



**Economic and Social  
Council**

Distr.  
GENERAL

ECE/EB.AIR/WG.5/2009/22  
16 June 2009

Original: ENGLISH

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**ECONOMIC COMMISSION FOR EUROPE**

**EXECUTIVE BODY FOR THE CONVENTION ON LONG-RANGE  
TRANSBOUNDARY AIR POLLUTION**

Working Group on Strategies and Review

Forty-fifth session

Geneva, 31 August–4 September 2009

Item 4 of the provisional agenda

**OPTIONS FOR REVISING THE GOTHENBURG PROTOCOL**

**DRAFT TECHNICAL ANNEX ON LIMIT VALUES FOR SOLVENT CONTENT OF  
PRODUCTS**

Note by the secretariat

*Summary*

At its forty-fourth session in April 2009, the Working Group on Strategies and Review welcomed the work carried out by the Expert Group on Techno-economic issues on updating the technical annexes IV, V, VI and VIII and the guidance documents and on elaborating new annexes on volatile organic compounds (VOC) in products and on particulate matter (dust). It requested the secretariat to submit them as official documents for negotiation at the forty-fifth session of the Working Group (ECE/EB.AIR/WG.5/96, para. 42 (d–e)). This note presents a draft technical annex on limit values for solvent content of products as suggested by the Expert Group on Techno-economic Issues.

## **Annex [XI]**

### **LIMIT VALUES FOR SOLVENT CONTENT OF PRODUCTS**

1. Section A applies to Parties other than Canada and the United States of America.
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2. This section concerns the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and vehicle refinishing<sup>1</sup>.
3. For the purpose of section A of the present annex, the following general definitions shall apply:
  - (a) "Substances" means any chemical element and its compounds, as they occur in the natural state or as produced by industry, whether in solid or liquid or gaseous form;
  - (b) "Preparation" means mixtures or solutions composed of two or more substances;
  - (c) "Organic compound" means any compound containing at least the element carbon and one or more of hydrogen, oxygen, sulphur, phosphorus, silicon, nitrogen, or a halogen, with the exception of carbon oxides and inorganic carbonates and bicarbonates;
  - (d) "Volatile organic compound (VOC)" means any organic compound having an initial boiling point less than or equal to 250°C measured at a standard pressure of 101,3 kPa;
  - (e) "VOC content" means the mass of volatile organic compounds, expressed in grams/litre (g/l), in the formulation of the product in its ready to use condition. The mass of volatile organic compounds in a given product which react chemically during drying to form part of the coating shall not be considered part of the VOC content;
  - (f) "Organic solvent" means any VOC which is used alone or in combination with other agents to dissolve or dilute raw materials, products, or waste materials, or is used as a cleaning agent to dissolve contaminants, or as a dispersion medium, or as a viscosity adjuster, or as a surface tension adjuster, or as a plasticiser, or as a preservative;
  - (g) "Coating" means any preparation, including all the organic solvents or preparations containing organic solvents necessary for its proper application, which is used to provide a film with decorative, protective or other functional effect on a surface;

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<sup>1</sup> Analytical methods to determine VOC content in the products, dates of implementation and potential derogations are not reported in this annex to let maximum flexibility to the Parties.

(h) "Film" means a continuous layer resulting from the application of one or more coats to a substrate;

(i) "Water-borne coatings (WB)" means coatings the viscosity of which is adjusted by the use of water;

(j) "Solvent-borne coatings (SB)" means coatings the viscosity of which is adjusted by the use of organic solvent;

(k) "Placing on the market" means making available to third parties, whether in exchange for payment or not. Importation into the Parties customs territory shall be deemed to be placing on the market for the purposes of this annex.

4. "Paints and varnishes" means products listed in the subcategories bellow, excluding aerosols. They are coatings applied to buildings, their trim and fitting, and associated structures for decorative, functional and protective purpose.

(a) "Matt coatings for interior walls and ceilings" means coatings designed for application to indoor walls and ceilings with a gloss  $\leq 25$  @ 60 degrees;

(b) "Glossy coatings for interior walls and ceilings" means coatings designed for application to indoor walls and ceilings with a gloss  $> 25$  @ 60 degrees;

(c) "Coatings for exterior walls of mineral substrate" means coatings designed for application to outdoor walls of masonry, brick or stucco;

(d) "Interior/exterior trim and cladding paints for wood, metal or plastic" means coatings designed for application to trim and cladding which produce an opaque film. These coatings are designed for either a wood, metal or a plastic substrate. This subcategory includes undercoats and intermediate coatings;

(e) "Interior/exterior trim varnishes and woodstains" means coatings designed for application to trim which produce a transparent or semi-transparent film for decoration and protection of wood, metal and plastics. This subcategory includes opaque woodstains. Opaque woodstains means coatings producing an opaque film for the decoration and protection of wood, against weathering, as defined in EN 927-1, within the semi-stable category;

(f) "Minimal build woodstains" means woodstains which, in accordance with EN 927-1:1996, have a mean thickness of less than 5µm when tested according to ISO 2808: 1997, method 5A;

(g) "Primers" means coatings with sealing and/or blocking properties designed for use on wood or walls and ceilings;

(h) "Binding primers" means coatings designed to stabilise loose substrate particles or impart hydrophobic properties and/or to protect wood against blue stain;

(i) "One-pack performance coatings" means performance coatings based on film-forming material. They are designed for applications requiring a special performance, such as primer and topcoats for plastics, primer coat for ferrous substrates, primer coat for reactive metals such as zinc and aluminium, anticorrosion finishes, floor coatings, including for wood and cement floors, graffiti resistance, flame retardant, and hygiene standards in the food or drink industry or health services;

(j) "Two-pack performance coatings" means coatings with the same use as one-performance coatings, but with a second component (e.g. tertiary amines) added prior to application;

(k) "Multicoloured coatings" means coatings designed to give a two-tone or multiple-colour effect, directly from the primary application;

(l) "Decorative effect coatings" means coatings designed to give special aesthetic effects over specially prepared pre-painted substrates or base coats and subsequently treated with various tools during the drying period.

5. "Vehicle refinishing products" means products listed in the subcategories below. They are used for the coating of road vehicles as defined in Directive 70/156/EEC, or part of them, carried out as part of vehicle repair, conservation or decoration outside of manufacturing installations.

(a) "Preparatory and cleaning" means products designed to remove old coatings and rust, either mechanically or chemically, or to provide a key for new coatings:

(i) preparatory products include gunwash (a product designed for cleaning spray-guns and other equipment), paint strippers, degreasers (including anti-static types for plastic) and silicone removers;

(ii) "precleaner" means a cleaning product designed for the removal of surface contamination during preparation for and prior to the application of coating materials;

(b) "Bodyfiller/stopper" means heavy-bodied compounds designed to be applied to fill deep surface imperfections prior to the application of the surfacer/filler;

(c) "Primer" means any coating that is designed for application to bare metal or existing finishes to provide corrosion protection prior to application of a primer surfacer:

(i) "surfacer/filler" means a coating designed for application immediately prior to the application of topcoat for the purpose of corrosion resistance, to ensure adhesion of the topcoat, and to promote the formation of a uniform surface finish by filling in minor surface imperfections;

(ii) "general metal primer" means a coating designed for application as primers, such as adhesion promoters, sealers, surfacers, undercoats, plastic primers, wet-on-wet, non-sand fillers and spray fillers;

(iii) "wash primer" means coatings containing at least 0,5 % by weight of phosphoric acid designed to be applied directly to bare metal surfaces to provide corrosion resistance and adhesion; coatings used as weldable primers; and mordant solutions for galvanised and zinc surfaces;

(d) "Topcoat" means any pigmented coating that is designed to be applied either as a single-layer or as a multiple-layer base to provide gloss and durability. It includes all products involved such as base coatings and clear coatings:

(i) "base coatings" means pigmented coatings designed to provide colour and any desired optical effects, but not the gloss or surface resistance of the coating system;

(ii) "clear coating" means a transparent coating designed to provide the final gloss and resistance properties of the coating system;

(e) "Special finishes" means coatings designed for application as topcoats requiring special properties, such as metallic or pearl effect, in a single layer, high-performance solid-colour and clear coats, (e.g. anti-scratch and fluorinated clear-coat), reflective base coat, texture finishes (e.g. hammer), anti-slip, under-body sealers, anti-chip coatings, interior finishes; and aerosols.

6. The following requirements shall be satisfied:

(a) Parties shall ensure that the products considered in this annex are placed on the market within their territory after the dates laid down, only if they have a VOC content not exceeding the limit values defined below:

**Table 1. Suggested maximum VOC content for paints and varnishes**

<b>Product Subcategory</b>	<b>Type</b>	<b>Phase I (g/l)*</b>	<b>Phase II (g/l)*</b>
Interior matt wall and ceilings (Gloss $\leq$ 25@60°)	WB	75	30
	SB	400	30
Interior glossy walls and ceilings (Gloss > 25@60°)	WB	150	100
	SB	400	100
Exterior walls of mineral substrate	WB	75	40
	SB	450	430
Interior/exterior trim and cladding paints for wood and metal	WB	150	130
	SB	400	300
Interior/exterior trim varnishes and woodstains, including opaque woodstains	WB	150	130
	SB	700	700
Primers	WB	5	30
	SB	45	350
Binding primers	WB	50	30
	SB	750	750
One pack performance coatings	WB	140	140
	SB	600	500
2 pack reactive performance coatings for specific end use	WB	140	140
	SB	550	500
Multi-coloured coatings	WB	150	100
	SB	400	100
Decorative effects coatings	WB	300	200
	SB	500	200

\* g/l ready to use

**Table 2: Suggested maximum VOC content for vehicle refinishing products**

<b>Product Subcategory</b>	<b>Coatings</b>	<b>VOC (g/l)*</b>
Preparatory and cleaning	Preparatory	850
	Pre-cleaner	200
Bodyfiller/stopper	All types	250
Primer	Surfacer/filler and general (metal) primer	540
	Wash primer	780
Topcoat	All types	420
Special finishes	All types	840

\* g/l of ready for use product. Except for “preparatory and cleaning”, any water content of the product ready for use should be discounted.

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