

RULE 4603 SURFACE COATING OF METAL PARTS AND PRODUCTS (Adopted April 11, 1991; Amended September 19, 1991; Amended May 21, 1992; Amended December 17, 1992; Amended May 20, 1993; Amended September 21, 2000; Amended December 20, 2001; Amended May 18, 2006; Amended September 20, 2007; Amended October 16, 2008)

1.0 Purpose

The purpose of this rule is to limit the emissions of volatile organic compounds (VOCs) from the coating of metal parts and products, large appliances parts or products, and metal furniture, and from the organic solvent cleaning and storage and disposal of solvents and waste solvent materials associated with such coating. This rule also specifies the administrative and recordkeeping requirements and the test methods for determining the VOC content, the VOC emissions, the VOC capture efficiency, the acid content, the metallic or iridescent quality of coatings, and the VOC emissions from spray gun cleaning systems.

2.0 Applicability

The provisions of this rule shall apply to the surface coating of metal parts or products, large appliances parts or products, and metal furniture, and to the organic solvent cleaning, and the storage and disposal of all solvents and waste solvent materials associated with such coating.

3.0 Definitions

3.1 Aerospace Vehicles: the completed unit of any aircraft, helicopter, missile or space vehicle.

3.2 Air Dried: a process whereby the coated object is cured or dried at ambient temperature or at a temperature below 194°F.

3.3 APCO: as defined in Rule 1020 (Definitions).

3.4 Application Equipment: a device, including, but not limited to, a spray gun, brush, and roller, used to apply adhesives, coatings, or inks.

3.5 ARB: California Air Resources Board.

3.6 ASTM: American Society for Testing and Materials.

3.7 Baked: a process whereby the coated object is heated above ambient temperature to a temperature at or above 194°F for the purpose of curing or drying.

3.8 Bench Scale Project: a project (other than at a research and development facility) that is operated on a small scale, such as one capable of being located on a laboratory bench top.

- 3.9 Brush Coating: the manual application of coatings using brushes or rollers.
- 3.10 Camouflage Coating: a coating used primarily by the military to conceal equipment from detection.
- 3.11 CFR: Code of Federal Regulations.
- 3.12 Coating: a material applied onto or impregnated into a substrate for protective, decorative, or functional purposes. Such materials include, but are not limited to, paints, varnishes, sealers, and stains.
- 3.13 Coils: metal sheets or strips which are rolled into coils for further industrial or commercial use.
- 3.14 Continuous Coating: an enclosed coating system where spray nozzles coat metal parts and products as they are conveyed through the enclosure. Water wash zones control the inlet and outlet of the enclosure. Excess coating drains into a recirculation system.
- 3.15 Cured Adhesive, Cured Coating, or Cured Ink: an adhesive, coating, or ink that is dry to the touch.
- 3.16 Degreaser: a tank, tray, drum or other container in which objects to be cleaned are exposed to a solvent or solvent vapor in order to remove contaminants. The objects to be cleaned include, but are not limited to, parts, products, tools, machinery, and equipment. An enclosed spray application equipment cleaning system is not a degreaser.
- 3.17 Dip Coating: the process in which a substrate is immersed in a solution (or dispersion) containing the coating material, and then withdrawn.
- 3.18 Dissolver: an organic solvent that is added to an adhesive, coating, or ink in order to melt or to liquefy solid particles.
- 3.19 Electrodeposition: a dip coating application method where the paint solids are given an electrical charge which is then attracted to a substrate.
- 3.20 Electrostatic Application: a method of spray application of coatings where an electrostatic potential is created between the parts to be coated and the paint particles.
- 3.21 EPA: United States Environmental Protection Agency.
- 3.22 Exempt Organic Compounds: all organic compounds not classified as volatile organic compounds (VOC), as listed in Rule 1020 (Definitions).

- 3.23 Extreme High Gloss Coating: a coating which, when tested by the American Society for Testing Material Test Method D-523 adopted in 1980, shows a reflectance of 75 or more on a 60° meter.
- 3.24 Extreme Performance Coating: a coating used on a metal surface where the coated surface is, in its intended use, exposed to any of the following:
- 3.24.1 Repeated heavy abrasion, including mechanical wear and repeated scrubbing with industrial grade solvents, cleaners, or abrasive scouring agents; or
 - 3.24.2 Unprotected shipboard conditions; or
 - 3.24.3 Temperatures consistently in excess of 250°F; or
 - 3.25.4 Chronic exposure to corrosive, caustic or acidic agents, chemicals, chemical fumes, chemical mixtures or solutions.
- 3.25 Flow Coating: a coating application system, with no air supplied to the nozzle, where paint flows over the part and the excess coating drains back into the collection system.
- 3.26 Grams of VOC per Liter of Coating Applied, Excluding Water and Exempt Compounds: the weight of VOC per combined volume of VOC and coating solids and can be calculated by the following equation:

$$\begin{array}{l} \text{Grams of VOC per Liter of} \\ \text{Coating Applied Excluding} \\ \text{Water and Exempt Compounds} \end{array} = \frac{W_s - W_w - W_{ec}}{V_m - V_w - V_{ec}}$$

Where:

- Ws = weight of volatile compounds, in grams
- Ww = weight of water, in grams
- Wec = weight of exempt compounds, in grams
- Vm = volume of material, in liters
- Vw = volume of water, in liters
- Vec = volume of exempt compounds, in liters

3.27 Grams of VOC per liter of Material: the weight of VOC per volume of material and can be calculated by the following equation:

$$\text{Grams of VOC per Liter of Material} = \frac{W_s - W_w - W_{ec}}{V_m}$$

Where:

W_s = weight of volatile compounds, in grams

W_w = weight of water, in grams

W_{ec} = weight of exempt compounds, in grams

V_m = volume of material, in liters

3.28 High Performance Architectural Coating: a coating used to protect architectural subsections and which meets the requirements of the Architectural Aluminum Manufacturers Association publication number AAMA 605.2-1980.

3.29 Heat Resistant Coating: any coating, which during normal use, must withstand temperatures of at least 400°F.

3.30 High Gloss Coating: any coating which achieves at least 85% reflectance on a 60 degree gloss meter when tested by ASTM Method D-523-89.

3.31 High Temperature Coating: any coating that is certified to withstand temperatures of at least 1,000°F for 24 hours.

3.32 High-Volume, Low-Pressure (HVLP) Spray Equipment: equipment used to apply materials by means of a spray gun which is designed and intended to be operated, and which is operated, between 0.1 and 10.0 psig of air atomizing pressure, measured dynamically at the center of the air cap and the air horns.

3.33 Large Appliance Part: any organic surface-coated metal lid, door, casing, or other interior or exterior metal part or accessory that is assembled to form a large appliance product.

3.34 Large Appliance Product: any organic surface-coated metal range, microwave oven, refrigerator, freezer, washer, dryer, dishwasher, water heater, or trash compactor manufactured for household, commercial, or recreational use.

3.35 Light-Duty Truck: any truck having a manufacturer's maximum gross vehicle weight rating of under 6,001 pounds.

3.36 Liquid Leak: a visible solvent leak from a container at a rate of more than three drops per minute, or a visible liquid mist.

3.37 Magnet Wire: wire used in electromagnetic field application in electrical machinery and equipment such as transformers, motors, generators, and magnetic tape recorders.

- 3.38 Maintenance Cleaning: the cleaning of tools, forms, molds, jigs, machinery, and equipment (except coating application equipment, ink application equipment, or adhesive application equipment), and the cleaning of work areas where maintenance or manufacturing occurs.
- 3.39 Manufacturing Process: the process of making goods or articles by hand or by machine.
- 3.40 Marine Vessel: any tugboat, tanker, freighter, passenger ship, barge, or other boat, ship, or watercraft. This includes both salt water and fresh water vessels.
- 3.41 Metal Containers or Closures: the interior or the exterior of formed metal cans, drums, pails, or crowns; or flat metal sheets which are intended to be formed into cans, drums, pails, lids, or crowns.
- 3.42 Metal Furniture: includes, but is not limited to, the following types of products: household, office, institutional, laboratory, hospital, public building, restaurants, barber and beauty shop, and dental furniture, as well as components of these products. It also includes office and store fixtures, partitions, shelving, lockers, lamps, and lighting fixtures, and wastebaskets
- 3.43 Metallic/iridescent Coating: any coating which contains more than 0.042 lb/gal or 5 grams/liter of metal or iridescent particles, as applied, where such particles are visible in the dried film.
- 3.44 Metal Parts and Products: any component or complete unit fabricated from metal, except those subject to the coating provisions of other source specific rules.
- 3.45 Motor Vehicle: a vehicle which is self-propelled and is a device by which any person or property may be propelled, moved or drawn upon a highway, excepting a device moved by human power or used exclusively upon stationary rails or tracks.
- 3.46 Multi-Component Coating: a coating requiring the addition of a separate reactive resin, commonly known as a catalyst or hardener, before application to form an acceptable dry film.
- 3.47 Non-Absorbent Container: a container made of non-porous material that does not allow the migration of solvents through it.
- 3.48 Non-Atomized Solvent Flow: solvents in the form of a liquid stream without the introduction of any propellant.
- 3.49 Non-Leaking Container: a container without liquid leak.
- 3.50 Normal Business Hours: Monday through Friday, 8:00 am to 5:00 pm.

- 3.51 One-Component Coating: a coating that is ready for application as it comes out of its container to form an acceptable dry film. A thinner, necessary to reduce the viscosity, is not considered a component.
- 3.52 Organic Solvent: the same as “Solvent.”
- 3.53 Organic Solvent Cleaning: as defined in Rule 4663 (Organic Solvent Cleaning, Storage, and Disposal).
- 3.54 Polyester Resin Materials: materials including, but not limited to, unsaturated polyester resins such as isophthalic, orthophthalic, halogenated, biphenol-A, vinyl-ester, or furan resins, cross-linking agents, catalysts, gel coats, inhibitors, accelerators, promoters, and any other VOC containing materials in polyester resin coating operations.
- 3.55 Polyester Resin Operations: methods used for the production or rework of products by mixing, pouring, hand-layup, impregnating, injecting, forming, winding, spraying, and/or curing unsaturated polyester resin materials with fiberglass, fillers, or any other reinforcement materials and associated cleanup.
- 3.56 Pretreatment Coating: any coating which contains no more than 12 percent solids by weight, and a minimum of one-half (0.5) percent acid by weight, is necessary to provide surface etching, and is applied directly to bare metal surfaces to provide corrosion resistance and adhesion.
- 3.57 Propellant: any gas, including air, in a pressure container for expelling the contents when the pressure is released.
- 3.58 Repair: recoating portions of previously coated product to cover mechanical damage to the coating following normal painting operations.
- 3.59 Repair Cleaning: a solvent cleaning operation or activity carried out during a repair process.
- 3.60 Repair Process: the process of returning a damaged object or an object not operating properly to good condition.
- 3.61 Research and Development: a facility or portion thereof used to further the development of useful materials, devices, systems, or methods, including, but not limited to, design, development, and improvement of prototypes and processes. Research and development does not include the manufacturing process itself.
- 3.62 Roll Coating: the application of coatings from a paint trough to a flat surface by a mechanical series of rollers.

- 3.63 Rolling, Consecutive 365-Day Period: any given date plus the immediate, previous 364 days.
- 3.64 SCAQMD: South Coast Air Quality Management District.
- 3.65 Scientific Instruments: instruments (including the components, assemblies, and subassemblies used in their manufacture) and associated accessories and reagents which are used for the detection, measurement, analysis, separation, synthesis, or sequencing of various compounds.
- 3.66 Silicone Release: a coating which contains silicone resin and has as its primary function the release of food products from metal surfaces such as baking pans.
- 3.67 Solar Absorbent Coating: a coating which has as its primary purpose the absorption of solar radiation.
- 3.68 Solid Film Lubricant: a very thin coating consisting of a binder system containing as its chief pigment material one (1) or more of the following: molybdenum disulfide, graphite, polytetrafluoroethylene (PTFE) or other solids that act as a dry lubricant between closely-fitting surfaces.
- 3.69 Solvent: as defined in Rule 4663 (Organic Solvent Cleaning, Storage, and Disposal).
- 3.70 Solvent Flushing: the use of a solvent to remove uncured adhesives, uncured inks, uncured coatings, or contaminants from the internal surfaces and passages of equipment by flushing solvent, by a non-atomized solvent flow, through the equipment.
- 3.71 Stationary Source: as defined in Rule 2201 (New and Modified Stationary Source Review Rule).
- 3.72 Stripping: the use of solvent to remove material such as cured adhesives, cured inks, cured or dried paint, cured or dried paint residue or temporary protective coating.
- 3.73 Surface Preparation: the removal of contaminants from a surface prior to the application of coatings, inks, or adhesives or before proceeding to the next step of a manufacturing process.
- 3.74 Transfer Efficiency: a ratio of the amount of coating solids adhering to the object being coated to the total amount of coating solids used in the application process, expressed as a percentage.
- 3.75 Thinner: a solvent that is used to dilute coatings to reduce viscosity, color strength, and solids, or to modify drying conditions.

- 3.76 Touch Up: that portion of the coating operation which is incidental to the main coating process but necessary to cover minor imperfections or to achieve coverage as required.
- 3.77 Viscosity Reducer: an organic solvent which is added to an adhesive, coating or ink to make it more fluid.
- 3.81 Volatile Organic Compounds (VOC): as defined in Rule 1020 (Definitions).
- 3.78 Waste Solvent Material: any solvent which may contain dirt, oil, metal particles, sludge, and/or waste products, or wiping material containing VOC including, but not limited to, paper, cloth, sponge, rag, or cotton swab used in organic solvent cleaning.
- 3.79 Wipe Cleaning: a solvent cleaning activity performed by hand rubbing an absorbent material such as a rag, paper, sponge, brush, or cotton swab containing solvent.

4.0 Exemptions

- 4.1 Except for large appliance parts and products, and metal furniture coating operations subject to Section 5.4.1, an operator at a given stationary source may use up to a total of 55 gallons of non-compliant coatings per rolling, consecutive 365-day period. All other provisions of the rule, including application methods and administrative requirements shall apply to the use of the non-compliant coatings.
 - 4.1.1 A non-compliant coating is a coating with VOC content, as applied, in excess of the applicable VOC content limits in Sections 5.1, or 5.2.
 - 4.1.2 The 55-gallon exemption limit is the total amount of non-compliant coatings, as applied, for all operations that would otherwise be subject to Section 5.1, or Section 5.2 VOC content limits.
 - 4.1.3 The 55-gallon exemption limit does not apply to non-compliant coatings used in a coating operation with an APCO-approved VOC emission control system that meets the requirements of Section 5.5.
- 4.2 The requirements of this rule shall not apply to touch-up and repair.
- 4.3 Any source which is in full compliance with the provisions of this rule shall be exempt from otherwise applicable portions of Rule 4661 (Organic Solvents).
- 4.4 The requirements of this rule shall not apply to the application of coatings to aircraft, aerospace vehicles, marine vessels, can, coils, and magnetic wire.

- 4.5 Through December 31, 2008, the provisions of this rule shall not apply to an operation subject to the requirements of Rule 4602 (Motor Vehicle and Mobile Equipment Coating Operations).
- 4.6 On and after January 1, 2009, the provisions of this rule shall not apply to an operation subject to the requirements of Rule 4612 (Motor Vehicle and Mobile Equipment Operations Phase II).
- 4.7 The provisions of this rule shall not apply to polyester resin operations and the application of polyester resin materials to metal parts and products.
- 4.8 The provisions of this rule shall not apply to stripping of cured coatings, cured adhesives, and cured inks, except the stripping of such materials from spray application equipment.
- 4.9 The VOC content limits of Table 3 shall not apply to the following applications:
 - 4.9.1 Cleaning of solar cells, laser hardware, scientific instruments, or high precision optics.
 - 4.9.2 Cleaning in laboratory tests and analyses, or bench scale or research and development projects.
 - 4.9.3 Cleaning of paper-based gaskets.
 - 4.9.4 Cleaning of clutch assemblies where rubber is bonded to metal by means of an adhesive.
- 4.10 The VOC content limit of Table 3, Category C, shall not apply to the cleaning of application equipment used to apply coatings on satellites or to the cleaning of application equipment used to apply radiation effect coatings.
- 5.0 Requirements
 - 5.1 General Coating Limits for Metal Parts and Products, Except for Large Appliance Parts or Products, and Metal Furniture Subject to Section 5.4.1

Except as otherwise provided by this rule, no operator shall apply to any metal part or product any coating with a VOC content in excess of the following limits, expressed as grams of VOC per liter (or pounds per gallon) of coating, less water and exempt compounds, as applied.

 - 5.1.1 Baked Coating 275 grams/liter (2.3 pounds/gallon)
 - 5.1.2 Air-Dried Coating 340 grams/liter (2.8 pounds/gallon)
 - 5.1.3 VOC Content Limit for Dip coating of steel joists (SIC 3441), air-dried.

5.1.3.1 340 grams of VOC/liter (2.8 pounds of VOC/gallon) for coatings with a viscosity, as applied, of more than 45.6 centistokes at 78°F or an average dry-film thickness of greater than 2.0 mils;

5.1.3.2 400 grams of VOC/liter (3.32 pounds of VOC/gallon) for coatings with a viscosity, as applied, of less than or equal to 45.6 centistokes at 78°F and an average dry-film thickness of less than or equal to 2.0 mils.

5.2 Specialty Coating for Metal Parts and Products, Except for Large Appliance Parts or Products, and Metal Furniture Subject to Sections 5.4.1

An operator subject to Section 5.2 shall not apply to any metal part or product any specialty coating with a VOC content in excess of the limits in Table 1.

Table 1 – VOC Content Limits for Specialty Coatings, except for Large Appliance Parts or Products, and Metal Furniture subject to Section 5.4.1 Limits are expressed as grams of VOC /liter (or pounds of VOC/gallon) of coating, less water and less exempt compounds, as applied)		
Coating Type	VOC Limit	
	Baked	Air-Dried
Camouflage	360 (3.0)	420 (3.5)
Extreme Performance	420 (3.5)	420 (3.5)
Heat Resistant	360 (3.0)	420 (3.5)
Extreme High Gloss	360 (3.0)	420 (3.5)
High Performance Architectural	420 (3.5)	420 (3.5)
High Temperature	420 (3.5)	420 (3.5)
Metallic Coating	360 (3.0)	420 (3.5)
Pretreatment Coating	420 (3.5)	420 (3.5)
Silicone Release	420 (3.5)	420 (3.5)
Solar Absorbent	360 (3.0)	420 (3.5)
Solid Film Lubricant	880 (7.3)	880 (7.3)

5.3 In lieu of complying with the applicable VOC content limits of Section 5.1, or Table 1, an operator may control emissions from coating operations with an APCO-approved VOC emission control system that meets the requirements of Section 5.5.

5.4 Coating Limits for Large Appliance Parts or Products Coating Operation and Metal Furniture Coating Operation

5.4.1 Effective on and after April 16, 2009, an operator whose total actual VOC emissions from all large appliance parts or products coating operations, or metal furniture coating operations, including related cleaning activities, at a stationary source are equal to or greater than 3 tons of VOC per 12-month rolling period, before consideration of controls, shall not apply to any large appliance parts or products or metal furniture any coating with a VOC content in excess of the applicable limits in Table 2. In lieu of complying with the VOC content limits in Table 2, an operator may comply with Section 5.4.1.2.

5.4.1.1 An operator shall comply with the applicable recordkeeping requirements of Section 6.2 to demonstrate if the VOC emissions from all large appliance parts or products coating operations, or metal furniture coating operations, including related cleaning activities, are equal to or greater than 3 tons of VOC per 12-month rolling period.

5.4.1.2 In lieu of complying with the VOC content limits in Table 2, an operator may operate a VOC control system that meets the applicable requirements of Section 5.5.

5.4.2 An operator of large appliance parts or products coating operations, or metal furniture coating operations whose total actual VOC emissions from all large appliance parts or products coating operations, or metal furniture coating operations, including related cleaning activities, at a stationary source are less than 3 tons of VOC per 12-month rolling period, before consideration of controls, shall comply with the applicable VOC content limits of coatings specified in Sections 5.1 and 5.2. An operator shall comply with the applicable recordkeeping requirements of Section 6.2 to demonstrate if the VOC emissions from all large appliance parts or products coating operations, or metal furniture coating operations, including related cleaning activities are less than 3 tons of VOC per 12-month rolling period.

<p>Table 2 - VOC Content Limits for Large Appliance Parts or Products, and Metal Furniture Coating Operations subject to Section 5.4.1 Limits are expressed as grams of VOC/liter (or pounds of VOC/gallon) of coating, less water and less exempt compounds, as applied)</p>	
Coating Type	VOC Limit

	Baked	Air-dried
General, One Component	275 (2.3)	275 (2.3)
General, Multi-Component	275 (2.3)	340 (2.8)
Extreme High Gloss	360 (3.0)	340 (2.8)
Extreme Performance	360 (3.0)	420 (3.5)
Heat Resistant	360 (3.0)	420 (3.5)
Metallic	420 (3.5)	420 (3.5)
Pretreatment Coating	420 (3.5)	420 (3.5)
Solar Absorbent	360 (3.0)	420 (3.5)

5.5 VOC Emission Control System Requirements

In lieu of complying with applicable provisions of Sections 5.1, 5.2, 5.4, 5.7, or 5.9, an operator may use a VOC emission control system that controls emissions from the source operation and meets the requirements of Sections 5.5.1 through 5.5.4.

5.5.1 The VOC emission control system shall be under District permit.

5.5.2 The VOC emission control system shall comply with the requirements of Sections 5.5.3 and 5.5.4 during periods of emission-producing activities.

5.5.3 The VOC emission control system shall be operated with an overall capture and control efficiency of at least 90 percent by weight as determined in Section 6.3.

5.5.4 Use of a VOC emission control system shall not result in emissions in excess of those that would have been emitted had the operator complied with the applicable provisions of Sections 5.1, 5.2, 5.4, 5.7, or 5.9.

5.5.4.1 The following equation shall be used to determine if the minimum required overall capture and control efficiency of an emission control system is at an equivalent or greater level of VOC reduction as would be achieved using compliant materials, equipment, or work practices, as stated in Section 5.5.

$$CE = \left[1 - \left(\frac{VOC_{LWc}}{VOC_{LWn,Max}} \times \frac{1 - (VOC_{LWn,Max} / D_{n,Max})}{1 - (VOC_{LWc} / D_c)} \right) \right] \times 100$$

Where:

CE = Minimum Required Control Efficiency, percent

VOC_{LWc} = VOC Limit of Rule 4603, less water and less exempt compounds

- $VOC_{LWn,Max}$ = Maximum VOC content of coating (or solvent) used in conjunction with a control device, less water and less exempt compounds
- $D_{n,Max}$ = Density of solvent, reducer, or thinner contained in the noncompliant coating (or cleaning solvent), containing the maximum VOC content of the multi-component (or cleaning solvent)
- D_c = Density of corresponding solvent, reducer, or thinner used in the compliant coating (or cleaning solvent) system = 880 gm/liter.

5.6 Work Practice Standards for Large Appliance Parts and Products, and Metal Furniture Coating Operations and Cleaning Materials Subject to Section 5.4.1

Effective on and after April 16, 2009, an operator shall minimize VOC emissions by complying with the following work practice standards:

- 5.6.1 Store all VOC-containing coatings, thinners, cleaning materials, and waste materials in closed containers. The containers shall remain closed at all times, except when specifically in use.
- 5.6.2 Close mixing vessels that contain VOC coatings and other materials, except when specifically in use.
- 5.6.3 Minimize spills of any VOC-containing materials and clean up spills immediately.
- 5.6.4 Convey VOC-containing materials in closed containers or pipes.

5.7 Organic Solvent Cleaning Requirements

- 5.7.1 An operator shall not use organic solvents for cleaning operations that exceed the VOC content limits specified in Table 3, in accordance with the corresponding effective date.

Table 3 – VOC Content Limits for Organic Solvents Used in Cleaning Operations		
Type of Solvent Cleaning Operation	Effective November 15, 2003 through September 20, 2008	Effective on and after September 21, 2008
	VOC Content Limit Grams of VOC/liter of material (lb/gal)	VOC Content Limit Grams of VOC/liter of material (lb/gal)
A. Product Cleaning During Manufacturing Process or Surface Preparation for Coating Application	50 (0.42)	25 (0.21)
B. Repair and Maintenance Cleaning	50 (0.42)	25 (0.21)
C. Cleaning of Coating Application Equipment	550 (4.6)	25 (0.21)

5.7.2 Until September 20, 2008, an operator performing Table 3 Category C cleaning outside of an APCO-approved VOC emission control system and using solvent with VOC content greater than 50 g/L shall meet the requirements of Sections 5.7.3 through 5.7.5 in addition to meeting the VOC content limit of Table 3 for this cleaning operation. On and after September 21, 2008, an operator shall perform all solvent cleaning operations with cleaning material having VOC content of 25 g/L or less, unless such cleaning operations are performed within the control of an APCO-approved VOC emission control system that meets the requirements of Section 5.5. Sections 5.7.3 through 5.7.5 shall not apply on and after September 21, 2008.

5.7.3 Cleaning activities that use solvents shall be performed by one or more of the following methods:

5.7.3.1 Wipe cleaning; or

5.7.3.2 Application of solvent from hand-held spray bottles from which solvents are dispensed without a propellant-induced force; or

5.7.3.3 Non-atomized solvent flow method in which the cleaning solvent is collected in a container or a collection system which is closed except for solvent collection openings and, if necessary, openings to avoid excessive pressure build-up inside the container; or

- 5.7.3.4 Solvent flushing method in which the cleaning solvent is discharged into a container that is closed except for solvent collection openings and, if necessary, openings to avoid excessive pressure build-up inside the container. The discharged solvent from the equipment must be collected into containers without atomizing into the open air. The solvent may be flushed through the system by air or hydraulic pressure, or by pumping.
- 5.7.4 Solvent shall not be atomized into the open air unless it is vented to an APCO-approved VOC emission control system that complies with Section 5.5. This provision shall not apply to the cleaning of nozzle tips of automated spray equipment systems, except for robotic systems, and cleaning with spray bottles or containers described in Section 5.7.3.2.
- 5.7.5 An operator shall not use VOC-containing materials to clean spray equipment used for the application of coatings, adhesives, or ink, unless an enclosed system or equipment that is proven to be equally effective at controlling emissions is used for cleaning. If an enclosed system is used, it must totally enclose spray guns, cups, nozzles, bowls, and other parts during washing, rinsing and draining procedures, and it must be used according to the manufacturer's recommendations and must be closed when not in use.

5.7.6 In lieu of complying with the VOC content limits of Table 3 or the provisions of Sections 5.7.3 through 5.7.5, an operator may control emissions from cleaning operations with an APCO-approved VOC emission control system that meets the requirements of Section 5.5.

5.8 Solvent Storage and Disposal Requirements

An operator shall store or dispose of fresh or spent solvents, waste solvent cleaning materials such as cloth, paper, etc, coatings, adhesives, catalysts, and thinners in closed, non-absorbent and non-leaking containers. The containers shall remain closed at all times except when depositing or removing the contents of the containers or when the container is empty.

5.9 Application Equipment Requirements: An operator shall not use or operate any coating application equipment on any metal parts and products subject to the provisions of this rule unless one of the following methods is used:

5.9.1 Electrostatic application;

5.9.2 Electrodeposition;

5.9.3 High-Volume, Low-Pressure (HVLP) spray,

5.9.3.1 High-Volume, Low-Pressure (HVLP) spray equipment shall be operated in accordance with the manufacturer's recommendations.

5.9.3.2 For HVLP spray guns manufactured prior to January 1, 1996, the end user shall demonstrate that the gun meets HVLP spray equipment standards. Satisfactory proof will be either in the form of manufacturer's published technical material or by a demonstration using a certified air pressure tip gauge, measuring the air atomizing pressure dynamically at the center of the air cap and at the air horns.

5.9.3.3 A person shall not sell or offer for sale for use within the District any HVLP spray gun without a permanent marking denoting the maximum inlet air pressure in psig at which the gun will operate within the parameters specified in Section 3.0.

5.9.4 Flow coating;

5.9.5 Roll coating;

5.9.6 Dip coating;

5.9.7 Brush coating; or

5.9.8 Continuous coating;

5.9.9 Any other coating application method which is demonstrated to the APCO to be capable of achieving at least 65 percent transfer efficiency. The transfer efficiency shall be determined in accordance with the SCAQMD method "Spray Equipment Transfer Efficiency Test Procedure for Equipment User," May 24, 1989, as contained in Section 6.3.8. Prior written approval from the APCO shall be obtained for each coating application method to be used pursuant to Section 5.9.9.

5.9.10 In lieu of compliance with Sections 5.9.1 through 5.9.9 an operator may control emissions from application equipment with a VOC emission control system that meets the requirements of Section 5.5.

5.10 Prohibition of Specification

No person shall solicit or require for use or specify the application of a coating subject to this rule if such use or application results in a violation of any of the provisions of this rule. The prohibition of this Section shall apply to all written or oral contracts under the terms of which any coating is to be applied to any metal part or product at any physical location within the District.

6.0 Administrative Requirements

6.1 Labeling Requirements

6.1.1 Coating VOC Content

Each container or accompanying data sheet of any coating subject to this rule shall display the maximum VOC content of the coating, as applied, and after any thinning as recommended by the manufacturer. VOC content shall be displayed as grams of VOC per liter of coating (less water and exempt compounds). VOC content displayed may be calculated using product formulation data, or may be determined using the test method in Section 6.3. For determination of compliance and enforcement of the limits specified in Section 5.0 of this rule, the VOC content of any coating determined to exceed its applicable limit through the use of either product formulation data or the test method in Section 6.3.1 shall constitute a violation of this rule.

6.1.2 Thinning Recommendations

Each container or accompanying data sheet of any coating subject to this rule shall display a statement of the manufacturer's recommendation regarding thinning of the coating. This requirement shall not apply to the thinning of coatings with water.

6.1.3 Solvent Compliance Statement Requirements

Manufacturers of any solvents subject to this rule shall indicate on the solvent container, or on a separate product data sheet or material safety data sheet, the name of the solvent, manufacturer's name, the VOC content, and density of the solvent, as supplied. The VOC content shall be expressed in units of gm/liter or lb/gallon.

6.2 Recordkeeping

An operator subject to Section 5.0 or exempt by Section 4.1 shall comply with the following requirements:

6.2.1 Maintain a current list of coatings and solvents in use which contains all of the coating data necessary to evaluate compliance, including the following information, as applicable:

6.2.1.1 mix ratio of components used,

6.2.1.2 VOC content and specific chemical constituents of coatings as applied, and

6.2.1.3 VOC content and specific chemical constituents of solvents used for surface preparation and cleanup.

6.2.2 Maintain daily records which include the following information:

6.2.2.1 volume coating/solvent mix ratio,

6.2.2.2 VOC content (lb/gal or grams/liter) and, for dip coating operations, viscosity (cSt) of coating,

6.2.2.3 volume of each coating used (gallons), and

6.2.2.4 quantity of cleanup solvent used (gallons).

6.2.3 VOC Emission Control System Records

An operator using a VOC emission control system pursuant to Section 5.5 as a means of complying with this rule shall maintain 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 necessary to ensure compliance with VOC limits. The parameters include, but are not limited to, temperatures, pressures, and flowrates.

- 6.2.4 Consistent records may be kept in grams/liter and liters instead of pounds/gallon and gallons. An operator of a stationary source subject to this rule shall maintain such records on a daily basis. An operator that is subject to the exemption of Section 4.1 may maintain usage records of non-compliant coatings on the days that such non-compliant coatings are used.
- 6.2.5 The operator shall retain the records specified in Sections 6.2.1 through 6.2.4, as applicable, on site for a period of five years, make the records available on site during normal business hours to the APCO, ARB, or EPA and submit the records to the APCO, ARB, or EPA upon request.

6.3 Test Methods

The following test methods shall be used to determine compliance with the provisions of this rule. Alternate test methods may be used provided they are approved by the APCO, ARB, and EPA.

- 6.3.1 VOC content of coatings and solvents shall be analyzed by EPA Method 24 and analysis of halogenated exempt compounds shall be analyzed by ARB Method 432.
- 6.3.2 Emissions of VOC shall be measured by EPA Method 25, 25A, or 25B, as applicable, and analysis of halogenated exempt compounds shall be analyzed by ARB Method 422.
- 6.3.3 The viscosity of coatings used for dip coating of steel joists as specified in Section 5.1.3 of this rule, shall be determined by using ASTM D5478-98 or ASTM D5125-97.
- 6.3.4 The quantification of coating as a metallic/iridescent topcoat shall be determined by SCAQMD Method 318 (Determination of Weight Percent of Elemental Metal in Coatings by X-ray Diffraction Method), July 1996.
- 6.3.5 Acid Content: Measurement of acid content of pre-treatment wash primers shall be conducted and reported 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.

6.3.6 Determination of emissions of VOC from spray gun cleaning systems shall be made using SCAQMD "General Method for Determining Solvent Losses from Spray Gun Cleaning Systems," dated October 3, 1989.

6.3.7 Determination of Overall Capture and Control Efficiency of VOC Emission Control Systems shall be made using the following methods:

6.3.7.1 The capture efficiency of a VOC emission control system's collection device shall be determined according to EPA's "Guidelines for Determining Capture Efficiency," January 9, 1995 and 40 CFR 51, Appendix M, Methods 204-204F, as applicable.

6.3.7.1.1 Capture Efficiency, in percent, is the ratio of the weight of VOC in the effluent stream entering the control device to the weight of VOC emitted from wood product coating operation or flat wood paneling product coating operation, both measured simultaneously, shall be calculated by the following equation:

$$\text{Capture Efficiency (\%)} = (W_c \div W_e) \times 100$$

Where:

W_c = weight of VOC entering the control device

W_e = weight of VOC emitted

6.3.7.2 The control efficiency of a VOC emission control system's VOC control device shall be determined using EPA Methods 2, 2A, or 2D for measuring flow rates and EPA Methods 25, 25A, or 25B for measuring total gaseous organic concentrations at the inlet and outlet of the control device. EPA Method 18 or ARB Method 422 shall be used to determine the emissions of exempt compounds.

6.3.7.2.1 Control Efficiency, in percent, is the ratio of the weight of VOC removed by the control device from the effluent stream entering the control device to the weight of VOC in the effluent stream entering the control device, both measured simultaneously, shall be calculated by the following equation:

$$\text{Control Device Efficiency (\%)} = [(W_c - W_a) \div W_c] \times 100$$

Where:

W_c = weight of VOC entering the control device

Wa = weight of VOC discharged from the control device

6.3.7.3 For VOC emission control systems that consist of a single VOC emission collection device connected to a single VOC emission control device, the overall capture and control efficiency shall be calculated by using the following equation:

$$CE_{\text{Capture and Control}} = [CE_{\text{Capture}} \times CE_{\text{Control}}] / 100$$

Where:

$CE_{\text{Capture and Control}}$ = Overall Capture and Control Efficiency, in percent

CE_{Capture} = Capture Efficiency of the collection device, in percent, as determined in Section 6.3.7.1

CE_{Control} = Control Efficiency of the control device, in percent, as determined in Section 6.3.7.2.

6.3.8 The transfer efficiency of alternative coating application methods shall be determined in accordance with the SCAQMD Method "Spray Equipment Transfer Efficiency Test Procedure for Equipment User," May 24, 1989.

6.4 Multiple Test Methods

When more than one test method or set of test methods is specified for any testing, a violation of any requirement of this rule established by any one of the specified test methods or set of test methods shall constitute a violation of this rule.

6.5 Version of Test Methods

All ASTM test methods referenced in Section 6.0 are the most recently EPA-approved version that appears in the CFR as Materials Approved for Incorporation by Reference.