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

EU Ecolabel Criteria Proposal Technical Report

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ipts Institute for Prospective Technological Studies

OAKDENE HOLLINS RESEARCH & CONSULTING

Glossary

Units Conventional SI units and prefixes used throughout: {k, kilo, 1000} {M, mega, 1,000,000} {G, giga, 10^9} {kg, kilogramme, unit mass} {t, metric tonne, 1,000 kg}

Acknowledgements

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Contents

1 Introduction

The European Ecolabel is an element of the European Commission's action plan on Sustainable Consumption and Production and Sustainable Industrial Policy Consumption and Production and Sustainable Industrial Policy adopted on 16 July 2008. This is a voluntary scheme established to encourage manufacturers to produce goods and services that are environmentally friendlier. The EU Ecolabel flower logo should facilitate recognition by consumers and organizations (i.e. public and private purchasers) of the best performing products in this respect, and making environmentally conscious choices more easily. The EU Ecolabel covers a wide range of products and services, and its scope is constantly being broadened. The process of establishing the criteria proceeds at the European level following consultation with experts and all interested parties.

This document details discussion points and specific evidence for amending or adding to the current EU Ecolabel paints and varnishes. It relies on the evidence base described within the following reports:[1] "*Ecolabel and Green Public Procurement (GPP) Criteria for Paints and Varnishes: Preliminary Background Report",* and *"Ecolabel Criteria for Paints and Varnishes: Background Report*" and the feedback received from stakeholders and from the 1st and 2nd Ad-Hoc Working Group (AHWG) and the EU Ecolabelling meeting.

This document sets out the rationale for updating the current EU Ecolabel criteria for paints and varnishes and provides an updated criterion at the end of each section.

[1] Reports are available via the project website: http://susproc.jrc.ec.europa.eu/paints/stakeholders.html

2 Scope

2.1 Merging indoor and outdoor paints, and changing the scope of the documents

It has become clear that some paints have both indoor and outdoor applications and as such require two licences. Discussions with applicants and other stakeholders, in addition to experience from the current EU Ecolabel paints and varnishes assessment process, confirms this. Applying for two separate licences for a single product adds additional cost and administrative burden to the applicant company and can confuse consumers. Of particular concern is that a paint passing both sets of criteria could display two licence numbers and two EU Ecolabels: having two licences could be interpreted as 'better' than having one. The merger of the two criteria documents was thus proposed to stakeholders. The overall aim is the production of a document that covers indoor paints, outdoor paints and also paints that can comply with both indoor and outdoor criteria. Only relatively minor changes to each criterion would be needed to realise this modification.

In general, stakeholders responded positively to the idea of combining the two criteria: such a merger was anticipated to reduce confusion among customers and applicants, while minimising administrative burden for both competent bodies and applicants. As a concern it was raised, however, that the merger might result in a reduction of income for competent bodies.

With this in mind, the Indoor and Outdoor Paint and Varnishes Criteria have been merged. The following sections examining the current criteria have been framed to incorporate the necessary changes allowing the combination of the documents that previously separately covered indoor and outdoor paints and varnishes.

2.2 Aim of the criteria and framework

This part of the criteria decision remains in general as it is in the current criteria decisions for indoor and outdoor paints. A small amendment is proposed regarding the ingoing substances following parallel developments of EU Ecolabel criteria decisions in other product groups.

The following text was initially proposed:

Criteria aim

The criteria aim, in particular at promoting:

- products that have a lower environmental impact along their life cycle,
- products that have high quality, very good performance and long durability,
- products which contain a limited amount of hazardous substances,
- products which emit a reduced amount of volatile organic compounds,
- indoor products which ensure a higher indoor air quality,
- the efficient use of the product.

Criteria for awarding the EU Ecolabel to paints and varnishes are set for each of the following aspects:

1. White pigment
2. Titanium dioxide
3. Efficiency in use
    (a) Spreading rate
    (b) Wet scrub resistance
    (c) Resistance to water
    (d) Adhesion
    (e) Abrasion
    (f) Weathering
    (g) Water vapour permeability
    (h) Liquid water permeability
    (i) Fungal resistance
    (j) Crack bridging
    (k) Alkali resistance
    (l) Corrosion resistance
4. Volatile Organic Compounds (VOC)
5. Metals
6. Hazardous substances and mixtures

6a. Restricted substances and mixtures list

6b. Substitution of hazardous substances and mixtures

7. Formaldehyde
8. Phthalates
9. Consumer information
10. Information appearing on the EU Ecolabel

Assessment and verification

(a) Requirements

The 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 his supplier(s) and/or their supplier(s), as appropriate.

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 possible, the testing shall be performed by laboratories that meet the general requirements of European Standard EN ISO 17025[2] or equivalent.

Where appropriate, competent bodies may require supporting documentation and may carry out independent verifications.

(b) Measurement thresholds

Unless otherwise indicated compliance with the ecological criteria is required for substances and mixtures intentionally added, as well as for by-products and impurities from raw materials, the concentration of which equals or exceeds 0,01 % by weight of final formulation.

(3) The exact formulation of the product (trade name, chemical name, CAS no.), the function and the form of all ingredients intentionally used as well the ingoing quantity shall be provided to the competent body. Any ingredient, including known impurities, present in concentrations greater than 0,01 % shall be reported unless a lower concentration is specified elsewhere in the criteria.

Where ingredients are referred to in the criteria, this includes substances and preparations. The definitions of 'substances' and 'mixtures' are given in the REACH Regulation (Regulation (EC) No 1907/2006 of the European Parliament and of the Council (1).

Safety data sheets for each ingredient shall be submitted to the competent body in accordance with Regulation (EC) No 1907/2006 of the European Parliament and of the Council.

(4) For Ecolabelled awarded products so far the applicant declares that minor (or none) changes in its paint formula (i.e. due to replacement or reduce of hazardous materials, slight VOC reduction etc.) cannot alter the technical performance (efficiency of use criteria), then the already «submitted» performance testing reports could be accepted for verification, if the period goes back up to 5 years back.

ECOLOGICAL CRITERIA

All criteria except criterion concerning VOC limits shall apply to the paint or varnish in its packaging. In line with Directive 2004/42/EC of the European Parliament and of the Council (2) the VOC limits relate to the ready to use product and so the maximum VOC content should be calculated based on any recommended additions such as colorants and/or thinners. For this calculation, data supplied by the raw material suppliers regarding solids content, VOC content and product density will be required.

Criteria 1 and 2 apply only to white and light-coloured paints (including finishes, primers, undercoats and/or intermediates).

For tinting systems, criteria 1 and 2 apply only to the white base (the base containing the most TiO_2). In cases where the white base is unable to achieve the requirement of at least 8 m 2 per

[2] ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories

litre at a hiding power of 98 %, the criteria shall be met after tinting to produce the standard colour RAL 9010.

Criteria 1 and 2 do not apply to transparent coatings.

2.3 Criteria Decision: Article 1 (Scope)

During the implementation and use of the EU Ecolabel, several questions on the scope of the criteria have been raised. Table 1 summarises the proposed amendments, stakeholder feedback (from the initial survey and the 1st AHWG) and provides guidance on a decision for inclusion or rejection from the Ecolabel.

There were requests to clearly define the terms 'transparent' and 'semi-transparent'. Information provided by stakeholders states that semi-transparent products' pigments are non-white[3], which increases the paint's opacity but does not result in it being completely opaque. Transparent paints do not contain any pigment. This is of particular importance for paints that contain only a small amount of TiO_2 (white pigment) for classification and assessment under Criterion Numbers 1 and 2. The following clarification has been proposed by stakeholders and included in the amended criterion:

> *Contrast ratio of:*
>
> *Transparent and semi-transparent < 98% at 120µ*
>
> *Opaque > 98% at 120µ.*

Confusion exists over the terminology for 'primers' and 'undercoats'. These terms are often considered, erroneously, as synonymous. The following clarifications from Annex I of Directive 2004/42/CE: "on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and vehicle refinishing products" are now included within the text:

> *1.1.d:*
>
> *d) 'interior/exterior trim and cladding paints for wood, metal or plastic' means coatings designed for application to trim and cladding which produce an opaque film. These coatings are designed for either a wood, metal or a plastic substrate. This subcategory includes undercoats and intermediate coatings*
>
> *1.1.g:*
>
> *'primers' means coatings with sealing and/or blocking properties designed for use on wood or walls and ceilings.*

Stakeholders were in general in agreement with the use of these clarifications, although some were concerned that definition 1.1.g could be considered as too narrow.

[3] A small amount of white pigment is sometimes used in some semi-transparent paints.

Table 1: Discussion of changes to the scope of the EU Ecolabel and comments from stakeholders

Product	Discussion	Stakeholder feedback	Recommendation
Wood oils	These treatments for wood penetrate the wood's surface and are arguably different than varnishes. Wood oils are mainly solvent-based and require a significant variation on the amount of allowable VOC to be permitted. These products penetrate the wood rather than forming a solid surface and are sometimes not classified as paints under the current definition. Also, the discussion at the AHWG for revision of this criteria in 2007 concluded that they should be omitted	Mixed views	Exclude but propose to include in the Commission's recommendation letter for investigation in the next criteria revision
UV curable paints	These specialist paints are in wide use, however are not readily available on the domestic market. They also require specialised equipment during application.	Unanimous exclude	Exclude
Powder coatings/paints	These are currently specified within scope, however, they face similar concerns as UV curable paints over availability on the market and use by non-industrial users. They are technical paints usually applied in an industrial setting requiring ovens to cure the paints.	Unanimous exclude	Exclude

Anti corrosive metal primers and topcoats	Stakeholders indicate that many of these products are specialised for industrial uses and would generally fail EU Ecolabel standards. Some argue that the less active water-based products should be included.	Mixed views	Include but final resolution to be made at the next AHWG. In case of inclusion we propose an additional fitness for use criterion.
Non film forming coatings (eg stone protection materials)	This class of products does not form a film and are therefore excluded under the criterion selection.	Mixed views	Exclude but final resolution to be made at the next AHWG
Preparation products (like filling putties for holes, cracks)	The explicit exclusion of facade coating from the current criteria suggests that similar products such as filling putties should also be excluded.	Mixed views	Exclude but propose to include in the Commission's recommendation letter for investigation in the next criteria revision
Thick waterproofing and insulation coatings for outdoor uses	A lack of suitable spreading-rate criterion currently prevents their inclusion, and, therefore, the development of an appropriate clause under spreading rates is required.	No or weak responses	Exclude but guidance is needed from the next AHWG
Parquet and floor waxes	These form solid transparent films on wood floors. Although scope exists for inclusion within the current document, (through articles 1 & 2) and could be considered as a varnish, the Competent Body Forum on June	Mixed views. Weak positive responses.	Exclude but propose to include in the Commission's recommendation letter for investigation in the next criteria revision

	2011 excluded these products due to the fact that they have not been considered during development of the current criteria.		
Façade coatings	Façade coatings are currently excluded from the criteria of paints for indoor use but are included in the outdoor.	No response	Exclude but guidance is needed from the next AHWG.
Paints used for street marking	Typically this product is not purchased by private consumers. However, as it is considered highly relevant for the scope of the Green Public Procurement criteria, for the sake of consistency, it could be considered to include also in Ecolabel. Comments for a definition proposal from stakeholders are welcome.	Unanimous exclude	Exclude

The below section gives details of the updates of the EU Ecolabel Paints and Varnishes scope and definitions.

The product group 'paints and varnishes' shall comprise **both indoor and outdoor** decorative paints and varnishes, woodstains and related products, as defined in paragraph 2, intended for use by do-it-yourself and professional users **(please note that these are not industrial users)**.

This includes, inter alia, floor coatings and floor paints, products which are tinted by distributors at the request of amateur 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 within **Directive 2004/42/CE Annex I 1.1.d and 1.1.g**.

Definitions

'Paint' means a pigmented coating material, in liquid or in paste form, which when applied to a substrate, forms an opaque film having protective, decorative or specific technical properties.

'Varnish' means a clear coating material which when applied to a substrate forms a solid transparent film having protective, decorative or specific technical properties.

After application, the paint or varnish dries to a solid, adherent and protective coating.

'Decorative paints and varnishes' means paints and varnishes that are applied to buildings, their trim and fittings, for decorative and protective purposes. They are applied in-situ. While their main function is decorative in nature, they also have a protective role.

'Woodstains' (lasures) means coatings producing a transparent or semi-transparent **(using substantially non-white pigment)** film for decoration and protection of wood against weathering, which enables maintenance to be carried out easily.

'Tinting systems' is a method of preparing coloured paints by mixing a 'base' with coloured tints.

Masonry coatings are coatings that produce a decorative and protective film for use on concrete, (paintable) brickwork, blockwork, rendering, calcium silicate or fibre-reinforced cement. They are intended principally for exterior use, but may also be used internally, or on soffits and balcony ceilings.

The following definitions shall be used:

Transparent: contrast ratio < 90% at 120µ;

Semi Transparent: contrast ratio 90-98% at 120µ;

Opaque contrast: ratio >98% at 120µ.

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

3. The product group shall not comprise:

    a) anti-fouling coatings

    b) wood preservation products

    c) coatings for particular industrial and professional uses, including heavy-duty coatings

    d) **facade coatings**

    e) Powder coatings

f) UV curable paint systems

g) Paints primarily intended for vehicles

h) products that do not form film over the substrate.

Feedback from AHWG2 and EUEB

Feedback received from the stakeholders indicated several amendments which should be done in the above formulation of the product group definition and scope, and assessment and verification procedure.

- Facade coatings have been removed from point 3 above,
- The name of the product group was proposed to include 'indoor and outdoor' (i.e. the proposed name is 'indoor and outdoor paints and varnishes',
- The general measurement threshold is 0,01%,
- Stakeholders asked to include conditions explaining when the testing should or not be renewed in the case of minor change in the formulation. The following text is proposed "For Ecolabelled awarded products so far the applicant declares that minor (or none) changes in its paint formula (i.e. due to replacement or reduce of hazardous materials, slight VOC reduction etc.) cannot alter the technical performance (efficiency of use criteria), then the already «submitted» performance testing reports could be accepted for verification, if the period goes back up to 5 years back".
- The term 'functional unit' has been removed from the decision text,

Follow-up after EUEB meeting from March 2013

Based on the feedback received during and mainly after the EU Ecolabelling meeting from March 2013 the following changes have been proposed for the new revised criteria draft:

- Regarding the criteria text part: " Article 1".

An amendment to clarify that fillers as defined by EN ISO 4618 are not in the scope was requested. This comment was accepted and respective text was added.

- Regarding the criteria text part: "Article 2".

Stakeholders asked to add a number of definitons for clarification purpose. Following this request several definitions were added (e.g. UV curable paint systems, powder coatings, in-can preservatives, dry film preservatives, anti-skinning agents). In case of defining gloss as main reference ISO 28138 standard levels were used.

- Regarding the criteria text part: " Article 7".

Stakeholders asked for a longer period of validity for the licences of current Ecolabelled products. The reasoning for this request is that in the current criteria revision many changes are made and therefore a longer transition period will allow manufacturers to undertake the necessary changes. This request was considered for relevant by the resaerch team. However this part of the criteria is the same across different product groups and a change there would need to be approved on the EUEB level; therefore no change has been now proposed.

- Regarding the criteria text part: " The aim of the criteria".

After the EUEB in November 2012 a few criteria areas were withdrawn (e.g. criterion on unused paint and on indoor air quality). The text's part referring to these area was therefore removed and/or amended.

Moreover, stakeholders proposed improvements on wording which was undertaken. An amendment was made to clarify that the requirements on Criterion 4 "Volatile Organic Compounds content-VOC" include also requirements on semi-volatile organic compounds (SVOCs).

- Regarding the criteria text part: "Assessment and verification"

In part (a) Requirements stakeholders asked to specify in which cases a Competent Bodies (CB) may accept different tests than the ones described in the criteria. In order to ensure a harmonised handling of Ecolabel dossiers across different member states it is now proposed that a CB can accept such a test only if the test is described in the user manual of the Ecolabel criteria application. Update of the user manual can be made more easily than the criteria legal document. Such an update should take place on the basis of agreement and consensus on discussions held on EUEB and CB Forum level. Relevant text was added on this point.

Further an amendment on the text regarding the acceptance and/or request (if appropriate) of the declaration of compliance with the criterion requirements, of test reports made by *manufacturers' suppliers* and other test proof was made.

A text regarding the EMAS system was not considered relevant to be included in a legal document as it was providing a more general recommendation and was therefore removed.

- In part (b) Measurement thresholds Member states have commented to specify the used limit of 0.01% in case of rounding up and proposed to use the 0.010% limit. Manufacturers asked to use instead a more relaxed threshold of 0.1% especialy as impurities are covered. The proposal of the MS was accepted whereas a clarification regarding impurities was added.
- In part (c) manufactures and their raw material suppliers expressed concerns that due to intelectual property rights providing to the CB the exact paint formula as requested by the criterion text could be a problem. This requirement is not a new one, it exists already in the current criteria for both indoor and outdoor products and there are many licences, so it was not seen a barrier for the current applicants. Therefore, the currently valid requirement is kept also in the revised criteria version.
- The text of point (d) regarding recognition of older performance testing reports (up to 5 years backwards) was removed from the decision text and will be included in the user manual, as requested in the feedback received. One stakeholder asked for a longer period than the 5 years. Other stakeholders indicated that acceptance of testing shall depend on whether a change in the formulation and/or testing methods and/or limit values took place (independantly when the testing was made; i.e. on the time which passed since the testing). Discussions with CBs how the acceptance of older testing results should be conducted in a harmonised way will be proposed to the CB Forum.
- Regarding the criteria text part: " Eco-label criteria".

Stakeholders commented that in criterion 4 in the verification part together with the theoretical calculation of the VOC content its measurement using the method given in ISO 11890 in line with Directive 2004/42/EC should be also accepted. The text was amended respectively.

- Further stakeholders spotted an inconsistency in the text part refering to the application of criterion 1 and 2 for tinting systems as the requirement should refer to the spreading rate requirement in general as this differs for different paint types. This section is removed and included in the single criteria in the revised version.

Follow-up after the EUEB meeting of June 2013

Stakeholder feedback

Disclosure of the exact formulation and possible impurities down to 100ppm is disproportionate and is not feasible. 0.10% was proposed as being more appropriate.

Exact formulations are the subject of intellectual property. Suppliers of raw materials will never provide all the information written in (c) to the applicants. Verification on the basis of a declaration supported by SDS and/or CLP classifications should be accepted. It is not acceptable to give the trade name of an ingredient added.

The 0.01% threshold for the reporting of paint and varnish ingredients has been the subject of concern from industry stakeholders throughout the revision process. It is an agreed threshold for Ecolabelled products that are chemical mixtures.

This requirement has now been amended to ensure that it is not open ended, as this was a general concern with regards to the ability to report on all possible substances present in the final product. The ingredients that are to be verified are specified, including those that may be below 0.10% and below 0.010%, as is the case for in-can preservatives <0.060% and within that substance group MIT/BIT <0.0150%. It is also proposed that the classifications for ingoing mixture are sufficient for the verification of criteria 5.

Based on the feedback received during and after the EU Ecolabelling meeting from June 2013 the final text is proposed as follows:

Article 1

11. The product group of 'indoor and outdoor paints and varnishes' shall comprise indoor and outdoor decorative paints and varnishes, woodstains and related products intended for use by amateur and professional users (please note that these are not industrial coatings) falling under the scope of Directive 2004/42/CE.

12. The product group of 'indoor and outdoor paints and varnishes' includes inter alia: floor coatings and floor paints; paint products which are tinted by distributors at the request of amateur 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 within Annex I to Directive 2004/42/CE .

13. The product group shall not comprise:

    (m) anti-fouling coatings

    (n) wood preservation products

    (o) coatings for particular industrial and professional uses, including heavy-duty coatings

    (p) powder coatings

    (q) UV curable paint systems

    (r) paints primarily intended for vehicles

(s) product which primary function is not to form a film over the substrate, e.g. oils and waxes

(t) fillers as defined by EN ISO 4618

(u) road-marking paints

Article 2

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

(1) 'Paint' means a pigmented coating material, in liquid or in paste or powder form, which when applied to a substrate, forms an opaque film having protective, decorative or specific technical properties.

(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.

After application, the paint or varnish dries to a solid, adherent and protective coating.

(3) 'Decorative paints and varnishes' means paints and varnishes that are applied to buildings, their trim and fittings, for decorative and protective purposes. They are applied in-situ. While their main function is decorative in nature, they also have a protective role.

(4) 'Woodstain' (lasures) means coatings producing a transparent or semi-transparent (using substantially non-white pigment) film for decoration and protection of wood against weathering, which enables maintenance to be carried out easily.

(5) 'Tinting system' is a method of preparing coloured paints by mixing a 'base' with coloured tints.

(6) 'Masonry coating' is a coatings that produce a decorative and protective film for use on concrete, (paintable) brickwork, blockwork, rendering, calcium silicate or fibre-reinforced cement. They are intended principally for exterior use, but may also be used internally, or on soffits and balcony ceilings.

(7) 'Binding primers' are coatings designed to stabilise loose substrate particles or impact hydrophobic properties.

(8) 'UV curing paint system' refers to hardening of coating materials by exposure to ultra-violet radiation[4].

(9) 'Powder coating' means protective and/or decorative coating formed by the application of a coating powder to a substrate and fusion (and curing, if necessary) to give a continuous film[5].

(10) 'In-can preservatives' (i.e. preservatives for products during storage) are products used for the preservation of manufactured products by the control of microbial deterioration to ensure their shelf life [6].

(11) 'Dry-film preservatives' (i.e. film preservatives) are products used for the preservation of films or coatings by the control of microbial deterioration or algal growth in order to protect the initial properties of the surface of materials or objects **Error! Bookmark not defined.**.

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[4] According to EN ISO 4618:2006 Paints and varnishes - Terms and definitions.

[5] According to EN ISO 8130-14:2004 Coating powders - Part 14: Terminology.

[6] According to 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.

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

(13) 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. For the purpose of these criteria VOCs are further defined as all organic compounds which, in a capillary column, are eluting up to and including Tetradecane ($C_{14}H_{30}$). The subcategories for paints and varnishes of Directive 2004/42/EC are used for defining VOC content limits.

(14) Semi volatile organic compounds (SVOCs) means any organic compound having a boiling point of greater than 250 °C. For the purpose of these criteria SVOCs are further defined as all organic compounds which, in a capillary column[7] are eluting with a retention range between n-Pentadecane ($C_{15}H_{32}$) to n-Docosane ($C_{22}H_{46}$)n- for non-polar systems and diethyl adipate ($C_{10}H_{18}O_4$) to methyl palmitate ($C_{17}H_{34}O_2$) for polar systems.

Furthermore, the following definitions shall be used:
Transparent and semi-transparent contrast ratio < 98% at 120µ wet film thickness,
Opaque contrast ratio >98% at 120µ wet film thickness,
White and light coloured paints are those with a tri-stimulus (Y-value) >70%
Gloss levels are used based on definion of ISO 13300 as follows:

Designation	Angle of incidence	Reflectance
Gloss	60^0	≥60
Mid sheen (semi gloss, satin, semi matt)	60^0 or 85^0	<60 ≥10
Matt	85^0	<10
Dead matt	85^0	<5

Gloss levels are measured as described in ISO 28138

Article 3

The criteria for awarding the EU Ecolabel under Regulation (EC) No 66/2010, for a product falling within the product group "paints and varnishes" defined in Article 1 of this Decision as well as the related assessment and verification requirements are set out in the Annex to this Decision.

Article 4

The criteria and the related assessment requirements set out in the Annex, shall be valid for four years from the date of adoption of this Decision.

Article 5

For administrative purposes, the code number assigned to the product group ' indoor and outdoor paints and varnishes' shall be "44".

Article 6

Decisions 2009/543/EC and 2009/544/EC are repealed.

Article 7

(1) By derogation from Article 6, applications for the EU Ecolabel for products falling within the product group 'indoor paints and varnishes' or 'outdoor paints and varnishes' submitted before the date of adoption of this Decision shall be evaluated

[7] As specified in 8.2.2 of FprCEN/TS 16516.

in accordance with the conditions laid down in Decisions 2009/543/EC or 2009/544/EC.

(2) Applications for the EU Ecolabel for products falling within the product group ‘paints and varnishes’ submitted within two months from the date of adoption of this Decision may be based either on the criteria set out in Decision 2009/543/EC or 2009/544/EC, or on the criteria set out in this Decision.

(3) Those applications shall be evaluated in accordance with the criteria on which they are based.

(4) Where the Ecolabel is awarded on the basis of an application evaluated in accordance with the criteria set out in Decision 2009/543/EC or 2009/544/EC, that Ecolabel may be used for 12 months from the date of adoption of this Decision.

Article 8

This Decision is addressed to the Member States.

ANNEX

EU ECOLABEL CRITERIA AND ASSESSMENT AND VERIFICATION REQUIREMENTS

The aim of the criteria

The criteria aim, in particular at promoting:

products that have a lower environmental impact along their life cycle,
products that have high quality, good performance and long durability,
products which contain a limited amount of hazardous substances,
products which contain a limited amount of volatile organic compounds.

Criteria for awarding the EU Ecolabel to paints and varnishes are set for each of the following aspects:

1. White pigment and wet scrub resistance
2. Titanium dioxide
3. Efficiency in use
   - (a) Spreading rate
   - (b) Resistance to water
   - (c) Adhesion
   - (d) Abrasion
   - (e) Weathering
   - (f) Water vapour permeability
   - (g) Liquid water permeability
   - (h) Fungal resistance
   - (i) Crack bridging
   - (j) Alkali resistance
   - (k) Corrosion resistance
4. Volatile and Semi-volatile Organic Compounds (VOCs, SVOCs)
5. Restriction of hazardous substances and mixtures
   - (a) Overall restrictions that apply to hazard classifications and risk phrases
   - (b) Restrictions that apply to Substances of Very High Concern
   - (c) Restrictions that apply to specific hazardous substances
6. Consumer information
7. Information appearing on the EU Ecolabel

Assessment and verification

(l) Requirements

The 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 his supplier(s) and/or their supplier(s), as appropriate.
Where appropriate, test methods other than those indicated for each criterion may be used if these are descripted in the user manual of the Ecolabel criteria application and the competent body assessing the application accepts their equivalence.
Competent bodies shall preferentially recognise tests which are accredited according to ISO 17025 and verifications performed by bodies which are accredited under the EN 45011 standard or an equivalent international standard.
Where appropriate, competent bodies may require supporting documentation and may carry out independent verifications.

(b) Measurement thresholds

Unless otherwise indicated compliance with the Ecolabel criteria is required for intentionally added substances and mixtures, as well as for by-products and impurities from raw materials, the concentration of which equals or exceeds 0,010 % by weight of final formulation.

(c) The exact formulation of the product, including the function and the physical form of all ingredients identified within the criteria, as well as any additional functional ingredients, and their ingoing concentration shall be provided to the competent body. The chemical name, CAS number and CLP classification shall be provided for each ingredient. All ingredients identified within the criteria, as well as any additional functional ingredients and known impurities, that are present at concentrations in the product of greater than 0,010 % shall be reported unless a lower concentration is required in order to comply with a derogation requirement .

Where ingredients are referred to in the criteria, this includes substances and preparations or mixtures. The definitions of ‘substances’ and ‘mixtures’ are given in the REACH Regulation (Regulation (EC) No 1907/2006 of the European Parliament and of the Council (1).
Safety data sheets and/or CAS numbers and CLP classifications (harmonised or otherwise) for each ingredient shall be submitted to the competent body in accordance with Regulation (EC) No 1907/2006 of the European Parliament and of the Council.
(d) For all criteria, apart from Criterion 4 Volatile and Semi-volatile Organic Compounds (VOCs, SVOCs), the limits shall apply to the paint or varnish in its packaging. In line with Directive 2004/42/EC the VOC limits relate to the ready to use product and so the maximum VOC content should be measured or calculated including any recommended additions such as colorants and/or thinners. For this calculation or measurement, data supplied by the raw material suppliers regarding solids content, VOC content and product density will be required. The above is also applicable in the measurement of SVOCs

3 Production

3.1 Raw material sourcing

3.1.1 White Pigments

A reduction in the use of pigment in paints, particularly titanium dioxide, is desirable because it is a major contributor to the paint's environmental impact. Pigment has an effect on the opacity of paint, therefore any reduction in use must be balanced against a reduction in the performance. Paint spreading performance is defined within the Spreading Rate criterion and is directly linked to the amount of pigment added to the paint. Alterations to the Spreading Rate Criterion along with this criterion should be considered in parallel to ensure that any changes do not prove too restrictive. To simplify this problem, the thresholds for the spreading rate will be held at their current levels and that changes are made to this criterion.

Respondents to the survey, mainly from industry, stated that the current requirements are difficult to meet and that any further tightening would significantly impact on the quality of the paint. To evaluate this response, anonymised data were received from approved EU Ecolabel applications from competent bodies. These data provided performance information on successfully Ecolabelled products. A comparison between the amount of white pigment required by EU Ecolabelled paints and the criterion limit was performed. Table 2 summarises these results.

Table 2: Amount of TiO_2 per m^2 of EU Ecolabelled paints

Type	Number of paints	Average white pigment (g/m^2)	Standard deviation (g/m^2)	Current threshold (g/m^2)
Indoor	58	23.5	8.6	36
Outdoor	12	18.1	13.3	38

Based on the data collected, current EU Ecolabelled products perform significantly better than those defined by the criteria for both indoor and outdoor paints. Analysis of the cumulative frequency shows that amounts of titanium dioxide vary in submitted paints, with only a small proportion of paints having greater than $30g/m^2$ of white pigment (Figure 1). Stakeholder feedback stated that these figures are low, and that the amount of TiO_2 in paint in Southern Europe is considerably higher.

Stakeholders claim that the lower levels of TiO_2 are due to a large number of matt wall emulsions that are Ecolabelled rather than higher performing paints. Further analysis of the paints with higher concentrations of white pigment is limited due to confidentiality; therefore, verifying stakeholder claims that high scrub resistance paints cannot be Ecolabelled was not possible.

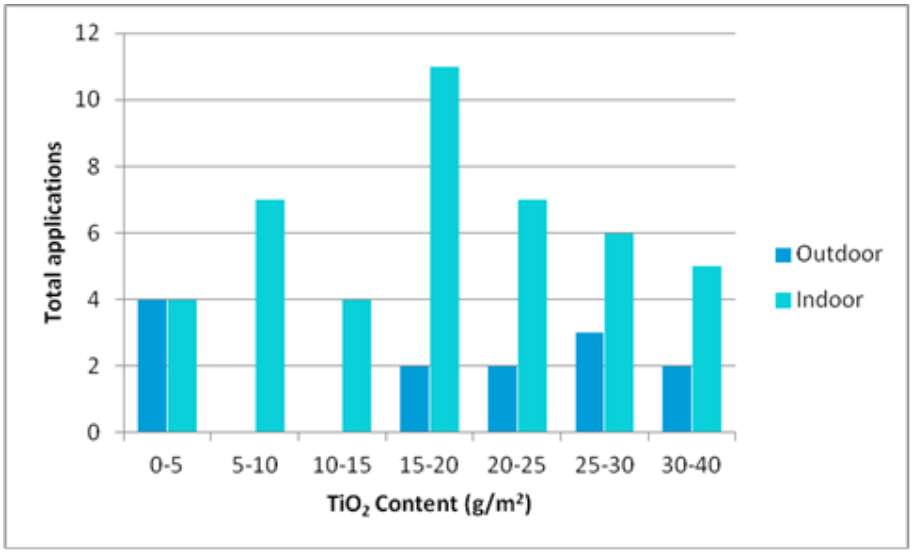


Figure 1: TiO_2 content in EU Ecolabelled paints

Based on this data, an opportunity exists to reduce the white pigment content of paints without excluding the majority of current EU Ecolabelled paints, however, comments from stakeholders suggested that a further reduction was not possible. At the 1st AHWG there was nearly a unanimous call to keep the levels as they are.

Stakeholders commented that elastomeric coatings, in particular PVC-based paints (A1-A5 according to EN 1062-1) and high binder content paints which are particularly used for high wet scrub resistance paints (class 1 in wet scrub resistance EN 13300), are currently excluded from the Ecolabel because of the current white pigment content requirements. These paints require more TiO_2 to achieve the requisite opacity. A 'second tier' white pigment limit has been proposed set specifically for high wet scrub resistant (Class 1) paints. Furthermore, there were several stakeholder submissions on including class 4 or 5 wet scrub resistant paints, particularly for matt paints. Class 4 wet scrub resistant paints could be used as the minimum performance benchmark. This would enable segregation between different grades of paint but also ensure that a minimum durability criterion is mandated. Three thresholds have been provided within the new criterion.

A competent body raised a concern that certain woodstains and varnishes contain small quantities of titanium dioxide. This led to the question about the need for these products to undergo spread-rate tests and the need to audit the emissions from titanium dioxide manufacture. This is confirmed by the data provided by competent bodies and collated under Figure 1, where a number of Ecolabelled paints have very low concentrations of TiO_2 (0-5 g/m^2). This presents three issues:

1. Determining spread rates (if the paints are transparent) and, thus, the amount of TiO_2 per square meter may be very difficult.
2. Applicants will be required to perform additional analysis on products that will undoubtedly pass the current requirements.
3. TiO_2 which is produced using higher polluting routes can be used because the small amount of TiO_2 used in the paint formulation will mean that the total pollution levels for its production will be below the currently mandated threshold in criterion 2.

To mitigate against point 1, it could be proposed that a further explanation should be drafted into this criterion that describes which paints are exempted by using the exclusion clauses developed for criterion 7(a), namely varnishes, woodstains, floor coatings, floor paints, undercoats, adhesion primers or any other transparent coatings. This also addresses point 2.

To prevent the use of the approach described under point 3, modifying the calculation under criterion 2 to 'per gram of TiO_2', rather than 'per meter squared of paint' will ensure that low-polluting TiO_2 is used within the paint.

A suggestion was made to include weathering as a test for durability of the paint. Unfortunately, further information on how to integrate this system within the current testing requirements was not supplied. It was recommended that the use of weathering as a proxy for durability is re-examined at the next revision.

White pigment content (white inorganic pigments with a refractive index higher than 1,8): Paints shall have a white pigment content lower or equal to that described in the table below per m^2 of dry film, with 98 % opacity.

Wet scrub resistance	Indoor limit (g/m^2)	Outdoor limit (g/m^2)
Class 1	40	42
Class 2	36	38
Class 4 (Matt paints)	25	27

This requirement does not apply to varnishes and woodstains.

Assessment and verification: The applicant shall either provide a declaration of non-use or provide documentation showing the content of white pigments, the spreading rate and the assessment and verification criteria set out for the wet scrub resistance criterion, together with the detailed calculation showing compliance with this criterion.

Feedback AHWG2 and EUEB meeting

Split views were expressed by the stakeholders regarding the criterion on white pigment. Some stakeholders supported the proposed values, mainly for indoor paints. It was emphasized that wet scrub resistance (WSR) is not of relevance for all paints and it shall be asked for indoor wall paints and only for other products which claim wet scrub resistance. The link between WSR and white pigment was not supported by some stakeholders. Several stakeholders were asked to keep the link of WSR for indoor paints only and this is proposed in the revised criterion.

It was mentioned in several feedback that the currently valid values (i.e. 36 g/m^2 for indoor and 38 g/m^2 for outdoor should be kept to allow high quality products in the scheme. Industry stakeholders supported allowing high quality products enter the scheme by relaxing the values and relating them to WSR but when this is appropriate (indoor wall paints).

It was also asked that from this criterion one shall exclude transparent coatings. Some stakeholders asked also to exclude primers and undercoats, while other asked to require for them the lower limit of white pigment – the one related to class 4 (i.e. 25 g/m^2) – without requiring the scrub resistance test. Additional feedback is asked on this last point.

Finally, it was indicated that due to the large potential range of possible tinting colours, this criterion shall be restricted to the testing of the white base (the base containing the most TiO_2).

Follow up after the EUEB meeting from March 2013

- Regarding the limit values and merging with the criterion on wet scrub resistance

Stakeholders asked several questions for clarification and gave proposals for improvement in the area of the white pigment limits and scope for different kinds of paints. It was not clear if in situation where no wet resistance is claimed the paint for indoor use shall comply with 36 g/m2 or 25 g/m2 limit. It was clarified that in this case the 25g/l limit applies.

Following the received feedback, the class 3 and 4 were removed from the table.

The derogation for limed paints and silicate paints was welcomed. It was further asked if this criterion applies to mat indoor wall paints which are not washable. Need to clarify which threshold applies for a paint that's both used indoor and outdoor was also mentioned. It is proposed that in this case the more stringent values apply.

Several stakeholders indicated the overlap with the sub-criterion on wet scrub resistance. It was proposed to merge these two criteria in one. Setting one common criterion was analysed and accepted. Specific comments regarding the wet-scrub resistance are included in the section 4.1.2 while the proposed formulation of the merged criterion is given below:

1. White pigment and Wet Scrub Resistance

(a) Minimum requirement for white pigment content:

For paints that have no wet scrub resistances claimed (including outdoor paints) as well as limed paints, silicate paints, primers, anti-rust paints and facade paints the white pigment content (white inorganic pigments with a refractive index higher than 1,8) shall not exceed 36g/m^2 for indoor products and 38g/m^2 for outdoor products. In the case of paints for both indoor and outdoor use the more stringent limit shall apply.

In case the above mentioned products fall under the exemption indicated in part (b) then the white pigment content (white inorganic pigments with a refractive index higher than 1,8) shall not exceed 25 g/m^2 of dry film, with 98 % opacity.

Indoor wall and ceiling paints for which wet scrub resistance claims are made shall have white pigment content (white inorganic pigments with a refractive index higher than 1,8) lower or equal to that described in Table 1 per m^2 of dry film, with 98 % opacity.

Wet scrub resistance	Indoor limit (g/m2)
Class 1	40
Class 2	36

Due to the large potential range of possible tinting colours, this criterion will be restricted to the testing of the white base (the base containing the most TiO2).

(b) Minimum requirement for Wet Scrub Resistance (for indoor paints only)

All indoor wall paints (finishes) shall achieve class 1 or class 2 in wet scrub resistance (WSR) according to EN 13300 and EN ISO 11998.

Exempted from this requirement are ceiling paints and indoor wall paints of class 3, class 4 or class 5 in WSR according to EN 13300 and EN ISO 11998 as well products which are not tested for WSR if their white pigment content (white inorganic pigments with a refractive index higher than 1,8) is equal or lower to 25g/m2 of dry film, with 98 % opacity. For paints of class 3, 4 and 5 it shall not be allowed to claim wet scrub resistance and no reference shall be presented on the label or other marketing documentation. If the products are not tested for WSR the consumer shall be informed about it on the packaging.

Due to the large potential range of possible tinting colors, this criterion will be restricted to the testing of tinting bases (base paints).

Assessment and verification: the applicant shall provide documentation showing that the content of white pigments is compliant with this criterion.

The applicant shall provide a test report according to EN 13300 using the method EN ISO 11998 (Test for cleanability and scrub resistance). For ceiling paints and indoor wall paints of class 3, 4 or 5 and paints which were not tested for WSR the graphics for the packaging shall be provided as evidence that no claim regarding wet scrub resistance is made and, if applicable, that the consumer was informed that the paint was not tested for wet scrub resistance.

Follow-up after the EUEB meeting from June 2013

Stakeholder feedback

The linking of the criteria will exclude high quality matt paints. Allowing ceiling paints to pass with only 25 g/m^2 of white pigment will mean that more paint is used as more layers will be needed.

Indoor paints with a white pigment content of 25 g/m^2 should achieve a WSR of 3. Those with a worse WSR cannot be considered to be a reduced impact product.

Manufacturers should not be required to inform the consumer that the product has not been subjected to WSR testing.

The requirement should only apply to the worst case from the paint range i.e. the tinting base only.

Clarification is required as to where it is stated that in-house testing is accepted.

The 25 g/m^2 limit is intended as an exemption for products for which no claim is made but which minimise their titanium dioxide content. It is proposed to retain the low titanium dioxide exemption unless evidence to support claims that it will lead to several painted layers being required is brought forward.

The requirement for WSR 3-5 to be communicated as not having been tested has been deleted and replaced by a requirement that 'Only WSR class 1 and 2 ecolabelled paints may claim wet scrub resistance on the label or other marketing documentation.' The intention is to create a more positive incentive for better performance.

With regards to the scope of the criteria a statement has been added that the WSR requirement applies only to tinting bases.

Assessment and verification, Clause (a) states that 'verifications performed by bodies which are accredited under the EN 45011 standard' shall be preferentially accepted but it does not exclude in-house testing.

Summary rationale for the final criteria proposal

The final proposal integrates the criteria on white pigment content (white inorganic pigments with a refractive index higher than 1,8) per m^2 of dry film with the Wet Scrub Resistance (WSR) performance rating. Integration of the criteria reflects the link the between the technical requirements of these two criteria.

A limit is set on white pigment content depending on whether Class 1 or 2 WSR is achieved, with Class 1 allowing for greater white pigment content. Moreover, all indoor paints shall achieve WSR Class 1 or 2 unless they have a white content of <25g/m^2. The latter reflects calls to recognise lower white pigment content in products that may not need to demonstrate WSR.

The white content limits apply to indoor paints as these are likely to be the most relevant in terms of WSR. A white content limit equating to Class 2 WSR performance is set for all other paints.

Only Class 1 or 2 claims may be marketed on ecolabelled products, reflecting a desire for claims to only be made for products of a high quality.

Based on the feedback received during and after the EU Ecolabelling meeting from June 2013 the following changes have been proposed for the new revised criteria draft:

1. White pigment and Wet Scrub Resistance

Criterion 1. White pigment and Wet Scrub Resistance

(a) Minimum requirement for white pigment content:

Indoor wall and ceiling paints for which Class 1 and 2 wet scrub resistance claims are made shall have a white pigment content (white inorganic pigments with a refractive index higher than 1,8) per m^2 of dry film equal to or lower than that described in Table 1, with 98 % opacity. This requirement only applies to tinting bases (base paints).

Table 1. Relationship between wet scrub resistance and TiO_2 content for indoor paints

Wet scrub resistance	**Indoor limit (g/m^2)**
Class 1	40
Class 2	36

For all other paints, including limed paints, silicate paints, primers, anti-rust paints and facade paints, the white pigment content (white inorganic pigments with a refractive index higher than 1,8) shall not exceed $36g/m^2$ for indoor products and $38g/m^2$ for outdoor products. In the case of paints for both indoor and outdoor use the more stringent limit shall apply.

In case the above mentioned products fall under the exemption indicated in part (b) then the white pigment content (white inorganic pigments with a refractive index higher than 1,8) shall not exceed 25 g/m^2 of dry film, with 98 % opacity.

(b) Minimum requirement for Wet Scrub Resistance (for indoor paints only)

All indoor wall and ceiling paints (finishes) shall achieve class 1 or class 2 in wet scrub resistance (WSR) according to EN 13300 and EN ISO 11998. This requirement only applies to tinting bases (base paints).

Exempted from this requirement are indoor wall and ceiling paints with a white pigment content (white inorganic pigments with a refractive index higher than 1,8) that is equal or lower to $25g/m^2$ of dry film, with 98 % opacity.

Only WSR class 1 and 2 ecolabelled paints may claim wet scrub resistance on the label or other marketing documentation.

Assessment and verification: *the applicant shall provide documentation showing that the content of white pigments is compliant with this criterion.*

The applicant shall provide a test report according to EN 13300 using the method EN ISO 11998 (Test for cleanability and scrub resistance). For ceiling paints and indoor wall paints the labelling for the packaging, including the accompanying text, shall be provided as evidence regarding claims of wet scrub resistance.

3.1.2 Titanium Dioxide Pigment

As is described within the background report, titanium dioxide is a significant contributor to the environmental impact of paint. It is important in enhancing the performance of the paint and so a careful balanced approach is needed in order to ensure that high quality paints are produced, whilst minimising the impact to the environment. Within the current revision of the EU Ecolabel criteria on paints and varnishes, there is a criterion that limits the emissions from titanium dioxide production.

There is some dispute as to whether the intention of this criterion was to set limits on SOx emissions and sulphate wastes from the chloride process. The Titanium Dioxide Harmonisation Directive[8] does not stipulate limits for SOx emissions for chloride wastes. Furthermore, stakeholders have argued that the levels of SOx emissions from the chloride process are so low they can be excluded from the calculation. From data supplied by the Reference Document on Best Available Technology for the Manufacture of Large Volume Inorganic Chemicals (BREF) (August 2007), sulphur dioxide emissions are released (albeit to a lesser extent) during production of titanium dioxide via the chloride route. Table 3 shows SOx emission from the production of TiO2 via the chloride route and also calculates the effect of SOx emissions on a typical paint formulation with a maximum of 38g of TiO2 per square meter as mandated by criterion 1 for outdoor paints.

Table 3: Emissions from European TiO_2 manufacturing plants using the chloride process based on BREF data[9]

SOx emissions from a chloride plant[10]	**SOx emissions per tonne of TiO_2**
Average	1.28 kg/tonne
Maximum	4.14 kg/tonne
Minimum	0.15 kg/tonne
SOx emissions per 38g of paint (based on BREF)	**SOx emissions per m2**
Average	48 mg/m^2
Maximum	157mg/m^2
Minimum	5mg/m^2

Based on the argument provided above, the maximum amount of SOx emitted from a chloride based TiO_2 plant is 40% less than the threshold for the EU Ecolabel. Although the BREF report was published in 2007, the calculations within the report are based on data from 1999 and are out of

[8] 92/112/EEC
[9] Best Available Technology for the Manufacture of Large Volume Inorganic Chemicals (BREF), EC, August 2007
[10] The figure takes into account the chlorination process and the energy to generate heat for the process.

date. Several stakeholders have stated that the SOx emissions from chloride plants are significantly lower than that provided by the sulphate route and therefore need not be included. Also, the Titanium Dioxide Harmonisation Directive does not require chloride route manufacturers to report SOx emissions making it difficult for these producers to provide evidence to the Ecolabel. This will have two possible consequences, either adding undue burden in monitoring and providing emissions data or effectively banning chloride-derived TiO_2 from the Ecolabel. As a result, it is proposed that SOx emissions should only be relevant to the sulphate route.

During the assessment process, an applicant stated that their TiO_2 supplier recycled their sulphur solid waste internally. Under such circumstances, the applicant argued that the sulphur should be considered a 'by-product' and exempt from the criterion. The Waste Framework Directive 2008/98/EC, article 3 defines waste: if this TiO_2 producer can satisfy article 5 (by-product production) of the Waste Framework Directive, then the sulphur waste can be exempt. A suggested amendment to the criteria has been made.

An analysis of anonymised data, received from successful EU Ecolabel applications from several National Competent Bodies, enabled a comparison of thresholds attained by submitted paint formulations.

Table 4 summarises these results.

Table 4: Average emissions from the manufacture of TiO_2 for successful EU Ecolabel paint applications.

TiO_2 Origin	**Number of products**	**Average values per paint**				
		SOx	**S**	**Nat**	**Synth**	**Slag**
Sulphate only processes	36	139	8.8			
(Standard Deviation)		56	4.2			
Chloride only processes	7			1.79	2.48	5.04
(Standard Deviation)				0.68	1.56	2.35
Mixed processes	38	99.4	7.3	1.83	3.17	5.66
(Standard Deviation)		87.9	5.7	1.04	1.79	3.54
Ecolabel limits (indoor)		252	18	3.7	6.4	11.9

If the product contains more than 3.0 weight % of titanium dioxide, the emissions and discharges of wastes from the production of any titanium dioxide pigment used shall not exceed the following (as derived from the Reference Document on Best Available Technology for the Manufacture of Large Volume Inorganic Chemicals (BREF) (August 2007)):

The sulphate process:

- SOx calculated as SO2: 7.0 kg/ton TiO2
- Sulphate waste: 500 kg/ton TiO2.

The chloride process:

- If natural ore is used, 103 kg chloride waste/ton TiO2
- If synthetic ore is used: 179 kg chloride waste /ton TiO2
- If rutile ore is used: 329 kg chloride waste /ton TiO2.

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.

For the avoidance of doubt, the Waste Framework Directive 2008/98/EC, article 3 defines 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 exempt.

Assessment and verification: The applicant shall either provide a declaration of non-use or provide the supporting documentation indicating the respective levels of emissions and discharges of wastes for these parameters, the titanium dioxide content of the product, the spreading rate, together with the detailed calculations showing compliance with this criterion.

Stakeholder feedback from AHWG2 and EUEB meeting

Stakeholders pointed out that in the criterion 2 the limits proposed for titanium dioxide are expressed as 'limit'/ton TiO2, while the pigment typically contains a few per cent of coating material such as silica or alumina. For this reason, in order to ensure clarity they propose that the limits should be expressed as 'limit'/ton TiO2 pigment. The respective amendment is made.

One association stakeholder mentioned that significant number of manufacturers reported higher emissions and discharges of wastes from the production of titanium dioxide. No additional feedback has been received on this point. The currently proposed values has not been changed in comparison with the currently valid criteria and it is proposed to keep them.

Follow up after the EUEB meeting from March 2013

Only very minor changes were introduced in the criterion following the feedback received, the phrase 'titanium dioxide' was extended to 'titanium dioxide pigment' and an amendment of the

assessment and verification was made, removing the unneeded part "together with the titanium dioxide content of the product".

Based on the analysis of the feedback received, the following formulation is proposed:

2. Titanium Dioxide Pigment

If the product contains more than 3.0 w/w % of titanium dioxide, the emissions and discharges of wastes from the production of any titanium dioxide pigment used shall not exceed the following :

For the sulphate process:

- SOx calculated as SO2: 7.0 kg/ton TiO2 pigment
- Sulphate waste: 500 kg/ton TiO2 pigment

For the chloride process:

- If natural rutile ore is used, 103 kg chloride waste/ton TiO2 pigment
- If synthetic rutile ore is used: 179 kg chloride waste /ton TiO2 pigment
- If slag ore ore is used: 329 kg chloride waste /ton TiO2 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.

For the avoidance of doubt, the Waste Framework Directive 2008/98/EC, article 3 defines waste. If the TiO2 producer can satisfy article 5 (by-product production) of the Waste Framework Directive for its solid wastes then, the wastes shall be exempted.

Assessment and verification: the applicant shall either provide a declaration of non-use or provide the supporting documentation indicating the respective levels of emissions and discharges of wastes for these parameters, showing compliance with this criterion.

Follow-up after the EUEB meeting of June 2013

Stakeholder feedback

Very limited further feedback was received. It should be made clear that all supporting documentation is to be supplied by TiO_2 producer.

The assessment and verification wording has been revised accordingly as recommended by the comments received from stakeholders.

Summary rationale for the final criteria proposal

The final criteria aligns the SO_X emissions limits for the sulphate process with the large volume inorganic chemicals BREF. SO_X emissions are only of significance from this process of ore production and are not possible to verify for the chloride process. Moreover, sulphate waste may be exempted if it is used as a by-product.

Under assessment and verification it has been clarified that the titanium dioxide producer shall provide the supporting documentation to evidence compliance with the criteria.

Based on the feedback received during and after the EU Ecolabelling meeting from June 2013 the following revised final criteria is proposed:

Criterion 2. Titanium Dioxide pigment

If the product contains more than 3.0% w/w of titanium dioxide, the emissions and discharges of wastes from the production of any titanium dioxide pigment used shall not exceed the following [11]:

For the sulphate process:

- SOx calculated as SO_2: 7.0 kg/ton TiO_2 pigment
- Sulphate waste: 500 kg/ton TiO_2 pigment

For the chloride process:

- If natural rutile ore is used, 103 kg chloride waste/ton TiO_2 pigment
- If synthetic rutile ore is used: 179 kg chloride waste /ton TiO_2 pigment
- If slag ore is used: 329 kg chloride waste /ton 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, article 3 shall be used for the definion 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.

Assessment and verification: *the applicant shall 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 monitoring data indicating the respective levels of process emissions and waste discharges of wastes.*

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

4 Use

4.1 Efficiency in use

There have been several requests to provide guidance on the application of the "efficiency in use" criteria by stakeholders. A new criterion note was initially proposed as follows.

Dependant on the claims made on the properties of the paint, the following tests shall be undertaken.

Criteria	All	Outdoor[1]	Varnish	Floor covering and paint	Undercoat	Masonry paint
Spreading rate	X					
Wet scrub resistance	X					
Resistance to water			X			
Adhesion				X	X	X
Abrasion				X		X
Weathering		X				X
Water vapour permeability[2]						X
Liquid water permeability[2]						X
Fungal resistance[2]						X
Crack bridging[2]						X
Alkali resistance[2]						X

Notes:

1 These are all products marketed as outdoor paints and include masonry paints

2 Only required where marketing claims are made about the paints

Stakeholder feedback from AHWG2 and EUEB meeting

As discussed during the AHWG meeting, the presented table was found too generic and it was asked to include the paint categories as defined in the Directive 2004/42/CE. Amended table submitted in the feedback received following the meeting was given in the revised criteria.

Furthermore, it was mentioned that the currently proposed criteria set many requirements for masonry paints, while it focuses less on the wood paints and floor coatings, or in general on all outdoor paints.

Efficiency against fungi was mentioned as important for wooden products and it was asked to be included a requirement in the revised criteria proposal.

Follow up after the EUEB meeting from March 2013

Based on the analysis of the feedback received and the update of the entire criteria text the Table included in the last criteria version has been amended accordingly, as follows:

Criteria	Paints and Varnishes (a to j are subcategories of the Directive 2004/CE/42)								
	Indoor paint (a, b)	Masonry paint (c)	Trim and cladding (d)	Outdoor paint (c)	Thick decorative coating indoor and outdoor (c)	Varnish and woodstain (e, f)	Floor covering and paint (i)	Primer (g)	Undercoat and primer (h)
Spreading rate (only on white and not tinting bases) – ISO 6504/1	8 m^2/L	4 m^2/L (elastomeric paint) 6 m^2/L (masonry paint)	6 m^2/L	6 m^2/L	1 m^2/L	-	8 m^2/L	6 m^2/L	8 m^2/L
Resistance to water – ISO 2812-3	-	-	-	-	-	x	x	-	-
Adhesion – EN 24624		-	-	-	-	-	Score 2	-	-
Abrasion – EN ISO 7784-2	-	-	-	-	-	-	x	-	-
Weathering – EN 11507 / EN 927-6	-	1 000 h	1000 h	1000 h	1000h (outdoor)	1000 h	-	-	-
Water vapour permeability[1] – EN ISO 7783-2	-	Class II or better	-	Class II or better	Class II or better (outdoor)	-	-	-	-
Liquid water permeability[1] – EN 1062-3	-	Class III (elastomeric paint) Class II (masonry paint)	-	Class II	Class II (outdoor)	-	-	-	-
Fungal resistance[1] – BS 3900:G6	-	Class 2 or lower	-	Class 2 or lower	Class 2 or lower (outdoor)	-	-	-	-
Crack bridging[1] – EN 1062-7	-	A1 (elastomeric paint only)	-	-	-	-	-	-	-
Alkali resistance – ISO 2812-4	-	x	-	-	-	-	-	-	x

Notes:
[1]Only required where marketing claims are made about the paints

Follow-up after the EUEB meeting of June 2013

The stakeholder feedback has been aggregated thematically in the table below, together with the proposed response going forward.

Stakeholder feedback

Sub-criteria	Stakeholder comments	Proposed response
3a. Spreading rate	Requirement for spreading rate should not be compulsory for primers. These might have other functionality than hiding.	The criteria is intended to recognise products that are more efficient. The requirement therefore varies according to the opacity of primers (and therefore also hiding power).
3c. Adhesion	Adhesion for masonry paint and primers according to EN 26624 should be 1,5 Mpa	The criteria is now aligned with the test method as specified.
	Adhesion for trim & cladding (only undercoats for wood & metal) and floor coverings EN ISO 2409 should be Score 2.	The criteria is now aligned with the test method as specified
3e. Weathering	Tests should only be performed on tinted paints; one white, one semi dark and one dark, to get a good evaluation for color difference and chalking.	It is understood that the requirement of $\Delta E^*=4$ was determined for the tinting base. Information is not currently available in order to set a requirement that would be suitable for selected tints. There is also industry concern about the cost of testing.
	Why has the requirement been reduced to 1000 hours from 2000 hours. For outdoor paints this test is important.	1000 hours was the consensus view from the stakeholder group on a representative testing duration. This represents an increase of 100% on the current criteria.

3h. Fungal resistance	Claims for fungal resistance can only refer to the property of the paint, not protection of the substrate, because of the biocidal regulations.	A reference has been added to the properties of the paint and in accordance with PT7 of the Biocide Regulation (EC) No 528/2012.
	Test method for wood: 927-3 for wood, and approved level should be rating 0 according to ISO 4628-1. Allow equivalent methods.	The test method has now been changed to EN 15457 in-line with the BPR which it is understood to support/relate to (see next point).
	The test should be aligned with those developed to support the BD/BPR. Additionally PT7 also addresses algal resistance for which an EN standard was also developed.	The test method has been changed to EN 15457/15458 in-line with the BPD/BR which it is understood to support/relate to. Algal resistance has also now been added with reference to EN 15458.
	It is difficult to define a representative tinted paint. It is proposed to adopt the following “Due to the large number of possible tinting colours, this criterion will be restricted to the testing of the base paint”	The proposal has been adopted accordingly.

Summary rationale for the final criteria proposal

The performance and lifespan of paint in use was identified in the preliminary technical analysis as a major influence on the environmental impact of paints and varnishes.

Given the range of efficiency in use criteria and the different paint products to which they may apply, a summary table has been developed in response to requests from stakeholders. This aims to make it easier for applicants to identify the criteria and performance that will apply to their product.

The criteria themselves have been, for the most part, subject to minor technical improvements based on feedback from stakeholders. Major changes relate to:

- the integration of Wet Scrub Resistance with the criteria on white pigment content (1(a)/(b)),
- An increase in the weathering test period to 1000 hours for outdoor paints in order to ensure the product is more hard wearing;
- updating of the test method for fungal resistance and expansion to include algal resistance, in-line with the Biocide Regulation,
- inclusion of a new criteria on corrosion resistance with reference to test methods EN ISO 12944-2 and EN ISO 12944-6.

Based on the feedback received during and after the EU Ecolabelling meeting from June 2013 the following revised final criteria is proposed:

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 5, shall be undertaken:

Table 5. Performance requirements for different kind of paints and varnishes

Criteria	Paints and Varnishes (a to j are subcategories of the Directive 2004/CE/42)								
	Indoor paint (a, b)	Masonry paint (c)	Trim and cladding (d)	Outdoor paint (c)	Thick decorative coating indoor and outdoor (c)	Varnish and woodstain (e, f)	Floor covering and paint (i)	Primer (g)	Undercoat and primer (h)
Spreading rate (only on white and not tinting bases) – ISO 6504/1	8 m^2/L	4 m^2/L (elastomeric paint) 6 m^2/L (masonry paint)	6 m^2/L	6 m^2/L	1 m^2/L	-	8 m^2/L	6 or 8 m^2/L (by opacity)	8 m^2/L
Resistance to water– ISO 2812-3	-	-	-	-	-	Resistant to water	Resistance to water	-	-
Adhesion – EN 24624		-	-	-	-	-	Score 2	1.5MPa (masonry paint)	1.5MPa (masonry paint)
Abrasion – EN ISO 7784-2	-	-	-	-	-	-	70 mg weight loss	-	-
Weathering – EN 11507 / EN 927-6	-	1000 h	1000 h (outdoor)	1000 h	1000h (outdoor)	1000 h	-	-	-
Water vapour permeability[1] – EN ISO 7783-2	-	Class II or better	-	Class II or better	Class II or better (outdoor)	-	-	-	-
Liquid water permeability[1] – EN 1062-3	-	Class III	-	Class II	Class II (outdoor)	-	-	-	-
Fungal resistance[1] – EN 15457	-	Class 1 or lower	-	Class 1 or lower	Class 1 or lower (outdoor)	Class 0 or lower	-	-	-
Algal resistance - EN 15458	-	Class 1 or lower	-	Class 1 or lower	Class 1 or lower (outdoor)	Class 0 or lower	-	-	-
Crack bridging[1] – EN 1062-7	-	A1 (elastomeric paint only)	-	-	-	-	-	-	-
Alkali resistance – ISO 2812-4	-	Alkali resistance	-	-	-	-	-	-	Alkali resistance (masonry paint)

Notes: [1] Only required where marketing claims are made about the paints

4.1.1 Spreading rate

A key environmental consideration is the amount of paint used during application. Minimising the amount of paint used, whilst achieving a high quality finish can result in a significant environmental saving. The most appropriate criterion by which this can be monitored is through the paints spreading rate. This is a criterion in the current revision of the EU Ecolabel Paints and Varnishes.

The interplay between this criterion and criterion 1 in section 3.1.1 mean that a variation in either has an impact on both. It is suggested that this criterion remains largely unchanged and that improvement in environmental performance should focus on the amount of white pigment within the formulations described in Section 3.1.1.

The test protocols defined within the cited standards have not been modified since the previous revision and can be used for the updated criteria document.

The performance criterion (spreading rate) for thick decorative coatings is missing for outdoor paints even though they are mentioned in the scope of the document. Most stakeholders suggest that the indoor criteria can be also applied to outdoor products. Several stakeholders questioned the availability of appropriate thick decorative coatings for outdoor use, suggesting that any requirement would be redundant; however, several examples seem to be available.[12] A combination of indoor and outdoor paint criteria may enable a unified threshold based on the current indoor level.

For opaque paints based on non-white (low TiO_2) bases, a gap currently exists in the ability to test their spreading rates. A possible option is the French test standard NF T30-073:1989-08-01, although the standard's popularity and use is unknown. Although information was sought, no additional information was forthcoming on the applicability or use of this standard, therefore it is suggested that it is not included within this revision.

A suggestion was made to differentiate the set limits for primers and undercoats. The reasoning behind is that the main function of a primer is to prepare the medium and to homogenize the porosity of the medium in order to give to the final coat a best adhesion. The adhesion is moreover proved by the test reports which should be made on the undercoats. Therefore it was argued that for primers and undercoats the focus should be on the limits for adhesion rather than spreading rate; the current ones are difficult to achieve. Further information and feedback from stakeholder to supportive this is needed before primers and undercoats should be treated separately. As the proposed limits are already in use and in the 1st AHWG there was no discussion on this point it is preliminary recommended to remain with the current proposal and to re-examine this at a later stage based on stakeholder response.

It is suggested that the term 'undercoat' is removed from the exempted list to align this criterion with the definition of undercoats and primers described in Section 2.3.

White paints and light-coloured paints (including finishes, primers, undercoats and/or intermediates) shall have a spreading rate (at a hiding power of 98 %) of at least 8m^2per litre of product for indoor paints and 6m^2 for outdoor paints. For tinting systems, this criterion applies only to the white base (the base containing the most TiO_2). In cases where the white base is unable to achieve this

[12] http://www.rialto-colors.com/wall-coatings/thick-coatings.asp

requirement, the criterion shall be met after tinting the white base to produce the standard colour RAL 9010.

For all other bases used to produce tinted products — these are bases which as a rule contain less TiO_2, which are unable to achieve the requirement of at least $8m^2$ per litre of product at a hiding power of 98 % — the criterion shall not apply. For paints that are a part of a tinting system, the applicant must advise the end-user on the product packaging and/or POS which shade or primer/undercoat (if possible bearing the Community Eco-label) should be used as a basecoat before applying the darker shade.

Primers with specific blocking/sealing, penetrating/binding properties and primers with special adhesion properties for aluminium and galvanised surfaces shall have a spreading rate (at a hiding power of 98 %) of at least $6m^2$ 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 power of $1m^2$ per kg of product.

Elastomeric paints shall have a spreading rate (at a hiding power of 98 %) of at least $4m^2$ per litre of product.

This requirement does not apply to varnishes, woodstains, floor coatings, floor paints~~,~~ 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 the method NF T 30 073 (or equivalent). 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.

Stakeholder feedback from AHWG2 and EUEB meeting

Following the stakeholders' feedback in the revised criterion version it is specified that a paint which is marketed as both for indoor and outdoor applications shall have a spreading rate (at a hiding power of 98 %) of at least $8m^2$ per litre. In this situation the test should only be done once.

Furthermore, for thick decorative coatings (i.e. paints which are designed to give a three-dimensional decorative effect) a spreading rate of at least 1 m^2 per kg of product was suggested. It was pointed out that these products use very small amount of titanium. Some products may have spreading rate of more than 2 or 3 kg/m2 without titanium.

From the revised criterion shall be exempted varnishes, woodstains, adhesion primers or any other transparent coatings, but not floor paints and floor coatings, which were initially excluded.

One of the stakeholders asked whether the information on spreading rate shall be mentioned on the packaging. This issue was addressed in the criterion regarding the user information.

Follow up after the EUEB meeting from March 2013

- Regarding scope of the criterion

Some stakeholders indicated that it was unclear if requirements for primers, thick decorative coatings and elastomeric paints applied only for white and light-coloured products. The requirement applies to all paints.

Additionally, it was indicated that it should be avoided to specify (as it is the case in the currently valid Ecolabel criterion) for some primers with special adhesion properties the surfaces they can be applied on (i.e. aluminium and galvanised surfaces) and to keep the criterion for primers as it was previously formulated. In this case the confusion to which applications or colours the requirement for primers applies would be avoided.

It was pointed out that so far the primers for interior walls should have at least a spreading rate (at a hiding power of 98 %) of 6m^2/l. For primers for interior walls good adhesion properties (e.g. on plaster) are the main attribute of these products, and not their opacity. Thus the spreading rate of 6m^2/l should be kept for these products.

In order to avoid misunderstanding, amendment of the exemption text was proposed as follows: "This requirement does not apply to varnishes, woodstains or any other transparent adhesion primers or transparent finishes".

- Regarding Assessment and Verification

Finally, it was indicated that in the assessment and verification section the phrase "or equivalent" shall be removed to ensure that all the applicants use the same test methods and the CBs evaluate in a harmonised way the applications.

The formulation of this criterion in the revised version is as follows:

(a) Spreading rate

Spreading rate requirement shall apply to white and light coloured paint products. For colours which are available in more colours the spreading rate shall apply to the lightest colour.

White paints and light-coloured paints (including finishes, primers, undercoats and/or intermediates) shall have a spreading rate (at a hiding power of 98 %) of at least 8m^2 per litre of product for indoor paints and 6m^2 for outdoor paints. Products marketed for both – indoor and outdoor shall have a spreading rate (at a hiding power of 98 %) of at least 8m^2 per litre. For tinting systems, this criterion applies only to the white base (the base containing the most TiO_2). In cases where the white base is unable to achieve this requirement, the criterion shall be met after tinting the white base to produce the standard colour RAL 9010.

For all other bases used to produce tinted products (bases which as a rule contain less $TiO_{2)}$, which are unable to achieve the requirement of at least 8m^2 per litre of product at a hiding power of 98 % - the criterion shall not apply. For paints that are a part of a tinting system, the applicant must advise the end-user on the product packaging and/or POS which shade or primer/undercoat (if possible bearing the Community Eco-label) should be used as a basecoat

before applying the darker shade.

Primers with specific blocking/sealing, penetrating/binding properties and primers with special adhesion properties shall have a spreading rate (at a hiding power of 98 %) of at least $6m^2$ 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 $1m^2$ per kg of product.

Elastomeric paints shall have a spreading rate (at a hiding power of 98 %) of at least $4m^2$ per litre of product.

This requirement does not apply to varnishes, woodstains, 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 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.

Follow-up after the EUEB meeting of June 2013

A summary of feedback received for each Efficiency in Use criteria and the proposed response can be found in section 4.1.

Based on the feedback received during and after the EU Ecolabelling meeting from June 2013 the following revised final criteria is proposed:

(a) Spreading rate

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.

White paints and light-coloured paints (including finishesand/or intermediates) shall have a spreading rate (at a hiding power of 98 %) of at least $8m^2$ per litre of product for indoor paints and $6m^2$ for outdoor paints. Products marketed for both – indoor and outdoor shall have a spreading rate (at a hiding power of 98 %) of at least $8m^2$ per litre.

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

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

Primers and undercoats without opacity shall have a spreading rate of at least $6m^2$ and those with opacity at least $8m^2$. Primers with specific blocking/sealing, penetrating/binding properties and primers with special adhesion properties shall have a spreading rate (at a hiding power of 98 %) of at least $6m^2$ 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 $1m^2$ per kg of product.

Elastomeric paints shall have a spreading rate (at a hiding power of 98 %) of at least $4m^2$ per litre of product.

This requirement does not apply to varnishes, woodstains, 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 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.*

4.1.2 Wet scrub resistance

Wet scrub resistance can be considered a means to determine the durability of a particular paint. Manufacturers state that this is one of the key performance indicators for hard wearing paints (particularly floor and bathroom/kitchen paint). The durability of paint is important in reducing its environmental impact. As is shown within the LCA in the background report, any increase in time between repaints, in this case due to an increase in wear resistance, leads to a decrease in the overall lifecycle impact of the paint.

A lengthy debate over the inclusion and scale of this requirement preceded the development of the current criterion. A key concern is whether this test needs to be carried out for all paints or only for those claiming wet scrub resistance. From an environmental perspective, more durable paints would reduce the environmental impact by increasing intervals between repainting. This was particularly addressed in the technical analysis[13]. However, the proposed universal requirement that all paints must meet this target was opposed because it would exclude most matt wall paints and was seen as unnecessary for wood and trim paints. Consensus on these issues has yet to be reached, with both views expressed within the stakeholder consultation;

[13] http://susproc.jrc.ec.europa.eu/paints/stakeholders.html

therefore, any proposed changes would need further stakeholder engagement and agreement prior to a final decision.

The significant environmental impact of improving the durability of the paint means that increasing the wet scrub resistance test is desirable. The additional positive consequence is that Ecolabel paints would be perceived to be high performance paints. It is proposed within the wet scrub resistance criterion that there is gradation of maximum concentrations of white pigment within the paint. This will allow higher quality paints to undergo Ecolabelling. To complement this, a change to this criterion is needed. A possible suggested solution is that the scrub resistance test should be 'graded' to enable differentiation between brushable (class 2) and washable (class 1) paints. This could be extended to class 4 paints as well (matt paints). As a result, all paints will need to undergo wet scrub resistance testing. This would add an additional cost burden to the paint manufacturers but will significantly improve the quality of Ecolabelled paint.

A small change has been requested from the stakeholders that "class 2 or better" means <=2. The currently specified test protocols are up to date and appropriate for determining wet scrub resistance. The text has been changed to reflect this point.

All paints shall have a wet scrub resistance as measured by EN 13300 and EN ISO 11998 of class 4 (not exceeding 70 microns after 200 cycles).

Paints (according to EN 13300) for which claims are made (whether on the product or in related marketing material) that they are brushable, shall have a wet scrub resistance as measured by EN 13300 and EN ISO 11998 of class 2 (not exceeding 20 microns after 200 cycles).

Paints (according to EN 13300) for which claims are made (whether on the product or in related marketing material) that they are hard wearing, shall have a wet scrub resistance as measured by EN 13300 and EN ISO 11998 of class 1 (not exceeding 5 microns after 200 cycles).

Due to the large potential range of possible tinting colours, this criterion will be restricted to the testing of tinting bases.

Assessment and verification: The applicant shall provide a test report according to EN 13300 using the method EN ISO 11998 (Test for cleanability and scrub resistance).

Feedback from AHWG2 and EUEB meeting

In the feedback received it was emphasized that wet scrub resistance should only be tested for indoor wall paints (finishes) and should not cover the outdoor paints (as it was also done in the currently valid criteria). EN 13300 wet scrub resistance classes are only defined for indoor wall and ceiling paints.

Additionally, it was mentioned that it is more appropriate to use the terms «washable», «cleanable» and «brush able» for class 2 or better (means class 1) instead of «brush able» for class 2 and «hard wearing» for class 1. The proposed improvement was introduced.

Follow up after the EUEB meeting from March 2013

- Regarding the scope and accepted class of WSR

It was also indicated that matt paints should not be required to be tested and that for clarity the exclusion of outdoor paints should be explicitly mentioned.

One stakeholder proposed to limit the acceptance of WSR to the class 1, 2 or 3. They pointed out that "*Good to very good durability for an indoor wall paints (i.e. scrub resistance class 1 or 2) means lower frequency to refresh and therefore makes less energy consumption/waste due to:*

- less raw materials/paints have to be produced,

- less waste are generated after application of this paint".

The paint with WSR class 4 was not considered by the stakeholder as more environmentally preferable. The proposal was to require for the indoor wall paints, for which there are no claims that they are washable-cleanable, a class 3 of WSR or better (i.e. class 1 or 2). The CB proposed also that ceiling paints and matt indoor paints (which constitute the main segment of the indoor paint products market), for which there is no claim that they are washable-cleanable, should be at least WSR class 3.

Opposite opinion was received from another stakeholder, who indicated that they are against compulsory requirement on WSR for all indoor paints. They asked for a clarification if transpirant paints are considered matt paints. The explained that "*transpirant paints, which constitute 60-80% of their ecolabelled products, are of WSR class 5. (…) These paints are not washable or cleanable, but they contain less hazardous substances, are water based, contain less white pigments than other washable paints and should not be discriminated*". It was referred results of the technical analysis which has shown that white pigments content is one of the main contributors to the environmental impact of paints for this product group. Thus, exclusion of paints with lower classes, e.g. 5, which contain less white pigment, was considered to be inconsistent with the findings of the study.

One stakeholder asked for WSR requirements for matt paints. Industry representative suggested to accept only paints with WSR of class 1 or 2 and asked for compulsory WSR testing for matt paints. Another one indicated that only ceiling paints shall be excluded, while all other indoor paints should be tested.

No agreement was obtained among stakeholders regarding this issue. There is a clear trade-off between the content of white pigment and the life-span of a paint product (which can be extended if the paint is washable-cleanable). Furthermore, it was indicated that consumer may choose lower class WSR paint due to esthetical reasons. Therefore, an inclusion of the paints with class 3, 4 or 5 if they have very low white pigment content was proposed to be accepted.

It is finally proposed to allow paints of lower class but only if the white pigment content does not exceed 25 g/l. For paints of class 3, 4 and 5 no claims on their clean-ability shall be made. Ceiling paints do are not required to be tested for WSR.

- Regarding testing

It was asked whether internal measurements could be accepted except of external control in order to limit costs for all testing required. A test report according to EN 13300 using the method EN ISO 11998 is required. Accepted are also tests conducted in-house.

Follow-up after the EUEB meeting of June 2013

A summary of feedback received and the proposed response and final criteria can be found in section 3.1.1.

4.1.3 Resistance to water

This test is important for water resistant paints. The current test protocol is the latest available version. However, an international review of the ISO standard is under way and a document has been circulated through the technical committee for comment. The publication date of the new standard is unknown but is likely to occur during the lifetime of the new criteria document; therefore, the wording within the criterion must reflect this anticipated change.

There was also a request to clarify that all varnishes, not just floor varnishes, shall meet this criterion.

Recommended minor amendments to the criterion text are suggested below.

All varnishes, floor coatings and floor paints shall have a 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 (Paints and varnishes — determination of resistance to liquids — Part 3: Method using an absorbent medium).*

* *This test procedure is due for revision during the lifetime of this criterion. If there is a substantive change to this procedure, a decision by the Competent Body Forum shall be taken on the appropriate test standard used.*

Follow-up after the EUEB meeting of June 2013

A summary of feedback received for each Efficiency in Use criteria and the proposed response can be found in section 4.1.

Based on the feedback received during and after the EU Ecolabelling meeting from June 2013 the following revised final criteria is proposed:

(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.*

4.1.4 Adhesion

The protocol has not been updated since the previous revision of the Ecolabel and there is consensus that this is appropriate for continued use in the EU Ecolabel. It is recommended that the test should be reused without revision. Stakeholders agreed on this in the 1st AHWG.

Pigmented masonry primers 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 1,5MPa.

Floor coatings, floor paints, floor undercoats, metal undercoats and wood undercoats shall score **<=** 2 in the EN 2409 test for adhesion. Transparent primers are not included in this requirement

The applicant shall evaluate the primer and/or finish alone or both as part of a system [the system when tested shall concern products if possible labelled with the European Ecolabel (with the exception of systems designed for metal surfaces)]. 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 EN ISO 2409 or EN 24624 (ISO 4624) as applicable.

Follow up after the EUEB meeting from March 2013

- Regarding the test methods and results acceptance

One stakeholder pointed out that the EN24624 (ISO 4624) shall be substituted by EN2409 for interior support, as it is not cohesive (like plaster substrate). EN 2409 is considered to better judge the adhesion. Additional explanations have been asked from the stakeholders and feedback is awaited.

Furthermore, a correction regarding the acceptance for adhesion for floor coatings, floor paints, floor undercoats, metal undercoats and wood undercoats tested in accordance with EN 2409 was pointed out. According to the EN 2409 best result is 0 and worst is 5 therefore in the revised draft criteria adhesion inferior or equal to 2 is required.

The formulation of this criterion in the revised version is as follows:

Pigmented masonry primers 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 1,5MPa.

Floor coatings, floor paints, floor undercoats, metal and wood undercoats shall score inferior or equal to 2 in the EN 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 EN ISO 2409 or EN 24624 (ISO 4624) as applicable.

Follow-up after the EUEB meeting of June 2013

A summary of feedback received for each Efficiency in Use criteria and the proposed response can be found in section 4.1.

Based on the feedback received during and after the EU Ecolabelling meeting from June 2013 the following revised final criteria is proposed:

(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 1,5MPa.

Floor coatings, floor paints, floor undercoats, interior masonry primers, metal and wood undercoats shall score inferior or equal to 2 in the EN 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 EN ISO 2409 or EN 24624 (ISO 4624) as applicable.*

4.1.5 Abrasion

The protocol has not been updated since the previous revision of the Ecolabel and there is consensus that this is appropriate for continued use in the EU Ecolabel.

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 7784-2:2006.

Assessment and verification: The applicant shall provide a test report showing compliance with this criterion using the method EN ISO 7784-2:2006.

Follow-up after the EUEB meeting of June 2013

A summary of feedback received for each Efficiency in Use criteria and the proposed response can be found in section 4.1.

Based on the feedback received during and after the EU Ecolabelling meeting from June 2013 the following revised final criteria is proposed:

(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.*

4.1.6 Weathering

An appropriate colour change test was not stipulated within the current criterion. The use of ISO 7724-3:1984 was suggested as the most appropriate standard available, which achieved general agreement from the stakeholders. This standard is due to be superseded by ISO 11664 within the timeframe of the next revision of the EU Ecolabel criteria document. This must be taken into account when drafting the new criterion. Appropriate wording has been provided on this point.

All other test specifications cited within this document are up-to-date and appear suited for their respective identified roles and will be used as in the criterion.

The current criterion does not account for possible colour changes in transparent, coloured products such as woodstains. This is a problem because the substrate has an impact on the overall colour of the paint and any colour change to the wood substrate due to weathering will affect the results of a test. A temporary solution proposed by the Competent Body Forum was the use of an inert substrate such as glass or metal to remove the effect of the wood on the overall test results. This proposal has met with significant resistance: it is argued that using an artificial substrate will have an impact on the performance of the woodstain. In particular, the adhesion and flaking properties of the paint will be significantly affected. This in turn is likely to have an impact on the performance of the colour fade of the paint.

It seems clear that testing the adhesion characteristics of the paint should be conducted on the appropriate substrate (in the case of woodstains, on untreated wood). There is a further question as

to whether an additional separate test on an inert material could be used to measure colour change due to weathering. An appropriate white primer could be used to enhance adhesion of the woodstain to the inert substrate. Some stakeholders are concerned; however, that the higher financial costs associated with the additional tests would be prohibitive.

Additional stakeholder feedback was not received on this issue from the 1st AHWG; therefore no additional clause will be added in this revision, with a recommendation that the issue is revisited at the next revision.

A minor change to the text is required to state that the gloss finishing tests only apply to gloss and satin paints and varnishes and they are inappropriate for matt paints. Appropriate text has been suggested.

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 11507:2007.

Masonry paints shall be exposed to test conditions for 1 000 hours, wood and metal finishes (including varnishes) shall be exposed to test conditions for 500 hours. Test conditions are: UVA 4h/60degC + humidity 4h/50degC.

Alternatively, wood finishes and wood varnishes may be exposed to weathering for 500 hours in the QUV accelerated weathering apparatus with cyclic exposure with UV(A) radiation and spraying according to EN 927-6.

According to ISO 7724-3:1984, the colour change of samples exposed to weathering shall not be greater than ΔE * = 4 and is not applicable to transparent varnishes and bases. To determine colour change of woodstains, a separate sample shall be prepared using an inert substrate and undergo weathering using a standard protocol outlined above.

Decrease samples in gloss for paints and varnishes exposed to weathering shall not be greater than 30 % of its initial value and shall be measured using ISO 2813. This is not applicable to matt-finish paints.

Chalking shall be tested using method EN ISO 4628-6:2007 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 4628-5:2003; flake density 2 or less, flake size 2 or less
- Cracking according to ISO 4628-4:2003; crack quantity 2 or less, crack size 3 or less
- Blistering according to ISO 4628-2:2003; blister density 3 or less, blister size 3 or less.

Due to the large number of possible tinting colours, these tests will be restricted to the base paint used.

Assessment and verification: The applicant shall provide test reports using either ISO11507:2007 according to the specified parameters or EN 927-6, or both (if relevant). The applicant shall provide test reports using EN ISO 4628-2, 4, 5, 6 where applicable. **Additionally, the applicant shall provide a test report in conformance to ISO 7724-3:1984* (where applicable).**

*This test procedure is due to be superseded by ISO 11664 during the lifetime of this criterion. If substantial changes to this procedure have been made, a decision by the Competent Body Forum shall be taken on the appropriate test standard to be used.

Feedback from AHWG2 and EUEB meeting

In the feedback stakeholders asked not to differentiate the exposure times for wood and masonry coatings; therefore in the revised version 1000 h is proposed for testing of these products. Alternatively, outdoor wood finishes and wood varnishes shall be exposed to weathering for 12 weeks (as required in Nordic Swan) in the QUV accelerated weathering apparatus with cyclic exposure with UV(A) radiation and spraying according to EN 927-6.

Further, it was indicated that testing should not be limited to the base paints but to one representative shade for each base paint. Tests should be performed on tinted paints and not on bases. This proposal is included in the revised criterion.

It is proposed to require max 30% decrease in gloss after exposure to weathering only for varnishes, excluding matt-finish varnishes. The stakeholders emphasized that "*it is not technically feasible to have the same gloss decrease for different kind of pigmented systems, which could be: high gloss, gloss, semi-gloss, satin, semi-matt etc, and for different substrates. Formulations differ a lot; choices of raw materials do not only depend on gloss retention. Pigments could have an opposite effect on gloss retention and chalking resistance (depending what is more important to the specific application)*".

Another stakeholder asked to set less strict threshold of 50% for alkyd based coatings and woodstains 50% decrease in gloss. The limit of 30% was considered discriminatory for alkyd based coatings and woodstains, for which gloss loss higher than 30% is observed but the behaviour of the film is still good. Comments are welcomed regarding this input.

Following the feedback obtained, in the revised proposal testing of gloss loss is proposed for varnishes, high-gloss and satin paints.

Furthermore, the definition on matt-finishes, as having an initial gloss value less than 60%, is added in the exclusion of the matt finishes from testing of gloss decrease.

Additionally, it was mentioned that "*to evaluate the change of colour of woodstains, it has been requested to make an application on an inert substrate (e.g. Glass); the woodstain may behave differently and it could crack and cause a change of colour and therefore totally distort colour measurements.* Testing the adhesion characteristics of the paint should be conducted on the appropriate substrate (in the case of woodstains, on untreated wood). This requirement is removed in the revised criterion.

Follow up after the EUEB meeting from March 2013

- Regarding testing on tinting bases or on coloured paints

One stakeholder highlighted that the proposed limits (threshold value ΔE*=4) was "s*et in 2008 by correlating weathering data of tinting bases without colorants. So this threshold for ΔE* is not the proper limit*" for testing of tinted paint. In the opinion of the stakeholder new limits need to be considered if tinted paints shall be tested. Furthermore, it was indicated that it is "*difficult to isolate the worse case of tinted paints (…). Also the amount of white pigment affect a lot*" the result. It was additionally explained that "ΔE*=8-10 for a dark shade may be very bad (i.e. visible difference) compared with ΔE*=4 for a white paint". It was indicated that a comprehensive study would need to be done before setting the proper limits. Therefore, for the current revision it is proposed to keep the testing on the base paint (without colorants) and is recommended for the next revision to be analysed which thresholds are appropriate if test is conducted on the final paints. Alternatively, it was proposed that 'Tests should be performed on one representative shade for each base paint'. Nevertheless, it would be difficult to identify which shade is the representative one.

Unless additional input from stakeholders with rationale and justified threshold is submitted to the project team, it is proposed for the tests to be still in this criteria version conducted for the base paint.

- Regarding threshold for alkyd based coatings and woodstains

There were a few comments highlighting that the limit of 30% gloss loss is too strict for the majority of alkyd based varnishes; even more that the testing time is now extended from 500h to 1000h. It was commented that for alkyd based varnishes the limit of 50% gloss loss is more appropriate. Another option proposed by stakeholders was to keep the testing requirement of 1000h only for outdoor products. Based on the above feedback, several amendments have been made. It is proposed to require the QUV testing of 1000h for outdoor products.

Gloss definition is given in the following table:

Designation	Angle of Incidence	Reflectance
Gloss	600	≥60
Mid sheen (semi gloss, satin, semi matt)	600 or 850	<60 ≥10
Matt	850	<10
Dead matt	850	<5
Gloss is measured by the method described in EN ISO 2813		

- Regarding testing

Several stakeholders asked to change the assessment for testing of the final product, i.e. the tinted paint, instead of paint base (due to the reasons explained above). This comment was accepted.

The following formulation of the criterion is proposed in the revised criteria version:

(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 11507. They shall be exposed to test conditions for 1 000 hours (including

varnishes). Test conditions are: UVA 4h/60 °C + humidity 4h/50 °C.

Alternatively, the 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 7724 3, the colour change of samples exposed to weathering shall not be greater than ΔE * = 4. It is not applicable to transparent 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[14] which have an initial gloss value less than 60% at 60^0 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 base paint used.

Assessment and verification: the applicant shall provide test reports using either ISO 11507 according to the specified parameters or EN 927-6, or both (if relevant). The applicant shall provide test reports using EN ISO 4628-2, 4, 5, 6 where applicable. Additionally, the applicant shall provide a test report in conformance to ISO 7724-3[15] (where applicable).

Follow-up after the EUEB meeting of June 2013

A summary of feedback received for each Efficiency in Use criteria and the proposed response can be found in section 4.1.

Based on the feedback received during and after the EU Ecolabelling meeting from June 2013 the following revised final criteria is proposed:

The following formulation of the criterion is proposed in the revised criteria version:

[14] Measures following the EN ISO 2813.

[15] This test procedure is due to be superseded by ISO 11664 during the lifetime of these criteria. If substantial changes to this procedure have been made, a decision by the Competent Body Forum shall be taken on the appropriate test standard to be used.

(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. They shall be exposed to test conditions for 1000 hours (including varnishes). Test conditions are: UVA 4h/60 °C + humidity 4h/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 7724 3, the colour change of samples exposed to weathering shall not be greater than ΔE * = 4. It is not applicable to transparent 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[16] which have an initial gloss value less than 60% at 60^0 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 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 7724-3 where applicable*.

4.1.7 Water vapour permeability

The protocol has not been updated since the previous revision of the Ecolabel and there is consensus that this is appropriate for continued use in the EU Ecolabel. This criterion will be included without revision.

[16] EN ISO 2813.

Follow up after the EUEB meeting from March 2013

One stakeholder asked for the reason to exclusion of transparent primers. As this criterion applies only to exterior masonry and concrete paints which are claimed to be breathable, the exclusion text was removed.

The following formulation of the criterion is proposed in the revised criteria version:

(f) Water vapour permeability

Where claims are made that exterior masonry and concrete paints are breathable the paint shall be classified 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 7783-2.

Follow-up after the EUEB meeting of June 2013

A summary of feedback received for each Efficiency in Use criteria and the proposed response can be found in section 4.1.

Based on the feedback received during and after the EU Ecolabelling meeting from June 2013 the following revised final criteria is proposed:

(f) Water vapour permeability
Where claims are made that exterior masonry and concrete paints are breathable the paint shall be classified 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 7783-2*.

4.1.8 Liquid water permeability

The test protocol has not been updated since the previous revision of the Ecolabel and there is consensus that this is appropriate for continued use in the EU Ecolabel. A minor change made is removing the "DIN" identifier of the standard.

Where claims are made that exterior masonry and concrete paints are water repellent or elastomeric, the coating shall be classified as class III (low liquid permeability) according to method EN 1062- 3:1999. 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 as class II (medium liquid

permeability) or better according to the test method EN 1062-3:1999.

Assessment and verification: The applicant shall provide a test report using methodology EN 1062-3:1999.

Follow-up after the EUEB meeting of June 2013

A summary of feedback received for each Efficiency in Use criteria and the proposed response can be found in section 4.1.

Based on the feedback received during and after the EU Ecolabelling meeting from June 2013 the following revised final criteria is proposed:

(g) Liquid water permeability

Where claims are made that exterior masonry and concrete paints are water repellent or elastomeric, the coating shall be classified 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 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*.

4.1.9 Fungal resistance

The protocol has not been updated since the previous revision of the Ecolabel and there is consensus that this is appropriate for continued use in the EU Ecolabel. This criterion current criterion is as follows:

Where claims are made that masonry finish coatings have anti-fungal properties, the coating shall have a score of 2 or better (less than 10 % fungal coverage), as determined by method BS 3900:G6. 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 methodology BS 3900:G6.

In the revised version wood paints have been included in the scope of the criterion.

Feedback from AHWG2 and EUEB meeting

One of the stakeholders asked if masonry paints with claims against fungi are not subject to the Biocide Regulation as PT 10; while in the scope section wood preservation is excluded. This issue

has been analysed. In accordance with the information given in the Manual of decisions for implementation of directive 98/8/EC concerning the placing on the market of biocidal products[17] it is stated that:

"the active substance (in paint) "prevent the growth of mould on the paint itself, once it has been painted on a wall or ceiling. Mould would normally feed on the organic components of the paint - the wall itself has probably very little to offer in nutrients as it is made of inorganic material. So in the end the active substance protects the paint-film (which in turn protects the wall). This clearly meets the definition of PT 7 in Annex V, which reads: 'Products used for the preservation of films or coatings by the control of microbial deterioration in order to protect the initial properties of the surfaces of materials or objects such as paint, plastics, sealants, wall adhesives, binders, papers, art works ..." and " the paint itself should not be considered as a biocidal product, however the active substance (or preparation) used as a preservative is a biocide in PT 7 and needs authorisation for the intended use".

It was further mentioned that such a requirement is very important for outdoor paints, for example, wood paints. It was requested that all outdoor coatings that claim fungal resistance should be included in the scope. Wood coatings are included in the revised criterion.

Follow up after the EUEB meeting from March 2013

- Regarding the accepted score in this criterion

One stakeholder asked for clearer explanation regarding the score the paint has to obtain. The standard defines a scale ranging from 0 (which refers to no growth) to 5 (more than 70% of the coating is covered by fungal growth). In order to comply with the requirement the paint must be in class 0 to 2.

- Regarding the testing

It was further indicated that the phrase "testing on the paint base" should be replaced by "testing on the one tinted paint", as "*it is the final paint which should be of the right quality. The tinting colour can affect the performance of the paint*". Respective amendment proposal was included in the draft.

- Regarding paints with microbial properties and their classification

Furthermore, it was again asked if paints with antimicrobial properties are considered to fall into the scope of PT10 according to Biocide Regulation (for explanation, please see below).

The following formulation of the criterion is proposed in the revised criteria version:

[17] Available online at: http://ec.europa.eu/environment/biocides/pdf/mod.pdf, accessed February 2013.

(h) Fungal resistance

Where claims are made that exterior masonry finish and wood paints have anti-fungal properties, the paint shall have a score of class 2 or lower (1 or 0), i.e. less than 10 % fungal coverage, as determined by method BS 3900: G6.

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

Assessment and verification: the applicant shall provide a test report using methodology BS 3900:G6.

Follow-up after the EUEB meeting of June 2013

A summary of feedback received for each Efficiency in Use criteria and the proposed response can be found in section 4.1.

Based on the feedback received during and after the EU Ecolabelling meeting from June 2013 the following revised final criteria is proposed:

(h) Fungal and algal resistance

Where claims are made that exterior masonry finish and wood paints have anti-fungal and algal properties, and in accordance with PT7 of the Biocide Regulation (EC) No 528/2012, the following requirements shall be determined using EN 15457 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 EN 15458.*

4.1.10 Crack bridging

The test protocol has not been updated since the previous revision of the Ecolabel and there is consensus that this is appropriate for continued use in the EU Ecolabel. A minor revision made is removing the "DIN" identifier of the standard.

Where claims are made that masonry (or concrete) paint has elastomeric properties, it shall be at least classified as A1 at 23 °C according to EN 1062-7:2004. 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 1062-7:2004

Follow-up after the EUEB meeting of June 2013

A summary of feedback received for each Efficiency in Use criteria and the proposed response can be found in section 4.1.

Based on the feedback received during and after the EU Ecolabelling meeting from June 2013 the following revised final criteria is proposed:

(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.
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*.

4.1.11 Alkali resistance

The protocol has not been updated since the previous revision of the Ecolabel and there is consensus that this is appropriate for continued use in the EU Ecolabel. This criterion will be included without revision.

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 2812-4:2007. The evaluation is done after 24 hours drying-recovery.

Assessment and verification: The applicant shall provide a test report using methodology ISO 2812-4:2007.

Follow-up after the EUEB meeting of June 2013

A summary of feedback received for each Efficiency in Use criteria and the proposed response can be found in section 4.1.

Based on the feedback received during and after the EU Ecolabelling meeting from June 2013 the following revised final criteria is proposed:

(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 done after 24 hours drying-recovery.

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

4.1.12 Corrosion resistance

The inclusion of anti-corrosion paints would mandate an additional performance criterion. Further input from stakeholders is needed to draft this criterion. As reference basis is proposed EN ISO 12944 – part 6 referring to class C3 – (low/rural) with medium durability. Furthermore, for the measurement method could be used ISO 4628 for -2 blistering and -3 rusting.

Feedback from AHWG2 and EUEB meeting

Concerning the tests one stakeholder indicated that EN ISO 12944 is more appropriate to Industrial coating while ISO 4628 is more appropriate to anti rust paints. Nevertheless, the standard ISO 4628 concerns only the evaluation and therefore would need to be combined with ISO 9227 for preparation and condition testing of samples.

A review of existing Ecolabel criteria was also conducted and, nevertheless, it was found that they do not contain specific requirements for the testing of anti corrosion properties, or that they exclude anticorrosive coatings from the scope.

Given the inclusion of anti-corrosion paints within the scope and that EN ISO 12944 appears to be the main reference point for the testing of the corrosion protection of paints it is therefore proposed to frame the criteria with reference to this standard. The applicant would need to select the relevant atmospheric corrosivity category from Table 1 in EN ISO 12944-2 and then the appropriate accompanying test procedures to carry out from EN ISO 12944-6. The rating of results shall then be carried out according to ISO 4628 for 2 blistering and 3 rusting.

Follow up after the EUEB meeting from March 2013

- Regarding the test conditions

Association stakeholders proposed to make this criterion more precise through adding the reference to the simulated corrosion test conditions which should be used (240 hours salt spray in accordance with the ISO 9227 standard was proposed).

Further clarification was proposed as follows: the results shall be rated using ISO 4628-2[18] for blistering and ISO 4628-3[19] for rusting. Ratings after 240h salt spray could be: ISO 4826-Part 2 for blistering: no worse than size 3 and density 3, ISO 4826-Part 3 for rusting: no worse than Ri2.

- Furthermore, changing the description of “anti-corrosive” paint (suitable more for industrial application products) to “anti-rust” paint (which better suits decorative paint products) was suggested.

The comments were accepted and the following formulation of the criterion is proposed in the revised criteria version:

[18] ISO 4628-3 Paints and varnishes - Evaluation of degradation of coatings - Designation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 2: Assessment of degree of blistering.

[19] ISO 4628-3:2003 Paints and varnishes - Evaluation of degradation of coatings - Designation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 3: Assessment of degree of rusting

(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 and zinc substrates shall be tested after 240h 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 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

Follow-up after the EUEB meeting of June 2013

A summary of feedback received for each Efficiency in Use criteria and the proposed response can be found in section 4.1.

Based on the feedback received during and after the EU Ecolabelling meeting from June 2013 the following revised final criteria is proposed:

(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 240h 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 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*.

4.2 Emissions during use

4.2.1 Volatile and semi-volatile organic compounds

Volatile Organic Compounds (VOCs) are used as solvents within paints to help keep it stable prior to use and aid in spreading and delivery of the paint to the substrate. VOCs encompass a wide variety of compounds and are generally classed as organic substances with a boiling point less than 250 °C.[20] VOCs generally evaporate or sublimate from the paint during and after application. The release of these emissions can cause eye, nose, and throat irritation along with headaches and loss of coordination. Due to the wide diversity of compounds encompassed by this classification, more extreme reactions can also present, in particular: damage to liver, kidney, and central nervous system and some are suspected or known to cause cancer in humans.[21]

The current VOC limits within the EU Ecolabel criteria are based on modified (reduced) 2010 limits from the Paints Directive 2004/42/EC. A recast of the Directive is underway but no change on the limits is proposed.[22] Therefore, further amendments to the Ecolabel thresholds will go beyond the values proposed within the Paints Directive. Table compares the VOC Directive's more stringent 2010 criteria with those stipulated within the EU Ecolabel Paints and Varnishes criteria (both for indoor and outdoor paints). As can be seen, the level set within the EU Ecolabel criteria ranges between 0 and 55% lower than the corresponding restrictions mandated within the VOC Directive. Feedback from the stakeholders stated that further reductions in certain product groups may be possible. The suggested reductions have been included in the final column of the table.

Table 6: Comparison between the VOC Directive emission limits, those mandated in the EU Ecolabel and stakeholder feedback on achievable levels.

Class	Description	Current levels	EU Ecolabel	% difference	Stakeholder feedback
A	**Interior matt walls and ceilings (Gloss <25@60°)**	30	15	50	10
B	**Interior glossy walls and ceilings (Gloss >25@60°)**	100	60	40	35-50
C	**Exterior walls of mineral substrate**	40	40	0	30-25
D	**Interior/exterior trim and cladding paints for wood and metal**	130	90	30.7	90-60
E	**Interior/exterior trim varnishes and woodstains, including opaque woodstains**	130	75 indoor 90 outdoor	42.3 30.7	50-90 60-90
F	**Interior and exterior minimal build woodstains**	130	75	42.3	40-55
G	**Primers**	30	15	50	10-15
H	**Binding primers**	30	15	50	10-15
I	**One-pack performance coatings**	140	100	28.6	60-100
J	**Two-pack reactive performance coatings for specific end use such as floors**	140	100	28.6	60-100
L	**Decorative effect coatings**	200	90	55	65-90

20 Directive 2004/42/CE
21 http://www.epa.gov/iaq/voc.html
22 http://ec.europa.eu/environment/air/pollutants/stationary/paints/paints_review.htm

Data gathered from dossiers of successful EU Ecolabel applications have been provided as anonymised data from the Competent Bodies and summarised in Table .

Table 7: A summary of the VOC levels of EU Ecolabelled paints and varnishes

Type	Competent body data			Criteria maximum	Difference	% difference
	Average	Standard deviation	No. of licenses			
1 Pack performance coatings	77.8	21.6	8	100	22.2	22.2
Exterior trim and cladding paints for wood and metal including undercoats	41.2	2.7	10	90	48.8	54.2
Exterior trim varnishes and wood-stains, including opaque woodstains	12.0	7.9	23	90	78.0	86.7
Interior Matt (walls/ceiling) (Gloss < 25@60 °)	2.9	3.4	60	15	12.1	80.7
Interior minimum build woodstains	42.5	14.8	6	75	32.5	43.3
Interior trim and cladding paints for wood and metal including undercoats	70.9	18.3	16	90	19.1	21.2
Interior trim varnishes and wood-stains, including opaque woodstains	46.9	23.8	35	75	28.2	37.5
Primers (indoor)	5.0	0.0	2	15	10.0	66.7

A full analysis of the list is not possible on all paint types due to a lack of data for certain paint-types. Additional information from stakeholders is requested. Where data is available, though, the average VOC content of EU Ecolabelled products is significantly lower than the Criterion threshold for the paint (except for interior glossy and primers – where only one submission has been recorded and meaningful results are not possible to derive).

Based on the evidence above, examining the stakeholder feedback, other ecolabelling schemes, analysis of dossiers from competent bodies and a desire to improve standards, Table 9 provides preliminarily proposed new EU Ecolabel limits for VOC content in paint.

Table 9: Proposed changes to the VOC levels for Ecolabelled paints

Description	EU Ecolabel (g/l)	New limits
Interior matt walls and ceilings (Gloss <25@60°)	15	10
Interior glossy walls and ceilings (Gloss >25@60°)	60	40
Exterior walls of mineral substrate	40	25
Interior/exterior trim and cladding paints for wood	90	80

and metal		
Interior/exterior trim varnishes and woodstains, including opaque woodstains	75 indoor 90 outdoor	65
Interior and exterior minimal build woodstains	75	75
Primers	15	10
Binding primers	15	10
One-pack performance coatings	100	80
Two-pack reactive performance coatings for specific end use such as floors	100	80
Decorative effect coatings	90	80

Stakeholders request that the calculation for the VOC limits should apply to paint in a 'ready-to-use' state rather than 'in can'. This will prevent the addition of extra solvent to the paint prior to use, which could have adverse effect on the user. Recommended wording has been added to the new criterion.

The decline in use of VOCs has led to an increase in the use of Semi Volatile Organic Compounds (SVOC's). SVOCs, found in adhesives for floors and wall covering materials. To a certain extent, the restrictions on SVOCs have been covered by VAH's and phthalates. Both the Austrian Ecolabel[23] and the German Blau Engel (Blue Angel)[24]specifically limit their use in paints, so inclusion in the EU Ecolabel will harmonise criteria.

Construction and building products are a major source of SVOCs and the Construction Products Directive[25] has an optional criterion[26] that SVOCs need to be avoided within the sector[27]. The major issue is that SVOC's can redistribute themselves from one surface, such as paints, onto other surfaces, from which they can be inhaled and ingested.[28]

It is recommended that an additional clause is added to this criterion based on values provided by alternative Ecolabels. Input from stakeholders is sought as to the level of restriction. Feedback on the inclusion or range for SVOC was not provided by stakeholders. It is suggested that the Austrian Ecolabel threshold of 3% (30 g/l) is used.

In the recently adopted prCEN/TS 16516:2013 Construction products — Assessment of release of dangerous substances — Determination of emissions into indoor air harmonised testing methods are given. Its publication as CEN technical specification is planned for July 2013 the definition and testing methods for VOCs and SVOCs are included. Currently further works on the EN standard for indoor air emissions are conducted.

The compounds: 2 butoxyethyl acetate, diethylene glycol methyl ether, ethylene glycol, triethylene glycol are prohibited from Austrian Ecolabel - Paints, Varnishes and wood sealant lacquers UZ01

[23] Austrian Ecolabel UZ01 (2010)
[24] Blau Engel RAL UZ 12a
[25] Construction products directive 89/106/EEC
[26] European Collaborative Action. Urban air, indoor environment and human exposure. Report No 27; Harmonisation framework for indoor material labelling schemes in the EU (2010)
[27] CEN/TC 351 Construction products: Assessment of the release of dangerous substances.
[28] EnVIE; Coordination Action on Indoor air Quality and Health Effects

(2010) and diethylene glycol methyl ether, ethylene glycol, triethylene glycol are prohibited under the Austrian Ecolabel - Wall paints UZ17 (2010). The hazardous nature of these compounds means that they are explicitly prohibited from use under the new hazardous substances criteria set out in Section 4.2.10. As a result, additional criterion is not needed.

A further threshold was suggested for anti-corrosion paints.

Volatile Organic Compounds (VOC) shall not exceed:

Description	VOC limits (g/l includingwater)
Indoor matt walls and ceilings (Gloss <25@60°)	**10**
Indoor glossy walls and ceilings (Gloss >25@60°)	**40**
Outdoor walls of mineral substrate	**25**
Indoor/Outdoor trim and cladding paints for wood and metal	**80**
Indoor trim varnishes and woodstains, including opaque woodstains	**65**
Outdoor trim varnishes and woodstains, including opaque woodstains	**75**
Indoor and Outdoor minimal build woodstains	**50**
Primers	**10**
Binding primers	**10**
One-pack performance coatings	**80**
Two-pack reactive performance coatings for specific end use such as floors	**80**
Decorative effect coatings	**80**
Anti-corrosion paints	**80**

In this context 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. The subcategories for paints and varnishes of the Directive are used for defining VOC limits. **These values shall be measured at the point of application and must include any additional solvent added to the paint prior to application.**

The total Semi Volatile Organic Compound (SVOC) shall be limited to 30 g/l including water. SVOC are defined as organic substances or mixtures with a boiling range between 250 and 400°C.

Assessment and verification: The applicant shall provide a declaration of compliance with this criterion. For all products the applicant shall indicate the VOC and SVOC content.

Feedback from AHWG2 and EUEB meeting

VOCs

Following the feedback received the proposed VOC limits for primers and binding primers were considered too tight. The value of 15 g/l was asked, also for indoor matt walls and ceilings. On the other hand, one CB asked to reduce the limit for matt interior paints to 5 g/l.

SVOCs

Some stakeholders emphasized that it is quite difficult to measure SVOCs and there is no agreed test protocol on how to measure them at EU-level or harmonised limit-values, and that it will be difficult to obtain information from suppliers, as there is no legal obligation to give information regarding these substances. A list of SVOCs was considered to be supportive in the verification process. It was also mentioned that a harmonized test method is under development - inquiry draft CEN/TC 139/WG 11, and an established and harmonized method should be the frame for a criteria for indoor air quality. It was decided that in this criteria revision the indoor air quality criterion will not be included.

Further, it was indicated that the limit of 30g/l for outdoor and tinting systems is very difficult to achieve. "The proposed limit shall be extended for outdoor and tinting systems to 40g/l. For indoor white paints the limit of 30g/l was considered appropriate, while for indoor tinting systems 40g/l was considered to be a minimum (i.e. the shades produced from tinting bases shall have a maximum 40g/l for each tinting base. It was proposed that the producer shall declare the shade with the estimated max SVOCs). It was explained that "t*inting systems, especially those used to tint both water and solvent based paints can contain SVOC as compatibilizers and SVOC as humectants (to avoid colorant to be dried in machine nozzles). Outdoor paints especially those based on Styrene Acrylic binders (the biggest market share in Europe) need enough coalescence agents (SVOC) in order to be applied in case of high humidity and low temperature(adverse conditions)*". It was emphasized that it is very difficult to reduce SVOCs from tinting colorants, especially in Southern Europe. One stakeholder proposed to increase the general limit to 60g/l.

Follow up after the EUEB meeting from March 2013

VOCs

- Regarding the limit values

Further discussion regarding the proposed VOC limits for primers and binding primers were conducted. Several MS stakeholders suggested coming back to the previously proposed values of 10 g/l in order to ensure that, after the removal of the criterion on indoor air quality, low VOCs emissions from the ecolabelled paints. On the other hand, industrial stakeholders asked not to lower the limit of 15 g/l. They explained that for indoor matt walls and ceilings, primers and binding primers lower values can be achieved more easily in some countries (e.g. Nordic countries, with colder climate, i.e. lower temperatures) than in other (i.e. Southern countries with wormer climate). It was pointed out that enough VOC is needed with respect to the open-

time of the paint[29]. One stakeholder proposed to set stricter values for nearly all paint types as follows:

Description	**VOC limits (g/l including water)**
Interior matt walls and ceilings (Gloss <25@60°)	10
Interior glossy walls and ceilings (Gloss >25@60°)	40
Exterior walls of mineral substrate	25
Interior/Exterior trim and cladding paints for wood and metal	80
Interior trim varnishes and woodstains, including opaque woodstains	50
Exterior trim varnishes and woodstains, including opaque woodstains	60
Interior and Exterior minimal build woodstains	45
Primers	10
Binding primers	10
One-pack performance coatings	60
Two-pack reactive performance coatings for specific end use such as floors	60
Decorative effect coatings	65
Anti-rust paints	80

Some industry stakeholders indicated that the VOCs limits are too low for "Interior/exterior trim and cladding paints for wood and metal". They explained that "p*aint of this type needs the enough VOC with respect to the open-time of the paint. If adjusted further, it will be risked that the customers switch to white spirit-based paints instead, which would be a worse alternative*".

In the revised criteria the previously proposed values have been kept with the exception of VOC limits for interior wall and ceiling paints, primers and binding primers, for which a compromise threshold of 12 g/l is proposed. Nevertheless technical rationale substantiating the previously mentioned higher threshold, regarding the technical need of higher VOCs content for the products used in southern countries (and explanation regarding the impact of lowering this to 12 g/l) are still welcome for the final discussion.

Furthermore, a clarification was asked which limit value will apply to paints for both, indoor and outdoor use. For both application products stricter limit values should be used.

Additional feedback with technical rationale regarding the limit values was requested and, if possible, will be presented in EUEB meeting in June.

It was further proposed that beside the theoretical calculation, the option to provide a test report using the method ISO 11890 (as defined in Directive 2004/42/EC) shall be allowed. Some stakeholders asked to substitute completely the self declaration by testing. As the technical specification for Construction products - Assessment of release of dangerous substances - Determination of emissions into indoor air shall be adapted in July 2013, feedback is asked whether the Determination of VOCs and SVOCs in test chamber air, as indicated in this

[29] In accordance with the feedback received "open time is defined as the time available where the paint can be worked into a previously painted area. Open time is a key performance property for coatings, particularly for brush applications".

specification shall be required or whether alternative verification shall be accepted. Nevetheless, for the current criteria version, both the calculation and the testing results shall be accepted.

SVOCs

- Regarding the definition

Different opinions were expressed regarding the definition of SVOCs. Some stakeholders supported the current definition, while others suggested to refer to the definition proposed in prCEN/TS 16516:2013 Construction products — Assessment of release of dangerous substances — Determination of emissions into indoor air. This draft of the harmonised testing methods has been adopted in September 2012. Its publication as CEN technical specification is planned for July 2013. Later the harmonised testing method will be published as EN standard, but this is not expected before 2015. The definition of SVOCs given in the prCEN/TS 16516 is as follows: "SVOCs are all organic compounds which, in a capillary column as specified in 8.2.2[30], are eluting with a retention range between n-hexadecane (excluded) and n-docosane (included)". It is proposed to use this definition in the revised draft.

In the feedback received, it was also mentioned that it would be helpful to list the SVOC substances, though it was recognised as a difficult task to establish an exhaustive list. Possibility of establishing such a list will be consulted with stakeholders, and if feasible, included in the user manual.

- Regarding the limit values for SVOCs

Some stakeholders pointed out that it is difficult to assess the stringency of these limits, as information about SVOCs is not easily available. It was suggested to increase the threshold limits to 50 g/l for indoor paints and 60 g/t for outdoor paints, and paints with tinting systems. The need to have SVOCs in is also, as above, linked to assurance of the appropriate open-time. Other opinions were also received, where stringent values of 10g/l for Interior matt paints were recommended, due to the link to indoor air quality. It was also proposed to keep for SVOCs the same limit values as for the VOCs as these are also used as solvent/coalescing agents.

The Blue Angel Scheme[31] defines VOCs are all TVOCs (Total Volatile Organic Compounds) and SVOCs according to DIN ISO 16000-6, i.e. the total of organic compounds within the retention range C6 – C16 and > C16 – C22. In accordance with the previsions of this scheme, if SVOC are present in the product, the VOCs (i.e. SVOC and TVOC content) shall not exceed the limit value for VOC with boiling point up to 200°C. Very low SVOC limit values are also set.

Due to much diversified opinions regarding the SVOCs limits and the differences how to deal with the situation when both VOCs and SVOCs (as defined in the criterion) are used, further stakeholders feedback in necessary. The project team further investigates this issue and will present the results, as far as possible during the EUEB meeting. Thus, the stakeholders are invited to provide their feedback and proposals with technical rationale substantiating these

[30] Of FprCEN/TS 16516 (this technical specification will be adopted in July 2013).
[31] For more information see: http://www.blauer-engel.de/en/products_brands/search_products/produkttyp.php?id=569.

proposals. So far, as no additional information, beside those mentioned above have been received, the formulation regarding the total sum of VOC and SVOC is left open.

Limits for SVOC for various types for paints were proposed for discussion with stakeholders as well.

The following formulation of the criterion is proposed in the revised criteria version:

Criterion 4. Volatile and Semi-volatile Organic Compounds (VOCs, SVOCs)

The maximum content of Volatile Organic Compounds (VOCs) and Semi-Volatile Organic Compounds (SVOCs) shall not exceed the limits given in Table 3[32].

The maximum total combined content of SVOC and VOC shall not exceed the sum limit values in table 3 [DISCUSSION POINT].

These values both for VOCs and SVOCs shall be calculated at the point of application and must include any additional solvent added to the paint prior to application or shall be measured as defined in Directive 2004/42/EC using the method given in ISO 11890 or CEN/TS 16516. In case of products used indoors and outdoors the strictest limit value for indoor paints shall prevail.

Table 3. VOC and SVOC limits and sum total limits (*column to be added*)

Description	**VOC limits (g/l including water)**	**SVOC limits (g/l including water)**
Interior matt walls and ceilings (Gloss <25@60°)	12	30 [1]/ 40 [2]
Interior glossy walls and ceilings (Gloss >25@60°)	40	30 [1]/40 [2]
Exterior walls of mineral substrate	25	40
Interior/Exterior trim and cladding paints for wood and metal	80	50 [1]/60 [2]
Interior trim varnishes and woodstains, including opaque woodstains	65	30
Exterior trim varnishes and woodstains, including opaque woodstains	75	60
Interior and Exterior minimal build woodstains	50	30 [1]/40 [2]
Primers	12	30 [1]/40 [2]
Binding primers	12	30 [1]/40 [2]
One-pack performance coatings	80	50 [1]/60 [2]
Two-pack reactive performance coatings for specific end use such as floors	80	50 [1]/60 [2]
Decorative effect coatings	80	50 [1]/60 [2]
Anti-rust paints	80	60

Notes:
[1] Indoor white paints and varnishes
[2] Indoor tinted paints / outdoor paints and varnishes

Assessment and verification: The applicant shall provide a declaration of compliance with this criterion and, if applicable, the test report of the measurements using the method given in ISO

[32] INumbering in accordance with the order of the criteria document.

11890 or CEN/TS 16516. For all products the applicant shall indicate the content of VOC and SVOC in the product.

Follow-up after the EUEB meeting of June 2013

Stakeholder feedback

Distinct feedback was received in relation to VOC's and SVOC's, with concerns relating to VOC's mainly relating to the limit values and those relating to SVOC relating to the complexity of introducing this sub-criteria and the test method to be used:

VOC sub-criteria:

Views on lower limit values for interior matt wall and ceiling paints, primers and binding primers was split and contradicting in their technical evidence.

On one hand it was stated that there is no technical justification in Southern Europe for VOC levels higher than 5-10 g/l. Several technologies are available to achieve less than 5-10 g/l and are used on largest industrial scale. Furthermore the market in some countries, e.g. France, will expect lower levels in order to maintain the reputation of the Ecolabel.

An intermediate comments suggested that a total (VOC + SVOC) of 15 to 20 g/l would be more than sufficient for Interior matt paints. A related comment was that there is no technical justification to allow higher SVOC values than these VOC limits.

In contrast to these comments, it was stated that a proposed VOC limit of 12 (matt walls/ceilings, primers, binding primers) would be too strict for southern Europe. It was also claimed that there is no argument for implementing the change from 15 to 12 g/L VOC for Interior matt walls and ceilings (Gloss <25@60°C), Primers and Binding primers. The small environmental gain cannot be compared to the high cost burden.

A number of comments suggested and requested clarification that self-declaration by calculation would still be possible for VOC's and SVOC's.

SVOC sub-criteria:

It was noted by many stakeholders that the method proposed for verification of SVOC (CEN/TS 16516) is not applicable for in can measurements.

Many comments related to the definition and marker compounds for the SVOC definition. With an SVOC definition of n-hexadecane to n-docosane a number of important substances used in low VOC paints (e.g. texanol) would not be addressed because there is a gap in the VOC and SVOC definitions between 250°c and 287°C

According to Directive 2004/42/EC, VOC means any organic compounds having an initial boiling point less than or equal to 250 °C/ 101,3 kPa. As a result SVOC's should be defined as having a boiling point > 250°C (> C14 Tetradecan).

Many comments highlighted that SVOC compounds are complicated to identify, a list of the substance groups that are targeted would therefore help, as in the Blue Angel and AgBB (Germany).

In relation to the proposed limit values there were split views and contradicting technical viewpoints. On one hand it was felt that limit values of 50 g/L for interior paints and 60 g/L for exterior paints should give paint manufacturers a chance to map their SVOCs and work with suppliers. On the other hand it was felt that the SVOC Limits are very, very high compared with, for example, the Blue Angel (UZ12a: 0,1 – 0,3% depending on solid content), noting that these are for very low VOC paints.

A number of technical points were made in relation to SVOC content. It was stated that SVOC emissions do not increase in function of reductions in VOC emissions. They can include a range of substances selected for different functional reasons. Both the VOC and SVOC limits should ensure sufficient open-time for the paint in order to get a good end result.

Many comments were received in relation to the test method for SVOC's, including a position paper from industry. An analytical method is required for SVOC's. Some stakeholders noted that the ISO 11890 method is not used for SVOC evaluation. At the moment there is no standardised method to measure SVOC content. It was, however, proposed to extend the use of ISO 11890 with retention times for SVOC's in the range of >C14 to C22 (based on the definition in CEN 16516).

In relation to combined VOC/SVOC limits in general these were not supported and should have been proposed earlier in the revision process.

A number of comments suggested and requested clarification that self-declaration by calculation should be possible for SVOC's, although this was contradicted by many comments about the potential complexity of doing this. A number of stakeholders felt that a test method for SVOC's would be preferable because of difficulties obtaining information from manufacturers and in defining boiling points for substances e.g. mineral oils.

VOC content sub-criterion

Matt interior ceiling and wall, primer and binding primer VOC content

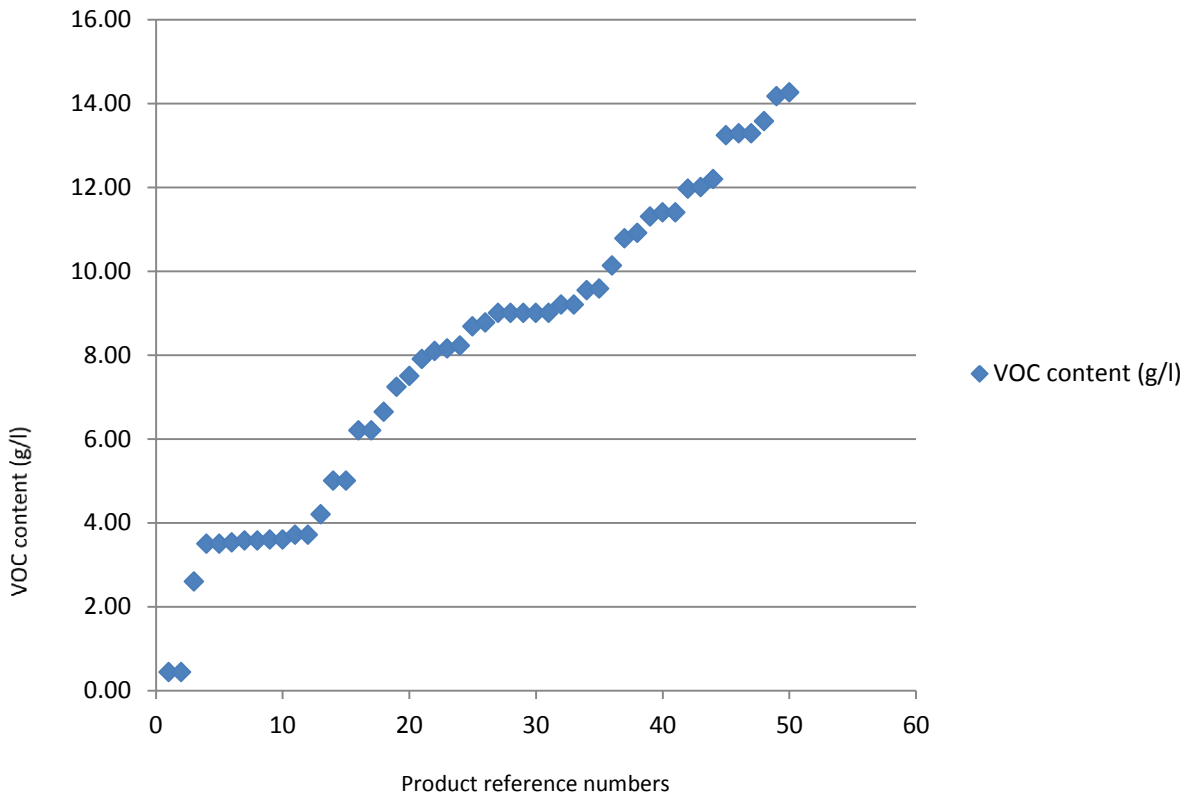
The position that there is no technical justification for VOC levels 5-10g/l in southern has been repeatedly stated by large manufacturers with substantial experience of low VOC paint reformulation. The feedback from some other industry stakeholders is, however, contradictory on this issue with claims that in order to ensure an adequate open time for the paint VOC's are still required.

Sample product data from two Southern European Competent Bodies was requested in order to try and clarify the position. Data on the VOC content of interior matt and ceiling paint (Gloss <25@60°) for ecolabelled products used in the South of Europe was collected from two Competent Bodies with a significant number of licenseholders. This indicated that for the 50 products licenced more than 70% of the licenced products investigated had a VOC content of less than 10 g/l including water.

With regards to the technical justification of moving from 15g/l to 10g/l the VOC content of paint was highlighted by the preliminary technical analysis as being a key environmental hot spot. An improvement is justified because the majority of licenseholders fall within the three relevant sub-categories and these are understood to represent a substantial proportion of EU

paint sales. Given, however, that this is the lowest VOC sub-category the gain should be maximised to achieve the greatest cumulative benefit in the market.

Figure 1. VOC content of 50 selected Ecolabelled interior matt wall/ceiling paint products (gloss <25@60°)



Low VOC paint and open time

Evidence was submitted in relation to the issue of open time. Open time is the period of time during which it is possible to rework an area already painted. The elimination of glycols in order to reduce VOC content can reduce open time. Those paints identified as being particularly important to ensure that they retain a good open time are:

- Outdoor masony paints,
- Hard interior coatings that are water and chemical resistant,
- Trim paints
- Decorative paints giving special effects.

It was claimed that a move from 15 g/l to 10 g/l VOC content the reduction in open time could be between 30% and 50%. It is understood that open time extenders can now be used as additives in low VOC paints. Some studies could be identified providing evidence of the improvements in open time that are possible but limited evidence is provided about the

chemical characteristics of the extenders used [33]. It is understood that perfluorinated surfactants are amongst the extenders that may be used. Conflicting evidence was received from manufacturers as to whether low VOC reformulations can retain sufficient opening times in Southern Europe. However, larger manufacturers within the stakeholder group claimed that there is no technical barrier in the South of Europe.

Labelling and communicating low VOC content

The performance of and communication of the Ecolabel in countries where low VOC content is now a market expectation (such as in France, Germany and the UK) is considered to be important, but it is equally the case that the Ecolabel must be applicable and relevant in other less mature markets for low VOC paint. It is therefore proposed that a low VOC content claim can be made by manufacturers alongside the label.

Text is proposed in Box 2 alongside the label which would allow for the communication of reduced (compliance with the criteria) and low (compliance with the lowest VOC level in the criteria) VOC levels. Different possible benchmarks and points of reference were considered. The French system has a threshold of 3g/l for low VOC paint. A voluntary industry scheme that is widely used (initiated by the home improvement retailer B&Q in the UK) has <80 g/l as a threshold for 'low' and <3 g/l for 'minimal'. ISO 11890-2 and ISO 17895, which is intended for 'low' VOC levels, have a cut off at 1.0 g/l.

Given concerns raised by manufacturers about the reduced open time of low VOC paints it is possible that a fitness for use requirement could be set for paints that claim to be 'low VOC'. There is now an ASTM (US) standard D7488-11 for the open time of latex paints which could be specified. However, limited data could be found in literature which could form the basis for benchmarks. This is therefore proposed for further investigation at the time of the next revision.

Assessment and verification

Given that this criteria has been in place through several revisions and experience has been buit up it is proposed to retain calculation as an option. However, in line with the proposed introduction of analytical testing for SVOC's it is also proposed to recognise/accept test results obtained according to the two relevant ISO standards 11890-2 and 17895.

SVOC content sub-criterion

Concerns have been raised throughout the revision process as to the complexity of introducing this sub-criteria and the limited industry experience. The SVOC proposal would be new to the Ecolabel and industry stakeholders without experience of the Blue Angel in Germany. There is very limited coverage of SVOC's by other labelling schemes and those that do (e.g. Blue Angel) are very complex to operate (e.g. Blue Angel has a panel of experts to oversee the criteria and test method). In order to keep the proposal as simple as possible a quantitative approach is

[33] McCreight.K.W, Rebecca Stockl. R, Testa.C and K.S.Seo, *Development of low VOC additives to extend the wet edge and open time of aqueous coatings*, Progress in Organic Coatings, Volume 72, Issues 1ww, SeptemberIssues 1www.sciencedirect.co

proposed. It is proposed that this position be reviewed once more experience has been gained by licenseholders and Competent Bodies.

Definition of SVOC's

The reference temperature range has been harmonised with Directive 2004/42/EC with 250°C as the boundary between VOC and SVOC. The marker compounds have then been specified as those organic compounds which, in a capillary column, elute with a retention range from Pentadecane($C_{15}H_{32}$) for non-polar systems and Diethyl adipate ($C_{10}H_{18}O_4$) in polar systems. The consensus from stakeholder feedback and the new CEN standard 16516 is that upper limit for the retention range for SVOC's should be n-Docosan ($C_{22}H_{46}$) in non-polar systems and methylpalmitate ($C_{17}H_{34}O_2$) in polar systems.

Setting the limit values

The limit values have been formulated by reference to the upper and mid-range values submitted by stakeholder manufacturers. These related to specific types/groups of paints and have been used to set two broad bands of performance of 30-40g/l and 50-60g/l.

Contradictory evidence was received about the workability of different limit values and the relationship between VOC and SVOC levels. The Blue Angel values are for very low VOC paint and there are now reference values for mid-low VOC content paint.

Contradictory evidence was received from industry on this issue. However, in the light of the functional issues highlighted in the evidence received (e.g. the need to maintain an adequate open time, the need to use different binders, the need for humectants in Southern Europe to ensure paint does not block spray nozzles) a conservative proposal has been formulated. It is recommened that the issue is revisited at the time of the next revision, upon which time more data should be available from licenses.

Specifying the test method

Calculation of SVOC content would not be applicable because of the complexity of identifying SVOC compounds within the paint formulation. It is understood that information available from raw material suppliers may not be of sufficient detail for this to be workable. A test method is therefore proposed in accordance with the potential difficulties raised.

An approach based on the use of Gas Chromatography and ISO 11890-2 was the consensus from industry stakeholders. It is understood from industry stakeholders, including a major testing body, that this would be suitable for use in the interim as the verification method.

It is therefore proposed that ISO 11890-2 is used as the basis for verification. This will allow for experience to be gained with its application to SVOC's. A stakeholder highlighted the need for some additional guidance on modifications to the methodology in ISO 11890-2. This included, indicatively:

- Analytical details (expansion of the time for the VOC scan in the chromatogram),
- Specification of how to quantify unidentified VOCs and SVOCs,
- Lowering of the detection limit.

It is proposed that this guidance is developed further for inclusion in the User Manual. The status of any standardisation initiatives shall be reviewed at the time of the next revision.

Concerns relating to the costs of tests

Stakeholders raised concerns about the possible cost of SVOC testing. This was quoted as being in the range of 800-1000 Euro. An indicative quote was obtained from a major EU testing organisation. This suggested a range of 150-250 Euro for a combined VOC and SVOC test according to ISO 11890-2. This suggests that the higher costs quoted by stakeholders may have related to tests in which individual SVOC's are identified, for example as specified by the Blue Angel or the German AgBB system.

Summary rationale for the final criteria proposal

VOC content was identified as an environmental hot spot in the preliminary LCA study. The proposal updates the VOC content limits based on a review of data from licenseholders and in general seeks to set content values that improve upon the 2010 requirements under the Paints Directive by between 43% and 67%.

The lowest content levels are set for matt interior wall and ceiling paints, with a further reduction from 15 to 10g/l proposed, supported by the consensus of feedback from manufacturers and data from existing licenseholders. Moreover, this product has the most licenses and are one of the most significant paint products in the marketplace.

In recognition of the technical potential to reduce VOC content still further and the use by some manufacturers of private labels indicating low VOC formulations on packaging it is proposed that the text next to the ecolabel be used to differentiate 'reduced VOC' products from 'low VOC' products.

Binders were also identified as an environmental hot spot from LCA evidence. The proposed introduction of a sub-criteria addressing Semi-Volatile Organic Compounds (SVOC's) will in part address binder content. The criteria is based on initially conservative content values and a simplified approach to verification based on the use of ISO 11880-2 as the test method. It is envisaged that this will require licenseholders to become familiar with measuring SVOC content. Moreover, SVOC's are increasingly being addressed as an indoor air quality issue. This criteria seeks to address the issue at source.

Based on the feedback received during and after the EU Ecolabelling meeting from June 2013 the following revised final criteria is proposed:

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

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 must 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' next to the Ecolabel. Those with a VOC content of less than 8.0 g/l may display the text 'low VOC content' next to the Ecolabel.

Table 3. VOC and SVOC content limits

Product description (with subcategory denotation according to Directive 2004/CE/42)	**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
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	50 [1] /60 [2]
l. Decorative effect coatings	80	50 [1] /60 [2]
Anti-rust paints	80	60

[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 1.0g/l, the methods given in ISO 17895. The SVOC content shall be determined using the method given in ISO 11890-2. The markers given in Table 4 shall be used as the basis for delimiting the Gas Chromatography results for SVOC's. In the case of products used both indoors and outdoors the strictest SVOC limit value for indoor paints shall prevail.

Table 4. Marker compounds to be used in the determination of SVOC content

	Polar systems (water-borne coating products)	**Non-polar systems (solvent-borne coating products)**
SVOC	Diethyl adipate ($C_{10}H_{18}O_4$) to methylpalmitate ($C_{17}H_{34}O_2$)	n-Pentadecane($C_{15}H_{32}$) to n-Docosan ($C_{22}H_{46}$)

Assessment and verification: *the applicant shall provide for the VOC content 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 a test report using the method given in ISO 11890-2. The test should be carried out with reference to the markers specified in Table 4.

4.2.2 Indoor air quality – CRITERIA WITHDRAWN

Studies in the 1980's in the USA[34] showed that the contamination of indoor air by 12 of the most commonly encountered organic pollutants (VOCs) was between 2 and 5 times that found in outside air irrespective of whether it was in a rural or industrial environment. Limiting emissions to air will reduce health impacts from exposure to VOCs.

The background report described the desire as well as the trend toward Indoor Air Quality (IAQ) testing. Although this is a nascent subject, requirements in Germany and, in particular, France are suitable for inclusion into the EU Ecolabel. In general, there is support for the use of IAQ to determine the emissions of VOC from paint. However, stakeholders are concerned over the cost as well as the fact that an international test has yet to be agreed. These concerns are real and have been taken into account. The trend towards IAQ testing cannot be ignored through the EU Ecolabel, therefore the following criterion is proposed (based upon the French criterion).

Indoor Air Quality

Each indoor paint shall undergo testing for indoor air quality and meet Class A+ as defined within French Decree NOR: DEVL1104875A. This requirement is restricted to the lightest colour paint within a series or, in tinting systems, the base paint.

Assessment and verification: The applicant shall provide test rsults using the methodology described within NOR: DEVL1104875A.

Feedback from AHWG2 and EUEB meeting

In general, the majority of stakeholders did not support setting this criterion in this revision process. Several stakeholders mentioned the lack of harmonised standard and high costs for testing as arguments against including this criterion. Stakeholders did not find it appropriate to use the French Decree (which is based on ISO 16000 series[35]).

We suggest you add this information in the technical report. any national scheme and emphasized that currently, the standard EN 16402 Paint and varnishes — Assessment of emissions of regulated dangerous substances from coatings into indoor air — Sampling, conditioning and testing is being developed and it seems appropriate to postpone setting such a criterion till this standard is available and can be used by applicants from all Member States. It was also additionally indicated that there are already strict requirements on VOCs emissions.

After the analysis of all comments received it is proposed not to set a criterion on indoor air emission in this revision process, but to propose it for consideration in the future revision, when harmonised for the EU-27 test methods are available and there is more experience with testing of these emissions.

[34] EPA's Office of Research and Development's "Total Exposure Assessment Methodology (TEAM) Study" (Volumes I through IV, completed in 1985

[35] This standard series is already used in the criteria document for wooden floor covering.

Follow up after the EUEB meeting from March 2013

A few Competent Bodies expressed in their feedback disappointment regarding the removal of the criterion on indoor air quality. They explained that respective criterion is very important for this product group: "*This criterion would be a true added value as it will respond to the concerns of consumers and public purchasers, especially for public authorities in charge of children. The criterion on VOC content in cans is not sufficient to ensure that paints have good performance with regards to indoor air quality*".

Furthermore, regarding the question raised by the manufacturers on the relevance of these tests for paints, the CB pointed out that "*the French Ministry of Environment, especially the service responsible for the implementation of the sanitary labelling, has not received any complaint from manufacturers for the time being. The decree is already applicable to new formulations of paints placed on the French market since January 2012, and will be applicable to all paints in 2013*". Although it was confirmed that some problem of reproducibility were observed and efforts are being made by the paint manufacturers to try solve this problem. It was further explained that the manufacturers "*elaborated in collaboration with the French Ministry of Environment a new protocol for the preparation of samples to test the paints*[36]. *It should ensure a better reproducibility of the emission tests. This protocol will be used by the control authorities in France from the 1st September 2013*".

It was also explained that the "*costs linked to the use of the French emission standard will be around 1500 euro per sample. A macro-economic study carried out by the Ministry of Environment shows that the cost should decrease because of the commercial competition between laboratories. As an example, the cost linked to LCA has been divided by 10 in 10 years*".

Although this criterion will not be included in the revised criteria version this time, in the statement accompanying the next criteria revision a recommendation to re-consider its inclusion in the future shall be made, as this issue is considered of relevance for this specific product group. Till then, harmonised at the EU 27 level testing methods are expected to be available.

Follow-up after EUEB meeting from June 2013

In general stakeholders expressed the same views as previously described.

4.2.3 Metals

In large quantities, certain metals are considered carcinogenic and hazardous to human health[37]. Although present in the environment, and necessary for human health in small amounts, any large concentration can cause acute or chronic toxicity[38]. As they are elements, they cannot be broken down and therefore will persist in the environment[39]. When absorbed by humans, they have been

[36] *This protocol is now approved and is available on the following web site: http://www.developpement-durable.gouv.fr/Chapitre-I-Mode-d-emploi-de-l.html.*

37 http://www.apis.ac.uk/overview/pollutants/overview_HM.htm

38 http://www.lef.org/protocols/prtcl-156.shtml

39 http://www.apis.ac.uk/overview/pollutants/overview_HM.htm

shown to have detrimental effects on kidney function, reproductive organs and the nervous system, particularly in unborn infants and young children.

It is unclear from the current wording if the amount of allowable trace concentrations of these compounds is the sum of all eight or applies to each individual one. Information provided from minutes of the previous revision of the EU Ecolabel criteria suggest that the intention was that the 0.01% (m/m) threshold was per metal. Also, clearer wording was suggested and agreed for the derogations surrounding cobalt by the CB working group.

Appropriate wording has been provided to clarify that this criterion is focused on a per metal basis and the agreed wording change has been made.

A further reduction in trace quantities of metal appear to be impractical at this stage.

Through stakeholder engagement, the clause that permits the use of barium sulphate has been questioned. Several other insoluble barium compounds may be present within certain mineral fillers and the inclusion of barium sulphate over these barium containing compounds appears to be arbitrary. Similarly, some have requested antimony in insoluble TiO_2 lattices to be exempt from this criterion on the basis that they are essentially non-toxic. Further submissions on this topic were not provided by stakeholders and therefore an amendment will not be made. It is recommended that this subject is re-visited at the next criteria revision.

Concerns have been raised that the current verification and assessment methods - SDS analysis and supplier declarations - are inappropriate to determine the metal content of the paints. A shift in the assessment has been proposed from analysis of the ingredients to analysis of the amount of metal available for release to the environment in the final product. A recently developed test protocol: EN 71-3, which examines the metal content in toys, could be an alternative. There was some support for the use of this test, however, several stakeholders questioned its applicability to the Ecolabel. One concern was that each tinting system may need a separate test which would be prohibitively expensive. There are also concerns that, being designed for toys, the test is not fit for purpose. In conclusion, there does not appear to be consensus over the use of an alternative testing regimen for determining the amount of metal in the paint.

The derogation for cobalt siccatives within this criterion overlaps with that presented within Section 4.2.10, Hazardous Substances. Phrasing has been suggested within this criterion and an appropriate derogation has been suggested within the Hazardous Substances criterion. Stakeholders have not provided any derogation requests for cobalt pigments. If there is a need for the use of cobalt pigments, derogation under the Hazardous Substances criteria will be needed. However, if alternatives are widely available, the need for derogation should be reconsidered.

The following metals or their compounds shall not be used as an ingredient of the product or tint (if applicable) (whether as a substance or as part of any preparation used): cadmium, lead, chromium VI, mercury, arsenic, barium (excluding barium sulphate), selenium, antimony **and cobalt**.

It is accepted that ingredients may contain traces of these metals up to **0.01** deriving from impurities in the raw materials **and can be present at these quantities for each metal for each ingredient.**

Derogations for substances containing cobalt are described under the Hazardous Substances criterion.

Assessment and verification: The applicant shall provide a declaration of compliance with this criterion as well as declarations from ingredient suppliers (where applicable).

Feedback from AHWG2 and EUEB meeting

Following the feedback received, cobalt pigments and cobalt shall be exempted from this criterion. It was emphasized that cobalt pigments are very important for outdoor paints (due to colour durability) and has no performing alternative available. "C*obalt pigments are needed to achieve alkaline stability properties. They belong to the spinel type group of minerals which means the cobalt is tightly bound within the crystal lattice. It is practically insoluble, chemically inert and not classified as hazardous for health or the environment under current EU legislation*".

Furthermore, it was proposed to consider extension of the exemption made for barium sulphate to other inert metalcomplexes (trapped in natural minerals), if corresponding documentation can be submitted.

A derogation for "pigments that contains antimony integrated in TiO2 rutile lattice, documentation shall be submitted proving that the molecular structure are inert and that the environmental and health effects from the pigment are on the same level as, or better that, the results for C.I Pigment Brown 24 (CAS mo 68186-90-3) and C.I Pigment Yellow 53 (CAS no 8007-18-9) in the report UNEF Publications, OECD SIDS Initial Assessment Profile"[40] have been submitted. It will be referred to in the hazardous criterium but is proposed to be kept also in the below formulation, until the final criteria version is set.

The following formulation is proposed in the revised criteria version:

Criterion 5. Metals

The following heavy metals or their compounds shall not be used as an ingredient of the product or tint (if applicable) (whether as a substance or as part of any preparation used): cadmium, lead, chromium VI, mercury, arsenic, barium (excluding barium sulphate), selenium, antimony and cobalt (cobalt driers).

Cobalt pigments and cobalt used as siccative in alkyd paints are exempted from this requirement.

For pigments that contain antimony integrated in TiO2 rutile lattice, documentation shall be submitted proving that the molecular structure are inert and that the environmental and health effects from the pigment are on the same level as, or better that, the results for C.I Pigment Brown 24 (CAS mo 68186-90-3) and C.I Pigment Yellow 53 (CAS no 8007-18-9) in the report UNEF Publications, OECD SIDS Initial Assessment Profile[41].

[40] Available at: www.inchem.org.
[41] Available at: www.inchem.org.

It is accepted that raw materials (ingredients) may contain traces of these metals up to 0.01 % deriving from impurities in the raw materials and can be present at these quantities for each metal for each ingredient.

Assessment and verification: the applicant shall provide a declaration of compliance with this criterion as well as declarations from raw materials (ingredients) suppliers (where applicable).

Follow-up after the EUEB meeting and stakeholder consultation of March 2013

It was highlighted that, on the same technical basis, the criteria should encompass derogations for a number of other pigments that may contain metals within their structure. Concern was raised as to what the basis would be for a comparative environmental and health evaluation of pigments containing metals. Without clear testing parameters this comparison would need to be carried out by a third party with chemical expertise.

During the previous round of consultation (September 2012-March 2013) test results were submitted by a stakeholder for a mineral containing barium with the aim of demonstrating the insolubility of the barium content. The test method used was DIN 53770-1 *Pigments and extenders - Determination of matter soluble in hydrochloric acid - Part 1: Preparation of acid extr*acts. This could therefore be suitable with the potential to also specify testing under alkaline conditions. Hazard classifications for derogation could also be considered alongside analytical testing results.

The following pigments containing the listed metals had previously been put forward and their cases for derogation evaluated:

- Barium sulphate: This substance is not classified and test results submitted by a stakeholder demonstrate that is relatively insoluble under acid, neutral and alkaline conditions.
- Antimony nickel within an insoluble TiO_2 lattice: A concentration limit of 3% was proposed linked to a requirement for benchmarking of the health and environmental performance. The antimony chromophore (8007-18-9) is classified similarly to the pigments proposed for comparison by stakeholders, with self-classifications suggesting H411 (R51/53).
- Cobalt aluminate blue spinel: A concentration limit of 5% was proposed for cobalt aluminate blue spinel in order to cover all shades. Self-classifications suggest that it would not be formally classified, although a small number suggest a classification of H400(R50).

Cobalt chromite blue-green spinel is also understood to have been derogated by the Blue Angel and self-classifications similarly suggest that it would not be formally classified. The derogation of pigments containing metals is further discussed in relation to the hazardous substance criteria Section 4.2.10.

It was commented that for pigments containing metals concentration limits would be unnecessarily restrictive. For pigments that meet the testing requirement a simple derogation was therefore envisaged.

On this basis the following formulation is proposed for the revised May 2013 criteria text, which would be moved into the hazardous substances Appendix:

(b) Metals and their compounds *Applicability:* All products	*The following metals or their compounds shall not be used as an ingredient of the product whether as a substance or as part of any preparation used:* Cadmium, lead, chromium VI, mercury, arsenic, barium, selenium, antimony and cobalt. *The following derogations apply:* - Barium, antimony and cobalt in pigments (see restriction 5(f)) - Cobalt in driers (see restriction 2(a))	Trace impurities 0.01% cut-off	*Verification:* Declaration by the applicant and their raw material suppliers.
(f) Pigments Applicability: All products	*Pigments containing metals shall only be used where laboratory testing of the pigment shows that the metal chromophore is bonded within a crystal lattice and is insoluble.* *The following metal containing pigments are derogated for use:* - *Barium sulphate* - *Antimony nickel within an insoluble TiO_2 lattice* - *Cobalt aluminate blue spinel* - *Cobalt chromite blue-green spinel*	n/a	*Verification:* *Test results demonstrating that the pigment chromophore is bonded within a crystal lattice and is insoluble.* *Test method:* *DIN 53770-1 or equivalent*

Follow-up after the EUEB meeting of June 2013

Feedback received and the proposed response are summarised and discussed in section 4.2.10, hazardous substances.

Based on the feedback received during the consultation period and after the EU Ecolabelling meeting from June 2013 the final criteria is proposed as follows, to be listed within Appendix 1 of criteria Decision, the 'hazardous substance restriction and derogation list':

(b) Metals and their compounds *Applicability:* All products	*The following metals or their compounds shall not be present in the product or the ingredients used in the product above the specified cut-off limit:* Cadmium, lead, chromium VI, mercury, arsenic, barium, selenium, antimony and cobalt. *The following derogations apply:* - Barium, antimony and cobalt in pigments (see restriction 5(f)) - Cobalt in driers (see restriction 2(a))	0.010% cut-off per listed metal

(f) Pigments Applicability: All products	*Pigments containing the metals listed in 5b shall only be used where laboratory testing of the pigment shows that the metal chromophore is bonded within a crystal lattice and is insoluble.* *The following metal containing pigments are derogated for use:* - *Barium sulphate* - *Antimony nickel within an insoluble TiO2 lattice* - *Cobalt aluminate blue spinel* - *Cobalt chromite blue-green spinel*	n/a

4.2.4 Volatile Aromatic Hydrocarbons

VAHs have specific environmental and human health impacts including DNA damage.[42] Exposure to these products should be minimised and any way to mandate a reduction in their use encouraged. The current criterion prevents their addition, with all stakeholders reporting their approval but allows their presence from impurities. A reduction in the amount of VAH present (from impurities) from 0.1 % (w/w) to 0.01% (w/w) as mandated in the Austrian Ecolabel in the final paint was explored.

A minimum threshold rather than a complete prohibition is important because VAHs are widely used monomers in production of binders for paints, particularly styrene in vinyllic emulsions. Under normal chemical synthesis, total conversion of styrene into a polymer is impossible and trace amounts of monomer will be present in the final product. Stakeholders have suggested that a further reduction of the threshold would be too strict for most of the low and medium PVC paints and that compliant with the requirements will be technically difficult. This is particularly acute for paints that contain a large amount of binder. Some stakeholders suggested that the reduction could be achieved but concerns surround enforceability: whether suitable analytical techniques are available to verify this level is unclear, as is the likelihood that paints manufacturers can provide the necessary information.

The response from industry stakeholders in the meeting was to remain at the current limit. However, a few Member States recommended an uptake of the Austrian Ecolabel limit of 0.01% though this recommendation was not substantiated with technical information and, due to the technical reasons outlined above, is unlikely to lead to further environmental gains.

The proposed criterion on hazardous substances covers this aspect. A derogation concerning mixtures of substances that contain VAHs will be made and this criterion removed. The relevant part of the hazardous substances criterion is as follows:

[42] Environ Health Perspect. 2002 June; 110(Suppl 3): 451–488.

(Part of Hazardous Substances criterion)

USE	Chemical Composition Ingredient	CAS/ EINECS	Classification	Note
Unreacted impurity	**Volatile Aromatic Hydrocarbons**	Various	**Various**	7

Note:

7- Ingredients containing Volatile Aromatic Hydrocarbons may be added up to such a limit that the VAH content in the end product will not exceed 0,1 % (w/w). In this context volatile aromatic hydrocarbon (VAH) means any organic compound, as defined in Directive 2004/42/EC, having an initial boiling point less than or equal to 250°C measured at a standard pressure of 101,3 kPa and having at least one aromatic nucleus in its developed structural formula.

Follow-up after the EUEB meeting of June 2013

Feedback received and the proposed response are summarised and discussed in section 4.2.10, hazardous substances.

4.2.5 Alkylphenolethoxylates

APEOs are non-ionic surfactants, which have an emulsifying and dispersing effect when processing paints, and in binders, dispersion aids, thickeners, driers, anti-foam agents and pigment pastes.[43] APEOs are produced in large volumes, with uses that lead to widespread release to the aquatic environment. They are highly toxic to aquatic organisms, and in the environment degrade to more environmentally persistent compounds. These chemicals have been detected in human breast milk, blood, and urine and are associated with reproductive and developmental effects in rodents.[44]

This criterion overlaps with the new hazardous substances requirements described within Section 4.2.10 and therefore can be removed from the new EU Ecolabel criteria document.

Follow-up after the EUEB meeting and stakeholder consultation of March 2013

Comments were received that the listing of specific APEO's was too narrow and that other labels such as the Blue Angel included much more comprehensive listings of surfactants which are APEO's or their derivatives. It may therefore be possible to maintain a simple reference in the restricted substance listing to 'APEO's and their derivatives' whilst providing a longer indicative list of derivatives either in an annex of the final Decision or in the User Manual for applicants.

The verification required clarifying as it was not felt to be feasible to obtain SDS from suppliers who may not wish to disclose the formulation of their products. CAS No's and classifications were felt to be more feasible.

On this basis the following formulation is proposed for the revised May 2013 criteria text, to be integrated into the hazardous substance listing:

(b) Alkylphenolethoxylates (APEOs) *Applicability:* Surfactants in colourant and tinting bases, white finishes, dispersing agents and primers.	Alkylphenolethoxylates (APEOs) and their derivatives shall not be used in any paint or varnish preparations or formulations. *An indicative list of APEO's and their derivatives is provided in Appendix 2 to this Decision.*	n/a	*Verification:* Declaration shall be provided by the applicant and their surfactant supplier supported by CAS No's and classifications for the surfactants used.

43 Paints and how they affect the environment, Tommi Nurmi and Konsta Kanniainen, 2008
44 http://www.epa.gov/oppt/existingchemicals/pubs/actionplans/RIN2070-ZA09_NP-NPEs%20Action%20Plan_Final_2010-08-09.pdf

Follow-up after the EUEB meeting of June 2013

Feedback received and the proposed response are summarised and discussed in section 4.2.10, hazardous substances.

Based on the feedback received during the consultation period and after the EU Ecolabelling meeting from June 2013 the final criteria is proposed as follows, and is to be listed under Appendix 1 of criteria Decision, within the 'hazardous substance restriction and derogation list':

4. Surfactants			
(a) General purpose surfactants *Applicability:* Surfactants in colourant and tinting bases, white finishes, dispersing agents and primers.	*Derogated classifications:* H411 (R51/53), H412 (R52/53), H413 (R53) *The following sum total values apply to the ready to use final product:* - White and light coloured products - All other colours The derogation applies to the surfactant formulation supplied to the paint manufacturer. Specific restrictions apply to Alkylphenolethoxylates (APEOs) and Perfluorinated surfactants.	Sum total surfactants in the ready to use product: 1.0% w/w 3.0% w/w	*Verification:* Declaration shall be provided by the applicant, raw material suppliers and/or their surfactant supplier supported by CAS No's and classifications for the surfactants used.
(b) Alkylphenolethoxylates (APEOs) *Applicability:* Surfactants in colourant and tinting bases, white finishes, dispersing agents and primers.	Alkylphenolethoxylates (APEOs) and their derivatives shall not be used in any paint or varnish preparations or formulations. *An indicative list of APEO's and their derivatives is provided in Appendix 2 to this Decision.*	n/a	*Verification:* A declaration of non-use shall be provided by the applicant and their raw material suppliers supported by CAS No's and classifications for the surfactants used.

4.2.6 Isothiazolinone compounds

Isothiazolinone compounds are found in wood coatings[45] and in some paint formulations. They are a broad spectrum fungicide, algicide and bacteriostat used in solvent based coatings, surface protection products and other xylene compatible products.[46] For people susceptible to their effects, the compounds can cause irritation to the skin and mucous membranes.[47] The extent to which they have harmful effects depends greatly on the level of concentration in the product used and on the method of exposure – long-term oral exposure being particularly hazardous.[48]

45 Revision of European Ecolabel and Development of Green Public Procurement Criteria for Indoor and Outdoor Paints and Varnishes, October 2011

46 Akcros Chemicals, http://www.akcros.com/products/europeproductrange/productsbycategory/microbiocides.aspx

47 Consumer exposure to biocides - identification of relevant sources and evaluation of possible health effects, Stefan Hahn, February 2010

48 Consumer exposure to biocides - identification of relevant sources and evaluation of possible health effects, Stefan Hahn, February 2010

There was a wide consensus among stakeholders that isothiazolinone biocides are necessary both for preserving the products in the can, and for their properties as a preservative while the product is in use (particularly in outdoor use). While further reduction in the levels of these compounds is desirable, most stakeholders suggested that this was difficult and impractical due to the lack of a viable alternative.

A proposal was made to increase the coverage of this criterion to include Iodopropynyl butylcarbamate (IPBC) as an alternative preservative. It was argued that there were benefits of reduced environmental damage from its use. Further information from stakeholders was requested but was not provided. It is suggested that this issue is revisited at the next revision of the criteria.

This criterion overlaps and can be incorporated with the new hazardous substances requirements described within Section 4.2.10 through the drafting of an appropriate derogation. Several stakeholders have provided information on derogations for these materials. The following derogation is suggested for the inclusion under hazardous substances criterion:

(Part of Hazardous Substances criterion,

Note: the substances are presented as an example (non exhaustive list) s. also hazardous substances criterion)

USE	Chemical Composition Ingredient	CAS/ EINECS	Classification	Note
In can preservative	2-Methyl-2H-isothizol-3-one	2682-20-4	R 22-23-34-43-50	1
	1,2 Benzisothiazol-3(2H)-one	2634-33-5	R 22-38-41-43-50	1
	Methyl-4-isothizolin-3-one	2682-20-4	R34-37-43-50-24/25	1
	mixture of: 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H -isothiazol-3-one [EC no. 220-239-6] (3:1)	55965-84-9	R23/24/25-34-43-50-53	3
	mixture of: 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H -isothiazol-3-one [EC no. 220-239-6] (3:1)	55965-84-9	R23/24/25-34-43-50-53	3
Dry film preservative	2-Octyl-2H-isothiazol-3-one	26530-20-1	R 22, 23/24-34-43-50/53	1
	1,2-Benzisothiazolin-3-one	2634-33-5	R 22-38-41-43-50	1

Notes:

[1].The sum of the total allowable concentration of these compounds is 0.05 % (w/w) before or after tinting (if applicable).

[2].For outdoor wood coatings the total allowable concentration shall not exceed 0.2 % (w/w).

[3].The sum of the total allowable concentration of these compounds is 0.0015 % (w/w).

Follow-up after the EUEB meeting and stakeholder consultation of March 2013 and June 2013

Isothiazolinone compounds are discussed within the wider context of biocides in Section 4.2.10.

4.2.7 Perfluorinated alkyl sulfonates (PFAS)

There was a stakeholder consensus that this criterion should remain unchanged. These compounds are hazardous and therefore overlap with the new hazardous substances requirements. This criterion will be removed from the new EU Ecolabel criteria document.

Follow-up after the EUEB meeting and stakeholder consultation of March 2013

Comments were received from an industry stakeholder that the criterion should reflect the advances made by industry in this area and distinguish, based on definitions established by the OECD, between long and short chained surfactants[49]. Evidence was provided showing that while new short chain surfactants introduced by industry are still persistent they have a significantly shorter half-life for bio-elimination from organisms[50]. It was also highlighted that this form of surfactant plays an important role in paint products formulated to make surfaces easy to clean, with their hydrophobic characteristics providing the function of water, oil and stain repellency [51]. It also understood from stakeholders that they can support a reduction in the VOC content of paints.

The proposed test methods should be reviewed because concerns were raised that they may not be accurate enough to exclude other possible contaminants from the paint formulation. More accurate GC/MS/MS and LC/MS/MS methods were proposed. Testing has, however, been omitted on the basis that, in line with the principle applied to the rest of the substance restrictions in Appendix 1, compliance shall be on the basis of declarations from raw material suppliers.

The application of this restriction to only colourants and tinting bases was queried. The basis for this narrow definition should be reviewed.

On this basis the following formulation is proposed for the revised May 2013 criteria text, to be integrated into the hazardous substance listing:

[49] OECD, Portal on perfluorinated chemicals, http://www.oecd.org/ehs/pfc/

[50] Compilation of scientific papers from the following journals: Integrated Environmental Assessment Management, Toxicology, Reproductive toxicology, Environmental Science & Technology and Environmental toxicology and chemistry.

[51] *Pending test data*

(c) Perfluorinated surfactants Applicability: Colorant and tinting bases	*Long chain perfluorinated surfactants, as specified in the OECD definition below, shall not be used:* (i) Perfluorocarboxylic acids with carbon chain lengths ≥C8, including perfluorooctanoic acid (PFOA); (ii) Perfluoroalkyl sulfonates with carbon chain lengths ≥C6, including perfluorohexane sulfonic acid (PFHxS) and perfluorooctane sulfonate (PFOS); and (iii) Precursors of these substances that may be produced or present in products	n/a	*Verification:* Declaration shall be provided by the applicant, raw material suppliers and/or their surfactant supplier supported by CAS No's and classifications for the surfactants used.

Follow-up after the EUEB meeting of June 2013

Feedback received and the proposed response are summarised and discussed in section 4.2.10, hazardous substances.

Based on the feedback received during the consultation period and after the EU Ecolabelling meeting from June 2013 the final criteria is proposed as follows, and is to be listed under Appendix 1 of criteria Decision, within the 'hazardous substance restriction and derogation list':

4. Surfactants			
(c) Perfluorinated surfactants *Applicability:* Surfactants in colourant and tinting bases, white finishes, dispersing agents and primers.	*Long chain perfluorinated surfactants, as specified in the OECD definition below, shall not be used:* (i) Perfluorocarboxylic acids with carbon chain lengths ≥C8, including perfluorooctanoic acid (PFOA); (ii) Perfluoroalkyl sulfonates with carbon chain lengths ≥C6, including perfluorohexane sulfonic acid (PFHxS) and perfluorooctane sulfonate (PFOS); and (iii) Precursors of these substances that may be produced or be present in the surfactant and/or the paint or varnish product	n/a	*Verification:* A declaration of non-use shall be provided by the applicant and their raw material suppliers supported by CAS numbers and identification of chain length for the surfactants used.

	Perfluorinated surfactants may only used in paint that is required to be resistant or repellent to water (see efficiency of use criteria 1b and 1g respectively) and a spreading rate of greater than 8 m^2/l (see efficiency of use criteria 1a).		

4.2.8 Halogenated Organic Solvents

Halogenated organic solvents can be found in paint thinners, strippers and solvents. They are largely non-flammable, though if they do combust, they can produce toxic gases. Risk to health from using halogenated organic solvents in paint includes dermatitis and eye irritation. More serious exposure via vapours or high levels of the solvents can lead to kidney and liver damage, heart irregularities and are potentially carcinogenic.[52]

Comments from stakeholders have revealed an apparent confusion over the targeted compounds of this criterion, which is entitled 'Halogenated Organic Solvents', whereas the text describes 'Halogenated Organic *Compounds*'. These two groups of compounds differ significantly, and several stakeholders were concerned about a prohibition on the use of "halogenated compounds" since the latter are used in many pigment systems. Investigation of the original documentation provides no additional insight into the aim of this criterion but, due to the use of halogenated tinting systems, complete prohibition of all compounds is impossible.

There was a further request to increase the threshold of this requirement to include halogenated pigments by ensuring they meet the EU's requirements for colour pigments in food packages according to Resolution AP (89). There is little data on the performance effect of increasing the stringency of the requirements on pigments beyond the current thresholds. Even from a basic analysis, pigments on walls need to last significantly longer than on food packaging. Without further data on the ability of these pigments to achieve this performance level this additional requirement should be deferred until the next revision.

All hazardous halogenated compounds are now covered under the new Hazardous Substances Criterion. The separate Halogenated Organic Compounds criterion is now redundant and has been removed.

4.2.9 Biocides

The original EU Ecolabel criteria for both indoor and outdoor paints did not adequately control the inclusion and use of biocides in paints. The revision to the Biocide Directive and the recently developed EU Ecolabel criteria for other products that contain biocides should be examined within this revision.

52 http://www.psfc.mit.edu/esh/halosolv.html

In addition to the new criterion for other EU Ecolabel products, alternative Ecolabels for paints and varnishes have clauses restricting biocides and preservatives. Table 9 describes the criteria developed for restrictions of biocides in paints for different Ecolabels.

Table 9: Comparison of alternative ecolabel's criteria to biocides

Ecolabel	Criteria
Austrian Ecolabel - Paints, varnishes and wood sealant lacquers UZ01 (2010)	Used only for in-can preservation and only Government certified substances with specific limit values between 15 and 200 ppm.
German Blue Angel – Low emission paints RAL UZ12a (July 2010) – Varnishes & glazes	No micro biocides unless on German approved list and only for in-can preservation
Japanese Ecomark 126 – Paint Version 2.3 (2011)	Up to 0.5% of product weight

Clauses within the Austrian and German-based Ecolabels mirror the changes likely to be enacted within the scheduled update to the Biocide Regulation, due for release in 2013. The Directive will restrict the use and sale of certain biocides within Europe to those registered and authorised by relevant authorities within each country in the EU.[53]

The wider scope for clauses defined in the Blue Angel and Austrian Ecolabel paints criteria are unsuitable for all the paints covered within the EU Ecolabel because of their use outdoors where biocides are necessary to prevent biofilms forming. Without biocides, the formation of biofilms will significantly reduce the lifetime of the paint. This may lead to an increase in the overall environmental impact due to necessary repaints. Therefore, a less stringent criterion for biocides is needed for products claiming antimicrobial action.

Bioaccumulation is a measure of the toxicological effect of substances within aquatic organisms: even if overall concentrations are low, prolonged exposure can give rise to toxic effects. Directive 1272/2008 defines the level at which a substance can be considered to biooaccumulate (or 'bioconcentrate') by determining the octanol/water partition coefficient, usually reported as a log K_{ow}. Within this Directive, log K_{ow} values equal to or greater than 4 can be considered 'bioaccumulative'. This value represents the potential to bioaccumulate, a more accurate (but usually unavailable) measure can be determined using the bioconcentration factor (BCF). A BCF in fish of ≥ 500 is indicative of the potential to bioconcentrate.

The suggested criterion below was presented in the 1st AHWG meeting and many stakeholders were positive:

Biocides

[53] http://register.consilium.europa.eu/pdf/en/11/st05/st05032-re02.en11.pdf

(i) The product may include biocides in order to preserve the product, and in the appropriate dosage for this purpose alone. These biocides shall be registered and authorized in the Biocide Product Regulation (BPD) scheme.

Assessment and verification: the applicant shall provide copies of the material safety data sheets of any preservatives added, together with information on their exact concentration in the product. The manufacturer or supplier of the preservatives shall provide information on the dosage necessary to preserve the product.

(ii) In accordance with Directive 67/548/EEC, Directive 1999/45/EC of the European Parliament and of the Council or Regulation (EC) No 1272/2008 substances or mixtures used as preservatives, that are classified as:

- *H400 Very toxic to aquatic life*
- *H410 Very toxic to aquatic life with long-lasting effects*
- *H411 Toxic to aquatic life with long-lasting effects*
- *H412 Harmful to aquatic life with long-lasting effects*
- *H413 May cause long-lasting harmful effects to aquatic life*

are permitted but only if their bioaccumulation potentials are characterised by log K_{ow} (log octanol/water partition coefficient) < 4,0 or an experimentally determined bioconcentration factor (BCF) ≤ 500.

Assessment and verification: The applicant shall provide a declaration of compliance with this criterion.

Similar criterion but with different limits are currently used in other EU Ecolabel products. Many stakeholders have further suggested that the bioaccumulation limits within part (ii) could be strengthened to log K_{ow} < 3,0 and BCF ≤ 100 which are values used in other Ecolabel product groups[54]. Criteria for other EU Ecolabel products such as laundry detergents use these values for log K_{ow} and BCF. However, there are obvious differences between detergents and paints. The nature of the product, function and use are completely different e.g. paints end up on a substrate and not in the wastewater like detergents except, perhaps, during the washing of brushes and rollers. A preliminary input from stakeholder was that even these low values can be achieved by the best performing paints. As the Ecolabelled products can comply with these restrictive limits these are also recommended for use. Additional feedback from manufacturers is asked

As presented in the preliminary criteria report it is suggested that a derogation request that breeches part (ii) above should be declined. That way part (ii) is used as a 'gate keeper' question during derogation requests for biocides whereas Part (i) could be included as a footnote within the derogations request to ensure that only the minimum about of biocide is used. Furthermore requiring the authorisation of the products from the BPD is considered redundant as if the biocide is not authorised it cannot be used. Thus, the proposed text refers only to the registration of the substance.

54 Establishing the ecological criteria for the award of the EU Ecolabel to detergents for dishwashers, (2011/263/EU)

(Part of Hazardous Substances criterion,

Note: the substances are presented as an example (non exhaustive list) see also hazardous substances criterion)

USE	Chemical Composition Ingredient	CAS/ EINECS	Classification	Note
In can preservative	2-Methyl-2H-isothizol-3-one	2682-20-4	R 22-23-34-43-50	1, 8,
	1,2 Benzisothiazol-3(2H)-one	2634-33-5	R 22-38-41-43-50	1, 8,
	Methyl-4-isothizolin-3-one	2682-20-4	R34-37-43-50-24/25	1, 8,
	Tetrahydro-1,3,4,6-tetrakis(hydroxymethyl) imidazo[4,5-d]imidazol-2,5(1H,3H)-dion	5395-50-6	R43	2, 8
	Bronopol (INN) 2-bromo-2-nitropropane-1,3-diol	52-51-7	R21/22 R37/38-41, R50	2, 8,
	Mixture of: 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H -isothiazol-3-one [EC no. 220-239-6] (3:1)	55965-84-9	R23/24/25-34-43-50-53	3, 8,
	mixture of: 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H -isothiazol-3-one [EC no. 220-239-6] (3:1)	55965-84-9	R23/24/25-34-43-50-53	3, 8,
Dry film preservative	3-iodo-2-propinyl-butylcarbamate (IPBC)	55406-53-6	R 20/22-41-50	2, 8,
	Pyrithione zinc	13463-41-7	R 22-23-38-41-50	2, 8,
	2-Octyl-2H-isothiazol-3-one	26530-20-1	R 22, 23/24-34-43-50/53	1, 8,
	3-iodo-2-propynyl-butylcarbamate	55406-53-6	R 20/22-41-50	2, 8,
	Zinc oxide	1314-13-2.	R 50/53	2, 8,
	1,2-Benzisothiazolin-3-one	2634-33-5	R 22-38-41-43-50	1, 8,
	Pyrithione zinc	13463-41-7	R 22-23-38-41-50	2, 8,
	Zinc oxide	1314-13-2.	R 50/53	2, 8,
	Sodium polynaphthalene sulphonate	9084-06-4	R 52/53	2, 8,
	Diuron (ISO)	330-54-1	R22-40-48-48/22-50/53	2, 8,

Notes:

[8.] (i)The product may include biocides in order to preserve the product, and in the appropriate dosage for this purpose alone. . These biocides shall be registered in the Biocide Product Regulation (BPD) scheme.

(ii) In accordance with Directive 67/548/EEC, Directive 1999/45/EC of the European Parliament and of the Council or Regulation (EC) No 1272/2008 substances or mixtures used as preservatives are permitted but only if their bioaccumulation potentials are characterised by log Kow (log octanol/water partition coefficient) < 3,0 or an experimentally determined bioconcentration factor (BCF) ≤ 100.

Follow-up after the EUEB meeting and stakeholder consultation of March 2013

The consensus view from stakeholders was that the criteria proposal was not currently workable, with a number of specific concerns being highlighted:

- Division into two annexes: The separation of a biocide listing and hazard derogations into separate annexes was felt to be confusing. The continuity between the two also requires addressing – for example the preservatives IPBC are zinc pyrithione are subject to concentration limits in Appendx 1 which are not permitted by Appendix 2;
- Restrictions applying to specific biocides: It was not felt to be clear why restrictions applied only to the listed biocides and on what scientific basis they had been selected. The listing was also referred to as a 'positive list' and it was queried as to why there was no list for dry film preservatives.
- Combinations of active substances: The listing of specific combinations of active substances was not felt to be workable because it would be too restrictive. It was also not clear whether other combinations could be used and if yes what rules would apply;
- Sum total or individual concentration limits: It should be clarified whether the concentration limits shall apply to the sum total of preservatives in the product or to individual preservatives. This will also dictate the degree of flexibility a manufacturer has to combine the actions of specific preservatives;
- Reference to the Blue Angel RAL-UZ-102 Appendix 1 biocide listing: Whilst harmonisation with this listing was proposed by some industry stakeholders there was general feedback that this could not be applied across all of Europe and that it did not cover film protection. Furthermore, it was also noted that under the Blue Angel criteria higher concentrations can be used if evidence from a 'biotest' is submitted [55];
- Strictness of the thresholds for combinations of active substances: The thresholds proposed were, by consensus, felt to be too restrictive, particularly for Southern Europe and for exterior paint used in humid locations, where the concentrations would not be high enough to protect the paint product. There needs to be sufficient flexibility because there are a limited number choice of effective biocides to choose from. It was also noted that restrictions on residual monomers and VOC's makes the final product more susceptible to infection, which could be a reputational risk for Ecolabelled paints;
- Assignment of substance-specific concentration limits on the basis of sensitising properties: A query was raised as to why the limits were assigned on this basis. The non-additive nature of the CLP rules for mixtures means that this would need to be applied across all preservatives in order to avoid being arbitrary.
- Assessment and verification on the basis of SDS: This was not likely to be feasible because preservative formulations may be confidential – although opinions on this issue varied and in some cases formulations were provided by stakeholders. Declaration of CAS numbers and classifications (self-classified or harmonised) would be feasible.

[55] Blue Angel, *Appendix 5: Conduct of a biotest* , RAL-UZ-12A Low pollutant paints and varnishes

Clarification was additionally requested as to whether the criterion applied only to preservatives added to the formula for the purpose of final product preservation or whether it is to protect ingoing raw materials. The most cited were binders and colourants, although emulsion resins, defoamers and thickeners were also referred to. No evidence was submitted in relation to the proportional contributions to concentrations in the final product although experience from the Blue Angel ecolabel suggests that final product preservation, binders and colourants are the main contributors to biocides in the final product. It was noted that for final product manufacturers the contributions from binders and colourants are difficult to estimate as they will depend on the storage time for the raw materials. The concentration in the final product may therefore be lower than estimated. Colourants were specifically highlighted as being difficult because they may be present both as in can preservatives and dry film preservatives. It was therefore queried as to how they should be treated. The Blue Angel ecolabel currently only focuses on final product preservation and binders.

Some biocides have been authorised for use in the EU despite being classified with hazards such as H400 (R50) which are identified in relation to ' *substances of concern'* in the Biocide Regulation (EC) No 528/2012. It may therefore be appropriate to ensure that any derogation conditions set out in the associated authorisation and formalised in a Directive are implemented by applicants. 4,5-Dichloro- 2-octyl-2H-isothiazol-3-one (DCOIT) is a good case in point, being classified with H400 (R50) and subject to a requirement in Directive 2011/66/EU [56] that surfaces painted with it are not exposed to weather.

It may also be appropriate to consider restrictions on preservatives that 'for which a dossier has been submitted for evaluation pending a decision on authorisation or non-inclusion' on the basis that a preservative may be permitted by the Ecolabel which later is denied an authorisation. A complete restriction is not felt to realistic because a range of commonly used preservatives are pending authorisation. Instead it is proposed that specific conditions be placed on those preservatives which are classified with hazards 'of concern'.

It was noted that from 2015 new rules under the second Adaptation to Technical Progress (ATP) of CLP Regulation [57] will come into force that will apply to biocides classified with H317 and/or H334 which are present at either concentrations greater than 0.1% or at 10% of the specific concentrations stipulated in Annex VI of Regulation (EC) No 1272/2008 and all amending legislation. In these cases the final product shall display EUH208 “Contains (name of sensitising substance). May produce an allergic reaction”. The acceptability of an ecolabelled product carrying this labelling is to be discussed further with stakeholders. A number of stakeholders proposed that a restriction on final product labelling with EUH208 at least apply to indoor paints. It is understood that this would have a significant impact on the use of isothiazolinone preservatives with specific concentrations of 500ppm and 15ppm.

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[56] **Commission Directive 2011/66/EU of 1 July 2011 amending Directive 98/8/EC of the European Parliament and of the Council to include 4,5-Dichloro- 2-octyl-2H-isothiazol-3-one as an active substance in Annex I thereto**

[57] Commission Regulation (EU) No 286/2011 of 10 March 2011 amending, for the purposes of its adaptation to technical and scientific progress, Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures

With the adoption of the new Biocides Regulation 528/2012 new requirements have been introduced for the disclosure of nanomaterials on product labelling and the selection of scientifically appropriate test methods. The Regulation reflects the definition of nanomaterials provided in the Commissions Recommendation 2011/696/EU[58]. It is therefore proposed to require a disclosure of ingredients falling under the definition in the above-mentioned recommendation in the assessment and verification of preservatives used in the EU Ecolabelled paint and varnish products. Reflecting the explanation given in the Background report[59] and industry stakeholders' input the scope of this requirement addresses only intentionally manufactured nanomaterials. The discussion on nanomaterials (there are different views of stakeholders) and potential options is described in the Background report.

On this basis the following formulation is proposed for the revised May 2013 criteria text, which would be included within the hazardous substances annex:

1. Preservatives added to binders and the final product

The paint formulation shall only contain preservatives that meet the requirements of this annex and which are authorised under the Biocide Directive 98/8/EC and the Biocide Regulation (EC) No 528/2012.*Applicants should consult the most current authorisation list:*

http://ec.europa.eu/environment/biocides/annexi_and_ia.htm

Preservatives for which a dossier has been submitted for evaluation pending a decision on authorisation or non-inclusion can be used, with the exception of those which are classified with H400 (R50) which shall not be used in outdoor paints.

(a) In-can preservatives *Applicability:* All products unless specified otherwise	*Derogated classifications:* H331 (R23), H317 (R43), H400 (R50), H410 (R50/53), H411 (R51/53), H412 (R52/53) *Derogation conditions:* ○ Substances classified with H400 (R50) shall be non-bioaccumulative. Non-bioaccumulative substances shall have a Log Kow ≤ 3.2 or a Bioconcentration Factor (BCF) ≤ 100. ○ Evidence shall be provided that Authorisation conditions under the Biocide Directive 98/8/EC and the Biocide Regulation (EC) No 528/2012 are being respected. ○ Where preservatives that are	*Sum total in the final product:* 0.060% w/w	*Verification:* Declaration by the applicant and their binder supplier supported by CAS numbers and classifications for the active ingredients in the final product and its binder. This shall include calculation by the applicant of the concentration of the active ingredient in the final product.

[58] COMMISSION RECOMMENDATION of 18 October 2011 on the definition of nanomaterial2011/696/EU, available online at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:275:0038:0040:EN:PDF.

[59] Background report, p. 51, available online at: http://susproc.jrc.ec.europa.eu/paints/docs/Ecolabel%20Paints%20Background%20Report.pdf.

	formaldehyde donors are used then formaldehyde emissions from the final product must meet the requirements in substance restriction 7(a)		This shall include identification of intentionally manufactured active ingredients with a particle size of less than 100 nm.
	The following in-can preservatives shall only be used at the specified maximum sum total concentrations in the final product at the time of manufacturing for the specified applications: *(i) Isothiazolinone compounds* *- All products*	*Sum total 0.05%*	*Verification:* Calculation by the applicant of the concentration of the active ingredient in the final product supported by the CAS number and classification.
(b) Dry film preservatives *Applicability:* All products unless specified otherwise	Derogated classifications: H317 (R43), H400 (R50), H410 (R50/53), H411 (R51/53), H412 (R52/53) Derogation conditions: ○ Substances classified with H400 (R50) shall be non-bioaccumulative. Non-bioaccumulative substances shall have a Log Kow ≤ 3.2 or a Bioconcentration Factor (BCF) ≤ 100. ○ Evidence shall be provided that the conditions set out in the Authorisation conditions for preservatives under the Biocide Directive 98/8/EC and the Biocide Regulation (EC) No 528/2012 are being respected.	*Sum total in the product:* *Indoor paints* *0.1% w/w* *Outdoor paints* *0.3% w/w*	*Verification:* Declaration by the applicant and their binder supplier supported by CAS numbers and classifications for the active ingredients in the final product and its binder. This shall include calculation by the applicant of the concentration of the active ingredient in the final product. This shall include identification of intentionally manufactured active ingredients with a particle size of less than 100 nm.
	The following dry film preservatives may be used at specified maximum sum total concentrations in the final product at the		*Verification:* Calculation by the

	time of manufacturing for the specified applications: (i) Isothiazolinone compounds - All products (ii) 3-iodo-2-propynyl butylcarbamate (IPBC) - Outdoor wood paints and varnishes - All other applications	*Sum total 0.05%* *0.45%* *0.3%*	applicant of the concentration of the active ingredient in the final product supported by the CAS number and classification.

A list of substances which were highlighted in February 2013 and which are pending re-evaluation of their derogations can be found in the Table 10. This list was provided to the industry association CEPE and derogations will be evaluated on the basis of functional need and the availability of substitutes. In some cases the derogations are also linked to consideration of other substance restrictions, for example free formaldehyde from donors.

Table 10. Preservatives to be re-evaluated for derogation (March 2013)

Substance group	**Substance**	**Basis for re-evaluation**
In-can preservatives	Bronopol-2-bromo-2-nitropropane 1,3 diol (52-51-7)	Contribution to free formaldehyde levels in the paint product, for which a revised limit value of 100 ppm is under consideration.
	Dodecyldipropylene triamine (BDA) (2372-82-9)	The substance has a different hazard profile within the in-can preservative group, displaying H301 (R25), H373 (R48/20-22). Contribution to free formaldehyde levels in the paint product, for which a revised limit value of 100 ppm is under consideration.
	20% silver chloride on 80% titanium dioxide (7783-90-6/13463-67-7)	The proposed concentration limit for outdoor paint applications is significantly higher than the sum total for the substance group. Self-classifications suggest that silver chloride may have an M Factor of between 10 and 1000 based on classification with H400 (R50) and H410 (R50/53).
	2 Octyl 2H isothiazol-3-one (26530-20-1)	The substance has a different hazard profile within the in-can preservative group, with a harmonised classification of H311 (R24) and H331 (R23).

Dry film preservatives	Diuron (330-54-1)	The substance has a different hazard profile within the dry film preservative group, displaying H351 (R40) and H373 (R48/22). The substance has an M Factor for hazards to the aquatic environment of 10.
	20% silver chloride on 80% titanium dioxide (7783-90-6/13463-67-7)	The substance is proposed with a concentration limit of 0.5% (indoor) and 2.0% (outdoor) which are significantly higher than the proposed sum total concentration limit for this substance group. Self-classifications suggest that silver chloride may have an M Factor of between 10 and 1000 based on classification with H400 (R50) and H410 (R50/53).
	2 Octyl 2H isothiazol-3-one (26530-20-1) OIT	The substance has a different hazard profile within the dry film preservative group, with a harmonised classification of H311 (R24) and H331 (R23).

Follow-up after the EUEB meeting of June 2013

A summary of the feedback received, organised into themes, is presented below. For each theme and related aggregate comments the proposed response is discussed.

Summary of final criteria proposal rationale

The requirements of Article 6(6) and 6(7) of the Ecolabel Regulation (EC) No 66/2010 necessitated a new approach to the preservative criteria and derogations. Preservatives are split into in-can preservation, in recognition of their different role. Colourants are also addressed separately, as these are stored under specific conditions in tinting machines. A limited reference is made to stabilisers in relation to certain preservatives.

The overarching requirement is that preservatives are authorised under the existing Biocide Regulation, and that related risk assessments have been carried out for consumer and professional paint use. Because of the limited number of authorised biocides available an exclusion is required where a preservative dossier is pending a decision.

The most important preservatives required to ensure product quality were identified and form the basis for overall hazard derogations, limit values and derogation conditions. Specific restrictions apply to isothiazolinones because of concerns about their role as allergens, particularly in indoor paints. In some cases higher sum limit values reflect the need to protect specific types of paint e.g. outdoor wood paints.

Concerns relating to the derogation of H400 and H410 are in part addressed by a strict derogation condition relating to bioaccumulation. This condition is stricter than the current CLP definition of bioaccumulation.

Stakeholder feedback: Substance group-specific comments

Substance group	Theme	Summary of stakeholder comments	Proposed response
1(a),(b),(c),(d) Preservatives	General approach to derogations	The biocide which are allowed could be named, for example : BIT, MIT, IPBC, Bronopol, terbuthrine	It was the consensus view of stakeholders from the September 2012 consultation round that a group approach be taken. Biocides have been named where specific derogation conditions apply.
		The hazard classifications R24 (H311), R23/24, H301 (R25), R48/20 (H373) are required to be derogated to support paint preservation. It would also exclude MIT and CMI/MI isothiazolinones.	The group derogations were created from the common hazard profiles of biocides on the original derogation list. It is proposed that these hazards shall only be derogated for specific biocides for which the need is justified.
	Precautionary restriction on H400/H410 hazards	The statement on preservatives that have been authorised but are classified with H400/H410 contradicts the derogations. Flexibility is required because very few preservatives have been approved under PT6/7	It is accepted that these derogations are required to support the use of preservatives and that flexibility is required. Given that conditions may be placed on the use of biocides classified with H400 and H410 as these are technically restricted by the Regulation it is proposed that a clause is added stating that: 'for which a risk assessment for professional and/or amateur (non-professional) use is provided in the Assessment Report.' Taking the example of DCOIT it can be seen that authorisation was granted accepting that a risk assessment was not carried out, despite significant authorisation conditions for its use in an industrial setting.

	Isothiazolinone preservatives	The 15ppm CIT/MIT limit value should be listed.	CIT/MIT is restricted at 15ppm because this would trigger labelling of the product with H317. The value has now been listed in Appendix 1.
		There is not sufficient technical knowledge whether EUH208 labelling can be avoided. Only allow very low isothiazolinone concentrations could be used, requiring formaldehyde donors to be used.	It is accepted that, based on the information gathered during this revision, EUH208 would be too restrictive and could have unintended consequence of supporting the use of formaldehyde donors.
		The MIT concentration limit should be reduced to 250ppm (0.025%)	MITdoes not require additional specific hazard derogations to BIT (in-can preservation). It is possible that MIT, BIT and OIT could be subject to tighter specific limits in colourants but this would limit flexibility of formulation.
	Derogation of stabilisers	Zinc oxide stabilizer should be derogated, as already for corrosion inhibition. Zinc pyrithion and BIT cannot be used without a stabilizer. A limit value of between 0.1-0.05% is proposed.	Given that these preservatives where derogated earlier in the process and are considered to be important ingredients it is proposed to introduce a specific derogation for stabilisers to support zinc pyrithion and BIT use only.
	Assessment and verification	Verification should cover all ingredients since raw materials often contain preservatives. Colourants were specifically proposed, as they may be added up to 10% to base paint.	It is considered that an open ended verification requirement for raw materials would not be workable as the concentrations have been determined for the main contributors - the preservative and binders. Based on new information from industry it is proposed to add a separate requirement for colourants.

1(a) In can preservatives	Colourants (tints)	Colourants require specifically addressing as they require specific combinations of preservatives to protect them whilst stored in dispensing machines in shops. Indicative minimum preservative contents for low VOC (<50 g/l) and very low VOC (<0.7 g/l) tints were provided. A combination of IPBC (0.1%), CIT/MIT (0.015%) and other isothiazolinones (MIT, BIT and OIT at 0.08 – 0.10%) are required.	A new sub-section of the preservative restrictions has been created. This specifies the sum total of preservatives that may be used to protect colourants in tinting machines. The sum total contribution of isothiazolinones requested was checked further to ensure it is the minimum required.
1(c) Dry film preservatives	General approach	Which products may contain film preservatives? The phrase: *all products unless specified otherwise in this context requires clarifying*	All products with the exception of indoor paints may contain dry film preservatives.
	Restriction of indoor paints	Dry film preservatives should not be permitted for indoor paints. Moreover, they are not required to protect indoor paints, with the exception of kitchens/wet rooms.	This feedback was received from a number of industry stakeholders and Member States. A new condition has been added restricting their use for indoor paints with the exception of paints with specific application in damp conditions i.e. kitchens and wet rooms.
	Should the sum total include derogations?	Clarify the derogation on IPBC and isothiazolinone compounds - can the derogated limit values be added to the sum limit values?	Feedback was received that the limit values for outdoor paints are too low for wood preservation. In this case only the values may be summed.

	Outdoor paint preservatives	The sum totals for outdoor paints need to be higher to support wood preservation. Sum totals between 0.6 - 0.75% were proposed. Permitting only IPBC is too limited.	The derogation for wood paint application of IPBC has been amended to allow a sum total of 0.65 based on a 0.45 IPBC concentration in combination with 0.2 of selected other preservatives.
		Are the sum values for in-can and dry film separate or interrelated? A sum total of 0.1% for isothiazolinones would be twice the current limit.	The total for in-can and dry film preservatives is additive, however, in-line with the current criteria the sum total for isothiazolinones shall be 0.05%.
		OIT should be derogated. It is not possible to work only with IPBC and Zinc Pyrithione as dry film preservatives.	It is understood that OIT may play a dual role of in-can and dry film preservative. It is proposed for derogation only for outdoor paints with additional hazard of H311(R24) for this preservative only.

Based on the feedback received during the consultation period and after the EU Ecolabelling meeting from June 2013 the final criteria is proposed as follows, and is to be listed under Appendix 1 of criteria Decision, within the 'hazardous substance restriction and derogation list':

1. Preservatives added to colourants, binders and the final product The paint formulation shall only contain preservatives that meet the requirements of 1a, 1b and 1c (as applicable), which are authorised under the Biocide Directive 98/8/EC and the Biocide Regulation (EC) No 528/2012 and for which a risk assessment for professional and/or amateur (non-professional) use is provided in the Assessment Report. *Applicants should consult the most current authorisation list:* http://ec.europa.eu/environment/biocides/annexi_and_ia.htm Preservatives for which a dossier has been submitted for evaluation pending a decision on authorisation or non-inclusion may be used in the interim period up until the adoption of the Decision. Preservatives may be used in indoor paints up to a sum total of in-can and dry film preservatives of 0.160% w/w and in outdoor paints up to a sum total of in-can and dry film preservatives of 0.56% w/w. The total may only be exceeded for the specified outdoor dry film preservatives.			
(a) In-can preservatives *Applicability:* All products unless specified otherwise	In-can preservatives classified with the following derogated hazard classifications may be used in ecolabelled products: *Derogated classifications:* H331 (R23), H400 (R50), H410 (R50/53), H411 (R51/53), H412 (R52/53), H317 (R43) In-can preservatives classified with these derogated classifications must also meet the following derogation conditions: ○ The sum total concentration shall not exceed 0.060% w/w ○ Substances classified with H400 (R50) and/or H410 (R50/53) shall be non-bioaccumulative. Non-bioaccumulative substances shall have a Log Kow ≤ 3.2 or a Bioconcentration Factor (BCF) ≤ 100. ○ Evidence shall be provided that Authorisation conditions under the Biocide Directive 98/8/EC and the Biocide Regulation (EC) No 528/2012 are respected for the product. ○ Where preservatives that are formaldehyde donors are used then formaldehyde emissions from the final product must meet the requirements in substance restriction 7(a) *The following preservatives are subject to additional derogations and limits on their contribution to the sum total of preservatives (in-can and dry film) in the final*	*In-can preservatives Sum total in the final product:* 0.060% w/w	*Verification:* Declaration by the applicant and their binder supplier supported by CAS numbers and classifications for the active ingredients in the final product and its binder. This shall include calculation by the applicant of the concentration of the active ingredient in the final product. In line with the requirements of the Biocide Regulation (EC) No 528/2012 Article 58(3) all manufactured active ingredients for which 50 % or more of the particles in the number size distribution have one or more external dimensions in the size range 1 nm-100 nm.

	product: *(i) Isothiazolinone compounds:* *- Sum total Isothiazolinone compounds in any product* *- 1,2-Benzisothiazol-2(2H)-one : H301 (R25)* *- 2-Octyl-2H-Isothiazol-3-one: H311 (R24)* *- 5-chloro-2-methyl-4-isothiazolin-3-one / 2- methyl-4-isothiazolin-3-one : H301 (R24), H311 (R25)*	*Sum total* *0.050%* *0.050%* *0.050%* *0.0015%*	
(b) Tinting (colourant) machine preservatives	The derogated hazard classifications and derogation conditions listed under 1(a) shall apply also to preservatives used to protect colour tints whilst stored in machines prior to mixing with base paints. Preservatives added to protect tints that will be dispensed from machines shall not exceed a sum total of 0.20% w/w. The following preservatives are subject to specific maximum concentration limits contributing to the sum total of preservatives in the final product: (i) *5-chloro-2-methyl-4-isothiazolin-3-one / 2- methyl-4-isothiazolin-3-one*: *H301 (R24), H311 (R25)* (ii) 3-iodo-2-propynyl butylcarbamate (IPBC)	*Sum total in the final product:* 0.20% w/w 0.0150% 0.10%	*Verification:* Declaration by the applicant and/or their tint supplier supported by CAS numbers and classifications for the active ingredients in the final product and its binder. This shall include calculation of the concentration of the active ingredient in the final tint product. In line with the requirements of the Biocide Regulation (EC) No 528/2012 Article 58(3) all manufactured active ingredients for which 50 % or more of the particles in the number size distribution have one or more external dimensions in the size range 1 nm-100 nm.

(c) Dry film preservatives *Applicability:* Outdoor paints, indoor paints for specific applications	Dry film preservatives and their stabilisers classified with the following derogated hazard classifications may be used in ecolabelled products: *Derogated classifications:* H400 (R50), H410 (R50/53), H411 (R51/53), H412 (R52/53), H317 (R43) Dry film preservatives classified with these derogated classifications must also meet the following derogation conditions: ○ The sum total concentration shall not exceed 0.10% w.w ○ Substances classified with H400 (R50) and/or H410 (R50/53) shall be non-bioaccumulative. Non-bioaccumulative substances shall have a Log Kow ≤ 3.2 or a Bioconcentration Factor (BCF) ≤ 100. ○ Evidence shall be provided that the conditions set out in the Authorisation conditions for preservatives under the Biocide Directive 98/8/EC and the Biocide Regulation (EC) No 528/2012 are being respected. A higher sum total applies to the following dry film preservatives for the specified applications only: (i) 3-iodo-2-propynyl butylcarbamate (IPBC) - Outdoor wood paints and varnishes (ii) - *2-Octyl-2H-Isothiazol-3-one: H311 (R24)* - Outdoor wood paints and varnishes	*Dry film preservatives Sum total in the final product:* Indoor paints intended for use in rooms with high humidity, including kitchens and bathrooms 0.10% w/w All outdoor paint applications 0.30% w/w *Outdoor paints sum total for IPBC combinations:* 0.65% 0.050%	*Verification:* Declaration by the applicant and their binder supplier supported by CAS numbers and classifications for the active ingredients in the final product and its binder. This shall include calculation by the applicant of the concentration of the active ingredient in the final product. In line with the requirements of the Biocide Regulation (EC) No 528/2012 Article 58(3) all manufactured active ingredients for which 50 % or more of the particles in the number size distribution have one or more external dimensions in the size range 1 nm-100 nm.
(d) Preservative stabiliser	Zinc oxide is derogated where it is required in outdoor paints as a stabiliser for dry film preservative combinations that require zinc pyrithione and/or 1,2 Benzisothiazol-3(2H)-one (BIT).	0.05%	*Verification:* Declaration by the applicant and their raw material suppliers.

4.2.10 Hazardous substances

The new Ecolabel Regulations [(EC) No 66/2010] aims to prevent the use of all chemicals classified as toxic, hazardous to the environment, carcinogenic, mutagenic or toxic for reproduction, and substances that are restricted under REACH regulations. The regulation stipulates:

6. The EU Ecolabel may not be awarded to goods containing substances or preparations/mixtures meeting the criteria for classification as toxic, hazardous to the environment, carcinogenic, mutagenic or toxic for reproduction (CMR), in accordance with Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, nor to goods containing substances referred to in Article 57 of Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency.

7. For specific categories of goods containing substances referred to in paragraph 6, and only in the event that it is not technically feasible to substitute them as such, or via the use of alternative materials or designs, or in the case of products which have a significantly higher overall environment performance compared with other goods of the same category, the Commission may adopt measures to grant derogations from paragraph 6. No derogation shall be given concerning substances that meet the criteria of Article 57 of Regulation (EC) No 1907/2006 and that are identified according to the procedure described in Article 59(1) of that Regulation, present in mixtures, in an article or in any homogeneous part of a complex article in concentrations higher than 0,1 % (weight by weight). Those measures, designed to amend non-essential elements of this Regulation, shall be adopted in accordance with the regulatory procedure with scrutiny referred to in Article 16(2).

There were significant concerns from stakeholders over the ability of the derogation system to enable a diverse pool of paints to meet the Ecolabel requirement. A large proportion of additives, including biocides and preservatives, surfactants, defoaming agents and other property-changing chemicals will not be allowed without derogations. The current consensus from industry is that there are no alternatives, and without these compounds the performance of the paints will be restricted. The advantage of this system is that large portions of the current criteria that address hazardous materials have been subsumed within this new criterion, simplifying the overall process.

The following derogations have been requested by manufacturers.

Derogation number a/a	USE	Chemical Composition Ingredient	CAS nr/ EINECS Nr / REACH registration Nr *	Classification	Maximum allowed concentration % w/w	Flagged from other stakeholders*
1	In can preservative	2-Methyl-2H-isothizol-3-one	2682-20-4	R 22-23-34-43-50	0,008% - 0,1%	X
2		1,2 Benzisothiazol-3(2H)-one	2634-33-5	R 22-38-41-43-50	0,01% - 0,1%	X
3		Tetrahydro-1,3,4,6-tetrakis(hydroxymethyl) imidazo[4,5-d]imidazol-2,5(1H,3H)-dion	5395-50-6	R43	0.080%	X
4		bronopol (INN) 2-bromo-2-nitropropane-1,3-diol	52-51-7	R21/22 R37/38-41, R50	0.100%	X
5		mixture of: 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H -isothiazol-3-one [EC no. 220-239-6] (3:1)	55965-84-9	R23/24/25-34-43-50-53	0.002%	
6		Sodium N-(hydroxymethyl)glucinate	70161-44-3	Xi; R36, R43	0.050%	
7		3-iodo-2-propinyl-butylcarbamate (IPBC)	55406-53-6 EINECS: 259-627-5	R 20/22-41-50	0,3% 0,1% (concentration in antifungi paint)	
8		Pyrithione zinc	13463-41-7	R 22-23-38-41-50	0,1% (Exterior wall paint) 0,020% (Concentration as in film)	
9	Dry film preservative	terbutryn	886-50-0	Xn, Xi, N; R 22-43-50/53 Or Xn R22; Xn R48/22; Xi R43; R52/53 Or only R 50/53	0.100%	
10		4,5-Dichloro-2-octyl-3(2H)-isothiazolone	64359-81-5	C;R34, Xi;R37, Xi;R43, N;R50	0.700%	
11		Pyrithione zinc	13463-41-7	R 22-23-38-41-50	0,1% (Exterior wall paint) 0,020% (Concentration as in film)	
12		Cobalt, complexes de neodecanoate et de borate	68457-13-6	Xn, N, R38, R43, R50/53, R22	0.025%	X
13		3-iodo-2-propinyl-butylcarbamate (IPBC)	55406-53-6 EINECS: 259-627-5	R 20/22-41-50	0,3% 0,1% (concentration in antifungi paint)	
14		2-Octyl-2H-isothiazol-3-one	26530-20-1	R 22, 23/24-34-43-50/53	0.040%	X
15		zinc oxide	1314-13-2	R 50/53	0,005% to 2% (depending on category)	X
16		Sodium polynaphthalene sulphonate	9084-06-4	R 52/53	0.1%	X
17	Neutralising agent-	triethylamine	121-44-8	R11 - R22 - R23/24 - R35 - R41	0.200%	X
18		Alkanolamine	102-79-4	Xi: R41	2.000%	
19		Ammoniaque	1336-21-6	C, N, R34, R50	0.200%	

20	pH correcto r	2-amino-2-methylpropanol	124-68-5	Xi: R36/38; R52/53	0.200%	
21		Ammonia RTECS #: BO0875000	7664-41-7	R10; R23; R34; R50	0.065%	X
22		2,2'-iminodiethanol (DEA)	111-42-2	R22-48/22; R38-41	2.000%	X
23	Cobalt dryer	Cobalt bis(2-ethylhexanoate)	136-52-7	Xi; R43 N; R50/53	1%;	X
24		Fatty acids, tall-oil, cobalt salts	61789-52-4	Xn; R22 Xi; R43 , N; R51/53	0.500%	X
25		Neodecanoic acid	26896-20-8	R52/53	1.000%	X
26	Zinc dryer	Hexanoic acid, 2-ethyl-, zinc salt,BASIC	85203-81-2	R38, R51/53		X
27	antiskini ng agent	2-butanone oxime ethyl methyl ketoxime / ethyl methyl ketone oxime	96-29-7	R40; R21; R41, R43	0.400%	X
28		Acideoctanoique, sel de zirconium	18312-04-4	Xi, R38	1.300%	X
29		lithium neodecanoate	27253-30-1	Xi, R38 Or Xi R38 ; R52/53	0.200%	X
30		Manganese salts	CAS 15956-58-8 or CAS 27253-32-3	Xi;R38.	4%	
31		Zirconium salt of 2-ethylhexanoic acid	22464-99-9	Xn, R20	0.600%	X
32	Other driers	Iron(1+), chloro[dimethyl-9,9-dihydroxy-3-methyl-2,4-di-(2-pyridyl-kN)-7-[(2-pyridinyl-kN)methyl]-3,7-diazabicyclo[3.3.1]nonane-1,5-dicarboxylate-kN3, kN7]-, chloride(1-)	478945-46-9	Xn; R22 Xn; R48/22 Xi; R43 R52/53	0.050%	x
33	UV protecti on filtre (Light stabilize r)	Melange de : bis(2,2,6-tetramethyl-1-octyloxypiperidin-4-yl)-1,10-decanedioate; 1,8-bis((2,2,6,6-tetramethyl-4-((2,2,6,6-tetramethyl-1-octyloxypiperidin-4-yl)-decan-1,10-dioxyl)piperidin-1-yl)oxy)octane	406-750-9	R53	0.60%	X
34		Bumetrizole	3896-11-5	R53	1.00%	X
35		reaction mass of α-3-(3-(2H-benzotriazol-2-yl)-5-tert-butyl-4-hydroxyphenyl)propionyl-ω-hydroxypoly(oxyethylene) and α-3-(3-(2H-benzotriazol-2-yl)-5-tert-butyl-4-hydroxyphenyl)propionyl-ω-3-(3-(2H-benzotriazol-	EC: 400-830-7	R43 R51-53	0.990%	X

		2-yl)-5-tert-butyl-4-hydroxyphenyl)propionyloxypoly(oxyethylene)				
36		bis(1,2,2,6,6-pentamethyl-4-piperidyl) sebacate 70 - 80 % Xi - N R43 - R50/53	41556-26-7	R43 R50/53	0.600%	X
37		methyl 1,2,2,6,6-pentamethyl-4-piperidylsebacate	82919-37-7	R43-R50/53	0.200%	X
38		de 3-(3-(2h-benzotriazol-2-yl)5-(1,1-dimethylethyl)-4-hydroxypenyl)propionates de c7-c9 alkyleramifie et lineaire	127519-17-9	R51/53	0.500%	X
39	Anticorrosive pigment (solid corrosive inhibitor).	zinc phosphate (2,5% ZnPO4)	ZnPO4: 7779-90-0	R50/53	8-10%	X
40		Zinc oxide	1314-13-2	R50/53	0,005% to 2% (depending on category)	X
41	Substrate Wetting agent / surface tension modifier	Polypropylene glycol alkylphenyl ether	9064-13-5	R43	3.000%	X
42		Polyoxyethylene isodecyl ether	61827-42-7	Xi· R41, Xn· R22	2.000%	X
43		Alcohols, C9-C11, ethoxylated	68439-46-3	Xi; R41	2.000%	X
44		Secondary Alcohols, C11-C15, ethoxylated	68131-40-8	Xi; R38, R41	2.000%	X
45		Secondary Alcohols, C12-C14, ethoxylated	84133-50-6	Xi; R41	2.000%	X
46		Alcohols, C16-C18, ethoxylated	68439-49-6	Xi, N, R50, R41 or Xn R22 ; Xi; R41	2.000%	X
47		Fatty alcohol ethoxylated	None	Xi; R41	2.000%	X
48		Alcohols, tallow,ethoxylated	61791-28-4	Xn; R22 ; Xi; R41	2.000%	X
49		Alcohols, C12-14,ethoxylated	68439-50-9	Xi; R41; N; R50	2.000%	X
50		Polyoxyethylenetridecyl ether phosphate	9046-01-9	Xi; R38 ; R41	2.000%	X
51		Poly(oxy-1,2-ethandediyl),a-isotridecyl-w-hydroxy-,phosphate	73038-25-2	Xi; R38 ; R41; R52/53	2.000%	X
52		Polyoxyethylenestearyl ether	9005-00-9	Xi; R41	2.000%	X
53		Isotridecanol, ethoxylated	9043-30-5 69011-36-5	Xn; R22 ; Xi; R41	2.000%	X
54		Alkyl polyglucoside	500-220-1	Xi; R41	2.000%	X
55		Tridecyl(polyethyleneoxy)ethanol	78330-21-9	Xn; R22 ; Xi; R41	2.000%	X
56		Sodium di-(2-ethylhexylic) sulfosuccinate	577-11-7	Xi; R38 ; R41	0.200%	X
57		2,4,7,9-tetramethyldec-5-yne-4,7-diol	126-86-3 /	R 36, R 52/53	0.25%	X

			EINECS: 204-809-1			
58		Alkoxylated Alcohol	none	R52/53	2.000%	X
59	Silicon Resin Emulsion	triethoxy(2,4,4-trimethylpentyl)silane	35435-21-3	R10 ; R52/53	3.000%	X
60	Solvent (in composition of some ingredients)	Hydrocarbures, C10-C13, n-alcanes, isoalcanes, cycliques, < 2% aromatiques	01-2119457273-39-XXXX	Xn; R65, R66	2.000%	X
61		2-methylpropan-1-ol	78-83-1	R10 Xi; R37/38-R41 R67	2.000%	X
62		Petroleum distillates, solvent dewaxed heavy paraffinic (DMSO extract <3%)	64742-65-0	CAS N°64742-65-0 ; 72623-87-1 : These CAS N° stands for a Toxic R45 substance except the DMSO extract is below 3% (Note H,L)	2.000%	X
63		Hydrocarbures en c12-18	93924-45-9	Xn, R65, R66	0.060%	X
64		Ethylene glycol monobutyl ether	111-76-2	Xn; R20/21/22 - Xi; R36/38	1%	X
65		Lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based	72623-87-1	CAS N°64742-65-0 ; 72623-87-1 : These CAS N° stands for a Toxic R45 substance except the DMSO extract is below 3% (Note H,L)	2.000%	X
66	Pigment	Nickel Titanium Yellow	8007-18-9	Heavy metal ?	2.000%	X
67	Silica in fillers	Derogation request for leucophyllite minerals containing crystalline silica classified STOT RE 1 and STOT RE 2		R48/25/24/23 or R48/20/21/22	0.500%	
68		crystalline silica classified STOT RE 1 or STOT RE 2 contained in fillers		R48/25/24/23 or R48/20/21/23	0.500%	
69		Heptanes (Naphtha),	092045-53-9	R11, 38, 51/53, 65, 67	0.020%	X
70		Complex alkanolamine	068784-47-4	R36/38	1.000%	X
71		Diethylene glycol (EC No. 2038722)	000111-46-6	R22	0.500%	X
72		iso-Propanol	000067-63-0	R11, 36, 67	0.020%	X

*Note: The requests of derogation were consulted within the stakeholders of the sub-AHWG for Hazardous substances. A limited number of stakeholders flagged these substances as they use alternatives.

None of these ingredients are flagged in Annex XIV of the REACH regulations, SVHC list, the SIN list or the Stockholm Convention POPs list.

Stakeholders had initially included the following additional substances as candidates for derogation but along the consultation these requests have been withdrawn.

2-dimethylaminoethanol N,N-dimethylethanolamine (DMEA)	108-01-0
Sodium hydroxide	1310-73-2
Cobalt polymer	
Cobalt carboxylate	68409-81-4
White spirit D60	64742-48-9

Moreover, related to STOT RE1 and STOT RE2 it should be highlighted that these refer to risks associated with inhalation of powders. In dry paint, crystalline silica will be embedded within the polymer binder of the paint, whilst in wet paint it will be in suspension and therefore this exposure pathway is not available. Regarding the use of crystalline silica which is classified as STOT RE 1 and STOT RE 2 (derogation Nr. 69-70) there was consensus among the members of the sub-AHWG on hazardous substances to grant the derogation. This is also proposed here though it should be highlighted that there could be a potential exposure when the paint is scratched off the wall (after its use life time). However, even then crystalline silica will be bounded together with the other ingredients and the substrate and this can lower the risk of inhalation.

The members of the sub-AHWG for the criterion on hazardous substances were consulted on the derogation requests. A limited number of members from both Competent Bodies and manufacturers challenged the derogation request for some of these substances. A stakeholder in particular stated that in their products these substances are not used. These flagged substances are indicated in the respective column of the above table. However, no additional information related to the alternatives used was provided. Moreover, it was also not possible to clarify which are the types of paints in which these substances are substituted. Stakeholders emphasized that the substances are not needed in every type of paint but might be necessary for specific uses. Based on these claims it is suggested that in derogation of a substance should explicitly include the reference to the type of paint for which its use is permitted. Further input of stakeholders regarding the type of paints for which alternatives are possible and the name of these alternatives are necessary in order to analyse these requests.

There are three possible options for determining the appropriate derogations for paints:

1. Use the extended list of derogations with additional restrictions that ensure that the current criterion (parts 6a, 6b, and 6c) are incorporated to limit the use of substances by risk phrase. Derogations for particular substances can be changed depending on the requirements of the paint. For example, the amount of biocides in paints could be stricter for indoor paint than in wet outside environments where mould and algae are a larger problem. Additional requirements for biocides (discussed in Section 4.2.9) and more stringent requirements based on CLP limits will also be included. These could serve as a 'gate keeper' for the derogated substances. Stakeholders have indicated it is possible to limit the hazardous substances within EU Ecolabelled paint to a threshold of 70% of the maximum allowable levels under CLP before the product is considered hazardous. Further variations in this can be managed through stakeholder discussion.

Also, although the calculation is complex, it is currently mandated through the CLP regulations and should add little additional burden to the reporting costs associated with EU Ecolabel. On this after consultation with the industry it was highlighted that an implementation of such a CLP based requirement would need a transition time. Paint manufacturers are users of substances and mixtures and the CLP compliant information for all the raw materials used would be available in 2015 and not before. In addition, companies do not yet have the IT system that would allow them to do the classification calculations. Performing manually this calculation per ecolabelled paint would be an additional burden.

2. Reduce the list of derogated substances by removing those substances that have been challenged by Competent Bodies and other stakeholders. Several substances on the derogated list were queried by stakeholders who had specific concerns over their hazardous nature. Due to the number and complexity of derogated substances, it is beyond the scope of this project to determine if those requests are valid or more benign alternatives are available. A precautionary principle could be used to uphold these challenges; however, there is a significant risk that such an action may exclude a large proportion of paints from the EU Ecolabel. As a consequence the popularity (and thus the effectiveness) of the Ecolabel will be harmed.
3. Use the extended list initially with a further date (transition period) to move to a reduced list. This would allow manufacturers to phase-out problematic substances whilst still producing EU Ecolabelled paint.

Further discussions may be necessary to determine the appropriate course of action, but option 3 has been suggested within the text below.

There is ambiguity over the meaning of the term 'ingredient'. It can cover a mixture of substances as part of the paint manufacturer's formulation or the individual substances used in the production of precursors. A clear definition of this term is needed to enable fair and accurate assessment of the materials used in the manufacture of the paint. Stakeholders were in agreement and that a balance should be made to ensure that the information provided by the applicants enabled assessment of the environmental risks of the paint without proving too onerous. Previous discussions through an AHWG for the revision of this EU Ecolabel Criteria highlighted the issue of introducing an additional term "ingredients", which has not been formally defined. An appropriate alternative is to use the terms from the CLP Directive[60]; namely "Substance" and "Mixture" (formally preparation), which are defined as:

> ***'substance'*** *means a chemical element and its compounds in the natural state or obtained by any production process, including any additive necessary to preserve the stability of the product and any impurity deriving from the process used but excluding any solvent, which may be separated without affecting the stability of the substance or changing its composition;*
>
> ***'mixture'*** *means a mixture or solution of two or more substances, which do not react.*

[60]Regulation (EC) No 1272/2008

Within the new dishwashing detergent criteria, the following text has been used to remove ambiguity:

> *...The risk phrases below generally refer to substances. However, for mixtures of enzymes and fragrances where information on substances may be difficult to obtain classification rules for mixtures may be applied.*

A similar clause has been developed for this criterion.

Based on the submissions and the analysis performed above, the following amendments to the criterion are proposed.

Hazardous substances

According to Article 6(6) of the regulation No 66/2010 on EU Ecolabel, the product or any part of it thereof shall not contain substances or mixtures meeting the criteria for classification with the hazard classes or categories in accordance with Regulation (EC) no 1227/2008 specified below nor shall it contain substances referred to in Article 57 of REACH Regulation (EC) no 1907/2006. The risk phrases below generally refer to substances. However, for mixtures of substances where information on the substances is difficult to obtain, classification for rules of mixtures may be applied. The term mixture and substance are used as defined within the CLP Regulation (EC) No 1272/2008.

Hazard Statement[1]	Risk Phrase[2]
H300 Fatal if swallowed	R28
H301 Toxic if swallowed	R25
H304 May be fatal if swallowed and enters airways	R65
H310 Fatal in contact with skin	R27
H311 Toxic in contact with skin	R24
H330 Fatal if inhaled	R23; R26
H331 Toxic if inhaled	R23
H340 May cause genetic defects	R46
H341 Suspected of causing genetic defects	R68
H350 May cause cancer	R45
H350i May cause cancer by inhalation	R49
H351 Suspected of causing cancer	R40
H360F May damage fertility	R60
H360D May damage the unborn child	R61
H360FD May damage fertility. May damage the unborn child	R60-61
H360Fd May damage fertility. Suspected of damaging the unborn child	R60-63
H360Df May damage the unborn child. Suspected of damaging fertility	R61-62
H361f Suspected of damaging fertility	R62
H361d Suspected of damaging the unborn child	R63
H361fd Suspected of damaging fertility. Suspected of damaging the unborn child	R62-63
H362 May cause harm to breast fed children	R64
H370 Causes damage to organs	R39/23; R39/24; R39/25; R39/26; R39/27; R39/28

H371 May cause damage to organs	R68/20; R68/21; R68/22
H372 Causes damage to organs through prolonged or repeated exposure	R48/25; R48/24; R48/23
H373 May cause damage to organs through prolonged or repeated exposure	R48/20; R48/21; R48/22
H400 Very toxic to aquatic life	R50
H410 Very toxic to aquatic life with long-lasting effects	R50-53
H411 Toxic to aquatic life with long-lasting effects	R51-53
H412 Harmful to aquatic life with long-lasting effects	R52-53
H413 May cause long-lasting harmful effects to aquatic life	R53
EUH059 Hazardous to the ozone layer	R59
EUH029 Contact with water liberates toxic gas	R29
EUH031 Contact with acids liberates toxic gas	R31
EUH032 Contact with acids liberates very toxic gas	R32
EUH070 Toxic by eye contact	R39-41
Sensitising substances	
H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled	R42
H317: May cause allergic skin reaction	R43

[1]Regulation (EC) no 1272/2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) no 1907/2006

[2]Directive 67/548/EEC with adjustment to REACH according to Directive 2006/12/EC and Directive 1999/45/EC as amended.

Derogations: Following substances are exempt from this criterion

Derogation number a/a	USE	Chemical Composition Ingredient	CAS nr/ EINECS Nr / REACH registration Nr *	Classification	Requirement	Maximum allowed concentration % w/w	Only for a transition period of 2 years	Type of paint
1	In can preservative	2-Methyl-2H-isothizol-3-one	2682-20-4	R 22-23-34-43-50	1, 5, 8, 9	0,1%	X	
2		1,2 Benzisothiazol-3(2H)-one	2634-33-5	R 22-38-41-43-50	1, 5, 8, 9	0,1%	X	
3		Tetrahydro-1,3,4,6-tetrakis(hydroxymethyl) imidazo[4,5-d]imidazol-2,5(1H,3H)-dion	5395-50-6	R43	2, 8, 9	0.080%	X	
4		bronopol (INN) 2-bromo-2-nitropropane-1,3-diol	52-51-7	R21/22 R37/38-41, R50	2, 5, 8, 9	0.100%	X	
5		mixture of: 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H -isothiazol-3-one [EC no. 220-239-6] (3:1)	55965-84-9	R23/24/25-34-43-50-53	2,3, 5, 8, 9	0.002%		
6		Sodium N-(hydroxymethyl)glucinate	70161-44-3	Xi; R36, R43	8 9	0.050%		
7		3-iodo-2-propinyl-butylcarbamate (IPBC)	55406-53-6 EINECS: 259-627-5	R 20/22-41-50	8, , 9	0,3%		
8		Pyrithione zinc	13463-41-7	R 22-23-38-41-50	2, 5, 8, , 9	.0,1%		Outdoor paint – façade coatings

						0,020%		All paints in film
9	Dry film preservative	terbutryn	886-50-0	Xn, Xi, N; R 22-43-50/53 Or Xn R22; Xn R48/22; Xi R43; R52/53 Or only R 50/53	2, 5, 8, 9	0.100%		
10		4,5-Dichloro-2-octyl-3(2H)-isothiazolone	64359-81-5	C;R34, Xi;R37, Xi;R43, N;R50	5, 9	0.700%		
11		Pyrithione zinc	13463-41-7	R 22-23-38-41-50	2, 5, 8, 9	0,1%		Outdoor paint – façade coatings
						0,020%		All paints in film
12		Cobalt, complexes de neodecanoate et de borate	68457-13-6	Xn, N, R38, R43, R50/53, R22	5, 9	0.025%	X	
13		3-iodo-2-propinyl-butylcarbamate (IPBC)	55406-53-6 EINECS: 259-627-5	R 20/22-41-50	2, 8, 5, 9	0,3%		
14		2-Octyl-2H-isothiazol-3-one	26530-20-1	R 22, 23/24-34-43-50/53	1, 2, 5, 8, 9	0.040%	X	
15		zinc oxide	1314-13-2	R 50/53	2, 5, 8, 9	2%	X	
16		Sodium polynaphthalene sulphonate	9084-06-4	R 52/53	2, 5, 8, 9	0.1%	X	
17	Neutralising agent-pH	triethylamine	121-44-8	R11 - R22 - R23/24 -	2, 9	0.200%	X	

	corrector			R35 - R41				
18		Alkanolamine	102-79-4	Xi: R41	9	2.000%		
19		Ammoniaque	1336-21-6	C, N, R34, R50	5, 9	0.200%		
20		2-amino-2-methylpropanol	124-68-5	Xi: R36/38; R52/53	5, 9	0.200%		
21		Ammonia RTECS #: BO0875000	7664-41-7	R10; R23; R34; R50	2,5, 9	0.065%	X	
22		2,2'-iminodiethanol (DEA)	111-42-2	R22-48/22; R38-41	2, 9	2.000%	X	
23	Cobalt dryer	Cobalt bis(2-ethylhexanoate)	136-52-7	Xi; R43 N; R50/53	2,4,5, 9	1%;	X	
24		Fatty acids, tall-oil, cobalt salts	61789-52-4	Xn; R22 Xi; R43 , N; R51/53	4,5, 9	0.500%	X	
25		Neodecanoic acid	26896-20-8	R52/53	4,5, 9	1.000%	X	
26	Zinc dryer	Hexanoic acid, 2-ethyl-, zinc salt,BASIC	85203-81-2	R38, R51/53	5, 9		X	
27	Anti-skinning agent	2-butanone oxime ethyl methyl ketoxime / ethyl methyl ketone oxime	96-29-7	R40; R21; R41, R43	6, 9	0.400%	X	
28		Acideoctanoique, sel de zirconium	18312-04-4	Xi, R38	9	1.300%	X	
29		lithium neodecanoate	27253-30-1	Xi, R38 Or Xi R38 ; R52/53	5	0.200%	X	
30		Manganese salts	CAS 15956-58-8 or CAS 27253-32-3	Xi;R38.	9	4%		
31		Zirconium salt of 2-ethylhexanoic acid	22464-99-9	Xn, R20	9	0.600%	X	

32	Other driers	Iron(1+), chloro[dimethyl-9,9-dihydroxy-3-methyl-2,4-di-(2-pyridyl-kN)-7-[(2-pyridinyl-kN)methyl]-3,7-diazabicyclo[3.3.1]nonane-1,5-dicarboxylate-kN3, kN7]-, chloride(1-)	478945-46-9	Xn; R22 Xn; R48/22 Xi; R43 R52/53	2, 5	0.050%	X	
33	UV protection filtre (Light stabilizer)	Melange de : bis(2,2,6,6-tetramethyl-1-octyloxypiperidin-4-yl)-1,10-decanedioate; 1,8-bis((2,2,6,6-tetramethyl-4-((2,2,6,6-tetramethyl-1-octyloxypiperidin-4-yl)-decan-1,10-dioxyl)piperidin-1-yl)oxy)octane	406-750-9	R53	5, 9	0.60%	X	Outdoor paints
34		Bumetrizole	3896-11-5	R53	5, 9	1.00%	X	Outdoor paints
35		reaction mass of α-3-(3-(2H-benzotriazol-2-yl)-5-tert-butyl-4-hydroxyphenyl)propionyl-ω-hydroxypoly(oxyethylene) and α-3-(3-(2H-benzotriazol-2-yl)-5-tert-butyl-4-hydroxyphenyl)propionyl-ω-3-(3-(2H-benzotriazol-2-yl)-5-tert-butyl-4-hydroxyphenyl)propionyloxypoly(oxyethylene)	EC: 400-830-7	R43 R51-53	5, 9	0.990%	X	Outdoor paints
36		bis(1,2,2,6,6-pentamethyl-4-piperidyl) sebacate 70 - 80 % Xi - N R43 - R50/53	41556-26-7	R43 R50/53	5, 9	0.600%	X	Outdoor paints
37		methyl 1,2,2,6,6-pentamethyl-4-piperidylsebacate	82919-37-7	R43-R50/53	5, 9	0.200%	X	Outdoor paints
38		de 3-(3-(2h-benzotriazol-2-yl)5-(1,1-dimethylethyl)-4-hydroxypenyl)propionates de c7-c9 alkyleramifie et lineaire	127519-17-9	R51/53	5, 9	0.500%	X	Outdoor paints

39	Anticorrosive pigment (solid corrosive inhibitor).	zinc phosphate (2,5% ZnPO4)	ZnPO4: 7779-90-0	R50/53	5, 9	8-10%	X	
40		Zinc oxide	1314-13-2	R50/53	5, 9	2%	X	
41	Substrate Wetting agent / surface tension modifier	Polypropylene glycol alkylphenyl ether	9064-13-5	R43	9	3.000%	X	
42		Polyoxyethyleneisodecyl ether	61827-42-7	Xi· R41 & Xn· R22	9	2.000%	X	
43		Alcohols, C9-C11, ethoxylated	68439-46-3	Xi; R41	9	2.000%	X	
44		Secondary Alcohols, C11-C15, ethoxylated	68131-40-8	Xi; R38, R41	9	2.000%	X	
45		Secondary Alcohols, C12-C14, ethoxylated	84133-50-6	Xi; R41	9	2.000%	X	
46		Alcohols, C16-C18, ethoxylated	68439-49-6	Xi, N, R50, R41 or Xn R22 ; Xi; R41	5, 9	2.000%	X	
47		Fatty alcohol ethoxylated	None	Xi; R41	9	2.000%	X	
48		Alcohols, tallow,ethoxylated	61791-28-4	Xn; R22 ; Xi; R41	9	2.000%	X	
49		Alcohols, C12-14,ethoxylated	68439-50-9	Xi; R41; N; R50	5, 9	2.000%	X	
50		Polyoxyethylenetridecyl ether phosphate	9046-01-9	Xi; R38 ; R41	9	2.000%	X	
51		Poly(oxy-1,2-ethandediyl),a-isotridecyl-w-hydroxy-,phosphate	73038-25-2	Xi; R38 ; R41; R52/53	5, 9	2.000%	X	
52		Polyoxyethylenestearyl ether	9005-00-9	Xi; R41	9	2.000%	X	
53		Isotridecanol, ethoxylated	9043-30-5 69011-36-5	Xn; R22 ; Xi; R41	9	2.000%	X	

54		Alkyl polyglucoside	500-220-1	Xi; R41	9	2.000%	X	
55		Tridecyl(polyethyleneoxy)ethanol	78330-21-9	Xn; R22 ; Xi; R41	9	2.000%	X	
56		Sodium di-(2-ethylhexylic) sulfosuccinate	577-11-7	Xi; R38 ; R41	9	0.200%	X	
57		2,4,7,9-tetramethyldec-5-yne-4,7-diol	126-86-3 / EINECS: 204-809-1	R 36, R 52/53	5, 9	0.25%	X	
58		Alkoxylated Alcohol	None	R52/53	5, 9	2.000%	X	
59	Silicon Resin Emulsion	triethoxy(2,4,4-trimethylpentyl)silane	35435-21-3	R10 ; R52/53	5, 9	3.000%	X	
60	Solvent (in composition of some ingredients)	Hydrocarbures, C10-C13, n-alcanes, isoalcanes, cycliques, < 2% aromatiques	01-2119457273-39-XXXX	Xn; R65, R66	9	2.000%	X	
61		2-methylpropan-1-ol	78-83-1	R10 Xi; R37/38-R41 R67	9	2.000%	X	
62		Petroleum distillates, solvent dewaxed heavy paraffinic (DMSO extract <3%)	64742-65-0	CAS N°64742-65-0 ; 72623-87-1 : These CAS N° stands for a Toxic R45 substance except the DMSO extract is below 3% (Note H,L)	9	2.000%	X	
63		Hydrocarbures en c12-18	93924-45-9	Xn, R65, R66	9	0.060%	X	
64		Ethylene glycol monobutyl ether	111-76-2	Xn; R20/21/22 - Xi; R36/38	9	1%	X	
65		Lubricating oils (petroleum), C20-50,	72623-87-1	CAS N°64742-65-0 ; 72623-87-1 : These	9	2.000%	X	

		hydrotreated neutral oil-based		CAS N° stands for a Toxic R45 substance except the DMSO extract is below 3% (Note H,L)				
66	Pigment	Nickel Titanium Yellow	8007-18-9	Heavy metal	9	2.000%	X	
67		leucophyllite minerals containing crystalline silica classified STOT RE 1 and STOT RE 2		R48/25/24/23 or R48/20/21/22	9, 10	0.500%		All paints
68		crystalline silica classified STOT RE 1 or STOT RE 2 contained in fillers		R48/25/24/23 or R48/20/21/23	9, 10	0.500%		All paints
69		Heptanes (Naphtha),	092045-53-9	R11, 38, 51/53, 65, 67	5, 9	0.020%	X	
70		Complex alkanolamine	068784-47-4	R36/38	9	1.000%	X	
71		Diethylene glycol (EC No. 2038722)	000111-46-6	R22	9	0.500%	X	
72		iso-Propanol	000067-63-0	R11, 36, 67	9	0.020%	X	
73	Unreacted impurity	Volatile Aromatic Hydrocarbons	Various	Various	7			

Notes:

1. The sum of the total allowable concentration of these compounds is 0.05 % (w/w) before or after tinting (if applicable). For outdoor wood coatings the total allowable concentration shall not exceed 0.2 % (w/w).
2. The sum of the total allowable concentration of these compounds is 0.1% w/w).
3. The sum of the total allowable concentration of these compounds is 0.0015 % (w/w).
4. These compounds can only be used in alkyd paints and varnishes and up to a concentration not exceeding 0,05 % (w/w), measured as % of cobalt metal in the end product.
5. Substances or mixtures can have an allowable maximum concentration of 2% (w/ww/w) in the final paint formulation.
6. May be used in alkyd paints up to a limit of 0.3 % (w/w) in the final paint formulation.
7. Ingredients containing VAH may be added up to such a limit that the VAH content in the end product will not exceed 0,1 % (w/w). In this context volatile aromatic hydrocarbon (VAH) means any organic compound, as defined in Directive 2004/42/EC, having an initial boiling point less than or equal to 250 °C measured at a standard pressure of 101,3 kPa and having at least one aromatic nucleus in its developed structural formula.

8. The product may include biocides in order to preserve the product, and in the appropriate dosage for this purpose alone. These biocides shall be registered in the Biocide Product Regulation (BPD) scheme. Further, in accordance with Directive 67/548/EEC, Directive 1999/45/EC of the European Parliament and of the Council or Regulation (EC) No 1272/2008 substances or mixtures used as preservatives, that are classified as: H400, H410, H411, H412 and H413 are permitted but only if their bioaccumulation potentials are characterised by log Kow (log octanol/water partition coefficient) $< 3,0$ or an experimentally determined bioconcentration factor (BCF) ≤ 100.

9. After a transition period of two years the paint formulation shall not contain any hazardous substances, or combinations thereof, that result in the formulation being greater than 0.7 of the limits defined within PART A of directive 1999/45/EC and as required by the CLP regulation for marking dangerous substances.

10. Derogation is granted provided that the user before and during the paint use cannot come in contact with the substance in a dry form (e.g. the substance is within the liquid paint).

Hazardous substances (continue.)

The final product must not be labelled according to the hazard statements above.

Concentration limits for substances or mixtures which may be or have been assigned the hazard statements or risk phrase listed above, or which meet the criteria for classification in the hazard classes or categories listed in the table above, and concentration limits for substances meeting the criteria set out in Article 57(a), (b) or (c) of Regulation (EC) No 1907/2006, shall not exceed the generic or specific concentration limits determined in accordance with the Article 10 of Regulation (EC) No 1272/2008. Where specific concentration limits are determined, they shall prevail over the generic ones.

Concentration limits for substances meeting the criteria set out in Article 57(d), (e) or (f) of Regulation (EC) No 1907/2006 shall not exceed 0.1% weight by weight.

Assessment and verification: The applicant shall provide a declaration of compliance with this criterion, together with a product material safety data sheet meeting the requirements of Annex II to the REACH Regulation and the quantity, in % (w/w), for all chemicals where derogations are sought. The applicant shall provide copies of the material safety data sheets of any preservatives added, together with information on their exact concentration in the product. The manufacturer or supplier of the preservatives shall provide information on the dosage necessary to preserve the product

Feedback from AHWG2 and the Hazardous Substance sub-AHWG

Extensive feedback was received with respect to this criterion, both during and after the second ad-hoc working group and during further rounds of consultation with the hazardous substance sub-AHWG. Comments relating to the three proposed options were as follows:

- The need for a dynamic criteria based on substance groups: The criteria should not contain a fixed derogation list as proposed by Option 1 as this would limit innovation. Instead it should be dynamic, allowing for derogations within defined substance groups;
- The basis for challenges should be transparent: Industry stakeholders expressed concern about the transparency and evidence underpinning challenges to derogation proposals (Option 2).
- Industry would not be able to respond within the 2 year transition period: In general stakeholders were not in favour of Option 3. There was a consensus that it would not be possible for industry to make substitutions on the scale required after the two year transition period, this therefore requires omitting or rethinking;

Other overall comments fell into the following categories:

- The need to review the consistency of the hazard classes, notes and concentration limits: The cross-references between the derogated concentration limits, CLP concentration limits and limits contained within the derogation notes require checking and harmonising. There

are also hazard classes listed in the derogations that are not addressed within the scope of the criteria. With regards to the 0.7% calculations many manufacturers will not have the software to provide verification and this approach will need to be reviewed against CLP compliance SDS up to 2015.

- The importance of taking into account exposure paths: A significant number of comments discussed the potential routes to exposure of the consumer or workers and the differences in the chemical forms of substances before and after incorporation into the paint matrix. This also links to the next point.
- Classification of Ecolabelled paint as dangerous to the environment: Whilst ingoing substances that are ingredients of the paint formulation could be classified as an aquatic hazard the final product (a mixture under CLP) should not be labelled as such as this would compromise the image of the Ecolabel. However, the concentration limits of ingoing substances that may trigger final product classification are unclear without the aid of worked examples and LC_{50} results for derogation proposals.

These comments and the proposed response are discussed further in Table below. Specific detailed comments were also received in relation to specific substances and for substance groups. These are summarised and the proposed response are discussed further in **Error! Reference source not found.** below. Substances for further discussion with stakeholders following the further revision of the derogations are listed in Table 12.

Table 11: Thematic comments received from Stakeholders following AHWG2

Theme	**Summary of comments**	**Proposed response**
Derogations by substance group	The substance by substance approach is too complex, inflexible and unfair, reflecting only a limited number of producers. The list will create competition between producers based on those has been able to enter their formulations onto the list, which may preclude SME's. The reasoning behind substances having been 'flagged' by stakeholders to reject derogations needs to be more transparent. Would it be possible to use a substance that is equal or less hazardous than those on the list? If not then innovation and improvement of paint formulations will be restricted. Instead a substance group approach should be taken. An example was given of biocides, with the hazard class restrictions accompanied by the	The derogation list is to be used as the evidence base to develop a substance group derogation list. This list would derogate specific hazard classes and, where appropriate, set maximum concentration limits for these groups, which could vary according to the sub-product. The hazard classes would be determined for each of the substance groups within the existing list based on the most common hazard classes. Where a substance or substances carry a different hazard profile to the rest of the group then their specific hazard classes would be flagged for exclusion. A further justification would then be required from industry in order to adjust the hazard class derogation

	specific function that would be derogated for indoor and/or outdoor paints and concentration limits applying to the group and/or specific substances e.g. sum of isothiazolinone compounds.	in order to permit use of the substance(s).
Procedure for future substance derogations	A significant number of stakeholders queried what the process would be for the derogation of substances in the future. How would this work if more hazardous substances were substituted by new less hazardous substances and formulations.	The proposed substance group approach to derogations would allow greater flexibility for substances not currently on the main derogation list to be used, subject to specific derogation conditions.
Procedure for handling future CLP classifications	Future changes in classifications can be foreseen. It may be that case that essential substances not classified at present change their status in the future, as noted by a number of stakeholders in relation to the change from R phrases to Hazard classes. The same may also apply to biocides under the EU authorisation process.	The criteria will include a clause requiring applicants to refer to the most current CLP classifications and thresholds, which shall prevail in the event of a conflict between the criteria and the classifications. Forthcoming changes in the allergen and aquatic toxicity classification rules will be further reviewed and the criteria will be updated where required.
Structure and formulation of the notes	The notes should be brought forward to before the derogation table. Comments included: - The need for clarity on whether maximum allowed concentration applies to the total sum of substances or individual substances. - A CLP version of Note 9 was requested in order to provide corresponding summary formulas. There was also some confusion surrounding the 0.7% request which was interpreted as being a concentration limit. - Specific calculation software would be required to comply with Note 9, which may serve as a barrier to applicants.	The concentration limits will be clarified for substance groups and specific substances. It is proposed following several rounds of consultation to omit the requirements described under Note 9. This is because they would Imply that the substance would no longer be classified at 0.7 of the trigger concentration limit. Create a potential barrier to applicants because of the complexity of the calculation method. The 0.7 factor applied was also relatively arbitrary, not reflecting the potential within each

		substance group for improvement. *Proposal:* Based on input from front runners/license holders set the substance group limits values stringently to reflect the minimum concentration required to achieve the function.
Assessment and verification	It was highlighted that manufacturers only have access to information about ingoing substances equal to or higher than the 0.1% threshold for SDS preparation.	Ingoing substances that have the potential to trigger classification of the final product as hazardous to the environment, acute toxicity, CMR or as an allergen may be present at less than 0.1% and may have specific concentration limits listed in Regulation (EC) No 1272/2008. For example, the isothiazonlinone preservative CIT has a generic concentration limit for H317 (R43) of 0.015% *Proposal:* Additional verification may therefore be required for substance groups for which there is a clear justification based on final classification of the product or hazards along the lifecycle of the product e.g. at the production plant.
Transition period	There was a consensus that industry and associated production timings would not permit enough substitutes within the two year time frame. Biocides were cited as an example, with industry waiting for the EU authorisation process to run its coarse first. Water-based paints require biocides for in-can protection and the transition applied to 2-methyl-2H-isothizol-3-one and 1,2-benzisothiazolo-3(2H)-one would eliminate long-term biocide protection. UV protectors for wood varnishes were also cited as an example. The need to re-open applications after	There was a consensus view from stakeholders that the transition period was unworkable, both from the point of view of industries capability to substitute commonly used substances, and from Competent Bodies who would have to manage the transition and large numbers of re-applications by license holders.

	two years was considered to be a heavy burden for Competent Bodies. The combination of the transition period and Note 9 would be problematic.	
Aquatic toxicity	A number of the maximum allowable concentrations would result in products being classified as hazardous to the environment, including products carrying an N (DSD) classification. There was a consensus that whilst ingoing substances could be classified as 'dangerous to the environment' the final product should not carry a classification. This was felt to be important to the trust and credibility of the Ecolabel. Concentration limits should be permitted that allow for sufficient efficacy of the paint formulation whilst not being classified. A maximum allowable concentration for the aquatic toxicity classes of 2% w/w was proposed. An opinion was expressed that anti-rust paints that incorporate anti-corrosive pigments should not be accepted.	It would seem logical for an ecolabelled product not to be labelled as 'hazardous for the environment'. This labelling equated to N (R50, R50/53, R51/53) under the DSD system, however, under CLP the distinction is less clear as all classifications H400-H413 result in this classification. There remains some scope for differentiation as the display of a pictogram is required for classes H400-H412 (acute category 1 and chronic category 1-2 hazards). A precautionary statement on prevention and disposal (P273, P501) is required for Category 1-4 hazards but a response if only required for Categories 1 and 2. Only Category 4 uses the words 'may cause' harmful effects, as opposed to being 'very toxic', 'toxic' or 'harmful', which together with the precautionary statements would serve to highlight the importance of how the consumer disposes of used paint. *Proposal:* Ingoing substances classified as hazardous for the aquatic environment shall not trigger classification of the final product as with a Category 1, 2 or 3 hazard. It is proposed that the same approach is applied to acute, allergen and CMR hazards, with the option of linking the derogation to the production

		phase.
Allergens	Should ecolabelled paint be permitted to be classified as a skin allergen (H317). This may result from derogating certain biocides. Dry film preservatives may need to be present at concentrations up to 0.45% in outdoor wood paints in order to preserve durability.	The trigger concentration limit for labelling of a mixture as a skin allergen is 1.0%. It is possible that this may change with the new 1A/B classifications. Substances may also have specific concentration limits below the trigger concentrations and cut-off of 0.01%, as can be seen for some of the preservatives proposed for derogation.
Redundant hazard classes	It was highlighted that a number of hazard classes are listed for derogation that do not feature in the standard legal criteria text: - R20, R21, R22, R36, R38, R39 and R41 on their own. R41 is essential for many paint formulations e.g. in surfactants, stabilizers - EUH070 corresponds to R39 and R41 in combination. - R43 was not on the original list of hazard classes.	The risk phrases highlighted have been removed from the criteria, with the exception of H317 (R43) which is of importance for the Member States and is addressed by other product groups as it is a consumer issue, in harmonisation with the hazard class listing used in other Ecolabel revisions.

Follow-up after the EUEB meeting and stakeholder consultation of March 2013

The move to a more flexible derogation framework was in general welcomed by stakeholders. However, there was an overall consensus from stakeholders that the proposal requires further development, with the rules requiring further testing in order to ensure that they are clear and transparent and to eliminate any contradictions. In particular the continuity between restrictions in Appendices 1 and 2 should be ensured.

Stakeholder comments relating to the following specific substance groups are aggregated and discussed in separate sections of this document:

– metals (Section 4.2.3),

– APEO's (Section 4.2.5),

– perfluorinated surfactants (Section 4.2.7),

– preservatives (Section 4.2.9),

– formaldehyde (Section 4.2.11)

– and phthalates (Section 4.2.12).

Some additional substance group-specific comments are aggregated in Table 11 of this section.

Below we discuss general comments received relating to the overall approach and to the structuring into substances groups, aggregated thematically:

- Substances of Very High Concern (SVHC's): A limited number of comments were received in relation to the restrictions on Substances of Very High Concern. Clarification was requested on the proposed criteria wording that appears to permit their use up to a concentration of 0.1%. This is because the wider restriction on hazardous substances in criteria 6b applies to substances classified as '…toxic, carcinogenic, mutagenic, dangerous to the environment…' at concentrations greater than 0.01%. Concern was also raised that the proposed approach may deviate from some recent criteria sets such as printed paper products in which substances meeting the criteria of Article 57 (a) (b) and (c) of Regulation (EC) No 1907/2006 shall not exceed generic or specific concentration limits as opposed to a stricter limit of 0.10%. It is to be noted, however, that Article 6(7) of the aforementioned Regulation states that *'No derogation shall be given concerning substances that meet the criteria of Article 57 of Regulation (EC) No 1907/2006…[at] concentrations higher than 0,1 % (weight by weight).*'
- Cut-off threshold: A range of comments were received in relation to the 0.01% threshold. Because 0.1% is the threshold for the mandatory disclosure of ingredients on Safety Data Sheets it was felt that 0.01% would be much more difficult to verify. This would be particularly problematic for impurities. Other stakeholders felt that the limit for impurities should be set at 0.01% and should not be cumulative. The application of a threshold for impurities to the final product should be made clearer.
- Inclusion of sensitising hazards: The inclusion of the respiratory and skin sensitising hazards H334 and H317 was queried. This is not a hazard classification mentioned in the Ecolabel Regulation 66/2010/EC. There is, however, general precedent and agreement from the EU Ecolabel Board that these hazards are included where they are particularly relevant i.e. where is potential for skin contact with and/or inhalation of the final product.
- Final product classification: With regard to classification of the final paint product there was a consensus from industry stakeholders that the stricter CLP definition of 'hazardous to the environment' would be workable. The relationship between final product classifications based on the CLP Regulation and the DSD Regulation is to be clarified e.g. does 'hazardous to the environment' equate to N under DSD.
- Additional derogation conditions: Limited feedback was received on the additional derogation rules relating to factory conditions and production processes. One existing licenseholder commented that they may be more challenging for SME's. The application of the conditions to Category 1 and 2 hazards requires clarification – which are the Category 1 and 2 hazards?
- Assessment and verification: The combination of verification routes that apply to a substrance or substance group should be clarified. Particular concern was raised about the range of test methods now proposed for a number of the substance groups. It was generally felt that it would not be realistic to introduce significant number of tests because of the cost. Compliance could only realistically be achieved based on a combination of SDS, calculations

and raw material suppliers declarations. Additionally, and in order to show compliance with the hazard classifications raw material suppliers should also confirm the classification status of raw materials and ingredients. It was felt that the overall requirements for applicants to compile such declarations into a 'technical report' would benefit from guidance in the User Manual following the final Decision. The general assessment and verification conditions for criteria 5 have been updated to support the declaration of classifications. This is based on text developed for other Ecolabel product groups and clarifies the information required to support declarations for classifications.

A more fundamental comment was made by one Competent Body that the substance list might better be placed within the criteria than in an appendix. It is not usual for an appendix to contain criteria requirements for applicants.

Earlier in the revision process a number of stakeholders raised concerns about nanomaterial ingredients. With the adoption of the new Biocides Regulation 528/2012 new requirements have been introduced for the disclosure of nanomaterials on product labelling and the selection of scientifically appropriate test methods. The Regulation reflects the definition of nanomaterials provided in the Commissions Recommendation 2011/696/EU[61].

Taking into account the requirements that are used in Biocides Regulation and in the section for derogating preservatives respective wording on the disclosure of ingredients which fall under the definition of Recommendation 2011/696/EU was introduced. Based on the explanation given in the Background report[62] and industry stakeholders' input the scope of this requirement addresses only intentionally manufactured nanomaterials. The discussion on nanomaterials (there are different views of stakeholders) and potential options is described in the Background report.

A summary of stakeholder comments relating to specific substance groups is summarised in table 12. For each aggregated comments a proposed response is also outlined.

Table 12: Substance-specific comments received from Stakeholders following March 2013

Substance group	Summary of comments	Proposed response
2. Driers and anti-skinning agents	A concentration limit was proposed of 1.0% for all driers. Evidence was, however, provided to support this proposal.	Previous submissions referred to a concentration limit of 0.1%. It is proposed to maintain this limit unless specific new evidence is submitted.
	There is a contradiction between the derogation of cobalt as a siccative in alkyd paints in Criterion 5 and their restriction in Appendix 2. In addition, a	The use of cobalt driers in alkyd paints is proposed for derogation at a final product concentration limit of 0.05%, which is consistent

[61] COMMISSION RECOMMENDATION of 18 October 2011 on the definition of nanomaterial2011/696/EU, available online at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:275:0038:0040:EN:PDF.

[62] Background report, p. 51, available online at: http://susproc.jrc.ec.europa.eu/paints/docs/Ecolabel%20Paints%20Background%20Report.pdf.

	derogation is required for H400 to support their use.	with the current criteria set. This is proposed a specific additional derogation and H400 shall not therefore be derogated for other driers.
	Concern was raised that the derogations would exclude the use of more common iron-based driers.	Further information is required as to why they would be excluded.
4. Surfactants	Surfactants are used in many types of paints and not just tinting bases. They are also used in various other raw materials e.g. resins, defoamers, dispersing agents.	The scope of the derogation has been widened to include dispersing agents and primers.
	Verification of this restriction using SDS for all surfactants present in raw materials within the paint formulation would be very difficult in practice since this information may be confidential. CAS numbers and classification would be more realistic (*see also* the general comments on assessment and verification).	The assessment and verification is to be modified to request CAS numbers and classifieds (self-classified of harmonised). The general assessment and verification conditions for criteria 5 clarify the information required to support declarations for classifications.
	It was commented that the overall concentration limit of 2% is too low and should be raised to 3% to reflect the possible contribution from colourants. The inclusion of colourants within the concentration limit should be clarified.	It is proposed that the current hazard class derogations are maintained as these are in line with surfactant derogations in other product groups [63]. On this basis an increase in the concentration limit to 3% could be accepted. A transition period of 12 months is likely to be applied to all existing licenseholders.
	It was additionally proposed that the hazard derogations be extended to classifications H400, H410 and H411. Five specific surfactants were identified as specific examples. If this extension is not accepted a transition period of 2 years is requested.	
5(f) Pigments	Restrictions on cobalt containing pigments in Criteria 5 and Appendix 1 need to be cross referenced. The Blue Angel allows the use of C.I. Pigment	It is proposed to derogate the proposed C.I.Pigments Blue 28 and 36. C.I.Pigment 50 was consulted in the C&L Inventory. Self-

[63] EU Ecolabel, *Detergent ingredients database*, Version January 2007

	Blue 28 and 36 and C.I.Pigment 50.	classifications suggest that it may be classified with H351. On this basis it is not proposed to derogate C.I.Pigment 50.
5(c) Binders and fillers	Clarification was requested as to why there is no binders and fillers substance group.	A new substance group is to be added to which derogation of hazard classification H373 (R48/20) up to a concentration limit of 1.0% would apply.
	Crystalline silica and leucophyllite minerals containing crystalline silica used as binders did not require a derogation and it is to be clarified as to whether they could be used.	Crystalline silica and leucophyllite minerals containing crystalline silica are to be derogated for use.
7(c) Monomers from binders	It was queried why only acrylic acid was restricted and why only for the paint classes c,d,e and i. This restriction is technically too narrow. Moreover, this substance is difficult to measure by standard analytical techniques.	Acrylic acid has been moved into a substance group entitled 'monomers from binders' to which a generic cut-off limit of 0.1% will be applied (see also the next comment relating to VAC's).
	The concentration limit for Volatile Aromatic Compounds (VAH's) of 0.1% in Decisions 2009/544/EC and 2009/543/EC could be used.	It is proposed to maintain the concentration limit for VAH's at 0.1%.

A list of substances which are pending re-evaluation of their derogations can be found in the Table 13. This list was provided to the industry association CEPE and derogations will be evaluated on the basis of functional need and the availability of substitutes.

Table 13. Substances to be re-evaluated for derogation (March 2013)

Substance group	**Substance**	**Basis for re-evaluation**
2. Drying and anti-skinning agents	Iron (1+), chloro[dimethyl 9,9-dihydroxy-3-methyl-2,4-di(2-pyridinyl-kN)-7-[(2-pyridinyl-kN)methyl]-3,7-diazabicyclo[3.3.1]nonane-1,5-dicarboxylate-kN3,kN7]-, chloride	The substance has a different hazard profile within the drier substance group, being classified with H373 (R48/22).
	2,2'iminodiethanol (DEA)	The substance has a different hazard profile within the drier group, being classified with H373 (R48/22).

3(a)Anti-corrosive pigment	Zinc phosphate (2.5%) for paint classes d,i and j at an 8.0% concentration limit.	This is a high concentration limit for an R50/53 classification and it is of significance to the classification of the final product.
4(a) General purpose surfactants	Alcohols, C16 C18 ethoxylated	These substances have a different hazard profile within the surfactant group, being classified with H400 (R50).
	Oleyl alcohol condensed with 2 moles ethylene oxide	
	Partially fluorinated alkyl phosphate esthers	The substance has a different hazard profile within the surfactant group, being classified with H330 (R26), H411 (R51/53), H373 (R48/22).
	Amphoteric fluorinated surfactant	The substance has a different hazard profile within the surfactant group, being classified with H411 (R51/53).
6(a) UV protection and stabilisation	bis (1,2,2,6,6 pentamethyl 4 piperidyl) sebacate	The substances have a different hazard profile within the UV protection/stabilisation substance group, being classified with H410 (R50/53).
	Methyl-1,2,2,6,6- pentamethyl-4-piperidylsebacate	
	Trizinc bis(orthophosphate)	
	2,2-dibromo-3-nitrilopropionamide	The substance has a different hazard profile within the UV protection/stabilisation substance group, displaying H400 (R50).
7(b) Solvents	Emulsion triethoxy (2,4,4 trimethylpentyl) silane	The substance has a different hazard profile within the solvent group, being classified with H412 (R52/53).

Follow-up after the EUEB meeting of June 2013

Stakeholder feedback

A stakeholder expressed concern that by derogating whole groups of substances, the ecolabel will not be a driving force to improve the environmental aspects of individual substances. A system should be used where individual substances are granted derogation only if a manufacturer documents that other tested substances are not sufficient.

Differentiated sum totals for aquatic hazard classifications were proposed. It was felt that without restrictions on the limit values for hazards such as H400 and H411 there would be potential for significant sum totals for these classifications.

The question was asked as to whether it would be possible to verify an ingoing mixture instead of the substances in that mixture? It should be explained when a mixture should be assessed rather than a substance.

It was felt by a number of stakeholders that the overall assessment/verification threshold of 0.01% should also apply to SVHC/Candidate List substances.

The substance group approach was introduced because of the consensus view of stakeholders in the September 2012 consultation round that the substance derogations were too complex and inflexible. Many different combinations of substances are used in formulations and not all possible ingredients can be captured by the derogation process. Some general rules were also found to be required e.g. given the limited scope for substitution of biocides.

As far as possible derogations have been made that contain specific conditions and which are related to required functions that ensure the quality of the product and/or support specific applications. It is anticipated that with the information gathered from licenseholders this approach will provide a better overall picture of the hazard profile and substitution potential for ecolabelled paint formulations.

It should be noted that the requirement on mixture classifications the criteria is now stricter, with H412 and H413 classifications now added. A proposal based on the DSD classification rules and the Nordic Swan criteria were reviewed earlier in the revision process and discounted by stakeholders because of their complexity. Instead substance-group restrictions limit concentrations as far as practically possible. It may then be possible to obtain a clearer picture of overall formulations at the time of the next revision.

At the March and June 2013 EUEB meetings a comparison of the hazards restricted by the current criteria and the new proposal was requested. This is presented in Table 14 and illustrates that with the exception of some substance groups the overall approach is stricter.

A number of comments were received in relation to nanomaterials. These states that they should be banned from ecolabelled paints and varnishes. This was based on a general view that there are gaps in the assessment framework under REACH and that possible variations in their toxicological and ecotoxicological characteristics are not addressed. Manufacturers should have to prove that they are safe to use.

A general ban is not possible at present for the EU Ecolabel. A clause has, however, been added to the assessment and verification requirements requiring disclosure for ingredients that are

nanomaterials according to the European Commissions proposed definition 2011/696/EU. This approach was supported by a number of Member States.

Table 14 Benchmarking and comparison of hazards restricted by Decisions 2009/543/EC and 2009/554/EC and the October 2013 hazardous substance criteria proposal

a) Final product classification

Existing criteria (2009 Decisions)	**Proposed criteria (October 2013)**	**Comparison of the criteria**
Toxic (T) Very toxic (T+) Harmful (Xn)	Acutely toxic T, T+ STOT T+ , T , Xn	No difference
Carcinogenic (Carc) Mutagenic (Mut) Toxic to reproduction (Repr)	Carcinogen, mutagen or reproductive toxicants CMR (Cat 1-3)	No difference
Dangerous to the environment (N)	Hazardous to the environment	Stricter: now includes H413(R53) and H412 (R52/53)
Corrosive (C) Irritant (for R43)	A respiratory or skin sensitiser (H317 and/or (H334)	No difference

b) Ingredients (very toxic, toxic or CMR)

Existing criteria	**Proposed criteria (October 2013)**	**Comparison of the criteria**
Acute toxicity: Oral, dermal and inhalation (Cat 1-3)	Acutely toxic: Cat 3 derogations for in-can preservatives, driers and neutralising agents. Cat 1 and 2 derogations for solvents.	Restriction of Category 1 and 2 hazards for all ingredients, *with one exception*.
STOT: Single exposure (Cat 1,2) STOT: Repeated exposure (Cat 1,2)	STOT: Derogations for binders/fillers and driers (Cat 2)	Restriction of Category 1 and 2 hazards for all ingredients, *with two exceptions*.
Mutagenic (Cat 1,2) Carcinogenic (Cat 1,2) Toxic for reproduction (Cat 1,2)	Carcinogen, mutagen or reproductive toxicants: *No derogations listed*	No CMR Cat 1-3 hazards are permitted or derogated
Preservatives labelled as follows may be used up to 0.1%	*Preservatives labelled accordingly may be used up to 0.06% (in-can) and 0.1-0.3% (dry film, indoor and outdoor respectively). Sum total 0.16% - 0.36%*	*Relaxation of overall limit values for preservatives but with an overall tightening of hazard restrictions:*
Acute toxicity: Oral, dermal and inhalation (Cat 1-3)	Acute toxicity: H331 (Cat 3), Isothizolinone compounds (H301, H311)	Stricter: Restriction of Category 1,2 hazards for all preservatives

STOT: Single and/or repeated exposure (Cat 1,2) Carcinogenic (Cat 2)	n/a n/a	Stricter: Restriction of Category 1,2 STOT hazards for all preservatives Stricter: Restriction of Category 1,2 carcinogens for all preservatives

c) Ingredients (dangerous for the environment)

Existing criteria	**Proposed criteria (October 2013)**	**Comparison of the criteria**
No hazardous ingredient may exceed 2%.	*The derogations permit substance groups within a range of 0.06% and 3%.*	With the exception of two substance groups the new limit values are <2%.
The sum total of ingredients labelled with the following hazards may not exceed 4%: Dangerous to the environment (N): R50, R50/53, R51/53, R52/53, R51, R52, R53 Acute toxicity: Cat 1-3 Chronic toxicity: Cat 1-4	*Worse case scenario total concentration 7.16% (all hazards) 3.36% (H400, H410, H411)* Hazardous to the environment: H400, H410, H411, H412, H413 Acute toxicity: Cat 1 Chronic toxicity: Cat 1-4 Cat 1,2 derogations: *Preservatives, driers, anti-corrosion pigments, neutralising agents, UV protectors.* Concentration limits: *0.06 – 2.0% (with the exception of outdoor paints and anti-corrosion protection)* Cat 3,4 derogations: *Preservatives, driers, anti-skinning agents, anti-corrosion pigments, verdigris prevention, surfactants, silicon resin emulsion, Neutralising agents, optical brighteners, UV protectors.* Concentration limits: *0.06 – 3.0%*	The sum total may now exceed 4% for some paint formulations. Stricter: The classification requirements for the final product has been tightened (see point a. above) The derogations are within the existing concentration limits for individual ingredients with the exception of surfactants which are proposed for derogation up to 3% (coloured paints only).

It is proposed that, in order to ensure that verification is workable, that the classification of ingoing mixtures be accepted (as is permitted in Article 6(6) of the Ecolabel Regulation).

With regards to SVHC's and criteria 5b the threshold of 0.10% is a horizontal requirement across ecolabelled products and also corresponds to the thresholds for notification to ECHA.

Substance group specific stakeholder comments and the proposed response are summarised in the table below.

Summary rationale for the final criteria proposal

The final proposal retains elements of the original criteria 6 on Dangerous substances whilst also responding to the requirements of Article 6(6) and 6(7) of the Ecolabel Regulation (EC) No 66/2010. The proposal was informed by lengthy derogation discussions with stakeholders.

The criteria consists of the following three elements:

- 5(a). Overall restrictions to hazard classifications and risk phrases: A standard ecolabel list of CLP hazards with their DSD equivalents forms the basis for this sub-criteria (see table 5 in the criteria). Paint and varnish ingredients were screened for their classification and the concentrations required in the final product. The result is a derogation framework that seeks to balance the need to manufacture high quality paints with the requirement to minimise the hazardous ingredients used. The result is Appendix 1 which groups paint and varnish ingredients and lists the hazards which were identified as requiring derogations as well as related concentration limits and derogation conditions, which are as specific as possible. Some derogation conditions relating to exposure of the workforce to hazards during the handling of raw materials during paint manufacturing were also identified and these are listed within 5(a). A 'safety net' in the form of a requirement on the overall classification of the paint and varnish mixture has been retained and made stricter by reference to CLP in place of DSD.
- 5(b) Substances of Very High Concern: The Ecolabel Regulation explicitly rules out the use of Candidate List SVHC's in ecolabelled products. This is reflected in the standard wording used in sub-criteria 5b. A derogation threshold of 0.10% is set. No derogation requests were received for Candidate List SVHC's.
- 5(c) Restrictions that apply to specific hazardous substances: This mainly consists of restrictions carried over from the current criteria. In some cases these have been updated in order to make them more specific (e.g. APEO'S, phthalates), in order to reflect the latest scientific evidence (e.g. perfluorinated surfactants) or in order to make the verification requirements more rigourous (e.g. formaldehyde).

Stakeholder feedback: Substance group-specific comments

Substance group	Theme	Summary of stakeholder comments	Proposed response
2(a) Driers	Iron driers should be included	Iron based driers are excluded based on their classification. They are environmentally preferable to cobalt driers, which additionally require H400 derogation.	In recognition of their environmentally preferable status the hazard derogations have been adjusted to permit iron driers. This removes H400/H410 and adds H301 (R24) and H373 (H48/20-22). Cobalt driers now have a specific derogation recognising drying function.
	Cobalt salts should be restricted	Cobalt salts are a Candidate List substance and shall not be used.	This status is addressed by criteria 5b.
	The cobalt limit should relate to the total content	The limit of 0,05% must be referred to as the content of Cobalt in alkyd paint.	This clarification has now been made.
4(a) General purpose surfactants	Additional hazard derogations	Derogations are required for H400, H410 and H411 in order to support paint formulation.	Of the derogations received the surfactants that were classified with H400, H410 and H411 tended to have a surfactant mixture classification of H412 or H411. It is therefore proposed to extend the derogated hazards only to H411
	Variations in the sum limit values by colour	The sum total limit value could be lowered to 1.0% for white and light coloured products (the majority of products) as 3.0% would be a worse case for colours.	The derogation has been made more specific, differentiating between white/light paints and colours. The majority of paints will fall into the first category, enabling the hazardous content to potentially be reduced. However, this must be balanced against the addition of H411 to the derogation.

4(b) Alkylphenolethoxylates (APEOs)	An indicative APEO list should be appended	A list of APEO's could be added in order to support raw material declarations (see the Blue Angel UZ12a)	It is proposed to make reference to the indicative list of APEO's provided by the Blue Angel.
4(c) Perfluorinated surfactants	Chain lengths less than C6	Persistency is still of concern for chain lengths shorter than six carbons. That the paint is easier to clean is not sufficient justification for their use. Surfactants used in the paints should pass the same criteria as for the detergents regulation EC 648/2004.	The proposal is in-line with industry substitution initiatives for perfluorinated substances (e.g.led by US EPA). It is to be noted that hazards H411-H413 are proposed as being derogated for general purpose surfactants because of their important role in paint formulations. The paint mixture may not, however, be classified. In recognition of concerns the derogation has been made more specific to their use to provide specific additional functions - namely resistant or repellent to water or with a high spreading rate. The latter supports efficient paint use.
5(a) Metals	Cut-off limit	In the current draft it is stated as: «Trace impurities 0,01% cut-off». Is it still for each metal for each ingredient? Please clarify again.	The 0.01% cut-off applies per listed metal. This has now been clarified in the text.
5(c) Mineral raw materials including fillers/(f) Pigments	To which metals does the testing requirment apply?	Does the test for solubility only apply to the metals listed in 5b? Moreover, insoluble requires defining because DIN 53770-1 only determines solubility.	The test shall only apply to the metals listed in 5b. A definition is to be provided in the User Manual.

6(b) Plasticisers in paints and varnishes	Scope of the restrictions	Why are only 8 phthalates listed. In some other ecolabels up to 27 are restricted.	The eight phthalates listed are those identified as being on the Candidate List and/or which warrant restriction on a precautionary basis for applications in rooms with small children. Phthalates for which evidence exists for their hazard classification or for meeting Article 57 criteria will be restricted automatically by criteria 5a e.g. according to the CMR hazards.
7(b) Solvents	Scope of the restrictions	The requirement on organic solvents should be expanded to halogenated organic compounds,	This change has now been made.
7(d) Volatile Aromatic Hydrocarbons and halogenated solvents	Scope of the restrictions	The restriction on VAH's should be split into unreacted monomers and VAH. A proposal to restrict these substances to 0.01% as impurities was made.	The distinction has now been made. A declaration of non-use is proposed for VAH's.

Table 15. Substances derogation re-evaluations and new proposals

a) Re-evaluations for derogation (from March 2013)

Substance group	**Substance**	**Derogation decision**
2. Drying and anti-skinning agents	Iron (1+), chloro[dimethyl 9,9-dihydroxy-3-methyl-2,4-di(2-pyridinyl-kN)-7-[(2-pyridinyl-kN)methyl]-3,7-diazabicyclo[3.3.1]nonane-1,5-dicarboxylate-kN3,kN7]-, chloride	Accepted - Iron driers are derogated as a safer alternative to cobalt driers. H373 (R48/22) has been added to the drier hazard derogation.
	2,2'iminodiethanol (DEA)	Accepted - H373 (R48/22) is now derogated for driers.
3(a)Anti-corrosive pigment	Zinc phosphate (2.5%) for paint classes d,i and j at an 8.0% concentration limit.	This is a high concentration limit for an R50/53 classification and it is of significance to the classification of the final product.
4(a) General purpose surfactants	Alcohols, C16 C18 ethoxylated	Rejected - H400 (R50) shall not be derogated. The functional requirement for this ingredient was not provided.
	Oleyl alcohol condensed with 2 moles ethylene oxide	
	Partially fluorinated alkyl phosphate esthers	Rejected - The additional hazards of H330 (R26) and H373 (R48/22) shall not be derogated. The functional requirement for this ingredient was not provided.
	Amphoteric fluorinated surfactant	Accepted - H411 (R51/53) shall be derogated in order provide sufficient flexibility in formulations given the new CLP classification rules.
	Polyethylene glycol monooleyl ether	Rejected - H400 (R50) shall not be derogated. It does not appear that in most cases the product is classified as such.
	Isotridecylalcohol, ethoxylated, phosphated, compd. with N,N-dimethylecyclohexanamine	Accepted - H411 (R51/53) shall be derogated in order provide sufficient flexibility in formulations given the new CLP classification rules.
6(a) UV protection and stabilisation	bis (1,2,2,6,6 pentamethyl 4 piperidyl) sebacate	Rejected - H410 (R50/53) shall not be derogated. The functional requirement for these ingredients was not provided.
	Methyl-1,2,2,6,6- pentamethyl-4-piperidylsebacate	

	Trizinc bis(orthophosphate)	
	2,2-dibromo-3-nitrilopropionamide	Rejected - H400 (R50) shall not be derogated. The functional requirement for these ingredients was not provided.
7(b) Solvents	Emulsion triethoxy (2,4,4 trimethylpentyl) silane	Rejected - H412 (R52/53) shall not be derogated. The functional requirement for these ingredients was not provided.

b) New proposals received (June 2013)

Substance group	**Substance**	**Derogation decision**
1(c) Dry film preservatives	Zinc oxide stabiliser (H400, H410) in conjunction with Zinc pyrithion and BIT	Accepted - Zinc pyrithion and BIT cannot be used without this stabiliser. These preservatives are required as options for outdoor paint preservation. A limit value of 0.05% was proposed.
	2-octyl-2H-isothiazol-3-one (H311, H331, H400, H410)	Accepted - It is understood that OIT may play a dual role of in-can and dry film preservative. It is proposed for derogation only for outdoor paints with the addition of hazard H311 (R24) and H331 (R23) for this preservative only. It is required for use in combination with preservatives such as IPBC and Tertbutryn.
4(c) Perfluorinated surfactants	3,3,4,4,5,5,6,6,7,7,8,8,8-Tridecafluorooctyl phosphate salts (no hazards)	Accepted - Perfluorinated surfactants are derogated subject to the general surfactant requirements and their carbon chain length, a proxy for their biodegradability.
	Phosphoric acid, mixed esters with 3,3,4,4,5,5,6,6,7,7,8,8,8 – tridecafluorooctan-1-ol and polysubstituted alkane, mono- and diammonium salts (H330, H412)	Rejected - Perfluorinated surfactants are derogated subject to the general surfactant requirements and their carbon chain length, a proxy for their biodegradability. However, the mixture classification with H330 raises concern.
	Reaction mass of mixed (3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl) phosphates, ammonium salts (H330, H410)	Rejected - Perfluorinated surfactants are derogated subject to the general surfactant requirements. The mixture is classified with H410, which is not derogated for surfactants, and H330.

Based on the feedback received during the consultation period and after the EU Ecolabelling meeting of June 2013 the final criteria is proposed as follows:

Criterion 5. Restriction of hazardous substances and mixtures

The final product shall not contain hazardous substances and mixtures in accordance with the rules set out in the following sub-criteria which apply to:

- Hazard classifications and risk phrases
- Substances of Very High Concern
- Specific other listed substances

Applicants are required to evidence that the final product formulation complies with the overall assessment and verification requirements together with any additional requirements contained within Appendix 1 of this Decision.

(a) Overall restrictions to hazard classifications and risk phrases

The final product formulation, including all intentionally added ingredients present at a concentration of greater than 0.010%, shall not, unless expressly derogated in Appendix 1, contain substances or mixtures classified as toxic, hazardous to the environment, allergenic, carcinogenic, mutagenic or toxic for reproduction (CMR) in accordance with Regulation (EC) No 1272/2008 or Directive 67/548/EC and as interpreted according to the hazard statements and risk phrases listed in table 5 of this criteria.

Table 5. Restricted hazard classifications and their categorisation

Acute toxicity	
Category 1 and 2	**Category 3**
H300 Fatal if swallowed (R28)	H301 Toxic if swallowed (R25)
H310 Fatal in contact with skin (R27)	H311 Toxic in contact with skin (R24)
H330 Fatal if inhaled (R23/26)	H331 Toxic if inhaled (R23)
H304 May be fatal if swallowed and enters airways (R65)	EUH070 Toxic by eye contact (R39/41)

Specific target organ toxicity	
Category 1	**Category 2**
H370 Causes damage to organs (R39/23, R39/24, R39/25, R39/26, R39/27, R39/28)	H371 May cause damage to organs (R68/20, R68/21, R68/22)
H372 Causes damage to organs (R48/25, R48/24, R48/23)	H373 May cause damage to organs (R48/20, R48/21, R48/22)

Respiratory and skin sensitisation	
Category 1A	**Category 1B**
H317: May cause allergic skin reaction (R43)	H317: May cause allergic skin reaction (R43)
H334: May cause allergy or asthma symptoms or breathing difficulties if	H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled (R42)

inhaled (R42)	

Carcinogenic, mutagenic or toxic for reproduction	
Category 1A and 1B	**Category 2**
H340 May cause genetic defects (R46)	H341 Suspected of causing genetic defects (R68)
H350 May cause cancer (R45)	H351 Suspected of causing cancer (R49)
H350i May cause cancer by inhalation (R49)	
H360F May damage fertility (R60)	H361f Suspected of damaging fertility (R62)
H360D May damage the unborn child (R61)	H361d Suspected of damaging the unborn child (R63)
H360FD May damage fertility. May damage the unborn child (R60, R60/61)	H361fd Suspected of damaging fertility. Suspected of damaging the unborn child (R62/63)
H360Fd May damage fertility. Suspected of damaging the unborn child (R60/63)	H362 May cause harm to breast fed children (R64)
H360Df May damage the unborn child. Suspected of damaging fertility (R61/62)	

Hazardous to the aquatic environment	
Category 1 and 2	**Category 3 and 4**
H400 Very toxic to aquatic life (R50)	H411 Toxic to aquatic life with long-lasting effects (R51/53)
H410 Very toxic to aquatic life with long-lasting effects (R50/53)	H412 Harmful to aquatic life with long-lasting effects (R52/53)
H413 May cause long-lasting effects to aquatic life (R53)	EUH059 Hazardous to the ozone layer (R59)

Hazardous to the ozone layer	
EUH059 Hazardous to the ozone layer (R59)	

The most recent classification rules adopted by the European Union shall take precedence over the listed hazard classifications and risk phrases. Applicants shall therefore ensure that classifications are based on the most recent rules on the classification, labelling and packaging of substances and mixtures.

In accordance with the methodologies for the classification of mixtures contained in Regulation (EC) No 1272/2008 and all amending legislation the hazard classification of the final paint product shall be determined in order to demonstrate compliance. Equivalence between DSD and CLP mixture classifications can be found in table 6.

Table 6. Final product classification: CLP versus DSD equivalence

CLP Mixture classification	*DSD equivalent*
Acutely toxic	T / T+
Specific target organ toxicity	T+ / T / Xn
A respiratory or skin sensitiser	-
A carcinogen, mutagen or reproductive toxicant	CMR Cat 1-3
Hazardous to the environment.	N (not inclusive of R53 and R 52/53)

(i) Derogations applying to substance groups

For the purpose of this product group, derogations have been granted for defined groups of substances that may be contained within the final product. These derogations stipulate the hazard classifications that are derogated for each specific substance group and the associated derogation conditions that apply. The derogations are set out in Appendix 1 and apply to the following substance groups:

- In-can preservatives
- Tinting machine preservatives
- Dry film preservatives
- Preservative stabilisers
- Drying and anti-skinning agents
- Corrosion inhibitors
- Surfactants
- Silicon resin emulsion in white paints, colourant and tinting bases
- Metals and their compounds
- Mineral raw materials including fillers
- Neutralising agents
- Optical brighteners
- Pigments
- UV protectors and stabilisers
- Plasticisers
- Solvents
- Unreacted monomers
- Volatile Aromatic Compounds and halogenated compounds

(ii) Derogation conditions applying to production sites

Additional conditions relating to production of paints and varnishes shall apply in the case of derogations for acute toxins or specific target organ toxins. In this case applicants shall submit evidence that they have met the following requirements:

- Substances to which an acute toxic or specific target organ toxins classification applies shall demonstrate compliance with relevant European Occupational Exposure Limit Values (OELV's) or Member State OELV's for the substance(s), with the strictest applying;
- Where there is no reference OELV then the applicant shall demonstrate how health and safety procedures for the handling of the ingoing substance(s) at production sites for the final ecolabelled paint product minimise exposure;
- Substances to which a classification applies as an aerosol or vapour shall demonstrate that workers are not exposed in this form;
- Substances to which the classification applies to in their dry form shall demonstrate that workers cannot come into contact with the substance in this form during manufacturing.

Assessment and verification: *the applicant shall demonstrate compliance with this criterion by providing a declaration of the classification and/or non-classification for:*

(i) The final paint or varnish product based on the methodologies for the classification of mixtures contained in Regulation (EC) No 1272/2008 and all amending legislation

(ii) Paint or varnish formula ingredients that fall within the groups of substances listed in 5(a)(i) and are present at concentrations of more than 0.010% in the final product

This declaration shall be based on information collected according to the requirements in Appendix 1.

Active ingredients to which specific concentration limits may apply under Regulation (EC) No 1272/2008 and which may fall below the cut-off value of 0.010% shall also be identified.

The following technical information shall be provided to support the declaration of the classification or non-classification of ingredients:

(i) For substances that have not been registered under Regulation (EC) No 1907/2006 and/or which do not yet have a harmonised CLP classification: Information meeting the requirements listed in Annex VII to that Regulation;

(ii) For substances that have been registered under Regulation (EC) No 1907/2006 and which do not meet the requirements for CLP classification: Information based on the REACH registration dossier confirming the non-classified status of the substance;

(iii) For substances that have a harmonised classification or are self-classified: safety data sheets where available. If these are not available or the substance is self-classified then information shall be provided relevant to the substances hazard classification according to Annex II to Regulation (EC) No 1907/2006;

(iv) In the case of mixtures: Safety data sheets where available. If these are not available then calculation of the mixture classification shall be provided according to the rules under Regulation (EC) No 1272/2008 together with information relevant to the mixtures hazard classification according to Annex II to Regulation (EC) No 1907/2006;

Substances and mixtures shall be characterised in accordance with that specified in section 10, 11 and 12 of Annex II of Regulation (EC) 1907/2006 (Requirements for the Compilation of Safety Data Sheets). This shall include information on the physical form and state of the ingredients and shall include identification of manufactured nanomaterial ingredients for which 50 % or more of the particles in the number size

distribution have one or more external dimensions in the size range 1 nm-100 nm .

The applicant shall also identify substances and mixtures used in the paint formulation which fall under the specific requirements for derogation as set out in Appendix 1. For each derogated substance or mixture supporting information shall be provided showing how the derogation requirements have been met.

(b) Restrictions that apply to Substances of Very High Concern

In accordance with Article 6(7) of Regulation (EC) No 66/2010 the final product and any ingredients or raw materials, shall not, unless specifically derogated, contain substances that:

- Meet the criteria in Article 57 of Regulation (EC) No 1907/2006 and of the Council of 18th December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH);
- Have been identified according to the procedure described in Article 59(1) which establishes the Candidate List for Substances of Very High Concern.

No derogation shall be given concerning substances that meet one or both of these conditions, and which are present in a paint or varnish product at concentrations higher than 0.10 % (weight by weight).

Assessment and verification: *the applicant shall provide a declaration of compliance with this criterion, supported by declarations of compliance signed by their suppliers. Applicants shall demonstrate that they have carried out a screening of ingoing substances against the current Candidate List for Substances of Very High Concern and the criteria in Article 57 of Regulation (EC) No 1907/2006*.

(c) Restrictions that apply to specific hazardous substances

The final product shall not contain the hazardous substances that are specifically identified in Appendix 1 at or above the specified concentration limits. The restrictions on substances in Appendix 1 apply to the following paint and varnish ingredients and residues:

(i) Dry film preservatives

(ii) Tinting machine preservatives

(iii) In-can preservatives

(iv) Preservative stabilisers

(v) Alkylphenolethoxylates (APEOs) surfactants

(vi) Perfluorinated surfactants

(vii) Metals and their compounds

(viii) Pigments

(ix) Plasticisers

(x) Free formaldehyde

Assessment and verification: verification and testing requirements are specified in Appendix 1 for substance and as relevant to specific forms of paint and varnish.

4.2.11 Formaldehyde

Formaldehyde is toxic both by inhalation and ingestion, and minimising or eliminating its use is an important goal for improving human health (classification under CLP with R23/24/25, R34, R40, R43). Stakeholders agreed that complete elimination of formaldehyde would be beneficial but felt that it was impractical at this stage. Formaldehyde is used as an in-can preservative and complete removal will reduce the quality and lifetime of the paint (particularly in hot, Southern European countries).

Stakeholders, both before and during consultation, indicated that the current testing regime is inappropriate for determining the concentration of formaldehyde. The requirement to test all the ingredients, particularly dry ingredients is unnecessary. Formaldehyde is used primarily to preserve liquid ingredients and therefore requiring a test for dry ingredients presents additional cost burdens to applicants. The amount of free formaldehyde in the paint is calculated by summing each component. This does not allow for any further in-can reactions that may generate more or less formaldehyde.

Concerns were also raised that the current in-can calculation using VdL-RL 03 is not sufficiently accurate, necessitating a further test using HPLC where 'formaldehyde donors' may be present. Three modifications have been suggested:

- Remove the requirement to test solid ingredients. This is the simplest option but does not provide any assurances of actual in-can formaldehyde testing.
- Remove the requirement to test all ingredients and perform an in-can test using HPLC. This reduces the administration burden on the paint suppliers and ensures that the amount of formaldehyde is accurate, however, it does mandate a potentially expensive test.
- Test indoor air quality. This option is discussed further in Section 4.2.2.

The most appropriate and robust suggestion was to perform HPLC analysis on the final paint formulation. Due to the variation in different paint colours and tinting systems, a testing regime suggested by stakeholders determines the maximum amount of formaldehyde in the end product. Although there is an additional cost associated with the testing of each tinting pigment, this cost is likely to be less than that associated with the current regime that requires testing of all ingredients.

Stakeholders also requested additional points of clarification, in particular, that the tests should be performed on the in-can formulations to ensure that any formaldehyde present was in its most concentrated state. It was also requested that all laboratory tests conform to ISO 17025:2005. Additional wording has been provided to reflect these points.

It should be noted that this criterion does not overlap with the Hazardous Substances criterion because formaldehyde donors may not necessarily be considered hazardous.

Free formaldehydes shall not be added. Formaldehyde donators may only be added in such quantities as will ensure that the resulting total content after tinting (if applicable) of free formaldehyde will not exceed 0,001 % (w/w).

Assessment and verification: The applicant shall provide a declaration of compliance with this criterion. In addition, the in-can concentration shall be determined using a standard based on High-Performance Liquid Chromatography using a testing laboratory certified to ISO 17025:2005. The applicant shall provide test results on the concentration of in-can formaldehyde on each paint colour,

or where a tinting system is used, on the base paint, each colour tint, and the theoretical maximum on a tinted paint (i.e. a paint that contains the maximum amount of tint with the most amount of formaldehyde donor).

Feedback from AHWG2 and EUEB meeting

In the stakeholders' feedback it was indicated that formaldehyde shall be measured in can for white base, each tinting bases and only one tinted paint that applicant estimate the most representative. Another stakeholder proposed that formaldehyde shall not be tested for each bases of a tinting system but to take two extremes: white base and transparent tinted bases with maximum rates.

Furthermore, it was also asked to allow testing using the VdL03 method (used also in Blue Angel) beside the HPLC. Only if formaldehyde donators (added or brought via other ingredients of the formula) are used, the applicant shall be obliged for testing with HPLC.

Some stakeholders indicated that many polymers have residual formaldehyde donors from the polymerization process, which have to be considered as production impurities. The total of formaldehyde donors, as set in the currently valid criteria, shall not exceed 10 ppm.

It was also asked to set guidelines on the conditions, when new formaldehyde test are required. Such a guideline could be included in the user manual for both applicants and CB, explaining how much a formulation can be changed (new raw material with other substances and/or changed of the amount of raw material) before a new test is required.

The stakeholders proposed the below test:

"- if inorganic raw material in the form of powder is changed in the formulation, no new test is required, as it is not expected to have any compact in the amount for formaldehyde.

- if one raw material is changed with another raw material which contains the same substances, no new test is required, as it is not expected to have any impact in the amount for formaldehyde."

Opinion regarding setting such guidelines is asked to other stakeholders.

The following formulation of the criterion is proposed in the revised criteria version:

Criterion 8. Formaldehyde

Free formaldehydes shall not be added. Formaldehyde donators may only be added in such quantities as will ensure that the resulting total content after tinting (if applicable) of free formaldehyde will not exceed 0,001% by weight.

Assessment and verification: the applicant shall provide a declaration of compliance with this criterion. In addition, the in-can concentration shall be determined using a standard based on High-Performance Liquid Chromatography using a national standard or validated method. The applicant shall provide test results on the concentration of in-can formaldehyde for white base, each tinting bases and one tinted paint that applicant estimate the most representative (i.e. with the highest amount of formaldehyde donor) / for base/colour tint combination which has the

maximum theoretical amount of formaldehyde (this base/colour combination shall be tested).Alternatively, the applicant shall provide test results from raw materials suppliers using the VdL-RL 03 test method (VdL Guideline03) 'In-can concentration of formaldehyde determined by the acetyl-acetone method' and calculations relating the data from these tests to the final product in order to indicate that the final maximum possible concentration of formaldehyde released by formaldehyde releasing substances is not higher than 0,001 % by weight.

Follow-up after the EUEB meeting and stakeholder consultation of March 2013

A number of comments highlighted the need to clarify the limit values that should apply, including the additional residual contributions listed in the proposed restrictions. This is to be clarified in relation to specific types of paint formulation, and in particular the use of specific types of preservatives.

The main comments received related to the potential for the free formaldehyde content of the paint product to be higher than 10ppm if preservatives or polymer binders that are formaldehyde donors are used. Evidence was submitted of the range of preservatives that this encompasses [64] and it was also noted that in many cases this group of preservatives represents an important alternative to isothiazolinones, including Bronopol-2-bromo-2-nitropropane 1,3 diol (52-51-7) and Dodecyldipropylene triamine (BDA) (2372-82-9).

An upper limit of 100ppm would be required to permit the use of preservatives that are formaldehyde donors. It is understood from existing Ecolabel licenseholders that the current limit value of 10ppm can only be met through the use of isothiazolinones, with the most effective being MIT/BIT. Formaldehyde donors are usually used in combination with isothiazolinones at concentrations that comply with the current restrictions on preservatives, isothiazolinones and formaldehyde.

A call for information from manufacturers of polymer dispersions (binders) indicated that a maximum residual concentration of 100 ppm could also be present in the final product. This suggests that for some paint formulations their overall contribution to the level of formaldehyde in paints and varnishes can be as significant as for preservatives.

The testing method also raised significant points of discussion. The VdL-RL 03 method was highlighted as not being accurate enough at low concentrations. This is because it picks up other aldehydes that may be present as residuals from polymers, which can then indicate a much higher, and therefore inaccurate concentration in the product. Alternative proposals were put forward based on either the more accurate HPLC method or testing of the emissions from a sample of painted surface (see below with reference to the Blue Angel). It was proposed that HPLC only be required where formaldehye donors are used, with calculations based on information from suppliers being accepted in order to comply with the 10 ppm limit.

[64] de Groot A C, Flyvholm M, Lensen G, Menn´e T and P Coenraads, *Formaldehyde-releasers: relationship to formaldehyde contact allergy. Contact allergy to formaldehyde and inventory of formaldehyde-releasers*, Contact Dermatitis 2009: 61: 63–85, John Wiley & Sons

It was also noted that Blue Angel has an additional form of verification that relates to the emissions of formaldehyde upon application of the paint. Upon review the specific requirement relates to a sample of painted surface in a chamber test with results showing <0,25 ppm after drying and < 0,05ppm after 24 hours. Given that the ECHA Committee for Risk Assessment has proposed that formaldehyde be reclassified to H350 (may cause cancer) [65] it is considered that this form of testing could now be more relevant in order to protect the consumer from exposure.

The Blue Angel's testing specification for formaldehyde emissions is based on a chamber test. It does not, however, reference a specific DIN, EN or ISO testing standard. It is understood that formaldehyde is commonly tested in relation to building products. The standard series EN 717-1 to 3 is specified for wood products but is understood to be used more generally for building products, including paints and varnishes. EN 717-3 is based on a flask as opposed to a chamber test and could therefore minimise costs.

The sampling method for testing generated comments mostly relating to minimising the costs to applicants. One proposal suggested only white and tinted transparent based or only for the worst case. It was highlighted that the specification of testing for limited colour ranges should be clarified. For example if only specific colours are produced. This requires only a simple clarification within the text.

Clarification was requested on when an updated testing may be required e.g. when a paint formula is changed.

The following formulation of the criterion is proposed in the May 2013 criteria revision, proposed for integration into the hazardous substance listing:

(a) Formaldehyde Applicability: *All products.*	Free formaldehyde shall not be intentionally added to the final product. Testing requirements shall reflect the product range. *The following sum total limit value shall apply* The following derogations are made from this requirement: (i) Where preservatives that are formaldehyde donors are required to protect a specific type of paint or varnish (ii) Where polymer dispersions (binders) are used as part of the paint formulation *In these cases the sum total shall not exceed the following limit value*:	10 ppm 100 ppm	*Verification:* Laboratory testing results for the white base, each transparent tinting base and the colour tint which has the maximum theoretical amount of formaldehyde. *Test method:* 10 ppm limit value: Determination of the in-can concentration using high-performance liquid

[65] ECHA, Scientific o*pinion adopted on 7th December 2012*, Commitee for Risk Assessment

			chromatography (HPLC) 100 ppm limit value: (1) Indoor paints and varnishes: Determined by means of analysis according to EN 717-3. Emissions must not exceed 0.25 ppm upon first application and they must be less than 0.05 ppm after 24 hours from the first application. (2) Outdoor paints and varnishes: Determination of the in-can concentration using high-performance liquid chromatography (HPLC) or VdL-RL 03

Follow-up after the EUEB meeting of June 2013

Stakeholder feedback

In relation to the derogation whch allows for 100ppm formaldehyde to be present a stakeholder queried how it shall be determined if formaldehyde donors are required. It was also noted that polymer dispersions (binders) are present in all paint products, all paints would be covered by the derogation. It was noted that the limit values should be workable for all kinds of indoor paints.

In relation to the test methods proposed it was queries as to why EN 717-3 was referred to instead of ISO 16000-3. In the Blue Angel emissions testing is only required as an alternative to content testing. In practice, this alternative has not been used by applicants.

Given concerns relating to the cost of HPLC test it was suggested by an industry association that calculations could be accepted (as before) or, as an alternative to HPLC, the cheaper Merckoquant method.

Derogations for formaldehyde donors and polymer dispersions

The selection of formaldehyde donors shall be the decision of paint formulator, however, given future classification with H350/R45 (may cause cancer) the criteria has been weighted to make their use more restrictive.

It is proposed to remove the reference to binders should be checked/selected to ensure that the paint complies.

In relation to the workability of the limit values feedback from stakeholders had not raised any previous concerns in relation to specific paint applications.

Specification of test methods

The revised proposal is intended as being strictly based on test methods, particularly in the light of H350 reclassification. It is accepted that HPLC is expensive but VdL-RL 03 was understood to be inaccurate, particularly with certain dispersion formulations. It is proposed that the Merckoquant test, which is understood to have be cheaper and to be accurate around the 10ppm threshold be used as the main form of verification. The Blue Angel RAL UZ 102 states the following:

> *''Serial tests showed that between 10 and 20 ppm, i.e. after exceeding the limiting value, intermediate colour shades become clearly visible. If a test based on this method shows results around the limiting value which indicate an exceeding - even if it is only a slight one - the product must be subjected to tests as described under "5. Notice" for exact determination and final clarification.''*

The result may be inaccurate for certain formulations because of the presence of other aldehydes, in which case HPLC shall be used for final determination.

Given the future reclassification of formaldehyde as H350 it is proposed that the emissions test, as specified by the Blue Angel, be retained as a derogation condition given the the new 100ppm limit where formaldehyde donors are used and possible concerns about consumer exposure.

In relation to emissions testing EN 717-3 was understood to have been used to test paint in some countries, but in most cases the ISO standard is now used. The reference has now been changed to ISO 16000-3 as proposed by a number of stakeholders.

Summary of final criteria proposal rationale

The revised proposal retains a limit value of 10ppm for free formaldehyde but introduces a derogation for where preservatives that are formaldehyde donors are used. Stakeholder concern to further restrict the use of isothiazolinone preservatives means that formaldehyde donors must also be available to paint formulators as an effective alternative.

This derogation permits concentrations of formaldehyde of up to 100ppm but is balanced by strict verification requirements that require analytical testing and emissions testing. The latter is proposed because formaldehyde is proposed to be reclassified with H350 (may cause cancer).

The verification requirements now require analytical testing instead of calculations. This is intended to provide a higher level of assurance for a substance that is of high consumer concern.

The 10ppm concentration limit was the subject of significant discussion amongst stakeholders

because of potential problems with the accuracy of the test results and the cost of the more accurate HPLC method. As a result the Merckoquant method has been introduced as a first test, with HPLC then used to make the final determination if the results are unclear or appear to exceed 10ppm.

Based on the feedback received during the consultation period and after the EU Ecolabelling meeting from June 2013 the final criteria is proposed as follows:

7. Residual substances that may be present in the final product			
(a) Formaldehyde Applicability: *All products.*	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. The sampling requirements for testing shall reflect the product range. *The following sum total limit value shall apply:* The following derogations are made from this requirement: (i) Where 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. (ii) Where polymer dispersions (binders) provide the function of formaldehyde donors instead of in-can preservatives. *In these cases the sum total shall not exceed the following limit value*:	0.0010% 0.010%	*Verification:* The free formaldehyde content shall be determined for the white base, each transparent tinting base and the colour tint which is predicted to contain the highest theoretical amount of formaldehyde. *Test method:* 0.0010% limit value: Determination of the in-can concentration using the Merckoquant method. If the outcome is not definitive according to this method then high-performance liquid chromatography (HPLC) shall be used to confirm the in-can concentration. 0.010% limit value: (1) All paints: Determination of the in-can formaldehyde concentration by means of analysis using VdL-RL 03 *or* high-performance liquid chromatography (HPLC). *and* (2) Indoor paints and varnishes: Determination by means of analysis according to ISO 16000-3. Emissions must not exceed 0.25 ppm upon first application and they must be less than 0.05 ppm after 24 hours from the first application.

4.2.12 Phthalates

Phthalates are used as plasticisers in PVC giving the plastic desired physical properties. They can be also used in paints to alter the overall finish of the paint. Several phthalates have been shown to be endocrine inhibitors; this can cause cancerous tumours, birth defects, and other developmental disorders. Some phthalates are in the candidate list to be classified as Substances of Very High Concern (SVHC) which will lead based on article 6.7 of EC Ecolabel Regulation 66/2010 to be directly excluded from Ecolabel products. There is some guidance provided by the EU that certain phthalates, in particular di-isononyl phthalate (DINP) and diisodecyl phthalate (DIDP) have no associated health risks.[66]

Many phthalates are excluded from several alternative ecolabels (US Green Seal and Austrian Ecolabel).[67] Within the paint industry, they are used in only a few applications and most stakeholders would welcome a ban in their use. As such the following criterion was initially suggested:

Intentional addition of phthalates is not permitted.

Assessment and verification: The applicant shall provide a declaration of compliance with this criterion.

Feedback from AHWG2 and EUEB meeting

Industrial stakeholders submitted the following explanation on the differentiation regarding the family of phthalates.

Phthalates are a family of substances divided into two groups:

- high molecular weight (HMW) phthalates

and

- low molecular weight (LMW) phthalates.

The HMW phthalates have all been registered for REACH and do not require any classification for health and environmental effects, nor are they on the Candidate List for Authorisation. High molecular weight phthalates are not CMR, neither are they considered endocrine disruptors.

As to the Low Molecular Weight phthalates, they are recognised as Substances of Very High Concern (SVHC) by the REACH regulation because of their effects on reproduction in animal studies.

The association asked to differentiate between these two groups of phthalates and to change the requirement as follows: “Intentional addition of Low Molecular Weight phthalates is not permitted”.

66 OJ C90/5 13.4.2006 (http://www.didp-facts.com/upload/documents/document8.pdf)
67 Environ Health Perspect. 2007 March; 115(3): 390–396. Published online 2006 December 19

The issue of phthalates was considered also in revision of other criteria (for textiles, bed mattresses). The restriction set and explanation is given below:

- High molecular weight phthalates (HMW) such as DINP, DIDP and DPHP are registered under the REACH regulation, and are non-classified for any health and environmental hazard. These HMW phthalates are not on the Candidate List of substances of very high concern. However, a ban is proposed for:

1. The use of DINP and DIDP in baby mattresses, since these are prohibited e.g. in toys;

2. DNOP, since information about the risks posed by this substance appears more uncertain.

Low molecular weight phthalates (LMW) such as DBP, BBP, DIBP and DEHP are recognised as substances of very high concern by the REACH regulation because of their effects on reproduction in animal studies. The list of banned substances mirror that used e.g. by the Oeko-Tex 100 scheme which adopts this approach.

The following substances shall not be added intentionally to the product:

- Di-iso-nonylphtalate
- Di-n-octylphthalate
- Di(2-ethylhexyl)-phthalate
- Diisodecylphthalate
- Butylbenzylphthalate
- Dibutuylphthalate
- Di-iso-butylphthalate
- Di-C6-8-branched alkyphthalates
- Di-C7-11-branched alkylphthalates
- Di-n-hexylphthalate
- Di-(2-methoxyethyl)-phthalate

A similar formulation is proposed for the criteria for paints, with the exception of DINP, DNOP and DIDP as given below:

Criterion 9. Phthalates

Intentional addition of the following phthalates shall not be added intentionally. The sum of the prohibited phtalates shall be lower than 0.1% by weight.

Name	CAS number	Acronym
Di(2-ethylhexyl)-phthalate	117-81-7	DEHP
Butylbenzylphthalate	85-68-7	BBP
Dibutuylphthalate	84-74-2	DBP

Di-iso-butylphthalate	84-69-5	DIBP
Di-C6-8-branched alkyphthalates	71888-89-6	DIHP
Di-C7-11-branched alkylphthalates	68515-42-4	DHNUP
Di-n-hexylphthalate	84-75-3	DHP
Di-(2-methoxyethyl)-phthalate	117-82-8	DMEP

Assessment and verification: the applicant shall provide a declaration of compliance with this criterion.

Follow-up after the EUEB meeting and stakeholder consultation of March 2013

Limited further comments were received in relation to this criterion. It was suggested to change the limit to 0.01% in line with the cut-off for impurities and for this to be the limit for individual substances rather than a sum total. This can be justified by the SVHC status of these substances. It was also suggested that the raw material supplier provide the declaration.

The following formulation of the criteria is proposed in the May 2013 revised criteria text and phthalates are to be integrated into the restricted substance listing in Appendix 1:

(b) Plasticisers in paint and varnish. *Applicability:* Where included in the formulation	*The following phthalates shall not be intentionally added as plasticisers:* DEHP (Bis-(2-ethylhexyl)-phthalate) BBP (Butylbenzylphthalate) DBP (Dibutylphthalate) DMEP (Bis2-methoxyethyl) phthalate DIBP (Diisobutylphthalate) DIHP (Di-C6-8-branched alkyphthalates) DHNUP (Di-C7-11-branched alkylphthalates) DHP (Di-n-hexylphthalate)	Concentration limit for any individual phthalate: 0.10%	*Verification:* Declaration shall be provided by the applicant and their raw material suppliers supported by CAS numbers and classifications.

Follow-up after the EUEB meeting of June 2013

Feedback received and the proposed response are summarised and discussed in section 4.2.10, hazardous substances.

Based on the feedback received during the consultation period and after the EU Ecolabelling meeting from June 2013 the final criteria is proposed as follows, and is to be listed under Appendix 1 of criteria Decision, within the 'hazardous substance restriction and derogation list':

6. Miscellaneous functional substances with specialist applications			
(b) Plasticisers in paint and varnish. *Applicability:* Where included in the formulation	*The following phthalates shall not be intentionally added as plasticisers:* DEHP (Bis-(2-ethylhexyl)-phthalate) BBP (Butylbenzylphthalate) DBP (Dibutylphthalate) DMEP (Bis2-methoxyethyl) phthalate DIBP (Diisobutylphthalate) DIHP (Di-C6-8-branched alkyphthalates) DHNUP (Di-C7-11-branched alkylphthalates) DHP (Di-n-hexylphthalate)	Concentration limit for any individual phthalate: 0.010%	*Verification:* Declaration shall be provided by the applicant and their raw material suppliers supported by CAS numbers and classifications.

5 End of life

5.1 Unused paint disposal – CRITERION WITHDRAWN

5.1.1 Unused paint

As is discussed under the technical analysis in part 1 of this study, unused paint is a significant environmental concern. It adds significantly to the impact of the applied paint and causes environmental pollution from its improper disposal. A recent study[68], based on relatively old data, highlights the problem of unused paint in the UK. In the DIY market, an estimated 25% of all paint goes unused, whereas with trade this drops to 1.5%. Stakeholders disagree with these figures and believe that approximately 10% of all paint is wasted. This equates to approximately 700,000 tons of unused paint wasted every year for the whole of Europe. Solvent-containing paint must be considered hazardous waste and undergo appropriate treatment. As is described within the LCC in the background report, hazardous waste disposal via incineration is approximately ten times the costs of non-hazardous waste.

A criterion to reduce the amount of wasted paint is important to reduce the overall environmental impact of the paint both in production and in treatment of the residuals. Unlike the manufacturing stage of paint where the ingredients and process are largely under the control of the manufacture, the responsibility at the end of life is shared among manufacturers, retailers, authorities and consumers. Therefore developing an appropriate criterion under the Ecolabel is more problematic.

There are different options and actions that can reduce the environmental impacts:

1. **Reuse**. Several schemes, mainly run as charitable organisations make use of unwanted paint selling either to the general public or for use within the social sector. Although unlikely to be operated directly by the manufacturers, support for such schemes could encourage more reuse and prevent waste. The largest hurdle for implementation is that collection and reuse throughout Europe is likely to be different between countries, which may be expensive to operate.
2. **Recycle or set minimum recycled content**. Recycling paint is an emerging technology whereby unused white paint is added to the base formulation. This reduces the amount of unused paint requiring disposal and can produce premium quality paint. The main concern is on the quality of the paint, particularly its anti-biocidal properties (has the old paint been contaminated?).
3. **Take-back for appropriate disposal**. As is described within the background report, solvent-containing waste paint must be treated as hazardous material and be sent for hazardous waste disposal (usually incineration). Although all countries should have the appropriate infrastructure to control this process, consumers may dispose of the waste paint through ordinary municipal waste streams (which could be damaging to the environment). Encouraging customers to return unwanted paint, for example to the point of sale, for appropriate disposal could be beneficial. There could, however, be problems in coordinating this requirement across Europe and the overall benefit may be limited.

[68] Paint and woodcare products - distribution and delivery, WRAP, 2011

4. **Combination of the above.** It is conceivable that developing the infrastructure for any of the above would facilitate the adoption of several reuse and recycling options. This would allow a manufacturer to decide the most appropriate method for controlling waste paint. It would however, be difficult to develop a flexible yet robust criterion to monitor this activity.

Alternative Ecolabels, in particular the Austrian Ecolabel, specify the development and implementation of a scheme to take-back, recycle and reuse unwanted paint. The French industry label 'RETOUR' is run by the French Environment Agency, ADÈME, to fulfil the requirements of their environmental code L541-10-4 which states that dangerous waste must be safely disposed of. The label is awarded to any suppliers of hazardous/industrial waste (including paint suppliers) who operate well-functioning and environmentally well-performing take-back schemes for clients. The label guarantees a quality take-back service, and obliges the supplier to offer to take back any unused product when the client purchases new items. The unused paint is then safely disposed of within the existing EU regulations.

Manufacturers indicate that there would be a significant barrier to implementing a take-back or paint reuse scheme.

There is a clear environmental impact from unused paint. This extends to both disposal of the paint and also the impact of production of unused paint. There is significant resistance from manufacturers and producers to the implementation of a take-back or reuse scheme. They argue that the diversity of the waste collection regimes throughout Europe make developing a universal scheme impractical and schemes tailored to individual Member States are expensive. Conversely, there is some support from the Ecolabel Competent Bodies who recognise the environmental value of reuse. A criterion has been suggested that reflects these viewpoints.

Unused Paint

Applicants shall encourage paint reuse/recycling equivalent to at least 2%, by volume, of all their Ecolabelled paint sold per annum. This can be achieved by one or with combination of the following options:

a) supporting reuse collection systems through third parties

b) accepting unwanted paint for recycling or reuse

c) supporting retailers with take-back systems.

The user should be respectively advised on the available options on how to deal with the unused paint.

Verification and assessment: The applicant shall either provide direct evidence of having a reuse scheme in place that reuses at least 2% by volume of paint per annum or provide evidence of substantial financial, logistical or physical support to a third party scheme that reuses 2%. It is not a requirement that the paint reused has obtained the EU Ecolabel. In addition, the applicant shall provide evidence through literature and packaging that instructs the end user where unused paint can be taken for reuse/recycling. These instructions should also be made available via the manufacturer website.

Feedback from AHWG2 and EUEB meeting

In general, the stakeholders considered the criterion very difficult. It was emphasized that producers have very limited or no influence on how products have been handled and on the consumer behaviour in reference to take take-back system: "*Paint producers have to take responsibility for products that are placed on the market or transferred to third party, but cannot manage processes outside the supply chain which he is not having control or influence on"*. Moreover, it was mentioned that reusing paint could also introduce increased risks of contamination by microorganisms, spoiling products, with negative effects on quality and environmental aspects as a consequence. It was mentioned that take-back systems for paint vary between EU countries and cannot be regulated in the frame of the EU Ecolabel.

Industry stakeholders proposed to inform with a explicit label on the product that "unused paint is no waste". Furthermore, they proposed to have under the "user information criterion" a recommendation to the consumer to calculate the exact amount that matches the consumer needs prior the paint purchase (reduce that way the amount of unused paint) as well to provide information how to extend storing of the unused paint for longer time (e.g. dry conditions, best handling practise etc). See section Consumer information of this document.

Based on the analysis of the comments received, it is proposed not to include this criterion in the revised proposal and to reconsider this issue in the next revision.

5.2 Packaging material – CRITERION WITHDRAWN

5.2.1 New Criterion: Packaging

Although relatively minor compared to reducing the amount of unused paint, additional criteria on minimising packaging waste would be environmentally beneficial. The literature review of LCAs performed within the background report concludes that the environmental impact of packaging is only a minor constituent compared to the production of the paint. The visibility of packaging waste is an important consideration.

The manufacture, use and disposal of packaging are important when considering both the volume of packaging waste (once the paint has been used) and to reduce the risk spillage to minimise paint waste and environmental damage. The use of reusable or lightweight packaging could also be considered.

There are three ways to reduce the environmental impact of the packaging:

1. Increasing the amount of recycled material within the paint pot
2. Decreasing the amount of material within the paint pot
3. Improving the usability and lifetime of the paint through changes in packaging design.

Mandating (1) within the EU Ecolabel appears to be achievable and could be readily introduced. To reduce the weight of packaging material (2), a modified criterion defined in the EU Ecolabel detergents criteria could be used:

$$WUR = \Sigma [(Wi + Ui)/(Di * ri)]$$

Where:

Wi = the weight (g) of the packaging component (i) including the label if applicable

Ui = the weight (g) of non-recycled (virgin) material in the packaging component (i). If the proportion of recycled material in the packaging component is 0% then Ui = Wi

Di = the number of functional units contained in the packaging component

(i). The functional unit = dosage in g/kg laundry. Note that the highest recommended dosage for each water hardness must be used in the WUR calculation.

ri = recycling figure, i.e. the number of times the packaging component (i) is used for the same purpose through a return or refill system.

r=1 if the packaging is not re-used for the same purpose. If the packaging is reused r is set to 1 unless the applicant can document a higher number.

However, information would be needed on the average weight of paint pots (and how this varies with size); whereas (3) could be used but is difficult to mandate and may stifle innovation. Without additional input, (1) is proposed as a new criteria.

Paint packaging

Plastic paint pots shall be made of a minimum 25% (w/w) post-consumer recycled material, be made of one polymer or be of compatible polymers for recycling and have the relevant ISO11469 marking.

This criterion does not apply to paint systems that deliver greater than 25 litres.

Verification and assessment: The applicant shall provide a declaration of compliance with this criterion along with evidence of marking.

Feedback from AHWG2 and EUEB meeting

Setting such a criterion found certain support, especially from the side of some CBs, nevertheless, it was also emphasized that it will be difficult to verify it. On the other hand, industry stakeholders mentioned suppliers "*may not be able to afford the demand in capacity, taking into account the recycling channels are not yet well organized*". Among other problems, stakeholders emphasized the lack of reproducibility in colour and the dark colour appearance, which could be a disadvantage for the consumer to select the product. Also worse durability/mechanical properties of the pots with recycled material as well the scarcity of suppliers and capacity at the market to supply enough packages to the market were mentioned. One stakeholder supported this criterion, if the requirement will not refer to post-consumer recycled material but to recycled material only (i.e. including pre-consumer recycled material too).

After the analysis of all comments received it has been decided not to set this criterion in the revised criteria version. More research is needed on the availability of the recycled materials and the properties of respective pots. This issue should be analysed more in depth ahead the next revision.

6 General

6.1 Consumer information

The following information shall appear on the packaging or attached to the packaging:

- “Unused paint is not waste”. It shall be recommended to preserve and reuse the unused paint as well to calculate the amount of paint needed prior purchase for minimizing environmental impacts.The use, substrate and conditions of use for which the product is intended. This shall include advice on preparatory work, etc., such as correct substrate preparation, advice on indoor use (where appropriate), or temperature
- Recommendations for cleaning tools and appropriate waste management (in order to limit water pollution). These recommendations shall be adapted to the type of product in question and field of application in question and may make use of pictograms if appropriate
- Recommendations concerning product storage conditions after opening (in order to limit solid waste), including safety advice if appropriate
- For darker coatings for which criterion 7(a) does not apply, advice is given concerning the use of the correct primer or base paint (if possible bearing the Community Eco-label)
- (Indoor only) — for thick decorative coatings a text informing that these are paints specially designed to give a three-dimensional decorative effect
- Text advising that unused paint requires specialist handling for safe environmental disposal and therefore it should not be thrown away with household refuse. The consumer should be informed on the provided and/or supported by the manufacture option for dealing the unused paint as given in criterion "unused paint".
- Recommendations on preventive protection measures for the painter. The following text (or equivalent text) shall appear on the packaging or attached to the packaging:
    - ‘For more information as to why this product has been awarded the Flower please visit the web-site: http://ec.europa.eu/environment/ecolabel.’

Assessment and verification: A sample of the product packaging shall be provided when submitting the application, together with a corresponding declaration of compliance with this criterion as appropriate. The information in which is given advice on how to deal with the "unused paint" should also be available via the manufacturer website.

Feedback from AHWG2 and EUEB meetings

Regarding assessment and verification one CB indicated that it is not needed that the applicant sends a sample of the product packaging. It is rather suggested that the applicant shall send art work (as PDF or other electronic form). The respective change is introduced in the revised criteria version.

One stakeholder asked additionally if the information on the class on wet scrub resistance should not be required to be placed on the product packaging. As it is not require to test all paints for SWR, this information cannot be required for all paints.

It is proposed to introduce the following information: **"Unused paint is not waste".** It shall be also recommended to preserve and reuse the unused paint as well to calculate the amount of paint needed prior purchase for minimizing environmental impacts. One CB proposed that manufacturers shall indicate the information on the product packaging about the quantity of paint needed for given surface *("for example: for a wall having a surface of X m², you only need to buy X quantity of paint"*). This could prevent the fact that consumers buy a too large quantity of paint.

Follow-up after the EUEB meeting of March 2013

- Regarding the text information to be included on the packaging

Some stakeholders indicated they found it unnecessary to add the text "Unused paint is not waste" together with the "*explanation to the customer that the amount of paint should be calculated to avoid excess use of paint*"). They augmented that "*adding of additional text to the packaging material, on labels which are already filled up with regulatory required texts, we will ultimately result in the need of country specific packaging material, instead of country-sharing labels which currently exists. This will generate more labels and packages and in the end harm the environment more than helping it. EU Ecolabel should rather encourage and support/host campaigns to raise the general public awareness regarding the issue of how to handle unused paint*". Others were of opinion that the recommendation to calculate paint demand prior to purchase shall be given; nevertheless the information on how to preserve the paint (shall be removed as the consumers cannot preserve the product appropriately i.e. add additional biocide).

In the opinion of the project team, the information regarding the unused paint should be kept due to its high environmental relevance found in the LCA results. Information on labels is already given in the language of the country where the product is placed on the market and translations need to be made. Though, it is true that sometimes manufacturers choose to have texts in few languages simultaneously, which contributes to high amount of text on the label. Nevertheless, as the criterion regarding take-back of unused paint was removed from the criteria set, this proposal was an alternative solution to raise the consumer attention regarding the end-of-life phase of the product. The study showed that the environmental impacts attributable to the unused paints are very high. Nevertheless, it was agreed that setting specific requirements for take back of unused paint is not feasible at the moment. Thus, the focus should be more on minimizing the amount of unused pain at "the source", e.g. aiding the customers in estimation how much they need to paint a given surface and raising their attention that unused paint is not waste. The more precisely estimated the amount, the lower amount of paint will become waste after the painting activity.

Further, following the feedback, the text of the requirement was redrafted to change the phrase "preserve" with "store in appropriate conditions".

Some stakeholders pointed out that this information shall be only put on DIY products, as the professional painters do already estimated the amount of paint needed. Nevertheless, as the

scope of the product group covers both, products intended for use by do-it-yourself and professional users, in the opinion of the product team, all ecolabelled products should contain this information, as sometimes the same product will be offered for professional and DIY applications.

One additional point was raised regarding the use of pictogram faucet to indicate that the tools should be washed with water. In the opinion of one CB this pictogram shall forbidden on the packaging. It was further proposed to add the following indication: "*To preserve the environment, do not throw your paint residue in the sewer sink, into drains, toilet or to the waste bin. All components of this product should be dropped off at the waste sorting centre (or recycling centre) of your town*".

Additional advices are given below:

- Wipe the brush thoroughly after application.
- Dry thoroughly. Rinse with a little water in a vessel. Allow the water to evaporate. The residue can then be normally thrown away (in the bin).
- Reseal packaging after use.
- Do not discharge into drains.
- Place the empty container for disposal at your local waste sorting centre
- It is recommended to contact the local authorities to check the terms of disposal and collection

It is proposed to include them in the user manual.

The final proposal is as follows:

The following information shall appear or be attached to the packaging:

- The following text: "Unused paint is not waste". It shall be recommended to store the paint in appropriate storage conditions (before and after opening), including, where appropriate, safety advice. The following text shall be added "Reuse of paints minimises the product life cycle environmental impact based on LCA studies". Information shall also be provided on how to estimate the amount of paint needed prior to purchase in order to minimise the paint wastage (e.g. for 1m2 of wall x liters of paint is needed) .
- Recommendations for 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"). The consumer should be advised on how to deal with the "unused paint" together with a web-link or contact details in which the consumer can find more detailed information.
- Recommendations on safety measures for the painter. This shall include basic

recommendation on personal protective equipment that should be worn. It should also include additional measures that should be taken when using spray equipment.

Assessment and verification: the applicant shall declare that the product complies with the requirement and provide the competent body with an artwork or samples of the user information and/or a link to a manufacturer's website containing this information as part of the application.

Follow-up after EUEB meeting from June 2013

Stakeholder feedback

The consumer information is too long and complicated. It should be presented in a clearer form, point by point. The language is also too technical e.g. reference to LCA is not appropriate.

There should be a requirement stating that empty packaging should be disposed of carefully/advice provided on how to dispose of it.

"Estimate the needed amount of paint carefully to avoid left overs" should be used instead of ''unused paint is not waste''. The applicant should not be restricted to the reference “x liters of paint for 1m2” and should have the option to provide this information on label in other ways.

The question was asked - if there are no links/information exist on how to safely dispose of paint what shall the applicant do? Some EU countries have limited recycling/recovery facilities.

Based on the feedback from stakeholders the information has been rationalised into three headings:

- Statements on the packaging;
- General information and advice;
- Advice and recommendations on paint handling.

The first heading consists of specific statements that shall be included on the packaging. The other headings now have a number of itemised points that shall be addressed in the information provided to the consumer. Technical references such as to LCA have now been removed.

The main message relating to paint wastage now states *“Minimise paint wastage by estimating how much paint you will need”.* The suggested advice has been amended to make reference to the *'estimate [of] the amount of paint needed prior to purchase in order to minimise paint wastage '*. Under the general information and advice heading the requirement has been made more general with the reference to “x liters of paint for 1m2” given as an example.

General advice is now to be provided on safe handling and disposal, with example messages given for the packaging/additional information.

In relation to the reference to disposal/re-use facilities it is considered important that safer disposal /re-use initiatives are highlighted if they exist, hence a reference to them has been

retained. However the clause '*where available*' has been added in the light of concerns from some industry stakeholders.

Based on the feedback received during the consultation period and after the EU Ecolabelling meeting from June 2013 the final criteria is proposed as follows:

Criterion 6. Consumer information

The following text 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"

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 $1m^2$ of wall x liters 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.

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 painter. 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*.

6.2 Information appearing on the Ecolabel

The current information appearing on the Ecolabel will need to be revised because the indoor and outdoor criteria are merged into a single document. In particular, a formalised system is needed to avoid customer confusion on the performance of the Ecolabel and the reason for the Ecolabel being awarded.

The proposed formulation of the criterion is as follows:

The optional label with text box shall contain the following text:

- Minimised content of hazardous substances
- Low content of volatile organic compounds (VOCs)
- Good performance for indoor use (where indoor criteria has been met)
- Good performance for outdoor use (where outdoor criteria has been met)
- 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.

Follow-up after EUEB meeting from June 2013

Stakeholder feedback

Limited feedback was received in relation to the labelling text. A comment was received in relation to "Low solvents" being more familiar to the consumers than "low content of VOC".

The term VOC was highlighted by a stakeholder. This term is used on a voluntary labelling scheme used in many countries and is also communicated in this form under the requirements of the Decorative Paints Directive. It is therefore considered to be an appropriate reference.

Based on the feedback received during the consultation period and after the EU Ecolabelling meeting of June 2013 the proposed revised criteria draft is as follows:

Criterion 7. Information appearing on the EU Ecolabel

The optional label with text box shall contain the following text, depending on the criteria met:

- Minimised content of hazardous substances
- Reduced content of volatile organic compounds (VOCs) (where VOC content complies with Criteria 4 and is >10.0 g/l)
- Low content of Volatile Organic Compounds (VOCs) (where VOC content is <10.0 g/l)
- Good performance for indoor use (where indoor criteria has been met)
- Good performance for outdoor use (where outdoor criteria has been met)
- 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.*

7 Additional aspects resulting from consultation

One more issue was raised in the stakeholders comments throughout the revision process. It referred to the use of nanomaterials in paint products. Examples of SiO_2, TiO_2, carbon black Al_2O_3 were given. It was further indicated that in the currently valid NF Environment label, the French Ecolabelling Board has decided that "*until a proper toxicological and ecotoxicological assessment framework for nanomaterials is in place, the precautionary principle on nanomaterials should be applied. In the criteria document for paint, the requirement is the following: "The product should not contain manufactured nanomaterials intentionally added in order to provide a new functionality"*

Some exemptions to this requirement are possible if the manufacturers can comply with all the following requirements: "The manufacturer shall demonstrate interest (technical benefit) that the use of nanoparticles can bring to the product. The manufacturer shall provide information on the toxicity and ecotoxicity of nanoparticles and show that the product will not release or emit nanoparticles throughout its life cycle".

It was highlighted that, although this restriction has been made, there are many applications for the NF label and this seems not to be a barrier for the environmentally friendly products.

Discussions on the use of nanomaterial and how these are treated in the Ecolabel are also made for other product groups. In the current criteria proposal for paints and varnishes the above recommended requirement was not, with exception of a requirement for disclosure of nanomaterials (as defined by Commission Recommendation 2011/696/EC), was not integrated. A consistent and harmonised approach with other product groups needs further discussions in the framework of the EU Ecolabel.