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Part VII. Source/Category Specific Emission Limits for Existing and New Sources

Section 2.0 Aerospace Manufacturing and Rework Operations

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1.0 APPLICABILITY

1.1 General Applicability. The provisions of this Section apply to each aerospace manufacturing or rework facility within the exterior boundaries of the Gila River Indian Community (“Community”) whose plant-wide potential to emit exceeds ten (10) pounds of volatile organic compounds (“VOC”) per day. Compliance with the provisions of this Section shall not relieve any person subject to the requirements of this Section from complying with any other federally enforceable New Source Performance Standard (“NSPS”) or National Emissions Standard for Hazardous Air Pollutants (“NESHAPs”). In such cases, the more stringent standard shall apply.

1.2 Exemptions. The following activities shall be exempt from the provisions of this Section:

- A.** Research and development;
- B.** Quality control;
- C.** Laboratory testing activities;

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- D. Chemical milling (except for application of chemical milling maskants);
- E. Metal finishing;
- F. Electrodeposition (except for the electrodeposition of paints);
- G. Composites processing (except for cleaning and coating of composite parts or components that become part of an aerospace vehicle or component as well as composite tooling that comes in contact with such composite parts or components prior to cure);
- H. Electronic parts and assemblies (except for cleaning and topcoating of completed assemblies);
- I. Manufacture of aircraft transparencies;
- J. Wastewater treatment operations;
- K. Manufacturing and rework of parts and assemblies not critical to the vehicle’s structural integrity or flight performance;
- L. Regulated activities associated with space vehicles designed to travel beyond the limit of the earth’s atmosphere including, but not limited to, satellites, space stations, and space shuttles;
- M. Utilization of primers, topcoats, specialty coatings, cleaning solvents, chemical milling maskants, and strippers containing VOCs at concentrations less than 0.1 percent for carcinogens or 1.0 percent for noncarcinogens;
- N. Utilization of touchup, aerosol, and Department of Defense classified coatings;
- O. Maintenance and rework of antique aerospace vehicles and components;
- P. Rework of aircraft or aircraft components if the holder of the Federal Aviation Administration design approval, or the holder’s licensee, is not actively manufacturing the aircraft or aircraft components.

2.0 DEFINITIONS

“**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. The ablative char surface serves as an insulative barrier, protecting adjacent components from the heat or open flame.

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

“**Adhesive Bonding**” means the joining together of two or more metal parts, such as the parts of a honeycomb core. The surfaces to be bonded are first coated with an adhesive bonding primer to promote adhesion and protect from subsequent corrosion. Structural adhesives are applied as either a thin film or as a paste and can be oven cured in an autoclave.

“**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. There are two categories of adhesive bonding primers, primers with a design cure at 250° F (120° C) or below and primers with a design cure above 250° F (120° C).

“**Aerospace Manufacturing Rework Facility**” means a commercial, civil, or military facility that produces in any amount an aerospace vehicle or component, or a commercial, civil, or military facility that reworks (or repairs) these vehicles or components. Aerospace manufacturing and rework operations may consist of, but not be limited to, any of the following basic operations: chemical milling maskant application, chemical milling, adhesive bonding, cleaning, metal finishing electrodeposition, coating application, depainting, and composite processing.

“**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.

“**Aircraft Fluid Systems**” means 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.

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

“**Antique Aerospace Vehicle or Component**” means an antique aircraft, as defined by 14 C.F.R. Part 45, or components thereof. An antique aerospace vehicle would not routinely be in commercial or military service in the capacity for which it was designed.

“**Aqueous Cleaning Solvent**” means a cleaning solvent in which water is the primary ingredient (greater than eighty (80) percent by weight of cleaning solvent solution as applied must be water). Detergents, surfactants, and bioenzyme mixtures and nutrients may be combined with the water along with a variety of additives such as organic

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solvents, builders, saponifiers, inhibitors, emulsifiers, pH buffers, and antifoaming agents. Aqueous solutions must have a flash point greater than 200° F (93° C) (as reported by the manufacturer) and the solution must be miscible with water.

“Application Equipment” means equipment used for applying coatings to a substrate. Application equipment includes, but is not limited to, coating distribution lines, coating hoses, equipment used in hand application methods, and equipment used in mechanically operated application methods including, but not limited to, spray guns, spinning disks, and pressure pots.

“Bearing Coating” means a coating applied to an antifriction bearing, a bearing housing, or the area adjacent to protect base material from excessive wear. A material shall not be classified as bearing coating if it can also be classified as a dry lubricative material or a solid film lubricant.

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

“Brush Coating” means the manual application of coatings using brushes or rollers.

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

“Chemical-agent Resistance Coating” or “CARC” means an exterior topcoat designed to withstand exposure to chemical warfare agents or the decontaminates used in these agents.

“Chemical Milling Maskant Application Operation” means the use of spray equipment or a dip tank to apply a chemical milling maskant, prior to chemically milling the component with a Type II etchant.

“Chemical Milling Maskant” means a 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 Type II etchants and any other of the above types of maskants are also not included in this definition.

“Chemical Milling” means a process used to reduce the thickness of selected areas of metal parts in order to reduce weight by submerging the metal parts in an etchant.

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“Cleaning Operation” means any operation that removes dirt or impurities from aerospace vehicles, components, or coating equipment. This may include spray-gun, hand-wipe, and flush cleaning operations.

“Cleaning Solvent” means any liquid material used for hand-wipe, spray-gun, or coating-line cleaning.

“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 clearcoat refers to any transparent coating without regard to substrate.

“Coating” means a material that is applied to the surface of an aerospace vehicle or component to form a decorative or functional solid film, or the solid film itself.

“Coating Class” means a specific subgroup of coatings such as all Topcoats, all Primers, all Type I Chemical Millings Maskants, etc.; or a specific type of specialty coating such as all Ablative Coatings, all Adhesion Promoters, all Antichafe Coatings, etc.

“Coating Operation” means using a spray booth, tank, or other enclosure or any area, such as a hangar, for applying a single type of coating (e.g., primer); using the same spray booth for applying another type of coating (e.g., topcoat) constitutes a separate coating operation for which compliance determinations are performed separately.

“Coating Unit” means a series of one or more coating applicators and any associated drying area and/or oven wherein a coating is applied, dried, and/or cured. A coating unit ends at the point where the coating is dried or cured, or prior to any subsequent application of a different coating. It is not necessary to have an oven or flashoff area to be included in this definition.

“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.

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

“Compatible Substrate Primer” means either compatible epoxy primer or adhesive primer.

“Composite Processing Operations” means layup, thermal forming, debulking, curing, break-out, compression molding, and injection molding of composites. *Layup* means the

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process of assembling the layers of the composite structure by positioning composite material in a mold and impregnating the material with a resin. *Thermal forming* means the process of forming the layup in a mold, which usually takes place in an autoclave. *Debulking* means the simultaneous application of low-level heat and pressure to the composite structure to force out excess resin, trapped air, vapor, and volatiles from between the layers of the composite structure. *Curing* means the process of changing resin into a solid material through a polymerization reaction. *Break-out* means the removal of the composite structure from the mold or curing fixtures. *Compression molding* means the process of filling one half of a mold with a molding compound, closing the mold, and applying heat and pressure until the material is cured. *Injection molding* means the use of a closed mold, where the molding compound is injected into the mold, maintained under pressure, and then cured by applying heat.

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

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

“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. Materials used for repairs or to bridge gaps left by scribing operations are also included in this category.

“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 (i.e., -275° F (-170° C) and below).

“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.

“Cyanoacrylate Adhesive” means a fast-setting, single component adhesive that cures at room temperature. (Also known as “super glue”).

“Depainting Operation” means the use of a chemical agent, media blasting, or any other technique to remove coatings from the outer surface of aerospace components or

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vehicles. The depainting operation includes washing of the aerospace component or vehicle to remove residual stripper and coating residue.

“Depainting” means the removal of any coating from the outer surface of the aircraft by either chemical or non-chemical means.

“Dip Coating” means the application of a coating material to a substrate by dipping the part into a tank of the coating material.

“Dry Lubricative Material” means a coating consisting of lauric acid, acetyl alcohol, waxes, or other noncross linked resin-bond materials that act as a dry lubricant.

“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. Uses include, but are not limited to, lightning strike protection, electromagnetic pulse (“EMP”) protection, and radar avoidance. Coatings that have been designated “classified” by the Department of Defense are exempt.

“Electrodeposition or Metal Plating” means an additive process for metal substrates in which another metal layer is added to the substrate in order to enhance corrosion and wear resistance necessary for the successful performance of the component. The two types of electro-deposition typically used are electroplating and plasma arc spraying.

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

“Electrostatic Spray” means a method of applying a spray coating in which opposite electrical charges are applied to the substrate and the coating. The coating is attracted to the substrate by the electrostatic potential between them.

“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.

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

“Etchant” means a chemical used to mill a part or subassembly, such as sodium hydroxide for aluminum parts.

“Fire-resistant (Interior) Coating” means for civilian aircraft, fire-resistant coatings are used on passenger cabin interior parts that are subject to the FAA fireworthiness

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requirements. For military aircraft, fire-resistant interior coatings are used on parts that are subject to the flammability requirements of MIL-STD-1630A and MIL-A-87721. For space applications, these coatings are used on parts that are subject to the flammability requirements of SE-R-0006 and SSP 30233.

“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.

“Flight Test Coating” means a 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 Coating” means the application of a coating material to a substrate by pouring the coating over the suspended part.

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

“Flush Cleaning Operation” means the cleaning of an aerospace vehicle or component by passing solvent over, into, or through the vehicle or component. The solvent may simply be poured into the vehicle or component and then drained, or be assisted by air or hydraulic pressure, or by pumping.

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

“Fuel Tank Coating” means a coating applied to fuel tank components for the purpose of corrosion and/or bacterial growth inhibition and to assure sealant adhesion in extreme environmental conditions.

“General Aviation (GA)” means the segment of civil aviation that encompasses all facets of aviation except air carriers, commuters and military. General aviation includes charter and corporate-executive transportation, instruction, rental, aerial application, aerial observation, business, pleasure and other special uses

“General Aviation Rework Facility” means any 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.

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“**Grams per Liter VOC**” means a weight of VOC per combined volume of VOC and coating solids, less water and exempt compounds, and can be calculated by the following equation:

$$\text{grams per liter} = \frac{W_s - W_w - W_{es}}{V_s - V_w - V_{es}}$$

W_s = weight of volatile organic compounds in grams

W_w = weight of water in grams

W_{es} = weight of exempt compounds in grams

V_s = volume of material in liters

V_w = volume of water in liters

V_{es} = volume of exempt compounds in liters

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

“**High Temperature Coating**” means a coating designed to withstand temperatures of more than 350°F (175°C).

“**High Volume Low Pressure (HVLP) Spray Equipment**” means spray equipment that is used to apply coatings by means of a gun that operates at ten (10.0) psig of atomizing air pressure or less at the air cap.

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

“**Intermediate Release Coating**” means a 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 a 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.

“**Leak**” means any visible leakage, including misting and clouding.

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

“**Metal Finishing Operations**” means conversion coating, anodizing, desmutting, descaling, and any operations that chemically affect the surface layer of a part, and are

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used to prepare the surface of a part for better adhesion, improved surface hardness, and improved corrosion resistance.

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

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

“Non-Chemical-Based Depainting Equipment” means any depainting equipment or technique, including media blasting equipment, that does not rely on a chemical stripper to repaint an aerospace vehicle or components.

“Non-Precursor Organic Compound” means any of the following organic compounds which have been designated by the EPA as having negligible photochemical reactivity: methane; ethane; methylene chloride (dichloromethane); 1,1,1-trichloroethane; trichlorofluoromethane (CFC-11); dichlorodifluoromethane (CFC-12); chlorodifluoromethane (CFC-22); 1,1,2-trichlorotrifluoroethane (CFC-113); 1,2-dichlorotetrafluoroethane (CFC-114); chloropentafluoroethane (CFC-115); trifluoromethane (FC-23); 2,2-dichloro-1,1,1-trifluoroethane (HCFC-123); 2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124); 1,1-dichloro-1-fluoroethane (HCFC-141b); 1-chloro-1,1-difluoroethane (HCFC-142b); pentafluoroethane (HFC-125); 1,1,2,2-tetrafluoroethane (HFC-134); 1,1,1,2-tetrafluoroethane (HFC-134a); 1,1,1-trifluoroethane (HFC-143a); 1,1-difluoroethane (HFC-152a); all completely fluorinated, completely saturated: alkanes, ethers and tertiary amines.

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

“Optical Anti-reflection 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.

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

“Potential to Emit” means the maximum capacity of a stationary source to emit a pollutant under its physical or operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restriction on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design only if the limitation or the effect it would have on emissions is enforceable as a practical matter. Secondary emissions do not count in determining the potential to emit of a stationary source.

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“Pretreatment Coating” means an organic coating that contains at least 0.5 percent acids by weight and is applied directly to metal surfaces to provide surface etching, corrosion resistance, adhesion, and ease of stripping.

“Primer” means the first layer and any subsequent layers of identically formulated coating applied to the surface of an aerospace vehicle or component. Primers are typically used for the corrosion prevention, protection from the environment, functional fluid resistance, and 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.

“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, etc. against erosion caused by rain impact during flight.

“Research and Development” means an operation whose primary purpose is for research and development of new processes and products and that is conducted under the close supervision of technically trained personnel and is not involved in the manufacture of final or intermediate products for commercial purposes, except in a de minimis manner. This definition includes aerospace coating operations, including operations performed for purposes of testing and quality control, which are not used for production purposes to directly produce a deliverable product or service, other than the first-article product or service.

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

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

“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.

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

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

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

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“**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.

“**Self-Priming Topcoat**” means a topcoat that is applied directly to 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.

“**Semiaqueous Cleaning Solvent**” means a solution in which water is the primary ingredient (greater than sixty (60) percent by weight of the solvent solution as applied must be water).

“**Silicone Insulation Material**” means an 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 a 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.

“**Space Vehicle**” means a 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 that through contamination can compromise the space vehicle performance.

“**Specialized Function Coating**” means a 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 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. 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.

“**Spray-Gun**” means a device that uses air pressure or air flow to atomize a coating or other material and to project the atomized coating particulates or other material into a component.

“**Stripper**” means a liquid that is applied to an aerospace component or vehicle to remove primer, topcoat, or coating residue.

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“**Structural Autoclavable Adhesive**” means an adhesive used to bond load carrying aerospace components that is cured by heat and pressure in an autoclave.

“**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.

“**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.

“**Temporary Protective Coating**” means a coating applied to 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 a coating formulated with specific thermal conductive or radioactive properties to permit temperature control of the substrate.

“**Topcoat**” means a coating that is applied over a primer on an aerospace vehicle or component for appearance, identification, camouflage, or protection. Topcoats that are defined as specialty coatings are not included under this definition.

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

“**Type II Etchant**” or “**Type II Chemical Milling Etchant**” means a chemical milling etchant that is a strong sodium hydroxide solution containing amines.

“**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.

“**Wing Coating**” means a corrosion-resistant topcoat that is resilient enough to withstand the flexing of the wings.

3.0 LIMITATIONS AND STANDARDS

3.1 **Primers, Topcoats and Chemical Milling Maskants.** No person shall apply any primer, topcoat (including self-priming topcoats), or chemical milling maskants that contain VOCs in excess of the limits in this Table 1.

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TABLE 1

PRIMER or TOPCOAT TYPE	VOC LIMIT
All primers (except Specialty or General Aviation Rework Facility Primers)	350 g/L (2.9 lb/gal)
All topcoats (except Specialty or General Aviation Rework Facility Primers)	420 g/L (3.5 lb/gal)
General Aviation Rework Facility Primers	540 g/L (4.5 lb/gal)
General Aviation Rework Facility Topcoats	540 g/L (4.5 lb/gal)
All Type I Chemical Milling Maskants	620 g/L (5.2 lb/gal)
All Type II Chemical Milling Maskants	150 g/L (1.3 lb/gal)

3.2 Specialty Coatings: No person shall apply any surface coating that contains VOC emissions in excess of the limits set forth in this Table 2.

TABLE 2

Type of Specialty Coating	VOC Limits
Ablative Coatings	600g/L (5.0 lb/gal)
Adhesion Promoters	890 g/L (7.4 lb/gal)
Adhesion Bonding Primers: Cured at 120°C or below	850 g/L (7.1 lb/gal)
Adhesive Bonding Primers: Cured at above 120°C	1030 g/L (8.6 lb/gal)
Adhesives: Commercial Interior	760 g/L (6.3 lb/gal)
Adhesives: Cyanoacrylate	1020 g/L (8.5 lb/gal)
Adhesives: Fuel Tanks	620 g/L (5.2 lb/gal)
Adhesives: Nonstructural	360 g/L (3.0 lb/gal)
Adhesives: Rocket Motor Bonding	890 g/L (7.4 lb/gal)
Adhesives: Rubber-Based	850 g/L (7.1 lb/gal)
Adhesives: Structural Autoclavable	60 g/L (0.5 lb/gal)
Adhesives: Structural Nonautoclavable	850 g/L (7.1 lb/gal)
Antichafe Coatings	660 g/L (5.5 lb/gal)
Bearing Coating Compounds	620 g/L (5.2 lb/gal)
Caulking and Smoothing Compounds	850 g/L (7.1 lb/gal)
Chemical Agent-Resistant Coatings	550 g/L (4.6 lb/gal)
Clear Coatings	720 g/L (6.0 lb/gal)
Commercial Exterior Aerodynamic Structure Primers	650 g/L (5.4 lb/gal)
Compatible Substrate Primers	780 g/L (6.5 lb/gal)
Corrosion Prevention Compounds	710 g/L (5.9 lb/gal)
Cryogenic Flexible Primers	645 g/L (5.4 lb/gal)

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Type of Specialty Coating	VOC Limits
Cryoprotective Coatings	600 g/L (5.0 lb/gal)
Dry Lubricative Materials	880 g/L (7.3 lb/gal)
Electric or Radiation-Effect Coatings	800 b/L (6.7 lb/gal)
Electrostatic Discharge and Electromagnetic Interference (EMI) Coatings	800 g/L (6.7 lb/gal)
Elevated Temperature Skydrol Resistant Commercial Primers	740 g/L (6.2 lb/gal)
Epoxy Polyamide Topcoats	660 g/L (5.5 lb/gal)
Fire-Resistant (Interior) Coatings	800 g/L (6.7 lb/gal)
Flexible Primers	640 g/L (5.3 lb/gal)
Flight-Test Coatings, Missile or Single Use Aircraft	420 g/L (3.5 lb/gal)
Flight-Test Coatings, All Others	840 g/L (7.0 lb/gal)
Fuel-Tank Coatings	720 g/L (6.0 lb/gal)
High-Temperature Coatings	850 g/L (7.1 lb/gal)
Insulations Coverings	740 g/L (6.2 lb/gal)
Intermediate Release Coatings	750 g/L (6.3 lb/gal)
Lacquers	830 g/L (6.9 lb/gal)
Maskants: Bonding	1230 g/L (10.3 lb/gal)
Maskants: Critical Use and Line Sealers	1020 g/L (8.5 lb/gal)
Maskants: Seal Coat Maskants	1230 g/L (10.3 lb/gal)
Metallized Epoxy Coatings	740 g/L (6.2 lb/gal)
Mold Releases	780 g/L (6.5 lb/gal)
Optical Anti-Reflective Coatings	750 g/L (6.3 lb/gal)
Part Marking Coatings	850 g/L (7.1 lb/gal)
Pretreatment Coatings	780 g/L (6.5 lb/gal)
Rain Erosion-Resistant Coatings	850 g/L (7.1 lb/gal)
Rocket Motor Nozzle Coatings	660 g/L (5.5 lb/gal)
Scale Inhibitors	880 g/L (7.3 lb/gal)
Screen Print Inks	840 g/L (7.0 lb/gal)
Sealants: Extrudable/Rollable/Brushable	280 g/L (2.3 lb/gal)
Sealants: Sprayable	600 g/L (5.0 lb/gal)
Silicone Insulation Materials	850 g/L (7.1 lb/gal)
Solid Film Lubricants	880 g/L (7.3 lb/gal)
Specialized Function Coatings	890 g/L (7.4 lb/gal)
Temporary Protective Coatings	320 g/L (2.7 lb/gal)

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Type of Specialty Coating	VOC Limits
Thermal Control Coatings	800 g/L (6.7 lb/gal)
Wet Fastener Installations Coatings	675 g/L (5.6 lb/gal)
Wing Coatings	850 g/L (7.1 lb/gal)

3.3 Emissions Control Devices. As an alternative to meeting the applicable coating limits set forth in subsection 3.2, an owner or operator may comply with this Section by installing and operating an emissions capture and control system approved by the Director, provided that the control system demonstrates, at a minimum, a combined VOC emissions reduction efficiency of greater than or equal to eighty-one (81) percent by weight.

3.4 Application Equipment.

A. Application Techniques. A person shall use one or more of the following application techniques in applying any primer or topcoat (including self-priming topcoats) to aerospace vehicles or components:

1. Flow/curtain application;
2. dip coat application;
3. roll coating;
4. brush coating;
5. cotton-tipped swab application;
6. electrodeposition (dip) coating;
7. high volume low pressure (HVLP) spraying;
8. electrostatic spray application;
9. other coating application methods that achieve emission reductions equivalent to HVLP or electrostatic spray application methods. Any such alternative methods shall be demonstrated to be equivalent to these methods and such demonstration must be approved by the Director in advance of the use of such alternatives.

B. Manufacturer Specifications. Each owner or operator of an aerospace manufacturing and/or rework operation shall ensure that all application devices listed in paragraph A of this subsection are operated at all times in accordance with company procedures and/or the manufacturer's

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specifications, whichever is more stringent. Equipment modified by the owner or operator shall maintain a transfer efficiency equivalent to HVLP and electrostatic spray application techniques.

- C. Exemptions. The following situations are exempt from the application equipment requirements listed in paragraph A of this subsection.
1. The application of chemical milling maskants.
 2. Any situation that normally requires the use of an extension on the spray-gun to properly reach limited access spaces.
 3. The application of coatings with fillers that adversely affect atomization with HVLP spray-guns and that cannot be applied by any of the specified application techniques.
 4. The application of coatings that normally have a dried film thickness of less than 0.0005 inches and that cannot be applied by any of the specified application techniques.
 5. Any situation that normally requires the use of airbrush application methods for stenciling, letters, and other identification markings.
 6. Touch-up and repair operations.

3.5 Hand-Wipe Cleaning Operations.

- A. Standards. Except as provided in paragraph B of this subsection, a person shall not use solvents for hand-wipe cleaning of aerospace vehicles or components unless the cleaning solvents satisfy one of the following:
1. Meet the definition of “aqueous cleaning solvent” in subsection 2.0.
 2. Have a VOC composite vapor pressure less than or equal to forty-five (45) millimeters of mercury (mm Hg) at 20 degrees Celsius.
 3. Is a hydrocarbon-based solvent that has a maximum composite vapor pressure of seven (7) mm Hg at 20 degrees Celsius.
- B. Exemptions. The following aerospace vehicle and component solvent cleaning operations are exempt from the hand-wipe cleaning operations listed in paragraph A of this subsection:

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1. Cleaning during the manufacture, assembly, installation, maintenance, or testing of components of breathing oxygen systems that are exposed to the breathing oxygen.
2. Cleaning during the manufacture, assembly, installation, maintenance, or testing of parts, subassemblies, or assemblies, that are exposed to strong oxidizers or reducers.
3. Cleaning and surface activation prior to adhesive bonding.
4. Cleaning of electronic parts and assemblies containing electronic parts.
5. 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.
6. Cleaning of fuel cells, fuel tanks, and confined spaces.
7. Surface cleaning of solar cells, coating optics, and thermal control surfaces.
8. Cleaning during fabrication, assembly, installation, and maintenance of upholstery, curtains, carpet, and other textile materials used in the interior of the aircraft.
9. Cleaning of metallic and non-metallic materials used in honeycomb cores during the manufacture or maintenance of these cores, and the cleaning of the completed cores used in the manufacture or maintenance of aerospace vehicles or components.
10. Cleaning of aircraft transparencies, polycarbonates, or glass substrates.
11. Cleaning and solvent usage associated with research and development, quality control, and laboratory testing.
12. Cleaning operations, using nonflammable liquids, conducted within five feet of energized electrical systems. Energized electrical systems means any alternating current (AC) or direct current (DC) electrical circuit on an assembled aircraft once electrical power is connected, including interior passenger and cargo areas, wheel wells, and tail sections.

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13. Cleaning operations identified as essential uses under the Montreal Protocol for which the U.S. EPA has allocated essential use allowances or exemptions.

3.6 **Solvent Cleaning Operations.**

- A. Flush Cleaning. Cleaning solvents, except semiaqueous cleaning solvents, used in the flush cleaning of aerospace vehicles, components, parts, assemblies, and coating unit components, with the exception of spray-guns, shall be emptied into an enclosed container or collection system that is kept closed when not in use or captured with wipers which comply with the housekeeping requirements of paragraph C. Aqueous cleaning solvents are exempt from these requirements.
- B. Spray Gun Cleaning. All spray-guns shall be cleaned by one of the following methods:
 1. Enclosed spray-gun cleaning, provided that it is kept closed when not in use and leaks are repaired as expeditiously as practicable, but no later than fifteen (15) days after the leak is first discovered. If the leak is not repaired by the 15th day after detection, the cleaning solvent shall be removed and the enclosed cleaner shall be shut down until the leak is repaired or its use is permanently discontinued.
 2. Nonatomized discharge of solvent into a vat, drum, or other waste container that is closed when not in use.
 3. Disassembly and cleaning of the spray-gun by hand in a vat that is kept closed at all times except when in use. Alternatively, the components shall be soaked in a vat, which shall remain closed during the soaking period and when not inserting or removing components.
 4. Atomized spray into a waste container that is fitted with a device designed to capture the atomized cleaning solvent emissions.

3.7 **Housekeeping Requirements.** Each owner or operator of an aerospace manufacturing and/or rework operation shall comply with the following housekeeping requirements:

- A. Solvent-laden cloth, paper, or any other absorbent applicators used for cleaning shall be placed in bags or other closed containers upon completing their use. These bags and containers shall be kept closed at all times except when depositing or removing these materials from the

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container. The bags and containers shall be designed so as to ensure that the vapors of the cleaning solvent are contained. Cotton-tipped swabs used for very small cleaning operations are exempt from this requirement.

- B.** All fresh and spent cleaning solvents, except semi-aqueous solvent cleaners, that are used in aerospace cleaning operations shall be stored in closed containers.
- C.** Conduct the handling and transfer of cleaning solvents to or from enclosed systems, vats, waste containers, and other cleaning operation equipment that hold or store fresh spent cleaning solvents in such a manner that spills are minimized.

4.0 MONITORING AND RECORDS

4.1 Recordkeeping. All persons subject to this Section shall comply with the following recordkeeping requirements. Records shall be retained for five (5) years and shall be made available to the Director upon request.

- A.** Coatings. Each owner or operator of an aerospace manufacturing and/or rework operation utilizing coatings specified in this Section shall maintain a current list of coatings that includes the specific category including noncompliant compounds, VOC content as applied, and the monthly amount used for each coating. If compliance is demonstrated using averaging, records of any such calculations must also be maintained.
- B.** Cleaning Solvents. Each owner or operator of an aerospace manufacturing and/or rework operation utilizing cleaning solvents shall:
 - 1.** Maintain a list of materials with corresponding water contents for aqueous and semi-aqueous hand-wipe cleaning solvents.
 - 2.** Maintain a current list of all cleaning solvents in use with their respective vapor pressures or, for blended solvents, VOC composite vapor pressures and records of the monthly usage of such cleaning solvents.
 - 3.** Maintain a current list of exempt hand-wipe cleaning processes for all cleaning solvents with a vapor pressure greater than forty-five (45) mm Hg used in exempt hand-wipe cleaning operations. This list shall include the monthly amount of each applicable solvent used.

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4. Maintain a list of any non-compliance occurrence, including the names and volumes of any non-compliant solvents or cleaners used.

C. Spray Gun Operations. An owner or operator of a cleaning operation subject to this Section shall maintain a record of all leaks from spray-gun cleaners, including identification of the source, the date the leak was first discovered, and the date the leak was repaired.

D. Emissions Control Devices Approved Pursuant to Subsection 3.3. An owner or operator of an emissions control device shall maintain daily records of the operating parameters for the device.

4.2 **Reporting.**

A. All facilities subject to the provisions of this Section are required to file with the Department an annual report covering activities for one calendar year. The report shall be submitted to the Department by March 31st of the following year. The report shall list any noncompliance situations that occurred in the reporting year. For each incident of non-compliance, the report shall provide an explanation of how the non-compliance situation occurred and it shall describe the preventative measures implemented to prevent similar non-compliance incidents in the future.

B. If no non-compliance situations occur in a calendar year, the facility shall submit in letter form a certification of compliance signed by a responsible official of the company.

5.0 **COMPLIANCE AND TEST METHODS**

5.1 **Primers and Topcoats.** Compliance with the limits in Table 1 of subsection 3.1 may be determined for each coating used or by computing the monthly mass-weighted average VOC content for all coatings within a given coating class used during that month. As an alternative to compliance with the emission limits set forth in Table 1 of subsection 3.1, an owner or operator may meet the requirements in subsection 3.3 of this Section.

5.2 **Specialty Coatings.** Compliance with the limits set forth in Table 2 of subsection 3.2 shall be determined for each and every coating used. Averaging within a given coating class is prohibited.

5.3 **Coatings.** The VOC content of coatings (less water and less nonprecursor organic compounds) as applied shall be determined by manufacturer's supplied data or Method 24 of 40 CFR part 60, Appendix A. If there is a discrepancy between the manufacturer's formulation data and the results of the Method 24

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analysis, compliance shall be based on the results from the Method 24 analysis. For waterborne (water-reducible) coatings, only manufacturer’s supplied data can be used to determine the VOC content of each formulation.

5.4 Control Equipment. Measurements of VOC emissions from control equipment shall be conducted in accordance with EPA Methods 18, 25, and/or 25A, 40 CFR 60, Appendix A.

5.5 Test Methods Adopted by Reference. The EPA test methods as they exist in the Code of Federal Regulations (CFR) as of [date of rule promulgation], as listed below, are adopted by reference. These adoptions by reference include no future editions or amendments. Copies of test methods referenced in this section are available at the Gila River Indian Community Department of Environmental Quality, 35 Pima Street, Sacaton, Arizona 85247.

- A. EPA Method 18 (“Measurement of Gaseous Organic Compound Emissions by Gas Chromatography”) and its submethods (40 CFR 60, Appendix A).
- B. EPA Test Method 24 (“Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings”) (40 CFR 60, Appendix A).
- C. EPA Method 25 (“Determination of Total Gaseous Nonmethane Organic Emissions as Carbon”) and its submethods (40 CFR 60, Appendix A).
- D. EPA Test Methods 204 (“Criteria For and Verification Of a Permanent or Temporary Total Enclosure”), 204a, 204b, 204c, 204d, 204e, and 204f (Appendix M, 40 CFR 51).

5.6 Formula for Total VOC Vapor Pressure.

$$PP_c = \frac{\sum_{i=1}^n (W_i)(VP_i) / MW_i}{\frac{W_w}{18} + \sum_{j=1}^m \frac{W_{ej}}{MW_{ej}} + \sum_{i=1}^n \frac{W_i}{MW_i}}$$

- W_i = Weight of the “i”th VOC compound in grams
- W_w = Weight of water in grams
- W_{ej} = Weight of the “j”th non-precursor compound in grams
- MW_i = Molecular weight of the “i”th VOC compound in grams per gram mole, e.g., one gram-mole of isopropyl alcohol weighs 60 grams

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MW_{ej} = Molecular weight of the “j”th non-precursor compound, e.g., 1 gram-mole of acetone weighs 58 grams
 PP_c = VOC composite partial pressure at 20°C in mm mercury (Hg)
 VP_i = Vapor pressure of the “i”th VOC compound at 20°C in mm Hg
18 = Weight of one gram-mole of water