Development of Green Public Procurement Criteria for Indoor and Outdoor Paints and Varnishes

2nd Ad-hoc Working Group Meeting
25th September 2012, Brussels
Joint Research Centre, Institute for Prospective Technological Studies

Content

1. Key environmental concerns, rationale and Life cycle costing
2. Scope and overview of criteria proposal
3. Core Criteria
2. Comprehensive Criteria
3. Award Criteria
4. Conclusions

a) Requirements on paint production
- Raw material sourcing

b) Use
- Efficiency in use
- Emissions during use

c) End of life
- Unused paint
- Unused paint disposal

Overview of Criteria and Requirements given in GPP

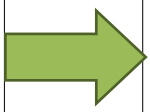
1. Technical specifications
   - Core
   - Comprehensive
2. Award criteria
   - Core
   - Comprehensive
3. Contract performance clause

Development of Green Public Procurement Criteria for Indoor and Outdoor Paints and Varnishes

Session 1: Key environmental concerns and rationale and Life Cycle Costing outcomes

2nd Ad-hoc Working Group Meeting
25th September 2012, Brussels
Joint Research Centre, Institute for Prospective Technological Studies

Key Environmental Areas

Key Environmental Areas		Green Public Procurement Approach
•In-use durability •Unused paint •Solvent based paints have a higher environmental impact than water based paints •TiO_2 manufacture is an important environmental impact of paint production •Additives have a wide range of health and environmental implications.		•Minimise the impact of production •Reduce the number of hazardous materials included in the paint •Limit paint wastage •Purchase durable paints.

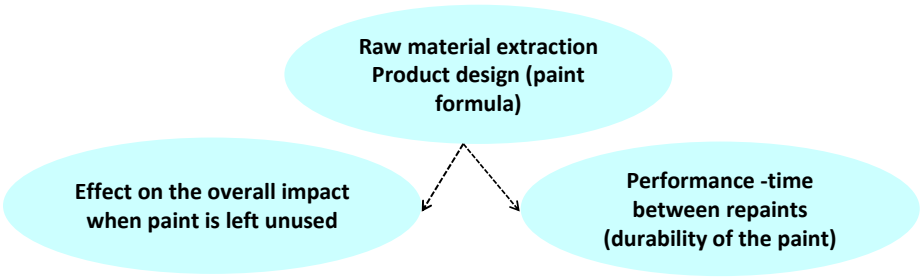
Document rationale and structure

- **Green Public Procurement criteria development relies on the common basis developed simultaneously for GPP and the EU Ecolabel and uses the criteria defined within that document as the starting point for the development of an equivalent GPP criteria.**
- **In general, the GPP comprehensive criteria list mirrors that within the EU Ecolabel criteria with less challenging criteria described for GPP core.**
- **This document relies on the evidence base described within the background reports:**

  - "Ecolabel and Green Public Procurement (GPP) Criteria for Paints and Varnishes: Preliminary Background Report"

  - "Revision of EU European Ecolabel and Development of EU Green Public Procurement Criteria for Indoor and Outdoor Paints and Varnishes: GPP Background Report"

Key environmental concerns



- Solvent based paints have a higher environmental impact than water based paints
- Binder and TiO2 manufacturing have an important environmental impact of paint production
- Additives have a wide range of health and environmental implications.

Life Cycle Costing

- The life cycle cost of paints and varnishes were established by calculating the baseline cost of fulfilling the functional unit that was set in the life cycle assessment technical work.
- The life cycle cost considered the procurement cost, the spreading rate, the longevity of the finish and the paint wastage, which included the disposal cost.
- It was found that all investigated factors had a large impact on the life cycle cost, with the exception of the disposal cost of waste paint.
  The majority of the cost from paint wastage occurred due to the additional paint that needed to be procured.

Life Cycle Costing

- The analysis shows that the procurement cost cannot be considered in isolation and that even moderate improvements in performance can outweigh the additional cost of purchasing more expensive paint.

A 20% price increase would, for example, be justified if the paint finish lasted 8.5 years or more compared with the baseline 7 years.

Similarly the 20% price increase would be outweighed if a spreading of 9.6 m2 per litre could be achieved instead of 8 m2 per litre.

Life Cycle Costing

- Whilst the quality and cost of the procured paint or varnish were dominant factors in determining the life cycle cost, it is essential to consider the impact of the application and the use phase.
- Correct cleaning and pre-treatment of the surfaces may significantly extend the life of the painted surface and be a cost effective step to carry out.
- Skilled decorators should be able to achieve the advertised spreading rates on suitable surfaces and leave a durable finish that will last a long time, whereas less skilled decorators may use more paint than is necessary and their work may not last as long.
- A labour cost saving may therefore not result in a life cycle cost saving.

Development of Green Public Procurement Criteria for Indoor and Outdoor Paints and Varnishes

Session 2: Scope and overview of criteria proposal

2nd Ad-hoc Working Group Meeting
25th September 2012, Brussels
Joint Research Centre, Institute for Prospective Technological Studies

Scope

The product group 'paints and varnishes' shall comprise both indoor and outdoor decorative paints and varnishes, woodstains and related products and painting services.

This includes, inter alia, floor coatings, floor paints and road markings, 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.

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 and amending Directive 1999/13/EC

Scope – differences in comparison with EU Ecolabel

'Road markings' are coatings used on a road surface in order to convey official information. They can also be applied in other facilities used by vehicles to mark parking spaces or designate areas for other uses. Within the confines of this standard, road markings will not include mechanical markings such as Cat's Eyes.

'Painting services' are contractors directly engaged to paint, usually termed 'painters and decorators'.

Overview of criteria

Criterion	Criterion Type			Key aspect addressed
	Core	Compr.	Award	
White pigments	X	X		Manufacturing impacts
Spreading rate	X	X		Performance
Wet scrub	X	X		Performance
VOCs	X	X		Emissions during use
Metals	X	X		Emissions during use
Hazardous substances	X	X		Emissions during use
Titanium Dioxide			X	Manufacturing impacts
Indoor Air Quality			X	Emissions during use
	Contract performance clause			
Unused Paint	X	X		Manufacturing impacts
Unused Paint disposal	X	X	X	Emissions at end of life

Feedback received

- **Calculation on VOC levels for roadmarkings in Table 1 page 11 was commented**

> **"Additional stakeholder feedback suggested that the density of solvent-based roadmarking paint was closer to 1.5g/ml than 1.08 used in the original calculation. As a consequence, Table 1 and the core and comprehensive criteria have been updated to reflect these comments."**

Development of Green Public Procurement Criteria for Indoor and Outdoor Paints and Varnishes

Session 3: Criteria

2nd Ad-hoc Working Group Meeting
25th September 2012, Brussels
Joint Research Centre, Institute for Prospective Technological Studies

Core criterion

Raw material sourcing

White pigments

White pigment content (white inorganic pigments with a refractive index higher than 1,8): *Paints shall have a white pigment content lower or equal to that described in the table below per m² of dry film, with 98 % opacity.*

Wet scrub resistance	Indoor limit (g/m²)	Outdoor limit (g/m²)
Class 1	48	50
Class 2	42	44

This requirement does not apply to varnishes and woodstains.

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

Comprehensive criterion

Raw material sourcing

White pigments

White pigment content (white inorganic pigments with a refractive index higher than 1,8): *Paints shall have a white pigment content lower or equal to that described in the table below per m² of dry film, with 98 % opacity.*

Wet scrub resistance	Indoor limit (g/m²)	Outdoor limit (g/m²)
Class 1	40	42
Class 2	36	38
Class 4 (Matt paints)	25	27

This requirement does not apply to varnishes and woodstains.

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

Award criterion

Raw material sourcing
Titanium dioxide

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

***The sulphate process*:**
SOx calculated as SO2: 7.0 kg/ton TiO2
Sulphate waste: 500 kg/ton TiO2.

Note:
SOx emissions only apply to the sulphate process.

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

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

Award criterion

Raw material sourcing
Titanium dioxide

For the avoidance of doubt, the Waste Framework Directive 2008/98/EC, Article 3 defines waste. If the TiO_2 producer can satisfy Article 5 (by-product production) of the Waste Framework Directive for its solid wastes then, the wastes shall be exempt.

Assessment and verification:
The applicant shall either provide a declaration of non-use or provide the supporting documentation indicating the respective levels of emissions and discharges of wastes for these parameters, the titanium dioxide content of the product, the spreading rate, together with the detailed calculations showing compliance with this criterion. Products holding a relevant Type 1 Ecolabel fulfilling the listed requirements will be deemed to comply.

Core criterion

Comprehensive criterion

Use - Efficiency in use

Spreading rate

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 8m2 per litre of product for indoor paints and 6m2 for outdoor paints. For tinting systems, this criterion applies only to the white base (the base containing the most TiO2). In cases where the white base is unable to achieve this requirement, the criterion shall be met after tinting the white base to produce the standard colour RAL 9010.

This requirement does not apply to varnishes, woodstains, floor coatings, floor paints, primers or any other transparent coatings.

***Assessment and verification*: The applicant shall provide a test report using the method ISO 6504/1 (Paints and varnishes — determination of hiding power — Part 1: Kubelka-Munk method for white and light-coloured paints) or 6504/3 [Part 3: determination of contrast ratio (opacity) of light-coloured paints at a fixed spreading rate]. Products holding a relevant Type 1 Ecolabel fulfilling the listed requirements will be deemed to comply.**

Core criterion

Use - Efficiency in use

Wet scrub resistance

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

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

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

***Assessment and verification*: The applicant shall provide a test report according to EN 13300 using the method EN ISO 11998 (Test for cleanability and scrub resistance). Products holding a relevant Type 1 Ecolabel fulfilling the listed requirements will be deemed to comply.**

Comprehensive criterion

Use - Efficiency in use

Wet scrub resistance

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

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

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

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

Comprehensive criterion

Use - Efficiency in use

Wet scrub resistance

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. Products holding a relevant Type 1 Ecolabel fulfilling the listed requirements will be deemed to comply.

the listed requirements will be deemed to comply.

Core criterion

Use - Emissions during use

Volatile organic compounds (VOCs)

VOC content shall not exceed:

Description	*VOC limits (g/l incl. water)*
Indoor matt walls and ceilings (Gloss <25@60°)	15
Indoor glossy walls and ceilings (Gloss >25@60°)	60
Outdoor walls of mineral substrate	40
Indoor/outdoor trim and cladding paints for wood and metal	90
Indoor trim varnishes and woodstains, including opaque woodstains	75
Outdoor trim varnishes and woodstains, including opaque woodstains	90
Indoor and outdoor minimal build woodstains	75
Primers	15
Binding primers	15
One-pack performance coatings	100
Two-pack reactive performance coatings for specific end use such as floors	100
Decorative effect coatings	90
Road markings	~~265~~ 375

Core criterion

Use - Emissions during use

Volatile organic compounds (VOCS)

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.

Assessment and verification:

Products holding a relevant Type 1 Eco-label fulfilling the listed requirements will be deemed to comply.

The applicant shall provide a declaration of compliance with this criterion. For all products the applicant shall indicate the VOC content. Products holding a relevant Type 1 Ecolabel fulfilling the listed requirements will be deemed to comply.

Comprehensive criterion

Use - Emissions during use

Volatile organic compounds (VOCs)

VOC content shall not exceed:

Description	VOC limits (g/l incl. water)
Indoor matt walls and ceilings (Gloss <25@60°)	10
Indoor glossy walls and ceilings (Gloss >25@60°)	40
Outdoor walls of mineral substrate	25
Indoor/outdoor trim and cladding paints for wood and metal	80
Indoor trim varnishes and woodstains, including opaque woodstains	65
Outdoor trim varnishes and woodstains, including opaque woodstains	75
Indoor and outdoor minimal build woodstains	50
Primers	10
Binding primers	10
One-pack performance coatings	80
Two-pack reactive performance coatings for specific end use such as floors	80
Decorative effect coatings	80
Road markings	~~25~~31

Comprehensive criterion

Use - Emissions during use

Volatile organic compounds (VOCS)

In this context volatile organic compounds (VOC) means any organic compounds having an initial boiling point less than or equal to 250°C measured at a standard pressure of 101,3 kPa as defined in Directive 2004/42/EC. The subcategories for paints and varnishes of the Directive are used for defining VOC limits. These values shall be measured at the point of application and must include any additional solvent added to the paint prior to application.

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

Assessment and verification:

Products holding a relevant Type 1 Eco-label fulfilling the listed requirements will be deemed to comply.

The applicant shall provide a declaration of compliance with this criterion. For all products the applicant shall indicate the VOC and SVOC content. Products holding a relevant Type 1 Ecolabel fulfilling the listed requirements will be deemed to comply.

Award criterion

Use - Emissions during use
Indoor air quality

Decree NOR : DEVL1104875A. This requirement is restricted to the lightest colour paint within a series or, in tinting systems, the base paint.

***Assessment and verification*:**
The applicant shall provide test results using the methodology described within NOR: DEVL1104875A. Products holding a relevant Type 1 Ecolabel fulfilling the listed requirements will be deemed to comply.

Core criterion
Comprehensive criterion

Use - Emissions during use
Metals

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

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

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.

Lead and chromium VI restrictions are not applicable to pigments used to road markings.

Core criterion

Comprehensive criterion

Use - Emissions during use

Metals

***Assessment and verification*:**
The applicant shall provide a declaration of compliance with this criterion as well as declarations from ingredient suppliers (where applicable). Products holding a relevant Type 1 Ecolabel fulfilling the listed requirements will be deemed to comply.

Core criterion

Use - Emissions during use

Hazardous substances

No ingredients (substances) shall be listed on the product label, in the safety data sheet (SDS) or in other relevant technical data sheets that are on the candidate list for Substances of Very High Concern or have been identified as substances of very high concern and have been included in the list foreseen in Article 59 of Regulation (EC) No 1907/2006 (the REACH Regulation). The list of substances referred to (the candidate list) can be found at: http://echa.europa.eu/chem_data/authorisation_process/candidate_list_table_en.asp.

***Assessment and verification*: The provision of the ingredients listed on the product label, the safety data sheet (SDS), the manufacturer's website and any other relevant technical data sheets, along with their CAS-Number and a declaration that none of the listed ingredients are on the candidate list.**

Comprehensive criterion OPTION 1

Use - Emissions during use

Hazardous substances

In addition to the core criterion for hazardous substances, the following compounds shall not be directly added to paint formulations:

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

Comprehensive Criterion OPTION 1

Use - Emissions during use

Hazardous substances

The paint formulation shall not contain any hazardous substances, or combinations thereof, that result in the formulation being greater than 0.7 as defined within PART A of directive 1999/45/EC and as required by the CLP regulation for marking dangerous substances for the following risk phrases:

Risk Phrase[1]				
R28	R68	R61-62	R48/20; R48/21; R48/22	R31
R25	R45	R62	R50	R32
R65	R49	R63	R50-53	R39-41
R27	R40	R62-63	R51-53	Sensitising substances
R24	R60	R64	R52-53	R42
R23; R26	R61	R39/23; R39/24; R39/25; R39/26; R39/27; R39/28	R53	R43
R23	R60-61	R68/20; R68/21; R68/22	R59	
R46	R60-63	R48/25; R48/24; R48/23	R29	

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

Comprehensive Criterion OPTION 1

Use - Emissions during use

Hazardous substances

***Assessment and verification*:**

A declaration that the requirements are fulfilled. The provision of the ingredients listed on the product label, the safety data sheet (SDS), the manufacturer's website and any other relevant technical data sheets, along with their CAS-Number (where available) and a declaration that none of the added ingredients are on the list.

Comprehensive Criterion OPTION 2

Use - Emissions during use

Hazardous substances

According to Article 6(6) of the regulation No 66/2010 on EU Ecolabel, the product or any part of it thereof shall not contain sub ces or mixtures meeting the criteria for classification with the ha or categories in accordance with Regulation (EC) no 1227/2 elow nor shall it contain substances referred to in Articl egulation (EC) no 1907/2006. The risk phrases below g substances. However, for mixtures of substan nation on the substances is difficult to obtain, classifica mixtures may be applied. The term mixture and sub as defined within the CLP Regulation (EC) No 12

Please see full criterion text in Background report

Hazard Statement[1]	Risk Phrase[2]
H300 Fatal if swallow	R28
H301 Toxic if swallowed	R25
H304 May be fatal if swallowed and enters airways	R65
H310 Fatal in contact with skin	R27

Comprehensive Criterion OPTION 2

Use - Emissions during use

Hazardous substances

Assessment and verification:

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

Products holding a relevant Type 1 Ecolabel fulfilling the listed requirements will be deemed to comply.

Core criterion
Comprehensive criterion

End of life

Unused paint

The service provider shall minimise paint wastage by limiting unused paint to 5%.

Assessment and verification: **The service provider shall provide evidence of the amount of paint sent for disposal compared to the amount of paint used during a previous six month period. Figures can be presented in volume or weight.**

Core criterion

Comprehensive criterion

End of life

Unused paint disposal

Contract performance clause

The service provider shall appropriately dispose of unwanted paint.

***Assessment and verification*: The service provider shall provide evidence of their procedures for disposing of paint at government or private waste treatment facilities.**

Award criterion

The service provider shall donate all suitable unwanted paint for reuse or recycling.

***Assessment and verification*: The service provider shall provide evidence of their procedures for donating all unused paint for reuse or recycling.**

Development of Green Public Procurement Criteria for Indoor and Outdoor Paints and Varnishes

Session 4: Stakeholders feedback, further steps

2nd Ad-hoc Working Group Meeting
25th September 2012, Brussels
Joint Research Centre, Institute for Prospective Technological Studies

Comments and points for consideration

- Guarantee (for painting services?)

Next steps

- Collection stakeholders' feedback
  Deadline for submitting the comments: 19 October 2012

- Finalisation of criteria document

Thank You

Feedback received

Comment and amendment made regarding VOC calculation on road marking

- **Calculation on VOC levels for road markings in Table 1 page 11 of the background report was commented**

> **"Additional stakeholder feedback suggested that the density of solvent-based road marking paint was closer to 1.5g/ml than 1.08 used in the original calculation. As a consequence, Table 1 and the core and comprehensive criteria have been updated to reflect these comments."**

Country	Limit of VOC content (wt%)	Limit of VOC content (g/l)**
NL	28	420
A	>75 wt% solids	375
DE	25	375
FI	2	3
SW	2	31
USA*	8	12
CA*	14 (summer) 42 (winter)	21(summer) 63 (winter)