MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT

RULE 1106 – MARINE COATING OPERATIONS
(Adopted 8/28/06)

(A) General

(1) Purpose

(a) The purpose of this Rule is to limit the emissions of Volatile Organic Compounds (VOC's) from Marine Coatings Operations.

(2) Applicability

( ) This Rule applies to all marine coating operations of both commercial boats and ships, pleasure craft and their appurtenances, and to the coating of buoys and oil drilling rigs or their parts and components intended for the marine environment which occur within the Mojave Desert Air Quality Management District.

(3) Exemptions

The provisions of this rule shall not apply to:

(a) The use of aerosol coating products.

(b) Facilities whose rate per day of coating use is less than one gallon, including any VOC-containing materials added to the original coating as supplied by the manufacturer. Only coatings subject to this rule shall be included in the calculation of rate per day, or; coating application operations that emit not more than 3 pounds of VOC's per day and not more than 200 pounds of VOC's per calendar year.

(c) Marine coatings applied to interior surfaces of potable water containers.

(c) Touch-up coatings.

(3) 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 applicable provisions of Rules 1114, 1115 and 442.

(B) Definitions

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

(1) Adhesive – Any substance that is used to bond one surface to another surface by attachment.

(2) Aerosol Coating Product – A hand-held, non-refillable container that expels pressurized materials by means of a propellant-induced force.

(3) Air-Dried Coating – Any coating that is not heated above 90°C (194°F) for the purpose of curing or drying.

(4) Air Flask Coating – A coating applied to the interior surfaces of high pressure breathing air flasks to provide corrosion resistance and which is certified safe for use with breathing air supplies.

(5) Antenna Coating – Any coating applied to equipment and associated structural appurtenances that are used to receive or transmit electronic signals.

(6) Antifoulant Coating – Any coating applied to the underwater portion of a vessel to prevent or reduce the attachment of biological organisms and is registered with the Environmental Protection Agency (EPA) as a pesticide.

(7) As Applied – The condition of a coating at the time of application to the substrate, including any thinning solvent.

(8) As Supplied – The condition of a coating before any thinning, as sold and delivered by the coating manufacturer to the user.

(9) Baked–Coating – Any coating that is cured at a temperature at or above 90°C (194°F).

(10) Clear Topcoat – A final coating which contains binders, but not opaque pigments, and is specifically formulated to form a transparent or translucent solid protective film. Includes but is not limited to varnishes.

(10) Clear Wood Finishes – Clear and semi-transparent topcoats applied to wood substrates to provide a transparent or translucent film.

(11) Coating – A material that is applied to a surface and forms a film in order to identify, beautify, protect convey a message, or minimize detection of such surface. "Coating" includes, but is not limited to, materials such as topcoats, stains, sealers, fillers, conversion varnish, pigmented coating, multicolored coating, moldseal coating, washcoat and toner.

(11) District – The Mojave Desert Air Quality Management District the geographical area of which is described in District Rule 103.

(14) Elastomeric Adhesive – Any adhesive containing natural or synthetic rubber.

(15) Exempt Compound – Those compounds listed in 40 CFR 51.100(S)(1).

(16) Extreme High Gloss Coating – A coating that achieves at least a 95% reflectance on a 60° meter when tested by ASTM Method D-523.

(17) Extreme Performance Coating – A coating that is used on a metal surface where the coated surface, in its intended use, is acutely and chronically exposed to salt water, corrosives, caustics, acids, oxidizing agents, wind or ocean driven debris or electromagnetic pulse.

(18) Finish Primer/Surfacer – A coating applied with a wet film thickness of less then 10 mils prior to the application of a topcoat for purposes of providing corrosion resistance, adhesion of subsequent coatings, a moisture barrier, or promotion of a uniform surface necessary for filling in surface imperfections.

(19) General Use Coating – A general use coating is any marine coating that is not a specialty coating, or does not have an otherwise specified limit.

(20) "Grams of VOC Per Liter of Coating Less Water and Less Exempt Compounds" (VOC Content) – The weight of VOC per combined volume of VOC and Coating solids, calculated using the formula in subsection (E)(1)(a).

(21) "Grams of VOC Per Liter of Material" – The weight of VOC per volume of material, calculated using the formula found in subsection (E)(1)(b).

(22) Heat-Resistant Coating – Any coating which during normal use must withstand temperatures of at least 204°C (400°F).

(23) High Build Primer/Surfacer – A coating applied with a wet film thickness of 10 mils or more prior to the application of a topcoat for purposes of providing corrosion resistance, adhesion of subsequent coatings, or a moisture barrier, or promoting a uniform surface necessary for filling in surface imperfections.

(24) High-Gloss Coating – Any coating which achieves at least 85% reflectance on a 60° meter when tested by ASTM Method 523.

(25) High Temperature Coating – Any coating which must withstand temperatures of at least 426°C (800°F).

(26) Inorganic Zinc (high-build) Specialty Coat – A coating that contains 960 grams per liter (8 pounds per gallon) or more elemental zinc incorporated into an inorganic silicate binder that is applied to steel to provide galvanic corrosion resistance. (These coatings are typically applied at more than 2 mil dry film thickness.

(27) Low Activation Interior Coating – Any coating used on interior surfaces aboard ships to minimize the activation of pigments on painted surfaces within a radiation environment.

(28) Marine Coating – Any coating, except unsaturated polyester resin (fiberglass) coatings, containing volatile organic compounds and applied by any means to ships, boats, and their appurtenances, and to navigational aids and oil drilling rigs intended for the marine environment.

(28) Metallic Heat-Resistant Coating – 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).

(30) Military Exterior Specialty Coating – Any exterior topcoat intended by the manufacturer to be applied to military vessels (including US Coast Guard) that are subject to specified chemical, biological, and radiological washdown requirements.

(31) Mist – Any low viscosity, thin film, epoxy coating applied to an inorganic zinc primer that penetrates the porous zinc primer and allows the occluded air to escape through the paint film prior to curing.

(32) Navigational Aids – Buoys or other Coast Guard waterway markers.

(33) Non-Skid Coating – Any coating which has, as its primary purpose, the creation of traction to prevent slippage.

(34) Nuclear Specialty Coating – Any protective coating used to seal porous surfaces such as steel (or concrete) that otherwise would be subject to intrusion by radioactive materials. These coatings must be resistant to long-term (service life) cumulative radiation exposure as tested by ASTM D4082–89, relatively easy to decontaminate as determined by ASTM D4256–89, and resistant to various chemicals to which the coatings are likely to be exposed as tested by ASTM D3912 – 80.

(35) Organic Zinc – Any coating derived from zinc dust incorporated into an organic binder that contains more than 960 grams of elemental zinc per liter (8 pounds per gallon) of coating, as applied, and that is used for the expressed purpose of corrosion protection.

(35) Overall Control Efficiency (CE) – The ratio, expressed as a percentage, of the weight of the VOC removed by the emission control system to the total weight of VOC emitted from Coating Application Operations, both measured simultaneously, calculated pursuant to the formulas found in Subsection (F)(1)(c).

(37) Pleasure Craft – Vessels which are manufactured or operated primarily for recreational purposes, or leased, rented, or chartered to a person or business for recreational purposes. The owner or operator of such vessels shall be responsible for certifying that the intended use is for recreational purposes.

(38) Pleasure-Craft Coating – Any marine coating, except unsaturated polyester resin (fiberglass) coatings, applied by brush, spray, roller or other means to a pleasure craft purposes.

(39) Pretreatment Wash Primer – A coating which contains no more than 12 percent solids, by weight, and at least ½ percent acids, by weight; is used to provide surface etching; and is applied directly to fiberglass and metal surfaces to provide corrosion resistance and adhesion of subsequent coatings.

(39) Repair and Maintenance Thermoplastic Coating – 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 operations purposes.

(39) Rubber Camouflage – Any specially formulated epoxy coating used as a camouflage topcoat for exterior submarine hulls and sonar domes.

(42) Sealant for Wire-Sprayed Aluminum – Any coating of up to one mil (0,0001 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).

(43) Sealer – A low viscosity coating, containing binders, applied to bare wood to seal surface pores to prevent subsequent coatings from being absorbed into the wood.

(44) Solvent Cleaning Operation – 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 that consists of a series of cleaning methods, each distinct method shall constitute a separate cleaning operation.

(45) "South Coast Air Quality Management District" (SCAQMD) – The air quality district created pursuant to Division 26, Part 3, Chapter 5.5 of the California Health and Safety Code (commencing with §40400).

(46) Special Marking Coating – Any coating used for items such as flight decks, ship's numbers, and other safety/identification applications.

(47) Specialty Interior Coating – An extreme performance coating used on interior surfaces aboard ships which has fire retardant properties and has a toxicity index of less than 0.03 in addition to existing military physical and performance requirements.

(48) Tack Coat – 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.

(49) Teak Primer – A coating applied to teak or previously oiled decks in order to improve the adhesion of a seam sealer to wood.

(50) Topcoat – Any final coating applied to the interior or exterior of a pleasure craft. Includes but is not limited to varnishes.

(51) Touch-Up Coating – Any coating used to cover minor imperfections prior to shipment appearing after the main coating operation.

(51) Underwater Weapons Systems – Any or all components of a weapons system that is launched or fired underwater.

(52) "United States Environmental Protection Agency" (USEPA) – The United States Environmental Protection Agency, the Administrator of the USEPA and his or her authorized representative.

(54) Varnishes – Clear wood topcoats formulated with various resins to dry by chemical reaction on exposure to air.

(55) Volatile Organic Compound (VOC) – Any volatile compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and Exempt Compounds.

(54) Wire-Sprayed Aluminum – Any multi-aluminum coating applied to a steel substrate using oxygen fueled combustion spray methods.

(C) Requirements

(1) VOC Content of Coatings

(a) A person shall not apply any marine coating to commercial boats or ships, pleasure craft and their appurtenances, and to buoys and oil drilling rigs or their parts and components intended for the marine environment, including any VOC-containing materials added to the original coating supplied by the manufacturer, which contains VOC in excess of the limits specified in Table 1.

Table 1
COATING LIMITS
(Grams of VOC Per Liter of Coating, Less Water and Less Exempt Compounds)

Marine Coating Materials Categories	**VOC Limit (g/liter)**	
	Air-Dried	Baked
Air Flask	340	
Antenna	530	
Antifoulant Coating – Non Pleasure Craft	400	
Antifoulant Coating – Aluminum Substrate Pleasure Craft	560	
Antifoulant Coating – Other Substrates Pleasure Craft	330	
Clear Wood Finishes – Sealers	550	
Clear Wood Finishes – Topcoats	490	
Elastomeric Adhesives with 15%, by weight, Natural or Synthetic Rubber	730	
Extreme Performance	420	360
Extreme High-Gloss	490	420
Finish Primer/Surfacer	420	
General Use	340	275
Heat Resistant	420	360
High Build Primer/Surfacer	340	
High-Gloss	340	275
High-Temperature	500	
Inorganic Zinc (high-build)	340	
Metallic Heat Resistant	530	
Military Exterior Specialty	340	
Mist	610	
Navigational Aids	340	
Nonskid	340	

Nuclear Specialty	420	
Organic Zinc	360	
Pretreatment Wash Primer	780	780
Repair and Maintenance of Thermoplastics	550	550
Rubber Camouflage	340	
Sealant for Wire-Sprayed Aluminum	610	
Special Marking	490	490
Specialty Interior	340	
Tack Coat	610	
Teak Primer	775	
Topcoats – Extreme High Gloss	490	
Topcoats – High Gloss	420	
Underwater Weapons Systems	340	275
Weld-through Precon Primer	340	

(b) In lieu of complying with the VOC content limitations in Table 1, air pollution control equipment with a capture and control system Overall Control Efficiency of at least 85 percent, as determined pursuant to subsections (F)(2)(a)(i) and (F)(2)(e)(i) of this rule may be used.

(b) Any coating, coating operation, or facility which is exempt from all or a portion of the VOC Content limits of this rule shall comply with the provisions of Rule 442, 1114 and 1115 unless compliance with the limits specified in this rule are achieved.

(2) Extreme Performance Coatings – Military Installations

( ) The VOC limits of Table 1 shall not apply to only military installation use of an extreme performance coating which has been approved by the APCO in writing pursuant to this subsection.

( ) Any person seeking to use an Extreme-performance Coating in any military coating operation which is subject to the provisions of this Rule shall:

(i) Submit a petition to the APCO stating the performance requirements, volume of coating, and VOC level which is attainable. Such petition shall include a technical justification of the attainable VOC level and an explanation why the coating cannot meet the limits set forth in subsection (C)(1)(a).

(i) If the APCO grants written approval, such petition shall be resubmitted for approval on an annual basis.

(i) If the APCO grants written approval, such approval shall contain volume and VOC limit conditions.

(iv) Records shall be maintained pursuant to Section (E).

(3) Transfer Efficiency

A person shall not apply any coatings to Marine vessels and appurtenances subject to the provisions of this Rule, unless the coating is applied with equipment

properly operated according to the manufacturer's suggested guidelines, and using one of the following application methods:

(a) Electrostatic attraction; or

(b) High Volume Low Pressure (HVLP) spray equipment; or

(c) Dip coat; or

(d) Hand application methods; or

(e) Other coating application methods as are demonstrated to have a transfer efficiency at least equal to one of the above methods, and which are used in a manner that the parameters under which they were tested are permanent features of the method. Prior to their use, such coating applications shall be approved in writing by the Executive Director.

(4) Prohibition of Specification

(a) No person shall solicit or require for use or specify the application of a coating on marine vessels, or part or component thereof if such use or application results in a violation of the provisions of this Rule. The prohibition of this subsection shall apply to all written or oral contracts under the terms of which any coating which is subject to the provisions of this rule is to be applied to any marine vessel, or part or component at any physical location within the District.

(5) Prohibition of Sale

(a) A person shall not offer for sale or sell within the District any coating that does not meet the VOC content limits, as set forth in Table 1 of this rule. The prohibition of this section shall apply to the sale of any marine coating which will be applied at any physical location within the District, except those which are specifically exempted in subsection B (15) and (C) of this rule.

(6) Compliance Statement Requirement

(a) The manufacturer of coatings subject to this rule shall include a designation of VOC as supplied on data sheets; including coating components, expressed in grams per liter or pounds per gallon, excluding water and Exempt Compounds.

(7) Surface Preparation and Cleanup Solvent

(a) The requirements of this section shall apply to any person using solvent for surface preparation, cleanup, and paint removal, including paint spray equipment.

(b) A person shall not use VOC-containing materials for the cleanup of application equipment used in marine coating operations, unless such material is collected in a closed container when not in use; and

(i) The application equipment is disassembled and cleaned in an enclosed system during the washing, rinsing and draining processes; or
(ii) The application equipment or equipment parts are cleaned in a container which is open only when being accessed for adding, cleaning, or removing application equipment or when cleaning material is being added, provided the cleaned equipment or equipment parts are drained to the container until dripping ceases; or
(iii) Other application equipment cleaning methods that are demonstrated to be as effective as the equipment described above in minimizing emissions of VOC to the atmosphere are used, provided that the device has been approved in writing prior to use, by the APCO.

(c) A person shall not use VOC-containing materials for surface preparation unless:

(i) The material contains 200 grams or less of VOC per liter of material (1.67 pounds per gallon); or
(ii) The material has an initial boiling point of 190°C (374°F) or greater; or
(iii) The material has a total VOC vapor pressure of 20 mm Hg or less, at 20°C (68°F).

(c) A person shall use closed, nonabsorbent containers for the storage of fresh or spent solvent, and disposal of cloth, paper, or any other absorbent material used for solvent surface preparation and cleanup.

(D) Monitoring and Records

(1) Coating Records

(a) Any person subject to section (C) or claiming exemption under section (A)(3) shall comply with the following requirements:

(i) The person shall maintain and have available during an inspection, a current list of Coatings in use which provides all of the Coating data necessary to evaluate compliance, including the following information, as applicable:
1. Coating, catalyst, and reducer used.
2. Mix ratio of components used.
3. VOC Content of coating as applied.
(ii) The person shall maintain records on a daily basis including:
1. Coating and mix ratio of components used in the coating; and

2. Quantity of each coating applied.

(iii) The person shall maintain records on a daily basis showing the type and amount of solvent used for cleanup, surface preparation, and paint removal.

(b) Notwithstanding the provisions of subsection (E)(1)(a), a person or facility which exclusively uses Coatings formulations compliant with subsection (D)(1)(a) may maintain usage records on a monthly basis.

(2) Compliance Assurance Monitoring

(a) Each Coating Application Operation subject to subparagraph (C)(1) which is using air pollution abatement equipment to meet the control requirement shall:

(i) Utilize Compliance Assurance Monitoring, as approved by the APCO. Each monitoring device(s), mechanism and/or technique shall be calibrated/maintained in a manner approved by the APCO; and

(ii) Maintain and produce daily records of key system operating parameters and maintenance procedures which will demonstrate continuous operation and compliance of the air pollution abatement equipment during periods of emissions-producing activities. Key system operating parameters are those necessary to ensure compliance with VOC content of coating requirements, such as temperatures, pressures and flow rates.

(b) Compliance with subsection (C)(1) shall be determined by compliance testing as prescribed in subsection (E)(2) and/or by evaluating Compliance Assurance Monitoring data.

(3) All records for the previous five year period maintained and produced pursuant to this Section shall be retained and available for inspection by the APCO upon request.

(E) Compliance Procedures and Test Methods

(1) Calculation Methods

( ) Grams of VOC per liter of coating less water and less Exempt Compounds shall be determined by the following equation:

$$Gv = \frac{Ws - Ww - Wes}{Vm - Vw - Ves}$$

Where: Gv=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

(b) Grams of VOC Per Liter of Material shall be determined by the following equation:

$$Gv = \frac{Ws - Ww - Wes}{Vm}$$

Where: Gv=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

(c) Overall Control Efficiency shall be determined by the following equations

$$CE = \frac{(Wc - Wa)}{We} x100$$

$$CE = \frac{[(CaptureEfficiency)x(ControlDeviceEfficiency)}{100}$$

(2) The following specified test methods shall be used to determine compliance with the provisions of this Rule.

( ) Determination of VOC Content:

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

(i) United States Environmental Protection Agency (USEPA) Reference Method 24 (40 CFR 60, Appendix A) for VOC content and ASTM D4457-85, or CARB Method 432 for determination of exempt compounds. 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,

(ii) SCAQMD Method 304 – *Determination of Volatile Organic Compounds (VOC) in Various Materials* contained in the SCAQMD "Laboratory Methods of Analysis for Enforcement Samples" manual.

(iii) 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 section (C), only when manufacturers specify which individual compounds are used in the coating formulation. In addition, the manufacturers shall identify the USEPA, CARB, or other approved test methods used to quantify the amount of each Exempt Compound.

(iv) Determination of the initial boiling point of liquid containing VOC, subject to subsection (C)(1)(a), shall be conducted in accordance with ASTM D1078-86.

(v) Calculation of total VOC vapor pressure for materials subject to subsection (C)(1)(a) shall be conducted in accordance with ASTM D2879-86. The fraction of water and exempt compounds in the liquid phase shall be determined by using ASTM D3792-91 and D4457-85 and shall be used to calculate the partial pressure of water and exempt compounds. The results of vapor pressure measurements obtained using ASTM D2879-86 shall be corrected for partial pressure of water and exempt compounds.

(vi) Measurement of solvent losses from alternative application cleaning equipment subject to (C)(6)(b) shall be conducted in accordance with the South Coast Air Quality Management District's "General Test Method for Determining Solvent Losses from Spray Gun Cleaning Systems"(11/1/94).

(b) Determination of Metal Content:

(i) 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.

(c) Determination of Acid Content

(i) The acid content of coating subject to the provisions of this rule shall be determined by ASTM D1613-85 (Acidity in Volatile Solvents and Chemical Intermediates Used in Paint. Varnish, Lacquer, and Related Products).

(d) Determination of Efficiency of Emission Control System

(i) The efficiency of the collection device of the emission control system as specified in paragraph (C)(1)(b) 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 District.

(ii) The efficiency of the control device of the emission control system as specified in paragraph (C)(1)(b) 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.

(e) Determination of Capture Efficiency

(i) Capture efficiency shall be determined according to the USEPA's technical document, "Guidelines for Determining Capture Efficiency" (1/9/95).

(f) Determination of Extreme High Gloss and High Gloss

(i) Gloss shall be determined by ASTM Method D-523.

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

(4) Alternative Test Methods

(a) Other test methods demonstrated to provide results that are acceptable for purposes of determining compliance with any provisions of this rule may also be used after review and approval in writhing by the District, CARB and USEPA.

(F) Violations

(1) Failure to comply with any provision of this Rule shall constitute a violation of the Rule.

(2) A violation of the limits contained in this Rule as determined by any one of these test methods shall constitute a violation of this Rule.

(3) 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.

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