



EMISSIONS ACTIVITY CATEGORY FORM
SURFACE COATING OPERATIONS
 Division of Air Pollution Control

This form is to be completed for each operation in which coatings are applied to parts, substrates, or other materials for functional, decorative, or protective purposes. State/Federal regulations which may apply to surface coating operations are listed in the instructions. Note that there may be other regulations which apply to this emissions unit which are not included in this list.

FOR OHIO EPA USE	
FACILITY ID#	
EU ID#	
Permit#	

1. Maximum Operating Schedule: ___ hours per day ___ hours per year

 If the schedule is less than 24 hours/day or 365 days/year, what limits the schedule to less than maximum? (See instructions for examples)

2. What type of materials(s) are being coated or painted in this operation? Check all that apply

- | | |
|---|-----------------------------------|
| <input type="checkbox"/> Metal | <input type="checkbox"/> Ceramic |
| <input type="checkbox"/> Plastic | <input type="checkbox"/> Paper |
| <input type="checkbox"/> Wood | <input type="checkbox"/> Fabric |
| <input type="checkbox"/> Rubber | <input type="checkbox"/> Concrete |
| <input type="checkbox"/> Other (describe) | |

3. Does this operation involve coating any of the following? Check all that apply

- | | |
|--|--|
| <input type="checkbox"/> Automobile/Trucks (at assembly plants) | <input type="checkbox"/> Metal Cans |
| <input type="checkbox"/> Used Automobiles (body/collision repair shops) | <input type="checkbox"/> Metal Coils |
| <input type="checkbox"/> Customized motor vehicles | <input type="checkbox"/> Metal Furniture |
| <input type="checkbox"/> Large Appliances | <input type="checkbox"/> Marine vessels (exterior) |
| <input type="checkbox"/> Aluminum or copper wire for electromagnetic coils | <input type="checkbox"/> Airplanes (exterior) |
| <input type="checkbox"/> Paper Web (roll) | <input type="checkbox"/> Vinyl |
| <input type="checkbox"/> Fabric Web (roll) | <input type="checkbox"/> Wood Furniture |
| <input type="checkbox"/> Flat Wood Paneling | <input type="checkbox"/> Miscellaneous Metal Parts |
| <input type="checkbox"/> Aerospace vehicles or components | <input type="checkbox"/> Miscellaneous Plastic Parts |

4. Does this operation involve the application of miscellaneous industrial adhesives and sealants? Yes No

5. Oven Information
 Is any type of curing or flash-off oven associated with this coating operation?
 Yes, Complete oven information below
 No, coatings are air-dried

Oven #1

- Electric
 - Infrared (IR)
 - Ultraviolet (UV)
 - Gas-Fired, total burner rating (MMBTU/hr) _____
- Oven Operating Temperature: _____degrees F

Oven #2

- Electric
 - Infrared (IR)
 - Ultraviolet (UV)
 - Gas-Fired, total burner rating (MMBTU/hr) _____
- Oven Operating Temperature: _____degrees F

Oven #3

- Electric
 - Infrared (IR)
 - Ultraviolet (UV)
 - Gas-Fired, total burner rating (MMBTU/hr) _____
- Oven Operating Temperature: _____degrees F

Are any of the coatings employed baked, heat-cured, or heat-polymerized, in the presence of oxygen?

- Yes No

If yes, list all coatings employed that are baked, heat-cured, or heat polymerized:

For fuel fired ovens only: Do coating or solvent vapors come in direct contact with flame?

- Yes No

If **YES**, list applicable oven identification:

Does the oven produce heat by: direct heat transfer, indirect heat transfer, or both?

6. How are parts cleaned prior to coating application?

- | | |
|---|--|
| <input type="checkbox"/> Not Done | <input type="checkbox"/> Solvent Bath Immersion |
| <input type="checkbox"/> Water-Based Parts Washer | <input type="checkbox"/> Solvent Vapor Immersion |
| <input type="checkbox"/> Manual Wipe with Solvent | <input type="checkbox"/> Bake Oven |

If a solvent is used for cleaning the parts, list the type and annual usage (in gallons) below.

Name of solvent: _____ Annual usage: _____ gal Solvent density: _____lb/gal

Provide an Environmental Data Sheet (or equivalent document) for each solvent used.

7. Does the coating operation employ a booth or enclosure for coating application? Yes No

If **NO**, please explain: _____

If **YES**, complete the table below: (see instructions)

Booth Manufacturer	Make or Model Number	Serial Number	Manufacture Date	Exhaust Particulate Control Equipment
			/ /	
			/ /	
			/ /	

8. Check the method(s) of coating application and provide the accompanying information:

Spray: Air Gun Airless Electrostatic High Volume Low Pressure (HVLP)

Other, describe: _____

Electrodeposition: Tank capacity (gallons): _____ Tank Dimensions (feet): length ___ height ___ width ___

Dip Tank: Capacity (gallons): _____ Dimensions (feet): length ___ height ___ width ___

Roll Coating Brush Bead-Type Extrusion Powder Coating

Other, describe: _____

9. How are parts transferred in and out of coating operation? Manually Conveyor

Other, describe: _____

10. **Coating Type and Usage Data:** Complete Table 1 below identifying the types and usages of all coatings, thinners, reducers, etc. used in this coating operation. **SEE INSTRUCTIONS FOR COMPLETING THIS SECTION.**

Name of coating	Coating Type ^a	Is coating thinned (reduced) prior to application? (yes/no)	Name of thinner	Max. amount of reducer added to one gallon of coating (specify units)	Maximum coating usage rates: ^b		
					gal/hr.	gal/day	gal/yr.
		<input type="checkbox"/> Yes <input type="checkbox"/> No					
		<input type="checkbox"/> Yes <input type="checkbox"/> No					
		<input type="checkbox"/> Yes <input type="checkbox"/> No					
		<input type="checkbox"/> Yes <input type="checkbox"/> No					
		<input type="checkbox"/> Yes <input type="checkbox"/> No					
		<input type="checkbox"/> Yes <input type="checkbox"/> No					
		<input type="checkbox"/> Yes <input type="checkbox"/> No					
		<input type="checkbox"/> Yes <input type="checkbox"/> No					
		<input type="checkbox"/> Yes <input type="checkbox"/> No					
		<input type="checkbox"/> Yes <input type="checkbox"/> No					

Notes:

^a Examples: primer, top coat, clear coat, surfacer, varnish, catalyst, sealer, adhesive, etc.

^b Usage equal beginning inventory, minus final inventory, plus purchases, minus credits for documented disposal or returns to suppliers.

Provide an Environmental Data Sheet (or equivalent document) for each solvent used.

11. Complete the following table for all cleanup materials and solvents used in the coating operation to clean paint guns, booth walls, etc. Do not include the amounts of solvents used for parts cleaning (question 6) or for thinning or reducing coatings (question 10, table 1).

<u>Name of cleanup material/solvent</u>	<u>Solvent density (lb/gal)</u>	<u>Maximum Monthly Use (gallons)</u>	<u>Maximum Annual Use (gallons)</u>

Provide an Environmental Data Sheet (or equivalent document) for each cleanup material/solvent used.

12. If any used solvents from this operation are reclaimed on-site using a solvent reclaiming unit (still), provide the approximate number of gallons reclaimed annually. Amount reclaimed = gal/yr.

13. If any used solvents from this operation are sent off-site for disposal, provide the following information:

Minimum amount of solvent waste disposed of throughout the year: gallons (use waste disposal records and estimate the amount of cleanup solvent contributing to the volume of the waste)

Cleanup solvent emissions should be accounted for. Note that emission calculations for solvents used for cleanup do not include solvents that are disposed or reclaimed:

Ex. Gallons solvent used – gallons solvent disposed = gallons solvent towards air emissions

Gallons solvent used – gallons solvent reclaimed = gallons solvent towards air emissions



**INSTRUCTIONS FOR COMPLETION
EMISSIONS ACTIVITY CATEGORY FORM
SURFACE COATING OPERATIONS**
Division of Air Pollution Control

GENERAL INSTRUCTIONS:

Provide complete responses to all applicable questions. If an item does not apply to the emissions unit, write in "Not Applicable" or "NA." If the answer is not known, write in "Not Known" or "NK." Please note that it is important to provide as much information as possible to determine state and federal rule applicability and compliance requirements. If you need assistance in understanding a question after reading the instructions below, contact your Ohio EPA District Office or Local Air Agency for assistance. Submittal of an incomplete application will delay application review and processing. In addition, the application may be returned as incomplete if all applicable questions are not answered appropriately.

APPLICABLE REGULATIONS:

The following State and Federal Regulations may be applicable to surface coating operations. Note that there may be other regulations which apply to this emissions unit which are not included in this list.

Federal: 40 CFR 60, (NSPS) Subpart A (General Provisions), Subpart EE (metal furniture), Subpart MM (automobile/light duty truck assembly plants), Subpart RR (pressure sensitive tape and labels), Subpart SS (large appliances), Subpart TT (metal coil), Subpart WW (beverage cans), Subpart SSS (magnetic tape), Subpart TTT (plastic parts for business machines), Subpart VVV (polymeric coating of supporting substrates)

40 CFR 63, (NESHAP/MACT) Subpart A (General Provisions), Subpart EE (magnetic tape), Subpart GG (aerospace manufacturing and rework), Subpart II (shipbuilding and repair), Subpart JJ (wood furniture), Subpart IIII (auto and light duty trucks), Subpart JJJ (paper), Subpart KKKK (metal cans), Subpart MMMM (miscellaneous metal parts), Subpart NNNN (large appliances), Subpart OOOO (fabric), Subpart PPPP (plastic parts), Subpart RRRR (metal furniture), Subpart SSSS (metal coil), and Subpart HHHHHH (miscellaneous surfaces - area sources)

State: OAC rule 3745-31-02 (Permit-to-Install and Operate)
OAC rule 3745-17-11(C) (Particulate emissions from surface coating processes)
OAC rule 3745-21-07(M) - Operations using liquid organic materials
OAC rule 3745-21-09 - Control of emissions of volatile organic compounds from stationary sources
OAC rule 3745-21-10 - Compliance test methods and procedures
OAC rule 3745-21-15 - Wood furniture manufacturing
OAC rule 3745-21-18 - Motor vehicle refinishing
OAC rule 3745-21-19 - Aerospace manufacturing
OAC rule 3745-21-20 - Shipbuilding and repair (marine coatings)
OAC rule 3745-21-24 - Flat wood paneling coatings
OAC rule 3745-21-26 - Miscellaneous metal and plastic parts
OAC rule 3745-21-28 - Miscellaneous industrial adhesives and sealants
OAC rule 3745-21-29 - Automobile and light truck assembly coating operations

If you would like a copy of these regulations, contact your Ohio EPA District Office or Local Air Agency. State regulations may also be viewed and downloaded from the Ohio EPA website <http://epa.ohio.gov/dapc/DAPCrules.aspx#112742676-effective-rules>.

Federal regulations may be viewed and downloaded at https://www.ecfr.gov/cgi-bin/text-idx?SID=ad3bdc0bb58c0c98d0b72a25f717b855&mc=true&tpl=/ecfrbrowse/Title40/40tab_02.tpl.

CALCULATING EMISSIONS:

Manufacturers of some types of emissions units and most types of control equipment develop emissions estimates or have stack test data which you can request. Stack testing of the emissions may also be completed by the applicant. Emissions test data may either be for the specific unit or a similar unit located at the facility or elsewhere. You may develop your own emissions factors by mass balance or other knowledge of your process if you can quantify inputs and outputs accurately. You may be able to do this on a small scale or over a short period of time if it is not practical during regular production. If you have control equipment you may be able to quantify the amount of pollutants collected over a known time period or production amount. Any emissions factor calculation should include a reference to the origin of the emissions factor or control efficiency.

Ohio EPA Engineering Guides #45 and #48 may be consulted when determining emissions from surface coating operations. Engineering Guides may be found online at <http://epa.ohio.gov/dapc/engineer/eguides.aspx>.

Additionally, a Fact Sheet "Calculating Emissions from Painting and Coating Operations" and an emission calculation spreadsheet can be found online at <http://www.epa.ohio.gov/dapc/genpermit/miscmetal.aspx>.

Basic fundamentals for determining surface coating composition:

$$\%VOC = 100 - \% \text{ water} - \% \text{ solids} - \% \text{ exempt solvents}^*$$

$$\text{Volatile content} = \% \text{ VOC} + \% \text{ water} + \% \text{ exempt solvents}^*$$

**see OAC 3745-21-01(B) for a list of compounds not considered as VOC.*

$$\text{VOC content (lbs/gal.)} = \% \text{ wt. VOC} \times \text{coating density (lbs/gal)}$$

$$\text{VOC content (lbs/gal.)} = \% \text{ vol. VOC} \times \text{density of solvent blend (lbs/gal)}$$

$$\text{VOC content, minus water} = \frac{\% \text{ wt. VOC} \times \text{coating density (lbs/gal)}}{1 - \% \text{ volume water}}$$

$$\text{VOC content, minus water and exempt solvents}^* = \frac{\% \text{ wt. VOC} \times \text{coating density (lbs/gal)}}{1 - \% \text{ volume water} - \% \text{ volume exempt solvents}^*}$$

The following example can be used to calculate the VOC content of a 2-part coating or a coating which is reduced prior to application:

Given: Paint: 3.3 lbs VOC/gal; Reducer: 6.5 lbs VOC/gal
For spraying, 4 gallons of paint are mixed with 1 gallon of reducer.

$$\text{Then: VOC/gal (as applied)} = \frac{(4 \text{ gal.})(3.3 \text{ lbs VOC/gal}) + (1 \text{ gal.})(6.5 \text{ lbs VOC/gal})}{(4 \text{ gal.} + 1 \text{ gal.})} = \frac{3.94 \text{ lbs VOC}}{\text{gal.}}$$

These fundamental equations can be used to determine VOC emissions from surface coating operations which do not have add-on emission control devices:

$$\text{VOC emissions} = \text{VOC content of coating (lbs/gal.)} \times \text{usage (i.e., gal/yr, gal/hr, or gal/day)}$$

$$\text{Total VOC emissions from surface coating operation} = \text{VOC emissions (from coatings)} + \text{VOC emissions (from cleanup)}$$

SPECIFIC INSTRUCTIONS:

1. Provide the maximum number of hours per day and days per year the surface coating operation will operate. The following are examples of why the maximum number of hours per day may be less than 24 or the maximum number of days per year may be less than 365 (this list is not all-inclusive):
 - The facility can only operate during daylight hours.
 - The process can only operate within a certain range of ambient temperatures.
 - The process is limited by another operation (i.e., a bottleneck).
2. Check appropriate composition material of parts being coated. If part is a composite, i.e., plastic and metal, check both plastic and metal boxes.
3. Special regulations apply when coating the products and items listed. For definitions of these products, see OAC rule 3745-21-01.
4. Indicate whether or not the applied coatings are considered to be miscellaneous industrial adhesive and sealants, as defined in OAC rule 3745-21-01. If the answer is yes, review the requirements of OAC rule 3745-21-28 to ensure that the operation complies with the applicable requirements.
5. Indicate the type of oven associated with the coating operation. For natural gas-fired ovens or dryers, enter the combined total of all individual burner ratings which are part of the oven. The burner rating can be found on the burner or in the oven manufacturer's specifications and is often expressed in terms of British Thermal Unit (BTU) per hour. Include the oven operating temperature in degrees Fahrenheit.

List all coatings which require baking or heat-curing. In general, a "baked" coating requires heating to such temperatures, usually above 250°F, so that a chemical reaction takes place and the coating is no longer soluble in the original solvent. A flash-off or drying oven is an oven used only to accelerate evaporation of the solvent from the coating and usually operates at a temperature no greater than 250°F.

For fuel fired ovens only, indicate if solvent laden exhaust from the ovens is recycled back through the burners. Indicate if the ovens use direct heat transfer, indirect heat transfer, or both (i.e., for indirect heat transfer, the products of combustion do not come into contact with process materials, but for direct heat transfer the products of combustion do come into contact with process materials).
6. Check the box which describes how parts are cleaned prior to being coated. If a solvent is used, provide the name of the solvent and the approximate annual usage. Provide with the application an Environmental Data Sheet for each solvent used.
7. Identify the name of the manufacturer of the booth(s) or enclosure(s), the serial number, and make or model number. If the booth(s) or enclosure(s) were fabricated by the owner, indicate owner name as the manufacturer. Indicate the manufacture date for each booth or enclosure.

For the exhaust equipment column, enter "water wash" if overspray is removed by a water spray or curtain, "exhaust filters" if the exhaust from the booth must go through filters (e.g., paper, fiberglass, or other media), "baffles" if the exhaust from the booth must go around a series of plates designed to reduce the exit velocity so that the overspray will drop out, "other" if some other type of particulate control is used, and "none" if there is no means of overspray emission control.
8. Enter the type of application equipment used by this coating operation. For the method(s) selected, complete the additional information requested in the area to the right of the selection. Definitions for many of these terms may be found in OAC rule 3745-21-01.
9. Describe how parts are moved in and out of the coating operation.

10. Provide all data requested concerning coating composition and usage in Table 1. Group coatings according to coating type. If a type of coating, such as top coat, includes multiple colors with similar formulations, only list the coating having the highest volatile organic compound (VOC) content and combine the total maximum anticipated usage of all similar formulations of the same coating and list these values on a single line in Table 1.

Provide an Environmental Data Sheet (or equivalent document) from your coating supplier for each coating and thinner used. These documents usually list all required coating formulation data. Material Safety Data Sheets (MSDS) are usually not designed or intended to meet EPA requirements and may not contain all information required.

Thinning/Reducing information: If a coating is thinned/reduced prior to application, provide the amount and units of thinning/reducing material added on a per gallon basis, i.e., one quart of reducer to one gallon of coating.

Coating usage information: Provide maximum number of gallons of coating applied hourly, daily, and annually based on maximum anticipated usage. For new installations, provide best estimate of maximum anticipated usage. The quantity of coatings disposed, not used, or returned to supplier may be subtracted from annual usage.

11. Provide information on the solvents and other materials used for routine cleaning of spray guns, coating applicators, booth walls, etc. Do not include solvents used for parts cleaning - report this in question 6. Do not include quantities of reducer/thinner used for mixing paint prior to application, report this in question 10. Provide an Environmental Data Sheet for each cleanup material/solvent used.
12. This question is applicable only if waste solvents are reclaimed for reuse in facility operations.
13. Provide all data on solvent waste from the coating operation which is shipped off-site for disposal. Waste shipping manifests and any waste analysis results should be consulted for this information.