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## RULE 1124

### Aerospace Assembly and Component Manufacturing Operations

#### (A) General

##### (1) Purpose

- (a) To reduce volatile organic compounds (VOC) emissions from aerospace assembly and component manufacturing operations.

##### (2) Applicability

- (a) This rule applies to any operation associated with manufacturing and assembling products for aircraft and space vehicles. The affected industries include commercial and military aircraft, satellite, space shuttle and rocket manufacturers and their subcontractors.
- (b) This rule also applies to maskant applicators, aircraft refinishers, aircraft fastener manufacturers, aircraft operators, and aircraft maintenance and service facilities.

#### (B) Definitions

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

- (1) Adhesion Promoter – A primer that is used to promote wetting and form a chemical bond with a subsequently applied sealant or other elastomer.
- (2) Adhesive - Any substance that is used to bond one surface to another surface by attachment.
- (3) Adhesive Bonding Primer - A primer applied to aerospace components to increase adhesive or adhesive film bond strength.
- (4) Aerosol Coating Product - 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.

- (5) Aerospace Component - The raw material, partial or completed fabricated part, assembly of parts, or completed unit of any aircraft or space vehicle and includes integral equipment such as models, mock-ups, prototypes, molds, jigs, tooling, hardware jackets, and test coupons.
- (6) Aerospace Material – any coating, primer, adhesive, sealant, maskant, lubricant, stripper or hand-wipe cleaning or clean-up solvent used during the manufacturing, assembly, refinishing, maintenance or service of an Aerospace Component./
- (7) Air Brush Operations – Application of Aerospace Material with equipment operating at air pressure between 25 psi and 116 psi and an air volume of 0.7 cfm and 1.75 respectively.
- (8) Aircraft - Any machine designed to travel through the air, without leaving the earth's atmosphere, whether heavier or lighter than air, including airplanes, balloons, dirigibles, helicopters, and missiles.
- (9) Air Pollution Control Officer (APCO) – The person appointed to the position of Air Pollution Control Officer of the District pursuant to the provisions of California Health & Safety Code §40750 and his or her designee.
- (10) Antichafe Coating - A coating applied to areas of moving aerospace components which may rub during normal operation.
- (11) Anti-Wicking Wire Coating - The outer coating of a wire which prevents fluid wicking into insulation of the wire.
- (12) Barrier Coating - A coating applied in a thin film to fasteners to inhibit dissimilar metal corrosion and to prevent galling.
- (13) Chemical Milling The removal of metal by chemical action of acids or alkalis.
- (14) Clear Topcoat - A topcoat that contains no visible pigments and is uniformly transparent when applied.
- (15) Coating Application Equipment - Equipment used for applying coating to a substrate. Coating application equipment includes coating distribution lines, coating hoses, pressure-pots, spray guns, and hand-application equipment, such as hand-rollers, brushes, daubers, spatulas, and trowels.
- (16) Conformal Coating - A coating applied to electrical conductors and circuit boards to protect them against electrical discharge damage and/or corrosion.
- (17) Dry Lubricative Materials -Coatings consisting of lauric acid, cetyl alcohol, waxes or other non-cross linked or resin bound materials which act as a dry lubricant or protective coat.
- (18) District – The Antelope Valley Air Quality Management District, the geographical area of which is described in District Rule 103.

- (19) Electric Or Radiation-Effect Coatings - Include electrically conductive coatings and radiation effect coatings and coating systems the uses of which may include prevention of radar detection.
- (20) Electronic Wire Coating - The outer electrical insulation coating applied to tape insulation of a wire specifically formulated to smooth and fill edges.
- (21) Epoxy Based Fuel-Tank Coating - Acoating that contains epoxy resin that is applied to a fuel tank of an aircraft to protect it from corrosion and/or bacterial growth.
- (22) Exempt Compounds - A compound identified as exempt in 40 CFR 51.100(s)(1).
- (23) Facility - Any permit unit, group of permit units, non-permitted equipment or any combination thereof which emits or may emit an Air Pollutant; and belongs to a single major industrial group in the Standard Industrial Classification manual; and is located on a single parcel of land or on contiguous property within the District; and which is owned or operated by the same person or by persons under common control.
- (24) Fastener Manufacturer - A facility that coats aircraft fasteners, such as pins, collars, bolts, nuts, and rivets, with solid-film lubricants for distribution to other facilities.
- (25) Fire-Resistant Coating - A cabin interior coating that meets for civilian aircraft the Federal Aviation Administration-required Ohio State University Heat Release, Fire and Burn Tests; for military aircraft, Aircraft Structure Integrity Program in MIL-STD-1530A and MIL-A-87221 (Northrop's MS-445-3.3.2.1 and MS-445-3.3.2.2).
- (26) Flight-Test Coating - A coating applied to an aircraft prior to flight testing to protect the aircraft from corrosion and to provide required marking during flight test evaluation.
- (27) Fuel-Tank Adhesive - An adhesive used to bond components exposed to fuel that must be compatible with fuel-tank coatings.
- (28) Fuel-Tank Coating, General - Acoating applied to a fuel tank of an aircraft to protect it from corrosion and/or bacterial growth.
- (29) Fuel-Tank Coating, Rapid Cure – A fuel tank coating with shortened curing times and decreased sensitivity to low humidity during the curing process.
- (30) Hand Application Method - The application of Aerospace Materials by manually held, non-mechanically operated equipment. Such equipment includes paint brushes, hand rollers, caulking guns, trowels, spatulas, syringe daubers, rags, and sponges.

- (31) High-Temperature Coating - A coating that must withstand temperatures of more than 350°F.
- (32) High-Volume, Low-Pressure (HVL) Spray - An Aerospace Materials application system which is operated with air pressure of between 0.1 and 10 pounds per square inch gauge (psig).
- (33) Impact-Resistant Coating - A flexible coating that protects aerospace components, such as aircraft landing gear, and landing gear compartments, and other surfaces subject to impact and abrasion from runway debris.
- (34) Line-Sealer Maskant - A maskant used to cover scribe lines in maskant in order to protect against etchant in multi-step etching processing.
- (35) Low-Solids Adhesive Coating, Primer Or Sealant - An adhesive coating, primer or sealant which has less than one pound of solids per gallon of material. Such solids are the non-volatiles remaining after a sample is heated at 230°F (110°C) for one hour.
- (36) Low-Solids Corrosion Resistant Primer - A corrosion resistant polyurethane compatible primer with enhanced adhesion and rain erosion resistance which contains no more than 45 percent (45%) solids, by weight, as applied.
- (37) Maskant For Chemical Milling - A coating applied directly to an aerospace component to protect surface areas when chemically milling the component.
- (38) Maskant For Chemical Processing - A coating applied directly to an aerospace component to protect surface areas when anodizing, aging, bonding, plating, etching, and/or performing other chemical surface operations on the component.
- (39) Metallized Epoxy Coating - A coating that contains relatively large quantities of flake pigmentation for appearance and/or added protection.
- (40) Mold Release Coating - A coating applied to the surface of a mold to prevent the molded component from sticking to the mold as it is removed.
- (41) Non-Structural Adhesive - An adhesive that bonds non-load-carrying aircraft components in non-critical applications and is not covered in any other specialty adhesive categories.
- (42) Optical Anti-Reflection Coating - A coating with a low reflectance in the infrared and visible wavelength range and is used for anti-reflection on or near optical and laser hardware.
- (43) Phosphate Ester Resistant Ink - A coating that is used for surface identification or marking which inhibits phosphate ester fluid corrosion.

- (44) Photolithographic Maskant - A coating applied by photoresist operation(s) directly to printed circuit boards, and ceramic and similar substrates to protect surface areas from chemical milling or chemical processing.
- (45) Photoresist Operation - A process for the application or development of photoresist masking solution on a substrate, including preparation, soft bake, develop, hard bake, and stripping, and can be generally subdivided as follows:
- (a) Negative Photoresist Operation is a process where the maskant hardens when exposed to light and the unhardened maskant is stripped, exposing the substrate surface for chemical milling or chemical processing.
  - (b) Positive Photoresist Operation is a process where the maskant softens when exposed to light and the softened maskant is stripped, exposing the substrate surface for chemical milling or chemical processing.
- (46) Prebonding Etchant – An acid or basic substance that is used to increase the strength of an adhesive bond by chemically altering the substrate surface morphology to increase the bonding surface area.
- (47) Pretreatment Primer - A primer which contains no more than 12 percent (12%) solids, by weight and at least 0.5 percent (0.5%) acid by weight, to provide surface etching and is applied directly to metal surfaces to provide corrosion resistance, adhesion, and ease of stripping.
- (48) Primer - A coating applied directly to an aerospace component for purposes of corrosion prevention, protection from the environment, functional fluid resistance and/or adhesion of subsequent coatings, adhesives, or sealants.
- (49) Primer Compatible With Rain Erosion Resistant Coating - A primer to which rain erosion resistant topcoat is applied.
- (50) Rain Erosion-Resistant Coating - A coating that protects leading edges, flaps, stabilizers, and engine inlet lips against erosion caused by rain impact during flight.
- (51) Repair Coating - A coating used to recoat portions of a product which has sustained mechanical damage to the coating following normal painting operations.
- (52) Repair Maskant - A maskant used to cover imperfections in the maskant coat.
- (53) Rework - The inspection, repair, and reconditioning of aerospace components subject to this rule.
- (54) Rollable, Brushable or Extrudable Sealant – A single or multi-component polymeric material used to seal many types of joints, gaps, removable panels, and windows where moderate movement is expected. Such material may be applied by rolling brushing extruding or daubing.

- (55) Rubber Solution Fuel-Tank Coating - A fuel-tank coating which performs as a sealant and protects the tank from corrosion and/or bacterial growth and is formulated with a butadiene acrylonitrile copolymer.
- (56) Scale Inhibitor - A coating that is applied to the surface of a part prior to thermal processing to inhibit the formation of tenacious scale.
- (57) Sealants - Viscous semisolid materials that fill voids in order to seal out water, fuel, and other liquids and solids, and in some cases, air movement.
- (58) Solid-Film Lubricant - A very thin coating consisting of a binder system containing as its chief pigment material one or more of the following: molybdenum disulfide, graphite, polytetrafluoroethylene (PTFE), or other solids that act as a dry lubricant between faying surfaces.
- (59) 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 & Safety Code (commencing with §40400).
- (60) Space-Vehicle - A vehicle designed to travel beyond the earth's atmosphere.
- (61) Stencil Coating – An ink or coating that is rolled, sprayed with an airbrush or touch-up gun, or brushed while using a template to add identifying letters and or numbers to Aerospace Components.
- (62) Stripper - A volatile liquid applied to remove cured Aerospace Material or their residues.
- (63) Structural Adhesive - Autoclavable - An adhesive used to bond load-carrying aircraft components and is cured by heat and pressure in an autoclave.
- (64) Structural Adhesive, High Temperature – Autoclavable – An adhesive used to bond load-carrying aircraft components which is cured by heat and pressure in an autoclave, and can withstand service temperatures above 450° F (232° C).
- (65) Structural Adhesive - Non-Autoclavable - An adhesive cured under ambient conditions and is used to bond load-carrying aircraft components or other critical functions, such as nonstructural bonding in the proximity of engines.
- (66) Temporary Marking Coating - An ink or a coating used to make identifying markings, and is removed prior to delivery of the aerospace component and/or assembly.
- (67) Temporary Protective Coating - A coating applied to an aerospace component to protect it from mechanical and environmental damage during manufacturing.
- (68) Topcoat - A coating applied over a primer for purposes such as appearance, identification, or protection.

- (69) Touch-Up Coating - A coating used to cover minor coating imperfections appearing after the main coating operation.
- (70) Touch-Up Operation – The application of Aerospace Materials by brush, air brush, detail HVLP spray equipment outside of a permitted paint enclosure to repair minor surface damage and imperfections after the main coating process.
- (71) Transfer Efficiency - 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.
- (72) Type I Etchant – A chemical milling etchant that contains varying amounts of dissolved sulfur and does not contain amines.
- (73) Type II Etchant – A chemical milling etchant that is a strong sodium hydroxide solution containing amines.
- (74) Unicoat - A coating which is applied directly to an aerospace component for purposes of corrosion protection, environmental protection, and functional fluid resistance that is not subsequently topcoated.
- (75) United States Environmental Protection Agency (USEPA) – The United States Environmental Protection Agency, the Administrator of the USEPA and his or her authorized representative.
- (76) Volatile Organic Compound (VOC) - Any volatile compound containing the element carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and exempt compounds as listed in 40 CFR 51.100(s)(1).
- (77) Wing Coating - A corrosion-resistant coating that is resilient enough to withstand the flexing of the wings.
- (78) Wire Ink - The surface identification stripe and mark on aerospace wire or cable which serves as an electrical insulator in the presence of high humidity.
- (79) Wire Prebonding Etchant - A non-additive surface treatment process to provide bondability of aerospace wire coatings to the underlying insulation layer

## (C) Requirements

- (1) VOC Content of Coatings
  - (a) A person shall not apply to aerospace components any Aerospace Materials, including any VOC-containing materials added to the original Aerospace Materials supplied by the manufacturer, which contain VOC in excess of the limits specified below:

**VOC LIMIT**  
**Grams Per Liter of Coating Less Water and Less Exempt Compounds**  
**Aerospace Materials: VOC Limit**

<b>PRIMERS</b>	--
General	350
Adhesion Promoter	850
Adhesive Bonding Primers	--
Commercial Aircraft	250
Military Aircraft	805
Low Solids Corrosion Resistant Primer	350
Pretreatment Primer	780
Primer Compatible with Rain Erosion-Resistant Coating	850
 <b>COATINGS</b>	 --
Antichafe Coating	420
Conformal Coating	750
Electric- or Radiation-Effect Coating	800
Fire-Resistant Coating	--
Civilian	650
Military	800
Flight-Test Coating	--
Used on Missiles or Single Use Target Craft	420
All Other	840
Fuel-Tank Coating	--
General	420
Rapid Cure	720
High-Temperature Coating	850
Impact-Resistant Coating	420
Metallized Epoxy Coating	700
Mold Release Coatings	780
Optical Anti-Reflection Coating	700
Rain Erosion-Resistant Coating	800
Scale Inhibitor	880
Space-Vehicle Coatings	--
Electrostatic Discharge Protection Coating	800
Other Space-Vehicle Coating	1000
Temporary Protective Coating	250
Topcoat	420
Clear Topcoat	520
Unicoat	420
Wing Coating	750
Wire Coatings	--
Electronic Wire Coating	420
Anti-Wicking	420
Pre-Bonding Etchant	420
Phosphate Ester Resistant Ink	925
 <b>ADHESIVES</b>	 --
Fuel-Tank Adhesive	620
Non-Structural	250
Space Vehicle Adhesive	800
Structural Adhesive	--
Autoclavable	50
High Temperature - Autoclavable	650
Non-Autoclavable	850



<b>VOC LIMIT</b>	
<b>Grams Per Liter of Coating Less Water and Less Exempt Compounds</b>	
<b>SEALANTS</b>	
Extrudable, Rollable or Brushable	280
Other	600

<b>MASKANTS</b>	
For Chemical Milling	--
For use with Type I Etchant	250
For use with Type II Etchant	160
For Chemical Processing	250*
Photolithographic Maskant	850
Touch-up, Line-Sealer Maskant	750
* Less water exempt compounds and perchloroethylene (PERC).	

<b>LUBRICANTS</b>	
Fastener Installation	--
Solid-Film Lubricant	880
Dry Lubricative Material	675
Fastener Lubricative Coating	--
Solid-Film Lubricant	250
Dry Lubricative Material	120
Barrier Coating	420
Non-Fastener Lubricative Coatings	--
Solid-Film Lubricant	880
Dry Lubricative Materials	675

- (b) Documents shall be provided to the the APCO demonstrating that the Unicoat is being used in lieu of the application of a primer and topcoat, and the applicant must receive written approval for the use of the Unicoat specifying the conditions of application from the APCO.
  - (c) For low-solids adhesives, coatings, primers or sealants, the appropriate limits in subparagraph (c)(1)(a) shall be expressed in grams of VOC per liter of material.
- (2) Solvent Use, Clean Up, and Stripping
- (a) A person shall not use VOC-containing materials for cleaning or clean up, excluding coating stripping and equipment cleaning unless:
    - (i) The VOC composite partial pressure is 45 mm Hg or less at a temperature of 20°C (68°F); or
    - (ii) The material contains 200 grams or less of VOC per liter of material.
  - (b) A person shall not use stripper on aerospace components unless:
    - (i) It contains less than 300 grams of VOC per liter of material; or
    - (ii) The VOC composite partial pressure is 9.5 mm Hg (0.18 psia) or less at 20°C (68°F).

(c) A person shall not atomize any solvent into open air.

(3) Equipment Cleaning Operations

Cleaning of coating application equipment shall comply with provisions of Rule 1171.

(4) Storage of VOC-Containing Materials

All VOC containing material, used or unused, including but not limited to surface coatings, thinners, cleanup solvents, or surface preparation materials, and all solvent laden cloth and paper, shall be stored in non-absorbent, non-leaking containers which shall be kept closed at all times except during extraction or introduction of material for mixing, use or storage.

(5) Transfer Efficiency

No person or facility shall apply Aerospace Materials unless it is applied with properly operating equipment or controlled, according to operating procedure specified by the equipment manufacturer or the APCO, and by the use of one of the following methods:

- (a) electrostatic application; or
- (b) flow coater; or
- (c) roll coater; or
- (d) dip coater; or
- (e) high-volume, low-pressure (HVLP) spray; or
- (f) hand application methods; or
- (g) such other alternative application methods as are demonstrated to the APCO, using District-approved procedures, to be capable of achieving at least equivalent transfer efficiency to method (C)(5)(e) and for which written approval of the APCO has been obtained; or
- (h) Approved air pollution control equipment under paragraph (C)(6).

(6) Control Equipment

Owners and/or operators may comply with provisions of paragraphs (C)(1), (C)(2), and (C)(5) by using approved air pollution control equipment provided that the VOC emissions from such operations and/or materials are reduced in accordance with provisions of (a) and (b).

- (a) The control device shall reduce emissions from an emission collection system by at least 95 percent (95%), by weight, or by reducing the output of the air pollution control device to less than 50 PPM calculated for carbon with no dilution.
  - (b) The owner/operator demonstrates that the system collects at least 90 percent (90%), by weight, of the emissions generated by the sources of emissions.
- (7) Prohibition of Solicitation of Violations
- (a) A person shall not solicit or require any other person to use, in the District, any Aerospace Material or combination of Aerospace Materials to be applied to any aircraft component subject to the provisions of this rule that does not meet the limits and requirements of this rule, or of an Alternative Emission Control Plan (AECPP) approved pursuant to the provisions of (C)(8).
  - (b) The requirements of this paragraph shall apply to all written or oral agreements executed or entered into after April 3, 1987.
- (8) Alternative Emission Control Plans
- (a) An owner/operator may comply with the provisions of paragraph (C)(1) by means of an Alternative Emission Control Plan pursuant to Rule 108.

## (D) Recordkeeping and Reporting Requirements

- (1) Recordkeeping
- (a) Records shall be maintained pursuant to the requirements of Rule 109.
- (2) Reporting
- (a) Persons who perform qualification acceptance testing on Aerospace Materials with a future compliance date for use in the District shall, on January 1 and July 1 of each year, submit a status report describing the progress toward the development of Aerospace Materials which satisfy future compliance dates. These reports shall contain, at a minimum:
    - (i) Manufacturer, product number, VOC content, and applicable coating category for each of the test candidates;
    - (ii) Test expenditures for the period;
    - (iii) Progress on candidates tested during this period.
    - (iv) Approvals received for coatings which comply with future compliance dates.
    - (v) Volume of coatings used in each coating category for which there is a future compliance date.

- (b) Facilities testing coatings in the same coating category may submit joint status reports. Once compliance with future compliance dates is achieved and a status report is submitted documenting such, no further status reports need be submitted.

(E) Compliance Procedures and Test Methods

(1) Calculations

- (a) For the purpose of determining compliance with VOC content limits specified in section (C), grams of VOC per liter of Aerospace Material shall be determined by using the following formulas as applicable:
- (i) For Aerospace materials not containing reactive diluents, grams of VOC per liter of coating, less water and less exempt compounds shall be determined as follows:

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

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.

- (ii) For Aerospaces Materials that contain reactive diluents, grams of VOC per liter of coating, less water and less exempt compounds shall be determined as follows:

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

Where:

- $W_s$  = Weight of volatile compounds evolved during curing and analysis, in grams.  
 $W_w$  = Weight of water evolved during curing and analysis, in grams.  
 $W_{es}$  = Weight of exempt compounds evolved during curing and analysis, in grams.  
 $V_m$  = Volume of material prior to reaction, in liters.  
 $V_w$  = Volume of water evolved during curing and analysis, in liters.

$V_{es}$  = Volume of exempt compounds evolved during curing and analysis, in liters.

- (b) Total grams of VOC per liter of Aerospace Material shall be determined using the following formula:

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

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.

- (c) The VOC composite partial pressure shall be determined as follows:

$$PP_c = \sum_{i=1}^n \frac{\frac{W_i}{MW_i} \times VP_i}{\frac{W_w}{MW_w} + \frac{W_e}{MW_e} + \sum_{i=1}^n \frac{W_i}{MW_i}}$$

Where:

$W_i$  = Weight of the “i”th VOC compound, in grams.

$W_w$  = Weight of water, in grams.

$W_e$  = Weight of exempt compound, in grams

$MW_i$  = Molecular weight of the “i”th VOC compound, in grams per gram-mole.

$MW_e$  = Molecular weight of exempt compound in grams per gram-mole.

$PP_c$  = VOC composite partial pressure at 20°C, in mm Hg.

$VP_i$  = Vapor pressure of the “i”th VOC compound at 20°C, in mm Hg.

(2) VOC Content of Aerospace Materials

- (a) To determine the physical properties of an Aerospace Material in order to perform the calculations in subsection (E)(1), the following reference methods shall be used:

- (i) EPA Reference 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).
    - a. Analysis done according to EPA Method 24 shall utilize ASTM Method D-2369-95, referenced in EPA Method 24.
    - b. The exempt solvent content shall be determined using SCAQMD Test Methods 302 and 303 (SCAQMD "Laboratory Methods of Analysis for Enforcement Samples" manual) or;
  - (ii) SCAQMD Test Methods 302, 303, and 304 (SCAQMD "Laboratory Methods of Analysis for Enforcement Samples" manual).
- (b) The following classes of compounds listed below will be analyzed as exempt compounds for compliance with subdivision (C), only at such time as manufacturers specify which individual compounds are used in the coating formulations and identify the test methods, which, prior to such analysis, have been approved by the USEPA and the SCAQMD, that can be used to quantify the amounts of each exempt compound.
- (i) 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.
- (3) Test Methods
- (a) Efficiency of the control device shall be determined according to EPA Method 25, 25A, or SCAQMD Test Method 25.1 or 25.3. Emissions determined to exceed any limits established by this rule through the use of either of the above-referenced test methods shall constitute a violation of this rule.
  - (b) The capture efficiency of the emissions collection system shall be determined by the USEPA method 204A-F and the most recent version of USEPA's *Guidelines for Determining Capture Efficiency* or any other method approved by the USEPA, the California Air Resources Board, and the SCAQMD.
  - (c) 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".

- (d) The identity and quantity of components in solvents shall be determined in accordance with SCAQMD test method 308 (Quantitation of Compounds by Gas Chromatography) contained in the SCAQMD "Laboratory Methods of Analysis for Enforcement Samples" manual. The VOC composite partial pressure is calculated using the equation in paragraph (b)(63).
- (e) Multiple Test Methods
  - (i) 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.
- (f) Any applicable alternative test method may be used so long as such method has been approved by USEPA, CARB and the APCO.

## (F) Administrative Requirements

- (1) Rule 442 Applicability
  - (a) Any Aerospace Material or facility which is exempt from all or a portion of this rule, shall comply with the provisions of Rule 442.

## (G) Exemptions

- (1) The provisions of paragraph (C)(1) of this rule shall not apply to Aerospace Materials with separate formulations that are used in volumes of less than 20 gallons per year provided that the total of all such formulations applied annually at a facility is less than 200 gallons.
- (2) The provisions of subdivision (C) of this rule shall not apply to a facility which uses a total of less than three gallons of VOC-containing Aerospace Materials on each and every day of operation.
- (3) The provisions of paragraphs (C)(1) and (C)(5) of this rule shall not apply to incidental corrosion maintenance repair coating operations at military facilities, provided that the coating use at any maintenance repair location within the facility does not exceed 1.5 gallons per day, and the total coating usage for such operations at the facility does not exceed five (5) gallons per day.
- (4) The provisions of subparagraph (C)(2)(a) shall not apply to space vehicle manufacturing.
- (5) The provisions of paragraph (C)(1) shall not apply to clear or translucent coatings applied on clear or transparent substrates.

- (6) The provisions of paragraph (C)(5) shall not apply to Touch-up Operations and stencil coatings provided that the Touch-up Operations and stencil coatings do not exceed 25 sq. ft. per aircraft.
- (7) The provisions of paragraph (C)(1) shall not apply to the recoating of assembled aircraft at rework facilities if original coating formulations are used.
- (8) The provisions of paragraph (C)(1) shall not apply to adhesives with separate formulations that are used in volumes of less than ten gallons per year.
- (9) The provisions of paragraph (C)(5) shall not be applied to the application of materials marking coatings.
- (10) The provisions of subdivision (C) shall not apply to laboratories which apply Aerospace Materials to test specimens for purposes of research, development, quality control, and testing for production-related operations.
- (11) The provisions of subdivision (C) shall not apply to the application of temporary marking coatings.
- (12) The provisions of paragraph (C)(2) of this rule do not apply to the surface cleaning of solar cells, fluid systems, avionic equipment, and laser optics.
- (13) The provisions of subdivision (D)(1) and (C)(5) shall not be applied to the application of materials that contain less than 20 g/L of VOC per liter of material.
- (14) The provisions of paragraph (C)(5) shall not apply to the use of materials dispensed from airbrush operations provided that the paint reservoir on the air brush is 8 oz or less and that the total amount of coating used for air brush operations at the Facility does not exceed five (5) gallons per year.
- (15) The provisions of this rule shall not apply to aerosol coating products.

[SIP: Submitted as amended 3/20/07 on \_\_\_\_\_; Submitted as amended 12/13/96 on 8/1/97 and approved for SCAQMD area only 8/17/98, 63 FR 43884; Approved 5/6/96, 61 FR 20136, 40 CFR 52.220(c)(215)(I)(A)(5); Approved 1/24/85, 50 FR 3338, 40 CFR 52.220(c)(154)(vii)(A); Approved 9/28/81, 46 FR 47451, 40 CFR 52.220(c)(58)(ii)(B)]