

RULE 4610 GLASS COATING OPERATIONS (Adopted May 16, 2002; Amended December 19, 2002; Amended April 17, 2003)

1.0 Purpose

The purpose of this rule is to limit the emissions of volatile organic compounds (VOCs) from the coating of glass products.

2.0 Applicability

The requirements of this rule shall apply to any major source that coats glass products with VOC-containing materials.

3.0 Definitions

3.1 Aerosol Coating Product: any 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 Clear Coating: a colorless coating, which contains binders, but no pigment, and is formulated to form transparent film.

3.3 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.

3.4 Coating Application Equipment: any equipment used to apply coating to a substrate. Coating application equipment includes coating distribution lines, coating hoses, pressure-pots, spray guns, and hand-application equipment.

3.5 Curtain/Flow Coater: a type of coating application equipment that coats an object by flowing a stream of coating over the object and draining off any excess coating.

3.6 Dip Coater: a type of application equipment that coats an object by submerging the object in a vat of coating, and subsequently withdrawing the object and draining off the excess coating.

3.7 Electric Dissipating Coating: a coating that rapidly dissipates a high-voltage electric charge.

3.8 Electrostatic Application: a method of applying coating whereby atomized paint droplets are charged and subsequently deposited on the substrate by electrostatic attraction.

- 3.9 Grams Of VOC Per Liter Of Coating, Less Water and Less Exempt Compounds: a weight of VOC per combined volume of VOC and coating solids and can be calculated by the following equation:

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

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

- 3.10 Hand Application Methods: any method used to apply coating to substrate by manually held, non-mechanically operated equipment. Such equipment includes paint brushes, hand rollers, caulking guns, trowels, spatulas, syringe daubers, rags, and sponges.
- 3.11 High-Volume, Low-Pressure (HVL) Spray: a coating application system which is operated at air pressure between 0.1 and 10.0 pounds per square inch gauge (psig).
- 3.12 Ink: a fluid that contains dyes and/or colorants, and is used to make markings but not to protect surfaces.
- 3.13 Major Source: as defined in Rule 2201 (New and Modified Stationary Source Review Rule).
- 3.14 Metallic Coating: a coating, which contains more than 5 grams of metal particles per liter of coating as applied.
- 3.15 Metal Particles: any pieces of a pure elemental metal or a combination of elemental metals.
- 3.16 Mirror Backing: a coating applied over the silvered surface of a mirror.
- 3.17 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.
- 3.18 Optical Coating: a coating applied to an optical lens.

- 3.19 Permanent Total Enclosure (PTE): a permanently installed enclosure that completely surrounds a source of emissions such that all VOC emissions are captured and contained for discharge to a control device.
- 3.20 Repair Coating: a coating used to re-coat portions of a previously coated product, which has sustained mechanical damage to the coating following normal coating operations.
- 3.21 Roll Coater: a type of coating application equipment that utilizes a series of mechanical rollers to form a thin coating film on the surface of a roller, which is then applied to a substrate by moving the substrate underneath the roller.
- 3.22 Shock-Free Coating: a coating applied to electrical components to protect the user from electric shock. The coating has characteristics of being of low capacitance and high resistance, and having resistance to breaking down under high voltage.
- 3.23 Stencil Coating: an ink or a coating which is rolled or brushed onto a template or stamp in order to add identifying letters and/or numbers.
- 3.24 Touch-up Coating: a coating used to cover minor imperfections appearing after the main coating operation.
- 3.25 Translucent Coating: a coating, which contains binders and pigment, and is formulated to form a colored, but not opaque, film.
- 3.26 Two-component Coating: a coating requiring the addition of a separate reactive resin, commonly known as a catalyst, before application to form an acceptable dry film.
- 3.27 Volatile Organic Compound (VOC): as defined in Rule 1020 (Definitions).

4.0 Exemptions

The provisions of this rule shall not apply to the following:

- 4.1 Touch-up and repair coatings;
- 4.2 Stencil coatings applied on clear or transparent substrates;
- 4.3 Coatings applied at a paint manufacturing facility while conducting performance tests on the coatings; and
- 4.4 Aerosol coating products.

5.0 Requirements

5.1 VOC Content Limits for Coatings

A person shall not apply on glass any coating, which exceeds the VOC content limit specified below:

COATING	VOC CONTENT LIMITS Less Water and Less Exempt Compounds Effective on and after 12/1/2002	
	g/L	lb/gal
General Coatings		
One-component	275	2.3
Two-component	420	3.5
Mirror Backing		
Curtain Coated	500	4.2
Roll Coated	430	3.6
Other Coatings		
Optical Coatings	800	6.7
Electric Dissipating Coatings and Shock-Free Coatings	360	3.0
Metallic Coatings	420	3.5

5.2 Prohibition of Specification

A person shall not specify the use, in the District, of any coating to be applied to any glass subject to the provisions of this rule that does not meet the limits and requirements of this rule. The requirements of this paragraph shall apply to all written or oral contracts.

5.3 Solvent Cleaning, Storage, and Disposal

Solvent cleaning operations and the storage and disposal of VOC-containing materials are subject to the provisions of Rule 4663 (Organic Solvent Cleaning, Storage and Disposal).

5.4 Application Equipment Requirements

A person shall not apply coatings unless the coating is applied with equipment operated according to the manufacturer's specifications, and by the use of one of the following methods:

5.4.1 electrostatic application; or

- 5.4.2 curtain/flow coater; or
- 5.4.3 roll coater; or
- 5.4.4 dip coater; or
- 5.4.5 hand application methods; or
- 5.4.6 high-volume, low-pressure (HVLV) spray.

5.5 VOC Emission Control Equipment

5.5.1 Except for mirror backing operations, a person may comply with the provisions in Sections 5.1 and 5.4 by using an APCO approved VOC emission control equipment, provided that the owner/operator demonstrates compliance with the following provisions:

5.5.1.1 The emission collection system has a capture efficiency of at least 90 percent of the VOC emissions generated by the sources of emissions and the control device reduces VOC emissions from the emission collection system by at least 95 percent, or

5.5.1.2 The VOC emission reduction system meets the requirements of Section 5.5.2.1 and Section 5.5.2.2.

5.5.2 VOC Emission Reductions – Mirror Backing Operations

In addition to the applicable requirements of Section 5.1, effective on and after July 1, 2004, a person performing mirror backing operations shall comply with the following requirements:

5.5.2.1 Reduce VOC emissions from operations such that emissions do not exceed 10 percent of the emissions which would result from compliance with Section 5.1 requirements, and

5.5.2.2 The VOC emission reduction system is approved by the APCO.

6.0 Administrative Requirements

6.1 Recordkeeping

6.1.1 Any person subject to the requirements of Section 5.0 of this rule shall maintain records which show on a daily basis, the following information:

- 6.1.1.1 type of coating;
 - 6.1.1.2 the VOC content of each coating, as applied, less water and exempt compounds;
 - 6.1.1.3 the specific mixing ratio for the coating, hardeners, catalysts, solvents, diluents, and thinners, if applicable;
 - 6.1.1.4 the method of application and substrate type;
 - 6.1.1.5 oven temperature (for coating operations), if applicable, and
 - 6.1.1.6 other information, as specified by the APCO, necessary to verify compliance with the applicable requirements of this rule.
- 6.1.2 Records of disposed waste solvent or waste solvent residues shall be kept in accordance with Rule 4663.
- 6.1.3 Records shall be maintained on-site for a minimum of five years and made available for inspection to the APCO upon request.
- 6.1.4 Any person using an add-on emission control system shall maintain daily records of key system operating parameters and maintenance procedures 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 the emission reduction, capture efficiency, control efficiency and overall capture and control efficiency requirements of this rule. The parameters may include, but are not limited to, temperatures, pressures, and flow rates.

6.2 Test Methods

6.2.1 Determination of VOC Content

The VOC content of materials subject to the provisions of this rule shall be determined by the following United States Environmental Protection Agency (EPA) Test Methods or any other method approved by EPA, the California Air Resources Board (ARB), and the APCO:

- 6.2.1.1 EPA Test Method 24 (Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings, Code of Federal Regulations Title 40, Part 60, Appendix A).

6.2.1.2 Exempt compounds' VOC content shall be determined by SCAQMD Method 303 (Determination of Exempt Compounds) contained in the SCAQMD "Laboratory Methods of Analysis for Enforcement Samples" manual.

6.2.2 Determination of Capture Efficiency of an Emission Control System

The capture efficiency of an emission collection control system 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, noted below or any other method approved by EPA, ARB, and the APCO:

6.2.2.1 EPA Method 204A (VOCs in Liquid Input Stream),

6.2.2.2 EPA Method 204B (VOCs in Captured Stream),

6.2.2.3 EPA Method 204C (VOCs in Captured Stream Dilution Technique),

6.2.2.4 EPA Method 204D (Fugitive VOCs from Temporary Total Enclosure),

6.2.2.5 EPA Method 204E (Fugitive VOCs from Building Enclosure),

6.2.2.6 EPA Method 204F (VOCs in Liquid Input Stream Distillation), and

6.2.2.7 EPA Method 204 (Criteria For And Verification Of A Permanent or Temporary Total Enclosure).

6.2.3 Determination of Control Efficiency of Emission Control System

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

6.2.4 Determination of Overall Capture and Control Efficiency of Emission Control System

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 6.2.2

CE_{CONTROL} = Control Efficiency of the control device, in percent, as determined in Section 6.2.3.

6.2.5 Multiple Test Methods

VOC emissions, VOC content, capture efficiency, control efficiency, and overall capture and control efficiency determined to exceed any limits established by this rule through the use of any of the above-referenced test methods or equations shall constitute a violation of the rule.

6.3 VOC Emission Control Equipment – Testing Requirements

The collection and control devices of an emission control system shall comply with the following testing requirements:

- 6.3.1 A collection device that is not a PTE shall be source tested on an annual basis to determine the collection efficiency of the collection device.
- 6.3.2 A collection device that is a PTE shall be source tested initially to validate that it meets the requirements of a PTE pursuant to EPA Method 204.
- 6.3.3 A control device shall be source tested on an annual basis to determine the control efficiency of the control device.