

# TITLE V OPERATING PERMIT BOILERPLATE PROCEDURES FOR WOOD FURNITURE AND FIXTURES MANUFACTURING FACILITIES

## PURPOSE

To specify requirements for Title V Federal Operating Permit approval of all wood furniture and fixtures manufacturing facilities. These facilities are those defined by the major group source industrial classification number "25" (see the SIC Manual). Operations that occur at such facilities include but are not limited to boiler operation, woodworking, finishing, wood drying, and gluing. All applicable conditions in existing permits should be merged with the applicable conditions needed for existing operations at these facilities. Additional details concerning applicability are given in Section VI.A.

The boilerplate is meant to provide a guideline for the minimum requirements of the Department. More stringent requirements may be imposed if necessary to demonstrate compliance with special requirements, e.g. NAAQS.

This boilerplate does not contain any requirements for new or modified sources or any sources applicable to the New Source Performance Standards (NSPS), however, these procedures and boilerplate may be combined with previously approved procedures and boilerplates.

## REFERENCES

Commonwealth of Virginia Regulations for the Control and Abatement of Air Pollution; Part I, Part II, Rule 4-8, Rule 4-17, Rule 4-35, Part V, Part VIII, §120-08-05; Appendix R; American Society for Testing and Materials (ASTM) Standards D396, "Standard Specification for Fuel Oils" and D1835, "Standard Specification for Liquefied Petroleum Gases"; AP-42.

## EQUIPMENT LISTING

### I. EQUIPMENT SPECIFICATIONS

List equipment specifications necessary to identify equipment at the facility. Equipment subject to existing requirements 9 VAC 5 Chapter 40 and new and modified 9 VAC 5 Chapter 50 of the State Regulations should be included in this equipment list. Include also any associated control device and any applicable permit date for equipment that is currently subject to a new source permit.

### II. INSIGNIFICANT EQUIPMENT AND ACTIVITIES

List the equipment necessary to identify that equipment at the facility that can be classified as insignificant under 9 VAC 5-80-720 A, B, and/or C [formerly Appendix W, Section II A, B, and/or C] of the State Regulations.

## FUEL BURNING EQUIPMENT

### 1) DEFINITIONS

The following definitions are for use in this guideline and do not necessarily have the same meaning in other portions of the regulations.

Boiler - a device that combusts fuel by external combustion to produce steam or to heat any medium.

Distillate oil - fuel oil (including diesel oil) that complies with the specifications for fuel numbers 1 or 2 as defined by the American Society for Testing and Materials in ASTM D396. This definition does not include number 4 oil nor does it include used or waste oil. Although diesel oil has its own ASTM specification,

numbers 1 and 2 diesel oil also meet the specifications for numbers 1 and 2 fuel oil and should be considered as such.

Existing source - means any stationary source other than a new source or modified source.

Fuel burning equipment - means any furnace, with fuel burning equipment appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat to be utilized by indirect heat transfer or producing power. This includes facilities that are designed as boilers to produce steam or heated water and are designed to burn either fossil fuel or refuse derived fuel. It does not include such facilities if designed primarily to burn raw refuse. This includes fuel burning equipment units (both permanently installed units and portable units) used to replace the power used by mobile sources.

Fuel burning equipment installation - all fuel burning equipment units within a stationary source in operation prior to October 5, 1979.

Liquid petroleum gas - petroleum gas, including butane and propane, as defined by the American Society for Testing and Materials in ASTM D1835.

Modified source - means any stationary source (or portion thereof), the modification of which commenced on or after March 17, 1972.

Natural gas - a naturally occurring mixture of hydrocarbon and non-hydrocarbon gases found in geologic formations beneath the earth's surface that has been mined, and made commercially available through a pipeline distribution system. This definition does not include synthetic gases or byproducts of chemical or refinery processes.

New source - means any stationary source (or portion thereof), the construction or relocation of which commenced on or after March 17, 1972; and any stationary source (or portion thereof), the reconstruction of which commenced on or after December 10, 1976.

Residual oil - fuel oil that complies with the specifications for fuel numbers 4, 5, and 6 as defined by the American Society for Testing and Materials in ASTM D396. This definition does not include used or waste oil. Although diesel oil has its own ASTM specification, numbers 4, 5, and 6 diesel oil also meet the specifications for numbers 4, 5, and 6 fuel oil and should be considered as such.

Total annual heat input - the summation of each consecutive twelve (12) month period's individual heat input for each fuel for each boiler.

Wood - means wood, wood residue, bark, or any derivative fuel or residue thereof, in any form including but not limited to sawdust, sanderdust, wood chips, scraps, slabs, millings, shavings, and processed pellets made from wood or other forest residues, including wood waste materials generated from the manufacturing processes of sources from SIC Major Group 25 or other SIC codes as appropriate.

Wood waste - any wood or wood related material which may contains chemical treatments or has affixed thereto paint and/or finishing materials or paper or plastic laminates

## 2) Control Technology

### a) Best Available Control Technology (BACT)

Additional or new BACT determinations are not required for existing operations. BACT requirements in existing permits should be carried to the Title V Permit. BACT requirements that may have been accidentally left out of previous permits may be included in the Title V Permit (see woodworking procedures if necessary).

### b) Maximum Available Control Technology (MACT)

MACT requirements governing hazardous air pollutants are applicable through Title V Federal Operating Permits. When promulgated the requirements of any applicable MACT must be included in the permit.

3) FUEL QUALITY SPECIFICATIONS

a) Heat Content

Unless otherwise stated by the applicant, the fuel shall be assumed to have the following heat content:

natural gas:	1,000 Btu/ft <sup>3</sup>
liquid petroleum gas (butane):	97,000 Btu/gal
liquid petroleum gas (propane):	90,000 Btu/gal
#1 distillate oil (including diesel)	134,000 Btu/gal
#2 distillate oil (including diesel)	138,000 Btu/gal
#4 residual oil	144,000 Btu/gal
#5 residual oil	146,000 Btu/gal
#6 residual oil	150,000 Btu/gal

coal and wood: reported by the applicant. The heat content value reported should conform to the fuel on an "as fired" basis, and on a higher heating value basis. The moisture content on an "as fired" basis shall also be reported by the applicant.

b) Density

Unless specified by the applicant, the fuel shall be assumed to have the following density:

natural gas:	0.042 lb/ft <sup>3</sup>
liquid petroleum gas (butane):	4.84 lb/gal
liquid petroleum gas (propane):	4.24 lb/gal
#1 distillate oil (including diesel)	6.79 lb/gal
#2 distillate oil (including diesel)	7.05 lb/gal
#4 residual oil	7.78 lb/gal
#5 residual oil	7.83 lb/gal
#6 residual oil	7.88 lb/gal
coal:	reported by applicant.
wood:	reported by applicant.

c) Fuel Sulfur Content

Unless specified and documented by specific analyses, the fuel shall be assumed to have the following sulfur content, by weight:

natural gas	negligible*
liquid petroleum gas (butane)	0.014 %**
liquid petroleum gas (propane)	0.0185 %**
#1 and #2 distillate oil (including diesel)	0.5 %**
#1 and #2 over the road diesel oil	0.05%**
#4, #5, and #6 residual oil	reported by applicant
coal	reported by applicant
wood	reported by applicant

\* - Refer to natural gas/distillate oil-fired boilerplate procedures

\*\* - Maximum based on ASTM standards

d) Fuel Ash Content -- *Ash content for distillate and residual oils should be from ASTM specifications.*

natural gas:	negligible
liquid petroleum gas (butane):	negligible
liquid petroleum gas (propane):	negligible
#1 distillate oil (including diesel)	negligible
#2 distillate oil (including diesel)	negligible
#4 residual oil	reported by applicant
#5 residual oil	reported by applicant
#6 residual oil	reported by applicant

coal:  
wood:

reported by applicant  
reported by applicant

#### 4) EMISSIONS CALCULATIONS

Unless specified and well documented by the applicant, the following emission factors shall be used to calculate **uncontrolled** emissions (*From Supplement B of 5th edition of AP-42. Check and compare the factors with the latest from AP-42.*):

natural gas - SCC 10200602 (for all except SO<sub>2</sub>)

TSP	14.0	lbs/10 <sup>6</sup> ft <sup>3</sup>
PM-10	14.0	lbs/10 <sup>6</sup> ft <sup>3</sup>
NOx	140.0	lbs/10 <sup>6</sup> ft <sup>3</sup>
CO	35.0	lbs/10 <sup>6</sup> ft <sup>3</sup>
VOC	2.8	lbs/10 <sup>6</sup> ft <sup>3</sup>
SO <sub>2</sub>	0.6	lbs/10 <sup>6</sup> ft <sup>3</sup>

Emission factor developed by DEQ-Air Division for natural gas - assume S = 0 for pipeline quality natural gas - this factor may be useful for other gases not meeting pipeline specifications:

liquid petroleum gas (butane) - SCC 10201001

TSP	0.6	lbs/10 <sup>3</sup> gal	
PM-10	0.6	lbs/10 <sup>3</sup> gal	
SO <sub>2</sub>	0.09 x S	lbs/10 <sup>3</sup> gal	S = gr/100 ft <sup>3</sup>
NOx	21.0	lbs/10 <sup>3</sup> gal	
CO	3.6	lbs/10 <sup>3</sup> gal	
VOC	0.4	lbs/10 <sup>3</sup> gal	

liquid petroleum gas (propane) - SCC 10201002

TSP	0.6	lbs/10 <sup>3</sup> gal	
PM-10	0.6	lbs/10 <sup>3</sup> gal	
SO <sub>2</sub>	0.10 x S	lbs/10 <sup>3</sup> gal	S = gr/100 ft <sup>3</sup>
NOx	19.0	lbs/10 <sup>3</sup> gal	
CO	3.2	lbs/10 <sup>3</sup> gal	
VOC	0.3	lbs/10 <sup>3</sup> gal	

distillate oil - SCC 10200501

TSP	2.0	lbs/10 <sup>3</sup> gal	
PM-10	1.0	lbs/10 <sup>3</sup> gal	
Lead	0.0	lbs/10 <sup>3</sup> gal	
SO <sub>2</sub>	143.6 x %S	lbs/10 <sup>3</sup> gal	
NOx	20.0	lbs/10 <sup>3</sup> gal	
CO	5.0	lbs/10 <sup>3</sup> gal	
VOC	0.2	lbs/10 <sup>3</sup> gal	

residual oil (#4) - SCC 10200504

TSP	7.0	lbs/10 <sup>3</sup> gal	
PM-10	6.02	lbs/10 <sup>3</sup> gal	
Lead	0.0	lbs/10 <sup>3</sup> gal	
SO <sub>2</sub>	151.6 x %S	lbs/10 <sup>3</sup> gal	
NOx	20.0	lbs/10 <sup>3</sup> gal	
CO	5.0	lbs/10 <sup>3</sup> gal	
VOC	0.2	lbs/10 <sup>3</sup> gal	

residual oil (#5) - SCC 10200404

TSP	10.0	lbs/10 <sup>3</sup> gal	
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PM-10	8.6 lbs/10 <sup>3</sup> gal
Lead	0.004 lbs/10 <sup>3</sup> gal
SO <sub>2</sub>	158.6 x %S lbs/10 <sup>3</sup> gal
NOx	55.0 lbs/10 <sup>3</sup> gal
CO	5.0 lbs/10 <sup>3</sup> gal
VOC	0.28 lbs/10 <sup>3</sup> gal

residual oil (#6) - SCC 10200401

TSP	9.19 x %S + 3.22 lbs/10 <sup>3</sup> gal
PM-10	7.9 x %S + 2.77 lbs/10 <sup>3</sup> gal
Lead	0.004 lbs/10 <sup>3</sup> gal
SO <sub>2</sub>	158.6 x %S lbs/10 <sup>3</sup> gal
NOx	55.0 lbs/10 <sup>3</sup> gal
CO	5.0 lbs/10 <sup>3</sup> gal
VOC	0.28 lbs/10 <sup>3</sup> gal

coal - SCC 10300208

TSP	15.0 lbs/ton
PM-10	6.2 lbs/ton
Lead	0.013 lbs/ton
SO <sub>2</sub>	31.0 x %S lbs/ton
NOx	9.5 lbs/ton
CO	11.0 lbs/ton
VOC	1.3 lbs/ton

wood -

Bark	Industrial - SCC 10200901 & 10200904	Commercial/Institutional - 10300901
TSP	47.0 lbs/ton	
PM10	16.8 lbs/ton	
CO	13.6 lbs/ton	
SO <sub>2</sub>	0.15 lbs/ton	
NOx	1.5 lbs/ton	
VOC	0.12 lbs/ton	

Wood/bark	Industrial - SCC 10200902 & 10200905	Commercial/Institutional - 10300902
TSP	7.2 lbs/ton	
PM10	6.48 lbs/ton	
CO	13.6 lbs/ton	
SO <sub>2</sub>	0.15 lbs/ton	
NOx	1.5 lbs/ton	
VOC	0.12 lbs/ton	

Wood	Industrial - SCC 10200903 & 10200906	Commercial/Institutional - 10300903
TSP	8.8 lbs/ton	
PM10	use 8.8 lbs/ton	(TSP = PM10)
CO	13.6 lbs/ton	
SO <sub>2</sub>	0.15 lbs/ton	
NOx	1.5 lbs/ton	
VOC	0.12 lbs/ton	

5) SPECIFIC REQUIREMENTS

a) Applicability

These boilerplate conditions apply to operation of boilers fired by any combination of natural gas, LP gas, distillate oil, residual oil, coal, wood, or any other approved fuel. Please note that combustion units designed and used exclusively for comfort or space heating that use liquid petroleum gas or natural gas as fuel are exempt from all permit requirements by Title V and Rule 8-5 of State Regulations. Units that use liquid petroleum gas or natural gas as fuel with oil backup may not be exempt.

b) NSPS Applicability

For all emissions units with existing NSPS requirements the applicable requirements should be included in the operating permit. Although no specific restrictions are required for NSPS units less than 30 million BTU per hour, NSPS designation should appear on, and EPA notification should be made for all permits issued.

c) Permit Limits

- i) Permit limits are required for each regulated pollutant having emissions of greater than or equal to 0.5 tons per year. SO<sub>2</sub> limits are not needed for units firing natural gas only as emissions are assumed to be negligible.
- ii) For units capable of burning two or more fuels, lbs/hr limits are based on the higher emission rate of the fuels combusted. Separate emission rates are not necessary for each fuel. However, it is recommended that calculations be performed to confirm this assumption. (See attached spreadsheet/tables.)  
Annual emissions limits in tons/yr are based on the permitted combination of fuel that produces the highest emission rate.
- iii) Rule 4-8 of the State Regulations uses the term "fuel burning equipment installation" which means to include all of the fuel burning equipment units at a facility in operation prior to October 5, 1979. If the construction date or initial start-up date of a boiler is after this date, the particulate and sulfur dioxide requirements do not apply to that boiler. However, the following requirements should be used as guideline values if no permit limits exist or the source was exempt from permitting.

d) Sulfur Dioxide Emissions

- i) SO<sub>2</sub> emissions from natural gas firing are assumed negligible.
- ii) SO<sub>2</sub> limits for liquid petroleum gas are calculated based on the emission factors listed in Section III above.
- iii) The sulfur content of the natural gas, liquid petroleum gas, and distillate oil used in each boiler shall not exceed the values listed in section IV.C. in accordance with ASTM standards.
- iv) For AQCR 1 through 6: All fuel burning equipment installations must meet an SO<sub>2</sub> emissions limit of 2.64K.  
  
For AQCR 7: All fuel burning equipment installations must meet an SO<sub>2</sub> emissions limit of 1.06K for liquid or gaseous fuels and 1.52K for solid fuels, where K is the heat input at total capacity expressed in Btu x 10<sup>6</sup> per hour.
- v) The sulfur content of the residual oil burned in residual oil- fired units with emissions controls may vary, provided that the requirements listed above are met.
- vi) The sulfur content of distillate burned in oil-fired units may be specified if needed.
- vii) The sulfur content of coal burned in coal-fired units may be specified if needed.
- viii) The sulfur content of wood burned in wood-fired units may be specified if needed.

e) Particulate Emissions --- Unless stated by a permit the following should be used to determine particulate emissions.

- i) Particulate limits for natural gas and liquid petroleum gas are calculated based on the emission factors listed in Section III above and are assumed negligible.
- ii) Particulate emissions in AQCR 1 through 6 shall not exceed the following limits:

- (1) For fuel burning equipment installations with total capacity less than  $10 \times 10^6$  Btu per hour, the maximum allowable emission ratio shall be 0.6 pounds of particulate per million Btu input.
- (2) For fuel burning equipment installations with total capacity between  $10 \times 10^6$  and  $10,000 \times 10^6$  Btu per hour, the maximum allowable emission ratio, E (pounds of particulate per million Btu input) =  $1.0906H^{-0.2594}$ , where H is the total capacity in millions of Btu per hour.
- (3) For fuel burning equipment installations with total capacity in excess of  $10,000 \times 10^6$  Btu per hour, the maximum allowable emission ratio shall be 0.1 pounds of particulate per million Btu input.

iii) Particulate emissions in AQCR 7 shall not exceed the following limits:

- (1) For fuel burning equipment installations with total capacity less than  $100 \times 10^6$  Btu per hour, the maximum allowable emission ratio shall be 0.3 pounds of particulate per million Btu input.
- (2) For fuel burning equipment installations with total capacity between  $100 \times 10^6$  and  $10,000 \times 10^6$  Btu per hour, the maximum allowable emission ratio, E (pounds of particulate per million Btu input) =  $0.9000H^{-0.2386}$ , where H is the total capacity in millions of Btu per hour.
- (3) For fuel burning equipment installations with total capacity in excess of  $10,000 \times 10^6$  Btu per hour, the maximum allowable emission ratio shall be 0.1 pounds of particulate per million Btu input.

f) Other Criteria Pollutants

Emissions standards for other criteria pollutants are calculated based on the emission factors listed in Section III above.

g) Opacity

For all boilers, visible emissions shall not exceed 20 percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed 60 percent opacity for existing sources or 30 percent opacity for new/modified sources. Other, more restrictive opacity limits that have been previously required by the Department, should be included in the permit. This condition applies at all times except during startup, shutdown, or malfunction.

h) Fuel Quality Verification

- i) No fuel sampling is required.
- ii) For distillate oil, the permittee must obtain a "fuel supplier certification" that includes the name of the oil supplier, a statement that the oil complies with the specifications for fuel oil numbers 1 or 2, as defined by ASTM D396 and maximum sulfur content of the fuel, if necessary.
- iii) For residual oil, the permittee must obtain a "fuel supplier certification" that includes the following:
  - (1) The name of the oil supplier,
  - (2) The location of the oil when the sample was drawn for analysis to determine the sulfur content of the oil, specifically including whether the oil was sampled as delivered to the affected facility, or whether the sample was drawn from oil in storage at the oil supplier's or oil refiner's facility, or other location;
  - (3) The sulfur content of the oil from which the shipment came (or of the shipment itself); and
  - (4) The method used to determine the sulfur content of the oil.
- iv) For coal, the permittee must obtain a "fuel supplier certification" that includes the following:
  - (1) The name of the coal supplier;
  - (2) The location of the coal when the sample was collected for analysis to determine the properties of the coal, specifically including whether the coal was sampled as delivered to the affected facility or whether the sample was collected from coal in storage at the mine, at a coal preparation plant, at a coal supplier's facility, or at another location. The certification shall include the name of the coal

- mine (and coal seam), coal storage facility, or coal preparation plant (where the sample was collected);
  - (3) The results of the analysis of the coal from which the shipment came (or of the shipment itself) including the sulfur content, moisture content, ash content, and heat content; and
  - (4) The methods used to determine the properties of the coal.
- v) For wood, the permittee must certify that wood waste materials were generated from manufacturing processes of sources from Major SIC code 25 or other SIC codes as appropriate.
- i) Emissions Testing
- i) Emissions testing is not required for these units; however, it may be specified as necessary for any units. Examples of situations in which it may be specified are suspected NAAQS violators, opacity standard violators, CEM certification, compliance certification, and units with emissions controls.
  - ii) An opacity test is not required for any unit. It is at the discretion of the Region whether a formal opacity test is to be specified for a unit, or whether a simple opacity test be done by the Regional staff. VEEs may be required if the boiler chronically exceeds the opacity standard. VEEs may be required for compliance certification. Opacity tests may be performed at various loads.
  - iii) All emissions testing should be conducted at 90 percent of rated capacity or greater. However, many boilers only approach maximum capacity during the winter months. The timing of any emissions testing should account for seasonal load variations. Allowances may be made for units recently tested.
- j) Recordkeeping/Reporting
- i) All facilities must maintain the following records on site:
    - (1) a copy of the permit,
    - (2) a monthly record of fuel consumption specifying each fuel consumed (kept current for the most recent five years), and
    - (3) fuel supplier certifications (kept current for the most recent five years).
    - (4) compliance certification records
  - ii) Other records which a facility may be required to maintain include the following:
    - (1) a statement of the time place, and nature of training provided to each boiler operator (if required under existing permit),
    - (2) a boiler operating and maintenance procedure (if required under existing permit),
    - (3) CEM records, when applicable

Reporting of annual emissions of particulates, VOCs, and any regulated pollutant will be required for fee calculation purposes.

#### Document References:

- (1) Virginia Department of Air Pollution Control Intra-Agency Memorandum from Air Toxics Program Coordinator to Director, DTE, "Toxic Air Emissions from Utility-Sized Boilers", October 26, 1989
- (2) Air Emissions Species Manual - Volume I - Volatile Organic Compound Species Profiles, Document # EPA-450/2-88-033a, United States Environmental Protection Agency, Research Triangle Park, NC, April 1988

## WOODWORKING OPERATIONS

### 1) DEFINITIONS

The following definitions are for use in this guideline and do not necessarily have the same meaning in other portions of the regulations.

complete enclosure - the particulate emissions are not vented to the ambient air. Air flow is completely restricted while allowing for material flow.

control device - air pollution control equipment (ie., fabric filter, baghouse or equivalent, scrubber, complete enclosure, or cyclone) which will control the particulate emissions from the woodworking equipment or the pneumatic transfer of collected wood waste.

conveyors - includes, but not limited to belt conveyors, augers, ribbons, screws, etc.

emission unit - one or more pieces of woodworking equipment or a combination of woodworking equipment controlled by a wood dust pickup and collection system (either bag filter or cyclone). The woodworking equipment may be grouped together and considered as "emission units" or grouped together to form a production line or section. In some cases the entire woodworking facility can be considered as an emission unit.

woodworking equipment - equipment which produces wood dust and/or chips or shavings in the processing of wood stock. Also, included is the collection, transferring and loadout systems of the wood waste generated by the types of equipment defined by this definition.

woodworking operation - operation in which wood is processed by use of woodworking equipment. any operation involving the generation of small wood waste particles by any kind of woodworking equipment. Also includes any woodworking waste collection operation.

wood waste (wood dust) - sawdust, woodchips and/or shavings generated by woodworking equipment.

### 2) Best Available Control Technology (BACT)

Additional or new BACT determinations are not required for existing operations. BACT requirements in existing permits should be carried to the Title V Permit. BACT requirements that may have been accidentally left out of previous permits may be included in the Title V Permit (see woodworking procedures if necessary).

### 3) EMISSIONS CALCULATIONS

#### Particulate Emissions

#### i) Calculations:

If no emission factors are available, material balance shall be used to calculate the emissions.

Unless PM-10 factors are available, assume that PM-10 emissions equal the calculated Total Suspended Particulate (TSP) emissions.

When calculating the emissions, the permit writer may want to check to determine if the lb/hr emission limit agrees with the required grain loading (i.e., 0.05 grains per dry standard cubic foot § 120-04-1703 B.)

#### ii) Emission Factors

##### (1) Typical Wood Furniture Manufacturing (rough input to final product).

Unless specified and documented by the applicant, the following emission factors shall be used to calculate the emissions for a typical wood furniture manufacturing facility (ie., the wood is processed from the rough input to the final product, with steps in between). These factors are based on numbers developed by the Department (see Department's Memo dated December 19,

1979 concerning estimating emissions from woodworking industries). These factors assume a cyclone transfer control. These factors can still be used even if a precleaner cyclone is not used.

EMISSIONS	EMISSION FACTOR UNITS	EMISSION FACTORS*
SAWDUST	LB <sub>part</sub> /Ton Rough Mill Input	8
	LB <sub>part</sub> /10 <sup>3</sup> Bd-Ft Rough Mill Input	10
	LB <sub>part</sub> /10 <sup>3</sup> Ft <sup>3</sup> Rough Mill Input	120
SANDER DUST	LB <sub>part</sub> /Ton Rough Mill Input	9
	LB <sub>part</sub> /10 <sup>3</sup> Bd-Ft Rough Mill Input	11
	LB <sub>part</sub> /10 <sup>3</sup> Ft <sup>3</sup> Rough Mill Input	135
SAWDUST/SANDER DUST MIX	LB <sub>part</sub> /Ton Rough Mill Input	11
	LB <sub>part</sub> /10 <sup>3</sup> Bd-Ft Rough Mill Input	14
	LB <sub>part</sub> /10 <sup>3</sup> Ft <sup>3</sup> Rough Mill Input	165
HOG	LB <sub>part</sub> /Ton Rough Mill Input	6
	LB <sub>part</sub> /10 <sup>3</sup> Bd-Ft Rough Mill Input	7
	LB <sub>part</sub> /10 <sup>3</sup> Ft <sup>3</sup> Rough Mill Input	90

\* As discharged from cyclone. The following control efficiencies were used in calculating the emission factors: 99% from the hog; 85% from sander; 99% from rough mill

(2) Furniture Manufacturing utilizing particle board and/or plywood.

For woodworking operations that process a majority of particle board and/or plywood instead of solid wood stock (dimension pieces) there are no emission factors available. Emissions are to be calculated case-by-case based on material balance.

(3) Miscellaneous emission factors - the following is a list of emission factors and the source of these factors:

- (a) wood waste storage bin vent 1.0 lb/ton AP-42 & SCC 3-07-030-01
- (b) storage bin loadout 2.0 lb/ton AP-42 & SCC 3-07-030-02

(4) Miscellaneous factors - the following is a list of miscellaneous factors:

- (a) relay system 1.0 lb/50 cu ft of air vendor
- (b) pickup point 10 grains/cu ft of air vendor
- (c) average weight of a board foot - 3.5 lbs, unless documented by the applicant.
- (d) one board foot (1"x12"x12") = 144 in<sup>3</sup> = 1/12 ft<sup>3</sup> = 0.083 ft<sup>3</sup>

#### 4) SPECIFIC REQUIREMENTS

a) Applicability

These boilerplate conditions apply to the operation of woodworking equipment/operations for the facilities stated in PURPOSE of this procedure.

b) Permit limits

- i) Grain loading - A 0.05 grains per dry standard cubic foot permit limit is required for all control devices (§ 120-04-1703 B.). Baghouses can meet this grain loading based on information obtained from baghouse vendors.

ii) Hourly and annual emission limits

Pounds per hour and tons per year permit limits are required for particulate emissions (ie., TSP and PM-10) equal to or greater than 0.5 ton per year.

The lbs/hr and tons/yr emissions limits are derived from the estimated overall emission contribution and are used for emission inventory purposes. Compliance with these limits shall be determined by permitted opacity limits and the permitted production or throughput limit, and/or hours of operation.

iii) Production or throughput, and hours of operation limits

A minimum of a production or a throughput annual limit, or an annual hours of operation limit is required for determining compliance, tracking of emissions for inventory purposes and for assessing potential operating permit fees. Therefore, the permit must contain either a production or a throughput limit, and/or a limit on hours of operation if the maximum calculated controlled annual particulate emissions are greater than 0.5 tons per year. In cases for less than 0.5 tons per year, only the permitted grains per dry standard cubic foot will be required for compliance purposes; and tracking of emissions for inventory purposes is not required.

In some cases, it may be easier for the source to keep records of operating hours instead of amount of wood processed.

Caution should be used in setting both production and hourly limits. For sources whose production fluctuates, the limit on hours of operation could be exceeded before the production or throughput limit is exceeded.

c) Opacity

Visible emissions from control devices and visible emissions from any fugitive emissions resulting from the conveying or handling of wood waste shall meet the provisions of Rule 4-1, unless specified in an existing permit, in which case the previously permitted limit shall be included in the Title V Permit.

d) Recordkeeping/Reporting

i) All facilities must maintain the following records on site for the most recent five year period:

- (1) hourly (optional), monthly, and annual records of wood or production throughput as required by the permit,
- (2) control equipment operation and maintenance procedure.

ii) Malfunction of the control equipment as required by the permit.

Reporting of annual emissions of particulates, VOCs, and any regulated pollutant will be required for fee calculation purposes.

**WOOD KILN OPERATIONS**

1) DEFINITIONS

The following definitions are for use in this guideline and do not necessarily have the same meaning in other portions of the regulations.

emission unit - one or more pieces of equipment or processes where the moisture content of wood is reduced and emissions from the process are released.

2) EMISSIONS CALCULATIONS

a) VOC Emissions

Kiln drying of wood is performed at facilities covered by this boilerplate. Therefore, emissions from kiln operations should be evaluated for VOC emissions.

The VOC emissions from kiln drying is dependent on the species of wood being dried. Southern Pine typically has the highest VOC emissions with hardwoods being much lower.

Emissions factors to be used in calculating VOC emissions from kiln drying are as follows:

Southern Pine	2.11 pounds per 1000 board feet <sup>*</sup>
Hardwoods	10% of Southern Pine emission (0.21 lbs/1000 board feet) <sup>**</sup>

- <sup>\*</sup> - Based on testing done by Weyerhaeuser
- <sup>\*\*</sup> - Estimate based on Weyerhaeuser tests

b) Other Emissions

For units that combust fuel to provide heat for the drying process the emissions from the fuel burning must be calculated. See the boiler procedures for emission factors to use in calculating these emissions.

3) SPECIFIC REQUIREMENTS

a) Applicability

These boilerplate conditions apply to the operation of kiln drying operations for the facilities stated in PURPOSE of this procedure.

b) Permit limits

- i) Permit limits are necessary for each regulated pollutant having emissions equal to or greater than 0.5 tons per yr. Annual emission limits only are required. Hourly rate not included due to variability of rate.

The tons/yr emissions limits are derived from the estimated overall emission contribution and are used for emission inventory purposes. Compliance with these limits shall be determined by permitted production or throughput limit, and/or hours of operation.

- ii) Production or throughput, and hours of operation limits

A minimum of a production or a throughput annual limit, or an annual hours of operation limit is required for determining compliance, tracking of emissions for inventory purposes and for assessing potential operating permit fees. Therefore, the permit must contain either a production or a throughput limit, and/or a limit on hours of operation if the maximum calculated emissions are greater than 0.5 tons per year.

Caution should be used in setting both production and hourly limits. For sources whose production fluctuates, the limit on hours of operation could be exceeded before the production or throughput limit is exceeded.

c) VOC Emissions

In general, VOC emissions resulting from kiln drying are not controlled, however, if a method is in operation, it should be included in the Title V permit.

d) Opacity

Visible emissions from control devices and visible emissions from any fugitive emissions shall meet the provisions of Rule 4-1, unless specified in an existing permit, in which case the previously permitted limit shall be included in the Title V Permit.

e) Recordkeeping/Reporting

i) All facilities must maintain the following records on site for the most recent five year period:

(1) monthly and annual records of production throughput and VOC emissions as required by the permit,

(2) control equipment operation and maintenance procedure.

ii) Malfunction of the control equipment as required by the permit.

For fuel burning units the records required in the boiler procedure should be kept.

Reporting of annual emissions of particulates, VOCs, and any regulated pollutant will be required for fee calculation purposes.

## FINISHING OPERATIONS

### 1) DEFINITIONS

The following definitions are for use in this guideline and do not necessarily have the same meaning in other portions of the regulations.

construction - fabrication or assembly of a new emissions unit.

installation - connecting and making an emissions unit that has previously been assembled at another location ready for use at the location of its intended use.

modification - see the definition of "modification" under §120-08-01 B.3 of State Regulations.

reconstruction - the replacement of an emissions unit or its components to such an extent that the fixed capital cost of the new components exceeds 50 percent of the fixed capital costs required to construct a comparable entirely new unit.

relocation - installation of an emissions unit that has been in service at another off-site location

### 2) Control Technology

#### a) Best Available Control Technology (BACT)

Additional or new BACT determinations are not required for existing operations. BACT requirements in existing permits should be carried to the Title V Permit. BACT requirements that may have been accidentally left out of previous permits may be included in the Title V Permit (see woodworking procedures if necessary).

#### b) Maximum Available Control Technology (MACT)

MACT requirements governing hazardous air pollutants are applicable through Title V Federal Operating Permits. National Emission Standards for Hazardous Air Pollutants for Source Categories - Subpart JJ - for Wood Furniture Manufacturing Operations has been promulgated and the requirements of this applicable MACT must be included in the permit. The attached table is a summary of Subpart JJ.

### 3) EMISSIONS CALCULATIONS

Particulate and VOC emissions can typically be calculated using information found on the coating Material Safety Data Sheet (MSDS). Parameters such as specific gravity, VOC content, and weight % solids are normally provided. Also, the major components are usually given in % by weight. In some instances, the MSDS is not specific enough, and the manufacturer must supply additional information. Particulate emissions should be calculated from weight % solids when possible, and VOC emissions should be calculated from VOC content less any water content. Remember that along with VOC emissions from coatings, the VOC emissions from various solvents used as coating thinners, in cleaning, and washoff should also be calculated.

The expected emissions are estimated using the permitted operating schedule, the expected consumption of the coatings, the appropriate transfer efficiencies, and the proper control efficiencies.

Particulate transfer efficiencies vary according to the size and shape of the item being coated, as well as the type of spray nozzle used. For most wood spray coating operations, when the source cannot provide an estimate, and when relatively broad, flat surfaces are covered, a 50% particulate transfer efficiency is considered average. Of course, if the coated item is narrow, or has many edges, the transfer efficiency can drop dramatically. Electrostatic spray coating of wood can yield very high transfer efficiencies, 90% or more. All transfer efficiencies should be documented by the source when possible.

Particulate control afforded by cellulose, fiberglass, polyester paint filters or water/oil curtain is assumed to be 85%, unless the source can document or demonstrate otherwise.

(Example Calculations)

Assume a coating is being applied in a spray booth to cabinet faces. The spray booth emissions are controlled by fiberglass filters (85% control), and the transfer efficiency is assumed to be 50%.

The emissions of VOC and particulate can be estimated in the following manner:

#### VOC

Form: [gal/hr] x [lb VOC/gal] x [1 - control eff.] = lb VOC/hr

$$(1.2 \text{ gal/hr})(6.49 \text{ lb VOC/gal})(1 - 0) = 7.79 \text{ lb/hr}$$

[gal/yr] x [lb VOC/gal] x [1 - control eff.] = lb VOC/yr

$$(5000 \text{ gal/yr})(6.49 \text{ lb VOC/gal})(1 - 0)(1 \text{ T}/2000 \text{ lb}) = 16.23 \text{ T/yr}$$

#### Particulate

Form: [gal/hr] x [lb solids/gal] x [1 - transfer eff.] x [1 - control eff.] = lb TSP/hr

$$(1.2 \text{ gal/hr})(3.81 \text{ lb solids/gal})(1 - 0.5)(1 - 0.85) = 0.34 \text{ lb/hr}$$

[gal/yr] x [lb solids/gal] x [1 - transfer eff.] x [1 - control eff.] = lb TSP/yr

$$(5000 \text{ gal/yr})(3.81 \text{ lb solids/gal})(1 - 0.5)(1 - 0.85) (1 \text{ T}/2000 \text{ lb}) = 0.71 \text{ T/yr}$$

#### 4) SPECIFIC REQUIREMENTS

##### a) Applicability

These boilerplate conditions apply to the operations of wood product spray booths, flatline coating,, and printing for the facilities stated in PURPOSE of this procedure.

##### b) Permit Limits

Permit limits are necessary for each regulated pollutant having emissions equal to or greater than 0.5 tons per yr. In the case where a facility may presently have in place some sort of add-on controls for VOC those controls and associated permits must be carried to the Title V permit. Permit limits for toxic pollutants shall be assigned according to MACT requirements as promulgated. The permit should include both hourly and annual emission limits.

##### c) Particulate Emissions

Although there is no BACT emission limit established for TSP from spray booths, an 85% level of control should be the minimum expected from filtration by fiberglass or any other media. A scrubbing device or water curtain should provide a comparable degree of control, else another control method should be used. An average 50% transfer efficiency should be assumed unless otherwise documented.

##### d) VOC Emissions

In general, VOC emissions resulting from the use of coatings and clean-up solvents in spray booths are not controlled, however, if a method is in operation, it should be included in the Title V permit.

In the case of flatwood paneling coating operations using spray booths, the VOC limits required by Rule 4-35 will be minimum VOC requirements for this boilerplate.

VOC emissions can be minimized by one of several methods. These include but are not limited to, the use of low solvent or water-base coatings, the use of non-photochemically reactive coatings, or coating application by airless spray nozzles.

##### e) Opacity

Visible emissions shall meet the provisions of Rule 4-1, unless specified in an existing permit, in which case the previously permitted limit shall be included in the Title V Permit.

##### f) Training, Operation, and Maintenance

These procedures shall be based on the MACT requirements.

##### g) Recordkeeping/Reporting

The standard boilerplate condition states that the permittee should keep any records "necessary to demonstrate compliance". At a minimum, records of monthly and annual VOC emissions (by material balance), including clean-up solvent, should be required. Monthly and annual records of any other regulated pollutant should also be required. In the case of multiple spray booths, records of emissions per spray booth may be necessary for tracking emissions.

Reporting of annual emissions of particulates, VOCs, and any regulated pollutant will be required for fee calculation purposes.

## WOOD GLUING OPERATIONS

### 1) DEFINITIONS

The following definitions are for use in this guideline and do not necessarily have the same meaning in other portions of the regulations.

complete enclosure - the particulate emissions are not vented to the ambient air. Air flow is completely restricted while allowing for material flow.

emission unit - one or more pieces of equipment or processes in combination with woodworking equipment where glue(s) are used and emissions from the glue(s) are released.

### 2) Control Technology

#### a) Best Available Control Technology (BACT)

Additional or new BACT determinations are not required for existing operations. BACT requirements in existing permits should be carried to the Title V Permit. BACT requirements that may have been accidentally left out of previous permits may be included in the Title V Permit (see woodworking procedures if necessary).

#### b) Maximum Available Control Technology (MACT)

MACT requirements governing hazardous air pollutants are applicable through Title V Federal Operating Permits. National Emission Standards for Hazardous Air Pollutants for Source Categories - Subpart JJ - for Wood Furniture Manufacturing Operations has been promulgated and the requirements of this applicable MACT must be included in the permit. The attached table is a summary of Subpart JJ.

### 3) EMISSIONS CALCULATIONS

#### VOC Emissions

Gluing and finishing are usually performed at most facilities covered by this boilerplate. Therefore, emissions from gluing operations should be evaluated for VOC emissions. For guidance concerning these evaluations, please refer to the appropriate boilerplate procedures.

Some woodworking equipment may be a combination of a glue machine and a saw. Therefore, the VOC emissions need to be evaluated. Emissions calculations should be based on the information provided by the applicant. An example VOC calculation is provided.

The VOC emissions consist of formaldehyde and vinyl acetate. Therefore, the total VOC emissions are the sum of these two components. For the calculation, please see the example toxic emissions calculation as listed in C.

Below is an example calculation for hourly emissions from a glue/woodworking machine. Toxic emissions may vary due to type and amount of glue used. Emissions calculations should be based on the information provided by the applicant.

#### example calculations:

The glue will be applied by a roller, not sprayed. A maximum of 4 gals per hour will be applied. The MSDS list the formaldehyde as being less than 0.1% by weight and the vinyl acetate as being less than 0.5% by weight. The specific gravity of the glue is listed on the MSDS as 1.12.

#### **for formaldehyde:**

$$(0.001) \times (8.3 \text{ lb/gal}) \times (1.12) \times (4.0 \text{ gal/hr}) \times (0.18) = 0.0067 \text{ lb/hr}$$

An 18% emission rate for formaldehyde was assumed based on the DAPC memo dated December 27, 1988 concerning the emission rate of free HCHO with a formaldehyde content less than 1% and the temperature does not exceed 340° F.

**for vinyl acetate:**

$$(0.005) \times (8.3 \text{ lb/gal}) \times (1.12) \times (4.0 \text{ gal/hr}) \times (0.18) = 0.0335 \text{ lb/hr}$$

The same emission rate for formaldehyde was used for vinyl acetate. This is a conservative rate since the vapor pressure of vinyl acetate is much lower than formaldehyde.

4) SPECIFIC REQUIREMENTS

a) Applicability

These boilerplate conditions apply to the operation of gluing operations for the facilities stated in PURPOSE of this procedure.

b) Permit limits

i) Hourly and annual emission limits

Permit limits are necessary for each regulated pollutant having emissions equal to or greater than 0.5 tons per yr.

The lbs/hr and tons/yr emissions limits are derived from the estimated overall emission contribution and are used for emission inventory purposes. Compliance with these limits shall be determined by permitted production or throughput limit, and/or hours of operation.

ii) Production or throughput, and hours of operation limits

A minimum of a production or a throughput annual limit, or an annual hours of operation limit is required for determining compliance, tracking of emissions for inventory purposes and for assessing potential operating permit fees. Therefore, the permit must contain either a production or a throughput limit, and/or a limit on hours of operation if the maximum calculated emissions are greater than 0.5 tons per year.

Caution should be used in setting both production and hourly limits. For sources whose production fluctuates, the limit on hours of operation could be exceeded before the production or throughput limit is exceeded.

c) VOC Emissions

In general, VOC emissions resulting from the use of adhesives are not controlled, however, if a method is in operation, it should be included in the Title V permit.

VOC emissions can be minimized by one of several methods. These include but are not limited to, the use of low VOC or water-base adhesives, the use of hot-melt adhesives, or adhesives curable by UV, electron beam, ultra sonic, high frequency, radio frequency, radiation, etc.

d) Opacity

Visible emissions from control devices and visible emissions from any fugitive emissions shall meet the provisions of Rule 4-1, unless specified in an existing permit, in which case the previously permitted limit shall be included in the Title V Permit.

e) Training, Operation, and Maintenance

These procedures shall be based on the MACT requirements.

f) Recordkeeping/Reporting

i) All facilities must maintain the following records on site for the most recent five year period:

- (1) hourly (optional), monthly, and annual records of production throughput and VOC emissions as required by the permit,

(2) control equipment operation and maintenance procedure.

ii) Malfunction of the control equipment as required by the permit.

Reporting of annual emissions of particulates, VOCs, and any regulated pollutant will be required for fee calculation purposes.

**MACT REQUIREMENTS**

1) SPECIFIC REQUIREMENTS - Attached to these procedures is a table that summarizes Subpart JJ, 40 CFR parts 63.800-63.819.

a) Applicability

These boilerplate conditions apply to the operation of the facilities stated in PURPOSE of this procedure that are a major source as defined in 40 CFR part 63.2, i.e. "any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit considering controls, in the aggregate, 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants". In addition to the facilities stated in PURPOSE of this procedure, Subpart JJ also applies to facilities with standard industrial classification codes (SIC): 2434 and 5712.

b) Emission limits

Emission limits shall be based on the requirements of Subpart JJ. The following table is a summary of the emission limits required by the MACT. See also the attached summary table.

SUMMARY OF EMISSION LIMITS

Emission point	Existing source	New source
<u>Finishing Operations</u>		
(a) Achieve a weighted average VHAP content across all coatings (maximum kg VHAP/kg solids [lb VHAP/lb solids], as applied);	1.0 <sup>a</sup>	0.8 <sup>a</sup>
(b) Use compliant finishing materials (maximum kg VHAP/kg solids [lb VHAP/lb solids], as applied);		
- stains	1.0 <sup>a</sup>	1.0 <sup>a</sup>
- washcoats	1.0 <sup>a,b</sup>	0.8 <sup>a,b</sup>
- sealers	1.0 <sup>a</sup>	0.8 <sup>a</sup>
- topcoats	1.0 <sup>a</sup>	0.8 <sup>a</sup>
- basecoats	1.0 <sup>a,b</sup>	0.8 <sup>a,b</sup>
- enamels	1.0 <sup>a,b</sup>	0.8 <sup>a,b</sup>
- thinners (maximum % HAP allowable); or	10.0	10.0
(c) As an alternative, use control device; or	1.0 <sup>c</sup>	0.8 <sup>c</sup>
(d) Use any combination of (a),(b), and (c)	1.0	0.8
<u>Cleaning Operations</u>		
Strippable spray booth material (maximum VOC content, kg VOC/kg solids [lb VOC/lb solids])	0.8	0.8
<u>Contact Adhesives</u>		
(a) Use compliant contact adhesives (maximum kg VHAP/kg solids [lb VHAP/lb solids], as applied) based on following criteria		
i. For aerosol adhesives, and for contact adhesives applied to nonporous substrates	NA <sup>d</sup>	NA <sup>d</sup>
ii. For foam adhesives used in products that meet flammability requirements	1.8	0.2
iii. For all other contact adhesives (including foam adhesives used in products that do not meet flammability requirements); or	1.0	0.2
(b) Use a control device	1.0 <sup>e</sup>	0.2 <sup>e</sup>

<sup>a</sup>The limits refer to the VHAP content of the coating, as applied.

<sup>b</sup>Washcoats, basecoats, and enamels must comply with the limits presented in this table if they are purchased premade, that is, if they are not formulated onsite by thinning other finishing materials. If they are formulated onsite, they must be formulated using compliant finishing materials, i.e., those that meet the limits specified in this table, and thinners containing no more than 3.0 percent HAP by weight.

<sup>c</sup>The control device must operate at an efficiency that is equivalent to no greater than 1.0 kilogram (or 0.8 kilogram) of VHAP being emitted from the affected emission source per kilogram of solids used.

<sup>d</sup>There is no limit on the VHAP content of these adhesives.

<sup>e</sup>The control device must operate at an efficiency that is equivalent to no greater than 1.0 kilogram (or 0.2 kilogram) of VHAP being emitted from the affected emission source per kilogram of solids used.

c) Training, Operation, and Maintenance

These procedures shall be based on the Subpart JJ requirements and shall include the Work Practice Implementation Plan. (see attached summary table).

d) Recordkeeping/Reporting

Recordkeeping and reporting, including initial and semi-annual certifications, shall be based on the Subpart JJ requirements (see attached summary table).

## **GENERAL REQUIREMENTS**

### a) Toxic Pollutants

A toxic pollutant review in accordance with Rule 4-3 or Rule 5-3 is not required. Promulgated MACT requirements governing hazardous air pollutants will be applicable through Title V Federal Operating Permits.

### b) Emissions Monitoring

Emission monitoring must be incorporated in the permit if required by the promulgation by the EPA of the Enhanced Monitoring Regulation. Emissions monitoring is not otherwise required unless previously required by a permit. If a baghouse is used, a device to continuously measure the differential pressure drop through the baghouse is required, except for a small baghouse that controls only the vent of a wood storage silo. Also, if a scrubber is used, it must be equipped with a flow meter and a device may be required to continuously measure the differential pressure through the scrubber.

### c) Emissions/Compliance Testing

Performance testing (i.e., stack testing) is not a requirement for emissions. There may be cases where testing may be required to gather emission data or demonstrate compliance.

### d) Notification

The owner or operator of all facilities must notify the Department of any malfunction causing excess emissions for more than one hour. This notification shall be made by facsimile transmission, telephone, or telegraph within four business hours of the occurrence, and provide a written statement within two weeks.

### e) Modeling

Modeling analysis, if required, should be done in accordance with current Agency policy.

### f) Emission Inventory

Regulated pollutant emissions must be coded into the Emission Inventory System.

### g) Permit Expiration

The permit shall be valid for a period not to exceed five years from the approval date but may vary depending on the schedule of renewal agreed upon by the source and DEQ.

### h) Permit Approval

Approval authority is given to the Regional Office. The Regional Director may sign for the Director.

## **SUMMARY TABLE**

This table is to serve as a cross reference and index to the permit conditions contained in this permit. Each emission unit that has one or more applicable requirements should be included in the table. A separate line should be used for each applicable requirement and the appropriate columns of the table completed. Use of this summary table is optional.

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## Summary of Wood Furniture MACT - Subpart JJ

Name	Requirement	Monitor/Methods	Recordkeeping	Initial Certification	Semi-Annual Certification
Compliance Dates 63.800(e) 63.800(f) 63.800(g) 63.804(j)(1)	1) If > 50 ton/yr HAP source compliance date = 11/27/97* <b>[63.800(e)]</b> 2) If < 50 ton/yr HAP source Compliance date = 12/7/98 <b>[63.800(e)]</b> 3) If new source , compliance date = upon startup <b>[63.800(f)]</b> 4) If reconstructed source, compliance date = upon startup <b>[63.800(g)]</b>  * If using the averaging approach to comply, sources must keep data for the entire month in which the compliance date falls. <b>[63.804(j)(1)]</b>				
Exempt Facilities 63.800(c)	Research or laboratory facilities <b>[63.800(c)]</b>		-----	-----	-----
Incidental Manufacturer 63.800(a)	Use < 100 Gal/Month of Coatings <b>[63.800(a)]</b>		Monthly usage record <b>[63.800(a)]</b>		
Minor or Synthetic Minor 63.800(b)(1) and (2)	Option 1 and 2: Wood Furniture operation emissions must equal 90% of total facility emissions based on annual emissions; and, <b>[63.800(b)]</b> 1) Use < 250 gal/month of total coatings, gluing, cleaning and washoff materials; or, <b>[63.800(b)(1)]</b>  2) Use < 3000 gal/12 m.r.a. of total coatings, gluing, cleaning and washoff materials <b>[63.800(b)(2)]</b>		Monthly usage records <b>[63.800(b)(1)]</b>  Monthly usage records <b>[63.800(b)(2)]</b>		
Minor or Synthetic Minor 63.800(b)(3)	Option 3: Wood Furniture operation emissions must equal 90% of total facility emissions based on a		1. Monthly usage records <b>[63.800(b)(3)]</b>		

Name	Requirement	Monitor/Methods	Recordkeeping	Initial Certification	Semi-Annual Certification
	12 month rolling average (m..r.a.); and, <b>[63.800(b)(3)]</b>  1) Limit total facility emissions to < 5 ton HAP/12 m.r.a. ; and, <b>[63.809(b)(3)]</b> 2) Limit total facility emissions to < 12.5 ton HAPs/12 m.r.a. <b>[63.800(b)(3)]</b>		2. Certified product data sheets for all coating material. <b>[63.800(b)(3)]</b> 3. Emission estimates from other co-located source categories <b>[63.800(b)(3)]</b>		
Averaging - Finishes 63.804(a)(1) 63.804(f)(1) 63.804(g)(1) 63.806(b) 63.806(c)	E value $\leq 1.0$ as calculated from Equation 1 <b>[63.804(a)(1)]</b>		1. Monthly average VHAP content of finishes using Eq. 1 <b>[63.806(c)]</b> 2. Certified Product Data Sheets for each coating <b>[63.806(b)(1)]</b> 3. VHAP content of each coating in kg VHAP/kg solids (or lb/lb) <b>[63.806(b)(2)]</b> 4. Monthly usage of each coating <b>[63.806(c)]</b>	<ul style="list-style-type: none"> <li>Submit results of averaging calculation <b>[63.804(f)(1)]</b></li> </ul>	<ul style="list-style-type: none"> <li>Submit averaging calculation for each month in reporting period. <b>[63.804(g)(1)]</b></li> <li>State that <math>E \leq 1.0</math> for existing sources <b>[63.804(g)(1)(i)]</b></li> <li>Obtain signature of responsible official <b>[63.804(g)(1)(ii)]</b></li> </ul>
Continuous Coaters 63.804(a)(2) 63.804(f)(3) 63.804(g)(3) 63.806(b) 63.806(d)	1) Use compliant coatings in the reservoir at all times. <b>[63.804(a)(2)]</b> 2) (Optional) Maintain Instantaneous viscosity $\geq$ Initial viscosity <b>[63.804(g)(3)(ii)]</b>	For Optional Method: A) Continuously monitor viscosity in the reservoir with meter; or, <b>[63.804(g)(3)(ii)]</b> B) Measure viscosity each time solvent or coating is added to the reservoir. <b>[63.804(g)(3)(ii)]</b>  <input type="checkbox"/> Inspectors may test with Method 311 to determine compliance; sources are not	1. Certified Product Data Sheets <b>[63.806(b)]</b> 2. VHAP content of coatings in kg VHAP/kg solids; and <b>[63.806(b)]</b>  3. Days of noncompliance and reasons for noncompliance <b>[63.804(g)]</b>  In addition, with Optional method: 1. Quantity of solvent	<ul style="list-style-type: none"> <li>Statement that compliant coatings, as demonstrated by the VHAP content of the coating reservoir and the VHAP content as calculated from records, and compliant thinners are being used; or, <b>[63.804(f)(3)(i)]</b></li> </ul> Or, Viscosity Method:  <ul style="list-style-type: none"> <li>State that compliant coatings as determined by the VHAP content of the coating in the reservoir are being used; the viscosity of the coating in the reservoir is being monitored and compliant thinners are being used; and, <b>[63.804(f)(3)(ii)]</b></li> </ul>	<ul style="list-style-type: none"> <li>State that compliant stains, washcoats, sealers, topcoats, basecoats, enamels, and thinners as applicable have been used each day in the reporting period; or, <b>[63.804(g)(3)(i)(A)]</b></li> <li>Identify the days of noncompliance and reasons for noncompliance. <b>[63.804(g)(3)(i)(A)]</b></li> <li>Signature of responsible official <b>[63.804(g)(3)(i)(B)]</b></li> </ul> Viscosity Method:  <ul style="list-style-type: none"> <li>State that compliant coatings as determined by the VHAP content of the coating reservoir have been used each day in the</li> </ul>

Name	Requirement	Monitor/Methods	Recordkeeping	Initial Certification	Semi-Annual Certification
		required to test. <b>[63.804(g)(3)(ii)(C)]</b>	and coating added to reservoir <b>[63.806(d)]</b> 2. Viscosity correlation demonstration <b>[63.806(d)]</b> 3. Viscosity measurements <b>[63.806(d)]</b>	<ul style="list-style-type: none"> <li>Submit viscosity correlation data. <b>[63.804(f)(3)(ii)]</b></li> </ul>	semi-annual reporting period; and state that the viscosity of the coating in the reservoir has not been less than the viscosity of the initial coating for any day in the semi-annual reporting period. <b>[63.804(g)(3)(ii)]</b>
Compliant Coatings - Finishes 63.802(a) 63.804(a)(2) 63.804(f)(2) 63.804(g)(2) 63.806(b)	<p>1) Limit as-applied VHAP content of stains, sealers, and topcoats to <math>\leq 1.0</math> kg VHAP/kg solid, and limit thinner content to <math>&lt; 10\%</math> VHAP by weight; and, <b>[63.804(a)(2)(i)]</b></p> <p>2) Limit as-applied Pre-made washcoats, basecoats, enamels to <math>\leq 1.0</math> kg VHAP/kg solid, and limit thinner content to <math>&lt; 10\%</math> VHAP by weight; and, <b>[63.804(a)(2)(ii)]</b></p> <p>3) Limit finishing material used in on-site formulations of washcoats, basecoats, and enamels to <math>\leq 1.0</math> kg VHAP; limit thinners used in these formulations to <math>\leq 3.0\%</math> VHAP by weight. <b>[63.804(a)(iii)]</b></p>		<p>1. Certified Product Data Sheets <b>[63.806(b)]</b></p> <p>2. VHAP content of coatings in kg VHAP/kg solids; and <b>[63.806(b)]</b></p> <p>If using <math>&gt; 3\%</math> thinner in compliant coatings <b>(EPA Policy statement)*</b></p> <p>1. Quantity of Solvent Additions <b>[implicit in term "as applied"]</b></p> <p>2. Calculations to show compliant after solvent additions <b>[implicit in term "as applied"]</b></p> <p>* Verbally expressed by Paul Almodovar USEPA and Susan Razor MRI in late Oct 1996</p>	<ul style="list-style-type: none"> <li>State that compliant stains, washcoats, sealers, topcoats, basecoats, enamels, and thinners as applicable are being used by the affected source. <b>[63.804(f)(2)]</b></li> </ul>	<ul style="list-style-type: none"> <li>State that compliant stains, washcoats, sealers topcoats, basecoats, enamels and thinners as applicable are being used by the affected source; or, <b>[63.804(g)(2)]</b></li> <li>Identify the period and the reasons for noncompliance. <b>[63.804(g)(2)]</b></li> </ul>
Control Device - Finishes or Adhesives 63.804(a)(3) 63.804(f)(4) 63.804(f)(6) 63.804(g)(4) 63.804(g)(6)	<p>1) Use a control system with an overall efficiency (R) such that <math>E_{ac} \leq 1.0</math> as calculated by Equation 2. (Finishes) <b>[63.804(a)(3)]</b></p> <p>2) Use a control system with an overall efficiency (R) such that <math>G_{ac} \leq 1.0</math> as</p>	<p>A) Conduct an initial performance test <b>[63.804(f)(4)(ii)]</b></p> <p>B) Monitor appropriate operating parameters.</p>	<p>1. Certified Product Data Sheets <b>[63.806(b)(1)]</b></p> <p>2. VHAP content in kg VHAP/ kg solids <b>[63.806(b)(2)]</b></p> <p>3. Monitoring Results</p>	<ul style="list-style-type: none"> <li>Submit monitoring plan identifying each operational parameter to be monitored and explain relationship between parameter and continuous compliance <b>[63.804(f)(4)(i)]</b></li> <li>Performance Test Results <b>[63.7(g)(1)]</b></li> </ul>	<ul style="list-style-type: none"> <li>Install, calibrate, maintain and operate the appropriate monitoring equipment according to manufacturer's specifications. <b>[63.804(g)(4)]</b></li> <li>Submit excess emissions and continuous monitoring system performance report and</li> </ul>

Name	Requirement	Monitor/Methods	Recordkeeping	Initial Certification	Semi-Annual Certification
63.806(b) 63.806(f) 63.806(g) 63.807(d)	<p>calculated by Equation 3. (Adhesives) <b>[63.804(c)(2)]</b></p> <p>3) Operate the control device at a daily average value at the operating parameter value. <b>[63.804(g)(4)(iv)]</b></p> <p>4) Calculate the daily average value as the average of all monitored parameters recorded during the operating day. <b>[63.804(g)(4)(iv)]</b></p> <p>5) Construct the control device such that all volumetric flow rates and total HAP emissions can be determined by the applicable test methods. <b>[63.805(d)(1)]</b></p>	<p><b>[63.804(g)(4)]</b></p> <p>C) Calculate the appropriate operating parameter values as the arithmetic mean of the maximum and minimum values obtained during the performance test. <b>[63.804(f)(4)(iv) and 63.804(f)(4)(iv) (E)]</b></p>	<p><b>[63.807(d)]</b></p> <p>4. Daily average value calculations <b>[63.806(f)] and [63.806(g)]</b></p> <p>5. Operating parameter value records <b>[63.806(f)]</b></p> <p>6. Copies of semiannual compliance reports (excess emission/summary reports) <b>[63.806(f)] , [63.806(g)] and [63.807(d)]</b></p>	<ul style="list-style-type: none"> <li>Control Efficiency calculation <b>[63.804(f)(4)(iii)]</b></li> </ul>	<p>summary report as required by Section 63.10(e) of Subpart A. <b>[63.804(g)(4)]</b></p>
Compliant Contact Adhesives 63.802(a)(2) 63.804(b) 63.804(c) 63.804(f)(5) 63.804(g)(5) 63.806(b)	<p>1) Limit VHAP content of contact adhesives to <math>\leq 1.0</math>kg VHAP/kg solids <b>[63.802(a)(2)(ii)] and [63.804(c)(1)]</b></p> <p>2) Limit VHAP content of fire resistant foam adhesives to <math>\leq 1.8</math> kg VHAP/kg solids <b>[63.802(a)(2)(i)] and [63.804(b)(1)]</b></p>		<p>1. Certified Product Data Sheets <b>[63.806(b)(1)]</b></p> <p>2. VHAP content of each adhesive in kg VHAP/kg solids (or lb/lb) <b>[63.806(b)(2)]</b></p>	<ul style="list-style-type: none"> <li>State that compliant contact adhesives are being used by the affected source <b>[63.804(f)(5)]</b></li> </ul>	<ul style="list-style-type: none"> <li>State that compliant contact adhesives have been used each day in the reporting period; or, <b>[63.804(g)(5)(i)]</b></li> <li>Identify each day non-compliant contact adhesives were used. <b>[63.804(g)(5)(i)]</b></li> <li>Signature of responsible official. <b>[63.804(g)(5)(ii)]</b></li> </ul>
Strippable Spray Booth Material 63.802(a)(3) 63.804(f)(7) 63.804(g)(7) 63.806(b)	<p>Limit Coatings to <math>\leq 0.8</math>kg VOC/kg solids <b>[63.802(a)(3)]</b></p>		<p>1. Certified Product Data Sheets <b>[63.806(b)(1)]</b></p> <p>2. VOC content of the coating in kg VOC/kg solids <b>[63.806(b)(2)]</b></p>	<ul style="list-style-type: none"> <li>State that compliant strippable spray booth coatings are being used by the affected source. <b>[63.804(f)(7)]</b></li> </ul>	<ul style="list-style-type: none"> <li>State that compliant strippable spray booth coatings have been used each day in the reporting period; or, <b>[63.804(g)(7)(i)]</b></li> <li>Identify each day a non-compliant coating was used. <b>[63.804(g)(7)(i)]</b></li> <li>Signature of responsible official. <b>63.804(g)(7)(ii)</b></li> </ul>
Work Practice Implementation Plan 63.803(a) 63.806(e)(5) 63.804(f)(8) 63.804(g)(8)	<p>1) Developed no later than 60days past the compliance date <b>[63.803(a)]</b></p> <p>2) Define environmentally desirable work practices in WIP <b>[63.803(a)]</b></p>		<p>1. Maintain WIP on site and have available for inspection upon request of the Administrator</p>	<ul style="list-style-type: none"> <li>State that the WIP has been developed and procedures have been established for implementing the provisions of the plan. <b>[63.804(f)(8)]</b></li> </ul>	<ul style="list-style-type: none"> <li>State that the work practice implementation plan is being followed: or, <b>[63.804 (g)(8)(i)]</b></li> <li>Specify the date(s) and provisions of the plan that have not been implemented during the</li> </ul>

Name	Requirement	Monitor/Methods	Recordkeeping	Initial Certification	Semi-Annual Certification
63.806(b)	3) Provide sufficient mechanisms to ensure that the work practice standards are being implemented. <b>[63.803(a)]</b> *Revisions to the plan do not require a Title V permit change. <b>[63.803(a)]</b>		<b>[63.803(a)]</b> 2. Include the following with the WIP: <b>[63.803(a)]</b> a. Operator Training Course b. Inspection and Maintenance Plan c. Formulation Assessment Plan d. Other logs specified in the WIP		reporting period. <b>[63.804(g)(8)(i)]</b> <input type="checkbox"/> Signature of Responsible Official <b>[63.804(g)(8)(ii)]</b>
Operator Training 63.803(b)	1) Train all new personnel involved with manufacturing operations upon hiring <b>[63.803(b)]</b> 2) Train all existing personnel within 6 mos of compliance date <b>[63.803(b)]</b> 3) Annually re-train all personnel. <b>[63.803(b)]</b> 4) The program shall contain: a) A list of all current personnel by name and job description that are required to be trained <b>[63.803(b)(1)]</b> b) an outline of subjects for initial and refresher training <b>[63.803(b)(2)]</b> c) Lesson plans on application technique, cleaning and washoff procedures, equipment setup and adjustments, management of cleanup wastes <b>[63.803(b)(3)]</b> d) Methodology for documenting successful completion of training <b>[63.803(b)(4)]</b>		1. A copy of the Training program kept with the WIP <b>[63.803(b)]</b> 2. Records demonstrating that the operator training program is in place <b>[63.803(b)]</b> 3. A list of trainees by name and job description <b>[63.803(b)(1)]</b> 4. Date of Training implicit in <b>[63.803(b)]</b> 5. Record of successful completion <b>[63.804(b)(4)]</b>	Part of WIP certification	Part of WIP certification
Inspection and Maintenance Plan	Develop a IMP to address the following:		1. The date and results of each	Part of WIP Certification	Part of WIP Certification

Name	Requirement	Monitor/Methods	Recordkeeping	Initial Certification	Semi-Annual Certification
<p>- 63.803(c) 63.806(e)(2)</p>	<p>1) Visually inspect all equipment used to transfer coatings, adhesives or organic solvents at least monthly; <b>[63.803(c)(1)]</b></p> <p>2) Attempt first repair within 5 calendar days after detection <b>[63.803(c)(4)(i)]</b></p> <p>3) Complete final repairs within 15days after detection unless a purchase is necessary to make the repairs <b>[63.803(c)(4)(ii)]</b></p> <p>4) Complete final repairs within 3 mos. If a purchase is necessary. <b>[63.803(c)(4)(ii)]</b></p>		<p>inspection and the repairs made <b>[63.803(c)(3)]</b></p> <p>2. An inspection schedule <b>[63.803(c)(2)]</b></p>		
<p>Cleanup and Washoff Solvent Accounting System- 63.803(d) 63.806(e)(3)</p>	<p>Develop an organic solvent accounting form to satisfy recordkeeping requirements. <b>[63.803(d)]</b></p>		<p>1. Monthly usage by solvent type <b>[63.803(d)(1)]</b></p> <p>2. # of pieces washed off <b>[63.803(d)(2)]</b></p> <p>3. Reason for washoff <b>[63.803(d)(2)]</b></p> <p>4. Monthly Quantity of spent solvent generated <b>[63.803(d)(3)]</b></p> <p>5. Fate (<i>Quantity</i>) of solvent (onsite recycle or offsite disposal) <b>[63.803(d)(3)]</b></p>	<p>Part of WIP Certification</p>	<p>Part of WIP Certification</p>
<p>Chemical Compositions of Cleaning and Washoff Solvents 63.803(e)</p>	<p>No cleaning or washoff solvent shall contain any chemical listed in Table 4 in concentrations subject to OSHA MSDS reporting <b>[63.803(e)]</b></p>			<p>Included as part of WIP certification</p>	<p>Included as part of WIP certification</p>
<p>Spray Booth Cleaning 63.803(f)</p>	<p>1) Except for cleaning conveyors, continuous coaters and their enclosures, metal filters, and when refurbishing a spray booth, limit content of all cleaners to &lt; 8.0% VOC</p>			<p>Included as part of WIP certification</p>	<p>Included as part of WIP certification</p>

Name	Requirement	Monitor/Methods	Recordkeeping	Initial Certification	Semi-Annual Certification
	by weight. <b>[63.803(f)]</b> 2) When refurbishing a spray booth use $\leq 1.0$ gals of solvent per booth to prepared for the spray booth coating. <b>[63.803(f)]</b>				
Storage Requirements 63.803(g)	Keep all containers used for storing finishing, gluing, cleaning and washoff material closed unless an operator is emptying or filling the container <b>[63.803(g)]</b>			Included as part of WIP certification	Included as part of WIP certification
Application equipment 63.803(h) 63.806(e)(4)	Conventional spray gun may only be used as follows: 1) For application of finishing material with $\leq 1.0$ lb VOC/lb solid as applied; or <b>[63.803(h)(1)]</b> 2) For touch and and repair if the finishes are applied from a $\leq 2.0$ gal container; and after completion of finishing operation; or, after the application of stain and before the application of other finishes; or, <b>[63.803(h)(2)]</b> 3) When Spray is automated; or, <b>[63.803(h)(3)]</b> 4) When Emissions are directed to a control device; or, <b>[63.803(h)(4)]</b> 5) When spraying a quantity of finishing material that is $< 5\%$ of total finishing material used during reporting period; or <b>[63.803(h)(5)]</b> , 6) When spraying a stain and it is technically or economically infeasible to use another application method. <b>[63.803(h)(6)]</b>		If using #5 to comply: 1. Total finishing material usage <b>[63.803(h)(5)]</b> 2. % of material applied w/ conventional guns <b>[63.803(h)(5)]</b>	Included as part of WIP certification	Included as part of WIP certification
Formulation Assessment Plan 63.803(l)	1) Develop a FAP <b>[63.803(l)]</b> 2) Notify the permitting authority in writing within 30 days		1. Keep FAP with WIP <b>[63.803(l)]</b> 2. List of VHAP of	Part of WIP Certification	Part of WIP Certification

Name	Requirement	Monitor/Methods	Recordkeeping	Initial Certification	Semi-Annual Certification
63.806(e)(5)	<p>if any VHAP baseline is increased. <b>[63.803(l)(4)]</b></p> <p>3) Baseline for any VHAP of potential concern for which a baseline has not been established is equal to de minimis for that chemical. <b>[63.803(l)(6)]</b></p> <p>4) Specify the amount and reason for the increase on the notification. <b>[63.803(l)(4)]</b></p> <p>5) If the increase does not satisfy the requirements of 63.804(l)(4)(i) thru (iv) then verbally contact the permitting authority to discuss the increase and possible mitigation measures. <b>[63.804(5)]</b></p> <p>6) Establish VHAP baseline at the highest annual usage of the VHAP from 1994-1996 adjusted for overall control efficiency of any control system <b>[63.803(l)(2)]</b></p>		<p>potential concern used in finishing. <b>[63.803(l)(1)]</b></p> <p>3. Baseline Usage for each VHAP <b>[63.803(l)(2)]</b></p> <p>4. Annual Usage of each VHAP if quantities above OSHA MSDS reporting <b>[63.803(l)(3)]</b></p>		
Other Requirements 63.9(b) 63.806(h) 63.807(b) and (c) 63.806(i) 63.806(j)	<p>1) Submit initial notification by 9/1/96 (270 days after effective date) <b>[63.9(b)]</b></p> <p>2) Submit initial compliance certification within 60 days after the applicable compliance date. <b>[63.807(b)]</b></p> <p>3) Submit semi-annual certifications within 30 calendar days after the end of each 6 month period. <b>[63.807(c)(1) and (2)]</b></p> <p>4) Submit excess emission reports and summary reports semi-annually if there are no excess emissions <b>[63.807(d)]</b></p> <p>5) Submit excess emission reports quarterly for a period of one year after any excess emission. <b>[63.807(d) ]</b></p>		<p>1. Compliance Certifications <b>[63.806(h)]</b></p> <p>2. Information submitted with the compliance report <b>[63.806(i)]</b></p> <p>3. All information required by the General Provisions (40 CFR Part 63, Subpart A) <b>[63.806(j)]</b></p>	Not Applicable	Not Applicable

Name	Requirement	Monitor/Methods	Recordkeeping	Initial Certification	Semi-Annual Certification
	6) Submit written notification of any increase in a VHAP of potential concern within 30 days after each annual peirod. <b>[63.807(e)]</b>				

## Summary of Wood Furniture MACT - Subpart JJ (cont.)

Name	Requirement	Monitoring
Performance Tests 63.805	<ol style="list-style-type: none"> <li>1) For proper sampling procedures, follow guidelines in "Standard Procedures for Collection of Coating and Ink Samples for VOC content Analysis by Reference Method 24 and Reference Method 24A" (EPA -340/1-91-010. <b>[63.805(a)]</b></li> <li>2) Determine control efficiency (R )/ Compliance as the product of capture and control device efficiency (FXN)(100). <b>[63.805(b)]</b></li> <li>3) Conduct three test runs with each a minimum of 30 minutes <b>[63.805(c)(1)]</b></li> <li>4) Perform Methods 2, 2A, 2C, 2D 3, and 4 two times during each run. <b>[63.805(c)]</b></li> <li>5) Isolate all affected emission points by a temporary or permanent total enclosure during the performance test. <b>[63.805(d)(2)]</b></li> <li>6) Run the test at a maximum production rate. <b>[63.805(d)(3)]</b></li> <li>7) Determine control device efficiency (F) using Equation 5. <b>[63.805(d)(4)]</b></li> <li>8) Determine capture system efficiency (N) using Equation 6. <b>[63.805(d)(5)]</b></li> </ol>	<ol style="list-style-type: none"> <li>1. Method 311 (40 CFR Part 63, App A) to determine VHAP content of the liquid coating <b>[63.805(a)]</b></li> <li>2. Formulation Data to identify the VHAP present in the coating. <b>[63.805(a)]</b></li> <li>3. Method 24 (40 CFR Part 60, App A) to determine the solids content and density of the coating. <b>[63.805(a)]</b></li> <li>4. Batch formulation information is acceptable if VOC and HAP are not released during the cure. <b>[63.805(a)]</b></li> <li>5. Method 18 to determine [HAP] of gaseous air stream <b>[63.805(c)(1)]</b></li> <li>6. Method 1 or 1 A to determine sample and velocity traverses <b>[63.805(c)(2)]</b></li> <li>7. Method 2, 2A, 2C, or 2D to measure velocity and volumetric flow rates. <b>[63.805(c)(3)]</b></li> <li>8. Method 3 to analyze exhaust gases. <b>[63.805(c)(4)]</b></li> <li>9. Method 4 to measure the moisture in the stack gas. <b>[63.805(c)(5)]</b></li> </ol>
Permanent Total Enclosure (Automatic Approval) 63.805(e)	<ol style="list-style-type: none"> <li>1) Total area of natural draft openings not to exceed 5% of total surface area of the total enclosure's walls floor, and ceiling. <b>[63.805(e)(1)(i)]</b></li> <li>2) All emission sources should be at least 4 equivalent diameters from each natural draft opening. <b>[63.805(e)(1)(ii)]</b></li> <li>3) Average inward face velocity across all natural draft openings should be at least 3600m/hr as tested using 63.805(e)(1)(iii) <b>[63.805(e)(1)(iii)]</b></li> </ol>	
Thermal Incineration 63.804(f)(4)(iv) 63.804(f)(6)(iv) - new 63.804(g)(4) 63.804(g)(6) -new	Install temp monitor in the firebox or in the ductwork downstream of the firebox in a position before any substantial heat exchange occurs <b>[63.804(g)(4)(ii)(A)]</b>	Continuously monitor minimum combustion temp <b>[63.804(f)(4)(iv)(A)]</b>
Catalytic Incineration w/ fixed catalyst bed 63.804(f)(4)(iv) 63.804(f)(6)(iv) -new 63.804(g)(4) 63.804(g)(6)-new	Install temp monitors in the gas stream (ductwork) immediately before and after bed. <b>[63.804(g)(4)(ii)(B)]</b>	Continuously monitor minimum gas temp both upstream and downstream of catalyst bed <b>[63.804(f)(4)(iv)(B)]</b>
Catalytic incinerator w/ fluidized bed 63.804(f)(4)(iv) 63.804(f)(6)(iv) 63.804(g)(4) 63.804(g)(6)	<ol style="list-style-type: none"> <li>1) Install temp monitor in gas stream before bed. <b>[63.804(g)(4)(ii)(C)]</b></li> <li>2) Install pressure monitor to measure pressure drop across the bed <b>[63.804(g)(4)(ii)(C)]</b></li> <li>3) Maintain a constant pressure drop across the bed as measured monthly. <b>[63.804(g)(4)(ii)(C)]</b></li> </ol>	Continuously monitor minimum gas temperature upstream of bed and measure pressure drop across the bed monthly <b>[63.804(f)(4)(iv)(C)]</b>
Carbon adsorber 63.804(f)(4)(iv) 63.804(f)(6)(iv) 63.804(g)(4) 63.804(g)(6)	<p>Option 1:</p> <ol style="list-style-type: none"> <li>1) Install an integrated stream flow monitor with <math>\pm 10\%</math> accuracy, capable of recording total regeneration stream mass flow: and , <b>[63.804(g)(4)(iii)(A)]</b></li> <li>2) Install a carbon bed temp monitor capable of recording the carbon bed temp after every regeneration cycle and within 15 min of cooling cycle and with an accuracy of <math>\pm(0.01</math> multiply by temp being monitored) or <math>\pm 0.5^\circ\text{C}</math> whichever is greater <b>[63.804(g)(4)(iii)(A)]</b></li> </ol>	<p>Measure total regeneration mass stream flow for each regeneration cycle, and carbon bed temp after each regeneration; or , <b>[63.804(f)(4)(iv)(D)]</b></p> <p>Measure [Organics] exiting unit. <b>[63.804(f)(4)(iv)(D)]</b></p>

### Summary of Wood Furniture MACT - Subpart JJ (cont.)

Name	Requirement	Monitoring
	Option 2: Install an organic monitor equipped with a continuous recorder that measures [organics] exiting the unit. <b>[63.804(g)(4)(iii)(B)]</b>  Option 3: Install any other device approved by the Administrator <b>[63.804(g)(4)(iii)(C)]</b>	
Formaldehyde Emission or Baseline Calculations 63.802(a)(1) 63.803(l)(2)	Use the amount of free formaldehyde present in the finishing material when applied <b>[63.803(l)(2)]</b>	
Styrene Emissions or Baseline Calculations 63.802(a)(1) 63.803(l)(2)	Calculate the unreacted monomer and multiple by 0.16 <b>[63.803(l)(2)]</b>	