

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 that 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 “Adhesion promoter” means a coating, which is labeled and formulated to be applied to uncoated plastic surfaces to facilitate bonding of subsequent coatings, and on which, a subsequent coating is applied.
- 3.2 “Aerosol Coating Product” means 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.
- 3.3 “Assembly Line” means 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.
- 3.4 “Associated Parts and Components” means 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.

- 3.5 "Automotive Coating" means any coating or coating component used or recommended for use in motor vehicle or mobile equipment refinishing, service, maintenance, repair, restoration, or modification, except metal plating activities. Any reference to automotive refinishing or automotive coating made by a person on the container or in product literature constitutes a recommendation for use in motor vehicle or mobile equipment refinishing.
- 3.6 "Automotive Coating Component" means any portion of a coating, including, but not limited to, a reducer or thinner, toner, hardener, and additive, which is recommended by any person to distributors or end-users for use in an automotive coating, or which is used in an automotive coating. The raw materials used to produce the components are not considered automotive coating components.
- 3.7 "Automotive Refinishing Facility" means 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.
- 3.8 "CARB" means the California Air Resources Board.
- 3.9 "Cleaning Operations" means 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.
- 3.10 "Clear Coat" means any coating that contains no pigments and is labeled and formulated for application over a color coat.
- 3.11 "Coating" means a material which is applied to a surface and forms a film in order to beautify, preserve, repair, or protect such a surface.
- 3.12 "Color Coat" means any pigmented coating, excluding primers and multi-color coatings, that requires a subsequent clear coat and which is applied over a primer or adhesion promoter. Color coats include metallic/iridescent color coatings.

- 3.13 “Electrostatic Spray Application” means any method of spray application of coatings where an electrostatic attraction is created between the part to be coated and the paint particles.
- 3.14 “Emission Control System” means any combination of capture systems and control devices used to reduce VOC emissions from automotive coating operations.
- 3.15 “Exempt Compounds” means for the purposes of this rule, the compounds listed in Sections 3.34.1 and 3.34.2.
- 3.16 “Graphic Arts Operation” means the application of logos, letters, numbers, or graphics to a painted surface by brush, roller, or airbrush.
- 3.17 “High-Volume, Low-Pressure (HVLP)” means spray equipment permanently labeled as such and which is designed and operated between 0.1 and 10 pounds per square inch, gauge, (psig) air atomizing pressure measured dynamically at the center of the air cap and at the air horns.
- 3.18 “Metallic/Iridescent Color Coating” means any coating that contains more than 0.042 pounds per gallon (5 grams per liter) of metal or iridescent particles as applied, where such particles are visible in the dried film.
- 3.19 “Mobile Equipment” means 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.
- 3.20 “Motor Vehicle” means any self-propelled vehicle, including, but not limited to, cars, trucks, buses, golf carts, vans, motorcycles, tanks, and armored personnel carriers.
- 3.21 “Multi-Color Coating” means 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, and which is applied over a primer or adhesion promoter.
- 3.22 “Person” shall have the same meaning as defined in Health and Safety Code Section 39047.
- 3.23 “Pretreatment Coating” means 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 labeled and formulated for application directly to bare metal surfaces to provide corrosion resistance and adhesion.

- 3.24 “Primer” means any coating, which is 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, and on which a subsequent coating is applied. Primers may be pigmented.
- 3.25 “Single-Stage Coating” means any pigmented coating, excluding primers and multi-color coatings, labeled and formulated for application without a subsequent clear coat. Single-stage coatings include single-stage metallic/iridescent coatings.
- 3.26 “Solvent” means a VOC-containing fluid used to perform cleaning operations.
- 3.27 “Spot Repair” means repair of an area on a motor vehicle, piece of mobile equipment, or associated parts or components of less than 1 square foot (929 square centimeters).
- 3.28 “Temporary Protective Coating” means any coating which is labeled and formulated for the purpose of temporarily protecting areas from overspray or mechanical damage.
- 3.29 “Transfer Efficiency” means the amount of coating solids adhering to the object being coated divided by the total amount of coating solids sprayed, expressed as a percentage.
- 3.30 “Truck Bed Liner Coating” means any coating, excluding color, multi-color, and single stage coatings, labeled and formulated for application to a truck bed to protect it from surface abrasion.
- 3.31 “Underbody Coating” means 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.
- 3.32 “Uniform Finish Coating” means any coating labeled and formulated for application 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.
- 3.33 “U.S. EPA” means the United States Environmental Protection Agency.
- 3.34 “Volatile Organic Compound (VOC)” means 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:

3.34.1 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

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

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

3.35 VOC Content

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

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

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

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

3.35.3 "VOC content for Solvents" means 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

W_{ec} = weight of exempt compounds in grams

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

V_w = volume of water in liters

V_{ec} = 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 and components, any coating with a VOC regulatory content, as calculated pursuant to Section 3.35.1, in excess of the following limits, except as provided in Section 4.3:

Coating Category	VOC regulatory limit as applied effective January 1, 2008 grams/liter (pounds per gallon*)
Adhesion Promoter	540 (4.5)
Clear Coat	250 (2.1)
Color Coat	420 (3.5)
Multi-Color Coating	680 (5.7)
Pretreatment Coating	660 (5.5)
Primer	250 (2.1)
Single-Stage Coating	340 (2.8)
Temporary Protective Coating	60 (0.5)
Truck Bed Liner Coating	310 (2.6)
Underbody Coating	430 (3.6)
Uniform Finish Coating	540 (4.5)
Any other coating type	250 (2.1)

*English units are provided for information only.

- 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 person, 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 lowest VOC content limit shall apply.
- 4.3 **Alternative Compliance.** Instead of complying with the VOC content limits specified in Section 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 pursuant to Section 6.6. Any approved system emission control 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 with a VOC content greater than 25 grams per liter.
- 4.5 **Prohibition of Sale or Manufacture.** No person shall manufacture, blend, repackage for sale, supply, sell, offer for sale, or distribute within the District any coating with a VOC content in excess of the limits specified in Section 4.1.

Notwithstanding the provisions of this section, a person may manufacture, blend, repackage for sale, supply, sell, offer for sale, or distribute a coating with a VOC content in excess of the limits specified in Section 4.1 under

the following circumstances and provided all of the requirements of Section 5.6 are also met:

- 4.5.1 The coating is for use exclusively within an emission control system as allowed in Section 4.3, or
 - 4.5.2 The coating is 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 parts and components, if such use or application results in a violation of this rule. This prohibition shall apply to all written or oral contracts, including, but not limited to, job orders, under the terms of which any coating or solvent that is subject to the provisions of this rule is to be used or applied.
- 4.7 **Coating Application Methods.** No person shall apply any coating to any motor vehicle, mobile equipment, or associated parts and components 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: If a spray gun is used, the end user must demonstrate that the gun meets the HVLP definition in Section 3.17 in design and use. A satisfactory demonstration must 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 alternative method that achieves a transfer efficiency equivalent to, or higher than, 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 alternative method prior to use.

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

4.8 Solvent Limits and Evaporative Loss Minimization

- 4.8.1 Each solvent present at any automotive refinishing facility shall not exceed a VOC content of 25 grams per liter as calculated pursuant to Section 3.35.3.
- 4.8.2 Solvent-laden materials shall be stored in closed containers.
- 4.8.3 All automotive coating components, automotive coatings, and 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 solvents shall be stored in closed vapor-tight containers, except while adding to or removing them from the containers.

5. Administrative Requirements

5.1 Compliance Statement Requirement

- 5.1.1 For each individual automotive coating or coating component, the manufacturer shall include the following information on product data sheets, or an equivalent medium:
 - 5.1.1.1 The VOC actual for coatings and VOC regulatory for coatings, expressed in grams per liter;
 - 5.1.1.2 The weight percentage of volatiles, water, and exempt compounds;
 - 5.1.1.3 The volume percentage of water and exempt compounds; and,
 - 5.1.1.4 The density of the material (in grams per liter).
- 5.1.2 For each individual ready to spray mixture (based on the manufacturer's stated mix ratio), the manufacturer shall include the following information on product data sheets, or an equivalent medium:
 - 5.1.2.1 The VOC actual for coatings and VOC regulatory for coatings, expressed in grams per liter;
 - 5.1.2.2 The weight percentage of volatiles, water, and exempt compounds;
 - 5.1.2.3 The volume percentage of water and exempt compounds; and,
 - 5.1.2.4 The density of the material (in grams per liter).

- 5.1.3 The manufacturer of solvents subject to this rule shall include the VOC content as supplied, calculated pursuant to section 3.35.3, 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 actual for coatings and VOC regulatory for coatings, 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 for solvents, 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 actual for coatings and VOC regulatory for coatings, as applied, or VOC content for 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 actual for coatings and VOC regulatory for coatings 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 VOC emission producing activities. "Key system operating parameters" are those parameters necessary to ensure or document compliance with section 4.3, including, but not limited to, temperatures, pressure drops, and air flow rates.
- 5.6 **Record Keeping Requirements for Prohibition of Sale.** Any person claiming an exception specified in Section 4.5 shall keep a detailed log of each solvent, automotive coating component, and automotive coating manufactured, blended, repackaged for sale, supplied, sold, offered for sale, or distributed showing:
- 5.6.1 The quantity manufactured, blended, repackaged for sale, supplied, sold, offered for sale, or distributed, including size and number of containers;
- 5.6.2 The VOC regulatory for coatings;
- 5.6.3 The VOC actual for coatings;
- 5.6.4 To whom they were supplied, sold, offered for sale, or distributed, or for whom they were manufactured, blended, or repackaged for sale including the name, address, phone number, retail tax license number, and valid district permit number, if sold within the District; and,
- 5.6.5 The specific 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 is 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, t-Butyl Acetate, and PCBTF Content.** The quantity of methyl acetate, acetone, t-butyl acetate, and parachlorobenzotrifluoride (as specified in Sections 3.15, 3.34, and 3.35) shall be determined by using 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 3.23) shall be determined by using 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 or better 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 Sections 3.35, 4.1, and 4.8.1) shall be determined by U.S. EPA Method 24 as set forth 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 specified in U.S. EPA Methods 204 –204f.
- 6.6 **Determination of Alternative Compliance.** Alternative compliance (as specified in Section 4.3) shall be determined 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 in violation if the measured VOC emissions, as measured by any of the test methods, exceed the standards specified in Section 4.3.
- 6.7 **Metallic Content.** The metallic content of a coating (as specified in Section 3.18) 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, other than as determined pursuant to Section 6.1, (as specified in Sections 3.15, 3.34 and 3.35) shall be determined by using 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 3.29 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).