weight to the final product formulation.

*Horizontal derogation condition: none of the derogations above, either individually or in combination, shall be permitted if they result in the final product being classified with any of the hazards defined in Table X, with the notable exception of H412 and H413 for outdoor products due to the presence of dry-film preservatives.

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 not apply to:

— substances not included in the scope of Regulation (EC) No 1907/2006 as defined in Article 2(2) of that Regulation;

— substances covered by Article 2(7)(b) of Regulation (EC) No 1907/2006, which sets out the criteria for exempting substances included in Annex V to that Regulation from the registration, downstream user and evaluation requirements.

Assessment and verification:

The applicant shall provide a signed declaration of compliance with sub-criterion 3.2, including compliance with any relevant derogation conditions, supported by declarations from suppliers and any other relevant documentation.

aA list of all ingoing substances with one or more of the restricted CLP hazards calculated to be present in the final product formulation in concentrations greater than 0,010 % weight by weight shall be presented, together with their CAS numbers, CLP classification status (i.e. harmonised, joint entry or self-entries only) the relevant function of the ingoing substance (e.g. in-can preservative, drier, anti-corrosion pigment, neutralising agents, surfactants, UV stabiliser 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~~ir~~ concentrations of any screened ingoing substances with EU Ecolabel-restricted CLP hazards in the ingredients, chemicals or raw materials used, in the format supplied,. ~~supported by safety data sheets for the chemicals supplied, the quantities added to the final product formulation and any other relevant declarations from suppliers or chemical producers that are necessary, in order to demonstrate compliance with the relevant requirements~~

— the weight of each of the ingredients, chemicals or raw materials added to make a known weight of final product formulation.

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 ~~restrict~~screened ingoing substance ~~impurity~~ 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 sub-criterion 4.2 (see Annexes IV and V to Regulation (EC) No 1907/2006)~~,~~ a declaration to this effect by the applicant shall suffice for those substances~~to demonstrate compliance~~.

Since multiple products or potential products (e.g. customised shades from a tinting system) using the same ~~process~~ ingredients, chemicals or raw materials may be covered by one EU Ecolabel license, a worst-case ~~the~~ calculation may be acceptable for each screened ingoing substance ~~only needs to be presented for each impurity for the worst-case product~~ within a common family of products covered by the same license.

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.

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Rationale for the proposed criterion text

The same hazardous substance restrictions that apply for decorative paints and varnishes are applied for aerosol spray paints as well. The main differences stem from the removal of certain allowances for aerosol spray paints and the additional of other ones.

For example, the exceptional circumstance of EU Ecolabel paints and varnishes being capable of being classified as H412 (in the unique case of the final dry-film preservative being needed to ensure sufficient dry-film durability in outdoor environments) has not been kept for aerosol spray paints. Derogations for the use of higher amounts of preservatives in tinting pastes are simply not applicable to aerosol spray paints and so these were not maintained either.

Discussions with aerosol spray manufacturers identified the following ingredients that would potentially need to be derogated, due to their presence in concentrations exceeding 0,010% in the final product and due to them having at least one of the restricted hazard codes:

- 2-Dimethylaminoethanol (CAS No 108-01-0). Present in supplied pigment pastes and present at limits less than 0,020% in the final product. The ECHA C&L inventory showed a harmonised classification as H226, H302, H312, H314 and H332 – none of which actually require a derogation from EU Ecolabel restrictions. Consequently, no derogation has been entered in the criteria – because the harmonised classification would take precedence over the previous joint entry, which did include H331 and which would have, in principle, required derogation.
- Alcohols, C12-14, ethoxylated (CAS No 68439-50-9). Used as a surfactant, mostly in supplied driers, and able to comply with the sum total 1,0% derogation limit allowed for surfactants in the products covered in Annexes I and II, so long as the H400 hazard is also derogated. The ECHA C&L inventory shows a joint entry as H400 and H411. The joint entry classifications take precedence over the self-classifications which also include H302, H315, H318, H319, H410 and H412. The joint entry classifications would require a specific derogation for aerosol spray paints and this has been proposed for Annex III.
- Alcohols, C12-14, ethoxylated propoxylated (CAS No 68439-51-0). Used as a surfactant, mostly in supplied defoamers, and able to comply with the sum total 1,0% derogation limit allowed for surfactants in the products covered in Annexes I and II. The ECHA C&L inventory shows no harmonised or joint entries and the most common self-classifications being H304, H318, H319, H400, H410 and H412. All of these classifications except H318 and H319 would in principle need derogation and this has been applied in Annex III.

- Distillates (petroleum), hydrotreated light (CAS No 64742-47-8). Present as a solvent in supplied driers. The ECHA C&L inventory shows a harmonised classification as H304. The presence of this substance is permitted due to the derogation of up to 1,0% weight by weight in the final product of H304 classified solvents.
- Hydrocarbons, C14-C18, n-Alkanes, Isoalkanes, cyclics (no CAS number, but EC number 927-632-8). Another solvent that comes in the supplied anti-corrosion additive. The ECHA C&L inventory shows a joint entry as H304. In principle, this is also covered by the existing derogation for H304 solvents.
- Neodecanoic acid, zinc salt, basic (or Zinc neodecanoate, CAS No 84418-68-8). Used in aerosol paints as a drier. The ECHA C&L inventory shows a joint entry as H400 and H411, which takes precedence over the self-classifications of H315, H410 and H412. These hazards are only derogated for cobalt-based driers (not H411, but only the more severe H410). So the derogation for driers has been modified in Annex III.
- Zinc neodecanoate (CAS No 13040-17-0). Used as an anti-corrosion additive. The ECHA C&L inventory showed a joint entry with the classification as H412 and could either be potentially included under the derogation for anti-corrosion pigments, or inserted as a standalone derogation as an anti-corrosion additive. The former option was chosen and has been applied equally to Annexes I, II and III.
- N,N-diethylhydroxylamine (CAS No 3710-84-7). Used as an anti-skinning agent. The ECHA C&L inventory showed a joint entry as H226, H312, H332, H335 and H411. Derogation for H411 would be required and this has been applied to the existing derogation for anti-skinning agents for Annex III only. The existing derogation, which applies to Annexes I and II derogates H317, H412 and H413 up to 0,40% in the final product.
- Triethylamine (CAS No 121-44-8). Used as a neutralising agent. The ECHA C&L inventory showed a harmonised classification as H225, H301, H311, H314, H318 and H331. The H301, H311 and H331 hazards would require derogation. This request has already been made also for Annex I and II products and so this derogation fits with the recently updated derogation for neutralising agents up to 0,50%.
- Trimethylolpropane (TMP, CAS No 77-99-6). Used as a pigment additive, especially with TiO2. The ECHA C&L inventory shows a joint entry classification as H361df. This additive is already derogated so long as it is used with the TiO2 pigment.
- Tri-zinc bis(orthophosphate) (CAS No 7779-90-0). Present in supplied pigment pastes. The ECHA C&L inventory shows a harmonised classification as H400 and H410. If grouped with anti-corrosion pigments, the H400 hazard would need to be derogated. This approach has been presented in Annex III only.

Former related sub-criterion 3.1 present the application of Articles 6(6) and 6(7) of the EU Ecolabel Regulation to paint and varnish products. This effectively requires a consistent and horizontal restriction of hazardous substances based on the hazard codes they are associated with and the general concentration they are present at in the final product (i.e. bans apply if present above 0.010 % by weight and not explicitly derogated). Any derogation from the horizontal requirements must be carefully considered and be clearly stated so that there are no misunderstandings about how the derogation should apply.

In addition to the horizontal requirements, which act as a sort of safety net for preventing many hazardous substances from being added to EU Ecolabel products, there is scope to apply more targeted and stricter restrictions on specific individual hazardous substances or groups of substances.

Main changes in the criterion

In the initial TR1 proposal, Annex III was not included. In draft TR2, the hazardous substances restriction for aerosol spray paints closely aligned with those for decorative paints and varnishes, with some key differences. Certain allowances for H412 (e.g., IPBC) and preservatives in tinting pastes were removed and specific derogations for substances like alcohol ethoxylates, neodecanoic acid zinc salt, and tri-zinc bis(orthophosphate) were added based on their hazard classifications (H400, H411, etc.). In addition, existing derogations, such as for trimethylolpropane with TiO2, were confirmed or modified for applicability to aerosol spray paints. Finally, a general derogation was included for certain solvents like petroleum distillates and hydrocarbons.

A number of minor changes have been made in this proposal included in TR3 to the derogation table based on discussions with water-based aerosol paint manufacturers. The additional derogations inserted have been: (i)

H400 for tri-zinc bis(orthophosphate) within the group "anti-corrosion pigments and additives"; (ii) H304 and H400 for surfactants; a derogation specifically for low levels (0,030%) of zinc neodecanoate as an anti-corrosion additive; (iv) a derogation for H411 for anti-skinning agents, and (v) a specific addition derogation for H400 when tri-zinc bis(orthophosphate) is used as a pigment additive.

Outcomes from and after 2nd AHWG meeting (November 2024)

During the 2nd AHWG meeting, stakeholders provided feedback on the criterion for hazardous substances for all 3 annexes, which is summarised in section 5.4.

After the 2nd AHWG meeting, 6 comments were received regarding hazardous substances relative to Annex III.

One key concern was the restrictions on Substances of Very High Concern (SVHCs) in these products, with one stakeholder suggesting exceptions due to the stability issues associated with water-based aerosol paints. They argued that water-based paints cannot be aerosolized without compromising stability, unlike solvent-based paints, and proposed removing aerosol spray paints from the EU Ecolabel's scope due to challenges in meeting VOC limits and potential legal issues in regions like California.

Another stakeholder discussed the potential future classification of synthetic amorphous silica (SAS) for repeated dose toxicity via inhalation and highlighted that while SAS in powder form may pose risks, it is safe in liquid form, such as in paints and coatings. They recommended allowing the use of SAS in liquid formulations, provided the materials are handled in a closed system or with methods that minimize dust exposure.

There was also a suggestion to correct the classification of "H304" (aspiration hazard) by separating it from acute toxicity, in line with the CLP Regulation, and creating a distinct "Aspiration hazard" category. Additionally, concerns were raised about the classification of ethoxylated alcohols. The CAS numbers for these substances are not unique, and the stakeholder recommended using the CESIO list of classification and labelling for surfactants, as it provides a clearer and more comprehensive overview. They further proposed that surfactants with certain hazardous classifications (H400, H411, H412, H413) should require a derogation for use in the EU Ecolabel.

Finally, a comment was made regarding the need for specific limits for aerosols under the EU Ecolabel, considering their unique characteristics. These include limiting flammable ingredients to a maximum of 28% and imposing strict restrictions on hazardous substances such as CMRs and respiratory sensitizers, to address inhalation risks. The stakeholder emphasized that, as the aerosol market grows, the industry will need to reformulate products to meet these targets. Additionally, they argued that the list of derogated substances for water-based aerosol paints should not be identical to that for decorative paints, and a new, tailored list should be developed after reviewing substances with no viable alternatives.

Outcomes from and after EUEB meeting (November 2024)

The comments provided on this criterion are the similar to section 5.4.

7.4.3 Sub-criterion 4.3 on specific hazardous substance exclusions

Identical to sub-criterion 3.3 in Annex I. Please refer to section 5.4.3 of this report for the previous and current proposals and the rationale section.

7.5 Criterion 4. Consumer information

TR2: Annex III: First Proposal for Criterion 5: Consumer information
5(a) The following texts shall appear on or be attached to the packaging: — 'Minimise paint wastage by estimating how much paint you will need before buying' — 'Recover unused paint for re-use'. — 'Reuse of paint can effectively minimise the products' life cycle environmental impact' 6 (b) The following general information and advice shall be provided on or be attached to the packaging or be available via a web-link or QR code: — How to estimate the amount of paint needed prior to purchase in order to minimise paint wastage and a recommended amount as a guideline (e.g. for 1 m^2 of wall, X litres of paint is needed). — How to deal with the 'leftover paint'. 6(c) The following advice and recommendations on how to handle the paint shall be provided on or be attached to the packaging or be available via a web-link or QR code: — Safety measures for the user. This shall include basic recommendation on personal protective equipment that should be worn. It shall also include additional measures that should be taken when using spray equipment. — The use of cleaning equipment and appropriate waste management (in order to limit water and soil pollution). For example, text advising that unused paint requires specialist handling for safe environmental disposal and therefore it should not be thrown away with household or commercial waste (e.g. 'Do not put residual paint down the kitchen sink or toilet, or into a waste bin'). — Storage of the paint in appropriate conditions (before and after opening), including, where appropriate, safety advice. Assessment and verification: the applicant shall declare that the product complies with the requirement and provide the competent body with the artwork or samples of the user information and/or a link or QR code to a manufacturer's website containing this information as part of the application. The recommended amount of paint given as a guideline shall be provided.
TR3: Annex III: Second Proposal for Criterion 4: Consumer information
4(a) The following texts shall appear on or be attached to the packaging: — 'Minimise paint wastage by estimating how much paint you will need before buying' — 'Recover unused paint for re-use'. — 'Reuse of paint can effectively minimise the products' life cycle environmental impact' 4(b) The following general information and advice shall be provided on or be attached to the packaging or be available via a web-link or QR code: — How to estimate the amount of paint needed prior to purchase in order to minimise paint wastage and a recommended amount as a guideline (e.g. for 1 m^2 of wall, X litres of paint is needed). — How to deal with the 'leftover paint'. 4(c) The following advice and recommendations on how to handle the paint shall be provided on or be attached to the packaging or be available via a web-link or QR code: — Safety measures for the user. This shall include basic recommendation on personal protective equipment that should be worn. It shall also include additional measures that should be taken when using spray equipment. — The use of cleaning equipment and appropriate waste management (in order to limit water and soil pollution). For example, text advising that unused paint requires specialist handling for safe environmental disposal and therefore it should not be thrown away with household or commercial waste (e.g. 'Do not put residual paint down the kitchen sink or toilet, or into a waste bin'). — Storage of the paint in appropriate conditions (before and after opening), including, where appropriate, safety advice.

Assessment and verification:

The applicant shall declare that the product complies with the requirement and provide the competent body with the artwork or samples of the user information and/or a link or QR code to a manufacturer's website containing this information as part of the application. The recommended amount of paint given as a guideline shall be provided.

Rationale for the proposed criterion text

Identical to criterion 5 in Annex I. Please refer to section 5.6 of this report for the previous and current proposals and the rationale section.

7.6 Criterion 5. Information appearing on the EU Ecolabel

TR2: Annex III: First Proposal for Criterion 6: Information appearing on the EU Ecolabel
The optional label with text box shall contain, where relevant, the following texts: — Minimised content of hazardous substances — Reduced content of volatile organic compounds (VOCs): x g/l — Reduced emissions of volatile organic compounds to indoor air (where indoor criteria have been met) or — Good performance for indoor use (where indoor criteria have been met) or — Good performance for outdoor use (where outdoor criteria have been met) or — Good performance for both indoor and outdoor use (where both indoor and outdoor criteria have been met) The guidelines for the use of the optional label with text box can be found in the 'Guidelines for use of the Ecolabel logo' on the website: http://ec.europa.eu/environment/ecolabel/documents/logo_guidelines.pdf Assessment and verification: the applicant shall provide a sample of the product label or an artwork of the packaging where the EU Ecolabel is placed, together with a declaration of compliance with this criterion.
TR3: Annex III: Second Proposal for Criterion 5: Information appearing on the EU Ecolabel
The optional label with text box shall contain, where relevant, the following texts: — Minimised content of hazardous substances — Reduced content of volatile organic compounds (VOCs): x g/l — Reduced emissions of volatile organic compounds to indoor air (where indoor criteria have been met) or — Good performance for indoor use (where indoor criteria have been met) or — Good performance for outdoor use (where outdoor criteria have been met) or — Good performance for both indoor and outdoor use (where both indoor and outdoor criteria have been met) The guidelines for the use of the optional label with text box can be found in the 'Guidelines for use of the Ecolabel logo' on the website: http://ec.europa.eu/environment/ecolabel/documents/logo_guidelines.pdf Assessment and verification: The applicant shall provide a sample of the product label or an artwork of the packaging where the EU Ecolabel is placed, together with a declaration of compliance with this criterion.

Rationale for the proposed criterion text

Identical to criterion 6 in Annex I. Please refer to section 5.7 of this report for the previous and current proposals and the rationale section.

8 Other criteria areas that were considered

8.1 Requirements on Carbon Footprinting

In the draft Technical Report 1, a proposal on a carbon footprinting or PEF criterion was included which would affect paints and varnishes (at that time there was no differentiation of annexes). Note that this criterion is not proposed anymore.

Rationale for excluding the criterion

While the overall goal of the EU Ecolabel is to encourage the production and consumption of products with an excellent environmental performance, setting a requirement on carbon footprint faced several compelling reasons, therefore the criterion will not be incorporating into the EU Ecolabel for paints and varnishes at this stage. Reasons why the criterion cannot be proposed:

- Different databases: The main objective of the carbon footprint criterion is to minimize the environmental impact of paint production and to facilitate the green transition within the construction sector. However, a key challenge is the lack of consistent data for setting carbon footprint limits for paints. The use of different databases (namely EF, Ecoinvent, GaBi, etc.) can significantly affect the final results, making it difficult to accurately compare the carbon footprint of the various paint products.
- Industry readiness and market availability: Although some stakeholders are actively working on carbon footprint analysis for their products, the market does not seem fully prepared. Currently, only 18 Environmental Product Declarations (EPDs) are available for decorative paints (not for all product under the scope of the EU Ecolabel), which is insufficient to represent the entire EU market related to paints and varnishes. As such, this sample size is inadequate for establishing a threshold limit. This would represent a burden for SMEs and other manufacturers not applying this concept of EPDs yet which would not justify a criterion not based on a non-robust yet methodology. Furthermore, in the absence of an EPD or third-party verification, the data analysis would need to be conducted by a Competent Body (CB), which would create a barrier for the implementation of the criterion.

A draft criteria proposal could have been developed, however, the barriers outlined above demonstrated that the criteria would lack reliability and scientific validity at this stage. These obstacles prevent the establishment of a well-supported and effective criterion. In the draft TR2, a summary of the discussions and analyses that were conducted was presented.

Criteria analysis

For the first proposal included in the draft TR1, the authors evaluated the potential for carrying out a PEF analysis for paints and varnishes, leveraging the existing PEFCR for paints and relevant EF datasets. However, it highlighted issues, such as the expiration of datasets, limited PEFCR coverage and practical challenges of mandatory PEFCR analysis. Upcoming EU regulations, including the Construction Products Regulation and the Energy Performance of Buildings Directive were considered, as these will require carbon footprint analyses for construction-related products. The high costs and complexities of full EPDs were pointed out and a simplified calculation methodology was proposed, along with an online tool to facilitate self-assessment by suppliers, with verification by Competent Bodies and allowances for third-party certified EPDs.

Based on this research, the first proposal for a criterion on carbon footprinting was created, with foundation on the PEFCR for decorative paints.

Outcomes from and after 1st AHWG meeting and Working Sub-Group 4 (WSG4) meeting (May and June 2024)

In total, 19 comments were received on the potential criterion on carbon footprinting after the 1st AHWG meeting. Furthermore, the WSG4 meeting with stakeholders provided insights into stakeholders' opinions on the inclusion of this criterion on the EU Ecolabel.

Based on the feedback from the 1st AHWG meeting and the subsequent WSG4 meeting, most were in favour of the inclusion of a carbon footprint criterion on the EU Ecolabel and some were in agreement of setting a limit value for CO_2 emissions, as many already have EPDs for their paint products due to market pressure or green building certification schemes, such as LEED and BREEAM.

However, the inclusion of this criterion in the EU Ecolabel is not without challenges, as stated by stakeholders: lack of supplier-specific data, expected costs and time constraints associated with producing a carbon footprint, which will likely have a greater impact on smaller companies. As argued by stakeholders, a full Environmental Product Declaration for any product will tend to cost several thousands of Euros and may take up to a year to be published. Nevertheless, many paint producers already have published EPDs for their paint products. In addition, some argue that the carbon footprint criterion would require dedicated personnel within the companies to collect and analyse the data.

One additional key challenge, however, is the current method for calculating carbon footprints, which often focuses on paint quantity (e.g. per kg or L) rather than performance (e.g. spreading rate, opacity, wet scrub resistance or durability). If this criterion would be included and limits to CO_2 emissions are to be set for the EU Ecolabel, stakeholders were in consensus that it must be correlated to performance. However, there is currently no publicly available method to calculate the carbon footprint which focuses on performance, and one is not expected to be developed soon. In addition, stakeholders agree that rules for carbon footprinting should be based on existing and established procedures and/or standards. Some stakeholders specifically argued that the calculation should follow ISO 14067 for greenhouse gas emissions of products, while for chemicals used as input materials, the guideline for Product Carbon Footprint for the chemical industry from Together for Sustainability could be applied[43].

One final issue with this criterion is that it focuses solely on carbon emissions and no other environmental impacts. However, other impacts are also relevant when assessing paint and varnish products, such as toxicity.

After the WSG4 meeting, some stakeholders expressed in written form, strong support for a harmonized method for calculating environmental impacts to ensure consistency among applicants. However, they raised concerns about the applicability of the PEFCR, noting that it only covers a limited range of products, such as indoor and outdoor paints for walls and ceilings, trim paints, and varnishes for specific applications, while excluding other products like outdoor trim varnishes, minimal build wood stains, primers, and performance coatings but that the PEFCRs are now outdated and the revision date is yet to be announced.

Further research in the second proposal

Based on the feedback from stakeholders, if a carbon footprint requirement would be added to the EU Ecolabel, the performance of paints should be included. Consequently, a methodology combining strength points in different LCA methodologies and standards would be required.

The best method to link performance to carbon footprint and draw comparisons between paints is to set a functional unit that all paint products must fulfil, such as the one described in the PEFCR for decorative paints: the protection and decoration of 1 m^2 of indoor/outdoor substrate for 50 years (98% opacity for paints). The amount of paint required to fulfil this functional unit is then calculated based on spreading rate, durability and other parameters, as described in the PEFCR for decorative paints.

In order to investigate the impact of the carbon footprint of paint products with and without performance considerations, a simple assessment would be conducted. The functional unit could be defined as the "protection and decoration of 1 m^2 of indoor substrate for 50 years at 98% opacity". A full methodology based on the amount of paint required to fulfil this functional unit could be based on the following parameters:

- Spreading rate (m^2/L)
- Fraction of paint applied to wall (of the paint taken from the can, how much is actually applied to the wall)
- Paint density (kg/L)
- Maintenance multiplier (based on durability – how many times it requires re-application over the 50 years)

The amount of paint required can therefore be calculated through the equation:

$$kg\ of\ paint = 1\ (m^2) / Spreading\ rate\ (m^2/L) / Fraction\ of\ applied\ paint\ (-) \times Paint\ density\ (kg/L) \times Maintenance\ multiplier$$

The results should then be different types of water-based indoor paints, based on EPDs Moreover, the

durability of indoor wood paints should be based on the initial hardness (König hardness) of the paint and the loss of hardness after application of hand cream (Atrix). The overall score is the equal weighting of the two properties.

[43] The gold standard PCF Guideline is now complete - TFS Initiative (tfs-initiative.com)

Following this methodology, the role of the CB would then be to verify that the product seeking an EU Ecolabel license is included in the verified EPD, supported by declarations from the producer, as well as durability tests results. However, stakeholders are uncertain regarding this approach, as the costs for the assessment and verification by CBs cannot be covered by the current fee structure. This in fact would present a major barrier for the application of the criterion.

Possible CO_2 limit for indoor paints

The analysis of a possible CO_2 limit for indoor paints could be determined through a systematic analysis of publicly available Environmental Product Declarations (EPDs) for both EU ecolabelled and non-ecolabelled products.

It is important to note that the indoor paint analysed in the LCA screening of the draft Preliminary Report was excluded from this assessment, as the PEF methodology differs from the EN 15804 standard, making direct comparisons between PEF and EPD results invalid. Additionally, the PEFCR for decorative paints includes the production of auxiliary materials, such as brushes for paint application, whereas some of the analysed EPDs do not account for these materials.

A carbon footprintring criterion for aerosol spray paints could also be proposed. However the evaluation of its potential inclusion in the EU Ecolabel present even more limitations given that EPDs is more limited to a single manufacturer, using different formulation.

Conclusions

The assessment and possible criteria on carbon footprinting for decorative paints and for spray paints encountered several barriers such as:

- inconsistencies in data sources;
- limited availability of EPDs; and
- overall weak readiness of the market to adopt a comprehensive carbon footprint criterion.

Given the abovementioned challenges, the criteria on carbon footprinting was not proposed.

Outcomes from and after 2nd AHWG meeting (November 2024)

Following the 2nd AHWG meeting, 3 comments were received regarding the exclusion of carbon footprint requirements. Overall, stakeholders supported the decision to exclude a carbon footprint criterion at this stage, citing the lack of harmonized standards, limited supplier data, and the absence of universal methodologies for interpreting full life cycle impacts. They emphasised the need for a robust methodology to support the full life cycle thinking.

It is worth noting that some stakeholders recommended developing a phased implementation plan to incorporate carbon footprinting criteria gradually as market conditions and data availability improve. They suggested the inclusion of this criterion in the next revision.

Further argumentation

While a phased implementation of carbon footprint criteria would ideally be included already in this revision, developing a phased implementation plan is not feasible at this time. It can be acknowledged that the research already conducted on this requirement provides a strong foundation for its incorporation in future revisions if relevant at that time.

8.2 Requirements on biobased content

Based on claims made by products on the market, requirements on biobased content were considered a relevant area to be investigated. However, given the absence of a clear demand from stakeholders, this criterion is not proposed as it does not seem to translate into genuine environmental benefits at the level of the final product.

Outcomes from and after 1st AHWG meeting

Several stakeholders expressed interest into incorporating an optional criterion for biobased content in paint products. They highlighted the growing market for biobased paint, for instance noting that 80% of new paints certified in France include a biobased claim. These stakeholders suggested adopting a criterion similar to those used in the EU Ecolabel for lubricants, absorbent hygiene products, or detergents. Furthermore, they recommended adding an accredited test report according to EN 16640 to measure the percentage of biobased

carbon in paint. Conversely, other stakeholders opposed to the inclusion of a biobased content criterion. They argued that using biobased materials does not inherently guarantee a reduced environmental footprint. Additionally, they pointed out that the paint industry is not yet prepared for a complete transition to biobased materials due to limited market availability.

Outcomes from and after 2nd AHWG meeting (November 2024)

During 2nd AHWG meeting, stakeholders were in favour of including a requirement on biobased content, highlighting the differences on health benefits between biobased and non-biobased paints. In addition, stakeholders argued that traceability, which was previously an issue, is no longer a concern as the industry now has a much more clear visibility on the source of the materials.

Following the 2nd AHWG meeting, five comments were received regarding biobased content requirements. Several stakeholders highlighted that biobased paints represent an emerging trend. Some advocated for an optional biobased content criterion in the EU Ecolabel, similar to the one for the EU Ecolabel for lubricants, to substantiate biobased claims in anticipation of the Green Claims Directive. They referenced a study demonstrating environmental benefits of biobased binders over petroleum-based ones and proposed a minimum of 20% biobased carbon content, verified through EN 16640-compliant testing, to enhance transparency and align with market trends.

Other stakeholders suggested that the growing interest in biobased paints, coupled with ongoing research and market advancements, indicates that the exclusion of this requirement may be temporary. They believe future revisions could accommodate this criterion once standardised methodologies are established.

However, some stakeholders supported excluding biobased content requirements, arguing that biobased content does not inherently guarantee greater environmental benefits and should not be included in the EU Ecolabel.

Outcomes from and after EUEB meeting (November 2024)

During the EUEB meeting, stakeholders requested more background information on the exclusion of biobased content requirements in the EU Ecolabel.

Rationale for excluding this criterion

While the interest in biobased content in paint products reflects a growing market trend and potential consumer demand, the inclusion of such a criterion in our standards is not justified at this time for several key reasons:

- Lack of proven environmental benefit: The primary goal of any environmental standard is to ensure a genuine reduction in environmental impact. Despite the increasing number of biobased claims, there is insufficient evidence to support that biobased paints inherently offer significant environmental benefits over conventional alternatives. Literature on this claim of environmental benefit of biobased paints over conventional paints is currently lacking. Although stakeholders argue that there are technical reports stating the benefits of using biobased resins in paints, the referred study have a limit sample on paint and only represent the French market, which therefore cannot be use as a representation of the European market. Without clear and demonstrable environmental advantages, adding a biobased content criterion could be misleading and fail to meet the primary goal of environmental sustainability.
- Industry readiness and market availability: The transition to biobased materials on a larger scale is currently constrained by their limited availability in the market. The paint industry is not fully equipped for a widespread shift to biobased materials, which could lead to supply chain issues and potential market disruptions. Introducing a criterion that the industry is not ready to meet could impose undue pressure and create challenges for manufacturers who already have or wish to have the EU Ecolabel on their products.
- Risk of superficial compliance: Including a criterion based solely on biobased content might encourage manufacturers to focus on meeting this requirement without necessarily achieving broader environmental benefits, by shifting to materials with potentially equal or higher impacts to the environment. This could lead to a superficial compliance where the presence of biobased content is prioritized over other crucial environmental factors, such as overall lifecycle impacts and sustainability practices.
- Alignment with established standards: While some stakeholders pointed to the EU Ecolabel criteria for other products, it is important to recognize that the environmental impacts and market dynamics

of paints differ from those of lubricants, AHP, or detergents. Adopting a similar criterion without thorough consideration of these differences could result in standards that are not well-suited to the specific context of paint and varnish products.

Additionally, introducing this criterion as optional would likely create confusion and inconsistency among manufacturers and consumers. Criteria must be clear and straightforward to ensure that all products are evaluated against the same criteria, facilitating fair competition and consumer understanding. Furthermore, optional criteria might lead to misleading claims about environmental benefits.

In conclusion, although the addition of a biobased content criterion is a relevant and emerging area of interest, the current evidence and market readiness do not support its inclusion in the criteria at this time. Developments in this area will continue to be monitored as more data and industry capacity become available.

A requirement for biobased content cannot be included as a criterion at this time due to a lack of sufficient evidence in the European market. However, existing studies indicate that some countries are already incorporating biobased content in paint formulations, suggesting a potential for broader adoption in the coming years, for instance France. This could lay the groundwork for introducing a biobased criterion in future revisions. Nonetheless, producers are still free to use biobased raw materials in their paint products without the need for a specific EU Ecolabel criterion.

8.3 Requirements on microplastics

Despite being a novel area, this requirement was deemed a good topic for discussion in the revision process of the paints and varnishes EU Ecolabel and determine whether it should be included and, if so, what potential requirements could be set. However, this requirement was only considered relevant if 'Synthetic Polymeric Microparticles' (SPM), usually called microplastics, would be added to paint or varnish products within the scope.

Outcomes from and after 1st AHWG meeting (May 2024)

Stakeholders expressed mixed views on the inclusion of a criterion for microplastics in EU ecolabelled paint and varnish products. Most stakeholders believed that this criterion was unnecessary given current and forthcoming regulations, suggesting that it would even fall outside the scope of the EU Ecolabel. They argued that microplastics should be addressed through broader regulatory measures rather than through the EU Ecolabel. However, others proposed addressing unintentional microplastic release from paints due to weathering by setting strict limits. There was also a suggestion to ban the intentional use of microplastics in paint formulations.

Outcomes from and after 2nd AHWG meeting (November 2024)

During 2nd AHWG meeting, stakeholders questioned the absence of a requirement on microplastics in the revised text, noting that the French industry was already prepared to comply with certain measures.

Following the 2nd AHWG meeting, five comments were received regarding microplastics requirements.

Stakeholders generally argued that the proposed microplastics requirement in criterion 4.3 (now 3.3) should be removed. While they acknowledged microplastics as a significant environmental issue, they believed that introducing a separate criterion for microplastics in the EU Ecolabel is not justified at this time. They pointed to existing restrictions under the REACH regulation and argued that any potential environmental impact from consumer use is minimal. Additionally, stakeholders highlighted that the Ecolabel criteria already address relevant concerns, such as advising consumers on proper waste management to prevent pollution. As a result, they recommended removing point (g) on microplastics from criterion 3.3 as well.

However, some stakeholders expressed support for banning microplastics as intentional ingredients in paints and varnishes, viewing it as an important environmental measure. Others argued that it is premature to create a criterion on microplastics, as currently several definitions exists without a common standardised definition for them. Additionally, some stakeholders suggested that the issue of microplastics is still relatively new to the industry, and therefore, it would be better to hold off on including requirements for this.

Outcomes from and after EUEB meeting (November 2024)

During the EUEB meeting, stakeholders suggested addressing secondary release of microplastics in the next criteria revision due to the lack of a currently accepted measurement method. Questions were raised about the exclusion of microplastics in water-based aerosol criteria. It was also noted that further guidance on the REACH restriction is awaited to clarify its interpretation.

Rationale for not banning microplastics (synthetic polymer microparticles)

While the inclusion of a criterion for microplastics is a relevant consideration given the growing concern over environmental pollution, there are several compelling reasons for not incorporating such a criterion into the EU Ecolabel at this time:

- Lack of legal clarity about microplastics in the context of paints: While microplastics are technically present in some supplied ingredients like polymer dispersions, according to clause 5c) in the Annex to Regulation (EU) 2023/2055, the restriction for the placement of microplastics on the market shall not apply to "*synthetic polymer microparticles which are permanently incorporated into a solid matrix during intended end use*". This derogation is accepted for the coatings industry and leads to the debate of whether a microplastic ingredient in a coating product should still be considered as such after the coating is applied and cured.
- Uncertainty about unintentional microplastic release: There is currently insufficient information regarding the extent to which microplastics are unintentionally released after film formation. In addition, there is limited data on the impact of unintentional release of microplastics. Without clear data on their release, it is challenging to create meaningful and enforceable criteria. Developing standards based on uncertain or incomplete information could lead to ineffective or misdirected regulatory efforts.
- Industry readiness and market availability: Setting strict limits on unintentional microplastic release requires significant industry readiness and practical feasibility. The paint industry supply chain is not yet fully prepared to meet such requirements, leading to potential compliance challenges and market disruptions. Especially suppliers of polymer dispersions are unable to confirm that their products are microplastic free.
- Future revisions: Environmental standards should be adaptable and responsive to emerging issues. As more data and industry practices evolve, the EU Ecolabel can be revised to include criteria on microplastics if and when it becomes clear that such measures are necessary and beneficial. This approach ensures that standards remain relevant and evidence-based.

In conclusion, while addressing microplastics (synthetic polymer microparticles) is an important environmental issue, incorporating a criterion for into the EU Ecolabel at this time is not justified. The focus should remain on broader regulatory measures, clear evidence, and industry readiness to ensure that environmental standards are both effective and practical in relation to microplastics (synthetic polymer microparticles).

8.4 Requirements on nanomaterials

Nanomaterials are ultrafine particles (typically 1–100 nanometers in size) that are widely used in paints to enhance the paint's durability, UV resistance, self-cleaning properties and antimicrobial effects[44]. These materials provide unique properties that improve mechanical strength, UV resistance, self-cleaning ability, and antimicrobial effects. Despite the growing adoption of nanotechnology, there are concerns regarding their potential health and environmental risks, particularly inhalation hazards and toxicity.

Following the 2nd AHWG meeting, stakeholders called for restrictions on nanoparticles in paints due to safety concerns, citing a lack of supporting information in the Technical Report. They highlighted potential health risks, particularly from inhalation, and referenced previous discussions and scientific studies showing the use of nano-silver, nano-copper, and nano-TiO_2 in paints. Finally, stakeholders emphasised the need to avoid such risks in water-based aerosol paints and drew parallels to existing restriction on nano-TiO_2 in cosmetics. Considering this feedback, the inclusion of requirements on nanomaterials in the EU Ecolabel for paints and varnishes is evaluated as shown in this section.

A key challenge in regulating nanomaterials is the lack of a harmonized definition across different regulatory frameworks, which leads to difficulties in determining compliance. For example, technical analysis of powders or slurries does not always provide a clear distinction between materials that meet nanomaterial definitions and those that do not. On the other hand, while some materials are explicitly marketed as "nano," many suppliers, including pigment manufacturers, may be unaware that their products qualify as nanomaterials under certain definitions. Imposing a ban on nanomaterials could inadvertently affect these suppliers, creating compliance uncertainties.

[44] https://www.paint.org/coatingstech-magazine/articles/nanotechnology-in-the-world-of-paints-and-coatings/

Different ecolabels and regulatory schemes take distinct approaches to nanomaterials:

- Nordic Swan Ecolabel (096)[45] follows the EU Commission Recommendation (2022/C 229/01)[46], which refines the 2011 definition of nanomaterials to improve clarity and provides the most recent definition. The Nordic Swan bans intentionally added nanomaterials but makes key exemptions for pigments, synthetic amorphous silica, polymer dispersions, and unmodified calcium carbonate. These exemptions acknowledge that many traditional materials used in coatings meet nanomaterial definitions but do not pose additional risks.
- EU Ecolabel for Cosmetic Products (2021/1870)[47] follows the Cosmetic Regulation, (EC) No 1223/2009[48], defining nanomaterials as intentionally manufactured, insoluble, and biopersistent. It bans all nanomaterials except those explicitly approved in Annexes III, IV, and VI of the Cosmetic Regulation. This approach is more applicable to direct skin contact products than to paints and varnishes, which generally do not have the same exposure to risks.
- Blue Angel (DE-UZ 12a, DE-UZ 225, DE-UZ 102) does not provide a definition of nanomaterials but prohibits the use of the term "nano" in advertising claims.

The distinctions in these approaches highlight the lack of a clear and universally agreed-upon definition of nanomaterials, which complicates the task of introducing consistent and effective requirements across different product categories.

Implementing a requirement for nanomaterials would also involve significant practical challenges. Tracing and verifying the presence of nanomaterials in paints would likely require third-party verification, and supply chain audits. These systems would create additional administrative costs on both manufacturers and certifying bodies, which may discourage participation and increase compliance burdens. Given the current uncertainty around the definition and regulation of nanomaterials, this would be difficult to implement effectively at this time.

Additionally, imposing restrictions on nanomaterials could have unintended negative consequences. Nanomaterials offer significant performance benefits, such as enhancing the durability and functionality of paints. Restricting their use without a clear scientific consensus could lead to the exclusion of materials that are currently contributing to the overall performance of paint products, thereby limiting their potential environmental benefits. This risk further emphasises the importance of waiting for a more thorough understanding of the health and environmental impacts of nanomaterials before implementing restrictions on the EU Ecolabel.

Given the current lack of a harmonized definition and the risk of unintended consequences, the inclusion of a requirement on nanomaterials in the EU Ecolabel is not justified at this stage of the revision process. This approach avoids placing undue burdens on suppliers who may unknowingly be affected and ensures that beneficial materials are not inadvertently excluded due to the ambiguities in the current existing definitions. Nevertheless, developments in this area will continue to be monitored as more data and industry capacity become available. This approach ensures that any future requirement is clear, enforceable, and does not impose unnecessary burdens on suppliers.

[45] https://www.nordic-swan-ecolabel.org/criteria/paints-and-varnishes-096/

[46] Commission Recommendation of 10 June 2022 on the definition of nanomaterial https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=oj:JOC_2022_229_R_0001

[47] Commission Decision (EU) 2021/1870 of 22 October 2021 establishing the EU Ecolabel criteria for cosmetic products and animal care products https://eur-lex.europa.eu/eli/dec/2021/1870/oj/eng

[48] Regulation (EC) No 1223/2009 of the European Parliament and of the Council of 30 November 2009 on cosmetic products https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A32009R1223

8.5 Requirements on minimum recycled content and/or design for recyclability rating for packaging

The inclusion of minimum recycled content and design for recyclability requirements in the EU Ecolabel for paints and varnishes has been carefully considered. According to feedback after the 2nd AHWG meeting, some stakeholders support the introduction of recyclability and recycled content criteria for both primary and secondary packaging, aligning with the Packaging and Packaging Waste Regulation (PPWR)[49]. Stakeholders proposed enforcing 2040 PPWR recycled content targets now and extending them to other materials, such as steel and paper; and using RecyClass and Circpack guidelines for recyclability and recycled content certification.

However, after reviewing LCA findings, regulatory developments, and practical implementation challenges, it is not justified to introduce such requirements at this time. Justification reasons are summarised as follows:

- Limited environmental benefit of recycled content in packaging: While increasing recycled content for packaging is often assumed to provide significant environmental benefits, the LCA screenings indicate that the impact of packaging in the overall footprint of paint and varnish products is relatively small, ranging from 1% to 3% for indoor and outdoor paints and varnishes, and 10% to 14% for solvent- and water-based aerosol spray paints. These results suggest that prioritizing other environmental aspects, such as product formulation and durability, may have a greater impact than enforcing recycled content in packaging.
- Regulatory redundancy: the upcoming PPWR will mandate minimum recycled content levels for plastic packaging by 2030 of at least 10 to 35% post-consumer plastic by 2030 and 25% to 65% by 2040. Given that these legally binding requirements will soon be in place at the EU level, adding an ecolabel-specific requirement would provide little added value while increasing administrative burdens on applicants.
- Challenges with design for recyclability: the practical effectiveness of recyclable packaging for paints and varnishes is questionable due to contamination concerns:
  - Residual paint or varnish in packaging may discourage recycling. Consumers often perceive paint residues as contaminants that should not be mixed with post-consumer plastics or metals.
  - Alkyd resin-based formulations could create specific challenges due to their chemical composition and stability, making it difficult to integrate post-consumer packaging into standard recycling streams.
  - Acrylic-based paints may also pose challenges if wet residues contaminate other recyclables, requiring more intensive washing or leading to higher rejection rates of recyclates. In fact, the most durable and stable formulations could be the hardest to recycle, raising doubts about the actual benefits of enforcing design-for-recyclability criteria in this product category.
- Additional costs: while introducing recycled content and recyclability requirements for packaging are important goals to improve the environmental performance of paint and varnish products, these requirements require third-party certification, which would impose additional costs and administrative burdens on applicants. Verification by Competent Bodies or other third-party verifiers would add complexity to the process.

[49] 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 https://eur-lex.europa.eu/eli/reg/2025/40/oj/eng

9 Impacts of the changes to the criteria

This section consists of a summary of the main general changes proposed in this TR3 for the revised criteria of the EU Ecolabel for indoor and outdoor paints and varnishes and potential implications for current license holders and possible applicants.

New definitions have been introduced to ensure consistent understanding and clarity of terms throughout the report, in this proposal all definitions are included in the preamble in the Act (60 definitions) while a few more definitions are proposed to be included in the User Manual (section 3.2 for more details).

The proposed restructuring of the scope, first presented in TR2, has been maintained in TR3, dividing the scope into three separate annexes:

- Annex I: Decorative paints, varnishes and related products
- Annex II: Performance coatings and related products
- Annex III: Water-based aerosol spray paints

The table below outlines the restructuring of the criteria as previously introduced in TR2. However, in TR3 it has also been proposed to remove criterion 1 on TiO_2 emissions from production.

Table 21. Restructuration of the EU Ecolabel criteria for indoor and outdoor paints and varnishes (as included in TR2 and TR3)

Subject/criteria content	Previous criteria from 2014	Proposed criteria	
		Annexes I and II	Annex III
Titanium dioxide	Previous criterion 2. Titanium dioxide production	Note that in this proposal this criterion is deleted	
Efficiency in use (includes WPC and WSR)	Previous criterion 3. Efficiency in use	Now becomes criterion 1. Efficiency in Use	Criterion 1. Efficiency in use without white pigment content
VOC and SVOC content	Previous criterion 4. Content of Volatile and Semi-volatile Organic Compounds (VOCs, SVOCs)	Now becomes criterion 3. Content of Volatile and Semi-volatile Organic Compounds (VOCs, SVOCs)	
Derogations, Restriction of hazardous substances and mixtures	Previous criterion 5. Restriction of hazardous substances and mixtures	Now becomes criterion 4. Restriction of hazardous substances and mixtures	
VOC emissions	n/a	Now becomes criterion 4. VOC emissions	No requirement here
Consumer information	Previous criterion 6. Consumer information	Criterion 5. Consumer information	Criterion 4. Consumer information
EU information	Previous criterion 7. Information appearing on the EU Ecolabel	Criterion 6. Information appearing on the EU Ecolabel	Criterion 5. Information appearing on the EU Ecolabel

Source: Own elaboration

Decorative paints, varnishes and related products

The revised criteria provide a general increase in the level of ambition proposed, and the addition of new requirements. In addition, the revised criteria propose a general increase of clarity and alignment with industry practices:

- In relation to previous criterion 1 on titanium dioxide production, it is proposed to delete this criterion. The main reasons for this decision are the challenges in establishing appropriate emission requirements due to very limited data availability and the necessity to align with the ongoing LVIC BREF revision process (expected to be completed in the coming years).
- Criterion 1 on efficiency in use has been revised to improve alignment with industry practices. Key changes include replacing "base paint" with "white base paint" and "tinting bases", refining spreading rate requirements to apply to white or lightest shades and allowing equivalent methods to ISO 6504-1 for measuring spreading rate. The WSR/WPC applicability table has been updated for accuracy, and WPC measurement has been aligned with spreading rate declarations. Water resistance testing now allows flexibility for primer-based systems, and gloss change measurement has been revised to use ISO 4628-1, removing the 5% threshold. Adhesion and weathering criteria were clarified, and the gloss decrease limit was increased from 30% to 50%. Finally, minor wording adjustments have been made for consistency.
- The values for VOC and SVOC content limits in criterion 2 on VOC content have been lowered for all subcategories, based on the analysis of license holder data provided by stakeholders, as well as stakeholder insights into paint formulation and climate variations. The new proposals in this criterion ensure that the new limits are ambitious but at the same time feasible for license holders.
- Criterion 3 on the restriction of hazardous substances and mixtures has been completely restructured and reworded compared to the 2014 criteria. One major change since TR2 is related to a heavy rewording of the horizontal CLP restrictions in criterion 3.2. This includes an attempt to spell out more clearly how restriction and derogations for preservatives work and the removal of derogations for anti-corrosion pigments. Four new exclusions have been inserted in criterion 3.3 in order to align closely with the DNSH requirements of the EU Taxonomy on pollution prevention and control.
- Criterion 4 on VOC emissions has been revised to improve clarity and flexibility. Key changes include adding table footnotes to clarify rounding rules for cumulative R value calculations and how to handle category 1 carcinogens with EU LCI values. The wording for worst-case product testing within a product family was adjusted, and a clause now allows emissions testing to conclude before 28 days if compliance is met earlier. Finally, the total SVOC limit was removed due to uncertainty in results.
- No changes have been made to criteria 5 and 6.

Performance Coatings and Related Products

The proposed criteria for performance coatings and related products in TR3 are similar to the criteria for decorative paints.

However, there are a few different requirements:

- Criterion 2 has been revised to introduce ecotoxicity testing requirements for waterproofing and outdoor anti-corrosion coatings. The testing approach follows the Blue Angel criteria for waterproofing with liquid plastics, using the same test standards and limits but omitting crustacean testing, focusing instead on bacteria and algae. The same limits have been applied to anti-corrosion coatings, as the toxic effect on microorganisms remains the key concern.

Water-based aerosol spray paints

The proposed criteria for this product group in TR3 follow the changes to the criteria for the other two product groups. However, there are a few different requirements:

- Criterion 2 on efficiency in use has been revised to include further requirements for adhesion, corrosion resistance, and weathering resistance to ensure durability and sustainability of water-based aerosol spray paints, following international standards for

testing. In addition, the requirement on spreading rate remains the same as in TR2 but with added clarifications regarding the unit of measurement. Finally, the requirement on spraying efficiency has been revised to include detailed testing guidelines, due to the lack of international standards.

— The VOC content in criterion 3 was separated into contributions from the liquid paint component and the propellant. The volume considered in VOC limits (in g/L) now clearly refers to the aerosol can's volume in the ready-to-use product. The entire criterion text has been revised to provide a consistent and transparent calculation process. The limit on the flammable component was removed, as it was deemed unnecessary since the overall product cannot be flammable per EU Ecolabel scope.

In conclusion, the revised criteria for the EU Ecolabel for paints and varnishes request a high level of performance, and potentially allow new products to be awarded the EU Ecolabel because of the new scope. Despite the general significant environmental impact of decorative paints and varnishes, this proposal for revised EU Ecolabel criteria allows to single out those decorative paints, varnishes and related products with a better environmental profile. The criteria for water-based aerosol spray paints will allow new products to be awarded the EU Ecolabel and potentially promote the development of water-based aerosol spray paints over solvent-based ones.

List of abbreviations

AP	Acidification
BPR	Biocidal Products
CB	Competent Bodies
CC	Climate Change
CEPE	European Council of the Paint, Printing Ink, and Artist's Colours Industry
CO_2	Carbon dioxide
CO_2eq	Carbon dioxide equivalent
CPR	Construction Products Regulation
E-Fr	Eutrophication, freshwater
E-Ma	Eutrophication, marine
E-Te	Eutrophication, terrestrial
E-Tox	Ecotoxicity, freshwater
ECHA	European Chemicals Agency
EF	Environmental Footprint
EFIA	Environmental Footprint Impact Assessment
EN	European Norm
EEPD	Environmental Product Declaration
EPBD	Energy Performance of Buildings Directive
ER	Resource depletion, fossil
ESPR	Ecodesign for Sustainable Products Regulation
EU	European Union
EUEB	European Union Ecolabelling Board
EUEL	European Union Ecolabel
GWP	Global Warming Potential
HTox-c	Human toxicity, cancer
HTox-nc	Human toxicity, non-cancer
IR	Ionising Radiation
ISO	International Organization for Standardization
JRC	Joint Research Centre
LCA	Life Cycle Assessment
LCI	Life Cycle Inventory
LCIA	Life Cycle Impact Assessment
LCS1	Life Cycle Stage 1: Raw material acquisition and pre-processing stage
LCS2	Life Cycle Stage 2: Manufacturing stage
LCS3	Life Cycle Stage 3: Distribution stage
LCS4	Life Cycle Stage 4: Use stage
LCS5	Life Cycle Stage 5: End-of-life stage
LU	Land Use

3994	MR	Resource depletion, minerals & metals
3995	NGO	Non-governmental Organization
3996	OD	Ozone Depletion
3997	REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
3998	PEF	Product Environmental Footprint
3999	PEFCR	Product Environmental Footprint Category Rules
4000	PM	Particulate Matter
4001	POF	Photochemical Ozone Formation
4002	PRODCOM'PRODuction COMmunautaire' (Community Production)	
4003	VOCs	Volatile Organic Compound
4004	SVOCs	Semi-Volatile Organic Compounds
4005	VVOCs	Very Volatile Organic Compounds
4006	TiO_2	Titanium dioxide
4007	WU	Water Use
4008	ZnS	Zinc sulphide

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4057 # Appendices

4058 ## Appendix 1. Substitution information and Derogation request form

4059 ### 1. Common information requirements

To be treated as confidential?	☐Yes ☐No

4060

Contact name	
Organisation	
Email	
Telephone No.	
Supplementary documents attached	

4061

1a. Chemical substance name(s)	
1b. CAS, EC or Annex VI numbers	
1c. Current EU regulatory status	
1d. CLP Classifications from the EU Ecolabel hazard listing[50]	
1e. Proportional contribution to final product classification (for mixture ingredients)	

[50] The relevant Commission Decision for the product group should be checked, but in general, the restricted CLP classifications are grouped as follows:

- Group 1 hazards: Category 1A or 1B carcinogenic, mutagenic and/or toxic for reproduction (CMR): H340, H350, H350i, H360, H360F, H360D, H360FD, H360Fd, H360Df.
- Group 2 hazards: Category 2 CMR: H341, H351, H361, H361f, H361d, H361fd, H362; Category 1 aquatic toxicity: H400, H410; Category 1 and 2 acute toxicity: H300, H310, H330; Category 1 aspiration toxicity: H304; Category 1 specific target organ toxicity (STOT): H370, H372.
- Group 3 hazards: Category 2, 3 and 4 aquatic toxicity: H411, H412, H413; Category 3 acute toxicity: H301, H311, H331; Category 2 STOT: H371, H373.

The purpose of grouping is to aid the derogation process, for example, a much stronger case needs to be presented for derogation of a group 1 hazard than a group 3 hazard.

For product groups where exposure routes to skin or inhalation pathways are foreseen, the H317 and H334 hazards would be placed amongst the Group 2 hazards.

1f. Existing scientific evidence and risk assessments relating to the substance	
1g. Functional need and significance to the final product	
1h. Typical concentration in the final product and specific components or articles	

2. Additional information required for derogation requests

2a. The relevance of the hazard classification(s) along the life cycle of the product (e.g. manufacturing, use, disposal)	
2b. Market availability of alternatives and the potential for substitution	

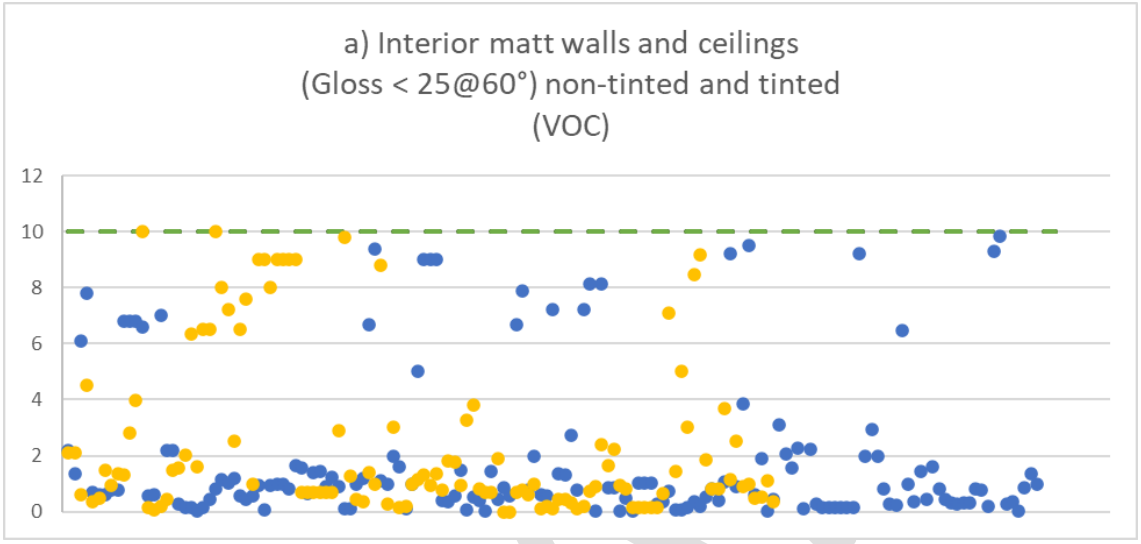
3. Additional information required about substitutes

3a. Comparative evaluation of environmental performance	
3b. The relevance of the hazard substitution along the life cycle of the product (e.g. manufacturing, use, disposal)	
3c. Compliance with product performance and functional requirements	
3d. Market diffusion and technical maturity	

Appendix 2. VOC and SVOC emission calculation (updated for TR3)

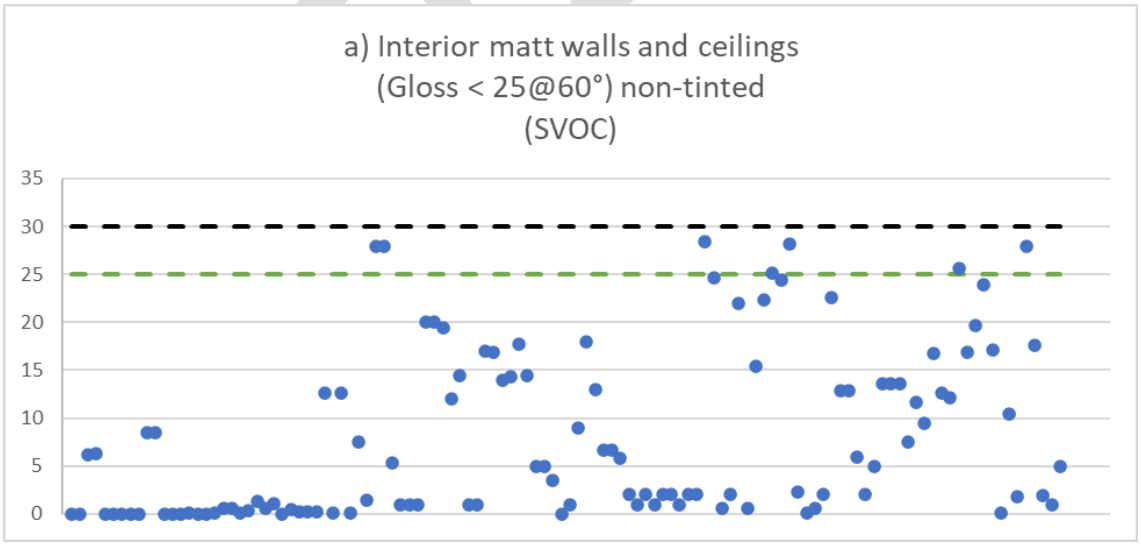
The graphics below illustrates current Criterion 3. Content of Volatile and Semi-volatile Organic Compounds (VOCs, SVOCs). These graphics were developed based on data received from five different CBs and stakeholder feedback after the 2nd AHWG. Each dot on the graph represents a license, which may cover one or multiple products with the same formulation. The black line indicates the current EU Ecolabel limit, while the green line shows the proposed new limit value.

a) Interior matt walls and ceilings (Gloss < 25@60°) non-tinted and tinted (VOC). Current and proposal VOC limit as the same

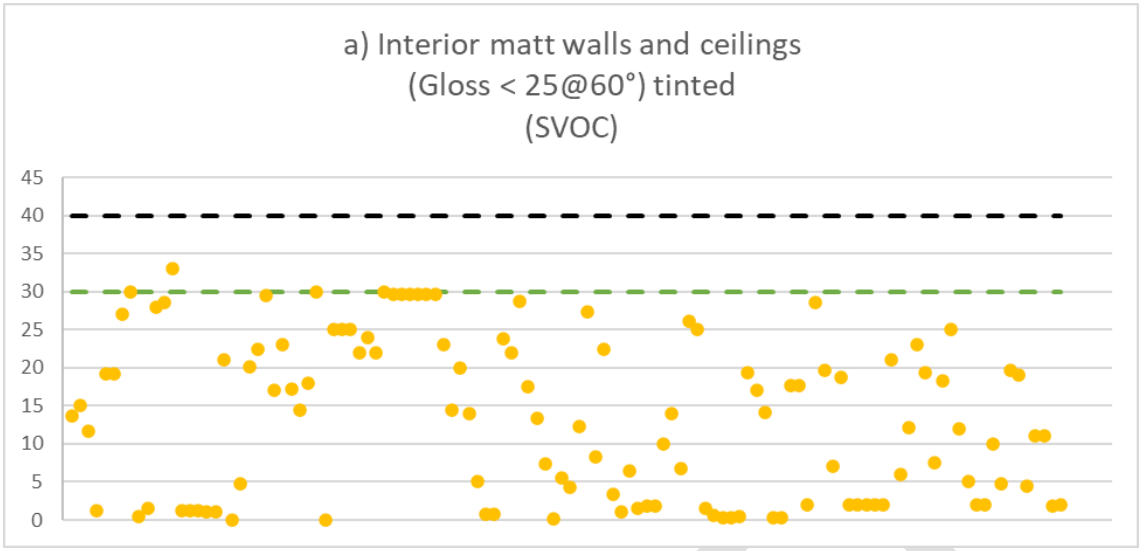


Blue: non-tinted, Yellow: tinted

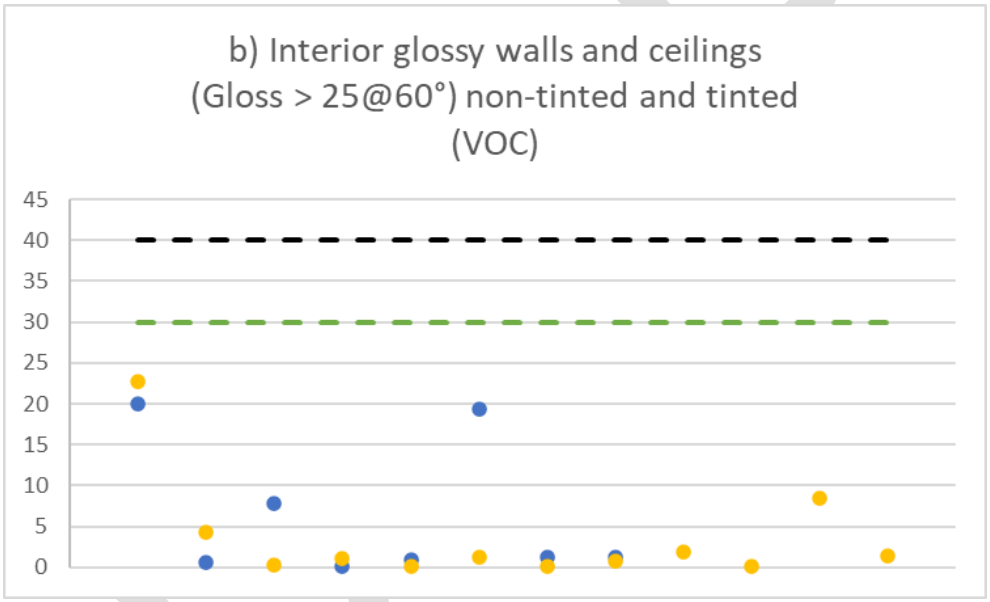
a) Interior matt walls and ceilings (Gloss < 25@60°) non-tinted (SVOC)



a) Interior matt walls and ceilings (Gloss < 25@60°) tinted (SVOC)

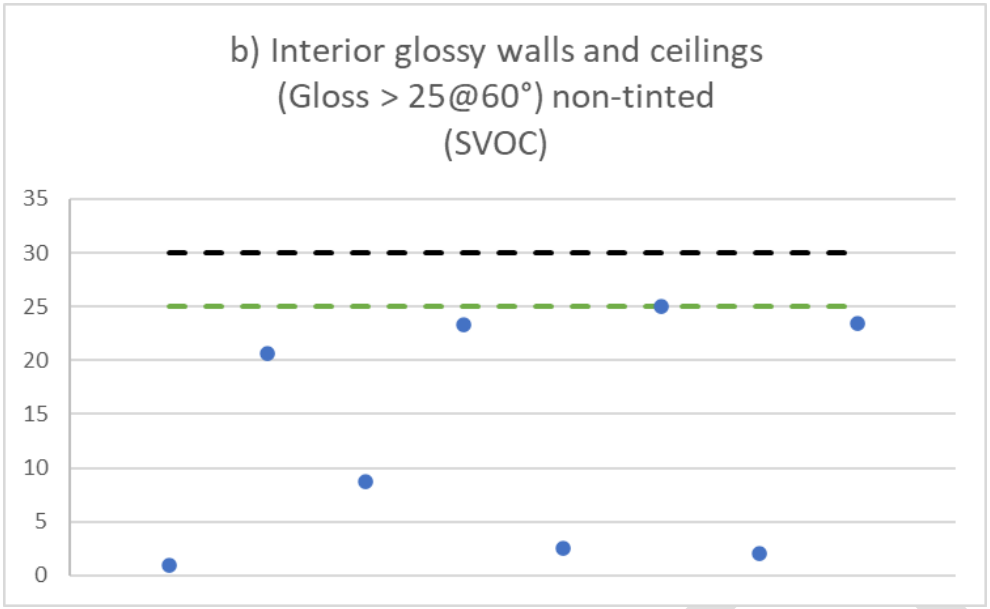


b) Interior glossy walls and ceilings (Gloss > 25@60°) non-tinted and tinted (VOC)

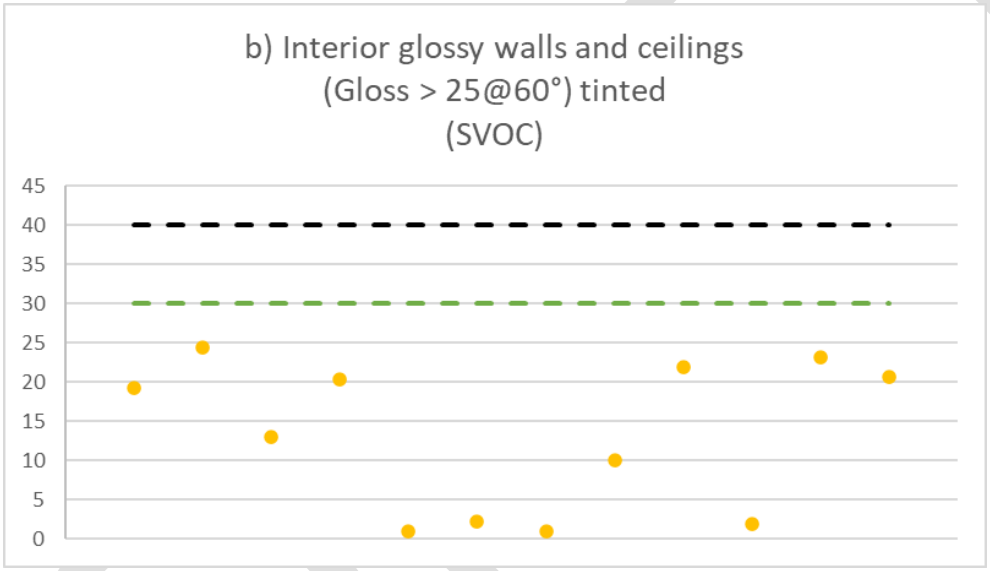


Blue: non-tinted, Yellow: tinted

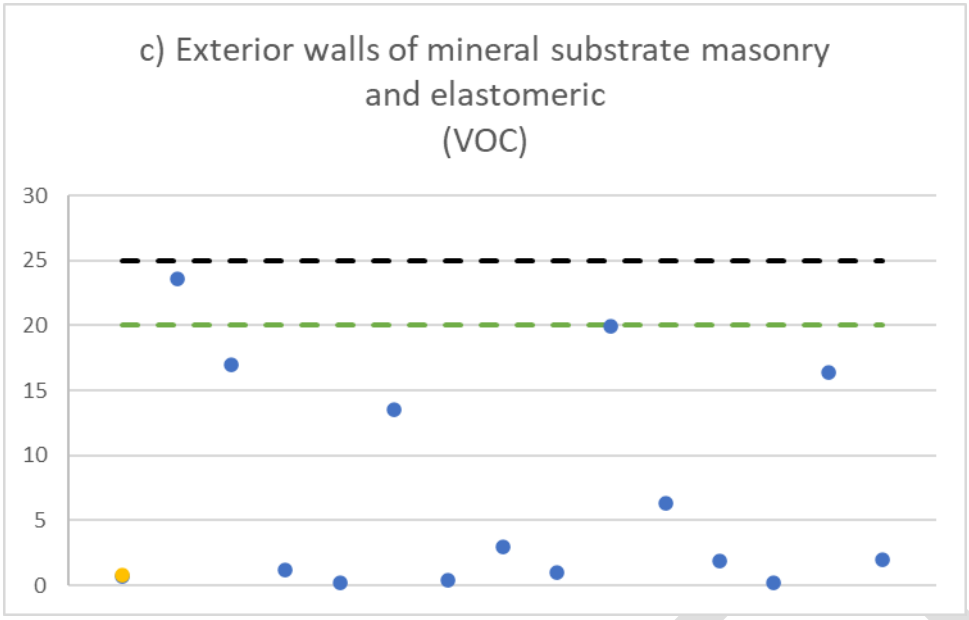
b) Interior glossy walls and ceilings (Gloss > 25@60°) non-tinted (SVOC)



b) Interior glossy walls and ceilings (Gloss > 25@60°) tinted (SVOC)

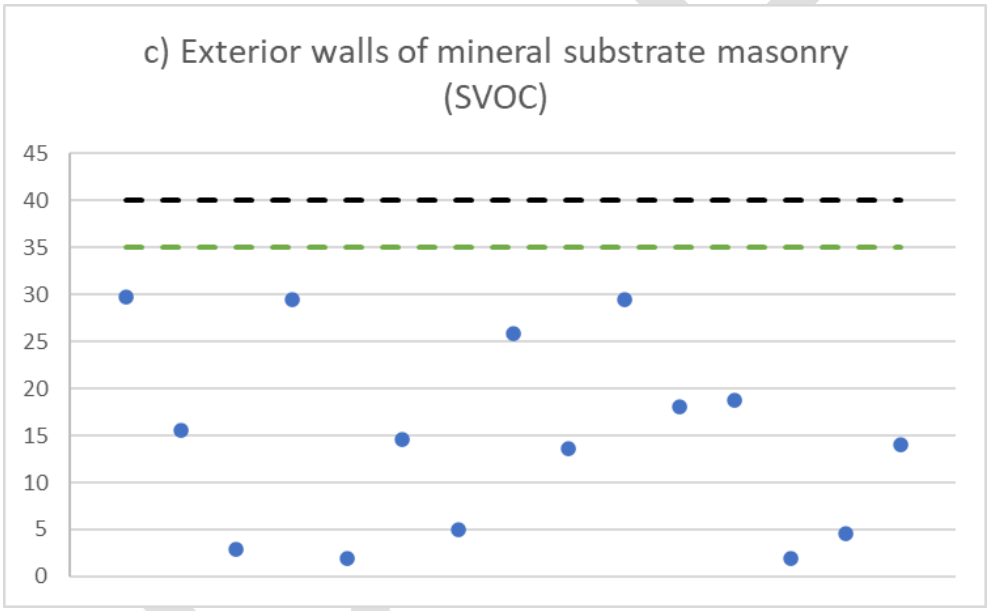


c) Exterior walls of mineral substrate masonry and elastomeric (VOC)

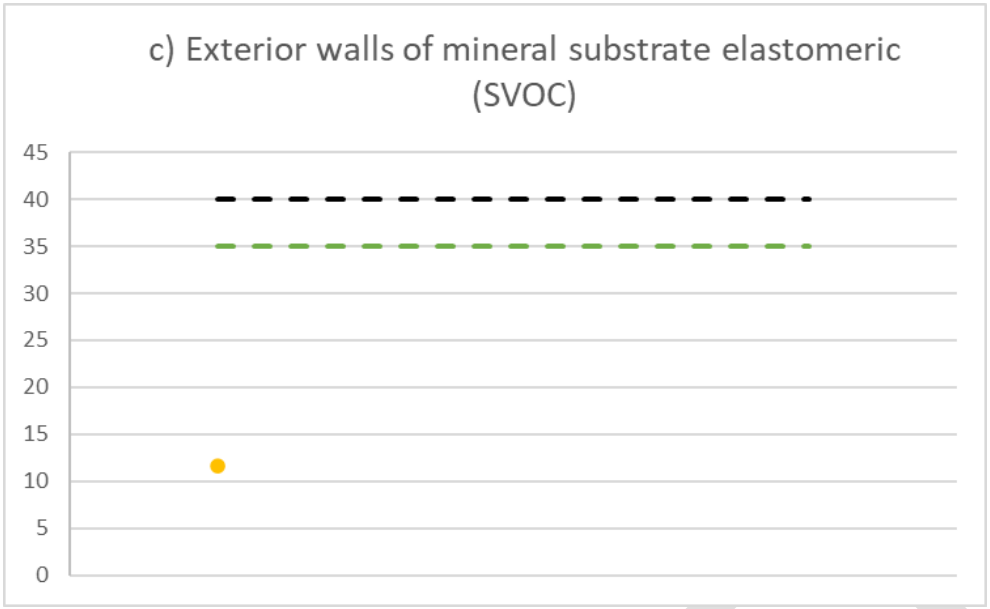


Blue: non-tinted, Yellow: tinted

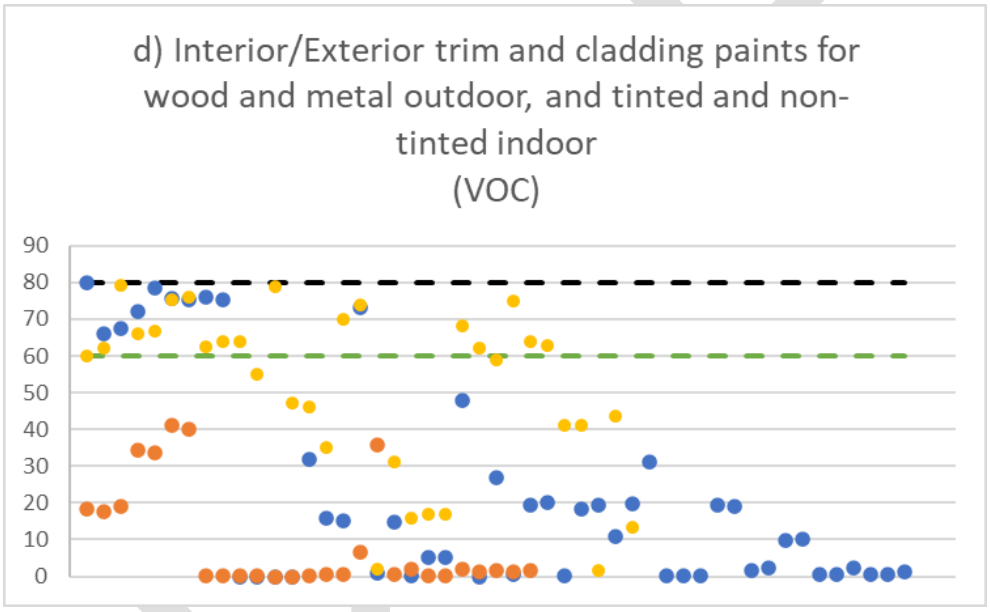
c) Exterior walls of mineral substrate masonry (SVOC)



c) Exterior walls of mineral substrate elastomeric (SVOC)

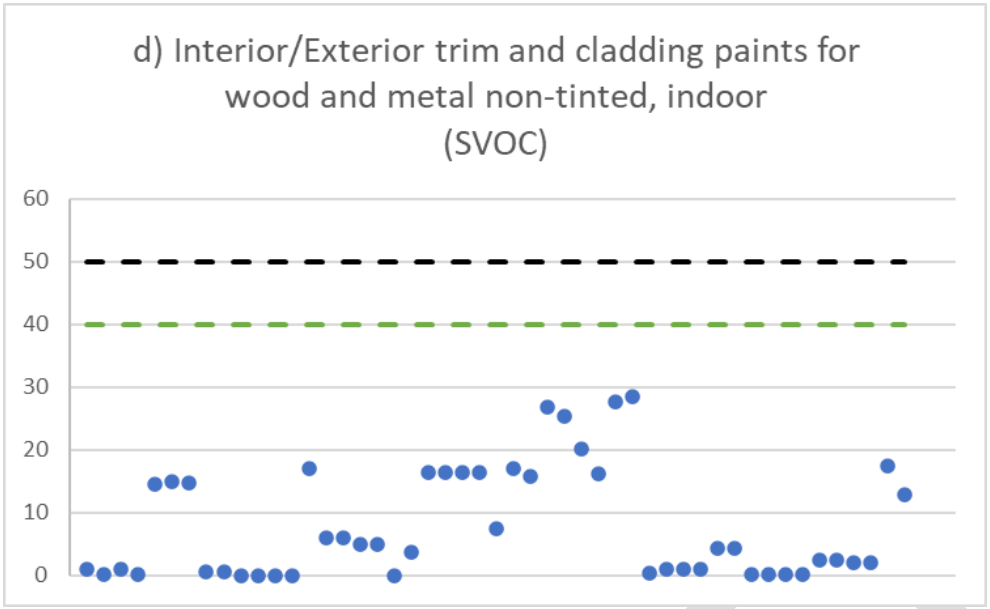


d) Interior/Exterior trim and cladding paints for wood and metal outdoor, and tinted and non-tinted indoor (VOC)

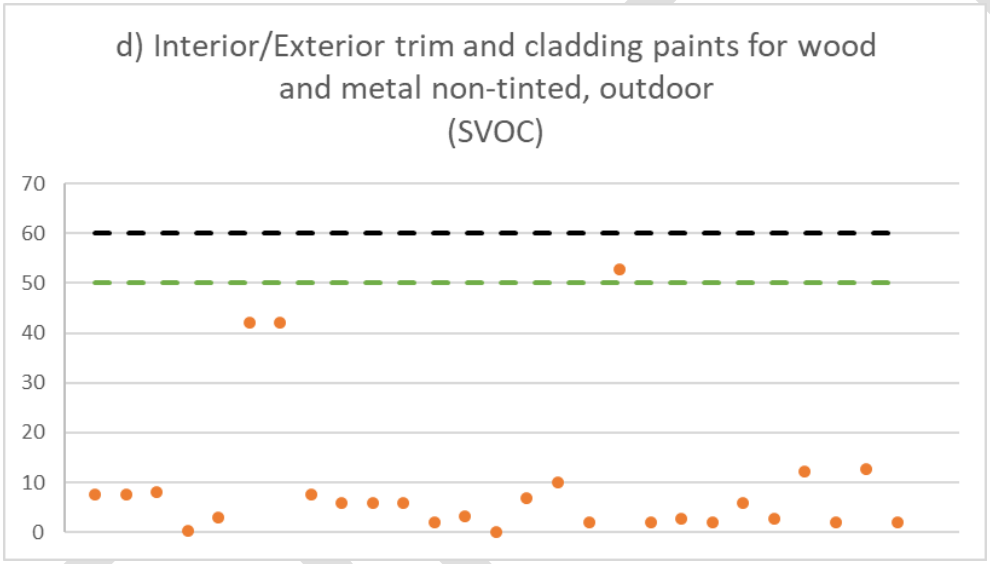


Blue: non-tinted indoor; Orange: non-tinted, outdoor; Yellow: tinted

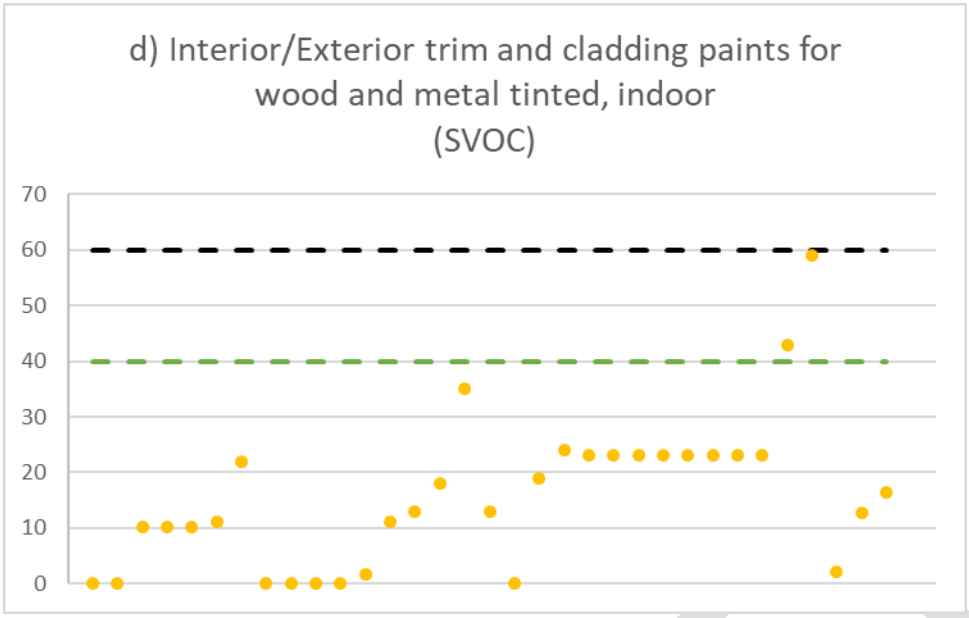
d) Interior/Exterior trim and cladding paints for wood and metal non-tinted, indoor (SVOC)



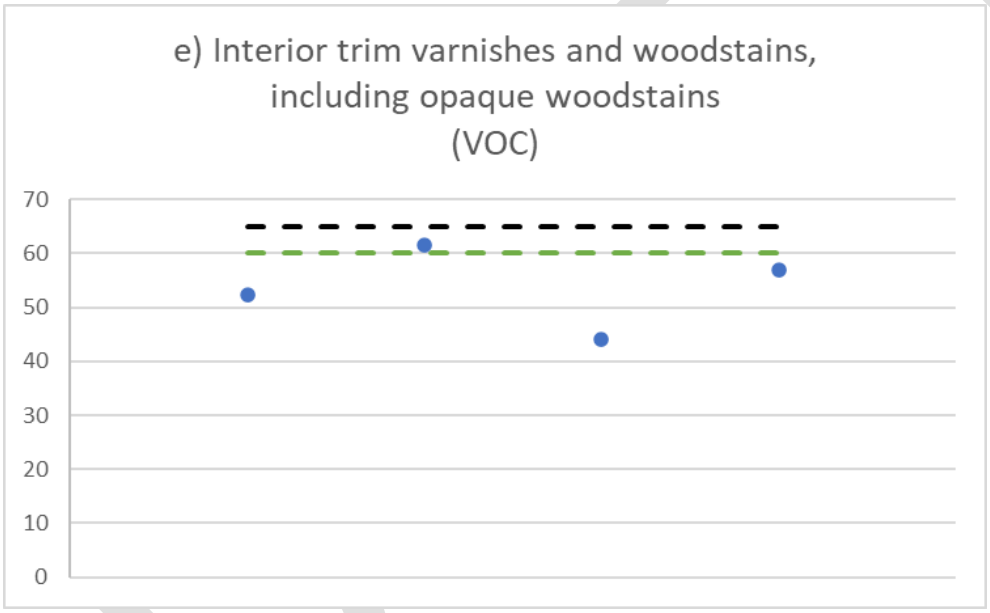
d) Interior/Exterior trim and cladding paints for wood and metal non-tinted, outdoor (SVOC)



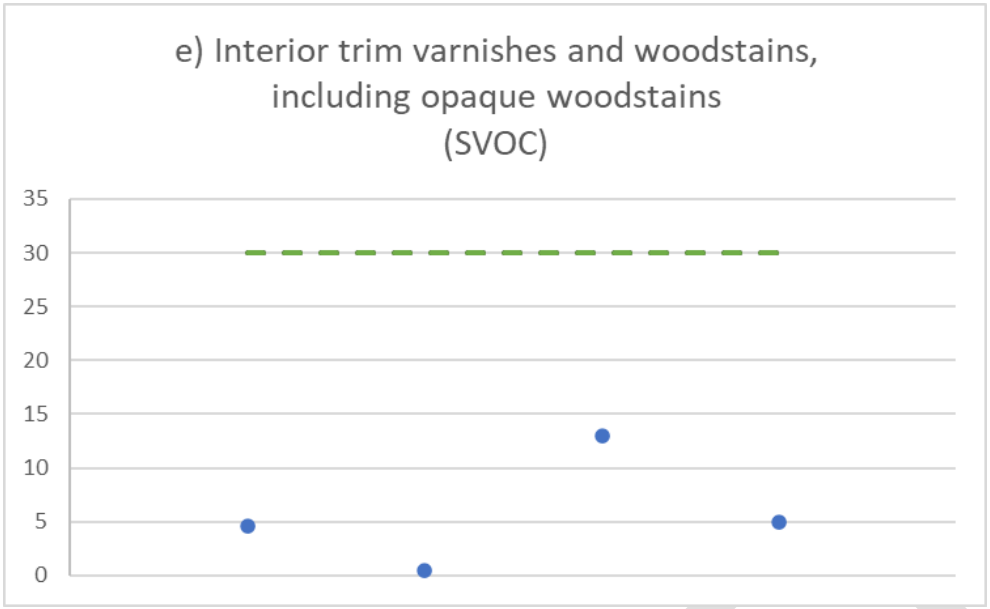
d) Interior/Exterior trim and cladding paints for wood and metal tinted, indoor (SVOC)



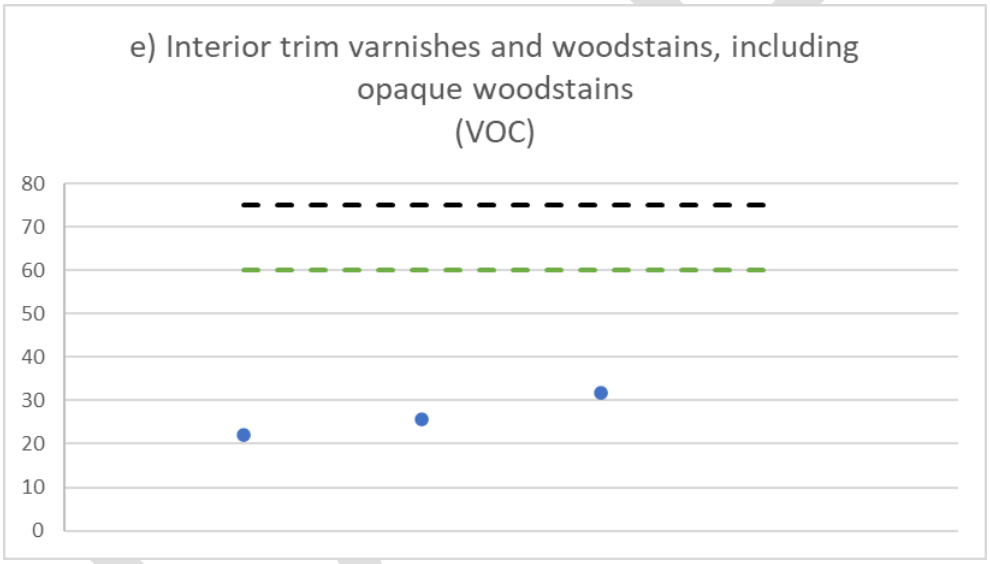
e) Interior trim varnishes and wood stains, including opaque wood stains (VOC)



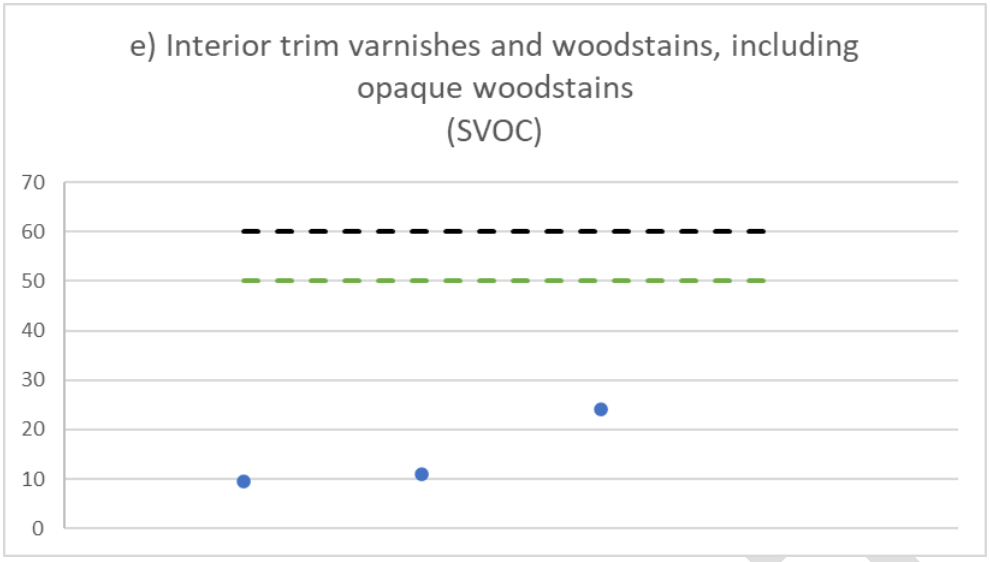
e) Interior trim varnishes and wood stains, including opaque wood stains (SVOC). Current and proposal VOC limit as the same



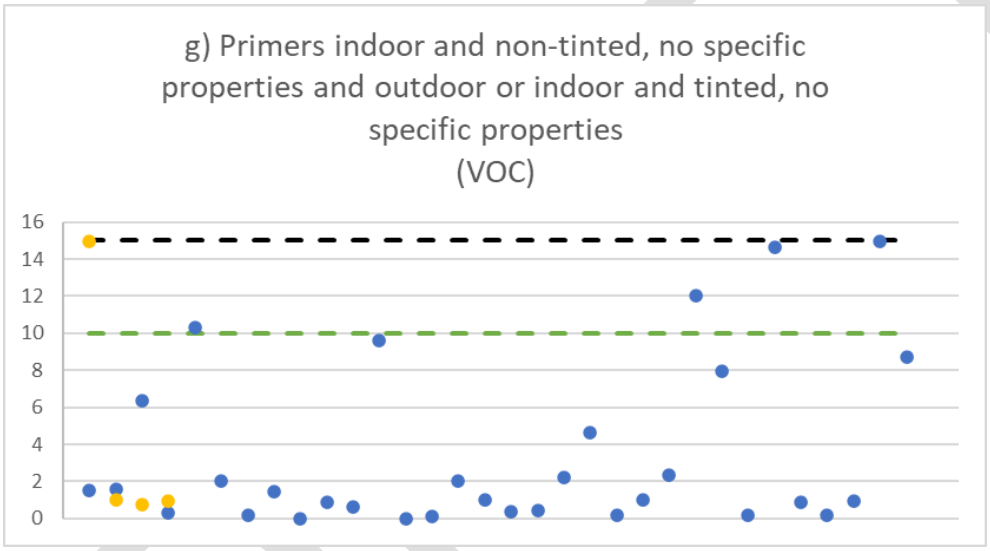
e) Interior trim varnishes and wood stains, including opaque wood stains (VOC)



e) Interior trim varnishes and wood stains, including opaque wood stains (SVOC)

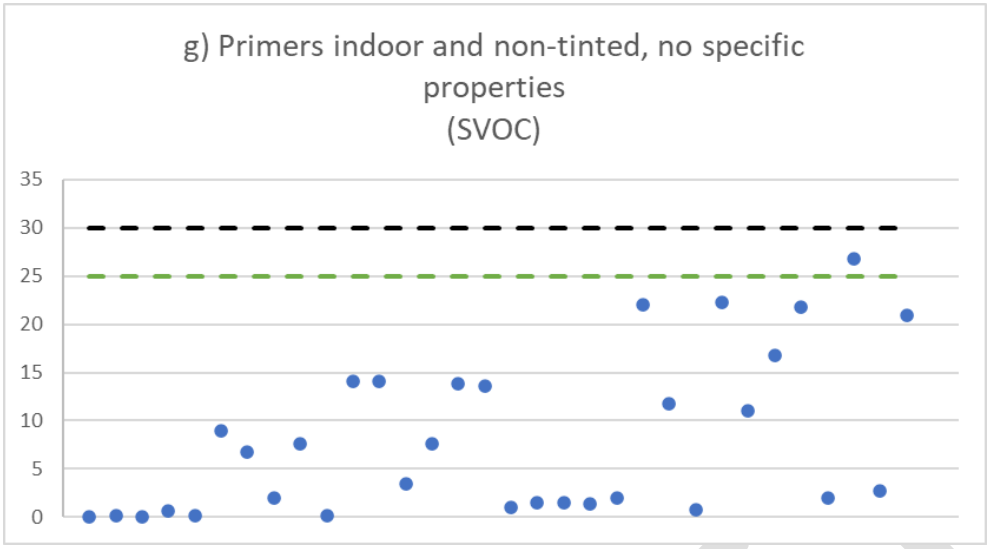


g) Primers indoor and non-tinted, no specific properties and outdoor or indoor and tinted, no specific properties (VOC)

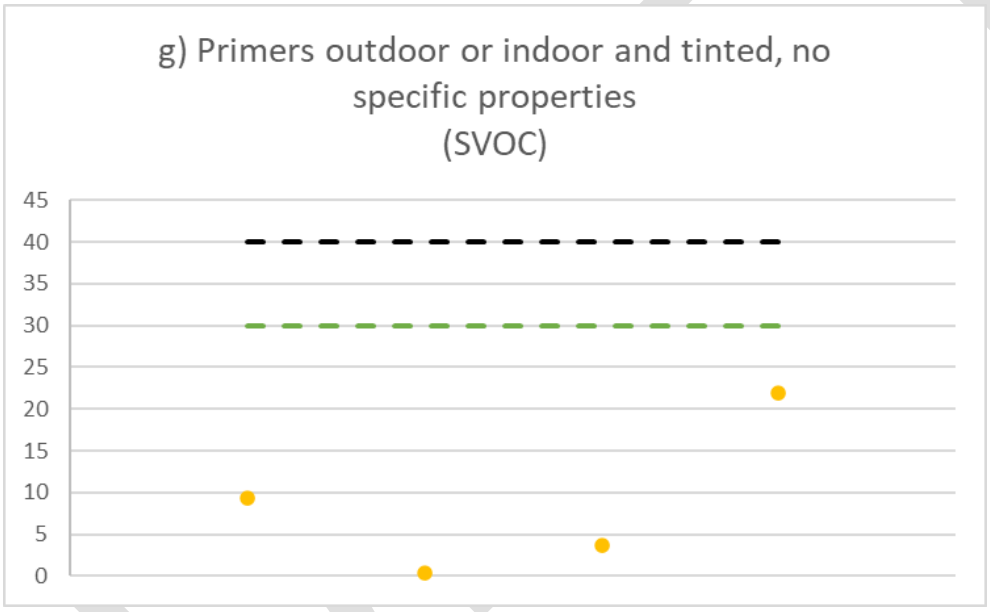


Blue: non-tinted indoor; Yellow: tinted

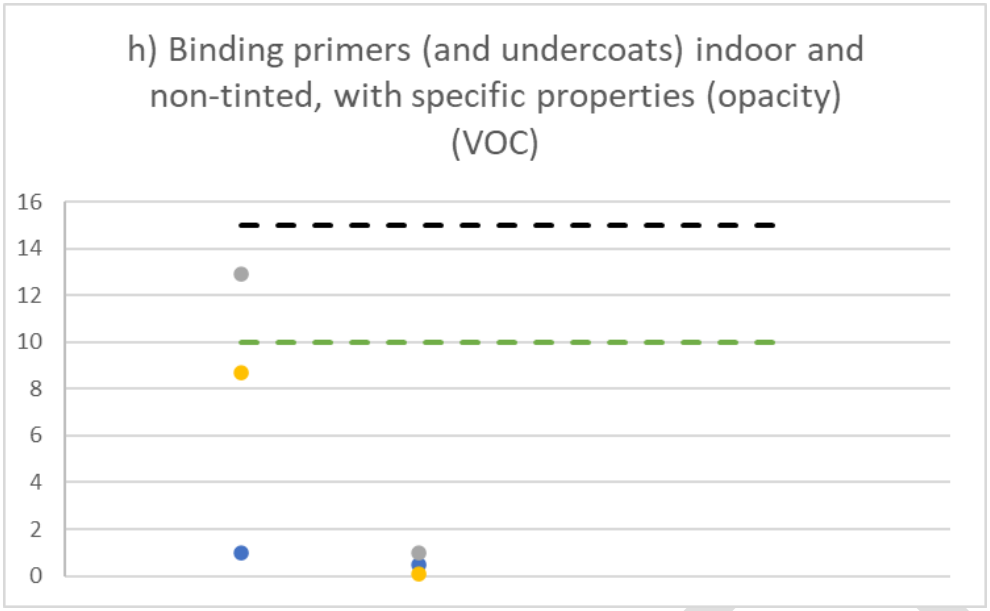
g) Primers indoor and non-tinted, no specific properties (SVOC)



g) Primers outdoor or indoor and tinted, no specific properties (SVOC)

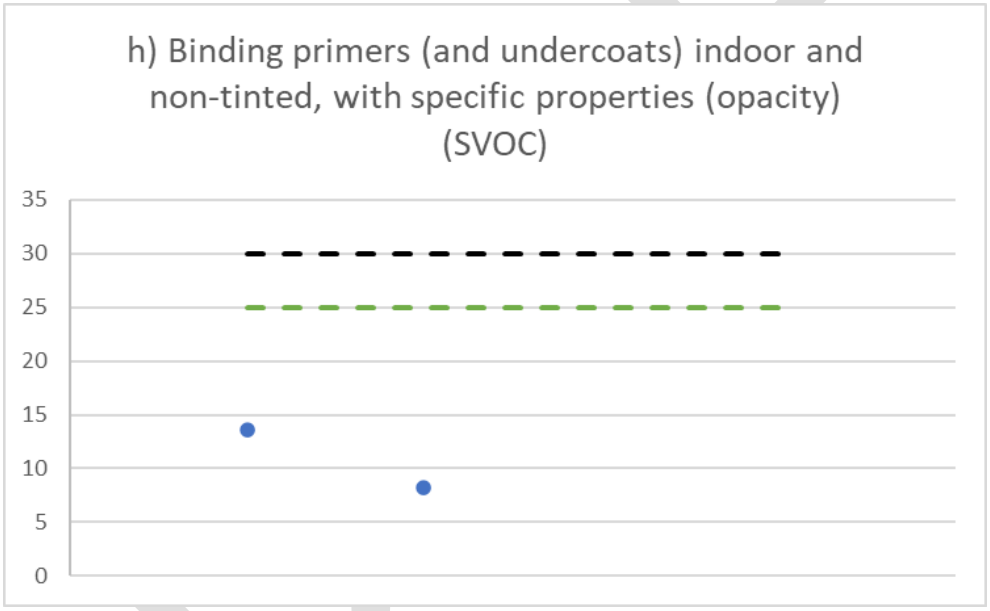


h) Binding primers (and undercoats) indoor and non-tinted, with specific properties (opacity) (VOC)

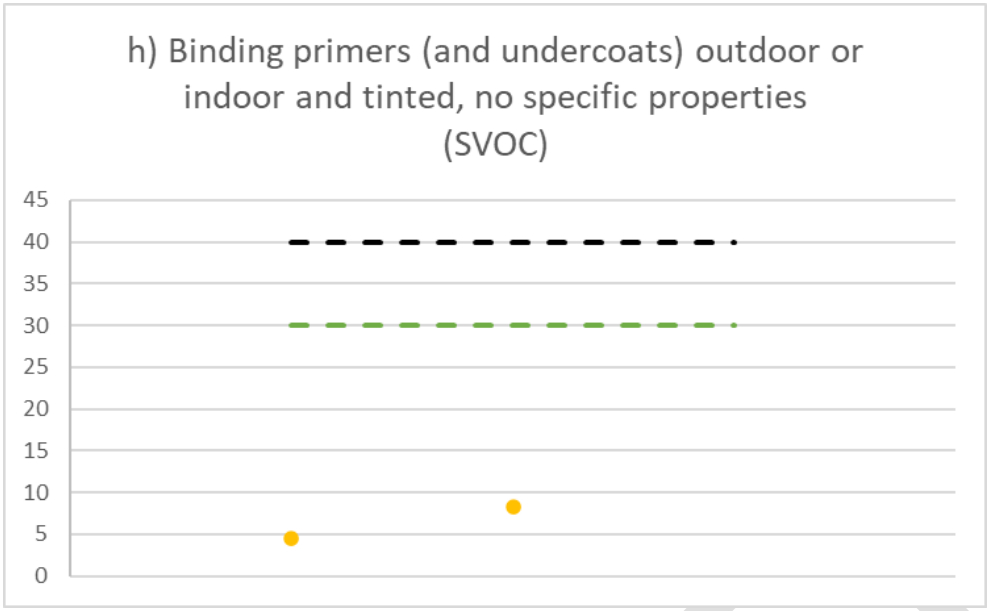


Blue: non-tinted indoor; Yellow: tinted- no specific properties; Gray: tinted- with specific properties

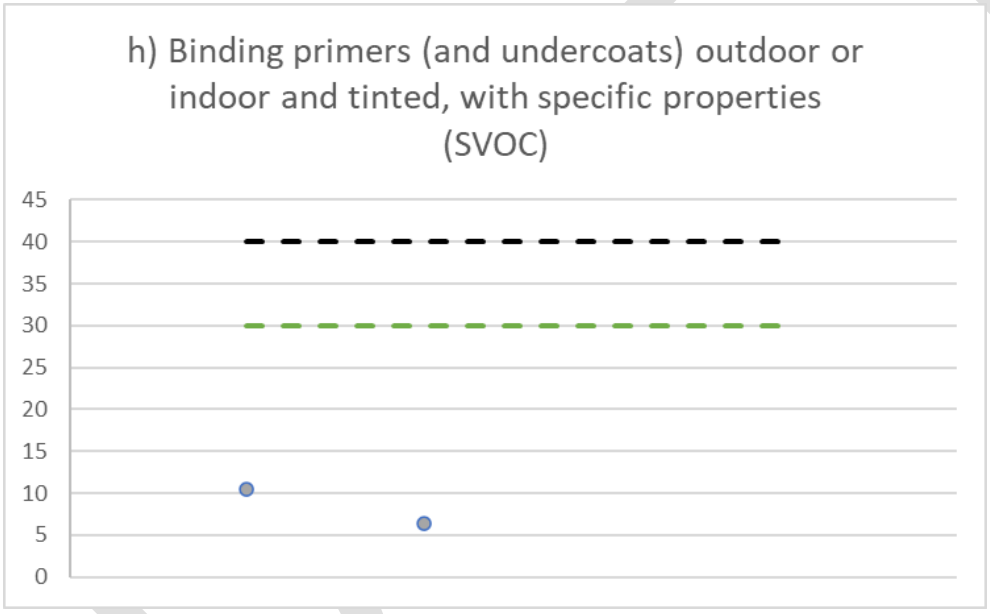
h) Binding primers (and undercoats) indoor and non-tinted, with specific properties (opacity) (SVOC)



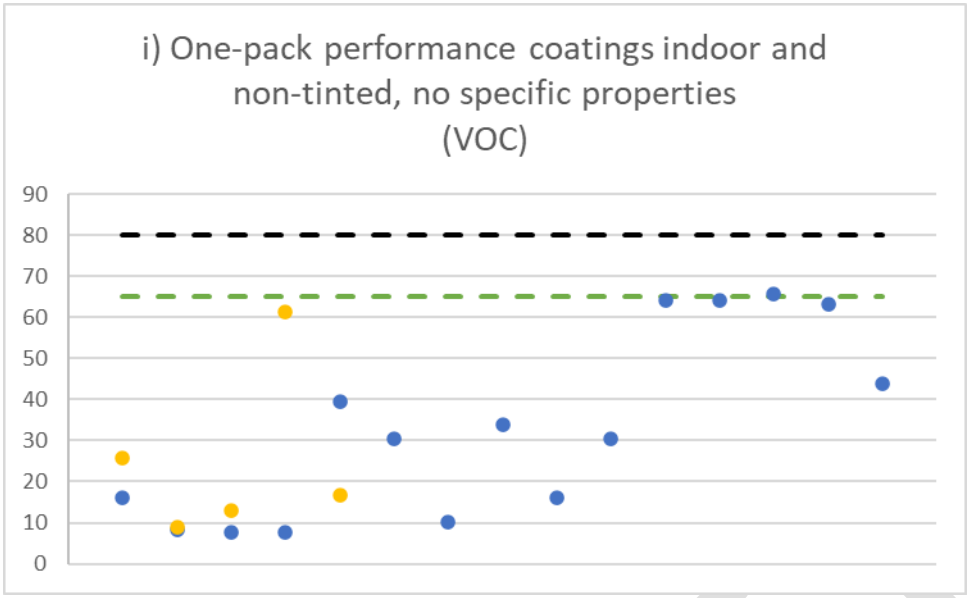
h) Binding primers (and undercoats) outdoor or indoor and tinted, no specific properties (SVOC)



h) Binding primers (and undercoats) outdoor or indoor and tinted, with specific properties (SVOC)

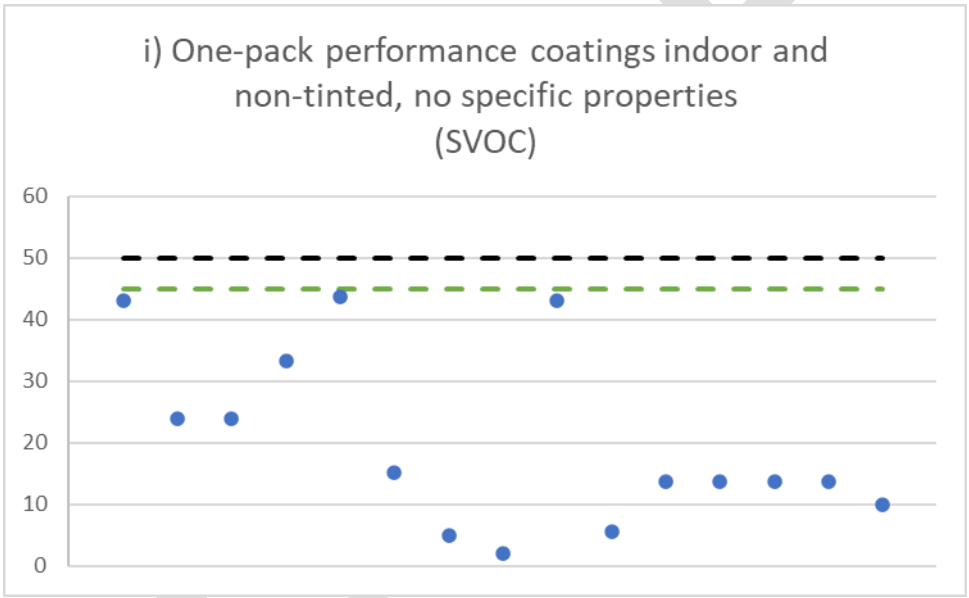


i) One-pack performance coatings indoor and non-tinted, no specific properties (VOC)

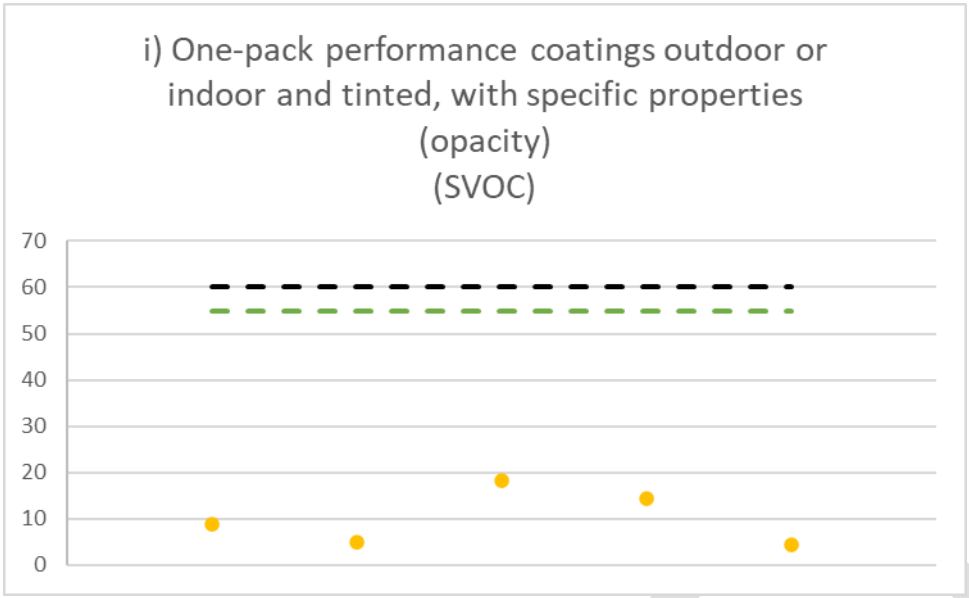


Blue: non-tinted indoor; Yellow: tinted

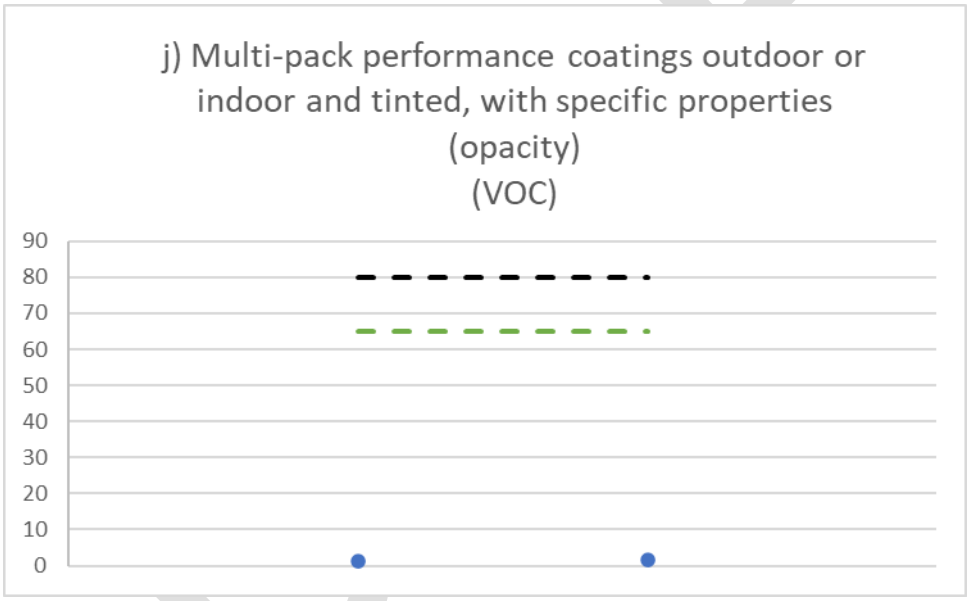
i) One-pack performance coatings indoor and non-tinted, no specific properties (SVOC)



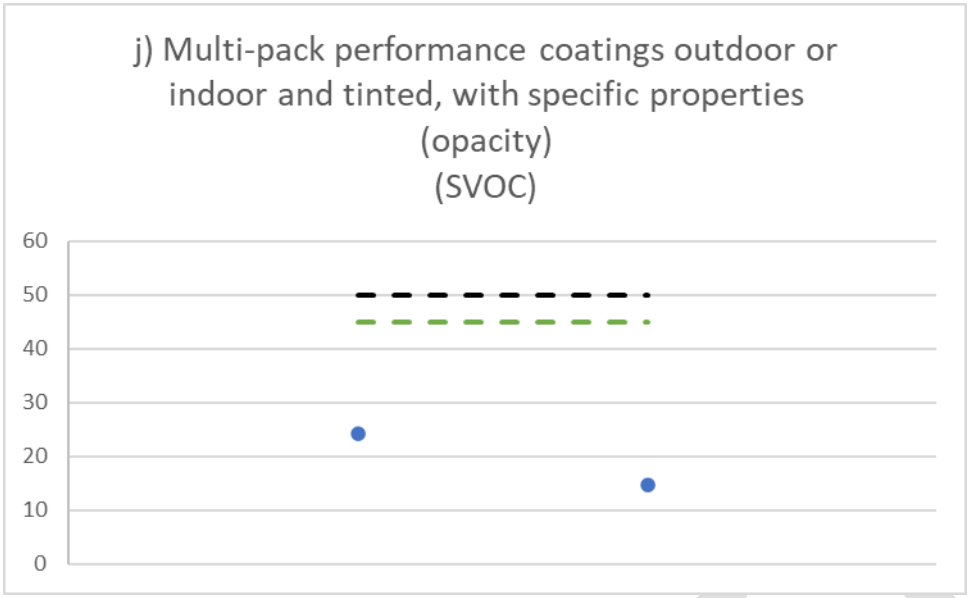
i) One-pack performance coatings outdoor or indoor and tinted, with specific properties (opacity) (SVOC)



j) Multi-pack performance coatings outdoor or indoor and tinted, with specific properties (opacity) (VOC)



j) Multi-pack performance coatings outdoor or indoor and tinted, with specific properties (opacity) (SVOC)



Because of the lack of data, we are using the assumption that "multi-pack performance indoor non-tinted coatings " are similar to *i) one-pack performance indoor non-tinted coatings*

Appendix 3. Screening of VOCs with EU LCI values for CMR hazards and non-exhaustive list of carcinogenic VOCs

The following information in the two tables below is provided for reference to readers who are:

1. Interested in knowing how many of the VOCs with EU-LCI values are also classified as carcinogenic.
2. Being more aware about the quantity of carcinogenic VOCs that could potentially be tested for

The information is relevant for any VOC emission testing to be carried out for indoor paints or varnishes (see criterion 5 in Annexes I and II).

Table 22. List of VOCs that have been assigned EU-LCI values

EU-LCI no.	CAS No.	Compound name	EU-LCI limit (µg/m³)	Status of EU-LCI value	Year of adoption	CMR?
1-AROMATIC HYDROCARBONS						
1-1	108-88-3	Toluene	2900	Derived EU-LCI	2013	H361d
1-2	100-41-4	Ethylbenzene	850	Derived EU-LCI	2013	No
1-3	1330-20-7, 106-42-3, 108-38-3, 95-47-6	Xylene (o-, m-, p-) and mix of o-, m- and p-xylene isomers	500	Derived EU-LCI	2013	No
1-4	98-82-8	Isopropylbenzene (cumene)	1700	Derived EU-LCI	2017	H350
1-5	103-65-1	n-Propylbenzene	950	Derived EU-LCI (read-across)	2013	No
1-6	108-67-8, 95-63-6, 526-73-8	Trimethylbenzene (1,2,3-; 1,2,4-; 1,3,5-)	450	Derived EU-LCI	2013	No
1-7	611-14-3	2-Ethyltoluene	550	Derived EU-LCI (read-across)	2014	H361
1-8*	527-84-4, 535-77-3, 99-87-6, 25155-15-1	Cymene (o-,m-,p-) (1-Isopropyl-2(3,4)-methylbenzene) and mix of o-, m- and p-cymene	2200	Derived EU-LCI	2022	No
1-9	95-93-2	1,2,4,5-Tetramethylbenzene	250	Derived EU-LCI (read-across)	2016	No
1-10	104-51-8	n-Butylbenzene	1100	Derived EU-LCI (read-across)	2014	No
1-11	99-62-7, 100-18-5	Diisopropybenzene (1,3-;1,4-)	750	Derived EU-LCI (read-across)	2013	H361
1-12	2189-60-8	Phenyl octane and isomers	1100	Derived EU-LCI (read-across)	2013	No
1-13	104-72-3	Phenyl decane and isomers		No EU-LCI value due to insufficient data	2016	No
1-14	6742-54-7	Phenyl undecane and isomers		No EU-LCI value due to insufficient data	2016	No
1-15	4994-16-5	4-Phenyl cyclohexene (4-PCH)		No EU-LCI value due to insufficient data	2015	No
1-16	100-42-5	Styrene	250	Derived EU-LCI	2013	H361d
1-17	98-83-9	2-Phenylpropene (α-methylstyrene)	1200	Derived EU-LCI	2018	No
1-18	637-50-3	1-Propenyl benzene (ß-methyl styrene)	1200	Derived EU-LCI (read-across)	2019	H361d
1-19	536-74-3	Phenyl acetylene	-	No EU-LCI value due to insufficient data	2015	H351
1-20	611-15-4 100-80-1 622-97-9 25013-15-4	Vinyl toluene (o-, m-, p-) and mix of o-, m-, and p-vinyl toluene	1200	Derived EU-LCI	2018	No
~~1-21~~	~~1074-17-5 1074-43-7~~	~~1-Methyl-2(3)-propylbenzene~~	–	~~Removed due to non-relevance~~		
1-22*		Other alkylbenzenes, as long as individual isomers have not to be evaluated differently	-	No EU-LCI value derived	2022	
1-23	91-20-3	Naphthalene	10	Derived EU-LCI	2015	H351

EU-LCI no.	CAS No.	Compound name	EU-LCI limit (µg/m³)	Status of EU-LCI value	Year of adoption	CMR?
1-24	91-17-8	Decahydronaphthalene	200	Derived EU-LCI	2019	No
1-25	95-13-6	Indene	450	Ascribed EU-LCI	2013	H351
2-SATURATED ALIPHATIC HYDROCARBONS						
2-1	110-54-3	n-Hexane	4300	Derived EU-LCI	2016	H361f
2-2	110-82-7	Cyclohexane	6000	Ascribed EU-LCI	2013	No
2-3	108-87-2	Methyl cyclohexane	8100	Ascribed EU-LCI	2013	No
2-4	142-82-5	n-Heptane	15000	Derived EU-LCI	2018	No
2-5		Other saturated aliphatic hydrocarbons C6-C8	14000	Derived EU-LCI (read-across)	2018	
2-6		Other saturated aliphatic hydrocarbons C9-C16	6000	Ascribed EU-LCI	2013	
2-7*		Other saturated aliphatic hydrocarbons C17-C22	-	No EU-LCI value derived	2022	
3-TERPENES						
3-1*	498-15-7	3-Carene	2500	Derived EU-LCI	2022	No
3-2	80-56-8	α-Pinene	2500	Derived EU-LCI	2013	No
3-3	127-91-3	ß--Pinene	1400	Ascribed EU-LCI	2013	No
3-4	138-86-3 5989-27-5 5989-54-8	Limonene	5000	Derived EU-LCI	2014	No
3-5		Other terpene hydrocarbons	1400	Ascribed EU-LCI	2013	
4-ALIPHATIC ALCOHOLS						
4-1	75-65-0	2-Methyl-2-propanol (tert-butanol)	620	Ascribed EU-LCI	2013	No
4-2	78-83-1	2-Methyl-1-propanol	11000	Derived EU-LCI	2016	No
4-3*	71-36-3	1-Butanol	11000	Derived EU-LCI (read across)	2022	No
4-4	71-41-0, 30899-19-5, 94624-12-1, 6032-29-7, 584-02-1, 137-32-6, 123-51-3, 598-75-4, 75-85-4, 75-84-3	1-Pentanol (all isomers)	730	Ascribed EU-LCI	2013	No
4-5	111-27-3	1-Hexanol	2100	Ascribed EU-LCI	2013	No
4-6	108-93-0	Cyclohexanol	2000	Ascribed EU-LCI	2013	No
4-7	104-76-7	2-Ethylhexan-1-ol	300	Derived EU-LCI	2014	No
4-8	111-87-5	1-Octanol	1700	Derived EU-LCI	2016	H341
4-9	123-42-2	4-Hydroxy-4-methyl-pentane-2-on (diacetone alcohol)	960	Ascribed EU-LCI	2013	No
4-10*		Other C6 - C13 saturated alcohols nand iso	800	Derived EU-LCI (read across)	2022	
4-11	105-08-8	1,4-Cyclohexanedimethanol	8300	Derived EU-LCI	2021	No
5-AROMATIC ALCOHOLS						
5-1	108-95-2	Phenol	70	Derived EU-LCI	2017	H341
5-2	128-37-0	BHT (2,6-di-tert-butyl-4-methylphenol)	100	Ascribed EU-LCI	2013	H340, H341, H350, H351, H361
5-3	100-51-6	Benzyl alcohol	440	Ascribed EU-LCI	2013	No
6-GLYCOLS, GLYCOL ETHERS, GLYCOL ESTERS						
6-1	107-21-1	Ethandiol (ethylenglykol)	3400	Derived EU-LCI	2016	No
6-2	96-49-1	Ethylene carbonate	4800	Derived EU-LCI (read-across)	2020	No
6-3	7397-62-8	Butyl glycolate	900	Derived EU-LCI	2019	H361, H361d
6-4	111-46-6	Diethylene glycol	5700	Derived EU-LCI (read-across)	2016	No
6-5*	57-55-6	Propylene glycol (1,2-dihydroxypropane)	2100	Derived EU-LCI	2022	No

EU-LCI no.	CAS No.	Compound name	EU-LCI limit (µg/m³)	Status of EU-LCI value	Year of adoption	CMR?
6-6	108-32-7	Propylene carbonate	1800	Derived EU-LCI	2021	No
6-7	623-84-7	Propylene glycol diacetate	1600	Derived EU-LCI (read-across)	2018	No
6-8	110-98-5, 25265-71-8	Dipropylene glycol	670	Ascribed EU-LCI	2013	No
6-9	110-63-4	1,4-Butanediol	2000	Ascribed EU-LCI	2013	No
6-10	107-41-5	Hexylene glycol (2-methyl-2,4-pentanediol)	3500	Derived EU-LCI	2018	No
6-11	6846-50-0	2,2,4-Trimethylpentanediol diisobutyrate	1300	Derived EU-LCI	2018	H361, H361d
6-12	109-86-4	Ethylene glycol monomethyl ether (2-methoxyethanol)	100	Derived EU-LCI	2018	H360FD
6-13	110-49-6	2-Methoxyethyl acetate	150	Derived EU-LCI (read-across)	2018	H360FD
6-14	110-71-4	1,2-Dimethoxyethane	100	Derived EU-LCI	2020	H360FD
6-15	111-96-6	Diethylene glycol dimethyl ether (1-Methoxy-2-(2-methoxy-ethoxy)-ethane	28	Ascribed EU-LCI	2013	H360FD
6-16	25265-77-4	2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate (Texanol)	850	Derived EU-LCI	2018	No
6-17	109-59-1	Ethylene glycol isopropylether (2-Methylethoxyethanol)	220	Ascribed EU-LCI	2013	No
6-18	112-49-2	Triethylene glycol-dimethyl ether	150	Derived EU-LCI	2019	H360Df
6-19*	110-80-5	Ethylene glycol monoethyl ether (2-ethoxyethanol)	30	Derived EU-LCI	2022	H360FD
6-20*	111-15-9	2-Ethoxyethyl acetate	50	Derived EU-LCI (read-across)	2022	H360FD
6-21	629-14-1	1,2-Diethoxyethane	150	Derived EU-LCI	2020	H360Df
6-22	111-90-0	Diethylene glycol monoethyl ether (2-(2-ethoxyethoxy) ethanol)	350	Ascribed EU-LCI	2013	H361; H360
6-23	2807-30-9	Ethylene glycol monoisopropyl ether (2-Propoxyethanol)	860	Ascribed EU-LCI	2013	No
6-24	111-76-2	Ethylene glycol monobutylether (2-butoxyethanol)	1600	Derived EU-LCI	2016	No
6-25	112-07-2	2-Butoxyethyl acetate	2200	Derived EU-LCI (read-across)	2016	No
6-26	112-34-5	Diethylene glycol monobutylether	350	Derived EU-LCI	2019	No
6-27	124-17-4	Diethylene glycol monomethyl ether acetate (Butyldiglykolacetate, 2-(2-butoxyethoxy) ethyl acetate)	850	Ascribed EU-LCI	2013	No
6-28	122-99-6	2-Phenoxyethanol	60	Derived EU-LCI	2016	No
6-29	112-25-4	Ethylene glycol n-hexyl ether (2-hexoxyethanol)	900	Derived EU-LCI	2019	No
6-30	112-59-4	Diethylene glycol n-hexyl ether (2-(2-hexoxyethoxy)-ethanol)	400	Derived EU-LCI (read-across)	2019	No
6-31	107-98-2	Propylene glycol monomethyl ether (1-methoxy-2-propanol)	7900	Derived EU-LCI	2018	No
6-32	1589-47-5	1-Propylene glycol 2-methyl ether (2-methoxy-1-propanol)	19	Ascribed EU-LCI	2013	H360D
6-33	70657-70-4	1-Propylene glycol 2-methyl ether acetate (2-methoxy-1-propyl acetate)	28	Ascribed EU-LCI	2013	H360D
6-34	7778-85-0	1,2-Propylene glycol dimethyl ether	500	Derived EU-LCI	2019	No
6-35	34590-94-8	Dipropylene glycol monomethyl ether	3100	Ascribed EU-LCI	2013	No
6-36	88917-22-0	Dipropylene glycol monomethyl ether acetate	950	Derived EU-LCI (read-across)	2019	No
6-37	29911-27-1	Dipropylene glycol mono-n-propylether	200	Derived EU-LCI (read-across)	2019	No
6-38	29911-28-2 35884-42-5 132739-31-2	Dipropylene glycol mono-n(t)-butylether	250	Derived EU-LCI	2019	No
6-39	20324-33-8 25498-49-1	Tripropylene glycol mono-methylether	1200	Derived EU-LCI	2018	No
6-40	63019-84-1, 89399-28-0, 111109-77-4	Dipropylene glycol dimethyl ether	1300	Ascribed EU-LCI	2013	

EU-LCI no.	CAS No.	Compound name	EU-LCI limit (µg/m³)	Status of EU-LCI value	Year of adoption	CMR?
6-41	2517-43-3	3-Methoxy-1-butanol	1700	Derived EU-LCI	2021	No
6-42	1569-01-3 30136-13-1	1,2-Propylene glycol n-propylether	5200	Derived EU-LCI	2021	No
6-43	5131-66-8 29387-86-8 15821-83-7 63716-40-5	1,2-Propylene glycol n-butylether	650	Derived EU-LCI	2018	No
6-44	104-68-7	Diethylene glycol phenylether	80	Derived EU-LCI (read-across)	2019	No
6-45	126-30-7	Neopentyl glycol	8700	Derived EU-LCI	2020	No
7-ALDEHYDES						
7-1	50-00-0	Formaldehyde	100	Derived EU-LCI	2016	H341; H350
7-2	75-07-0	Acetaldehyde	300	Derived EU-LCI	2020	H341; H350
7-3	123-38-6	Propanal	650	Derived EU-LCI	2018	No
7-4	123-72-8	Butanal	650	Derived EU-LCI	2013	No
7-5	110-62-3	Pentanal	800	Derived EU-LCI (read-across)	2013	No
7-6	66-25-1	Hexanal	900	Derived EU-LCI (read-across)	2013	No
7-7	111-71-7	Heptanal	900	Derived EU-LCI (read-across)	2013	No
7-8	123-05-7	2-Ethyl-hexanal	900	Derived EU-LCI (read-across)	2013	H361
7-9	124-13-0	Octanal	900	Derived EU-LCI (read-across)	2013	No
7-10	124-19-6	Nonanal	900	Derived EU-LCI (read-across)	2013	No
7-11	112-31-2	Decanal	900	Derived EU-LCI (read-across)	2013	No
7-12	4170-30-3 123-73-9 15798-64-8	2-Butenal (Crotonaldehyd)	5	Derived EU-LCI	2015	H341
7-13	1576-87-0 764-39-6 31424-04-1	2-Pentenal	7	Derived EU-LCI (read-across)	2015	No
7-14	6728-26-3 505-57-7 16635-54-4 1335-39-3 73543-95-0	2-Hexenal	7	Derived EU-LCI (read-across)	2015	No
7-15	2463-63-0 18829-55-5 57266-86-1 29381-66-6	2-Heptenal	7	Derived EU-LCI (read-across)	2015	No
7-16	2363-89-5 2548-87-0 25447-69-2 20664-46-4	2-Octenal	7	Derived EU-LCI (read-across)	2015	No
7-17	2463-53-8 18829-56-6 60784-31-8	2-Nonenal	7	Derived EU-LCI (read-across)	2015	No
7-18	3913-71-1 2497-25-8 3913-81-3	2-Decenal	7	Derived EU-LCI (read-across)	2015	No
7-19	2463-77-6 53448-07-0 1337-83-3	2-Undecenal	7	Derived EU-LCI (read-across)	2015	No
7-20	98-01-1	Furfural	10	Derived EU-LCI	2017	H351
7-21	111-30-8	Glutaraldehyde	1	Derived EU-LCI	2018	No
7-22	100-52-7	Benzaldehyde	-	No EU-LCI value due to insufficient data	2013	No
8-KETONES						
8-1	78-93-3	2-Butanone (ethylmethylketone)	20000	Derived EU-LCI	2016	No

EU-LCI no.	CAS No.	Compound name	EU-LCI limit (µg/m³)	Status of EU-LCI value	Year of adoption	CMR?
8-2	563-80-4	3-Methyl-2-butanone	7000	Ascribed EU-LCI	2013	No
8-3	108-10-1	4-Methyl-2-pentanone (methylisobutylketone)	1000	Derived EU-LCI	2016	H351
8-4	120-92-3	Cyclopentanone	1200	Derived EU-LCI	2020	No
8-5	108-94-1	Cyclohexanone	1400	Derived EU-LCI	2021	No
8-6	1120-72-5	2-Methylcyclopentanone	1400	Derived EU-LCI (read-across)	2020	No
8-7	583-60-8	2-Methylcyclohexanone	2300	Ascribed EU-LCI	2013	No
8-8	98-86-2	Acetophenone	490	Ascribed EU-LCI	2013	No
8-9	116-09-6	1-Hydroxyacetone (1-hydroxy-2-propanone)	2100	Derived EU-LCI (read-across)	2019	H341
8-10	67-64-1	Acetone	120000	Derived EU-LCI	2018	No
9-ACIDS						
9-1	64-19-7	Acetic acid	1200	Derived EU-LCI	2016	No
9-2	79-09-4	Propionic acid	1500	Derived EU-LCI	2016	No
9-3	79-31-2	Isobutanoic acid (isobutyric acid)	1800	Derived EU-LCI (read-across)	2018	No
9-4	107-92-6	Butanoic acid (butyric acid)	1800	Derived EU-LCI (read-across)	2018	No
9-5	75-98-9	2,2-Dimethylpropanoic acid (pivalic acid)	2100	Derived EU-LCI (read-across)	2018	No
9-6	109-52-4	n-Pentanoic acid (valeric acid)	2100	Derived EU-LCI (read-across)	2018	No
9-7	142-62-1	n-Hexanoic acid (caproic acid)	2100	Derived EU-LCI (read-across)	2018	No
9-8	111-14-8	n-Heptanoic acid	2100	Derived EU-LCI (read-across)	2018	No
9-9	124-07-2	n-Octanoic acid	2100	Derived EU-LCI (read-across)	2018	No
9-10	149-57-5	2-Ethylhexanoic acid	150	Derived EU-LCI	2014	H361; H360D; H360Df; H361d
10-ESTERS						
10-1	108-21-4	Propyl acetate (n-, iso-)	4200	Ascribed EU-LCI	2013	No
10-2	108-65-6	2-Methoxy-1-methylethyl acetate	650	Derived EU-LCI	2019	No
10-3	107-31-3	Methylformiate	3000	Derived EU-LCI	2021	No
10-4	592-84-7	n-Butyl formate	4900	Derived EU-LCI (read-across)	2021	No
10-5	80-62-6	Methyl methacrylate	750	Derived EU-LCI	2016	No
10-6*		Other methacrylates	-	No EU-LCI value derived	2022	n/a
10-7	110-19-0	Isobutyl acetate	4800	Ascribed EU-LCI	2013	No
10-8*	123-86-4	n-butyl acetate	8500	Derived EU-LCI	2022	No
10-9	103-09-3	2-Ethylhexyl acetate	350	Derived EU-LCI (read-across)	2018	No
10-10	96-33-3	Methyl acrylate	180	Ascribed EU-LCI	2013	No
10-11	140-88-5	Ethyl acrylate	200	Ascribed EU-LCI	2013	No
10-12	141-32-2	n-Butyl acrylate	110	Ascribed EU-LCI	2013	No
10-13	103-11-7	2-Ethylhexyl acrylate	380	Ascribed EU-LCI	2013	No
10-14		Other acrylates (acrylic acid esters)	110	Ascribed EU-LCI	2013	n/a
10-15	627-93-0	Dimethyl adipate	50	Ascribed EU-LCI	2013	H361
10-16	106-65-0	Dimethyl succinate	20	Derived EU-LCI	2020	No
10-17	1119-40-0	Dimethyl glutarate	25	Derived EU-LCI	2020	No
10-18	71195-64-7	Diisobutyl glutarate	35	Derived EU-LCI (read-across)	2020	No
10-19	925-06-4	Diisobutyl succinate	35	Derived EU-LCI (read-across)	2020	No
10-20	105-75-9	Dibutyl fumarate	50	Ascribed EU-LCI	2013	No
10-21	105-76-0	Maleic acid dibutylester	50	Ascribed EU-LCI	2013	No
10-22	13048-33-4	Hexamethylene diacrylate	10	Ascribed EU-LCI	2013	No
10-23	96-48-0	Butyrolactone	2800	Derived EU-LCI	2018	No
~~10-24~~	~~115-95-7~~	~~Linalool acetate~~		~~Removed due to non relevance~~		n/a
10-25*	97-88-1	n-Butyl methacrylate	2200	Derived EU-LCI	2022	No

EU-LCI no.	CAS No.	Compound name	EU-LCI limit (µg/m³)	Status of EU-LCI value	Year of adoption	CMR?
10-26*	688-84-6	2-Ethylhexyl methacrylate	2100	Derived EU-LCI	2022	H361
11-CHLORINATED HYDROCARBONS						
11-1	127-18-4	Tetrachloroethene	80	Derived EU-LCI	2018	H351
~~11-2~~	~~56-23-5~~	~~Tetrachloromethane~~		~~Removed due to non-relevance~~		n/a
11-3	106-46-7	1,4-Dichlorobenzene	150	Derived EU-LCI	2013	H351
12-OTHERS						
12-1	123-91-1	1,4-Dioxane	400	Derived EU-LCI	2015	H350
12-2	105-60-2	Caprolactame	300	Derived EU-LCI	2013	No
12-3	872-50-4	N-methyl-2-pyrrolidon	1800	Derived EU-LCI	2016	H360D
12-4*	556-67-2	Octamethylcyclotetrasiloxane (D4)	116000	Derived EU-LCI	2022	H361f
12-5*	541-02-6	Decamethylcyclopentasiloxane (D5)	20000	Derived EU-LCI value	2022	H361
12-6*	540-97-6	Dodecamethylcyclohexasiloxane (D6)	10000	Derived EU-LCI value	2022	No
12-7	100-97-0	Hexamethylenetetramine	30	Ascribed EU-LCI	2013	No
12-8	96-29-7	2-Butanonoxime	15	Derived EU-LCI	2015	H350
12-9	126-73-8	Tributyl phosphate	300	Derived EU-LCI	2016	H351
12-10	78-40-0	Triethyl phosphate	1700	Derived EU-LCI	2021	No
12-11	26172-55-4	5-chloro-2-methyl-2H-isothiazol-3-one (CIT)	1	Ascribed EU-LCI	2013	No
12-12	2682-20-4	2-Methyl-4-isothiazolin-3-one (MIT)	100	Ascribed EU-LCI	2013	No
12-13	121-44-8	Triethylamine	60	Derived EU-LCI	2017	No
12-14	109-99-9	Tetrahydrofuran	500	Derived EU-LCI	2018	H351
12-15*	68-12-2	Dimethylformamide	50	Derived EU-LCI value	2022	H360D
12-16*	107-50-6	Tetradecamethylcycloheptasiloxane (D7)	10000	Derived EU-LCI value	2022	No
12-17	2687-91-4	N-Ethyl-2-pyrrolidone	400	Derived EU-LCI	2016	H360D

** Indicates that entries are new or altered since last version of EU LCI values*

Source: Own elaboration based on European Commission – EU-LCI values and ECHA C&L inventory.

Table 23. List of carcinogenic VOCs relevant to paint and varnish products

No.	CAS	Name	CMR CLP hazards	EU-LCI value?
1.	79-06-1	Acrylamide	H340; H350; H361f	No
2.	107-13-1	Acrylonitrile	H350	No
3.	106-92-3	Allyl glycidyl ether	H341; H351; H361f	No
4.	71-43-2	Benzene	H340; H350	No
5.	1464-53-5	2,2'-Bioxirane	H340; H350	No
6.	542-88-1	Bis (chloromethyl) ether	H350	No
7.	101-90-6	Resorcinol diglycidyl ether	H341; H350	No
8.	106-47-8	4-Chloroaniline	H350	No
9.	106-89-8	Epichlorhydrine	H350	No
10.	51594-55-9	(R)-(-)-Epichlorohydrine	H350	No
11.	95-69-2	4-Chloro-2-methylaniline	H341; H350	No
12.	100-44-7	Benzyl chloride	H350	No
13.	14977-61-8	Chromyl chloride	H340; H350i	No
14.	96-12-8	1,2-Dibromo-3-chloropropane	H340; H350; H360F	No
15.	106-93-4	1,2-Dibromoethane	H350	No
16.	764-41-0	1,4-Dichlorobut-2-ene	H350	No
17.	107-06-2	Ethylene dichloride	H350	No
18.	96-23-1	1,3-Dichloro-2-propanol	H350	No

No.	CAS	Name	CMR CLP hazards	EU-LCI value?
19.	79-44-7	Dimethylcarbamoyl chloride	H350	No
20.	540-73-8	N,N'-Dimethylhydrazine; 1,2-Dimethylhydrazine	H350	No
21.	106-87-6	Vinylcyclohexane diepoxide	H341; H350; H360F	No
22.	680-31-9	Hexamethylphosphoric triamide	H340; H350	No
23.	90-04-0	2-Methoxyaniline	H341; H350	No
24.	120-71-8	6-Methoxy-m-toluidine	H350	No
25.	592-62-1	Methyl azoxy methyl acetate	H350; H360D	No
26.	838-88-0	4,4-Methylenedi-o-toluidine	H350	No
27.	15159-40-7	Morpholine-4-carbonyl chloride	H351	No
28.	79-46-9	2-Nitropropane	H350	No
29.	924-16-3	N-Nitrosodibutylamine	H351	No
30.	55-18-5	N-Nitrosodiethylamine	H350; H341; H340	No
31.	621-64-7	Nitrosodipropylamine	H350	No
32.	601-77-4	N-Nitrosodiisopropylamine	H340; H350	No
33.	612-64-6	N-Ethyl-N-nitrosoaniline	H350	No
34.	1116-54-7	2,2'-(Nitrosoimino)bisethanol	H350	No
35.	10595-95-6	N-Methyl-N-nitroso-ethylamine	H351; H361	No
36.	59-89-2	N-Nitrosomorpholine	H341; H350	No
37.	100-75-4	N-Nitrosopiperidine	H351	No
38.	930-55-2	N-Nitrosopyrrolidine	H351; H341; H350	No
39.	88-72-2	2-Nitrotoluene	H340; H350; H361f	No
40.	122-60-1	Phenyl glycidyl ether	H341; H350	No
41.	1120-71-4	1,3-Propansulton	H350	No
42.	91-22-5	Quinoline	H341; H350	No
43.	94-59-7	5-Allyl-1,3-benzodioxole	H341; H350	No
44.	96-09-3	Styrene oxide	H350	No
45.	95-06-7	Sulfallate	H350	No
46.	5216-25-1	4-Chlorobenzotrichloride	H350; H361f	No
47.	509-14-8	Tetranitromethane	H351	No
48.	95-53-4	o-Toluidine	H350	No
49.	2431-50-7	2,3,4-Trichlorobut-1-ene	H351	No
50.	79-01-6	Trichloroethylene	H341; H350	No
51.	96-18-4	1,2,3-Trichloropropane	H350; H360F	No
52.	98-07-7	Benzotrichloride	H350	No
53.	137-17-7	2,4,5-Trimethylanilin	H350	No
54.	51-79-6	Urethane	H350	No

Source: Own elaboration

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