



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

## EU Ecolabel Criteria Proposal Technical Report

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## **Glossary**

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

## **Acknowledgements**

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# 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:<sup>1</sup> *"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 1<sup>st</sup> and 2<sup>nd</sup> 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.

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<sup>1</sup> 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<sup>2</sup> 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).

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<sup>2</sup> ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories

For tinting systems, criteria 1 and 2 apply only to the white base (the base containing the most TiO<sub>2</sub>). In cases where the white base is unable to achieve the requirement of at least 8 m<sup>2</sup> per 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 1<sup>st</sup> 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<sup>3</sup>, 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<sub>2</sub> (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.

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<sup>3</sup> 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	<p>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</p>	Mixed views	<p>Exclude but propose to include in the Commission's recommendation letter for investigation in the next criteria revision</p>
UV curable paints	<p>These specialist paints are in wide use, however are not readily available on the domestic market. They also require specialised equipment during application.</p>	Unanimous exclude	Exclude
Powder coatings/paints	<p>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.</p>	Unanimous exclude	Exclude
Anti corrosive	<p>Stakeholders indicate that many of these</p>	Mixed views	<p>Include but final resolution to be made</p>

metal primers and topcoats	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.		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 2011 excluded these products due to the fact	Mixed views. Weak positive responses.	Exclude but propose to include in the Commission's recommendation letter for investigation in the next criteria revision

	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 120 $\mu$ ;

Semi Transparent: contrast ratio 90-98% at 120 $\mu$ ;

Opaque contrast: ratio >98% at 120 $\mu$ .

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 definitions 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 research 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% especially 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 intellectual 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.

The revised version of these sections is given below:

#### *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 do-it-yourself 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 impart hydrophobic properties.
- (8) 'UV curing paint system' refers to hardening of coating materials by exposure to ultra-violet radiation<sup>4</sup>.
- (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<sup>5</sup>.
- (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<sup>6</sup>.
- (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<sup>6</sup>.
- (12) 'Anti-skinning substances' are additives that are added to the coating materials to prevent skinning during production or storage if 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. The subcategories for paints and varnishes of the Directive are used for defining VOC limits.

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<sup>4</sup> According to EN ISO 4618:2006 Paints and varnishes - Terms and definitions.

<sup>5</sup> According to EN ISO 8130-14:2004 Coating powders - Part 14: Terminology.

<sup>6</sup> 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.



- (14) Semi volatile organic compounds (SVOCs) are defined as all organic compounds which, in a capillary column<sup>7</sup> are eluting with a retention range between n-hexadecane (excluded) and n-docosane (included).

Note: Other definitions to be added for substance groups

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 definition of ISO 13300 as follows:

Designation	Angle of incidence	Reflectance
Gloss	60 <sup>0</sup>	≥60
Mid sheen (semi gloss, satin, semi matt)	60 <sup>0</sup> or 85 <sup>0</sup>	<60 ≥10
Matt	85 <sup>0</sup>	<10
Dead matt	85 <sup>0</sup>	<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 [insert date - 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 "x".

#### *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'

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<sup>7</sup> As specified in 8.2.2 of FprCEN/TS 16516.

submitted before the date of adoption of this Decision shall be evaluated 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 from the date of adoption of this Decision but by xxx at the latest 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.

Done at Brussels,

*For the Commission*  
*Janez POTOČNIK*  
*Member of the Commission*

### **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
- Appendix 1 Hazardous substance restriction and derogation list

### **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 these are described in the user manual of the Ecolabel criteria application and 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<sup>8</sup> 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 Eco-label 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 0,010 % by weight of final formulation.

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<sup>8</sup> ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories

(c) 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 0,010 % 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.

(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 calculated or measured based on 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 calculation or measurement of SVOC.

## 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.

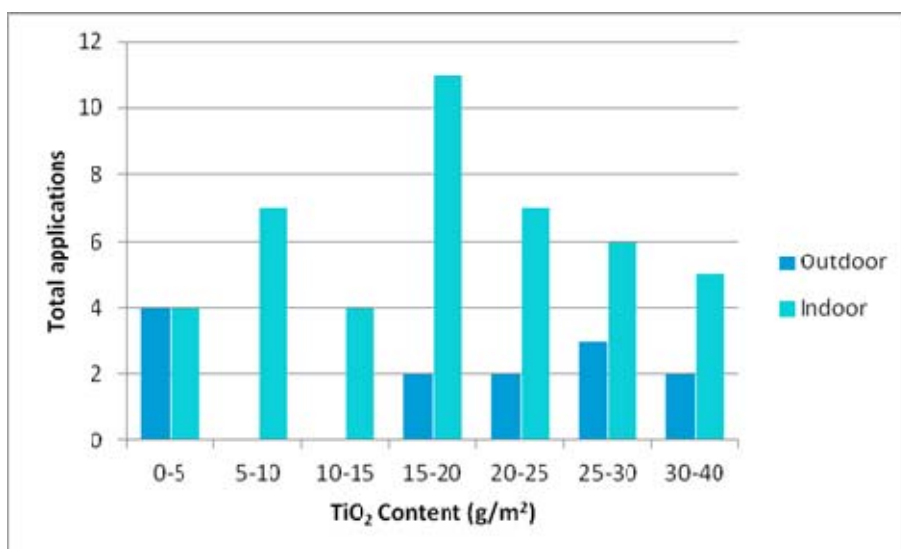


Figure 1: TiO<sub>2</sub> content in EU Ecolabelled paints

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 1<sup>st</sup> 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<sub>2</sub> 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<sub>2</sub> (0-5 g/m<sup>2</sup>). This presents three issues:

1. Determining spread rates (if the paints are transparent) and, thus, the amount of TiO<sub>2</sub> 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<sub>2</sub> which is produced using higher polluting routes can be used because the small amount of TiO<sub>2</sub> 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<sub>2</sub>', rather than 'per meter squared of paint' will ensure that low-polluting TiO<sub>2</sub> 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<sup>2</sup> of dry film, with 98 % opacity.

Wet scrub resistance	Indoor limit (g/m <sup>2</sup> )	Outdoor limit (g/m <sup>2</sup> )
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<sup>2</sup> for indoor and 38 g/m<sup>2</sup> 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<sup>2</sup>) – 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<sub>2</sub>).

### **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/m<sup>2</sup> or 25 g/m<sup>2</sup> 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<sup>2</sup> for indoor products and 38g/m<sup>2</sup> 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<sup>2</sup> 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<sup>2</sup> of dry film, with 98 % opacity.



Wet scrub resistance	Indoor limit (g/m <sup>2</sup> )
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 TiO<sub>2</sub>).

(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/m<sup>2</sup> 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.

### 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 SO<sub>x</sub> emissions and sulphate wastes from the chloride process. The Titanium Dioxide Harmonisation Directive<sup>9</sup> does not stipulate limits for SO<sub>x</sub> emissions for chloride wastes. Furthermore, stakeholders have argued that the levels of SO<sub>x</sub> 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

<sup>9</sup> 92/112/EEC

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 TiO<sub>2</sub> via the chloride route and also calculates the effect of SOx emissions on a typical paint formulation with a maximum of 38g of TiO<sub>2</sub> per square meter as mandated by criterion 1 for outdoor paints.

Table 3: Emissions from European TiO<sub>2</sub> manufacturing plants using the chloride process based on BREF data<sup>10</sup>

SOx emissions from a chloride plant <sup>11</sup>	SOx emissions per tonne of TiO <sub>2</sub>
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 m <sup>2</sup>
Average	48 mg/m <sup>2</sup>
Maximum	157mg/m <sup>2</sup>
Minimum	5mg/m <sup>2</sup>

Based on the argument provided above, the maximum amount of SOx emitted from a chloride based TiO<sub>2</sub> 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 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<sub>2</sub> 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<sub>2</sub> 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<sub>2</sub> producer can satisfy article 5 (by-product production)

<sup>10</sup> Best Available Technology for the Manufacture of Large Volume Inorganic Chemicals (BREF), EC, August 2007

<sup>11</sup> The figure takes into account the chlorination process and the energy to generate heat for the process.

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<sub>2</sub> for successful EU Ecolabel paint applications.*

TiO <sub>2</sub> Origin	Number of products	Average values per paint				
		SO <sub>x</sub>	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:

- SO<sub>x</sub> calculated as SO<sub>2</sub>: 7.0 kg/ton TiO<sub>2</sub>
- Sulphate waste: 500 kg/ton TiO<sub>2</sub>.

The chloride process:

- If natural ore is used, 103 kg chloride waste/ton TiO<sub>2</sub>
- If synthetic ore is used: 179 kg chloride waste /ton TiO<sub>2</sub>
- If rutile ore is used: 329 kg chloride waste /ton TiO<sub>2</sub>.

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<sub>2</sub> 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 TiO<sub>2</sub>, 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 TiO<sub>2</sub> 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<sup>12</sup>:

For the sulphate process:

- SOx calculated as SO<sub>2</sub>: 7.0 kg/ton TiO<sub>2</sub> pigment

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<sup>12</sup> As derived from the Reference Document on Best Available Technology for the Manufacture of Large Volume Inorganic Chemicals (BREF), August 2007.

- Sulphate waste: 500 kg/ton TiO<sub>2</sub> pigment

For the chloride process:

- If natural rutile ore is used, 103 kg chloride waste/ton TiO<sub>2</sub> pigment
- If synthetic rutile ore is used: 179 kg chloride waste /ton TiO<sub>2</sub> pigment
- If slag ore ore is used: 329 kg chloride waste /ton TiO<sub>2</sub> 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:

SO<sub>x</sub> 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<sub>2</sub> 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.

## 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 <sup>1</sup>	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 <sup>2</sup>						X
Liquid water permeability <sup>2</sup>						X
Fungal resistance <sup>2</sup>						X
Crack bridging <sup>2</sup>						X
Alkali resistance <sup>2</sup>						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 <sup>2</sup> /L	4 m <sup>2</sup> /L (elastomeric paint) 6 m <sup>2</sup> /L (masonry paint)	6 m <sup>2</sup> /L	6 m <sup>2</sup> /L	1 m <sup>2</sup> /L	-	8 m <sup>2</sup> /L	6 m <sup>2</sup> /L	8 m <sup>2</sup> /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 <sup>1</sup> – EN ISO 7783-2	-	Class II or better	-	Class II or better	Class II or better (outdoor)	-	-	-	-
Liquid water permeability <sup>1</sup> – EN 1062-3	-	Class III (elastomeric paint) Class II (masonry paint)	-	Class II	Class II (outdoor)	-	-	-	-
Fungal resistance <sup>1</sup> – BS 3900:G6	-	Class 2 or lower	-	Class 2 or lower	Class 2 or lower (outdoor)	-	-	-	-
Crack bridging <sup>1</sup> – EN 1062-7	-	A1 (elastomeric paint only)	-	-	-	-	-	-	-
Alkali resistance – ISO 2812-4	-	x	-	-	-	-	-	-	x

Notes:

<sup>1</sup>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.<sup>13</sup> 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<sub>2</sub>) 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 1<sup>st</sup> 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<sup>2</sup>per litre of product for indoor paints and 6m<sup>2</sup> for outdoor paints. For tinting systems, this criterion applies only to the white base (the base containing the most TiO<sub>2</sub>). 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

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<sup>13</sup> <http://www.rialto-colors.com/wall-coatings/thick-coatings.asp>

RAL 9010.

For all other bases used to produce tinted products — these are bases which as a rule contain less  $\text{TiO}_2$ , which are unable to achieve the requirement of at least  $8\text{m}^2$  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  $6\text{m}^2$  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  $1\text{m}^2$  per kg of product.

Elastomeric paints shall have a spreading rate (at a hiding power of 98 %) of at least  $4\text{m}^2$  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  $8\text{m}^2$  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  $1\text{m}^2$  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/m<sup>2</sup> 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<sup>2</sup>/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<sup>2</sup>/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<sup>2</sup> per litre of product for indoor paints and 6m<sup>2</sup> 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<sup>2</sup> per litre. For tinting systems, this criterion applies only to the white base (the base containing the most TiO<sub>2</sub>). 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<sub>2</sub>), which are unable to achieve the requirement of at least 8m<sup>2</sup> 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<sup>2</sup> 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<sup>2</sup> per kg of product.

Elastomeric paints shall have a spreading rate (at a hiding power of 98 %) of at least 4m<sup>2</sup> 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<sup>14</sup>. 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; therefore, any proposed changes would need further stakeholder engagement and agreement prior to a final decision.

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<sup>14</sup> <http://susproc.jrc.ec.europa.eu/paints/stakeholders.html>

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  $\leq 2$ . 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.

#### **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.

#### **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 1<sup>st</sup> 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  $\leq 2$  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.

#### **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.



#### 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 1<sup>st</sup> 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  $\Delta E^* = 4$  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  $\Delta E^*=4$ ) was *"set in 2008 by correlating weathering data of tinting bases without colorants. So this threshold for  $\Delta E^*$  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 *" $\Delta E^*=8-10$  for a dark shade may be very bad (i.e. visible difference) compared with  $\Delta E^*=4$  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  $\Delta E^* = 4$ . 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<sup>15</sup> which have an initial gloss value less than 60% at 60° angle of incidence.

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

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

- Flaking according to ISO 4628-5; flake density 2 or less, flake size 2 or less
- Cracking according to ISO 4628-4; crack quantity 2 or less, crack size 3 or less
- Blistering according to ISO 4628-2; blister density 3 or less, blister size 3 or less.

Tests should be performed on base paint used.

<sup>15</sup> Measures following the EN ISO 2813.

**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<sup>16</sup> (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.

#### 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.

#### 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

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<sup>16</sup> 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.

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.

#### **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<sup>17</sup> 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

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<sup>17</sup> Available online at: <http://ec.europa.eu/environment/biocides/pdf/mod.pdf>, accessed February 2013.

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:

#### **(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.

#### **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

#### **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.

#### **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<sup>18</sup> for blistering and ISO 4628-3<sup>19</sup> 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:

#### **(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.

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<sup>18</sup> 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.

<sup>19</sup> 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

## 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.<sup>20</sup> VOCs generally evaporate or sublime 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.<sup>21</sup>

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.<sup>22</sup> Therefore, further amendments to the Ecolabel thresholds will go beyond the values proposed within the Paints Directive. Table 5 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 5: 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

<sup>20</sup> Directive 2004/42/CE

<sup>21</sup> <http://www.epa.gov/iaq/voc.html>

<sup>22</sup> [http://ec.europa.eu/environment/air/pollutants/stationary/paints/paints\\_review.htm](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 6.

Table 6: 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 woodstains, 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 woodstains, 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 7 provides preliminarily proposed new EU Ecolabel limits for VOC content in paint.

Table 7: 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

<b>and metal</b>		
<b>Interior/exterior trim varnishes and woodstains, including opaque woodstains</b>	75 indoor 90 outdoor	65
<b>Interior and exterior minimal build woodstains</b>	75	75
<b>Primers</b>	15	10
<b>Binding primers</b>	15	10
<b>One-pack performance coatings</b>	100	80
<b>Two-pack reactive performance coatings for specific end use such as floors</b>	100	80
<b>Decorative effect coatings</b>	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<sup>23</sup> and the German Blau Engel (Blue Angel)<sup>24</sup> 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<sup>25</sup> has an optional criterion<sup>26</sup> that SVOCs need to be avoided within the sector<sup>27</sup>. 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.<sup>28</sup>

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

<sup>23</sup> Austrian Ecolabel UZ01 (2010)

<sup>24</sup> Blau Engel RAL UZ 12a

<sup>25</sup> Construction products directive 89/106/EEC

<sup>26</sup> European Collaborative Action. Urban air, indoor environment and human exposure. Report No 27; Harmonisation framework for indoor material labelling schemes in the EU (2010)

<sup>27</sup> CEN/TC 351 Construction products: Assessment of the release of dangerous substances.

<sup>28</sup> 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 including water)
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 *"tinting 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 warmer climate). It was pointed out that enough VOC is needed with respect to the open-

time of the paint<sup>29</sup>. 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 *“paint 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

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<sup>29</sup> 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. Nevertheless, 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<sup>30</sup>, 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<sup>31</sup> 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 provisions 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 is 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

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<sup>30</sup> Of FprCEN/TS 16516 (this technical specification will be adopted in July 2013).

<sup>31</sup> For more information see: [http://www.blauer-engel.de/en/products\\_brands/search\\_products/produkttyp.php?id=569](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<sup>32</sup>.

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 <sup>1</sup> /40 <sup>2</sup>
Interior glossy walls and ceilings (Gloss >25@60°)	40	30 <sup>1</sup> /40 <sup>2</sup>
Exterior walls of mineral substrate	25	40
Interior/Exterior trim and cladding paints for wood and metal	80	50 <sup>1</sup> /60 <sup>2</sup>
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 <sup>1</sup> /40 <sup>2</sup>
Primers	12	30 <sup>1</sup> /40 <sup>2</sup>
Binding primers	12	30 <sup>1</sup> /40 <sup>2</sup>
One-pack performance coatings	80	50 <sup>1</sup> /60 <sup>2</sup>
Two-pack reactive performance coatings for specific end use such as floors	80	50 <sup>1</sup> /60 <sup>2</sup>
Decorative effect coatings	80	50 <sup>1</sup> /60 <sup>2</sup>
Anti-rust paints	80	60

Notes:

<sup>1</sup> Indoor white paints and varnishes

<sup>2</sup> Indoor tinted paints / outdoor paints and varnishes

<sup>32</sup> INumbering in accordance with the order of the criteria document.

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

#### 4.2.2 Indoor air quality – CRITERIA WITHDRAWN

Studies in the 1980's in the USA<sup>33</sup> 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.

Verification and assessment: The applicant shall provide test results 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<sup>34</sup>).

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.

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<sup>33</sup> EPA's Office of Research and Development's "Total Exposure Assessment Methodology (TEAM) Study" (Volumes I through IV, completed in 1985

<sup>34</sup> This standard series is already used in the criteria document for wooden floor covering.

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.

### **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”<sup>35</sup>*. *It should ensure a better reproducibility of the emission tests. This protocol will be used by the control authorities in France from the 1<sup>st</sup> 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.

### **4.2.3 Metals**

In large quantities, certain metals are considered carcinogenic and hazardous to human health<sup>36</sup>. Although present in the environment, and necessary for human health in small amounts, any large concentration can cause acute or chronic toxicity<sup>37</sup>. As they are elements, they cannot be broken

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<sup>35</sup> *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-I.html>.*

<sup>36</sup> [http://www.apis.ac.uk/overview/pollutants/overview\\_HM.htm](http://www.apis.ac.uk/overview/pollutants/overview_HM.htm)

<sup>37</sup> <http://www.lef.org/protocols/prtcl-156.shtml>

down and therefore will persist in the environment<sup>38</sup>. When absorbed by humans, they have been 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<sub>2</sub> 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**.

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<sup>38</sup> [http://www.apis.ac.uk/overview/pollutants/overview\\_HM.htm](http://www.apis.ac.uk/overview/pollutants/overview_HM.htm)

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. *"Cobalt 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 metal complexes (trapped in natural minerals), if corresponding documentation can be submitted.

A derogation for "pigments that contains antimony integrated in TiO<sub>2</sub> 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 no 68186-90-3) and C.I Pigment Yellow 53 (CAS no 8007-18-9) in the report UNEF Publications, OECD SIDS Initial Assessment Profile"<sup>39</sup> 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 siccativ in alkyd paints are exempted from this requirement.

For pigments that contain antimony integrated in TiO<sub>2</sub> 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

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<sup>39</sup> Available at: [www.inchem.org](http://www.inchem.org).

Brown 24 (CAS no 68186-90-3) and C.I Pigment Yellow 53 (CAS no 8007-18-9) in the report UNEF Publications, OECD SIDS Initial Assessment Profile<sup>40</sup>.

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 extracts*. 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 it is relatively insoluble under acid, neutral and alkaline conditions.
- Antimony nickel within an insoluble TiO<sub>2</sub> 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

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<sup>40</sup> Available at: [www.inchem.org](http://www.inchem.org).

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:

<p>(b) Metals and their compounds</p> <p><i>Applicability:</i> All products</p>	<p><i>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:</i></p> <p>Cadmium, lead, chromium VI, mercury, arsenic, barium, selenium, antimony and cobalt.</p> <p><i>The following derogations apply:</i></p> <ul style="list-style-type: none"> <li>- Barium, antimony and cobalt in pigments (see restriction 5(f))</li> <li>- Cobalt in driers (see restriction 2(a))</li> </ul>	<p>Trace impurities 0.01% cut-off</p>	<p><i>Verification:</i> Declaration by the applicant and their raw material suppliers.</p>
<p>(f) Pigments</p> <p><i>Applicability:</i> All products</p>	<p><i>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.</i></p> <p><i>The following metal containing pigments are derogated for use:</i></p> <ul style="list-style-type: none"> <li>- Barium sulphate</li> <li>- Antimony nickel within an insoluble TiO<sub>2</sub> lattice</li> <li>- Cobalt aluminate blue spinel</li> <li>- Cobalt chromite blue-green spinel</li> </ul>	<p>n/a</p>	<p><i>Verification:</i> <i>Test results demonstrating that the pigment chromophore is bonded within a crystal lattice and is insoluble.</i></p> <p><i>Test method:</i> <i>DIN 53770-1 or equivalent</i></p>

#### 4.2.4 Volatile Aromatic Hydrocarbons

VAHs have specific environmental and human health impacts including DNA damage.<sup>41</sup> 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

<sup>41</sup> Environ Health Perspect. 2002 June; 110(Suppl 3): 451–488.

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:

(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 and stakeholder consultation of March 2013](#)

VAC compounds are discussed within the wider context of residual monomers in Section 4.2.10.



#### 4.2.5 Alkylphenoethoxylates

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.<sup>42</sup> 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.<sup>43</sup>

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:

<p>(b) Alkylphenoethoxylates (APEOs)</p> <p><i>Applicability:</i></p> <p>Surfactants in colourant and tinting bases, white finishes, dispersing agents and primers.</p>	<p>Alkylphenoethoxylates (APEOs) and their derivatives shall not be used in any paint or varnish preparations or formulations.</p> <p><i>An indicative list of APEO's and their derivatives is provided in Appendix 2 to this Decision.</i></p>	<p>n/a</p>	<p><i>Verification:</i></p> <p>Declaration shall be provided by the applicant and their surfactant supplier supported by CAS No's and classifications for the surfactants used.</p>
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42 Paints and how they affect the environment, Tommi Nurmi and Konsta Kannainen, 2008

43 [http://www.epa.gov/oppt/existingchemicals/pubs/actionplans/RIN2070-ZA09\\_NP-NPEs%20Action%20Plan\\_Final\\_2010-08-09.pdf](http://www.epa.gov/oppt/existingchemicals/pubs/actionplans/RIN2070-ZA09_NP-NPEs%20Action%20Plan_Final_2010-08-09.pdf)

#### 4.2.6 Isothiazolinone compounds

Isothiazolinone compounds are found in wood coatings<sup>44</sup> 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.<sup>45</sup> For people susceptible to their effects, the compounds can cause irritation to the skin and mucous membranes.<sup>46</sup> 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.<sup>47</sup>

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-isothiazol-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-isothiazolin-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	55965-84-9	R23/24/25-34-43-50-53	3

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

45 Akcros Chemicals, <http://www.akcros.com/products/europeproductrange/productsbycategory/microbiocides.aspx>

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

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

	no. 247-500-7] and 2-methyl-2H-isothiazol-3-one [EC no. 220-239-6] (3:1)			
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:

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

<sup>2</sup>.For outdoor wood coatings the total allowable concentration shall not exceed 0.2 % (w/w).

<sup>3</sup>.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

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<sup>48</sup>. 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<sup>49</sup>. 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<sup>50</sup>. 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.

<sup>48</sup> OECD, Portal on perfluorinated chemicals, <http://www.oecd.org/ehs/pfc/>

<sup>49</sup> Compilation of scientific papers from the following journals: Integrated Environmental Assessment Management, Toxicology, Reproductive toxicology, Environmental Science & Technology and Environmental toxicology and chemistry.

<sup>50</sup> Pending test data

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:

<p>(c) Perfluorinated surfactants</p> <p>Applicability: Colorant and tinting bases</p>	<p><i>Long chain perfluorinated surfactants, as specified in the OECD definition below, shall not be used:</i></p> <p>(i) Perfluorocarboxylic acids with carbon chain lengths <math>\geq C8</math>, including perfluorooctanoic acid (PFOA);</p> <p>(ii) Perfluoroalkyl sulfonates with carbon chain lengths <math>\geq C6</math>, including perfluorohexane sulfonic acid (PFHxS) and perfluorooctane sulfonate (PFOS); and</p> <p>(iii) Precursors of these substances that may be produced or present in products</p>	<p>n/a</p>	<p><i>Verification:</i></p> <p>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.</p>
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#### 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.<sup>51</sup>

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

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51 <http://www.psfc.mit.edu/esh/halosolv.html>

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.

In addition to the new criterion for other EU Ecolabel products, alternative Ecolabels for paints and varnishes have clauses restricting biocides and preservatives. Table 8 describes the criteria developed for restrictions of biocides in paints for different Ecolabels.

*Table 8: 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.<sup>52</sup>

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 bioaccumulate (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  $\geq 500$  is indicative of the potential to bioconcentrate.

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

#### *Biocides*

*(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)  $\leq 500$ .*

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<sup>52</sup> <http://register.consilium.europa.eu/pdf/en/11/st05/st05032-re02.en11.pdf>

*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  $BCF \leq 100$  which are values used in other Ecolabel product groups<sup>53</sup>. 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 breaches 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 amount 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.

(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-isothiazol-3-one	2682-20-4	R 22-23-34-43-50	1, 8, 9
	1,2-Benzisothiazol-3(2H)-one	2634-33-5	R 22-38-41-43-50	1, 8, 9
	Methyl-4-isothiazolin-3-one	2682-20-4	R34-37-43-50-24/25	1, 8, 9
	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, 9
	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, 9
	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, 9
Dry film preservative	3-iodo-2-propynyl-butylcarbamate (IPBC)	55406-53-6	R 20/22-41-50	2, 8, 9
	Pyrrithione zinc	13463-41-7	R 22-23-38-41-50	2, 8, 9
	2-Octyl-2H-isothiazol-3-one	26530-20-1	R 22, 23/24-34-43-50/53	1, 8, 9
	3-iodo-2-propynyl-butylcarbamate	55406-53-6	R 20/22-41-50	2, 8, 9
	Zinc oxide	1314-13-2	R 50/53	2, 8, 9
	1,2-Benzisothiazolin-3-one	2634-33-5	R 22-38-41-43-50	1, 8, 9
	Pyrrithione zinc	13463-41-7	R 22-23-38-41-50	2, 8, 9

<sup>53</sup> Establishing the ecological criteria for the award of the EU Ecolabel to detergents for dishwashers, (2011/263/EU)

	Zinc oxide	1314-13-2.	R 50/53	2, 8, 9
	Sodium polynaphthalene sulphonate	9084-06-4	R 52/53	2, 8, 9
	Diuron (ISO)	330-54-1	R22-40-48-48/22-50/53	2, 8, 9

Notes:

<sup>8.</sup> (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 Appendix 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 <sup>54</sup>;

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<sup>54</sup> Blue Angel, *Appendix 5: Conduct of a biotest*, RAL-UZ-12A Low pollutant paints and varnishes



- **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.

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<sup>55</sup> 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

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<sup>55</sup> **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**

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 <sup>56</sup> 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.

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<sup>57</sup>. 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<sup>58</sup> 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:

<b>1. Preservatives added to binders and the final product</b>			
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. <i>Applicants should consult the most current authorisation list:</i>			
<a href="http://ec.europa.eu/environment/biocides/annexi_and_ia.htm">http://ec.europa.eu/environment/biocides/annexi_and_ia.htm</a>			
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	<i>Derogated classifications:</i> H331 (R23), H317 (R43), H400 (R50), H410 (R50/53), H411	<i>Sum total in the final</i>	<i>Verification:</i> Declaration by the

<sup>56</sup> 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

<sup>57</sup> COMMISSION RECOMMENDATION of 18 October 2011 on the definition of nanomaterial 2011/696/EU, available online at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:275:0038:0040:EN:PDF>.

<sup>58</sup> Background report, p. 51, available online at: <http://susproc.irc.ec.europa.eu/paints/docs/Ecolabel%20Paints%20Background%20Report.pdf>.

<p><i>Applicability:</i></p> <p>All products unless specified otherwise</p>	<p>(R51/53), H412 (R52/53)</p> <p><i>Derogation conditions:</i></p> <ul style="list-style-type: none"> <li>○ Substances classified with H400 (R50) shall be non-bioaccumulative. Non-bioaccumulative substances shall have a Log Kow <math>\leq 3.2</math> or a Bioconcentration Factor (BCF) <math>\leq 100</math>.</li> <li>○ 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.</li> <li>○ Where preservatives that are formaldehyde donors are used then formaldehyde emissions from the final product must meet the requirements in substance restriction 7(a)</li> </ul>	<p><i>product:</i></p> <p>0.060% w/w</p>	<p>applicant and their binder supplier supported by CAS numbers and classifications for the active ingredients in the final product and its binder.</p> <p>This shall include calculation by the applicant of the concentration of the active ingredient in the final product.</p> <p>This shall include identification of intentionally manufactured active ingredients with a particle size of less than 100 nm.</p>
	<p>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:</p> <p><i>(i) Isothiazolinone compounds</i></p> <p>- All products</p>	<p><i>Sum total</i></p> <p>0.05%</p>	<p><i>Verification:</i></p> <p>Calculation by the applicant of the concentration of the active ingredient in the final product supported by the CAS number and classification.</p>
	<p>Derogated classifications: H317 (R43), H400 (R50), H410 (R50/53), H411 (R51/53), H412 (R52/53)</p> <p><i>Derogation conditions:</i></p> <ul style="list-style-type: none"> <li>○ Substances classified with H400 (R50) shall be non-bioaccumulative. Non-bioaccumulative substances shall have a Log Kow <math>\leq 3.2</math> or a Bioconcentration Factor (BCF) <math>\leq 100</math>.</li> <li>○ Evidence shall be provided that the</li> </ul>	<p><i>Sum total in the product:</i></p> <p><i>Indoor paints</i></p> <p>0.1% w/w</p> <p><i>Outdoor paints</i></p> <p>0.3% w/w</p>	<p><i>Verification:</i></p> <p>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.</p> <p>This shall include</p>

	<p>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.</p>		<p>calculation by the applicant of the concentration of the active ingredient in the final product.</p> <p>This shall include identification of intentionally manufactured active ingredients with a particle size of less than 100 nm.</p>
	<p>The following dry film preservatives may be used at specified maximum sum total concentrations in the final product at the time of manufacturing for the specified applications:</p> <p>(i) Isothiazolinone compounds</p> <p>- All products</p> <p>(ii) 3-iodo-2-propynyl butylcarbamate (IPBC)</p> <p>- Outdoor wood paints and varnishes</p> <p>- All other applications</p>	<p><i>Sum total</i></p> <p>0.05%</p> <p>0.45%</p> <p>0.3%</p>	<p><i>Verification:</i></p> <p>Calculation by the applicant of the concentration of the active ingredient in the final product supported by the CAS number and classification.</p>

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 9. 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 9. Preservatives to be re-evaluated for derogation (March 2013)*

<b>Substance group</b>	<b>Substance</b>	<b>Basis for re-evaluation</b>
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)	<p>The substance has a different hazard profile within the in-can preservative group, displaying H301 (R25), H373 (R48/20-22).</p> <p>Contribution to free formaldehyde levels in the paint product, for which a revised limit</p>

		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).

#### 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-isothiazol-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 corrector	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	antiskinning 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 protection filter (Light stabilizer)	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 $\alpha$ -3-(3-(2H-benzotriazol-2-yl)-5-tert-butyl-4-hydroxyphenyl)propionyl- $\omega$ -hydroxypoly(oxyethylene) and $\alpha$ -3-(3-(2H-benzotriazol-2-yl)-5-tert-butyl-4-hydroxyphenyl)propionyl- $\omega$ -3-(3-(2H-benzotriazol-	EC: 400-830-7	R43 R51-53	0.990%	X



		2-yl)-5-tert-butyl-4-hydroxyphenyl)propionyloxypoly(oxyethylene)				
<b>36</b>		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
<b>37</b>		methyl 1,2,2,6,6-pentamethyl-4-piperidylsebacate	82919-37-7	R43-R50/53	0.200%	X
<b>38</b>		de 3-(3-(2h-benzotriazol-2-yl)5-(1,1-dimethylethyl)-4-hydroxyphenyl)propionates de c7-c9 alkyleramifie et lineaire	127519-17-9	R51/53	0.500%	X
<b>39</b>	Anticorrosive pigment (solid corrosive inhibitor).	zinc phosphate (2,5% ZnPO4)	ZnPO4: 7779-90-0	R50/53	8-10%	X
<b>40</b>		Zinc oxide	1314-13-2	R50/53	0,005% to 2% (depending on category)	X
<b>41</b>	Substrate Wetting agent / surface tension modifier	Polypropylene glycol alkylphenyl ether	9064-13-5	R43	3.000%	X
<b>42</b>		Polyoxyethylene isodecyl ether	61827-42-7	Xi; R41, Xn; R22	2.000%	X
<b>43</b>		Alcohols, C9-C11, ethoxylated	68439-46-3	Xi; R41	2.000%	X
<b>44</b>		Secondary Alcohols, C11-C15, ethoxylated	68131-40-8	Xi; R38, R41	2.000%	X
<b>45</b>		Secondary Alcohols, C12-C14, ethoxylated	84133-50-6	Xi; R41	2.000%	X
<b>46</b>		Alcohols, C16-C18, ethoxylated	68439-49-6	Xi, N, R50, R41 or Xn R22 ; Xi; R41	2.000%	X
<b>47</b>		Fatty alcohol ethoxylated	None	Xi; R41	2.000%	X
<b>48</b>		Alcohols, tallow,ethoxylated	61791-28-4	Xn; R22 ; Xi; R41	2.000%	X
<b>49</b>		Alcohols, C12-14,ethoxylated	68439-50-9	Xi; R41; N; R50	2.000%	X
<b>50</b>		Polyoxyethylenetridecyl ether phosphate	9046-01-9	Xi; R38 ; R41	2.000%	X
<b>51</b>		Poly(oxy-1,2-ethandediyl),a-isotridecyl-w-hydroxy-,phosphate	73038-25-2	Xi; R38 ; R41; R52/53	2.000%	X
<b>52</b>		Polyoxyethylenestearyl ether	9005-00-9	Xi; R41	2.000%	X
<b>53</b>		Isotridecanol, ethoxylated	9043-30-5 69011-36-5	Xn; R22 ; Xi; R41	2.000%	X
<b>54</b>		Alkyl polyglucoside	500-220-1	Xi; R41	2.000%	X
<b>55</b>		Tridecyl(polyethyleneoxy)ethanol	78330-21-9	Xn; R22 ; Xi; R41	2.000%	X
<b>56</b>	Sodium di-(2-ethylhexylic) sulfosuccinate	577-11-7	Xi; R38 ; R41	0.200%	X	
<b>57</b>		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-alcane, 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<sup>59</sup>; 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.*

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<sup>59</sup>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 <sup>1</sup>	Risk Phrase <sup>2</sup>
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

<b>H370 Causes damage to organs</b>	R39/23; R39/24; R39/25; R39/26; R39/27; R39/28
<b>H371 May cause damage to organs</b>	R68/20; R68/21; R68/22
<b>H372 Causes damage to organs through prolonged or repeated exposure</b>	R48/25; R48/24; R48/23
<b>H373 May cause damage to organs through prolonged or repeated exposure</b>	R48/20; R48/21; R48/22
<b>H400 Very toxic to aquatic life</b>	R50
<b>H410 Very toxic to aquatic life with long-lasting effects</b>	R50-53
<b>H411 Toxic to aquatic life with long-lasting effects</b>	R51-53
<b>H412 Harmful to aquatic life with long-lasting effects</b>	R52-53
<b>H413 May cause long-lasting harmful effects to aquatic life</b>	R53
<b>EUH059 Hazardous to the ozone layer</b>	R59
<b>EUH029 Contact with water liberates toxic gas</b>	R29
<b>EUH031 Contact with acids liberates toxic gas</b>	R31
<b>EUH032 Contact with acids liberates very toxic gas</b>	R32
<b>EUH070 Toxic by eye contact</b>	R39-41
<b>Sensitising substances</b>	
<b>H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled</b>	R42
<b>H317: May cause allergic skin reaction</b>	R43

<sup>1</sup>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

<sup>2</sup>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-isothiazol-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%		
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 - R35 - R41	2, 9	0.200%	X



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-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 $\alpha$ -3-(3-(2H-benzotriazol-2-yl)-5-tert-butyl-4-hydroxyphenyl)propionyl- $\omega$ -hydroxypoly(oxyethylene) and $\alpha$ -3-(3-(2H-benzotriazol-2-yl)-5-tert-butyl-4-hydroxyphenyl)propionyl- $\omega$ -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-hydroxyphenyl)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	



				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)  $\leq 100$ .

- <sup>9.</sup> 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.
- <sup>10.</sup> 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<sub>50</sub> 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 **Error! Reference source not found.**

*Table 10: Thematic comments received from Stakeholders following AHWG2*

Theme	Summary of comments	Proposed response
Derogations by substance group	<p>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.</p> <p>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.</p> <p>Instead a substance group approach should be taken. An example was given of biocides, with the hazard class restrictions accompanied by the specific function that would be derogated for indoor and/or outdoor</p>	<p>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.</p> <p>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 in order to permit use of the substance(s).</p>



	paints and concentration limits applying to the group and/or specific substances e.g. sum of isothiazolinone compounds.	
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: <ul style="list-style-type: none"> <li>- The need for clarity on whether maximum allowed concentration applies to the total sum of substances or individual substances.</li> <li>- 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.</li> <li>- Specific calculation software would be required to comply with Note 9, which may serve as a barrier to applicants.</li> </ul>	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.  <i>Proposal:</i> 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.	<p>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 isothiazolinone preservative CIT has a generic concentration limit for H317 (R43) of 0.015%</p> <p><i>Proposal:</i> 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.</p>
Transition period	<p>There was a consensus that industry and associated production timings would not permit enough substitutes within the two year time frame.</p> <p>Biocides were cited as an example, with industry waiting for the EU authorisation process to run its course first. Water-based paints require biocides for in-can protection and the transition applied to 2-methyl-2H-isothiazol-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.</p> <p>The need to re-open applications after two years was considered to be a heavy burden for Competent Bodies.</p> <p>The combination of the transition</p>	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.

	period and Note 9 would be problematic.	
Aquatic toxicity	<p>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.</p> <p>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.</p> <p>Concentration limits should be permitted that allow for sufficient efficacy of the paint formulation whilst not being classified.</p> <p>A maximum allowable concentration for the aquatic toxicity classes of 2% w/w was proposed.</p> <p>An opinion was expressed that anti-rust paints that incorporate anti-corrosive pigments should not be accepted.</p>	<p>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.</p> <p>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.</p> <p>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.</p> <p><i>Proposal:</i> 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.</p> <p>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.</p>
Allergens	Should ecolabelled paint be permitted to be classified as a skin allergen (H317). This may result from	The trigger concentration limit for labelling of a mixture as a skin allergen is 1.0%. It is possible that

	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.	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	<p>It was highlighted that a number of hazard classes are listed for derogation that do not feature in the standard legal criteria text:</p> <ul style="list-style-type: none"> <li>- R20, R21, R22, R36, R38, R39 and R41 on their own. R41 is essential for many paint formulations e.g. in surfactants, stabilizers</li> <li>- EUH070 corresponds to R39 and R41 in combination.</li> <li>- R43 was not on the original list of hazard classes.</li> </ul>	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:

- o 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 substance 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<sup>60</sup>.

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<sup>61</sup> 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 11. For each aggregated comments a proposed response is also outlined.

*Table 11: Substance-specific comments received from Stakeholders following March 2013*

<b>Substance group</b>	<b>Summary of comments</b>	<b>Proposed response</b>
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 siccativ in alkyd paints in Criterion 5 and their restriction in Appendix 2. In addition, a derogation is required for H400 to support their use.	The use of cobalt driers in alkyd paints is proposed for derogation at a final product concentration limit of 0.05%, which is consistent 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	Further information is required as

<sup>60</sup> COMMISSION RECOMMENDATION of 18 October 2011 on the definition of nanomaterial 2011/696/EU, available online at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:275:0038:0040:EN:PDF>.

<sup>61</sup> Background report, p. 51, available online at: <http://susproc.jrc.ec.europa.eu/paints/docs/Ecolabel%20Paints%20Background%20Report.pdf>.

	derogations would exclude the use of more common iron-based driers.	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 ( <i>see also</i> the general comments on assessment and verification).	The assessment and verification is to be modified to request CAS numbers and classifieds (self-classified or 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 <sup>62</sup> . 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 Blue 28 and 36 and C.I. Pigment 50.	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-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.

<sup>62</sup> EU Ecolabel, *Detergent ingredients database*, Version January 2007

	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 12. 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 12. 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'iminoethanol (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 esters	The substance has a different hazard profile within the surfactant group, being classified with H330 (R26), H411 (R51/53), H373 (R48/22).
	Amphoterics 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).

On the basis of stakeholder comments received up to March 2013 the following revised criteria text is proposed, complemented by the proposed Appendix 1: Hazardous substance restriction and derogation list.

#### 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:

- (a) Hazard classifications and risk phrases
- (b) Substances of Very High Concern
- (c) 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 that apply 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 3 of this criteria.

In accordance with the methodologies for the classification of mixtures contained in Regulation (EC) No 1272/2008 and all amending legislation the final product shall not display the following hazard labelling:

*Table 4. Final product classification: CLP versus DSD equivalence*

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

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, labeling and packaging of substances and mixtures.

*Table 5. Restricted hazard classifications and their categorisation*

<b>Acute toxicity</b>	
<b>Category 1 and 2</b>	<b>Category 3</b>
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)

<b>Specific target organ toxicity</b>	
<b>Category 1</b>	<b>Category 2</b>
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)

<b>Respiratory and skin sensitisation</b>	
<b>Category 1A</b>	<b>Category 1B</b>
H317: May cause allergic skin reaction (R43)	H317: May cause allergic skin reaction (R43)
H334: May cause allergy or asthma	H334: May cause allergy or asthma symptoms

symptoms or breathing difficulties if inhaled (R42)	or breathing difficulties if inhaled (R42)
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<b>Carcinogenic, mutagenic or toxic for reproduction</b>	
<b>Category 1A and 1B</b>	<b>Category 2</b>
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)	

<b>Hazardous to the aquatic environment</b>	
<b>Category 1 and 2</b>	<b>Category 3 and 4</b>
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)

*(i) Derogations applying to substance groups*

For the purpose of this product group only, 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
- Dry film preservatives
- Drying and anti-skinning agents
- UV protectors and stabilisers
- Binders and fillers
- Corrosion inhibitors
- Surfactants
- Silicon resin emulsion in white paints, colourant and tinting bases

- Optical brighteners
- Neutralising agents
- Solvents
- Unreacted monomers

*(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 and, where necessary their suppliers, 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

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 non-classification:

- (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 the physical form and state of the ingredients and shall include identification of intentionally manufactured ingredients with a particle size of less than 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:

- a) Meet the criteria in Article 57 of Regulation (EC) No 1907/2006 and of the Council of 18<sup>th</sup> December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH);
- b) 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) In-can preservatives
- (iii) Pigments
- (iv) Plasticisers
- (v) Metals and their compounds
- (vi) Alkylphenolethoxylates (APEOs) surfactants
- (vii) Perfluorinated surfactants
- (viii) 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.

## Proposed Appendix 1

### Hazardous substance restriction and derogation list

Substance group	Scope of restriction and/or derogation	Concentration limits (where applicable)	Assessment and verification
<p><b>1. Preservatives added to binders and the final product</b></p> <p>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. <i>Applicants should consult the most current authorisation list:</i></p> <p><a href="http://ec.europa.eu/environment/biocides/annexi_and_ia.htm">http://ec.europa.eu/environment/biocides/annexi_and_ia.htm</a></p> <p>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.</p>			
<p>(a) In-can preservatives</p> <p><i>Applicability:</i></p> <p>All products unless specified otherwise</p>	<p><i>Derogated classifications:</i> H331 (R23), H317 (R43), H400 (R50), H410 (R50/53), H411 (R51/53), H412 (R52/53)</p> <p><i>Derogation conditions:</i></p> <ul style="list-style-type: none"> <li>○ Substances classified with H400 (R50) shall be non-bioaccumulative. Non-bioaccumulative substances shall have a Log Kow <math>\leq</math> 3.2 or a Bioconcentration Factor (BCF) <math>\leq</math> 100.</li> <li>○ 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.</li> <li>○ Where preservatives that are formaldehyde donors are used then formaldehyde emissions from the final product must meet the</li> </ul>	<p><i>Sum total in the final product:</i> 0.060% w/w</p>	<p><i>Verification:</i></p> <p>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.</p> <p>This shall include calculation by the applicant of the concentration of the active ingredient in the final product.</p> <p>This shall include identification of intentionally manufactured</p>

	requirements in substance restriction 7(a)		active ingredients with a particle size of less than 100 nm.
	<p>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:</p> <p><i>(i) Isothiazolinone compounds</i></p> <p>- All products</p>	Sum total 0.05%	<p><i>Verification:</i></p> <p>Calculation by the applicant of the concentration of the active ingredient in the final product supported by the CAS number and classification.</p>
<p>(b) Dry film preservatives</p> <p><i>Applicability:</i></p> <p>All products unless specified otherwise</p>	<p><i>Derogated classifications:</i> H317 (R43), H400 (R50), H410 (R50/53), H411 (R51/53), H412 (R52/53)</p> <p><i>Derogation conditions:</i></p> <ul style="list-style-type: none"> <li>○ Substances classified with H400 (R50) shall be non-bioaccumulative. Non-bioaccumulative substances shall have a Log Kow <math>\leq</math> 3.2 or a Bioconcentration Factor (BCF) <math>\leq</math> 100.</li> <li>○ 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.</li> </ul>	<p><i>Sum total in the product:</i></p> <p>Indoor paints 0.1% w/w</p> <p>Outdoor paints 0.3% w/w</p>	<p><i>Verification:</i></p> <p>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.</p> <p>This shall include calculation by the applicant of the concentration of the active ingredient in the final product.</p> <p>This shall include identification of intentionally manufactured active ingredients with a particle size of less than 100 nm.</p>
	The following dry film preservatives may be used at specified maximum sum total concentrations in the final product at the time of manufacturing for the		<p><i>Verification:</i></p> <p>Calculation by the applicant of</p>

	<p>specified applications:</p> <p><i>(i) Isothiazolinone compounds</i></p> <p>- All products</p> <p><i>(ii) 3-iodo-2-propynyl butylcarbamate (IPBC)</i></p> <p>- Outdoor wood paints and varnishes</p> <p>- All other applications</p>	<p><i>Sum total 0.05%</i></p> <p>0.45%</p> <p>0.3%</p>	<p>the concentration of the active ingredient in the final product supported by the CAS number and classification.</p>
<p><b>2. Drying and anti-skinning agents</b></p>			
<p>(a) Driers</p> <p><i>Applicability:</i> All paints products</p>	<p><i>Derogated classifications:</i> H317 (R43), H410 (R50/53), H411 (R51/53), H412 (R52/53), H413 (R53)</p> <p>Cobalt driers in alkyd paints, which additionally are classified with H400 (R50) are derogated up to the following concentration limit:</p>	<p>0.1% w/w</p> <p>0.05%</p>	<p><i>Verification:</i></p> <p>Declaration shall be provided by the applicant and their raw material suppliers supported by CAS numbers and classifications.</p>
<p>(b) Anti-skinning agents</p> <p><i>Applicability:</i> All paints products</p>	<p><i>Derogated classifications:</i> H412 (R52/53), H413 (R53), H317 (R43)</p>	<p>0.40% w/w</p>	<p><i>Verification:</i></p> <p>Declaration shall be provided by the applicant and their raw material suppliers supported by CAS numbers and classifications.</p>



<b>3. Corrosion inhibitors</b>			
<p>(a) Anti corrosion pigments</p> <p><i>Applicability:</i> Where required</p>	<p><i>Derogated classifications:</i> H410 (R50/53), H411 (R51/53), H412 (R52/53), H413 (R53)</p> <p>Concentration limits that shall apply:</p> <p>(i) Paints Directive 2004/42/EC classes d,i, j</p> <p>(ii) All other products</p>	<p>8.0% w/w</p> <p>2.0% w/w</p>	<p><i>Verification:</i></p> <p>Declaration shall be provided by the applicant and their raw material suppliers supported by SDS.</p>
<p>(b) Verdigris prevention</p> <p><i>Applicability:</i> Where required</p>	<p><i>Derogated classifications:</i> H412 (R52/53), H413 (R53)</p>	<p>0.5% w/w</p>	<p><i>Verification:</i></p> <p>Declaration shall be provided by the applicant and their raw material suppliers supported by CAS numbers and classifications.</p>
<b>4. Surfactants</b>			
<p>(a) General purpose surfactants</p> <p><i>Applicability:</i> Surfactants in colourant and tinting bases, white finishes, dispersing agents and primers.</p>	<p><i>Derogated classifications:</i> H412 (R52/53), H413 (R53)</p> <p>Specific restrictions apply to Alkylphenoxyethoxylates (APEOs) and Perfluorinated surfactants.</p>	<p>3.0% w/w</p>	<p><i>Verification:</i></p> <p>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.</p>

<p>(b) Alkylphenoethoxylates (APEOs)</p> <p><i>Applicability:</i></p> <p>Surfactants in colourant and tinting bases, white finishes, dispersing agents and primers.</p>	<p>Alkylphenoethoxylates (APEOs) and their derivatives shall not be used in any paint or varnish preparations or formulations.</p> <p><i>An indicative list of APEO's and their derivatives is provided in Appendix 2 to this Decision.</i></p>	<p>n/a</p>	<p><i>Verification:</i></p> <p>Declaration shall be provided by the applicant and their surfactant supplier supported by CAS No's and classifications for the surfactants used.</p>
<p>(c) Perfluorinated surfactants</p> <p><i>Applicability:</i></p> <p>Surfactants in colourant and tinting bases, white finishes, dispersing agents and primers.</p>	<p><i>Long chain perfluorinated surfactants, as specified in the OECD definition below, shall not be used:</i></p> <p>(i) Perfluorocarboxylic acids with carbon chain lengths <math>\geq C8</math>, including perfluorooctanoic acid (PFOA);</p> <p>(ii) Perfluoroalkyl sulfonates with carbon chain lengths <math>\geq C6</math>, including perfluorohexane sulfonic acid (PFHxS) and perfluorooctane sulfonate (PFOS); and</p> <p>(iii) Precursors of these substances that may be produced or be present in the surfactant and/or the paint or varnish product</p>	<p>n/a</p>	<p><i>Verification:</i></p> <p>Declaration shall be provided by the applicant, raw material suppliers and their surfactant supplier supported by CAS numbers and identification of chain length for the surfactants used.</p>

<b>5. Miscellaneous functional substances with general application</b>			
<p>(a) Silicon resin emulsion in white paints, colourant and tinting bases</p> <p><i>Applicability:</i> All paints products</p>	<p><i>Derogated classifications:</i> H412 (R52/53), H413 (R53)</p>	<p>2.0% w/w</p>	<p><i>Verification:</i> Declaration shall be provided by the applicant and their raw material suppliers supported by CAS numbers and classifications.</p>
<p>(b) Metals and their compounds</p> <p><i>Applicability:</i> All products</p>	<p><i>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:</i></p> <p>Cadmium, lead, chromium VI, mercury, arsenic, barium, selenium, antimony and cobalt.</p> <p><i>The following derogations apply:</i></p> <ul style="list-style-type: none"> <li>- Barium, antimony and cobalt in pigments (see restriction 5(f))</li> <li>- Cobalt in driers (see restriction 2(a))</li> </ul>	<p>Trace impurities 0.01% cut-off</p>	<p><i>Verification:</i> Declaration by the applicant and their raw material suppliers.</p>
<p>(c) Binders and fillers</p> <p><i>Applicability:</i> All paints products</p>	<p><i>Derogated classifications:</i> H373 (R48/20)</p> <p>Binders containing metals referred to in restriction 5(b) may be used if laboratory testing shows that the metal is bonded within a crystal lattice and is insoluble (see test method applicable).</p>	<p>1.0% w/w</p>	<p><i>Verification:</i> Declaration shall be provided by the applicant and their raw material suppliers supported by CAS numbers and classifications.</p>

	<p><i>The following binders and fillers are derogated on this basis:</i></p> <ul style="list-style-type: none"> <li>- Nepheline syenite, containing barium</li> </ul>		<p><i>Test method:</i></p> <p>DIN 53770-1 or equivalent</p>
<p>(d) Neutralising agents</p> <p><i>Applicability:</i></p> <p>All paints products unless specified</p>	<p><i>Derogated classifications:</i> H311 (R24), H331 (R23), H400 (R50), H412 (R52/53), H413 (R53)</p> <p><i>The following concentration limits shall apply:</i></p> <ul style="list-style-type: none"> <li>- Varnishes and floor lacquers</li> <li>- All other products</li> </ul>	<p>1.0% w/w</p> <p>0.50% w/w</p>	<p><i>Verification:</i></p> <p>Declaration shall be provided by the applicant and their raw material suppliers supported by CAS numbers and classifications.</p>
<p>(e) Optical brighteners</p> <p><i>Applicability:</i></p> <p>All paints products</p>	<p><i>Derogated classifications:</i> H413 (R53)</p>	<p>0.1% w/w</p>	<p><i>Verification:</i></p> <p>Declaration shall be provided by the applicant and their raw material suppliers supported by CAS numbers and classifications.</p>
<p>(f) Pigments</p> <p><i>Applicability:</i></p> <p>All products</p>	<p>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.</p> <p><i>The following metal containing pigments are derogated for use:</i></p> <ul style="list-style-type: none"> <li>- Barium sulphate</li> </ul>	<p>n/a</p>	<p><i>Verification:</i></p> <p>Test results demonstrating that the pigment chromophore is bonded within a crystal lattice and is insoluble.</p>

	<ul style="list-style-type: none"> <li>- Antimony nickel within an insoluble TiO<sub>2</sub> lattice</li> <li>- Cobalt aluminate blue spinel</li> <li>- Cobalt chromite blue-green spinel</li> </ul>		<i>Test method:</i> DIN 53770-1 or equivalent
<b>6. Miscellaneous functional substances with specialist applications</b>			
(a) UV protectors and stabilising agents for outdoor paints  <i>Applicability:</i> <i>Outdoor paints</i>	<i>Derogated classifications:</i> H317 (R43), H411 (R51/53), H412 (R52/53), H413 (R53),	0.60% w/w	<i>Verification:</i> Declaration shall be provided by the applicant and their raw material suppliers supported by CAS numbers and classifications.
(b) Plasticisers in paint and varnish.  <i>Applicability:</i> Where included in the formulation	<i>The following phthalates shall not be intentionally added as plasticisers:</i> 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 alkyphthalates) DHP (Di-n-hexylphthalate)	Concentration limit for any individual phthalate:  0.10%	<i>Verification:</i> Declaration shall be provided by the applicant and their raw material suppliers supported by CAS numbers and classifications.

**7. Residual substances that may be present in the final product**

<p>(a) Formaldehyde</p> <p>Applicability: <i>All products.</i></p>	<p>Free formaldehyde shall not be intentionally added to the final product. Testing requirements shall reflect the product range.</p> <p><i>The following sum total limit value shall apply</i></p> <p>The following derogations are made from this requirement:</p> <p>(i) Where preservatives that are formaldehyde donors are required to protect a specific type of paint or varnish</p> <p>(ii) Where polymer dispersions (binders) are used as part of the paint formulation</p> <p><i>In these cases the sum total shall not exceed the following limit value:</i></p>	<p>10 ppm</p> <p>100 ppm</p>	<p><i>Verification:</i></p> <p>Laboratory testing results for the white base, each transparent tinting base and the colour tint which has the maximum theoretical amount of formaldehyde.</p> <p><i>Test method:</i></p> <p>10 ppm limit value: Determination of the in-can concentration using high-performance liquid chromatography (HPLC)</p> <p>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</p>
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<p>(b) Solvents</p> <p><i>Applicability:</i> All products.</p>	<p><i>Derogated classifications:</i> H304 (R65)</p>	<p>tbc% w/w</p>	<p><i>Verification:</i> Declaration shall be provided by the applicant and their raw material suppliers supported by CAS numbers and classifications.</p>
<p>c) Unreacted monomers</p> <p><i>Applicability:</i> To be specified</p>	<p>Unreacted monomers including Volatile Aromatic Hydrocarbons and acrylic acid may be present in the final product up to a sum total limit.</p>	<p>0.1% w/w</p>	<p><i>Verification:</i> Declaration shall be provided by the applicant and their raw material suppliers supported by CAS numbers and classifications.</p>

#### 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 impact 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<sup>63</sup> 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 formaldehyde donors are used, with calculations based on information from suppliers being accepted in order to comply with the 10 ppm limit.

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<sup>63</sup> de Groot A C, Flyvholm M, Lensen G, Menné 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) <sup>64</sup> 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:

<p>(a) Formaldehyde</p> <p>Applicability: All products.</p>	<p>Free formaldehyde shall not be intentionally added to the final product. Testing requirements shall reflect the product range.</p> <p><i>The following sum total limit value shall apply</i></p> <p>The following derogations are made from this requirement:</p> <p>(i) Where preservatives that are formaldehyde donors are required to protect a specific type of paint or varnish</p> <p>(ii) Where polymer dispersions (binders) are used as part of the paint formulation</p> <p><i>In these cases the sum total shall not exceed the following limit value:</i></p>	<p>10 ppm</p>	<p><i>Verification:</i></p> <p>Laboratory testing results for the white base, each transparent tinting base and the colour tint which has the maximum theoretical amount of formaldehyde.</p> <p><i>Test method:</i></p> <p>10 ppm limit value: Determination of the in-can concentration using high-performance liquid</p>
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<sup>64</sup> ECHA, Scientific opinion adopted on 7th December 2012, Committee for Risk Assessment

		100 ppm	<p>chromatography (HPLC)</p> <p>100 ppm limit value:</p> <p>(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.</p> <p>(2) Outdoor paints and varnishes: Determination of the in-can concentration using high-performance liquid chromatography (HPLC) or VdL-RL 03</p>
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#### 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.<sup>65</sup>

Many phthalates are excluded from several alternative ecolabels (US Green Seal and Austrian Ecolabel).<sup>66</sup> 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:

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65 OJ C90/5 13.4.2006 (<http://www.didp-facts.com/upload/documents/document8.pdf>)  
66 Environ Health Perspect. 2007 March; 115(3): 390–396. Published online 2006 December 19

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".

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-nonylphthalate

- Di-n-octylphthalate
- Di(2-ethylhexyl)-phthalate
- Diisodecylphthalate
- Butylbenzylphthalate
- Dibutylphthalate
- Di-iso-butylphthalate
- Di-C6-8-branched alkylphthalates
- 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 phthalates 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
Dibutylphthalate	84-74-2	DBP
Di-iso-butylphthalate	84-69-5	DIBP
Di-C6-8-branched alkylphthalates	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:

<p>(b) Plasticisers in paint and varnish.</p> <p><i>Applicability:</i> Where included in the formulation</p>	<p><i>The following phthalates shall not be intentionally added as plasticisers:</i></p> <p>DEHP (Bis-(2-ethylhexyl)-phthalate)</p> <p>BBP (Butylbenzylphthalate)</p> <p>DBP (Dibutylphthalate)</p> <p>DMEP (Bis2-methoxyethyl) phthalate</p> <p>DIBP (Diisobutylphthalate)</p> <p>DIHP (Di-C6-8-branched alkylphthalates)</p> <p>DHNUP (Di-C7-11-branched alkylphthalates)</p> <p>DHP (Di-n-hexylphthalate)</p>	<p>Concentration limit for any individual phthalate:</p> <p>0.10%</p>	<p><i>Verification:</i></p> <p>Declaration shall be provided by the applicant and their raw material suppliers supported by CAS numbers and classifications.</p>
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## 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<sup>67</sup>, 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 manufacturer, 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.

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<sup>67</sup> 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:

$$WUR = \sum [(Wi + Ui)/(Di * ri)]$$

Where:

$W_i$  = the weight (g) of the packaging component (i) including the label if applicable

$U_i$  = 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  $U_i = W_i$

$D_i$  = 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.

$r_i$  = 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 required 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 m<sup>2</sup>, 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 paint 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 1m<sup>2</sup> 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.

## **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](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 received after the EUEB meeting in March 2013. It referred to the use of nanomaterials in paint products. Examples of SiO<sub>2</sub>, TiO<sub>2</sub>, carbon black Al<sub>2</sub>O<sub>3</sub> 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 integrated. A consistent and harmonised approach with other product groups needs further discussions in the framework of the EU Ecolabel.