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RULE 1107

Coating of Metal Parts and Products

(A) General

- (1) Purpose
 - (a) To reduce volatile organic compound (VOC) emissions from the coating of metal parts and products.
- (2) Applicability
 - (a) This rule applies to all metal coatings operations except those performed on aerospace assembly, magnet wire, marine craft, motor vehicle, metal container, and coil coating operations.

(B) Definitions

For the purpose of this rule, the following definitions shall apply:

- (1) “Aerosol Coating Product” - is 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, or for use in specialized equipment for ground traffic/marketing applications.
- (2) “Air Dried Coating” - is a coating that is cured at a temperature below 90°C (194°F).
- (3) “Baked Coating” - is a coating that is cured at a temperature at or above 90°C (194°F).
- (4) “Camouflage Coating” - is a coating used, principally by the military, to conceal equipment from detection.
- (5) “Capture Efficiency” - is the percentage of volatile organic compounds used, emitted, evolved, or generated by the operation that are collected and directed to an air pollution control device.
- (6) “Coating” - is a material which is applied to a surface and which forms a continuous film in order to beautify and/or protect such surface.

- (7) “Contract Painter” - is a non-manufacturer of metal parts and products who applies coatings to such products at his facility exclusively under contract with one or more parties that operate under separate ownership and control.
- (8) “Electric-Insulating Varnish” - is a non-convertible-type coating applied to electric motors, components of electric motors, or power transformers, to provide electrical, mechanical, and environmental protection or resistance.
- (9) “Etching Filler” - is a coating that contains less than 23 percent solids by weight and at least 1/2-percent acid by weight, and is used instead of applying a pretreatment coating followed by a primer.
- (10) “Exempt Compounds” - (see Rule 102-Definition of Terms).
- (11) “Extreme High-Gloss Coating” - is 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.
- (12) “Extreme-Performance Coating” - is a coating used on a metal surface where the coated surface is, in its intended use, subject to the following:
- (a) Chronic exposure to corrosive, caustic or acidic agents, chemicals, chemical fumes, chemical mixtures or solutions; or
- (b) Repeated exposure to temperatures in excess of 250° F; or
- (c) Repeated heavy abrasion, including mechanical wear and repeated scrubbing with industrial grade solvents, cleansers or scouring agents. Extreme Performance Coatings include, but are not limited to, coatings applied to locomotives, railroad cars, farm machinery and heavy duty trucks.
- (13) “Grams of VOC per Liter of Coating Less Water and Less Exempt Compounds” - is the weight of VOC per combined volume of VOC and coating solids and can be calculated by the following equation:

Grams of VOC per Liter of Coating Less Water and Less Exempt Compounds
(VOC Content):

$$G_v = \frac{W_s - W_w - W_{es}}{V_m - V_w - V_{es}}$$

Where:

- G_v = Grams of VOC Per Liter of Coating Less Water and Less Exempt Compounds
- W_s = Weight of volatile compounds in grams
- W_w = Weight of water in grams
- W_{es} = Weight of Exempt Compounds in grams
- V_m = Volume of material in liters
- V_w = Volume of water in liters
- V_{es} = Volume of Exempt Compounds in liters

- (14) “Grams of VOC per Liter of Material” - is the weight of VOC per volume of material and can be calculated by the following equation:

Grams of VOC per Liter of Material:

Where:

$$G_v = \frac{W_s - W_w - W_{es}}{V_m}$$

Where:

G_v	=	Grams of VOC Per Liter of Coating Less Water and Less Exempt Compounds
W_s	=	Weight of volatile compounds in grams
W_w	=	Weight of water in grams
W_{es}	=	Weight of Exempt Compounds in grams
V_m	=	Volume of material in liters

- (15) “Hand Application Methods” - is the application of coatings by manually held nonmechanically operated equipment. Such equipment includes paint brushes, hand rollers, caulking guns, trowels, spatulas, syringe daubers, rags, and sponges.
- (16) “Heat-Resistant Coating” - is a coating that must withstand a temperature of at least 400°F during normal use.
- (17) “High-Performance Architectural Coating” - is a coating used to protect architectural subsections and which meets the requirements of the Architectural Aluminum Manufacturer Association's publication number AAMA 2604-05 (Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels) or 2605-05 (Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels).
- (18) “High-Temperature Coating” - is a coating that is certified to withstand a temperature of 1000°F for 24 hours.
- (19) “High-Volume, Low-Pressure (HVL) Spray” - is a coating application system which is operated at air pressure between 0.1 and 10 pounds per square inch gauge (psig).
- (20) “Ink” - is a fluid that contains dyes and/or colorants and is used to make markings but not to protect surfaces.
- (21) “Magnetic Data Storage Disk Coating” - is a coating used on a metal disk which stores data magnetically.

- (22) “Metal Particles” - are pieces of an elemental pure metal or a combination of elemental metals.
- (23) “Metal Parts and Products” - are any components or complete units fabricated from metal, except those subject to the coating provisions of other source specific rules of Regulation XI.
- (24) “Metallic Coating” - is a coating which contains more than 5 grams of metal particles per liter of coating, as applied.
- (25) “Military Specification Coating” - is a coating applied to metal parts and products and which has a paint formulation approved by a United States Military Agency for use on military equipment.
- (26) “Mold-Seal Coating” - is the initial coating applied to a new mold or repaired mold to provide a smooth surface which, when coated with a mold release coating, prevents products from sticking to the mold.
- (27) “Motor Vehicle” - is a passenger car, light-duty truck, medium-duty vehicle, or heavy-duty vehicle as defined in Section 1902, Title 13, of the California Administrative Code.
- (28) “Pan-Backing Coating” - is a coating applied to the surface of pots, pans, or other cooking implements that are exposed directly to a flame or other heating elements.
- (29) “Prefabricated Architectural Component Coatings” - are coatings applied to metal parts and products which are to be used as an architectural structure
- (30) “Pretreatment Coating” - is a coating which contains no more than 12 percent solids by weight, and at least 1/2-percent acid, by weight, is used to provide surface etching, and is applied directly to metal surfaces to provide corrosion resistance, adhesion, and ease of stripping.
- (31) “Reactive Diluent” - is a liquid which is a VOC during application and one in which, through chemical reaction such as polymerization, 20 percent or more of the VOC becomes an integral part of a finished coating.
- (32) “Repair Coating” - is a coating used to recoat portions of a product which has sustained mechanical damage to the coating following normal painting operations.
- (33) “Safety-Indicating Coating” - is a coating which changes physical characteristics, such as color, to indicate unsafe conditions.
- (34) “Silicone-Release Coating” - is any coating which contains silicone resin and is intended to prevent food from sticking to metal surfaces such as baking pans.
- (35) “Solar-Absorbent Coating” - is a coating which has as its prime purpose the absorption of solar radiation.

- (36) “Solid-Film Lubricant” - is a very thin coating consisting of a binder system containing as its chief pigment material one or more of molybdenum disulfide, graphite, polytetrafluoroethylene (PTFE) or other solids that act as a dry lubricant between faying surfaces.
- (37) “Stencil Coating” - is an ink or a coating which is rolled or brushed onto a template or stamp in order to add identifying letters and/or numbers to metal parts and products.
- (38) “Textured Finish” - is a rough surface produced by spraying large drops of coating onto a previously applied coating.
- (39) “Touch-Up Coating” - is a coating used to cover minor coating imperfections appearing after the main coating operation.
- (40) “Transfer Efficiency” - is the ratio of the weight or volume of coating solids adhering to an object to the total weight or volume, respectively, of coating solids used in the application process, expressed as a percentage.
- (41) “Vacuum-Metalizing Coating” - is the undercoat applied to the substrate on which the metal is deposited or the overcoat applied directly to the metal film.
- (42) “Volatile Organic Compound (VOC)” - means any volatile chemical compound that contains the element carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, carbonates and metallic carbides; and excluding methane and exempt compounds.

(C) Requirements

(1) Operating Equipment

- (a) A person shall not apply VOC containing coatings to metal parts and products subject to the provisions of this rule unless the coating is applied with properly operating equipment according to an operating procedure specified by the equipment manufacturer or the Executive Officer, or designee, and by the use of one of the following methods:
 - (i) Electrostatic attraction, or
 - (ii) Flow coat, or
 - (iii) Dip coat, or
 - (iv) Roll coater, or
 - (v) High-Volume, Low-Pressure (HVLP) Spray, or
 - (vi) Hand Application Methods, or
 - (vii) Other coating application methods as are demonstrated to have a Transfer Efficiency at least equal to or better than achieved by HVLP spraying.

(2) VOC Content of Coatings

- (a) A person shall not apply to metal parts and products subject to the provisions of this rule any coatings, including any VOC containing materials added to the original coating supplied by the manufacturer, which contain VOCs in excess of the limits specified below:

LIMITS				
Grams of VOC Per Liter of Coating, Less Water and Less Exempt Compounds				
<u>Coating</u>	<u>Air Dried</u>	<u>(lb/gal)</u>	<u>Baked</u>	<u>(lb/gal)</u>
General*	340	(2.8)	275	(2.3)
Military Specification	340	(2.8)	275	(2.3)
Etching Filler	420	(3.5)	420	(3.5)
Solar-Absorbent	420	(3.5)	360	(3.0)
Heat-Resistant	420	(3.5)	360	(3.0)
Extreme High-Gloss	420	(3.5)	360	(3.0)
Metallic	420	(3.5)	420	(3.5)
Extreme Performance	420	(3.5)	360	(3.0)
Prefabricated Architectural Component	420	(3.5)	275	(2.3)
Touch Up	420	(3.5)	360	(3.0)
Repair	420	(3.5)	360	(3.0)
Silicone Release	420	(3.5)	420	(3.5)
High Performance Architectural	420	(3.5)	420	(3.5)
Camouflage	420	(3.5)	420	(3.5)
Vacuum-Metalizing	420	(3.5)	420	(3.5)
Mold-Seal	420	(3.5)	420	(3.5)
High-Temperature	420	(3.5)	420	(3.5)
Electric-Insulating Varnish	420	(3.5)	420	(3.5)
Pan Backing	420	(3.5)	420	(3.5)
Pretreatment Coatings	420	(3.5)	420	(3.5)

*A General Coating is a Coating that does not meet a specific Coating category definition and is assumed to be a general use Coating and subject to the VOC limit for a General Coating.

- (b) A person shall not use VOC containing materials which have a VOC content of more than 200 grams per liter of material for stripping any coating governed by this rule.
- (c) Containers used for the disposal of cloth or paper used in stripping cured coating shall be closed except when depositing or removing the cloth or paper from the container.
- (3) Solvent Cleaning Operations; Storage and Disposal of VOC containing Materials
- (a) Solvent cleaning of application equipment, parts, products, tools, machinery, equipment, general work areas, and the storage and disposal of VOC containing materials used in cleaning operations shall be carried out pursuant to Rule 1171 - Solvent Cleaning Operations.

- (4) For coatings that contain reactive diluents, the Grams of VOC per Liter of Coating, Less Water and Less Exempt Compounds shall be calculated by the following equation:

Grams of VOC per Liter of Coating Less Water and Less Exempt Compounds (VOC Content):

$$G_v = \frac{W_s - W_w - W_{es}}{V_m - V_w - V_{es}}$$

Where:

G_v	=	Grams of VOC Per Liter of Coating Less Water and Less Exempt Compounds
W_s	=	Weight of volatile compounds in grams
W_w	=	Weight of water in grams
W_{es}	=	Weight of Exempt Compounds in grams
V_m	=	Volume of material in liters
V_w	=	Volume of water in liters
V_{es}	=	Volume of Exempt Compounds in liters

- (5) Owners and/or operators of control equipment may comply with provisions of subparagraph (C)(1) and/or (C)(2) by using approved air pollution control equipment provided that the VOC emissions from such operations and/or materials are reduced in accordance with the provisions of (a) and (b):
- (a) The control device shall reduce emissions from an emission collection system by at least 95 percent by weight or the output of the air pollution control device is 50 PPM by volume calculated as carbon with no dilution.
 - (b) The owner/operator demonstrates that the system collects at least 90 percent by weight of the emissions generated by the sources of emissions.

(D) Prohibition of Specifications

A person shall not specify the use in the District of any coating to be applied to any metal parts and products 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 and oral contracts.

(E) [Reserved for Prohibition of Sale of Noncompliant Coating]

(F) Methods of Analysis

(1) Determination of VOC content

The VOC content of coatings subject to the provisions of this rule shall be determined by the following methods:

- (a) United States Environmental Protection Agency (USEPA) Reference Method 24 (Code of Federal Regulations Title 40 Part 60, Appendix A). The exempt solvent content shall be determined by SCAQMD Method 303 (Determination of Exempt Compounds) contained in the SCAQMD "Laboratory Methods of Analysis for Enforcement Samples" manual; or,
- (b) SCAQMD Method 304 [Determination of Volatile Organic Compounds (VOCs) in Various Materials] contained in the SCAQMD "Laboratory Methods of Analysis for Enforcement Samples" manual.
- (c) Exempt Perfluorocarbon Compounds
The following classes of compounds:
 - cyclic, branched, or linear, completely fluorinated alkanes;
 - cyclic, branched, or linear, completely fluorinated ethers with no unsaturations;
 - cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and
 - sulfur-containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine,will be analyzed as exempt compounds for compliance with paragraph (C), only when manufacturers specify which individual compounds are used in the coating formulation. In addition, the manufacturers must identify the United States Environmental Protection Agency, California Air Resources Board, and the District approved test methods used to quantify the amount of each exempt compound.

(2) Determination of Efficiency of Emission Control System

- (a) Capture efficiency specified in paragraph (C)(7), shall be determined by the procedures presented in the USEPA technical guidance document, "Guidelines for Determining Capture Efficiency, January 9, 1995." Notwithstanding the test methods specified by the Guidelines, any other method approved by the USEPA, the California Air Resources Board, and the SCAQMD Executive Officer may be substituted.
- (b) The efficiency of the control device of the emission control system as specified in paragraph (C)(7) and the VOC content in the control device exhaust gases, measured and calculated as carbon, shall be determined by the USEPA Test Methods 25, 25A, or SCAQMD Method 25.1 (Determination of Total Gaseous Non-Methane Organic Emissions as

Carbon) as applicable. USEPA Test Method 18, or ARB Method 422 shall be used to determine emissions of exempt compounds.

(3) Multiple Test Methods

When more than one test method or set of methods are 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 the rule.

(4) Demonstrations of transfer efficiency shall be conducted in accordance with SCAQMD method "Spray Equipment Transfer Efficiency Test Procedure for Equipment User," May 24, 1989.

(G) Exemptions

(1) The provisions of subparagraphs (C)(1) and (C)(2) of this rule, shall not apply to:

- (a) Stencil coatings;
- (b) A facility which uses a total of less than one gallon of coating, including any VOC-containing materials added to the original coating as supplied by the manufacturer, subject to this rule, in any one day;
- (c) Total noncompliant coating use per facility that does not exceed 55 gallons per rolling 12-month period;
- (d) Safety-indicating coatings;
- (e) Magnetic data storage disk coatings;
- (f) Solid-film lubricants;

(2) The provisions of subparagraph (C)(1) of this rule shall not apply to any coating operation that, because of physical and/or chemical characteristics of the substrate or safety conditions, cannot meet the efficiency of equal to or better than HVLP transfer efficiency, provided that:

- (a) A general coater submits a written petition to the Executive Officer setting forth the basis, including test data, for the claim that efficiency of equal to or better than HVLP transfer efficiency cannot be met, and approval is granted by the Executive Officer or designee.
- (b) A contract painter submits a written petition to, and receives approval from, the Executive Officer or designee to exempt the coating of such items; and the contract painter maintains a daily log:
 - (i) which describes the reason(s) why efficiency of equal to or greater than HVLP transfer efficiency cannot be achieved, including a

- written and/or photographic description of the object to be used;
and
 - (ii) into which the entry is made prior to commencement of coating operations for that object; and
 - (iii) which is made available for review by the District upon request;
and
 - (iv) which is retained in the operator's files for at least five years.
- (3) The Executive Officer or designee may revoke the approval granted pursuant to subparagraph (G)(2)(b) of this rule if:
 - (a) the daily log is not adequately maintained; or
 - (b) an entry is made after the application of coating; or
 - (c) the physical characteristics of the substrate do not warrant an exemption.
- (4) The provisions of subparagraph (C)(1) of this rule shall not apply to the application of touch-up coatings, repair coatings, textured coatings, metallic coatings which have a metallic content of more than 30 grams per liter, mold-seal coatings, and to facilities that use less than three gallons of coating, as applied, including any VOC-containing materials added to the original coating as supplied by the manufacturer, per day.
- (5) The provisions of subparagraphs (C)(1), (C)(2), and (C)(3) of this rule do not apply to the application of coatings and use of cleaning solvents while conducting performance tests on the coatings at paint manufacturing facilities.
- (6) The provisions of paragraph (C)(2) of this rule shall not apply to high performance architectural, vacuum metalizing, and/or pretreatment coatings used at a facility where the total actual VOC emissions from all miscellaneous metal product surface coating operations, including related cleaning activities, are less than 2.7 tons per 12-month rolling period before consideration of add-on controls.
- (7) The provisions of paragraph (C)(2) of this rule shall not apply to aerosol coating products.

(H) Rule 442 Applicability

Any coating, coating operation or facility which is exempt from all or a portion of the VOC limits of this rule shall comply with the provisions of Rule 442.

(I) Alternative Emission Control Plan

An owner/operator may achieve compliance with subparagraph (C)(2) by means of an Alternative Emission Control Plan pursuant to Rule 108.

(J) **Qualification for Classification as Extreme-Performance Coating**

A coating may be classified as an extreme-performance coating provided that the applicator requests and receives written approval of such classification from the Executive Officer, or designee, prior to application of such coating, and shows that the intended use of each coated object would require coating with an extreme-performance coating.

(K) **Recordkeeping**

Daily records of coating and solvent usage shall be maintained pursuant to Rule 109.

(L) **Emission Reduction Credits**

Facilities that use high performance architectural, pretreatment, or vacuum metalizing coatings shall not receive emission reduction credit(s) pursuant to SCAQMD Rule 1309 above those emission reduction credit(s) that the facility would have received if it was operated with coatings having a VOC content of no more than 420 g/L, less water and less exempt compounds.

See SIP Table at www.avaqmd.ca.gov

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