Revision of EU European Ecolabel and Development of EU Green Public Procurement Criteria for Indoor and Outdoor Paints and Varnishes

Working Document for 1st AHWG for revision of Ecolabel Criteria

February 2012

Jiannis S. Kougoulis, Renata Kaps, Oliver Wolf

Ben Walsh, Katherine Bojczuk, Trevor Crichton

JRC EUROPEAN COMMISSION

ipts Institute for Prospective Technological Studies

OAKDENE HOLLINS RESEARCH & CONSULTING

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Glossary

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

Acknowledgements

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Contents

1 Introduction

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 Part 1 entitled: "*Ecolabel and Green Public Procurement (GPP) Criteria for Paints and Varnishes: Part 1: Background, Market survey and Technical analysis"*. The main points from Part 1 are summarised within Section 1.

This document discusses stakeholder submissions along with information provided within dossiers for currently Ecolabelled paints to identify where reasonable changes to the current Ecolabel criteria can be made. Each criterion is discussed in turn, to aid the reader, each Section states the current criteria, provides a discussion on the need for change, gives recommendations for discussion at the AHWG in bold and then, where necessary, suggests an updated criterion.

The purpose is to equip stakeholders involved in the revision process with a proposal for updated criteria, with evidence to support these changes. This report will form the basis of discussions of an Ad-hoc Working Group (AHWG) meeting to be held in February 2011.

The remainder of this section provides a summary of the findings from Part 1.

1.1 *Legislative context - Key changes since 2008/2009*

1.1.1 Ecolabel

The Regulation EC 1980/2000 concerning the Community Ecolabel award scheme was amended by the Regulation EC 66/2010 to increase its effectiveness and streamline its operation. The revised EU Ecolabel regulation was adopted on 25th November2009 and entered into force on 19th February 2010. A number of key changes, were incorporated:

1. That criteria would be determined on a scientific basis (Article 6.3)
2. There would be a focus on the most significant environmental impacts over the product lifecycle (article 6.3.a)
3. A substitution of hazardous with safer substances (Article 6.3.b)
4. Any substances classified according to CLP as hazardous to the environment, toxic, carcinogenic, mutagenic or toxic for reproduction (CMR) and referred to in Article 57 of Regulation 1907/2006 (REACH) would be restricted (Article 6.6)
5. Derogations may be given in respect of the above, if substitution or use of alternative materials is not technically feasible. However no derogations are possible in respect of substances of very high concern (SVHC) identified in accordance with the procedure set out in Article 59. (Article 6.7).

1.1.2 Biocides

The Biocidal Products Directive (98/8/EC) regulates the placing of biocidal products on the market. The Directive applies only to products which have active agents that impart biocidal properties to the product into which they are incorporated.

According to the directive, active substances have to be assessed at the Community level. Once an active substance has been assessed, it can be included in Annex I. Each Member State must then authorise products containing the biocide before they can be placed on the market in that individual Member State. Once authorised by a Member State, the product can be placed on the market in any other Member State.

A standardised text is now included in all proposed EU ecolabel criteria to ensure that only authorised and assessed biocidal substances are used.

1.1.3 Classification, Labelling and Packaging of Chemical Substances and mixtures (CLP)

This entered into force on 20th January 2009 and implemented the UN globally Harmonised system (GHS) at EU level. The regulation (EC No 1272/2008) came into force on 20th January 2009. The new system of classification, labelling and packaging had to be implemented by 1st December 2010 for substances and by 1st January 2015 for mixtures. However substances and mixtures will still have to be classified and labelled according to the predecessor Dangerous Substances Directive (Directive 67/548/EEC) and Directive 1999/45/EC for preparations until 1st June 2015.

Hazard statements as well as the equivalent R-phrases are routinely used in all ecolabel criteria development work and have been in this document also.

1.1.4 Indoor air quality

New French regulations require mandatory testing and labelling of paints for Indoor Air Quality.[1] The scheme, called ANSES, requires testing to measure the emissions of paint in a sealed room 28 days after application. They have a classification system similar to that implemented for energy efficiency of white goods (C to A+). The German system AgBB: Health-related Evaluation of Emissions of Volatile Organic Compounds (VOC and SVOC) from Building Products, sets out restrictions on the level of emissions allowed for construction products (in particular flooring but can be applied to paints). An extensive list of chemicals are regulated, with limits described as "Lowest Concentrations of Interest" (LCI).

Development and implementation of a similar criterion within the Ecolabel would probably replace the current criteria: 3 (VOC content), 4 (VHA content), 6g (Formaldehyde) and 6h (halogenated organic solvents).

1.2 *Market analysis and general concepts*

Before discussing in detail the classification of paints and varnishes, it is important that certain key concepts are described on the composition of paint. Within the context of the Ecolabel and this report, Directive 2004/42/CE (limiting VOC in paint) definition on paint is used:

> *[a paint] provide[s] a film with decorative, protective or other functional effect on a surface; ... 'Film' means a continuous layer resulting from the application of one or more coats to a substrate;*

There several factors that make it impossible to extrapolate from PRODCOM data to EU Ecolabel specifications. In particular, an Ecolabel criterion calls for the determination of volatile organic compound (VOC) content in order to classify products. VOC content is also an important indicator for consumers when purchasing paint products. Although the paint type can be extracted from the PRODCOM data, this is not broken down further and it is likely that each paint type within the coded category has a different VOC content. These data are therefore not very useful in analysing coatings that fall within the Ecolabel criteria.

[1] http://www.eco-institut.de/fileadmin/contents/International_Labelling/VOC/Arrete_etiquetage_2011.pdf

Table 1: Breakdown of EU27 paints and varnishes production (sold volume) by PRODCOM code (2010)

PRODCOM code	Description	Production (tonnes)	%
20101150	Emulsion paints	3,677,474	52%
20301290	Other paints and varnishes (synthetic polymers)	1,213,345	17%
20301225/ 20301229	Gloss paints and high performance paints	887,267	13%
20301170	Non-vinyl emulsion paints	619,243	9%
20301250	Other paints and varnishes (acrylic / vinyl polymers)	259,942	4%
20301270	Paints and varnishes: solutions n.e.c.	268,024	4%
20301230	Gloss wood paints	98,618	1%
EU27 TOTAL		**7,023,913**	**100%**

Source: Eurostat, PRODCOM (2010)

1.2.1 Market structure

The paints market is dominated by several large companies. It was estimated in 2008 that the top ten coating producers accounted for one third of total global output, demonstrating their dominance over the markets.

While the larger paint and varnish suppliers have a comprehensive product list, including decorative and speciality paints, small and medium-sized enterprises (SMEs) in the paints industry tend to focus on niche products and national consumer demands in the European market. In 2009, there were an estimated 1,000 SMEs in the coatings business in Europe[2].

The top five producing countries account for 69% of the total value of production of manufactured goods. These five countries are:

- Germany (20%)
- Italy (17%)
- France, (13%)
- United Kingdom (11%)
- Spain (8%).

1.2.2 Market trends

The production of paints and varnishes in the EU27 shows a downward trend between 2005 and 2010 and is expected to continue, both volumes sold and value produced are expected to fall, although value shows a steeper decline.

Medium to long term forecasts for the European coatings market as whole are more positive, and suggest short to mid term growth, although at a low rate. In terms of volumes, slow annual growth at a rate of less than 2% is predicted to 2014, which equates to a forecast consumption of 7.4 billion litres. Across the same period, the value of the coatings market is forecast to grow to revenues of €23billion by 2014, a compound rate of over 3% annually.[3]

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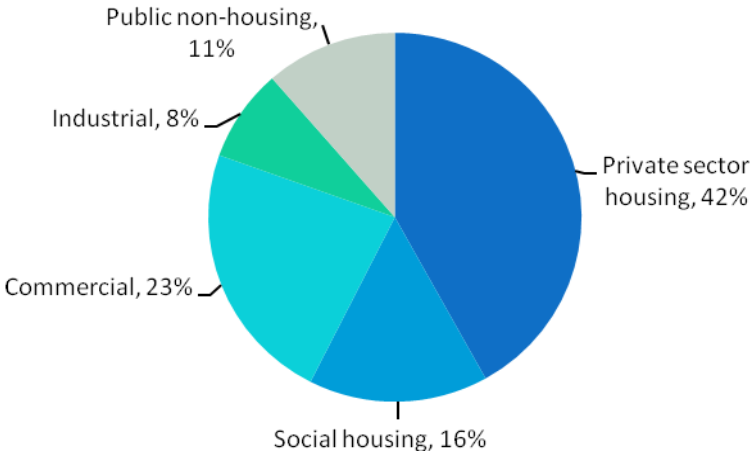
[2] Coatings World, *SME's are fighting to hold on,* 2009. Available at: http://www.coatingsworld.com/contents/view_europe-reports/2009-02-02/smes-are-fighting-to-hold-on/

[3] European coatings journal: *The European coatings market*, 2011

1.2.3 Public procurement

The trade paints market is analysed by sector in figure 4 for 2006. In terms of public procurement, 16% of the total is used for social housing and 11% for public non housing.[4] Figure 1 represents trade paint. In the UK, trade paint represents an estimated 43% share of the overall decorative paints market.[5]

Figure 1: Trade paints market by sector 2006 (% share in sector)



Source: Palmer market research (2007), Trade paints market Report (GB)

1.3 *Technical analysis*

1.3.1 Review of lifecycle analysis

Seven separate paint LCAs were identified from which the following conclusions were made:

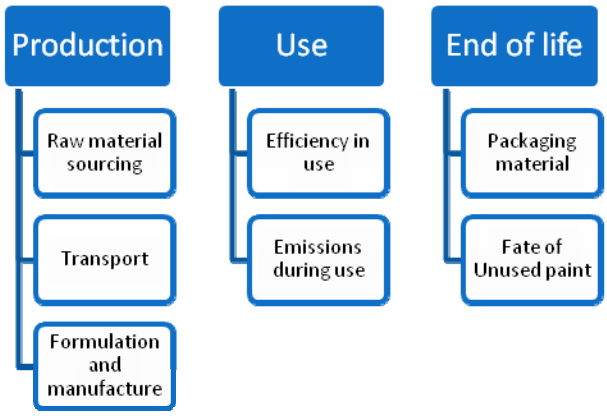
- Solvent-based paints have a higher environmental impact than corresponding water-based paints
- Extending the life of a product contributed most to the environmental benefit of the paint
- The impact of transportation is negligible.
- Fillers, pigments and additives have a minor environmental impact on the paint.
- Solvent-based paints lead to a 10 fold increase in the release of VOCs compared to water based paints
- Where greater than 10% titanium dioxide is used, it is the most significant contributor to the environmental impact.
- Manufacturing impacts where vague within all examined studies

[4] Palmer market research (2007), Trade paints market Report (GB)

[5] AMA Research (2009), *Paint, wall coverings and woodcare market, UK 2009-2013*

1.3.2 Further investigation into the lifecycle of paint

A further investigation of the lifecycle of the paint examined production, use and end of life.



The production phase examined two model paints:

- **Water-based vinyl emulsions** which can be used for a diverse range of paint applications from wall paints and trim paints
- **Water-based Alkyd emulsions** that are largely used in varnishes.
-

These two paints represent approximately 50 % of the entire European market share of paints. The carbon footprint of these two paints was 2.42 and 2.32 kg CO_{2e} /kg of paint for the vinyl emulsion and alkyd emulsion respectively, which compares favourably to reviewed results.

The three biggest contributors to the environmental impact of paint are binders, TiO_2 pigment and plant energy in manufacture. Interestingly, about one quarter of the overall environmental impact of the paint is from the manufacturing phase. Conversely, 75% of all carbon footprint of the paint is within the supply chain of the paint manufacturer.

In the use phase, decreasing the frequency between repaints has a significant effect on reducing the environmental impact of the paint.

The LCA made assumptions on the “additives” portion of the bill of materials. This was because a representative assessment of the additives could not be made due to the large number of different chemicals that could be considered in this category and the diversity of their environmental impact. These are known to have a significant environmental or toxicity risk associated with them. The following compounds were assessed for their ecotoxicity and human health impacts:

- Alkylphenolethoxylates (APEOs)
- Perfluorinated alkyl sulfonates (PFAS)
- Formaldehyde
- Halogenated Organic Solvents
- Phthalates
- Heavy Metals
- Volatile Aromatic Hydrocarbons
- Volatile Organic solvents
- Isothiazolinone compounds

Unwanted or unused paint has a significant environmental impact. The combined environmental impact of left over paint (including the impact of production) must be accounted for when assessing the environmental impact of painting.

Summary

Based on the information presented above, the following conclusions can be made on the environmental impact of paints and varnishes:

Conclusion	Significance	Addressable in the ecolabel?
In-use durability plays a key role in determining the environmental impact of paints as do periods between repaints.	Very High	Yes, through performance criteria
Unwanted paint has a significant environmental impact	High	Possibly, though the requirement of take-back schemes
Solvent based paints have a higher environmental impact than water based paints	High	Yes, by controlling the amount of VOC present in the paint
The impacts of transportation are very low	Low	No, would require specification for local sourcing
Binder manufacture is an important environmental impact of paint production	Medium	No, dictating the conditions for binder use may stifle innovation
TiO2 manufacture is an important environmental impact of paint production	Medium	Yes, reducing TiO_2 use can be achieved
Only ¼ of the carbon footprint is due to energy in production at the paint manufacturer, meaning that the majority of greenhouse gas emissions are emitted from the supply chain	Medium	No, paint manufacturers cannot easily control their supply chain emissions making any criterion impractical.
Additives have a wide range of health and environmental implications. No studies have quantified this effect but they are of concern.	Medium	Yes, encouraging manufacturers to use alternatives is possible.

These conclusions broadly reflect those identified through the literature survey.

1.4 *Environmental hotspots and mitigations*

The EU Ecolabel criteria should reflect and address the impacts identified in the previous parts of this section. A mapping exercise was performed to translate the current EU Ecolabel criteria for paints and varnishes for both indoor and outdoor paints onto the impacts identified within the LCA, Table 2. Where gaps in the current criteria were identified, additional criteria are suggested for discussion in the following sections and are highlighted in red in the table below. Issues which have appeared since the last revision, such as the use of nanomaterials, which should be considered for inclusion within the revision, are also highlighted in red.

Table 2: A map of the current (blue) and possible new (red) criteria against the lifecycle of paint

Life cycle stage	Impact	Criteria
Production	Raw material sourcing	1. White pigments 2. Titanium Dioxide 6. Dangerous substances
	Formulation and manufacture	*Green house gas emissions* *Water use*
Use	Efficiency in use	7. Fitness for use
	Emissions during use	3. Volatile organic compounds 4. Volatile aromatic hydrocarbons 5. Heavy metals 6. Dangerous substances 8. Consumer information Biocides Nanoparticles Indoor air quality
End of life	Packaging material	Packaging material
	Unused paint disposal	Unused paint disposal

Note: Criteria areas mentioned in the accompanied note from the current Ecolabel decisions of indoor and outdoor paints for consideration in the revision process are in italics.

The following sections and discussion mirrors the order highlighted within this table.

It should be noted that there is likely to be overlap between the various criteria. This will be resolved during the final drafting of the criteria document.

2 Scope

2.1 *Merging Indoor and Outdoor Paints or 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, along with 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 administration 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, outdoor and paints that can comply with both indoor and outdoor criteria. Only relatively minor changes to each criteria would be needed to realise this shift.

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

Accounting for similarities in the two criteria documents, and support for a merger from stakeholders, the following Sections examining the current criteria have been framed to incorporate the necessary changes allowing combination of the two documents.

Possible complications on merging the revision of the current two EC Decisions for indoor and outdoor paints respectively into one will be checked at the final drafting stage.

It is suggested that the separate indoor and outdoor criteria document are merged into a Paints and Varnishes criteria that covers both sets of paints.

2.2 *Current Criterion Article 1 (Indoor And Outdoor)*

Current Criterion
The product group 'indoor paints and varnishes' shall comprise indoor decorative paints and varnishes, woodstains and related products, as defined in paragraph 2, intended for use by do-it-yourself and professional users and primarily developed for indoor use and marketed as such.

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 primers and undercoats of such product systems.

2. '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.

'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 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.

(Outdoor only): 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.

3. The product group shall not comprise:
(a) anti-corrosion coatings;
(b) anti-fouling coatings;
(c) wood preservation products;
(d) coatings for particular industrial and professional uses, including heavy-duty coatings;
(e) facade coatings; **(indoor only)**
(f) any product primarily developed for outdoor use and marketed as such. **(indoor only)**
(e) any product primarily developed for indoor use and marketed as such**. (outdoor only)**

During the implementation and use of the EU Ecolabel, several questions on the scope of the criteria have been raised. Table 3 summarises the proposed amendment and provides guidance on a decision for inclusion or rejection from the Ecolabel.

Table 3: Discussion of changes to the scope of the EU Ecolabel.

Product	Discussion	Recommendation
Wood oils	These treatments for wood penetrate the wood's surface and are arguably different to 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	**Exclude**
UV curable paints	These specialist paints are in wide use, however, are not readily available to the domestic market. They also require specialist equipment during application	**Exclude**
Powder coatings/paints	These are currently specified within scope, however, they face similar concerns over availability to, and use by, the amateur and trade market. They are technical paints usually applied in an industrial setting requiring ovens to cure the paints.	**Discussion point: Keep within the scope powder coatings/paints?**
Anti corrosive metal primers and topcoats	Stakeholders indicate that many of these products are specialised for industrial uses and would generally fail EU Ecolabel standards. Some argue that the less active water-based products should be included.	**Discussion point: Include anti-corrosive metal primers and topcoats in the scope?**
Non film forming coatings (eg stone protection materials)	These class of products do not form a film and are therefore excluded under the criterion selection.	**Exclude**
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.	**Exclude**
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.	**Proposal to include**
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 their not being considered during development of the current criteria.	**Proposal to include**
Façade coatings	Façade coatings are currently excluded from the criteria of paints for indoor use but are included in the outdoor.	**Proposal to include**
Paints used for street marking	It is not a typical product purchased from private consumers. However, as it is considered very relevant for the scope of Green Public Procurement for terms of consistency it could be considered to include also in Ecolabel. Comments for a definition proposal from stakeholders are welcome	**Discussion Point: Include façade coatings?**

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[6], which increases the paint's opacity but does not result in it being completely opaque. Transparent paints do not contain any pigment. This is of particular importance for paints that contain only a small amount of TiO_2 (white pigment) for classification and assessment under Criterion Numbers 1 and 2.

A recommended amendment to the criterion to clearly define the terms transparent and semitransparent has been amended in the text below.

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

Confusion exists over the terminology for 'primers' and 'undercoats': often considered, erroneously, as synonymous. A proposed inclusion of 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" was suggested in the released consultation document[7] to the stakeholders:

> *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 generally agreed with this, although some were concerned that definition 1.1.g could be considered as too narrow.

Clarification to the text has been suggested to differentiate between undercoats and primers.

Suggested amendments to the criterion

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**.

'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.

'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.

[7] http://susproc.jrc.ec.europa.eu/paints/

'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.

3. The product group shall not comprise:
DISCUSSION POINT on a) anti-corrosion coatings;
(b) anti-fouling coatings;
(c) wood preservation products;
(d) coatings for particular industrial and professional uses, including heavy-duty coatings;
DISCUSSION POINT ~~(e) facade coatings;~~
DISCUSSION POINT on (f) Powder coatings
(g) UV curable paint systems
(h) Paints primarily intended for vehicles
(i) products that do not form film over the substrate, such as wood oils

In the following criteria, stakeholders are invited to comment on if the current criteria for paints can be used (in a modified form) for paints for street marking. These paint are relevant for GPP, but not this Ecolabel.

Stakeholders are asked to provide their comments to the suggestions and discussion points presented.

3 Production

3.1 *Raw Material Sourcing*

3.1.1 Current Criterion Number 1: White Pigments (Indoor And Outdoor)

Current Criterion
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 (36 g – indoor and 38g- outdoor) per m^2 of dry film, with 98 % opacity.

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 and the spreading rate, together with the detailed calculation showing compliance with this criterion.

A reduction in the use of pigment, particularly titanium dioxide, in paints 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 criterion 7(a) and is directly linked to the amount of pigment added to the paint. Alterations to criterion 7(a) along with this criterion should be considered in parallel to ensure that any changes do not prove too restrictive. To simplify this problem, it is proposed that the thresholds for spread-rate (criterion 7(a)) are held at their current levels and that changes are made to this criterion.

Stakeholders are asked for comments regarding this approach.

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 4 summarises these results.

Table 4: Amount of TiO_2 per m^2 of EU Ecolabelled paints

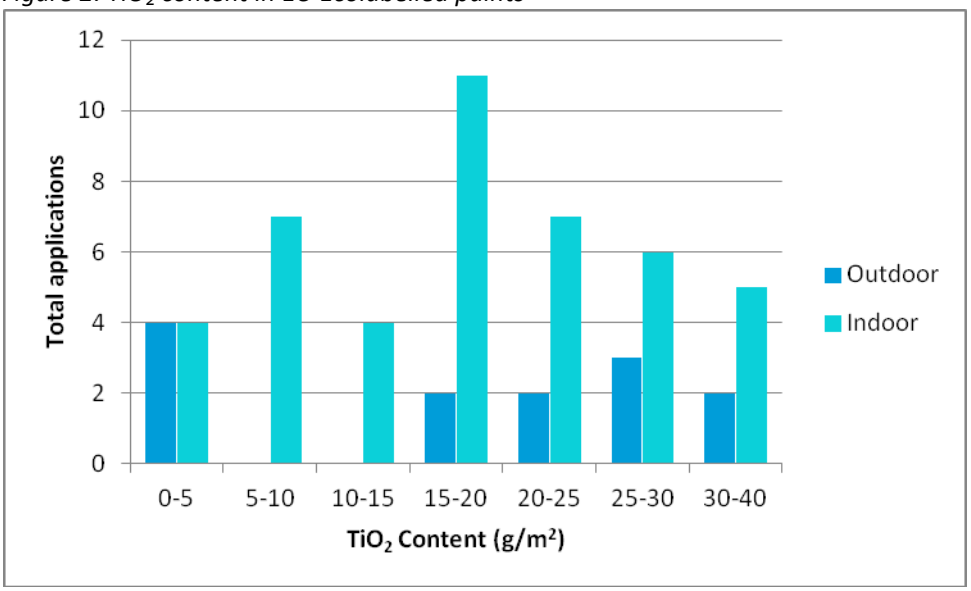
Type	Number of paints	Average white pigment (g/m^2)	Standard deviation (g/m^2)	Current threshold (g/m^2)
Indoor	**58**	23.5	**8.6**	36
Outdoor	**12**	18.1	**13.3**	38

Based on the data collected, current EU Ecolabelled products perform significantly better than that 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/m2 of white pigment (Figure 2).

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 in this phase not possible. From the data available, paints with higher levels of titanium dioxide come from a variety of competent bodies (paint manufacturers) and are classified as 'interior matt wall paints' and 'trim paints'. The mean spreading rates (m^2/l) of the paints are 9.08 with a standard deviation of 0.70 indicating a similar performance.

Figure 2: TiO_2 content in EU Ecolabelled paints



Based on this data, an opportunity exists to reduce the white pigment content of paints without excluding the majority of the currently EU Ecolabelled paints, however, comments from stakeholders suggested that a further reduction was not possible.

There is clear evidence that a reduction in the amount of TiO_2 is justified but further investigation with the stakeholders is needed to specify the threshold.

Stakeholders commented that elastomeric coatings, in particular PVC-based paints (A1-A5 according to EN 1062-1) 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. A 'second tier' white pigment limit has been proposed set specifically for high wet scrub resistant paints.

If further evidence can be sourced from stakeholders an additional maximum white pigment clause should be considered for high wet scrub resistant paints. Stakeholders are asked for comments.

A competent body raised a concern that certain woodstains and varnishes contain small quantities of titanium dioxide. This led to confusion over the need for these products to undergo spread-rate tests and the need to audit the emissions from titanium dioxide manufacture (this criterion along with criterion 2 and 7a). This is confirmed by the data provided by competent bodies and collated under Figure 2, where a number of Ecolabelled paints have very low concentrations of TiO_2 (0-5 g/m^2). This presents three issues:

1. Determining spread rates (if the paints are transparent) and, thus, the amount of TiO_2 per square meter may be very difficult.
2. Applicants will be required to perform additional analysis on products that will undoubtedly pass the current requirements.

3. TiO_2 which is produced using higher polluting routes can be used because the small amount of TiO_2 used in the paint formulation will mean that the total pollution levels for its production will be below the currently mandated threshold in criterion 2.

To mitigate against point 1, it could be proposed that a further explanation should be drafted into this criterion that describes which paints are exempt 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 point 3 from occurring, modifying the calculation under criterion 2 to 'per gram of TiO_2', rather than 'per meter squared of paint', will ensure that low-polluting TiO_2 is used within the paint.

Possible proposal of new Criterion
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 (t**o REDUCED threshold- g – indoor and -to REDUCED threshold- g- outdoor**) per m^2 of dry film, with 98 % opacity.

DISCUSSION POINT: High wet scrub resistance paints (Class 1 in wet scrub resistance EN 13300) shall have a white pigment content lower or equal to -to a different threshold than the one above- g per m^2 of dry film with 98% opacity.

This requirement does not apply to paints and varnishes **that are exempt from criterion 7(a), namely varnishes, woodstains, floor coatings, floor paints, undercoats, adhesion primers or any other transparent coatings.**

Assessment and verification: The applicant shall either provide a declaration of non-use or provide documentation showing the content of white pigments and the spreading rate, together with the detailed calculation showing compliance with this criterion. **A test report showing compliance with EN 13300 should be provided if applicable.**

Stakeholders are asked to provide their comments to the suggestions and discussion points presented.

3.1.2 Current Criterion Number 2: Titanium Dioxide (Indoor And Outdoor)

Suggested amendments to the criterion
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)):

Indoor:
— SOx emissions (expressed as SO2): 252 mg per m^2 of dry film (98 % opacity),
— sulphate wastes: 18 g per m^2 of dry film (98 % opacity),
— chloride wastes: 3,7, 6,4 and 11,9 g per m^2 of dry film (98 % opacity) respectively, for natural rutile, synthetic rutile and slag ores.

Outdoor
— SOx emissions (expressed as SO2): 266 mg per m2 of dry film (98 % opacity),
— sulphate wastes: 19 g per m2 of dry film (98 % opacity),
— chloride wastes: 3.9, 6.8 and 12.5 g per m^2 of dry film (98 % opacity) respectively, for natural rutile,

synthetic rutile and slag ores.

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.

There is some dispute as to whether the intention in this criterion was to set limits on SOx emissions and sulphate wastes from the chloride process. The Titanium Dioxide Harmonisation Directive [8] does not stipulate limits for SOx emissions for chloride wastes. Furthermore, stakeholders have argued that the level of SOx emissions from the chloride process are so low they can be excluded from the calculation. From data supplied by the Reference Document on Best Available Technology for the Manufacture of Large Volume Inorganic Chemicals (BREF) (August 2007), sulphur dioxide emissions are released (albeit to a lesser extent) during production of titanium dioxide via the chloride route. Table 5 shows SOx emission from the production of TiO_2 via the chloride route and also calculates the effect of SOx emissions on a typical paint formulation with a maximum of 38g of TiO_2 per square meter as mandated by criterion 1 for outdoor paints.

Table 5: Emissions from European TiO_2 manufacturing plants using the chloride process based on BREF data[9]

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

Based on the results provided above, the maximum amount of SOx emitted from a chloride based TiO_2 plant is 40% less than the threshold for the EU Ecolabel. This is a significant proportion and should be considered as part of the assessment process. 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. Further data are required from the stakeholders to validate these claims.

Further discussions with stakeholders are needed to determine if the above calculation needs updating with more recent data. Also further discussion is required on whether SOX reporting for chloride route is appropriate.

A question was raised on carbon emissions with respect to titanium dioxide production, an issue discussed in more depth in Section 3.2.1.

During the assessment process, an applicant stated that their TiO_2 supplier recycled their sulphur solid waste internally. Under such circumstances, the applicant argued that the sulphur should be considered

[8] 92/112/EEC

[9] Best Available Technology for the Manufacture of Large Volume Inorganic Chemicals (BREF), EC, August 2007

[10] The figure takes into account the chlorination process and the energy to generate heat for the process.

a 'by-product' and exempt from the criterion. The Waste Framework Directive 2008/98/EC, article 3 defines waste: if this TiO_2 producer can satisfy article 5 (by-product production) of the Waste Framework Directive, then the sulphur waste can be exempt.

Changes to the criterion text should be considered to better reflect the Definition of Waste. . Feedback from stakeholders is requested to determine if this would over-complicate this criterion.

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 6 summarises these results.

Table 6: Average emissions from the manufacture of TiO_2 for successful EU Ecolabel paint applications.

TiO2 Origin	Number of products	Average values per paint				
		SOX	S	Nat	Synth	Slag
Sulphate only processes	36	139	8.8			
(Standard Deviation)		56	4.2			
Chloride only processes	7			1.79	2.48	5.04
(Standard Deviation)				0.68	1.56	2.35
Mixed processes	38	99.4	7.3	1.83	3.17	5.66
(Standard Deviation)		87.9	5.7	1.04	1.79	3.54
Ecolabel limits (indoor)		252	18	3.7	6.4	11.9

The average SOx and sulphur emissions from paints that used TiO_2 derived from the sulphur-only processes emitted 45% less than the threshold limit, suggesting that a threshold reduction is justifiable and a modest overall impact on the industry.

Determining the current level of emissions through the chloride route is not possible. Approximately half of submitted applications contained TiO_2 derived from both the sulphate and the chloride production processes, and nearly all had formulations that contained raw material from a mixture of sources. The absence of formulations containing TiO_2 sourced from individual feedstocks suggests that it is the industry norm to source from all three feedstocks. All reported chloride emissions are significantly below the threshold. The foregoing implies that a reduction in the chloride emissions should be achievable with minimal impact on the currently successful EU Ecolabelled paints.

Stakeholders have suggested that a reduction in these values would be difficult to meet using current production techniques, but this view is not supported by the evidence presented in Table 6.

It is recommended that further conversations with stakeholders are sought to determine if the evidence presented here is representative. Based on the CB submissions a further reduction in the emissions level is substantiated and therefore could be proposed.

A calculation based on the emissions per gram of TiO_2 is proposed (see also discussion in section 3.1.1). This will enable unification of the indoor and outdoor criteria and improve the readability of the document. This will also ensure that where a paint formulation uses less TiO_2 than the threshold stipulated in criterion 1, the TiO_2 is from low polluting sources.

Stakeholders are asked to comment if this approach should be followed or whether a more appropriate way should be used to address better this issue.

Discussion point: Possible amendments to the criterion
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)):

— SOx emissions (expressed as SO2): to be discussed mg per g
— sulphate wastes: To be discussed g per g
— chloride wastes: To be discussed g per g respectively, for natural rutile, synthetic rutile and slag ores.

Note:
That SOx emissions apply to both the sulphate and chloride process.
For the avoidance of doubt, the Waste Framework Directive 2008/98/EC, article 3 defines waste. If the TiO_2 producer can satisfy article 5 (by-product production) of the Waste Framework Directive for its solid wastes then, the wastes shall be exempt.

{for information of the AHWG: To calculate current criterion levels, divide the values by 36 for indoor paint and 38 for outdoor paint.}

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.

Stakeholders are asked to provide their comments to the suggestions and discussion points presented.

3.2 *Formulation and manufacture*

3.2.1 New Criteria: Consideration Of Green House Gas Emissions (GHG)

The current EU Ecolabel criterion does not directly address reductions in Green House Gas (GHG) emissions. Minimising the impact of climate change by reducing the release of carbon dioxide and other GHG into the atmosphere is a priority for many countries, as well as for businesses keen to convey the benefits of products to specifiers and consumers.

GHG emissions can be classed as either:

- direct GHG emissions - emissions from sources that are owned or controlled by the manufacturer e.g. energy used in manufacture;
- or
- indirect GHG emissions are emissions that are a consequence of the activities of the manufacturer, but occur at sources owned or controlled by another supply chain entity e.g. allocation of emissions from processes in which purchased materials.

Other EU Ecolabel criteria are examining the possibility of limiting the amount of GHGs that can be released in the manufacture of a product. Several larger paint manufacturers have completed carbon footprint analyses but the practice and the methodology employed to perform such analyses are not uniform. The LCA suggests that the majority of the impact in paint production occurs within the paint's supply chain, not at the point of formulation. This means that the majority of emissions are produced by the suppliers to the paint manufacturers (the applicants) and controlling or accurately reporting on these emissions is a significant challenge to the applicants, and especially for SMEs. Where maximum emissions limits are being set in other EU Ecolabel product groups (for example the criteria for paper), the majority of the impacts are associated with emissions by the manufacturer/applicant.

Based on this analysis, effective lowering of the GHG emissions from the production of paint will require the applicant to demand a carbon footprint from each of their suppliers and/or perform a full carbon footprint based on proxies. Both these solutions are probably impractical and is expected to add an additional cost burden to applicants. Stakeholders largely reflect this viewpoint.

It is considered that setting requirements based on carbon footprint values is currently not relevant. However, stakeholders are asked to comment on if a further discussion is needed on how reporting of these values could be relevant.

One possible area where limits on carbon emissions could be mandated is with the production of TiO_2. A BREF study is available that enables identification of average energy use from the manufacturing process. Note that this is not a full LCA but focuses on energy use from the TiO_2 plant. The average energy use to produce 1 tonne of TiO_2 using the chloride and sulphate process is 17 Gj per tonne and 36 Gj per tonne, respectively. To approximate emission levels, the emissions from the UK energy mix defined within the Ecoinvent database was used to convert energy use into emissions. Based on this calculation:

- average emissions from the chloride process are 2.85 te CO_{2e} per tonne of TiO_2
- average emission from the sulphate process are 6.03 te CO_{2e} per tonne of TiO_2

As can be seen, the sulphate process is significantly more energy intensive than the corresponding chloride process and therefore produces more carbon in production. If controlling the emissions from TiO_2 production are seen as important and relevant for the Ecolabel the following options could be considered:

1. To set individual limits for each production process, as a consequence, the chloride process will have a significantly lower threshold than TiO_2 derived from the sulphate route.

2. To set a universal threshold for the production of TiO_2. Depending on the level set, this could in effectively prohibit the use of TiO_2 derived from the sulphate process.

This analysis does not, however, account for emissions associated with raw material extraction. According to the Ecoinvent database - which considers the whole lifecycle - the differences are much less pronounced, with the chloride and sulphate process emitting 4.3 and 5 te CO_{2e}, respectively. Further discussions with stakeholders are needed to understand this issue.

A further discussion with TiO_2 manufacturers is suggested to determine if there are appropriate limits on GHG emissions from the production of TiO_2. In addition, it is suggested that a further discussion is needed to decide if Ecolabel criteria are appropriate policy tool to address this aspect.

Limiting direct emissions (those emitted by the paint manufacturer) are relatively small but could still reduce the environmental burden of paint. Unfortunately industry average data on the formulation of paint are not available yet. Also, due to wide range of paints, different data sets would be needed. It appears to have many practical constrains to specify direct emission limits in this revision.

A preliminary conclusion is that an additional criterion on direct emissions of GHG are omitted from this Ecolabel revision because of complexities and variation in the product of paint, along with lack of data on emissions during paint formulation. It is recommended that this aspect is investigated during the next criteria revision. Stakeholders are asked for further comments.

3.2.2 New Criteria: Consideration Of Water Use

The current EU Ecolabel criteria do not address minimising water usage in production. The focus would be on water consumption at the plant rather than the amount of water present within the paint itself. Stakeholders seemed receptive to the idea but doubted that a threshold could be set or measured. There were concerns that the additional costs associated with data collection would disproportionately impact smaller organisations, particularly those without ISO14001 (or equivalent EMS). Also, without industry average data across the different types of product, a baseline is lacking against which a comparison and threshold can be set. Unless evidence from stakeholders can provide insight, developing a water use criterion is not considered of relevant. The consumption of water is one environmental aspect that is addressed within the paint LCA. Based on this data, addressing water use separately does not seem to be currently substantiated by the technical analysis outcomes.

The evidence suggests that an additional criterion on water usage should be are omitted from a revision of the Ecolabel because of complexities and variation in the product of paint, along with lack of data on water-use during paint formulation and poor information on the particular significance of such a requirement. Stakeholders are invited to comment.

4 Use

4.1 *Efficiency in use*

4.1.1 Current Criterion Number 7(a): Spreading rate (indoor and outdoor)

Current Criterion
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 8 m^2per litre of product. **(6m^2 for outdoor)**

For tinting systems, this criterion applies only to the white base (the base containing the most TiO_2). In cases where the white base is unable to achieve the requirement of at least 8 m^2 per litre **(6m^2 for outdoor)** at a hiding power of 98 %, the criterion shall be met after tinting the white base to produce the standard colour RAL 9010. For all other bases used to produce tinted products — these are bases which as a rule contain less TiO2, which are unable to achieve the requirement of at least 8 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 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 m^2 per kg of product. **(indoor only)**

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

This requirement does not apply to varnishes, woodstains, floor coatings, floor paints, undercoats, 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 (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.

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 applied similarly to outdoor products. Several stakeholders questioned the availability of appropriate thick decorative coatings for use outdoors, suggesting that any requirement

would be redundant; however, several examples seem to be available.[11] A combination of indoor and outdoor paint criteria may enable a unified threshold based on the current indoor level.

It is recommended that the spreading performance for indoor thick decorative coatings is applied to outdoor coatings.

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 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. Stakeholders are asked to comment on this approach.

For opaque paints based on non-white (low TiO_2) bases, a gap currently exists in the ability to test their spreading rates. A possible alternative is the French test standard NF T30-073:1989-08-01, although the standard's popularity and use is unknown. Further information from stakeholders is sought, along with its applicability to transparent paints.

A discussion in necessary to determine if NF T30-073:1989-08-01 could be applied to paints with non-white bases.

As discussed in Section 2.2, where an increase is scope is proposed to include thick waterproof coatings, the following text should be considered for inclusion in this criterion:

> *Outdoor thick coatings for water proofing roofs and terraces shall have a minimum spreading rate of 2 m^2/lit (hiding power 98%)*

It is recommended that if the increase in scope is agreed, the described spreading rate thresholds should be discussed with stakeholders.

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 2.2.

Suggested amendments to the criterion

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 **–[for discussion, should these thresholds remain at 8 m^2 per litre of product for indoor paints and 6m^2 for outdoor paints.]** For tinting systems, this criterion applies only to the white base (the base containing the most TiO_2). In cases where the white base is unable to achieve this requirement, the criterion shall be met after tinting the white base to produce the standard colour RAL 9010.

For all other bases used to produce tinted products — these are bases which as a rule contain less TiO2, which are unable to achieve the requirement of at least 8 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 %)

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

of at least 6 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 m^2 per kg of product.

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

This requirement does not apply to varnishes, woodstains, floor coatings, floor paints, ~~**undercoats**~~, ~~**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 (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.

4.1.2 Current Criterion Number 7(b): Wet scrub resistance (indoor)

Current Criterion
Wall paints (according to EN 13300) for which claims are made (whether on the product or in related marketing material) that they are washable, cleanable or brushable shall have a wet scrub resistance as measured by EN 13300 and EN ISO 11998 of class 2 or better (not exceeding 20 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) and evidence (on the product packaging or related marketing material) that the end-user is informed that the product has not been tested for wet scrub resistance in the case of ceiling paints.

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 analysis12. 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.

Due to significant stakeholder disagreement, it is recommended that the current criterion will continue to apply to paints that claim wet scrub resistance. For the other type of paints stakeholders are invited

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

to provide feedback whether the paint durability shall be addressed in this criterion and with such a type of requirement or not. This should also include feedback of inclusion of outdoor criteria.

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

The text has been changed to reflect this point.

Stakeholders expressed views that the scrub resistance test should be 'graded' to enable differentiation between brushable (class 2) and washable (class 1) paints. Although relatively minor, such a change may be confusing to consumers where the definitions are less well understood. A further discussion with stakeholders may therefore be needed prior to implementation. There was also a call to tighten the requirement to a minimum of class 1, but such a move is likely to be opposed and cause problems for currently Ecolabelled paints.

A further discussion is needed over the merits of either grading paint performance or tightening the criterion to class 1 paints.

Suggested amendments to the criterion
Wall paints (according to EN 13300) **(DISCUSSION POINT: could this also include other paint types**) for which claims are made (whether on the product or in related marketing material) that they are washable, cleanable or brushable shall have a wet scrub resistance as measured by EN 13300 and EN ISO 11998 of class 2 or better **(<=2)** (not exceeding 20 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) and evidence (on the product packaging or related marketing material) that the end-user is informed that the product has not been tested for wet scrub resistance in the case of ceiling paints.

4.1.3 Current Criterion Numbers 7b (outdoor) & 7c (indoor): Resistance to water

Current Criterion
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).

The current test protocol is the latest available version. However, an international review of the 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 have been suggested below.

Suggested amendments to the criterion
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).*

(footnote) * 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 Current Criterion Number 7c (outdoor): Adhesion

Current Criterion
Adhesion: Masonry paints (excluding transparent primers) shall score a pass in the EN 24624 (ISO 4624) pull-off test for adhesion and floor coatings, floor paints and undercoats for concrete, wood and metal coatings shall score at least a 2 in the EN 2409 cross-cut method for adhesion. When carrying out EN 24624 where the cohesive strength of the substrate is less than the adhesive strength of the paint then this is considered a pass, otherwise the adhesion of the paint must be in excess of a pass value of 1,5MPa.

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 Eco-label (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.

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 and it is recommended that the test should be reused without revision.

4.1.5 Current Criterion Number 7d (indoor): Adhesion

Current Criterion

Adhesion: Floor coatings, floor paints and floor undercoats, metal and wood undercoats shall score at least 2 in the EN 2409 test for adhesion. 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.

Transparent primers are not included in this requirement

Assessment and verification: The applicant shall provide a test report using the method EN ISO 2409 or EN 24624 (ISO 4624) as applicable

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. There was a request for clarification of the wording of the scope of the requirement.

Recommended minor amendments to the criterion text have been suggested below.

Suggested amendments to the criterion

Floor coatings, floor paints, floor undercoats, metal undercoats and wood undercoats shall score **<=** 2 in the EN 2409 test for adhesion. 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.

Transparent primers are not included in this requirement

Assessment and verification: The applicant shall provide a test report using the method EN ISO 2409 or EN 24624 (ISO 4624) as applicable

4.1.6 Current Criterion Numbers 7d (outdoor) & 7e (indoor): Abrasion

Current Criterion
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.

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. There was a question over how the test was conducted but it is clearly set out within the cited standard. There was a comment that non-film forming paints should be excluded. Paints which do not form a film are currently excluded from the Ecolabel making this a moot point.

It is recommended that the text is reused without revision.

4.1.7 Current Criterion Number 7e (outdoor): Weathering

Current Criterion
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.

The colour change of samples exposed to weathering shall not be greater than ΔE * = 4 and decrease in gloss for varnishes shall not be greater than 30 % of its initial value. The gloss shall be measured using ISO 2813. The criterion for colour change is not applicable to transparent varnishes and bases.

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). Additionally the applicant shall provide test reports using EN ISO 4628-2, 4, 5, 6 where applicable. The applicant shall also provide a declaration that (where applicable) the colour change of the coating is within the parameter set in this document.

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 suggested that specifies this test standard within the text below.

All other test specifications cited within this document are up-to-date and appear suited for their respective identified roles.

It is recommended that the current test specifications are used as-is in the updated 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.

Further stakeholder engagement is recommended to clarify if an additional test is appropriate using an inert substrate and white primer for woodstains.

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 is inappropriate for matt paints.

Appropriate text has been suggested within the criterion text below.

Suggested amendments to the criterion

Masonry finish paints and wood and metal finishes including varnishes shall be exposed to artificial weathering in apparatus including fluorescent UV lamps and condensation or water spray according to 11507:2007.

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

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

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

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

Chalking shall be tested using method EN ISO 4628-6:2007 on masonry finish coats and wood and metal finishes (where applicable) after the samples have been exposed to weathering. Coatings shall achieve a score of 1,5 or better (0,5 or 1,0) in this test. In the standard there are illustrated references.

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

— Flaking according to ISO 4628-5:2003; flake density 2 or less, flake size 2 or less,
— Cracking according to ISO 4628-4:2003; crack quantity 2 or less, crack size 3 or less,
— Blistering according to ISO 4628-2:2003; blister density 3 or less, blister size 3 or less.

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

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

(footnote) * this test procedure is due to be superseded by ISO 11664 during the lifetime of this 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.

4.1.8 Current Criterion Number 7(f): Water vapour permeability (outdoor)

Current Criterion
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 7783-2. Due to the large number of potential tinting colours, this criterion will be restricted to testing of the base paint; this requirement is not applicable to transparent primers.

Assessment and verification: The applicant shall provide a test report using methodology EN ISO 7783-2.

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 criterion is included without revision.

4.1.9 Current Criterion Number 7(g) (outdoor): Liquid water permeability

Current Criterion
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 DIN 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 DIN EN 1062-3:1999.

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

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 suggested was to remove the "DIN" identifier to the standard should be made.

Suggested amendments to the criterion
Where claims are made that exterior masonry and concrete paints are water repellent or elastomeric, the coating shall be classified as Class III (low liquid permeability) according to method EN 1062- 3:1999. Due to the large number of potential tinting colours, this criterion will be restricted to the testing of the base paint. All other masonry paints shall be classified as Class II (medium liquid permeability) or better according to the test method EN 1062-3:1999.

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

4.1.10 Current Criterion Number 7(h) (outdoor): Fungal resistance

Current Criterion
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.

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 criterion is included without revision.

4.1.11 Current Criterion Number 7(i) (outdoor): Crack bridging

Current Criterion
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 DIN 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

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 suggested was to remove the "DIN" identifier to the standard should be made.

Suggested amendments to the criterion
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

4.1.12 Current Criterion Number 7(j) (outdoor): Alkali resistance

Current Criterion
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.

Noting that an applicant was unaware that this criterion was mandatory for all masonry paints and primers, one stakeholder suggested that additional explanation should be added to the guideline document to highlight this point. This, however, falls outside the scope of this revision.

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 criterion is included without revision.

Suggested amendments to the criterion
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.

4.2 *Emissions During Use*

4.2.1 Current Criterion Number 3: Volatile Organic Compounds (Indoor and Outdoor)

Current Criterion

VOC content shall not exceed:

Outdoor paints		Indoor paints	
Product Classification	VOC limits (g/l including water)	Product Classification	VOC limits (g/l including water)
Coatings for exterior walls of mineral substrate	40	Interior Matt (walls/ceiling) (Gloss < 25@60 °)	15
Exterior trim and cladding paints for wood and metal including undercoats	90	Interior glossy (walls/ceiling) (Gloss > 25@60 °)	60
Exterior trim varnishes and wood-stains, including opaque woodstains	90	Interior trim and cladding paints for wood and metal including undercoats	90
Exterior minimum build woodstains	75	Interior trim varnishes and wood-stains, including opaque woodstains	75
Primers (for exterior use)	15	Interior minimum build woodstains	75
Binding Primers (for exterior use)	15	Primers	15
1 Pack performance coatings	100	Binding Primers	15
Two-pack reactive performance coatings for specific end use such as floors	100	1 Pack performance coatings	100
		Two-pack reactive performance coatings for specific end use such as floors	100
		Decorative effect coatings	90

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.

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

The current VOC limits within the EU Ecolabel criteria are based on modified (reduced) 2010 limits from the VOC Directive 2004/42/CE. Table 7 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 7: comparison between the VOC Directive emission limits and those mandated in the EU Ecolabel.

Class	Description	Current levels	EU Ecolabel	% difference	Stakeholder feedback
A	Interior matt walls and ceilings (Gloss <25@60°)	30	15	50	
B	Interior glossy walls and ceilings (Gloss >25@60°)	100	60	40	
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	
F	Interior and exterior minimal build woodstains	130	75	42.3	40
G	Primers	30	15	50	
H	Binding primers	30	15	50	
I	One-pack performance coatings	140	100	28.6	60
J	Two-pack reactive performance coatings for specific end use such as floors	140	100	28.6	60
L	Decorative effect coatings	200	90	55	

Data gathered from dossiers of successful EU Ecolabel applications have been provided as anonymised data from the Competent Bodies and summarised in Table 8.

Table 8: A summary of the VOC levels of EU Ecolabelled paints and varnishes

	Competent body data			Criteria maximum	Difference	% difference
Type	Average	Standard deviation	Number of licenses			
1 Pack performance coatings	46.9	5.9	8	100	53.2	53.2
Exterior trim and cladding paints for wood and metal including undercoats	41.2	2.7	10	90	48.8	54.2
Exterior trim varnishes and wood-stains, including opaque woodstains	12.0	7.9	23	90	78.0	86.7
Interior glossy (walls/ceiling) (Gloss > 25@60 °)	56.2	--	1	60	3.8	6.3
Interior Matt (walls/ceiling) (Gloss < 25@60 °)	2.9	3.4	60	15	12.1	80.7
Interior minimum build woodstains	42.5	14.8	6	75	32.5	43.3
Interior trim and cladding paints for wood and metal including undercoats	70.9	18.3	16	90	19.1	21.2
Interior trim varnishes and wood-stains, including opaque woodstains	46.9	23.8	35	75	28.2	37.5
Primers (indoor)	5.0	0.0	2	15	10.0	66.7

A full analysis of the list was in this phase not possible on all paint types due to a lack of data for certain paint-types. Additional information from stakeholders is requested. Where 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 two submissions have been recorded).

At 700ppm (0.07% m/m), the VOC criteria for Blue angel for wall paints are significantly lower than that specified within the current EU Ecolabel. However, moving the EU Ecolabel VOC levels to that mandated in Blue Angel may exclude many of the currently approved paint products.

Stakeholders are asked to provide feedback if adoption of the VOC limits of Blue Angel for indoor matt paints within the EU Ecolabel will adversely affect the success of the current EU Ecolabel.

Based on the stakeholder feedback and analysis of dossiers from competent bodies above, Table 9 provides ranges of new limits from which, it is suggested a new VOC should be proposed. Further consultation is required to ensure that these limits are realistic.

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

Description	EU Ecolabel (g/l)	Discussion point Proposed new levels range
Interior matt walls and ceilings (Gloss <25@60°)	15	1-7.5
Interior glossy walls and ceilings (Gloss >25@60°)	60	35-55
Exterior walls of mineral substrate	40	15-25
Interior/exterior trim and cladding paints for wood and metal	90	60-80
Interior/exterior trim varnishes and woodstains, including opaque woodstains	75 indoor 90 outdoor	45-55 indoor 50-70 outdoor
Interior and exterior minimal build woodstains	75	45-55
Primers	15	1-10
Binding primers	15	1-10
One-pack performance coatings	100	45-60
Two-pack reactive performance coatings for specific end use such as floors	100	45-60
Decorative effect coatings	90	65-85

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). SVOC's, found in adhesives for floors and wall covering materials, are defined as having a boiling point of 380-400°C. To a certain extent, the restrictions on SVOC's has been covered by VAH's and phthalates. Both the Austrian Ecolabel[13] and the German Blau Engel (Blue Angel)[14], specifically limit their use in paints, so inclusion in the EU Ecolabel will harmonise criteria.

Construction and building products are a major source of SVOC's and the Construction Products Directive[15] has an optional criterion[16] that SVOC's need to be avoided within the sector[17]. The major

[13] Austrian Ecolabel UZ01 (2010)

[14] Blau Engel RAL UZ 12a

[15] Construction products directive 89/106/EEC

[16] European Collaborative Action. Urban air, indoor environment and human exposure. Report No 27; Harmonisation framework for indoor material labelling schemes in the EU (2010)

[17] CEN/TC 351 Construction products: Assessment of the release of dangerous substances.

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.[18]

It is recommended that an additional clause is added to this criterion based on values provided by MS ecolabels. Input from stakeholders is sought as to the level of restriction.

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 (2010) and diethylene glycol methyl ether, ethylene glycol, triethylene glycol are prohibited under the Austrian Ecolabel - Wall paints UZ17 (2010). Stakeholders were asked if such restrictions could be applied to the EU Ecolabel. There were two outcomes:

- Some supported prohibition or indeed prohibition of all ethylene glycol ethers.
- Others suggested that the current dangerous substances criterion will prevent justifiable damaging products from inclusion.

Further discussion within the AHWG is needed before a decision can be made. Some of these chemicals are harmful (for example diethylene glycol methyl ether), but the need to explicitly set down their exclusion as part of a criterion may be redundant with the use of criterion 6 unless further concerns are raised, in which case an exemption from the derogation may provide further reassurance. It should be noted that there is likely to be an overlap between this criterion and that offered within criterion 6, this will be addressed during the final drafting stages of the criteria document.

Stakeholders have requested a change to the current verification regime by focusing on Indoor Air Quality. Such a change is considered further in the Section on

[18] EnVIE; Coordination Action on Indoor air Quality and Health Effects

New Criterion: Indoor Air Quality.

Suggested amendments to the criterion

VOC content shall not exceed:

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

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 [For discussion]. SVOC are defined as organic substances or mixtures with a maximum boiling range of 380-400°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.

4.2.2 Current Criterion Number 4: Volatile Aromatic Hydrocarbons (Indoor and Outdoor)

Current Criterion

Volatile aromatic hydrocarbons shall not be directly added to the product before or during tinting (where applicable); however ingredients containing VAH may be added up to such a limit that the VAH content in the end product will not exceed 0,1 % (m/m).

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.

Assessment and verification: The applicant shall provide a declaration of compliance with this criterion stating that VAH has not been added other than in prefabricated ingredients and where applicable declarations from the suppliers of the ingredient confirming their VAH content.

VAH's have specific environmental and human health impacts including DNA damage.[19] 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 % (m/m) to 0.01% (m/m) 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, 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 compliance with the requirements will be technically difficult. This is particularly acute for paints that contain a large amount of binder. Some stakeholders suggested that the reduction could be achieved but concerns surround enforceability: whether suitable analytical techniques are available to verify this level is unclear, as is the likelihood that paint manufacturers can provide the necessary information.

It is recommended that, based on this analysis, only a slight reduction of the limit is appropriate. Stakeholders are asked for comments.

Suggested amendments to the criterion
Volatile aromatic hydrocarbons shall not be directly added to the product before or during tinting (where applicable); however ingredients containing VAH may be added up to such a limit that the VAH content in the end product will not exceed -DISCUSSION POINT 0,1 % (m/m).

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.

Assessment and verification: The applicant shall provide a declaration of compliance with this criterion stating that VAH has not been added other than in prefabricated ingredients and where applicable declarations from the suppliers of the ingredient confirming their VAH content.

4.2.3 Current Criterion Number 5: Heavy Metals

Current Criterion
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.

Cobalt shall also not be added as an ingredient with the exception of cobalt salts used as a siccative in alkyd paints. These may be used up to a concentration not exceeding 0,05 % (m/m) in the end product, measured as cobalt metal. Cobalt in pigments is also exempted from this requirement.

It is accepted that ingredients may contain traces of these metals up to 0,01 % (m/m) deriving from impurities in the raw materials.

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

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

It is unclear from the current wording if the amount of allowable trace concentrations of heavy metals is the sum of all eight metals or applies to each individual metal. 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 suggested to clarify that this criterion is focused on a per metal basis and the agreed wording change has been made. Furthermore, stakeholders are asked for comments on a possible reduction in this limit.

Through stakeholder engagement, the clause that permits the use of barium sulphate has been questioned. Several other insoluble barium compounds may be present within certain mineral fillers and the inclusion of barium sulphate over these barium containing compounds appears to be arbitrary. Similarly, some have requested antimony in insoluble TiO_2 lattices to be exempt from this criterion on the basis that they are essentially non-toxic.

Further discussions with stakeholders are needed to determine if the allowed materials should be expanded from barium sulphate to all insoluble barium compounds and other insoluble materials.

Concerns have been raised that the current verification and assessment methods - SDS analysis and supplier declarations - are inappropriate to determine the heavy metal content of the paints. A shift in the assessment has been proposed from analysis of the ingredients to analysis of the amount of heavy metal available for release to the environment in the final product. A recently developed test protocol: EN 71-3, which examines the heavy metal content in toys, could be an alternative.

Manufacturers should be consulted to determine the feasibility changing the testing regime for heavy metals to EN 71-3.

Suggested amendments to the criterion

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**.

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

Exceptions for cobalt:

1) Cobalt salts as a siccative may be used, only in alkyd paints and varnishes, up to a concentration not exceeding 0,05 % (m/m), measured as % of cobalt metal in the end product.

2) Cobalt pigments may be used in all paints and varnishes without any limitation.

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

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

4.2.4 Current Criterion Number 6(a): Dangerous substances: the products (indoor and outdoor)

Current Criterion
The product shall not be classified as very toxic, toxic, dangerous to the environment, carcinogenic, toxic for reproduction, harmful, corrosive, mutagenic or irritant (only where this is caused by the presence of ingredients labelled with R43) in accordance with Directive 1999/45/EC of the European Parliament and of the Council before or after tinting (where applicable).

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.

This criterion along with 6(b) and 6(c) has been superseded by new Ecolabel Regulations ((EC) No 66/2010). The aim is 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).*

This Section therefore includes comments and changes from this and the two following criteria.
This section will set out the gathered evidence based on submissions from stakeholders, the derogations under the current EU Ecolabel and information from the LCA in Part 1 of this report.

As presented in section 1.4, in the end there is likely to find overlap between the various criteria. This will be resolved during the final drafting of the criteria document. This criterion will probably affect several other criteria.

Stakeholder comments

From the stakeholder consultation, we received 69 comments concerning the need to change these three criteria and which chemicals and risk phrases need derogations. The following section summarises the results from the consultation process:

General

Several stakeholders claim that changing to the current criteria will cause significant problems. Indeed, several participants said that enacting the exclusion criteria would fail all currently ecolabelled products. Due to the large number of possible ingredients within the paints, groups of compounds, rather than individual chemicals will need to have derogations (for example: biocides, siccatives and anti skin agents). Depending on the system, there is likely to issues with the following risk phrases: R23, 24, 25, 26, 27, 28, 39, 40, 41, 48, 43, 51, 52 and 53. This statement is discussed in more detail under the analysis of the current EU Ecolabel paints and varnishes derogations.

Specific derogations

The following were explicitly requested by stakeholders as derogations from the new criterion:

- Preservatives and biocides, in particular in-can and in-film biocides generally possess R43 classification. The isothiazolinones compounds where singled out along with IPBC and methyl ethyl ketoxime. These systems also have risk phrases associated with damage to aquatic systems (R50, R51, R52 and R53), along with isothiasolinones, bronopol and IPBC were singled out. In general, it was claimed that chemical preservatives need a derogation equivalent to what has happened in several other EU Ecolabelled products.
- pH correctors such as ammonia and ammonium salts will need derogations against R50.
- Most fillers contain silica which is classified as with R48/20
- Many substances used in paint have an R41 classification
- Cobalt-salt dryers are used as siccatives, they are heavy metals and are also classified as R43
- Colorants, dispersants, surfactants and wetting agents may have R50, R51, R52 and R53.

Further, the European association for paint manufacturers (CEPE) as a first response provided the following feedback.

Specific exemptions			
Substance name	CAS	**Reason**	Labelling
1,2-benzisothiazole-3(2H)-one (BIT)	2634-33-5	known as efficient protective agent in the can. Already regulated by the biocides regulation. Currently there are no alternatives.	Xn, N, R22, R38, R41, R43, R50
3-iodo-2-propynyl butylcarbamate (IPBC)	55406-53-6	Used to avoid the bacterial attack of the outdoor coating (fungicide). Without this substance, coatings will not have black-mould resistance. It is already regulated by the biocides regulation. Currently there are no alternatives	DSD Classification Xn ; R20.22 Xi ; R41, R37, R43 N ; R50 CLP Classification Eye Dam. 1 H318 /Acute Tox. 4 H302 /Acute Tox. 4 H332 / Skin. Sens. 1 H317 /STOT SE3 H335/Aquatic Acute 1 H400
Hexanoic acid, 2-ethyl-, zinc salt, basic	85203-81-2	Alkyd dryer. There is an alternative but the market is restricted to one supplier which causes competition problems. The performance is also poorer,	DSD Classification Xi ; R38 N ; R51/53 CLP Classification Not classified
DEA - diethanolamine	111-42-2	Specific secondary and tertiairy amines (DEA, TEA, DMEA etc.) when used in polyurethanes and alkyds. This means that we cannot use either of these binder technologies within Ecolabel products.	R22-38-41-48/22 (H302-H315-H318-H373)

General exemptions		
Category	Reason	**Remarks**
Ingredients classified as STOT RE 1-2 **Mineral fillers (crystalline silica)**	These mineral fillers are toxic by dust inhalation, however, this exposure route disappears because the paint is in a liquid form after the mixing step. In paint formulation, the mixing process is conducted under controlled conditions so as to prevent dust formation or minimise dust exposure. Therefore, it appears that the health risks for these criteria (STOT RE1-2) are very low for paint formulators and nil for professionals (painters) and the general public.	**Support by IMA Europe**
R43	Issues expected in some RM categories such as biocides, UV-protection, etc. Preservatives , waterborne co-dryers Difficult to avoid some R43 substances such as some biocides and driers for Alkyd emulsion paints. Existing criteria for R43: the product cannot be classified as irritant induced by the R43 substance. This implies, according to the CLP rules of classification for a mixture, that the sum of the R43 substances cannot be greater than 1%	**Difficult to be very specific on substance level: quite many substances; difficult to judge which of more concern and priority to European coating business; long lists of exemption substances in the Ecolabel criteria unwanted ...** **+ business implications: different companies = different priorities**
R65	Even low amount of Naphtas and similar substances will probably be of concern if there is no concentration limit will be attached to it. Perhaps also questionable if H304 is fully relevant due to the viscosity dependency. Proposal not justified for paints application. R65 risk phrase is related to viscosity. At the end, the paint is viscous and the R65 hazard does not exist anymore. When manufacturing paints, the R65 hazard is managed at the occupational level. Prohibit R65 ingredients will lead to the prohibition of every hydrocarbons.	
R41	Preservatives, ethoxylated alcohols which are present in many additives The same argument for R65 but for pH instead of viscosity. The proposal not justified for paints application. R41 risk phrase is related to pH at the end, the paint has a neutral pH and the R41 hazard does not exist anymore. When manufacturing paints, the R41 hazard is managed at the occupational level. To prohibit R41 ingredients means prohibit for instance lime.	

Analysis of the current EU Ecolabel

Significant effort has been spent in developing the current EU Ecolabel criteria for dangerous substances. It is important to compare these criteria with the new proposal described within the new Ecolabel Regulations ((EC) No 66/2010).

Current criteria 6(b) gives the following derogations:

> *Active ingredients used as preservatives in the formula and that are assigned any of the risk phrases R23, R24, R25, R26, R27, R28, R39 R40 or R48 (or combinations thereof) may nevertheless be used up to a limit of 0,1 % (m/m) of the total paint formulation.*

And current criteria 6(c) gives the following derogations:

> *No ingredient shall exceed 2 % (m/m), including those used in tinting (if applicable), that at the time of application fulfil the classification criteria of any of the following risk phrases (or combinations thereof):*
>
> *— N R50 (very toxic to aquatic organisms),*
>
> *— N R50/53 (very toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment),*
>
> *— N R51/53 (toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment),*
>
> *— N R52/53 (harmful to aquatic organisms, may cause long term adverse effects in the aquatic environment),*
>
> *— R51 (toxic to aquatic organisms),*
>
> *— R52 (harmful to aquatic organisms),*
>
> *— R53 (may cause long-term adverse effects in the aquatic environment),*
>
> *as laid down in Directive 67/548/EEC or Directive 1999/45/EC.*

As can be seen there is a close correlation between the stakeholder responses and the current derogations as laid down in the EU Ecolabel paints and varnishes.

Table 10 shows the recent developed list of prohibited risk phrases, a comparison of the allowed risk phrases under the current EU Ecolabel and comments from stakeholders on the need for derogations. An example of the implementation of this criterion is given within the draft Ecolabel on paper products.[20]

[20] http://ec.europa.eu/environment/ecolabel/ecolabelled_products/categories/pdf/copying_paper/final_draft.pdf

Table 10: A presentation of prohibited risk phrases under the new EU Ecolabel regulations (EC) no66/2010 and possible need for derogations

New criterion prohibited hazardous and risk phrases		Comments
Hazard Statement	**Risk Phrase**	
H300 Fatal if swallowed	R28	A
H301 Toxic if swallowed	R25	A
H304 May be fatal if swallowed and enters airways	R65	Y
H310 Fatal in contact with skin	R27	A
H311 Toxic in contact with skin	R24	A
H330 Fatal if inhaled	R23; R26	A
H331 Toxic if inhaled	R23	A
H340 May cause genetic defects	R46	X
H341 Suspected of causing genetic defects	R68	X
H350 May cause cancer	R45	X
H350i May cause cancer by inhalation	R49	X
H351 Suspected of causing cancer	R40	A
H360F May damage fertility	R60	X
H360D May damage the unborn child	R61	X
H360FD May damage fertility. May damage the unborn child	R60-61	X
H360Fd May damage fertility. Suspected of damaging the unborn child	R60-63	X
H360Df May damage the unborn child. Suspected of damaging fertility	R61-62	X
H361f Suspected of damaging fertility	R62	X
H361d Suspected of damaging the unborn child	R63	X
H361fd Suspected of damaging fertility. Suspected of damaging the unborn child	R62-63	Y
H362 May cause harm to breast fed children	R64	Y
H370 Causes damage to organs	R39/23; R39/24; R39/25; R39/26; R39/27; R39/28	Y
H371 May cause damage to organs	R68/20; R68/21; R68/22	X
H372 Causes damage to organs through prolonged or repeated exposure	R48/25; R48/24; R48/23	A
H373 May cause damage to organs through prolonged or repeated exposure	R48/20; R48/21; R48/22	A, 1

H400 Very toxic to aquatic life	R50	B, 2
H410 Very toxic to aquatic life with long-lasting effects	R50-53	B, 3
H411 Toxic to aquatic life with long-lasting effects	R51-53	B
H412 Harmful to aquatic life with long-lasting effects	R52-53	B
H413 May cause long-lasting harmful effects to aquatic life	R53	B
EUH059 Hazardous to the ozone layer	R59	Y
EUH029 Contact with water liberates toxic gas	R29	Y
EUH031 Contact with acids liberates toxic gas	R31	Y
EUH032 Contact with acids liberates very toxic gas	R32	Y
EUH070 Toxic by eye contact	R39-41	A, 4
Sensitising substances		
H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled	R42	X
H317: May cause allergic skin reaction	R43	5

Key
A= Preservatives can be used up to 0.1m/m in total paint formulation, all other ingredients are prohibited under this criteria
B= no ingredient shall have more that 2%m/m in total paint formulation
X = Prohibited under the current EU Ecolabel criteria
Y = Not prohibited under the existing EU Ecolabel criteria and no comment from stakeholders
1 = All silica fillers are classified R48/20
2 = Fungicides and preservatives usually have this risk phrase along with alkaline pH modifiers such as ammonia
3 = Fungicides and preservatives
4 = Many compounds have this (R41)
5 = Preservatives and fungicides (in can and in-use) - need 2000ppm, in particular IPBC, Isothiasolinones, MEK, surfactants. UV absorbers, also cobalt as a siccative in alkyd paints.

Discussion

It seems clear that the required change in this criterion will cause difficulties to this product group. 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.

As the difficulties to overcome are considered to be high in this product group in relation to the use of biocides an option for regulating their use is a new criterion proposal which would refer to the new biocides Directive and is presented in section 4.2.14. This is proposed in case the present new criterion for H- and R- phrases are not applicable because alternatives are not available

An additional potential practical problem with this is that the number of compounds that would need investigation for derogations could be very high, which could make the revision process not manageable in the given time frame. This should be also considered.

Based on this analysis:

- EU Ecolabel must follow the Ecolabel Regulation 66/2010. Stakeholders suggest that then it is likely to decrease significantly the number of paints which are currently Ecolabelled.
- The stakeholders are asked to provide specific request for derogations for certain substances together with the supportive scientific and technical information which could substantiate this decision. Without this evidence, a derogation cannot be made.
- Unlike in the current Ecolabel criteria decision for paints and varnishes a derogation of one or more R-phrases is not possible.
- In case of high number of derogation requests a grouping of these substances could be possible.

Further discussion by the AHWG is needed before an appropriate decision can be made.

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. Stakeholder responses from the survey agreed that a clear definition was required 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[21]; 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.*

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 could be developed for Paints and Varnishes:

> *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.*

A discussion within the AHWG will be required to ensure that this phrase does not lead to an undue burden on applicants.

[21] Regulation (EC) No 1272/2008

4.2.5 Current Criterion Number 6(b): Ingredients (very toxic, toxic, carcinogenic, mutagenic, toxic for reproduction):

Current Criterion

No ingredient including those used in tinting (if applicable) shall be used that is assigned or may be assigned at the time of application any of the following risk phrases (or combinations thereof):

— R23 (toxic by inhalation),
— R24 (toxic in contact with skin),
— R25 (toxic if swallowed),
— R26 (very toxic by inhalation),
— R27 (very toxic in contact with skin),
— R28 (very toxic if swallowed),
— R33 (danger of cumulative effects),
— R39 (danger of very serious irreversible effects),
— R40 (limited evidence of carcinogenic effect),
— R42 (may cause sensitisation by inhalation),
— R45 (may cause cancer),
— R46 (may cause heritable genetic damage),
— R48 (danger of serious damage to health by prolonged exposure),
— R49 (may cause cancer by inhalation),
— R60 (may impair fertility),
— R61 (may cause harm to the unborn child),
— R62 (possible risk of impaired fertility),
— R63 (possible risk of harm to the unborn child),
— R68 (possible risk of irreversible effects),

as laid down in Council Directive 67/548/EEC or in Directive 1999/45/EC. Active ingredients used as preservatives in the formula and that are assigned any of the risk phrases R23, R24, R25, R26, R27, R28, R39 R40 or R48 (or combinations thereof) may nevertheless be used up to a limit of 0,1 % (m/m) of the total paint formulation.

Alternatively, the Globally Harmonised System (GHS) of classification may be considered. In this case the ingredients, including those used in tinting (if applicable), classified as the following (or combinations thereof) shall not be used:

— Acute Toxicity (oral) – Category I, II, III,
— Acute Toxicity (dermal) – Category I, II, III,
— Acute Toxicity (inhalation) – Category I, II, III,
— Respiratory Sensitisation – Category I,
— Mutagenic Substances – Category I, II,
— Carcinogenic Substances – Category I, II,
— Substances Toxic for Reproduction – Category I, II,
— Specific Target Organ Systemic Toxicity (single exposure) – Category I, II,
— Specific Target Organ Systemic Toxicity (repeated exposure) – Category I, II,

as laid down in ST/SG/AC.10/30 and revised in ST/SG/AC.10/34/Add.3 on the Globally Harmonized System of Classification and Labelling of Chemicals. Active ingredients used as preservers in the formula and that are assigned any of the following GHS categories may nevertheless be used up to a limit of 0,1 % (m/m) of the total paint formulation:

— Acute Toxicity (oral, dermal, inhalation) – I, II, III (only oral and dermal),

— Specific Target Organ Systemic Toxicity (single and/or repeated exposure) – I, II (or combinations thereof) and,
— Carcinogenicity category II,

Methyl Ethyl Ketoxime may be used in alkyd paints up to a limit of 0,3 % (m/m).

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.

See Section 4.2.4.[22]

4.2.6 Current Criterion Number 6(c): Dangerous to the environment (indoor and outdoor)

Current Criterion
No ingredient shall exceed 2 % (m/m), including those used in tinting (if applicable), that at the time of application fulfil the classification criteria of any of the following risk phrases (or combinations thereof):
— N R50 (very toxic to aquatic organisms),
— N R50/53 (very toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment),
— N R51/53 (toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment),
— N R52/53 (harmful to aquatic organisms, may cause long term adverse effects in the aquatic environment),
— R51 (toxic to aquatic organisms),
— R52 (harmful to aquatic organisms),
— R53 (may cause long-term adverse effects in the aquatic environment),

as laid down in Directive 67/548/EEC or Directive 1999/45/EC.

Alternatively, the Globally Harmonised System (GHS) of classification may be considered. In this case no ingredient shall exceed 2 % (m/m), including those used in tinting (if applicable), that is assigned or may be assigned at the time of application any of the following classifications:

Aquatic Toxicity categories (and combinations thereof):
— Acute I, II, III,
— Chronic I, II, III, IV,

as laid down in ST/SG/AC.10/30 and revised in ST/SG/AC.10/34/Add.3 on the Globally Harmonized System of Classification and Labelling of Chemicals.

In either case, the sum total of all ingredients that are assigned or may be assigned at the time of application any of these risk phrases (or combinations thereof) or GHS classifications shall not exceed 4 % (m/m).

This requirement does not apply to ammonia or akyl ammonia.
This requirement does not affect the obligation to fulfil the requirement set out in criterion 6(a) above.

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

[22] **It should be noted that there is likely to be overlap between the various criteria. This will be resolved during the final drafting of the criteria document.**

together with a list of ingredients and material safety data sheets of each ingredient meeting the requirements of Annex II to the REACH Regulation.

See Section 4.2.4.[23]

4.2.7 Current Criterion Number 6(d): Alkylphenolethoxylates (apeos)

Current Criterion
APEOS shall not be used in the product before or during tinting (if applicable).

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

Comments from stakeholders suggest that this criterion should remain unchanged. One comment requested more stringent verification methods with laboratory test reports – possibly through the use of HPLC (high-performance liquid chromatography). However, the additional costs associated with such an analysis may not be justified above the current assessment criterion.

A discussion within the AHWG is required to determine if the additional testing is justified from both accuracy and the additional costs imposed by such a test.

4.2.8 Current Criterion Number 6(e): Isothiazolinone compounds

Current Criterion
The content of isothiazolinone compounds in the product shall not exceed 0,05 % (m/m) before or after tinting (if applicable). Likewise the content of the mixture of 5-chloro-2-methyl-2H-isothiazol-3- one (EC No 247-500-7) and 2- methyl-2H-isothiazol-3-one (EC No 220-239-6) (3:1) shall not exceed 0,0015 % (m/m).

(outdoor): For wood coatings isothiazolinone compounds shall not exceed 0,2 % (m/m).

Assessment and verification: The applicant shall provide a declaration of compliance with this criterion, indicating the amounts (if used).

There was wide consensus among stakeholders was 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 this was difficult and impractical due to the lack of a viable alternative.

Additional stakeholder engagement is needed to determine appropriate criteria. It is important the products are compliant with the biocide framework directive (discussed in Section 4.2.14

[23] **It should be noted that there is likely to be overlap between the various criteria. This will be resolved during the final drafting of the criteria document.**

A proposal was made to increase the coverage of this criterion to include IPBC as an alternative preservative. It was argued that there were benefits of reduced environmental damage from its use. Further information is required on this substance and stakeholder engagement is sought.

Additional stakeholder engagement is required to determine if IPBC is an appropriate biocide to include under this criterion.

A minor request was made to structure the criterion so as to make clear that there are three requirements.

Suggested amendments to the criterion
The content of isothiazolinone compounds in the product shall not exceed DISCUSSION POINT: 0,05 % (m/m) before or after tinting (if applicable).

The content of the mixture of 5-chloro-2-methyl-2H-isothiazol-3- one (EC No 247-500-7) and 2- methyl-2H-isothiazol-3-one (EC No 220-239-6) (3:1) shall not exceed **DISCUSSION POINT: 0,0015 % (m/m).**

For outdoor wood coatings isothiazolinone compounds shall not exceed **DISCUSSION POINT: 0,2** % (m/m).

Assessment and verification: The applicant shall provide a declaration of compliance with this criterion, indicating the amounts (if used).

4.2.9 Current Criterion Number 6(f): PFAS

Current Criterion
Perfluorinated alkyl sulfonates (PFAS), perfluorinated carboxylic acids (PFCA) including Perfluorooctanoic Acid (PFOA) and related substances listed in the OECD 'Preliminary lists of PFOS, PFAS, PFOA, PFCA, related compounds and chemicals that may degrade to PFCA (as revised in 2007)' are not permitted in the product. The OECD list is provided in the Annex to this criteria document.

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

It is recommended that this criterion remains unchanged.

4.2.10 Current Criterion Number 6(g): Formaldehyde (indoor and outdoor)

Current Criterion
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 % (m/m).

Assessment and verification: The applicant shall provide a declaration of compliance with this criterion. In addition the applicant shall provide test results from raw materials suppliers using the VdL-RL 03 test method (VdL Guide-line03) '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 % (m/m). Alternatively formaldehyde resulting from formaldehyde

donors can be measured in the end product by using a standard based on High- performance liquid chromatography.

Formaldehyde is toxic both by inhalation and ingestion, and minimising or eliminating its use is an important goal for improving human health. 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).

A further reduction in the amount of formaldehyde in-can should be sought If the quality of the paint can be guaranteed. Stakeholders are asked to provide feedback regarding the technical difficulties which may occur if the limit is reduced.

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 0.

A discussion at the AHWG is necessary to determine the most appropriate amendment.

Stakeholders 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 proposed for testing on in-can preparations requiring the testing facilities to be certified ISO 17025:2005.

Current Criterion
Notwithstanding criteria 6a, 6b and 6c, only halogenated compounds that at the time of application have been risk assessed and have not been classified with the risk phrases (or combinations thereof): R26/27, R45, R48/20/22, R50, R51, R52, R53, R50/53, R51/53, R52/53 and R59 in accordance with Directives 67/548/EEC and 1999/45/EC may be used in the product before or during tinting (if applicable).

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

4.2.11 Current Criterion Number 6(h): Halogenated Organic Solvents (indoor and outdoor)

Current Criterion
Notwithstanding criteria 6a, 6b and 6c, only halogenated compounds that at the time of application have been risk assessed and have not been classified with the risk phrases (or combinations thereof): R26/27, R45, R48/20/22, R50, R51, R52, R53, R50/53, R51/53, R52/53 and R59 in accordance with Directives 67/548/EEC and 1999/45/EC may be used in the product before or during tinting (if applicable).

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

US Green seal – Stains & Finishes (2010) criteria prohibit the use of halogenated solvents (US Green Seal Criteria). Expanding the EU Ecolabel criteria to match these requirements is seen as a means to limit exposure to potentially damaging compounds. Comments from stakeholders have revealed an apparent confusion over the targeted compounds of this criterion, which is entitled 'Halogenated Organic Solvents', whereas the text describes 'Halogenated Organic *Compounds*'. These two groups of compounds differ significantly, and several stakeholders were concerned about a prohibition on the use of "halogenated compounds" since the latter are used in many pigment systems. Investigation of the original documentation provides no additional insight into the aim of this criterion. The title of the criterion should, apparently, be 'Halogenated Organic *Compounds*' and due to the use of halogenated tinting systems, complete prohibition is impossible.

The required changes to criteria 6(a), 6(b) and 6(c) can now incorporate this criterion and should be removed.

4.2.12 Current Criterion Number 6(i): Phthalates (indoor and outdoor)

Current Criterion
Notwithstanding criteria 6a, 6b and 6c, only phthalates that at the time of application have been risk assessed and have not been classified with the phrases (or combinations thereof): R60, R61, R62, R50, R51, R52, R53, R50/53, R51/53, R52/53, in accordance with Directive 67/548/EEC and its amendments, may be used in the product before or during tinting (if applicable). Additionally DNOP (di-n-octyl phthalate), DINP (di-isononyl phthalate), DIDP (di-isodecyl phthalate) are not permitted in the product.

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

Phthalates are endocrine inhibitors and are also completely excluded from several MS and non-EU Ecolabels (US Green Seal and Austrian Ecolabel).[24] Within the paint industry they are apparently very few applications and most stakeholders would welcome a ban in their use. However, the current exclusion of DINP and DIDP do not have any associated risk phrases (OJ C90/5 13.4.2006). Therefore, stakeholders are requested to provide feedback on if a total ban is justified.

24 Environ Health Perspect. 2007 March; 115(3): 390–396. Published online 2006 December 19

Based on this analysis, three options are suggested for discussion within the AHWG:

1. **A total ban of Phthalates is proposed within the new criteria document, it appears that this would have limited effect on the applicants**
2. **Continue with the current criterion**
3. **Request of supportive information for DNIP and DIDP because their ban is not associated with the given risk phrases**

4.2.13 Current Criterion Number 8: Consumer Information (Indoor and Outdoor)

Current Criterion
The following information shall appear on the packaging or attached to the packaging:
— 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 that it should not therefore be thrown away with household refuse. Advice regarding disposal and collection should be sought from the local authority,
— 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.

Stakeholders are invited to comment on how the indoor and outdoor criteria should be merged and how can the existing criterion indicate that the Ecolabelled paints are highlighly durable and therefore reduce the need for repaints.

No other proposed changes where suggested by stakeholders.

4.2.14 New Criterion: Inclusion of 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 recent revision to the Biocide Directive and recently developed EU Ecolabel criteria for other products that contain biocides should be examined within this revision. Further we would like to highlight we expect that this proposal will have overlap with the new criterion 4.2.4 (if this remains as given). This section is proposed in case the present new criterion for H- and R- phrases are not applicable because alternatives are not available.

In addition to the new criterion for other EU Ecolabel products, MS and non- EU countries Ecolabels for paints and varnishes have clauses restricting biocides and preservatives. Table 11 describes the criteria developed for restrictions of biocides in paints for different ecolabels.

Table 11: Comparison of MS and non EU countries 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 Directive, 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.[25]

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 should be investigated for products claiming antimicrobial action.

Bioaccumulation is a measure of the toxicological effect of substances within aquatic organisms: even if overall concentrations are low, prolonged exposure can give rise to toxic effects. Directive 1272/2008 defines the level at which a substance can be considered to biooaccumulate (or 'bioconcentrate') by determining the octanol/water partition coefficient, usually reported as a log K_{ow}. Within this Directive, log K_{ow} values equal to or greater than 4 can be considered 'bioaccumulative'. This value represents the potential to bioaccumulate, a more accurate (but usually unavailable) measure can be determined using the bioconcentration factor (BCF). A BCF in fish of ≥ 500 is indicative of the potential to bioconcentrate. Criteria for other EU Ecolabel products such as laundry detergents use lower values for log K_{ow} and BCF, but stakeholders suggest that these lower values may be unsuitable for paints due to the nature of the latter's use. Also, because the material is not being washed away during use (except, perhaps, during the washing of brushes and rollers), the environmental impact is likely to be less for paint than that resulting from detergents.

The proposed criterion below is recommended for inclusion as an additional criterion within an updated document. Further discussion with stakeholders may be needed to determine the threshold values bioaccumulation.

Proposed new Criterion

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 Directive

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

(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 Kow (log octanol/water partition coefficient) < 4,0 or an experimentally determined bioconcentration factor (BCF) ≤ 500.

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

4.2.15 New Criterion: Regulation of the use of Nanoparticles

The use of nanoparticles and other nanomaterials within a wide variety of consumer products can enhance performance. Nanoparticles are beginning to make an impact within the paint sector in several aspects including: increasing drying rate, dirt resistance and better humidity tolerance.[26] The use of silver nanoparticles as a biocide and antibacterial agent within paints is seen as a promising application.

The risk associated with the inclusion of nanoparticles within paints need careful assessment; some evidence suggests an inherent health risk posed by exposure to nanoparticles.[27] However, the scientific debate is still open. Further, the performance gains from the use of such materials could also have broader environmental benefits. For instance, the inclusion of certain nanomaterials may result in the performance of water-based paints equalling that of traditionally 'better' performing solvent-based alternatives, thus reducing the exposure to solvents during paint application.[28] Separate research indicates that silver nanoparticles reduced the need for using such biocides as isothiazoline compounds, which are shown to be damaging to health and the environment.[29] A greater understanding of the benefits of the inclusion of nanomaterials is needed to develop an appropriate view on use within EU Ecolabelled paints and varnishes.

The Austrian Ecolabel on Varnishes and Wood Sealants and Wall Paints has developed criterion for the regulation of the use of nanomaterials within their ecolabelled products. This uses the Swiss

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[26] http://www.docstoc.com/docs/26408859/NANOMATERIALS-FOR-PAINTS-AND-COATINGS-IN

[27] SCIENTIFIC COMMITTEE ON EMERGING AND NEWLY IDENTIFIED HEALTH RISKS (SCENIHR),modified Opinion (after public consultation) on "The appropriateness of existing methodologies to assess the potential risks associated with engineered and adventitious products of nanotechnologies", 2006

[28] http://www.empa.ch/plugin/template/empa/*/98022/---/l=2

[29] SpecialChem (2009) "Preservation of Coatings with Silver"; available at http://www.specialchem4coatings.com/resources/articles/article.aspx?id=11343&q=nano-silver (accessed 28.05.2011)

categorisation of risk based on a precautionary approach to the application and use of nanomaterials. In particular, the approach examines the risk of exposure, its chemical activity and its human toxicity; where the latter is not known, the nanomaterial is assumed to be hazardous.[30] Where risk is deemed as 'high', the nanomaterials are prohibited from the ecolabelled paints.

According to stakeholders, and initial research into this area, little evidence is available on the environmental or human impact of nanomaterials in paints. Although other ecolabels have used a precautionary principle, but this is not a general rule and specific evidence is needed. It is noteworthy that nanoparticles are already used widely in paints - typically, as a result of the emulsion process making questions over nanomaterials relevant to this product group. Therefore, banning these products as a precautionary measure could result in the exclusion of many different paints. The current immaturity of understanding in this field means that a criterion excluding nanomaterials cannot confidently be added. However, due to the unique properties of the nanomaterials that are not expressed in bulk materials, a clause requiring that the appropriate SDS is submitted with the material (where available) may begin to mitigate this problem.

It is recommended that no additional criterion are developed that control or exclude nanomaterials. Further discussions with stakeholders may be needed to determine if a separate clause is needed to ensure that the appropriate SDS is supplied to the CB where a nanomaterials is used.

As a first approach reporting of the use of nanomaterials, their composition and concentration is proposed. Consultation with stakeholders whether this information can be given is requested.

[30] http://www.nanotechia.org/news/global/swiss-government-publishes-precautionary-matrix-f

4.2.16 New Criterion: Indoor Air Quality

Studies in the 1980's in the USA[31] showed that the contamination of indoor air by 12 of the most commonly encountered organic pollutants (VOC's) was between 2 and 5 times that found in outside air irrespective of whether it was in a rural or industrial environment.

There was a request from several stakeholders to change the testing procedure for VOCs and other materials (including formaldehyde) from in-can measurements to Indoor Air Quality (IAQ). IAQ will test the emissions of substances of interest from the paint during the drying process and also when the paint is in use. This method has the advantage of eliminating concerns of suppliers of the paint manufacturers not completely disclosing the content of ingredients. It will however, require significant additional costs associated with independent testing.

New legislation, in particular, regulations in France, Germany and the soon to be introduced regulations for CE labelling based on the Construction Product (Regulation (EU) No 305/2011) are pushing paint companies to provide IAQ testing and therefore should be considered within the Ecolabel. Development and implementation of a similar criterion within the Ecolabel would probably replace the current criteria: 3 (VOC content), 4 (VHA content), 6g (Formaldehyde) and 6h (halogenated organic solvents).

The French regulations require mandatory testing and labelling of paints for Indoor Air Quality.[32] The scheme, called ANSES requires testing to measure the emissions of paint in a sealed room 28 days after application. They have a classification system similar to that implemented for energy efficiency of white goods (C to A+). Table 12 shows the concentrations of measured emissions from paints and the classification under the French regulations.

Table 12: Classification of IAQ based on emissions from paint under the French testing system (μgm^{-3})

Substances/Emissions class	A+	A	B	C
Formaldehyde	<10	<60	<120	>120
Acetaldehyde	<200	<300	<400	>400
Toluene	<300	<450	<600	>600
Tetrachloroethene	<250	<350	<500	>500
Xylene	<200	<300	<400	>400
1,2,4-Trimethylbenzene	<1000	<1500	<2000	>2000
1,4-Dichlorbenzene	<60	<90	<120	>120
Ethylbenzene	<750	<1000	<1500	>1500
2-Butoxyethanol	<1000	<1500	<2000	>2000
Styrene	<250	<350	<500	>500
Total VOC	**<1000**	**<1500**	**<2000**	**>2000**

The German system AgBB: Health-related Evaluation of Emissions of Volatile Organic Compounds (VOC and SVOC) from Building Products, sets out restrictions on the level of emissions allowed for construction products (in particular flooring but can be applied to paints). An extensive list of chemicals are regulated, with limits described as "Lowest Concentrations of Interest" (LCI). Unlike the French system, these are maximum emission levels designed to remove the most polluting paints from the environment and more stringent levels may be possible within the Ecolabel.

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

[32] http://www.eco-institut.de/fileadmin/contents/International_Labelling/VOC/Arrete_etiquetage_2011.pdf

The development of the two national schemes is leading to an EU-level harmonisation project by the JRC: IHCP at ISPRA. The project favours the LCI approach and is expecting to deliver acceptable levels of emissions on 170 chemicals during 2012.[33] The ultimate goal is an EU-wide harmonised standard for IAQ that will apply to all building materials.

A related but separate committee has been established under the European Committee for Standardisation (CEN) to develop a harmonised testing procedure for IAQ. This is in a response to the European Construction Products Directive (CPD) which requires manufacturers of construction products to declare "regulated properties" in CE marking. In addition to traditional properties such as mechanical strength and fire safety, CPD refers also to the protection of hygiene, health and environment (Essential Requirement No. 3), which is interpreted to include air emissions. This regulation can apply paints and varnishes and ultimately requires all paints to undergo IAQ testing before they receive CE marking. Currently, paints are not required to meet this criterion because there are no mandated national or EU-wide tests for IAQ.[34]

The initial publication by CEN is due by the end of 2012, but completion of the standards is not expected until 2017.[35] The standards will be based on the ISO16000 series.

It appears that the LCI levels for chemicals defined by the JRC IHCP will be tested using the unified standard developed by CEN as a basis for CE marking.

Based on the analysis above the following conclusions can be drawn:

- There is a general move towards IAQ testing for construction materials (including paints), which will at some point be mandatory through the CE marking scheme.
- There is not an internationally recognised/harmonised standard for testing
- IAQ is only relevant for indoor paints and varnishes.
- The current research by the JRC: IHCP is intended as a minimum standard and therefore probably lower than required by the EU Ecolabel.
- The work performed particularly by the French could form the basis of a threshold for EU Ecolabel paints and varnishes.

It is recommended that further a discussion at the AHWG is needed to determine the best course of action, in particular:

- Should the current in-can ingredient criterion be replaced with an IAQ criterion?
- The inclusion of additional test could be prohibitively expensive, does the cost justify the inclusion?
- Should the French emissions standards be used (for example only paints achieving A+ emission ratings be used)?
- How can outdoor paints be accounted for (for example, provide more lenient criteria – classification B for outdoor paints)?

[33] Minutes of the 8th Indoor Air Quality (IAQ) Expert Group meeting 14 June 2011 - Luxembourg

[34] Evaluation of a horizontal approach to assess the possible release of dangerous substances from construction products in support of requirements from the construction products directive, Energy Research Centre of the Netherlands, 2008

[35] New regularity controls on chemical release to indoor air: is it all bad news?, BCF update seminar, 2011

5 End of life

5.1 *Unused paint disposal*

5.1.1 New Criterion: 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[36], 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%. Scaling up to Europe, this equates to approximately 900,000 te of unused paint wasted every year, suggesting that approximately 12% of the environmental burden of paint is from wasted paint. Unused paint is characterised in US as household hazardous waste and in several regions are set up collection centres. However, this practice is not currently available in all EU 27. Recently in France entered into force a law covering this issue.

Waste paint can be considered a hazardous material and therefore disposal should be appropriately controlled. The current EU Ecolabel (part 8: consumer information) requires that the user is given information on proper disposal of unwanted paint. However, an EU Ecolabel paint producer is not required to manage or control that process. MS ecolabels, in particular the Austrian ecolabel, specify the development and implementation of a scheme to take-back, recycle and reuse unwanted paint. Stakeholders indicate that there would be a significant barrier to implementing a take-back or paint reuse scheme. An alternative may be to provide information to consumers (per Member State) of organisations that provide unwanted paint reuse services, perhaps through websites, leaflets and other media. Further discussion with stakeholders is needed before this type of criterion could be mandated.

It is recommended that a further discussion with stakeholders is held to determine a proper action within the Ecolabel for addressing the problem of unused paint. This could include mandating a take-back scheme similar to that developed in certain Member States (e.g. France) but any action should consider what is the current infrastructure and how collection centres for unused paint could be best facilitated.
Important role has also the consumer information. A discussion should be held on methods to provide consumers with information on which volume of paint is appropriate for their needs and providing paint in the appropriate quantities. Stakeholders are requested to provide feedback and possible options on this

Proposed new criterion for discussion

1. **An additional criterion for a take-back system for paints residual**

[36] Paint and woodcare products - distribution and delivery, WRAP, 2011

Proposed new criterion for discussion

2. An additional criterion for consumer information (criteria 8)
Under " The following information shall appear on the packaging or attached to the packaging:"

Information on where consumers can find local paint reuse schemes for unwanted paints.

5.2 *Packaging material*

5.2.1 New Criterion: Packaging

Packaging is one of the major end of life considerations. Most of the current criteria document focuses on ingredients and performance of paint and varnish products. Additional criteria on minimising packaging waste and methods to reuse unwanted paint would be environmentally beneficial.

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. Other ecolabels include packaging as part of their criteria, as detailed within Table 13.

Table 13: Comparison of MS and non-EU countries ecolabel's criteria on packaging

Ecolabel	Criterion
Austrian Ecolabel - Paints, Varnishes and wood sealant lacquers and Wall paints	No use of halogenated organic based plastics, re-sealable. No sprays.
Japanese Ecomark 126 – Paint Version 2.3 (2011)	Containers shall be returnable. Containers shall be lead-free metal cans of recyclable design. Containers are collected and recycled. No aerosols.
US Green seal – Stains & Finishes (2010) (GS-47)	A minimum of 25% recovered material content, except if manufacturer take-back program for recycling in place Heavy metals, phthalates, bisphenol A, and chlorinated compounds are prohibited unless part of recovered material. No aerosols.

While a returnable and reuseable packaging system is environmentally desirable, stakeholders stated that the cost and difficulty in administration of return schemes across all Member States makes it impractical to implement through the EU Ecolabel. Based on this conclusion, recycling appears the most appropriate option to reduce the environmental burden of paint packaging.

Two aspects of recycling can affect the environmental performance of the packaging:

- The recycled content within the packaging; and,
- Ensuring that the materials used in the manufacture of the packaging a suitable for recycling.

In general, two material types are used in paint packaging: steel and plastic. Defining a level of recycled content for steel is inappropriate: steel as a commodity contains a certain proportion of recycled content and this does not vary, nor, under normal circumstances, can manufacturers demand higher recycled content. However, scope does apparently exist for mandating a minimum recycled content for plastic

paint pots. For instance, the US Green Seal stipulates a minimum of 25% (m/m) of the content of a plastic paint pot must be derived from post-consumer waste.

Particularly with respect to paints, methods and routes for recycling metals and plastic paint pots vary from country to country. Steel paint pots appear more readily recycled than their plastic equivalents, but explicitly mandating recycling targets for the paint pots is impractical. Steel is readily and easily recycled whereas certain plastics (particularly where laminates are used) are more difficult to recycle. To address this issue, other EU Ecolabel criteria, where plastic parts are used, (for example 2009/300/EC EU Ecolabel for televisions) specify the following criterion:

Plastic parts shall be of one polymer or be of compatible polymers for recycling and have the relevant ISO11469 marking.

Based on this analysis, it is recommended that a criterion relating to the recyclability and recycled content of plastic packaging should be developed for EU Ecolabel paints.

Proposed new criterion for discussion

Recycled content of paint pots.
Plastic paint pots shall be made of 25% (m/m) 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.

6 General

6.1 *Current Criterion Number 9 (Indoor and Outdoor): Information Appearing On The Ecolabel*

Current Criterion
Box 2 of the eco-label shall contain the following text:

— good performance for indoor use, **(indoor only)**
— good performance for outdoor use, **(outdoor only)**
— restricted hazardous substances,
— low solvent content.

Assessment and verification: The applicant shall provide a sample of the product packaging showing the label, together with a declaration of compliance with this criterion.

The current information appearing on the Ecolabel will need to be revised if 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. This will partly be addressed within the structure of the new document and also the requirements for the labelling itself.

The difference between the indoor and outdoor paints shall be highlighted to the user (as now we propose to merge the criteria).

A proposed change to this criterion is provided below for discussion.

Suggested amendments to the criterion
Box 2 of the eco-label shall contain the following text:

— 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)**
— restricted hazardous substances,
— low solvent content.

Assessment and verification: The applicant shall provide a sample of the product packaging showing the label, together with a declaration of compliance with this criterion.

6.2 *General Comment*

Industry-based stakeholders have requested longer transition period between criteria to enable them to re-formulate as necessary and ready new dossier packs.