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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-ninth session**

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Item 3 (b) of the provisional agenda

**Options for revising the annexes to the Gothenburg Protocol to  
Abate Acidification, Eutrophication and Ground-level Ozone:  
technical annexes****Draft annex XI****Note by the secretariat***Summary*

This document presents a proposed new annex XI — on limit values for volatile organic compounds content of products — to the Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone for consideration by the Working Group on Strategies and Review at its forty-ninth session. It is based on documents ECE/EB.AIR/WG.5/2009/22, ECE/EB.AIR/WG.5/2011/2, and further proposals made by the European Union and provisionally agreed at the forty-eighth session of the Working Group in April 2011.

Proposed new text is indicated in bold. Text in square brackets that is not marked for deletion has not been provisionally agreed by the Working Group.

## Limit values for [solvent – ~~delete~~] volatile organic compounds content of products

1. Section A applies to Parties other than Canada and the United States of America, **section B applies to Canada and section C applies to the United States of America.**

### A. Parties other than Canada and the United States of America

2. This section concerns the limitation of emissions of volatile organic compounds (VOCs) due to the use of organic solvents in certain paints and varnishes and vehicle refinishing **products.** [<sup>1</sup> - ~~delete~~]

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” – ~~delete~~] “**Mixture**” 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 **VOCs** [volatile organic compounds–~~delete~~], expressed in grams/litre (g/l), in the formulation of the product in its ready to use condition. The mass of [volatile organic compounds – ~~delete~~] **VOCs** 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 **mixture** [preparation – ~~delete~~], including all the organic solvents or **mixtures** [preparations – ~~delete~~] 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;

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

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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. – ~~delete~~]

(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 below, 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 wood stains” 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 wood stains. Opaque wood stains 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 wood stains” means wood stains which, in accordance with EN 927-1:1996, have a mean thickness of less than  $5\mu\text{m}$  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 stabilize 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 – delete], or part of them, carried out as part of vehicle repair, conservation or decoration outside of manufacturing installations. **In this respect, "road vehicle" means any motor vehicle intended for use on the road, being complete or incomplete, having at least four wheels and a maximum design speed exceeding 25 km/h, and its trailers, with the exception of vehicles which run on rails and of agricultural and forestry tractors and all mobile machinery:**

(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) “Pre-cleaner” 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 galvanized 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) – ~~delete~~ Parties shall ensure that the products **covered by** [considered in – ~~delete~~] this annex **which** are placed on the market within their territory **comply with the maximum VOC content as specified in tables 1 and 2.** [after the dates laid down, only if they have a VOC content not exceeding the limit values defined below: - ~~delete~~] **For the purposes of restoration and maintenance of buildings and vintage vehicles designated by competent authorities as being of particular historical and cultural value, Parties may grant individual licences for the sale and purchase in strictly limited quantities of products which do not meet the VOC limit values laid down in this Annex. Parties may [also] exempt from compliance with the above requirements products sold for exclusive use in an activity covered by Annex VI and carried out in a registered or authorized installation complying with that Annex.**

Table 1. Maximum VOC content for paints and varnishes

Product Subcategory	Type	[Phase I (g/l)* – <del>delete</del> ]	[Phase II – <del>delete</del> ] (g/l)*
Interior matt wall and ceilings (Gloss ≤ 25@60°)	WB	[75 – <del>delete</del> ]	30
	SB	[400 – <del>delete</del> ]	30
Interior glossy walls and ceilings (Gloss > 25@60°)	WB	[150 – <del>delete</del> ]	100
	SB	[400 – <del>delete</del> ]	100
Exterior walls of mineral substrate	WB	[75 – <del>delete</del> ]	40
	SB	[450 – <del>delete</del> ]	430
Interior/exterior trim and cladding paints for wood and metal	WB	[150 – <del>delete</del> ]	130
	SB	[400 – <del>delete</del> ]	300
Interior/exterior trim varnishes and wood stains, including opaque wood stains	WB	[150 – <del>delete</del> ]	130
	SB	[500 – <del>delete</del> ]	400

Product Subcategory	Type	[Phase I (g/l)* – <del>delete</del> ]	[Phase II – <del>delete</del> ] (g/l)*
Interior and exterior minimal build wood stains	WB	[150 – <del>delete</del> ]	130
	SB	[700 – <del>delete</del> ]	700
Primers	WB	[50 – <del>delete</del> ]	30
	SB	[450 – <del>delete</del> ]	350
Binding primers	WB	[50 – <del>delete</del> ]	30
	SB	[750 – <del>delete</del> ]	750
One pack performance coatings	WB	[140 – <del>delete</del> ]	140
	SB	[600 – <del>delete</del> ]	500
2 pack reactive performance coatings for specific end-use	WB	[140 – <del>delete</del> ]	140
	SB	[550 – <del>delete</del> ]	500
Multi-coloured coatings	WB	[150 – <del>delete</del> ]	100
	SB	[400 – <del>delete</del> ]	100
Decorative effects coatings	WB	[300 – <del>delete</del> ]	200
	SB	[500 – <del>delete</del> ]	200

\* g/l ready to use.

Table 2. [Suggested maximum – ~~delete~~] **Maximum** VOC content for vehicle refinishing products

Product Subcategory	Coatings	VOC (g/l)*
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.

## B. Canada

7. [Limit values for controlling emissions of volatile organic compounds from the use of consumer and commercial products will be determined, as appropriate, taking into account information on available control technologies, techniques and measures, limit values applied in other jurisdictions, and the documents below. These documents vary in the degree to which they are mandatory, and in some cases the authority for implementation is not at the federal level, but rests with sub-national jurisdictions. The inclusion of a particular document should not be understood to imply that Canada agrees to be bound by it under the Gothenburg Protocol:

(a) VOC Concentration Limits for Architectural Coatings Regulations, SOR/2009-264;

(b) VOC Concentration Limits for Automotive Refinishing Products, SOR/2009-197;

(c) Regulations Amending the Prohibition of Certain Toxic Substances Regulations, 2005 (2-Methoxyethanol, Pentachlorobenzene and Tetrachlorobenzenes), SOR/2006-279;

(d) Federal Halocarbon Regulations, SOR/2003-289;

(e) Prohibition of Certain Toxic Substances Regulations, SOR/2003-99;

(f) Solvent Degreasing Regulations. SOR/2003-283;

(g) Tetrachloroethylene (Use in Dry Cleaning and Reporting Requirements) Regulations, SOR/2003-79;

(h) Order Adding Toxic Substances to Schedule 1 to the Canadian Environmental Protection Act, 1999;

(i) Notice with Respect to Certain Substances on the Domestic Substances List (DSL);

(j) Order Amending Schedule 1 to the Canadian Environmental Protection Act, 1999 (Miscellaneous Program);

(k) Ozone-depleting Substances Regulations, SOR/99-7;

(l) Proposed regulations for VOC Concentrations Limits for Certain Products;

(m) Proposed notice requiring the preparation and implementation of pollution prevention plans in respect of specified substances on Schedule 1 of the Canadian Environmental Protection Act, 1999, related to the resin and synthetic rubber manufacturing sector;

(n) Proposed notice requiring the preparation and implementation of pollution prevention plans in respect of specified substances on Schedule 1 of the Canadian Environmental Protection Act, 1999, implicated in the polyurethane and other foam sector (except polystyrene);

(o) Notice with Respect to Certain Hydrochlorofluorocarbons;

(p) Notice with Respect to Certain Substances on the Domestic Substances List (DSL); and

(q) Environmental Code of Practice for the Reduction of Solvent Emissions from Dry Cleaning Facilities. PN1053.]

### **C. United States of America**

8. Limit values for controlling emissions of VOC from sources subject to National Volatile Organic Compound Emission Standards for Consumer and Commercial Products are specified in the following documents:

- (a) Automobile refinish coatings — 40 C.F.R. Part 59, Subpart B;
  - (b) Consumer products — 40 C.F.R. Part 59, Subpart C;
  - (c) Architectural coatings — 40 C.F.R. Part 59, Subpart D;
  - (d) Aerosol coatings — 40 C.F.R. Part 59, Subpart E; and
  - (e) New and in-use portable fuel containers — 40 C.F.R. Part 59, Subpart F.
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