



## I. GENERAL GUIDELINES

Each facility should be inspected at an interval outlined in the inspection frequency guidelines. Follow the guidelines in the General Inspection Policy for the following areas, in addition to the procedures listed below:

### A. Inspection Assignments

### B. Complaint Assignments

Common complaints are painting overspray, paint or solvent odors, and sawdust drift if woodworking is performed.

### C. Pre-Inspection Procedures

Use the Paint/Coatings inspection form and appropriate safety equipment needed to conduct the inspection.

## II. PERMIT REQUIREMENTS

### A. Applicability

Wood products coating operations are required to have an Authority to Construct and Permit to Operate unless otherwise exempted by Rule 2020. Shops are permitted on a source specific basis, including spray booths or spray areas.

### B. Exemptions

The provisions of the rule do not apply to:

1. Surface coating operations that use less than one quart of coating per day or less than eight gallons of coating per year are exempt from ATC and PTO requirements (Rule 2020). For any period in which a facility exceeds the limit, the exemption becomes void. The source must keep sufficient records to validate their permit-exempt status. Sources losing their exempt status are required to submit an ATC application for their facility. A Notice of Violation (NOV) will be issued if the inspector discovers that the exemption has been lost.

2. Wood products coating operations that use a total of less than 20 gallons of coating per year in a stationary source are exempt from the provisions of

Rule 4606, except for record keeping, but may still require a permit to operate.

3. Aerosol spray coatings for touch up and repair
4. The application of coatings by template in order to add designs, letters, or numbers to wood products.
5. The application of coatings to wooden musical instruments.
6. Residential noncommercial operations.

C. Violations

An NOV (or NTC as allowed by policy) shall be issued for:

1. Lack of PTO/ATC or modifications without an ATC.
2. Violations of PTO/ATC conditions.
3. Violations of the requirements of Rule 4606.

D. Permit Conditions

Typical permit conditions are; use of a spray booth, record keeping requirements, coating/solvent usage limits, coating application requirements, daily emission limits of VOCs (DEL), and visible emission limits. In order to change a permit condition, a facility must submit a new permit application to the Permit Services Division along with a request for the desired change.

If the permit condition has requirements or standards similar to those in Rule 4606, the inspector will enforce the more stringent standard or requirement. If the permit condition references or essentially quotes the regulation, the NOV will be issued for a violation of both Rule 2070 and Rule 4606.

III. INSPECTION PROCEDURES

A. General

Upon arrival at a facility, contact the person in charge. Identify yourself and give the operator your business card. Advise the operator of the

purpose of the inspection and explain that he will be advised of the results upon completion of the inspection.

The suggested inspection sequence for refinishing facilities is as follows (detailed inspection methods are located later in the policy):

1. Determine if the PTO is on-site, and discuss the permit conditions with the representative. Determine if the spray booth, if required, is in use at the time of inspection; if so, observe the exhaust for visible emissions. If visibles are observed, conduct a VEE. Note the manometer reading on the booth if one is present and required by the PTO. If the booth is not in use, examine the exhaust filters. Dirty filters are an indication of poor housekeeping.
2. Verify that approved coating application methods are used.
3. Determine the method used for spray equipment clean up. If an enclosed unit is utilized, verify that it is operable, and that solvent used is compliant.
4. Determine if the facility has a "Minimizer", or other solvent distilling device. If so, see Appendix A for information on verifying compliant use.
5. Observe the work area to ensure that enclosed gun cleaners, coating cans, solvent and coating waste drums, solvent rag bins, etc., are closed.
6. Review coating records to determine individual product compliance and total VOC usage (if limited by a DEL). If you are unable to determine a product's VOC content from product examination, record review, or manufacturer's product specifications, contact your Supervisor to discuss the suitability of product sampling.
7. Conduct a post inspection meeting with owner/operator.

B. Equipment Identification

Permit Services engineering evaluations generally describe permissible equipment and the associated District rules. Determine whether the equipment on site meets the specifications in the permit. New spray equipment and gun cleaners do not require permit changes.

C. Equipment Application Methods

1. All coatings must be applied using either: brush, dip tanks flow coating, rollers, electrostatic systems, or High-Volume Low-Pressure (HVLP) spray equipment.
2. HVLP-High Volume, Low Pressure Applications.

HVLP guns must have an operating pressure between 0.1 and 10 psi at the nozzle. Because of the diverse configuration of HVLP models, it may not be visually possible to verify if a spray gun is an approved HVLP model. Most new models have “HVLP” stamped onto the body of the spray gun. If not, the source should be able to provide manufacturer’s literature, which will enable the inspector to verify compliance. Ensure that any spray guns on-site are either stamped “HVLP”, or that documentation is kept on site that specifies the gun is HVLP, or has at least a 65% transfer efficiency according to SCAQMD test method as stated in the rule. Additional information should be obtained through the spray gun manufacturer or the local supplier, if needed. The following non-HVLP spray guns have been determined by Permit Services to meet the 65% transfer efficiency:

- a. DeVilbiss-670 (Plus)
- b. SATAjet RP
- c. SATAjet RP Digital 2

If any non-compliant application systems or methods are found, an NOV shall be issued.

D. Surface Preparation and Cleanup Solvent

Solvents used for cleaning operations have limits defined as weight per volume of material, or “material VOC”, therefore they may be diluted, if feasible, to meet the VOC limits specified by the rule. The use of solvents containing VOCs for surface preparation and cleanup must comply with the following:

1. Only solvents complying with the applicable limitations in Table 3 of the rule may be used for cleanup and surface preparation. Fresh or spent solvents, coatings, adhesives, catalysts, reducers, and cloth or paper used with these materials must be stored and/or disposed of in closed, non-leaking, non-absorbent containers. This includes coating containers with stirring and mixing sticks.
2. Cleanup of spray equipment with solvents requires the use of an enclosed system or equipment proven to be equivalent. Some open units, such as one manufactured by Safety-Kleen, offer an open-bowl type unit that surrounds the parts to be cleaned, and has been determined to meet the requirements. Enclosed type cleaners must be closed when containing solvent, except to load or unload guns. If acetone, water, or other exempt solvents are used, or if the facility does

not use cleaning solvents greater than 50 g/l “material VOC”, an enclosed system for cleaning is not required.

3. Solvents used for surface cleaning are to be applied by wipe cleaning, non-atomized solvent flow, or with a hand-held spray bottle. However, the spray bottle should dispense the solvent without a propellant-induced force.
4. An NOV will be issued for non-compliance with the requirements for use and VOC limits.

E. Coating Standards

The coating VOC limits in the current version of Rule 4606 shall be enforced unless the facility has a permitted VOC control device. The limits are defined as “weight per volume of coating, less water and exempt compounds” (meaning as mixed for application), as per the definition in the rule.

Compliance with VOC limits will be determined through review of facility records and by examination of coatings kept at the facility. In the case where no VOC documentation has been made for coatings an NOV shall be issued for the records violation. Samples may also be taken to verify the VOC content of any questionable coating. Samples will be taken in accordance with District policy and with Supervisor authorization.

F. Other Standards

1. Prohibition of Specifications

No person shall specify the application of coatings that result in a violation of provisions of Rule 4606. If the facility claims that a contract requires the use of non-complying coatings, document the specifications and obtain a copy of the contract.

If a choice of more than one coating is specified, and any of the choices is compliant, or if the contract states that the coatings must comply with District regulations, then the specification is not a violation.

NOVs issued under this section require approval of a supervisor.

2. Compliance Statement Requirements

Manufacturers of any solvents subject to this rule shall indicate on the solvent container, or on a separate product data sheet, the name of the solvent, manufacturer's name, the VOC content, and density of the solvent as supplied. NOV's to solvent manufacturers for failure to provide VOC information require prior approval of the supervisor.

### 3. Labeling Requirements

The VOC content of each coating, as applied after any thinning as recommended by the manufacturer, is to be displayed on the container or product data sheet. The VOC content is to be expressed as weight of VOC per volume of coating, less water and exempt compounds.

If the manufacturer recommends thinning the coating with solvent, such guidelines are to be displayed on the coating can or product data sheet.

## IV. COATING RECORDS

### A. Records Required

Any person subject to, or seeking to maintain an exemption from Rule 4606 shall maintain documentation for all coatings and solvents currently in use. Coating record requirements can be grouped into three categories: (1) facility-wide coatings in use, (2) source coating daily usage records for new wood products, and (3) source coating daily usage records for refinishing, replacement, and custom replica furniture operations.

#### 1. Facility-wide coatings in use records

A list of the coatings in use that provides all of the data necessary to evaluate compliance, including the following information, as applicable:

- a. Coating, catalyst, reducers, and solvents
- b. Manufacturer's recommended mix ratio of components
- c. VOC content of coatings, as applied, and solvents

#### 2. New wood products source specific daily usage records

Records of usage on a daily basis of all the coatings listed in the facility-wide coating records. These records must include the date used and the following applicable information:

- a. Coating and mix ratio of components in the coating used

- b. Quantity of each coating applied
  - c. Identification of coating category
  - d. Type and amount of solvent used for cleanup and surface preparation
3. Refinishing, replacement, and custom replica daily usage records:
  - a. Quantity of coating, catalyst and reducer
  - b. Type and amount of stripper used
  - c. Type and amount of solvent used for cleanup and surface preparation
  - d. Each type of wood product coated
4. Records Retention

Sources that are exempt from the requirements of the rule due to less than 20 gallons of coating used per year may maintain records on an extended basis, not to exceed monthly.

Records may be kept in either grams/liter or pounds/gallon. Facilities shall maintain these records on a daily basis and shall be maintained for the previous 5-year period, or alternate period as specified by the PTO, whichever is greater.

#### B. Records Evaluation

The following should be included in the evaluation of records in order to determine compliance with rule limits and the record keeping section.

1. Manufacturer's product information sheets. (They should provide specifications for all products in use at the facility.)
2. Daily coating records for compliance, including computer program records. (Spot-check to determine if coatings meet the requirements of the rule. A more comprehensive review should be initiated if problems are found.)
3. Records of surface preparation and cleanup solvents used. (Verify VOC compliance and that they are being maintained.)
4. Check for violations of DELs.

Appendix B demonstrates field calculations to be used in verifying compliance.

#### C. Records Not Immediately Available



In certain cases records are in existence at the time of inspection, but cannot be produced because knowledgeable personnel are not present, the records are temporarily elsewhere, computer failure, or for other good reasons. The inspector will advise the owner/operator of the need to have records readily available. If not available, the facility should be directed to provide the records to the District within three working days. An NTC can be issued to facilitate compliance. If the records are not produced within this time, an NOV will be issued.

D. Minor Record Keeping Errors and Omissions

An NTC shall be issued for minor record keeping errors and omissions. If similar errors are found during subsequent inspections an NOV shall be issued.

E. Records Not Kept

An NOV should be issued for failure to keep records. In cases where no records are kept, the inspector will take alternate steps to determine compliance with the coating standards. These steps may include, but are not limited to, the inspection of purchase records, production records, examination of product cans, product data sheets, etc. If compliance cannot be determined, samples of questionable coatings should be taken if approved by a Supervisor.

V. POST-INSPECTION PROCEDURE

The following elements should be covered with the owner/operator in a post inspection interview.

- A. Discuss overall condition of the facility and equipment.
- B. Review applicable rules and advise the source of any rule changes or upcoming VOC limitations.
- C. Review all PTOs and ATCs, including the need for proper posting and compliance with appropriate conditions. Discuss how permit conditions that appear to be incorrect may be changed.
- D. Review results of the equipment inspection and the storage of coatings, adhesives, solvents and rags.
- E. If coating samples were taken, advise the source of possible enforcement actions if any coating is found to be noncomplying.
- F. Review records evaluation, advise source of any deficiencies, and discuss improvement areas.
- G. Issue appropriate NOV/NTC and review compliance options.

- H. Advise source of District procedures applicable to any new equipment or modifications to permitted equipment.
- I. Provide compliance assistance information as necessary, including how to obtain copies of the rule. Make appropriate recommendations to improve compliance and facilitate future inspections.

## APPENDIX A – MINIMIZER USE

To clarify the District's position as to the compliant use of a "Minimizer" or other solvent distillation device supplied to paint shops, three scenarios are discussed below:

1. Safety-Kleen is marketing a machine to paint coating facilities called a Minimizer that is designed to separate the solids from solvents through a distillation process. This unit can operate as a stand-alone unit where different types of coatings and solvents are poured into it. The Minimizer progresses through heating cycles, which separates the solvents from the solids through a distillation process. The solvents are recycled or re-used, and Safety-Kleen comes by to pick up the solids for disposal.
2. Another application is where the Minimizer is connected to an enclosed gun cleaner. In this application, Safety-Kleen supplies Clear Choice (100 % acetone) solvent to the enclosed gun cleaner. As the gun cleaner is utilized, a mixture of paint, reducer, and catalyst will combine with the acetone and enter the Minimizer. The Minimizer progresses through heating cycles, which separates the solvents from the solids through a distillation process and transfers the solvents, back to the enclosed gun cleaner. No additional waste coatings are added to the mix other than the residual in the spray guns being cleaned.
3. The third application is where the Minimizer is connected to an enclosed gun cleaner. In this application, Safety-Kleen supplies Heavy Duty Solvent 550 (500 g/l VOC) or Virgin 550 Solvent (525 g/l VOC) to the enclosed gun cleaner. As the gun cleaner is utilized, a mixture of paint, reducer, and catalyst will combine with the solvent and enter the Minimizer. The Minimizer progresses through heating cycles, which separates the solvents from the solids through a distillation process and transfers the solvents, back to the enclosed gun cleaner. No additional waste coatings are added to the mix other than the residual in the spray guns being cleaned.

The District will allow the Minimizer to be used as described in scenario #1 or #2. If solvent from a unit described under scenario #1 is to be used on-site, the solvent mix must first be analyzed to verify that the VOC content complies with the 550 g/l (4.6 lb/gal) limit, or the limits of any other use. Records of the lab analyses must be on site for each batch of the produced solvent used. The Minimizer may NOT be used as described in scenario #3.

## APPENDIX B – VOC FIELD CALCULATIONS OF COATINGS

Rule 4606 has limitations on the volatile organic compound (VOC) content of most materials on a *less water and exempt compounds* basis. The rationale behind this is to preclude attempts to achieve “compliance” by simply diluting coatings with water or exempt solvents. Since coatings work by the deposition of resins and solids onto the substrate, if a more dilute coating is used, more of it has to be used in order to achieve the same result, resulting in higher VOC emissions.

Manufacturers use the following formula to calculate VOCs for compliance with Table 1 of Rule 4606. You may see it termed “VOC coating”, “VOC less exempt”, “VOC as applied less exempt”, “VOC le”, and other ways. This value will be larger or the same as the “material” VOC value.

Sec 3.20 Grams of VOC per liter of Coating Excluding Water and Exempt Compounds:

$$= \frac{W_s - W_w - W_{ec}}{V_m - V_w - V_{ec}}$$

$W_s$  = weight of volatile compounds (remember that H<sub>2</sub>O is “volatile”)  
 $W_w$  = weight of water  
 $W_{ec}$  = weight of exempt compounds  
 $V_m$  = volume of material  
 $V_w$  = volume of water  
 $V_{ec}$  = volume of exempt compounds

Manufacturers use the following formula to calculate “material VOC”. You may see this value, if listed, as “VOC material” or “VOC as packaged”, or “VOC ap”. This value can be smaller or the same as the “less exempt” value, but would not be larger. The “less exempt” and “material” VOC values would be the same if there were no water or exempt compounds in the coating.

Sec 3.21 Grams of VOC per liter of Material

$$= \frac{W_s - W_w - W_{ec}}{V_m - V_w - V_{ec}}$$

Vm

Ws = weight of volatile compounds  
Ww = weight of water  
Wec = weight of exempt compounds  
Vm = volume of material

#### READY TO SPRAY COATINGS

Some coatings are used from the manufacturer with no mixing involved (ready to spray). In these cases, use the “VOC less exempt” data from the manufacturer for the coating “as applied” compliance determination with the limits in Table 1.

#### REDUCED AND/OR CATALYZED COATINGS WITH KNOWN “AS APPLIED” VOC

Some coatings have to be mixed with catalysts (hardeners) and/or reducers (thinners) in a ratio recommended by the manufacturer. If the facility follows the mix ratios as recommended, use the “VOC less exempt as applied” data given by the manufacturer.

#### REDUCED AND/OR CATALYZED COATINGS WITH UNKNOWN “AS APPLIED” VOC

Some coatings have been mixed in ratios not specified by the manufacturer, or have been mixed with catalysts or reducers from different manufacturers. In these cases, a “coating VOC as applied, less exempts” will have to be calculated.

#### Calculating “as applied” VOC, less water and exempt compounds

The following formula gives a “ballpark” coating value, which is easy to use and adequate for a field calculation in most situations. Use VOC” less exempt” values.

Example: A coating mixed in the shop as follows:

6 parts coating : 1 part catalyst : 1 part reducer

(If the facility states the coating is “reduced 10%”, use 0.1 as the reducer part.)

$$\text{VOC} = \frac{(6 \times \text{VOC base}) + (1 \times \text{VOC catalyst}) + (1 \times \text{VOC reducer})}{(6 + 1 + 1)}$$

(If acetone or water alone is the “reducer” it is completely ignored in the above equation, both in the numerator and the denominator.)

The above method is the most accurate when dealing with coatings and components that contain no exempt compounds or water. (You would easily be able to identify those components by comparing the “VOC less exempt” (VOC le) value with the “VOC material” value on the can or in the MSDS. Even if the coating or additives contain exempt compounds, attempt to use this formula to show compliance, since the formula would only “over-estimate” the VOC value.

If using the formula shows non-compliance with the VOC coating limits with an exceedance of less than 0.5 lb/gal, and the coatings contain exempt compounds, the following formula should be used to determine an accurate VOC content for a reduced and/or catalyzed coating. The formula used by the manufacturer removes exempt compounds from the weight AND the volume of the component; the ballpark calculation does not account for that.

VOC as applied less water and exempts for a mixture of coating, reducer, and catalyst  
=

$$\frac{(Ws1 + Ws2 + Ws3) - (Ww1 + Ww2 + Ww3) - (Wec1 + Wec2 + Wec3)}{(Vm1 + Vm2 + Vm3) - (Vw1 + Vw2 + Vw3) - (Vec1 + Vec2 + Vec3)}$$

Where:

Ws1 = weight of all volatile compounds in the original coating  
 Ws2 = weight of volatile compounds in reducer  
 Ws3 = weight of volatile compounds in catalyst

Ww1 = weight of water in the original coating  
 Ww2 = weight of water in reducer  
 Ww3 = weight of water in catalyst

Wec1 = weight of exempt compounds in the original coating  
 Wec2 = weight of exempt compounds in reducer  
 Wec3 = weight of exempt compounds in catalyst

Vm1 = volume of original coating material  
 Vm2 = volume of reducer  
 Vm3 = volume of catalyst

Vw1 = volume of water in coating material  
 Vw2 = volume of water in reducer  
 Vw3 = volume of water in catalyst

Vec1 = volume of exempt compounds in coating  
 Vec2 = volume of exempt compounds in reducer

Vec3 = volume of exempt compounds in catalyst

The CARB Automotive Refinishing manual formula shown below also can be used in wood products coating applications. This formula adjusts the volume “parts” used in the final mix at the shop.

$$R \text{ (adjusted volume of component)} = V \times [1 - ((\text{wt}\% \text{es} / \text{Density es})(\text{Density m}) - (\text{wt}\% \text{H}_2\text{O} / \text{Density H}_2\text{O})(\text{Density m}))]$$

Where:

Volume or “parts”	V
Adjusted volume	R
Material density	Density m
Exempt solvent density	Density es
% exempt solvents by weight	wt%es
% water by weight	wt%H <sub>2</sub> O
Water density	D H <sub>2</sub> O

Use the Adjusted volume or parts in the following formula to determine compliance:

Where:

Ra	=	Adjusted volume of component a
Rb	=	Adjusted volume of component b
Rc	=	Adjusted volume of component c

$$\text{VOC lb/gal le} = \frac{(\text{VOCa lb/g} \times \text{Ra}) + (\text{VOCb lb/g} \times \text{Rb}) + (\text{VOCc lb/g} \times \text{Rc})}{\text{Ra} + \text{Rb} + \text{Rc}}$$

These are more extensive than ballpark field calculations, and require all of the above data from the manufacturer.

### CALCULATING VOC EMISSIONS FOR DEL COMPLIANCE DETERMINATION

“VOC as packaged” would be the “Material” VOC as defined in the rule. That value is used to calculate a facility’s VOC emissions with respect to the gallons of coatings actually used that day. It only comes into play if the facility has a Daily Emission Limit for VOCs on their permit. For a ballpark determination of compliance with a DEL, use the lb/gal values of the coatings recorded (which would be “less exempt” values if the coatings used contained exempt compounds), multiplied by the volumes used. Facilities with DELs should be doing this on their records. Be alert to the fact that using these numbers *over-estimates* the VOCs emitted from the coating usage. If the facility can meet its DEL limit using these values, then use of those figures is allowed. If the facility is showing non-compliance using these values, use the formula for “Grams of VOC per liter of Material”, to arrive at the “VOC material” lb/gal value

of each coating. If a more extensive calculation is required for reduced and catalyzed coatings, use the above formulas and simply input the total volume of material in the denominator rather than the adjusted volume, while accounting for the less exempt values in the numerator.