

RULE 337. SURFACE COATING OF AIRCRAFT OR AEROSPACE VEHICLES PARTS AND PRODUCTS COMPONENTS. (Adopted 7/10/1990, revised 7/24/1990, and 10/20/1994, and [date of amended rule adoption])

Comment [A72]: Under the proposed amended definitions, aircraft is synonymous with aerospace vehicle.

A. Applicability

This rule is applicable to any person who manufactures, any aerospace vehicle coating or aerospace component coating for use within the District, as well as any person who uses, applies, or specifies/solicits the use or application of any aerospace vehicle or component surface coatings or associated solvent within the District for aircraft or aerospace vehicle parts and products. Rule 337 does not apply to electronic components.

Comment [A73]: Our practice is to add for use within the District and uses text to explain and narrow the scope of the rule. Adding or associated solvent extends the applicability to solvent cleaning. This change stems from a commitment in the 2010 Clean Air Plan.

B. Exemptions

1. The provisions of Section D.1 shall not apply to any non-complying coatings with separate formulations used in volumes of less than 20 gallons of each non-complying formulation per stationary source in any calendar year, provided that To qualify for this exemption from Section D.1, the total volume of non-complying coatings used at a stationary source does not exceed 200 gallons annually. Coatings used for operations that are exempt per Sections B.2, and B.3, B.6, B.8, B.11, B.12, and B.13 shall not be included in calculating the volume of coatings used under this exemption. Any person claiming this exemption shall maintain on a monthly/daily basis an annual running total of the volume of each separate formulation of coating used under this exemption records consistent with Section H.7 and make them available to the District for review upon request. These coatings shall be subject to the records required by Section H.
2. The provisions of Section E, and H shall not apply to touch-up and repair, provided Section D.1 limits are met and records are maintained pursuant to a Permit to Operate.
3. The provisions of this rule shall not apply to coatings (including adhesive products and sealant products) supplied in non-refillable aerosol products in non-refillable containers with capacities of 18 ounces or less.
4. Any coating and associated solvent cleaning subject to the requirements of this rule shall be exempt from the requirements of Rule 317, Organic Solvents, and Rule 322, Metal Surface Coating Thinner and Reducer. Any coating exempt from this rule shall comply with all other applicable District Rules.
5. This rule shall not apply to any cleaning performed with a solvent (including emulsions) that contains two percent by weight or less of each of the following:
 - a. Reactive organic compounds, and
 - b. Toxic air contaminants (as determined by generic solvent data, solvent manufacturer's composition data or by a gas chromatography test and a mass spectrometry test).
 - c. Any person claiming this exemption shall maintain the records specified in Sections H.1.a and H.1.f in a manner consistent with Section H.9 and make them available for review.
6. This rule shall not apply to coatings that contain less than 20 grams of reactive organic compound per liter (0.17 pounds of reactive organic compound per gallon) of coating, less water and less exempt compounds, as applied.

Comment [A74]: The last sentence is added for ease of understanding that surface coating of electronic components is not subject to Rule 337. This applicability approach follows the EPA guideline (EPA-453/R-97-004) for this source category. Rule 321 governs the cleaning of electronic components.

Comment [A75]: The July 25 draft included a lead-in sentence. Workshop attendees and CAC members indicated on Aug. 10 that the wording was confusing. Hence, staff re-wrote the exemption section for improved clarity.

Comment [A76]: Our protocol is to specify requirements are on a stationary source basis. By adding per stationary source, misinterpretations that the requirements are on a facility basis should be avoided.

Comment [A77]: EPA recommends daily recordkeeping when using noncompliant coatings. (Ref. EPA's Rule 337 Technical Support Document dated Sept. 20, 1995.)

Comment [A78]: Changed PAR to keep original total rule exemption. This approach is consistent with the 1997 CTG for coating operations at aerospace manufacturing and rework operation. SC Rule 1124(I)(5) and VC Rule 74.13.E.6, also have a similar exemption.

Comment [A79]: Including rule titles for referenced rules follows an EPA recommendation.

Comment [A80]: Essentially the same as the Rule 321.B.1 exemption.

Comment [A81]: Changed the text to apply to all qualifying coatings. Exempting low ROC paints is similar to the SC Rule 1124(I)(13) exemption. Exempting low ROC adhesives and sealants is consistent with PAR 353.B.7.

7. Section D.2 and J.1.a shall **not** apply to solvents and strippers used in space vehicle manufacturing and rework.

Comment [A82]: Modeled on the SC Rule 1124(l)(4) exemption.

8. **This rule shall not apply to** chemical milling, metal finishing, and electrodeposition (except for electrodeposition of coatings).

Comment [A83]: Based on the 40 CFR Section 63.741(f) exemption.

9. Section J.1.a shall **not** apply to **any of the following:**

a. **Cleaning of encasements, including decoy shells or box casings, for electronic components that have a total surface area that is less than 2 square feet; and**

b. **Cleaning of parts, subassemblies, or assemblies that are exposed to strong oxidizers or reducers (e.g., nitrogen tetroxide, liquid oxygen, or hydrazine); and**

Comment [A84]: Similar to the Ventura County APCD (VC) Rule 74.13.C.3 exemption.

c. **Cleaning of aircraft transparencies, polycarbonate, or glass substrates; and**

Comment [A85]: Stems from the 40 CFR Section 63.744(e)(10) exemption.

d. **Cleaning of solar cells, coated optics, laser hardware, scientific instruments, high-precision optics, telescopes, microscopes, avionic equipment, military fluid systems, and thermal control surfaces;**

Comment [A86]: Added 337..a and d at the suggestion of Raytheon's Sherri Wentz. Staff also added definitions for in Rule 102 for avionic equipment, fluid system, high-precision optics, and scientific instruments.

e. **Wipe cleaning during the manufacture, assembly, installation, maintenance, or testing of components of breathing oxygen systems that are exposed to the breathing oxygen;**

f. **Wipe cleaning and surface activation prior to adhesive bonding;**

g. **Wipe cleaning of aircraft and ground support equipment fluid systems that are exposed to the fluid, including air-to-air heat exchangers and hydraulic fluid systems;**

h. **Wipe cleaning of fuel cells, fuel tanks, and confined spaces.**

Comment [A87]: 337.B.9.e - h are modeled on exemptions found in 40 CFR Section 63.744(e).

10. Section E shall **not** apply to **any of the following:**

a. **Any situation that normally requires the use of an airbrush or an extension on the spray gun to properly reach limited access spaces; and**

Comment [A88]: Similar to the SC Rule 1124(l)(14) exemption.

b. **The use of airbrush application methods for stenciling, lettering, and other identification markings.**

Comment [A89]: Modeled on the SC 1124(l)(11) provision.

11. The chemical milling maskant limits in Section D.1, Table 337-1, shall **not** apply to **any of the following:**

a. **Touch-up of scratched surfaces or damaged maskant; and**

b. **Touch-up of trimmed edges.**

Comment [A90]: Follows 40 CFR Section 63.747(c)(3)(i) and (ii) exemptions.

12. Section **D.1** shall **not** apply to **electric- and radiation-effect coatings** that have been designated as "classified" by the United States Department of Defense.

Comment [A91]: Stems from 40 CFR 63, Subpart GG, Appendix A's definition of **electric or radiation-effect coating**.

13. **This rule shall not apply to coatings (including adhesive products and sealant products) subject to the Air Resources Board consumer products regulation found in Title 17 of the California Code of Regulations, section 94507 et seq.**

Comment [A92]: Modeled on the South Coast AQMD (SC) Rule 1124(l)(15) and 1168(j)(13) exemptions. This exemption is needed for consistency with the Rule 353.B.12 exemption.

14. Sections D.2 and J.1.a shall not apply to **any of the following:**

a. **Cleaning or stripping of coating overspray from personal protective equipment;**

b. Wipe cleaning or stripping during fabrication, assembly, installation, and maintenance of upholstery, curtains, carpet, and other textile materials used in the interior of the aircraft.

c. Wipe cleaning or stripping of metallic and nonmetallic materials used in honeycomb cores during the manufacture or maintenance of these cores, and cleaning of the completed cores used in the manufacture of aerospace vehicles or components.

Comment [A93]: 14.a added at the request of a stakeholder. 14.b and c are modeled on exemptions found in 40 CFR Section 63.744(e).

C. Definitions

See Rule 102, Definitions, for definitions not ~~restricted to interpretation of~~ limited to this rule. Definitions specific to this rule are listed below. For purposes of this rule, the following definitions shall apply:

Comment [A94]: Our protocol is to change the lead-in sentences in this manner.

“Ablative Coating” means any coating that chars when exposed to open flame or extreme temperatures, as would occur during the failure of an engine casing or during aerodynamic heating. The ablative char surface serves as an insulative barrier, protecting adjacent components from the heat or open flame.

Comment [A95]: Most of the proposed new definitions are from 40 CFR 63, Subpart GG or the EPA Control Techniques Guideline (CTG) for this source category (EPA-453/R-97-004, Dec. 1997).

“Adhesion Promoter” means any very thin coating applied to a substrate to promote wetting and form a chemical bond with the subsequently applied material.

“Adhesive” means any substance that is used to bond one surface to another surface by attachment or fused union. Adhesives are a type of specialty coating.

Comment [A96]: Same as the Rule 353 “Adhesive” definition.

1. “Adhesive Bonding Primer” means any coating-primer applied in a very thin film to aircraft or aerospace parts or products-components for the primary purpose of providing a primer for a subsequent coat of structural adhesive corrosion inhibition and increased adhesive bond strength by attachment.

Comment [A97]: Added for ease of understanding the relationship between adhesive and specialty coating.

“Adhesive Product” means any adhesive, glue, cement, mastic, adhesive bonding primer, adhesive primer, adhesive primer for plastics, and any other adhesive primer. Adhesive products are a type of coating.

“Aerospace Vehicle or Component” means any fabricated part, processed part, assembly of parts, or completed unit, with the exception of electronic components, of any aircraft including but not limited to airplanes, helicopters, missiles, rockets, and space vehicles includes satellites.

2. “Aircraft or Aerospace Vehicle” means a fabricated part, assembly of parts or completed unit of any aircraft, helicopter, missile or space vehicle.

Comment [A98]: The term is replaced by aerospace vehicle or components.

“Aircraft Fluid Systems” mean those systems that handle hydraulic fluids, fuel, cooling fluids, or oils.

“Aircraft Transparency” means the aircraft windshield, canopy, passenger windows, lenses and other components which are constructed of transparent materials.

“Airless Spray” means a spray method in which a pump forces the adhesive through an atomizing nozzle at high pressure (1,000 to 6,000 pounds per square inch).

Comment [A99]: The term is used in Section E.11.

“Antichafe Coating” means any coating applied to areas of moving aerospace components that may rub during normal operations or installation.

“Associated Solvent” means any solvent used in a solvent cleaning machine or in for solvent cleaning operations subject to this rule performed in association with surface coating of any aerospace vehicle or aerospace component.

Comment [A100]: Staff revised the definition to avoid confusion when the “associated solvent” is exempt from the rule and to expand the definition to include solvents used in solvent cleaning machines.

“Barrier Coating” means any coating applied in a thin film to fasteners to inhibit dissimilar metal corrosion and to prevent galling.

“Bearing Coating” means any coating applied to an antifriction bearing, a bearing housing, or the area adjacent to such a bearing in order to facilitate bearing function or to protect base material from excessive

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wear. A material shall not be classified as a bearing coating if it can also be classified as a dry lubricative material or a solid film lubricant.

“Bonding Maskant” means any temporary coating used to protect selected areas of aerospace parts from strong acid or alkaline solutions during processing for bonding.

“Caulking and Smoothing Compounds” mean semi-solid materials which are applied by hand application methods and are used to aerodynamically smooth exterior vehicle surfaces or fill cavities such as bolt hole accesses. A material shall not be classified as a caulking and smoothing compound if it can also be classified as a sealant.

“Chemical Agent-Resistant Coating” means any exterior topcoat designed to withstand exposure to chemical warfare agents or the decontaminants used on these agents.

“Chemical Milling Maskant” means any coating that is applied directly to aluminum components to protect surface areas when chemical milling the component with a Type I or Type II etchant. Type I chemical milling maskants are used with a Type I etchant and Type II chemical milling maskants are used with a Type II etchant. This definition does not include bonding maskants, critical use and line sealer maskants, and seal coat maskants. Additionally, maskants that must be used with a combination of Type I or II etchants and any of the above types of maskants (i.e., bonding, critical use and line sealer, and seal coat) are not included. Maskants that are defined as specialty coatings are not included under this definition. Section C provides definitions of Type I and Type II etchants.

“Cleaning Operation” means collectively spray-gun, hand-wipe, and flush cleaning operations.

“Cleaning Solvent” means any liquid material used for hand-wipe, spray gun, or flush cleaning. This definition does not include any solution that contains no reactive organic compounds and no toxic air contaminants.

“Clear Coating” means a transparent coating usually applied over a colored opaque coating, metallic substrate, or placard to give improved gloss and protection to the color coat. In some cases, a clear coat refers to any transparent coating without regard to substrate.

“Coating” means any material that is applied to the surface of an aerospace vehicle or component to form a decorative, protective, or functional solid film, or the solid film itself. Adhesives, sealants, and lubricative material are types of specialty coatings.

Comment [A101]: Added for ease of understanding that these materials are specialty coatings.

“Commercial Exterior Aerodynamic Structure Primer” means any primer used on aerodynamic components and structures that protrude from the fuselage, such as wings and attached components, control surfaces, horizontal stabilizers, vertical fins, wing-to-body fairings, antennae, and landing gear and doors, for the purpose of extended corrosion protection and enhanced adhesion.

“Commercial Interior Adhesive” means any material used in the bonding of passenger cabin interior components. These components must meet the Federal Aviation Administration fireworthiness requirements.

“Compatible Substrate Primer” includes two categories: “compatible epoxy primer” and “adhesive primer.” “Compatible epoxy primer” means any primer that is compatible with the filled elastomeric coating and is epoxy based. The compatible substrate primer is an epoxy-polyamide primer used to promote adhesion of elastomeric coatings such as impact-resistant coatings. “Adhesive primer” means any coating that (1) inhibits corrosion and serves as a primer applied to bare metal surfaces or prior to adhesive application, or (2) is applied to surfaces that can be expected to contain fuel. Fuel tank coatings are excluded from this category.

“Compliant Material” means any coating, stripper, or solvent that has a reactive organic compound content or composite partial pressure that complies with the applicable limit in Sections D.1, D.2, or J.1

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“Confined Space” means any space that (1) is large enough and so configured that an employee can bodily enter and perform assigned work; (2) has limited or restricted means for entry or exit (for example, fuel tanks, fuel vessels, and other spaces that have limited means of entry); and (3) is not suitable for continuous employee occupancy.

“Contact Bond Adhesive” or **“Contact Adhesive”** means any adhesive intended by the manufacturer to adhere to itself instantaneously upon contact. The adhesive is applied to both adherends and allowed to become dry, which develops a bond when the adherends are brought together without sustained pressure. For application to both surfaces to be bonded together, is allowed to dry before the two surfaces are placed in contact with each other, forms an immediate bond that is impossible, or difficult, to reposition after both adhesive-coated surfaces are placed in contact with each other, and does not need sustained pressure or clamping of surfaces after the adhesive-coated surfaces have been brought together using sufficient momentary pressure to establish full contact between both surfaces. Contact adhesive does not include rubber cements that are primarily intended for use on paper substrates. Contact adhesive also does not include vulcanizing fluids that are designed and labeled for tire repair only.

“Contact Bond Adhesive-Specialty Substrates” or **“Specialty Contact Adhesive”** means any contact adhesive that is intended by the manufacturer to be used for the bonding of nonporous substrates to each other, the bonding of decorative laminate in post-forming application, the bonding of decorative laminate to metal, melamine-covered board, or curved surfaces, or the bonding of any substrate to metal, rubber, rigid plastic, or wood veneer not exceeding 1/16 inch in thickness.

“Control” means the reduction, by destruction or removal, of the amount of affected pollutants in a gas stream prior to discharge to the atmosphere.

“Control System” means any combination of pollutant capture system(s) and control device(s) used to reduce discharge to the atmosphere of reactive organic compound or toxic air contaminant emissions generated by a regulated operation.

“Corrosion Prevention System” means any coating system that provides corrosion protection by displacing water and penetrating mating surfaces, forming a protective barrier between the metal surface and moisture. Coatings and compounds containing oils or waxes are excluded from this category.

“Critical Use and Line Sealer Maskant” means any temporary coating, not covered under other maskant categories, used to protect selected areas of aerospace parts from strong acid or alkaline solutions such as those used in anodizing, plating, chemical milling and processing of magnesium, titanium, or high-strength steel, high-precision aluminum chemical milling of deep cuts, and aluminum chemical milling of complex shapes. Materials used for repairs or to bridge gaps left by scribing operations (i.e., line sealer) are also included in this category.

“Cryogenic Flexible Primer” means any primer designed to provide corrosion resistance, flexibility, and adhesion of subsequent coating systems when exposed to loads up to and surpassing the yield point of the substrate at cryogenic temperatures (~~minus~~ 275 degrees Fahrenheit and below).

“Cryoprotective Coating” means any coating that insulates cryogenic or subcooled surfaces to limit propellant boil-off, maintain structural integrity of metallic structures during ascent or re-entry, and prevent ice formation.

“Cyanocrylate Adhesive” means any fast-setting, single component adhesive that cures at room temperature. Also known as "super glue."

“Depainting” means the removal of a permanent coating from the outer surface of an aerospace vehicle or component.

“Depainting Operation” means the use of a chemical agent, media blasting, or any other technique to remove permanent coatings from the outer surface of an aerospace vehicle or components. The depainting operation includes washing of the aerospace vehicle or component to remove residual stripper, media, or coating residue.

3. ~~“Detailing or Touch-up Guns” mean any are~~ small air spray equipment, including air brushes, that operate at no greater than 5 ~~CFM-cubic feet per minute~~ air flow and no greater than 50 pounds per square inch gauge (~~Psig~~) air pressure and are used to coat small products or portions of products.

Comment [A102]: The District protocol is to remove degree symbols, abbreviations, and acronyms. Hence, they are spelled out here and elsewhere.

“Dip Coat Application” means any process in which a substrate is immersed in a solution (or dispersion) containing the coating material, and then withdrawn.

“Dry Lubricative Material” means any coating consisting of lauric acid, cetyl alcohol, waxes, or other non-cross linked or resin-bound materials which act as a dry lubricant.

4. ~~“Interior Topcoat” means a topcoat used in habitable interior spaces of aircraft.~~

Comment [A103]: Moved to be in alphabetical order.

5. ~~“Electric- or Radiation-Effect Coatings” means an electrically conductive or insulative coating, or coatings used on radar and antennae enclosures~~ any coating or coating system engineered to interact, through absorption or reflection, with specific regions of the electromagnetic energy spectrum, such as the ultraviolet, visible, infrared, or microwave regions. Uses include, but are not limited to, lightning strike protection, electromagnetic pulse protection, and radar avoidance.

“Electrodeposition” means the application of a coating using a water-based electrochemical bath process. The component being coated is immersed in a bath of the coating. An electric potential is applied between the component and an oppositely charged electrode hanging in the bath. The electric potential causes the ionized coating to be electrically attracted, migrated, and deposited on the component being coated.

“Electrostatic Discharge and Electromagnetic Interference Coating” means any coating applied to space vehicles, missiles, aircraft radomes, and helicopter blades to disperse static energy or reduce electromagnetic interference.

6. ~~“Electrostatic Application” means using a sufficient charging of atomized paint droplets to cause deposition by electrostatic attraction. This application requires a minimum 60kV power supply.~~

Comment [A104]: Replaced by the term “electrostatic spray” and relocated it to Rule 102.

“Elevated-Temperature Skydrol-Resistant Commercial Primer” means any primer applied primarily to commercial aircraft (or commercial aircraft adapted for military use) that must withstand immersion in phosphate-ester (PE) hydraulic fluid (Skydrol 500b or equivalent) at the elevated temperature of 150 degrees Fahrenheit for 1,000 hours.

“Epoxy Polyamide Topcoat” means any coating used where harder films are required or in some areas where engraving is accomplished in camouflage colors.

7. ~~“Exempt Organic Compounds” means those compounds listed as exceptions in the definition of “Reactive Organic Compounds” in Rule 102.~~

Comment [A105]: Exempt organic compound is replaced by exempt compound in Rule 337. An exempt compound definition is being added to Rule 102, Definitions.

“Exterior Primer” means the first layer and any subsequent layers of identically formulated coating applied to the exterior surface of an aerospace vehicle or component where the component is used on the exterior of the aerospace vehicle. Exterior primers are typically used for corrosion prevention, protection from the environment, functional fluid resistance, and adhesion of subsequent exterior topcoats. Coatings that are defined as specialty coatings are not included under this definition.

8. ~~“Extreme Performance Interior Topcoat” means a topcoat used in interior spaces of aircraft areas requiring a fluid, stain, or nicotine barrier.~~

“Fastener Manufacturer” means any stationary source that coats aircraft fasteners, such as pins, collars, bolts, nuts, and rivets, with solid-film lubricants for distribution.

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“Fastener Sealant” means any sealant applied to a device used to join two or more parts together.

9. ~~“Fire-Insulation-Resistant (Interior) Coating” means a coating used to provide a layer of insulation in the event of an aircraft or engine fire.~~

1. For civilian aircraft, any coating used on passenger cabin interior parts that are subject to the Federal Aviation Administration fireworthiness requirements.
2. For military aircraft, any coating used on parts that are subject to the flammability requirements of MIL-STD-1630A and MIL-A-87721.
3. For space applications, any coating used on parts that are subject to the flammability requirements of SE-R-0006 and SSP 30233.

“Flexible Primer” means any primer that meets flexibility requirements such as those needed for adhesive bond primed fastener heads or on surfaces expected to contain fuel. The flexible coating is required because it provides a compatible, flexible substrate over bonded sheet rubber and rubber-type coatings as well as a flexible bridge between the fasteners, skin, and skin-to-skin joints on outer aircraft skins. This flexible bridge allows more topcoat flexibility around fasteners and decreases the chance of the topcoat cracking around the fasteners. The result is better corrosion resistance.

“Flight Test Coating” means any coating applied to aircraft other than missiles or single-use aircraft prior to flight testing to protect the aircraft from corrosion and to provide required marking during flight test evaluation.

“Flow Coat Application” means any coating application system, with no air supplied to the nozzle, where paint flows over the part and the excess coating drains back into the collection system.

“Flush Cleaning” means the removal of contaminants such as dirt, grease, oil, and coatings from an aerospace vehicle or component or application equipment by passing solvent over, into, or through the item being cleaned. The solvent may simply be poured into the item being cleaned and then drained, or be assisted by air or hydraulic pressure, or by pumping. Hand-wipe cleaning operations where wiping, scrubbing, mopping, or other hand actions are used are not included.

“Fuel Tank Adhesive” means any adhesive used to bond components exposed to fuel and must be compatible with fuel tank coatings.

10. ~~“Fuel Tank Coating” means any coating applied to the interior of a fuel tank components or to fuel wetted areas of aircraft to protect it from for the purpose of corrosion and/or bacterial growth inhibition and to assure sealant adhesion in extreme environmental conditions.~~

11. ~~“Grams of ROC Reactive Organic Compound per Liter of Coating, Less Water and Less Exempt Compounds” means the weight of ROC-reactive organic compound per combined volume of ROC-reactive organic compound and coating solids and can be calculated by the following equation:~~

$$\frac{\text{Grams}(lb) \text{ of ROC} / l(\text{gal}) \text{ of coating}}{\text{Grams}(lb) \text{ of ROC} / l(\text{gal}) \text{ of coating}} = \frac{W_s - W_w - W_{es}}{V_m - V_w - V_{es}}$$
$$\frac{\text{Grams of reactive organic compounds per liter of coating, less water and less exempt compounds}}{\text{Grams of reactive organic compounds per liter of coating, less water and less exempt compounds}} = \frac{W_s - W_w - W_{es}}{V_m - V_w - V_{es}}$$

Where: W_s = Weight of volatile compounds (including water) in grams

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W_w = Weight of water in grams
 W_{es} = Weight of exempt ~~organic~~ compounds in grams
 V_m = Volume of material in liters
 V_w = Volume of water in liters
 V_{es} = Volume of exempt ~~organic~~ compounds in liters

For aerospace coatings that contain reactive diluents, the grams of reactive organic compound per liter of coating, less water and less exempt compounds, shall be calculated by the following equation:

$$\frac{\text{Grams of reactive organic compounds per liter of coating, less water and less exempt compounds}}{\text{exempt compounds}} = \frac{W_{rs} - W_{rw} - W_{re}}{V_m - V_{rw} - V_{re}}$$

Where:

W_{rs} = Weight of volatile compounds not consumed during curing in grams
 W_{rw} = Weight of water not consumed during curing in grams
 W_{re} = Weight of exempt compounds not consumed during curing in grams
 V_m = Volume of material not consumed during curing in liters
 V_{rw} = Volume of water not consumed during curing in liters
 V_{re} = Volume of exempt compounds not consumed during curing in liters

12. —“**Hand Application Method**” means the application of a surface coating by manually held non-mechanically operated equipment. Such equipment includes paint brush, hand-roller, trowel, spatula, dauber, rag or sponge.

“**Hand-Wipe Cleaning Operation**” means the removal of contaminants such as dirt, grease, oil, and coatings from an aerospace vehicle or component by physically rubbing it with a material such as a rag, paper, or cotton swab that has been moistened with a cleaning solvent.

13. —“**High Temperature Coating**” means any coating that, during normal use, must be designed to withstand temperatures in excess of more than 350 °F degrees Fahrenheit.

14. —“**High Volume Low Pressure Spraying**” means using spray equipment with air pressure between 0.1 and 10.0 psi and air volume greater than 15.5 cfm per spray gun.

Comment [A106]: Replaced by the term “high volume low pressure spraying equipment” and relocated it to Rule 102.

“**Insulation Covering**” means any material that is applied to foam insulation to protect the insulation from mechanical or environmental damage.

“**Interior Topcoat**” means any topcoat used in habitable interior spaces of aircraft.

Comment [A107]: Relocated here to be in alphabetical order.

“**Intermediate Release Coating**” means any thin coating applied beneath topcoats to assist in removing the topcoat in depainting operations and generally to allow the use of less hazardous depainting methods.

“**Lacquer**” means any clear or pigmented coating formulated with a nitrocellulose or synthetic resin to dry by evaporation without a chemical reaction. Lacquers are resolvable in their original solvent.

“**Limited Access Space**” means any internal surfaces or passages of an aerospace vehicle or component that cannot be reached without the aid of an airbrush or a spray gun extension for the application of coatings.

~~“**Liquid Leak**” means any coating, stripper, or solvent leak at a rate of more than three drops per minute or any visible liquid mist.~~

Comment [A108]: The term is no longer used in the rule. Hence, the definition should be deleted.

15. —“**Maskant Chemical Processing**” means a coating applied directly to a part to protect surface areas when chemical milling, anodizing, aging, bonding, plating, etching and/or performing other chemical operations on the surface of the part.

“Long Term Adhesive Bonding Primer” means any adhesive bonding primer that has met the aircraft manufacturers’ required performance characteristics following 6,000 hours testing, used for metal to structural core bonding, and with an adhesive that is specified to be cured at a temperature of 350 degrees Fahrenheit plus or minus 10 degrees Fahrenheit.

Comment [A109]: This term and those listed in Table 337-2 under **adhesive bonding primers** are from definitions in SJV Rule 4605.

“Metalized Epoxy Coating” means any coating that contains relatively large quantities of metallic pigmentation for appearance and/or added protection.

“Mold Release” means any coating applied to a mold surface to prevent the molded piece from sticking to the mold as it is removed.

“Natural Draft Opening” means any opening in a room, building, or total enclosure that remains open during operation of the facility and that is not connected to a duct in which a fan is installed. The rate and direction of the natural draft through such an opening is a consequence of the difference in pressures on either side of the wall containing the opening.

“Non-Complying Coating” means a coating with a reactive organic compound content above a limit specified in Section D.1.

“Noncompliant Material” means any coating, stripper, or solvent that has a reactive organic compound content or composite partial pressure that does not comply with the applicable limit in Sections D.1, D.2, or I.1.

“Nonstructural Adhesive” means any adhesive that bonds nonload bearing aerospace components in noncritical applications and is not covered in any other specialty adhesive categories.

“Optical Anti-Reflective Coating” means any coating with a low reflectance in the infrared and visible wavelength ranges that is used for antireflection on or near optical and laser hardware.

“Part Marking Coating” means any coatings or inks used to make identifying markings on materials, components, and/or assemblies. These markings may be either permanent or temporary.

16. — “Pretreatment Wash Primer Coating” means a any organic coating which that contains a small quantity of at least 0.5 percent acids by weight for surface etching and is applied directly to metal or composite surfaces to provide surface etching, corrosion resistance, adhesion, and ease of stripping.

17. — “Primer” means a the first layer and any subsequent layers of identically formulated coating applied directly to a part for purposes of to the surface of an aerospace vehicle or component. Primers are typically used for corrosion prevention, protection from the environment, functional fluid resistance, and/or adhesion of subsequent coatings. Primers that are defined as specialty coatings are not included under this definition.

“Radome” means the nonmetallic protective housing for electromagnetic transmitters and receivers (e.g., radar, electronic countermeasures, etc.).

“Rain Erosion-Resistant Coating” means any coating or coating system used to protect the leading edges of parts such as flaps, stabilizers, radomes, engine inlet nacelles, etc. against erosion caused by rain impact during flight.

“Reactive Organic Compound” as defined in Rule 102, Definitions.

“Reactive Diluent” means a liquid which is a reactive organic compound during application and one in which, through chemical and/or physical reactions, such as polymerization, 20 percent or more of the reactive organic compound becomes an integral part of a finished material.

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“Remanufactured Commercial Aircraft Part” means any aerospace component that is built as a spare part or replacement part subject to an existing commercial aircraft specification.

18. ~~“Repair” means recoating of previously coated product due to damage to the coating following normal painting operations.~~

“Rocket Motor Bonding Adhesive” means any adhesive used in rocket motor bonding applications.

“Rocket Motor Nozzle Coating” means any catalyzed epoxy coating system used in elevated temperature applications on rocket motor nozzles.

“Rubber-Based Adhesive” means any quick setting contact cement that provides a strong, yet flexible bond between two mating surfaces that may be of dissimilar materials.

“Scale Inhibitor” means any coating that is applied to the surface of a part prior to thermal processing to inhibit the formation of scale.

“Screen Print Ink” means any ink used in screen printing processes during fabrication of decorative laminates and decals.

“Seal Coat Maskant” means any overcoat applied over a maskant to improve abrasion and chemical resistance during production operations.

19. ~~“Sealant” means any coating material used to prevent the intrusion applied for the purpose of filling voids and providing a barrier against penetration of water, fuel, air, or other fluids or vapors, liquids or solids from certain areas of aerospace vehicles or components. There are two categories of sealants: extrudable/rollable/brushable sealants and sprayable sealants. Sealants are a type of specialty coating.~~

Comment [A110]: Added for ease of understanding the relationship between sealants and specialty coatings.

20. ~~“Sealant Bonding Primer” means a coating applied in a very thin film to a part or product for the purpose of providing a primer for a subsequent coat of silicone sealant.~~

21. ~~“Self Priming Self-Priming Topcoat” means any coating topcoat that is applied directly to a part or product that is not subsequently overcoated an uncoated aerospace vehicle or component for purposes of corrosion prevention, environmental protection, and functional fluid resistance. More than one layer of identical coating formulation may be applied to the vehicle or component.~~

“Sealant Product” means any sealant and sealant primer. Sealant products are a type of coating.

“Short Term Adhesive Bonding Primer” means any 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 degrees Fahrenheit plus or minus 10 degrees Fahrenheit.

“Silicone Insulation Material” means any insulating material applied to exterior metal surfaces for protection from high temperatures caused by atmospheric friction or engine exhaust. These materials differ from ablative coatings in that they are not “sacrificial.”

“Solid Film Lubricant” means any very thin coating consisting of a binder system containing as its chief pigment material one or more of the following: molybdenum, graphite, polytetrafluoroethylene (PTFE), or other solids that act as a dry lubricant between faying surfaces.

“Solids” mean the non-volatile portion of the coating which after drying makes up the dry film.

“Solvent” means any liquid containing any reactive organic compound or any toxic air contaminant, which is used as a diluent, thinner, dissolver, viscosity reducer, cleaning agent, drying agent, preservative, or other similar uses.

“Solvent Cleaning” means any activity, operation, or process (including, but not limited to, surface preparation, cleanup, or wipe cleaning) performed outside of a solvent cleaning machine, that uses solvent to remove uncured adhesives, uncured coatings, uncured inks, uncured polyester resin material, uncured sealant, or other contaminants, including, but not limited to, dirt, soil, oil, lubricants, coolants, moisture, fingerprints, and grease, from parts, products, tools, machinery, application equipment, and general work areas. Cleaning spray equipment used for the application of coating, adhesive, ink, polyester resin material, or sealant is also considered to be solvent cleaning irrespective of the spray material being cured.

“Solvent Cleaning Machine” means any device or piece of equipment that uses solvent liquid or vapor to remove soils, moisture, or other contaminants from the surfaces of materials. Types of solvent cleaning machines include, but are not limited to, batch cold, batch vapor, in-line cold, in-line vapor, remote reservoir, and gas-path solvent cleaners. Buckets, pails, and beakers with capacities of 3.785 liters (1.00 gallon) or less are not considered solvent cleaning machines. However, the use of such a container or similar containers (e.g., hand-held spray bottles) with a liquid solvent for cleaning is considered to be solvent cleaning. Any device or piece of equipment used exclusively for stripping shall not be considered to be a solvent cleaning machine.

Comment [A111]: Solvent, solvent cleaning, and solvent cleaning machine are the same definitions found in Rule 321. Solvent includes any liquid containing any toxic air contaminant.

“Sonic and Acoustic Applications” means the use of aerospace materials on aerospace components that are subject to mechanical vibration and/or sound wave cavitation.

“Space Vehicle” means any man-made device, either manned or unmanned, designed for operation beyond earth’s atmosphere. This definition includes integral equipment such as models, mock-ups, prototypes, molds, jigs, tooling, hardware jackets, and test coupons. Also included is auxiliary equipment associated with test, transport, and storage, which through contamination can compromise the space vehicle performance.

22. — “Space Vehicle Coating” means any coating applied to vehicles designed to travel beyond the earth’s atmosphere.

“Specialized Function Coating” means any coating that fulfills extremely specific engineering requirements that are limited in application and are characterized by low volume usage. This category excludes coatings covered in other Specialty Coating categories.

“Specialty Coating” means any coating that, even though it meets the definition of a primer, topcoat, or self-priming topcoat, has additional performance criteria beyond those of primers, topcoats, and self-priming topcoats for specific applications. These performance criteria may include, but are not limited to, temperature or fire resistance, substrate compatibility, antireflection, temporary protection or marking, sealing, adhesively joining substrates, or enhanced corrosion protection. The reactive organic compound content limit for the individual specialty coatings are listed in Section D.1, Table 337-2. Definitions for each specialty coating category are provide in Section C.

“Spray Gun” means any device that atomizes a coating or other material and projects the particulates or other material onto a substrate.

“Stationary Source” as defined in Rule 102-Definitions.

23. — “Stripper” means a precursor organic compound applied to remove temporary coating, maskant for chemical processing, paint or residue any liquid that is applied to a surface to remove cured or dried coatings such as primers, adhesives (e.g., debonding or unglueing), topcoats, and temporary protective coatings.

Comment [A112]: Modeled on 40 CFR 63.742 and SJV Rule 4605 definitions. Industry requested clarification of debonding and unglueing provisions. In response, staff added text on stripping cured adhesives. Stripper material limits are in Rule 337.D.2.

24. — “Structural Autoclavable Adhesive” means any coating adhesive which is applied for the purpose of bonding structural components together used to bond load-carrying aerospace components that is cured by heat and pressure in an autoclave.

“Structural Nonautoclavable Adhesive” means any adhesive cured under ambient conditions that is used to bond load-carrying aerospace components or for other critical functions, such as nonstructural bonding in the proximity of engines.

“Surface Preparation” means the removal of contaminants from the surface of an aerospace vehicle or component or the activation or reactivation of the surface in preparation for the application of a coating.

25. “Temporary Protective Coating” means any coating applied to a part to protect it from mechanical and environmental damage during manufacturing provide scratch or corrosion protection during manufacturing, storage, or transportation. Two types include peelable protective coatings and alkaline removable coatings. These materials are not intended to protect against strong acid or alkaline solutions. Coatings that provide this type of protection from chemical processing are not included in this category.

“Thermal Control Coating” means any coating formulated with specific thermal conductive or radiative properties to permit temperature control of the substrate.

26. “Topcoat” means any coating applied over a primer or intermediary coating on an aerospace vehicle or component for purposes such as appearance, identification, camouflage, or protection. Coatings that are defined as specialty coatings are not included under this definition.

27. “Touch-up-Up” means that portion of the coating operation which is separate from the main coating process but necessary to cover minor imperfections or to achieve coverage as required.

“Touch-Up and Repair Operation” means that portion of the coating operation that is the incidental application of coating used to cover minor imperfections in the coating finish or to achieve complete coverage. This definition includes out-of-sequence or out-of-cycle coating.

28. “Transfer Efficiency” means the ratio of the weight of coating solids adhering to the object being coated to the weight of coating solids used in the application process, expressed as a percentage.

Comment [A113]: This term has been relocated to Rule 102.

“Type I Chemical Milling Maskant” see the “Chemical Milling Maskant” definition.

“Type II Chemical Milling Maskant” see the “Chemical Milling Maskant” definition.

“Type I Etchant” means any chemical milling etchant that contains varying amounts of dissolved sulfur and does not contain amines.

“Type II Etchant” means any chemical milling etchant that is a strong sodium hydroxide solution containing amines.

“Viscosity” means the internal friction of a liquid that makes it resistant to flow.

“Wet Fastener Installation Coating” means any primer or sealant applied by dipping, brushing, or daubing to fasteners that are installed before the coating is cured.

29. “Wing Coating” means any corrosion-resistant coating that is resilient enough to withstand the flexing of the aircraft wings.

D. Requirements — Reactive Organic Compound (ROC) Limits

1. A No person shall not apply any coating or specify-solicit the use of any coating on any aerospace vehicle or component subject to the provisions of this rule, which, as applied, emits or may emit contains reactive organic compounds into the atmosphere in excess of the limits shown in the tables below. These limits are expressed in grams of reactive organic compound per liter or pounds per gallon of coating, less water and less exempt organic compounds:

Comment [A114]: Our practice is to improve text flow by changing the sentence structure in this manner.

Comment [A115]: ARB suggested the text changes in a letter dated February 2, 1995.

**Table 337-1: Reactive Organic Compound Content Limits for Coatings Other than Specialty Coatings
(Grams of Reactive Organic Compound per Liter, Less Water and Less Exempt Compounds)**

Coating Type	ROC Limit
	Effective [date of amended rule adoption]
Exterior Primer	350
Primer	350
Self-Priming Topcoat	420
Topcoat	420
Type I Chemical Milling Maskant	250
Type II Chemical Milling Maskant	160

Comment [A116]: 40CFR63, Subpart GG, coating types were condensed into those in Table 337-1. Subpart GG limits were compared to existing Rule 337 limits and those found in other air districts. Table 337-1 figures reflect limits that have been achieved in practice.

**Table 337-2: Reactive Organic Compound Content Limits for Specialty Coatings
(Grams of Reactive Organic Compound per Liter, Less Water and Less Exempt Compounds)**

Coating Type	ROC Limit	
	g/L Effective Before [24 months after the date of amended rule adoption]	g/L Effective On and After [24 months after the date of amended rule adoption]
Ablative Coating	600	600
Adhesion Promoter	850	250
Adhesive Bonding Primers:	250	250
New Commercial Aircraft	250	250
All Military Aircraft	805	805
Remanufactured Commercial Aircraft Parts	805	805
Sonic and Acoustic Applications	805	805
Long Term	250	250
Short Term	250	250
Adhesives:		
Commercial Interior Adhesive	760	760
Cyanoacrylate Adhesive	1020	1020
Fuel Tank Adhesive	620	620
Nonstructural Adhesive	250	250
Rocket Motor Bonding Adhesive	890	890
Rubber-Based Adhesive	850	850
Structural Autoclavable Adhesive	50	50
Structural Nonautoclavable Adhesive	850	850
Antichafe Coating	600	420
Barrier Coating	420	420
Bearing Coating	620	620
Caulking and Smoothing Compounds	850	850
Chemical Agent-Resistant Coating	550	550
Clear Coating	520	520
Commercial Exterior Aerodynamic Structure Primer	350	350

Comment [A117]: Coating types from EPA's CTG for this source category were added to Table 337-2. The limits in that guidance document were compared to those in other air districts. Lower ROC-content limits that have been achieved in practice were included in lieu of the limits recommended in the CTG. As noted below, some subcategories and limits were based on other air district rules.

Comment [A118]: ARB suggested lowering the limit for adhesion promoter to 250 g/l, antichafe coating to 420 g/l, and fastener sealant to 600 g/l based on limits in other air districts. A 24-month period for phasing-in the new limits is provided to allow sale through and use of already purchased material.

Comment [A119]: Adhesive bonding primer limits and subcategories were modeled on those found in the SC and SJV rules.

[Annotated draft of March 27, 2012]

Coating Type	ROC Limit	
	<u>g/l Effective Before [24 months after the date of amended rule adoption]</u>	<u>lb/gal Effective On and After [24 months after the date of amended rule adoption]</u>
<u>Compatible Substrate Primer</u>	<u>350</u>	<u>350</u>
<u>Corrosion Prevention System Compound</u>	<u>710</u>	<u>710</u>
<u>Cryogenic Flexible Primer</u>	<u>350</u>	<u>350</u>
<u>Cryoprotective Coating</u>	<u>600</u>	<u>600</u>
<u>Dry Lubricative Material</u>		
<u>Fastener Manufacturing</u>	<u>120</u>	<u>4120</u>
<u>Nonfastener Manufacturing</u>	<u>675</u>	<u>5-6675</u>
<u>Electric- /or Radiation-Effect</u>	<u>800</u>	<u>6-7800</u>
<u>Electrostatic Discharge and Electromagnetic Interference Coating</u>	<u>800</u>	<u>800</u>
<u>Elevated-Temperature Skydrol-Resistant Commercial Primer</u>	<u>350</u>	<u>350</u>
<u>Epoxy Polyamide Topcoat</u>	<u>660</u>	<u>660</u>
<u>Extreme Performance Interior Topcoat</u>	<u>420</u>	<u>3-5420</u>
<u>Fastener Sealant</u>	<u>675</u>	<u>600</u>
<u>Fire Insulation Coating</u>	<u>600</u>	<u>5</u>
<u>Fire-Resistant (Interior) Coating</u>	<u>600</u>	<u>600</u>
<u>Flexible Primer</u>	<u>350</u>	<u>350</u>
<u>Flight-Test Coatings:</u>		
<u>Missile or Single Use Aircraft</u>	<u>420</u>	<u>420</u>
<u>All Other</u>	<u>600</u>	<u>600</u>
<u>Fuel Tank Coating (Excluding Fuel Tank Adhesive)</u>	<u>720</u>	<u>6</u>
	<u>420</u>	<u>420</u>
<u>High-Temperature Coating</u>	<u>720</u>	<u>6720</u>
<u>Interior Topcoat</u>	<u>340</u>	<u>2-8340</u>
<u>Insulation Covering</u>	<u>740</u>	<u>740</u>
<u>Intermediate Release Coating</u>	<u>750</u>	<u>750</u>
<u>Lacquer</u>	<u>830</u>	<u>830</u>
<u>Maskant-Chemical Processing</u>	<u>600</u>	<u>5</u>
<u>Maskants:</u>		
<u>Bonding Maskant</u>	<u>1,230</u>	<u>1,230</u>
<u>Critical Use and Line Sealer Maskant</u>	<u>1,020</u>	<u>1,020</u>
<u>Seal Coat Maskant</u>	<u>1,230</u>	<u>1,230</u>
<u>Metallized Epoxy Coating</u>	<u>700</u>	<u>700</u>
<u>Mold Release</u>	<u>780</u>	<u>780</u>
<u>Optical Anti-Reflective Coating</u>	<u>700</u>	<u>700</u>
<u>Part Marking Coating</u>	<u>850</u>	<u>850</u>
<u>Pretreatment Wash Primer Coating</u>	<u>400</u>	<u>3-3</u>
	<u>780</u>	<u>780</u>
<u>Primer</u>	<u>350</u>	<u>2-9</u>
<u>Rain Erosion-Resistant Coating</u>	<u>600</u>	<u>600</u>
<u>Rocket Motor Nozzle Coating</u>	<u>660</u>	<u>660</u>
<u>Scale Inhibitor</u>	<u>880</u>	<u>880</u>
<u>Screen Print Ink</u>	<u>840</u>	<u>840</u>

Comment [A120]: Dry lubricative material limits and subcategories were modeled on those found in the SC and SJV rules.

Comment [A121]: SC, SJV, and VC rules include a 675 g/l fastener sealant limit. The 600 g/l limit is based on a limit in the SJV Rule 4605.

Coating Type	ROC Limit	
	g/l <u>Effective</u> Before [24 months after the date of amended rule adoption]	lb/gal <u>Effective On</u> and After [24 months after the date of amended rule adoption]
Sealant	600	5
<u>Extrudable/Rollable/Brushable Sealant</u>	280	280
<u>Sprayable Sealant</u>	600	600
<u>Sealant Bonding Primer</u>	720	6
<u>Self Priming Topcoat</u>	420	3.5
<u>Silicone Insulation Material</u>	850	850
<u>Solid Film Lubricants</u>		
<u>Fastener Manufacturing</u>	250	250
<u>Fastener Installation</u>	880	880
<u>Nonfastener Manufacturing</u>	880	880
Space Vehicle Coating:		
Electrostatic-Discharge	800	6-7800
Other	1,000	8-31,000
<u>Specialized Function Coating</u>	890	890
Temporary Protective Coating	250	2-1,250
<u>Topcoat</u>	420	3.5
<u>Thermal Control Coating</u>	800	800
<u>Wet Fastener Installation Coating</u>	675	675
Wing Coating	750	6-3750

Comment [A122]: Solid film lubricants subcategories and limits mirror those found in the SC, SJV, and VC rules.

2. ~~A~~ No person shall ~~not~~ apply any stripper or ~~specify~~ solicit the use of any stripper unless it complies with one or both of the following:

a. The stripper contains less than ~~400-300~~ grams of reactive organic compound per liter of ~~ROC of material (2.50 pounds of reactive organic compound per gallon).~~

Comment [A123]: Change made to 300 g/l per suggestion from the Air Resources Board.

b. The stripper has a ~~true vapor~~ reactive organic compound composite partial ~~pressure of less than 10 mm Hg equal to or less than 9.5 millimeters of mercury at actual usage temperature~~ 20 degrees Celsius.

Comment [A124]: Reactive organic compound composite partial pressure is more contemporary than true vapor pressure. SJV and VC have reduced the limit to 9.5 mm Hg at 20 degrees C.

3. ~~Sources~~ A person may elect to use an add-on exhaust control equipment system to achieve as an alternative to meeting the requirements compliance with the provisions of Sections D.1, D.2, E, and J, provided that the control equipment meets all of the applicable requirements of sections a. and b. below are met. Such control equipment must be approved in advance by the Control Officer. ~~Any person choosing to install such control equipment shall obtain an Authority to Construct from the District prior to installation.~~

Comment [A125]: Following other air district methods, sources may comply with the Section E (application equipment) and Section J (solvent ROC-content or pressure) provisions by using an add-on control system.

a. ~~The control device shall reduce emissions from an emission collection system by at least 95 percent by weight.~~

b. ~~The emission collection system which collects and transports emissions to an air pollution control device shall collect at least 90 percent by weight of the emissions generated by the sources of emissions.~~

a. ~~The overall efficiency (the capture efficiency multiplied by the control device efficiency) of the total system shall not be less than 85.5 percent, by weight. Alternatively, the control device reactive organic compound exhaust concentration shall not exceed 10 parts~~

Comment [A126]: Similar to the Rule 321.N.1 provision.

per million by volume as propane or other limit approved by the Environmental Protection Agency, the Air Resources Board, and the Control Officer.

- b. Combustion temperature shall be continuously monitored when operating a thermal incinerator.
- c. Inlet and exhaust gas temperatures shall be continuously monitored when operating a catalytic incinerator.
- d. Control device efficiency shall be continuously monitored when operating a carbon adsorber or a control device other than a thermal or catalytic incinerator.
- e. Compliance through the use of an add-on control system shall not result in affected pollutant emissions in excess of the affected pollutant emissions that would result from compliance with Sections D.1, D.2, E, and J.

Comment [A127]: Subsections d - f mirror Rule 353.1 provisions.

Comment [A128]: Similar to provision in Rule 321.N.6. (**Reactive organic compound** changed to **affected pollutant** to include TACs.)

E. Requirements – Application Equipment

A No person shall ~~not~~ apply coatings subject to ~~the provisions of~~ this rule ~~except by using properly operated~~ unless the application is performed with equipment ~~and by operating according to the manufacturers operating guidelines.~~ In addition, except as provided in Section D.3, the application method employed shall be one of the following:

Comment [A129]: ARB suggested the addition of according to the manufacturers operating guidelines.

- 1. Electrostatic spray application, or
- 2. Flow coat application, or
- 3. Dip coat application, or
- 4. Roll coater, or
- 45. High volume, low pressure spraying (HVLP) equipment, or
- 56. Electrodeposition, or
- 67. Hand application methods, or
- 78. Detailing or touch-up guns, or
- 89. Any other ~~coating~~ application method ~~that approved by the Control Officer, the Air Resources Board, and the Environmental Protection Agency, achieves that has a coating transfer efficiency of at least equivalent to or greater than~~ 65 percent ~~efficiency as demonstrated measured by using~~ the test method specified in Section I.4.
- 10. Except as otherwise provided in Section E.11, air-atomized spray may only be used for the application of contact adhesives or specialty contact adhesives.
- 11. For adhesive products and sealant products with an as applied viscosity of 200 centipoise or greater, airless spray, air-assisted airless, and air-atomized spray may be used.

Comment [A130]: The potential new Section E provisions are similar to those found in the SJV Rule 4653 and the SC Rule 1168. The District proposes them to comply with the “every feasible control technique” requirements in state law.

Comment [A131]: SC Rule 1168 and SJV Rule 4653 include **roll coater**.

Comment [A132]: Stems from SJV Rule 4653.5.2.9.

Comment [A133]: Modeled on SC Rule 1168(c)(5)(H).

F. Requirements – ~~Closed Containers~~ General Operating

Any person who owns, operates, or uses any surface coating or depainting equipment for any aerospace vehicle or component coating operation shall meet the following requirements:

1. ~~All ROC reactive organic compound-containing materials, used or unused, including but not limited to surface coatings, thinners, cleanup solvents, strippers, or surface preparation materials shall be stored and disposed of in closed nonabsorbent and nonleaking containers equipped with tight-fitting covers. All covers shall be in place unless adding material to or removing material from the containers, and opened only during extraction or introduction of material for mixing, use or storage the containers are empty, or doing maintenance/inspection of the containers. After distillation recovery of solvent, waste solvent residues shall not contain more than 20 percent of reactive organic compound by weight as determined by the test method specified in Section I.10.~~
2. ~~All application equipment, ventilation system, and emission control equipment shall be installed, operated, and maintained consistent with the manufacturer's specifications.~~
3. ~~Waste solvent, waste solvent residues, and any other waste material that contains reactive organic compounds shall be disposed of by one of the following methods: All containers holding surface coating or solvent shall be free of liquid leaks. All application equipment, solvent distillation units, and gun washers shall not have any liquid leaks, visible tears, holes, or cracks. Any such liquid leak, visible tear, hole, or crack is a violation of this rule.~~

~~Any liquid leak, visible tear, hole, or crack that is detected shall be repaired within one day from discovery, or the equipment shall be drained of all surface coating or solvent, consistent with Section F.1 provisions, and shut down until replaced or repaired. Application equipment, solvent distillation units, and gun washers shall not be operated when leaking.~~
 - a. ~~A commercial waste solvent reclamation service licensed by the State of California.~~
 - b. ~~At a facility that is federally or state licensed to treat, store or dispose of such waste.~~
 - c. ~~Recycling in conformance with Section 25143.2 of the California Health and Safety Code.~~
4. ~~All covers, valves, drain plugs, and other closure devices designed to reduce surface coating stripper, or solvent evaporation shall not be removed or opened except to process work or to perform monitoring, inspections, maintenance, or repairs that require the removal of the covers or other closure devices.~~
5. ~~Any surface coating, stripper, or solvent spills shall be wiped up immediately and the used absorbent material (e.g., cloth, paper, sand, sawdust, etc.) shall be stored in closed containers that are handled in accordance with Section F.1.~~
6. ~~The handling and transfer of coatings, strippers, and cleaning solvents to or from enclosed systems, vats, waste containers, and other cleaning operation equipment that hold or store fresh or spent coatings, strippers, and cleaning solvents shall be conducted in such a manner to minimize spills.~~
7. ~~Any storage of any compound Containers used to store coating, solvent, or any waste material that contains reactive organic compounds subject to this rule shall be marked or clearly labeled indicating the name of the material they contain only be done in containers that meet the labeling requirements of Section G.~~

Comment [A134]: The housekeeping provisions are similar to requirements found in Rule 321.D.

G. Requirements -- Manufacturer Labeling

1. Each container of any coating subject to this rule shall display the date on which the contents were manufactured or a code indicating the date of manufacture. Each manufacturer of such coatings shall file with the Air Pollution Control Officer and the Executive Officer of the California Air Resources Board an explanation of each code.

[Annotated draft of March 27, 2012]

2. Each container of any coating subject to this rule shall display a statement of the manufacturer's recommendation regarding thinning of the coating. This recommendation shall not apply to the thinning of coatings with water. The recommendation shall specify that the coating is to be employed without thinning or diluting under normal environmental and application conditions unless any thinning recommended on the label for normal environmental and application conditions does not cause a coating to exceed its applicable standard for reactive organic compound content.
3. Each container of any coating subject to this rule shall display the maximum ROC reactive organic compound content of the coating, as applied, and after any thinning as recommended by the manufacturer. ROC Reactive organic compound content shall be displayed as grams per liter or lb/gal pounds per gallon of coating, less water and less exempt organic compounds. The VOC volatile organic compound content may be displayed instead of the ROC reactive organic compound content as long as the manufacturer's definition of VOC volatile organic compound is consistent with the definition of ROC reactive organic compound contained in District Rule 102, Definitions. ROC Reactive organic compound content displayed may be calculated using product formulation data and the formula in Section C, or may be determined using the test method in Section I.1.

Comment [A135]: ARB recommendation.

Comment [A136]: Inserting and the formula in Section C follows an ARB suggestion.

H. Requirements — Recordkeeping

Any Person ~~person~~ subject to this rule shall comply with the following requirements. Any owner or operator of any stationary source comprised of more than one facility may comply with the following requirements on a facility basis.

Comment [A137]: The District added this in response to an Industry comment received during the Aug. 10, 2011 workshop.

1. Maintain a current listing file of all ROC reactive organic compound-containing materials in use at ~~their facility~~ the stationary source subject to this rule. ~~This listing shall include:~~ The file shall provide all of the data necessary to evaluate compliance and shall include the following information, as applicable:
 - a. material name and manufacturer identification (e.g., brand name, stock identification number);
 - b. application method;
 - c. material type, and manufacturer's specific use instructions (e.g., specific use for which the material is intended), type operation (e.g., coating, stripping, or solvent cleaning), and, for coating operations, the coating type from Table 337-1 or Table 337-2 and equipment coated;
 - d. specific mixing ratio data (e.g., component volumes or weights) of each component for each batch sufficient to determine the mixture's reactive organic compound content;
 - e. the corresponding reactive organic compound limit(s) from Sections D.1, D.2, and J.1 and the maximum actual as applied ROC reactive organic compound content of coating used. If complying using the "reactive organic compound composite partial pressure" method only, provide the actual reactive organic compound composite partial pressure of the materials used less water and less exempt compounds as applied (including thinning solvents); and
 - f. current coating, stripper, and solvent manufacturer specification sheets, Material Safety Data Sheets, product data sheets, or air quality data sheets, which list the reactive organic compound content of each material in use at the stationary source subject to this rule. Compliance with this provision may be done by ensuring the manufacturer's specifications are listed on the product container.

Comment [A138]: Our protocol is to specify requirements are on a stationary source basis. By adding in use at the stationary source, misinterpretations that the requirements are on a facility basis should be avoided.

Comment [A139]: Essentially the same text found in Rule 353.O.1.

Comment [A140]: Added in response to a comment by VAFB.

2. ~~Current coating manufacturer specification sheets, Material Safety Data Sheets or current air quality data sheets, which list the ROC content of each material in use at their facility, shall be available for review on site.~~

Comment [A141]: Moved to 337.H.1.f.

32. Maintain ~~purchase records identifying the type or name and the volume of material purchased for each ROCreactive organic compound-containing material purchased for use at the stationary source. The records shall include, but not be limited to, the following:~~

a. ~~material name and manufacturer identification (e.g., brand name, stock identification number); and~~

b. ~~material type (e.g., coating type from Table 337-1 or Table 337-2, cleanup solvent, stripper, etc.);~~

~~c. volume of material purchased;~~

~~d. date of purchase; and~~

~~e. receipts of each purchase.~~

3. ~~Maintain records of the disposal method of disposal each time waste solvent or waste solvent residue, or other waste material that contain reactive organic compounds is removed from the stationary source for disposal.~~

4. ~~Maintain~~ For each material maintained in response to Section H.1.a, ~~maintain at a minimum, on a monthly basis for compliant material and on a daily basis for noncompliant material, a record of the following:~~

Comment [A142]: Revised to show "Section H.1.a" to exclude MSDSs per clarification request received during the August 10, 2011 workshop.

a. ~~volume used (gallons per day, gallons per month);~~

b. ~~ROCreactive organic compound content (grams per liter or pounds per gallon); and~~

c. ~~and resulting ROCreactive organic compound emissions (pounds per day, pounds per month) of each ROC-containing material used.~~

~~For permitted stationary sources and users of non-compliant coatings, These all records required by this Subsection and Subsection H.5 shall be summarized for each calendar year and submitted to the District by March 1 of the following year. The annual report shall include the name and address of the Permittee, the Permit to Operate number that the coating, stripping, and/or solvent cleaning is subject to (if permitted), and/or a statement that the annual report includes non-compliant coating usage information.~~

Comment [A143]: Moved the annual reporting requirements to Section L per industry suggestion.

5. ~~Operators of facilities~~ For any stationary source that uses ~~non-compliant coating materials with compliance achieved through the operation of~~ emission control equipment ~~as an alternative to meeting the requirements of Sections D.1, D.2, E, or J, shall maintain~~ daily records of key operating parameter values and maintenance procedures ~~which that~~ demonstrate continuous operation and compliance of the emission control ~~device system~~ during periods of emission producing activities ~~shall be maintained. These parameters shall include, but not be limited to:~~

a. ~~Hours of operation;~~

b. ~~All maintenance work that requires the emission control system to be shut down;~~

c. ~~All information needed to demonstrate continuous compliance with Section D.3, such as temperatures, pressures, and/or flow rates.~~

Comment [A144]: Subsections a - c are from Rule 321.R.1.c.

[Annotated draft of March 27, 2012]

6. ~~All~~ Any records required ~~by~~ to be maintained pursuant to this rule shall be kept on site for at least 2 years unless a longer retention period is otherwise required by state or federal regulation(s). Such records shall be readily available for ~~expeditious~~ shall be retained and available for inspection by the Control Officer or designated representative upon request for the previous 36 month period and review by the District.

Comment [A145]: During the CAC meeting on August 10, a concern about the need to maintain records for 5 years was raised. Staff discovered that EPA had modified its 5 year recordkeeping policy. Hence, per the EPA "Guidance Document for Correcting Common VOC & Other Rule Deficiencies," 2 years record retention is acceptable for sources not subject to Title V permitting or a MACT standard.

7. Any person claiming an exemption under Section B.1 shall maintain:

a. Daily records of the volumes in gallons of non-compliant-complying coating materials used by each separate formulation at the stationary source.

b. Annual running totals, from January 1 of each calendar year, of the volume in gallons of non-compliant-complying coating materials used at the stationary source for:

1) Each separate formulation.

2) All formulations.

Comment [A146]: EPA recommended daily recordkeeping for non-complying coatings.

~~8. If an operator or District staff discovers a liquid leak in a container holding surface coating, stripper, or solvent, or a liquid leak, visible tear, hole, or crack in application equipment, a solvent distillation unit, or in a gun washer, the operator shall record:~~

~~a. the date of discovery;~~

~~b. the corrective action taken; and~~

~~c. the date of repair or equipment replacement.~~

I. Requirements – Compliance Provisions and Test Methods

1. ~~ROC content of a coating~~ Coatings and solvent reactive organic compound content shall be determined ~~measured using EPA~~ by the Environmental Protection Agency Reference Method 24, its constituent methods, or an equivalent method approved by the ~~Control Officer, ARB and EPA~~ Environmental Protection Agency, the Air Resources Board, and the Control Officer. The determination of exempt compounds shall be performed in accordance with ASTM D 4457-85/1991, "Standard Test Method for Determination of Dichloromethane and 1,1,1-Trichloroethane in Paints and Coatings by Direct Injection into a Gas Chromatograph," ASTM International. ~~Alternatively, determination of exempt compounds may be performed in accordance with the South Coast Air Quality Management District Method 303-91, "Determination of Exempt Compounds," August 1996. The reactive organic compound content of materials containing 50 grams of reactive organic compound per liter or less shall be determined by the South Coast Air Quality Management District Method 313-91, "Determination of Volatile Organic Compounds by Gas Chromatography-Mass Spectrometry," June 1993, or any other test methods approved by the Environmental Protection Agency, the Air Resources Board, and the Control Officer.~~

Comment [A147]: EPA recommended referring to SC Method 313 for determining ROC content of materials containing < 50 g/l.

2. ~~Compliance with Section D.3.a~~ The control device efficiency for reactive organic compound emissions shall be determined by ~~using ARB Method 100 or EPA Environmental Protection Agency Test Methods 25, 25A, the South Coast Air Quality Management District Method 25.1, "Determination of Total Gaseous Non-Methane Organic Emissions as Carbon," February 1991, or the South Coast Air Quality Management District Method 25.3, "Determination of Low Concentration Non-Methane Non-Ethane Organic Compound Emissions from Clean Fueled Combustion Sources," March 2000, as applicable. Environmental Protection Agency Test Method 18 or Air Resources Board Method 422, "Exempt Halogenated VOCs in Gases," September 12, 1990, shall be used to determine emissions of exempt compounds. or a method determined to be equivalent and approved by the Control Officer, ARB, and EPA.~~

Comment [A148]: These changes follow EPA's recommendation that the District model the provisions on SC Rule 1122(h)(7)(B) text.

[Annotated draft of March 27, 2012]

3. ~~Compliance with Section D.3.b~~ The capture efficiency for reactive organic compound emissions shall be based on EPA Guidelines for Developing Capture Efficiency Protocols from 55 FR 26865, July 1, 1990 determined by verifying the use of a Permanent Total Enclosure and 100 percent capture efficiency as defined by Environmental Protection Agency Method 204, "Criteria for and Verification of a Permanent or Temporary Total Enclosure." Alternatively, if an Environmental Protection Agency Method 204 defined Permanent Total Enclosure is not employed, capture efficiency shall be determined using a minimum of three sampling runs subject to data quality criteria presented in the Environmental Protection Agency technical guidance document "Guidelines for Determining Capture Efficiency, January 9, 1995." Individual capture efficiency test runs subject to the Environmental Protection Agency technical guidelines shall be determined by:
 - a. The Temporary Total Enclosure approach of Environmental Protection Agency Methods 204 through 204F; or
 - b. The South Coast Air Quality Management District "Protocol for Determination of Volatile Organic Compounds (VOC) Capture Efficiency," May 1995;
4. ~~Compliance with Section E.8~~ Application equipment coating transfer efficiencies shall be determined measured using South Coast Air Quality Management District Method "Spray Equipment Transfer Efficiency Test Procedure of Equipment User," May 24, 1989.
5. ~~Compliance with Section D.2~~ Reactive organic compound composite partial pressures shall be determined measured using ASTM D 2879-86 1997, "Standard Test Method for Vapor Pressure-Temperature Relationship and Initial Decomposition Temperature of Liquids by Isoteniscope," ASTM International, in combination with the formula in the Section C-Rule 102 definition of "reactive organic compound composite partial pressure," manufacturer's specified vapor reactive organic compound composite partial pressure, or an accepted scientific reference approved the Environmental Protection Agency, the Air Resources Board, and the Control Officer.
6. The control device efficiency for toxic air contaminant emissions that are not reactive organic compounds shall be determined using:
 - a. an Environmental Protection Agency approved test method or methods, or
 - b. in the case where there is no Environmental Protection Agency approved test method, a District approved detection method applicable for each target toxics specie.
 - c. the Control Officer may require more than one test method on any emission control device where necessary to demonstrate that the overall efficiency is at least 85.5 percent by weight in reducing emissions of reactive organic compounds and/or toxic air contaminants. Any technique to convert "parts per million by volume" test method results to either 1) "parts per million by weight," or 2) "mass emission rates" (e.g., pounds per hour) shall first be approved by the Control Officer and, if such approval is not provided, then the technique shall not be used to show compliance with this rule.
7. The capture efficiency for toxic air contaminant emissions that are not reactive organic compounds shall be determined by using the methods described in Section I.3 modified in a manner approved by the District to quantify the mass of liquid or gaseous reactive organic compounds and/or toxic air contaminants.
8. The active and passive solvent losses from spray gun cleaning systems shall be determined using South Coast Air Quality Management District's, "General Test Method for Determining Solvent Losses from Spray Gun Cleaning Systems," dated October 3, 1989. The test solvent for this determination shall be any lacquer thinner with a minimum reactive organic compound composite

Comment [A149]: EPA recommended that the District model the provisions on SC Rule 1122(h)(7)(A) text.

Comment [A150]: Essentially the same as Rule 321.P.4 provisions.

Comment [A151]: Similar to the Rule 321.P.3 requirements.

partial pressure of 105 millimeters of mercury at 20 degrees Celsius, and the minimum test temperature shall be 15 degrees Celsius.

9. Viscosity shall be determined by ASTM D 1084-88, "Standard Test Methods for Viscosity of Adhesives," ASTM International.
10. Solvent waste residue reactive organic compound content shall be determined by using Environmental Protection Agency Reference Method 25D or an equivalent method approved by the Environmental Protection Agency, the Air Resources Board, and the Control Officer. [Reserved] Emissions of reactive organic compounds from the exhaust of an emission control system shall be measured by the Environmental Protection Agency Method 25, in combination with Environmental Protection Agency Method 18 or the California Air Resources Board Method 422, "Exempt Halogenated VOCs in Gases," September 12, 1990. (to determine emissions of exempt compounds).
11. When more than one test method or set of test methods are specified for any testing, a test result showing an exceedance of any limit of this rule shall constitute a rule violation.
12. The Environmental Protection Agency test methods in effect on [date of amended rule adoption] shall be the test methods used to meet the requirements of this rule.

Comment [A152]: Added per the EPA recommendation in the Technical Support Document for SJV Rule 4605 (June 2009).

J. Requirements – Solvent Cleaning Associated with Surface Coating of Aerospace Vehicles and Components

Comment [A153]: Section J stems from similar solvent cleaning provisions in Rule 321.M.

Section J requirements shall apply to any person performing solvent cleaning associated with surface coating of aerospace vehicles or components, including, but not limited to, use of wipe cleaning cloths, hand-held spray bottles, squirt bottles, aerosol products, and the cleaning of application equipment. The following requirements become effective [one year from the date of amended rule adoption] and are in addition to the general operating requirements specified in Section F.

1. Solvent Requirements

Except when using an emission control system that meets the requirements of Section D.3, no person shall use any solvent to perform solvent cleaning which exceeds the following limits:

a. When Performing Surface Preparation for Coating Application and Cleanup (Other than Spray Application Equipment Cleaning):

- 1) 200 grams of reactive organic compound per liter (1.67 pounds of reactive organic compound per gallon) of material, or
- 2) reactive organic compound composite partial pressure of 45 millimeters of mercury at 20 degrees Celsius.

Comment [A154]: Modeled on SC Rule 1124(c)(1)(A) and SJV Rule 4605.5.2.1.

b. When Performing Solvent Cleaning of Spray Application Equipment: 25 grams of reactive organic compounds per liter (0.21 pounds of reactive organic compound per gallon) of material. In lieu of meeting the reactive organic compound-content limit, a person may use an enclosed cleaning system, or equipment that is proven to the satisfaction of the Control Officer to be equally effective as an enclosed cleaning system at controlling emissions. "Equal effectiveness" of an alternative cleaning system shall be determined by the test method referenced in Section I.8 of this rule. If an enclosed cleaning system is used, it shall totally enclose spray guns, cups, nozzles, bowls, and other parts during washing, rinsing, and draining procedures, and it shall be used according to the manufacturer's recommendations and be closed when not in use.

Comment [A155]: ARB and EPA recommended a 25 g/l limit on the solvent's ROC content.

Comment [A156]: Aerospace industry spokespersons indicated that some application equipment cleaning requires with a higher ROC-content solvent. In response, a provision modeled on Rule 321.M.3 is included.

[Annotated draft of March 27, 2012]

2. **Cleaning Devices and Methods.** Except for solvent cleaning of spray application equipment, any person performing solvent cleaning with a solvent containing more than 25 grams of reactive organic compounds per liter of material shall use one or more of the following cleaning devices or methods:

- a. Wipe cleaning where solvent is dispensed to wipe cleaning materials from containers that are kept closed to prevent evaporation, except while dispensing solvent or replenishing the solvent supply, and where wipes are stored in closed containers to prevent evaporation when not in use;
- b. Application of solvent from hand-held spray bottles, squirt bottles, or other closed containers with a capacity of one liter or less; or
- c. Non-atomized solvent flow, dip, or flush cleaning method where pooling on surfaces being cleaned is prevented or drained, and all solvent runoff is collected in a manner that enables solvent recovery or disposal. The collection system shall be kept closed to prevent evaporation except while collecting solvent runoff or emptying the collection system.

Comment [A157]: Similar to Rule 321.M.2.

K. Compliance Schedule

Except as otherwise specified in Section D.1 and Section J, the provisions of this rule are effective on [date of amended rule adoption]. Any person subject to this rule shall comply with the Section J requirements by [one year from the date of amended rule adoption].

Any person who owns, operates, or uses any application equipment to surface coat any aerospace vehicles or components shall meet the following compliance schedule:

1. By [30 days from the date of amended rule adoption], comply with Section F, Requirements - General Operating.
2. By [six months from the date of amended rule adoption], comply with the recordkeeping provisions in the following Sections:
 - a. H.1.d - mixing volumes.
 - b. H.1.e - reactive organic compound content data.
 - c. H.2 - purchase records.
 - d. H.3 - waste disposal records, and
 - e. H.4 - daily records for noncompliant materials.
3. By [one year from the date of amended rule adoption], comply with the Section J and Section M requirements.
4. By [date of amended rule adoption], comply with all other provisions of this rule.

L. Reporting Requirements

Submittal of an annual report to the District is required if:

- A person holds a permit for equipment subject to the requirements of this rule, or
- A person is subject to the requirements of this rule and applies non-complying coatings.

The annual report shall be due March 1 and it shall contain the following information for the previous calendar year:

1. monthly records required by Section H.4.
2. annual totals (gallons) based on each of the coating's and solvent's monthly data.
3. if claiming the Rule 337.B.1 exemption, annual totals (gallons) of non-complying coatings for each separate formulation and all formulations, per Section H.7.b. and
4. if permitted, name and address of the company or agency, and the Permit to Operate number that the surface coating equipment is subject to.

Comment [A158]: The annual report provision was relocated from Section H.4 to a stand-alone section per an Industry suggestion.

M. Requirements - Solvent Cleaning Machine

Any person who owns, operates, or uses any solvent cleaning machine shall comply with the applicable provisions of Rule 321, Solvent Cleaning Machines and Solvent Cleaning.

Comment [A159]: Added to clarify that Rule 321 provisions apply to solvent cleaning machines when used in conjunction with surface coating of aerospace vehicles and components.