

CATEGORY:

**COATING - AEROSPACE**

BACT Size: Minor Source BACT

PAINT SPRAY BOOTH

<b>BACT Determination Number:</b> 182	<b>BACT Determination Date:</b> 9/18/2018
---------------------------------------	---

**Equipment Information**

**Permit Number:** 25528

**Equipment Description:** PAINT SPRAY BOOTH

**Unit Size/Rating/Capacity:** ≤ 4,785 lbs VOC/year Per Project

**Equipment Location:** COMPOSITE ENGINEERING INC, A KRATOS CO  
5301 RALEY BLVD  
SACRAMENTO, CA

**EXPIRED**

**BACT Determination Information**

<b>ROCs</b>	<b>Standard:</b>	
	<b>Technology Description:</b>	1.Compliance with SMAQMD Rule 456 and aerospace coatings BACT VOC limits (see Tables 1-3 in BACT Determination Evaluation) 2.Use of an enclosed gun cleaner
	<b>Basis:</b>	Achieved in Practice
<b>NOx</b>	<b>Standard:</b>	30 ppmvd @ 3% O2 or 0.036 lb/MMBtu/hr
	<b>Technology Description:</b>	1.For heaters ≥ 325,000 Btu/hr, low NOx burner, 30 ppmvd @ 3% O2 or 0.036 lb/MMBtu/hr
	<b>Basis:</b>	Achieved in Practice
<b>SOx</b>	<b>Standard:</b>	No Standard
	<b>Technology Description:</b>	
	<b>Basis:</b>	Achieved in Practice
<b>PM10</b>	<b>Standard:</b>	
	<b>Technology Description:</b>	1.Enclosed paint booth with use of dry filters and use of HVLP, properly maintained
	<b>Basis:</b>	Achieved in Practice
<b>PM2.5</b>	<b>Standard:</b>	No Standard
	<b>Technology Description:</b>	
	<b>Basis:</b>	Achieved in Practice
<b>CO</b>	<b>Standard:</b>	No Standard
	<b>Technology Description:</b>	
	<b>Basis:</b>	Achieved in Practice
<b>LEAD</b>	<b>Standard:</b>	
	<b>Technology Description:</b>	
	<b>Basis:</b>	

**Comments:** For T-BACT:  
1.Compliance with SMAQMD Rule 456 and aerospace coatings BACT VOC limits (see Tables 1-3 in BACT Determination Evaluation), and VOC control system with overall capture efficiency ≥90% by weight  
2.Compliance with 40 CFR Subpart 63 GG limits for volatile HAPs 3.Compliance with 40 CFR 63 Subpart HHHHHH for metals 4. For major sources of HAPs, compliance with 40 CFR 63, Subpart GG

**District Contact:** Jeff Quok Phone No.: (916) 874-4863 email: jquok@airquality.org

CATEGORY:

**COATING - AEROSPACE**

BACT Size: Minor Source BACT

PAINT SPRAY BOOTH

<b>BACT Determination Number:</b> 183	<b>BACT Determination Date:</b> 9/18/2018
---------------------------------------	---

**Equipment Information**

**Permit Number:** N/A -- Generic BACT Determination  
**Equipment Description:** PAINT SPRAY BOOTH  
**Unit Size/Rating/Capacity:** > 4,785 lb VOC/year Per Project  
**Equipment Location:**

**EXPIRED**

**BACT Determination Information**

<b>ROCs</b>	<b>Standard:</b>	
	<b>Technology Description:</b>	1.Compliance with SMAQMD Rule 456 and aerospace coatings BACT VOC limits (see Tables 1-3 in BACT Determination Evaluation), and VOC control system with overall capture efficiency ≥90% by weight 2.Use of an enclosed gun cleaner
	<b>Basis:</b>	Achieved in Practice
<b>NOx</b>	<b>Standard:</b>	30 ppmvd @ 3% O2 or 0.036 lb/MMBtu/hr
	<b>Technology Description:</b>	1.For heaters ≥ 325,000 Btu/hr, low NOx burner, 30 ppmvd @ 3% O2 or 0.036 lb/MMBtu/hr
	<b>Basis:</b>	Achieved in Practice
<b>SOx</b>	<b>Standard:</b>	No Standard
	<b>Technology Description:</b>	
	<b>Basis:</b>	Achieved in Practice
<b>PM10</b>	<b>Standard:</b>	
	<b>Technology Description:</b>	1.Enclosed paint booth with use of dry filters and use of HVLP, properly maintained
	<b>Basis:</b>	Achieved in Practice
<b>PM2.5</b>	<b>Standard:</b>	No Standard
	<b>Technology Description:</b>	
	<b>Basis:</b>	Achieved in Practice
<b>CO</b>	<b>Standard:</b>	No Standard
	<b>Technology Description:</b>	
	<b>Basis:</b>	Achieved in Practice
<b>LEAD</b>	<b>Standard:</b>	
	<b>Technology Description:</b>	
	<b>Basis:</b>	

**Comments:** For T-BACT:  
1.Compliance with SMAQMD Rule 456 and aerospace coatings BACT VOC limits (see Tables 1-3 of BACT Determination Evaluation), and VOC control system with overall capture efficiency ≥90% by weight  
2.Compliance with 40 CFR Subpart 63 GG limits for volatile HAPs 3.Compliance with 40 CFR 63 Subpart HHHHHH for metals 4.For major sources of HAPs, compliance with 40 CFR 63, Subpart GG

**District Contact:**



## BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION

# EXPIRED

<b>DETERMINATION NO.:</b>	182 & 183
<b>DATE:</b>	9/18/18
<b>ENGINEER:</b>	Jeffrey Quok

<b>Category/General Equip Description:</b>	Coating – Aerospace
<b>Equipment Specific Description:</b>	Paint Spray Booth
<b>Equipment Size/Rating:</b>	≤ 4,785 lbs VOC/year, Minor Source ( <b>BACT #182</b> )
	> 4,785 lbs VOC/year, Minor Source ( <b>BACT #183</b> )
<b>Previous BACT Det. No.:</b>	#16

This BACT determination will update Determination #16 for paint spray booths used for aerospace coating. This BACT determination will also include stripping and solvent cleaning operations related to aerospace coating operations. Additionally, this determination is being updated to include T-BACT for HAPs associated with VOC and PM emissions.

This BACT was determined under the project for A/C 25528 (Composite Engineering Inc. Kratos Company).

### **BACT/T-BACT ANALYSIS**

#### **A: ACHIEVED IN PRACTICE (Rule 202, §205.1a)**

The following control technologies are currently employed as BACT/T-BACT for paint spray booths used for aerospace coating operations by the following air pollution control districts:

**AGENCY - US EPA :**

**BACT**

Source: EPA RACT/BACT/LAER Clearinghouse

[RBLC ID: WA-0344](#) (10/07/2008)

<b>Aerospace Surface Coating</b>	
<b>VOC</b>	40.8 tons VOC/year emission limit, Compliance with 40 CFR Part 63, Subpart GG and Low VOC vapor pressure cleaning solvents and strippers with low pressure applicators or manual application for depainting
<b>NOx</b>	No standard
<b>SOx</b>	No standard
<b>PM10</b>	No standard
<b>PM2.5</b>	No standard
<b>CO</b>	No standard

**T-BACT**

The EPA BACT Clearinghouse did not contain any T-BACT determinations.

**RULE REQUIREMENTS:**

[40 CFR 63 Subpart GG – National Emission Standards for Hazardous Air Pollutants for Aerospace Manufacturing and Rework Facilities](#)

This subpart applies to facilities that are engaged, either in part or in whole, in the manufacture or rework of commercial, civil, or military aerospace vehicles or components and that are major sources as defined in §63.2.

Subpart GG organic HAP and VOC coating limits are shown below.

**Standards: Primers and Topcoats application operations**

<b>Coating Type</b>	<b>HAP Limit g/L (lb/gallon)<sup>(A)</sup></b>	<b>VOC Limit g/L (lb/gallon)<sup>(A)</sup></b>
Primer		
A. General aviation rework facilities	540 (4.5)	540 (4.5)
B. Exterior primer to large commercial air craft components (parts or assemblies) or fully assembled	650 (5.4)	650 (5.4)
C. Large commercial aircraft at existing affected sources that produce fully assembled, large commercial aircraft	350 (2.9)	350 (2.9)
Topcoats		
A. General aviation rework facilities	540 (4.5)	540 (4.5)

Coating Type	HAP Limit g/L (lb/gallon) <sup>(A)</sup>	VOC Limit g/L (lb/gallon) <sup>(A)</sup>
B. Other	420 (3.5)	420 (3.5)
Self-Priming topcoats		
A. General aviation rework facilities	540 (4.5)	540 (4.5)
B. Other	420 (3.5)	420 (3.5)

(A) Coating limits for HAP are expressed in terms of mass (grams or pounds) of HAP per volume (liters or gallons) of coating less water. Coating limits for VOC are expressed in terms of mass (grams or pounds) of VOC per volume (liters or gallons) of coating less water and less exempt solvent.

### Standards: Specialty Coating Application Operations

Coating Type	HAP Limit g/L (lb/gallon) <sup>(A)</sup>	VOC Limit g/L (lb/gallon) <sup>(A)</sup>
Ablative Coating	600 (5.0)	600 (5.0)
Adhesion Promoter	890 (7.4)	890 (7.4)
Adhesive Bonding Primers: Cured at 250 °F or below	850 (7.1)	850 (7.1)
Adhesive Bonding Primers: Cured above 250 °F	1030 (8.6)	1030 (8.6)
Commercial Interior Adhesive	760 (6.3)	760 (6.3)
Cyanoacrylate Adhesive	1,020 (8.5)	1,020 (8.5)
Fuel Tank Adhesive	620 (5.2)	620 (5.2)
Nonstructural Adhesive	360 (3.0)	360 (3.0)
Rocket Motor Bonding Adhesive	890 (7.4)	890 (7.4)
Rubber-based Adhesive	850 (7.1)	850 (7.1)
Structural Autoclavable Adhesive	60 (0.5)	60 (0.5)
Structural Nonautoclavable Adhesive	850 (7.1)	850 (7.1)
Antichafe Coating	660 (5.5)	660 (5.5)
Bearing Coating	620 (5.2)	620 (5.2)
Caulking and Smoothing Compounds	850 (7.1)	850 (7.1)
Chemical Agent-Resistant Coating	550 (4.6)	550 (4.6)
Clear Coating	720 (6.0)	720 (6.0)
Commercial Exterior Aerodynamic Structure Primer	650 (5.4)	650 (5.4)
Compatible Substrate Primer	780 (6.5)	780 (6.5)
Corrosion Prevention System	710 (5.9)	710 (5.9)
Cryogenic Flexible Primer	645 (5.4)	645 (5.4)

<b>Coating Type</b>	<b>HAP Limit g/L (lb/gallon)<sup>(A)</sup></b>	<b>VOC Limit g/L (lb/gallon)<sup>(A)</sup></b>
Cryoprotective Coating	600 (5.0)	600 (5.0)
Dry Lubricative Material	880 (7.3)	880 (7.3)
Electric or Radiation-Effect Coating	800 (6.7)	800 (6.7)
Electrostatic Discharge and Electromagnetic Interference (EMI) Coating	800 (6.7)	800 (6.7)
Elevated-Temperature Skydrol-Resistant Commercial Primer	740 (6.2)	740 (6.2)
Epoxy Polyamide Topcoat	660 (5.5)	660 (5.5)
Fire-Resistant (interior) Coating	800 (6.7)	800 (6.7)
Flexible Primer	640 (5.3)	640 (5.3)
Flight-Test Coatings: Missile or Single Use Aircraft	420 (3.5)	420 (3.5)
Flight-Test Coatings: All Other	840 (7.0)	840 (7.0)
Fuel-Tank Coating	720 (6.0)	720 (6.0)
High-Temperature Coating	850 (7.1)	850 (7.1)
Insulation Covering	740 (6.2)	740 (6.2)
Intermediate Release Coating	750 (6.3)	750 (6.3)
Lacquer	830 (6.9)	830 (6.9)
Bonding Maskant	1,230 (10.3)	1,230 (10.3)
Critical Use and Line Sealer Maskant	1,020 (8.5)	1,020 (8.5)
Seal Coat Maskant	1,230 (10.3)	1,230 (10.3)
Metallized Epoxy Coating	740 (6.2)	740 (6.2)
Mold Release	780 (6.5)	780 (6.5)
Optical Anti-Reflective Coating	750 (6.3)	750 (6.3)
Part Marking Coating	850 (7.1)	850 (7.1)
Pretreatment Coating	780 (6.5)	780 (6.5)
Rain Erosion-Resistant Coating	850 (7.1)	850 (7.1)
Rocket Motor Nozzle Coating	660 (5.5)	660 (5.5)
Scale Inhibitor	880 (7.3)	880 (7.3)
Screen Print Ink	840 (7.0)	840 (7.0)
Extrudable/Rollable/Brushable Sealant	280 (2.3)	280 (2.3)
Sprayable Sealant	600 (5.0)	600 (5.0)
Silicone Insulation Material	850 (7.1)	850 (7.1)
Solid Film Lubricant	880 (7.3)	880 (7.3)
Specialized Function Coating	890 (7.4)	890 (7.4)

Coating Type	HAP Limit g/L (lb/gallon) <sup>(A)</sup>	VOC Limit g/L (lb/gallon) <sup>(A)</sup>
Temporary Protective Coating	320 (2.7)	320 (2.7)
Thermal Control Coating	800 (6.7)	800 (6.7)
Wet Fastener Installation Coating	675 (5.6)	675 (5.6)
Wing Coating	850 (7.1)	850 (7.1)

(A) Coating limits for HAP are expressed in terms of mass (grams or pounds) of HAP per volume (liters or gallons) of coating less water. Coating limits for VOC are expressed in terms of mass (grams or pounds) of VOC per volume (liters or gallons) of coating less water and less exempt solvent.

### Inorganic HAP emissions

An owner or operator of a new or existing primer, topcoat, or specialty coating application operation in which any of the coatings that are spray-applied and contain inorganic HAP shall comply with the following applicable requirements:

1. Apply these coatings in a booth, hangar, or portable enclosure in which air flow is directed downward onto or across the part or assembly being coated and exhausted through one or more outlets.
2. For new sources, control the air stream from this operation as follows:
  - a) Before exhausting it to the atmosphere, pass the air stream through an air pollution control system that meets or exceeds the efficiency data points in the tables below:

#### THREE-STAGE ARRESTOR; LIQUID PHASE CHALLENGE FOR NEW SOURCES

Filtration efficiency requirement, %	Aerodynamic particle size range, µm
>95	>2.0
>80	>1.0
>65	>0.42

#### THREE-STAGE ARRESTOR; SOLID PHASE CHALLENGE FOR NEW SOURCES

Filtration efficiency requirement, %	Aerodynamic particle size range, µm
>95	>2.5
>85	>1.1
>75	>0.70

### [40 CFR 63 Subpart HHHHHH – National Emission Standards for Hazardous Air Pollutants for Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources](#)

This subpart applies to autobody refinishing operations, among other area sources, that include motor vehicles and mobile equipment spray-applied surface coating operations; and apply coatings that may potentially contain the target HAP compounds of chromium, lead, manganese, nickel, or cadmium. This subpart also applies to operations using MeCl for the

removal of dried paint.

### **General Requirements**

For paint stripping operations using MeCl:

- A. Implement management practice to minimize the evaporative emissions of MeCl. The management practices must address practices in paragraphs 1 through 5, as applicable.
  1. Evaluate each application to ensure there is a need for paint stripping.
  2. Evaluate each application where a paint stripper containing MeCl is used to ensure that there is no alternative paint stripping technology that can be used.
  3. Reduce exposure of all paint strippers containing MeCl to the air.
  4. Optimize application conditions when using paint strippers containing MeCl to reduce MeCl evaporation.
  5. Practice proper storage and disposal of paint strippers containing MeCl.

For coatings that may potentially contain the target HAP compounds of chromium, lead, manganese, nickel, or cadmium:

1. All spray-applied coatings must be performed in a spray booth, preparation station, or mobile enclosures that are fully enclosed with a full roof with four walls or complete side curtains. The enclosure must be ventilated at a negative pressure and equipped with a filter system that can achieve at least 98% capture efficiency.
2. Coatings must be applied with HVLP spray equipment, electrostatic application, airless spray gun, air-assisted airless spray gun, or an equivalent technology for which written approval has been obtained from the U.S. EPA.
3. Spray gun cleaning must be conducted such that an atomized mist or spray of gun cleaning solvent and paint residue is not created outside of a container that collects used cleaning solvent.
4. All new and existing personnel who spray-apply surface coatings must be trained in the proper application of surface coatings.
5. For new affected sources, submit an initial notification to EPA no later than 180 days after initial startup or July 7, 2008, whichever is later. For an existing affected source, submit the initial notification no later than January 11, 2010.

### **AGENCY - ARB :**

#### **BACT**

Source: ARB BACT Clearinghouse

The ARB BACT Clearinghouse did not contain any BACT determinations

#### **T-BACT**

The ARB BACT Clearinghouse did not contain any T-BACT determinations.

#### **RULE REQUIREMENTS:**

No Rules.



**AGENCY - SMAQMD :**

**BACT**

BACT Determination #16 (3/5/2004)

<b>Aerospace Assembly &amp; Component Coating Ops: Spray Booth</b>	
<b>VOC</b>	Compliance with SMAQMD Rule 456
<b>NOx</b>	No standard
<b>SOx</b>	No standard
<b>PM10</b>	No standard
<b>PM2.5</b>	No standard
<b>CO</b>	No standard

**T-BACT**

The current BACT determination does not address T-BACT.

**RULE REQUIREMENTS:**

[Rule 456 Aerospace Assembly and Component Coating Operations \(Last amended 10/23/2008\)](#)

**VOC content of coatings for aerospace components:** Except as provided in sections 110, 111, and 305 a person shall not apply to any aerospace component any coating that exceeds the following VOC contents limits as applied. The VOC content per volume of coating shall be determined pursuant to Section 502.1:

<b>Coating Category</b> (SMAQMD Rule 456 Definition)	<b>VOC Content Limit as Applied</b> g/l (lbs/gal)
Ablative	600 (5.0)
Adhesive	600 (5.0)
Adhesive Bonding Agent	780 (6.5)
Conformal	600 (5.0)
Electrostatic Discharge	612 (5.1)
Extreme Performance	750 (6.3)
Fire Resistant/Retardant	600 (5.0)
Flight Test	420 (3.5)
Fuel Tank	650 (5.4)
High Temperature	420 (3.5)
Maskants:	622 (5.2)
Type I	460 (1.3)
Type II	850 (7.1)
All Others	

<b>Coating Category</b> (SMAQMD Rule 456 Definition)	<b>VOC Content Limit as Applied</b> g/l (lbs/gal)
Ablative	600 (5.0)
Mold Release	762 (6.4)
Part Marking	850 (7.1)
Pretreatment Wash Primer	780 (6.5)
Primer	350 (2.9)
Radiation Effect	600 (5.0)
Rain Erosion Resistant: Fluoroelastomer All Other	800 (6.7) 600 (5.0)
Sealant	600 (5.0)
Sealant Adhesion Promoter	760 (6.3)
Self-Priming Topcoat	420 (3.5)
Solid Film Lubricant	880 (7.3)
Space Vehicle: Electro Static Discharge All Other	880 (7.3) 1000 (8.3)
Temporary Protective	250 (2.1)
Thermal Expansion Release	762 (6.4)
Thermocontrol	600 (5.0)
Topcoat: Acrylic Lacquer For F-111 All Other	780 (6.5) 420 (3.5)
Wet Fastener Installation	620 (5.2)

**VOC Content for coating removers (strippers):** A person shall not use a coating remover (stripper) in aerospace coating operations which contains more than 300 grams of VOC per liter of material (2.5 pounds per gallon) or has a VOC composite partial vapor pressure of greater than 9.5 mmHg (0.18 psia) at 68°F (20°C). The VOC content shall be determined pursuant to Section 502.1. The VOC composite partial vapor pressure shall be determined pursuant to Section 502.6.

**Application Equipment Requirement:**

A person shall or stationary source shall not apply any coating unless one of the following application methods is used:

- a. Hand application equipment, such as a brush or roller
- b. Dip coat
- c. Flow coat
- d. Roll coater
- e. Electrodeposition

- f. Electrostatic spray
- g. High-volume low-pressure (HVLP) spray
- h. Low-volume low-pressure (LVLP) spray
- i. Any other equivalent method which has been approved in writing by the Air Pollution Control Officer and the U.S. Environmental Protection Agency

**Surface Preparation and Cleaning, Application Equipment Cleanup, and Storage Requirements:**

Any person subject to this rule shall comply with the following requirements:

- a. Closed containers shall be used for the disposal of cloth, sponges, or paper used for surface preparation, cleanup, and coating removal.
- b. A person shall not use VOC- containing materials for the cleaning of application equipment used in coating operations unless the VOC content of the material used does not exceed 25 grams/liter (0.21 pounds per gallon). The VOC content shall be determined pursuant to Section 502.1.
- c. A person shall not perform cleaning or surface preparation unless the VOC content of the material used does not exceed 200 grams per liter (1.67 pounds/gallon) or the material has a VOC composite partial vapor pressure of 45 mmHg or less at 68°F (20°C), as determined by Sections 502.1 and 502.6.

**Emission Control System Requirements:**

As an alternative to Section 301, 302 and 304 a person may use air pollution control equipment that has been permitted by the Air Pollution Control Officer, pursuant to Rule 201, General Permitting Requirements, that provides an overall system efficiency, as determined by Section 408, of not less than 85%.

**AGENCY - SCAQMD :**

**BACT**

Source: [SCAQMD BACT Guidelines \(Part D\) for Non-Major Polluting Facilities, page 43 & 114](#) (Last Revised 12/2/16), [Makeup Air Heater, A/N 413559](#) (11/24/04)

<b>Spray Booths – Other Types</b>	
<b>VOC</b>	<p><u>For booths with &lt;1170 lbs/month VOC Emissions</u></p> <p>1. Compliance with applicable AQMD Regulation XI Rules</p> <p><u>For booths with ≥1170 lbs/month VOC Emissions</u></p> <p>1. Compliance with applicable AQMD Regulation XI Rules, and VOC control system with ≥90% collection efficiency and ≥ 95% destruction efficiency; OR</p> <p>2. Use of Super Compliant Materials (&lt;5% VOC by weight); OR</p> <p>3. Use of low-VOC materials resulting in an equivalent emission reduction</p>
<b>NOx</b>	<p><u>For booths with heaters</u></p> <p>1. Low NOx burner not to exceed 30 ppmvd @ 3% O2</p>
<b>SOx</b>	No standard
<b>PM10</b>	Dry filters or waterwash
<b>PM2.5</b>	No standard
<b>CO</b>	No standard

**T-BACT**

There are no T-BACT standards published in the clearinghouse for this category.

**RULE REQUIREMENTS:**

[Reg XI, Rule 1124 – Aerospace Assembly and Component Manufacturing Operations \(Last amended 9/21/2001\)](#)

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

<b>Primers</b> (SCAQMD Rule 1124 Definition)	<b>VOC Content Limit as Applied</b> g/l
General Primer	350
Low-Solids Corrosion Resistant Primer	350
Pretreatment Primer	780
Rain Erosion-Resistant Coating Compatible Primer	850
Adhesion Promoter	250
<b>Adhesive Bonding Primer</b>	
New Commercial Aircraft	250
All Military Aircraft	805
Remanufactured Commercial Aircraft Parts	805
Sonic And Acoustic Applications	805
<b>Adhesive Bonding Primer</b>	
Long Term	250
Short Term	250

<b>Coatings</b> (SCAQMD Rule 1124 Definition)	<b>VOC Content Limit as Applied</b> g/l
Topcoat	420
Clear Topcoat	520
Unicoat	420
Wing Coating	750
Impact Resistant Coating	420
High-Temperature Coating	850
Antichafe Coating	420

<b>Coatings</b> (SCAQMD Rule 1124 Definition)	<b>VOC Content Limit as Applied</b> g/l
Topcoat	420
Rain Erosion-Resistant Coating	800
Conformal Coating	750
Optical Anti-Reflective Coating	700
Scale Inhibitor	880
Metallized Epoxy Coating	700
Electric Or Radiation Effect Coating	800
Temporary Protective Coating	250
Fuel Tank Coatings	420
Mold Release Coatings	780
<b>Flight Resistant Coatings</b>	
Used On Missiles Or Single Use Target Craft	650
All Other	840
<b>Fire Resistant Coatings</b>	
Commercial	650
Military	800
<b>Wire Coatings</b>	
Phosphate Ester Resistant Ink	925
Other	420
<b>Space Vehicle Coatings</b>	
Electrostatic Discharge Protection Coating	800
Other	1000

<b>Adhesives</b> (SCAQMD Rule 1124 Definition)	<b>VOC Content Limit as Applied</b> g/l
Non-structural adhesive	250
Structural Adhesive	
Autoclavable	50
Non-Autoclavable	850
Space Vehicle Adhesive	800
Fuel Tank Adhesive	620

<b>Sealants</b> (SCAQMD Rule 1124 Definition)	<b>VOC Content Limit as Applied</b> g/l
Fastener Sealant	675
Extrudable, Rollable Or Brushable Sealant	280
Other	600

<b>Maskants</b> (SCAQMD Rule 1124 Definition)	<b>VOC Content Limit as Applied</b> g/l
For Chemical Processing	250
For Chemical Milling	
Type I	250
Type II	160
Photolithographic	850
Touch-Up, Line Sealer Maskants	750

<b>Lubricants</b> (SCAQMD Rule 1124 Definition)	<b>VOC Content Limit as Applied</b> g/l
Fastener Installation	
Solid-Film Lubricant	880
Dry Lubricative Materials	675
Fastener-Lubricative Coatings, Fastener Manufacturing	
Solid Film Lubricant	250
Dry Lubricative Materials	120
Barrier Coating	420
Non-Fastener Lubricative Coatings, Fastener Manufacturing	
Solid Film Lubricant	880
Dry Lubricative Materials	675

<b>Cleaning Solvents and Strippers</b> (SCAQMD Rule 1124 Definition)	<b>VOC Limit</b>
Cleaning Solvents	200 g/l or 45 mmHg VOC Composite Partial Pressure

<b>Cleaning Solvents and Strippers</b> (SCAQMD Rule 1124 Definition)	<b>VOC Limit</b>
Cleaning Solvents	200 g/l or 45 mmHg VOC Composite Partial Pressure
Strippers	300 g/l or 9.5 mmHg VOC Composite Partial Pressure

Documents shall be provided to the Executive Officer or his designee demonstrating that unicoat is being used in lieu of the application of a primer and topcoat, and the applicant must receive written approval for the use of unicoat specifying the conditions of application from the Executive Officer or his designee.

**Solvent Cleaning Operations; Storage and Disposal of VOC-Containing Materials**

- a. Cleaning of material application equipment and storage of solvent laden cloth shall comply with provisions of Rule 1171.
- b. A person shall not atomize any solvent into open air.

**Transfer efficiency**

A person or facility shall not apply aerospace materials unless they are applied with properly operating equipment or controlled, according to operating procedure specified by the equipment manufacturer or the Executive officer or his designee, and by the use of one of the following methods:

- a. Electrostatic application
- b. Flow coater
- c. Roll coater
- d. Dip coater
- e. High-volume, low-pressure (HVLP)
- f. Hand application methods
- g. Such other alternative application methods are demonstrated to the Executive Officer, using District-approved procedures, to be capable of achieving at least equivalent transfer efficiency to method (c)(3)(E) and for which written approval of the Executive Officer has been obtained
- h. Approved air pollution control equipment under paragraph (c)(4)

**Control Equipment**

Owners and/or operators may comply with provisions of paragraphs (c)(1) and (c)(3) by using approved air pollution control equipment provided that the VOC emissions from such operations and/or materials are reduced in accordance with provisions (A) and (B)

- (A) The control device shall reduce emissions from an emission collection system by at least 95%, by weight, or the output of the air pollution control device is less than 50 ppm calculated as carbon with no dilution.
- (B) The owner/operator demonstrates that the system collects at least 90 percent, by weight, of the emissions generated by the sources of emissions.

**Air Toxics**

In lieu of complying with subdivisions (e), (f), (h), and (i) of Rule 1402 - Control of Toxic Air Contaminants from Existing Sources, a facility may submit a compliance plan to the District for the Executive Officer's approval within 180 days from the date of Health Risk

Assessment approval that demonstrates how a toxicity-weighted emissions reduction efficiency of at least 90.0 percent for toxic organic solvents and at least 99.0 percent for toxic particulate matter emissions has been achieved and will be maintained in the future.

**Reg XI, Rule 1171 – Solvent Cleaning Operations (Last amended 5/1/2009)**

This rule applies to all persons who use solvent materials in solvent cleaning operations during the production, repair, maintenance, or servicing of parts, products, tools, machinery, equipment, or general work areas; all persons who store and dispose of these materials used in solvent cleaning operations; and all solvent suppliers who supply, sell, or offer for sale solvent cleaning materials for use in solvent cleaning operations.

<b>Solvent Cleaning Activity</b>	<b>VOC limits g/l (lb/gal)</b>
(A) Product cleaning during manufacturing process or surface preparation for coating, adhesive, or ink application	
(i) General	25 (0.21)
(ii) Electrical apparatus components & electronic components	100 (0.83)
(B) Repair and Maintenance Cleaning	
(i) General	25 (0.21)
(ii) Electrical apparatus components & electronic components	100 (0.83)
(C) Cleaning of coatings or adhesives application equipment	25 (0.1)
(D) Cleaning of polyester resin application equipment	25 (0.21)

**Reg XI, Rule 1147 – NOx Reductions from Miscellaneous Sources (Last amended 9/9/2011)**

This rule applies to ovens, dryers, dehydrators, heaters, kilns, calciners, furnaces, crematories, incinerators, heated pots, cookers, roasters, fryers, closed and open heated tanks and evaporators, distillation units, afterburners, degassing units, vapor incinerators, catalytic or thermal oxidizers, soil and water remediation units and other combustion equipment with nitrogen oxide emissions that require a District permit and are not specifically required to comply with a nitrogen oxide emission limit by other District Regulation XI rules.



Equipment Category	NOx Emission Limit for Unit Heat Ratings ≥ 325,000 BTU/hour PPM @ 3% O2, dry or pound/MMBtu heat input		
	Process Temperature		
	≤800° F	>800° F and <1200° F	≥1200 ° F
Make-Up air heater or other air heater located outside of building with temperature controlled zone inside building	30 ppm or 0.036 lb/MMBtu/hr	-	-

**AGENCY - SAN DIEGO COUNTY APCD:**

**BACT**

Source: [NSR Requirements for BACT](#). (June 2011)

There are no BACT standards published in the clearinghouse for this category.

**T-BACT**

There are no T-BACT standards published in the clearinghouse for this category.

**RULE REQUIREMENTS:**

**Regulation 4, Rule 67.9 – Aerospace Coating Operations** (Effective 4/30/97)

This rule is applicable to the coating, masking, bonding, and paint stripping of aerospace components in operations where aerospace coatings are used, to surface cleaning related to these aerospace coating operations, and to the cleanup of application equipment associated with these operations.

**VOC Content Limits**

Adhesives (SDAPCD Rule 67.9 Definition)	VOC Content Limit as Applied g/l
Adhesive Bonding Primers	
Structural	850
For Elastomers and Elastomeric	850
All Other Adhesive Bonding Primers	850
Adhesives	
Structural Autoclavable	50
Structural Epoxy	50
Structural Non-Autoclavable	250
Elastomeric	850

<b>Adhesives</b> (SDAPCD Rule 67.9 Definition)	<b>VOC Content Limit as Applied</b> g/l
Adhesive Bonding Primers	
Structural	850
For Elastomers and Elastomeric	850
All Other Adhesive Bonding Primers	850
Adhesives	
Fuel Tank Adhesives	620
All Other Adhesives	250

<b>Coatings</b> (SDAPCD Rule 67.9 Definition)	<b>VOC Content Limit as Applied</b> g/l
Antichafe Coatings	600
Bearing Coatings	620
Caulking And Smoothing Compounds	850
Conformal Coating	750
Dry Lubricative Materials	
Fasteners Lubrication	250
Non-Fasteners Lubrication	880
Electromagnetic Radiation Effect Coatings	800
Flight Test Coatings	
Use On Missiles, Targets	420
All Others	840
Form Release Agents	800
Fuel Tank Coatings	720
Heat Treatment Scale Inhibitors	880
High Temperature Coatings	850
High Temperature Resistant, Thermal Flash Resistant, Rain Erosion Resistant Coatings	800
Impact Resistant Coatings	420
Line Seal Maskants	650
Maskants For Bonding	600
Maskants For Chemical Milling:	
Type I Including Multi-Stage Maskants	250

<b>Coatings</b> (SDAPCD Rule 67.9 Definition)	<b>VOC Content Limit as Applied</b> g/l
Type II	160
All Other Chemical Milling	250
Maskants For Chemical Processing Including Multi-Stage Maskants	250
Optical Anti-Reflective Coatings	700
Pretreatment Coatings	780
Primers	350
Primers Compatible With Rain Erosion Coatings	850
Rain Erosion Resistant Coatings	690
Sealants	600
Hot Melt Sealants	100
Solid Film Lubricants	
Fasteners Lubrication	250
Non-Fasteners Lubrication	880
Space Vehicle Coatings	
Electrostatic Discharge Protection	800
Other Space Vehicle Coatings	1000
Adhesives	800
Temporary Protective Coatings	250
Thermoscontrol Coatings	600
Topcoats	420
Unicoats	420
Wet Fastener Installation Coatings	675
All Other Coatings	420

**Application Methods**

Except as provided in Subsections (b)(1), (b)(2), and (b)(5), a person shall not apply aerospace coatings in aerospace coating operations subject to this rule except by means of the following application methods:

1. Electrostatic spray application
2. Flow coat application
3. Dip coat application
4. Hand application methods
5. Airless spray application for use with maskants and temporary protective coatings only
6. High-volume low-pressure (HVLP) spray application
7. Other coating application methods that are demonstrated to have transfer efficiency at least equal to one of the above application methods, and which are used in such a manner that parameters under which they were tested are permanent features of the

method. Such coating application methods shall be approved in writing by the Air Pollution Control Officer prior to use.

### **Stripping Operations**

Except as provided in Subsection (b)(1), a person shall not use a stripper in aerospace coating operations unless the stripper:

1. Contains 400 grams VOC per liter of material or less as applied, or
2. Has a total vapor pressure of voc of 9.5 mmHg or less at 68°F (20°C)

### **Surface Cleaning Operations**

Except as provided in Subsections (b)(1) and (b)(8), a person shall not use a material for surface cleaning or surface preparation of an aerospace component unless:

1. The material contains 200 grams of VOC per liter of material or less as applied, or
2. The material has a total vapor pressure of voc of 45 mmHg or less at 68°F (20°C), or
3. The material has an initial boiling point of 374°F (190°C) or greater at 760 mmHg total pressure, or
4. The aerospace component is cleaned in an enclosed cleaning material container which is only opened when assessing parts or adding surface cleaning materials.

### **Cleaning of Application Equipment**

Except as provided in Subsection (b)(1), a person shall not clean aerospace coating application equipment unless the cleaning material:

1. Contains 200 grams or less of VOC per liter of material; or
2. Has a total vapor pressure of VOC of 20 mm Hg or less at 68°F (20°C); or
3. Has an initial boiling point of 190o C (374o F) or greater at 760 mm Hg total pressure; or
4. The cleaning material is flushed or rinsed through the application equipment in a contained manner that will minimize evaporation into the atmosphere; or
5. The application equipment or equipment parts are cleaned in a container which is open only when being accessed for adding, cleaning, or removing application equipment or when cleaning material is being added, provided the cleaned equipment or equipment parts are drained to the container until dripping ceases; or
6. A system is used that totally encloses the component parts being cleaned during washing, rinsing and draining; or
7. Other application equipment cleaning methods are used that are demonstrated to be as effective as any of the equipment described above in minimizing the emissions of VOC to the atmosphere, provided that the method has been tested and approved by the Air Pollution Control Officer prior to use.

### **Maskant Dip Coating Application Equipment**

Except as provided in Subsections (b)(1), (b)(6), and (b)(7), a person shall not use a dip tank to apply Type I chemical milling maskants or maskants for chemical processing or component coatings of a multi-stage maskants to aerospace parts unless:

1. The dip tank is covered except when being accessed to add or remove materials; take samples; visually inspect the maskant level; clean, maintain or repair the tank; or apply maskant; and
2. The dip tank has a readily visible, permanent mark or line indicating the maximum allowable maskant level; and Regulation IV -13- Rule 67.9
3. The dip tank has a freeboard ratio greater than or equal to 0.5; and
4. Maskant agitation is achieved by means other than gas agitation; and
5. Material is added to the dip tank by means of submerged filling; and

- Any dip tank lip exhaust ventilation system with an inlet located below the cover of the maskant application dip tank is turned off and the ventilation duct closed when the maskant application dip tank is covered.

**Disposal of Waste Materials into the Air**

A person shall not use spray application equipment or any other means to dispose of waste coatings, coating components, surface preparation materials, or cleaning materials into the air, except when momentarily purging coating material from a spray applicator cap immediately before or after applying the coating material.

**Control Equipment**

Any person subject to this rule may comply with the provisions of Subsections (d)(1) through (d)(6) by using air pollution control equipment which has been approved in writing by the Air Pollution Control Officer provided that the air pollution control equipment:

Has been installed in accordance with an Authority to Construct; and

- Includes an emission collection system which captures organic gaseous emissions. Including emissions associated with applicable coating, equipment cleaning, and surface preparation operations, and transports the captured emissions to an air pollution control device; and
- Has a combined emissions capture and control device efficiency of at least 85% by weight.

**AGENCY - BAY AREA AQMD:**

**BACT**

Source: BAAQMD BACT Guideline

[Document # 161.1.1 for <25 lb/day \(uncontrolled\)](#) (09/06/91)

[Document # 161.1.2 for ≥25 lb/day \(uncontrolled\)](#) (09/06/91)

<b>Spray Booths – Coating of Aerospace Components</b>	
<b>POC (A)</b>	<p><u>For &lt;25 lb VOC/day emissions</u></p> <ol style="list-style-type: none"> <li>Coatings with VOC content and transfer efficiency complying with Reg. 8, Rule 29, and emissions controlled to overall capture/destruction efficiency ≥ 90% by weight (Technologically Feasible); or</li> <li>Compliance with Reg. 8, Rule 29 (Achieved in Practice)</li> </ol> <p><u>For ≥25 lb VOC/day emissions</u></p> <ol style="list-style-type: none"> <li>Coatings with VOC content less than and transfer efficiency greater than that required by Reg. 8, Rule 29, and emissions controlled to overall capture/destruction efficiency ≥ 90% by weight (Technologically Feasible); or</li> <li>Coatings with VOC content and transfer efficiency complying with Reg. 8, Rule 29, and emission controlled to overall capture/destruction efficiency ≥ 90% by weight (Achieved in Practice)</li> </ol>
<b>NOx</b>	No standard
<b>SOx</b>	No standard
<b>PM10</b>	Dry filters or waterwash, properly maintained
<b>PM2.5</b>	No standard
<b>CO</b>	No standard

(A) POC = Precursor Organic Compounds. POC is considered equivalent to SMAQMD definition of VOC (under Rule 101).

**T-BACT**

Source: BAAQMD BACT Guideline  
[Document # 161.1.1 for <25 lb/day \(uncontrolled\)](#) (09/06/91)  
[Document # 161.1.2 for ≥25 lb/day \(uncontrolled\)](#) (09/06/91)

<b>Spray Booths – Coating of Motor Vehicle and Mobile Equipment, Rework or Bodyshop</b>	
<b>NPOC (A)</b>	<p><u>For &lt;25 lb VOC/day emissions</u></p> <ol style="list-style-type: none"> <li>Coatings with VOC content and transfer efficiency complying with Reg. 8, Rule 29, and emissions controlled to overall capture/destruction efficiency ≥ 90% by weight (Technologically Feasible. Generally considered cost effective if ≥ 25 lb/VOC/day); or</li> <li>Compliance with Reg. 8, Rule 29 (Achieved in Practice)</li> </ol> <p><u>For ≥25 lb VOC/day emissions</u></p> <ol style="list-style-type: none"> <li>Coatings with VOC content less than and transfer efficiency greater than that required by Reg. 8, Rule 29, and emissions controlled to overall capture/destruction efficiency ≥ 90% by weight (Technologically Feasible. Generally considered cost effective if ≥ 25 lb/VOC/day); or</li> <li>Coatings with VOC content and transfer efficiency complying with Reg. 8, Rule 29, and emission controlled to overall capture/destruction efficiency ≥ 90% by weight (Achieved in Practice)</li> </ol>

(A) NPOC = Non-Precursor Organic Compounds. NPOC are select exempt compounds that are not considered VOC in SMAQMD rules (under Rule 101).

**RULE REQUIREMENTS:**

**Reg 8, Rule 29 – Aerospace Assembly and Component Coating Operations**  
 (12/20/1995)

**Coating Limits**

A person shall not apply to aerospace components any coating with a VOC content in excess of the following limits, expressed as grams VOC per liter (lbs/gal) of coating as applied, excluding water, unless emissions to the atmosphere are controlled to an equivalent level by air pollution abatement equipment with an abatement device efficiency of at least 85% that meets the requirements of Regulation 2, Rule 1:

<b>Coating Category</b> (BAAQMD Rule 29 Definition)	<b>VOC Content Limit as Applied</b> g/l (lbs/gal)
Primer	350 (2.9)
Adhesive Bonding Primer	850 (7.1)
Interior Topcoat	340 (2.8)
Electric Or Radiation Effect Coating	800 (6.7)
Extreme Performance Interior Topcoat	420 (3.5)
Fire Insulation Coating	600 (5.0)
Fuel Tank Coating	720 (6.0)

<b>Coating Category</b> (BAAQMD Rule 29 Definition)	<b>VOC Content Limit as Applied</b> g/l (lbs/gal)
Primer	350 (2.9)
High-Temperature Coating	720 (6.0)
Sealant	600 (5.0)
Self-Priming Topcoat	420 (3.5)
Topcoat	420 (3.5)
Pretreatment Wash Primer	420 (3.5)
Sealant Bonding Primer	720 (6.0)
Temporary Protective Coating	250 (2.1)

**Solvent Evaporative Loss Minimization**

Any person using organic solvent for surface preparation and cleanup or mixing, using or disposing of coating or stripper containing organic solvent:

1. Shall use closed containers for the storage or disposal of cloth or paper used for solvent surface preparation and cleanup
2. Shall not use organic compounds for the cleanup of spray equipment including paint lines unless equipment for collecting the cleaning compounds and minimizing their evaporation to the atmosphere is used.
3. Shall close containers of stripper subject to this Rule, coating, catalyst, thinner, or solvent when in use.

**Stripper limitations**

A person shall not use a stripper unless it complies with one or both of the following:

1. The stripper contains less than 400 g/l (3.3 lbs/gal) of precursor organic compounds.
2. The stripper has a true vapor pressure of less than 10 mmHg (0.19 psia) at actual usage temperature.

**Maskant for chemical processing limitations**

A person shall not apply any maskant for chemical processing to aerospace components unless:

1. The VOC emissions from coating operations are reduced by 85%, or
2. The coating contains less than 600 grams of VOC per liter of coating excluding water, as applied.

**Spray application equipment limitations:**

A person who uses spray application equipment to apply coatings to aerospace components within the District shall use one or more of the following high transfer efficiency application methods, unless emissions to the atmosphere are controlled by an approved emission control system with an overall abatement efficiency of at least 85%.

1. High-volume, Low-pressure (HVLP) spray, operated in accordance with manufacturer's recommendations, or
2. Electrostatic spray, operate in accordance with manufacturer's recommendations, or
3. Detailing gun, or

Any other coating spray application which has been demonstrated to the satisfaction of the APCO to achieve an equivalent transfer efficiency compared to the spray application methods listed in Subsections 310.1 through 310.3. Prior written approval from the APCO shall be obtained for each alternative method used.

**AGENCY - SAN JOAQUIN VALLEY APCD :**

**BACT**

Source: SJVUAPCD BACT Guideline

[Guideline 4.2.6 Aerospace Parts Coating Operation \(1/16/1997\)](#)

[Guideline 4.2.7 Aerospace Parts Coating Operation – Solid Film Lubricant for computer, medical specialty, and aerospace metal parts and products \(11/12/1998\)](#)

<b>Aerospace Parts Coating Operation</b>	
<b>VOC</b>	1. The use of an enclosed gun cleaner and coatings with a VOC content (less water and exempt compounds) lower than the following: Primers < 6.4 lb VOC/gal Topcoats < 5.2 lb VOC/gal (Achieved in Practice) 2. Thermal oxidation (Technologically Feasible) 3. Catalytic oxidation (Technologically Feasible) 4. Carbon adsorption (Technologically Feasible)
<b>NOx</b>	No standard
<b>SOx</b>	No standard
<b>PM10</b>	Enclosed paint booth with dry filters and use of HVLP gun
<b>PM2.5</b>	No standard
<b>CO</b>	No standard

<b>Aerospace and Metal Parts Coating Operation – Solid Film Lubricant for computer, medical specialty, and aerospace metal parts and products</b>	
<b>VOC</b>	1. Solvent-based solid film lubricant coatings with a VOC content of 6.44 lb/gal (less water and exempt compounds) or lower (Achieved in Practice) 2. VOC capture and thermal incineration system (Technologically Feasible) 3. VOC capture and catalytic incineration system (Technologically Feasible) 4. VOC capture and carbon adsorption (Technologically Feasible)
<b>NOx</b>	No standard
<b>SOx</b>	No standard



<b>Aerospace and Metal Parts Coating Operation – Solid Film Lubricant for computer, medical specialty, and aerospace metal parts and products</b>	
<b>PM10</b>	Enclosed paint booth with dry filters and use of HVLP spray gun or equivalent application method.
<b>PM2.5</b>	No standard
<b>CO</b>	No standard

**T-BACT**

There are no T-BACT standards published in the clearinghouse for this category.

**RULE REQUIREMENTS:**

**[Rule 4605 – Aerospace Assembly and Component Coating Operations](#)**

(Amended 6/16/2011)

**Coating Limits**

An operator shall not apply any aerospace component any coating, aerosol or adhesive with a VOC content, less water and exempt compounds, as applied, in excess of the following limits:

<b>Coating Category</b> (SJVAPCD Rule 4605 Definition)	<b>VOC Regulatory Limit as Applied</b> g/l
Ablative	600
Adhesion Promoter	850
Adhesives	
A. Non-Structural	250
B. Structural	
I. Autoclavable	50
ii. Nonautoclavable	850
Adhesive Bonding Primers	
A. New Commercial Aircraft	250
B. All Military Aircraft	805
C. Remanufactured Commercial Aircraft Parts	805
D. Sonic And Acoustic Applications	805
E. Long Term	250
F. Short Term	250
Antichafe Coatings	600

<b>Coating Category</b> (SJVAPCD Rule 4605 Definition)	<b>VOC Regulatory Limit as Applied</b> g/l
Ablative	600
Barrier Topcoat	420
Bearing Coating	620 <sup>(A)</sup>
Caulking And Smoothing Compounds	850 <sup>(A)</sup>
Chemical Agent Resistant Coating	550 <sup>(A)</sup>
Clear Topcoat	520
Conformal Coating	750
Dry Lubricative Materials	
A. Fastener Manufacturing	120
B. Nonfastener Manufacturing	675
Electric/Radiation Effect Coatings	800
Electromagnetic Interference Coating	800 <sup>(A)</sup>
Fastener Sealants	600 <sup>(B)</sup>
Fire Resistant Coatings	
A. Civilian (Interior)	650
Flight Test Coatings Used On	
A. Missiles Or Single-Use Target Craft	420
B. All Others	600
Fuel Tank Coatings	
A. General	420
B. Epoxy	420
Fuel Tank Adhesives	620
High Temperature Coating	850
Impact Resistant Coating	420
Intermediate Release Coating	750 <sup>(A)</sup>
Lacquer	830 <sup>(A)</sup>
Maskants – Chemical Milling	250

<b>Coating Category</b> (SJVAPCD Rule 4605 Definition)	<b>VOC Regulatory Limit as Applied</b> g/l
Ablative	600
Metalized Epoxy Coating	740 <sup>(A)</sup>
Mold Release	780 <sup>(A)</sup>
Optical Anti-Reflective Coating	700
Part Marking Coating	850 <sup>(A)</sup>
Pretreatment Coating	780
Primers	
A. General	350
B. Commercial Exterior Aerodynamic Structure	350
Rain Erosion Resistant Coating	800
Rocket Motor Nozzle Coating	660 <sup>(A)</sup>
Scale Inhibitor	880
Screen Print Ink	840
Sealant (Extrudable/Rollable/Brushable)	280 <sup>(C)</sup>
Silicone Insulation Material	850 <sup>(A)</sup>
Solid Film Lubricants	
A. Fastener Manufacturing	250
B. Fastener Installation	880
C. Nonfastener Manufacturing	880
Space Vehicle Coatings	
A. Electrostatic Discharge Protection	800
B. Other Space Vehicle Coatings	1,000
C. Adhesives	800
Specialized Function Coatings	890 <sup>(A)</sup>
Temporary Protective Coatings	250
Thermal Control Coating	800 <sup>(A)</sup>

<b>Coating Category</b> (SJVAPCD Rule 4605 Definition)	<b>VOC Regulatory Limit as Applied</b> g/l
Ablative	600
Topcoats	420
Epoxy Polyamide	660 <sup>(A)</sup>
Unicoats (Self Priming Topcoats)	420
Wet Fastener Installation Coating	675 <sup>(A)</sup>
Wing Coating	750
Wire Coatings	
A. Electronic	420
B. Anti-Wicking	420
C. Pre-Bonding Etching	420
D. Phosphate Ester Resistant Ink	925

- (A) Coatings that have been designated as “classified” by the Department of Defense or coatings that are used on space vehicles are exempt from these coating limits.
- (B) Coatings that have been designated as “classified” by the Department of Defense or coatings that are used on space vehicles are exempt from the 600 g/l limit, but must comply with a 675 g/l limit.
- (C) Coatings that have been designated as “classified” by the Department of Defense or coatings that are used on space vehicles are exempt from the 280 g/l limit, but must comply with a 600 g/l limit.

### **Surface Cleaning**

No operator shall use a solvent for surface cleaning, clean-up, or jet engine or rocket engine gas path cleaning or flushing, not exempt under Section 4.0 of this rule, excluding stripping coatings or cleaning coating application equipment, unless:

1. The solvent contains less than 200 grams of VOC per liter (1.67 lb/gal) of material, as applied; or
2. The VOC composite vapor pressure of the solvent is less than or equal to 45 mm Hg (0.87 psia) at a temperature of 68°F.

### **Coating Application Equipment Cleaning**

An operator shall not use VOC-containing materials to clean spray equipment used for the application of coatings, adhesives, or ink, unless an enclosed system or equipment that is proven to be equally effective at controlling emissions is used for cleaning. If an enclosed system is used, it must totally enclose spray guns, cups, nozzles, bowls, and other parts during washing, rinsing and draining procedures, and it must be used according to the manufacturer’s recommendations and must be closed when not in use.

### **Coating Strippers**

No operator shall use or specify for use within the District a coating stripper unless it contains less than 300 grams of VOC per liter (2.5 lb/gal), as applied, or unless it has a VOC composite vapor pressure of 9.5 mm Hg (0.18 psia) or less at 68°F.

### **Storage and Disposal of VOC Containing Materials**

An operator shall store or dispose of fresh or spent solvents, waste solvent cleaning materials such as cloth, paper, etc., coatings, adhesives, catalysts, and thinners in closed, nonabsorbent and non-leaking containers. The containers shall remain closed at all times except when depositing or removing the contents of the containers or when the container is empty.

### **Application Equipment Requirements**

No operator shall apply coatings subject to the provisions of this rule unless one of the following methods is used:

1. Electrostatic application;
2. Electrodeposition;
3. High-Volume, Low-Pressure (HVLP) spray,
4. Flow coating;
5. Roll coating;
6. Dip Coating;
7. Brush Coating

### **VOC Emission Control System**

As an alternative to meeting the requirements of Sections 5.1, 5.2, 5.3, or 5.5, an operator may install a VOC emission control system provided that the VOC emission control system meets all of the following requirements:

1. The VOC emission control system shall be approved by the APCO.
2. The VOC emission control system shall comply with the requirements of Section 5.6.3 through 5.6.5 during periods of emission-producing activities.
3. The VOC control system's VOC control device shall have a control efficiency of at least 95%, by weight.
4. The VOC emission control system's VOC collection device shall have a capture efficiency of at least 90%, by weight.
5. In no case shall compliance through the use of a VOC emission control system result in VOC emissions in excess of the VOC emissions which would result from the compliance with applicable provisions of Sections 5.1, 5.2, 5.3, or 5.5.

The following control technologies have been identified and are ranked based on stringency:

<b>SUMMARY OF ACHIEVED IN PRACTICE CONTROL TECHNOLOGIES (A)</b>	
<b>VOC</b>	<p><u>For booths with &lt;9,125 lb/year VOC Emissions (B)</u></p> <ol style="list-style-type: none"> <li>1. Compliance with SCAQMD Regulation XI, Rules 1124, 1147, &amp; 1171 [SCAQMD]</li> <li>2. The use of an enclosed gun cleaner with a VOC content (less water and exempt compounds) lower than the following: primers &lt; 6.4 lb VOC/gal, topcoats &lt; 5.2 lb VOC/gal, solid film lubricants ≤6.44 lb/gal [SJVAPCD]</li> <li>3. Compliance with SMAQMD Rule 456 [SMAQMD]</li> <li>4. Compliance with SDAPCD Rule 67.9 [SDAPCD]</li> <li>5. Compliance with Reg. 8, Rule 29 [BAAQMD]</li> <li>6. 40.8 tons/year, compliance with 40 CFR Part 63, Subpart GG and low VOC vapor pressure cleaning solvents and strippers with low pressure applicators or manual application for depainting [US EPA, RBLC ID: WWA-0344]</li> </ol> <p><u>For booths with ≥9,125 lb/year VOC Emissions (B)</u></p> <ol style="list-style-type: none"> <li>1. Coatings with VOC content and transfer efficiency complying with Reg. 8, Rule 29, and emission controlled to overall capture efficiency ≥ 90% by weight [BAAQMD]</li> <li>2a. Compliance with applicable AQMD Regulation XI Rules, and VOC control system with ≥90% collection efficiency and ≥ 95% destruction efficiency; OR [SCAQMD]</li> <li>2b. Use of Super Compliant Materials (&lt;5% VOC by weight); OR [SCAQMD]</li> <li>2c. Use of low-VOC materials resulting in an equivalent emission reduction [SCAQMD]</li> <li>3. The use of an enclosed gun cleaner with a VOC content (less water and exempt compounds) lower than the following: primers &lt; 6.4 lb VOC/gal, topcoats &lt; 5.2 lb VOC/gal, solid film lubricants ≤6.44 lb/gal [SJVAPCD]</li> <li>4. Compliance with SMAQMD Rule 456. [SMAQMD]</li> <li>5. Compliance with SDAPCD Rule 67.9 [SDAPCD]</li> <li>6. 40.8 tons VOCs/year, compliance with VOC limits of 40 CFR Part 63, Subpart GG and low VOC vapor pressure cleaning solvents and strippers with low pressure applicators or manual application for depainting [US EPA, RBLC ID: WWA-0344]</li> </ol>
<b>NOx</b>	<ol style="list-style-type: none"> <li>1. For heaters ≥ 325,000 Btu/hr, low NOx burner, 30 ppmvd @ 3% O2 or 0.036 lb/MMBtu/hr [SCAQMD Rule 1147]</li> <li>2. No Standard – [SMAQMD, SDCAPCD, BAAQMD, SJVAPCD]</li> </ol>
<b>SOx</b>	<ol style="list-style-type: none"> <li>1. No Standard – [SMAQMD, SCAQMD, SDCAPCD, BAAQMD, SJVAPCD]</li> </ol>
<b>PM10</b>	<ol style="list-style-type: none"> <li>1. Enclosed paint booth with dry filters and use of HVLP [SJVAPCD]</li> <li>2. Dry filters or waterwash, properly maintained [BAAQMD]</li> <li>3. Dry filters or waterwash [SCAQMD]</li> <li>4. No Standard [SMAQMD, SDAPCD]</li> </ol>
<b>PM2.5</b>	<ol style="list-style-type: none"> <li>1. No Standard – [SMAQMD, SCAQMD, SDAPCD, BAAQMD, SJVAPCD]</li> </ol>
<b>CO</b>	<ol style="list-style-type: none"> <li>1. No Standard – [SMAQMD, SCAQMD, SDCAPCD, BAAQMD, SJVAPCD]</li> </ol>

<b>SUMMARY OF ACHIEVED IN PRACTICE CONTROL TECHNOLOGIES (A)</b>	
<b>HAP/NPOC (T-BACT)</b>	<ol style="list-style-type: none"> <li>1. Coatings with VOC content and transfer efficiency complying with Reg. 8, Rule 29, and emission controlled to overall capture/destruction efficiency <math>\geq 90\%</math> by weight [BAAQMD]</li> <li>2. Compliance with volatile HAP limits of 40 CFR 63 Subpart GG [US EPA] and metal HAP standards of 40 CFR 63 Subpart HHHHHH [US EPA]. For major sources, full compliance with GG.</li> </ol>

(A) The BACT thresholds of 25 lbs/day and 1,170 lbs/month from BAAQMD and SCAQMD, respectively, have been converted to annual thresholds (9,125 lb/yr for BAAQMD and 14,040 lb/yr for SCAQMD) since cost effectiveness calculations are based on annual cost and not daily or monthly.

(B) 9,125 lb/yr is the more restrictive limit and it is based on BAAQMD's BACT determination.

The following control technologies have been identified as the most stringent, achieved in practice control technologies:

<b>BEST CONTROL TECHNOLOGIES ACHIEVED</b>		
<b>Pollutant</b>	<b>Standard</b>	<b>Source</b>
VOC	<p><u>For booths with &lt;9,125 lbs/year VOC Emissions</u></p> <ol style="list-style-type: none"> <li>1. Compliance with applicable SMAQMD, SCAQMD, SDAPCD, BAAQMD, SJVAPCD Rule, whichever is most stringent per operation</li> <li>2. Use of an enclosed gun cleaner</li> </ol> <p><u>For booths with <math>\geq 9,125</math> lbs/year VOC Emissions</u></p> <ol style="list-style-type: none"> <li>1. Compliance with applicable SMAQMD, SCAQMD, SDAPCD, BAAQMD, SJVAPCD Rule, whichever is most stringent per operation, and VOC control system with overall capture efficiency <math>\geq 90\%</math> by weight</li> <li>2. Use of an enclosed gun cleaner</li> </ol>	<p>SMAQMD, SCAQMD, SDAPCD, BAAQMD, SJVAPCD</p> <p>SMAQMD, SCAQMD, SDAPCD, BAAQMD, SJVAPCD</p>
NOx	<ol style="list-style-type: none"> <li>1. For heaters to <math>\geq 325,000</math> Btu/hr, low NOx burner, 30 ppmvd @ 3% O<sub>2</sub> or 0.036 lb/MMBtu/hr</li> </ol>	SCAQMD
SOx	No Standard	SMAQMD, SCAQMD, SDAPCD, BAAQMD, SJVAPCD
PM10	<ol style="list-style-type: none"> <li>1. Enclosed paint booth with use of dry filters and use of HVLP, properly maintained</li> </ol>	BAAQMD SJVAPCD
PM2.5	No Standard	SMAQMD, SCAQMD, SDAPCD, BAAQMD, SJVAPCD
CO	No Standard	SMAQMD, SCAQMD, SDAPCD, BAAQMD, SJVAPCD

<b>BEST CONTROL TECHNOLOGIES ACHIEVED</b>		
<b>Pollutant</b>	<b>Standard</b>	<b>Source</b>
HAP/NPOC (T-BACT)	1. Compliance with applicable SMAQMD, SCAQMD, SDAPCD, BAAQMD, SJVAPCD Rule, whichever is most stringent per operation, and VOC control system with overall capture efficiency $\geq 90\%$ by weight 2. Compliance with volatile HAP limits of 40 CFR 63 Subpart GG [US EPA] and metal HAP standards of 40 CFR 63 Subpart HHHHHH [US EPA]. For major sources, full compliance with GG.	BAAQMD US EPA (40 CFR 63 Subpart GG)

**B: TECHNOLOGICALLY FEASIBLE AND COST EFFECTIVE (Rule 202, §205.1.b.)**

**1. Technologically Feasible Alternatives for Criteria Pollutants:**

Any alternative basic equipment, fuel, process, emission control device or technique, singly or in combination, determined to be technologically feasible by the Air Pollution Control Officer.

The table below shows the technologically feasible alternatives identified as capable of reducing emissions beyond the levels determined to be “Achieved in Practice” as per Rule 202, §205.1.a.

<b>Pollutant</b>	<b>Technologically Feasible Alternative</b>
<b>VOC</b>	<u>For control of VOCs from the coating operation:</u> 1. Carbon Adsorber 2. Thermal Oxidizer  <u>For control of heater combustion emissions:</u> No other technologically feasible option identified
<b>NOx</b>	No other technologically feasible option identified
<b>SOx</b>	No other technologically feasible option identified
<b>PM10</b>	No other technologically feasible option identified
<b>PM2.5</b>	No other technologically feasible option identified
<b>CO</b>	No other technologically feasible option identified

**Cost Effective Determination:**

After identifying the technologically feasible control options, a cost analysis is performed to take into consideration economic impacts for all technologically feasible controls identified.

**Maximum Cost per Ton of Air Pollutants Controlled**

- A. A control technology is considered to be cost-effective if the cost of controlling one ton of that air pollutant is less than the limits specified below:



<u>Pollutant</u>	<u>Maximum Cost (\$/ton)</u>
VOC	17,500
NO <sub>x</sub>	24,500
PM10	11,400
SO <sub>x</sub>	18,300
CO	TBD if BACT triggered

#### Cost Effectiveness Analysis Summary

The cost analysis was processed in accordance with the EPA OAQPS Air Pollution Control Cost Manual (Third Edition). The sales tax rate was based on the District's standard rate of 8.5% as approved on 10/17/16. The electricity (11.24 cents/kWh) and natural gas (6.41 dollars/1,000 cubic feet) rates were based on an industrial application as approved by the District on 10/17/16. The life of the equipment was based on the EPA cost manual recommendation. The interest rate was based on the previous 6-month average interest rate on United States Treasury Securities (based on the life of the equipment) and addition of two percentage points and rounding up to the next higher integer rate. The labor (Occupation Code 51-9122: Painters, Transportation Equipment) and maintenance (Occupation Code 49-9099: Installation, maintenance, and repair workers, all other) rates were based on data from the Bureau of Labor Statistics. These labor costs are higher than for other coating-related industries thus increasing the cost of add-on controls.

#### Carbon Adsorption System

Equipment Life = 10 years

Total Capital Investment = \$10,210.98

Annualized Total Capital Investment = \$1,258.92 per year

Direct Annual Cost = \$7,014.29 per year

Indirect Annual Cost = \$3,570.56 per year

Cost of Carbon per year = \$25,839.00

Total Annual Cost = \$37,682.77 per year

VOC Removed = 2.15 tons per year

**Cost of VOC Removal = \$17,500.42 per ton reduced**

A detailed calculation of the cost effectiveness for VOC removal with a carbon absorber is shown in Appendix B. Uncontrolled VOC emissions of 4,785 lb/year or greater is the cost-effective threshold for control equipment using carbon absorption control technology

#### Thermal Oxidizer:

Equipment Life = 10 years

Total Capital Investment = \$218,719

Annualized Total Capital Investment = \$18,943.24 per year

Direct Annual Cost = \$91,119.25 per year

Indirect Annual Cost = \$37,100.42 per year

Total Annual Cost = \$128,219.67 per year

VOC Removed = 7.33 tons per year

**Cost of VOC Removal = \$17,500.00 per ton reduced**

A detailed calculation of the cost effectiveness for VOC removal with a thermal oxidizer is shown in Appendix B. Uncontrolled VOC emissions of 14,654 lb/year or greater is the cost-effective threshold for control equipment using thermal oxidation control technology.

**Conclusion:** In this analysis, different emission operating levels are presented with the corresponding total cost per ton of VOC controlled using either a carbon adsorption control or a thermal oxidizer. Uncontrolled VOC emission level of 4,785 lb per year or greater must be reached in order for the carbon absorption control option to be cost effective. Uncontrolled VOC emission level of 14,654 lb per year or greater must be reached in order for a thermal oxidizer to be cost effective. The emissions levels for the cost effectiveness of controls is based on the District cost effective limit for ROC of \$17,500 per ton controlled.

**C: SELECTION OF BACT**

Based on the review of SMAQMD, SCAQMD, SDCAPCD, BAAQMD, SJVAPCD, CARB, and EPA BACT Clearinghouses and cost effectiveness determinations, BACT for VOC, NOx, SOx, PM10, PM2.5, and CO will be the following:

<b>BACT For Paint Spray Booths for Aerospace Coatings (#182) ≤ 4,785 lbs VOC/year</b>		
<b>Pollutant</b>	<b>Standard</b>	<b>Source</b>
VOC	1. Compliance with SMAQMD Rule 456 and aerospace coatings BACT VOC limits (see Tables 1-3 below) 2. Use of an enclosed gun cleaner	SMAQMD, SDAPCD, SJVAPCD SCAQMD, BAAQMD,
NOx	1. For heaters ≥ 325,000 Btu/hr, low NOx burner, 30 ppmvd @ 3% O2 or 0.036 lb/MMBtu/hr	SCAQMD
SOx	No Standard	SMAQMD
PM10	1. Enclosed paint booth with use of dry filters and use of HVLP, properly maintained	BAAQMD SJVAPCD
PM2.5	No Standard	SMAQMD, SCAQMD, SDAPCD, BAAQMD, SJVAPCD
CO	No Standard	SMAQMD, SCAQMD, SDAPCD, BAAQMD, SJVAPCD

<b>T-BACT Paint Spray Booths for Aerospace Coatings (#182) ≤ 4,785 lbs VOC/year</b>		
<b>Pollutant</b>	<b>Standard</b>	<b>Source</b>
HAP/NPOC (T-BACT)	1. Compliance with with SMAQMD Rule 456 and aerospace coatings BACT VOC limits (see Tables 1-3 below), and VOC control system with overall capture efficiency ≥90% by weight 2. Compliance with 40 CFR Subpart 63 GG limits for volatile HAPs 3. Compliance with 40 CFR 63 Subpart HHHHHH for metals 4. For major sources of HAPs, compliance with 40 CFR 63, Subpart GG	BAAQMD US EPA (40 CFR 63 Subpart GG)

<b>BACT For Paint Spray Booths for Aerospace Coatings (#183) &gt; 4,785 lb VOC/year Per Project</b>		
<b>Pollutant</b>	<b>Standard</b>	<b>Source</b>
VOC	<ol style="list-style-type: none"> <li>1. Compliance with SMAQMD Rule 456 and aerospace coatings BACT VOC limits (see Tables 1-3 below), and VOC control system with overall capture efficiency <math>\geq 90\%</math> by weight</li> <li>2. Use of an enclosed gun cleaner</li> </ol>	SMAQMD, SCAQMD, SDAPCD, BAAQMD, SJVAPCD
NOx	<ol style="list-style-type: none"> <li>1. For heaters <math>\geq 325,000</math> Btu/hr, low NOx burner, 30 ppmvd @ 3% O<sub>2</sub> or 0.036 lb/MMBtu/hr</li> </ol>	SCAQMD
SOx	No Standard	SMAQMD
PM10	<ol style="list-style-type: none"> <li>1. Enclosed paint booth with use of dry filters and use of HVLP, properly maintained</li> </ol>	BAAQMD SJVAPCD
PM2.5	No Standard	SMAQMD, SCAQMD, SDAPCD, BAAQMD, SJVAPCD
CO	No Standard	SMAQMD, SCAQMD, SDAPCD, BAAQMD, SJVAPCD

<b>T-BACT Paint Spray Booths for Aerospace Coatings (#183) &gt; 4,785 lb VOC/year Per Project</b>		
<b>Pollutant</b>	<b>Standard</b>	<b>Source</b>
HAP/NPOC (T-BACT)	<ol style="list-style-type: none"> <li>1. Compliance with with SMAQMD Rule 456 and aerospace coatings BACT VOC limits (see Tables 1-3 below), and VOC control system with overall capture efficiency <math>\geq 90\%</math> by weight</li> <li>2. Compliance with 40 CFR Subpart 63 GG limits for volatile HAPs</li> <li>3. Compliance with 40 CFR 63 Subpart HHHHHH for metals</li> <li>4. For major sources of HAPs, compliance with 40 CFR 63, Subpart GG</li> </ol>	BAAQMD US EPA (40 CFR 63 Subpart GG)

<b>Table 1 Maximum VOC Content Excluding Water and Exempt Compounds grams/liter</b>		
<b>Coating Type</b>	<b>VOC Limits g/l</b>	<b>Source</b>
Ablative	<b>420</b>	SDAPCD Rule 67.9 (A)
Adhesion Promoter	<b>250</b>	SCAQMD Rule 1124
Sealant Adhesion Promoter	<b>420</b>	SDAPCD Rule 67.9 (A)
<b>Adhesives</b>		
A. Non-Structural	<b>250</b>	SJVAPCD Rule 4605, SCAQMD Rule 1124
B. Structural		
i. Autoclavable	<b>50</b>	SJVAPCD Rule 4605, SCAQMD Rule 1124, SDAPCD Rule 67.9
ii. Nonautoclavable	<b>250</b>	SDAPCD Rule 67.9
iii. Epoxy	<b>50</b>	SDAPCD Rule 67.9
C. Elastomeric	<b>600</b>	SMAQMD Rule 456
D. Fuel Tank Adhesives	<b>600</b>	SMAQMD Rule 456
E. All Other Adhesives	<b>250</b>	SDAPCD Rule 67.9
<b>Adhesive Bonding Primers</b>		
A. New Commercial Aircraft	<b>250</b>	SJVAPCD Rule 4605, SCAQMD Rule 1124
B. All Military Aircraft	<b>805 (B)</b>	SJVAPCD Rule 4605, SCAQMD Rule 1124
C. Remanufactured Commercial Aircraft Parts	<b>805 (B)</b>	SJVAPCD Rule 4605, SCAQMD Rule 1124
D. Sonic and Acoustic Applications	<b>805 (B)</b>	SJVAPCD Rule 4605, SCAQMD Rule 1124
E. Long Term	<b>250</b>	SJVAPCD Rule 4605, SCAQMD Rule 1124
F. Short Term	<b>250</b>	SJVAPCD Rule 4605, SCAQMD Rule 1124
Antichafe Coatings	<b>420</b>	SCAQMD Rule 1124
Bearing Coating	<b>620</b>	SJVAPCD Rule 4605, SCAQMD Rule 1124
Caulking And Smoothing Compounds	<b>850</b>	SJVAPCD Rule 4605, SDAPCD Rule 67.9,
Chemical Agent Resistant Coating	<b>420</b>	SDAPCD Rule 67.9 (A)
Conformal Coating	<b>600</b>	SMAQMD Rule 456
Electric/Radiation Effect Coatings	<b>600</b>	SMAQMD Rule 456

<b>Table 1 Maximum VOC Content Excluding Water and Exempt Compounds grams/liter</b>		
<b>Coating Type</b>	<b>VOC Limits g/l</b>	<b>Source</b>
<b>Fire Resistant Coatings</b>		
A. Civilian (Interior)	<b>420</b>	SDAPCD Rule 67.9 (A)
B. Commercial	<b>420</b>	SDAPCD Rule 67.9 (A)
C. Military	<b>420</b>	SDAPCD Rule 67.9 (A)
<b>Flight Test Coatings Used On</b>		
A. Missiles or Single-Use Target Craft	<b>420</b>	SJVAPCD Rule 4605, SMAQMD Rule 456, SDAPCD Rule 67.9
B. All Other Coatings	<b>420</b>	SMAQMD Rule 456
<b>Fuel Tank Coatings</b>		
A. General	<b>420</b>	SJVAPCD Rule 4605, SCAQMD Rule 1124
B. Epoxy	<b>420</b>	SJVAPCD Rule 4605, SCAQMD Rule 1124
High Temperature Coating	<b>420</b>	SMAQMD Rule 456
Impact Resistant Coating	<b>420</b>	SJVAPCD Rule 4605, SCAQMD Rule 1124, SDAPCD Rule 67.9
Intermediate Release Coating	<b>420</b>	SDAPCD Rule 67.9 (A)
Lacquer	<b>420</b>	SDAPCD Rule 67.9 (A)
Maskants for bonding	<b>600</b>	SDAPCD Rule 67.9
Maskants – Chemical Processing	<b>250</b>	SCAQMD Rule 1124, SDAPCD Rule 67.9
<b>Maskants – Chemical Milling</b>		
A. Type I	<b>250</b>	SJVAPCD Rule 4605
B. Type II	<b>160</b>	SCAQMD Rule 1124, SDAPCD Rule 67.9
C. Photolithographic	<b>250</b>	SJVAPCD Rule 4605
D. Touch-up, Line Sealer Maskants	<b>250</b>	SJVAPCD Rule 4605
E. All Others	<b>250</b>	SJVAPCD Rule 4605
Metalized Epoxy Coating	<b>420</b>	SDAPCD Rule 67.9 (A)
Mold/Form Release	<b>762</b>	SMAQMD Rule 456
Optical Anti-Reflective Coating	<b>700</b>	SJVAPCD Rule 4605, SCAQMD Rule 1124, SDAPCD Rule 67.9

<b>Table 1</b> <b>Maximum VOC Content Excluding Water and Exempt Compounds</b> <b>grams/liter</b>		
<b>Coating Type</b>	<b>VOC Limits g/l</b>	<b>Source</b>
Part Marking Coating	<b>420</b>	SDAPCD Rule 67.9 (A)
Pretreatment Coating	<b>780</b>	SJVAPCD Rule 4605, SMAQMD Rule 456, SDAPCD Rule 67.9
<b>Primers</b>		
A. General	<b>350</b>	SJVAPCD Rule 4605, SMAQMD Rule 456, SCAQMD Rule 1124, SDAPCD Rule 67.9, BAAQMD Rule 29
B. Commercial Exterior Aerodynamic Structure	<b>350</b>	SJVAPCD Rule 4605, SMAQMD Rule 456
C. Low-Solids Corrosion Resistant Primer	<b>350</b>	SCAQMD Rule 1124
D. Pretreatment Primer	<b>350</b>	SJVAPCD Rule 4605, SMAQMD Rule 456, SCAQMD Rule 1124, SDAPCD Rule 67.9
E. Pretreatment Wash Primer	<b>350</b>	SJVAPCD Rule 4605, SMAQMD Rule 456, SCAQMD Rule 1124, SDAPCD Rule 67.9
F. Sealant Bonding Primer	<b>350</b>	SJVAPCD Rule 4605, SMAQMD Rule 456, SCAQMD Rule 1124, SDAPCD Rule 67.9
G. Rain Erosion-Resistant Coating Compatible Primer	<b>350</b>	SJVAPCD Rule 4605, SMAQMD Rule 456, BAAQMD Rule 29
<b>Rain Erosion Resistant Coating</b>		
A. Fluoroelastomer	<b>690</b>	SDAPCD Rule 67.9
B. All Other	<b>600</b>	SMAQMD Rule 456
Rocket Motor Nozzle Coating	<b>420</b>	SDAPCD Rule 67.9 (A)
Scale Inhibitor	<b>880</b>	SJVAPCD Rule 4605, SCAQMD Rule 1124, SDAPCD Rule 67.9
Screen Print Ink	<b>420</b>	SDAPCD Rule 67.9 (A)
<b>Sealant</b>		
A. Fastener Sealant	<b>420</b>	SDAPCD Rule 67.9 (A)
B. Extrudable, Rollable or Brushable	<b>280</b>	SJVAPCD Rule 4605, SCAQMD Rule 1124
C. Hot Melt Sealant	<b>100</b>	SDAPCD Rule 67.9
D. Other	<b>600</b>	SMAQMD Rule 456, SCAQMD Rule 1124, SDAPCD Rule 67.9, BAAQMD Rule 29
Silicone Insulation Material	<b>420</b>	SDAPCD Rule 67.9 (A)

<b>Table 1 Maximum VOC Content Excluding Water and Exempt Compounds grams/liter</b>		
<b>Coating Type</b>	<b>VOC Limits g/l</b>	<b>Source</b>
<b>Solid Film/Dry Lubricants</b>		
A. Fastener Manufacturing		
i. Solid-Film Lubricant	<b>250</b>	SJVAPCD Rule 4605, SCAQMD Rule 1124, SDAPCD Rule 67.9
ii. Dry Lubricative Materials	<b>120</b>	SJVAPCD Rule 4605, SCAQMD Rule 1124
iii. Barrier Coating	<b>420</b>	SCAQMD Rule 1124
B. Fastener Installation		
i. Solid-Film Lubricant	<b>420</b>	SDAPCD Rule 67.9 (A)
ii. Dry Lubricative Materials	<b>420</b>	SDAPCD Rule 67.9 (A)
C. Nonfastener Manufacturing		
i. Solid-Film Lubricant	<b>880</b>	SJVAPCD Rule 4605, SMAQMD Rule 456, SCAQMD Rule 1124, SDAPCD Rule 67.9
ii. Dry Lubricative Materials	<b>675</b>	SJVAPCD Rule 4605, SCAQMD Rule 1124
<b>Space Vehicle Coatings</b>		
A. Electrostatic Discharge Protection	<b>800</b>	SJVAPCD Rule 4605, SCAQMD Rule 1124, SDAPCD Rule 67.9
B. Adhesives	<b>800</b>	SJVAPCD Rule 4605, SCAQMD Rule 1124, SDAPCD Rule 67.9
C. Other Space Vehicle Coatings	<b>1000</b>	SJVAPCD Rule 4605, SMAQMD Rule 456, SCAQMD Rule 1124, SDAPCD Rule 67.9
Specialized Function Coatings	<b>420</b>	SDAPCD Rule 67.9 (A)
Temporary Protective Coatings	<b>250</b>	SJVAPCD Rule 4605, SCAQMD Rule 1124, SDAPCD Rule 67.9, BAAQMD Rule 29
Thermal Control Coating	<b>600</b>	SMAQMD Rule 456, SDAPCD Rule 67.9
<b>Topcoats</b>		
A. Acrylic lacquer for F-111	<b>420</b>	SJVAPCD Rule 4605, SCAQMD Rule 1124, SDAPCD Rule 67.9
B. Barrier Topcoat	<b>420</b>	SJVAPCD Rule 4605, SCAQMD Rule 1124
C. Clear Topcoat	<b>420</b>	SMAQMD Rule 456
D. Interior Topcoat	<b>340</b>	BAAQMD Rule 29



<b>Table 1 Maximum VOC Content Excluding Water and Exempt Compounds grams/liter</b>		
<b>Coating Type</b>	<b>VOC Limits g/l</b>	<b>Source</b>
E. All Other	<b>420</b>	SJVAPCD Rule 4605, SMAQMD Rule 456, SCAQMD Rule 1124, SDAPCD Rule 67.9
Epoxy Polyamide	<b>420</b>	SDAPCD Rule 67.9 (A)
Unicoats	<b>420</b>	SJVAPCD Rule 4605, SCAQMD Rule 1124, SDAPCD Rule 67.9
Wet Fastener Installation Coating	<b>620</b>	SMAQMD Rule 456
Wing Coating	<b>420</b>	SDAPCD Rule 67.9 (A)
<b>Wire Coatings</b>		
A. Electronic	<b>420</b>	SJVAPCD Rule 4605, SCAQMD Rule 1124
B. Anti-Wicking	<b>420</b>	SJVAPCD Rule 4605, SCAQMD Rule 1124
C. Pre-Bonding Etching	<b>420</b>	SJVAPCD Rule 4605, SCAQMD Rule 1124
D. Phosphate Ester Resistant Ink	<b>420</b>	SDAPCD Rule 67.9 (A)
E. Other	<b>420</b>	SCAQMD Rule 1124
All Other Coatings	<b>420</b>	SDAPCD Rule 67.9

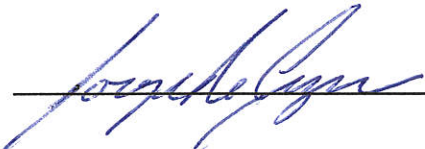
(A) VOC limit is based on SDAPCD Rule 67.9's All Other Coatings Category.

(B) These coating categories would fall under SMAQMD's Rule 456 adhesive bonding agent (primer) category. However, SMAQMD's VOC content limit of 780 g/l has not been shown to be achieved in practice for adhesive bonding primers for military aircrafts, remanufactured commercial aircraft parts, and sonic and acoustic applications. Therefore, SJVAPCD's Rule 4605 and SCAQMD's Rule 1124 VOC content of 805 g/l will be used instead.

<b>Table 2 Solvent Cleaning VOC Limits</b>		
<b>Type of Solvent Cleaning Operation</b>	<b>VOC Content Limit grams of VOC/liter of material</b>	<b>Source</b>
Cleaning or surface preparation	200 g/l Or 45 mm Hg VOC Composite Partial Pressure	SMAQMD Rule 456, SJVAPCD Rule 4605, SCAQMD Rule 1124
Cleaning of application equipment	25 g/l	SMAQMD Rule 456

Table 3 Stripper VOC Limits		
Type of Stripper	VOC Limit	Source
All Strippers	300 g/l Or 9.5 mm Hg VOC Composite Partial Pressure	SMAQMD Rule 456, SJVAPCD Rule 4605, SCAQMD Rule 1124

REVIEWED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

APPROVED BY:  \_\_\_\_\_ DATE: 9/18/18

# **Attachment A**

**Review of BACT Determinations published by EPA**

List of BACT determinations published in EPA's RACT/BACT/LAER Clearinghouse (RBLC) for Automotive Refinishing:

RBLC	Permit Date	Process Code (A)	Process/Equipment	Pollutant	Standard	Control Technology	Case-By-Case Basis
<a href="#">OK-0172</a>	11/19/15	41.001	Chemical Depainting/Aircraft Paint Stripping/Aircraft parts paint stripping	VOC	333.38 tons/year	1. Low VOC vapor pressure cleaning solvents and strippers (<45 mmHg @ 20°C or as specified per NESHAP GG/ 2. Low pressure or hand application 3. Good work practices per Subpart GG	BACT-PSD
<a href="#">OK-0171</a>	11/18/15	41.001	Chemical Depainting/Aircraft Paint Stripping/Aircraft parts paint stripping	VOC	1605.56 tons/year	1. Low VOC vapor pressure cleaning solvents and strippers (<45 mmHg @ 20°C or as specified per NESHAP GG/ 2. Low pressure or hand application 3. Good work practices per Subpart GG	BACT-PSD
<a href="#">IN-0126</a>	9/21/11	41.001	Refinish Operation	VOC	4.5 lb/gal monthly volume-weighted average	Management and work practices	Other Case-by-Case
<a href="#">WA-0344</a>	10/7/08	41.001	Paint Booth/Hangar	VOC	40.8 tons/year	Compliance with 40 CFR Part 63, Subpart GG and Low VOC vapor pressure cleaning solvents and strippers with low pressure applicators or manual application for depainting	BACT-PSD
<a href="#">WA-0340</a>	7/27/07	41.001	Paint Hangar/Final Exterior Coating	VOC	412 tons any 12 consecutive months		Other Case-by-Case

(A) Process Code 41.003 includes automotive refinishing.

= Selected as the most stringent BACT determination achieved in practice.

# **Attachment B**

**Review of BACT Determinations published by ARB**

List of BACT determinations published in ARB's BACT Clearinghouse for spray booths that were used for miscellaneous metal parts and products:

Capacity	Source	Date	NOx	VOC	CO	PM10
16' x 30' x 17'	<a href="#">SMAQMD</a>	7/25/2005		4,700 lb/year, low VOC coatings		
16'4"W x 12'2"L x 10'8"H	<a href="#">SCAQMD</a>	07/01/1999		15 lb VOC/day, dry filters		

= Selected as the most stringent BACT determination achieved in practice.

# **Attachment C**

**Cost Effectiveness Determination for Carbon  
Adsorption and Thermal Oxidizers**

# COST EFFECTIVENESS ANALYSIS FOR CARBON ADSORPTION

This cost effectiveness analysis was performed using EPA's OAQPS Control Cost Manual  
EPA publication no. 450/3-90-006

## FACILITY

**NAME:** Composite Engineering Inc.  
**LOCATION:** 5301 Raley Blvd.  
**PERMIT NO.:** 25528  
**EQUIPMENT DESCRIPTION:** Aerospace Coating

## VOC Parameters

VOC of concern	Toluene
Cost of pure VOC (\$/ton)	100
Molecular weight of VOC (Refer to Control Cost Manual, pg 3-63)	92.13
Emission rate (lbs/hr - inlet)	7.83
Inlet concentration (ppm)	70
k factor (Refer to Control Cost Manual, pg 4-11)	0.551
m factor (Refer to Control Cost Manual, pg 4-11)	0.11
Partial pressure (psi)	0.00103589

## Gas Parameters

Total gas flow rate (acfm - inlet)	8,000
Total gas pressure (psi - inlet)	14.7

## Equipment Parameters

Removal efficiency (%)	90.0%
Adsorption time (hours)	8
Desorption time (hours)	8
Number of adsorbing beds	1
Number of Desorbing beds	1
Equipment life (years)	10

## Operating Parameters

Hours per day	8
Days per week	5
Weeks per year	52

## Carbon Requirements

Controlled VOC Emissions with max operation (tons/year)	7.3
VOC Emissions BACT add on limit (lbs/year)	4785
Controlled VOC Emissions BACT add on limit (tons/year)	2.2
Carbon working capacity (lb VOC/lb carbon)	0.25
Amount of carbon needed (lbs)	17,226
Carbon cost	\$25,839



**Direct Costs:**

Purchased Equipment Cost	
Adsorber and auxiliary equipment	\$7,800.00
Instrumentation	\$780.00
Sales taxes	\$663.00
Freight	\$390.00
<b>Purchased Equipment Cost</b>	<b>\$9,633.00</b>

Direct installation costs	Canister carbon adsorption doesn't require site prep and building costs	
Foundations & supports		\$ -
Handling & erection		\$ -
Electrical		\$ -
Piping		\$ -
Insulation		\$ -
Painting		\$ -
<b>Direct installation costs</b>		<b>\$ -</b>

**Indirect Costs:**

Indirect Costs (installation)	
Engineering	\$ -
Construction and field expenses	\$ -
Contractor fees	\$ -
Start-up	\$ 192.66
Performance test	\$ 96.33
Contingencies	\$ 288.99
<b>Total Indirect Costs</b>	<b>\$ 577.98</b>

**Total Capital Investment** \$10,210.98

Interest Rate	0.04
Equipment Life (years)	10
Capital Recovery Factor (CRF)	0.1233
<b>Capital recovery cost</b>	<b>\$1,258.92</b>

**Direct Annual  
Costs**

Bureau of Labor Statistics.  
Occupation Code: 51-9122  
(Painters, Transportation  
Equipment)

Labor wage (\$/hr)	20.27
operator hour (hrs/shift)	0.5
shifts per day (shift/day)	1
days of work per year (days/year)	260

Operator labor	
Operator	\$2,635.10
Supervisor	\$0.00
Material	\$2,635.10
Replacement labor	\$0.00

Utilities	
Electrical Cost	
kW/hp	0.746
hp	10
hours/year	2080
kWh price	0.1124
Electrical	\$1,744.09
<b>Total Direct Annual Costs (without carbon costs)</b>	<b>\$7,014.29</b>

**Indirect Annual Costs**

Overhead		\$3,162.12
Administrative Charges	\$	204.22
Property Tax	\$	102.11
Insurance	\$	102.11
<b>Total Indirect Annual Costs (without Capital Recovery)</b>		<b>\$3,570.56</b>

Ton VOC controlled	2.15
Carbon needed	17,226
<b>Cost of Carbon per year</b>	<b>\$25,839.00</b>

**Total Annual  
Costs**

**Cost of VOC Removal**

\$37,682.77
\$17,500.42

Determination of Maximum Annual VOC Limit Not Requiring Add-on Bact

Annual Direct Operating Cost (without carbon costs)	\$7,014.29
Annual Indirect Operating Cost	\$4,829.48

Carbon working capacity (lb carbon/lb VOC)	0.25
<b>Annual lb VOC PTE</b>	4785
Annual tons Controlled VOC	2.2
Control Efficiency	0.900
Amount of Carbon Needed	17226
Cost of Carbon	\$25,839.00
Total Annual Cost	\$37,682.77
<b>Cost per ton VOC Controlled</b>	<b>\$17,500.42</b>

# **COST EFFECTIVENESS ANALYSIS FOR THERMAL INCINERATION**

---

This cost effectiveness analysis was performed using EPA's OAQPS Control Cost Manual  
EPA publication no. 450/3-90-006

**FACILITY NAME:** Composite Engineering Inc.  
**LOCATION:** 5301 Raley Blvd.  
**PERMIT NO.:** 25528  
**EQUIPMENT DESCRIPTION:** Aerospace Coating

## **VOC Parameters**

VOC of concern	Toluene
Molecular weight of VOC (see Control Cost Manual, p 3-63)	92.13
Heat of combustion (Btu/lb - see Control Cost Manual, p 3-63)	17,601
Heating value of VOC (Btu/scf)	4,074
Emission rate (lbs/hr - inlet)	7.827818517
Inlet concentration (ppm)	68

## **Gas Parameters**

Total gas flow rate (scfm - inlet)	8000
Total gas pressure (psi - inlet)	14.7
Inlet gas temperature (deg F)	71

## **Equipment Parameters**

Level of energy recovery (0%, 35%, 50% or 70%)	70%
Control efficiency (%)	90.0%
Equipment life (years)	10

## **Operating Parameters**

Hours per day	8
Days per week	5
Weeks per year	52
Shifts per day	2

## **Incinerator Parameters**

Volumetric heat of combustion of effluent (Btu/scf)	0.28
Heat of combustion per pound of effluent (Btu/lb)	3.75
Temperature Required for incineration (deg F)	1,500.00
Gas temperature at exit of pre-heater (deg F)	1,071.30
Effluent gas temperature (deg F)	499.7

## **Electricity Usage**

Price of electricity (\$/kWh)	\$0.1124
System fan (kWh/yr)	61,651.20
Total Power Used (kWh/yr)	61,651.20

**Gas Usage**

Price of gas (\$/1000 cu.ft.)	\$6.41
Auxiliary fuel required (scfm)	85.64

**CAPITAL COST**

## Direct Costs:

Incinerator	\$110,000
Auxiliary equipment (if not included above)	\$0
Equipment Cost (A)	<b>\$110,000</b>
Instrumentation (0.1A if not included above)	\$11,000
CA Sales taxes (0.085)	\$9,350
Freight (0.05A)	\$5,500
Total Equipment Cost (B)	<b>\$135,850</b>

## Direct Installation Costs:

Foundation & Supports (0.08B)	\$10,868
Handling & erection (0.14B)	\$19,019
Electrical (0.04B)	\$5,434
Piping (0.02B)	\$2,717
Insulation for duct work (0.01B)	\$1,359
Painting (0.01B)	\$1,359
Direct Installation Cost	<b>\$40,755</b>

Site preparation	\$0
Facilities & buildings	\$0

<b>Total Direct Costs</b>	<b>\$176,605</b>
---------------------------	------------------

## Indirect Costs (installation)

Engineering (0.10B)	\$13,585
Construction & field expenses (0.05B)	\$6,793
Contractor fees (0.10B)	\$13,585
Start-up (0.02B)	\$2,717
Performance test (0.01B)	\$1,359
Contingencies (0.03B)	\$4,076

<b>Total Indirect Costs</b>	<b>\$42,114</b>
-----------------------------	-----------------

<b>TOTAL CAPITAL INVESTMENT</b>	<b>\$218,719</b>
---------------------------------	------------------

**ANNUAL COST**

## Direct Annual Costs

Operating Cost		
	Operator (@ \$20.27/hr & .5 hr per shift)	\$5,270.20
	Supervisor (15% of operator)	\$790.53
	Operating materials	\$0.00
Maintenance		
	Labor (@18.50/hr & .5 hr per shift)	\$4,810.00
	Material (same as labor)	\$4,810.00
Utilities		
	Price of electricity (\$/kWh)	\$0.11
	Price of gas (\$/1000 cu.ft.)	\$6.41
	Electricity (\$/yr)	\$6,929.59
	Natural Gas (\$/yr)	\$68,508.92
	<b>Total Direct Costs</b>	<b>\$91,119.25</b>

Indirect Annual Costs

Overhead	\$9,408.44
Administrative charges	\$4,374.37
Property taxes	\$2,187.19
Insurance	\$2,187.19
Interest rate (%)	4%
Equipment life (years)	10
CRF	0.0736
Capital recovery	\$16,097.68
<b>Capital Recovery Inflation Adjustment</b>	<b>\$18,943.24</b>
<b>Total Indirect Costs</b>	<b>\$37,100.42</b>

<b>TOTAL ANNUAL COST</b>	<b>\$128,219.67</b>
--------------------------	---------------------

Annual Cost (\$/yr)	\$128,219.67
Annual Emissions Reductions (tons/yr)	7.33
Annual Emissions Reductions (lbs/yr)	14,653.68
(annual emissions based on BACT determination limit for add-on controls)	

<b>COST PER TON OF VOCs REDUCED (\$/ton)</b>	<b>\$17,500.00</b>
--	--------------------

# **Attachment D**

## **BACT Determinations from Air Districts**



Technology Transfer Network  
Clean Air Technology Center - RACT/BACT/LAER Clearinghouse

## Pollutant Information

Click on the **Process Information** button to see more information about the process associated with this pollutant.  
Or click on the **Process List** button to return to the list of processes.

[RBLG Home](#)
[New Search](#)
[Search Results](#)
[Facility Information](#)
[Process List](#)
[Process Information](#)
[Pollutant Information](#)
[Help](#)
**FINAL**
**RBLG ID:** WA-0344

**Corporate/Company:** BOEING COMMERCIAL AIRPLANE GROUP

**Facility Name:** RENTON

**Process:** PAINT BOOTH/HANGAR

**Pollutant:** Volatile Organic Compounds (VOC)

**CAS Number:** VOC

**Pollutant Group(s):** Volatile Organic Compounds (VOC),

**Substance Registry System:** Volatile Organic Compounds (VOC)
**Pollution Prevention/Add-on Control Equipment/Both/No Controls Feasible:** P

**P2/Add-on Description:** COMPLIANCE WITH 40 CFR PART 63, SUBPART GG AND LOW VOC VAPOR PRESSURE CLEANING SOLVENTS AND STRIPPERS WITH LOW PRESSURE APPLICATORS OR MANUAL APPLICATION FOR DEPAINTING.

**Test Method:**

Unspecified

[EPA/OAR Methods](#)
[All Other Methods](#)
**Percent Efficiency:**

0

**Compliance Verified:**

Unknown

**EMISSION LIMITS:**
**Case-by-Case Basis:**

BACT-PSD

**Other Applicable Requirements:**
**Other Factors Influence Decision:**

Unknown

**Emission Limit 1:**

40.8000 T/YR 12 MONTH ROLLING AVERAGE

**Emission Limit 2:**

0

**Standard Emission Limit:**

0

**COST DATA:**
**Cost Verified?**

No

**Dollar Year Used in Cost Estimates:**
**Cost Effectiveness:**

0 \$/ton

**Incremental Cost Effectiveness:**

0 \$/ton

**Pollutant Notes:**



**BAY AREA AIR QUALITY MANAGEMENT DISTRICT  
Best Available Control Technology (BACT) Guideline**

**Source Category**

<b>Source:</b> <i>Spray Booth - Coating of Aerospace Components</i>	<b>Revision:</b>	<i>1</i>
	<b>Document #:</b>	<i>161.1.2</i>
<b>Class:</b> <i>≥25 lb/day emissions (Uncontrolled)</i>	<b>Date:</b>	<i>09/06/91</i>

**Determination**

<b>POLLUTANT</b>	<b>BACT</b> 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice	<b>TYPICAL TECHNOLOGY</b>
<b>POC</b>	1. Coating w/ VOC content less than and transfer efficiency greater than that required by Reg. 8, Rule 29, and emissions controlled to overall capture/destruction efficiency $\geq 90\%^a$ 2. Coating w/ VOC Content and transfer efficiency complying w/ Reg. 8, Rule 29, and emissions controlled to overall capture/destruction efficiency $\geq 90\%$	1. Collection system Vented to Carbon Adsorber or Afterburner <sup>a</sup>  2. Collection system Vented to Carbon Adsorber or Afterburner <sup>a</sup>
<b>NO<sub>x</sub></b>	1. n/a 2. n/a	1. n/a 2. n/a
<b>SO<sub>2</sub></b>	1. n/a 2. n/a	1. n/a 2. n/a
<b>CO</b>	1. n/a 2. n/a	1. n/a 2. n/a
<b>PM<sub>10</sub></b>	1. n/d 2. n/s	1. n/d 2. Dry Filters or Waterwash, Properly Maintained <sup>a</sup>
<b>NPOC</b>	1. Coating w/ VOC content less than and transfer efficiency greater than that required by Reg. 8, Rule 29, and emissions controlled to overall capture/destruction efficiency $\geq 90\%^a$ 2. Coating w/ VOC solvent content and transfer efficiency complying w/ Reg. 8, Rule 29, and emissions controlled to overall capture/destruction efficiency $\geq 90\%^a$	1. Collection system Vented to Carbon Adsorber or Afterburner <sup>a</sup>  2. Collection system Vented to Carbon Adsorber or Afterburner <sup>a</sup>

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**  
**Best Available Control Technology (BACT) Guideline**

**Source Category**

<b>Source:</b>	<i>Spray Booth - Coating of Aerospace Components</i>	<b>Revision:</b>	<b>1</b>
		<b>Document #:</b>	<b>161.1.1</b>
<b>Class:</b>	<i>&lt;25 lb/day Emissions (Uncontrolled)</i>	<b>Date:</b>	<b>09/06/91</b>

**Determination**

<b>POLLUTANT</b>	<b>BACT</b> 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice	<b>TYPICAL TECHNOLOGY</b>
<b>POC</b>	1. Coating w/ VOC content and transfer efficiency complying w/ Reg. 8, Rule 29, and emissions controlled to overall capture/ destruction efficiency $\geq 90\%$ <sup>a,c</sup> 2. Compliance w/ Reg. 8, Rule 29 <sup>a</sup>	1. Collection System Vented to Carbon Adsorber or Afterburner <sup>a,c</sup>  2. Low VOC Coating <sup>a</sup>
<b>NOx</b>	1. n/a 2. n/a	1. n/a 2. n/a
<b>SO<sub>2</sub></b>	1. n/a 2. n/a	1. n/a 2. n/a
<b>CO</b>	1. n/a 2. n/a	1. n/a 2. n/a
<b>PM<sub>10</sub></b>	1. n/d 2. n/s	1. n/d 2. Dry Filters or Waterwash, Properly Maintained <sup>a,b</sup>
<b>NPOC</b>	1. Coating w/ solvent content and transfer efficiency complying w/ Reg. 8, Rule 29, and emissions controlled to overall capture/ destruction efficiency $\geq 90\%$ <sup>a,c</sup> 2. Compliance w /Reg 8, Rule 29 <sup>a</sup>	1. Collection system Vented to Carbon Adsorber <sup>a,c</sup>  2. Low Solvent Coatings <sup>a</sup>

**References**

*a. BAAQMD*  
*c. Generally considered to be cost-effective if uncontrolled emissions  $\geq 25$  lb/day*

## Section I: AQMD BACT Determinations

Application No.: 413559

Equipment Category – Dryer or Oven

<b>1. GENERAL INFORMATION</b>		DATE: 9/15/2004
A. MANUFACTURER: Spray Systems		
B. TYPE: Direct-Fired Makeup Air Heater for Automotive Type Side-Draft Spray Booth		C. MODEL: MD1000 (Spray Booth)
D. STYLE: Manual application of coatings by workers within spray booth		
E. APPLICABLE AQMD RULES: 401, 402		
F. COST: \$ (NA)		SOURCE OF COST DATA:
G. OPERATING SCHEDULE: 10 HRS/DAY		4 DAYS/WK 50 WKS/YR
<b>2. EQUIPMENT INFORMATION</b>		APP. NO.: 413559
A. FUNCTION: Heats spray booth ventilation air to control booth temperature. This spray booth is used for application of coatings and for drying/curing coated parts used in manufacture of aerial refueling system components. The booth is in use approximately half time on a batch basis with batch times running typically one to three hours. Booth temperature varies from approximately 70F to a maximum of 130F, depending on the operation taking place. The facility operates 4 days/week, two 10-hr shifts per day.		
B. MAXIMUM HEAT INPUT: 1.9 MMBtu/hr		C. MAXIMUM THROUGHPUT: Two 10 hp exhaust fans
D. BURNER INFORMATION: NO.: 1 TYPE: Low-NOx		
E. PRIMARY FUEL: Natural Gas		F. OTHER FUEL: None
G. OPERATING CONDITIONS: Firing rate varies with air throughput. Maximum booth temperature is 130F.		
<b>3. COMPANY INFORMATION</b>		APP. NO.: 413559
A. NAME: Sargent Fletcher		B. SIC CODE: 3728
C. ADDRESS: 9400 East Flair Drive CITY: El Monte STATE: CA ZIP: 91731		
D. CONTACT PERSON: Gilbert Tanon		E. PHONE NO.: 626-402-2205
<b>4. PERMIT INFORMATION</b>		APP. NO.: 413559
A. AGENCY: SCAQMD		B. APPLICATION TYPE: new construction
C. AGENCY CONTACT PERSON: Emmanuel Quizon		D. PHONE NO.: 909-396-2523
E. PERMIT TO CONSTRUCT/OPERATE INFORMATION: <input type="checkbox"/> CHECK IF NO P/C		P/C NO.: 413559 ISSUANCE DATE: 5/27/2003 P/O NO.: F67626 ISSUANCE DATE: 4/6/2004
F. START-UP DATE: October 2003		

**5. EMISSION INFORMATION**

APP. NO.: 413559

**A. PERMIT**

A1. PERMIT LIMIT: Spray booth temperature not to exceed 130F. NOx not to exceed 30 ppmvd@3%O2 (30-Minute average).

A2. BACT/LAER DETERMINATION: NOx: 30 ppmvd@3%O2

A3. BASIS OF THE BACT/LAER DETERMINATION:

**B. CONTROL TECHNOLOGY**

B1. MANUFACTURER/SUPPLIER: Eclipse Combustion

B2. TYPE: Nozzle-Mix Low-NOx burner

B3. DESCRIPTION: Winnox WX 200

B4. CONTROL EQUIPMENT PERMIT APPLICATION DATA: P/C NO.: ISSUANCE DATE:  
P/O NO.: ISSUANCE DATE:B5. WASTE AIR FLOW TO CONTROL EQUIPMENT: FLOW RATE:  
ACTUAL CONTAMINANT LOADING: BLOWER HP:

B6. WARRANTY: Manufacturer guaranteed 30 ppmvd@3%O2 NOx and 5 ppmvd CO.

B7. PRIMARY POLLUTANTS: NOx, CO, VOC, PM10

B8. SECONDARY POLLUTANTS:

B9. SPACE REQUIREMENT:

B10. LIMITATIONS: B11. UNUSED

B12. OPERATING HISTORY: The makeup air heater has been in regular use since October 2003.

B13. UNUSED B14. UNUSED

**C. CONTROL EQUIPMENT COSTS**C1. CAPITAL COST:  CHECK IF INSTALLATION COST IS INCLUDED IN EQUIPMENT COST

EQUIPMENT: \$ INSTALLATION: \$ (NA) SOURCE OF COST DATA:

C2. ANNUAL OPERATING COST: \$ (NA) SOURCE OF COST DATA:

**D. DEMONSTRATION OF COMPLIANCE**

D1. STAFF PERFORMING FIELD EVALUATION:

ENGINEER'S NAME: INSPECTOR'S NAME: DATE:

D2. COMPLIANCE DEMONSTRATION:

D3. VARIANCE: NO. OF VARIANCES: None DATES:  
CAUSES:D4. VIOLATION: NO. OF VIOLATIONS: None DATES:  
CAUSES:

D5. MAINTENANCE REQUIREMENTS: D6. UNUSED



**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT  
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities\***

10-20-2000 Rev. 0

Equipment or Process:      Dryer or Oven.

Subcategory/ Rating/Size	Criteria Pollutants					
	VOC	NOx	SOx	CO	PM <sub>10</sub>	Inorganic
Carpet Oven		80 ppmvd, corrected to 3% O <sub>2</sub> (10-20-2000)	Natural Gas (1990)		Natural Gas (1990)	
Rotary, Spray and Flash Dryers <sup>1)</sup>		Natural Gas with Low NOx Burner (10-20-2000)	Natural Gas (1990)		Natural Gas with Baghouse (1990)	
Tray, Agitated Pan, and Rotary Vacuum Dryers		Natural Gas with Low NOx Burner (10-20-2000)	Natural Gas (1990)		Natural Gas (1990)	
Tenter Frame Fabric Dryer		60 ppmvd Corrected to 3% O <sub>2</sub> (10-20-2000)	Natural Gas (10-20-2000)		Natural Gas (10-20-2000)	
Other Dryers and Ovens – Direct and Indirect Fired		30 ppmvd corrected to 3% O <sub>2</sub> (04-10-98)	Natural Gas (10-20-2000)		Natural Gas (10-20-2000)	

1. Dryers for foodstuff, pharmaceuticals, aggregate & chemicals.

\* Means those facilities that are not major polluting facilities as defined by Rule 1302 - Definitions  
BACT Guidelines - Part D

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**  
**Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities\***

10-20-2000 Rev. 0

Equipment or Process: Spray Booth

Subcategory/ Rating/Size	Criteria Pollutants					Inorganic
	VOC	NOx	SOx	CO	PM <sub>10</sub>	
Automotive, Down-Draft Type, < 660 Lbs/Month of VOC Emissions	Compliance with Applicable SCAQMD Regulation XI Rules (10-20-2000)				Dry Filters or Waterwash (1990)	
Other Types, < 1170 Lbs/Month of VOC Emissions	Compliance with Applicable SCAQMD Regulation XI Rules (10-20-2000)				Same as Above (1990)	
Automotive, Down-Draft Type, ≥ 22 Lbs/Day of VOC Emissions	- Compliance with Applicable SCAQMD Regulation XI Rules, and VOC Control System with ≥ 90% Collection Efficiency and ≥ 95% Destruction Efficiency, or - Use of Super Compliant Materials (< 5% VOC by weight); or - Use of Low-VOC Materials Resulting in an Equivalent Emission Reduction (10-20-2000)				Same as Above (1990)	
Other Types, ≥ 1170 Lbs/Month of VOC Emissions	Same as Above (10-20-2000)				Same as Above (1990)	

Note: The sum of all VOC emissions from all spray booths within the same subcategory applied for in the previous two years at the same facility are considered toward the emission threshold.

\* Means those facilities that are not major polluting facilities as defined by Rule 1302 - Definitions  
 BACT Guidelines - Part D

Spray Booth

San Joaquin Valley  
Unified Air Pollution Control District

**Best Available Control Technology (BACT) Guideline 4.2.6\***

Last Update: 01/16/1997

**Aerospace Parts Coating Operation**

Pollutant	Achieved in Practice or contained in the SIP	Technologically Feasible	Alternate Basic Equipment
VOC	The use of an enclosed gun cleaner and coatings with a VOC content (less water and exempt compounds) lower than the following: Primers < 6.4 lb VOC/gal Topcoats < 5.2 lb VOC/gal	1. Thermal Oxidation 2. Catalytic Oxidation 3. Carbon Adsorption	
PM10	Enclosed paint booth with dry filters and use of HVLP gun		

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in a state implementation plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is required for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.

**\*This is a Summary Page for this Class of Source**



San Joaquin Valley  
Unified Air Pollution Control District

**Best Available Control Technology (BACT) Guideline 4.2.7\***

Last Update: 11/12/1998

**Aerospace and Metal Parts Coating Operating - Solid Film  
Lubricant for computer, medical specialty, and aerospace metal parts and  
products**

<b>Pollutant</b>	<b>Achieved in Practice or contained in the SIP</b>	<b>Technologically Feasible</b>	<b>Alternate Basic Equipment</b>
VOC	Solvent-based solid film lubricant coating with a VOC content of 6.44 lb/gal (less water and exempt compounds), or lower.	1) VOC capture and thermal incineration system. 2) VOC capture and catalytic incineration system. 3) VOC capture and carbon adsorption system.	
PM10	Enclosed paint spray booth with dry filters and use of HVLP spray gun or equivalent application method.		

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in a state implementation plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is required for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.

**\*This is a Summary Page for this Class of Source**

# **Attachment E**

## **Public Notice Comments and Responses**

### *Intra-Office Memo*

**To** : FILE (BACT Determination #182 & #183)  
**From** : Jeffrey Quok  
**Date** : 9/18/2018  
**Subject** : BACT Determination #182 & #183

---

On 8/31/18 an email was received from Marci Stepman of Verdant Environmental with comments about BACT Determinations #182 & #183. The comments and responses are below.

- 1.) Our review of Attachment C Cost Effectiveness Determination for Carbon Adsorption indicates that the Sacramento Metropolitan AQMD determined that the cost of carbon is \$1.50 per pound and concluded that carbon adsorption is cost effective at an emission rate of more than 4,875 pounds per year. We wish to point out that a cost of \$1.50 per pound is significantly less than the 2018 cost estimates we have obtained, which are on the order of \$3.25 per pound.

Verdant requests that the Sacramento Metropolitan AQMD indicate that this analysis is part of a case-by-case BACT determination and should not be taken to imply that carbon adsorption is always cost effective at an emission rate of more than 4,875 pounds per year.

*If a future applicant provides documentation that add-on controls for their project would not be cost effective at 4,875 pounds VOC per year, SMAQMD will evaluate BACT for the project on a case-by-case basis.*