

AGENCY OF NATURAL RESOURCES

Waterbury, Vermont

ENVIRONMENTAL PROTECTION REGULATIONS

CHAPTER 5

AIR POLLUTION CONTROL

Subchapter II. Prohibitions

Subsection 5-253.16 Wood Furniture Manufacturing

(a) Applicability.

(1) This subsection applies to all *stationary sources* that are engaged, either in part or in whole, in the manufacture of *wood furniture* or *wood furniture components*, except as provided in paragraphs (a) (2) and (3) below.

(2) A *stationary source* engaged, either in part or in whole, in the manufacture of *wood furniture* or *wood furniture components* that has allowable *VOC* emissions of less than 25 tons per year and that is not located at a major source of hazardous air pollutants is exempt from all provisions of this subsection, except for paragraph (c)(4) regarding the control of individual hazardous air contaminants.

(3) *Stationary sources* that are primarily engaged in the manufacture of products other than *wood furniture* or *wood furniture components* and that use no more than 100 gallons per month of *finishing material* and *contact adhesives* combined in the manufacture of *wood furniture* or *wood furniture components* are not subject to this subsection, except that each such source shall maintain records of monthly *finishing material* and *adhesive usage*.

(b) Definitions. For the purpose of this subsection, the following definitions apply, in addition to those of Section 5-101 of this chapter:

“*Adhesive*” means any chemical substance that is applied for the purpose of bonding two surfaces together other than by mechanical means. *Adhesives* shall not be considered coatings or *finishing materials*. Products used on humans and animals, *adhesive* tape, contact paper, or any other product with an *adhesive* incorporated onto or in an inert *substrate* shall not be considered *adhesives*.

“*Aerosol Adhesive*” means an *adhesive* that is dispensed from a pressurized container as a suspension of fine solid or liquid particles in gas.

“*As Applied*” means the *VOC*, *HAP* and *solids* content of the *coating* or *contact adhesive* that is actually used for *coating* or gluing the *substrate*. It includes the contribution of materials used for in-house dilution of the *coating* or *contact adhesive*.

“*Basecoat*” means a coat of colored material, usually opaque, that is applied before graining inks, glazing coats, or other opaque *finishing materials*, and is usually *topcoated* for protection.

“*Certified Product Data Sheet (CPDS)*” means documentation furnished by coating or adhesive suppliers or an outside laboratory that provides the *HAP* content of a *finishing material*, *contact adhesive*, or *solvent*, by percent weight, measured using EPA Method 311, or an equivalent or alternative method approved by the *Air Pollution Control Officer* and *EPA*; the *VOC* content and *solids* content of a *finishing material*, strippable booth *coating*, *solvent* or *contact adhesive*, by percent weight, measured using EPA Method 24, or an alternative or equivalent method approved by the *Air Pollution Control Officer*; and the density, measured by EPA Method 24 or an alternative or equivalent method approved by the *Air Pollution Control Officer*. Therefore, the reportable *VOC* and *HAP* contents should represent the maximum aggregate emissions potential of the *finishing material*, strippable booth *coating*, *adhesive*, or *solvent* in concentrations greater than or equal to 1.0 percent by weight or 0.1 percent for *VOCs* or *HAPs* that are carcinogens, as defined by the Occupational Safety and Health Administration Hazard Communication Standard (29 CFR 1910), as formulated.

“*Cleaning Operations*” means operations in which *organic solvent* is used to remove *coating* materials or *adhesives* from equipment used in *wood furniture manufacturing operations*.

“*Coating*” means a protective, decorative, or functional film applied in a thin layer to a surface. Such materials include, but are not limited to, paints, *topcoats*, varnishes, *sealers*, *stains*, *washcoats*, *basecoats*, *enamels*, inks, and temporary protective *coatings*.

“*Coating Application Station*” means the part of a coating operation where the coating is applied, e.g., a spray booth.

“*Coating Operation*” means those activities in which a *coating* is applied to a *substrate* and is subsequently air-dried, cured in an oven, or cured by radiation.

“*Coating Solids* (or *solids*)” means the part of the *coating* which remains after the *coating* is dried or cured; *solids* content is determined using data from the EPA Method 24, or an equivalent or alternative method approved by the *Air Pollution Control Officer* and *EPA*.

“*Contact Adhesive*” means an *adhesive* that is applied to two *substrates*, dried, and mated under only enough pressure to result in good contact. The bond is immediate and sufficiently strong to hold pieces together without further clamping, pressure, or airing.

“*Continuous Coater*” means a finishing

system that continuously applies *finishing materials* onto furniture parts moving along a conveyor. *Finishing materials* that are not transferred to the part are recycled to a reservoir. Several types of application methods can be used with a *continuous coater* including spraying, curtain *coating*, roll *coating*, dip *coating*, and flow *coating*.

“*Conventional Air Spray*” means a spray coating method in which the coating is atomized by mixing it with compressed air and applied at an air pressure greater than 10 pounds per square inch (gauge) at the point of atomization. Airless and air assisted airless spray technologies are not *conventional air spray* because the *coating* is not atomized by mixing it with compressed air. Electrostatic spray technology is also not considered *conventional air spray* because an electrostatic charge is employed to attract the coating to the workpiece.

“*Enamel*” means a coat of colored material, usually opaque, that is applied as a protective *topcoat* over a *basecoat*, primer, or previously applied *enamel* coats. In some cases, another *finishing material* may be applied as a *topcoat* over the *enamel*.

“*Equipment Leak*” means emissions of *volatile organic compounds* or *volatile hazardous air pollutants* from pumps, valves, flanges, or other equipment used to transfer or apply *coatings, adhesives, or organic solvents*.

“*Finishing Material*” means a coating used in the *wood furniture* industry. Such materials include, but are not limited to, *stains, basecoats, washcoats, enamels, sealers, and topcoats*.

“*Finishing Operation*” means those operations in which a *finishing material* is applied to a *substrate* and is subsequently air-dried, cured in an oven, or cured by radiation.

“*Foam Adhesive*” means a *contact adhesive* used for gluing foam to fabric, foam to foam, and fabric to wood.

“*Nonporous Substrate*” means a surface that is impermeable to liquids. Examples include metal, rigid plastic, flexible vinyl, and rubber.

“*Normally Closed Container*” means a container that is closed unless an operator is actively engaged in activities such as emptying or filling the container.

“*Organic Solvent*” means a liquid containing *volatile organic compounds* or *volatile hazardous air pollutant* that is used for dissolving or dispersing constituents in a *coating* or *contact adhesive*, adjusting the viscosity of a *coating* or *contact adhesive*, or cleaning equipment. When used in a *coating* or *contact adhesive*, the *organic solvent evaporates* during drying and does not become a part of the dried film.

“*Sealer*” means a *finishing material* used to seal the pores of a wood substrate before additional coats of *finishing material* are applied. Special purpose *finishing materials* that are used in some finishing systems to optimize aesthetics are not *sealers*.

“*Solvent*” means a liquid used in a *coating* or *contact adhesive* to dissolve or disperse constituents and/or to adjust viscosity. It evaporates during drying and does not become a part of the dried film.

“*Stain*” means any color coat having a *solids* content by weight of no more than 8.0 percent that is applied in single or multiple coats directly to the *substrate*. It includes, but is not limited to, nongrain raising *stains*, equalizer *stains*, prestains, sap *stains*, body *stains*, no-wipe *stains*, penetrating *stains*, and toners.

“*Strippable Spray Booth Coating*” means a *coating* that: (1) is applied to a spray booth wall to provide a protective film to receive overspray during *finishing operations*; (2) that is subsequently peeled off and disposed; and (3) by achieving (1) and (2), reduces or eliminates the need to use *organic solvents* to clean spray booth walls.

“*Substrate*” means the surface onto which a *coating* or *contact adhesive* is applied (or into which a *coating* or *contact adhesive* is impregnated).

“*Thinner*” means a volatile liquid that is used to dilute *coatings* or *contact adhesives* (to reduce viscosity, color strength, and *solids*, or to modify drying conditions).

“*Topcoat*” means the last film-building *finishing material* that is applied in a finishing system.

“*Touchup and Repair*” means the application of *finishing materials* to cover minor finishing imperfections.

“*Volatile Hazardous Air Pollutant (VHAP)*” means any *volatile hazardous air pollutant* listed in Table 2 to Subpart JJ of Title 40 of the Code of Federal Regulations (CFR) Part 63.

“*Washcoat*” means a transparent special purpose *finishing material* having a *solids* content by weight of 12.0 percent by weight or less. *Washcoats* are applied over initial *stains* to protect, to control color, and to stiffen the wood fibers in order to aid sanding.

“*Washoff Operations*” means those operations in which *organic solvent* is used to remove *coating* from *wood furniture* or a *wood furniture component*.

“*Wood Furniture*” means any product made of wood, a wood product such as rattan or wicker, or an engineered wood product such as particleboard that is manufactured under any of the following standard industrial classification codes: 2434, 2511, 2512, 2517, 2519, 2521, 2531, 2541, 2599, or 5712.

“*Wood Furniture Component*” means any part that is used in the manufacture of *wood furniture*. Examples include, but are not limited to, drawer sides, cabinet doors, seat cushions, and laminated tops.

“*Wood Furniture Manufacturing Operations*” means the finishing, gluing, cleaning, and/or *washoff operations* associated with the production of *wood furniture* or *wood furniture components*.

(c) Standards

(1) **VOC Emission Limitations.** Each owner or operator of a *stationary source* subject to this subsection which has allowable emissions of 25 tons per year or more of *VOC* shall limit *VOC* emissions from *wood furniture manufacturing operations* by:

(i) Using only *topcoats* containing no more than 1.8 lbs *VOC/lb solids, as applied*, and *sealers* containing no more than 1.9 lbs *VOC/lb solids, as applied*, or the equivalent. Compliance shall be demonstrated by any of the compliance methods in (e)(1);

(ii) Using acid-cured alkyd amino vinyl *sealers* containing no more than 2.3 lbs *VOC/lb solids, as applied*, and acid-cured alkyd amino conversion varnish *topcoats* containing no more than 2.0 lbs *VOC/lb solids, as applied*, or the equivalent. Compliance shall be demonstrated by any of the compliance methods in (e)(1); and

(iii) Using only *strippable spray booth coatings* containing no more than 0.8 lbs *VOC/lb solids, as applied*.

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(d) Work Practice Standards

(1) **Work practice implementation plan.** Each owner or operator of a *stationary source* subject to this subsection shall prepare, maintain and adhere to a written work practice implementation plan that defines environmentally desirable work practices for each *wood furniture manufacturing operation* and for all other finishing, gluing, cleaning and *washoff operations* at the source and addresses each of the work practice standards presented in sub paragraphs (2) through (11) of this paragraph. The plan shall be developed no more than 60 days after the compliance date for each subject source. The written work practice implementation plan shall be available for inspection by the *Air Pollution Control Officer* upon request. If the *Air Pollution Control Officer* determines that the work practice implementation plan does not adequately address each of the topics specified in paragraphs (2) through (11) of this paragraph, as applicable, or that the plan does not include sufficient

¹ NOTE: EPA did Incorporate by Reference 5-253.16(c)(2) “VHAP Emission Limitations for Existing Sources,” 5-253.16(c)(3) “VHAP Emission Limitations for New Sources,” and 5-253.16(c)(4) “Control of Emissions of Individual Hazardous Air Contaminants,” into the Vermont State Implementation Plan (SIP). The State of Vermont did not intend these sections to be included as part of the Vermont SIP.

mechanisms for ensuring that the work practice standards are being implemented, the *Air Pollution Control Officer* may require the owner or operator to modify the plan.

(2) **Operator training course.** Each owner or operator of a *stationary source* subject to this subsection shall train all new and existing personnel, including contract personnel, who are involved in finishing, gluing, cleaning, and *washoff operations* or implementation of the requirements of this subsection. All new personnel shall be trained upon hiring. All existing personnel shall be trained within 6 months of the effective date of this subsection. All personnel shall be given refresher training annually. The owner or operator shall maintain a copy of the training program with the work practice implementation plan. The training program shall include, at a minimum, the following:

- (i) A list of all current personnel by name and job description that are required to be trained;
- (ii) An outline of the subjects to be covered in the initial and refresher training for each position or group of personnel;
- (iii) Lesson plans for courses to be given at the initial and the annual refresher training that include, at a minimum, appropriate application techniques, appropriate cleaning and washoff procedures, appropriate equipment setup and adjustment to minimize *finishing material* usage and overspray, and appropriate management of cleanup wastes; and
- (iv) A description of the methods to be used at the completion of initial or refresher training to demonstrate and document successful completion.

(3) **Inspection and maintenance plan.** Each owner or operator of a *stationary source* subject to this subsection shall prepare, maintain and adhere to a written *equipment leak* inspection and maintenance plan that specifies:

- (i) A minimum visual inspection frequency of once per month for all equipment used to transfer or apply *coatings, adhesives, or organic solvents*;
- (ii) An inspection schedule;
- (iii) Methods for documenting the date and results of each inspection and any repairs that were made;
- (iv) The timeframe between identifying the leak and making the repair, which adheres, at a minimum, to the following schedule:
 - (A) A first attempt at repair (e.g., tightening of packing glands) shall be made no later than five calendar days after the leak is detected; and

(B) Final repairs shall be made within 15-calendar days after the leak is detected, unless the leaking equipment is to be replaced by a new purchase, in which case repairs shall be completed within three months.

(4) **Cleaning and washoff solvent accounting system.** Each owner or operator of a *stationary source* subject to this subsection shall develop and use an *organic solvent* accounting form to record:

- (i) The quantity and type of *organic solvent* used each month for washoff and cleaning;
- (ii) The number of pieces washed off, and the reason for the washoff; and
- (iii) The quantity of spent *organic solvent* generated from each washoff and *cleaning operation* each month, and whether it is recycled onsite or disposed offsite.

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(6) **Spray booth cleaning.** Each owner or operator of a *stationary source* subject to this subsection shall not use compounds containing more than 8.0 percent by weight of *VOC* for cleaning spray booth components other than *conveyors*, *continuous coaters* and their enclosures, or metal filters. However, when the spray booth *coating* or other protective material used to cover the booth is being replaced, the owner or operator shall use no more than 1.0 gallon of *organic solvent* per booth to prepare the surface of the booth prior to applying the booth *coating*.

(7) **Storage requirements.** Each owner or operator of a *stationary source* subject to this subsection shall use *normally closed containers* for storing finishing, gluing, cleaning, and washoff materials.

(8) **Application equipment requirements.** Each owner or operator of a stationary source subject to this subsection shall not use *conventional air spray guns* to apply *finishing materials*, except as provided below:

- (i) When applying *finishing materials* that have a *VOC* content no greater than 1.0 lb *VOC/lb solids*, as applied;
- (ii) When performing *touchup and repair* under the following conditions:

(A) The *touchup and repair* occurs after completion of *the finishing operation*; or

² NOTE: EPA did Incorporate by Reference 5-253.16(d)(5) "Chemical composition of cleaning and washoff solvents," into the Vermont State Implementation Plan (SIP). The State of Vermont did not intend this section to be included as part of the Vermont SIP.

(B) The *touchup and repair* occurs after the application of stain and before the application of any other type of *finishing material*, and the materials used for *touchup and repair* are applied from a container that has a volume of no more than 2.0 gallons.

(iii) When the spray gun is aimed and triggered automatically, not manually;

(iv) When emissions from the *coating application station* are directed to a *VHAP* or *VOC* control device;

(v) When the conventional air gun is used to apply *finishing materials* and the cumulative total usage of that *finishing material* is no more than 5.0 percent of the total gallons of *finishing material* used during the semiannual reporting period; or

(vi) When the conventional air gun is used to apply *stain* on a part for which it is technically or economically infeasible to use any other spray application technology and the *Air Pollution Control Officer* has approved, in writing, a submission from the owner or operator demonstrating such infeasibility on the basis, alone or in combination, that:

(1) The production speed is too high or the part shape is too complex for one operator to coat the part and the application station is not large enough to accommodate an additional operator; or

(2) The excessively large vertical spray area of the part makes it difficult to avoid sagging or runs in the *stain*.

(9) **Line cleaning.** Each owner or operator of a *stationary source* subject to this subsection shall pump or drain all *organic solvent* used for line cleaning into a *normally closed container*.

(10) **Gun cleaning.** Each owner or operator of a *stationary source* subject to this subsection shall collect all organic solvent used to clean spray guns into a *normally closed container*.

(11) **Washoff operations.** Each owner or operator of a *stationary source* subject to this subsection shall control emissions from *washoff operations* by:

(i) Using normally closed tanks for washoff; and

(ii) Minimizing dripping by tilting or rotating the part to drain as much *solvent* as possible.

(e) Compliance procedures and monitoring requirements

(1) Each owner or operator of a *stationary source* subject to this subsection must demonstrate compliance with the provisions of (c)(1)(i) and (c)(1)(ii), as applicable, by using one of the following methods:

(i) By use of compliant *topcoats* and *sealers*, including acid-cured *topcoats* and *sealers*, as demonstrated by maintaining current *certified product data sheets* for each *topcoat* and *sealer* and by performing, prior to use, calculations to account for any dilution;

(ii) By use of *topcoats* and *sealers* with a monthly weighted average for each that achieves the emission limitations in pounds of *VOC* per pound solids of 1.8 for *topcoats* and 1.9 for *sealers*, or 2.3 for acid-cured alkyd amino vinyl sealers and 2.0 for acid-cured alkyd amino conversion varnish *topcoats*, as demonstrated by using the following formula and by maintaining current *certified product data sheets* for each *topcoat* and *sealer* and by performing, prior to use,

$$E_{VOC} = \frac{\sum_{i=1}^n M_i C_i}{\sum_{i=1}^n M_i}$$

calculations to account for any dilution:

Where:

EVOC = the average *VOC* content of the *topcoats* or *sealer*, respectively, in lbs *VOC/lb solids*;

C = the *VOC* content of a particular *topcoat* or *sealer*, in lbs *VOC/lb solids*, as applied;

M = the mass of *solids*, in pounds, in a particular *topcoat* or *sealer* used during the monthly averaging period.

(iii) By achieving equivalent emission reductions through the use of a control system and monitoring requirements approved by the *Air Pollution Control Officer*; or

(iv) By achieving equivalent emission reductions through the use of any combination, approved by the *Air Pollution Control Officer*, of compliant *topcoats* and *sealers*, an averaging approach and a control system, each as provided for above.

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(f) Record keeping requirements. The owner or operator of a *stationary source* subject to this subsection shall maintain records of the following and shall retain such records for a minimum period of five years:

(1) A *certified product data sheet* for each *finishing material, thinner, contact adhesive, and strippable spray booth coating* used at the source.

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(3) The *VOC* content in *lb VOC/lb solids, as applied*, of each *topcoat, sealer, and strippable spray booth coating* used at the source.

(4) The quantity of each *finishing material, thinner, contact adhesive, and strippable spray booth coating* used at the source each month.

(5) For *stationary sources* demonstrating compliance with (c)(1)(i), (c)(1)(ii), (c)(2)(i), or (c)(3)(i) through monthly averaging, the averaging calculation completed in accordance with (e)(1)(ii) and (e)(2)(ii), as applicable, for each month.

(6) For *stationary sources* with *continuous coaters* demonstrating compliance with (c)(1)(i), (c)(1)(ii), (c)(2)(i), or (c)(3)(i) through the use of compliant *coatings* where the *VHAP* or *VOC* content of the *coating* in the reservoir is not calculated from records, the owner or operator shall maintain records of the following:

(i) *Solvent* and *coating* additions to the *continuous coater* reservoir;

(ii) Viscosity measurements; and

(iii) Data demonstrating that viscosity is an appropriate parameter for demonstrating compliance, as applicable.

(7) For *stationary sources* demonstrating compliance with (c)(1)(i), (c)(1)(ii), (c)(2)(i), or (c)(3)(i) by use of a control device, any records required by *the Air Pollution Control Officer*.

³ NOTE: EPA did Incorporate by Reference 5-253.16(e)(2) or 5-253.16(e)(3) into the Vermont State Implementation Plan (SIP). The State of Vermont did not intend these sections to be included as part of the Vermont SIP.

⁴ NOTE: EPA did Incorporate by Reference 5-253.16(f)(2) into the Vermont State Implementation Plan (SIP). The State of Vermont did not intend this section to be included as part of the Vermont SIP.

(8) The work practice implementation plan and all records associated with fulfilling the requirements of that plan, including, but not limited to:

- (i) Records demonstrating that the operator training program is in place;
- (ii) Records collected in accordance with the inspection and maintenance plan;
- (iii) Records associated with the cleaning *solvent* accounting system;
- (iv) Records associated with the limitation on the use of *conventional air spray* guns showing total *finishing material* usage and the percentage of *finishing materials* applied with *conventional air spray* guns for each semiannual period; and
- (v) Copies of documentation such as logs developed to demonstrate that the other provisions of the work practice implementation plan are followed.

(9) All compliance status reports and all other information submitted with those reports.

(g) Reporting requirements.

(1) The owner or operator of a *stationary source* subject to this subsection shall submit a semi-annual compliance status report covering the previous 6 months of *wood furniture manufacturing operations*. The semiannual reports shall cover the periods January 1 through June 30 and July 1 through December 31. The first report shall be submitted within 30 calendar days after the end of the 6-month period in which the source becomes subject to this subsection. Subsequent reports shall be submitted within 30 calendar days after the end of the 6-month reporting periods. The semiannual reports shall include:

- (i) For *stationary sources* demonstrating compliance with (c)(1)(i), (c)(1)(ii), (c)(2)(i), or (c)(3)(i) through the use of compliant *coatings*, a statement that compliant *coatings* and *thinners* have been used each day in the semiannual reporting period;
- (ii) For *stationary sources* demonstrating compliance with (c)(1)(i), (c)(1)(ii), (c)(2)(i), or (c)(3)(i) through monthly averaging, the averaging calculations completed in accordance with (e)(1)(ii) and (e)(2)(ii), as applicable, for each month within the semiannual reporting period and a statement that the source is in compliance with the respective standard;
- (iii) For *stationary sources* with *continuous coaters* demonstrating compliance with (c)(1)(i), (c)(1)(ii), (c)(2)(i) or (c)(3)(i) through the use of compliant *coatings*:
 - (A) A statement that compliant *coatings*, as determined by the *VHAP* or *VOC* content of the *coating* in the reservoir and the *VHAP* or *VOC* content as calculated from records, and compliant *thinners* have been used each day in the semiannual reporting period; or

(B) A statement that compliant *coatings*, as determined by the *VHAP* or *VOC* content of the *coating* in the reservoir, have been used each day in the semiannual reporting period. Additionally, a statement that the viscosity of the *coating* in the reservoir has not been less than the viscosity of the initial *coating*, that is, the *coating* that is initially mixed and placed in the reservoir, for any day in the semiannual reporting period.

A *stationary source* is in violation of the standard when a sample of the as-applied coating exceeds the applicable limit, as determined using EPA Method 311 and/or Method 24, or the viscosity of the *coating* in the reservoir is less than the viscosity of the initial *coating*.

(iv) For *stationary sources* demonstrating compliance with (c)(1)(i), (c)(1)(ii), (c)(2)(i), or (c)(3)(i) by use of a control device, an excess emissions report that includes all elements required by the *Air Pollution Control Officer*.

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(vii) A statement that compliant *strippable spray booth coatings* have been used each day in the semiannual reporting period;

(viii) A statement that the work practice implementation plan is being followed; and

(ix) If the *stationary source* was in violation of any provision of this subsection, the measures taken to bring the source into compliance.

(h) Compliance. A *stationary source* subject to this subsection shall be in compliance on or before the effective date of this rule, immediately upon commencement of operation, or when the source becomes subject to this subsection, whichever occurs later.

⁵ NOTE: EPA did Incorporate by Reference 5-253.16(g)(1)(v) or 5-253.16(g)(1)(vi) into the Vermont State Implementation Plan (SIP). The State of Vermont did not intend these sections to be included as part of the Vermont SIP.