

**California Air Resources Board
Suggested Control Measure for Automotive Coatings**

1. Purpose

The purpose of this rule is to limit volatile organic compound (VOC) emissions from coatings and solvents associated with the coating of motor vehicles and mobile equipment.

2. Applicability

- 2.1 Except as provided in Section 2.2, this rule is applicable to any person who supplies, sells, offers for sale, manufactures, or distributes any automotive coating or associated solvent for use within the District, as well as any person who uses, applies, or solicits the use or application of any automotive coating or associated solvent within the District.
- 2.2 This rule does not apply to:
- 2.2.1 Any automotive coating or associated solvent that is offered for sale, sold, or manufactured for use outside of the District or for shipment to other manufacturers for reformulation or repackaging.
 - 2.2.2 Any aerosol coating product.
 - 2.2.3 Any automotive coating which is sold, supplied, or offered for sale in 0.5 fluid ounce or smaller containers intended to be used by the general public to repair tiny surface imperfections.
 - 2.2.4 Any coating applied to motor vehicles or mobile equipment, or their associated parts and components, during manufacture on an assembly line.

3. Definitions

- 3.1 **Aerosol Coating Product:** a pressurized coating product containing pigments or resins that dispenses product ingredients by means of a propellant, and is packaged in a disposable can for hand-held application.
- 3.2 **Assembly Line:** an arrangement of industrial equipment and workers in which the product passes from one specialized operation to another until complete, by either automatic or manual means.
- 3.3 **Associated Parts and Components:** structures, devices, pieces, modules, sections, assemblies, subassemblies, or elements of motor vehicles or mobile equipment that are designed to be a part of motor vehicles or mobile equipment but which are not attached to motor vehicles or mobile equipment at the time of coating the structure, device, piece, module, section, assembly, subassembly, or element. "Associated parts and components" does not include circuit boards.

- 3.4 **Automotive Coating:** any coating or coating component used or recommended for use in motor vehicle or mobile equipment refinishing, service, maintenance, repair, restoration, or modification, except plating activities. Any reference to automotive refinishing made by a manufacturer on or in product literature constitutes a recommendation for motor vehicle or mobile equipment refinishing.
- 3.5 **Automotive Coating Component:** any portion of a coating, such as a reducer or thinner, toner, hardener, additive, etc., recommended by its manufacturer to distributors or end-users for automotive coating. The raw materials used to produce the components are not considered automotive coating components.
- 3.6 **Automotive Refinishing Facility:** any shop, business, location, or parcel of land where motor vehicles or mobile equipment or their associated parts and components are coated, including autobody collision repair shops. "Automotive Refinishing Facility" does not include the original equipment manufacturing plant where the motor vehicle or mobile equipment is completely assembled.
- 3.7 **CARB:** the California Air Resources Board.
- 3.8 **Cleaning Operations:** the removal of loosely held uncured adhesives, inks, coatings, or contaminants, including, but not limited to, dirt, soil, or grease, from motor vehicles, mobile equipment, associated parts and components, substrates, parts, products, tools, machinery, equipment, or general work areas.
- 3.9 **Clear Coat:** any coating that contains no pigments and is intended to seal and protect a color coat.
- 3.10 **Coating:** a material which is applied to a surface and forms a film in order to beautify, preserve, repair, or protect such a surface.
- 3.11 **Color Coat:** any pigmented coating, excluding pigmented primers and multi-color coatings. Color coats include metallic/iridescent color coatings.
- 3.12 **Electrostatic Spray Application:** any method of spray application of coatings where an electrostatic attraction is created between the part to be coated and the paint particles.
- 3.13 **Emission Control System:** any combination of capture systems and control devices used to reduce VOC emissions from automotive coating operations.

- 3.14 **Exempt Compounds:** for the purposes of this rule, exempt compounds are the compounds listed in Sections 3.31.1 and 3.31.2.
- 3.15 **Graphic Arts Operation:** the application of logos, letters, numbers, or graphics to a painted surface by brush, roller, or airbrush.
- 3.16 **High-Volume, Low-Pressure (HVL P):** spray equipment permanently labeled as such and used to apply any coating by means of a spray gun which is designed and operated between 0.1 and 10 psig air atomizing pressure measured dynamically at the center of the air cap and at the air horns.
- 3.17 **Metallic/Iridescent Color Coat:** any coating that contains more than 0.042 lb/gal (5 g/l) of metal or iridescent particles as applied, where such particles are visible in the dried film.
- 3.18 **Mobile Equipment:** any device that may be drawn and/or driven on rails or a roadway including, but not limited to, trains, railcars, truck trailers, mobile cranes, bulldozers, street cleaners, and implements of husbandry or agriculture.
- 3.19 **Motor Vehicle:** any self-propelled vehicle, including, but not limited to, cars, trucks, buses, golf carts, vans, motorcycles, tanks, and armored personnel carriers.
- 3.20 **Multi-Color Coating:** any coating that exhibits more than one color in the dried film after a single application, is packaged in a single container, and hides surface defects on areas of heavy use.
- 3.21 **Pretreatment Coating:** any coating that contains a minimum of one-half (0.5) percent acid by weight and not more than 16 percent solids by weight necessary to provide surface etching and is applied directly to bare metal surfaces to provide corrosion resistance and adhesion.
- 3.22 **Primer:** any coating labeled and formulated for application to a substrate to provide 1) a bond between the substrate and subsequent coats, 2) corrosion resistance, 3) a smooth substrate surface, or 4) resistance to penetration of subsequent coats. Primers may be pigmented.
- 3.23 **Solvent:** a VOC-containing fluid used to perform cleaning operations.
- 3.24 **Spot Repair:** repair of an area on a motor vehicle, piece of mobile equipment, or associated parts or components of less than 1 ft² (929 cm²).
- 3.25 **Temporary Protective Coating:** any coating applied for the purpose of protecting areas from overspray or mechanical damage.

- 3.26 **Transfer Efficiency:** the amount of coating solids adhering to the object being coated divided by the total amount of coating solids sprayed, expressed as a percentage.
- 3.27 **Truck Bed Liner Coating:** any coating, excluding color and multi-color coats, labeled and formulated for application to a truck bed to protect it from surface abrasion.
- 3.28 **Underbody Coating:** any coating labeled and formulated for application to wheel wells, the inside of door panels or fenders, the underside of a trunk or hood, or the underside of the motor vehicle.
- 3.29 **Uniform Finish Coating:** any coating applied to the area around a spot repair for the purpose of blending a repaired area's color or clear coat to match the appearance of an adjacent area's existing coating.
- 3.30 **U.S. EPA:** the United States Environmental Protection Agency.
- 3.31 **Volatile Organic Compound (VOC):** any volatile compound containing at least one atom of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, and excluding the following:
- 3.31.1 methane;
- methylene chloride (dichloromethane);
 - 1,1,1-trichloroethane (methyl chloroform);
 - trichlorofluoromethane (CFC-11);
 - dichlorodifluoromethane (CFC-12);
 - 1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113);
 - 1,2-dichloro-1,1,2,2-tetrafluoroethane (CFC-114);
 - chloropentafluoroethane (CFC-115);
 - chlorodifluoromethane (HCFC-22);
 - 1,1,1-trifluoro-2,2-dichloroethane (HCFC-123);
 - 2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124);
 - 1,1-dichloro-1-fluoroethane (HCFC-141b);
 - 1-chloro-1,1-difluoroethane (HCFC-142b);
 - trifluoromethane (HFC-23);
 - pentafluoroethane (HFC-125);
 - 1,1,2,2-tetrafluoroethane (HFC-134);
 - 1,1,1,2-tetrafluoroethane (HFC-134a);
 - 1,1,1-trifluoroethane (HFC-143a);
 - 1,1-difluoroethane (HFC-152a);
 - cyclic, branched, or linear completely methylated siloxanes;

the following classes of perfluorocarbons:

- (A) cyclic, branched, or linear, completely fluorinated alkanes;
- (B) cyclic, branched, or linear, completely fluorinated ethers with no unsaturations;
- (C) cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and
- (D) sulfur-containing perfluorocarbons with no unsaturations and with the sulfur bonds only to carbon and fluorine; and

3.31.2 the following low-reactive organic compounds which have been exempted by the U.S. EPA:

acetone;
ethane;
parachlorobenzotrifluoride (1-chloro-4-trifluoromethyl benzene);
perchloroethylene; and
methyl acetate.

3.32 VOC Content:

3.32.1 VOC regulatory for Coatings: VOC in grams per liter of coating, excluding water and exempt compounds, shall be calculated by the following equation:

$$\text{VOC regulatory content} = \frac{W_v - W_w - W_{ec}}{V_m - V_w - V_{ec}}$$

3.32.2 VOC actual for Coatings: VOC in grams per liter of material shall be calculated using the following equation:

$$\text{VOC actual content} = \frac{W_v - W_w - W_{ec}}{V_m}$$

3.32.3 VOC content for Solvents: VOC in grams per liter of material shall be calculated by the following equation:

$$\text{VOC content} = \frac{W_v - W_w - W_{ec}}{V_m}$$

Where:

VOC content = amount of volatile organic compounds in grams/liter

W_v = weight of volatiles in grams

W_w = weight of water in grams

Wec = weight of exempt compounds in grams

Vm = volume of material (coating or solvent, as applicable) in liters

Vw = volume of water in liters

Vec = volume of exempt compounds in liters

4. Standards

- 4.1 **Coating Limits:** no person shall apply to any motor vehicle, mobile equipment, or associated parts or components, any coating with a VOC regulatory content in excess of the following limits, except as provided for in Section 4.3:

Coating Category	VOC regulatory limit as applied on or after January 1, 2008 (grams/liter)
Clear coat	250
Color coat	420
Multi-color coating	680
Pretreatment Coating	660
Primer	250
Temporary Protective Coating	60
Truck Bed Liner Coating	310
Underbody Coating	430
Uniform Finish Coating	540
Any other coating type	250

- 4.2 **Most Restrictive VOC Limit:** if anywhere on the container of any automotive coating, or any label or sticker affixed to the container, or in any sales, advertising, or technical literature supplied by a manufacturer or anyone acting on their behalf, any representation is made that indicates that the coating meets the definition of or is recommended for use for more than one of the coating categories listed in Section 4.1, then the most restrictive VOC content limit shall apply.
- 4.3 **Alternative Compliance:** in lieu of compliance with the VOC content limits in 4.1, a person may use an emission control system that has been approved, in writing, by the Executive Officer or Air Pollution Control Officer of the District and which achieves an overall control efficiency of at least 85 percent as determined per Section 6.6. Any approved system must be maintained and used at all times in proper working condition.

- 4.4 **Prohibition of Possession:** no person shall possess at any automotive refinishing facility, any automotive coating that is not in compliance with Section 4.1 or 4.3, as applicable, or any solvent that is not in compliance with Section 4.8.
- 4.5 **Prohibition of Sale:** no person shall manufacture, blend, repackage for sale, supply, sell, offer for sale, or distribute within the District any coating prohibited by this rule.

Notwithstanding the provisions of this section, a person may sell or distribute a coating in violation of Section 4.1 of this rule under the following circumstances and provided all of the requirements of Section 5.6 are also met:

- 4.5.1 The coating is used exclusively within an emission control system as allowed in Section 4.3, or
- 4.5.2 The coating is sold for use outside the District.
- 4.6 **Prohibition of Specification:** no person shall solicit or require the use of, or specify the application or use of any coating or solvent on a motor vehicle or mobile equipment, or associated part or component, if such use or application results in a violation of this rule. This prohibition shall apply to all written or oral contracts under the terms of which any coating or solvent that is subject to the provisions of this rule is to be applied.
- 4.7 **Coating Application Methods:** no person shall apply any coating to any motor vehicle or mobile equipment, or associated part or component, unless one of the following application methods is used:
- 4.7.1 Brush, dip, or roller.
- 4.7.2 Electrostatic spray.
- 4.7.3 High-Volume Low-Pressure (HVLP) spray equipment.
- 4.7.4 Use of a spray gun: the end user shall demonstrate that the gun meets the HVLP definition in Section 3.16 in design and use. Satisfactory proof shall be based on the manufacturer's published technical material on the design of the gun and by a demonstration of the operation of the gun using an air pressure tip gauge from the manufacturer of the gun.
- 4.7.5 Any method that achieves a transfer efficiency equivalent to the application methods listed in Sections 4.7.1, 4.7.2, or 4.7.3. Written approval from the Executive Officer or Air Pollution Control Officer

of the District shall be obtained for each equivalent method prior to use.

Section 4.7 does not apply to coating use of less than one (1) fluid ounce (29.6 milliliters), underbody coatings, graphic arts operations, or truck bed liner coatings.

4.8 Solvent Limits and Evaporative Loss Minimization.

4.8.1 Solvents used in any activity subject to this rule shall not exceed a VOC content of 25 g/l.

4.8.2 Solvent-laden materials shall be stored in closed containers.

4.8.3 All automotive coating components, automotive coatings, and/or solvents shall be stored in closed vapor tight containers.

4.8.4 No person shall clean spray equipment unless a closed system is used. However, equivalent control equipment can be used if the Executive Officer or Air Pollution Control Officer of the District, the CARB, and the U.S. EPA approves it in writing prior to use.

4.8.5 All waste automotive coating components, automotive coatings, and/or solvents shall be stored in closed vapor tight containers, except while adding the aforementioned items to or removing them from the containers.

5. Administrative Requirements

5.1 Compliance Statement Requirement:

5.1.1 The manufacturer of automotive coatings or coating components shall include the VOC content (actual and regulatory), expressed in grams per liter; the weight percentage of volatiles, water, and exempt compounds; the volume percentage of water and exempt compounds; and the density of the material (in grams per liter) on product data sheets, or an equivalent medium, for each individual coating component, and ready-to-spray mixture for coatings (based on the manufacturer's stated mix ratio).

5.1.2 The manufacturer of solvents subject to this rule shall include the VOC content as supplied expressed in grams per liter, on product data sheets, or an equivalent medium.

5.2 Labeling Requirements:

5.2.1 The manufacturer of automotive coatings or coating components shall include on all containers the applicable use category(ies), and the VOC content (actual and regulatory), as supplied, expressed in grams per liter.

5.2.2 The manufacturer of solvents subject to this rule shall include on all containers the VOC content, as supplied, expressed in grams per liter.

5.3 **Maintenance of Records:** records required by this rule shall be retained for a minimum of three years and made available for inspection by District personnel upon request.

5.4 **Record Keeping Requirements:** any person who uses coatings or solvents subject to this rule shall maintain and have available at all times, on site, the following:

5.4.1 A current list of all coatings and solvents used. This list shall include the following information for each coating and solvent:

5.4.1.1 material name and manufacturer

5.4.1.2 application method

5.4.1.3 coating type (as listed in Section 4.1) and mix ratio specific to the coating

5.4.1.4 VOC content of the coating (actual and regulatory), as applied, or VOC content of the solvent.

5.4.1.5 whether the material is a coating or solvent

5.4.2 Current manufacturer specification sheets, material safety data sheets, technical data sheets, or air quality data sheets, which list the VOC content (actual and regulatory) of each ready-to-spray coating (based on the manufacturer's stated mix ratio) and automotive coating components, and VOC content of each solvent.

5.4.3 Purchase records identifying the coating type (as listed in Section 4.1), name, and volume of coatings and solvents.

5.5 **Record Keeping Requirements for Emission Control Systems:** any person using an emission control system shall maintain daily records of key system operating parameters which will demonstrate continuous operation and compliance of the emission control system during periods of emission producing activities. "Key system operating parameters" are those parameters necessary to ensure compliance with VOC emission limits, including, but not limited to, temperatures, pressure drops, and flow rates.

- 5.6 **Record Keeping Requirements for Prohibition of Sale:** any person claiming an exception outlined in Section 4.5 shall keep a detailed log of each solvent, automotive coating component, and automotive coating sold showing: the quantity sold, including size and number of containers; the VOC content of each coating component (actual and regulatory); to whom they were sold including the name, address, phone number, retail tax license number, and valid district permit number, if sold within the District; and, the exception being utilized under Section 4.5.
6. **Test Methods:** the following test methods are incorporated by reference herein, and shall be used to test coatings and solvents subject to the provisions of this rule. A source shall be considered in violation of this rule if any measurement by any of the listed applicable test methods exceeds the standards of this rule.
- 6.1 **Methyl Acetate, Acetone, and PCBTF Content:** the quantity of methyl acetate, acetone, and parachlorobenzotrifluoride (as specified in Sections 3.14, 3.31, and 3.32) shall be determined by ASTM Method D-6133-00: "Standard Test Method for Acetone, *p*-Chlorobenzotrifluoride, Methyl Acetate or *t*-Butyl Acetate Content of Solvent-Reducible and Water-Reducible Paints, Coatings, Resins, and Raw Materials by Direct Injection Into a Gas Chromatograph" . (May 2000).
- 6.2 **Acid Content:** measurement of acid content (as specified in Section 3.21) shall be determined in accordance with ASTM D1613-96 "Standard Test Method for Acidity in Volatile Solvents and Chemical Intermediates Used in Paint, Varnish, Lacquer, and Related Products" (May 1996)
- 6.3 **Alternative Test Methods:** the use of other test methods which are determined to be equivalent and approved, in writing, by the Executive Officer or Air Pollution Control Officer of the District, CARB, and U.S. EPA may be used in place of the test methods specified in this rule.
- 6.4 **VOC Content of Coatings or Solvents:** VOC content (as specified in Section 4.1) shall be determined by U.S. EPA Method 24 as it exists in Appendix A of Title 40 of the Code of Federal Regulations (40 CFR) Part 60, "Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings".
- 6.5 **Control Efficiency:** when either U.S. EPA Method 25, 25A, or 25B is used to determine VOC emissions, control device equivalency (as specified in Section 4.3) shall be determined as prescribed in U.S. EPA Methods 204 –204f.
- 6.6 **Determination of Alternative Compliance:** alternative compliance (as specified in Section 4.3) shall be measured by U.S. EPA Method 25, 25A,

or 25B, Title 40 Code of Federal Regulations, Part 60, Appendix A as applicable. A source shall be considered in violation if the measured VOC emissions, as measured by any of the test methods, exceed the standards of this rule.

- 6.7 **Metallic Content:** the metallic content of a coating (as specified in Section 3.17) shall be determined by South Coast Air Quality Management District Method 318-95, "Determination of Weight Percent Elemental Metal in Coatings by X-ray"(July 1996).
- 6.8 **Exempt Compound Content:** exempt compound content (as specified in Sections 3.14, 3.31 and 3.32) shall be determined by CARB Method 432, "Determination of Dichloromethane and 1,1,1-Trichloroethane in Paints and Coatings"(September 12, 1998); CARB Method 422, "Determination of Volatile Organic Compounds in Emissions from Stationary Sources" (January 22, 1987); or, South Coast Air Quality Management District (SCAQMD) Method 303-91, "Determination of Exempt Compounds" (February 1993).
- 6.9 **Transfer Efficiency:** spray equipment transfer efficiency (as specified in Sections 3.26 and 4.7.5) shall be determined by using South Coast Air Quality Management District "Spray Equipment Transfer Efficiency Test Procedure for Equipment User" (May 24, 1989).
- 6.10 **HVLP Equivalency:** spray equipment HVLP equivalency (as specified in Section 4.7.4) shall be determined by using South Coast Air Quality Management District "Guidelines for Demonstrating Equivalency with District Approved Transfer Efficient Spray Guns" (September 26, 2002).