

Control of Volatile Organic Compounds Content on Paint, Varnishes & Vehicle Refinishing Products



Paints and coatings are the largest source of volatile organic compounds (VOC) from solvent uses. Volatile solvents (e.g., white spirit, toluene...) are used to dissolve or disperse pigment and resin in paints and coatings, thereby giving the desired consistency for application. Once paint is applied, the solvent, including potentially harmful VOC evaporates into the air, allowing the resin and pigment to produce a coat of paint. Considering the serious effects to human health and the environment, the European Union (EU),

United States (US), and China have implemented different regulatory frameworks to control VOC emissions from these products.

THE EU

The European Parliament has passed the Paints Directive (2004/42/CE) with the specific aim of reducing emissions of VOC



into the atmosphere resulting from the use of organic solvents in

certain paints, varnishes, and vehicle refinishing products. A two-phased regulatory approach will be implemented. Limits will be in place in 2007 with tighter specifications by 2010. Two internationally recognized analytical methods ISO 11890-2 and ASTM D2369 were recommended for determining compliance with the VOC content limit values in the Paints Directive. Starting in 2007, those regulated products are required to carry labels indicating their product subcategory and their maximum VOC content in a ready to use condition.

THE US

In 1998, US Environmental Protection Agency (EPA) promulgated regulations limiting the VOC content of



architectural coatings and automobile refinish coatings (40 C.F.R. Part 59). Under this regulation, there are 61

and 7 product subcategories to be regulated for architectural coatings and automobile refinish coatings, respectively. US EPA's methods 24 and 24A are the federally required methods for measuring VOC emissions. In addition to labeling, compliance is enforced through mandatory recordkeeping and reporting of VOC content information



EU and US regulatory VOC limits for paint, varnishes, and vehicle refinishing products		
Product Category	VOC content limit in the EU ^a (g/L) Year 2007 → Year 2010	VOC content limit in the US ^a (g/L)
Paints & varnishes		
Paints	75-150 → 30-40 (WB ^b) 400-450 → 30-430 (SB ^c)	550-730
Stains	150 → 130 (WB) 500-700 → 400-700 (SB)	120-720
Primers	50 → 30 (WB) 450-750 → 350-750 (SB)	350-780
Coatings	140-300 → 100-200 (WB) 400-600 → 100-500 (SB)	250-800
Vehicle refinishing products		
Preparatory & cleaning	850 (Preparatory) 200 (Pre-cleaner)	780
Primer	540 (Surface/filler & general metal primer) 780 (wash primer)	580
Topcoat	420	600-680
Special finishes	840	840

^aSome limits are presented as the range of values. Please contact us for the regulatory limit of your specific product subcategory. Values after the symbol "→" in the second column are the implemented EU specifications in 2010.

^bWB: water-borne coatings

^cSB: solvent-borne coatings

CHINA

In China, ten mandatory standards of Indoor Decorating and Refurbishing Materials on limit of harmful substances emission have been implemented in 2002. Of these, the mandatory standard on interior architectural coatings (GB 158582-2002) stipulated that emission of VOC is limited to or less than 200g/L for interior coatings. GB/T 6751-1986 is the recommended testing method for measuring the VOC content of coatings.



Eco-labeling

In addition to these mandatory regulations, low-VOC products have long been introduced in consumer market. Concerning the growing ecological and environmental awareness among consumers, a number of leading brand names have developed their own in-house specifications and/or acknowledged various international eco-labeling standards. The eco-labeling standard is a voluntary market-based instrument, indicating the environmental performance of a product from a whole life cycle perspective. Eco-labels such as EU Eco-label, German Blue Angel, French NF Environment Mark, Nordic Swan Label, US Green Seal, and China Environmental Labeling are widely recognized by consumers. Considering products in category of paint and coating, maximum VOC content is a core indicator to be tested for these eco-labels. Limits are stricter than the usual ones for EU & US. Please contact us if you need additional information.

Armed with strong expertise and remarkable technical support, SGS VOC competence centre can offer professional and comprehensive testing services not only for these regulated products but also for other VOC-emitting products.

SGS can also offer a wide range of tests on painting such as initial characteristics testing (characterization analysis, characteristics of coating...) and performance & safety testing (performance tests, aging tests...).

Understanding your worldwide business vision, SGS provides the reliable, one-stop service to ensure your products satisfy a wide array of regulatory regimes required to access key global markets.

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