

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

**RULE 1124 -- AEROSPACE ASSEMBLY AND COMPONENT
MANUFACTURING OPERATIONS**

*(Adopted July 6, 1979)(Amended May 7, 1982)(Amended January 6, 1984)
(Amended June 1, 1984)(Amended January 9, 1987)(Amended February 6, 1987)
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(Amended January 13, 1995)(Amended Dec. 13, 1996)(Amended September 21, 2001)*

(a) Purpose and Applicability

The purpose of Rule 1124 is to reduce volatile organic compound (VOC) emissions from aerospace assembly and component manufacturing operations. This rule applies to any operation associated with manufacturing and assembling products for aircraft and space vehicles for which an aerospace material is used. The affected industries include commercial and military aircraft, satellite, space shuttle and rocket manufacturers and their subcontractors. The 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 is a primer that is used to promote wetting and form a chemical bond with a subsequently applied sealant or other elastomer.
- (2) ADHESIVE is any substance that is used to bond one surface to another surface by attachment
- (3) ADHESIVE BONDING PRIMER is a primer that is applied to an aerospace component to increase adhesive or adhesive film bond strength. Adhesive bonding primers are of two types: those that cure at or below 250°F and those that cure above 250°F.
- (4) 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.
- (5) AEROSPACE COMPONENT is 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 is 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. For the purposes of this rule material shall mean aerospace material.
- (7) AIRCRAFT is 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.
- (8) ANTICHAFFE COATING is a coating applied to areas of moving aerospace components which may rub during normal operation.
- (9) ANTI-WICKING WIRE COATING is the outer coating of a wire which prevents fluid wicking into insulation of the wire.
- (10) BARRIER COATING is a coating applied in a thin film to fasteners to inhibit dissimilar metal corrosion and to prevent galling.
- (11) CHEMICAL MILLING is the removal of metal by chemical action of acids or alkalis.
- (12) CLEAR TOPCOAT is a topcoat that contains no visible pigments and is uniformly transparent when applied.
- (13) COATING APPLICATION EQUIPMENT is 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.
- (14) CONFORMAL COATING is a coating applied to electrical conductors and circuit boards to protect them against electrical discharge damage and/or corrosion.
- (15) DRY LUBRICATIVE MATERIALS are 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.
- (16) ELECTRIC- or RADIATION-EFFECT COATINGS include electrically conductive coatings and radiation effect coatings, the uses of which may include prevention of radar detection.

- (17) ELECTRONIC WIRE COATING is the outer electrical insulation coating applied to tape insulation of a wire specifically formulated to smooth and fill edges.
- (18) ELECTROSTATIC DISCHARGE PROTECTION COATING is a coating applied to space vehicles, missiles, aircraft radomes, and helicopter blades to disperse static energy.
- (19) EPOXY BASED FUEL-TANK COATING is a coating which contains epoxy resin that is applied to a fuel tank of an aircraft to protect it from corrosion and/or bacterial growth.
- (20) EXEMPT COMPOUNDS: As defined in Rule 102.
- (21) FACILITY is all the buildings, equipment and materials on one contiguous piece of property.
- (22) FASTENER MANUFACTURER is a facility that coats aircraft fasteners, such as pins, collars, bolts, nuts, and rivets, with solid-film lubricants for distribution to other facilities.
- (23) FIRE-RESISTANT COATING is 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 Structural 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).
- (24) FLIGHT-TEST COATING is 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.
- (25) FUEL-TANK ADHESIVE is an adhesive used to bond components exposed to fuel and must be compatible with fuel-tank coatings.
- (26) FUEL-TANK COATING is a coating applied to a fuel tank of an aircraft to protect it from corrosion and/or bacterial growth.
- (27) 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:

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

| | | | |
|--------|-----|---|---------------------------------------|
| Where: | Ws | = | weight of volatile compounds in grams |
| | Ww | = | weight of water in grams |
| | Wes | = | weight of exempt compounds in grams |
| | Vm | = | volume of material in liters |
| | Vw | = | volume of water in liters |
| | Ves | = | volume of exempt compounds in liters |

For aerospace materials 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:

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

| | | | |
|--------|-----|---|---|
| Where: | Ws | = | weight of volatile compounds evolved during curing and analysis, in grams |
| | Ww | = | weight of water evolved during curing and analysis, in grams |
| | Wes | = | weight of exempt compounds evolved during curing and analysis, in grams |
| | Vm | = | volume of the material prior to reaction, in liters |
| | Vw | = | volume of water evolved during curing and analysis, in liters |
| | Ves | = | volume of exempt compounds evolved during curing and analysis, in liters |

- (28) GRAMS OF VOC PER LITER OF MATERIAL is the weight of VOC per volume of material and can be calculated by the following equation:

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

| | | | |
|--------|-----|---|---------------------------------------|
| Where: | Ws | = | weight of volatile compounds in grams |
| | Ww | = | weight of water in grams |
| | Wes | = | weight of exempt compounds in grams |
| | Vm | = | volume of material in liters |

- (29) HAND APPLICATION METHOD is the application of materials by manually held, non-mechanically operated equipment. Such equipment

includes paint brushes, hand rollers, caulking guns, trowels, spatulas, syringe daubers, rags, and sponges.

- (30) HIGH-TEMPERATURE COATING is a coating that must withstand temperatures of more than 350oF.
- (31) HIGH-VOLUME, LOW-PRESSURE (HVLP) SPRAY is a material application system which is operated at air pressure of between 0.1 and 10 pounds per square inch gauge (psig).
- (32) IMPACT-RESISTANT COATING is 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.
- (33) LINE-SEALER MASKANT is a maskant used to cover scribe lines in maskant in order to protect against etchant in multi-step etching processing.
- (34) LONG TERM PRIMER (METAL TO STRUCTURAL CORE BONDING) is an adhesive bonding primer that has met the aircraft manufacturers' required performance characteristics following 6000 hours testing, used for metal to structural core bonding, and with an adhesive that is specified to be cured at 350oF ± 10°F.
- (35) LOW-SOLIDS ADHESIVE, COATING, PRIMER OR SEALANT is 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 110oC for one hour.
- (36) LOW-SOLIDS CORROSION RESISTANT PRIMER is a corrosion resistant polyurethane compatible primer with enhanced adhesion and rain erosion resistance which contains no more than 45 percent solids, by weight, as applied.
- (37) MASKANT FOR CHEMICAL MILLING is a coating applied directly to an aerospace component to protect surface areas when chemical milling the component.
- (38) MASKANT FOR CHEMICAL PROCESSING is 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 is a coating that contains relatively large quantities of flake pigmentation for appearance and/or added protection.
- (40) MOLD RELEASE COATING is 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 is 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 is 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) PHOTOLITHOGRAPHIC MASKANT is 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.
- (44) PHOTORESIST OPERATION is 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.
- (45) PRETREATMENT PRIMER is a primer which contains no more than 12 percent solids by weight, and at least ½-percent acid by weight, to provide surface etching and is applied directly to metal surfaces to provide corrosion resistance, adhesion, and ease of stripping.
- (46) PRIMER is 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.

- (47) PRIMER COMPATIBLE WITH RAIN EROSION RESISTANT COATING is a primer to which rain erosion resistant topcoat is applied.
- (48) RAIN EROSION-RESISTANT COATING is a coating that protects leading edges, flaps, stabilizers, and engine inlet lips against erosion caused by rain impact during flight.
- (49) REPAIR COATING is a coating used to recoat portions of a product which has sustained mechanical damage to the coating following normal painting operations.
- (50) REMANUFACTURED AIRCRAFT PARTS are aerospace components that are built as spare parts or replacement parts subject to an existing commercial aircraft specification.
- (51) REPAIR MASKANT is a maskant used to cover imperfections in the maskant coat.
- (52) REWORK is the inspection, repair, and reconditioning of aerospace components subject to this rule.
- (53) RUBBER SOLUTION FUEL-TANK COATING is 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.
- (54) SCALE INHIBITOR is a coating that is applied to the surface of a part prior to thermal processing to inhibit the formation of tenacious scale.
- (55) SEALANTS are viscous semisolid materials that fill voids in order to seal out water, fuel, and other liquids and solids, and in some cases, air movement.
- (56) SHORT TERM PRIMER (METAL TO STRUCTURAL CORE BONDING) is an adhesive bonding primer that has met the manufacturers' required performance characteristics following 1000 hours testing, used for metal to metal and metal to structural core bonding, and with an adhesive which is specified to be cured at a temperature of 350°F ± 10°F.
- (57) SOLID-FILM LUBRICANT is 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.
- (58) SONIC AND ACOUSTIC APPLICATIONS are the use of aerospace materials on aerospace components that are subject to mechanical vibration and/or sound wave cavitation.
 - (59) SPACE-VEHICLE is a vehicle designed to travel beyond the earth's atmosphere.
 - (60) STENCIL COATING is an ink or a coating that is rolled, sprayed with an airbrush or a touch-up gun, or brushed, while using a template to add identifying letters and/or numbers to aerospace components.
 - (61) STRIPPER is a volatile liquid applied to remove cured aerospace materials or their residues.
 - (62) STRUCTURAL ADHESIVE - AUTOCLAVABLE is an adhesive used to bond load-carrying aircraft components and is cured by heat and pressure in an autoclave.
 - (63) STRUCTURAL ADHESIVE - NON-AUTOCLAVABLE is 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.
 - (64) TEMPORARY MARKING COATING is an ink or a coating used to make identifying markings, and is removed prior to delivery of the aerospace component and/or assembly.
 - (65) TEMPORARY PROTECTIVE COATING is a coating applied to an aerospace component to protect it from mechanical and environmental damage during manufacturing.
 - (66) TOPCOAT is a coating applied over a primer for purposes such as appearance, identification, or protection.
 - (67) TOUCH-UP COATING is a coating used to cover minor coating imperfections appearing after the main coating operation.
 - (68) TOXICITY-WEIGHTED EMISSION REDUCTION EFFICIENCY is the difference between the uncontrolled and the controlled toxicity-weighted total emissions divided by the uncontrolled toxicity-weighted total emissions and multiplied by 100. Toxic organic solvent and toxic particulate matter toxicity-weighted emission reduction efficiencies are calculated separately and are represented by the following equation:

$$\eta = \frac{T_u - T_c}{T_u} \times 100$$

Where: η = The toxicity-weighted emission reduction efficiency
 T_u = The uncontrolled toxicity-weighted total emissions
 T_c = The controlled toxicity-weighted total emissions

(69) TOXICITY-WEIGHTED TOTAL EMISSIONS is the sum of the product of the mass emissions and the unit risk factor for each toxic component of aerospace material used per year. There are two toxicity-weighted total emission values, one for uncontrolled emissions and the other for controlled emissions. Toxicity-weighted total emissions for toxic organic solvents and toxic particulate matter are calculated separately and are represented by the following equations:

$$T_u = \sum_{i=1}^n m_i U_i$$

$$T_c = \sum_{i=1}^n (1 - E_i)(m_i U_i) + \sum_{j=1}^m (1 - E_j)(m_j U_j)$$

Where: T_u = The uncontrolled toxicity-weighted total emissions
 T_c = The controlled toxicity-weighted total emissions
 m_i = Baseline mass emissions of each toxic organic solvent or toxic particulate matter as established in a District approved Health Risk Assessment in pounds per year
 U_i = Unit risk factor for each toxic organic solvent or toxic particulate matter in inverse micrograms per cubic meter $(\mu\text{g}/\text{m}^3)^{-1}$
 E_i = Overall control efficiency of the add-on control equipment for which aerospace materials containing toxic organic solvent or toxic particulate matter are vented to
 m_j = Additional mass emissions of each toxic organic solvent or toxic particulate matter to the baseline mass emissions that established a District approved Health Risk Assessment in pounds per year

- U_j Unit risk factor for each toxic organic solvent or toxic particulate matter in inverse micrograms per cubic meter (μg/m³)⁻¹
- E_j Overall control efficiency of the add-on control equipment for which additional aerospace materials containing toxic organic solvent or toxic particulate matter will be vented to

- (70) TOXIC ORGANIC SOLVENT is any volatile compound that has a finalized unit risk factor assigned by the Office of Environmental Health Hazard Assessment.
- (71) TOXIC PARTICULATE MATTER is any non-volatile compound that has a finalized unit risk factor assigned by the Office of Environmental Health Hazard Assessment.
- (72) 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.
- (73) TYPE I ETCHANT is a chemical milling etchant that contains varying amounts of dissolved sulfur and does not contain amines.
- (74) TYPE II ETCHANT is a chemical milling etchant that is a strong sodium hydroxide solution containing amines.
- (75) UNICOAT is 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.
- (76) VOC COMPOSITE PARTIAL PRESSURE is the sum of the partial pressures of the compounds defined as VOCs.

VOC Composite Partial Pressure is calculated 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_w | = | Molecular weight of water, 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 |

- (77) VOLATILE ORGANIC COMPOUND (VOC) is as defined in Rule 102.
- (78) WING COATING is a corrosion-resistant coating that is resilient enough to withstand the flexing of the wings.
- (79) WIRE INK is the surface identification stripe and mark on aerospace wire or cable that serves as an electrical insulator in the presence of high humidity.
- (80) WIRE PREBONDING ETCHANT is a non-additive surface treatment process to provide bondability of aerospace wire coatings to the underlying insulation layer.

(c) Requirements

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

| VOC Limit | | | |
|---|----------------------------------|---|---|
| Grams of VOC per Liter, Less Water and Less Exempt Compounds | | | |
| Primers | Current VOC Limit | VOC Limit Effective 1-1-03 | VOC Limit Effective 1-1-05 |
| General Primer | 350 | 350 | 350 |
| Low-Solids Corrosion Resistant Primer | 350 | 350 | 350 |
| Pretreatment Primer | 780 | 780 | 780 |
| Rain Erosion-Resistant Coating Compatible Primer | 850 | 850 | 850 |
| Adhesion Promoter | 850 | 850 | 250 |
| Adhesive Bonding Primer | | | |
| New Commercial Aircraft | 805 | 250 | 250 |
| All Military Aircraft | 805 | 805 | 805 |
| Remanufactured Commercial Aircraft Parts | 805 | 805 | 805 |
| Sonic and Acoustic Applications | 805 | 805 | 805 |
| Adhesive Bonding Primer | | | |
| Long Term | 250 | 250 | 250 |
| Short Term | 250 | 250 | 250 |

| Coatings | Current VOC Limit | VOC Limit Effective 3-01-02 |
|---------------------------------|----------------------------------|--|
| Topcoat | 420 | 420 |
| Clear Topcoat | 520 | 520 |
| Unicoat | 420 | 420 |
| Wing Coating | 750 | 750 |
| Impact Resistant Coating | 420 | 420 |
| High-Temperature Coating | 850 | 850 |
| Antichafe Coating | 600 | 420 |
| Rain Erosion-Resistant Coating | 800 | 800 |
| Conformal Coating | 750 | 750 |
| Optical Anti-Reflective Coating | 700 | 700 |
| Scale Inhibitor | 880 | 880 |
| Metallized Epoxy Coating | 700 | 700 |

| Coatings (cont'd) | Current VOC Limit | VOC Limit Effective 3-01-02 |
|---|----------------------------------|--|
| Electric or Radiation Effect Coating | 800 | 800 |
| Temporary Protective Coating | 250 | 250 |
| Fuel Tank Coatings | 420 | 420 |
| Mold Release Coatings | 780 | 780 |
| Flight Test Coatings | | |
| Used on Missiles or Single Use Target Craft | 420 | 420 |
| All Other | 840 | 840 |
| Fire Resistant Coatings | | |
| Commercial | 650 | 650 |
| Military | 970 | 800 |
| Wire Coatings | | |
| Phosphate Ester Resistant Ink | 925 | 925 |
| Other | 420 | 420 |
| Space Vehicle Coatings | | |
| Electrostatic Discharge Protection Coating | 800 | 800 |
| Other | 1000 | 1000 |

| Adhesives | Current VOC Limit |
|-------------------------|------------------------------|
| Non-Structural Adhesive | 250 |
| Structural Adhesive | |
| Autoclavable | 50 |
| Non-Autoclavable | 850 |
| Space Vehicle Adhesive | 800 |
| Fuel Tank Adhesive | 620 |

| Sealants | Current VOC Limit | VOC Limit Effective 3-01-02 |
|---|----------------------------------|--|
| Fastener Sealant | 675 | 675 |
| Extrudable, Rollable or Brushable Sealant | 600 | 280 |
| Other | 600 | 600 |

| Maskants | Current VOC Limit |
|---|--------------------------|
| For Chemical Processing | 250 |
| For Chemical Milling | |
| Type I | 250 |
| Type II | 160 |
| Photolithographic | 850 |
| Touch-up, Line Sealer Maskants | 750 |
| Lubricants | Current VOC Limit |
| Fastener Installation | |
| Solid-Film Lubricant | 880 |
| Dry Lubricative Materials | 675 |
| Fastener-Lubricative Coatings, Fastener Manufacturing | |
| Solid Film Lubricant | 250 |
| Dry Lubricative Materials | 120 |
| Barrier Coating | 420 |
| Non-Fastener Lubricative Coatings, Fastener Manufacturing | |
| Solid Film Lubricant | 880 |
| Dry Lubricative Materials | 675 |

| VOC LIMIT | |
|---|---|
| Grams of VOC per Liter of Material | |
| Cleaning Solvents and Strippers | Current VOC Limit |
| Cleaning Solvents | 200 g/L or 45 mm Hg VOC Composite Partial Pressure |
| Strippers | 300 g/L or 9.5 mm Hg VOC Composite Partial Pressure |

- (B) Documents shall be provided to the Executive Officer or his designee demonstrating that 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 unicoat specifying the conditions of application from the Executive Officer or his designee.

- (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 Cleaning Operations; Storage and Disposal of VOC-Containing Materials
 - (A) Cleaning of material application equipment and storage of solvent laden cloth and paper shall comply with provisions of Rule 1171.
 - (B) A person shall not atomize any solvent into open air.
- (3) Transfer Efficiency

A person or facility shall not apply aerospace materials unless they are applied with properly operating equipment or controlled, according to operating procedure specified by the equipment manufacturer or the Executive Officer or his designee, 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 Executive Officer, using District-approved procedures, to be capable of achieving at least equivalent transfer efficiency to method (c)(3)(E) and for which written approval of the Executive Officer has been obtained; or
 - (H) Approved air pollution control equipment under paragraph (c)(4).
- (4) Control Equipment

Owners and/or operators may comply with provisions of paragraphs (c)(1) and (c)(3) 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, by weight, or the output of the air pollution control device is less than 50 PPM 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) Recordkeeping Requirements

Records shall be maintained pursuant to the requirements of Rule 109.

(e) Determination of VOC Content

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

(1) 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). Analysis done according to EPA Method 24 shall utilize Procedure B of ASTM Method D-2369, referenced in EPA Method 24. The exempt solvent content shall be determined using SCAQMD Test Methods 302 and 303 (SCAQMD "Laboratory Methods of Analysis for Enforcement Samples" manual) or;

(2) SCAQMD Test Methods 302, 303, and 304 (SCAQMD "Laboratory Methods of Analysis for Enforcement Samples" manual).

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 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.

(f) Test Methods

(1) Efficiency of the control device shall be determined according to EPA Method 25, 25A, SCAQMD Test Method 25.1, or SCAQMD Test Method 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.

- (2) The capture efficiency of the emissions collection system shall be determined by the USEPA method cited in 55 FR (Federal Register) 26865, June 29, 1990 or any other method approved by the USEPA, the California Air Resources Board, and the SCAQMD.
- (3) The transfer efficiency of alternative application methods shall be determined in accordance with the SCAQMD method "Spray Equipment Transfer Efficiency Test Procedure for Equipment User, May 24, 1989".
- (4) 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)(72).
- (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 shall be those referenced in this section or any other applicable method approved by the USEPA, the California Air Resources Board, and the SCAQMD.

(g) **Rule 442 Applicability**

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

(h) **Prohibition of Solicitation of Violations**

- (1) A person shall not solicit or require any other person to use, in the District, any material or combination of 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 subdivision (i).

(2) The requirements of this paragraph shall apply to all written or oral agreements executed or entered into after April 3, 1987.

(i) **Alternative Emission Control Plans**

An owner/operator may comply with the provisions of paragraph (c)(1) by means of an Alternative Emission Control Plan pursuant to Rule 108.

(j) **Reporting Requirements**

Persons who perform qualification acceptance testing on materials with a future compliance date for use in the District shall, beginning July 1, 1994 and at 6-month intervals thereafter, submit a status report describing the progress toward the development of materials which satisfy future compliance dates. These reports shall contain, at a minimum:

- (1) Manufacturer, product number, VOC content, and applicable material category for each of the test candidates;
- (2) Test expenditures for the period;
- (3) Progress on candidates tested during this period.
- (4) Approvals received for materials which comply with future compliance dates.
- (5) Volume of materials used in each material category for which there is a future compliance date.

Facilities testing materials in the same material 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.

(k) **Air Toxics**

In lieu of complying with subdivisions (e), (f), (h), and (i) of Rule 1402 - Control of Toxic Air Contaminants from Existing Sources, a facility may submit a compliance plan to the District for the Executive Officer's approval within 180 days from the date of Health Risk Assessment approval that demonstrates how a toxicity-weighted emissions reduction efficiency of at least 90.0 percent for toxic organic solvents and at least 99.0 percent for toxic particulate matter emissions has been achieved and will be maintained in the future.

(l) Exemptions

- (1) The provisions of paragraph (c)(1) of this rule shall not apply to materials, exclusive of adhesives, with separate formulations that are used in volumes of less than 20 gallons per year provided that the total of such formulations applied annually by 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 materials on each and every day of operation.
- (3) The provisions of paragraphs (c)(1) and (c)(3) 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 gallons per day.
- (4) The VOC limits for solvents and strippers 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)(3) shall not apply to touch-up and stencil coatings.
- (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)(3) shall not be applied to the application of materials marking coatings.
- (10) The provisions of subdivision (c) shall not apply to laboratories which apply 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 VOC limits for solvents shall not apply to the surface cleaning of solar cells, fluid systems, avionic equipment, and laser optics.

- (13) The provisions of subdivision (d) and paragraph (c)(3) shall not apply to the application of materials that contain less than 20 g/L of VOC per liter of material.
- (14) The provisions of paragraph (c)(3) shall not apply to the use of materials dispensed from airbrush operations.
- (15) The provisions of this rule shall not apply to aerosol coating products.
- (16) Until January 1, 2005, the VOC limit for fuel tank coatings shall not apply to non-spray rubber solution fuel-tank coating, containing less than 710 g/L of VOC per liter of coating, used on fuel tanks with maximum capacity of 35 gallons and where the total facilitywide usage of this coating is less than 150 gallons per year. Records shall be maintained pursuant to the requirements of Rule 109 to establish eligibility for this exemption.