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COMMISSION STAFF WORKING DOCUMENT

EU green public procurement criteria for paints, varnishes and road marking

EU green public procurement criteria for paints, varnishes and road markings

1 INTRODUCTION

EU green public procurement criteria are designed to make it easier for public authorities to purchase goods, services and works with reduced environmental impacts. The use of the criteria is **voluntary**. The criteria are formulated in such a way that they can be, if deemed appropriate by the individual authority, (partially or fully) integrated into its tender documents with minimal editing. Before publishing a tender, public authorities are advised to check the available offer of the good, services and works they plan to purchase on the market where they are operating. This document lists the EU GPP criteria developed for the paints, varnishes and road markings product group. An accompanying technical report provides the full rationale for the selection of these criteria and references for further information.

The criteria are split into selection criteria, technical specifications, award criteria and contract performance clauses. The criteria are of two types:

- ***Core criteria*** – which *are designed to allow for easy application of GPP, focussing on the key area(s) of environmental performance of a product and aimed at keeping administrative costs for companies to a minimum*.
- ***Comprehensive criteria*** - *which take into account more aspects or higher levels of environmental performance, for use by authorities that want to go further in supporting environmental and innovation goals*.

The formulation "(same for core and comprehensive criteria)" is inserted if the criteria are identical for both levels of ambition.

In some cases paint not meeting the requirements of the GPP criteria may be needed for technical reasons e.g., restoration of a historical building, in order to preserve the original character of a painted surface. In such cases the procurer, supported by technical advice, should evaluate the specific needs and the availability of alternative solutions, and if necessary, can decide to exempt tenders for paints or painting

services from the GPP requirements. Market enquiries could be used to determine if alternatives with suitable performance requirements may be available.

1.1 Products definition and scope

The product group comprises two different subsets of products: 'paints and varnishes' and 'road markings'.

The subset 'paints and varnishes' (called also 'paints') includes indoor and outdoor paints and varnishes, woodstains and related products, as defined below, intended for use by professional users (not industrial uses).

Paint and varnish products include, inter alia:

- Floor paints;
- Products which are tinted by distributors at the request of 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[1] Annex I 1.1.d and 1.1.g.

The subset 'road markings' includes products such as paint or structural plastic systems which are applied to road surfaces in order to delineate traffic lanes, bays and signals, as well as to provide frictional properties and night time retro-reflection in dry, wet and rain conditions. They are generally composed of a pigmented road marking material and glass beads which, together, may or may not form a film over the substrate. Preformed road marking products defined as tape, preformed cold plastic road marking or preformed thermoplastic road marking with or without drop-on materials are also included in the scope, as well as primers and adhesives needed for application of the road marking material.

The product group does not include:

- anti-fouling coatings;
- wood preservation products;
- coatings for particular industrial and professional uses, including heavy-duty coatings;

[1] Directive 2004/42/CE of the European Parliament and of the Council of 21 April 2004 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.

- powder coatings;
- UV curable paint systems;
- paints primarily intended for vehicles;
- product which primary function is not to form a film over the substrate, e.g. oils and waxes (with the exception of certain road marking systems);
- transparent chemical floor coatings using reactive resins as binders for thick layer coverings for industrial floors;
- mechanical markings such as cat's eyes.

The following product definitions are provided to support application of the criteria:

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

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

'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 mainly intended for exterior use, but may also be used internally, or on soffits and balcony ceilings.

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

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

'Tinting system' means a method of preparing coloured paints by mixing a 'base' with coloured tints.

Further supporting technical definitions are provided in Annex 1.

1.2 Works contracts definition and scope

The criteria also address related painting and road marking works contracts. These can include one-off works contracts; call-down contracts from a framework as well as cyclical, long-term painting services. All contracts shall be based on the use of paint products defined within the scope of this product group. The following contract definitions are addressed within the scope of the criteria:

‘Painting works' means when contractors, usually termed ‘painters and decorators', are directly engaged to paint indoor or external surfaces on a one-off, call down or cyclical basis, including ongoing maintenance and remedial works.

'Road marking works' means when contractors, usually termed 'road marking operatives', are directly engaged to apply road markings on a one-off or cyclical basis, including maintenance and remedial works.

1.3 General note on Verification

For a number of criteria, the proposed means of verification is the provision of test reports. For each of the criteria, the relevant test methods are indicated. It is up to the public authority to decide at which stage such test results should be provided. In general, it does not seem necessary to require all tenderers to provide test results from the outset. To reduce the burden on tenderers and public authorities, a self-declaration could be considered to be sufficient when submitting bids. In addition, there are different options for if and when these tests might be required:

a) At the tendering stage:

For *one-off supply contracts*, the bidder with the most economically advantageous tender could be required to provide this proof. If the proof is deemed to be sufficient, the contract can be awarded. If the proof is deemed insufficient or non-compliant then:

i) where the means of verification concern a technical specification, the proof would be requested from the next highest-scoring bidder who would then be considered for contract award;

ii) where the means of verification concerns an award criterion, the additional points awarded would be removed and the tender ranking would be recalculated with all the ensuing consequences applying.

A test report verifies that a sample product has been tested for certain requirements, not the items actually delivered under the contract. For framework contracts the situation may be different. This scenario is covered further in point b).

b) During contract execution:

Test results could be requested for one or several items delivered under the contract, either in general, or if there are concerns about false declarations. This is particularly important for framework contracts which do not stipulate an initial order.

It is recommended that explicit performance clauses are included in the contract. These should stipulate that the contracting authority is entitled to carry out random verification tests at any time during the term of the contract. If the results of such tests show that the delivered products do not meet the criteria, the contracting authority will be entitled to apply penalties and has the option of terminating the contract. Some public authorities include conditions stipulating that if, following the tests, the product meets their requirements, the testing costs must be borne by the public authority; but if the requirements are not met, the costs have to be borne by the supplier.

For *framework agreements*, the point at which provision of proof is requested depends on the specific set-up of the contract:

i) For framework agreements with a single operator where the individual items to be delivered are identified when awarding the framework agreement, and the number of units is determined later, the same considerations apply as for the one-off supply contracts described above;

ii) For framework agreements that pre-select several potential suppliers and then hold competitions among the pre-selected, the pre-selected tenderers may only need to demonstrate at this initial pre-selection stage their capability to deliver items that meet the minimum performance requirements of the framework agreement. For ensuing call-down contracts (or orders) that are awarded following the competition among the pre-selected suppliers, the same considerations apply as under a) and b) above, if additional requirements have to be proven under the competition. If the competition is decided only about price, then a check at the contract execution stage should be considered.

It is also important to highlight the option for bidders to provide verification through the EU Ecolabel or through another relevant ecolabel fulfilling the same specified requirements. Verification would then be requested following the same approach as has been set out for test results.

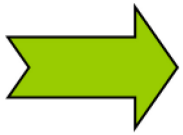
Please also note that, under Article 44 (2) of Directive 2014/24/EU, the contracting authorities shall accept other appropriate means of proof. This could include a technical dossier from the manufacturer where the economic operator concerned had no access to test reports, or no possibility of obtaining them within the relevant time limits. This is under the condition that the lack of access was not attributable to the economic operator concerned and that the economic operator concerned thereby proves that the works, supplies or services provided by it meet the requirements or criteria set out in the technical specifications, the award criteria or the contract performance conditions. In case a reference to a certificate/test report drawn up by a specific conformity assessment body is made for the execution of the tests, contracting authorities shall also accept certificates/test reports issued by other equivalent assessment bodies.

2 KEY ENVIRONMENTAL IMPACTS

The key environmental impacts of paints and varnishes are associated with their production. The quantity of paint used is therefore an important factor, together with the amount of waste and unused paint and how long the paint lasts for until a new paint layer needs to be applied.

In terms of paint ingredients solvents, binders and TiO_2 (white pigment) manufacture have an important environmental impact during raw material extraction and paint production. Solvent-based paints have a higher overall environmental impact than water-based paints. Hazardous functional additives to the paint such as preservatives, plasticisers, pigments and extenders can have a wide range of health and environmental implications.

In the case of road markings the glass beads added to the paint also have significant environmental impacts associated with their manufacturing, primarily related with the energy used to form the beads. Contaminants within the glass such as arsenic can also be problematic because of dispersion of the beads in the environment. Durability of road marking also has a significant influence on the overall environmental impact of these products.

Key Environmental Aspects		GPP Approach
• Solvent, binder and TiO_2 manufacture • Road marking glass beads manufacture • Hazardous functional additives • Product durability • Waste caused by unused product		• Minimise the impact of production by addressing specific ingredients and dosage • Reduce the hazardous properties of the overall formulation • Promote durable paints and road markings • Incentivise minimisation of product wastage, including reuse and recycling

The order of impacts does not necessarily reflect their importance.

Detailed information about the paints, road markings and associated works contracts, including information about related legislation, standards and technical sources used as evidence, can be found in the technical report.

3 EU GPP CRITERIA FOR PAINTS, VARNISHES AND ROAD MARKINGS

3.1 Paints and varnishes

Core criteria	Comprehensive criteria
SUBJECT MATTER	
The purchase of paints and varnishes with a reduced environmental impact	
TECHNICAL SPECIFICATIONS	
1. Paint formulation **2.**	
1.1 White pigment content *(This requirement does not apply to transparent and semi-transparent coatings)* Paints shall have a white pigment content (white inorganic pigments with a refractive index higher than 1,8) per m^2 of dry film equal to or lower than: • 38 g/m^2 for indoor paints, with the exception of indoor wall paints claiming Class 1 wet scrub resistance (WSR) for which 40 g/m^2 shall apply; • 40 g/m^2 for all outdoor paints. Undercoats and primers shall have a white pigment content (white inorganic pigments with a refractive index higher than 1,8) per m^2 of dry film equal to or lower than 25 g/m^2. **Verification:** The tenderer shall provide documentation for the paint formulation showing the content of white pigments. Where required, Class 1 wet scrub resistance shall be demonstrated based on a test report carried out according to EN 13300 using the method EN ISO 11998 (Test for cleanability and scrub resistance).	**1.1 White pigment content** *(This requirement does not apply to transparent and semi-transparent coatings)* Paints shall have a white pigment content (white inorganic pigments with a refractive index higher than 1,8) per m^2 of dry film equal to or lower than: • 36 g/m^2 for indoor products, with the exception of indoor wall paints claiming Class 1 wet scrub resistance (WSR) for which 40 g/m^2 shall apply; • 38 g/m^2 for outdoor paints. Undercoats and primers shall have a white pigment content (white inorganic pigments with a refractive index higher than 1,8) per m^2 of dry film equal to or lower than 25 g/m^2. **Verification:** The tenderer shall provide documentation for the paint formulation showing the content of white pigments. Where required, Class 1 wet scrub resistance shall be demonstrated based on a test report carried out according to EN 13300 using the method EN ISO 11998 (Test for cleanability and scrub resistance).

Products which have been awarded the EU Ecolabel for paints and varnishes, as established in Commission Decision (EU) 2014/312/EU are deemed to comply.	Products which have been awarded the EU Ecolabel for paints and varnishes, as established in Commission Decision (EU) 2014/312/EU are deemed to comply.

1.2 Content of Volatile Organic Compounds

The maximum content of Volatile Organic Compounds (VOCs) shall not exceed the limits given in Table 1.
The content of VOCs shall be determined for the ready-to-use product and shall include any recommended additions prior to application such as colourants and/or thinners.

Table 1 VOC content limits

Product description (with subcategory denotation according to Directive 2004/CE/42)	**VOC limits (g/l including water)**
a. Interior matt walls and ceilings (Gloss <25@60°)	15
b. Interior glossy walls and ceilings (Gloss >25@60°)	60
c. Exterior walls of mineral substrate	30
d. Interior/Exterior trim and cladding paints for wood and metal	90
e. Interior trim varnishes and woodstains, including opaque woodstains	75
e. Exterior trim varnishes and woodstains, including opaque woodstains	90
f. Interior and Exterior minimal build woodstains	75
g. Primers	15
h. Binding primers	15
i. One-pack performance coatings	100
j. Two-pack reactive performance coatings for specific end use such as floors	100
Decorative effect coatings	90

1.2 Content of Volatile Organic Compounds

The maximum content of Volatile Organic Compounds (VOCs) shall not exceed the limits given in Table 2.
The content of VOCs shall be determined for the ready-to-use product and shall include any recommended additions prior to application such as colourants and/or thinners.

Table 2 VOC content limits

Product description (with subcategory denotation according to Directive 2004/CE/42)	**VOC limits (g/l including water)**
a. Interior matt walls and ceilings (Gloss <25@60°)	10
b. Interior glossy walls and ceilings (Gloss >25@60°)	40
c. Exterior walls of mineral substrate	25
d. Interior/Exterior trim and cladding paints for wood and metal	80
e. Interior trim varnishes and woodstains, including opaque woodstains	65
e. Exterior trim varnishes and woodstains, including opaque woodstains	75
f. Interior and Exterior minimal build woodstains	50
g. Primers	15
h. Binding primers	15
i. One-pack performance coatings	80
j. Two-pack reactive performance coatings for specific end use such as floors	80
Decorative effect coatings	80

Anti-rust paints	80

Verification:
The tenderer shall provide either:
a) a calculation of the VOC content, supported, if available, by Safety Data Sheets or;
b) a test report carried out according to ISO 11890-2. Products with a VOC content lower than 1.0 g/l shall be tested according to ISO 17895.
Products which have been awarded the EU Ecolabel for paints and varnishes, as established in Commission Decision (EU) 2014/312/EU are deemed to comply.

1.3 Product hazard labelling

The final product shall not be classified as being acutely toxic, a specific target organ toxicant, carcinogenic, mutagenic or toxic for reproduction, hazardous to the environment, in accordance with Regulation (EC) No 1272/2008 (CLP Regulation), as indicated in Table 3.

Table 3 Final product classification

Acute toxicity	Acute Tox. 1 Acute Tox. 2 Acute Tox. 3
Specific target organ toxicity – repeated exposure Specific target organ toxicity – single exposure	STOT RE 1 or 2 STOT SE 1, 2 or 3
Carcinogenicity	Carc. 1A Carc. 1B Carc. 2
Germ cell mutagenicity	Muta. 1A Muta. 1B

Anti-rust paints	80

Verification:
The tenderer shall provide either:
a) a calculation of the VOC content, supported, if available, by Safety Data Sheets or;
b) a test report carried out according to ISO 11890-2. Products with a VOC content lower than 1.0 g/l shall be tested according to ISO 17895.
Products which have been awarded the EU Ecolabel for paints and varnishes, as established in Commission Decision (EU) 2014/312/EU are deemed to comply.

1.3 Product hazard labelling

The final product shall not be classified as being acutely toxic, a specific target organ toxicant, a respiratory or skin sensitizer, or carcinogenic, mutagenic or toxic for reproduction hazardous to the environment, in accordance with Regulation (EC) No 1272/2008 (CLP Regulation), as indicated in Table 4.

Table 4 Final product classification

Acute toxicity	Acute Tox. 1 Acute Tox. 2 Acute Tox. 3
Specific target organ toxicity – repeated exposure Specific target organ toxicity – single exposure	STOT RE 1 or 2 STOT SE 1, 2 or 3
Carcinogenicity	Carc. 1A Carc. 1B Carc. 2
Germ cell mutagenicity	Muta. 1A

	Muta. 2
Reproductive toxicity	Repr. 1A Repr. 1B Repr. 2
Hazardous to the aquatic environment	Aquatic Acute 1
	Aquatic Chronic 1 or 2

Verification:
The tenderer shall provide appropriate documentation confirming that the products to be supplied are not classified with the listed hazards.
The documentation of the mixture classification shall be provided in accordance with the rules provided in Regulation (EC) No 1272/2008 (CLP Regulation) and/or Safety Data Sheets.
Products which have been awarded the EU Ecolabel for paints and varnishes, as established in Commission Decision (EU) 2014/312/EU are deemed to comply.

	Muta. 1B Muta. 2
Reproductive toxicity	Repr. 1A Repr. 1B Repr. 2
Hazardous to the aquatic environment	Aquatic Acute 1
	Aquatic Chronic 1 or 2
	Aquatic Chronic 3*
Respiratory sensitization	Resp. Sens. 1, 1A or 1B
Skin sensitization	Skin Sens. 1 , 1A or 1B

* The final product shall be allowed to be classified with H412 only in case of use of dry film preservative combinations containing 3-iodo-2-propynyl butylcarbamate (IPBC) in outdoor paints and varnishes at concentrations equal to or lower than 0.650% w/w.

Verification:
The tenderer shall provide appropriate documentation confirming that the products to be supplied are not classified with the listed hazards.
The documentation of the mixture classification shall be provided in accordance with the rules provided in Regulation (EC) No 1272/2008 (CLP Regulation) and/or Safety Data Sheets.
Where relevant, for outdoor products classified with aquatic chronic toxicity 3 and containing IPBC tenderers shall provide documentation specifying that the content of IPBC combination is equal to or lower than 0.650% w/w.
Products which have been awarded the EU Ecolabel for paints and varnishes, as established in Commission Decision (EU) 2014/312/EU are deemed to comply.

1.4 Hazardous ingredients

The paint shall be compliant with the restrictions presented in Table 5, which either restrict the presence of or limit the concentration of the indicated hazardous substances in the paint.

Table 5 Paint hazardous ingredient requirements

Ingredient	**Restriction or upper concentration limit**
Preservatives:	Preservatives shall be non bio-accumulative[1].
Dry film preservatives:	Dry film preservatives shall not be intentionally used with the exception of: - Indoor paints specifically required for high humidity areas with an upper concentration limit of 0.10% w/w - Outdoor paints with an upper concentration limit of 0.30% w/w
Alkylphenolethoxylates: Alkylphenolethoxylates (APEOs) and their derivatives shall not be used in any paint or varnish preparations or formulations.	Shall not be intentionally used.
Phthalates:	0.1% w/w

1.4 Hazardous ingredients

The paint shall be compliant with the restrictions presented in Table 6, which either restrict the presence of or limit the concentration of the indicated hazardous substances in the paint. .

Table 6 Paint hazardous ingredient requirements

Ingredient	**Restriction or upper concentration limit**
Preservatives:	Preservatives shall be non bio-accumulative[1].
Dry film preservatives:	Dry film preservatives shall not be intentionally used with the exception of: - Indoor paints specifically required for high humidity areas with an upper concentration limit of 0.10% w/w - Outdoor paints with an upper concentration limit of 0.30% w/w
Alkylphenolethoxylates: Alkylphenolethoxylates (APEOs) and their derivatives shall not be used in any paint or varnish preparations or formulations.	Shall not be intentionally used.

Phthalates[2] identified as substances of very high concern and listed in the candidate list of the REACH Regulation [3] shall not be present in any paint or varnish preparations or formulations thereof.	
Formaldehyde: Free formaldehyde in the white base, tinting base and colour tint[2]:	0.010% w/w
Metals: Cadmium, lead, chromium VI, mercury, arsenic, selenium.	0.010% w/w per metal or metallic complex/salt, as appropriate

[1] An ingredient is considered bio-accumulative when Log Kow ≤ 4.0 or bio-concentration factor (BCF) ≤ 500.

[2] In the case that a wide range of colour tints are to be used the bidder shall indicate which colour tint has the highest potential for formaldehyde release. A test report shall then only be requested for this tint.

Verification:

The tenderer shall provide appropriate documentation confirming compliance with the criterion, namely:

- for preservatives and APEOs: Safety Data Sheets for the product mixture.
- for phthalates: Safety Data Sheets for the product mixture .
- additionally for preservatives: a test report using OECD 305 Test

Phthalates: Phthalates [3] identified as substances of very high concern and listed in the candidate list of the REACH Regulation **Error! Bookmark not defined.** shall not be present in any paint or varnish preparations or formulations thereof.	0.1% w/w
Formaldehyde: Free formaldehyde in the white base, tinting base and colour tint[2]; with the exception of where formaldehyde donors are required or are present in polymer dispersions, in which case the following value shall apply:	0.0010% w/w 0.010% w/w
Metals: Cadmium, lead, chromium VI, mercury, arsenic, selenium.	0.010% w/w per metal or metallic complex/salt, as appropriate
Isothiazolinones: Isothiazolinones MIT[3] CIT/MIT[4]	 Sum total: 0.050% w/w 0.020% w/w 0.0015% w/w

[1] An ingredient is considered bio-accumulative when Log Kow ≤ 3.2 or bio-concentration factor (BCF) ≤ 100.

[2] In the case that a wide range of colour tints are to be used the bidder shall indicate which colour tint has the highest potential for formaldehyde release. A test report shall then only be

[2] To meet this requirement, tenderers and/or their suppliers will need to screen the REACH Candidate List for phthalates. Although phthalates may be easy to identify as an ingredient because their function is generally as a plasticiser, not all phthalates that appear on the Candidate List are readily recognisable by their chemical name. It may therefore be useful to provide tenderers with a chemical definition. For this purpose they are defined as "a group of chemical compounds whose structural basis is an ester of phthalic acid (1,2-benzene dicarboxylic acid)".

[3] ECHA, Candidate List of substances of very high concern for Authorisation, https://echa.europa.eu/candidate-list-table

Guideline can be used as an alternative to the Safety Data Sheet for the sole purpose of confirming that the preservatives used are non-bioaccumulative. • for formaldehyde: a test report based on the Merckoquant method or high-performance liquid chromatography (HPLC) method (See Annex 2), • for metals: a test report based on ISO 3856 series or equivalent. Products which have been awarded the EU Ecolabel for paints and varnishes, as established in Commission Decision (EU) 2014/312/EU are deemed to comply.	requested for this tint. [3] Methylisothiazolinone [4] 5-chloro-2-methyl-4-isothiazolin-3-one (CIT) / 2- methyl-4-isothiazolin-3-one (MIT) in a ratio of 3:1 **Verification:** The tenderer shall provide appropriate documentation confirming compliance with the criterion, namely: • for preservatives and APEOs: Safety Data Sheets for the product mixture. • for phthalates: Safety Data Sheets for the product mixture. • additionally for preservatives: a test report using OECD 305 Test Guideline can be used as an alternative to the Safety Data Sheet for the sole purpose of confirming that the preservatives used are non-bioaccumulative. • for formaldehyde: a test report based on the Merckoquant method or high-performance liquid chromatography (HPLC) method (See Annex 2), • for metals: a test report based on ISO 3856 series or equivalent, • for isothiazolinones: Safety Data Sheets for the product mixture. Products which have been awarded the EU Ecolabel for paints and varnishes, as established in Commission Decision (EU) 2014/312/EU are deemed to comply.
2. Efficiency of application and durability	
2.1 Spreading rate *(same for core and comprehensive criteria)* *(This specification is not applicable to varnishes, woodstains, transparent adhesion primers or any other transparent and semi-transparent coatings.)* The paint shall achieve an efficient spreading rate according to the applicable performance requirement inTable 7.	

Table 7 Spreading rates for specific paint products

Type of paint	**Spreading rate**[1] (m^2/l)
White paints and light-coloured paints (including finishes and intermediates)	- indoor: 8 - outdoor: 6 - indoor & outdoor: 8
Tinting systems[2]	8
Primers and undercoats a. opaque b. with specific blocking/sealing, penetrating/binding properties c. with special adhesion properties	 8 6 6
Thick decorative coatings	1m^2 per kg of product
Elastomeric outdoor paints	4

Notes:
[1]The spreading rates apply at a hiding power of 98%
[2]Only base should be tested

Verification:
The tender shall provide a test report using the following methods, or their equivalent:

- ISO 6504/1 (Paints and varnishes — determination of hiding power — Part 1: Kubelka-Munk method for white and light-coloured paints);
- ISO 6504/3 (Part 3: determination of contrast ratio (opacity) of light-coloured paints at a fixed spreading rate);
- NF T 30 073 for paints specially designed to give a three-dimensional decorative effect or which are characterised by a very thick coat.

Products which have been awarded the EU Ecolabel for paints and varnishes, as established in Commission Decision (EU) 2014/312/EU are deemed to comply.

	2.2 Wet scrub resistance (only indoor paints) *(For applications where cleanability and scrub resistance are required)* *(This requirement does not apply to transparent and semi-transparent coatings.)*

	Wall paint for which wet scrub resistance is requested in the tender shall achieve Class 1 or 2 in wet scrub resistance according to EN 13300 and EN ISO 11998 or their equivalent. Matt indoor wall and ceiling paints with white pigment content equal or lower than 25g/m^2 of dry film are exempt from this requirement. This requirement only applies to tinting bases (base paints). **Verification:** The tenderer shall provide a test report according to EN 13300 using the method EN ISO 11998 (Test for cleanability and scrub resistance) or equivalent. Products which have been awarded the EU Ecolabel for paints and varnishes, as established in Commission Decision (EU) 2014/312/EU are deemed to comply. *A core criterion is not proposed, nevertheless, if the procured paint will be used on surfaces which will be intensively cleaned, public procurers are encouraged to use the comprehensive criterion.*

2.3 Weathering resistance (only outdoor paints)
(same for core and comprehensive criteria)

Masonry, wood and metal paints shall demonstrate resistance to the possible forms of weathering-induced deterioration in Table 8.
Masonry paints shall be exposed to artificial test conditions for 1000 hours, wood and metal paints for 500 hours.
This shall be demonstrated according to the recommended test methods, or their equivalent, under artificial weathering conditions. Corrosion resistance for metal paints shall also include blistering.
Tests should be performed on the tinting base.

Table 8 Weathering resistance tests

Weathering induced deterioration	Performance requirement	Recommended test
Decrease of gloss[1]	Less than or equal to 30% of its initial value	ISO 2813
Chalking	1,5 or better (0,5 or 1,0)	EN ISO 4628-6
Flaking	Flake density 2 or less, flake size 2 or less	ISO 4628-5
Cracking	Crack quantity 2 or less, crack size 3 or less	ISO 4628-4
Blistering	Blister density 3 or less, blister size 3 or less.	ISO 4628-2
Corrosion[2]	Rusting equal to or better than Ri2.	ISO 4628-3

[1]Not applicable to mid-sheen and matt-finishes (refer to Annex 1 for details).
[2]For anti-rust paints.

Verification:
The tenderer shall provide test results demonstrating performance of the paint according to the requirements listed in Table 8.
With the exception of corrosion for metal paints the artificial weathering conditions shall reflect the conditions described in ISO 11507 or (for outdoor wood finishes) QUV accelerated weathering apparatus with cyclic exposure with UV(A) radiation and spraying according to EN 927-6 or their equivalent.
For corrosion the relevant atmospheric corrosivity categories in EN ISO 12944-2 and the accompanying procedures specified in EN ISO 12944-6, or

equivalent, shall be used. Anti-rust paints for steel substrates shall be tested after 240h salt spray following ISO 9227 or equivalent.
Products which have been awarded the EU Ecolabel for paints and varnishes, as established in Commission Decision (EU) 2014/312/EU are deemed to comply with the above criteria.

2.4 Fungal and algal resistance of the film (only outdoor paints)
(same for core and comprehensive criteria)
(For applications where fungal and algal resistance of the film are needed)

Base paints used for exterior masonry and wood and for which fungal and/or algal resistant properties are needed should meet the requirements in Table 9.

Table 9 Fungal and algal resistance requirements

Application	Fungal resistance	Algal resistance
Masonry	Class 1 or lower	Score of 0
Wood	Class 1 or lower	Score of 0

Verification:
The tenderer shall provide test results demonstrating compliance according to the test methods EN 15457 and/or EN 15458, or their equivalent. For coatings containing encapsulated dry-film biocides altered conditioning protocols shall also be accepted. Manufacturers shall provide information about any variation in conditioning along with test results of the EN 15457 and/or 15458 standards.
Products which have been awarded the EU Ecolabel for paints and varnishes, as established in Commission Decision (EU) 2014/312/EU are deemed to comply.

2.5 Abrasion resistance of floor paints
(same for core and comprehensive criteria)

Floor coatings and floor paints shall demonstrate 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.

Verification:
The tenderer shall provide test results carried out according to EN ISO 7784-2 or equivalent.
Products which have been awarded the EU Ecolabel for paints and varnishes, as established in Commission Decision (EU) 2014/312/EU are deemed to

comply.

2.6 Packaging

(same for core and comprehensive criteria)

Paints should be delivered in containers of (no smaller than) X litres *(to be decided by the public authority in order to reduce packaging).*

AWARD CRITERIA

1. Content of Semi-Volatile Organic Compounds

Points shall be awarded if the paint product has a content of Semi-Volatile Organic Compounds (SVOCs) equal to or less than the limits set out in Table 10.

The content of SVOCs shall be determined for the ready-to-use product and shall include any recommended additions prior to application such as colourants and/or thinners.

Table 10 SVOC content limits

Product description (subcategories according to Directive 2004/CE/42)	**SVOC limits (g/l including water)**
a. Interior matt walls and ceilings (Gloss <25@60°)	30[1]/ 40[2]
b. Interior glossy walls and ceilings (Gloss >25@60°)	30[1]/ 40[2]
c. Exterior walls of mineral substrate	40
d. Interior/Exterior trim and cladding paints for wood and metal	50[1]/ 60[2]
e. Interior trim varnishes and woodstains, including opaque woodstains	30

	e. Exterior trim varnishes and woodstains, including opaque woodstains: 60 f. Interior and Exterior minimal build woodstains: 30[1]/ 40[2] g. Primers: 30[1]/ 40[2] h. Binding primers: 30[1]/ 40[2] i. One-pack performance coatings: 50[1]/ 60[2] j. Two-pack reactive performance coatings for specific end use such as floors: 50[1]/ 60[2] Decorative effect coatings: 50[1]/ 60[2] Anti-rust paints: 60 Notes: [1] Indoor white paints and varnishes [2] Indoor tinted paints / outdoor paints and varnishes **Verification:** The tenderer shall provide either: a) a calculation of the SVOC content, supported, if available, by Safety Data Sheets or; b) a test report carried out according to ISO 11890-2. Additionally, the test modifications provided in Annex 3 shall be used. Products which have been awarded the EU Ecolabel for paints and varnishes, as established in Commission Decision (EU) 2014/312/EU are deemed to comply.

2. Indoor Air Quality: Indoor paints

Points shall be awarded to products with emissions (of TVOCs and/or Formaldehyde) lower than the limits indicated in Table 11.

Table 11 Indoor paint emissions to air limits

Emission source	Emissions limits (µg/m³)	
	3 days	28 days
TVOCs[1]	10,000	2,000
Formaldehyde	-	120

[1]Total Volatile Organic Compounds

Verification:
The tenderer shall provide test reports based on analytical testing according to EN 16402 or equivalent.

2. Indoor Air Quality: Indoor paints

Points shall be awarded to products with emissions (of TVOCs and/or Formaldehyde) lower than the limits indicated in Table 12.

Table 12 Indoor paint emissions to air limits

Emission source	Emissions limits (µg/m³)	
	3 days	28 days
TVOCs[1]	10,000	1,500
Formaldehyde	-	60

[1] Total Volatile Organic Compounds

Verification:
The tenderer shall provide test reports based on analytical testing according to EN 16402 or equivalent.

CONTRACT PERFORMANCE CLAUSES

1 Technical advice and site inspections
(same for core and comprehensive criteria)

The tenderer shall provide technical advice and site works instructions to the Contracting Authority or their contractors. This shall include the following:

- Method statements and guidance on substrate preparation;
- Method statements and guidance on paint preparation, including estimates for application per m^2;
- Optimal conditions for storage and application of the product;
- Risk mitigation measures to minimise environmental pollution;
- Advice on appropriate disposal of unused paint.

Technical advice shall also be made available, upon request, to the site-operatives of the Contracting Authority or their contractors either in the form of on-site

visits (in a number and scope to be specified by the contracting authority at tendering stage) or a technical hotline (in a language specified by the contracting authority).

The tenderer shall provide documentation which contains the listed information. Written feedback from the operatives applying the paint shall confirm satisfactory provision of technical advice and site support.

3.2 Painting works contracts

Core criteria	Comprehensive criteria
SUBJECT MATTER	
Painting works which maximise the lifespan of the paint whilst minimising associated environmental impacts	
SELECTION CRITERIA	
1. Competencies of the tenderer *(same for core and comprehensive criteria)* The tenderer shall demonstrate professional competencies in the following areas, as relevant to the nature of the contract being let (choose as relevant for the contract): • Method statements for the efficient use of paint on-site, including the preparation of estimates and the use of specialist equipment; • Method statements for the preparation of substrates and paint formulations prior to application. This shall include, as appropriate, safety procedures for the removal of existing films and coatings, and the handling of new paints and varnishes during their application; • The application of environmentally improved products, including those with reduced VOC content; • The application of durable and high specification finishes, with reference to relevant EN standards or their equivalent; • Policies and supporting management systems to minimise paint waste, maximise the reuse or recycling of unused paint and to ensure its safe disposal and the safe disposal of other chemicals such as paint stripping agents. **Verification**: The tenderer shall provide evidence in the form of information and references related to relevant contracts in the previous 5 years in which the above elements have been carried out.	
TECHNICAL SPECIFICATIONS	
1. Use of paints meeting the EU GPP criteria *(same for core and comprehensive criteria)* Painting work contracts shall be performed using paint products that comply with EU Green Public Procurement requirements as specified in Technical Specifications for core criteria of EU GPP Section 4.1 Paints and varnishes.	

Verification:
The tenderer shall provide supporting documentation that the products to be used meet the criteria specified above

2. Management of waste and unused paint
(same for core and comprehensive criteria)

The tenderer shall submit a waste management plan for paint leftover from the preparation of the substrate and application. The plan shall include:

- Where paint removal/demarking needs to be conducted, an assessment of the potential hazardous content of paint that has been stripped from substrates and, if a risk is identified, a method statement for mitigating the risk by safe handling and disposal.
- A method statement for on-site practices for the cleaning of painting equipment and the storage of waste and unused paint for safe disposal as hazardous waste.
- Measures to minimise waste and unused paint.

Verification:
The tenderer shall provide a documented waste management plan which shall include method statements for safe paint stripping, equipment cleaning and waste and unused paint handling and disposal, as well as the measures applied to minimise waste and unused paint.

Monitoring of paint waste shall then take place through a contract performance clause.

AWARD CRITERIA	
	1. Performance based painting contracts *(Where long-term performance based painting and maintenance contracts are tendered)* Points shall be awarded according to the estimated volume of paint used while maintaining the quality of the painted surface during the life-time of the contract. **Verification:** The tenderer shall provide a document setting out the estimated quantities of

	paint required during the contracted program, including assumptions made about the required number of repaints over the life-time of the contract.
	2. Reuse and/or recycling of waste and unused paint Points shall be awarded reflecting a commitment to reuse or recycle waste and unused paint. The tenderer shall submit a management plan setting out the arrangements made to ensure that waste and unused paint arising from works will be: • Reused by the contractor, and/or • Reused externally; and/or • Recycled. Reuse or recycling routes could include reuse projects or the manufacturing of new paint using waste and unused product as a base. A monitoring system will be used to account for waste and unused paint. **Verification:** The tenderer shall provide a documented management plan which shall include a description of the arrangements made to ensure that waste and unused pain will be reused by the contractor and/or other external entity and/or recycled.
CONTRACT PERFORMANCE CLAUSES	
1. Management of paint handling *(same for core and comprehensive criteria)* The contractor shall provide records of (*for performance based contracts*): • The quantity of paint purchased;	

- The actual paint quantities used in fulfilling the contract specifications.

The contractor shall also provide records for waste and unused paint arisings, including tracking where it has been:

- Reused by the contractor;
- Reused externally;
- Recycled;
- Safely disposed of.

The contractor shall also provide records – in case old paint layer needed to be removed from the substrate that it has been:

- Handled safely;
- Disposed of safely for treatment as hazardous waste.

3.3 Road markings

Core criteria	Comprehensive criteria
SUBJECT MATTER	
The purchase of road markings with a reduced environmental impact	
TECHNICAL SPECIFICATIONS	
1. Road marking formulation	
1.1 Content of Volatile Organic Compounds (VOCs) (i) The maximum content of VOCs shall not exceed a limit of 150 g/l. The content of VOCs shall be determined for the ready-to-use product and shall include any recommended additions prior to application. Solvents which have negligible contribution to smog formation (listed in Annex 4) may be excluded from VOC calculation. Exceptionally, when procurers determine that the road markings must be applied under weather conditions which prevent the use of low VOC road markings (relative air humidity > 80%, air temperature < 5 ˚C or > 40 ˚C), the total content of VOC shall not exceed 395 g/l. (ii) The following compounds shall not be used: – Chlorinated solvents, such as methylene chloride or chloroalkanes, – Aromatic solvents, such as benzene, ethyl benzene, toluene, or xylene, – Ethylene-based glycol ethers or their acetates. **Verification:**	**1.1 Content of Volatile Organic Compounds (VOCs)** (i) The maximum content of VOCs shall not exceed a limit of 100 g/l. (ii) The following compounds shall not be used: – Chlorinated solvents, such as methylene chloride or chloroalkanes; – Aromatic solvents, such as benzene, ethyl benzene, toluene, or xylene; – Ethylene-based glycol ethers or their acetates. **Verification:** The tenderer shall provide results of calculation based on the ingredients and raw materials or a test report according to ISO EN 11890-2, ASTMD 2369 (where reactive diluents are present) or equivalent supported by necessary calculations. In addition, a declaration that the specificaly excluded solvents are not used, shall be provided.

The tenderer shall provide results of calculation based on the ingredients and raw materials or a test report according to ISO EN 11890-2, ASTMD 2369 (where reactive diluents are present) or equivalent supported by necessary calculations. In addition, a declaration that the specificaly excluded solvents are not used, shall be provided.

1.2 Product hazard labelling

The final product shall not be classified as being acutely toxic, a specific target organ toxicant, carcinogenic, mutagenic or toxic for reproduction, hazardous to the environment, in accordance with Regulation (EC) No 1272/2008 (CLP Regulation), as indicated in Table 13.

Table 13 Final product classification

Acute toxicity	Acute Tox. 1 Acute Tox. 2 Acute Tox. 3
Specific target organ toxicity – repeated exposure Specific target organ toxicity – single exposure	STOT RE 1 or 2 STOT SE 1, 2 or 3
Carcinogenicity	Carc. 1A Carc. 1B Carc. 2
Germ cell mutagenicity	Muta. 1A Muta. 1B Muta. 2
Reproductive toxicity	Repr. 1A Repr. 1B Repr. 2
Hazardous to the aquatic environment	Aquatic Acute 1 Aquatic Chronic 1 or 2

1.2 Product hazard labelling

The final product shall not be classified as being acutely toxic, a specific target organ toxicant, carcinogenic, mutagenic or toxic for reproduction, hazardous to the environment, in accordance with Regulation (EC) No 1272/2008 (CLP Regulation), as indicated in Table 14.

Table 14 Final product classification

Acute toxicity	Acute Tox. 1 Acute Tox. 2 Acute Tox. 3
Specific target organ toxicity – repeated exposure Specific target organ toxicity – single exposure	STOT RE 1 or 2 STOT SE 1, 2 or 3
Carcinogenicity	Carc. 1A Carc. 1B Carc. 2
Germ cell mutagenicity	Muta. 1A Muta. 1B Muta. 2
Reproductive toxicity	Repr. 1A Repr. 1B Repr. 2
Hazardous to the aquatic environment	Aquatic Acute 1 Aquatic Chronic 1 or 2 Aquatic Chronic 3

Verification:
The tenderer shall provide appropriate documentation confirming that the products to be supplied are not classified with the listed hazards.
The documentation of the mixture classification shall be provided in accordance with the rules provided in Regulation (EC) No 1272/2008 (CLP Regulation) and/or Safety Data Sheets.

1.3 Hazardous ingredients

The product shall be compliant with the restrictions presented in Table 15, where substances can be required to meet given characteristics or restricted on their concentration.

Table 15 Road marking hazardous ingredient requirements

Ingredient	**Restriction or upper concentration limit**
Dry film preservatives:	Preservatives shall be non bio-accumulative[1]
Phthalates: Phthalates[4] identified as substances of very high	0.1% w/w

Verification:
The tenderer shall provide appropriate documentation confirming that the products to be supplied are not classified with the listed hazards.
The documentation of the mixture classification shall be provided in accordance with the rules provided in Regulation (EC) No 1272/2008 (CLP Regulation) and/or Safety Data Sheets.

1.3 Hazardous ingredients

The product shall be compliant with the restrictions presented in Table 16, where substances can be required to meet given characteristics or restricted on their concentration.

Table 16 Road marking hazardous ingredient requirements

Ingredient	**Restriction or upper concentration limit**
Dry film preservatives:	Preservatives shall be non bio-accumulative[1]
Phthalates: Phthalates [6] identified as substances of very high concern and listed in the candidate list of the REACH Regulation [7] shall not be present in any paint or varnish	0.1% w/w

[4] To meet this requirement, tenderers and/or their suppliers will need to screen the REACH Candidate List for phthalates. Although phthalates may be easy to identify as an ingredient because their function is generally as a plasticiser, not all phthalates that appear on the Candidate List are readily identifiable. It may therefore be useful to provide

concern and listed in the candidate list of the REACH Regulation[5] shall not be present in any paint or varnish preparations or formulations thereof.	
Metals: Cadmium, lead, chromium VI, mercury, arsenic, selenium	0.01% w/w per metal or metallic complex/salt, as appropriate

[1] An ingredient is considered bio-accumulative when Log Kow ≤ 3.2 or bio-concentration factor (BCF) ≤ 100.

Verification:
The tenderer shall provide appropriate documentation confirming compliance with the criterion, namely:

- for preservatives: Safety Data Sheets for the product mixture.
- additionally for preservatives: a test report using OECD 305 Test Guideline can be used as an alternative to the Safety Data Sheet for the sole purpose of confirming that the preservatives used are non-bioaccumulative.
- for phthalates: Safety Data Sheets for the product mixture and/or a REACH Article 33(1) [6] declaration that is valid for the products to be supplied.

preparations or formulations thereof.	
Metals: Cadmium, lead, chromium VI, mercury, arsenic, selenium	0.01% w/w per metal or metallic complex/salt, as appropriate

[1] An ingredient is considered bio-accumulative when Log Kow ≤ 3.2 or bio-concentration factor (BCF) ≤ 100.

Verification:
The tenderer shall provide appropriate documentation confirming compliance with the criterion, namely:

- for preservatives: Safety Data Sheets for the product mixture.
- additionally for preservatives: a test report using OECD 305 Test Guideline can be used as an alternative to the Safety Data Sheet for the sole purpose of confirming that the preservatives used are non-bioaccumulative.
- for phthalates: Safety Data Sheets for the product mixture and/or a REACH Article 33(1)[10] declaration that is valid for the products to be supplied.
- for metals: a test report based on the ISO 3856 series or equivalent.

tenderers with a chemical definition. For this purpose they are defined as "a group of chemical compounds whose structural basis is an ester of phthalic acid (1,2-benzene dicarboxylic acid)".

[7] ECHA, Candidate List of substances of very high concern for Authorisation, https://echa.europa.eu/candidate-list-table

[5] ECHA, Candidate List of substances of very high concern for Authorisation, https://echa.europa.eu/candidate-list-table

[6] Explanatory note: REACH Art 33(1) does not refer to mixtures (such as paints and most road markings formulations), but only to articles. Articles usually found in road markings that are not mixtures are structural plastic systems and preformed road marking products defined as tape, preformed cold plastic road marking or preformed thermoplastic road marking. In this case, Article 33 (1) of REACH applies: Under this article, suppliers (this also includes the professional shops from which the article is purchased and the article producers or importers) have to provide recipients (in this case procurers) information about the safe use of the article. As a minimum, shall be

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- for metals: a test report based on the ISO 3856 series or equivalent.

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2. Content of hazardous ingredients in glass beads

The glass beads used shall not contain arsenic, antimony and lead at individual concentrations exceeding 200 ppm.

Verification:
The tenderer shall provide a test report verifying the concentrations of the specified substances present in the glass beads according to EN 1423 or equivalent.

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2. Content of hazardous ingredients in glass beads

The glass beads used shall not contain arsenic, antimony and lead at individual concentrations exceeding 150 ppm.

Verification:
The tenderer shall provide a test report verifying the concentrations of the specified substances present in the glass beads according to EN 1423 or equivalent.

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3. Quality and durability of road marking system
(same for core and comprehensive criteria)

The tenderer shall demonstrate that the road marking maintains the minimum performance requirements, namely for night time visibility, day time visibility, skid resistance and erosion, after a defined number of wheel passages[1], as specified by the procurer in the call for tender.

[1] Indicatively, a reasonable performance could be considered as 500.000 wheel passages, according to standards EN 1824 and EN 13197. If a higher level of performance is desired, then a higher number of wheel passages should be specified.

Verification:
The tenderer shall provide a test report or the approval of a national test facility demonstrating compliance of the road marking system under the conditions appropriate to the contract and according to EN 1824, EN 13197 or equivalent. To ensure comparability, the contracting authority shall specify in the call for tender the test method to be used by all tenderers.

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<tr><td colspan="2">AWARD CRITERIA</td></tr>
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communicated to the recipient (in this case procurer) the name of the candidate list substance(s) that is in the article, if they are present in concentration of more than 0,1% of the article weight.

1. Road marking formulation – White pigment (titanium dioxide) content *(For call for tenders where specific quality and durability requirements are set)* Points shall be awarded to the bidder with a product with a lower white pigment content than the following limits: – for systems applied at <1 kg/m^2: <14 % TiO_2, – for systems applied at >1 kg/m^2: <10 % TiO_2. **Verification:** The tenderer shall provide documentation for the product formulation, supported by test results or declaration of conformity of the relevant homologation body[2], showing the content of white pigment. *[2] An homologation body is an official body that carries out the certification and pre-approval of products in accordance with specific performance criteria for use at national, regional and/or local level.*	**1. Road marking formulation – White pigment (titanium dioxide) content** *(For call for tenders where specific quality and durability requirements are set)* Points shall be awarded to the bidder with a product with a lower white pigment content than the following limits: – for systems applied at <1 kg/m^2: <10 % TiO_2, – for systems applied at >1 kg/m^2: <8 % TiO_2. **Verification:** The tenderer shall provide documentation for the product formulation, supported by test results or declaration of conformity of the relevant homologation body[2], showing the content of white pigment. *[2] An homologation body is an official body that carries out the certification and pre-approval of products in accordance with specific performance criteria for use at national, regional and/or local level.*
	2. Glass beads – Recycled glass content *(For purchase of road marking containing glass beads to fulfil the specified grade of night time visibility and retro-reflectivity set in the call for tender. This criterion is not applicable when special properties, such as high retro-reflectivity requirements, are specified by the contracting authority.)* X points shall be awarded in proportion to the recycled content (by mass) of the total amount of glass beads used to fulfil the contract. The recycled content shall be calculated on the basis of an average mass balance of the raw materials used (in accordance with the methodology prescribed in ISO 14021).

Table 17. Points to be awarded based on recycled glass content.

Content of recycled glass	Points
75% - 100%	100% of points
50% - 75%	75% of points
25% - 50%	50% of points
< 25%	0 points

The specified grade of night time visibility and retro-reflectivity in wet conditions set in the call for tender shall be met.

Verification:
The tenderer shall provide third-party verified documentation from the glass bead manufacturer(s) indicating the recycled content (by mass) of the total amount of glass beads used to fulfil the contract. Upon award of the contract, or upon request from the contracting authority, the tenderer shall provide third-party verified documentation describing the calculation (according to the methodology prescribed in ISO 14021) of the said recycled content, as well as third-party verified records of the data supporting the said calculation including, as a minimum, batch and factory production control system (operated in accordance with EN 1423 or equivalent[1]) documentation.

[1] *This could include ISO 9001 or a national or international scheme for verifying the*

	traceability of recycled content.
CONTRACT PERFORMANCE CLAUSES	
1 Technical support and site inspections *(same for core and comprehensive criteria)* The contractor shall provide technical advice and site works instructions to the Contracting Authority or their contractors, including: • Method statements and guidance on substrate preparation, • Method statements and guidance on product preparation, including estimates for application per m^2, • Optimal conditions for storage and application of the product, including support in selecting and using application equipment, • Risk mitigation measures to minimise environmental pollution, • Advice on appropriate disposal of unused product. Technical advice shall also be made available, upon request, to the site-operatives of the Contracting Authority or their contractors either in the form of on-site visits (in a number and scope to be specified by the contracting authority at tendering stage) or a technical hotline (in a language specified by the contracting authority). The tenderer shall provide documentation which contains the listed information. Written feedback from the operatives applying the road marking product shall confirm satisfactory provision of technical advice and site support.	

3.4 Road marking works contracts

Core criteria	Comprehensive criteria
SUBJECT MATTER	
The letting of works contracts which maximise the lifespan of road marking whilst minimising associated environmental impacts	
SELECTION CRITERIA	
1. Competencies of the tenderer *(same for core and comprehensive criteria)*	

The tenderer shall demonstrate professional competencies in the following areas, as relevant to the nature of the contract being let:

- Method statements for the efficient use of road marking on-site, including the preparation of estimates and the use of specialist equipment;
- Method statements for the preparation of substrates (including, where appropriate, safety procedures for removal of road markings which may have been made with lead pigment and are considered hazardous; or high pressure removal of road markings);
- Method statements for the preparation of road marking formulations and their handling during their application;
- The application of environmentally improved products, including those with reduced VOC content;
- The application of durable and high specification finishes, with reference to relevant EN standards or their equivalent;
- Policies and supporting management systems to minimise road markings waste, maximise the reuse or recycling of waste and unused road marking and to ensure their safe disposal and safe disposal of other chemicals such as road marking stripping agents.

Verification:
The tenderer shall provide evidence in the form of information and references related to relevant contracts in the previous 5 years in which the above elements have been carried out.

TECHNICAL SPECIFICATIONS

1. Use of road markings meeting the EU GPP criteria
(same for core and comprehensive criteria)

All work contracts shall be performed using road marking products that comply with the EU Green Public Procurement requirements as specified in Technical specifications for core criteria of EU GPP – Section 4.3 Road markings.

Verification:
The tenderer shall provide supporting documentation that the products used meet the criteria specified above

2. Management of waste and unused road marking material
(same for core and comprehensive criteria)

The tenderer shall submit a waste management plan for road marking material leftover from the preparation of the substrate and application. The plan shall include:

- Where demarking needs to be conducted, an assessment for the potential hazardous content of road marking material to be stripped from substrates and, if a risk is identified, a method statement for mitigating the risk by safe handling and disposal.
- A method statement for on-site practices in the cleaning of equipment and the storage of waste and unused road marking material for safe disposal as

hazardous waste.

- Measures to minimise waste and unused road marking material.

Verification:

The tenderer shall provide a documented waste management plan which shall include method statements for safe demarking, equipment cleaning and waste and unused road marking material handling and disposal, as well as the measures applied to minimise waste and unused road marking material.

Monitoring of road marking material waste arisings shall be addressed as a contract performance clause.

AWARD CRITERIA

	1 Performance based contracts *(Where long-term performance based road marking application and maintenance contracts are tendered)* Points shall be awarded according to the estimated volume of road marking material used while maintaining the quality of the road marking during the life-time of the contract. **Verification:** The tenderer shall provide a document setting out the estimated quantities of road marking material required during the contracted program, including assumptions made about the required number of remarkings over the life-time of the contract.

CONTRACT PERFORMANCE CLAUSES

1. Management of road marking usage and application

(same for core and comprehensive criteria)

The contractor shall provide records of (*for performance based contracts*):

- The quantity of road marking purchased;
- The actual road marking quantities used in fulfilling the contract specifications.

The contractor shall also provide records for waste and unused road marking arisings, including tracking where it has been:

- Reused by the contractor;

- Reused externally;
- Recycled;
- Safely disposed of.

The contractor shall also provide records – in case old road marking layer needed to be removed from the substrate - that it has been:

- Handled safely;
- Disposed of safely for treatment as hazardous waste.

4 LIFE CYCLE COSTING

In the development of Green Public Procurement criteria, one of the most important aspects to take into account is a life-cycle cost analysis of the best environmentally-performing products with respect to average products in the market. Cost considerations (using a life-cycle perspective) are very important in the public sphere as this contributes in the justification of public spending. Member states should be encouraged to make choices that are a good value in the long-term.

In order to allow public procurers to select the products that will be most cost-effective it is recommended to use a product life cycle perspective and apply a life cycle cost (LCC) approach. LCC considers the entire (physical) life cycle of a product, from production to disposal. Depending on the perspective taken in the LCC assessment, costs of different stages can be calculated with more or less detail. The use phase of the life cycle is relevant for the public procurers since this cost will be incurred. The production cost of the product to be purchased does not need to be calculated in detail, since the relevant cost element for the purchasing authority would be integrated in the final product price.

Many procured items, such as computers or printers, require electricity and consumables to function and the costs of these can often exceed the initial purchase cost of the item. For paints and varnishes the life time costs are generally only incurred at the point of painting. The main considerations for calculating the life cycle costs are the:

- cost of purchasing and delivery (e.g., cost per litre of paint or varnish as delivered);
- spreading rate to meet performance criteria (e.g., amount of paint required to cover a given surface area);
- lifetime performance (time between repaints to maintain performance criteria);
- disposals costs (disposal of unused paints).

Costs that may theoretically be incurred but were not considered were:

- For outdoor paints, the change in thermal performance for the building:
    - The choice of colour is the dominant factor affecting thermal performance.
- Labour time and equipment cost for application of the paint:
    - It would be impossible to meaningfully establish costs and differentiate products based on this variable.
- Additional disposal costs at the end of life for the painted surface:
- Disposal cost of the painted surfaces are unlikely to be affected by the paint that was applied;
- Indoor paints: any energy saving from having a lighter painted room and therefore less use of artificial light.

The aforementioned costs have also environmental costs which are commonly studied under the frame of "environmental externalities" but these were not considered relevant for a report supporting the development of GPP criteria and were not included in the analysis. It is important to highlight that in this context it is evident that when assessing the overall costs it is not sufficient to consider solely the advertised cost per litre of paint. In the investigation carried out it was found that all investigated factors (procurement cost, the spreading rate, the longevity of the finish and the paint wastage) 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. The analysis also 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. For further details on the costing modelling and conclusions please refer to accompanying Technical Report.

Also notice that 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.

The above described general observations, although done for decorative paints, apply also for road markings, with the durability and the times between repainting/refreshing being determinant in the overall life cycle costing.

Annexes

Annex 1. Technical definitions related to paint and/or road marking specifications

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

(2) 'Gloss paints' are those which at an angle of incidence of 60^{o} show a reflectance of ≥ 60

(3) 'Mid sheen paints' (also referred to as semi-gloss, satin, semi-matt) are those which at an angle of incidence of 60^{o} or at 85^{o} show a reflectance of < 60 and ≥ 10

(4) 'Matt paints' are those which at an angle of incidence of 85^{o} show a reflectance of <10

(5) 'Dead matt paints' are those which at an angle of incidence of 85^{o} show a reflectance of <5

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

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

(8) 'Volatile organic compounds' (VOC) means any organic compounds having an initial boiling point less than or equal to 250 °C measured at a standard pressure of 101,3 kPa as defined in Directive 2004/42/EC and which, in a capillary column, are eluting up to and including n-Tetradecane ($C_{14}H_{30}$),

(9) 'Semi-volatile organic compounds' (SVOCs) means any organic compound having a boiling point greater than 250 °C and less than 370 °C measured at a standard pressure of 101,3 kPa and which, in a capillary column are eluting with a retention range after n-Tetradecane ($C_{14}H_{30}$) and up to and including n-Docosane ($C_{22}H_{46}$).

Annex 2. Formaldehyde testing

Requirement	Report method
A sum total formaldehyde limit of 0.0010% w/w applies unless a derogation applies (see the row below).	The Merckoquant method shall be used. If the outcome is inconclusive, high-performance liquid chromatography (HPLC) shall be used to confirm the in-can concentration.
A higher formaldehyde limit 0.010% w/w applies where: (i) Preservatives that are formaldehyde donors are required as an in-can preservative to protect a specific type of paint or varnish and where the formaldehyde donor is used in the place of isothiazolinone preservatives (ii) Polymer dispersions (binders) provide, through residual levels of formaldehyde, the function of formaldehyde donors instead of in-can preservatives.	Determination of the in-can formaldehyde concentration by means of analysis using VdL-RL 03 or high-performance liquid chromatography (HPLC).
	Indoor paints and varnishes: Determination by means of analysis[1] according to ISO 16000-3. Emissions must not exceed 0.25 ppm upon first application and they must be less than 0.05 ppm after 24 hours from the first application. Initial application is considered to be once stable air mixing in the test chamber has been achieved. It is recommended that stable air mixing can be achieved after 1 hour with the aid of a fan. In all cases the results shall be corrected to reflect a ventilation rate of 1.0 air change/hour by dividing them by 2. This ensures that the results reflect the chamber conditions used in EN 717-1 which form the basis for the emission thresholds.

[1]Equivalent standards exist which may be used, in particular CEN/TS 16516 which is intended to supersede the ISO 16000 series.

Annex 3. SVOC test method markers and modifications

Guidance on the determination of Semi-Volatile Organic Compounds (SVOC) using ISO 11890-2 (2013) (extending its scope)

***Scope**:*

This guidance interprets the specifications of ISO 11890-2 to allow the running of a test to quantify paint SVOC content, either alone or in one run together with an ISO 11890-2 VOC test, so as to evaluate compliance with the requirements of the EU Ecolabel. This guidance should therefore be read alongside ISO 11890-2, but with the modified sample preparation method, apparatus and parameters specified taking precedence.

***Sample preparation**:*

An organic solvent suitable for diluting the sample shall be used. It shall have a purity of at least 99% by mass. The recommended dilution solvent is methanol 100%. If necessary, the sample can be stirred during 30 minutes with application of ultrasound in order to achieve a homogenous liquid phase, or by mechanically stirring during two hours followed by centrifugation or a filtration step using a PTFE filter type for paints containing large, undissolved particles. In the case that a homogenous liquid phase cannot be achieved using methanol 100% then another suitable dilution solvent, such as acetonitrile or tetrahydrofuran, shall be used.

Note:

The marker compounds to be used are n-tetradecane (n-C14) and n-Docosane (n-C22). It may be necessary to prepare a marker solution containing these compounds in acetone due to the limited solubility of n-Docosane in acetonitrile.

***Apparatus**:*

Capillary column:

- The preferred choice of column shall be one made of fused silica coated with 5% phenyl / 95% dimethyl polysiloxane (slightly polar type, DB5 or equivalent).

- A column coated with 100% dimethyl polysiloxane (non-polar type, DB1 or equivalent) may be used if it can be shown to perform better for predominantly non-polar paint ingredients.

Note:

A suitable combination of column length (30m or 60m), diameter and temperature programme shall be selected such that compounds in the sample and the markers elute in the order of their increasing boiling points. A column length of 60m may be used to improve the elution order for the slightly polar column type.

Oven:
- Oven initial temperature: *between 40 and 100°C*
- Isothermal holding time: *between 2 and 5 min*
- Heating rate: *between 3 and 20°C/min*
- Oven final temperature: *between 280 and 325°C*
- Isothermal holding time: *>2min*
- Flow in the column: *between 1 and 2 ml/min*
Detector:
- Identification by mass spectrometer
- Quantification by flame ionization detector (FID)
- FID detector temperature: *Final oven temperature or higher*
Carrier gas:
- helium
Hot injection system:
- injector temperature : *between 250 and 280°C*
- injection volume: *between 1 and 2 µl*
Calibration:
- the preferred internal standard for quantification of SVOC peaks shall be n-tetradecane (n-C14)
- an alternative internal standard, 1,2-diethoxyethane (also named ethylene glycol diethyl ether) can be used in order to achieve improved recovery values when analysing water-based paints.

Note:

If the calibration procedures are run in an appropriate manner the selection of the internal standard should have no impact on the test result. However, it is important to ensure that the internal standard does not overlap or hide any peaks arising from the sample itself. It must therefore show a complete separation from other peaks in the chromatogram. A large choice of internal standards is thus possible but internal standards having very low boiling points (e.g. acetone…) or very high boiling points (C22 and more…) must be excluded to avoid any discriminatory phenomenon in the injector.

- All SVOCs shall be identified as far as achievable, and then quantification shall be performed with their authentic calibration standards, as specified for VOCs in ISO 11890-2, or via their relative response factors.

- Remaining unknown SVOC peaks shall be quantified using the response factor of diethyl adipate, expressed in diethyl adipate equivalents.

During the validity period of the criteria it is likely that ISO 11890-2 will be revised and its scope extended to also provide a test method for SVOC's. This guidance shall therefore be used in the interim until the standard is revised.

Annex 4. Exempted compounds

- methane;
- ethane;
- methylene chloride (dichloromethane);
- 1,1,1-trichloroethane (methyl chloroform);
- 1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113);
- trichlorofluoromethane (CFC-11);
- dichlorodifluoromethane (CFC-12);
- chlorodifluoromethane (HCFC-22);
- trifluoromethane (HFC-23);
- 1,2-dichloro 1,1,2,2-tetrafluoroethane (CFC-114);
- chloropentafluoroethane (CFC-115);
- 1,1,1-trifluoro 2,2-dichloroethane (HCFC-123);
- 1,1,1,2-tetrafluoroethane (HFC-134a);
- 1,1-dichloro 1-fluoroethane (HCFC-141b);
- 1-chloro 1,1-difluoroethane (HCFC-142b);
- 2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124);
- pentafluoroethane (HFC-125);
- 1,1,2,2-tetrafluoroethane (HFC-134);
- 1,1,1-trifluoroethane (HFC-143a);
- 1,1-difluoroethane (HFC-152a);
- parachlorobenzotrifluoride (PCBTF);
- cyclic,
- branched, or linear completely methylated siloxanes;
- acetone;
- perchloroethylene (tetrachloroethylene);
- 3,3-dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca);
- 1,3-dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb);
- 1,1,1,2,3,4,4,5,5,5-decafluoropentane (HFC 43-10mee);
- difluoromethane (HFC-32);
- ethylfluoride (HFC-161);
- 1,1,1,3,3,3-hexafluoropropane (HFC-236fa);
- 1,1,2,2,3-pentafluoropropane (HFC-245ca);
- 1,1,2,3,3-pentafluoropropane (HFC-245ea);
- 1,1,1,2,3-pentafluoropropane (HFC-245eb);
- 1,1,1,3,3-pentafluoropropane (HFC-245fa);
- 1,1,1,2,3,3-hexafluoropropane (HFC-236ea);
- 1,1,1,3,3-pentafluorobutane (HFC-365mfc);
- chlorofluoromethane (HCFC-31);
- 1 chloro-1-fluoroethane (HCFC-151a);
- 1,2-dichloro-1,1,2-trifluoroethane (HCFC-123a);
- 1,1,1,2,2,3,3,4,4-nonafluoro-4-methoxy-butane ($C_4F_9OCH_3$ or HFE-7100);
- 2-(difluoromethoxymethyl)-1,1,1,2,3,3,3-heptafluoropropane ($(CF_3)_2CFCF_2OCH_3$);
- 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluorobutane ($C_4F_9OC_2H_5$ or HFE-7200);
- 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane ($(CF_3)_2CFCF_2OC_2H_5$);
- methyl acetate; 1,1,1,2,2,3,3-heptafluoro-3-methoxy-propane (n-C3F7OCH3, HFE-7000);
- 3-ethoxy- 1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl) hexane (HFE-7500);
- 1,1,1,2,3,3,3-heptafluoropropane (HFC 227ea);
- methyl formate (HCOOCH3);
- 1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-trifluoromethyl-pentane (HFE-7300);

- propylene carbonate;
- dimethyl carbonate;
- *trans*-1,3,3,3-tetrafluoropropene;
- HCF_2OCF_2H (HFE-134);
- $HCF_2OCF_2OCF_2H$ (HFE-236cal2);
- $HCF_2OCF_2CF_2OCF_2H$ (HFE-338pcc13);
- $HCF_2OCF_2OCF_2CF_2OCF_2H$ (H-Galden 1040x or H-Galden ZT 130 (or 150 or 180));
- *trans* 1-chloro-3,3,3-trifluoroprop-1-ene;
- 2,3,3,3-tetrafluoropropene;
- 2-amino-2-methyl-1-propanol;
- ethyl acetate;
- butyl acetate;
- and perfluorocarbon compounds which fall into these classes:
    - Cyclic, branched, or linear, completely fluorinated alkanes;
    - Cyclic, branched, or linear, completely fluorinated ethers with no unsaturations;
    - Cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and
    - Sulfur containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine.