

EU GPP Criteria for Paints, Varnishes and Road Markings

Green Public Procurement (GPP) is a voluntary instrument. This document provides the EU GPP criteria developed for the Paints, Varnishes and Road Markings product group. The accompanying Technical Background Report provides details on the reasons for selecting these criteria and references for further information.

The product group is split into three parts – regarding paint and varnish products, for road marking products and for works contracts. Criteria are split into Selection Criteria, Technical Specifications, Award Criteria and Contract Performance Clauses. For each part of the product group two sets of criteria are presented:

- The core criteria are suitable for use by any contracting authority across the Member States and address the key environmental impacts. They are designed to be used with minimum additional verification effort or cost increases.
- The comprehensive criteria are for those who wish to purchase the best products available on the market. These may require additional verification effort or a slight increase in cost compared to other products with the same functionality.

1. Definition and Scope

1.1 Products definition and scope

The product group 'paints and varnishes' (called also 'paints') shall comprise indoor and outdoor paints and varnishes, woodstains and related products, as defined below, intended for use by professional users (please note that these are not industrial users).

Road markings are additionally addressed as a specific product with distinct characteristics and performance requirements.

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/CE¹ Annex I 1.1.d and 1.1.g.

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.

'Road marking' means the application of paint systems or structural plastic systems to road surfaces in order to delineate traffic lanes, bays and signals, as well as to provide frictional properties and night time retroreflection. They are generally composed of a pigmented road marking material and a broadcast material 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. Mechanical markings such as cat's eyes are not included.

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.

The product group shall not comprise:

- anti-fouling coatings,
- wood preservation products,
- coatings for particular industrial and professional uses, including heavy-duty coatings,
- powder coatings,
- UV curable paint systems,
- paints primarily intended for vehicles,
- products that do not form film over the substrate, with the exemption of road markings,
- transparent chemical floor coatings using reactive resins as binders for thick layer coverings for industrial floors.

Supporting technical definitions relating to paint specifications 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.

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 which in turn is influenced by how much residual paint is left unused and how long the paint lasts for until a new paint layer needs to be applied.

In terms of paint ingredients solvents, binders and TiO₂ (white pigment) manufacture have an important environmental impact during raw material 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 broadcast material added to the paint, usually consisting of glass beads, also has significant environmental impacts associated with their manufacturing, primarily associated with the process energy to form the beads. Contaminants within the glass such as arsenic can also be problematic because of dispersion of the beads in the environment. The durability of the road marking also has a significant impact on the overall environmental impact of the paint product.

Key Environmental Aspects	GPP Approach
<ul style="list-style-type: none"> • Solvent, binder and TiO₂ manufacture have an important contribution to the environmental impact in paint production • Solvent based paints have a higher environmental impact than water based paints • Road marking broadcast material manufacture have an important environmental impact in paint production • Hazardous functional additives can have a wide range of health and environmental implications • Unused product is a wasted resource and can cause environmental harm if not disposed of properly 	<ul style="list-style-type: none"> • 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 re-use 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 Background 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	
<p>1. Paint formulation</p> <p>1.1 White pigment content</p> <p>Paints shall have a white pigment content (white inorganic pigments with a refractive index higher than 1,8) per m² of dry film equal to or lower than 38g/m² for indoor paints, with the exception of indoor wall paints claiming Class 1 wet scrub resistance (WSR) for which 40 g/m² shall apply, and 40 g/m² for all outdoor paints.</p> <p>Undercoats and primers shall have a white pigment content (white inorganic pigments with a refractive index higher than 1,8) per m² of dry film equal to or lower than 25 g/m².</p> <p><i>This requirement does not apply to transparent and semi-transparent coatings.</i></p> <p>Verification: The tenderer shall provide documentation for the paint formulation, supported by testing results, showing that the content of white pigments is compliant with this criterion.</p>	<p>1. Paint formulation</p> <p>1.1 White pigment content</p> <p>Paints shall have a white pigment content (white inorganic pigments with a refractive index higher than 1,8) per m² of dry film equal to or lower than 36 g/m² for indoor products and 38 g/m² for outdoor products, with the exception of indoor wall paints claiming Class 1 wet scrub resistance (WSR) for which 40 g/m² shall apply.</p> <p>Undercoats and primers shall have a white pigment content (white inorganic pigments with a refractive index higher than 1,8) per m² of dry film equal to or lower than 25g/m².</p> <p><i>This requirement does not apply to transparent and semi-transparent coatings.</i></p> <p>Verification: The tenderer shall provide documentation for the paint formulation, supported by testing results, showing that the content of white pigments is compliant with this criterion.</p>

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
Anti-rust paints	80

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

<p>Verification: The tenderer shall provide a test report carried out according to ISO 11890-2 or equivalent, or for products with a VOC content of less than 1.0g/l, ISO 17895 or equivalent. In principle the calculation will also be accepted as a proof of compliance, however the contracting authority reserves the right to request test results.</p>	<p>Verification: The tenderer shall provide a test report carried out according to ISO 11890-2 or equivalent, or for products with a VOC content of less than 1.0g/l, ISO 17895 or equivalent. In principle the calculation will also be accepted as a proof of compliance, however the contracting authority reserves the right to request test results.</p>																						
<p>1.3 Product hazard labelling</p> <p>The final product shall not be classified and labelled 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.</p> <p>Table 3 Final product classification</p> <table border="1" data-bbox="185 815 1102 1331"> <tr> <td>Acute toxicity</td> <td>Acute Tox. 1 Acute Tox. 2 Acute Tox. 3</td> </tr> <tr> <td>Specific target organ toxicity – repeated exposure Specific target organ toxicity – single exposure</td> <td>STOT RE 1 or 2 STOT SE 1, 2 or 3</td> </tr> <tr> <td>Carcinogenicity</td> <td>Carc. 1A Carc. 1B Carc. 2</td> </tr> <tr> <td>Germ cell mutagenicity</td> <td>Muta. 1A Muta. 1B Muta. 2</td> </tr> <tr> <td>Reproductive toxicity</td> <td>Repr. 1A Repr. 1B Repr. 2</td> </tr> <tr> <td>Hazardous to the aquatic environment</td> <td>Aquatic Acute 1</td> </tr> </table>	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	<p>1.3 Product hazard labelling</p> <p>The final product shall not be classified and labelled 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.</p> <p>Table 4 Final product classification</p> <table border="1" data-bbox="1122 850 2045 1331"> <tr> <td>Acute toxicity</td> <td>Acute Tox. 1 Acute Tox. 2 Acute Tox. 3</td> </tr> <tr> <td>Specific target organ toxicity – repeated exposure Specific target organ toxicity – single exposure</td> <td>STOT RE 1 or 2 STOT SE 1, 2 or 3</td> </tr> <tr> <td>Carcinogenicity</td> <td>Carc. 1A Carc. 1B Carc. 2</td> </tr> <tr> <td>Germ cell mutagenicity</td> <td>Muta. 1A Muta. 1B Muta. 2</td> </tr> <tr> <td>Reproductive toxicity</td> <td>Repr. 1A Repr. 1B Repr. 2</td> </tr> </table>	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
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<p>or shall not carry a precautionary statements required for products with these classifications. The corresponding packaging labels are provided for reference in Annex 2.</p> <p>Verification: Tenderers shall provide appropriate documentation confirming that the products to be supplied are not classified and/or do not require labelling with the listed hazards. The documentation can include calculations of mixture classification carried out in accordance with the rules provided in the CLP Regulation and/or Safety Data Sheets.</p>	<table border="1"> <tr> <td data-bbox="1111 233 1738 379">Hazardous to the aquatic environment</td> <td data-bbox="1738 233 2042 379">Aquatic Acute 1 Aquatic Chronic 1 or 2 Aquatic Chronic toxicity 3</td> </tr> <tr> <td data-bbox="1111 379 1738 448">Respiratory sensitization</td> <td data-bbox="1738 379 2042 448">Resp. Sens. 1, 1A or 1B</td> </tr> <tr> <td data-bbox="1111 448 1738 517">Skin sensitization</td> <td data-bbox="1738 448 2042 517">Skin Sens. 1 , 1A or 1B</td> </tr> </table> <p>or shall not carry a precautionary statements required for products with these classifications. The corresponding packaging labels are provided for reference in Annex 2.</p> <p>Verification: Tenderers shall provide appropriate documentation confirming that the products to be supplied are not classified and/or do not require labelling with the listed hazards. The documentation can include calculations of mixture classification carried out in accordance with the rules provided in the CLP Regulation and/or Safety Data Sheets.</p>	Hazardous to the aquatic environment	Aquatic Acute 1 Aquatic Chronic 1 or 2 Aquatic Chronic toxicity 3	Respiratory sensitization	Resp. Sens. 1, 1A or 1B	Skin sensitization	Skin Sens. 1 , 1A or 1B
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Respiratory sensitization	Resp. Sens. 1, 1A or 1B						
Skin sensitization	Skin Sens. 1 , 1A or 1B						

1.4 Hazardous ingredients

The paint shall not contain the following substances at or greater than the concentration limits and in accordance with the restrictions in Table 5.

Table 5 Paint hazardous ingredient requirements

Ingredient	Concentration limit
Preservatives: - <i>Preservatives shall be non-bioaccumulative and any associated risk mitigation measures shall be implemented.</i> - <i>Dry film preservatives shall not be used with the exception of areas of:</i> - <i>high humidity</i> - <i>outdoor paints.</i>	Log Kow \leq 4.0 or Bioconcentration Factor (BCF) \leq 500 0.10% 0.30%
Formaldehyde: <i>Free formaldehyde in the white base, tinting base and worst case colour tint.</i>	0.010%
Phthalates: <i>The following phthalates shall not be intentionally added as plasticisers:</i> <i>DEHP (Bis-(2-ethylhexyl)-phthalate)</i> <i>BBP (Butylbenzylphthalate)</i> <i>DBP (Dibutylphthalate)</i> <i>DMEP (Bis2-methoxyethyl) phthalate</i> <i>DIBP (Diisobutylphthalate)</i> <i>DIHP (Di-C6-8-branchedalkylphthalates)</i> <i>DHNUP (Di-C7-11-</i>	0.010% per phthalate

1.4 Hazardous ingredients

The paint shall not contain the following substances at or greater than the concentration limits and in accordance with the restrictions in Table 6.

Table 6 Paint hazardous ingredient requirements

Ingredient	Concentration limit
Preservatives: - <i>Preservatives shall be non-bioaccumulative and any associated risk mitigation measures shall be implemented.</i> - <i>Dry film preservatives shall not be used with the exception of areas of:</i> - <i>high humidity</i> - <i>outdoor paints</i>	Log Kow \leq 3.2 or Bioconcentration Factor (BCF) \leq 100. 0.10% 0.30%
Alkylphenolethoxylates: Alkylphenolethoxylates (APEOs) and their derivatives shall not be used in any paint or varnish preparations or formulations.	Not permitted
Formaldehyde: <i>Free formaldehyde in the white base, tinting base and worst case colour tint, with the exception of where formaldehyde donors are required or are present in polymer dispersions, in which case the following value shall apply:</i>	0.0010%
Phthalates: <i>The following phthalates shall not be intentionally added as plasticisers:</i>	0.010% per phthalate

<i>branchedalkylphthalates</i> <i>DHP (Di-n-hexylphthalate)</i>		<i>DEHP (Bis-(2-ethylhexyl)-phthalate)</i> <i>BBP (Butylbenzylphthalate)</i> <i>DBP (Dibutylphthalate)</i> <i>DMEP (Bis2-methoxyethyl) phthalate</i> <i>DIBP (Diisobutylphthalate)</i> <i>DIHP (Di-C6-8-branchedalkylphthalates)</i> <i>DHNUP (Di-C7-11-branchedalkylphthalates)</i> <i>DHP (Di-n-hexylphthalate)</i>	
Metals: <i>Cadmium, lead, chromium VI, mercury, arsenic, selenium.</i>	0.010% per metal	Metals: <i>Cadmium, lead, chromium VI, mercury, arsenic, selenium.</i>	0.010% per metal
<p>Verification: The tenderer shall provide appropriate documentation confirming compliance with the criterion. Compliance with maximum concentration limits established in the criteria can be verified using Safety Data Sheets obtained from raw material suppliers and Safety Data Sheets for mixture. Additionally:</p> <ul style="list-style-type: none"> for formaldehyde: A test report shall be provided based on the use of the Merckoquant method or high-performance liquid chromatography (HPLC) method (See annex 3), for metals: for which a test report shall be provided based on the use of ISO 3856 series or equivalent, for preservatives: If requested by the contracting authority, a test report shall be provided confirming that the preservatives used are non-bioaccumulative. 		<p>Verification: The tenderer shall provide appropriate documentation confirming compliance with the criterion. Compliance with maximum concentration limits established in the criteria can be verified using Safety Data Sheets obtained from raw material suppliers and Safety Data Sheets for mixture. Additionally:</p> <ul style="list-style-type: none"> for formaldehyde: A test report shall be provided based on the use of the Merckoquant method or high-performance liquid chromatography (HPLC) method (See annex 3), for metals: for which a test report shall be provided based on the use of ISO 3856 series or equivalent, for preservatives: If requested by the contracting authority, a test report shall be provided confirming that the preservatives used are non-bioaccumulative. 	

2. Efficiency of application and durability (as applicable)

2.1 Spreading rate

The paint shall achieve an efficient spreading rate according to the applicable performance requirement in Table 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	8
b. with specific blocking/sealing, penetrating/binding properties	6
c. with special adhesion properties	6
Thick decorative coatings	1 m ² per kg of product
Elastomeric outdoor paints	4

Notes:

¹The spreading rates apply at a hiding power of 98%

²Only base should be tested

This specification is not applicable to varnishes, woodstains, transparent adhesion primers or any other transparent and semi-transparent coatings.

Verification:

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

2. Efficiency of application and durability(as applicable)

2.1 Spreading rate

The paint shall achieve an efficient spreading rate according to the applicable performance requirement in Table 8.

Table 8 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	8
b. with blocking/sealing, penetrating/binding properties	6
c. with special adhesion properties	6
Thick decorative coatings	1 m ² per kg of product
Elastomeric outdoor paints	4

Notes:

¹The spreading rates apply at a hiding power of 98%

² Only base should be tested

This specification is not applicable to varnishes, woodstains, transparent adhesion primers or any other transparent and semi-transparent coatings.

Verification:

The tenders shall provide a test report using the following methods, or their

<ul style="list-style-type: none"> • 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. 	<p>equivalent:</p> <ul style="list-style-type: none"> • 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.
	<p><i>For applications where cleanability and scrub resistance are required</i></p> <p>2.2 Wet scrub resistance (only indoor paints)</p> <p>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. Exempted are matt indoor wall and ceiling paints with white pigment content equal or lower than 25g/m² of dry film. This requirement only applies to tinting bases (base paints).</p> <p><i>This requirement does not apply to transparent and semi-transparent coatings.</i></p> <p>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.</p> <p><i>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.</i></p>

2.3 Weathering resistance (only outdoor paints)

Masonry, wood and metal paints shall demonstrate resistance to the possible forms of weathering-induced deterioration in Table 9.

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 9 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

Notes:

¹Not applicable to mid sheen and matt-finishes with an initial gloss value less than 60% at 60° angle of incidence.

²For anti-rust paints.

Verification:

The tenderer shall provide test results demonstrating performance of the paint

2.3 Weathering resistance (only outdoor paints)

Masonry, wood and metal paints shall demonstrate resistance to the possible forms of weathering-induced deterioration in Table 10.

Paints shall be exposed to artificial test conditions for 1000 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 10 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

Notes:

¹Not applicable to mid sheen and matt-finishes with an initial gloss value less than 60% at 60° angle of incidence.

²For anti-rust paints.

Verification:

The tenderer shall provide test results demonstrating performance of the paint according to the requirements listed in Table 10.

according to the requirements listed in Table 9.

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.

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.

For applications where fungal and algal resistance of the film are required

2.4 Fungal and algal resistance of the film (only outdoor paints)

Exterior masonry and wood paints for which fungal and/or algal resistant properties are requested in the tender shall meet the requirements in Table 11. Only base paints shall be required to meet the criterion.

Table 11 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

For applications where fungal and algal resistance of the film are required

2.4 Fungal and algal resistance of the film (only outdoor paints)

Exterior masonry and wood paints for which fungal and/or algal resistant properties are requested in the tenders shall meet the requirements in Table 12. Only base paints shall be required to meet the criterion.

Table 12 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

<p>about any variation in conditioning along with test results of the EN 15457 and/or 15458 standards.</p>	<p>in conditioning along with test results of the EN 15457 and/or 15458 standards.</p>		
<p>2.5 Abrasion resistance of floor paints</p> <p>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.</p> <p>Verification: The tenderer shall provide test results carried out according to EN ISO 7784-2 or equivalent.</p>	<p>2.5 Abrasion resistance of floor paints</p> <p>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.</p> <p>Verification: The tenderer shall provide test results carried out according to EN ISO 7784-2 or equivalent.</p>		
<p>AWARD CRITERIA</p>			
	<p>1. Content of Semi Volatile Organic Compounds</p> <p>Points shall be awarded if the tenderer is able to supply paint with content of Semi Volatile Organic Compounds (SVOCs) content equal to less than the limits given in Table 13.</p> <p>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.</p> <p>Where verification by testing is selected by the Contracting Authority tenderers shall be provided with the markers and test modifications described in Annex 4.</p> <p>Table 13 SVOC content limits</p> <table border="1" data-bbox="1182 1232 1998 1327"> <thead> <tr> <th data-bbox="1191 1238 1787 1302">Product description (with subcategory denotation according to Directive 2004/CE/42)</th> <th data-bbox="1796 1238 1989 1327">SVOC limits (g/l including water)</th> </tr> </thead> </table>	Product description (with subcategory denotation according to Directive 2004/CE/42)	SVOC limits (g/l including water)
Product description (with subcategory denotation 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
	<p>Notes:</p> <p>1 Indoor white paints and varnishes</p> <p>2 Indoor tinted paints / outdoor paints and varnishes</p> <p>Verification:</p> <p>The tenderer shall provide a test report according to ISO 11890-2 or equivalent, with modifications according to the requirements in Annex 4. In principle the calculation will also be accepted as a proof of compliance, however the contracting authority reserves the right to request test results.</p>	

2. Indoor Air Quality: Indoor paints

Points shall be awarded to products with emissions lower than the limits indicated in Table 14.

Table 14 Indoor paint hazardous emissions limits

Product	Emissions limits ($\mu\text{g}/\text{m}^3$)	
	3 days	28 days
TVOCs	10,000	2,000
Formaldehyde	-	120

¹Total Volatile Organic Compounds

Verification:

The tenderer shall verify that one or more of the selected technical improvements have been met based on analytical testing according to EN 16402 or equivalent.

3. Distribution and take-back

Points shall be awarded to tenderers that use paint supply systems that minimises packaging waste.

2. Indoor Air Quality: Indoor paints

Points shall be awarded to products with content or emissions lower than the limits indicated in Table 15.

Table 15 Indoor paint hazardous content and emissions to air limits

Product	Concentration limit (ppm)	Emissions to air limits ($\mu\text{g}/\text{m}^3$)	
		3 days	28 days
TVOCs ¹		10,000	1,500
Formaldehyde		-	60
Isothiazolinones - sum total	500		
MIT ²	200		
CIT/MIT ³	15		

¹Total Volatile Organic Compounds

²Methylisothiazolinone

³ 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 verify that one or more of the selected technical improvements have been met based on analytical testing according to EN 16402 or equivalent for TVOCs and formaldehyde. For verification of isothiazolinones content Safety Data Sheets shall be provided.

3. Distribution and take-back

Points shall be awarded to tenderers that use paint supply systems that minimises packaging waste.

<p>Tenderers shall submit an estimate of the weight and type of packaging that will be used as the function of the volume of paint delivered for the contract. Reusable systems shall be given the maximum amount of points.</p> <p>Verification: The systems to be used for storage and delivery of the paint shall be described and calculations provided for the estimate of the weight of packaging per volume of paint.</p>	<p>Tenderers shall submit an estimate of the weight and type of packaging that will be used as the function of the volume of paint delivered for the contract. Reusable systems shall be given the maximum amount of points. Packaging waste together with residual paint shall be taken back for re-use, recycling or safe disposal.</p> <p>Verification: The systems to be used for storage and delivery of the paint shall be described and calculations provided for the estimate of the weight of packaging per volume of paint. The take-back system and end-markets for residual road marking and packaging waste shall be described.</p>
CONTRACT PERFORMANCE CLAUSES	
<p>1 Technical advice and site inspections</p> <p>The tenderer shall provide technical advice and site works instructions to the Contracting Authority or their contractors. This shall include the following:</p> <ul style="list-style-type: none"> • Method statements and guidance on substrate preparation, • Method statements and guidance on paint preparation, including estimates for application per m², • Optimal conditions for storage and application of the product, • Risk mitigation measures to minimise environmental pollution, • Advice on appropriate disposal of unused paint. <p>Technical advice shall also be made available to the site-operatives of the Contracting Authority or their contractors either in the form of on-site visits or a technical hotline.</p> <p>Verification:</p>	<p>1 Technical advice and site inspections</p> <p>The tenderer shall provide technical advice and site works instructions to the Contracting Authority or their contractors. This shall include the following:</p> <ul style="list-style-type: none"> • Method statements and guidance on substrate preparation, • Method statements and guidance on paint preparation, including estimates for application per m², • Optimal conditions for storage and application of the product, • Risk mitigation measures to minimise environmental pollution, • Advice on appropriate disposal of unused paint. <p>Technical advice shall also be made available to the site-operatives of the Contracting Authority or their contractors either in the form of on-site visits or a technical hotline.</p> <p>Verification:</p>

The tenderer shall provide documentation which contains the listed information and shall obtain confirmation in writing from site-operatives that the on-site technical support or a technical hotline has been provided.	The tenderer shall provide documentation which contains the listed information and shall obtain confirmation in writing from site-operatives that the on-site technical support or a technical hotline has been provided.
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3.2 Road markings	
Core criteria	Comprehensive criteria
SUBJECT MATTER	
The purchase of road markings with a reduced environmental impact	
TECHNICAL SPECIFICATIONS	
<p>1. Road marking formulation</p> <p>1.1 Content of Volatile Organic Compounds (VOC's)</p> <p>(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 may be excluded from VOC calculation (see Appendix 5). Exceptionally, when procurers determine that there are local specificities (locations where very low or very high temperatures may occur) which prevent the use of low VOC road markings, the total content of VOC shall not exceed 395 g/l.</p> <p>(ii) The following compounds shall not be used:</p> <ul style="list-style-type: none"> – Chlorinated solvents, such as methylene chloride or chloroalkanes, – Aromatic solvents, such as benzene, ethyl benzene, toluene, or 	<p>1. Road marking formulation</p> <p>1.1 Content of Volatile Organic Compounds (VOC's)</p> <p>(i) The maximum content of VOCs shall not exceed a limit of 100 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 may be excluded from VOC calculation (see Appendix 5). Exceptionally, when procurers determine that there are local specificities (locations where very low or very high temperatures may occur) which prevent the use of low VOC road markings, the total content of VOC shall not exceed 395 g/l.</p> <p>(ii) The following compounds shall not be used:</p> <ul style="list-style-type: none"> – Chlorinated solvents, such as methylene chloride or chloroalkanes, – Aromatic solvents, such as benzene, ethyl benzene, toluene, or

<p>xylene, – Ethylene-based glycol ethers or their acetates.</p> <p>Verification: The tenderer shall provide results of calculation based on the ingredients and raw materials or a test report according to ISO 11890-2 or equivalent supported by necessary calculations. In addition, a declaration that the specifically excluded solvents are not used, shall be provided.</p>	<p>xylene, – Ethylene-based glycol ethers or their acetates.</p> <p>Verification: The tenderer shall provide results of calculation based on the ingredients and raw materials or a test report according to ISO 11890-2 or equivalent supported by necessary calculations. In addition, a declaration that the specifically excluded solvents are not used, shall be provided.</p>																				
<p>1.2 Product hazard labelling</p> <p>The final product shall not be classified and labelled 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 16.</p> <p>Table 16 Final product classification</p> <table border="1" data-bbox="190 842 1108 1324"> <tr> <td>Acute toxicity</td> <td>Acute Tox. 1 Acute Tox. 2 Acute Tox. 3</td> </tr> <tr> <td>Specific target organ toxicity – repeated exposure Specific target organ toxicity – single exposure</td> <td>STOT RE 1 or 2 STOT SE 1, 2 or 3</td> </tr> <tr> <td>Carcinogenicity</td> <td>Carc. 1A Carc. 1B Carc. 2</td> </tr> <tr> <td>Germ cell mutagenicity</td> <td>Muta. 1A Muta. 1B Muta. 2</td> </tr> <tr> <td>Reproductive toxicity</td> <td>Repr. 1A Repr. 1B Repr. 2</td> </tr> </table>	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	<p>1.2 Product hazard labelling</p> <p>The final product shall not be classified and labelled 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 17.</p> <p>Table 17 Final product classification</p> <table border="1" data-bbox="1131 842 2051 1324"> <tr> <td>Acute toxicity</td> <td>Acute Tox. 1 Acute Tox. 2 Acute Tox. 3</td> </tr> <tr> <td>Specific target organ toxicity – repeated exposure Specific target organ toxicity – single exposure</td> <td>STOT RE 1 or 2 STOT SE 1, 2 or 3</td> </tr> <tr> <td>Carcinogenicity</td> <td>Carc. 1A Carc. 1B Carc. 2</td> </tr> <tr> <td>Germ cell mutagenicity</td> <td>Muta. 1A Muta. 1B Muta. 2</td> </tr> <tr> <td>Reproductive toxicity</td> <td>Repr. 1A Repr. 1B Repr. 2</td> </tr> </table>	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
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Hazardous to the aquatic environment	Aquatic Acute 1 Aquatic Chronic 1 or 2	Hazardous to the aquatic environment	Aquatic Acute 1 Aquatic Chronic 1 or 2 Aquatic Chronic 3										
<p>or shall not carry a precautionary statements required for products with these classifications. The corresponding packaging labels are provided for reference in Annex 2.</p> <p>Verification: Tenderers shall provide appropriate documentation confirming that the products to be supplied are not classified and/or do not require labelling with the listed hazards. The documentation can include calculations of mixture classification carried out in accordance with the rules provided in the CLP Regulation and/or Safety Data Sheets.</p>		<table border="1"> <tr> <td data-bbox="1133 347 1744 416">Respiratory sensitization</td> <td data-bbox="1744 347 2056 416">Resp. Sens. 1, 1A or 1B</td> </tr> <tr> <td data-bbox="1133 416 1744 485">Skin sensitization</td> <td data-bbox="1744 416 2056 485">Skin Sens. 1, 1A or 1B</td> </tr> </table> <p>or shall not carry a precautionary statements required for products with these classifications. The corresponding packaging labels are provided for reference in Annex 2.</p> <p>Verification: Tenderers shall provide appropriate documentation confirming that the products to be supplied are not classified and/or do not require labelling with the listed hazards. The documentation can include calculations of mixture classification carried out in accordance with the rules provided in the CLP Regulation and/or Safety Data Sheets.</p>		Respiratory sensitization	Resp. Sens. 1, 1A or 1B	Skin sensitization	Skin Sens. 1, 1A or 1B						
Respiratory sensitization	Resp. Sens. 1, 1A or 1B												
Skin sensitization	Skin Sens. 1, 1A or 1B												
<p>1.3 Hazardous ingredients</p> <p>The product shall not contain the following substances at or greater than the concentration limits in Table 18.</p> <p>Table 18 Paint hazardous ingredient requirements</p> <table border="1"> <thead> <tr> <th data-bbox="192 1145 869 1209">Ingredient</th> <th data-bbox="869 1145 1099 1209">Concentration limit</th> </tr> </thead> <tbody> <tr> <td data-bbox="192 1209 869 1348"> Phthalates: <i>Di(2-ethylhexyl)-phthalate (DEHP, 117-81-7)</i> <i>Butylbenzylphthalate (BBP, 85-68-7)</i> <i>Dibutylphthalate (DBP, 84-74-2)</i> </td> <td data-bbox="869 1209 1099 1348"> 0.01% per phthalate </td> </tr> </tbody> </table>		Ingredient	Concentration limit	Phthalates: <i>Di(2-ethylhexyl)-phthalate (DEHP, 117-81-7)</i> <i>Butylbenzylphthalate (BBP, 85-68-7)</i> <i>Dibutylphthalate (DBP, 84-74-2)</i>	0.01% per phthalate	<p>1.3 Hazardous ingredients</p> <p>The product shall not contain the following substances at or greater than the concentration limits in Table 19.</p> <p>Table 19 Paint hazardous ingredient requirements</p> <table border="1"> <thead> <tr> <th data-bbox="1133 1145 1666 1209">Ingredient</th> <th data-bbox="1666 1145 2018 1209">Concentration limit</th> </tr> </thead> <tbody> <tr> <td data-bbox="1133 1209 1666 1321"> Dry film preservatives: <i>Preservatives shall be non-bioaccumulative and any associated risk mitigation measures shall be implemented.</i> </td> <td data-bbox="1666 1209 2018 1321"> Log Kow ≤ 3.2 or Bioconcentration Factor (BCF) ≤ 100 </td> </tr> <tr> <td data-bbox="1133 1321 1666 1348">Phthalates:</td> <td data-bbox="1666 1321 2018 1348">0.01%</td> </tr> </tbody> </table>		Ingredient	Concentration limit	Dry film preservatives: <i>Preservatives shall be non-bioaccumulative and any associated risk mitigation measures shall be implemented.</i>	Log Kow ≤ 3.2 or Bioconcentration Factor (BCF) ≤ 100	Phthalates:	0.01%
Ingredient	Concentration limit												
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Ingredient	Concentration limit												
Dry film preservatives: <i>Preservatives shall be non-bioaccumulative and any associated risk mitigation measures shall be implemented.</i>	Log Kow ≤ 3.2 or Bioconcentration Factor (BCF) ≤ 100												
Phthalates:	0.01%												

<p><i>Di-iso-butylphthalate (DIBP, 84-69-5)</i> <i>Di-C6-8-branchedalkylphthalates (DIHP, 71888-89-6)</i> <i>Di-C7-11-branchedalkylphthalates (DHNUP 685,15-42-4)</i> <i>Di-n-hexylphthalate (DHP, 84-75-3)</i> <i>Di-(2-methoxyethyl)-phthalate (DMEP 117-82-8)</i></p>		<p><i>Di(2-ethylhexyl)-phthalate (DEHP, 117-81-7)</i> <i>Butylbenzylphthalate (BBP, 85-68-7)</i> <i>Dibutylphthalate (DBP, 84-74-2)</i> <i>Di-iso-butylphthalate (DIBP, 84-69-5)</i> <i>Di-C6-8-branchedalkylphthalates (DIHP, 71888-89-6)</i> <i>Di-C7-11-branchedalkylphthalates (DHNUP 685,15-42-4)</i> <i>Di-n-hexylphthalate (DHP, 84-75-3)</i> <i>Di-(2-methoxyethyl)-phthalate (DMEP 117-82-8)</i></p>	<p>per phthalate</p>
<p>Metals: <i>Cadmium, lead, chromium VI, mercury, arsenic, selenium</i></p>	<p>0.01% per metal</p>	<p>Metals: <i>Cadmium, lead, chromium VI, mercury, arsenic, selenium</i></p>	<p>0.01% per metal</p>
<p>Verification: The tenderer shall verify the concentration limits established in the criterion for metals by providing test reports using the ISO 3856 series or equivalent. To verify the content of other ingredients Safety Data Sheets shall be provided.</p>		<p>Verification: The tenderer shall verify the concentration limits established in the criterion for metals by providing test reports using the ISO 3856 series or equivalent. To verify the content of other ingredients Safety Data Sheets shall be provided.</p>	
<p>2. Content of hazardous ingredients in broadcast material</p> <p>The glass beads used as broadcast material within the road marking shall not contain arsenic, antimony and lead at individual concentrations exceeding 200 ppm.</p> <p>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.</p>		<p>2. Content of hazardous ingredients in broadcast material</p> <p>The glass beads used as broadcast material within the road marking shall not contain arsenic, antimony and lead at individual concentrations exceeding 150 ppm.</p> <p>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.</p>	

<p>3. Quality and durability of road marking system – Minimum abrasion resistance</p> <p>The tenderer shall demonstrate that the road marking maintains the minimum performance requirements specified by the procurer in the call for tender for night time visibility, day time visibility, skid resistance and erosion after at least 500,000 wheel passages.</p> <p>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 test to be used by all tenderers shall be specified by the procurer.</p>	<p>3. Quality and durability of road marking system – Minimum abrasion resistance</p> <p>The tenderer shall demonstrate that the road marking maintains the minimum performance requirements specified by the procurer in the call for tender for night time visibility, day time visibility, skid resistance and erosion after at least 2,000,000 wheel passages.</p> <p>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 test to be used by all tenderers shall be specified by the procurer.</p>
AWARD CRITERION	
<p><i>For call for tenders where specific quality and durability requirements are set:</i></p> <p>1. Road marking formulation – White pigment (titanium dioxide) content</p> <p>Points shall be awarded to the bidder with a paint product showing a lower white pigment content than:</p> <ul style="list-style-type: none"> – for systems applied at <0.5 kg/m²: <14 % TiO₂, – for systems applied at >0.5 kg/m²: <10 % TiO₂. <p>Verification: The tenderer shall provide documentation for the paint formulation, supported by test results, showing the content of white pigment.</p>	<p><i>For call for tenders where specific quality and durability requirements are set:</i></p> <p>1. Road marking formulation – White pigment (titanium dioxide) content</p> <p>Points shall be awarded to the bidder with a paint product showing a lower white pigment content than:</p> <ul style="list-style-type: none"> – for systems applied at <0.5 kg/m²: <10 % TiO₂, – for systems applied at >0.5 kg/m²: <8 % TiO₂. <p>Verification: The tenderer shall provide documentation for the paint formulation, supported by test results, showing the content of white pigment.</p>

	<p><i>For purchase of road marking containing broadcast material to fulfil specified grade of night time visibility and retro-reflectivity in wet conditions set in the call for tender:</i></p> <p>2. Broadcast material – Recycled glass content</p> <p>Points shall be awarded when post-consumer recycled glass content of the glass beads used as broadcast material exceeds 15%. The specified grade of night time visibility and retro-reflectivity in wet conditions set in the call for tender shall be met.</p> <p>Verification: The tenderer shall provide declaration from the glass bead manufacturer indicating the recycled glass content per kg of broadcast material. This shall be third party certified as part of ISO 9001 or an equivalent national or international scheme for verifying traceability of recycled content.</p>
<p>3. Distribution and take-back</p> <p>Points shall be awarded to tenderers that use road marking supply systems that minimises packaging waste.</p> <p>Tenderers shall submit an estimate of the weight and type of packaging that will be used as the function of the volume of road marking delivered for the contract. Maximum amount of points shall be given for reusable systems in place.</p> <p>Verification: The systems to be used for storage and delivery of the road marking shall be described and calculations provided for the estimate of the weight of</p>	<p>3. Distribution and take-back</p> <p>Points shall be awarded to tenderers that use road marking supply systems that minimises packaging and road marking waste.</p> <p>Tenderers shall submit an estimate of the weight and type of packaging that will be used as the function of the volume of road marking delivered for the contract. Maximum amount of points shall be given for reusable systems in place. Packaging waste together with residual road marking shall be taken back for re-use, recycling or safe disposal.</p> <p>Verification:</p>

packaging per volume of road marking.	The systems to be used for storage and delivery of the road marking shall be described and calculations provided for the estimate of the weight of packaging per volume of road marking. The take-back system and end-markets for residual road marking and packaging waste shall be described.
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CONTRACT PERFORMANCE CLAUSES

<p>1 Technical support and site inspections</p> <p>The tenderer shall provide technical advice and site works instructions to the Contracting Authority or their contractors. This shall include the following:</p> <ul style="list-style-type: none"> • Method statements and guidance on substrate preparation, • Method statements and guidance on paint preparation, including estimates for application per m², • 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 paint. <p>Site visits and training by technicians from the paint manufacturer shall also be available upon request for larger works by the Contracting Authority or their contractors.</p> <p>Verification: 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 shall be provided.</p>	<p>1 Technical support and site inspections</p> <p>The tenderer shall provide technical advice and site works instructions to the Contracting Authority or their contractors. This shall include the following:</p> <ul style="list-style-type: none"> • Method statements and guidance on substrate preparation, • Method statements and guidance on paint preparation, including estimates for application per m², • 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 paint. <p>Site visits and training by technicians from the paint manufacturer shall also be available upon request for larger works by the Contracting Authority or their contractors.</p> <p>Verification: 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 shall be provided.</p>
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3.3 Paint and roadmarking works contracts

Core criteria	Comprehensive criteria
SUBJECT MATTER	
The letting of works contracts which maximise the lifespan of the paint or road marking whilst minimising associated environmental impacts	
SELECTION CRITERIA	
<p>1. Competencies of the tenderer</p> <p>The tenderer shall demonstrate professional competencies in the following areas, as relevant to the nature of the contract being let:</p> <ul style="list-style-type: none"> • 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(including, where appropriate, safety procedures for removal of paints or road markings which may have been made with lead pigment and are considered hazardous; or high pressure removal of road markings); • 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 or road markings waste, maximise the re-use or recycling of residual paint or road marking and to ensure their safe disposal and safe disposal of other chemicals such as paint stripping agents. <p>Verification:</p>	<p>1. Competencies of the tenderer</p> <p>The tenderer shall demonstrate professional competencies in the following areas, as relevant to the nature of the contract being let:</p> <ul style="list-style-type: none"> • 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(including, where appropriate, safety procedures for removal of paints or road markings which may have been made with lead pigment and are considered hazardous; or high pressure removal of road markings); • 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 or road marking waste, maximise the re-use or recycling of residual paint or road marking and to ensure their safe disposal and safe disposal of other chemicals such as paint stripping agents. <p>Verification:</p>

<p>The tenderer shall provide supporting documentation including method statements, product specifications used on previous contracts and policies relating to residual and waste paint or road markings handling. Performance data from previous work contracts shall be provided where available.</p>	<p>The tenderer shall provide supporting documentation including method statements, product specifications used on previous contracts and policies relating to residual and waste paint or road markings handling. Performance data from previous work contracts shall be provided where available.</p>
<p>2. Use of paints or road markings meeting the EU GPP criteria</p> <p>The tenderer shall use paints or roadmarking products that comply with the EU Green Public Procurement requirements as specified: For paints: Technical specifications for core criteria of EU GPP Section 3.1 Paints and varnishes or For road markings: Technical specifications for core criteria of EU GPP Section 3.2 Road markings</p> <p>Verification: The tenderer shall provide supporting documentation that the products used meet the criteria as specified in the verification part of the EU GPP criteria.</p>	<p>2. Use of paints or road markings meeting the EU GPP criteria</p> <p>The tenderer shall use paints or roadmarking products that comply with the EU Green Public Procurement requirements as specified: For paints: Technical specifications for comprehensive criteria of EU GPP Section 3.1 Paints and varnishes or For road markings: Technical specifications for comprehensive criteria of EU GPP Section 3.2 Road markings</p> <p>Verification: The tenderer shall provide supporting documentation that the products used meet the criteria as specified in the verification part of the EU GPP criteria.</p>
<p>TECHNICAL SPECIFICATIONS</p>	
<p>1. Management of residual paint or road marking</p> <p>Paint or road marking waste shall be no more than 5% of the amount used during the duration of the contract.</p> <p>The tenderer shall submit a waste management plan for paint or road marking arising from the preparation of the substrate and application of new paint or road marking. The plan shall include:</p> <ul style="list-style-type: none"> • Where paint removal/demarcation needs to be conducted, an assessment for the potential hazardous content of paint or road 	<p>1. Management of residual paint or road marking</p> <p>Paint or road marking waste shall be no more than 1.5% of the amount used during the duration of the contract.</p> <p>The tenderer shall submit a waste management plan for paint or road marking arising from the preparation of the substrate and application of new paint or road marking. The plan shall include:</p> <ul style="list-style-type: none"> • Where paint removal/demarcation needs to be conducted, an assessment for the potential hazardous content of paint or road

<p>marking that has been stripped from substrates and, if a risk is identified, a method statement for mitigating the risk by safe handling and disposal.</p> <ul style="list-style-type: none"> • A method statement shall be provided for on-site practices in the cleaning of painting equipment and the storage of residual paint or road marking for safe disposal as hazardous waste. <p>Verification: The tenderer shall provide calculation of the amount of unused paint (expressed in percentage of the purchased paint) together with a documented waste management plan which shall include method statements for safe paint or road marking stripping, equipment cleaning and residual paint handling and disposal.</p> <p><i>Monitoring of paint or road marking waste arising shall be addressed as a contract performance clause.</i></p>	<p>marking that has been stripped from substrates and, if a risk is identified, a method statement for mitigating the risk by safe handling and disposal.</p> <ul style="list-style-type: none"> • A method statement shall be provided for on-site practices in the cleaning of painting equipment and the storage of residual paint or road marking for safe disposal as hazardous waste. <p>Verification: The tenderer shall provide calculation of the amount of unused paint (expressed in percentage of the purchased paint) together with a documented waste management plan which shall include method statements for safe paint or road marking stripping, equipment cleaning and residual paint handling and disposal.</p> <p><i>Monitoring of paint or road marking waste arising shall be addressed as a contract performance clause.</i></p>
AWARD CRITERIA	
<p>1. Efficiency of application and durability</p> <p>1.1 Provision of warranties</p> <p>Points shall be awarded according to the length of the warranty offered for performance of the painted surfaces.</p> <p>Verification: The tenderer shall provide a copy of the warranty terms and conditions and the security put in place to maintain the warranty commitment. The basis for the assumption of warranty length shall be provided. Assumptions relating to preparation of the substrate and paint or road marking specifications to be used shall be outlined.</p>	<p>1. Efficiency of application and durability</p> <p>1.1 Provision of warranties</p> <p>Points shall be awarded according to the length of the warranty offered for performance of the painted surfaces.</p> <p>Verification: The tenderer shall provide a copy of the warranty terms and conditions and the security put in place to maintain the warranty commitment. The basis for the assumption of warranty length shall be provided. Assumptions relating to preparation of the substrate and paint or road marking specifications to be used shall be outlined.</p>

	<p>1.2 Long-term painting contracts</p> <p>Points shall be awarded according to the identified potential for savings in the amount of paint or road marking used during a planned paint contract that may require several renewals of the paint or marking.</p> <p>The potential for savings in the use of paint during the contract period, as well as related savings in related overheads such as access, stopping up of highways (in the case of road markings) shall be calculated on the basis of the planned program and the assumptions provided.</p> <p>Verification: The tenderer shall provide a document setting out the estimated quantities of paint required during the contracted program as well as the potential for savings on paint or road marking. The equivalent financial savings, including saving on associated overheads, shall also be estimated.</p>
	<p>2. Management of residual paint or road marking – re-use and recycling</p> <p>Points shall be awarded reflecting a commitment to re-use or recycle residual paint or road marking product. The tenderer shall submit a management plan setting out how residual paint arising from works will be:</p> <ol style="list-style-type: none"> 1. Re-used on the same or other contracts, and/or 2. Arrangements to ensure it is re-used or recycled externally. <p>Re-use or recycling routes could include re-use projects or the manufacturing of new paint or road marking using residual product as a base. A monitoring system will be used to account for residual paint arisings.</p> <p>Verification:</p>










	<p>The tenderer shall provide a documented management plan which shall include method statements for handling and storage of residual paint for re-use by the contractor, as well as arrangements for re-use or recycling of paint by third parties. The monitoring system shall record the quantities of waste paint or road marking arisings and their subsequent use.</p>
CONTRACT PERFORMANCE CLAUSES	
<p>1. Management of paint or road marking usage and application</p> <p>The contractor shall record and evidence:</p> <ul style="list-style-type: none"> • The quantity of paint or road marking purchased, • The actual paint or road marking quantities used in fulfilling the contract specifications. <p>The contractor shall also provide records for residual paint or road marking arisings, including tracking where it has been:</p> <ul style="list-style-type: none"> • Re-used by the contractor, • Sent for external re-use and/or recycling, • Safely disposed of. <p>The contractor shall also provide records – in case old paint or road marking layer needed to be removed from the substrate that it has been:</p> <ul style="list-style-type: none"> • Handled safely • Disposed of safely for treatment as hazardous waste <p>Verification: The contractor shall provide reports at agreed intervals during the contract duration.</p>	<p>1. Management of paint or road marking usage and application</p> <p>The contractor shall record and evidence:</p> <ul style="list-style-type: none"> • The quantity of paint or road marking purchased, • The actual paint or road marking quantities used in fulfilling the contract specifications. <p>The contractor shall also provide records for residual paint or road marking arisings, including tracking where it has been:</p> <ul style="list-style-type: none"> • Re-used by the contractor, • Sent for external re-use and/or recycling, • Safely disposed of. <p>The contractor shall also provide records – in case old paint or road marking layer needed to be removed from the substrate that it has been:</p> <ul style="list-style-type: none"> • Handled safely • Disposed of safely for treatment as hazardous waste <p>Verification: The contractor shall provide reports at agreed intervals during the contract duration.</p>

Annex

Annex 1. Technical definitions related to paint 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° 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° or at 85° show a reflectance of <60 and ≥ 10
- (4) 'Matt paints' are those which at an angle of incidence of 85° show a reflectance of <10
- (5) 'Dead matt paints' are those which at an angle of incidence of 85° 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,









Annex 2. Hazard labels that shall be avoided

Old classification and label (DSD)			Hazard classes and categories ²	New classification and label ³		
Very toxic	R28		Acute toxicity, categories 1, 2 - Oral - Dermal - Inhalation	H300 H310 H330	Danger	
	R27					
Toxic	R26					
	R25		Acute toxicity, category 3 - Oral - Dermal - Inhalation	H301 H311 H331	Danger	
R24						
Toxic	R23					
	R46		Germ cell mutagenicity, categories 1A, 1B Carcinogenicity, categories 1A, 1B Reproductive toxicity, categories 1A, 1B STOT ⁴ , single exposure, category 1 STOT ⁶ , repeated exposure, category 1	H340 H350 H360 H370 H372	Danger	
R45, R49						
Harmful	R60, R61					
	R39		Respiratory sensitization, category 1	H334	Danger	
R48						
Harmful	R42					
	R68		Germ cell mutagenicity, categories 2A, 2B Carcinogenicity, categories 2A, 2B Reproductive toxicity, categories 2A, 2B STOT ⁶ single exposure, category 2	H341 H351 H361 H371	Warning	
R40						
	R62, R63					
	R68					

² According to Annex I of CLP Regulation 1272/2008 for all hazard categories with Globally Harmonized System of Classification and Labelling of Chemicals (GHS) pictograms

³ According to Annex V of CLP Regulation 1272/2008

⁴ STOT = Specific Target Organ Toxicity

	R48		STOT ⁶ , repeated exposure, category 2	H373		
	R22 R21 R20		Acute toxicity, category 4 - Oral - Dermal - Inhalation	H302 H312 H332	Warning	
Irritant	R43 R37		Skin sensitization, category 1 STOT ⁶ , single exposure, category 3 – Respiratory tract irritation	H317 H335	Warning	
Dangerous for the environment	R50 R50/53		Hazardous to the aquatic environment, acute, category 1 Hazardous to the aquatic environment, chronic, category 1	H400 H410	Warning	
	R51/53		Hazardous to the aquatic environment, chronic, category 2	H411		
	R52/53	No symbol	Hazardous to the aquatic environment, chronic, category 3	H412	-----	No pictogram

Annex 3. Formaldehyde testing

Requirement	Report method
<p>Asum total formaldehyde limit of 0.0010% applies unless a derogation applies (see the row below).</p>	<p>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.</p>
<p>A higher formaldehyde limit 0.010% applies where:</p> <p>(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</p> <p>(ii) Polymer dispersions (binders) provide, through residual levels of formaldehyde, the function of formaldehyde donors instead of in-can preservatives.</p>	<p>Determination of the in-can formaldehyde concentration by means of analysis using VdL-RL 03 or high-performance liquid chromatography (HPLC).</p> <p>Indoor paints and varnishes: Determination by means of analysis¹ 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.</p> <p>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.</p> <p>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.</p>

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

Annex 4. SVOC test method markers and modifications

(Final version will be verified with the version accepted in the EU Ecolabel scheme; to be available in September 2015)

Marker compounds to be used in testing according to ISO 11890-2

Guidance document of the paints industry on determination of Semi-Volatile Organic Compounds (SVOC) using ISO 11890-2

Scope:

This guidance document interprets the specifications of ISO 11890-2 to allow running an SVOC test, either alone or in one run together with an ISO 11890-2 VOC test, to evaluate the compliance of SVOC content with the requirements of the EU ecolabel.

Sample preparation:

The sample is diluted with methanol 100%. If necessary, the sample can be stirred during 30 min with application of ultrasound in order to get a homogenous liquid phase, or by mechanically stirring during two hours followed by a filtration step by using a PTFE filter type. In the case that a homogenous liquid phase cannot be achieved using methanol 100% then another suitable dilution solvent shall be used.

Apparatus:

Capillary column / oven:

- The column shall be made of fused silica coated with 5% phenyl / 95% dimethyl polysiloxane (slightly polar type, DB5 or equivalent) or coated with 100% dimethyl polysiloxane (non-polar type, DB1 or equivalent) . The columns length and diameter shall be selected in order to ensure a correct separation of the analytes.
- 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: between 2 and 6 min
- Flow in the column: between 1 and 2 ml/min

Detector:

- identification by mass spectrometer

- quantification by flame ionization detector
- detector temperature: between 230 and 260°C

Carrier gas:

- helium

Hot injection system:

- injector temperature : between 250 and 280°C
- injection volume: between 1 and 2 µl

Calibration :

- the internal standard for quantification of SVOC peaks is n-tetradecane (n-C14)

Note:

Another internal standard which is 1,2-diethoxyethane (also named ethylene glycol diethyl ether), as mentioned in ASTM D6886, can be used. The selection of the internal standard has no impact on the test result, if the calibration procedures are run in an appropriate manner. It only needs to be avoided that the internal standard overlaps or hides any peaks arising from the sample itself. A large choice of internal standards is thus possible but internal standards having very low boiling points (acetone...) or very high boiling points (C22 and more...) must be excluded to avoid any discriminatory phenomenon in the injector. An internal standard having a boiling point around 250°C, like n-tetradecane, might better represent the behavior of VOC and SVOC mixtures and should be preferred.

Annex 5. 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-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;
- HCF₂OCF₂H (HFE-134);
- HCF₂OCF₂OCF₂H (HFE-236cal2);
- HCF₂OCF₂CF₂OCF₂H (HFE-338pcc13);
- HCF₂OCF₂OCF₂CF₂OCF₂H (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;
- 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.