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*U.S. Environmental
Protection Agency*

**FINAL
MAXIMUM ACHIEVABLE CONTROL
TECHNOLOGY REGULATION
AFFECTING:**

**WOOD
FURNITURE
MANUFACTURING**

FACT SHEET

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Final MACT for The Wood Furniture Manufacturing Industry

Background

The Clean Air Act as amended in 1990 established the basis for the Environmental Protection Agency (EPA) to set new requirements for hazardous air pollutants (HAPs). The EPA has promulgated a Maximum Available Control Technology (MACT) standard for the wood furniture manufacturing industry. The MACT, a nationwide standard, applies to 188 toxic chemicals listed in the Clean Air Act as HAPs.

Affected Sources

This MACT standard applies only to major sources in the wood furniture manufacturing industrial classification codes found below in Table 1. A major source of HAPs is one that emits or has the potential to emit 10 tons per year (tpy) of an individual HAP or 25 tpy of a combination of all HAPs per year. Potential to Emit means your ability to emit a pollutant or pollutants taking into account the maximum design capacity of your equipment and your facility - manufacturing operations are considered to be taking place 365 days per year, 24 hours per day. Emission control equipment may reduce the amount of "potential" emissions.

Table 1. Wood Furniture Categories Affected by Final MACT

<u>SIC Code</u>	<u>Description</u>
2434	Wood Kitchen Cabinets
2511	Wood household furniture, except upholstered
2512	Wood household furniture, upholstered
2517	Wood television, radio, phonograph, and sewing machine cabinets
2519	Household furniture, not otherwise classified
2521	Wood office furniture
2531	Public building and related furniture
2541	Wood office and store fixtures, partitions, shelving, and lockers
2599	Furniture and fixtures, not otherwise classified
5712	Furniture Stores (Custom Kitchen Cabinets)

SIC 7641 Wood Furniture Refinishing and Restoration is not included as affected sources.

Exemptions

If your facility qualifies for one of the following exemptions you can be classified as an area source and will not be subject to Title V Federal Operating Permits. Each of the exemptions will require that you keep and maintain records providing proof of your exemption for a period of five(5) years. Also, at least 90% of your plant wide emissions must be associated with the manufacture of wood furniture for these exemptions to apply. The exemptions are as follows:

- . You can be exempt if you are using or agree to use no more than 250 total gallons per month or 3,000 gallons per rolling 12-month period of finishing materials, adhesives, cleaning solvents and washoff solvents.
- . You are exempt if you are using more than 250 gal/month or 3000 gal/yr if you use materials that contain no more than 5 tons of any one HAP per rolling 12 month period or no more than 12.5 tons of any combination of HAPs per rolling 12 month period, including materials from other emission sources not associated with the manufacture of wood furniture.
- . You are also exempt if you are an "Incidental" Wood Furniture Manufacturing facility. These sources use no more than 100 gal/month of wood furniture coatings and adhesives, but are major due to other unrelated operations at the facility, i.e., operations not included in the SIC codes for the wood furniture industry.

Approach

The MACT regulates emissions of HAPs from all applicable wood furniture surface coating operations nationwide (see Table 1).

The MACT standard contains numerical emission limits for surface coating operations including finishing, contact adhesive, and peelable spray booth coating (see Table 2). Finishes include stains, washcoats, basecoats, fillers, sealers, glazes, highlighters, enamels and topcoats.

The MACT also contains work practice standards (see Table 4) which will reduce waste and evaporation of HAPs through the implementation of good housekeeping measures such as keeping containers of materials closed, periodic training of operators who use solvent and/or coatings, and performing periodic inspections to locate and repair of leaking equipment. In addition, the rule requires use of spray equipment which is believed to be more efficient in applying coatings and requires accounting procedures for the quantity of solvent used for cleaning and washoff, the number of times each piece of equipment is washed off, and the reason for the washoff. These practices will help focus attention on quality control issues that result in the minimization of HAP and volatile organic compound emissions.

Compliance Schedule

- The MACT Standard was proposed on December 6, 1994. On December 7, 1995, the final MACT was adopted.
- Sources emitting more than 50 tpy of HAPs have until November 21, 1997 to comply with the final rule.
- Sources emitting less than 50 tpy of HAPs have until December 7, 1998 to comply with the final rule.

Compliance Methods

Compliance with the MACT Standard can be achieved by using compliant coatings; that is, either non-HAP coatings or those meeting the limits shown in Table 2. High-solids coatings and water-based coatings have fewer Volatile Organic Compounds (VOCs) and HAPs and are becoming more available. Although add-on control may also be used to meet the standards, the use of less solvent and fewer toxics in coatings and finishes is preferred (and may be more economical).

The basic methods for complying with the standards for finishing operations are the use of low HAP materials or control devices such as incinerators. For cleaning operations, the basic method of complying with the standards are based on the use of low-VOC strippable coatings for spray booths.

Limits for MACT

"As applied" means after the coating has been thinned or diluted with additional solvent (which is usually done at the furniture manufacturing facility). The "as applied" value for the HAP or VOC can be calculated from the manufacturer's data (e.g., for the case of VOC, Test Method 24 data) and the quantity of VOC which was added to the coating.

- Existing Finishing Operations: 1.0 lb of HAP per pound of solid as applied.

- New Finishing Operations: 0.8 lbs of HAP per pound of solid as applied. 1.0 lb of HAP per pound of solid as applied for stains. Max % HAP for thinners is 10%.

- Peelable Spray Booth Coating: 0.8 lb of VOC per lb for both existing and new sources.

- Existing Contact Adhesive 1.8 lbs of HAP per pound for foam adhesives that meet flammability tests and 1.0 lbs of HAP per pound for all other adhesives. There are no VHAP limits for aerosol adhesives and for contact adhesives applied to nonporous substrates.

- New Contact Adhesive Operations: 0.2 lbs per pound for most adhesives and foams and no VHAP content limits on aerosol adhesives and contact adhesives applied to nonporous substrates.

A summary of all of the MACT limits can be found on the next page in Table 2.

Table 2. Summary of Final MACT Emission Limit

Emission Point	Existing Source	New Source
Finishing Operations		
(1) Achieve a weighted average HAP content across all coatings (maximum lb VHAP/lb solids)	1.0^a	0.8^a
(2) Use compliant finishing materials (maximum lb VHAP/lb solids)		
- stains	1.0 ^a	1.0 ^a
- washcoats	1.0 ^{a,b}	0.8 ^{a,b}
- sealers	1.0 ^a	0.8 ^a
- topcoats	1.0 ^a	0.8 ^a
- basecoats	1.0 ^{a,b}	0.8 ^{a,b}
- enamels	1.0 ^{a,b}	0.8 ^{a,b}
- thinners (maximum percent HAP allowable)	10.0	10.0
(3) As an alternative, use add-on control device	1.0^c	0.8^c
(4) Use a combination of (1), (2) and (3)	1.0	0.8
Cleaning Operations		
Strippable spray booth material (max VHAP content = lb VOC/lb solids)	0.8	0.8
Contact Adhesive Operations		
(1) Use compliant contact adhesives (maximum lb VHAP/lb solids)		
(i) For aerosol adhesives, and for contact adhesives applied to nonporous substrates	NA ^d	NA ^d
(ii) For foam adhesives used in products that meet flammability requirements	1.8 ^a	0.2 ^a
(iii) For all other adhesives (including foam adhesives used in products not meeting flammability requirements); or	1.0 ^a	0.2 ^a
(2) Use a control device	1.0^e	0.2^e

a The limits refer to the HAP content of the coating or adhesive as applied.

b Compliant washcoats, basecoats, and enamels must be used if they are purchased premade; that is, they are not formulated on site by thinning other finishing materials. If they are formulated on site, they must be formulated with compliant finishing materials and thinners containing no more than 3 percent HAP by weight.

c The control device must operate at an efficiency equivalent to no greater than 1.0 lb (or 0.8 lbs) of HAP being emitted from the affected emission source per pound of solids used.

d There is no limit on the VHAP content of these adhesives.

e The control device must operate at an efficiency that is equivalent to no more than 1.0 lb (or 0.2 lb) Volatile HAP (VHAP) emitted from the affected emission point per pound of solids used.

Work Practice Standards

In addition to numerical standards, the rule minimizes evaporative emissions through work practices covering storage, transfer, and applications in finishing, contact adhesive, cleaning, and wash off operations. These practices include employee training, inspection and maintenance, and housekeeping measures (such as "containers should be closed when not in use").

Table 4. Summary of Work Practice Standards for the MACT

Emission Source	Work Practice
Finishing Operations	
Transfer Equipment Leaks	<ul style="list-style-type: none"> - Develop a written plan to address the inspection, maintenance and repair of leaks. The plan must have a minimum inspection frequency of once per month and procedures for addressing malfunctions.
Storage containers including mixing equipment	<ul style="list-style-type: none"> - When such containers are used for HAP or HAP-containing materials, keep covered when not in use.
Application equipment	<ul style="list-style-type: none"> - Limit use of conventional air spray guns and encourage use of more efficient transfer technology.
Finishing materials	<ul style="list-style-type: none"> - Demonstrate that usage of HAPs has not increased except as allowed by the standards; document in the formulation assessment.
Cleaning Operations	
Gun/line cleaning	<ul style="list-style-type: none"> - Collect cleaning solvent in a closed container. - Cover all containers associated with cleaning when not in use.
Spray booth cleaning	<ul style="list-style-type: none"> - Do not use solvents unless cleaning conveyors or metal filters.
Wash-off tanks/general cleaning.	<ul style="list-style-type: none"> - Do not use chemicals found in Table 4 of the Rule for cleaning or washoff solvents if their concentrations are subject to MSDS reporting, as required by OSHA. - Keep wash tank covered when not in use. - Minimize dragout by tilting and/or rotating the part to drain as much solvent as possible and allow sufficient time to dry. - Maintain a log of the quantity and type of solvent used for washoff cleaning as well as the quantity of waste shipped off site and the fate of this waste (recycling or disposal). - Maintain a log of the number of pieces washed off and the reason for washoff.
Miscellaneous	
Operator training	<ul style="list-style-type: none"> - All operators shall be trained on proper application, cleanup, and equipment use. - The training program shall be written and retained on site.
Implementation plan	<ul style="list-style-type: none"> - Develop a plan to implement work practice standards. - Maintain plan on site.

The work practice standards apply to both existing and new major sources. Air guns will be allowed only in the following instances:

- when used in conjunction with coatings less than 1.0 lb VOC/lb of solids
- for touch up and repair under limited conditions
- when spray is automated
- when add-on controls are used
- if the cumulative application is less than 5% of total gallons of coating applied
- if the permitting agency determines other application technology is economically or technically infeasible.

Reporting and Housekeeping

All facilities will be required to keep records and provide periodic reports to the air pollution control agency. Records should be maintained and consolidated in one location for convenient review by regulatory officials. The recordkeeping requirements associated with the proposed rule are summarized in Table 5.

Table 5. MACT: Recordkeeping and Reporting Requirements

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|---|--|
| <input type="checkbox"/> Certified product data sheet for each material used in finishing, strippable spray booth coating, thinning and adhesive operations. | <input type="checkbox"/> Work Practice Implementation Plan and records associated with fulfilling the requirements of the work practice standards. |
| <input type="checkbox"/> VHAP content, in lb VHAP/lb solids as applied for each finishing and adhesive material that is covered by the MACT and VOC content in lb VOC/lb solids as applied for each strippable spray booth coating subject to the MACT. | <input type="checkbox"/> Calculations showing control efficiency of any control equipment used to meet the standard. |
| <input type="checkbox"/> Quantities of finishing and thinning materials used to support any calculations and copies of averaging calculations. | <input type="checkbox"/> Compliance certifications with all status reports. |
| <input type="checkbox"/> Solvent and coating additions, viscosity measurements, and data showing relationship between viscosity and VHAP content. | <input type="checkbox"/> Semi-annual reporting is required. |
| | <input type="checkbox"/> Use of control equipment must conform to the Part 63 requirements that, in some cases, require quarterly reporting. |
| | <input type="checkbox"/> Records must be retained for 5 years. |

CONTACTS

For more complete compliance information refer to the final rule or contact one of the following:

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