

(Adopted November 4, 1988)(Amended May 5, 1989)(Amended June 2, 1989)
(Amended March 2, 1990)(Amended November 2, 1990)(Amended December 7, 1990)
(Amended August 2, 1991)(Amended January 13, 1995)

RULE 1106. MARINE COATING OPERATIONS

(a) Applicability

This rule applies to all coating operations of boats, ships, and their appurtenances, and to buoys and oil drilling rigs intended for the marine environment. Coating operations of vessels which are manufactured or operated primarily for recreational purposes are subject to the requirements of Rule 1106.1 - Pleasure Craft 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 is dispensed by means of a propellant, and is packaged in a disposable can for hand-held application.
- (2) AIR DRIED COATING is any coating that is cured at a temperature below 90°C (194°F).
- (3) ANTENNA COATING is any coating applied to equipment and associated structural appurtenances which are used to receive or transmit electromagnetic signals.
- (4) ANTIFOULING COATING is any coating applied to the underwater portion of a vessel to prevent or reduce the attachment of biological organisms. An antifouling coating shall be registered with the Environmental Protection Agency (EPA) as a pesticide.
- (5) BAKED COATING is any coating that is cured at a temperature at or above 90°C (194°F).
- (6) ELASTOMERIC ADHESIVE is any adhesive containing natural or synthetic rubber.
- (7) EXEMPT COMPOUNDS are any of the following compounds:
 - (A) Group I (General)
 - trifluoromethane (HFC-23)
 - pentafluoroethane (HFC-125)
 - 1,1,2,2-tetrafluoroethane (HFC-134)
 - tetrafluoroethane (HFC-134a)
 - 1,1,1-trifluoroethane (HFC-143a)

1,1-difluoroethane (HFC-152a)
 chlorodifluoromethane (HCFC-22)
 dichlorotrifluoroethane (HCFC-123)
 2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124)
 dichlorofluoroethane (HCFC-141b)
 chlorodifluoroethane (HCFC-142b)
 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
 sulfur-containing perfluorocarbons with no unsaturations and with
 sulfur bonds only to carbon and fluorine

(B) Group II

methylene chloride
 1,1,1-trichloroethane (methyl chloroform)
 trichlorotrifluoroethane (CFC-113)
 dichlorodifluoromethane (CFC-12)
 trichlorofluoromethane (CFC-11)
 dichlorotetrafluoroethane (CFC-114)
 chloropentafluoroethane (CFC-115)

The use of Group II compounds and/or carbon tetrachloride may be restricted in the future because they are toxic, potentially toxic, upper-atmosphere ozone depleters, or cause other environmental impacts. By January 1, 1996, production of chlorofluorocarbons (CFC), 1,1,1-trichloroethane (methyl chloroform), and carbon tetrachloride will be phased out in accordance with the Code of Federal Regulation Title 40, Part 82 (December 10, 1993).

- (8) EXTREME HIGH GLOSS COATING is any coating which achieves at least 95 percent reflectance on a 60° meter when tested by ASTM Method D-523.
- (9) 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

$$\text{Water and Less Exempt Compounds} = \frac{W_s - W_w - W_{es}}{V_m - V_w - V_{es}}$$

Where: 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

- (10) HEAT RESISTANT COATING is any coating which during normal use must withstand temperatures of at least 204°C (400°F).
- (11) HIGH GLOSS COATING is any coating which achieves at least 85 percent reflectance on a 60° meter when tested by ASTM Method D-523.
- (12) HIGH TEMPERATURE COATING is any coating which must withstand temperatures of at least 426°C (800°F).
- (13) LOW ACTIVATION INTERIOR COATING is any coating used on interior surfaces aboard ships to minimize the activation of pigments on painted surfaces within a radiation environment.
- (14) MARINE COATING is any coating, except unsaturated polyester resin (fiberglass) coatings, containing volatile organic materials and applied by any means to ships, boats, and their appurtenances, and to buoys and oil drilling rigs intended for the marine environment.
- (15) METALLIC HEAT RESISTANT COATING is any coating which contains more than 5 grams of metal particles per liter of coating as applied and which must withstand temperatures over 80°C (175°F).
- (16) NAVIGATIONAL AIDS are buoys or other Coast Guard waterway markers.
- (17) PRETREATMENT WASH PRIMER is any coating which contains at least 1/2-percent acids, by weight, to provide surface etching and is applied directly to metal surfaces to provide corrosion resistance, adhesion, and ease of stripping.
- (18) REPAIR AND MAINTENANCE THERMOPLASTIC COATING is any resin-bearing coating, such as vinyl, chlorinated rubber, or bituminous coatings, in which the resin becomes pliable with the application of heat, and is used to recoat portions of a previously coated substrate which has sustained damage to the coating following normal coating operations.
- (19) SEALANT FOR WIRE-SPRAYED ALUMINUM is any coating of up to one mil (0.001 inch) in thickness of an epoxy material which is reduced for application with an equal part of an appropriate solvent (naphtha, or ethylene glycol monoethyl ether).
- (20) SOLVENT CLEANING OPERATION is the removal of loosely held uncured adhesives, uncured inks, uncured coatings, and contaminants from

parts, products, tools, machinery, equipment, and general work areas. Contaminants include, but are not limited to, dirt, soil, and grease. In a cleaning process which consists of a series of cleaning methods, each distinct method shall constitute a separate solvent cleaning operation.

- (21) SPECIAL MARKING COATING is any coating used for items such as flight decks, ships' numbers, and other safety/identification applications.
- (22) TACK COAT is an epoxy coating of up to two mils (0.002 inch) thick applied to an existing epoxy coating. The existing epoxy coating must have aged beyond the time limit specified by the manufacturer for application of the next coat.
- (23) TOUCH-UP COATING is any coating used to cover minor imperfections prior to shipment appearing after the main coating operation.
- (24) UNDERSEA WEAPONS SYSTEM is any or all components of a weapons system that is launched or fired underwater.
- (25) VOLATILE ORGANIC COMPOUND (VOC) is any volatile compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and exempt compounds.
- (26) WIRE-SPRAYED ALUMINUM is any multi-aluminum coating applied to a steel substrate using oxygen fueled combustion spray methods.

(c) Requirements

(1) VOC Content of Marine Coatings

Except as otherwise provided in this rule, a person shall not apply a marine coating with a VOC content in excess of the following limits, expressed as grams of VOC per liter of coating as applied, less water and less exempt solvents:

<u>COATING</u>	<u>VOC LIMIT</u>	
	<u>Baked</u>	<u>Air Dried</u>
General Coating	275 g/L	340 g/L

<u>COATING</u>	<u>VOC LIMIT</u>	
	<u>Baked</u>	<u>Air Dried</u>
Specialty Coating		
Heat Resistant	360	420
Metallic Heat Resistant		530
High Temperature		500
Pre-Treatment Wash Primer	780	780
Underwater Weapons Systems	275	340
Elastomeric Adhesives with 15%, by Weight, Natural or Synthetic Rubber		730
Solvent-Based Inorganic Zinc		650
Navigational Aids		340
Sealant for Wire-Sprayed Aluminum		610
Special Marking		490
Tack Coat		610
Low Activation Interior Coating		420
Repair and Maintenance Thermoplastic		550
Extreme High-Gloss Coating	420	490
Antenna Coating		530
Antifoulant		400
High Gloss	275	340

(2) Approved Emission Control System

- (A) Owners and/or operators may comply with the provisions of paragraph (c)(1) by using an emission control system, which has been approved in writing by the Executive Officer, for reducing VOC emissions. The control system must achieve a minimum capture efficiency using USEPA, ARB, and District methods specified in subparagraph (e)(4)(A) and a destruction efficiency of at least 85 percent by weight, and,
- (B) The approved system shall reduce the VOC emissions, when using non-compliant coatings, to an equivalent or greater level that would be achieved by the provisions in paragraph (c)(1). The required efficiency of an emission control system at which an equivalent or greater level of VOC reduction will be achieved shall be calculated by the following equation:

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

- Where:
- C.E. = Control Efficiency, percent
 - VOC_{LWc} = VOC Limit of Rule 1106, less water and less exempt compounds, pursuant to subdivision (c).
 - VOC_{LWn,Max} = Maximum VOC content of non-compliant coating 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 non-compliant coating, containing the maximum VOC content of the multicomponent coating.
 - D_c = Density of corresponding solvent, reducer, or thinner used in the compliant coating system = 880g/L.

- (3) **Alternative Emission Control Plan**
 Owners and/or operators may achieve compliance with the requirements of paragraph (c)(1) by means of an Alternative Emission Control Plan pursuant to Rule 108.
 - (4) **Solvent Cleaning Operations; Storage and Disposal of VOC-containing Materials**
 All solvent cleaning operations and the storage and disposal of VOC-containing materials used in solvent cleaning operations shall be carried out pursuant to Rule 1171 - Solvent Cleaning Operations.
 - (5) **Recordkeeping**
 Notwithstanding the provisions of subdivision (g), records shall be maintained pursuant to Rule 109.
- (d) **Prohibition of Specification**
- (1) A person shall not solicit or require any other person to use, in the district, any coating or combination of coatings to be applied to any marine vessel or marine component subject to the provisions of this rule that does not meet the limits requirements of this rule or of an Alternative Emission Control Plan approved pursuant to the provisions of paragraph (c)(3) of this rule.

- (2) The requirements of paragraph (d)(1) shall apply to all written or oral agreements executed or entered into after November 4, 1988.

(e) Test Methods

(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 compound 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 (VOC) 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 subdivision (c), only when manufacturers specify which individual compounds are used in the coating formulation. In addition, the manufacturers shall identify the USEPA, California Air Resources Board, and the SCAQMD approved test methods used to quantify the amount of each exempt compound

(2) Determination of Metal Content

The metal content in metallic coatings subject to the provisions of this rule shall be determined by the SCAQMD Method 311 (Analysis of Percent Metal in Metallic Coatings by Spectrographic Method) contained in the

SCAQMD "Laboratory Methods of Analysis for Enforcement Samples" manual.

(3) Determination of Acid Content

The acid content of coating subject to the provisions of this rule shall be determined by ASTM D 1613-85 (Acidity in Volatile Solvents and Chemical Intermediates Used in Paint, Varnish, Lacquer, and Related Products) contained in the SCAQMD "Laboratory Methods of Analysis for Enforcement Samples" manual.

(4) Determination of Efficiency of Emission Control System

(A) The efficiency of the collection device of the emission control system as specified in paragraph (c)(2) shall be determined by the USEPA method cited in 55 Federal Register 26865 (June 29, 1990), or any other method approved by the USEPA, the California Air Resources Board, and the SCAQMD.

(B) The efficiency of the control device of the emission control system as specified in paragraph (c)(2) and the VOC content in the control device exhaust gases, measured and calculated as carbon, shall be determined by 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.

(5) Multiple Test Methods

When more than one test method or set of test 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.

(6) All test methods referenced in this section shall be the most recently approved version.

(f) Rule 442 Applicability

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

(g) Exemptions

The provisions of this rule shall not apply to:

- (1) marine coatings applied to interior surfaces of potable water containers.
- (2) touch-up coatings
- (3) marine coatings purchased before January 1, 1992, in containers of one quart or less and applied to pleasure craft.
- (4) antifoulant coatings applied to aluminum hulls.
- (5) aerosol coating products.