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

Draft Technical Report v2.0

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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). 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 second version of the Technical Report is to summarise the outcomes of the analysis of the current criteria following the 1st Ad-Hoc Working Group (AHWG) meeting and subsequent Working Sub-Groups meetings. Four Working Sub-Groups (WSGs) were established after the 1st AHWG meeting as further discussions were identified to be necessary in four areas of work. These meetings were held with stakeholders that provided their Expression of Interest to participate and exchanges before and after the meetings took place with the development of working papers on the selected subjects. In this line, the Working Sub-Groups established were: Working Sub-Group 1 on Product category hierarchy and definitions; Working Sub-Group 2 on Licence data; Working Sub-Group 3 on Explaining technical performance requirements and Working Sub-Group 4 on Carbon Footprint. The background information and minutes of these meetings are also available in the Product Policy Analysis (before Product Bureau) website[1].

This second version of the Technical Report includes the proposed expansion on the scope of the EU Ecolabel criteria to include 2 different additional types of paint products. Following the scope adjustments, a revised restructuring of the criteria is also presented for stakeholders' consideration. The presented structure splits the criteria in 3 Annexes: Decorative paints, varnishes and related product; Performance coatings and related products and Water-based aerosol spray paints.

The present 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 2nd Ad-Hoc Working Group (AHWG) meeting, scheduled for November 2024, and the following stakeholder consultation. This Technical Report is supported and complemented by the draft Preliminary Report 2 (updated after the comments received following the 1st AHWG meeting), which is published in parallel with this Technical Report.

In this second version of the Technical Report, which should be considered as a working document that will evolve into later versions during the project, the first proposal for the revised EU Ecolabel criteria have been revised based on stakeholder inputs received to date and known issues with the existing criteria that were flagged during the 1st AHWG meeting and working sub-group meetings. 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] 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

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[2] 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 new Circular Economy Action Plan (CEAP) from March 2020, being regarded as an important tool whose criteria will be developed in synergy with future Ecodesign measures. As a part of the circular economy package, the European Commission has adopted the Directive on empowering consumers for the green transition[3]. 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[4]). 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 2 (hereafter, TR2) addresses the requirements of EU Ecolabel Regulation 66/2010 and its main purpose is to summarise the results from the 1st AHWG meeting and working subgroup discussions about the extension of the criteria and the addition of new criteria and limits according to stakeholders acceptance and comments. This TR2 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 draft TR2 is supported and complemented by the draft Preliminary Report 2 published in parallel in October 2024, ahead of the 2nd Ad-Hoc Working Group (AHWG2) meeting scheduled for November 2024. The draft Preliminary Report 2 includes analyses of the scope and definition, market analysis, and technical analysis. In the draft Preliminary Report 2, the results of a life cycle assessment (LCA) for different products under the scope of the EU Ecolabel criteria were presented for the identification of the environmental hotspots.

Bringing together the information in the associated draft Preliminary Report 2 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 initial inputs from stakeholders, a second

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

[3] 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

[4] 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

proposal for a set of revised EU Ecolabel criteria is presented in this TR2. The entire life cycle of the products is considered, from 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, working sub-group meetings, 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 TR2 is structured as follows:

- Introduction (Chapter 1): this section describes the goal of the project and the structure of the document.
- Summary of the draft Preliminary Report 2 (Chapter 2): this section summarises the main findings from the draft Preliminary Report 2, especially with respect to market analysis and technical analysis, including an overview of the results of the LCA screening studies.
- Scope, definitions and criteria structure (Chapter 3): this section reports proposals for potential changes to the 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 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 proposal for Annex I: **"**Decorative paints and varnishes and related products**"**, Annex II: **"**Performance coatings and related products**"** and Annex III: **"**Water-based aerosol spray paints**"** (Chapter 5, 6 and 7, respectively): 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. For transparency, a table of all comments received during the public consultation periods, together with responses and explanations on how they have been addressed in the next rounds of criteria proposals, are published as a separate document.

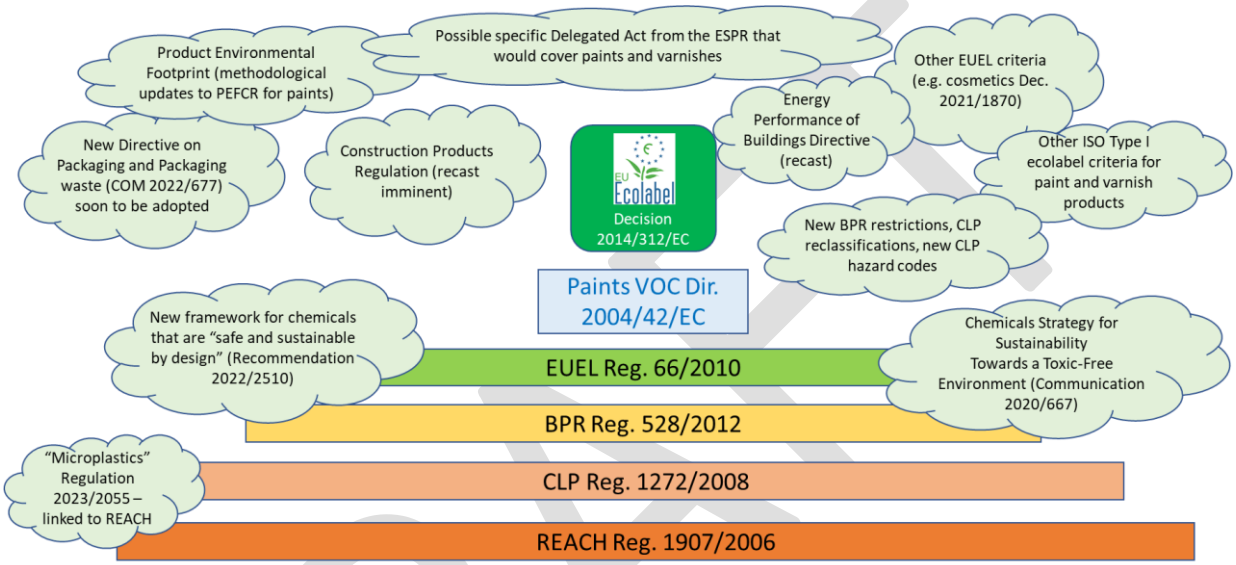
2 Summary of draft Preliminary Report 2

The summary here reflects the content of updated draft Preliminary Report 2 (PR2). 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[5];
- 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.

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

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) which are now adopted and the Construction Products Regulation (CPR) which should be adopted soon. Moreover, the Packaging and Packaging Waste Regulation (PPWR)[6] is soon-to-be adopted. 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 2 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) and the Energy Performance of Buildings Directive (EPBD) that are important drivers for the new criteria proposals for VOC emissions and carbon footprinting requirements.

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[7]

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.	

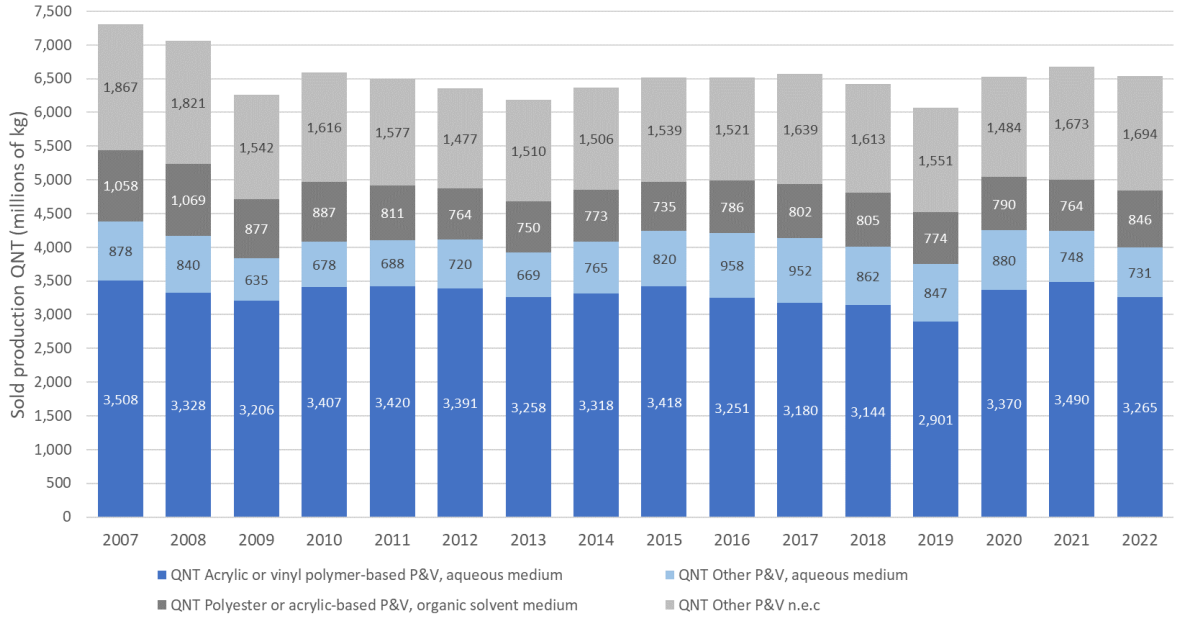
Source: Combination of Eurostat PRODCOM and own elaboration.

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.

[6] https://environment.ec.europa.eu/publications/proposal-packaging-and-packaging-waste_en

[7] 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

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%).

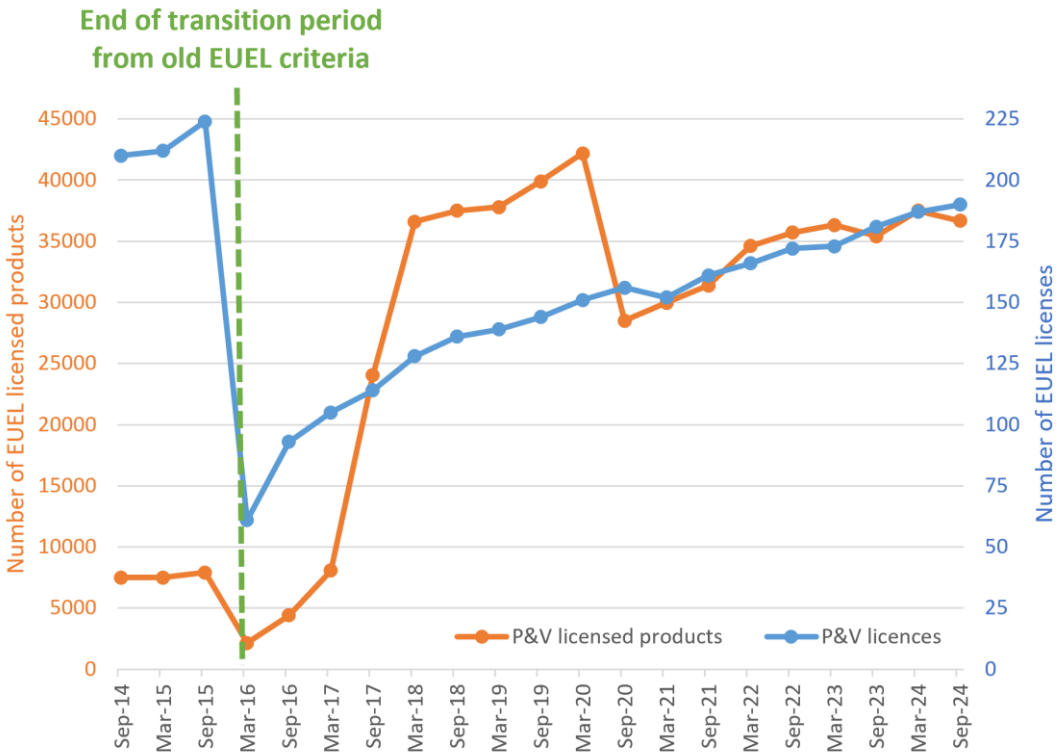
Paint manufacturers rely heavily on the supply of raw materials from other companies and only some of the larger multinational manufacturers also produce (some) of the raw materials they use, which they will also normally sell to competing paint and varnish manufacturers. At global level, there have 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[8]) and one for outdoor paints and varnishes (Decision 2009/543/EC[9]). 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.

[8] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32009D0544
[9] 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[10]

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.

[10] 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.
SCHWEIZER STIFTUNG FARBE	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 included in the draft Preliminary Report 2. 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 were considered suitable for reading in more detail. From the 13 EPDs, 8 concerned indoor paints[11], 2 concerned outdoor paints[12], 1 looked at both indoor and outdoor paints[13] and 2 looked at varnishes[14]. 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:

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

[12] Jotashied Decor traditional Tex, Dyrup Acryl mellemmalling

[13] Paintlac

[14] Pinturas Macy, Juno varnishes

297 — Indoor wall paint,

298 — Outdoor wall paint,

299 — Indoor wood varnish,

300 — Outdoor wood varnish,

301 — Water-and solvent-based aerosol spray paint.

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

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

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

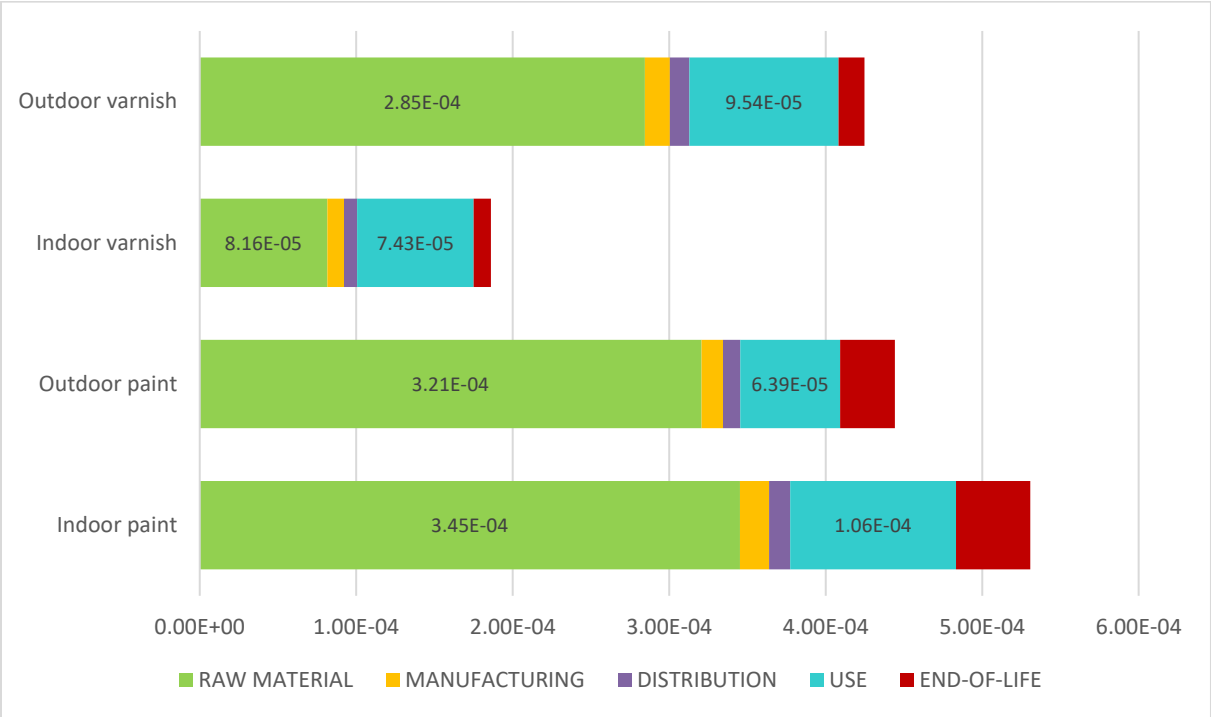
309 Table 3. Reference flow calculation assumptions.

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

310 *Source: Own elaboration.*

311 A comparison of results generated from the LCA modelling after normalisation and weighting according to the
312 PEF methodology, showed the results in the figure below for the indoor and outdoor paints and varnishes, split
313 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.



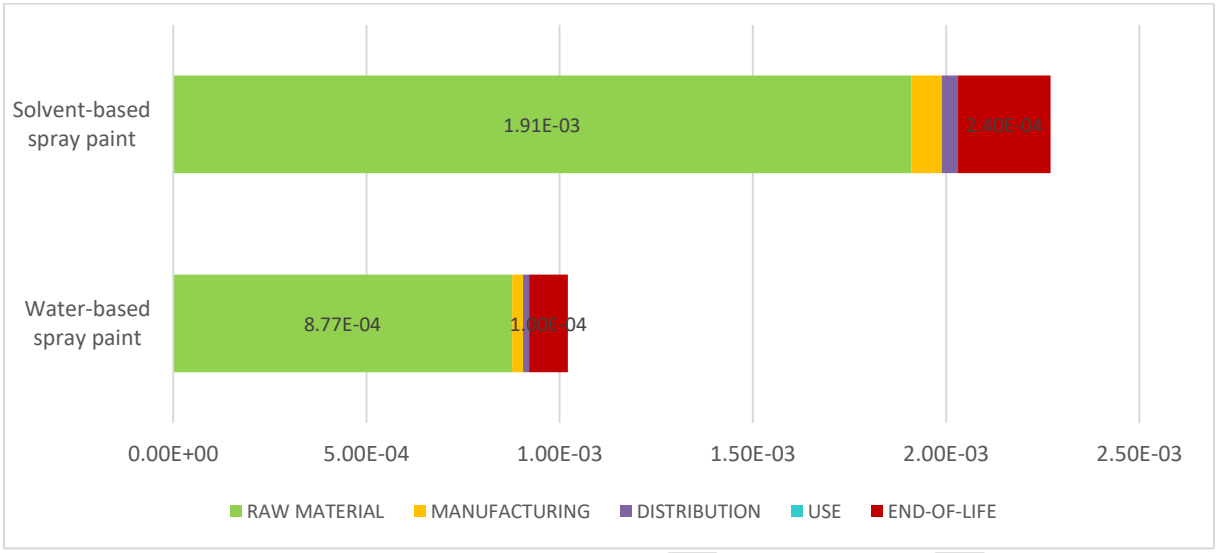
Source: Own elaboration.

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 the figure below.

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 microplastic 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 microplastics.

3 Scope, definitions and criteria structure

The second proposal is presented below in a track change style, so that the differences from the first proposed scope, from the first draft Technical Report (TR1) 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

A first draft of the new proposal scope text is presented below.

TR1: First proposed scope
1. The product group of 'indoor and outdoor paints and varnishes' shall comprise the following indoor and outdoor decorative paints, ~~and~~ varnishes, woodstains and related products intended for use by consumers and professional users via application to buildings, their trim and fittings, and associated structures: ~~falling under the scope of Directive 2004/42/CE of the European Parliament and of the Council (1).~~ (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 woodstains (f) minimal build woodstains (g) primers (h) binding primers (i) one-pack performance coatings (j) two-pack performance coatings (k) multicoloured coatings (l) decorative effect coatings (m) anti-rust paints (n) floor coatings and floor paints (o) wood paints (p) wood and decking stains (q) tinting pastes? The paint categories referred to above include base paints and different colour shades achieved by tinting, either predefined by the manufacturer or at the customised request of consumers or professional decorators to operators of tinting systems. ~~2. The product group of 'indoor and outdoor paints and varnishes' shall comprise: floor coatings and floor paints; paint products which are tinted by distributors at the request of consumer (non-professional) or professional decorators; tinting systems, decorative paints in liquid or paste formulas which may have been pre-conditioned, tinted or prepared by the manufacturer to meet consumer's needs, including wood paints, wood and decking stains, masonry coatings and metal finishes primers and undercoats of such product systems as defined in Annex I to Directive 2004/42/CE.~~ ~~3~~2. The product group shall not comprise the following products: (a) anti-fouling coatings; (b) preservation products for wood impregnation; (c) coatings for particular industrial and professional uses, including heavy-duty coatings; (d) powder coatings (this does not apply to cement paints or other "just add water" paints, see definition in Article 2(x)); (e) UV curable paint systems; (f) paints primarily intended for vehicles; (g) product which primary function is not to form a continuous film over the substrate, e.g. oils and waxes *(subject to change if scope is expanded)*; (h) fillers as defined by EN ISO 4618; (i) road-marking paints (*subject to change if scope is expanded*).
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 ~~the following~~ indoor and outdoor ~~decorative~~ paints, varnishes, woodstains and ~~related products~~ primers whose primary purpose is to impart decorative characteristics to buildings, their trim and fittings and associated structures ~~intended for use by consumers and professional users via application 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).

~~(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 woodstains~~

~~(f) minimal build woodstains~~

~~(g) primers~~

~~(h) binding primers~~

~~(i) one pack performance coatings~~

~~(j) two pack performance coatings~~

~~(k) multicoloured coatings~~

~~(l) decorative effect coatings~~

~~(m) anti rust paints~~

~~(n) floor coatings and floor paints~~

~~(o) wood paints~~

~~(p) wood and decking stains~~

~~(q) tinting pastes?~~

~~The paint categories referred to above~~ 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 ~~or~~ (professional or non-professional) ~~decorators~~ 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 ~~comprise the following products~~:

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. ~~Preservation products for wood impregnation~~ Wood preservatives.

~~(d) powder coatings (this does not apply to cement paints or other "just add water" paints, see definition in Article 2(x));~~

~~(e) UV curable paint systems;~~

f. Coatings ~~for particular industrial and professional uses, including heavy duty 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. ~~Paints~~ 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. ~~*(subject to change if scope is expanded)*~~
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 ~~(subject to change if scope is expanded)~~

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.

Rationale for proposed scope text:

This second proposal include the definition of three products groups as outlined in the proposed Articles 1, 2 and 3 of the draft Act. The related criteria are to be defined in three separate Annexes of the Commission Decision. These Annexes being: **"decorative paints and varnishes and related products"** (Annex I) and **"performance coatings** and related products**"** (Annex II). Furthermore, Annex III is introduced to **include "**water-based aerosol spray paints**" as part of the scope extensio**n.

Initially, there was reluctance to expand the scope of the EU Ecolabel for indoor and outdoor paints and varnishes. The feedback suggested that the current criteria were already challenging to follow, and adding more products would only increase the complexity. However, after discussions in the Working Sub-Groups (WSGs), it was agreed with stakeholders to divide the scope into the three mentioned Annexes.

The primary reason for dividing the criteria into separate annexes was to simplify the structure, rather than consolidating all criteria into a single annex. The addition of water-based aerosol spray paints and waterproofing products further necessitated this division.

Regarding Articles 1 and 2: The idea of splitting the scope into two annexes (i.e. via two scopes described in Articles 1 and 2) is aimed to make a clear distinction between coating products covered by Directive 2004/42/CE whose primary purpose is "decorative", and coatings covered by the same Directive whose primary purpose is [technical] "performance" (Article 2). While there is always a certain technical performance associated with decorative coating layers and a normally a certain decorative effect associated with performance coating layers, a clear distinction can be made by using the subcategories of coating products listed in section 1.1 of Annex I to Directive 2004/42/CE. The scope of decorative paints (Article 1) basically identifies all 12 of the subcategories in section 1.1 of Annex I as being in the scope, and then explicitly excludes 4 of them for different reasons.

The first two categories excluded from Article 1 are excluded because they are considered as "performance" coatings (i and j) and are dealt with in Article 2. The next subcategory excluded is multi-coloured coatings (subcategory k). Although this latter category is a "decorative" coating, there were no specific requirements for

them in the 2014 criteria. In the absence of input about these products and to clear up doubts about their inclusion or non-inclusion, they are now explicitly excluded. The final subcategory explicitly excluded is decorative effect coatings (subcategory I). These were previously in the scope but have very different use characteristics compared to the other decorative paint subcategories – in particular, have a very low spreading rate and the joint highest allowed VOC content. Due to a lack of input about these products and the very likely higher environmental impacts when compared to other decorative coatings, these products are now proposed to be excluded from the scope.

In Article 1, the three exclusions of "*coatings for particular industrial processes …*", "*UV curable paint systems*" and "*powder coatings*" have been combined since the latter two are simply specific examples of the former. The same approach has been used in Article 2 for performance coatings. In both cases, the term "*coatings for particular industrial and professional uses …*" has been changed to "*coatings and coating systems designed for use in industrial processes…*". The main reason for this change is that the previous use of the word "*particular*" implied that only some industrial and professional processes were excluded – leading to the question of which industrial and professional processes might not be excluded. In the present TR2 proposal, all coatings designed for use in industrial processes are excluded, namely coating processes that would be applied in a factory on a production line or in a batch process. They are excluded both from Article 1 and Article 2. Professional processes are not explicitly excluded together with industrial processes because many professional services could easily include the application of decorative or performance coatings by professionals to buildings, their trim, fittings and associated structures. The only difference might be that they use different equipment to apply the coating to the substrate.

Other changes to the scope for decorative paints included the change to the wording for excluded product categories to make it easier to understand. For example, the term "*wood preservatives*" is used now instead of "*Preservation products for wood impregnation*" and instead of saying "*powder coatings*", the text "*Cement-based paints where cement is used as a binder in the formulation*" is used. In the latter case, this extra wording has been used to avoid previous confusion shown by several stakeholders in distinguishing between cement-based paints and paints for cement-based substrates. The exclusion of "*fillers*" has been extended to also include "*plasters, grouts, sealants and adhesives*", just for clarity.

On the exclusion of oils, waxes and road markings: Oils and waxes remain out of the scope after some initial consideration about their inclusion. The main reasons for not including them were a lack of interest from producers and major difficulties in identifying potential EU Ecolabel criteria that would allow for distinction between the environmental performance of different oil and wax products.

With road markings, these are confirmed as being out of the scope of Article 1 because they are not decorative paints and out of the scope of Article 2 because the industry representatives were actively opposed to their inclusion in the EU Ecolabel. The main reasons provided were that road markings are not products used by regular consumers and they are not used in "*buildings, their trim, fittings or associated structures*" unlike the other products in the 2014 criteria scope. Furthermore, there are a wide range of different road marking chemistries and application methods which produce coatings that have to meet stringent road safety and durability standards. A completely new approach to the criteria would be needed to develop suitable criteria for road marking paints and even with such a major investment in criteria development, it might be that the EU Ecolabel could inadvertently lead to a compromise between environmental performance and safety or durability of road markings.

Regarding the inclusion of "just add water" paints in Article 1: A major change to the scope was to include a certain category of decorative paints that are supplied in powder. To use them, it is necessary to mix them with water following the instructions of the manufacturer. The resulting paint can then be used like a typical water-based decorative paint. This type of paint product is relatively new and does not fit directly with any of the subcategories in Directive 2004/42/CE because they do not contain solvents in the first place. In order to include them in the scope, it was necessary to add a specific paragraph to describe their inclusion. The reason for including these products is because the authors believe that they offer important environmental advantages such as avoiding the need for in-can preservatives, savings in transport impacts since water is only added at the point of use, and the option to prepare quantities of paint as and when needed, reducing the amount of waste due to spoilage on the shelf and half-empty cans when the job is done.

Regarding the scope of performance coatings in Article 2: All performance coatings must fall within the scope of Directive 2004/42/CE, specifically under subcategories (i) and (j). Upon reading these subcategories, this specifically refers to:

- 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 coatings,
- flame retardant coatings, and
- coatings for hygiene standards in the food or drink industry or health services.

This list of performance coatings from Directive 2004/42/CE is actually non-exhaustive because this list is preceded by the text: "… designed for applications requiring a special performance, **such as…**". Therefore, further discussion about what is in and out of the scope of Article 2 is foreseen to take place during the 2nd AHWG meeting. Nonetheless, it has been proposed to explicitly exclude two of the subcategories listed above. First of all, coatings that provide a flame retardancy function are proposed to be excluded because it is highly likely that they will contain hazardous substances that would require specific derogations. Secondly, coatings for hygiene standards are excluded because they are likely to contain biocidal active substances at levels that would require further derogations. Another point to note is that the terms "*one-pack*" and "*multi-pack*" are used in the proposed criteria whereas Directive 2004/42/CE refers to "*one pack*" and "*two-pack*". By using the term "*multi-pack*", other coating formulas that may use three or even four components are also included.

Rationale for the inclusion of water-based aerosol spray paints in the scope (Article 3): The principal objective of Directive 2004/42/CE was to reduce VOC emissions from certain paints, varnishes and vehicle refinishing products. Aerosols were explicitly excluded from the paints and varnishes (subcategories 1.1) of the Directive. For this reason, aerosols were also excluded from the scope of the 2014 EU Ecolabel criteria. However, aerosols were actually included in the Directive under the vehicle refinishing paints (subcategories 2.1, being considered as an example of "special finishes"). The legal limit for special finishes, which includes aerosol paints, was set at 840 g/L in Directive 2004/42/CE, much higher than the limits set for the water-based paints and varnishes in the same Directive. Article 9 of Directive 2004/42/CE set out a review clause to consider the inclusion of potential VOC limits for aerosols within the scope of the paints and varnishes section of the Directive by 2008, but this revision is not planned at the moment.

In recent years, the development of water-based alternatives to aerosol spray paint formulations offers an opportunity to greatly reduce VOC emissions from these products and deliver a number of environmental benefits associated with the replacement of organic solvents by water. According to input from manufacturers, the difference in VOC content of organic solvent-based aerosol paints and water-based aerosol paints is a factor of 2 (decreasing from around 600 g/L to 300 g/L). It was agreed to carry out further research to determine if the water-based aerosol paints deliver suitably large environmental improvements compared to the normal organic solvent-based aerosols. Such research, which is described in more detail further below, concluded that the environmental benefits were sufficient to justify their inclusion in the scope of the EU Ecolabel. However, due to the differences in the way these products are used, it was appropriate for them to be included in a standalone annex, hence the reason for the scope being defined in Article 3.

An extra benefit of the shift to water-based formulations in aerosol spray paints is that highly flammable solvents like acetone are replaced by water. Some flammable ingredients still remain in water-based aerosol spray paints, but they are present in levels that are low enough so that the aerosol is not classified as flammable. To meet the criteria for an aerosol to be non-flammable, either the formulation has to contain ≤1% flammable components (by mass) or meeting the following conditions:

- Have less than 85% flammable components (by mass),
- Ignition shall not occur at a distance of ≥ 75cm in the ignition test,
- The heat of combustion must be < 20 KJ/g, and

- The time equivalent must be > 300 s/m3 or the deflagration density must be > 300 g/m3.

Based on flammability, aerosols are either classified as:

- Aerosol 1: meaning extremely flammable aerosol (with H222 in section 2 of SDS, with pictogram).
- Aerosol-2: meaning flammable aerosol (with H223 in section 2 of SDS, with pictogram).
- Aerosol 3: meaning non-flammable aerosol (no H code relating to flammability in section 2 of SDS, no pictogram).

The EU Ecolabel scope is basically ensuring that only Aerosol 3 type products can be awarded the ecolabel. Non-flammable aerosols also bring important safety benefits and have less storage and transport restrictions.

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 are documented in the Table of Comments (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 environmental advantages, such as reduced paint spoilage, the elimination of in-can preservatives, and reduced packaging and transport impacts.

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-skimming 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.

Further research

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.

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-	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.

Ecolabel scheme and product group	Scope	How does it compare to the EU Ecolabel?
	corrosion coatings; surface treatments containing >10% wax; fillers and wall paints (the latter covered in UZ-17).	
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 <2m²/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, woodstains and related products intended for use by consumers and professional users falling under the scope of Directive 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	Very, very similar to the scope for EU Ecolabel. Large parts of the text are literally copy-pasted, but with some notable differences too, for example with outdoor products and the anti-rust paints.

Ecolabel scheme and product group	Scope	How does it compare to the EU Ecolabel?
	anti-rust paints and outdoor products (in another product group).	

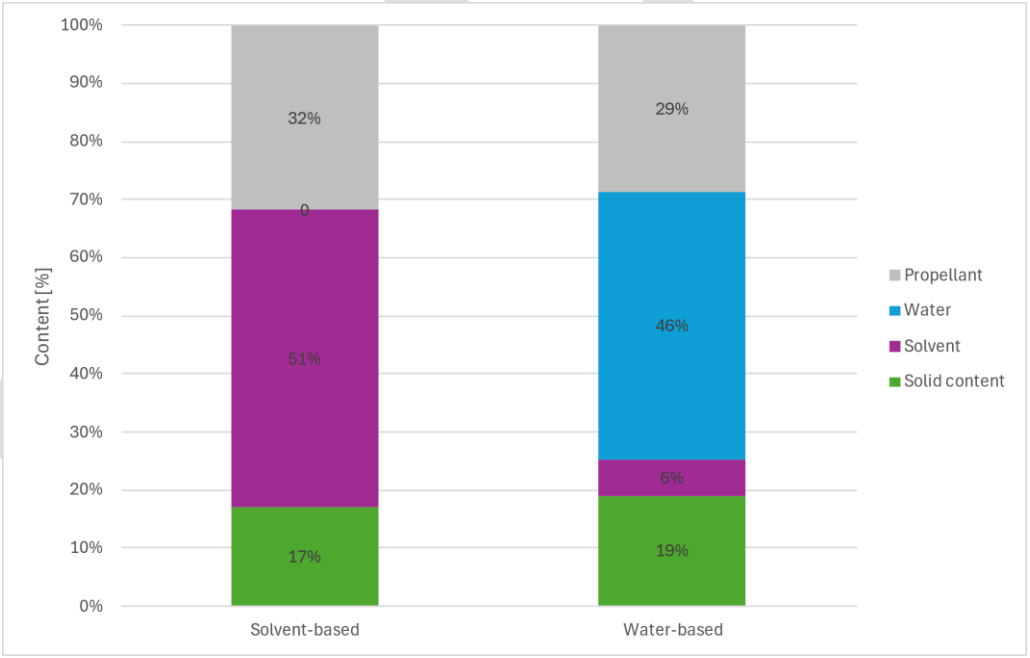
Source: Own elaboration from the various ecolabel criteria documents cited.

From the three main ecolabel schemes listed above, it can be seen that they all 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 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).

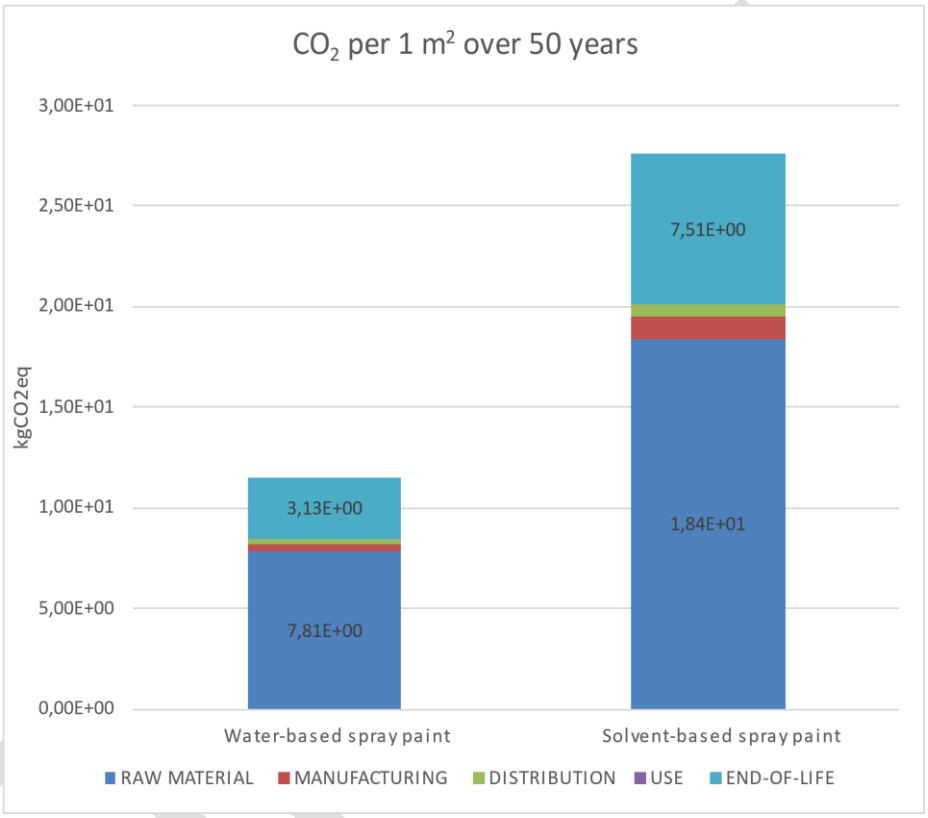
Europe is the leading producer of aerosol products worldwide, with over 5 billion cans being produced each year. Aerosol paints and varnishes account for around 5-6% of total aerosol cans produced, meaning that around 300 million cans of aerosol paints and varnish are produced each year in Europe. Of 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 Error! Reference source not found..

Figure 7. CO_2 footprint per 1 m2 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 2).

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 the scope (Article 2): Decorative paints 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 recognized 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). Stakeholder consultation to date has not been conclusive either way.

Questions to stakeholders

Questions about proposed scope
Q1. Opinions about the proposed scope?
Q2. Apart from the products already listed in subcategory 1.1(i) of Directive 2004/42/CE, what other "performance" coatings can be understood to be covered by this subcategory (and also subcategory 1.1(j))?
Q3. How to define waterproofing products? And are they already in the scope of Directive 2004/42/CE or not?
Q4. Should the technical term "barrier coating material" be used to describe waterproofing products? And while there are many types of barriers (e.g. water, chemicals, heat, noise etc.) should a nuanced version of "barrier coating" be used in the scope for Annex II?

3.2 Definitions

The first proposed definition presented below in grey text is from the draft TR1. This is immediately followed by the second proposed definition, with track changes reflecting the differences in this draft TR2 proposal.

TR1: First proposed definitions
For the purposes of this Decision, the following definitions shall apply: (1) '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; (2) '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; (3) 'Decorative paints and varnishes' means paints and varnishes that are applied in-situ to buildings, their trim and fittings, for decorative and protective purposes, specifically referring to: matt or glossy coatings for interior walls and ceilings; coatings for exterior walls of mineral substrate; interior/exterior trim and cladding paints; interior/exterior trim varnishes and woodstains; minimal build woodstains; wood and decking stains; wood paints; primers; binding primers; one-pack and two-pack performance coatings; multicoloured coatings; decorative effect coatings; floor coatings and floor paints; (4) '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 (and that may be based on _____ binders); (5) '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 (and that may be based on _____ binders); (6) '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 (and that may be based on _____ binders); (7) 'interior/exterior trim varnishes and woodstains', 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. (and that may be based on _____ binders); (8) 'minimal build woodstains', according to Directive 2004/42/CE, means woodstains 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 (and that may be based on _____ binders); (9) 'primers', according to Directive 2004/42/CE, means coatings with sealing and/or blocking properties designed for use on wood or walls and ceilings (and that may be based on _____ binders); (10) '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 (and that may be based on _____ binders); (11) '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 (and that may be based on _____ binders); (12) '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 (and that may be based on _____ binders); (13) 'multicoloured coatings', according to Directive 2004/42/CE, means coatings designed to give a two-tone or multiple-colour effect, directly from the primary application (and that may be based on _____ binders); (14) 'decorative effect coatings', according to Directive 2004/42/CE, means coatings designed to give special aesthetic effects over specially prepared pre-painted substrates or base coats and subsequently treated with various tools during the drying period. (and that may be based on _____ binders); (15) '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 (and that may be based on _____ binders); (16) 'wood paints' means paints applied to wood, which change the colour of the wood (and that may be based on _____ binders); (17) 'wood and decking stains' are a type of paint with low quantities of binder that penetrate deep into the wood and change its natural colour and appearance (and that may be based on _____ binders);

(18) 'Lasure' 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 (and that may be based on _____ binders);

(19) 'Tinting system' means a method for preparing coloured paints by mixing a 'base' with coloured tinting pastes;, and 'tinting paste' means a highly concentrated pigment preparation;

(20) '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 (and that may be based on _____ binders);

(21) 'Binding primers' means coatings designed to stabilise loose substrate particles or impact hydrophobic properties (and that may be based on _____ binders);

(22) 'UV curable paint system' means the hardening of coating materials by exposure to artificial ultra-violet radiation;

(23) '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;

(24) '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;

(25) '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;

(26) 'Anti-skinning substances' are additives that are added to the coating materials to prevent skinning during production or storage of the coating material;

(27) 'Driers', also referred to as 'siccatives', means _____

(28) 'Surfactants' means _____

(29) 'Mineral raw material' means _____

(30) 'Optical brightener' means _____

(31) 'UV stabiliser' means _____

(32) 'Binder' means _____

(33) '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);

(34) '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);l(35) 'White and light coloured' paints are those with a tri-stimulus (Y- value) > 70 %; l(36) 'Gloss paints' are those which at an angle of incidence of 60° show a reflectance of ≥ 60;

(37) '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;

(38) 'Matt paints' are those which at an angle of incidence of 85° show a reflectance of < 10;

(39) 'Dead matt paints' are those which at an angle of incidence of 85° show a reflectance of < 5;

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

(41) 'Opaque' means a film with a contrast ratio of > 98 % at 120µ wet film thickness.

(42) 'Anti-rust paints' means paints designed to prevent rust in metal substrates in the presence of oxygen and water, through the application of a protective coating (and that may be based on _____ binders).

(43) 'Thick decorative coating' means paints that are designed to give a three-dimensional decorative effect and a therefore characterized by a very thick coat (and that may be based on _____ binders).

(44) 'Elastomeric paint' means _____ (and that may be based on _____ binders).

(45) 'Undercoat' means _____

(46) 'Aerosol spray paints' means _____

(47) 'Road marking paints' means _____

(48) 'Cement paints' means _____

(49) 'Wood oils' means oils used for the care and protection of wood (e.g. pearling effect) without any cleaning action;

(50) 'Waxes' means ____

(51) 'Waterproofing products' means ____

(52) 'Wood preservative' means a product containing a biocide with the primary purpose of inhibiting the development of wood-destroying and/or wood-staining organisms in the wood to which it is applied.

TR2: Second proposed definitions (reordered alphabetically)

Article 4

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

~~(_) 'Aerosol spray paints' means _____~~

(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.

~~(_) 'Anti-skinning substances' are additives that are added to the coating materials to prevent skinning during production or storage of the coating material;~~

~~(_) 'Binder' means _____~~

~~(_) 'Binding primers', according to Directive 2004/42/CE, means coatings designed to stabilize loose substrate particles or impart hydrophobic properties (and that may be based on _____ binders);~~

(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.

~~(_) '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;~~

~~(_) 'Decorative effect coatings', according to Directive 2004/42/CE, means coatings designed to give special aesthetic effects over specially prepared pre-painted substrates or base coats and subsequently treated with various tools during the drying period.;~~

(5) 'Decorative purpose', means treatments with the primary objective to change or restore the appearance of a substrate;

~~(_) 'Driers', also referred to as 'siccatives', means _____~~

~~(_) 'Decorative paints and varnishes' means paints and varnishes that are applied in situ to buildings, their trim and fittings, for decorative and protective purposes;~~

~~(_) '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;~~

(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 ~~(and that may be based on _____ binders)~~;

~~(_) 'Gloss paints' are those which at an angle of incidence of 60° show a reflectance of ≥ 60;~~

~~(_) '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;~~

~~(_) '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 woodstains', 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' 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;~~

~~(_) '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;~~

(_) '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 woodstains', according to Directive 2004/42/CE, means woodstains 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;

(_) 'Multicoloured coatings', according to Directive 2004/42/CE, means coatings designed to give a two-tone or multiple-colour effect, directly from the primary application;

(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;

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

(_) 'Optical brightener' means _____

(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;

(_) '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);

(14) 'Tinting system' means a method for preparing coloured paints by mixing a 'base' with coloured tinting pastes or powders, and 'tinting paste' means a highly concentrated pigment preparation;

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

(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;

(_) '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);

(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

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

(20) 'Wood oils' means oils used for the care and protection of wood (e.g. pearling effect) without any cleaning action;

(_) 'Wood paints' means paints applied to wood, which change the colour of the wood;

(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.

(17) 'wood and decking stains' are a type of paint with low quantities of binder that penetrate deep into the wood and change its natural colour and appearance;

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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.

The track changes version of the definitions shows a high degree of change, with even well-established definitions apparently being taken out (e.g. "in-can preservatives"). However, it should be noted that the placement of definitions in the Commission Decisions has changed since 2014. Previously, all definitions were placed in the Act, in the first Article after the description of the scope. Now only definitions of terms that appear in the Act are included in this Article. Any additional definitions of terms that only appear in the Annex are now to be placed at the end of the Annex preamble, just after the part where general assessment and verification aspects are described. Furthermore, there are additional definitions that are helpful, but which are more technical and not needed for the sake of understanding of the legal text. These definitions are included in the further research section of this draft TR2, but are not intended to appear in the legal text. Instead, they should be flagged for potential inclusion in the User Manual (UM).

The main changes to the definitions can be summarised as follows:

- Legally important terms appearing in the Act – definitions remain in the Act (in Article 4).
- Legally important terms appearing in the Annex only – definitions moved/placed in the Annex preamble.
- Additional terms relating to ingredient descriptions – definitions provided in TR2 for potential inclusion in UM.
- Terms relating to technical properties – definitions provided in TR2 for potential inclusion in 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. The initial definition proposed could be refined somewhat. 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.

Outcomes from and after 1st AHWG meeting

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 seeks to enhance the EUEL User Manual by identifying additional definitions for technical terms and ingredient types. By doing so, we can provide clearer guidance, helping applicants better understand the criteria and ensuring compliance with the requirements. To facilitate this process, definitions have been organized into an Excel file, which was sent to the stakeholder participating in the WSG1 via the Teams group. This file comprised four tabs, each serving a distinct purpose as set as it follows:

— Directive 2004/42/CE,

- Definitions Cross-Check,
- Ingredient Types,
- Technical Properties

Definitions relating to ingredient types and technical properties are less open to legal ambiguity but are helpful to know and have in one place for both applicants and Competent Bodies alike. For this reason, such definitions are flagged here in TR2 in the further research section of this rationale for their future inclusion in the UM.

Further research

The following definitions are flagged for future inclusion in the User Manual. First definitions regarding ingredient types, because it is likely that applicants will need to flag which ingredients correspond to which ingredient types when declaring compliance with hazardous substance criteria. In cases where different definitions are available and have still not been decided, both options are currently still included for stakeholders to offer opinions on:

Ingredient type definitions flagged for the User Manual:

Any text in blue or strikethrough indicates changes in the description or an altogether new definition since the drafting of Technical Report 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.
- (_) '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.
- (_) 'Anti-skinning substances' mean additives that are added to the coating materials to prevent skinning during production or storage of the coating material;
- (_) '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,
- (_) 'Crosslinking agent' means _____
- (_) '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]
- (_) '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.
- (_) 'Neutralising agent' means _____
- (_) '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
- (_) '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.
- (_) '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.
- (_) 'UV stabiliser' means an additive that protects the coating film and/or the substrate against the negative effects of UV-beams contained in sunlight
- (_) '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:

Any text in blue or strikethrough indicates changes in the description or an altogether new definition since TR1.

— (_) 'Abrasion' means, according to ISO 4618:2014, the process of wearing away or deformation of a surface by friction as a result of rubbing.

— (_) '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.

— (_) 'Gloss' means, according to ISO 4618:2014, an optical property of a surface, characterized by its ability to reflect light specularly.

— (_) 'Hiding power' means, according to ISO 4618:2014, the ability of a coating to obliterate the colour or colour differences of the substrate.

— (_) 'Sheen' means, according to ISO 4618:2014, gloss observed on an apparently matt surface at glancing angles of incidence.

— (_) '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.

Questions to stakeholders

Questions about proposed definitions
Q5. Opinions about definitions proposed here (both in Article 4 and those proposed for the User Manual)?
Q6. How to define "crosslinking agents" and "neutralising agents" in the context of paints and varnishes?
Q7. Any suggestions for the definition of elastomeric paints?

3.3 Restructuring of criteria

A reorganization of the criteria has been proposed to align with the new annex structure.

The three Annexes are structured as it follows:

— Annex I: Decorative paints and varnishes and related products

— Annex II: Performance coatings and related products

— Annex III: Water-based aerosol spray paints

Table 5 is a simple overview of how the proposed criteria proposals would apply to the different annexes. Note that the existing criterion 1, White Pigment Content, has been merged with criterion 3, Efficiency in Use. As a result, all criteria have been renumbered accordingly, and two new criteria have been added, i.e. criterion 7 on VOC content, and criterion 8 on Carbon Footprint.

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

Subject/criteria content	Previous criteria from 2014	Proposed criteria		
		Annex I	Annex II	Annex III
White pigment content and WSR	Previous criterion 1. White pigment content	Moved to part (b) of the new criterion 2. Efficiency in Use and White pigment content and WSR requirements		No previous criterion to move.
Titanium dioxide	Previous criterion 2. Titanium dioxide production	Now becomes criterion 1. Titanium dioxide production		
Efficiency in use	Previous criterion 3. Efficiency in use	Now becomes criterion 2. Efficiency in Use and white pigment content and WSR		Criterion 2. Efficiency in use without white pigment limit
VOC and SVOC content	Previous criterion 4. Content of Volatile and Semi-volatile Organic	Now becomes criterion 3. Content of Volatile and Semi-volatile Organic Compounds (VOCs, SVOCs)		

Subject/criteria content	Previous criteria from 2014	Proposed criteria		
		Annex I	Annex II	Annex III
	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 5. VOC emissions		No requirement here
Consumer information	Previous criterion 6. Consumer information	Criterion 6. Consumer information		Criterion 5. Consumer information
EU information	Previous criterion 7. Information appearing on the EU Ecolabel	7. Information appearing on the EU Ecolabel		Criterion 6. Information appearing on the EU Ecolabel

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

Rationale for restructuring the criteria

The main arguments for the restructuring into annexes have already been explained in the rationale for the scope proposals. Separate annexes make the criteria more readable for someone who is only interested in one type of products at a given time (i.e. all 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 identical, there are many parts within these criteria that will be nuanced for the particular products included in the scope of each annex.

The reshuffling 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 makes sense because the old criterion 1 is basically 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). So the criteria is basically saying that you can only use so much high performance pigment if no performance claim is made, and that you can use some more only if a claimable performance is achieved (i.e. WSR class 1 or 2). This concept fits quite well with the general aim of the old criterion 3.

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.

TR1: First 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. 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, the mass of packaging materials used and its material composition. (e) The number of individual products associated with the same base formulation 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. *[Definitions for terms that only appear in the Annex (and not in the Act) should be placed here in future versions]*
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 ~~mass of~~ packaging material(s) used ~~and its material composition~~.

(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;
~~(_) 'Decorative effect coatings', according to Directive 2004/42/CE, means coatings designed to give special aesthetic effects over specially prepared pre-painted substrates or base coats and subsequently treated with various tools during the drying period.;~~
(_) '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 woodstains', 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 woodstains', according to Directive 2004/42/CE, means woodstains 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;
~~(_) 'Multicoloured coatings', according to Directive 2004/42/CE, means coatings designed to give a two-tone or multiple-colour effect, directly from the primary application;~~
(_) 'Opaque' means a film with a contrast ratio of ≥ 98 % at 120µ wet film thickness.
~~(_) 'Optical brightener' means _____~~
(_) '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)
~~(_) 'Road marking paints' means _____~~
(_) '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 %;
~~(_) 'Wood paints' means paints applied to wood, which change the colour of the wood;~~

~~(17) 'wood and decking stains' are a type of paint with low quantities of binder that penetrate deep into the wood and change its natural colour and appearance;~~

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 EU Ecolabel criteria. It is more efficient to simply state this one time at the beginning than to repeat it for each annex. The legal documents, i.e. Annex I, II and III accompanying this report, provide the annex preamble in the three cases.

The first paragraph prior to the assessment and verification section has been greatly reduced compared to draft 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[15]). The next 7 or 8 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.

Definitions or legally important terms that appear in the Annex but not in the Act have been moved to here. The definition of "*lasure*" has been updated to better align with the ISO 4618.2014 definition.

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

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. 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-rust paints*" and "*minimal build woodstains*".

Definitions are also provided for all hazardous substance groups with specific derogations in Criterion 4 (previously Criterion 5) about "Restriction of hazardous substances and mixtures", such as "*driers*" and "*surfactants*", expanding on existing definitions for groups like "*in-can preservatives*", "*dry-film preservatives*", and "*anti-skimming substances*". However, since these terms are considered to be less open to legal interpretation, they are proposed to be only defined in the User Manual.

Outcomes from and after 1st AHWG meeting

After the 1st AHWG meeting four comments were received in relation to the assessment and verification 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' has been 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[16].

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

887 Questions to stakeholders

Questions about proposed definitions in the Annex preamble
Q8. Any suggestions for the definition of "undercoats"? (in context of criterion 2)
Q9. Any suggestions for the definition of "specific blocking, sealing, penetrating, binding or special adhesion properties" (in context of primers in criterion 2)
Q10. Any other suggestions for the definition of "microplastics"?

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5 Criteria proposal for Annex I: Decorative paints and 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 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. White pigment content and wet scrub resistance requirements (now moved to part b) of criterion 3 **on "efficiency in use", which is now** Criterion 2) [old]

First Proposal for Criterion 1: White pigment content and wet scrub resistance requirements

Note: this criterion only applies to paint products.

No EU Ecolabel paint product shall claim wet scrub resistance via the use of terms like "washable" in product information or marketing material unless it meets class 1 or class 2 requirements according to the procedure defined in ISO 11998 and the classification system of EN 13300. Furthermore, EU Ecolabel paint products shall meet the relevant requirements on wet scrub resistance and white pigment content as defined in the table below.

For the purposes of this criterion, "white pigment" shall be counted as pigments with a refractive index higher than 1,8.

Limits in the table below apply to white paints and, in the case of tinted paints, apply to the white base paint only.

Table 1: Requirements for wet scrub resistance and white pigment content for paint products

Wet scrub resistance claim?	Wet scrub resistance	White pigment content
Yes	Class 1	≤ 40 g/m²*
Yes	Class 2	≤ 36 g/m²*
No	n/a	≤ 25 g/m²*

The m^2 refers to $1m^2$ of dry film with an opacity of at least 98%.

Assessment and verification:

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/m^2 for a dry-film of at least 98% opacity according to ISO 6504-1, shall also be stated. Multiplying the white pigment concentration (in g/L) by the spreading rate (in L/m^2) will produce results in 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, 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.

TR2: Second proposal: see Criterion 2(b)

This criterion has been moved to form part of the criterion on "Efficiency in use" (now part (b) of Criterion 2, which was previously Criterion 3). Only a minor change has been applied which was the reintroduction of a limit for outdoor paints, which had been accidentally deleted in the TR1 proposal. These minor changes are highlighted in track changes there.

Rationale for the proposed criterion text on white pigment content and WSR

Information about the rationale for the placement and content of the criterion on white pigment content and wet scrub resistance requirements is provided in the rationale section in section 5.3.

5.2 Criterion 1 (previously Criterion 2): Titanium dioxide production

TR1: First proposal for Criterion 2: Titanium dioxide production

Note: this criterion only applies to paint products.

If the product contains more than 3,0 % w/w of titanium dioxide (TiO_2), the emissions and discharges of wastes from the production of any titanium dioxide pigment used shall ~~not exceed the following~~ meet the following requirements for the respective production processes~~(1)~~:

For all types of TiO_2 production process:

— Procedures shall be in place to ensure a "low dust" working environment.

For the sulphate process (1):

— SOx calculated as SO_2: 7,0 kg/tonne TiO_2 pigment

— Sulphate waste: 500 kg/tonne TiO_2 pigment

For the chloride process (1):

— If ore with above 95% TiO_2 content ~~natural rutile ore~~ is used, 103 kg chloride waste/tonne TiO_2 pigment

— If ore with 90-95% TiO_2 content ~~If synthetic rutile ore~~ is used: 179 kg chloride waste/tonne TiO_2 pigment

— If ore below 90% TiO_2 content or above ~~If slag ore~~ is used: 329 kg chloride waste/tonne TiO_2 pigment

If more than one type of ore is used, the values will apply in proportion to the quantity of the individual ore types used.

~~Note:~~

~~SOx emissions only apply to the sulphate process.~~

The Waste Framework Directive 2008/98/EC of the European Parliament and of the Council (~~1~~2), Article 3 shall be used for the definition of waste. If the TiO_2 producer can satisfy Article 5 (by-product production) of the Waste Framework Directive for its solid wastes, then~~,~~ the wastes shall be exempted from being counted as waste.

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 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 used and a statement of annual average SOx emissions, specific sulphate waste generation or specific chloride waste generation, as appropriate. ~~submit supporting documentation showing compliance by the titanium dioxide producer manufacturing the raw material for the paint product either in the form of a declaration of non-use or a declaration supported by data indicating that the respective levels of process emissions and waste discharges of wastes are met.~~

(1) As derived from the Reference Document on Best Available Technology for the Manufacture of Large Volume Inorganic Chemicals (BREF), August 2007.

(~~1~~2) Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (OJ L 312, 22.11.2008, p. 3).

TR2: Annex I: Second proposal for Criterion on Titanium dioxide production (now criterion 1)

~~*Note: this criterion only applies to paint products.*~~

If the product contains more than 3,0 % w/w of titanium dioxide (TiO_2), the emissions to air and water ~~and discharges of wastes~~ 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 use is 90-95% TiO2 content (3) When ore used is <90% TiO2 content		

~~For all types of TiO_2 production process:~~

~~— Procedures shall be in place to ensure a "low dust" working environment.~~

~~For the sulphate process (1):~~

~~— SOx calculated as SO_2: 7,0 kg/tonne TiO_2 pigment~~

~~— Sulphate waste: 500 kg/tonne TiO_2 pigment~~

~~For the chloride process (1):~~

~~— If ore with above 95% TiO_2 content is used, 103 kg chloride waste/tonne TiO_2 pigment~~

~~— If ore with 90-95% TiO_2 content is used: 179 kg chloride waste/tonne TiO_2 pigment~~

~~— If ore below 90% TiO_2 content or above is used: 329 kg chloride waste/tonne TiO_2 pigment~~

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

Emissions to air shall be counted from point source(s)[17] 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.
- 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[18], 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.

[17] 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.

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

~~The Waste Framework Directive 2008/98/EC of the European Parliament and of the Council (2), Article 3 shall be used for the definition of waste. If the TiO_2 producer can satisfy Article 5 (by-product production) of the Waste Framework Directive for its solid wastes, then, the wastes shall be exempted from being counted as waste.~~

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. ~~SOx emissions, specific sulphate waste generation or specific chloride waste generation, as appropriate~~.

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.

~~*(1) As derived from the Reference Document on Best Available Technology for the Manufacture of Large Volume Inorganic Chemicals (BREF), August 2007.*~~

~~*(2) Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (OJ L 312, 22.11.2008, p. 3).*~~

Rationale for the proposed criterion text on TiO_2 production

The use of TiO_2 is a major 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 2). It is the white pigment *par excellence* thanks to its very high refractive index. This criterion aims to address some of the main emissions associated with TiO_2 production.

A preliminary questionnaire was conducted with stakeholders on the existing criterion 2 (now proposed criterion 1). The majority of respondents consider the criterion to be relevant for the EU Ecolabel's overall goal. Most also find 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 criterion, nearly all respondents opposed the idea, with some paint manufacturers expressing that the burden of demonstrating compliance should be shifted to TiO_2 manufacturers.

For the first proposal included in the draft TR1, 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 the draft TR1 were driven by industry feedback and the need for greater flexibility in the types of ore used in the chloride process. Originally, waste limits were set based on ore type due to varying TiO_2 purity levels, but with the inclusion of other ores like ilmenite and leucoxene, and the decreasing quality of available ores, it was decided to base waste limits on TiO_2 content instead. This approach has been maintained in TR2 regarding the emissions of Cl to water from the chloride process.

New requirements for TiO_2 production have been added to the TR2 proposal and the reasons why are explained in more detail in the further research section.

Regarding the requirement for a low dust environment at the TiO_2 production facility, a more specific set of requirements has been proposed that is similar to the dust controls set out in Commission Decision (EU) 2021/476 for EU Ecolabel for hard covering products, specifically regarding natural stone transformation plants and agglomerated stone product plants. These are general good practice measures for the control of dust exposure to workers and to the surrounding environment.

Outcomes from and after the 1st AHWG meeting

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 TiO2 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.

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 SO_2 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[19] set an annual average workplace limit of 0.3 mg/m^3 for respirable sized particles[20]. This is the same limit as for any bio-persistent granular dust.

Questions to stakeholders

Questions about criterion 1 on TiO2 production
Q11. Opinions about the latest proposal on requirements associated with TiO_2 production?
Q12. Are the test methods for the different emissions appropriate? Is there any clarity on this coming out of the revision process of BREF for Large Volume Inorganic Chemicals? (which includes TiO_2)

[19] MAK stands for "maximale Arbeitsplatz-Konzentration", or "maximum workplace concentration". See: 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 22.07.2024).

[20] 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)."

5.3 Criterion 2 (previously Criterion 3). Efficiency in use requirements

TR1: First proposal for Criterion 3: Efficiency in use

In order to demonstrate the efficiency in use of paints and varnishes the following tests per type of paint and/or varnish, as indicated in Table 2, shall be undertaken:

Table 2. Performance requirements for different kinds of paints and varnishes

	Paints and Varnishes (with their subcategories identified according to the Directive 2004/42/EC)							
Criteria	Indoor paint (a,b)	Outdoor paint (c)	Trim and cladding (d)	Thick decorative coating indoor and outdoor (l)	Varnish and woodstain (e, f)	One pack performance and floor covering paint (i)	Primer (g)	Undercoat and primer (h)
3(a) Spreading rate (only for white and light coloured paints, including the white base paints used in tinting systems)) – ISO 6504-1. Not applicable to varnishes, lasures, transparent adhesion primers or any other transparent coatings.	8 m2/L	4 m2/L (elastomeric paint) 6 m2/L (masonry paint)	Outdoor products 6m2/L (outdoor products) Indoor products 8m2/L (indoor products)	1 m2/kg L	-	Outdoor products 6 m2/L (outdoor products) Indoor products 8 m2/L (indoor products)	6 m2/L (without having specific blocking, sealing, penetrating, binding or special adhesion properties and opacity) 8 m2/L (with opacity but no specific properties mentioned above)	
3(b) Resistance to water – ISO 2812-3	-	-	-	-	Resistant to water	Resistant to water	-	-
3(c) Adhesion – EN 24624 ISO 4624 or ISO 2409	-	-	-	-	-	Score of 2 or lower (ISO 2409)	>1,5 MPa (for masonry paint, and according to ISO 4624)	
3(d) Abrasion – EN ISO 7784-2	-	-	-	-	-	≤ 70 mg weight loss	-	-
3(e) Weathering – (cycles as per EN 16474-1 and 16474-6 or 11507 / EN 927-6, for 1000 hours)	-	1 000 h Colour change ΔE* ≤ 4 (EN ISO 11664-6); Gloss decrease[2] < 30% (EN ISO 2813); Chalking[3] of ≤ 1.5 (EN ISO 4628-6); Flaking density ≤ 2 and flake size ≤ 2 (EN ISO 4628-5); Crack quantity ≤ 2 and crack size ≤ 3 (EN ISO 4628-4); Blister density ≤ 3 and blister size ≤ 3 (EN ISO 4628-2)					-	-
3(f) Water vapour permeability[1] – EN ISO 7783	-	Class II or better	-	Class II or better (outdoor)	-	-	-	-
3(g) Liquid water permeability[1] – EN 1062-3	-	Where claims are made: Class III All other products: Class II or better	-	Class II or better (outdoor)	-	-	-	-
3(h) Fungal resistance[1] – EN 15457	-	Class 1 or lower (masonry or	Class 0 (outdoor wood products)	Class 1 or lower (outdoor)	-	-	-	-

		wood paints)						
3(h) Algal resistance[(1)] – EN 15458	-	Class 1 or lower (masonry or wood paints)	Class 0 (outdoor wood products)	Class 1 or lower (outdoor)	-	-	-	-
3(i) Crack bridging[(1)] – EN 1062-7	-	A1 or better (elastomeric paint only)	-	-	-	-	-	-
3(j) Alkali resistance – ISO 2812-4	-	No noticeable damage (masonry paint)	-	-	-		No noticeable damage (outdoor masonry paint)	
3(k) Corrosion resistance[(1)] – EN ISO 12944-2 and 12944-6, ISO 9227, ISO 4628-2 and 4628-3.	-	Anti-rust paint Blistering ≥ size 3/ density 3 Rusting ≥ Ri2		-	-	Anti-rust paint Blistering ≥ size 3/ density 3 Rusting ≥ Ri2		
(1) Only required when marketing claims are made. (2) Gloss maintenance requirement not applicable to mid-sheen and matt-finishes which have an initial gloss value less than 60% at 60° angle of incidence (3) Chalking assessment is applicable to masonry finish coats and wood and metal finishes (where applicable) after the samples have been exposed to weathering.								

Further details of the efficiency in use criteria and their assessment and verification shall be followed as defined below:

3(a) Spreading rate:

This requirement does not apply to varnishes, lasures, transparent adhesion primers or any other transparent coatings. For paints, the spreading rate requirement shall apply to white and light-coloured paint products. For paints that are available in more colours, 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 the spreading rate shall apply to the lightest colour.~~

- White paints and light-coloured paints, ~~(~~including finishes and intermediates,~~)~~ shall have a spreading rate of at least 8 m2 per litre of product for indoor paints and 6 m2 for outdoor paints while ensuring a hiding power of at least 98 % according to ISO 6504-3. Products marketed for both indoor and outdoor application shall meet the ~~have a~~ higher spreading rate requirement~~(at a hiding power of 98 %)~~ of at least 8 m2 per litre.
- For tinting systems, this criterion applies only to the white base (the base containing the most TiO2). 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.
- For paints that are a part of a tinting system, the applicant must advise the end-user on the product packaging and POS which shade or primer/ undercoat (if possible, bearing the Community Eco-label) should be used as a basecoat before applying the darker shade.
- Opaque primers and undercoats 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~~properties and primers with~~ special adhesion properties. These special properties shall be considered as _____ ~~shall have a spreading rate of at least 6 m2 per litre of product.~~

~~Thick decorative coatings (paints that are specially designed to give a three-dimensional decorative effect and are therefore characterised by a very thick coat) shall alternatively have a spreading rate of 1 m2 per kg of product.~~

~~Opaque elastomeric paints shall have a spreading rate of at least 4 m2 per litre of product.~~

~~This requirement does not apply to varnishes, lasures, transparent adhesion primers or any other transparent coatings.~~

Assessment and verification: the applicant shall provide a test report using the method ISO 6504-1 (Paints and varnishes — determination of hiding power — Part 1: Kubelka-Munk method for white and light-coloured paints) or 6504-3 (Part 3: determination of contrast ratio (opacity) of light-coloured paints at a fixed spreading rate) or, for paints specially designed to give a three-dimensional decorative effect and characterised by a very thick coat, results in m_2/kg according to the method NF T 30 073. For bases used to produce tinted products not evaluated according to the abovementioned requirements, the applicant shall produce evidence of how the end-user will be advised to use a primer and/or grey (or other relevant shade) of undercoat before application of the product.

3(b) Resistance to water:

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

Assessment and verification: the applicant shall provide a test report using the method ISO 2812-3.

3(c) Adhesion:

Pigmented masonry primers for exterior uses shall score a pass in the ~~EN 24624 (~~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.

Transparent primers are not included in this requirement.

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 test report using the method defined in EN ISO 2409 or ~~EN 24624 (~~ISO 4624~~)~~, as applicable.

3(d) Abrasion:

Floor coatings and floor paints shall have an abrasion resistance not exceeding 70 mg weight loss after 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 test report showing compliance with this criterion using the method EN ISO 7784-2.

3(e) Weathering (for outdoor paints and varnishes):

Masonry finish paints and wood and metal finishes including varnishes shall be exposed to artificial weathering in apparatus including fluorescent UV lamps and condensation or water spray according to ISO ~~11507~~16474-1. They shall be exposed to test conditions for 1000 hours. Test conditions are: UVA 4 h/60 °C + humidity 4 h/50 °C.

Alternatively, outdoor wood finishes and 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.

According to ISO 11664-6~~7724-3~~, the colour change of samples exposed to weathering shall not be greater than $\Delta E^* = 4$. It is not applicable to varnishes and bases.

Decrease of gloss for gloss paints and varnishes exposed to weathering shall not be greater than 30 % of its initial value and shall be measured using ISO 2813. This requirement is not applicable to mid sheen and matt finishes ~~(1)~~ which have an initial gloss value less than 60 % at 60° angle of incidence.

Chalking shall be tested using method EN ISO 4628-6 on masonry finish coats and wood and metal finishes (where applicable) after the samples have been exposed to weathering. Coatings shall achieve a score of 1,5 or better (0,5 or 1,0) in this test. In the standard there are illustrated references.

The following parameters shall also be evaluated on masonry finish coats and wood and metal finishes after the samples have been exposed to weathering:

— Flaking according to ISO 4628-5; flake density 2 or less, flake size 2 or less

— Cracking according to ISO 4628-4; crack quantity 2 or less, crack size 3 or less

— Blistering according to ISO 4628-2; blister density 3 or less, blister size 3 or less.

Tests *should be performed on the tinting base*.

Assessment and verification: the applicant shall provide test reports using either ISO ~~11507~~16474-1 according to the specified parameters or EN 927-6, or both. The applicant shall provide test reports using EN ISO 4628-2, 4, 5, 6 and a test report in conformance ISO 11664-6~~7724-3~~ where applicable.

3(f) Water vapour permeability:

Where claims are made that exterior masonry and concrete paints are breathable the paint shall be classified according to EN 1062-1 as class II (medium vapour permeability) or better according to the test method EN ISO 7783.

Due to the large number of potential tinting colours, this criterion will be restricted to testing of the base paint.

Assessment and verification: the applicant shall provide a test report using methodology EN ISO 7783 and classification according EN 1062-1.

3(g) Liquid water permeability

Where claims are made that exterior masonry and concrete paints are water repellent or elastomeric, the coating shall be classified according to EN1062-1 as class III (low liquid permeability) according to method EN 1062-3.

Due to the large number of potential tinting colours, this criterion will be restricted to the testing of the base paint.

All other masonry paints shall be classified according to EN 1062-1 as class II (medium liquid permeability) or better according to the test method EN 1062-3.

Assessment and verification: the applicant shall provide a test report using methodology EN 1062-3 and classification according EN 1062-1.

3(h) Fungal and algal resistance

Where claims are made that exterior masonry finish and wood paints have anti-fungal or~~and~~ anti-algal properties, and in accordance with PT7 of the Biocide Regulation (EU) No 528/2012 of the European Parliament and of the Council [(1)], the following requirements shall be determined using EN 15457 or~~and~~ EN 15458.

Masonry paints shall have a score of class 1 or lower (1 or 0) for fungal resistance, (i.e. less than 10 % fungal coverage) and a score of class 1 or lower for algal resistance.

Wood paints shall have a score of 0 for fungal resistance and 0 for algal resistance.

Due to the large number of possible tinting colours, this criterion will be restricted to the testing of the base paint.

Assessment and verification: the applicant shall provide a test report using the methodology in EN 15457 and/or EN 15458, as appropriate.

3(i) Crack bridging

Where claims are made that masonry (or concrete) paint has elastomeric properties, the paint shall be at least classified as A1 at 23 °C according to EN 1062-7.

Due to the large number of potential tinting colours, this criterion will be restricted to the testing of the base paint.

Assessment and verification: the applicant shall provide a test report using methodology DIN EN 1062-7.

(j) Alkali resistance

Masonry paints and primers 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 ~~is~~ shall be done after 24 hours drying-recovery.

Assessment and verification: the applicant shall provide a test report using methodology ISO 2812-4.

3(k) Corrosion resistance

Simulated corrosion stresses shall be applied to a substrate for the purpose of rating according to the appropriate atmospheric corrosivity category or categories in EN ISO 12944-2 and the accompanying test procedures specified in EN ISO 12944-6. Anti-rust paints for steel substrates shall be tested after 240 h salt spray following ISO 9227. The results shall be rated using ISO 4628-2 for blistering and ISO 4628-3 for rusting. The paint shall achieve a result not worse than size 3 and density 3 in blistering and not worse than Ri2 in rusting ~~test~~.

Assessment and verification: the applicant shall provide testing and rating reports to confirm compliance with this criterion.

(1) Regulation (EU) No 528/2012 of the European Parliament and of the Council of 22 May 2012 concerning the making available on the market and use of biocidal products (OJ L 167, 27/06/2012, p. 1).

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 woodstains (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(d) Abrasion~~	~~No~~	~~No~~	~~No~~	~~No~~	~~No~~	~~No~~	~~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

~~3~~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 TiO2). 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.

~~No EU Ecolabel paint product shall claim wet scrub resistance via the use of terms like "washable" in product information or marketing material unless it meets class 1 or class 2 requirements according to the procedure defined in ISO 11998 and the classification system of EN 13300. Furthermore, EU Ecolabel paint products shall meet the relevant requirements on wet scrub resistance and white pigment content as defined in the table below.~~

~~For the purposes of this criterion, "white pigment" shall be counted as pigments with a refractive index higher than 1,8.~~

~~Limits in the table below apply to white paints and, in the case of tinted paints, apply to the white base paint only.~~

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.

~~3~~2(c) Resistance to water

Note: This requirement applies to all varnish and woodstain products except for minimal build woodstains.

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 woodstain 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 woodstains 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.

~~*3(d) Abrasion:*~~

~~Floor coatings and floor paints shall have an abrasion resistance not exceeding 70 mg weight loss after 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 test report showing compliance with this criterion using the method EN ISO 7784-2.~~

~~3~~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.

~~3~~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-~~1~~3. They shall be exposed to test conditions for 1000 hours with cycling conditions of: ~~Test conditions are:~~ 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-~~6~~4	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 ~~1,5 or better (0,5 or 1,0)~~ ≤ 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. ~~test reports using either ISO 1150716474-1 according to the specified parameters or EN 927-6, or both. The applicant shall provide test reports using EN ISO 4628-2, 4, 5, 6 and a test report in conformance ISO 11664-~~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 ~~where~~ applicable.

~~3~~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.

~~Where claims are made that exterior masonry and concrete paints are breathable the paint shall be classified according to EN 1062-1 as class II (medium vapour permeability) or better according to the test method EN ISO 7783.~~

~~Due to the large number of potential tinting colours, this criterion will be restricted to testing of the base paint.~~

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 test report using methodology EN ISO 7783 and classification according EN 1062-1.~~ 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.

~~3~~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.

~~Where claims are made that exterior masonry and concrete paints are water repellent or elastomeric, the coating shall be classified according to EN1062-1 as class III (low liquid permeability) according to method EN 1062-3.~~

~~Due to the large number of potential tinting colours, this criterion will be restricted to the testing of the base paint.~~

~~All other masonry paints shall be classified according to EN 1062-1 as class II (medium liquid permeability) or better according to the test method EN 1062-3.~~

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 test report using methodology EN 1062-3 and classification according EN 1062-1.~~ 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.

~~3~~2(h) Fungal resistance ~~and algal 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 ~~shall have~~: A score of class 1 or lower (class ~~1 or~~ 0, i.e. less than 10% fungal coverage) for fungal resistance according to EN 15457.
- For wood paints ~~shall have~~: 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 ~~using the methodology in~~ 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 ~~shall have~~: A score of class 1 or lower (class ~~1 or~~ 0) for algal resistance according to EN 15458.
- For wood paints ~~shall have~~: 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 ~~using the methodology in~~ according to EN 15458.

~~3~~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.

~~Where claims are made that masonry (or concrete) paint has elastomeric properties, the paint shall be at least classified as A1 at 23 °C according to EN 1062-7.~~

~~Due to the large number of potential tinting colours, this criterion will be restricted to the testing of the base paint.~~

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.

~~3(j)~~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.

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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 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 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; 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 TR1 was still difficult to read. There is simply not enough space to explain the different nuances for when the criteria apply and don´t apply and to also mention the limits and test standards at the same time. In TR2, it has been proposed 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 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 is 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. 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).

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.

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

In total, 31 comments were received in written form on 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).

<u>Further research and main changes in the second proposal on efficiency in use</u>

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:

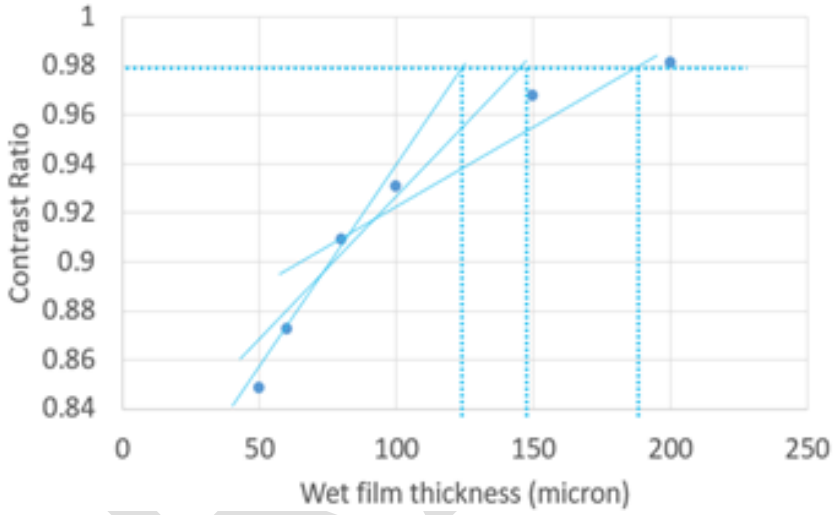
- indoor wall and ceiling paint (a, b),
- outdoor mineral substrate paint (c),
- trim and cladding paints (d),
- varnishes and woodstains (e,f),
- primers (g),
- binding primers (h), and one additional category
- "just add water" decorative paints (for use on buildings, their trim, fittings or associated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

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 woodstains 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 woodstains, and that water resistance requirements should exclude minimal build woodstains. 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.

Questions to stakeholders

Questions about criterion 2 on efficiency in use for decorative paints, varnishes and related products
Q13. Opinions about the new criteria proposals for efficiency in use?
Q14. Should only ISO 6504-1 be allowed for spreading rate calculations?
Q15. Should the definition of “opaque” (contrast ratio of ≥ 98 % at 120µ wet film thickness) also specify the test method(s) used to measure this?
Q16. Should anti-fungal and anti-algal coatings continue to be included in the scope of EU Ecolabel? And are there any specific examples of such products that have been awarded the EU Ecolabel?

5.4 Criterion 3 (previously Criterion 4). Content of Volatile and Semi-volatile Organic Compounds (VOCs, SVOCs)

TR1: First proposal for Criterion 4: 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 3.

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 3 may display the text ‘reduced VOC content’ and the VOC content in g/l next to the Ecolabel.

Table 3: VOC and SVOC content limits

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°)	10	30 (1)/40 (2)
b. Interior glossy walls and ceilings (Gloss > 25@60°)	40	30 (1)/40 (2)
c. Exterior walls of mineral substrate	25	40
d. Interior/Exterior trim and cladding paints for wood and metal	80	50 (1)/60 (2)
e. Interior trim varnishes and woodstains, including opaque woodstains	65	30 (50, 60)

e. Exterior trim varnishes and woodstains, including opaque woodstains	75	60
f. Interior and Exterior minimal build woodstains	50	30 (1)/40 (2)
g. Primers	15	30 (1)/40 (2)
h. Binding primers	15	30 (1)/40 (2)
i. One-pack performance coatings	80	50 (1)/60 (2)
j. Two-pack reactive performance coatings for specific end use such as floors	80 (65)	50 (1)/60 (2)
l. Decorative effect coatings	80	50 (1)/60 (2)
Anti-rust paints	80 (75)	60 (n/a)

(1) Indoor white paints and varnishes

(2) 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/, the methods given in ISO 17895. The SVOC content shall be determined using the method given in ISO 11890-2. [M1] The test shall be carried out using the analytical system as identified in the Criteria User Manual. In the case of products used both indoors and outdoors the strictest SVOC limit value for indoor paints shall prevail.

Assessment and verification: the applicant shall provide for the VOC content of the ready to use product either a test report using the methods given in ISO 11890-2 or ISO 17895 that demonstrates compliance or a declaration of compliance supported by calculations based on the paint ingredients and raw materials.

The applicant shall provide for the SVOC content of the ready to use product either a test report using the method given in ISO 11890-2 or a declaration of compliance supported by calculations based on the paint ingredients and raw materials. The test shall be carried out with reference to the modifications to ISO 11890-2 provided in the Criteria User Manual. At the request of a Competent Body applicants may be required to validate calculations using the specified test method.

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 XTable .

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°)	~~10~~ 5	~~30~~ 25 (1) / ~~40~~ 28 (2)
b. Interior glossy walls and ceilings (Gloss > 25@60°)	~~40~~ 20	~~30~~ 15 (1) / ~~40~~ 24 (2)
c. Exterior walls of mineral substrate	~~25~~ 15	~~40~~ 30
d. Interior/Exterior trim and cladding paints for wood and metal	~~80~~ 40	~~50~~ 30 (1) / ~~60~~ 20 (2)
e. Interior trim varnishes and woodstains, including opaque woodstains	~~65~~ 60	~~30~~ 10
e. Exterior trim varnishes and woodstains, including opaque woodstains	~~75~~ 35	~~60~~ 25

f. Interior and Exterior minimal build woodstains	~~50~~ 35	25 ~~30 (1)~~() ~~/ 40 (2)~~
g. Primers	~~15~~ 10	24 ~~30~~(1) / 28 ~~40~~(2)
h. Binding primers	~~15~~ 9	9 ~~30~~(1) / 12 ~~40~~(2)
~~i. One-pack performance coatings~~	~~15~~	~~30 (1)/40 (2)~~
~~j. Two-pack reactive performance coatings for specific end use such as floors~~	~~80~~	~~50 (1)/60 (2)~~
~~l. Decorative effect coatings~~	~~80~~	~~50 (1)/60 (2)~~
~~Anti-rust paints~~	~~80 (75)~~	~~60 (n/a)~~

(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. ~~[M1] The test shall be carried out using the analytical system as identified in the Criteria User Manual.~~ 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 ~~either~~ a representative test report or reports using the methods given in ISO 11890-2 or ISO 17895 and results shall ~~that~~ demonstrates compliance with the relevant limits.~~or a declaration of compliance supported by calculations based on the paint ingredients and raw materials.~~

~~The applicant shall provide for the SVOC content of the ready to use product either a test report using the method given in ISO 11890-2 or a declaration of compliance supported by calculations based on the paint ingredients and raw materials. The test shall be carried out with reference to the modifications to ISO 11890-2 provided in the Criteria User Manual. At the request of a Competent Body applicants may be required to validate calculations using the specified test method.~~

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, which set mandatory upper limits for VOC content for various types of paint and varnish products. The EU Ecolabel criteria go further by setting even lower limits and by also setting limits for SVOC contents too.

In setting new limits, it was considered that the Directive dates back to 2004, and advancements in paint production technologies have occurred over the past 20 years. Collected data confirmed that the limits established by the Directive are higher than the product-specific data limits. Therefore, the EU Ecolabel is establishing even lower limits based on this product-specific data.

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

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.

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.

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 7 shows the number of products and licenses used in the calculation of the new VOC and SVOC limits.

Table 7. 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 woodstains, including opaque woodstains	4	27
e. Exterior trim varnishes and woodstains, including opaque woodstains	3	245
f. Interior and Exterior minimal build woodstains	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 is presented in Appendix 2 of this report. For products in category *(a) Interior matt walls and ceilings (Gloss <25@60˚),* 18% of the formulations will 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, will be excluded under the new limit. Category *(d) Interior/Exterior trim and cladding paints for wood and metal* will see an 8% exclusion from the existing EUEL, while for category *(e) Interior trim varnishes and woodstains, including opaque woodstains*, the exclusion rate is 4%. For category (e) Exterior trim varnishes and woodstains, including opaque woodstains, no products will be excluded based on the received data.

No data were available for category *(f) Interior and Exterior minimal build woodstains*; thus, the assumption for the new limit was based on data from category *(e).* However, there is 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 will be excluded under the new limit, while 17% will 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)* will adopt the same limits as category *(b),* however no information on the exclusion of existing products is possible due the lack of information.

Questions to stakeholders

Questions about criterion 3
Q17. Opinions about the new criteria proposals for VOC and SVOC content limits?

5.5 Criterion 4 (previously Criterion 5). Restriction of hazardous substances and mixtures

TR1: First proposal for Criterion 5: Restriction of hazardous substances and mixtures (no track changes style for the sake of clarity – but this proposed text would effectively replace the current criterion 5 AND the Appendix of Decision 2014/312/EU)
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.
5.1. 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 components therein do not contain any SVHCs. The declaration shall be supported by safety data sheets of all supplied chemicals and materials used to produce the final product and the components therein.

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 unavoidable impurities identified as SVHCs, 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 can be present in the chemical product up to 0.0100% w/w, unless further restricted under criterion 7.3.8. Substances known to be released or to degrade from ingoing substances are considered ingoing substances and not impurities.gJustifications for any deviation from a retention factor of 100% (e.g. solvent evaporation) or for chemical modification of a SVHC impurity shall be provided.

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

Unless derogated in Table 5, 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, categories and associated hazard statement codes stated in Table 4, in accordance with Regulation (EC) No 1272/2008.

Table 4. 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 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 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 5. Derogations to restrictions on ingoing substances and mixtures that are classified with one or more of the restricted hazards listed in Table 4 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-can preservative: Formaldyehyde-releasing in-can preservatives: Bronopol (CAS No 52-51-7); 2-bromo-2-(bromomethyl)pentanedinitrile (DBDCB), CAS No 35691-65-7) EGForm (CAS No 3586-55-8)** (benzyloxy)methanol (CAS No 14548-60-8)**	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 >0,020 % weight by weight. The addition of these substances (and any other ingredients that release formaldehyde) 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. **EGForm and (benzyloxy)methanol do not have any restricted hazard classifications, but their use is also subject to the free formaldehyde content of the final product.
In can preservative: Isothiazoline or izothiazoline-releasing substances: 2,2-dithiobis(N-methylbenzamide) (DTBMA) (CAS No 2527-58-4)	H317, 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 cases where isothiazoline preservatives are actively added by the paint or varnish manufacturer, the final product shall be tested

1,2-benzoisothiazol-3(2H)-one (BIT, CAS No 2634-33-5) 2-butyl-benzo(di)isothiazol-3-one (BBIT, CAS No 4299-07-4)		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, 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. 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:	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 or dry film preservations combinations that require 1,2-Benzisothiazol-3(2H)-one (BIT).
Drying and anti-skimming agents		
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. † 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.
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.
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		
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.
Silicon resin	H412, H413	*See horizontal derogation condition at foot of table Only allowed up to concentrations of 2,0 % weight by weight.
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	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.
Titanium dioxide	H350i	*See horizontal derogation condition at foot of table The applicant and the TiO2 supplier(s) 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.
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 weigh to the final product formulation.
Binders and cross-linking agents: Adipic acid dihydrazide (CAS No 1071-93-8)	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. - Binder content of 20-40%: allowable residual methanol is 0,030 % weight by weight. - Binder content of >40%: allowable residual methanol is 0,050 % weight by weight.

*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 5.2, 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 demonstrate compliance with the relevant requirements.

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

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 5.2 (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.

5.3. Specific hazardous substance restrictions for ingoing substances.

(a) Akylphenolethoxylates (APEOs) and their derivatives shall not be used in any paint or varnish preparations or formulations.

(b) Perfluorinated and polyfluorinated compounds (PFAS) shall not be used in any paint or varnish preparations or formulations.

(c) The following phthalates shall not be intentionally added to the final product formulation: DEHP (Bis-(2-ethylhexyl)-phthalate, CAS No); BBP (Butylbenzylphthalate, CAS No); DBP (Dibutylphthalate, CAS No); DMEP (bis-2-methoxyethyl phthalate, CAS No); DIBP (Di-isobutylphthalate, CAS No); DIHP (Di-C6-8-branched alkylphthalates, CAS No); DHNUP (Di-C7-11-branched alkylphthalates, CAS No) and DHP (Di-n-hexylphthalate, CAS No).

(d) 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 5.2, 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.

Assessment and verification:

The applicant shall declare the non-use of the substances in their formulation, supported by declarations from their suppliers about the non-use of these substances in the materials supplied and that are used in formulations subject to the EU Ecolabel license application procedure.

The absence of intentional addition of the phthalate compounds shall be their absence in concentrations greater than 0,010 % weight by weight in the final product formulation.

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 for 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.

TR2: Second proposal for Criterion 4 (previously 5): 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 ~~components~~ therein do not contain any SVHCs as ingoing substances. The declaration shall be supported by safety data sheets of all supplied ingredients~~chemicals and materials~~ used to produce the final product and declarations from the chemical suppliers ~~and the components therein~~.

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 ~~unavoidable~~ 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 ~~chemical~~ product above~~up to~~ 0,0100% w/w or in any ingredient in concentrations exceeding 0,100% w/w.~~, unless further restricted under criterion 7.3.8. Substances known to be released or to degrade from ingoing substances are considered ingoing substances and not impurities.g Justifications for~~ Any deviation from a retention factor of 100% for an SVHC impurity (e.g. solvent evaporation~~)~~ or ~~for~~ chemical modification) ~~of a SVHC impurity shall be provided~~ must be supported by adequate justifications.

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, ~~the final product and~~ any ingoing substances or mixtures that are present in concentrations exceeding 0,010 % weight by~~e~~ 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: ~~Formaldychyde releasing in can preservatives:~~ Bronopol (CAS No 52-51-7); ~~2-bromo-2-(bromomethyl)pentanedinitrile (DBDCB), CAS No 35691-65-7)~~ ~~EGForm (CAS No 3586-55-8)**~~ ~~(benzyloxy)methanol (CAS No 14548-60-8)**~~	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 >0,03~~2~~0 % 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). ~~The addition of these substances (and any other ingredients that release formaldehyde) 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.~~ ~~**EGForm and (benzyloxy)methanol do not have any restricted hazard classifications, but their use is also subject to the free formaldehyde content of the final product.~~
In can preservative: Isothiazoline or izothiazoline-releasing substances: ~~2,2-dithiobis(N-methylbenzamide) (DTBMA) (CAS No 2527-58-4)~~ ~~1,2-benzoisothiazol-3(2H)-one (BIT, CAS No 2634-33-5)~~ ~~2-butyl-benzo(di)isothiazol-3-one (BBIT, CAS No 4299-07-4)~~	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~~s~~ 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		
~~Binders and cross linking 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 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 ~~and the TiO2 supplier(s)~~ 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 ~~5~~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 ~~5~~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.

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. ~~shall not be used in any paint or varnish preparations or formulations.~~

(b) Perfluorinated and polyfluorinated compounds (PFAS). ~~shall not be used in any paint or varnish preparations or formulations.~~

(c) ~~The following p~~Phthalates. ~~shall not be intentionally added to the final product formulation.: DEHP (Bis (2-ethylhexyl) phthalate, CAS No 117-8-7); BBP (Butylbenzylphthalate, CAS No 85-68-7); DBP (Dibutylphthalate, CAS No 84-74-2); DMEP (bis-2-methoxyethyl phthalate, CAS No 117-82-8); DIBP (Di isobutylphthalate, CAS No 84-69-5); DIHP (Di-C6-8-branched alkylphthalates, CAS No 71888-89-6); DHNUP (Di-C7-11-branched alkylphthalates, CAS No 68515-42-4) and DHP (Di-n-hexylphthalate, CAS No 84-75-3).~~

(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~~d~~) 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 ~~5~~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 ~~the~~ingoing substances in their formulation, supported by declarations from their suppliers about the non-use of APEOs/PFAS and listed phthalates as ingoing ~~these~~ substances in the ingredients~~materials~~ supplied and that are used in formulations subject to the EU Ecolabel license application procedure.

~~The absence of intentional addition of the phthalate compounds shall be their absence in concentrations greater than 0,010 % weight by weight in the final product formulation.~~

(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~~for~~ 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.

Rationale for the proposed criterion text for hazardous substance restrictions

The main changes between TR1 and TR2 proposals have been done in response to comments received from stakeholders to the criterion on hazardous substances. One of the main changes has been the reintroduction of derogations for residual solvents (H304) and unreacted monomers (derogated H codes not defined except for acrylic acid). These had inadvertently been removed in the TR1 proposals. A similar confusion arose from the way the derogation for isothiazolines was presented in TR1. It looked like only three specific compounds were derogated but the intention was that this was specific to any individual isothiazoline compound or combinations thereof. This should now be clearer in TR2. Another change has been the reversion to the requirements on free-formaldehyde as being a direct exclusion with certain limits depending on whether certain preservatives or binders are used. Derogations for anti-corrosion pigments and verdigris protection have been removed, since these now correspond to performance coatings (for Annex II).

Regarding the testing of isothiazolines in the final product, a mandatory requirement when isothiazolines are used by the applicant, as proposed in TR1, was considered too burdensome. A change to align with the Nordic approach which allows theoretical calculations or direct testing to be used was considered when preparing TR2, but the fact that there is apparently no standard harmonised method for testing isothiazolines in paint and varnish products was a concern for the authors. Different sample preparation procedures, dilution ratios, analytical conditions, calibration standards and data processing etc. could greatly influence results and make the results highly variable from one test laboratory to another. This fact, coupled with the remark that laboratory results are normally lower than theoretical numbers, because some isothiazoline is also consumed or lost somehow in the can, means that the theoretical calculation remains a suitable approach. In line with the general assessment and verification conditions, Competent Bodies are still free to request additional information via testing of representative samples for EU Ecolabel products when considered necessary.

Additional specific exclusions have been added to better align with Nordic Swan criteria (organotin, fragrances and certain bisphenols). However, further research is needed to specifically list the bisphenols in question so that a more specific declaration from applicants and suppliers can be requested.

Many of the derogation limits in criterion 4.2 have now been clarified that they refer to shares in the final product. A cross-cutting change has been a clearer distinction between ingoing substances and impurities, which should be easier to understand now that definitions for these terms have been inserted.

Outcomes from and after the 1st AHWG meeting

A total of 125 comments on the hazardous substance criteria were received in writing after the 1st AHWG meeting.

Definitions: A number of these comments referred to concerns about the need for additional definitions to be provided in the legal text so that the hazardous substance criteria could be consistently interpreted. The definitions needed were for the terms **"***ingoing substances and mixtures***", "***impurities***" and "***unavoidable impurities***".**

SVHC restrictions, old criterion 5.1 (now proposed as 4.1): Regarding the non-use of SVHCs, clarity was sought about whether the concentration limit for SVHCs mentioned in the assessment and verification for SVHCs that were impurities applied to the final product or to supplied ingredients. Now that definitions have been added to distinguish what ingoing substances and impurities are, both for ingredients and for the final product. A clear distinction can be made that SVHCs are not permitted at any level as ingoing substances, but only as impurities and only up to the prescribed limits for impurities (proposed to be 0,100% in ingredients and 0,010% in the final product).

CLP restrictions, old criterion 5.2 (now proposed as 4.2): Regarding the hazard restrictions, clarity was requested to make sure that the CLP rules of mixtures are followed at the level of individual ingoing substances and not of ingoing mixtures. For example, if a supplied ingredient contained 0,030% MIT preservative, the ingredient would be classified as H317 (because specifically MIT >0.0015% classifies the mixture as H317). If that ingredient is then used at a concentration, say 2% in the final paint product. The following two situations could be deduced:

1. The calculation treats the ingoing mixture as 2% of H317, where any generic limits for H317 would mean any H317 ingredient present above 1% → classification of the paint as H317.
2. The calculation works back to the original H317 substance (MIT) and estimates the concentration of MIT in the final product (0.030% x 2% (i.e. x0.02) = 0.0006%). Even though MIT has a much tighter specific limit of 0.0015% for H317, the actual content of MIT is lower than this → paint not classified as H317.

Other comments requested the derogation of substances based on their individual merits and 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.

On endocrine disruptors: split views were expressed about the restrictions on suspected endocrine disruptors. Stakeholders in favour cited the precautionary approach and the fact that other recently adopted EU Ecolabel criteria had the same restriction. Stakeholders against stated that there was still a lack of clarity about the procedure and criteria by which a substance can end up being classified as a suspected endocrine disruptor.

With isothiazolines: many comments were received expressing doubts about which substances were allowed and which were not within the 0.040% limit. Only some were explicitly mentioned in the table. It was explained that this was an oversight in the original TR1 and that the intention was that no specific isothiazolines were actually excluded per se. About the testing of isothiazoline concentrations in the final product, this was supported by some stakeholders and rejected by others. The main reasons in favour were that it is a more realistic value and could capture any traces of isothiazolines in supplied ingredients that were either not declared by suppliers or were declared at lower levels than is actually the case. Arguments against were based on the fact that there is apparently no harmonised method for the measurement of isothiazolines in paints and varnishes and so results could be highly varied depending on methodological details. Generally speaking, experience to date suggested that measured concentrations were lower than the theoretical ones. The Nordic Swan approach currently allows either a theoretical calculation based on estimated isothiazoline contents (in supplied ingredients and added during product formulation) or a direct test of the final product.

For dry film preservatives: an inconsistency with the limit for IPBC was flagged, with the table saying it had been reduced to 0.50% while the text said it had been reduced to 0.25%. In fact the table was correct, with the new proposed limit being 0.50%. An additional hazard derogation (H330) was requested for dry film preservatives and general doubt was expressed about the number of outdoor coatings that would be able to meet to EU Ecolabel criteria.

With criteria relating to formaldehyde: stakeholders pointed out that DBDCB was not a formaldehyde-releasing preservative and so should not be associated with formaldehyde derogation conditions. Other comments requested that the previous approach to formaldehyde be maintained, with a standalone restriction on free formaldehyde and then different limits allowed depending on whether certain preservatives are used or not. It was also requested that the derogation for bronopol be increased from 0.02% to 0.03%.

Regarding the derogation for adipic acid, it was requested to also insert the hazard code H317 because there is now a self-classification with this hazard. If not inserted, it would basically just be favouring suppliers who choose not to self-classify with H317 and punishing those that do. This was confirmed after double checking the ECHA C&L inventory. Another 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.

Stakeholders also highlighted a change in TR1 from the original 2014 criteria about the derogation for using ZnO as a BIT preservative stabiliser. In the TR1 proposal, the allowance for use in in-can preservation formulations (PT6) type products, had accidentally been removed. This is now reinserted. Another request asked for a flat total requirement to be set for ZnO in the whole formulation because ZnO can serve more than one function (e.g. neutralising agent or anti-corrosion pigment) in a paint product. However, no specific limit was proposed or detailed breakdown of what roles ZnO can play in paints and the typical concentrations needed for those effects.

Going into more detail on neutralising agents, if ZnO is to be permitted here, one stakeholder requested that it would not be allowed in any extra quantities than the 0.04% of ZnO already allowed as a stabiliser for BIT preservatives. A derogation request was also submitted for triethylamine, which has the restricted hazards H301, H311 and H331 according to its harmonised classification in the ECHA C&L inventory.

Some minor adjustments were requested regarding the TiO_2 derogation, regarding the hazard cited (H351i instead of H350i) and that the entry should specify the physical form of the TiO2 as well so that people understand that the derogation condition (and the classification) only apply in the first place under certain conditions regarding the physical form of the TiO_2 supplied. Clarity was also sought about the exact nature of the dust control requirements that should apply in the paint factory via the derogation condition.

Many comments were submitted regarding the missing derogations relating to unreacted monomers and solvents. These had accidentally been left out of the TR1 proposals because they had been deleted by mistake during one of the amendments to the 2014 criteria. This meant that the derogations were present in the original 2014 criteria, but not in the most recent consolidated version of the same criteria. They are now reinserted in TR2.

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.

In terms of specific hazardous substance restrictions, there were several requests to align with the Nordic Swan list and to also be clearer about the banning of PFAS or polyfluorinated compounds as a whole. The non-addition of microplastics to paint and varnish products was also requested.

Further research and main changes in the second proposal

The need for definitions for terms like "*ingoing substances*", "*impurities*" and "*unavoidable impurities*" was acknowledged by the project team, but further research was necessary before deciding on the precise wording of these definitions. A comparison of definitions from different sources is provided in the tables below, starting with the term "*impurities*".

Table 8. Definition of the term "impurities"

Source	Definition	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.

Source	Definition	Remarks
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.

So 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). 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*)."

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

Table 9. Definition of the term "ingoing substances"

Source	Definition	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 released from ingoing substances in stabilized manufacturing conditions (e.g. formaldehyde and arylamine) are also considered as ingoing substances;	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	'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	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.

Source	Definition	Remarks
	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.	
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.

So 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 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*".

Given the quantity of derogations listed, stakeholders were asked if all of these were actually used, or at least which ones were most commonly used. Only a few responses were received, but potentially covered many licenses. Between these respondents, the most common derogations applied were:

- Preservatives
- Zinc oxide (ZnO)
- Driers
- Surfactants
- Silica
- Neutralising agents
- Solvent
- Heavy metals
- Titanium dioxide & TMP
- UV stabiliser
- OPBC dry film preservative
- Unreacted monomers and methanol.

With regards to the request to specifically ban PFAS, it was necessary to define PFAS so that the restriction can be understood in a common way. According to REACH, PFAS can be defined as:

"*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 definition for microplastics is also required if their intentional use as ingoing substances in paint and varnish products is to be banned. However, despite many ongoing regulatory efforts to restrict the use of microplastics (also referred to as synthetic polymer microparticles), the authors would like to check with stakeholders about a suitable definition for this term.

Questions to stakeholders

Questions about criterion 4 on hazardous substance restrictions
Q18. Opinions about criterion 4.1 on SVHC restrictions?
Q19. Opinions about criterion 4.2 on CLP restrictions and derogations?
Q19b. Opinions about the allowance for real mixture testing to be accepted with encapsulated preservatives?
Q20. Opinions about criterion 4.3 on specific substance restrictions?
Q21. How robust is the current procedure for identifying substances as potential endocrine disruptors (EUH381 and EUH 431)? Do you think it is ok to restrict them to the same extent as substances classified as EUH380 or EUH 430? How best to demonstrate compliance with restrictions on endocrine disruptor restrictions?
Q22. With Zinc Oxide, it is derogated for use as a preservative stabiliser (with BIT) up to 0.040%. However, it can also be used as a neutralising agent. Are manufacturers able to clearly distinguish where the different Zinc Oxides come from? For example, is the BIT supplied already with Zinc Oxide as a mixture, or is it prepared in the paint factory by formulators?
Q23. Opinions about the correct/incorrect allocation of % limits to the final product or to specific ingredients?
Q24. The derogation for unreacted monomers needs specific hazard codes. H400 has been added for acrylic acid, but what other unreacted monomers are relevant and what restricted hazard codes do they have?
Q25. What are the authorised impurity levels of PFAS according to REACH? And is there a standard test method that could be cited for testing for PFAS impurities that is suitable for paints, varnishes and their ingredients?
Q26. Any suggested preferences about supplier declaration formats and associated content?

5.6 Criterion 5. VOC emissions [new]

TR1: First proposal for new criterion on VOC emissions
Note: only applicable to indoor paints and varnishes
Emissions of VOCs and SVOCs shall not exceed the limits defined in the table below.

Table 6: 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

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

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. In this line, previous discussions suggested to reassess the feasibility of setting criteria for indoor air quality requirements based on emission rates in the next revision of the EU Ecolabel criteria.

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.

For the first proposal included in TR1, a comparison was drawn between ecolabels including Blue Angel, Nordic Swan, and French VOC label. In addition, an analysis of green building certification schemes was conducted, to

determine if there may be potential benefits of creating a new criterion for VOC emissions on the EU Ecolabel. From this, limits for VOC emissions for 3-day and 28-day testing were set.

Comparison with other ecolabels

The Nordic Swan criteria for paints and varnishes (v4.1) set limits on emissions of category 1 carcinogenic VOCs of 1 µg/m3 after 28 days and 300 µg/m3 for total VOCs after 28 days.

The Blue Angel criteria (UZ-12a) set the same limits as the Nordic Swan, plus other limits at 3 days for the same parameters (3000 µg/m3 for total VOCs and 10 µg/m3 for carcinogenic VOCs except formaldehyde) and other limits for additional parameters after 28 days (R value, TSVOC, TVOC without LCI, and formaldehyde).

The proposed criteria for (indoor) EU Ecolabel paints and varnishes broadly align with the Blue Angel approach, although it does not go so far as to also require limits on TVOC without LCI values, since the added value of this data is questionable given that we already measure TVOC emissions and the R value.

Just focusing on the 28-day values, it is also possible to compare the ambition level with national VOC label emission limits in the table below.

Table 10. Comparison of similar 28-day VOC emission limits with EU Ecolabel paints and varnish proposal

Parameter	EU Ecolabel	Blue Angel*	Nordic Swan*	AgBB 2021	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	< 100 µg/m3		< 100 µg/m3	< 100 µg/m3		
R value	≤ 1.0	≤ 1.0		≤ 1.0	≤ 1.0	≤ 1.0	
Formaldehyde	< 20 µg/m3	< 20 µg/m3		< 100 µg/m3	< 100 µg/m3	< 10 µg/m3	< 60 µg/m3
Other CMR cat. 1 substances	< 1 µg/m3	< 1 µg/m3	< 1 µg/m3	< 1 µg/m3	< 1 µg/m3	< 1 µg/m3	

**Blue Angel refers to "DE-UZ 12a on low-emission and low-pollutant paints and varnishes (v.8)"; Nordic Swan refers to "096 Paints and varnishes, v4.1"; 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.

Research and source for the proposals given

The shift to water-based formulations has created major reductions in VOC emissions and there is an existing criterion on VOC content that requires the total amount of VOCs in EU Ecolabel paints and varnishes to be significantly less than the legal limits. However, limits on total VOC do not give the full picture when trying to consider the impact of coatings on indoor air quality.

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 revision of the Construction Products Regulation (CPR), where VOC emissions from relevant construction products should be tested according to EN 16516 test standard. However, only some categories of coatings are included within the scope of the CPR and it appears that decorative coatings are not included.

Thanks to the developments with the CPR, and the existing EN 16402 standard, 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 values, as published on the European Commission website for around 150 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.

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 11. 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 of time such as bedrooms, living rooms, classrooms, offices, etc. The TVOC has and does not exceed 300µg/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.	
DGNB Office building and residential	Evaluation of incomparable VOC measurements (measured more than four weeks after completion)	ISO 16000: TVOC of ≤3000 or ≤300 ug/m3 US EPA TO-1, TO-15, TO-17 and TO-11A: ≤3000 or ≤300 ug/m3 ASHRAE 189-1 and California Department of Public Health) Standard Method V1.1: ≤500 or ≤200 ug/m3
LEED Credit for VOC emissions for materials used in the building interior.	For the VOC emissions evaluation, 2 option to meet the criteria are presented, with one being focus on the California Department of Public Health (CDPH) Standard Method and the second according to CEN TS 16516 and 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 meets 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.

Outcomes from and after 1st AHWG meeting

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 question 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 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 factor (R<1) 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 costs of VOC emissions testing. Most currently measure TVOC emissions using ISO 16001 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 argue 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.

Further research in the second proposal

Despite the challenges presented by stakeholders, implementing a VOC emission criterion with a 3-day and 28-day test remains crucial for several key reasons:

- Health impacts of VOCs/SVOCs: To certify high-quality products, both VOC and SVOC emissions must be considered – VOCs are defined as compounds with boiling pointes up to 250◦C, whereas compounds above this threshold are categorised as SVOCs. The latter are considered more critical due to their persistent nature and potential health impacts. Therefore, setting limits to VOC/SVOC emissions protect those applying the paint (up to 3 days) but also those living/using the room in the following 28 days. The proposed criterion serves as a robust indicator of indoor air quality, which is a critical aspect of overall environmental sustainability.
- Reasonable limit values: The proposed limit values for VOC/SVOC emissions are reasonable and should not be differentiated amongst paints.
- Alignment with future regulatory trends: Continuous updates and revisions to standards are necessary to address emerging health concerns and improve regulatory frameworks. Environmental regulations are becoming increasingly stricter globally. By adopting rigorous VOC emission standards now, we align the EU Ecolabel with future regulatory trends, positioning it as a forward-thinking and proactive certification. This approach ensures that EU Ecolabel products remain compliant with, and often ahead of, upcoming regulations, fostering long-term stability and credibility.
- Consumer trust and market leadership: The EU Ecolabel is a mark of environmental excellence. By adopting strict VOC emissions criteria, we reinforce the label's reputation as a leader in environmental standards. This can enhance consumer trust and differentiate EU Ecolabel products in the market, potentially driving demand for certified products despite the initial costs.
- Global competitiveness: As global markets increasingly prioritize sustainability, having stringent VOC emissions standards can make EU products more competitive internationally. By setting high standards, we ensure that EU Ecolabel products are not only compliant with but also exceed international environmental expectations.
- Implementation and flexibility: To address concerns about industry readiness, a phased implementation approach can be adopted. Providing a transition period, such as the suggested 36 months, allows manufacturers time to adapt and comply with the new standards, mitigating the impact on certified products.

Compounds now recognized as carcinogenic should be excluded from the R value criterion and have specific limit values instead. In addition, specific compounds with separate criteria, such as Acetaldehyde, should be removed from the R value consideration.

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. The test is performed with a 5-year frequency, which is not deemed demanding. 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.

No changes were made to the first proposed criterion, as the limits are reasonable and should not be differentiated amongst paints.

Questions to stakeholders

Questions about proposed Criterion 5
Q27. Opinions about VOC emission limits for indoor decorative paints and varnishes?

5.7 Criterion 6. Consumer information

TR1: Existing 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' — '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: — 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 'unused paint' together with, where available, a web-link or contact details from which the consumer can find more detailed information. 6(c) The following advice and recommendations on how to handle the paint shall be provided on or be attached to the packaging: — 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 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.
TR2: Annex I: 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~~unused~~ paint' ~~together with, where available, a web-link or contact details from which the consumer can find more detailed information~~.

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.

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.

Outcomes from and after 1st AHWG meeting

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.

Main changes in second proposal

Based on TR1 and subsequent working group meetings with stakeholders, the product group scope has now been finalised. Consequently, a proposal for this criterion has been developed, including the option to access consumer information through a website or QR code.

5.8 Criterion 7. Information appearing on the EU Ecolabel

TR1: Existing 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

— 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.
TR2: Annex I: Proposal for Criterion 8: 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

The content of this criterion may be sensitive to any changes in the product group scope and any completely new criteria (for example on VOC emissions), so it is not recommended to review this criterion in any detail until the scope and criteria are agreed.

Outcome from and after the 1st AHWG meeting

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 have been made to the existing criterion.

6 Criteria proposal for Annex II: Performance coatings and related products [new]

The whole of Annex II is new, but 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. Even though all the Annex II criteria are technically new, in cases where text has been repeated from the draft TR1 versions of criteria and simply split up or duplicated, track changes are applied as if there was previously a TR1 version with the Annex II criteria structure. 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

TR1. First proposal for Criterion 1: Titanium dioxide production

Readers are referred to section 5.2 of this report to see the original proposal from TR1, which was originally criterion 2.

TR2: Annex II: 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 X: 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 use 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 % TiO2 content of the different ores used.

Emissions to air shall be counted from point source(s)[21] 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.

[21] 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.

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.
- 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[22], 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 TiO_2 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 TiO2 pigments used in the EU Ecolabel paint products.

For emissions to air, concentrations shall be expressed in units of mg/Nm3 at XX% O_2 content and multiplied by a specific emission air flow rate in units of Nm3/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/m3 shall be multiplied by a specific wastewater flow rate in units of m3/tonne TiO2 pigment production for the same time period that the data was collected.

Rationale for the proposed criterion text

The rationale for this criterion follows the same foundational principles as Annex I: Decorative paints, in section 5.2.

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

6.2 Criterion 2. Efficiency in use requirements

TR1: First proposal for Criterion 3: Efficiency in use

Same as presented in section 5.3 of this TR2. Only parts relating to certain categories applied (subcategories (i) and (j) to be precise).

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.

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. However, there was a lack of input and background knowledge regarding performance coatings, and so this proposal comes with a number of questions attached.

Questions to stakeholders

Questions about criterion 2
Q28. Were spreading rate requirements for "primers" and "binding primers" also intended to apply to those for performance coatings as well as for decorative coatings in the original 2014 EU Ecolabel criteria?
Q29. Are the white pigment content and wet scrub resistance requirements relevant to performance "paints"? Or at least to floor paints?
Q30. Which of the coating property changes after the weathering test should be defined for performance coatings?

6.3 Criterion 3. Content of Volatile and Semi-volatile Organic Compounds (VOCs, SVOCs)

TR1: First proposal for Criterion 4: 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 3.

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 3 may display the text 'reduced VOC content' and the VOC content in g/l next to the Ecolabel.

Table 3: VOC and SVOC content limits

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°)	10	30 (1)/40 (2)
b. Interior glossy walls and ceilings (Gloss > 25@60°)	40	30 (1)/40 (2)
c. Exterior walls of mineral substrate	25	40
d. Interior/Exterior trim and cladding paints for wood and metal	80	50 (1)/60 (2)
e. Interior trim varnishes and woodstains, including opaque woodstains	65	30 (50, 60)
e. Exterior trim varnishes and woodstains, including opaque woodstains	75	60
f. Interior and Exterior minimal build woodstains	50	30 (1)/40 (2)
g. Primers	15	30 (1)/40 (2)
h. Binding primers	15	30 (1)/40 (2)
i. One-pack performance coatings	80	50 (1)/60 (2)
j. Two-pack reactive performance coatings for specific end use such as floors	80 (65)	50 (1)/60 (2)
l. Decorative effect coatings	80	50 (1)/60 (2)
Anti-rust paints	80 (75)	60 (n/a)

(1) Indoor white paints and varnishes

(2) 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/, the methods given in ISO 17895. The SVOC content shall be determined using the method given in ISO 11890-2. [M1] The test shall be carried out using the analytical system as identified in the Criteria User Manual. In the case of products used both indoors and outdoors the strictest SVOC limit value for indoor paints shall prevail.

Assessment and verification: the applicant shall provide for the VOC content of the ready to use product either a test report using the methods given in ISO 11890-2 or ISO 17895 that demonstrates compliance or a declaration of compliance supported by calculations based on the paint ingredients and raw materials.

The applicant shall provide for the SVOC content of the ready to use product either a test report using the method given in ISO 11890-2 or a declaration of compliance supported by calculations based on the paint ingredients and raw materials. The test shall be carried out with reference to the modifications to ISO 11890-2 provided in the Criteria User Manual. At the request of a Competent Body applicants may be required to validate calculations using the specified test method.

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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	~~80~~ 40	44 ~~50 (1) / 60 (2)~~
j. Multi-pack reactive performance coatings for specific end use such as floors	~~80 (65)~~ 65	45 ~~50 (1) / 60 (2)~~
Anti-rust paints	~~80 (75)~~ 70	50
Waterproofing coatings	??	??

~~(1) Indoor white paints and varnishes~~

~~(2) 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. ~~[M1] The test shall be carried out using the analytical system as identified in the Criteria User Manual.~~ 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 ~~either~~ a representative test report or reports using the methods given in ISO 11890-2 or ISO 17895 and results shall ~~that~~ demonstrate~~s~~ compliance with the relevant limits.~~or a declaration of compliance supported by calculations based on the paint ingredients and raw materials.~~

~~The applicant shall provide for the SVOC content of the ready to use product either a test report using the method given in ISO 11890-2 or a declaration of compliance supported by calculations based on the paint ingredients and raw materials. The test shall be carried out with reference to the modifications to ISO 11890-2 provided in the Criteria User Manual. At the request of a Competent Body applicants may be required to validate calculations using the specified test method.~~

1705

1706 ## Rationale for the proposed criterion text

1707 The rationale for this criterion follows the same foundational principles as Annex I for decorative paints and
1708 varnishes and related products in section 5.4.

1709 ## Further research and main changes in the second proposal

1710 Based on the data received before and after the WSG2, several graphs were drawn for VOC and SVOC content,
1711 to determine if new limits could be set.

1712 Data from five different CBs were collected and analysed to establish new VOC and SVOC limits for Criterion 3.
1713 Emissions from the EU Ecolabel formulations provided by the CBs were used to calculate potential reductions.
1714 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 12 shows the number of products and licenses used in the calculation of the new VOC and SVOC limits.

Table 12. 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 is given in Appendix 2 of this report. For products in category *(i) One-pack performance coatings*, 22% of the formulations will 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.

Questions to stakeholders

Questions about criterion 3
Q31. Opinions about the proposals for VOC / SVOC content limits for performance coat

6.4 Criterion 4. Restriction of hazardous substances and mixtures

TR1: First proposal for Criterion 4: Restriction of hazardous substances and mixtures

There was no previous Annex II proposed in TR1. The basis for the criterion was the same as presented in TR1 as already presented in section 5.5 of this TR2 – text not repeated in order to not lengthen the TR2 unnecessarily.

TR2: Annex II: First proposal for Criterion 4: Restriction of hazardous substances and mixtures (for performance coatings only)

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.

TR1: First proposal for Criterion 4: Restriction of hazardous substances and mixtures

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.

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	

TR1: First proposal for Criterion 4: Restriction of hazardous substances and mixtures

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:	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.

TR1: First proposal for Criterion 4: Restriction of hazardous substances and mixtures		
3-iodo-2-propynyl butylcarbamate (IPBC, CAS No 55406-53-6)		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		

TR1: First proposal for Criterion 4: Restriction of hazardous substances and mixtures		
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

TR1: First proposal for Criterion 4: Restriction of hazardous substances and mixtures		
		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.

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,

TR1: First proposal for Criterion 4: Restriction of hazardous substances and mixtures
- 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.

Rationale for the proposed criterion text

The rationale for this criterion follows the same foundational principles as Annex I (Decorative paints and varnishes and related products), see section 5.5 of this TR2 for more details of why the wording is proposed as it is.

The only significant difference in the criteria wording is regarding verdigris protection and the scope of the application of anti-corrosion pigments which are kept in this Annex II as explained in the rationale of criterion 4 (Annex I).

6.5 Criterion 5. VOC emissions

TR1: First proposal for new criterion on VOC emissions
Note: only applicable to indoor paints and varnishes Emissions of VOCs and SVOCs shall not exceed the limits defined in the table below. Table 6: 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

TR2: Annex II: 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

Rationale for the proposed criterion text on VOC emissions

The rationale for this criterion follows the same foundational principles as Annex I (Decorative paints and varnishes and related products), in section 5.6.

6.6 Criterion 6. Consumer information

TR1: Existing 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' — '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: — 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 'unused paint' together with, where available, a web-link or contact details from which the consumer can find more detailed information. 6(c) The following advice and recommendations on how to handle the paint shall be provided on or be attached to the packaging: — 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 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.
TR2: Annex II: 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~~unused~~ paint' ~~together with, where available, a web-link or contact details from which the consumer can find more detailed information~~. 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.

Rationale for the proposed criterion text

The rationale for this criterion follows the same foundational principles as Annex I (Decorative paints and varnishes and related products), in section 5.7.

6.7 Criterion 7. Information appearing on the EU Ecolabel

TR1: Existing 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 — 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.
TR2: Annex II: 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.

Rationale for the proposed criterion text

The rationale for this criterion follows the same foundational principles as Annex I (Decorative paints and varnishes and related products), in section 5.8. However, the content of this criterion may be sensitive to any changes in the product group scope and any completely new criteria (for example on VOC emissions), so it is not recommended to review this criterion in deep detail until the scope and criteria are agreed.

7 Criteria proposal for Annex III: Water-based aerosol spray paints [new]

The whole of Annex III is new, but is based on the same basic criteria used in Annex I. The rationale for why an Annex III is proposed is presented in the "Scope" section of this report. Even though all the Annex III criteria are technically new, in cases where text has been repeated from the TR1 versions of criteria and simply split up or duplicated, track changes are applied as if there was previously a TR1 version with the Annex III criteria structure. 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 III. Instead, a placeholder is inserted to direct the reader to the relevant part in Annex I.

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. These criteria will be discussed in detail during the 2nd AHWG meeting.

7.1 Criterion 1. Titanium dioxide production

TR1. First proposal for Criterion 1: Titanium dioxide production

There was no Annex III in the TR1 proposals. Readers are referred to section 5.2 of this report to see the original proposal from TR1.

TR2: Annex III: Criterion 1: Titanium dioxide production

If the aerosol spray paint 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 X: 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 SO2 to air (EN 14791)	4,5 kg/t TiO2 pigment	n/a
Emissions of HCl to air (ISO 15713)	n/a	0,70 kg/t TiO2 pigment
Emissions of SO4 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 use 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 % TiO2 content of the different ores used.

Emissions to air shall be counted from point source(s)[23] 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.
- 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[24], 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 TiO2 pigments used in the EU Ecolabel paint products.

For emissions to air, concentrations shall be expressed in units of mg/Nm3 at XX% O2 content and multiplied by a specific emission air flow rate in units of Nm3/tonne TiO2 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/m3 shall be multiplied by a specific wastewater flow rate in units of m3/tonne TiO2 pigment production for the same time period that the data was collected.

Rationale for the proposed criterion text

The same rationale as already mentioned in section 5.2 of this report applies equally to decorative paints as it does to water-based aerosol spray paints, namely that titanium dioxide is a very important ingredient but whose production is also very energy intensive and associated with significant emissions to air and water. Consequently, the use of TiO_2 is also an important contributor to the overall life cycle environmental impacts of aerosol spray paints.

[23] 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.

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

7.2 Criterion 2. Efficiency in use requirements

In order to demonstrate the efficiency in use of aerosol spray paints the following tests and requirements, as indicated in Table 2, shall be undertaken:

TR2: Annex III: 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.

Rationale for the proposed criterion text

The criterion for efficiency in use has been established to ensure that water-based aerosol spray paint products adequately cover a designated area of substrate. To determine these requirements, data was collected from relevant stakeholders. As this is an initial proposal, stakeholders are encouraged to provide feedback on the proposed criterion and share specific information about the different requirements included.

In conversations with aerosol spray paint manufacturers, it was confirmed that the spreading rate can be evaluated for these products using the same principles as ISO 6504-1 or ISO 6504-3.

A very relevant requirement for efficiency in use is a metric referred to as "efficiency in spraying", which refers to the quantity of paint formulation present in the can that can be sprayed out under satisfactory conditions. However, while this principle was defined and a limit agreed in discussions with aerosol spray paint manufacturers, precise details of the test and the standard reference have still not been provided.

Outcomes from and after 1st AHWG meeting and Working Sub-Group 1 (WSG1) meeting

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). Hence, there are plenty of ways to ensure that water-based products would be able to deliver a satisfactory level of performance. However, deciding on what levels of performance are suitable requires further discussion and this will be raised at the 2ns AHWG meeting.

Questions to stakeholders

Questions about Annex III: criterion 2
Q32. Any other efficiency in use requirements that can be applied for aerosol spray paints? Examples that are already applied to decorative and performance coatings include: adhesion, abrasion, water resistance, weathering, alkali resistance and corrosion resistance. Q33. What is the standard method for measuring "efficiency in spraying" for aerosol spray paints?

7.3 Criterion 3. 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.

Rationale for the proposed criterion text

The VOC content in aerosol paints has clear health impacts on professionals across various applications, as well as building occupants when used indoors. Short-term exposure can lead to headaches and irritation of the eyes, throat, and nose, while long-term exposure can cause serious conditions, such as kidney damage and even cancer. Therefore, only water-based aerosol spray paints are considered for the EU Ecolabel criteria. These paints are designed as environmentally friendly alternatives to traditional solvent-based paints, with significantly lower VOC levels. Although not entirely VOC-free, the VOC emissions are greatly reduced compared to conventional spray paints, making them a more sustainable 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 are not included in the current version. The EU Ecolabel criteria address this gap by setting limits specifically for aerosol spray paints, reflecting 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.

A VOC limit was established based on the data received from stakeholders. Further discussions will be held at the 2nd AHWG meeting, where additional comments will be gathered and analyzed to ensure that the limits are set with consideration of market readiness and environmental parameters.

Questions about criterion 3
Q34. Opinions about the VOC content limit requirement for aerosol spray paints?

7.4 Criterion 4. Restriction of hazardous substances and mixtures

Annex III: First proposal for Criterion 4: Restriction of hazardous substances and mixtures

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

The aerosol spray paint 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.

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.

(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 >0,030 % 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.
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 0,25% 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 preservations 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 2,0 %.
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.
Neodecanoic acid, zinc salt, basic (CAS No 84418-68-8)	H400, H411	*See horizontal derogation condition at foot of table Only allowed up to 0,050 % weight by weight in the final product.
Neutralising agents	H301, H311, H331, H400, H410, H411, H412, H413	*See horizontal derogation condition at foot of table Only allowed up to 0,50 % weight by weight in the final product.
N,N-diethylhydroxylamine (CAS No 3710-84-7)	H411	*See horizontal derogation condition at foot of table Only allowed up to 0,020 % weight by weight in the final product.
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 and additionally for alcohols: H400, H410, H411 and H412	*See horizontal derogation condition at foot of table Solvents only allowed up to concentrations of 1,0 % weight by weight in the final product. Specifically alcohols are only allowed up to 0,40% weight by weight.
Surfactants	H411, H412, H413	*See horizontal derogation condition at foot of table Only allowed up to 1,0 % weight by weight in 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 (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 or 0,015 % in the final product.
Tri-zinc bis(orthophosphate) (CAS No 7779-90-0)	H400, H410	*See horizontal derogation condition at foot of table Only allowed up to sum total concentrations of 0,060 % weight by weight in the final product.
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..

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.

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 and fragrances 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.

Rationale for the proposed criterion text

The same hazardous substance restrictions that apply for decorative paints and varnishes have basically been 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 IPBC 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). 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. The harmonised classification needs no derogation and so 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). 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.

- Alcohols, C12-14, ethoxylated propoxylated (CAS No 68439-51-0). 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.
- Distillates (petroleum), hydrotreated light (CAS No 64742-47-8). The ECHA C&L inventory shows a harmonised classification as H304. In principle this is proposed to be included under the general derogation for H304 "solvents".
- Hydrocarbons, C14-C18, n-Alkanes, Isoalkanes, cyclics (no CAS number, but EC number 927-632-8). The ECHA C&L inventory shows a joint entry as H304. In principle, this is proposed to be included under the general derogation for H304 "solvents".
- Neodecanoic acid, zinc salt, basic (CAS No 84418-68-8). 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.
- N,N-diethylhydroxylamine (CAS No 3710-84-7). The ECHA C&L inventory showed a joint entry as H226, H312, H332, H335 and H411. Derogation for H411 would be required.
- Triethylamine (CAS No 121-44-8). 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 decorative paints, for the use of triethylamine as a neutralising agent and it is used for the same purpose in aerosol spray paints.
- Trimethylolpropane (TMP, CAS No 77-99-6). 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. To be confirmed that this is the case also with aerosol spray paints.
- Tri-zinc bis(orthophosphate) (CAS No 7779-90-0). The ECHA C&L inventory shows a harmonised classification as H400 and H410. These two hazards would need to be derogated. If this is used for anti-corrosion properties, then the derogation for anti-corrosion pigments could be modified.
- Zinc decanoate (CAS No 13040-17-0). The ECHA C&L inventory showed two self-classifications as "not classified". However, the aerosol spray paint manufacturers considered it as an H412 substance. Further clarification needed on this.

Former related criteria 4.1 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.

Questions to stakeholders

Questions about criterion 4
Q35. Opinions about the hazardous substance restrictions for aerosol spray paints?

7.5 Criterion 5. 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' — '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 'unused 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.

The proposed text for this criterion is based on the changes made to the existing criterion on consumer information for Annex I in section 5.7.

7.6 Criterion 6. Information appearing on the EU Ecolabel

TR2: Annex III: 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 — 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

The rationale for this criterion follows the same foundational principles as Annex I (Decorative paints and varnishes and related products), in section 5.8. However, the content of this criterion may be sensitive to any changes in the product group scope and any completely new criteria (for example on VOC emissions and carbon footprint), so it is not recommended to review this criterion in deep detail until the scope and criteria are agreed.

8 Other criteria areas to be 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 at this stage of the revision process, this criterion is not proposed anymore.

TR1: First proposal for a criterion on carbon footprinting or PEF
The life cycle carbon footprint of the paint or varnish products shall be assessed according to one of the following methods, with preference being given in the order of the list below. — A cradle-to-grave analysis using the latest Environmental Footprint datasets and according to relevant Product Environmental Footprint Category Rules (PEFCR) that are valid at the date of the application for the EU Ecolabel license. — A cradle-to-grave analysis using the latest Environmental Footprint datasets and according to general Product Environmental Footprint methodology set out in Commission Recommendation (EU) 2021/2279. — A cradle-to-grave analysis reporting on modules A to C of the EN 15804 method and using any combination of specific and generic data for ingredients and reference flows. — A cradle-to-gate analysis using module A of the EN 15804 method and using any combination of specific and generic data for ingredients and reference flows. Except in the case where the PEFCR is followed the carbon footprint shall be reported using a functional unit of per m2 per year. Any datasets and calculation rules used shall be those in force at the date of the application for the EU Ecolabel. Assessment and verification: The applicant shall provide the Competent Body with a full formulation of the paint or varnish product(s) and the associated carbon footprints of each ingredient. Reference flows for fuel, electricity, water, wastewater, normal waste and hazardous waste shall also be provided. Transport assumptions (distance and mode) shall be explained for each ingredient coming to the factory as well as an average distribution scenario for sold products. Assumed losses due to spoilage, spillage and misapplication shall be communicated as will an assumed spreading rate in m^2/L, which should be the same as communicated on any packaging, if mentioned there. The assumed lifetime before reapplication shall be estimated and explained in terms of the results of durability testing of the paint or varnish product(s).

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. Below is a summary of the discussions and analyses that were conducted.

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

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[25].

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 woodstains, primers, and performance coatings but that the PEFCRs are now outdated and the revision date is yet to be announced.

[25] The gold standard PCF Guideline is now complete - TFS Initiative (tfs-initiative.com)

Further research

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 is 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.

When looking at performance, a cradle-to-grave analysis is preferred over cradle-to-gate, as the functional unit refers to the protection and decoration of an indoor/outdoor substrate over 50 years, meaning that the paint/varnish in question must be applied in a substrate and reapplied every X years, based on its durability. To account for this, a cradle-to-grave analysis must be conducted, which includes the production of paint/varnish, its application and reapplication over 50 years, its end-of-life and any relevant transport.

In order to investigate the impact of the carbon footprint of paint products with and without performance considerations, a simple assessment was conducted. To link performance to the carbon footprint and allow comparison amongst paint products, a functional unit was chosen. A functional unit in an LCA study is a 'quantified description of the performance requirements that the product system under study must fulfil'.

The functional unit was defined as the "protection and decoration of 1 m^2 of indoor substrate for 50 years at 98% opacity". The amount of paint required to fulfil this functional unit was calculated 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 (-) × Paint density (kg/L) × Maintenance multiplier

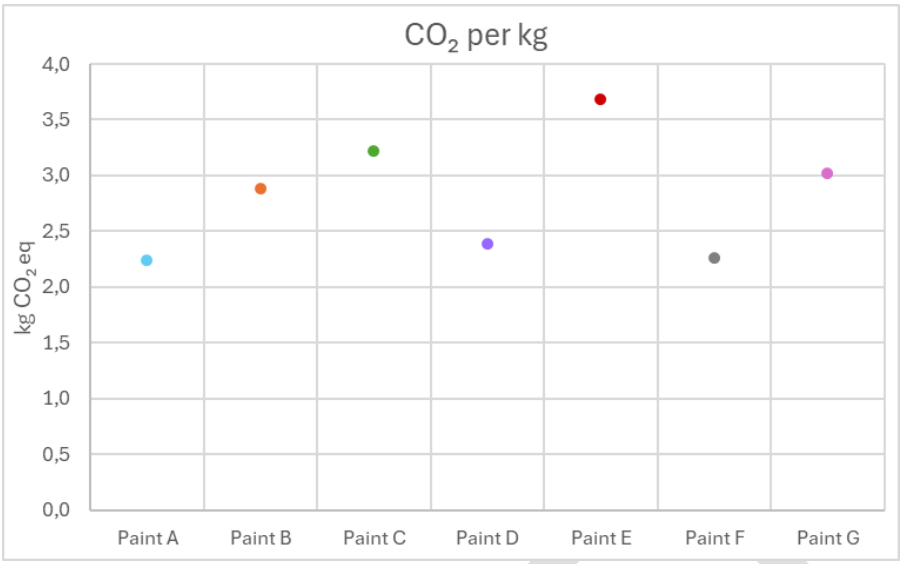
A comparison was conducted on seven different types of water-based indoor paints, based on EPDs sent by one participant and research conducted by the project team. The Table 13 below shows the amount of each paint required to fulfil the functional unit, based on the equation above.

Table 13. Key input factors for life cycle carbon calculations for 7 paint products

	Paint A	Paint B	Paint C	Paint D	Paint E	Paint F	Paint G
Spreading rate [m^2/L]	15.6	15.6	11	8	12	10.26	13.00
Fraction of paint applied [-]	0.89						
Paint density [kg/L]	1.43	1.31	1.47	1.32	1.45	1.47	1.41
Maintenance multiplier [-]	3.33	3.33	5	6.67	3.33	5.00	4.17
Amount of paint required [kg]	0.343	0.315	0.529	0.632	0.348	0.803	0.508

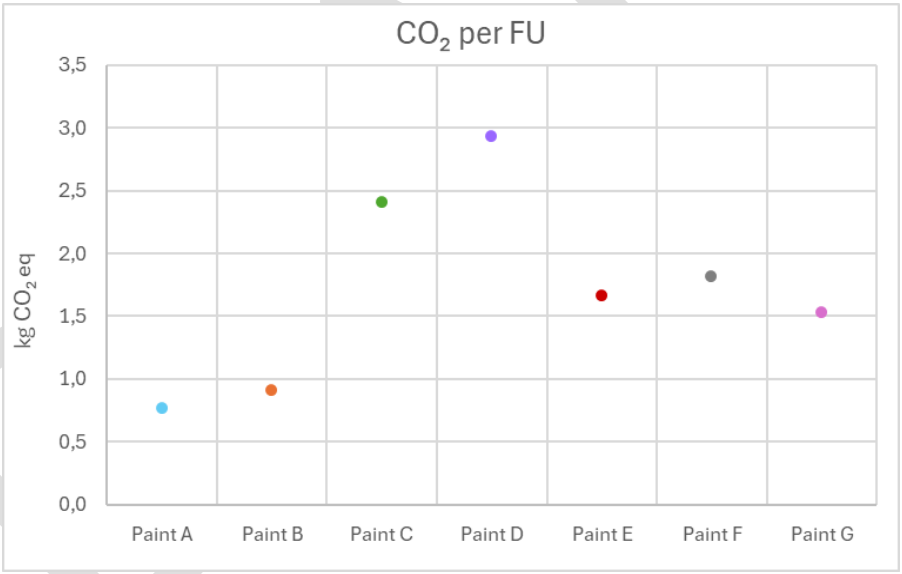
Source: Own elaboration.

Figure 9. Carbon footprint (A1-A3) per kg of 7 types of interior paints.



Source: Own elaboration.

Figure 10. Carbon footprint (A1-A3) per functional unit of 7 types of interior paints.



Source: Own elaboration.

Source: Own elaboration.

Figure 9 and Figure 10 were created to compare the carbon footprint when focusing on amount (kg) *vs* functional unit (performance). Although these results pertain only to the production stage (A1-A3), due to lack of data availability, the carbon footprint for certain paints changes considerably when looking at impact per kg or per functional unit. This is the case for Paint D, which has one of the lowest footprints per kg but when accounting for performance over 50 years, the lower durability compared to the remaining paints leads to the highest impact per FU. In contrast, Paint E has the highest impact per kg but the fourth lowest per FU, due to its spreading rate and durability.

Methodology

Sources of information for the possible development of carbon footprint criterion are the PEFCR for paints, the latest EN 15804:2019 standard and the multiple relevant EF datasets for ingredients and materials used in paints and varnishes. Besides, data from manufacturers are available, however in a limited number. While the methodological rules set out in both the PEFCR and EN 15804 could serve as a basis for carrying out an LCA analysis, it is to note that the PEFCR was developed in the PEF pilot phase, i.e. before 2018 and is outdated (no update is taking place for now), thus, it cannot be used as a reference.

The advantage of following the methodology described in EN 15804 is that it can be applied to any type of construction product, contrary to the PEFCR, which was developed solely for decorative paints and is not relevant for many of the additional products being considered for inclusion in the scope of the EU Ecolabel (e.g. aerosol spray paints, waterproofing coatings). In addition, because many producers already have EPDs for most of their paint products and continue to get them due to market pressure, they are familiar with the methodology.

- A1-A3 (Product Stage): Includes raw material extraction, transportation to manufacturing site, and production processes.
- A4-A5 (Construction Stage): Covers transportation to the application site and the application process.
- B1-B7 (Use Stage): Involves use, maintenance, and any repair work – here the re-application of paint to the substrate is included in module B2 (maintenance).
- C1-C4 (End-of-life Stage): Considers deconstruction, transportation, waste processing, and final disposal.
- D (Benefits and Loads Stage): Accounts for benefits and loads of recycling and/or incinerating materials with energy recovery. This module is optional, as it is outside of the system boundary.

One additional benefit of following the methodology in EN 15804 is that secondary materials (reused, recycled) enter the system as burden free, which incentivises the use of recycled materials during production of paint/varnish products.

In addition, using the EN 15804 EPD framework would provide clear results for each life cycle stage and a better overview of the carbon footprint of the products. However, one concern presented by stakeholders is that the carbon footprint claim on the products may be difficult for consumers to understand. A potential solution to this is creating straightforward labelling and offering detailed explanations through QR codes or websites.

Nevertheless, it is likely easier to obtain CF data from raw material suppliers than remaining environmental impacts.

Some stakeholders inquired about cut-off rules for ingredients if wt% is lower than 1%. However, small amounts of certain ingredients can have significant environmental impacts, particularly in terms of their carbon footprint, toxicity, or other harmful effects. Including 100% of all ingredients ensures a comprehensive assessment of the environmental and health impacts of the product. In addition, it promotes full transparency and ensures that no potentially significant environmental impacts are overlooked.

Durability of paints

The assumed lifetime before reapplication for indoor and outdoor paints and varnishes should be based on the durability assessment in Annex 4 of the PEFCR for decorative paints (but note this is out-of-date).

Indoor paints and varnishes

For indoor wall paints, a wet scrub resistance test following EN 13300:2001 and ISO 11998 classification should be conducted. Based on the WSR class of the indoor paint, the durability of the paint on the substrate should be with the corresponding maintenance multiplier, as follows:

Table 14. Durability of indoor paints and varnishes

Quality Level	WSR class	Loss of thickness	Durability	Maintenance multiplier
Q1	1	< 5 µm at 200 scrub cycles	15	3.33
Q2	2	≥ 5 to < 20 µm at 200 scrub cycles	6	8.33
Q3	3	≥ 20 to < 70 µm at 200 scrub cycles	3	16.67
Q4	4 & 5	Based on 40 scrub cycles	1	50

Source: Own elaboration.

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. Based on the outcome of the overall score, the points are assigned to three different quality levels as follows:

Table 15. Durability of indoor paints and varnishes quality levels

Quality level	Points	Durability (years)	Maintenance multiplier
Q1	≥ 7	12	9
Q2	5 ≤ x < 7	8.6	6
Q3	< 5	4.6	3

Source: Own elaboration.

Outdoor paints and varnishes

Outdoor mineral wall paints should be tested according to ISO 4628, following 1000 hours of QUV-A exposure following ISO 11507. Colour change should be measured using DE2000 following the ISO 11664-6.

Table 16. Durability of outdoor paints and varnishes

Quality level	Final Quality Score	Durability	Maintenance multiplier
Q1	1 to 2	15	3.33
Q2	3	10	5
Q3	4 to 5	5.45	9.17

Source: Own elaboration.

Outdoor wood paint durability should be based on three criteria: the volume of total solid, the pigment volume concentration and the biocides content. The score is the sum of all properties with a maximum score of 30, as follows:

Table 17. Durability of outdoor paints and varnishes quality levels

Quality level	Points	Durability	Maintenance multiplier
Q1	0 to 10	10	5
Q2	11 to 20	6.7	7.46
Q3	21 to 30	3.5	14.29

Source: Own elaboration.

Data

According to stakeholders, one of the biggest challenges in developing a carbon footprint criterion would be getting supplier-specific data on the raw materials used. However, the more primary data used, the more reliable are the results of the carbon footprint and primary data should be incentivised as much as possible. However, when such happens, secondary data is used.

Although cradle-to-gate data is based on current production, from gate-to-grave, most data would be based on scenarios and assumptions. Apart from the use stage, when the paint/varnish is reapplied to the substrate, default data may be a potential solution to the lack of data availability or to avoid assumptions.

The Environmental Footprint database offers a wide range of datasets for ingredients found in paints. However, it lacks datasets for ingredients and other generic databases may be required to complement EF datasets. Other generic databases include Ecoinvent, GaBi and ELCD. Allowance should also be made to overwrite generic data assumptions in case suppliers can provide an EPD for supplied ingredients. This way, suppliers and producers would be encouraged to make or source lower carbon materials. However, any such specific claims should indeed be official EPDs and be third party certified and be valid at the date of application.

When using specific and generic data for ingredients, a data quality check should be conducted. This check can be done through the Data Quality Rating (DQR) according to the PCF guideline.

When no data is available for a specific substance, proxy data may be used. However, this needs to be reported as such.

The process of conducting a carbon footprint analysis may be costly for companies. As a result, grouping products into family groups is possible. To ensure reliability, the worst-case product must be considered and argumentation as to why the product is the worst-case of the family group must be provided and data proving this must be shared with the relevant Competent Body.

Verification process

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 2 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.

Data collection approach:

- Focus on Comprehensive EPDs: The primary criterion for data selection was the availability of EPDs that covered all relevant life cycle stages (A1-A5, B1-B7, C1-C4), as outlined in the methodology. This ensured that the full environmental impact of each product, from raw material extraction to end-of-life, was accounted for.
- Inclusion of various paint types: EPDs for both EU Ecolabelled and non-ecolabelled indoor paints were reviewed, allowing for a broad and representative sample of products currently available in the market.
- Conversion to Functional Unit: In cases where the EPD data was provided per kilogram (kg) of paint, the declared units were converted into the functional unit defined in the criterion: the protection and decoration of 1 m² of indoor substrate for 50 years. This conversion ensured a fair comparison between different paints by accounting for their durability, opacity, and reapplication frequency. For EPDs declaring only modules A1-A5 and C1-C4, module B was calculated as the sum of A1-A5 and C1-C4 over the 50-year period, based on the maintenance multiplier. EPDs declaring less than A1-A5 and C1-C4 were disregarded in this analysis.

— Durability: when durability data (given in years of WSR class) was not explicitly available in the EPD, a worst-case scenario approach was taken for EU Ecolabelled paints. Specifically, a durability of 6 years was assumed, which corresponds to the lowest durability found for EU Ecolabelled indoor paints. This conservative estimate ensured that even in the absence of durability data, the analysis remained robust.

Conversion to Functional Unit:

As previously stated, for EPDs declaring only modules A1-A5 and C1-C4, module B was calculated as follows:

$$\text{Module B} = [\text{Sum(A1-A5)}\ (kgCO_2eq) + \text{Sum(C1-C4)}\ (kgCO_2eq) \times (\text{Maintenance multiplier} - 1)$$

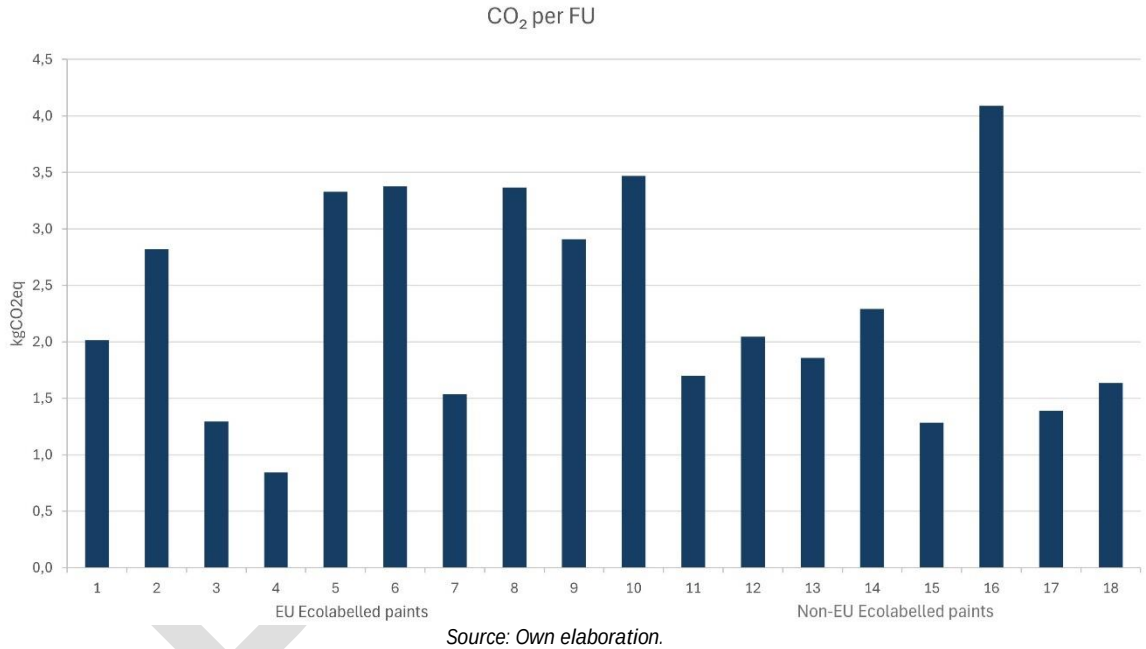
To convert EPDs declaring kg of paint, the following equation was used:

$$CO_2 \text{ footprint per FU} = \text{Sum(A1-A5; B; C1-C4)}\ (kgCO_2eq) \times \text{Density (kg/L)} / \text{Spreading rate } (m^2/L)$$

Analysis and Benchmarking:

After converting the data to the functional unit, the Global Warming Potential (GWP) results of 18 paints were compared and are shown in Figure 11.

Figure 11. CO_2 per FU calculated for 18 indoor paints, based on publicly available EPDs.



Source: Own elaboration.

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 criteria.

Given the abovementioned challenges, the criteria on carbon footprinting are not proposed because these barriers hinder the ability to establish scientifically sound and reliable criteria.

Question to stakeholders

Questions about other criteria areas to be considered
Q36. Opinions about the decision to not set criteria on carbon footprinting?

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 in TR1. However, unless there was a clear demand for it from stakeholders, the criterion would not be proposed as it did 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 in incorporating an optional criterion for biobased content in paint products. They highlighted the growing market for biobased paint, 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 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.

Rationale for excluding 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. 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.

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 and future revisions will be considered, as more data and industry capacity become available.

8.3 Requirements on microplastics

Despite being a novel area, this requirement was deemed a good topic for discussion after the publication of TR1, to determine whether it should be included and, if so, what potential requirements could be set. However, this requirement was only considered relevant if microplastics are added to some paint or varnish products within the scope.

Outcomes from and after 1st AHWG meeting

Stakeholders expressed mixed views on the inclusion of a criterion for microplastics in paint and varnish products. Most believe that this criterion is unnecessary given current and forthcoming regulations, suggesting that it falls outside the scope of the EU Ecolabel. They argue 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 is also a suggestion to ban the intentional use of microplastics in paint formulations. These measures could position the EU Ecolabel as a leader in addressing microplastics in paints and varnishes.

Rationale for excluding criterion

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:

- Uncertainty about microplastics in formulations: There is currently insufficient information regarding the extent to which microplastics are intentionally added to paint formulations. Without clear data on their use, 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.
- Evidence Basis: The regulation of microplastics in paint products is a novel area with limited data on the prevalence and impact of intentional microplastic additives in these products. Regulatory measures should be based on solid evidence to ensure they are both necessary and effective. Given that an EU policy to address microplastics releases in paints is not yet developed, it is premature to introduce specific criteria under Ecolabel.
- Industry readiness and market availability: Setting strict limits on unintentional microplastic release or banning intentional microplastic use requires significant industry readiness and practical feasibility. The paint industry is not yet be fully prepared to meet such requirements, leading to potential compliance challenges and market disruptions.
- 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 is an important environmental issue, incorporating a criterion for microplastics 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.

Questions to stakeholders

Questions about other criteria areas to be considered
Q37. Any opinions about decision to not set criteria on biobased content?
Q38. Any opinions about the proposed approach to microplastics in criterion 4.3? (i.e. non-use as ingoing substances)

9 Summary of the main changes in the criteria

This section outlines the key changes to the criteria of the EU Ecolabel for indoor and outdoor paints and varnishes. New definitions have been added to ensure consistent understanding and clarity of terms throughout the report. The most significant change involves the restructuring of the scope, with the inclusion of aerosol spray paints and waterproofing products. As a result, the scope has been divided into three separate annexes, as detailed below:

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

Additionally, restructuring in the criteria were made following the annexes, as presented below:

Table 18. Restructuration of the EU Ecolabel criteria for indoor and outdoor paints and varnishes

Subject/criteria content	Previous criteria from 2014	Proposed criteria		
		Annex I	Annex II	Annex III
White pigment content and WSR	Previous criterion 1. White pigment content	Moved to part (b) of the new criterion 2. Efficiency in Use and White pigment content and WSR requirements		No previous criterion to move.
Titanium dioxide	Previous criterion 2. Titanium dioxide production	Now becomes criterion 1. Titanium dioxide production		
Efficiency in use	Previous criterion 3. Efficiency in use	Now becomes criterion 2. Efficiency in Use and white pigment content and WSR		Criterion 2. Efficiency in use without white pigment limit
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 5. VOC emissions		No requirement here
Consumer information	Previous criterion 6. Consumer information	Criterion 6. Consumer information	Criterion 5. Consumer information	
EU information	Previous criterion 7. Information appearing on the EU Ecolabel	Criterion 7. Information appearing on the EU Ecolabel	Criterion 6. Information appearing on the EU Ecolabel	

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

2327	MR	Resource depletion, minerals & metals
2328	NGO	Non-governmental Organization
2329	OD	Ozone Depletion
2330	REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
2331	PEF	Product Environmental Footprint
2332	PEFCR	Product Environmental Footprint Category Rules
2333	PM	Particulate Matter
2334	POF	Photochemical Ozone Formation
2335	PRODCOM'	PRODuction COMmunautaire' (Community Production)
2336	VOC	Volatile Organic Compound
2337	SVOCs	Semi-Volatile Organic Compounds
2338	TiO_2	Titanium dioxide
2339	WU	Water Use
2340	ZnS	Zinc sulphide

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2379 # Appendices

2380 ## Appendix 1. Substitution information and Derogation request form

2381 ### 1. Common information requirements

To be treated as confidential?	☐Yes ☐No

2382

Contact name	
Organisation	
Email	
Telephone No.	
Supplementary documents attached	

2383

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[26]	
1e. Proportional contribution to final product classification (for mixture ingredients)	

[26] 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	

2384

2385 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	

2386

2387 3. Additional information required about substitutes

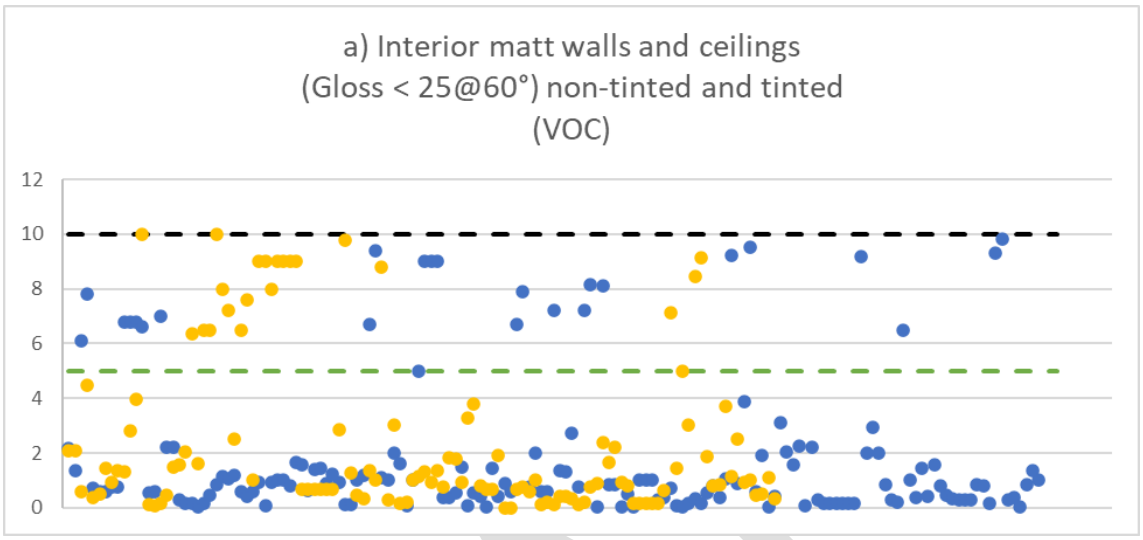
3a. Comparative evaluation of environmental performance	
3b. The relevance of the hazard substitution along the life cycle of the product (e.g. manufacturing, use, disposal)	
3c. Compliance with product performance and functional requirements	
3d. Market diffusion and technical maturity	

2388

Appendix 2. VOC and SVOC emission calculation

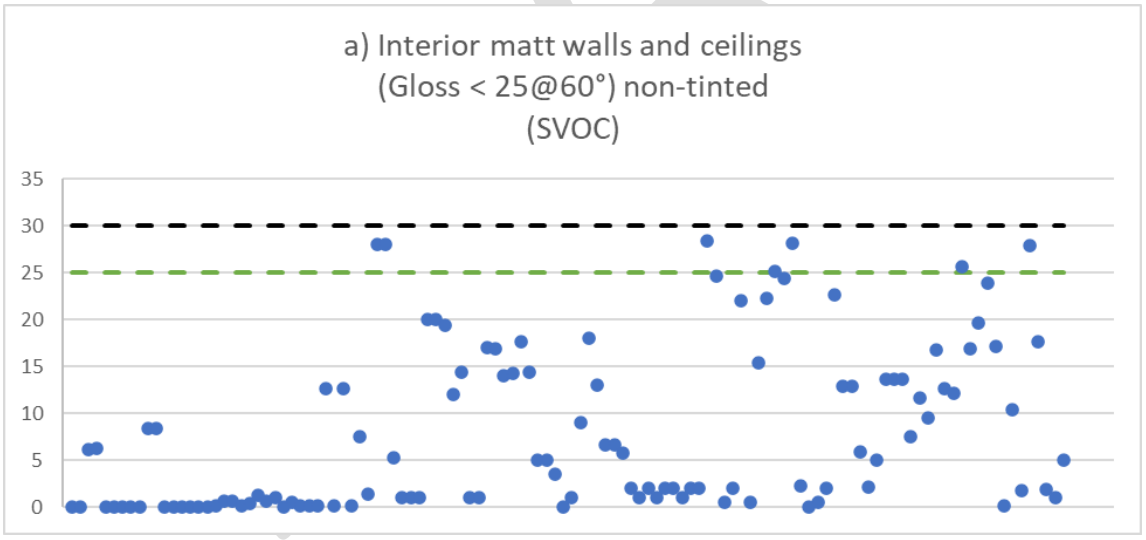
The graphics below illustrates current Criterion 3. Content of Volatile and Semi-volatile Organic Compounds (VOCs, SVOCs). These graphics were developed based on data received from five different CBs. Each dot on the graph represents a license, which may cover one or multiple products with the same formulation. 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)

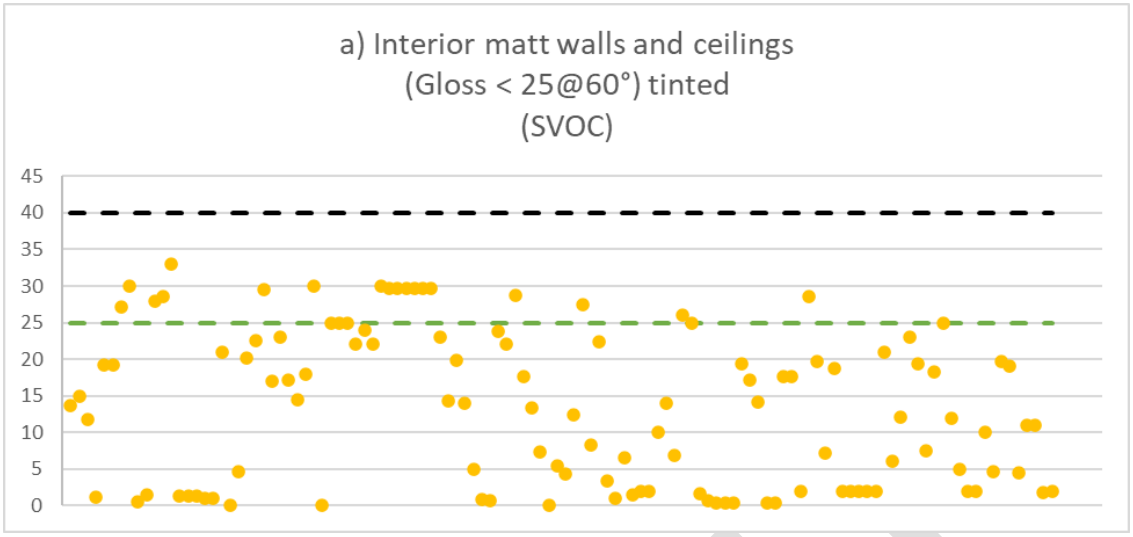


Blue: non-tinted, Yellow: tinted

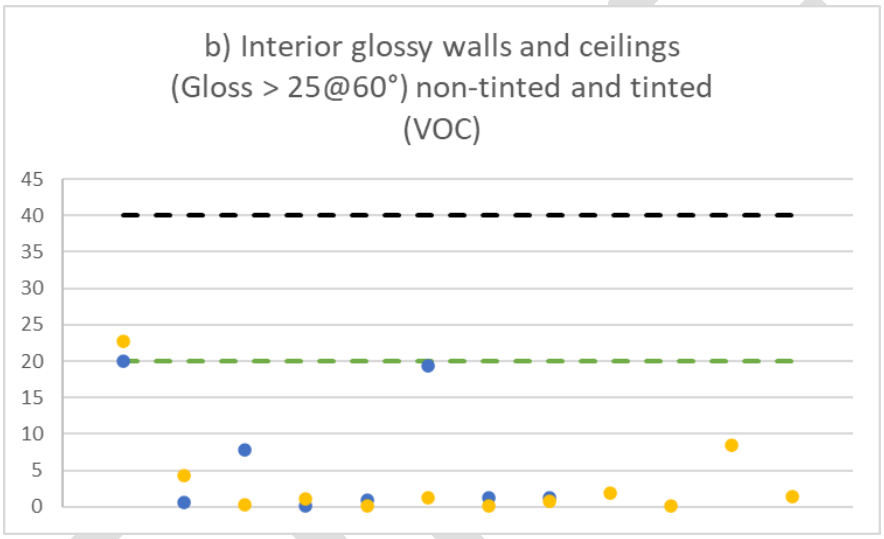
a) Interior matt walls and ceilings (Gloss < 25@60°) non-tinted (SVOC)



a) Interior matt walls and ceilings (Gloss < 25@60°) tinted (SVOC)

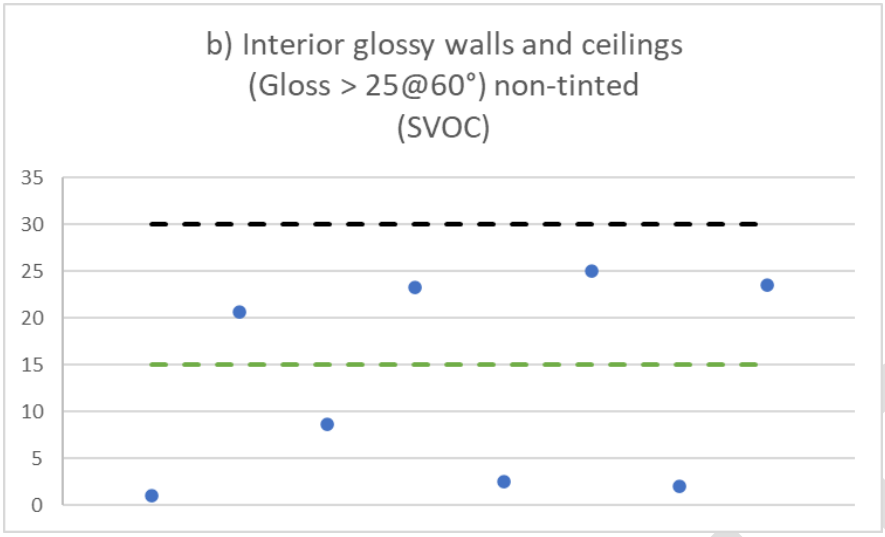


b) Interior glossy walls and ceilings (Gloss > 25@60°) non-tinted and tinted (VOC)

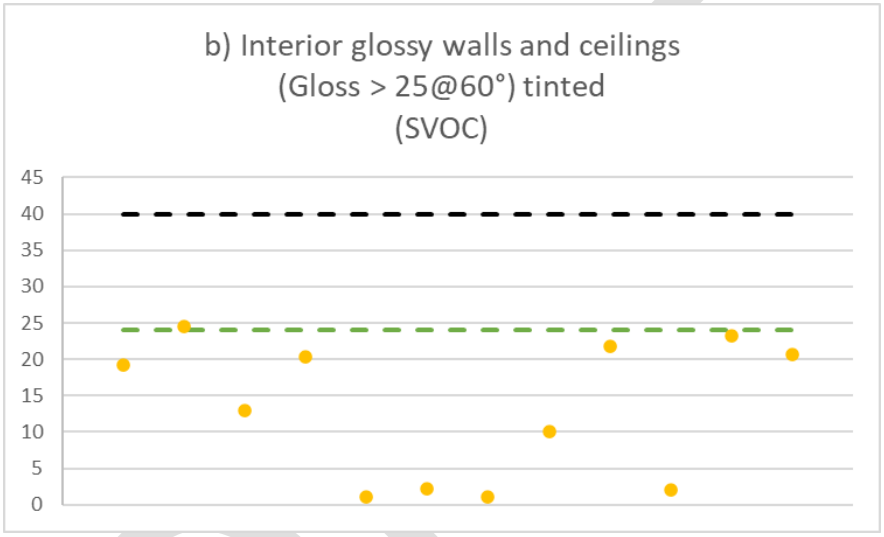


Blue: non-tinted, Yellow: tinted

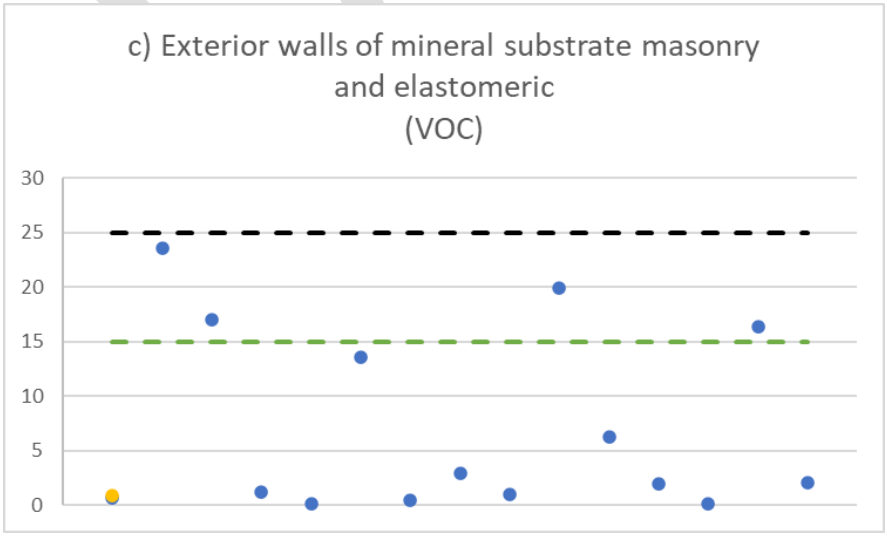
b) Interior glossy walls and ceilings (Gloss > 25@60°) non-tinted (SVOC)



b) Interior glossy walls and ceilings (Gloss > 25@60°) tinted (SVOC)

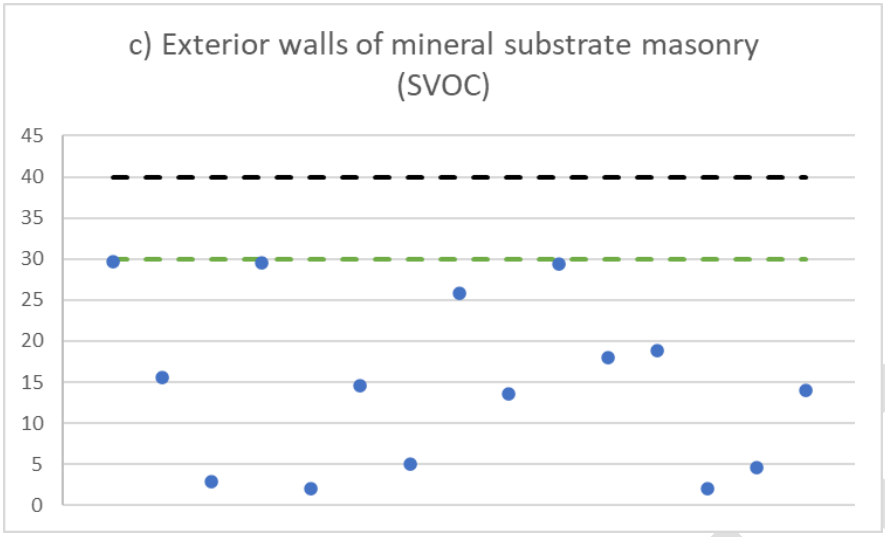


c) Exterior walls of mineral substrate masonry and elastomeric (VOC)

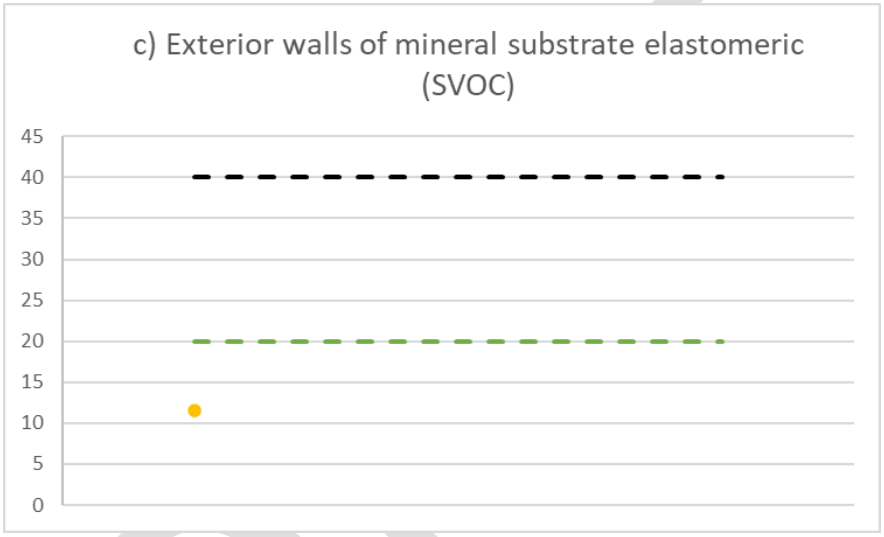


Blue: non-tinted, Yellow: tinted

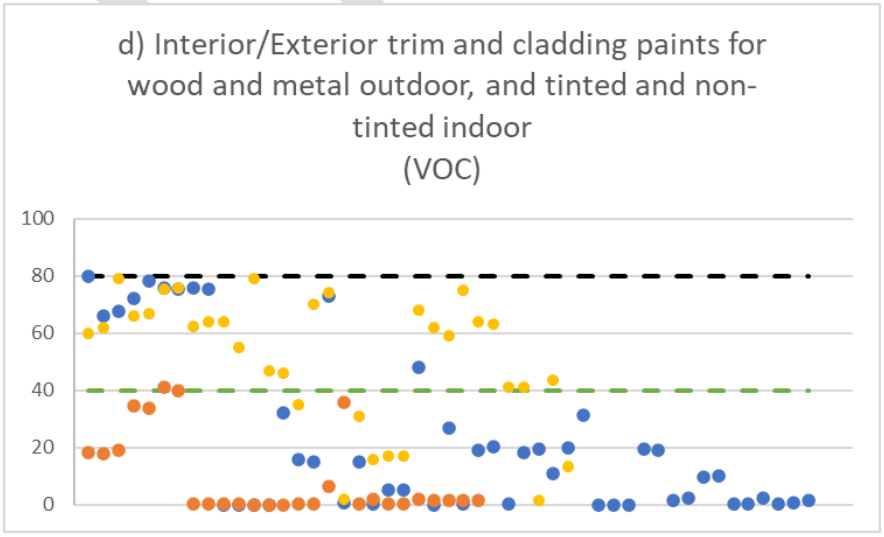
c) Exterior walls of mineral substrate masonry (SVOC)



c) Exterior walls of mineral substrate elastomeric (SVOC)

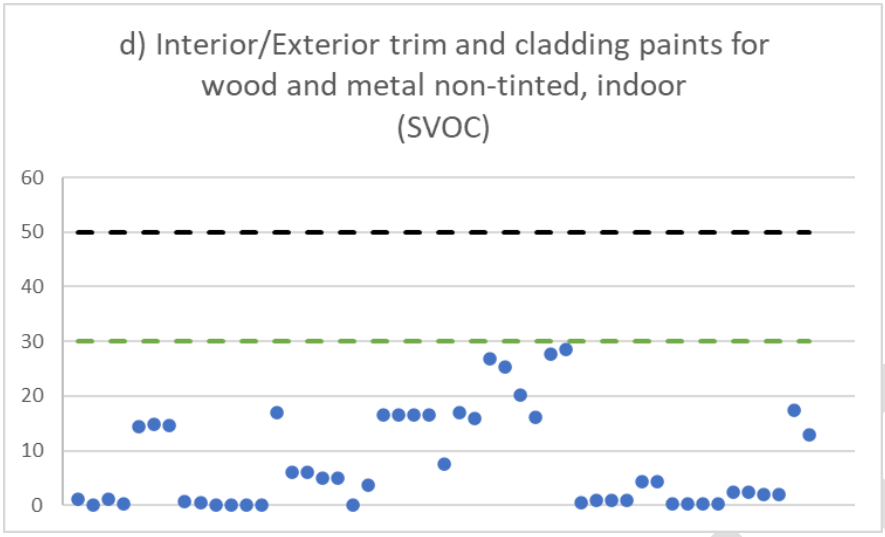


d) Interior/Exterior trim and cladding paints for wood and metal outdoor, and tinted and non-tinted indoor (VOC)

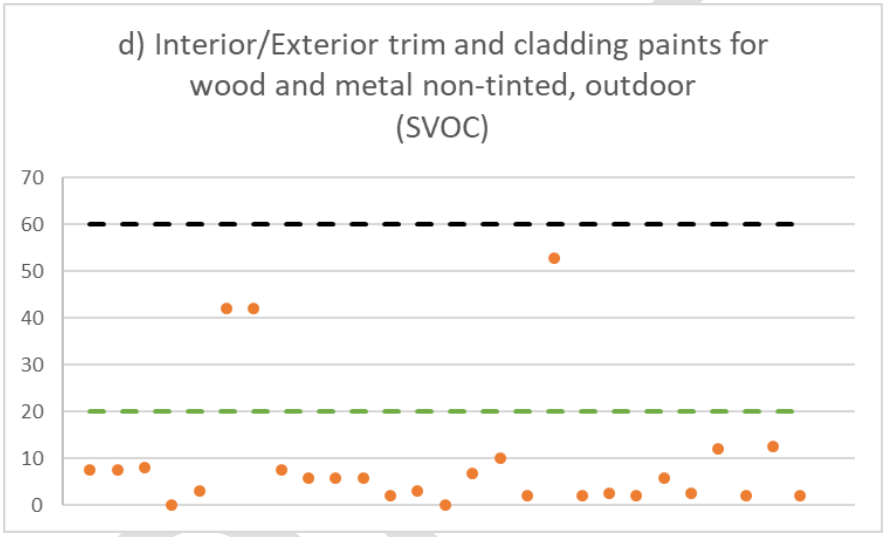


Blue: non-tinted indoor; Orange: non-tinted, outdoor; Yellow: tinted

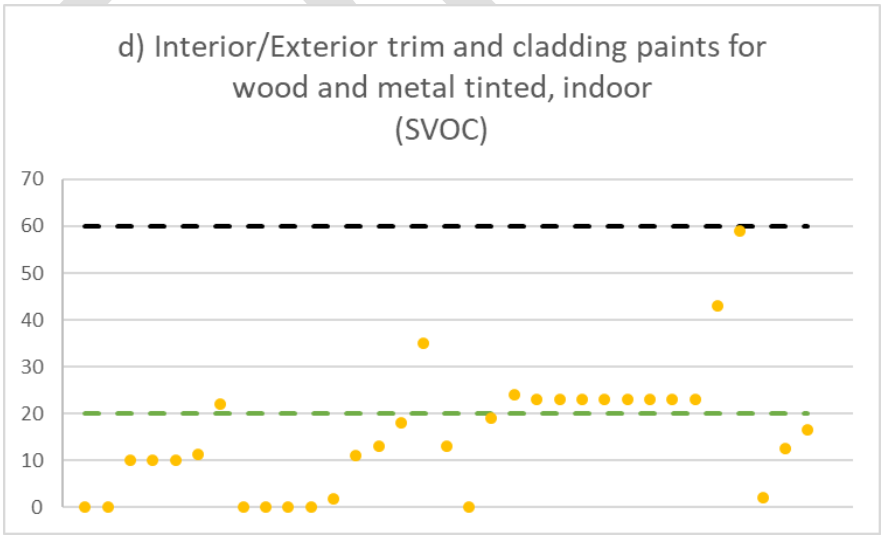
d) Interior/Exterior trim and cladding paints for wood and metal non-tinted, indoor (SVOC)



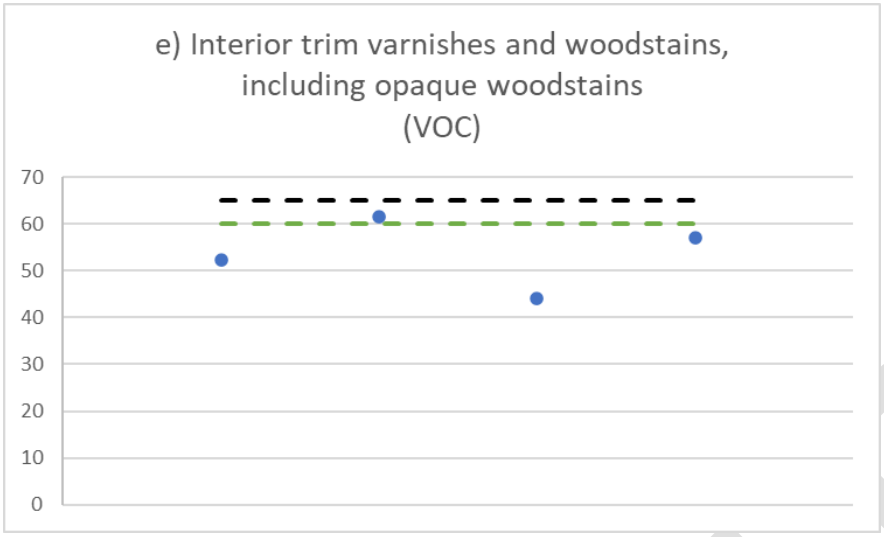
d) Interior/Exterior trim and cladding paints for wood and metal non-tinted, outdoor (SVOC)



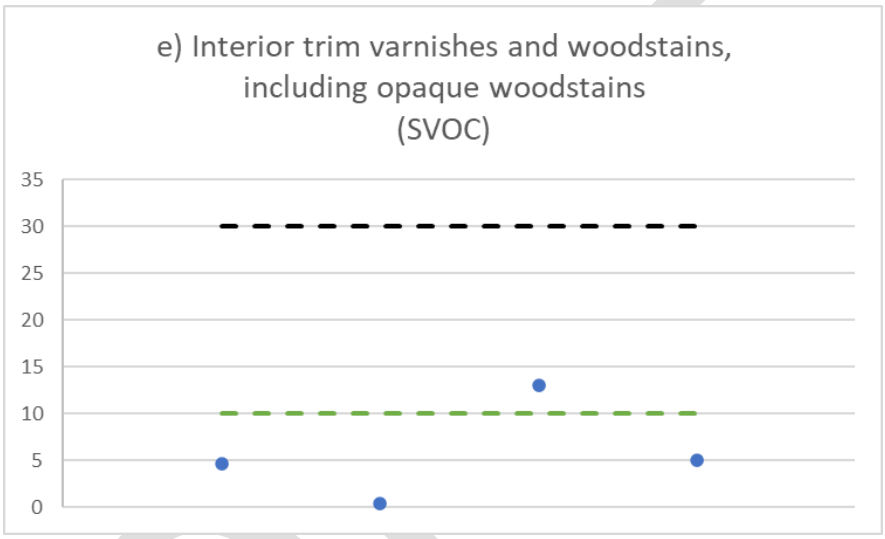
d) Interior/Exterior trim and cladding paints for wood and metal tinted, indoor (SVOC)



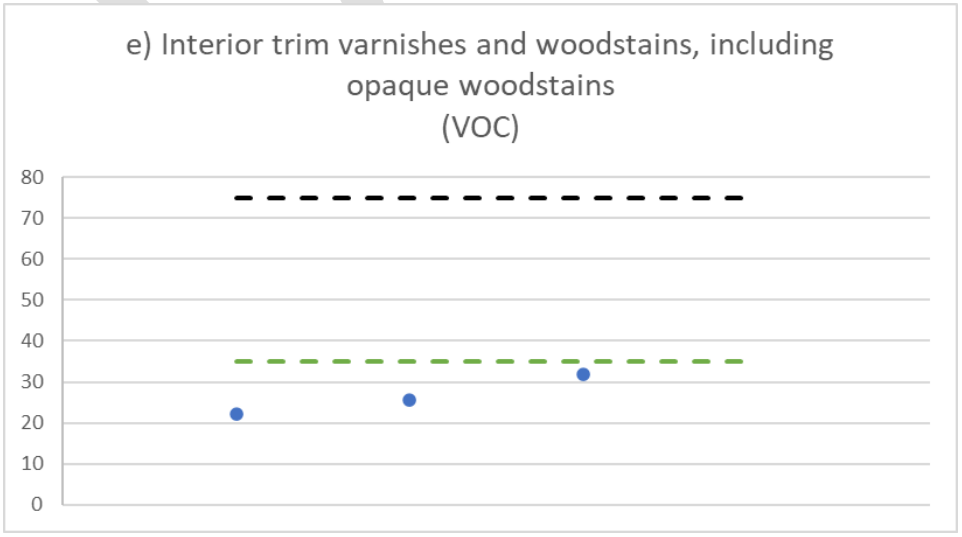
e) Interior trim varnishes and woodstains, including opaque woodstains (VOC)



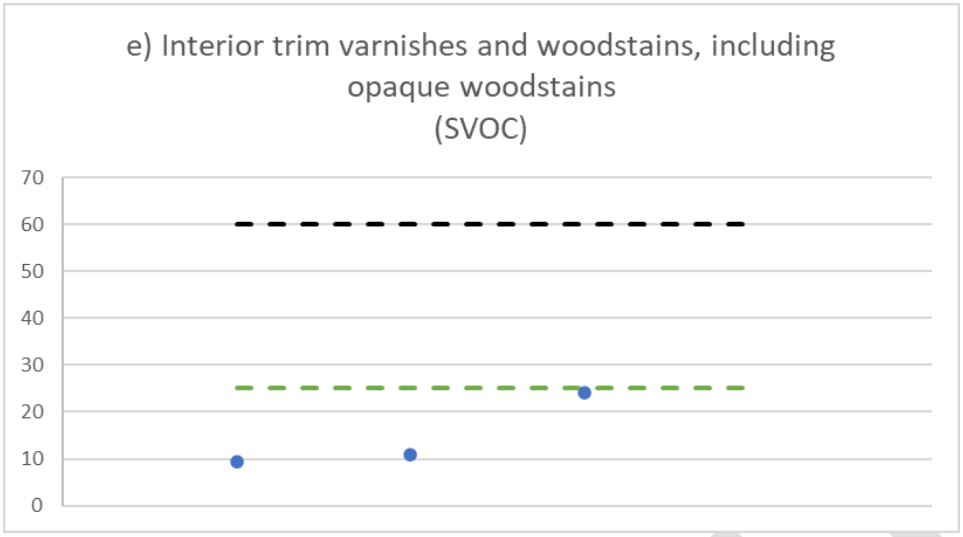
e) Interior trim varnishes and woodstains, including opaque woodstains (SVOC)



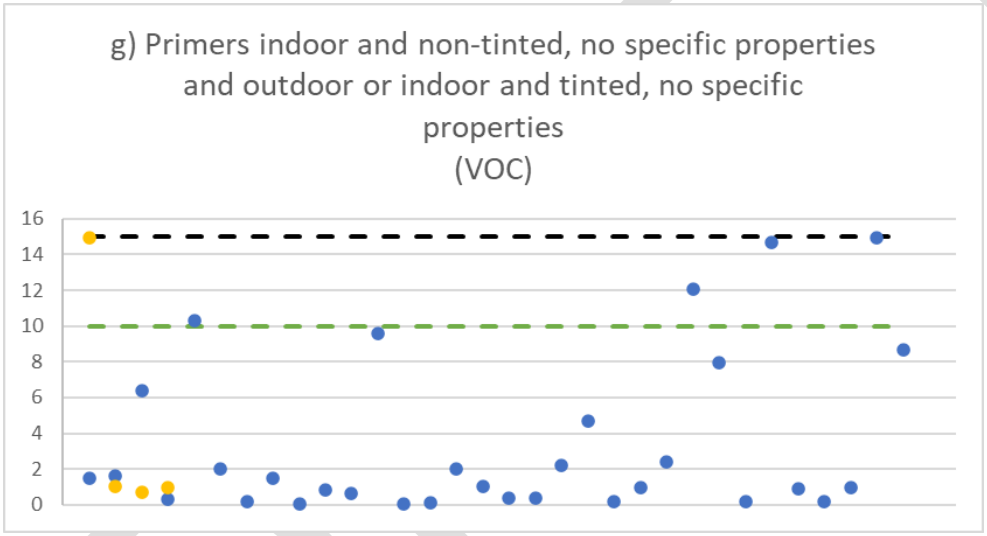
e) Interior trim varnishes and woodstains, including opaque woodstains (VOC)



e) Interior trim varnishes and woodstains, including opaque woodstains (SVOC)

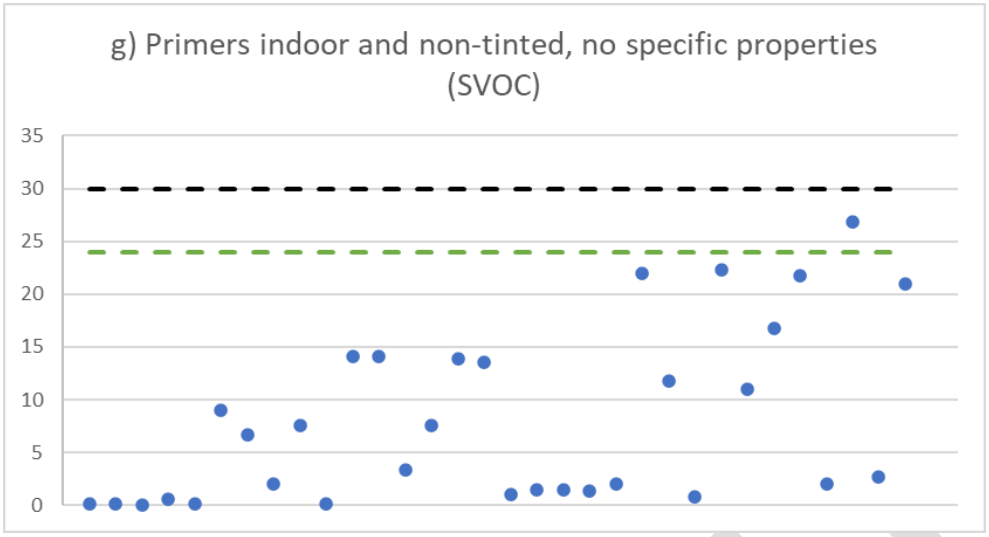


g) Primers indoor and non-tinted, no specific properties and outdoor or indoor and tinted, no specific properties (VOC)

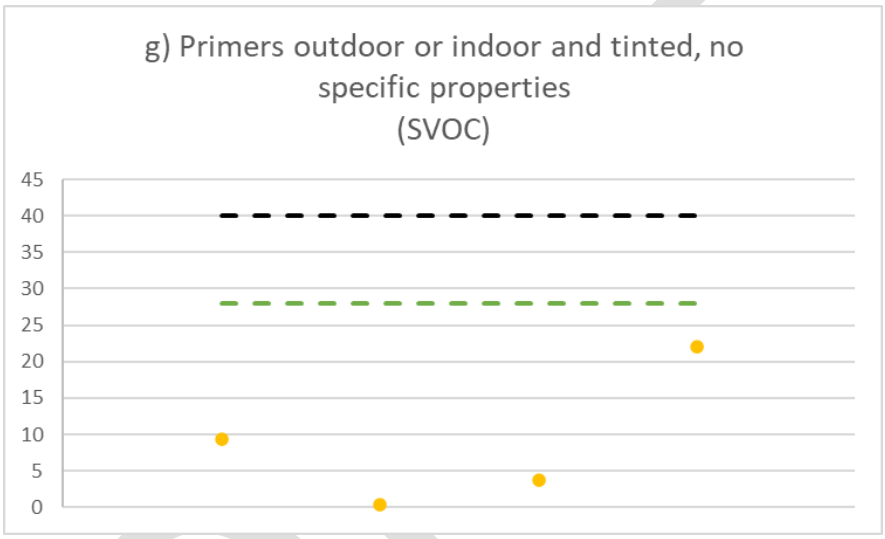


Blue: non-tinted indoor; Yellow: tinted

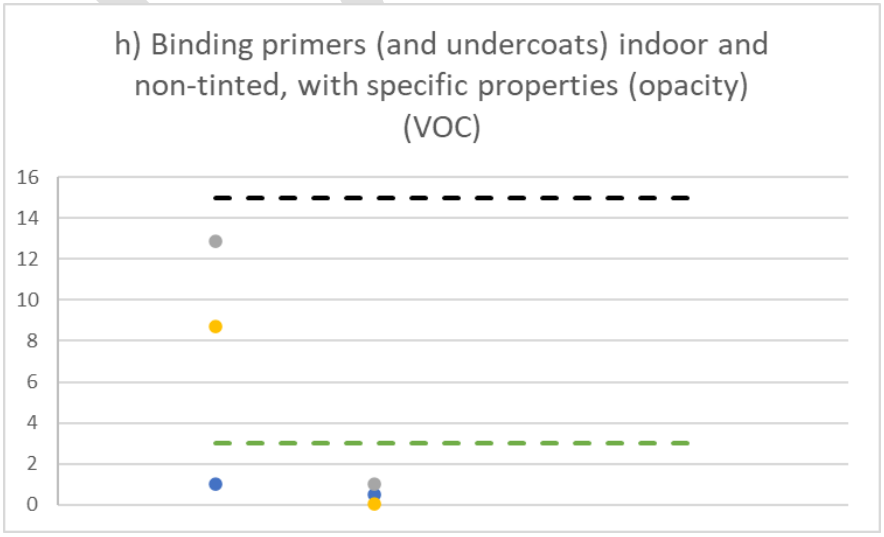
g) Primers indoor and non-tinted, no specific properties (SVOC)



g) Primers outdoor or indoor and tinted, no specific properties (SVOC)

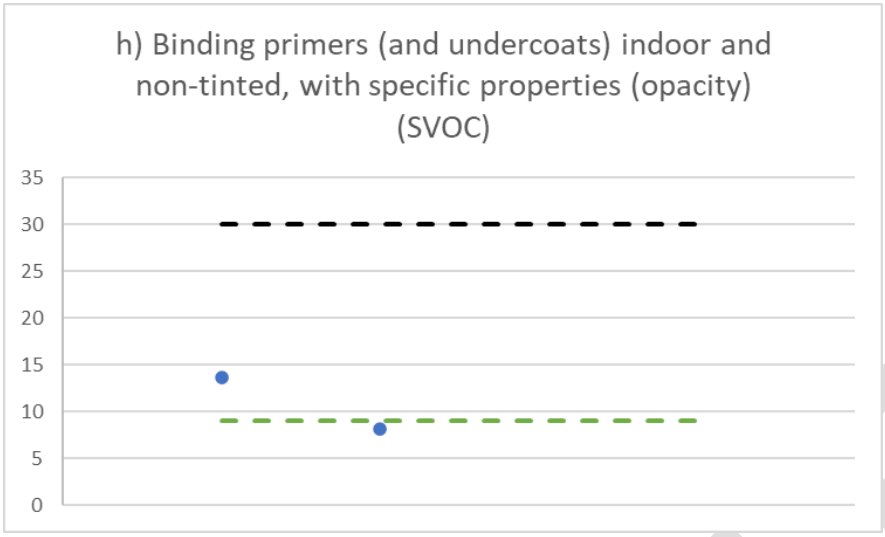


h) Binding primers (and undercoats) indoor and non-tinted, with specific properties (opacity) (VOC)

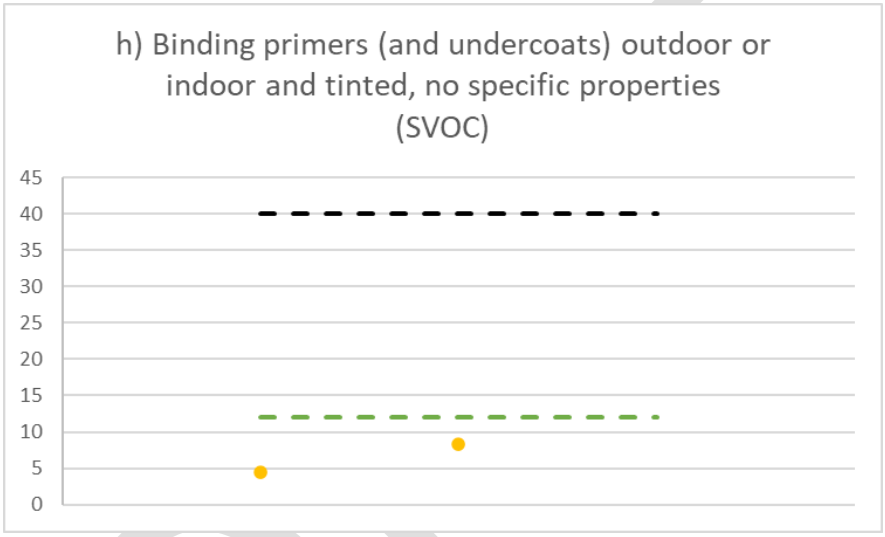


Blue: non-tinted indoor; Yellow: tinted- no specific properties; Gray: tinted- with specific properties

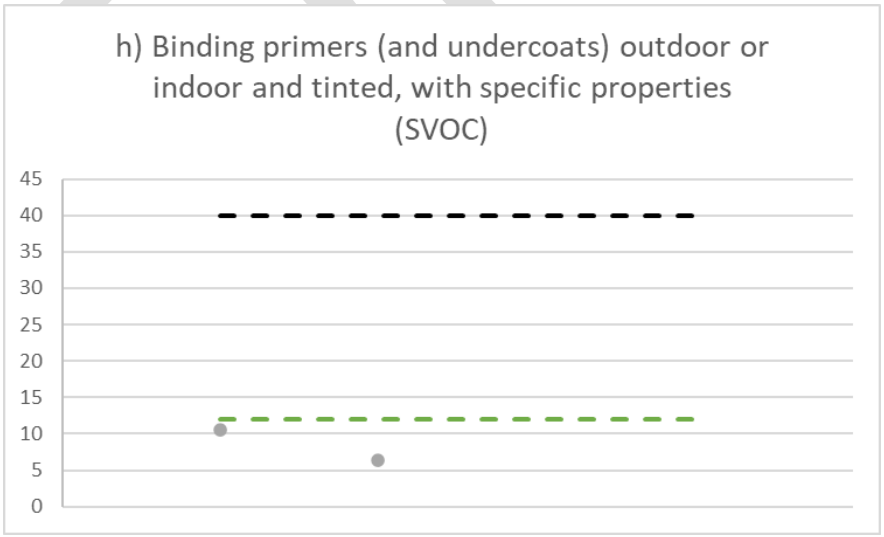
h) Binding primers (and undercoats) indoor and non-tinted, with specific properties (opacity) (SVOC)



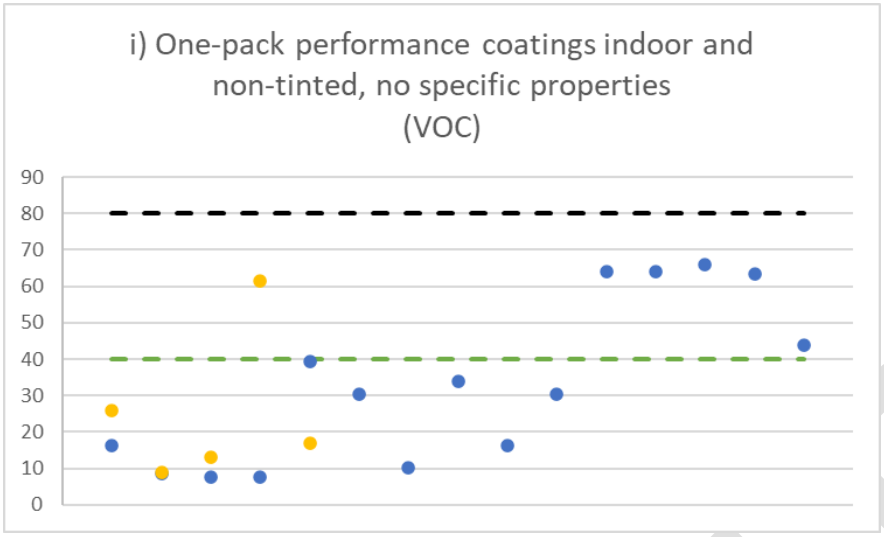
h) Binding primers (and undercoats) outdoor or indoor and tinted, no specific properties (SVOC)



h) Binding primers (and undercoats) outdoor or indoor and tinted, with specific properties (SVOC)

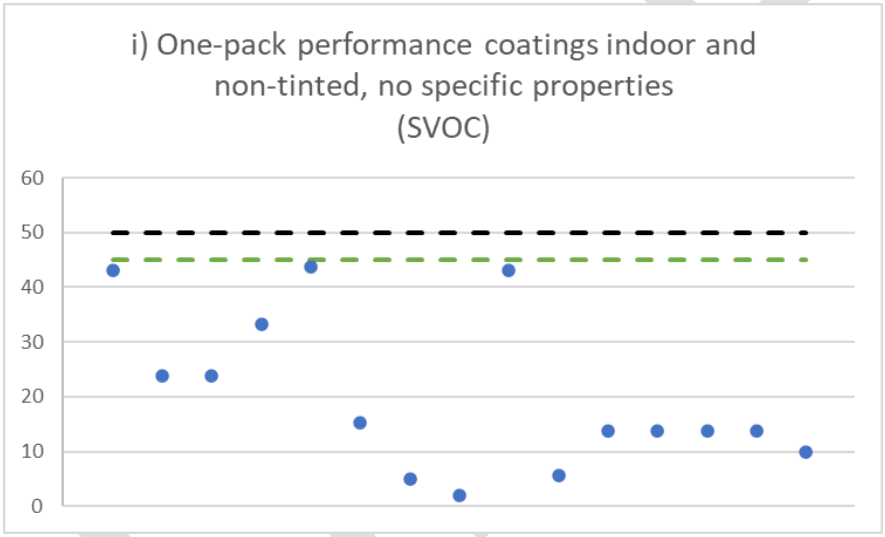


i) One-pack performance coatings indoor and non-tinted, no specific properties (VOC)

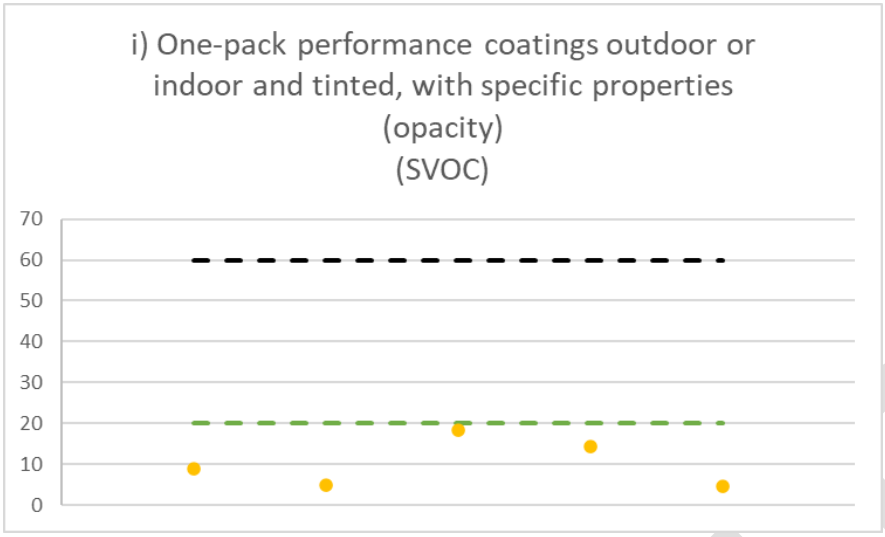


Blue: non-tinted indoor; Yellow: tinted

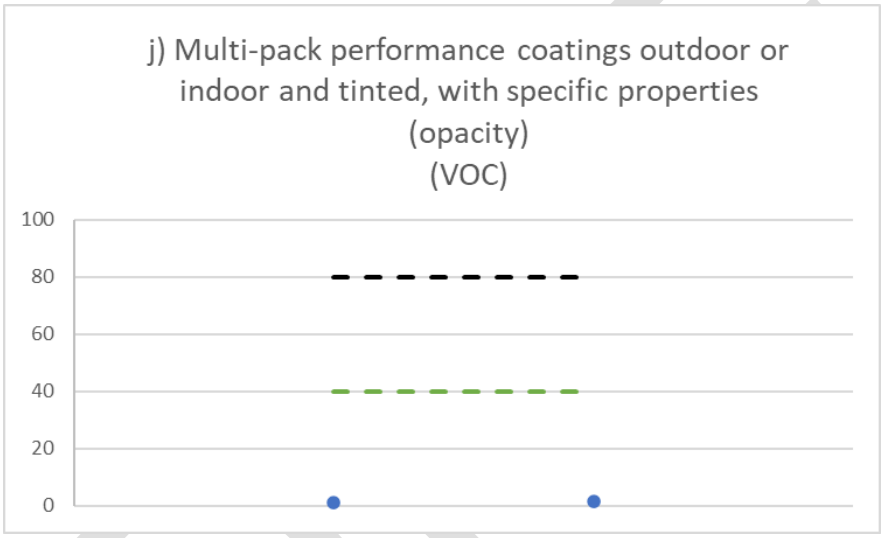
i) One-pack performance coatings indoor and non-tinted, no specific properties (SVOC)



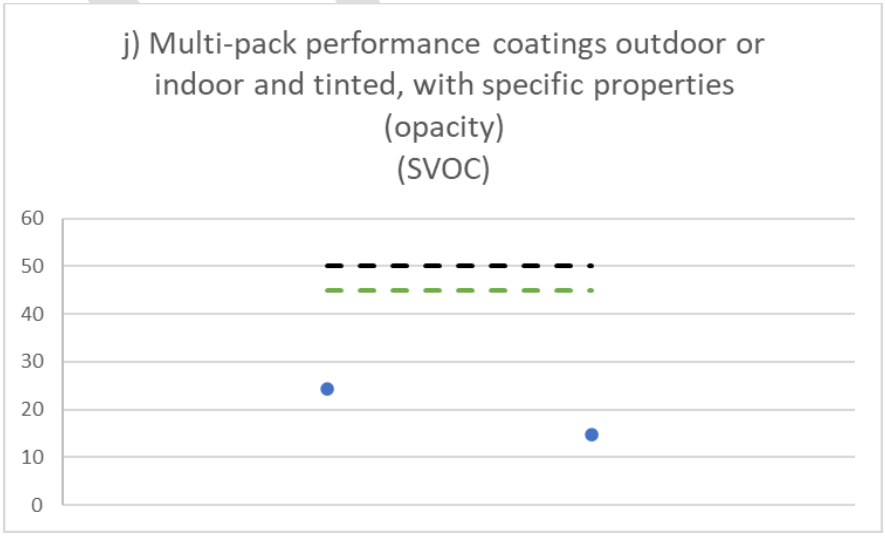
i) One-pack performance coatings outdoor or indoor and tinted, with specific properties (opacity) (SVOC)



j) Multi-pack performance coatings outdoor or indoor and tinted, with specific properties (opacity) (VOC)

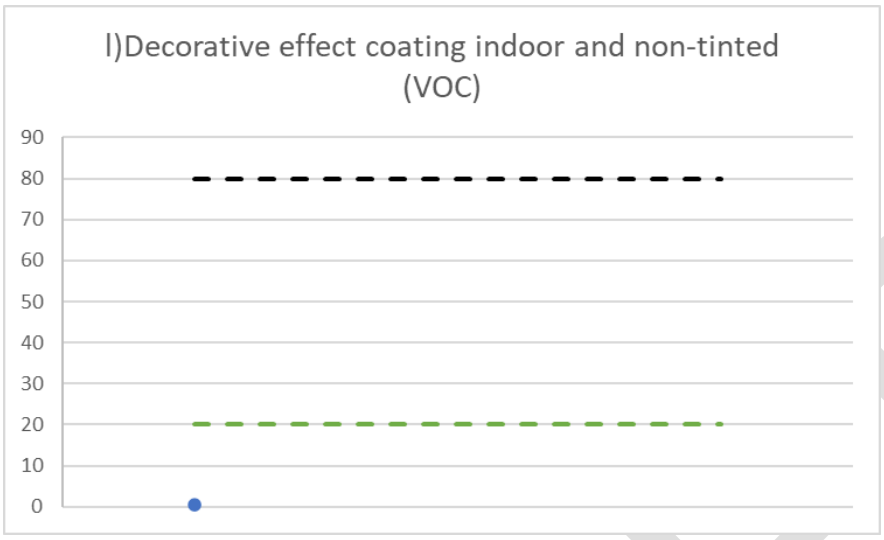


j) Multi-pack performance coatings outdoor or indoor and tinted, with specific properties (opacity) (SVOC)

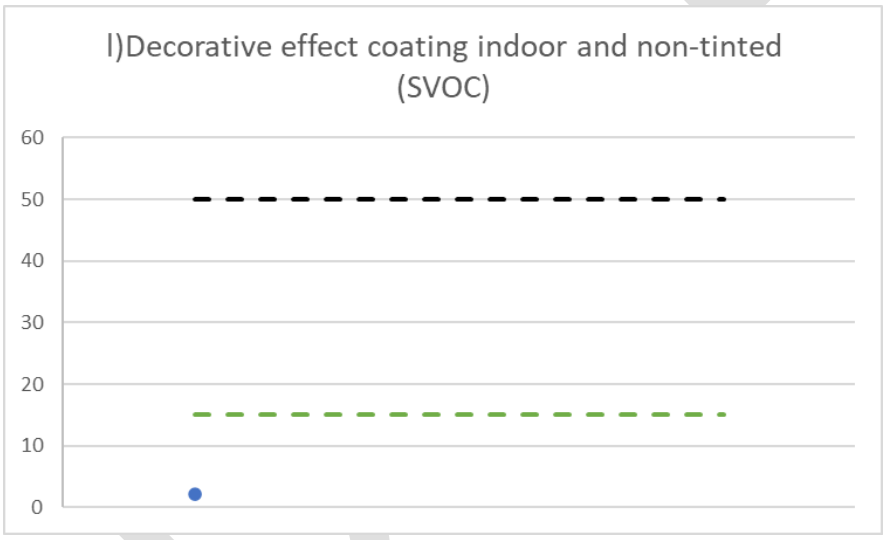


Because of the lack of data, we are using the assumption that "multi-pack performance indoor non-tinted coatings " are similar to *i)one-pack performance indoor non-tinted coatings*

l)Decorative effect coating indoor and non-tinted (VOC)



l)Decorative effect coating indoor and non-tinted (SVOC)



Because of the lack of data, we are using the assumption that decorative effect coating are similar to *b)Interior glossy walls and ceiling (gloss>25"60) non-tinted*

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