

RULE 410.9 Wood Products Surface Coating Operations – Adopted 3/13/2014

I. Purpose

The Purpose of this Rule is to limit Volatile Organic Compound (VOC) emissions from wood product surface coatings. This Rule specifies wood coatings, storage, cleanup and disposal of organic solvents and waste solvent materials associated with the use of wood product coatings.

II. Applicability

Provisions of this Rule shall apply to surface coating of wood products.

III. Definitions

- A. Air Dried: A process whereby the coated object is cured or dried at ambient temperature or at a temperature below 194°F.
- B. Application Equipment: A device, including, but not limited to, a spray gun, brush, and roller, used to apply adhesives, coatings, or inks.
- C. ASTM: American Society for Testing and Materials.
- D. Baked: A process whereby the coated object is heated above ambient temperature to a temperature at or above 194°F for the purpose of curing or drying.
- E. Brush Coating: The manual application of coatings using brushes or rollers.
- F. Capture Efficiency: In percent, is the ratio of the weight of the VOC in the effluent stream entering the control device to the weight of VOC emitted from wood product coating operations, both measured simultaneously, and can be calculated by the following equation:
$$\text{Capture Efficiency} = [W_c/W_e] \times 100$$

Where: W_c = weight of VOC entering control device
 W_e = weight of VOC emitted
- G. Clear Sealer: A coating containing binders, but not opaque pigments, which seals the wood product prior to application of the subsequent coatings.
- H. Clear Topcoat: A final coating which contains binders, but not opaque pigments, and is specifically formulated to form a transparent or translucent solid protective film.
- I. Coating: A material which is applied to a surface and which forms a film in order to beautify and/or protect such surface.

- J. Composite Wood: A manufactured material consisting of tightly compressed wood fibers bonded with resins which includes, but is not limited to, particleboard, fiberboard and hardboard.
- K. Cured Adhesive, Cured Coating, or Cured Ink: an adhesive, coating, or ink that is dry to the touch.
- L. Degreaser: A tank, tray, drum or other container in which objects to be cleaned are exposed to a solvent or solvent vapor in order to remove contaminants. The objects to be cleaned include, but are not limited to, parts, products, tools, machinery, and equipment. An enclosed spray application equipment cleaning system is not a degreaser.
- M. Dip Coating: The process in which a substrate is immersed in a solution (or dispersion) containing the coating material, and then withdrawn after allowing the excess coating to drain.
- N. Dissolver: An organic solvent that is added to an adhesive, coating, or ink in order to melt or to liquefy solid particles.
- O. EPA: United States Environmental Protection Agency
- P. Filler: A material which is applied to a wood product, and whose primary function is to build up, or fill the voids and imperfections in the wood product to be coated. This shall not include composite wood edge filler.
- Q. Grams of VOC per Liter of Coating, Less Water and Exempt Compounds: The weight of VOC content per combined volume of VOC and coating solids and can be calculated by the following equation:

$$\text{Grams of VOC per liter of coating, less water and exempt compounds} = \frac{W_s - W_w - W_{ec}}{V_m - V_w - V_{ec}}$$

Where:

- W_s = weight of volatile compounds (grams)
W_w = weight of water (grams)
W_{ec} = weight of exempt compounds (grams)
V_m = volume of material (liters)
V_w = volume of water (liters)
V_{ec} = volume of exempt compounds (liters)

- R. High Gloss Coating: Any coating which achieves at least 85% reflectance on a 60 degree gloss meter when tested by ASTM Method D-523-08.
- S. High-Solid Stains: Stains containing more than 1 pound of solids per gallon of material, and include wiping stains, glazes, and opaque stains.

- T. High-Volume, Low-Pressure (HVL) Spray Equipment: Spray equipment permanently labeled as such and which is designed and operated between 0.1 and 10 pounds per square inch, gauge, (psig) air atomizing pressure measured dynamically at the center of the air cap and at the air horns and with liquid supply pressure less than 50 psig.
- U. Ink: A fluid that contains dyes and/or colorants and is used to make markings but not to protect surfaces.
- V. Liquid Leak: A visible solvent leak from a container at a rate of more than three drops per minute, or a visible liquid mist.
- W. Low-Solid Stain: A stain containing 1 pound, or less, of solids per gallon of material.
- X. Maintenance Cleaning: The cleaning of tools, forms, molds, jigs, machinery, and equipment (except coating application equipment, ink application equipment, or adhesive application equipment), and the cleaning of work areas where maintenance or manufacturing occurs.
- Y. Mold-Seal Coating: the initial coating applied to a new mold or repaired mold to provide a smooth surface which, when coated with a mold release coating, prevents products from sticking to the mold.
- Z. Multi-Colored Coating: a coating which exhibits more than one (1) color when applied and which is packaged in a single container and applied in a single coat.
- AA. Non-Absorbent Container: A container made of non-porous material that does not allow the migration of solvents through it.
- BB. Non-Atomized Solvent Flow: Solvents in the form of a liquid stream without the introduction of any propellant.
- CC. Pigmented Coating: A final opaque coating which contains binders and colored pigments, and is specifically formulated to hide the wood surface and form a solid protective film.
- DD. Potential to Emit: The maximum capacity of a facility to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the facility to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation, emissions, or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation is enforceable by the EPA Administrator.
- EE. Roll Coating: The application of coatings from a paint trough to a flat surface by a mechanical series of rollers.
- FF. Sanding Sealer: A coating containing binders, which seals the wood prior to application of the subsequent coatings.

- GG. Stripper: Solvent used to remove material such as cured adhesives, cured inks, cured or dried paint, cured or dried paint residue or temporary protective coating.
- HH. Surface Preparation: The removal of contaminants from a surface prior to the application of coatings, inks, or adhesives or before proceeding to the next step of a manufacturing process.
- II. Transfer Efficiency: A ratio of the amount of coating solids adhering to the object being coated to the total amount of coating solids used in the application process, expressed as a percentage.
- JJ. Thinner: A solvent that is used to dilute coatings to reduce viscosity, color strength, and solids, or to modify drying conditions.
- KK. Touch Up: That portion of the coating operation which is incidental to the main coating process but necessary to cover minor imperfections or to achieve coverage as required.
- LL. Volatile organic Compound (VOC): As defined in Rule 102, Definitions.
- MM. Wood Products: Surface-coated room furnishings which include cabinets (kitchen, bath, and vanity), tables, chairs, beds, sofas, shutters, art objects, and any other coated objects made of wood, composite wood, simulated wood material used in combination with wood or composite wood; and/or paper laminated on composite wood.

IV. Exemptions

Requirements of this Rule shall not apply to the following operations:

- A. Residential noncommercial operations.
- B. Small wood products coating operations (< 20 gallons usage/year).
- C. Coating of wooden musical instruments.
- D. The application of coatings by template (to add designs, letters or numbers to wood products).
- E. Aerosol-spray coatings used for touch up and repair.
- F. Specific types of finishes (imitation wood grain, crackle lacquers, and faux and leaf finishes). Architectural coatings.

V. Requirement

- A. With the exception of the exemptions listed in Section IV of Draft Rule 410.9, an operator shall not apply to any wood product, any coating, aerosol, or adhesive with a VOC content as applied, that exceeds the applicable limit specified in Table 1 or Table 2.

TABLE 1
VOC CONTENT LIMITS FOR WOOD PRODUCT COATING OPERATION

VOC Content Limits Expressed in Grams per Liter Less Water and Exempt Compounds		
Content Category	VOC Limit g/l	VOC Limit lb/gal
1. Clear Topcoat	275	2.3
2. Clear Sealers	240	2.3
3. Filler	275	2.3
4. High-Solids Stain	240	2.0
5. Ink	500	4.2
6. Mold-Seal Coating	750	6.3
7. Multi-Colored Coating	275	2.3
8. Pigmented Coating	275	2.3
9. Sanding Sealer	240	2.3

TABLE 2
VOC CONTENT LIMITS FOR WOOD PRODUCT COATING OPERATION

VOC Content Limits Expressed in Grams per Liter of Material, as Applied		
VOC Content Category	VOC Limit g/l	VOC Limit lb/gal
1. Low-Solids Stain	120	1.0
2. Stripper	350	2.9

No person shall use any stripper on wood products unless:

1. The reactive organic compound content is 350 grams per liter (2.9 lb/gal) of material or less; or
 2. The reactive organic compound composite partial pressure of the stripper is 2 mm Hg (0.04 psia) or less at 20°C (68°F).
- B. Most Restrictive VOC Limit: If anywhere on the container of any wood coating, or any label or sticker affixed to the container, or in any sales, advertising, or technical literature supplied by a person, any representation is made that indicates that the coating meets the definition of or is recommended for use for more than one of the coating categories listed in Table 1 or Table 2, then the lowest VOC content limit shall apply.

- C. Alternate Emission Control: In lieu of complying with VOC content limits specified in Table of Standards, an emission control system with a capture efficiency of at least 90% and a control efficiency of at least 90% may be used if it has been approved in writing by the Air Pollution Control Officer. Any approved emission control system must be maintained and used in proper working condition at all times.
- D. Equipment Requirements: Spray application of wood coatings shall only be performed by the following: electrostatic equipment, high-volume, low pressure (HVLV) spray equipment, hand roller, flow coat, roll coater, dip coat, paint brush, detailing or touchup guns,
- E. Surface preparation and Equipment Cleanup Requirements: No person shall conduct preparation or equipment cleanup for activities subject to provisions of this Rule unless the following VOC limits are met and methods are used:
1. VOC content of surface preparation solvent shall not exceed 25 g/l (0.2 lb/gal), as calculated pursuant to Section III.Q., unless such cleaning operation is performed within the control of an APCO approved VOC emission control system that meets the requirements of Section V.C.
 2. Cleaning of Coatings Application Equipment: Solvents used for cleaning of coatings application equipment shall comply with both limits specified below:
 - a. Solvent shall have a VOC content of 950 grams or less per liter (7.9 lb/gal) of material; and
 - b. Solvent shall have a VOC composite partial pressure of 35 mm Hg or less at 20/C (68/F).
 3. Cleaning-Devices and Methods: No person shall perform solvent cleaning operations unless one of the following cleaning devices or methods is used:
 - a. Wipe Cleaning;
 - b. Spray bottles or containers with a maximum capacity of 16 fluid ounces from which solvents are applied without a propellant induced force;
 - c. Cleaning equipment having a closed solvent container during cleaning operations, except when depositing and removing objects to be cleaned, and closed during nonoperation except during maintenance and repair of the cleaning equipment itself;
 - d. Remote reservoir cold cleaner operated in conformance with District Rule 410.3, Organic Solvent Degreasing Operations;
 - e. System totally enclosing guns, cups, nozzles, bowls, and other parts during washing, rinsing, and draining procedures;

- f. Non-atomized solvent flow method collecting cleaning solvent in a container or a collection system closed except for solvent collection openings and, if necessary, openings to avoid excessive pressure build-up inside the container; or
- g. Solvent flushing method discharging solvent into a closed container, except for solvent collection openings and, if necessary, openings to avoid excessive pressure build-up inside the container. Discharged solvent from such equipment shall be collected in containers without atomizing into open air. Solvent may be flushed through the system by air or hydraulic pressure, or by pumping.

VI. Administrative Requirements

A. Labeling Requirements: Each manufacturer of any wood product coating subject to this Rule shall display information listed in Subsections VI.A.1. through VI.A.3. on coating container (or label) in which coating is sold or distributed or an accompanying data sheet

- 1. Date Code: date coating was manufactured, or date code representing date, shall be indicated on label, lid or bottom of container. If manufacturer uses a date code for any coating, manufacturer shall file an explanation of each code with the Executive Officer of the CARB.
- 2. Thinning Recommendations: statement of manufacturer's recommendation regarding thinning of coating shall be indicated on label or lid of container. This requirement does not apply to thinning of architectural coatings with water. If thinning of coating prior to use is not necessary, recommendation must specify coating is to be applied without thinning.
- 3. VOC Content: Each container or accompanying data sheet of any coating subject to this Rule shall display either maximum or actual VOC content of coating, as supplied, as well as maximum thinning as recommended by manufacturer. VOC content shall be displayed in grams of VOC per liter (or pounds per gallon) of coating. VOC content displayed shall be calculated using product formulation data, or shall be determined using test methods in Subsection VII.

B. Record Keeping Requirements

An operator is required to maintain the coating manufacturer's specifications, either listed on the coating container, product data sheet, or Safety Data Sheet (SDS), available for review and shall maintain daily records which show the following information as applicable:

- 1. A current list of VOC containing products in use containing all data necessary to evaluate compliance, including the following information, as applicable:
 - a. Material name and manufacturer's identification;

- b. Application method;
 - c. Material type and specific use instructions;
 - d. Specific mixing instructions;
 - e. Maximum VOC content of coating as applied, including thinning solvents; hardeners, etc., excluding water and exempt compounds; and
 - f. Coating composition and density.
2. Daily coating and solvent use records, including the following information for each:
- a. Volume used of each component and mix ratio;
 - b. VOC content in grams/liter (or pounds/gallon) as applied/used; and
 - c. Volume in liters (or gallons) applied/used.
3. Capture and control equipment operating records, if applicable, including:
- a. Periods of operation corresponding to use records kept for Subsection VI.B.2. showing control equipment was used as necessary;
 - b. Key system operating parameters showing operation as required to comply with this Rule and as intended by manufacturer; and
 - c. Date performed, and description of all control system maintenance.

Records required by the proposed Rule shall be retained for a minimum of three (3) years and made available on site during normal business hours to the APCO, ARB, or EPA upon request.

VII. Test Methods

- A. Analysis of Samples - Samples of VOC as specified in this Rule shall be analyzed by U.S. EPA Method 24 Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings and analysis of halogenated exempt compounds shall be conducted using CARB Method 432 - Determination of Dichloromethane and 1,1,1-Trichloroethane in Paints and Coatings , or ASTM D-4457-85 Standard Test Method for Determination of Dichloromethane and 1,1,1-Trichloroethane in Paints and Coatings by Direct Injection into a Gas Chromatograph.
- B. Determination of Emissions - Emissions of VOC shall be measured by U.S. EPA Method 25, 25A, or 25B, as applicable.

- C. Determination of Capture Efficiency - Where add-on control equipment is utilized, capture efficiency shall be determined in accordance with 40 CFR Appendix M – Methods 204-204F.
- D. Measurement of Acid Content - Acid content of Pre-Treatment Wash Primers shall be conducted and reported in accordance with ASTM D1613-06 Standard Test Method for Acidity in Volatile Solvents and Chemical Intermediates used in Paint, Varnish, Lacquer, and Related Products.
- E. Demonstration of Transfer Efficiency - Transfer efficiency shall be demonstrated using South Coast Air Quality Management District Method "Spray Equipment Transfer Efficiency Test Procedure for Equipment User".
- F. Determination of VOC Composite Partial Pressures - VOC composite partial pressures shall be determined using either manufacturer's information regarding formulation or using ASTM methods E168-06 – Standard Practices for General Techniques of Infrared Quantitative Analysis, E169-93 – Standard Practices for General Techniques of Ultraviolet- Visible Quantitative Analysis, or E260-96 – Standard practice for Packed Column Gas Chromatography for determination of mole fractions and then summing products of each VOC component's vapor pressure and its mole fraction. For materials containing no non-VOC components, VOC composite partial pressure can be measured directly by ASTM Method D2879-10 – Standard Test Method for Vapor Pressure-Temperature Relationship and Initial Decomposition Temperature of Liquids by Isoteniscope.
- G. Determination of VOC Emissions From Spray Gun Cleaning Systems - VOC emissions from spray gun cleaning systems shall be made using South Coast Air Quality Management District "General Test Method for Determining Solvent Losses from Spray Gun Cleaning Systems".
- H. When more than one test method or set of test methods is specified for any testing, a violation of any requirement of this rule established by any one of the specified test methods or set of test methods shall constitute a violation of this rule."

VIII. Compliance Schedule

A. New Sources

1. Owners or Operators of any facility proposing to install wood coating operations and required to comply with Section V of this rule shall obtain an Authority to Construct (ATC) in accordance with Rule 210.1 prior to installation or operation of any wood coating operation.
2. Owners or Operators of any facility with wood coating operations exempt by Section IV of this rule shall maintain records of wood coatings use, in accordance with Section VI, B upon initial operations.

B. Existing Sources

1. Owners or Operators of any facility with wood coating operations required to comply with Section V of this rule shall obtain a valid Permit to Operate (PTO) or an Authority to Construct (ATC). Owner or operator shall apply for an ATC within 180 days from the adoption of this Rule.
2. Owners or Operators of any facility with wood coating operations exempt by Section IV of this rule shall maintain records of wood coatings use within 180 days of this rule being adopted.
3. Owners or operators with valid PTO(s), required to comply with Section V of this rule shall be in full compliance within 12 months of rule adoption.

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