.13-1 Aerospace Coating Operations.

A. Applicability and Exemptions.

(1) This regulation applies to an aerospace coating operation at a premises where the total actual VOC emissions from all aerospace coating operations is 20 pounds or more per day.

(2) The standards in §C(2) of this regulation do not apply to tooling and touch up and repair operations.

(3) A person subject to the standards in §C(2) of this regulation may comply with those standards by using an air pollution control device (see Regulation .02B(2)(b) of this chapter).

B. Definitions. In this regulation, the following terms have the meanings indicated:

(1) "Ablative coating" means a 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, and serves as an insulative barrier, protecting adjacent components from the heat or open flame.

(2) "Adhesion promoter" means a thin coating applied to a substrate to:

(a) Promote wetting; and

(b) Form a chemical bond with the subsequently applied material.

(3) Adhesive Bonding Primer.

(a) "Adhesive bonding primer" means a primer applied in a thin film to aerospace components for the purpose of corrosion inhibition and increased adhesive bond strength by attachment.

(b) "Adhesive bonding primers" include the following categories:

(i) Primers with a design cure at 250°F or below; and

(ii) Primers with a design cure above 250°F.

(4) Aerospace Vehicle or Component.

(a) "Aerospace vehicle or component" means any fabricated part, processed part, assembly of parts, or completed unit of any aircraft.

(b) "Aerospace vehicle or component" includes:

(i) Airplanes;

(ii) Helicopters;

(iii) Missiles;

(iv) Rockets; and

(v) Space vehicles.

(c) "Aerospace vehicle or component" does not include electronic components.

(5) "Antichafe coating" means a coating applied to areas of moving aerospace components that may rub during normal operations or installation.

(6) Bearing Coating.

(a) "Bearing coating" means a coating applied to an antifriction bearing, a bearing housing, or the area adjacent to a bearing in order to facilitate bearing function or to protect base material from excessive wear.

(b) "Bearing coating" does not include a dry lubricative material or a solid film lubricant.

(7) "Bonding maskant" means a temporary coating used to protect selected areas of aerospace parts from strong acid or alkaline solutions during processing for bonding.

(8) Caulking and Smoothing Compounds.

(a) "Caulking and smoothing compounds" means semi-solid materials which are:

(i) Applied by hand application methods; and

(ii) Used to aerodynamically smooth exterior vehicle surfaces or fill cavities such as bolt hole accesses.

(b) "Caulking and smoothing compounds" does not include compounds that can be classified as sealants.

(9) "Chemical agent-resistant coating (CARC)" means an exterior topcoat designed to withstand exposure to chemical warfare agents or the decontaminants used on these agents.

(10) Chemical Milling Maskant.

(a) "Chemical milling maskant" means a coating that is applied directly to aluminum components to protect surface areas when chemically milling the component with a Type II etchant.

(b) "Chemical milling maskant" does not include:

(i) Maskants used with Type I etchants, bonding maskants, line sealers, and critical use and seal coat maskants; or

(ii) Maskants that must be used on an individual part or subassembly with a combination of Type II etchants and any of the types of maskants listed in §B(10)(b)(i) of this regulation.

(11) "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.

(12) "Commercial exterior aerodynamic structure primer" means a 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.

(13) "Commercial interior adhesive" means materials used in the bonding of passenger cabin interior components that meet the Federal Aviation Administration (FAA) fireworthiness requirements.

(14) Compatible Substrate Primer.

(a) "Compatible substrate primer" means a compatible epoxy primer that is:

(i) Compatible with the filled elastomeric coating and is epoxy based; and

(ii) An epoxy polyamide primer used to promote adhesion of elastomeric coatings such as impact-resistant coatings.

(b) "Compatible substrate primer" means an adhesive primer coating that inhibits corrosion and serves as a primer applied to:

(i) Bare metal surfaces or before adhesive application; or

(ii) Surfaces that can be expected to contain fuel.

(c) "Compatible substrate primer" does not include fuel tank coatings.

(15) Corrosion Prevention System.

(a) "Corrosion prevention system" means a coating system that provides corrosion protection by displacing water and penetrating mating surfaces, forming a protective barrier between the metal surface and moisture.

(b) "Corrosion prevention system" does not include coatings containing oils or waxes.

(16) Critical Use and Line Sealer Maskant.

(a) "Critical use and line sealer maskant" means a 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.

(b) "Critical use and line sealer maskant" includes materials used for repairs or to bridge gaps left by scribing operations (that is, line sealer).

(17) "Cryogenic flexible primer" means a 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 (-275°F and below).

(18) "Cryoprotective coating" means a 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.

(19) Cyanoacrylate Adhesive.

(a) "Cyanoacrylate adhesive" means a fast-setting, single component adhesive that cures at room temperature.

(b) "Cyanoacrylate adhesive" is also known as "super glue."

(20) "Dry lubricative material" means a coating consisting of lauric acid, cetyl alcohol, waxes, or other noncross linked or resin-bound materials that act as a dry lubricant.

(21) Electric or Radiation-Effect Coating.

(a) "Electric or radiation-effect coating" means a 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 to be used for lightning strike protection, electromagnetic pulse (EMP) protection, and radar avoidance.

(b) "Electric or radiation-effect coating" does not include coatings that have been designated as "classified" by the Department of Defense.

(22) "Electrostatic discharge and electromagnetic interference (EMI) coating" means a coating applied to space vehicles, missiles, aircraft radomes, and helicopter blades to disperse static energy or reduce electromagnetic interference.

(23) "Elevated-temperature Skydrol-resistant commercial primer" means a 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(F for 1,000 hours.

(24) "Epoxy polyamide topcoat" means a coating used where harder films are required or in some areas where engraving is accomplished in camouflage colors.

(24-1) "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 used on the exterior of the aerospace vehicle.

(25) "Fire-resistant (interior) coating" means:

(a) For civilian aircraft, fire-resistant interior coatings used on passenger cabin interior parts that are subject to the FAA fireworthiness requirements;

(b) For military aircraft, fire-resistant interior coatings used on parts that are subject to the flammability requirements of MIL-STD-1630A and MIL-A-87721; and

(c) For space applications, coatings used on parts that are subject to the flammability requirements of SE-R-0006 and SSP 30233.

(26) "Flexible primer" means a primer that meets flexibility requirements such as those needed for adhesive bond primed fastener heads or on surfaces expected to contain fuel that:

(a) 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; and

(b) Allows more topcoat flexibility around fasteners and decreases the chance of the topcoat cracking around the fasteners.

(27) "Flight test coating" means a coating applied to aircraft other than missiles or single-use aircraft before flight testing to protect the aircraft from corrosion and to provide required marking during flight test evaluation.

(28) "Fuel tank adhesive" means an adhesive used to bond components exposed to fuel and are compatible with fuel tank coatings.

(29) "Fuel tank coating" means a coating applied to fuel tank components for the purpose of corrosion or bacterial growth inhibition and to assure sealant adhesion in extreme environmental conditions.

(29-1) "General aviation rework facility" means an aerospace facility with the majority of its revenues resulting from the reconstruction, repair, maintenance, repainting, conversion, or alteration of general aviation aerospace vehicles or components.

(30) "High temperature coating " means a coating designed to withstand temperatures of more than 350°F.

(31) "Insulation covering" means material that is applied to foam insulation to protect the insulation from mechanical or environmental damage.

(32) "Intermediate release coating" means a thin coating applied under topcoats to assist in removing the topcoat in depainting operations and generally to allow the use of less hazardous depainting methods.

(33) "Lacquer" means a clear or pigmented coating formulated with a nitrocellulose or synthetic resin to dry by evaporation without a chemical reaction that is resoluble in its original solvent.

(33-1) "Large commercial aircraft" means an aircraft of more than 110,000 pounds maximum certified take-off weight manufactured for nonmilitary use.

(34) "Metalized epoxy coating" means a coating that contains relatively large quantities of metallic pigmentation for appearance or added protection.

(35) "Mold release" means a coating applied to a mold surface to prevent the molded piece from sticking to the mold as it is removed.

(36) "Nonstructural adhesive" means an adhesive that bonds non-load-bearing aerospace components in noncritical applications and is not covered in any other specialty adhesive categories.

(37) "Optical antireflection coating" means a coating with a low reflectance in the infrared and visible wavelength ranges that is used for antireflection on or near optical and laser hardware.

(38) "Part marking coating" means coatings or inks used to make identifying markings on materials, components, or assemblies, and may be either permanent or temporary.

(39) "Pretreatment coating" means an organic coating that contains at least 0.5 percent acids by weight and is applied directly to metal or composite surfaces to provide surface etching, corrosion resistance, adhesion, and ease of stripping.

(40) Primer.

(a) "Primer" means the first layer and any subsequent layers of identically formulated coating applied to the surface of an aerospace vehicle or component, and typically used for:

(i) Corrosion protection;

(ii) Protection from the environment;

(iii) Functional fluid resistance; and

(iv) Adhesion of subsequent coatings.

(b) "Primer" does not include specialty coatings.

(41) "Rain erosion-resistant coating" means a coating or coating system used to protect the leading edges of parts such as flaps, stabilizers, radomes, engine inlet nacelles, and similar parts against erosion caused by rain impact during flight.

(42) "Rocket motor bonding adhesive" means an adhesive used in rocket motor bonding applications.

(43) "Rocket motor nozzle coating" means a catalyzed epoxy coating system used in elevated temperature applications on rocket motor nozzles.

(44) "Rubber-based adhesive" means a quick setting contact cement that provides a strong, yet flexible bond between two mating surfaces that may be of dissimilar materials.

(45) "Scale inhibitor" means a coating that is applied to the surface of a part before thermal processing to inhibit the formation of scale.

(46) "Screen print ink" means an ink used in screen printing processes during fabrication of decorative laminates and decals.

(47) Sealant.

(a) " Sealant" means a material used to prevent the intrusion of water, fuel, air, or other liquids or solids from certain areas of aerospace vehicles or components.

(b) " Sealant" includes the following categories:

(i) Extrudable/rollable/brushable sealants; and

(ii) Sprayable sealants.

(48) "Seal coat maskant" means an overcoat applied over a maskant to improve abrasion and chemical resistance during production operations.

(49) "Self-priming topcoat" means one or more layers of topcoat that are applied directly to an uncoated aerospace vehicle or component for purposes of corrosion prevention, environmental protection, and functional fluid resistance. The coating is not subsequently topcoated with any other product formulation.

(50) "Silicone insulation material" means:

(a) An insulating material applied to exterior metal surfaces for protection from high temperatures caused by atmospheric friction or engine exhaust; and

(b) Insulating materials that differ from ablative coatings in that they are not "sacrificial."

(51) "Solid film lubricant" means a thin coating consisting of a binder system containing as its chief pigment material one or more of the following:

(a) Molybdenum;

(b) Graphite;

(c) Polytetrafluoroethylene (PTFE); or

(d) Other solids that act as a dry lubricant between faying (that is, closely or tightly fitting) surfaces.

(52) "Specialty coating" means a 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, including:

(a) Temperature or fire resistance;

(b) Substrate compatibility;

(c) Antireflection;

(d) Temporary protection or marking;

(e) Sealing;

(f) Adhesively joining substrates; or

(g) Enhanced corrosion protection.

(53) Specialized Function Coating.

(a) "Specialized function coating" means a coating that fulfills extremely specific engineering requirements that are limited in application and are characterized by low volume usage.

(b) "Specialized function coating" does not include coatings covered in other specialty coating categories.

(54) "Structural autoclavable adhesive" means an adhesive used to bond load-carrying aerospace components that is cured by heat and pressure in an autoclave.

(55) "Structural nonautoclavable adhesive" means an adhesive cured under ambient conditions that is used to bond load-carrying aerospace components or other critical functions, such as nonstructural bonding in the proximity of engines.

(56) Temporary Protective Coating.

(a) "Temporary protective coating" means a coating applied to provide scratch or corrosion protection during manufacturing, storage, or transportation.

(b) "Temporary protective coating" includes peelable protective coatings and alkaline removable coatings, which are not intended to protect against strong acid or alkaline solutions.

(c) "Temporary protective coating" does not include coatings that provide protection from chemical processing.

(57) "Thermal control coating" means a coating formulated with specific thermal conductive or radiative properties to permit temperature control of the substrate.

(58) "Tooling operation" means the fabrication and repair of a mold or other form used in production related to aerospace vehicle components.

(59) Topcoat.

(a) "Topcoat" means a coating that is applied over a primer on an aerospace vehicle or component for appearance, identification, camouflage, or protection.

(b) "Topcoat" does not include coatings that are defined as specialty coatings.

(60) Touch-Up and Repair Operation.

(a) "Touch-up and repair operation" means that portion of the coating operation that is the incidental application of coatings used to cover minor imperfections in the coating finish or to achieve complete coverage.

(b) "Touch-up and repair operation" includes out-of-sequence or out-of-cycle coating.

(61) "Wet fastener installation coating" means a primer or sealant applied by dipping, brushing, or daubing to fasteners that are installed before the coating is cured.

(62) "Wing coating" means a corrosion-resistant topcoat that is resilient enough to withstand the flexing of the wings.

C. General Requirements for Aerospace Coating Operations.

(1) Except as provided in §C(3) of this regulation, a person who owns or operates an aerospace coating operation subject to this regulation may not cause or permit the discharge of VOC into the atmosphere unless the standards in §C(2) of this regulation are met.

(2) Aerospace Coating Operation Standards.

(a) Coating Standards at Maximum Allowable VOC in Pounds Per Gallon (Grams Per Liter) of Coating Applied (Minus Water)

Coating Types	*Pounds/Gallon (Grams/Liter)*
Topcoats	3.5 (420)
Self-priming topcoat	3.5 (420)
Primers	2.9 (350)
Chemical Milling Maskants	1.3 (160)
Exterior primer for large commercial aircrafts	5.4 (650)
Primer for general aviation rework facilities	4.5 (540)
(b) Standards for Specialty Coatings.	
Coating	*Pounds/Gallon (Grams/Liter)*
Ablative Coating	5.0 (600)
Adhesion Promoter	7.42 (890)
Adhesive Bonding Primers: Cured at 250°F or below	7.09 (850)
Adhesive Bonding Primers: Cured above 250°F	8.59 (1030)
Antichafe Coating	5.50(660)
Bearing Coating	5.17 (620)
Bonding Maskant	10.26 (1,230)
Caulking and Smoothing Compounds	7.09 (850)
Chemical Agent-Resistant Coating	4.58 (550)
Clear Coating	6.00 (720)
Commercial Exterior Aerodynamic Structure Primer	5.42 (650)
Commercial Interior Adhesive	6.34 (760)
Compatible Substrate Primer	6.50 (780)
Corrosion Prevention Compound	5.92 (710)
Critical Use and Line Sealer Maskant	8.51 (1,020)
Cryogenic Flexible Primer	5.38 (645)
Cryoprotective Coating	5.00 (600)
Cyanoacrylate Adhesive	8.51 (1,020)
Dry Lubricative Material	7.34 (880)
Electric or Radiation-Effect Coating	6.67 (800)
Electrostatic Discharge and Electromagnetic Interference (EMI)	6.67 (800)

Coating	
Elevated-Temperature Skydrol—Resistant Commercial Primer	6.17 (740)
Epoxy Polyamide Topcoat	5.50 (660)
Fire-Resistant (interior) Coating	6.67 (800)
Flexible Primer	5.34 (640)
Flight-Test Coatings Missile or Single Use Aircraft	3.50 (420)
Flight-Test Coatings All Other	7.0 (840)
Fuel Tank Adhesive	5.17 (620)
Fuel-Tank Coating	6.00 (720)
High-Temperature Coating	7.09 (850)
Insulation Covering	6.17 (740)
Intermediate Release Coating	6.25 (750)
Lacquer	6.9 (830)
Metallized Epoxy Coating	6.17 (740)
Mold Release	6.50 (780)
Nonstructural Adhesive	3.00 (360)
Optical Antireflective Coating	6.25 (750)
Part Marking Coating	7.09 (850)
Pretreatment Coating	6.50
Rain Erosion-Resistant Coating	7.09 (850)
Rocket Motor Bonding Adhesive	7.42 (890)
Rocket Motor Nozzle Coating	5.50 (660)
Rubber-Based Adhesive	7.09 (850)
Scale Inhibitor	7.34 (880)
Screen Print Ink	7.00 (840)
Sealants: Extrudable/Rollable/Brushable Sealant	2.33 (280)
Sprayable Sealant	5.0 (600)
Seal Coat Maskant	10.26 (1,230)
Silicone Insulation Material	7.09 (850)
Solid Film Lubricant	7.34 (880)
Specialized Function Coating	7.42 (890)
Structural Autoclavable Adhesive	0.50 (60)
Structural Nonautoclavable Adhesive	7.09 (850)
Temporary Protective Coating	2.67 (320)
Thermal Control Coating	6.67 (800)
Wet fastener installation coating	5.63 (675)
Wing coating	7.09 (850)

(3) A person subject to this regulation may exceed the specialty coating standards in §C(2)(b) of this regulation if the total VOC emissions from all specialty coatings that exceed the standard in §C(2)(b) of this regulation do not exceed 20 pounds on any day.

(4) A person who owns or operates an aerospace coating operation subject to this regulation shall comply with the primer and topcoat applications operations, chemical milling maskant operations, and the test methods

and coating averaging procedures specified in 40 CFR §§63.745(a)—(e), 63.747(a)—(e), and 63.750 as applicable, which are incorporated by reference.

(5) Cleanup Requirements. A person who owns or operates an aerospace coating operation shall:

(a) Store all waste materials containing VOC, including cloth or paper, in closed containers;

(b) Maintain lids on surface preparation and cleanup materials when not in use; and

(c) Use enclosed containers or VOC recycling equipment to clean spray gun equipment.

(6) Record Keeping.

(a) A person subject to this regulation shall maintain the following records:

(i) A description and the volume of each coating used; and

(ii) The total weight and VOC content of each coating used on a monthly basis.

(b) Records shall be retained for not less than 3 years and be made available to the Department upon request.