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National Emission Standards for Hazardous Air Pollutants for Wet-Formed Fiberglass Mat Production; Proposed Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 63

[FRL–6703–5]

RIN 2060–AH89

National Emission Standards for Hazardous Air Pollutants for Wet-Formed Fiberglass Mat Production

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: The EPA is adding wet-formed fiberglass mat production to the list of categories of major sources of hazardous air pollutants (HAPs) published under section 112(c) of the Clean Air Act (CAA) and to the source category schedule for national emission standards for hazardous air pollutants (NESHAP).

The EPA is, at the same time, proposing the NESHAP for new and existing sources at wet-formed fiberglass mat production facilities. The HAPs emitted by the facilities subject to the proposed NESHAP include three organic HAPs (formaldehyde, methanol, and vinyl acetate). Exposure to these HAPs can cause reversible or irreversible adverse health effects including carcinogenic, respiratory, nervous system, developmental, reproductive, and/or dermal health effects. The EPA estimates the proposed NESHAP would reduce nationwide emissions of HAPs from the drying and curing ovens at these facilities by 199 megagrams per year (Mg/yr)(219 tons per year or tons/yr), an approximate 74 percent reduction from the current level of emissions. Under section 112(c)(5) of the CAA, the wet-formed fiberglass mat production NESHAP has a promulgation date of May 26, 2002.

The proposed NESHAP are based on the Administrator's determination that wet-formed fiberglass mat production facilities emit several of the 188 HAPs listed in the CAA from the various process operations found within the industry, and that these facilities can be major sources of HAPs. The proposed NESHAP protect the public by requiring all wet-formed fiberglass mat production facilities that are major sources to meet emission standards reflecting the application of the maximum achievable control technology (MACT).

DATES: *Comments.* Public comments on the proposed rule must be received on or before July 25, 2000.

Public Hearing. A public hearing will be held if requests to speak are received by June 12, 2000.

ADDRESSES: *Comments.* Interested parties may submit written comments (in duplicate, if possible) to Docket No. A–97–54 at the following address: Air and Radiation Docket and Information Center (6102), U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue, NW, Washington, DC 20460. A separate copy of the comments should be sent to Mr. Juan Santiago, Minerals and Inorganic Chemicals Group, Emission Standards Division (MD–13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone number (919) 541–1084.

FOR FURTHER INFORMATION CONTACT: For information concerning the proposed rule, contact Mr. Juan Santiago, Minerals and Inorganic Chemicals Group, Emission Standards Division (MD–13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone number (919) 541–1084, e-mail address: santiago.juan@epa.gov. For information regarding Method 316, contact Ms. Rima N. Howell; Emissions, Monitoring, and Analysis Division (MD–19); U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone number (919) 541–0443, e-mail address: *howell.rima@epa.gov.*

SUPPLEMENTARY INFORMATION:

Comments. Commenters wishing to submit proprietary information for consideration should clearly distinguish such information from other comments and clearly label it ''Confidential Business Information.'' Submissions containing such proprietary information should be sent directly to the following address, and not to the public docket, to ensure that proprietary information is not inadvertently placed in the docket: Attention: Mr. Juan Santiago, c/o OAQPS Document Control Officer, 411 W. Chapel Hill Street, Room 740B, Durham, North Carolina 27701. Information covered by such a claim of confidentiality will be disclosed by EPA only to the extent allowed and by the procedures set forth in 40 CFR part 2. If no claim of confidentiality accompanies a submission when it is received by EPA, the submission may be made available to the public without further notice to the commenter.

Public Hearing. Anyone requesting to present oral testimony or attend the public hearing must contact Ms. Tanya Medley at (919) 541–5422 no later than June 16, 2000. A verbatim transcript of the hearing and any written statements will be available for public inspection and copying during normal working hours at the EPA's Air and Radiation Docket and Information Center in Washington, DC.

Docket. Docket A–97–54, containing supporting information used in developing the proposed standards, is available at the Air and Radiation Docket and Information Center, 401 M Street, SW, Room M–1500, Waterside Mall, Washington D.C. 20460 and may be inspected from 8 a.m. to 5:30 p.m., Monday through Friday. Copies of this information may be obtained by request from the Air Docket by calling (202) 260–7548. A reasonable fee may be charged for copying docket materials.

Electronic Access and Filing Addresses. The official record for this rulemaking has been established under Docket No. A–97–54 (including comments and data submitted electronically). A public version of this record, including printed, paper versions of electronic comments, which does not include any information claimed as confidential business information (CBI), is available for inspection from 8 a.m. to 5:30 p.m., Monday through Friday, excluding legal holidays.

Electronic comments can be sent directly to the EPA's Air and Radiation Docket and Information Center at: ''A–and–R–Docket@epamail.epa.gov.'' Electronic comments must be submitted in American Standard Code for Information Interchange (ASCII) file format. Avoid the use of special characters and any form of encryption. Comments and data will also be accepted on disks in WordPerfect® Version 5.1, 6.1 or Corel 8 file format or ASCII file format. All comments and data in electronic form must be identified by the docket number (A–97–54). Electronic comments may be filed online at many Federal Depository Libraries.

Worldwide Web (WWW). The proposed regulatory text will be available on the WWW through the Technology Transfer Network (TTN), a network of the EPA's electronic bulletin boards. The TTN provides information and technology exchange in various areas of air pollution control. The TTN is accessible through the Internet at ''TELNET ttnbbs.rtpnc.epa.gov''. If more information on the TTN is needed, call the HELP line at (919) 541–5384.

Regulated Entities. Entities potentially regulated by this action are those industrial facilities that manufacture wet-formed fiberglass mat. Wet-formed fiberglass mat production is classified under Standard Industrial Classification (SIC) code 3329325, a subset of SIC code 3329, Pressed and Blown Glass, Not Elsewhere Classified. Regulated categories and entities are shown in

table 1. This table is not intended to be exhaustive, but provides a guide for readers regarding entities likely to be regulated by final action on this proposal. This table lists the types of entities that EPA is now aware could potentially be regulated by final action on this proposal. To determine whether your facility would be regulated by final action on this proposal, carefully examine the applicability criteria in section III.A of this preamble and in § 63.2981 of the proposed rule. If there are any questions regarding the applicability of this action to a particular entity, consult Mr. Juan Santiago (See **FOR FURTHER INFORMATION CONTACT**).

TABLE 1.—REGULATED CATEGORIES AND ENTITIES

Category	SIC code	Description
Industrial	3329325	Wet-formed fiberglass mat production facilities.

Incorporation by Reference. A request for approval of the incorporation by reference by the Director of the Office of the Federal Register will be submitted prior to promulgation of this rule for the following material: Chapters 3 and 5 of ''Industrial Ventilation: A Manual of Recommended Practice,'' American Conference of Governmental Industrial Hygienists (22nd edition, 1995). The procedures in this material are used for designing the system for capturing and conveying HAP emissions to the control device. The incorporation by reference of this publication is expected to be approved by the Director of the Office of the Federal Register upon promulgation.

Organization of this Document. The information in this preamble is organized as follows:

I. Introduction
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II. What are the requirements of these proposed NESHAP?
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C. Executive Order 13132—Federalism
D. Executive Order 13084—Consultation and Coordination with Tribal Governments
E. Unfunded Mandates Reform Act
F. Regulatory Flexibility Act
G. Paperwork Reduction Act
H. National Technology Transfer and Advancement Act

I. Introduction

A. Regulatory Background and Addition to Source Category List

Section 112(c) of the CAA directs us to list each category of major and area sources, as appropriate, that emits one or more of the 188 HAPs listed in section 112(b) of the CAA. The term ''major source'' is defined in section 112(a)(1) to mean:

> * * * any stationary source or group of stationary sources located within a contiguous area under common control that emits or has the potential to emit, considering controls, in the aggregate 10 tons per year or more of any HAP or 25 tons per year or more of any combination of HAPs * * *

We published an initial list of source categories on July 16, 1992 (57 FR 31576). Included on the initial source category list were major sources of HAP emissions from the asphalt roofing and processing industry.

During development of the asphalt roofing and processing NESHAP, industry representatives alerted us about the existence of the wet-formed fiberglass mat production industry, and its relationship to the asphalt roofing production industry. They indicated to us that wet-formed fiberglass mat production facilities have the potential to be major sources of HAP emissions, and some wet-formed fiberglass mat production facilities are collocated with asphalt roofing and processing facilities. They expressed the opinion that there should be a NESHAP for wet-formed fiberglass mat production developed separately from the asphalt roofing and processing industry. We have decided to propose a separate NESHAP for wet-formed fiberglass mat production because the production processes and pollutant emissions differ from those in the asphalt roofing industry. In addition, wet-formed fiberglass mat is produced at both stand-alone facilities and those collocated with asphalt roofing and processing facilities. The CAA provides that we may amend the list anytime. Consequently, wet-formed fiberglass mat production is being added to the source category list under section 112(c) of the CAA.

Wet-formed fiberglass mat is the substrate for several asphalt roofing products. In wet-formed fiberglass mat production, glass fibers are bonded with an organic resin. The mat is formed as the resin is dried and cured in heated ovens. The majority of HAP emissions associated with wet-formed fiberglass mat production are emitted from the drying and curing oven exhaust. Based on HAP emission data obtained during the development of this proposed rule, we have determined that wet-formed fiberglass mat production facilities are major sources of HAPs. Nine of the 14 facilities (10 of the 15 production lines) control the drying and curing oven exhaust emissions. All five of the remaining facilities that do not control the drying and curing oven exhaust are major sources of HAPs (Docket No. A–97–54).

Today's action adds wet-formed fiberglass mat production to the list of source categories for which MACT standards are to be developed. Final standards for this source category are required to be promulgated by May 26, 2002.

B. Solicitation of Comments

We are seeking full public participation in arriving at final decisions and encourage comments on all aspects of this proposal from all interested parties. Full supporting data and detailed analyses should be submitted with comments to allow us to make maximum use of the comments. All comments should be sent according to the information given in the **ADDRESSES** section. Comments on this proposal must be submitted on or before the date specified in the **DATES** section.

C. Source of Authority for National Emission Standards for Hazardous Air Pollutants Development

Section 112 of the CAA requires us to promulgate standards for the control of HAP emissions from each source category listed under section 112(c). The statute requires the standards to reflect the maximum degree of reduction in emissions of HAPs that is achievable taking into consideration the cost of achieving the emission reduction, any non-air quality health and environmental impacts, and energy requirements. This level of control is commonly referred to as MACT. The MACT standards can be based on the emission reductions achievable through application of measures, processes, methods, systems, or techniques including, but not limited to: (1) Reducing the volume of, or eliminating emissions of, such pollutants through process changes, substitution of materials, or other modifications; (2) enclosing systems or processes to eliminate emissions; (3) collecting, capturing, or treating such pollutants when released from a process, stack, storage, or fugitive emissions point; (4) design, equipment, work practice, or operational standards (including requirements for operator training or certification) as provided in section 112(h) of the CAA; or (5) a combination of the above (see section 112(d)(2) of the CAA).

For new sources, MACT standards cannot be less stringent than the emission control achieved in practice by the best-controlled similar source (see section 112(d)(3) of the CAA). The MACT standards for existing sources can be less stringent than standards for new sources. However, they cannot be less stringent than the average emission limitation achieved by the best-performing 12 percent of existing sources for categories and subcategories with 30 or more sources, or the best-performing five sources for categories or subcategories with fewer than 30 sources.

In essence, MACT standards are designed to ensure that all major sources of air toxic emissions achieve the level of control already being achieved by the better-controlled and lower-emitting sources in each category. This approach provides assurance to the public that each major source of toxic air pollution will be required to effectively control its emissions. At the same time, this approach provides a level economic playing field, ensuring that facilities that employ cleaner processes and good emission controls are not disadvantaged relative to competitors with poorer controls.

D. What Are the Health Effects of Pollutants Emitted From This Source Category?

The CAA was created, in part, ''to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population'' (see section 101(b) of the CAA). The proposed NESHAP would protect public health by reducing emissions of HAPs from wet-formed fiberglass mat production facilities.

Emission data collected during development of the proposed NESHAP show that formaldehyde, vinyl acetate, and methanol are emitted from wet-formed fiberglass mat production facilities (Docket No. A–97–54). The proposed emission limits would reduce emissions of formaldehyde, vinyl acetate, and methanol emitted from drying and curing ovens. As a result of controlling these HAPs, the proposed NESHAP would also reduce emissions of volatile organic compounds (VOC). Following is a summary of the potential health effects caused by exposure to these pollutants.

Exposure to formaldehyde, vinyl acetate, and methanol irritates the eyes, skin, and mucous membranes and can cause conjunctivitis, dermal inflammation, and respiratory symptoms. Formaldehyde exposure has been associated with reproductive effects such as menstrual disorders and pregnancy problems in female workers. We have classified formaldehyde as Class B1, a probable human carcinogen, on the basis of findings of nasal cancer in animal studies and limited human data. Acute exposure to vinyl acetate is known to cause irritation of the lungs and nose, and irritation or blistering of skin. Exposure to very high levels of vinyl acetate can cause dizziness. Data are not sufficient to classify vinyl acetate as a potential human carcinogen.

Acute exposure to methanol (usually by ingestion) is well known to cause blindness and severe metabolic acidosis, sometimes leading to death. Chronic methanol exposure, including inhalation, may cause central nervous system disturbances possibly leading to blindness. Methanol exposure has also been linked to developmental effects in animals. Data are not sufficient to classify methanol as a potential human carcinogen (Docket No. A–97–54).

The degree of adverse health effects associated with HAP exposure can range from mild to severe. The extent and degree to which the health effects may be experienced are dependent upon: (1) The ambient concentrations observed in the area (*e.g.,* as influenced by emission rates, meteorological conditions, and terrain); (2) the frequency and duration of exposures; (3) characteristics of exposed individuals (*e.g.,* genetics, age, preexisting health conditions, and lifestyles); and (4) pollutant-specific characteristics (*e.g.,* toxicity, half-life in the environment, and bioaccumulation).

Formaldehyde, vinyl acetate, and methanol are also VOC that are precursors to tropospheric ozone formation. Ambient concentrations in excess of the national ambient air quality standards (NAAQS) for ozone can damage lung tissue, reduce lung function, and increase sensitivity of the lung to other irritants. Additional information on the health effects of ozone are included in the EPA's ''Criteria Document'' (three volumes, EPA/600/P–93–004aF through EPA/600/P–93–004cF, July 1996), which supports the NAAQS for ozone. Many areas of the country, including several in which wet-formed fiberglass mat production facilities are located, are not in compliance with the NAAQS for ozone.

E. Wet-Formed Fiberglass Mat Production Industry Profile and Process Description

Wet-formed fiberglass mat is currently produced in the United States by nine companies operating 14 plants (15 production lines) in nine States. These plants may be collocated with asphalt roofing plants because wet-formed fiberglass mat can be used as a substrate for manufacturing asphalt roofing shingles and roll roofing products.

Wet-formed fiberglass mat is used as a substrate for asphalt shingles and roll roofing, as a reinforcement for reinforced plastic composite products (including thermosets and thermoplastics) and for cement and gypsum products, and in miscellaneous specialty applications such as battery separators and for pipe-wrapping and flooring.

A typical wet-formed fiberglass mat production line consists of the following processes: (1) Preparation of glass fibers;

(2) formation of fibers into a fiberglass mat; (3) saturation with urea-formaldehyde binder solution; (4) curing and drying the binder-coated fiberglass mat; (5) cooling the mat; and (6) trimming, cutting, and packaging.

Fiberglass mat is manufactured by binding glass fibers with urea-formaldehyde resin. The glass fibers are mixed with water and emulsifiers in large (several thousand gallons) mixing vats to form an aqueous slurry of fibers and water. The slurry is then pumped to another large vat that acts as a surge tank and then to a third vat that is the supply tank for the mat forming machine.

The mat forming machine consists of a slurry dispenser and moving wire screen belt. The wire screen belt carries the glass fiber mat throughout the production process. The glass fiber slurry is dispensed from a slot onto the screen in a uniform curtain. After the slurry is dispensed onto the screen, the screen passes over a vacuum slot into which the excess water and emulsion are drawn, leaving only a layer of fibers on the screen.

The mat of fibers then passes under a binder dispenser. An aqueous solution of urea-formaldehyde binder is dispensed from a slot or a curtain coater onto the mat of fibers in a uniform curtain. Just after the binder is dispensed onto the mat, the screen passes over another vacuum slot into which the excess binder solution is drawn.

The mat of fibers and binder then passes into a drying and curing oven. This is a multiple-stage oven that uses heated, forced air to carry away excess moisture. In the first stage, the moisture is driven from the binder. This causes the binder to migrate to the points where the glass fibers cross each other. In the second and third stages of the oven, the binder cures and hardens. After leaving the oven, the finished mat is wound into large rolls and prepared for shipment.

The information in the Technical Association of the Pulp and Paper Industry (TAPPI) survey responses (Docket No. A–97–54) and information obtained from a single facility that did not respond to the TAPPI survey (Docket No. A–97–54) indicate that drying and curing oven emissions from 10 of the 15 glass mat production lines are controlled by thermal oxidizers. Five facilities for which information is available do not have add-on emission controls on either the binder application vacuum or the drying and curing oven exhausts. No emission control devices other than thermal oxidizers are used on the drying and curing oven exhausts in this industry.

The thermal oxidizers used in this industry operate at temperatures that range from about 1,000 to 1,500 degrees Fahrenheit (°F) (540 to 820 degrees Celsius (°C)) with residence times from 0.5 to 4.8 seconds. Most existing thermal oxidizers are also designed for energy recovery. Formaldehyde destruction efficiencies, for those facilities for which there are data, range from about 90 percent to greater than 99 percent.

F. How Were Pollution Prevention Practices Considered in the Development of These Proposed NESHAP?

The format of the proposed NESHAP is a mass emission limit (kilograms of formaldehyde per megagram of wet-formed fiberglass mat produced) and an equivalent percentage reduction requirement compliance option. The mass emission limit allows for the use of pollution prevention practices in place of add-on control devices. A potential pollution prevention practice could be a process modification to reduce the formaldehyde content of binder formulations.

II. What Are the Requirements of These Proposed NESHAP?

A. Do These Proposed NESHAP Apply to Me?

The proposed NESHAP would apply to each existing and newly constructed drying and curing oven located at a wet-formed fiberglass mat production facility that is a major source of HAPs or that is collocated with a major source. A major source means any source that has the potential to emit 10 tons/yr or more of any one HAP or 25 tons/yr or more of any combination of HAPs. If your facility is determined to be an area source, you would not be subject to these proposed NESHAP.

B. What Emission Standards Must I Meet?

The proposed NESHAP regulate emissions of formaldehyde as a surrogate for total HAP emissions. Control of formaldehyde will also result in control of vinyl acetate and methanol. A mass emission limit and a percentage reduction requirement compliance option for formaldehyde are proposed for each new and existing drying and curing oven. The emission limits are the same for new and existing sources. New source and existing source emission standards for the drying and curing oven exhaust are a maximum formaldehyde emission rate of 0.03 kilograms per megagram (kg/Mg) of wet-formed fiberglass mat produced (0.05 pounds per ton (lb/ton) of wet-formed fiberglass mat produced) or a minimum of 96 percent destruction efficiency of formaldehyde (as shown in table 2). You can choose to comply with either the emission rate limit or the percent reduction requirement. If you use a thermal oxidizer or other control device to achieve the mass emission limit or percentage reduction requirement, you must collect and convey the emissions from each drying and curing oven to the control device according to the procedures specified in chapters 3 and 5 of ''Industrial Ventilation: A Manual of Recommended Practice.''

TABLE 2.—SUMMARY OF PROPOSED EMISSION STANDARDS FOR NEW AND EXISTING DRYING AND CURING OVENS AT WET-FORMED FIBERGLASS MAT MANUFACTURING PLANTS

Process	Emission limit
Each existing and new drying and curing oven.	0.03 kg of formaldehyde per Mg of fiberglass mat (0.05 lb of formaldehyde per ton of fiberglass mat). OR 96 percent reduction of formaldehyde.

C. What Operating Standards Must I Meet?

In addition to the emission standards, the proposed NESHAP contain specific operating standards, summarized in Table 3. The operating standards require you to maintain certain process or control device parameters within the levels established during the initial performance test. In general, the parameter values or ranges that must be maintained, must be approved by the

Administrator based on the performance test demonstrations. You must reference the operating standards in the operating permit that you are required to obtain under 40 CFR part 70.

You must also submit for the Administrator's approval an operations, maintenance, and monitoring (OMM) plan for the facility. The OMM plan specifies the parameters that must be monitored, how they will be monitored, and the corrective actions to follow whenever a monitored parameter deviates from the operating standards. You must also reference the OMM plan in your 40 CFR part 70 operating permit.

TABLE 3.—SUMMARY OF OPERATING STANDARDS FOR NEW AND EXISTING SOURCES

Affected source	Monitor type/operation/process	Operating Standards
Drying and curing ovens	Resin free-formaldehyde content.	Use a resin with a free-formaldehyde content no greater than that of the resin used during the performance test, as determined by the resin purchase specification or test method.
	Binder formulation formaldehyde content.	Use a binder with a formaldehyde content no greater than that of the binder formulation used during the performance test.
	Product urea-formaldehyde resin solids content.	Do not manufacture a product with a urea-formaldehyde resin solids content per ton of product higher than that of the product made during the performance test.
	Loss-on-ignition	Do not exceed the loss-on-ignition value of the product made during the performance test.
	Solids content of urea-formaldehyde resin.	Do not exceed the solids content of the urea-formaldehyde resin used in the product made during the performance test.
Drying and curing ovens controlled by a thermal oxidizer.	Thermal oxidizer operating temperature.	Maintain the average temperature for each 3-hour period at or above the average operating temperature achieved during the performance test.
	Thermal oxidizer operation.	Operate the thermal oxidizer in accordance with the operation, maintenance, and monitoring plan; annually inspect the thermal oxidizer for structural and design integrity.
Drying and curing ovens controlled by modifications or a control device other than a thermal oxidizer.	Process or control device parameters.	Maintain the process or control device within the ranges established during the performance test.
All affected sources	Corrective action	Initiate corrective action within 1 hour of an established operating parameter excursion and complete and document action per operation, maintenance and monitoring plan.

If the operating parameters deviate from the values or ranges specified in your OMM plan, you would be in violation of the standards. Following the performance test, whenever a monitored parameter deviates from the established operating standards, you must initiate the corrective actions specified in the OMM plan within 1 hour. You must complete the corrective actions in an expeditious manner and implement them as specified in your OMM plan.

If you use a thermal oxidizer to achieve compliance with the emission standards, you must operate the thermal oxidizer so that the average operating temperature in any 3-hour block period does not fall below the average temperature established during the performance test. Additionally, an annual inspection of the thermal oxidizer is required to ensure that the structural and design integrity of the combustion chamber is maintained in the same condition as during the performance test. If you use process modifications or an add-on control device other than a thermal oxidizer to achieve compliance with the emission standards, you must maintain the process or control device parameter(s) within the required ranges that you established during the performance test.

The operating standards also require you to maintain the resin free-formaldehyde content, the binder formulation formaldehyde content, the solids content of the urea-formaldehyde resin, the urea-formaldehyde resin solids content of the product manufactured, and the loss-on-ignition value of the wet-formed fiberglass mat produced within the levels you established during a compliance test and as specified in your OMM plan.

D. What Are the Performance Test and Initial Compliance Provisions of These Proposed NESHAP?

You must conduct a performance test to demonstrate initial compliance with the emission limits. The performance test must be performed initially and every 5 years following the initial performance test. A performance test is also required to change the value or range of an operating standard. Under the proposed NESHAP, you must conduct the performance test while operating at or near the maximum production rate and while making wet-formed fiberglass mat with the highest urea-formaldehyde resin solids content, loss-on-ignition value, using the resin with the highest free-formaldehyde content, and using the binder with the highest formaldehyde content. You must measure formaldehyde emissions as the average of three test runs using EPA Reference Method 316 in appendix A of 40 CFR part 63, ''Sampling and Analysis for Formaldehyde from Stationary Sources in the Mineral Wool and Wool Fiberglass Industries.'' This proposed method was published in the March 31, 1997 **Federal Register** (63 FR 15288). You must demonstrate compliance with either the mass emission limit or the percentage reduction requirement using the instructions and equations contained in the performance test requirement section of this proposed NESHAP.

During the performance tests, you must continuously monitor the thermal oxidizer operating temperature and record the average temperature in 15-minute blocks during each 1-hour test run. After completion of the three required test runs, you must determine the 3-hour average operating temperature of the thermal oxidizer. If you use process modifications or an add-on control device other than a thermal oxidizer to comply with the

emission standards, you must determine the appropriate control device or process monitoring parameters to indicate whether compliance is being achieved. You must include the process or control device parameters, monitoring frequency, and the averaging periods in your site-specific test plan required by the 40 CFR part 63 general provisions and approved by the permitting agency prior to conducting your initial performance test. You may perform multiple tests to establish the least restrictive value or operating range for the selected parameters that still demonstrate compliance.

During the performance tests, you must also monitor and record the average hourly wet-formed fiberglass mat production rate prior to edge trimming, the free-formaldehyde content and the solids content of the urea-formaldehyde resin used to produce the mat, the formaldehyde content of the binder used to produce the mat, the urea-formaldehyde solids content per ton of product, and the loss-on-ignition value of the product manufactured during each of the three test runs.

If you use a thermal oxidizer to comply with these NESHAP, you must conduct a performance evaluation for the thermal oxidizer temperature monitoring device prior to the initial performance test to determine compliance. The evaluation must be conducted according to the procedures in 40 CFR 63.8(e) of the NESHAP general provisions. The temperature monitoring device must meet the following performance and equipment specifications: (1) The temperature monitoring device must be installed at the exit of the combustion zone of each thermal oxidizer; (2) the recorder response range must include zero and 1.5 times the average temperature; and (3) the reference method must be a National Institute of Standards and Technology calibrated reference thermocouple-potentiometer system or an alternate reference, subject to the approval of the Administrator.

The proposed NESHAP would allow facilities subject to the NESHAP to conduct short-term experimental production runs, where the formaldehyde content or other process parameters deviate from the levels established during previous performance tests, without conducting additional performance tests. You must apply for approval from the Administrator or delegated State agency to conduct such experimental production runs. The application must be made at least 30 days prior to conducting the run. The application would include information on the nature and duration of the test runs including plans to perform emissions testing. Such experimental production runs are important to industry and allow them to develop new products, improve existing products, and determine the effects on emissions of process modifications being considered, such as binder formulation.

E. What Monitoring Requirements Must I Meet?

Continuous compliance is demonstrated after the initial performance test and between subsequent performance tests by monitoring emission control devices and process operating parameters. The allowable monitoring parameter values or ranges are determined during your initial performance test and must be approved by the Administrator.

If a thermal oxidizer is used to achieve compliance with the emission standards, you must monitor the operating temperature of the thermal oxidizer. If you use a thermal oxidizer to achieve compliance with the proposed emission standards, you must: (1) Install, operate, calibrate, and maintain a device that continuously measures the operating temperature of each thermal oxidizer; and (2) determine and record the temperature in 15-minute and 3-hour block averages. This is typically done using a thermocouple (a standard feature on most thermal oxidizers) and a chart recorder or data logger. You are also required to monitor the resin free-formaldehyde content, the binder formulation formaldehyde content, the solids content of the urea-formaldehyde resin, the urea-formaldehyde resin solids content of the product manufactured, and the loss-on-ignition value of the wet-formed fiberglass mat produced. Because these process parameters affect the amount of HAPs emitted from the drying and curing oven, you must monitor them to ensure that operation of the production process is consistent with the conditions of the performance test, and that the production process does not vary in such a way as to increase HAP emissions from the drying and curing oven exhaust.

If process modifications or a control device other than a thermal oxidizer is used to achieve compliance with the emission standards, you must monitor the parameters that were established during the performance test and approved by the Administrator.

The proposed NESHAP contain provisions that would allow you to change the thermal oxidizer operating temperature, add-on control devices, and process parameter values from those established using the initial and 5-year performance tests. These provisions would allow you to make process changes or to demonstrate that different monitoring parameter values would more appropriately demonstrate compliance with the proposed emission standards. You may revise the monitoring or process parameter values by conducting additional performance tests to verify compliance at the revised operating levels. For example, if you intend to use a urea-formaldehyde resin with a higher free-formaldehyde or solids content, produce a wet-formed fiberglass mat with a higher urea-formaldehyde resin solids content, or produce a product with a higher loss-on-ignition value, you must perform additional performance tests to verify compliance at the increased operating or process parameters. You must request and obtain approval from the Administrator to conduct these additional performance tests and must submit performance data that justify and support the expanded parameter ranges before the facility is allowed to operate under the revised monitoring parameters.

F. What Are the Notification, Recordkeeping, and Reporting Requirements of These Proposed NESHAP?

All notification, recordkeeping, and reporting requirements in the 40 CFR part 63 general provisions, as well as additional requirements, apply to wet-formed fiberglass mat manufacturing facilities. The notification and reporting requirements include, but are not limited to: (1) Initial notification of applicability of the rule, notification of the dates for conducting the performance test, and notification of compliance status; (2) a report of performance test results; (3) a startup, shutdown, and malfunction plan; (4) reports of any startup, shutdown, and malfunction events that occur; and (5) reports of excess emissions (*i.e.,* monitoring parameter exceedances) and continuous monitoring system performance. When no exceedances occur, you must submit semiannual reports indicating that no exceedances have occurred during the period. If exceedances or deviations from established monitoring parameters occur, the frequency of submitting the excess emission reports becomes quarterly until a request to return to semiannual reporting is approved by the Administrator. You cannot submit the request to reduce the frequency of the reporting period until the affected

source's excess emissions and continuous monitoring system performance reports remain continually within the established parameter ranges for 1 full year.

You must maintain records of the following, as applicable: (1) Thermal oxidizer operating temperature; (2) process parameters for drying and curing ovens that comply with the emission standards using process modifications or an add-on control device other than a thermal oxidizer; (3) free-formaldehyde content of the resin; (4) binder formulation formaldehyde content; (5) loss-on-ignition value of the wet-formed fiberglass mat produced; (6) urea-formaldehyde resin solids content per ton of the wet-formed fiberglass mat produced; (7) average hourly wet-formed fiberglass mat production rate; (8) the date and time an exceedance commenced if a parameter monitoring exceedance occurs, the date and time corrective actions were initiated and completed, a description of the cause of the exceedance, and a description of the corrective actions taken; (9) the approved OMM plan; (10) maintenance and inspections performed on control devices; and (11) any other information required to be recorded in the general provisions.

The NESHAP general provisions require that records be maintained for at least 5 years from the date of each record. You would retain the records onsite for at least 2 years but may retain the records offsite for the remaining 3 years. The records must be readily available and in a form suitable for efficient inspection and review. The files may be retained on paper, on microfilm, on microfiche, on a computer, on computer disks, or on magnetic tape. Reports may be made on paper or on a labeled computer disk using commonly available and compatible computer software.

III. What Are the Impacts of These Proposed NESHAP?

A. What Are the Air Emission Impacts?

At the current level of control, nationwide emissions of HAPs from the 14 facilities in the industry are about 268 Mg/yr (295 tons/yr). Under the proposed NESHAP, it is expected that thermal oxidizers will be added to the five uncontrolled drying and curing ovens, and that existing thermal oxidizers will be replaced with new units for three out of the ten controlled drying and curing ovens. This would result in an estimated reduction in nationwide HAP emissions of 199 Mg/yr (219 tons/yr) (Docket No. A–97–54).

Formaldehyde emissions from wet-formed fiberglass mat manufacturing lines account for about 65 percent of the baseline HAP emissions. Methanol emissions account for approximately 30 percent, with vinyl acetate comprising the remaining 5 percent of the baseline HAP emissions. Estimated nationwide emissions of formaldehyde from existing wet-formed fiberglass mat production lines are 174 Mg/yr (192 tons/yr) at the current level of control. Implementing the proposed NESHAP will reduce nationwide formaldehyde emissions from existing sources by about 130 Mg/yr (143 tons/yr) (Docket No. A–97–54), and combined emissions of vinyl acetate and methanol will be reduced by 70 Mg/yr (77 tons/yr).

B. What Are the Water and Solid Waste Impacts?

Because compliance with the proposed NESHAP is based on the use of thermal oxidizers, no water pollution or solid waste impacts would result from the proposed NESHAP.

C. What Are the Energy Impacts?

Thermal oxidizers require electrical energy to operate fans. Additional electrical energy requirements are estimated to be 4,260 megawatt hours per year (MW-hr/yr). An additional 275,000 million British thermal units per year (Btu/yr) of natural gas are estimated to be required for eight additional thermal oxidizers that would be added to existing sources. The total additional energy (electricity and natural gas) required as a result of the proposed NESHAP is 290 billion Btu/yr in the fifth year following promulgation of the NESHAP (Docket No. A–97–54). No new glass mat production lines are projected in the 5 years after promulgation; therefore, no increased energy requirement is expected for new glass mat production lines under the proposed NESHAP.

D. Are There Any Additional Environmental and Health Impacts?

Reducing HAP emissions will lower occupational HAP and VOC exposure levels. The operation of thermal oxidizers may increase occupational noise levels in the five facilities that currently do not control HAP emissions.

E. What Are the Cost Impacts?

Cost impacts of the proposed NESHAP for drying and curing ovens were analyzed using site-specific information included in the TAPPI survey responses coupled with procedures from the ''OAQPS Cost Manual'' (Docket No. A–97–54). For some facilities where site-specific data necessary for estimating costs (e.g., a vent flow rate) were not available, average factors developed from industry data were used to estimate the missing data.

The total capital costs to achieve the proposed NESHAP were estimated to be $5,272,000. These capital cost impacts arise from the purchase and installation of eight thermal oxidizers—five thermal oxidizers for the five facilities without existing controls and three thermal oxidizers for three facilities that must replace existing thermal oxidizers that cannot meet the proposed NESHAP. The average capital costs of installing a new thermal oxidizer is $658,000 per oxidizer. The capital costs estimate to install a new thermal oxidizer to achieve compliance includes the cost of auxiliary burners, combustion chambers, primary heat exchangers, weather-tight housing and insulation, a fan, flow and temperature controls, a stack, and structural supports.

Ten of the 15 wet-formed fiberglass mat production lines have existing thermal oxidizers. We have formaldehyde emissions data for five of the existing thermal oxidizers. Based on an evaluation of the emissions data, four of these five thermal oxidizers are already achieving the formaldehyde control level required by the proposed NESHAP. Therefore, no thermal oxidizer capital costs to comply with the proposed NESHAP were estimated for these four facilities. The fifth facility controls both the drying and curing oven exhaust and the binder application vacuum exhaust. Since this facility is not achieving the formaldehyde control level required by the proposed NESHAP, the cost of a new thermal oxidizer was estimated for this facility. The thermal oxidizer cost estimate is based on the flow rate from the drying and curing oven exhaust only since the proposed NESHAP does not require control of the binder application vacuum exhaust.

No formaldehyde emissions data are available for the remaining five existing thermal oxidizers. Three facilities have thermal oxidizers operating at temperatures and residence times that are as high as those that have achieved the proposed formaldehyde control level. Therefore, we expect that these three facilities will be able to comply with the proposed NESHAP using their existing thermal oxidizers. No increases in capital or annual costs were estimated for these facilities. The two remaining thermal oxidizers have temperatures or residence times lower than those at the facilities that are achieving the proposed control levels. Capital costs were estimated to replace

these two thermal oxidizers with new thermal oxidizers that are designed to meet the proposed NESHAP.

The proposed monitoring requirements for the thermal oxidizer operating temperature are not current industry practice and are expected to impose additional costs on facilities with existing thermal oxidizers. To estimate the impact of the additional monitoring equipment (i.e., a data logging system), a cost of $7,000 ($1,000 for each of the seven facilities with an existing thermal oxidizer that is achieving the proposed NESHAP) was included in the capital cost estimate (Docket No. A–97–54). No additional capital costs were estimated for monitoring equipment for the new thermal oxidizers since temperature monitors and recording devices are standard equipment and are included in the cost estimates for new thermal oxidizers.

The total annualized cost of the proposed NESHAP for eight new thermal oxidizers is about $2,414,000. The average annual cost for a typical facility that installs a new thermal oxidizer is $302,000. The annualized cost estimate includes the cost of operation, maintenance, supervisory labor, maintenance materials, utilities, administrative charges, taxes, insurance, and capital recovery.

F. What Are the Economic Impacts?

The goal of the economic impact analysis is to estimate the market response of the wet-formed fiberglass mat production industry to the proposed emission standards and to determine the economic effects that may result from the proposed NESHAP. As discussed above, 14 facilities owned by nine different companies produce wet-formed fiberglass mat domestically. These facilities may potentially be affected by the proposed NESHAP.

The estimated nationwide annualized cost of the proposed NESHAP is $1.595 million. This cost estimate represents approximately 0.069 percent of the 1995 sales revenues for domestically produced wet-formed fiberglass mat. Based upon this estimate, it is reasonable to assume that market price increases and production decreases resulting from the proposed NESHAP are likely to be very small. Thus, we conclude that the proposed NESHAP is not likely to have a significant economic impact on the wet-formed fiberglass mat industry as a whole or on secondary markets such as the labor market and foreign trade.

We performed a streamlined economic analysis to determine facility-specific impacts. The facility-specific impacts are examined by calculating the ratio of the estimated annualized costs of emission controls for each facility to the estimated revenues per facility (i.e., a cost-to-sales ratio) to assess the likelihood of facility closures and employment impacts. Cost-to-sales ratios refer to the change in the cost of emission controls divided by the sales revenue of wet-formed fiberglass mat, the goods produced in the process for which additional pollution control is required. This ratio can be estimated for either individual firms or as an average for some set of firms such as affected small firms. While it has different significance for different market situations, it is a good rough gauge of potential impact. If costs for the individual (or group of) firms are completely passed onto the purchasers of the good(s) being produced, the ratio is an estimate of the price change (in percentage form after multiplying the ratio by 100). If costs are completely absorbed by the producer, this ratio is an estimate of changes in pretax profits (in percentage form after multiplying the ratio by 100). The distribution of cost-to-sales ratios across the whole market, the competitiveness of the market, and profit-to-sales ratios are among the obvious factors that may influence the significance of any particular cost-to-sales ratio for an individual facility.

For these proposed NESHAP, a cost-to-sales ratio exceeding 1 percent was determined to be an initial indicator of the potential for a significant facility impact. Each of the 14 facilities affected by the proposed NESHAP has cost-to-sales ratios of less than 1 percent of sales. Therefore, the facility-specific impacts are not considered to be significant for any facility affected by the proposed NESHAP. No facility is likely to close as a result of the proposed NESHAP. Facilities in the wet-formed fiberglass mat production industry are likely to increase the price charged for the product in response to market price changes, to absorb the costs with no price increase, or to respond with a combination of these alternatives. The economic impacts to consumers and producers of wet-formed fiberglass mat are anticipated to be minimal. The generally small scale of the impacts suggests that there will also be no significant impacts on markets for the products made using wet-formed fiberglass mat. For more information, consult the economic impact report entitled ''Economic Impact Analysis for the Proposed National Emission Standard for Hazardous Air Pollutants from the Production of Wet-Formed Fiberglass Mat,'' January 1999 (Docket No. A–97–54).

IV. How Were These Proposed NESHAP Developed?

A. Selection of Emission Sources

In the wet-formed fiberglass mat production industry, HAPs are emitted from two processes: binder application processes and drying and curing processes. For the reasons described below, we selected the drying and curing processes at new and existing wet-formed fiberglass mat production lines for control under the proposed NESHAP.

The drying and curing oven drives off moisture remaining on the fibers and sets the binder using heated air. Fans are used to draw hot air through the mat within each of the oven zones; the hot air may be recycled within each zone to conserve energy. Emissions of formaldehyde, vinyl acetate, and methanol result from vaporization of volatile compounds in the binder. Emissions from ten of the 15 drying and curing ovens on wet-formed fiberglass manufacturing lines are controlled by thermal oxidizers. Emissions from the remaining five ovens are uncontrolled.

The emissions from the drying and curing ovens account for approximately 90 percent of the total HAP emissions from wet-formed fiberglass mat production facilities. Although one facility controls the vent gases from the binder application vacuum exhaust along with the drying and curing oven exhaust, we do not consider the control of the binder application vacuum exhaust at this facility to represent MACT for new sources. When the binder application vacuum exhaust is controlled using an existing thermal oxidizer designed to control only the drying and curing oven exhaust, the overall HAP reduction achieved by the thermal oxidizer is decreased (Docket No. A–97–54). Introducing the binder application vacuum exhaust into an existing thermal oxidizer decreases the performance of the thermal oxidizer because of the decreased residence time in the thermal oxidizer and the high moisture content of the binder application vacuum exhaust. No binder application vacuum exhausts are controlled using stand-alone thermal oxidizers. In addition, the costs of controlling the binder application vacuum exhaust by requiring a stand-alone thermal oxidizer would be unreasonably high. For these reasons, we propose to regulate HAP emissions at the MACT floor only from the drying and curing oven processes.

B. Selection of MACT Floor

After identifying the MACT floors for new and existing sources, we must investigate regulatory alternatives. Regulatory alternatives are different levels of emissions control, equal to or more stringent than the MACT floor levels. Information about the industry is analyzed to project national impacts (which include HAP emission reduction levels and cost, energy, and non-air quality health and environmental impacts) and to select the regulatory alternative that best reflects MACT. The selected alternative may be more stringent than the MACT floor, but the control level must be achievable and reasonable in the Administrator's judgement considering cost, non-air quality health and environmental impacts, and energy requirements. The objective is to achieve the maximum degree of emissions reduction without imposing unreasonable impacts (see section 112(d)(2) of the CAA). The regulatory alternatives and emission limits selected for new and existing sources may be different because of different MACT floors.

In establishing the MACT standards, we may distinguish among classes, types, and sizes of sources within a category or subcategory when there are significant differences among the classes or subcategories (see section 112(d)(1) of the CAA). For the wet-formed fiberglass mat industry, we examined the processes, the process operations, and other factors to determine if separate classes of units, operations, or other criteria have an effect on air emissions or their controllability that would justify subcategories. Because all the wet-formed fiberglass mat production facilities use similar processes and emit the same pollutants, there is no basis for establishing subcategories. Therefore, we decided to regulate wet-formed fiberglass mat production as one source category.

Because the wet-formed fiberglass mat production industry has fewer than 30 sources, the MACT floor for existing sources is based on the average of the best-performing five sources. Nine facilities (10 production lines) of the 14 facilities (15 production lines) use a thermal oxidizer to control HAP emissions from the drying and curing oven exhaust. Emission reductions achieved by thermal oxidizers represent the best emissions control technology achieved by sources subject to the proposed standards. Thus, the MACT floor for existing sources is the level of control achieved by a thermal oxidizer.

The new source MACT floor is based on the emission control that is achieved in practice by the best-controlled similar source. Because the best-controlled drying and curing oven uses a thermal oxidizer and no more effective control technology than thermal oxidation has been achieved to control gaseous HAPs, this is also the MACT floor level of control for new sources.

One facility currently controls the emissions from the binder application vacuum exhaust using a thermal oxidizer originally designed to control only the drying and curing oven exhaust. Because the existing thermal oxidizer was not designed to control the binder application vacuum exhaust along with the drying and curing oven exhaust, a lower overall HAP reduction is achieved at this facility than by facilities controlling only the drying and curing oven exhaust. The overall HAP level of control is compromised due to the decreased residence time in the thermal oxidizer and the high moisture content of the binder application vacuum exhaust. Therefore, because it is not the best controlled source, we do not consider the control of the binder application vacuum exhaust at this facility to represent the MACT floor for new sources.

Currently, we are not aware of any available controls that are better than a thermal oxidizer for controlling gaseous HAP emissions at wet-formed fiberglass mat production lines. We considered controlling the binder application vacuum exhaust emissions in addition to the drying and curing oven exhaust emissions. We have determined that controlling the binder application vacuum exhaust emissions with a stand-alone thermal oxidizer was the only available beyond-the-floor option for existing sources. The incremental cost of controlling the binder application vacuum exhaust with a dedicated thermal oxidizer is approximately $39,200/Mg ($35,700/ton) of HAP reduced (Docket No. A–97–54). As discussed above, it is not possible to combine the binder application vacuum exhaust with the drying and curing oven exhaust at existing facilities without decreasing the performance of the existing thermal oxidizer. We did not select this control scenario because it achieves a lower overall HAP reduction.

As with existing sources, the only option more stringent than the MACT floor level of control for new sources is control of the binder application vacuum exhaust in addition to controlling the drying and curing oven exhaust. For new sources, a thermal oxidizer could be designed to handle both emission sources. Therefore, for this analysis, we assumed that a single thermal oxidizer would be used to control both the drying and curing oven exhaust and the binder application vacuum exhaust. This assumption was made since controlling the drying and curing oven exhaust and the binder application vacuum exhaust in separate thermal oxidizers would be more expensive than a single thermal oxidizer for both emission sources (Docket No. A–97–54).

The estimated incremental cost for new sources to control both the drying and curing oven exhaust and the binder application vacuum exhaust with one thermal oxidizer is approximately $12,800/Mg ($11,600/ton) of HAP reduced. The new source control cost estimates are based on a representative wet-formed fiberglass mat production facility controlling both the drying and curing oven exhaust and the binder application vacuum exhaust with a single thermal oxidizer (Docket No. A–97–54). Based on this evaluation, we concluded that the cost of controlling the binder application vacuum exhaust at new sources is unreasonable at this time.

For each of the cases evaluated above, we did not identify emission control technologies or control of additional emission sources that would reduce emissions to a level below the MACT floor without imposing costs which we concluded are unreasonable at this time. Therefore, we are proposing emission limits at the MACT floor level of control.

C. Emission Limits

We have performance data for five facilities in this industry that use thermal oxidizers to control drying and curing oven exhaust streams. Table 4 summarizes the available formaldehyde emissions data from these facilities. However, data from only four thermal oxidizers were used to determine the proposed emission limits. The performance of the thermal oxidizer at the fifth facility was not considered representative of the MACT floor level of control. This facility controls the emissions from the binder application vacuum exhaust using a thermal oxidizer originally designed to control only the emissions from the drying and curing oven exhaust. Because the binder application vacuum exhaust is a cooler and more dilute stream than the drying and curing oven exhaust, the residence time in the combustion chamber is decreased and HAP destruction efficiency is reduced. Therefore, data from plant E in table 4 were not used to determine emission limits for drying and curing ovens.

TABLE 4.—SUMMARY OF FORMALDEHYDE EMISSION TEST RESULTS ON WET-FORMED FIBERGLASS MAT PRODUCTION LINES FOR DRYING AND CURING OVEN EXHAUST

Plant	Thermal oxidizer parameters [b]	Average formaldehyde emissions [a]				Calculated control device efficiency (% destruction)
		Uncontrolled		Controlled		
		kg/Mg	lb/ton	kg/Mg	lb/ton	
A	1500 °F, 1.25 s RT	1.972	3.945	0.0065	0.013	99.7
B	1500 °F, 1 s RT	0.415	0.830	0.0018	0.0037	99.5
C	1350 °F, 0.75 s RT	0.296	0.591	0.0035	0.0070	98.8
D	1400 °F, 1.2 s RT	0.590	1.18	0.02	0.04	96.4
E [c]	1500 °F, 0.6 s RT	0.970	1.94	0.095	0.19	90.1

[a] Emission units are kg (lb) of formaldehyde per Mg (ton) of fiberglass mat product.
[b] RT = Retention time.
[c] This facility also controls the binder application vacuum exhaust with the thermal oxidizer that was originally designed to control only the drying and curing oven exhaust. Therefore, this thermal oxidizer was not considered representative of the MACT floor level of control.

The controlled emission rates of the four thermal oxidizers that represent the MACT floor level of control range from 0.0018 to 0.02 kg/Mg (0.0037 to 0.04 lb/ton) and the destruction efficiencies range from 99.7 to 96.4 percent efficiency. We believe that the differences in the performance achieved by the four thermal oxidizers are due to differences in operating temperature, residence time, combustion chamber design, and variations in uncontrolled emissions that occur in this industry. Considering these variables, we consider the performance of the four well-designed and -operated thermal oxidizers to represent the MACT floor level of control. Based on the data from all four sources with well-designed and -operated thermal oxidizers, and considering the variability in performance of a thermal oxidizer representative of the MACT floor level of control, we have selected a mass emission limit of 0.03 kg/Mg as the standard for new and existing sources. The 0.03 kg/Mg mass emission limit selected is somewhat higher that the short-term test result of 0.02 kg/Mg for the fourth thermal oxidizer. However, the selected mass emission limit allows for long-term process and control equipment variability.

We are also establishing an alternative percentage reduction efficiency standard to address situations in which a facility cannot achieve the 0.03 kg/Mg mass emission limit due to process variations while operating technology representative of the MACT floor level of control. Considering the data from all four of the sources with well-designed and -operated thermal oxidizers representative of the MACT floor level of control, and considering the variability in performance of a thermal oxidizer representative of the MACT floor level of control, we have selected a 96 percent destruction efficiency as the alternative standard. Sources subject to these emission standards would be allowed to demonstrate compliance by either meeting a mass emission limit of 0.03 kg/Mg (0.05 lb/ton) of product or achieving a 96 percent destruction efficiency. For example, a facility with a high inlet formaldehyde concentration may not be able to achieve the mass emission limit but could comply with the percentage reduction.

D. Selection of Test Methods

Under the proposed NESHAP, you must conduct a performance test using formaldehyde as a surrogate measure for all organic HAPs. You must measure formaldehyde emissions using EPA Reference Method 316 or any other alternative method that has been approved by the Administrator under § 63.7(f) of the general provisions.

The EPA Reference Method 316, ''Sampling and Analysis for Formaldehyde Emissions from Stationary Sources in the Mineral Wool and Wool Fiberglass Industries,'' is a manual test method that measures formaldehyde by spectrophotometry using the modified pararosaniline method. The method was validated at a mineral wool manufacturing facility, which has been determined to be a similar source, according to the procedures in EPA Validation Method 301, 40 CFR part 63, appendix A. In Method 316, gases are withdrawn isokinetically from an emission source and are collected in high-purity water. Formaldehyde present in the emissions is highly soluble in water. Formaldehyde in the sample reacts with acidic pararosaniline and sodium sulfite, forming a purple chromophore. The intensity of the purple color, measured spectrophotometrically, provides a measure of the formaldehyde concentration in the sample.

Using the results of the performance tests, you would use the equations and procedures in the rule to convert the formaldehyde emission rate into either a kg/Mg (lb/ton) of product emission rate or a percentage removal value. Appendix A to the proposed standards contains a method for determining the free-formaldehyde content of urea-formaldehyde resins. Appendix B to the proposed standards contains a method for determining the loss-on-ignition of the product. You must monitor these parameters to ensure compliance with the standards between performance tests.

E. Selection of Operating Standards and Monitoring Requirements

We believe that the operating standards and monitoring requirements discussed in sections II.C and II.E, respectively, will provide sufficient information needed to determine continuing compliance or identify operating problems at the source. At the same time, the provisions are not labor intensive, do not require expensive or complex equipment, and do not require burdensome recordkeeping. For example, temperature monitoring and recording equipment are standard features on thermal oxidizers. Resin free-formaldehyde content is a standard purchase specification for resin. Finally, the solids content of the urea-formaldehyde resins, the urea-formaldehyde solids content, the binder formulation formaldehyde content, and loss-on-ignition value of the product manufactured are monitored and recorded as part of normal product quality control procedures.

V. What Are the Administrative Requirements of These Proposed NESHAP?

A. Executive Order 12866—Regulatory Planning and Review

Under Executive Order 12866 (58 FR 51735, October 4, 1993), EPA must determine whether the regulatory action is ''significant'' and, therefore, subject to

review by the Office of Management and Budget (OMB) and the requirements of the Executive Order. The Executive Order defines ''significant regulatory action'' as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs, or the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

It has been determined that this action is not a ''significant regulatory action'' under the terms of the Executive Order and is, therefore, not subject to OMB review. However, an economic analysis of the proposed NESHAP was prepared and is available in the docket (Docket A–97–54).

B. Executive Order 13045—Protection of Children From Environmental Health Risks and Safety Risks

Executive Order 13045 (62 FR 19885, April 23, 1997) applies to any rule that (1) Is determined to be ''economically significant'' as defined under Executive Order 12866, and (2) concerns the environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, EPA must evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by EPA.

The EPA interprets Executive Order 13045 as applying only to those regulatory actions that are based on health or safety risks, such that the analysis required under section 5–501 of the Order has the potential to influence the regulation. This proposed rule is not subject to Executive Order 13045 because it is not an economically significant regulatory action as defined by Executive Order 12866, and it is based on technology performance and not on health or safety risks.

C. Executive Order 13132—Federalism

Executive Order 13132, entitled ''Federalism'' (64 FR 43255, August 10, 1999), requires EPA to develop an accountable process to ensure ''meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications.'' ''Policies that have federalism implications'' is defined in the Executive Order to include regulations that have ''substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.'' Under Executive Order 13132, EPA may not issue a regulation that has federalism implications, that imposes substantial direct compliance costs, and that is not required by statute, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by State and local governments, or EPA consults with State and local officials early in the process of developing the proposed regulation. The EPA also may not issue a regulation that has federalism implications and that preempts State law unless the Agency consults with State and local officials early in the process of developing the proposed regulation.

If EPA complies by consulting, Executive Order 13132 requires EPA to provide to OMB, in a separately identified section of the preamble to the rule, a federalism summary impact statement (FSIS). The FSIS must include a description of the extent of EPA's prior consultation with State and local officials, a summary of the nature of their concerns and the agency's position supporting the need to issue the regulation, and a statement of the extent to which the concerns of State and local officials have been met. Also, when EPA transmits a draft final rule with federalism implications to OMB for review pursuant to Executive Order 12866, EPA must include a certification from the Agency's Federalism Official stating that EPA has met the requirements of Executive Order 13132 in a meaningful and timely manner.

This proposed rule will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. This determination has been made since none of the affected facilities under this proposed rule are owned or operated by State or local governments. Thus, the requirements of section 6 of the Executive Order do not apply to this rule. Although section 6 of Executive Order 13132 does not apply to this rule, EPA did consult with State and local officials in developing the proposed rule.

D. Executive Order 13084—Consultation and Coordination With Indian Tribal Governments

Under Executive Order 13084, EPA may not issue a regulation that is not required by statute that significantly or uniquely affects the communities of Indian tribal governments, and that imposes substantial direct compliance costs on those communities unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by the tribal governments or EPA consults with those governments. If EPA complies by consulting, Executive Order 13084 requires EPA to provide to OMB, in a separately identified section of the preamble to the rule, a description of the extent of the EPA's prior consultation with representatives of affected tribal governments, a summary of the nature of their concerns, and a statement supporting the need to issue the regulation. In addition, Executive Order 13084 requires EPA to develop an effective process permitting elected officials and other representatives of Indian tribal governments ''to provide meaningful and timely input in the development of regulatory policies on matters that significantly or uniquely affect their communities.''

Today's proposed rule does not significantly or uniquely affect the communities of Indian tribal governments. No affected facilities are owned or operated by Indian tribal governments. Accordingly, the requirements of section 3(b) of Executive Order 13084 do not apply to this proposed rule.

E. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Pub. L. 104–4, establishes requirements for Federal agencies to assess the effects of their regulatory actions on State, local, and tribal governments and the private sector. Under section 202 of the UMRA, EPA generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with ''Federal mandates'' that may result in expenditures by State, local, and tribal governments, in the aggregate, or by the private sector, of $100 million or more in any 1 year. Before promulgating an EPA rule for which a written statement is needed, section 205 of the UMRA generally requires EPA to identify and consider a reasonable number of regulatory alternatives and

adopt the least costly, most cost-effective, or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not apply when they are inconsistent with applicable law. Moreover, section 205 allows EPA to adopt an alternative other than the least costly, most cost-effective, or least burdensome alternative if the Administrator publishes with the final rule an explanation why that alternative was not adopted. Before EPA establishes any regulatory requirements that may significantly or uniquely affect small governments, it must have developed, under section 203 of the UMRA, a small government agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of the EPA regulatory proposals with significant Federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

The EPA has determined that this proposed rule does not contain a Federal mandate that may result in expenditures of $100 million or more for State, local, and tribal governments, in the aggregate, or the private sector in any 1 year. The total nationwide capital cost for the proposed standard is estimated at $5.3 million; the annualized nationwide cost is estimated at $2.4 million. Thus, today's proposed rule is not subject to the requirements of sections 202 and 205 of the UMRA.

F. Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) generally requires an agency to conduct a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statue unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations, and small governmental jurisdictions.

For purposes of assessing the impacts of today's proposed rule on small entities, small entity is defined as: (1) a small business that has less than 750 employees; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any non-for-profit enterprise which is independently owned and operated and is not dominant in its field.

After considering the economic impacts of today's proposed rule on small entities, I certify that this action will not have a significant economic impact on a substantial number of small entities. We have determined that only two of the nine companies producing wet-formed fiberglass mat are small businesses. One of these small businesses is not anticipated to incur emission control costs because it already has controls in place which should achieve the MACT emission levels. Therefore, only one small firm in the wet-formed fiberglass mat production industry is expected to incur emission control costs as a result of the regulation. This small business is expected to incur control costs that represent 0.3441 percent of current sales revenues, a cost-to-sales ratio substantially below 1 percent (the criterion established as a first indicator of the potential for significant impact). As a result of the increased costs of emission controls, this small entity in the affected industry will likely increase the price of its product in response to a market change in price, will absorb the cost increase with no price increase, or will respond with a combination of these responses. Since the estimated costs as a percentage of sales are relatively minimal, it is anticipated that the regulation will not have a significant impact on this company's profitability.

Although this proposed rule will not have a significant economic impact on a substantial number of small entities, EPA nonetheless has tried to reduce the impact of this proposed rule on small entities by providing flexibility by offering a choice of compliance and monitoring options. Compliance options include mass emission limits or percent reduction standards. Compliance with the proposed standard can be achieved through the use of a thermal oxidizer or other control device. Pollution prevention practices, such as process modifications, are also included in the proposed rule. We continue to be interested in the potential impacts of the proposed rule on small entities and welcome comments on issues related to such impacts.

G. Paperwork Reduction Act

The information collection requirements in this proposed rule have been submitted for approval to OMB under the requirements of the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.* An Information Collection Request (ICR) document has been prepared by EPA (ICR No. ____), and a copy may be obtained from Sandy Farmer, U.S. Environmental Protection Agency, Office of Environmental Information, Collection Strategies Division (2822), 1200 Pennsylvania Avenue, NW, Washington, DC 20460, or by calling (202) 260–2740.

The information requirements contained in the proposed NESHAP are necessary to determine initial and continuous compliance with the emission standards. The proposed information requirements include the notification, recordkeeping, and reporting requirements of the NESHAP general provisions, authorized under section 114 of the CAA, which are mandatory for all owners or operators subject to national emission standards. All information submitted to EPA for which a claim of confidentiality is made is safeguarded according to Agency policies in 40 CFR part 2, subpart B. The proposed rule does not require any notifications or reports beyond the minimum required by the general provisions. Proposed subpart HHHH requires additional records of information specific to the wet-formed fiberglass mat production industry which are needed to determine compliance with the rule.

The annual public reporting and recordkeeping burden for this collection is estimated at 2,983 labor hours per year at an annual cost of $98,183. This estimate includes an initial performance test and report (with repeat tests where needed); one-time preparation of a startup, shutdown, and malfunction plan with semiannual reports of any event in which the procedures in the plan were not followed; semiannual excess emissions reports; notifications; the operations, maintenance, and monitoring plan; and recordkeeping. The annualized capital cost associated with monitoring requirements is estimated at $2,300.

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purpose of collecting, validating, verifying, processing, maintaining, disclosing, and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to respond to a collection of information; search existing data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB

control number. The OMB control numbers for the EPA's regulations are listed in 40 CFR part 9 and 48 CFR chapter 15.

Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including the use of automated collection techniques, to the Director, Collection Strategies Division, Office of Environmental Information, U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue, NW, Washington, DC 20460, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th Street NW, Washington, DC 20503, marked ''Attention: Desk Officer for EPA.'' Refer to ICR 1964.01 in any correspondence. Because OMB is required to make a decision concerning the ICR between 30 and 60 days after May 26, 2000. A comment to OMB is most likely to have its full effect if OMB receives it by June 26, 2000. The final rule will respond to any OMB or public comments on the information collection requirements contained in this proposal.

H. National Technology Transfer and Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act (NTTAA), Public Law 104–113, directs all Federal Agencies to use voluntary consensus standards in regulatory and procurement activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards (VCS) are technical standards (such as materials specifications, test methods, sampling procedures, and business practices) which are developed or adopted by voluntary consensus standard bodies. The NTTAA requires Federal agencies to provide Congress, through annual reports to OMB, with explanations when an agency does not use available and applicable voluntary consensus standards.

Consistent with the NTTAA, the EPA conducted searches to identify voluntary consensus standards for the EPA's emissions sampling and analysis reference methods and industry recommended materials analysis procedures cited in this rule. Candidate voluntary consensus standards for materials analysis were identified for product loss-on-ignition and free formaldehyde content. Consensus comments provided by industry experts were that the candidate standards did not meet industry materials analysis requirements. Therefore, EPA has determined these VCS were impractical for the wet-formed fiberglass mat production NESHAP. The EPA, in consultation with the Technical Association for the Pulp and Paper Industry (TAPPI), has formulated industry-specific materials analysis consensus standards which are proposed in this rule.

The EPA search to identify VCS for the EPA's emissions sampling and analysis reference methods cited in this proposed rule identified six candidate standards that appeared to have possible use in lieu of EPA standard reference methods. However, after reviewing available standards, EPA determined that four of the candidate consensus standards identified for measuring emissions of the HAPs or surrogates subject to emission standards in the proposed rule would not be practical due to lack of equivalency, documentation, and validation data. Two of the remaining candidate consensus standards are new standards under development that EPA plans to follow, review and consider adopting at a later date.

The EPA takes comment on compliance demonstration requirements proposed in this rulemaking and specifically invites the public to identify potentially-applicable VCS. Commentors should also explain why this proposed rule should adopt these VCS in lieu of EPA's test methods. Emission test methods and performance specifications submitted for evaluation should be accompanied with a basis for the recommendation, including method validation data and the procedure used to validate the candidate method (if method other than Method 301, 40 CFR part 63, appendix A was used).

Section 63.2993 of the proposed NESHAP lists the EPA testing methods. These testing methods have been used by States and industry for more than 10 years.

List of Subjects in 40 CFR Part 63

Environmental protection, Air pollution control, Hazardous substances, Reporting and recordkeeping requirements.

Dated: May 12, 2000.

Carol M. Browner,

Administrator.

For the reasons set out in the preamble, part 63 of title 40, chapter I, of the Code of Federal Regulations is proposed to be amended as follows:

PART 63—NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES

1. The authority citation for part 63 continues to read as follows:

Authority: 42 U.S.C. 7401 *et seq.*

2. Part 63 is amended by adding subpart HHHH to read as follows:

Subpart HHHH—National Emission Standards for Hazardous Air Pollutants for Wet-Formed Fiberglass Mat Production

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Subpart HHHH—National Emission Standards for Hazardous Air Pollutants for Wet-Formed Fiberglass Mat Production

Introduction and Applicability

§ 63.2980 What is the purpose of this subpart?

This subpart establishes national emission standards for hazardous air pollutants for existing, new, and reconstructed drying and curing ovens at facilities that produce wet-formed fiberglass mat.

§ 63.2981 Does this subpart apply to me?

You must comply with this subpart if you meet the criteria in paragraphs (a), (b), (b)(1) or paragraph (b)(2) of this section:

(a) You own or operate a drying and curing oven at a wet-formed fiberglass mat production facility.

(b) The facility at which your drying and curing oven is located emits or has the potential to emit in the aggregate either:

(1) A single hazardous air pollutant at a rate of 9.07 megagrams (10 tons) or more per year; or

(2) Any combination of hazardous air pollutants at a rate of 22.68 megagrams (25 tons) or more per year.

§ 63.2982 Where can I find definitions of key words used in this subpart?

The definitions of keywords used in this subpart are in §§ 63.2 and 63.3004.

Standards

§ 63.2983 What emission standards must I meet?

(a) You must control the formaldehyde emissions from each drying and curing oven by either:

(1) Limiting emissions of formaldehyde to 0.03 kilograms or less per megagram (0.05 pounds per ton) of fiberglass mat produced; or

(2) Reducing uncontrolled formaldehyde emissions by 96 percent or more.

(b) [Reserved]

§ 63.2984 What operating standards must I meet?

(a) You must maintain operating parameters within established limits or ranges specified in your operation, maintenance, and monitoring plan described in § 63.2987. If any of the specified parameters deviate from the limit or range specified in the operation, maintenance, and monitoring plan, an operating parameter excursion occurs and must be addressed according to paragraph (b) of this section. The operating parameters in paragraphs (a)(1) through (7) of this section must be maintained:

(1) You must operate the thermal oxidizer so that the average operating temperature in any 3-hour block period does not fall below the temperature established during your performance test and specified in your approved operation, maintenance, and monitoring plan.

(2) You must maintain the process or emission control device parameters within the ranges established during the performance test and specified in your approved operation, maintenance, and monitoring plan.

(3) You must not use a resin with a free-formaldehyde content greater than that of the resin used during your performance test and specified in your approved operation, maintenance, and monitoring plan.

(4) You must not use a binder formulation with a urea formaldehyde content greater than that of the binder formulation used during your performance test and specified in your approved operation, maintenance, and monitoring plan.

(5) You must not use a urea-formaldehyde (UF) resin with a solids content greater than that of the resin used during your performance test and specified in your approved operation, maintenance, and monitoring plan.

(6) You must not manufacture a product with a higher UF resin solids content per ton of product (including any material trimmed from the final product) than that of the product manufactured during your performance test and specified in your approved operation, maintenance, and monitoring plan.

(7) You must not produce products that have a loss-on-ignition value greater than that of the product manufactured during your performance test and specified in your approved operation, maintenance, and monitoring plan.

(b) When you detect that an operating parameter deviates from the limit or range established in paragraph (a) of this section, you must initiate corrective actions within 1 hour according to the provisions of your operation, maintenance, and monitoring plan. The corrective actions must be completed in an expeditious manner as specified in the operation, maintenance, and monitoring plan.

(c) You must maintain and inspect control devices according to the procedures specified in the operation, maintenance, and monitoring plan.

(d) You must reference the operating standards and their allowable ranges or limits and your operation, maintenance, and monitoring plan in the 40 CFR part 70 operating permit application for the drying and curing oven.

(e) If you use a thermal oxidizer or other control device to achieve the emission standards in § 63.2983, you must capture and convey the formaldehyde emissions from each drying and curing oven according to the procedures in chapters 3 and 5 of ''Industrial Ventilation: A Manual of Recommended Practice (22nd Edition).'' This publication is incorporated by reference in § 63.3003.

§ 63.2985 When must I meet these standards?

(a) Existing drying and curing ovens must be in compliance with this subpart no later than [3 years after date final rule is published in the **Federal Register**].

(b) New or reconstructed drying and curing ovens must be in compliance with this subpart at startup or by [the date final rule is published in the **Federal Register**], whichever is later. For the purpose of this subpart, a new drying and curing oven is defined as each drying and curing oven that commences construction or reconstruction after May 26, 2000.

§ 63.2986 How do I comply with the standards?

(a) You must install, maintain, and operate a thermal oxidizer or other control device or implement a process modification that reduces formaldehyde emissions from each drying and curing oven to the limits specified in the emission standards in § 63.2983.

(b) You must comply with the operating standards of this subpart. The operating standards prescribe the requirements for demonstrating continuous compliance, based on the operation, maintenance, and monitoring plan. Requirements for operating standards are specified in § 63.2984.

(c) You must conduct a performance test to demonstrate compliance for each

drying and curing oven subject to the emission standards of this subpart and to establish the limits or ranges for process or control device parameters that will be monitored to demonstrate continuous compliance. You must repeat the test every 5 years as part of renewing your 40 CFR part 70 operating permit. A performance test is also required to change the limit or range for any operating parameter specified in the operation, maintenance, and monitoring plan. In conducting performance tests, you must meet the requirements of § 63.7 for test dates; notifications; quality assurance program; testing facilities; conduct of the test; use of an alternate test method; data analysis, recordkeeping, and reporting; and requesting a test to be waived. You must also conduct the tests under the conditions specified in § 63.2992 and after verifying the performance of monitoring equipment as specified in § 63.2994.

(d) You must install, calibrate, maintain, and operate devices that monitor the parameters specified in your approved operation, maintenance, and monitoring plan at the frequency specified in the plan.

(e) You must prepare and follow a written operation, maintenance, and monitoring plan. The plan must be submitted to the Administrator for review and approval and must be referenced by your 40 CFR part 70 operating permit. The plan must include, as a minimum, the information specified in § 63.2987.

(f) You must comply with the monitoring, recordkeeping, and reporting requirements of this subpart. You must perform the monitoring, recordkeeping, and reporting required in §§ 63.2996 through 63.3000.

Operation, Maintenance, and Monitoring Plan

§ 63.2987 What must my operation, maintenance, and monitoring plan include?

(a) You must prescribe the monitoring that will be performed to ensure compliance with the standards in this subpart. Minimum monitoring requirements are listed in table 1 of this subpart. Your plan must specify the items listed in paragraphs (a)(1) through (3) of this section:

(1) Each process and control device to be monitored, the type of monitoring device that will be used, and the operating parameters that will be monitored.

(2) A monitoring schedule that specifies the frequency that the parameter values will be determined and recorded.

(3) The limits or ranges for each parameter that represent continuous compliance with the emission standards in § 63.2983. Limits and ranges must be based on values of the monitored parameters recorded during performance tests.

(b) You must establish routine and long-term maintenance and inspection schedules for each control device. You must incorporate in the schedules the control device manufacturer's recommendations for maintenance and inspections or equivalent procedures. If you use a thermal oxidizer, the maintenance schedule must include procedures for annual or more frequent inspection of the thermal oxidizer to ensure that the structural and design integrity of the combustion chamber is maintained. At a minimum, you must meet the requirements of paragraphs (b)(1) through (10) of this section:

(1) Inspect all burners, pilot assemblies, and pilot sensing devices for proper operation. Clean pilot sensor if necessary.

(2) Ensure proper adjustment of combustion air and adjust if necessary.

(3) Inspect, when possible, all internal structures (such as baffles) to ensure structural integrity per the design specifications.

(4) Inspect dampers, fans, and blowers for proper operation.

(5) Inspect motors for proper operation.

(6) Inspect, when possible, combustion chamber refractory lining. Clean and repair or replace lining if necessary.

(7) Inspect the thermal oxidizer shell for proper sealing, corrosion, and hot spots.

(8) For the burn cycle that follows the inspection, document that the thermal oxidizer is operating properly and make any necessary adjustments.

(9) Generally observe whether the equipment is maintained in good operating condition.

(10) Complete all necessary repairs as soon as practicable.

(c) You must establish procedures for responding to operating parameter excursions. At a minimum, the procedures in paragraphs (c)(1) through (3) of this section must include:

(1) Procedures for determining the cause of the operating parameter excursion.

(2) Actions for correcting the excursion and returning the operating parameters to the allowable ranges or limits.

(3) Procedures for recording the times that the excursion began and ended, and corrective actions were initiated and completed.

(d) Your plan must specify the recordkeeping procedures to document compliance with the emissions and operating standards. Table 1 of this subpart establishes the minimum recordkeeping requirements.

§ 63.2988 How do I get my operation, maintenance, and monitoring plan approved?

You must obtain approval for your operation, maintenance, and monitoring plan. The steps in paragraphs (a) and (b) of this section are required to obtain approval of your plan:

(a) You must submit a draft plan to the Administrator for approval 60 days before conducting the performance tests required in § 63.2991.

(b) Within 60 days after conducting the performance tests required in § 63.2991, you must submit the final plan, including the results of the performance tests, to the Administrator for approval. In addition, you must submit the parameter levels or ranges to the permit Agency for approval.

§ 63.2989 How do I change my operation, maintenance and monitoring plan?

Changes to your operation, maintenance and monitoring plan require the approval of the Administrator.

(a) If you are revising the ranges or limits established for your operating standards, you must meet the requirements in paragraphs (a)(1) through (4) of this section:

(1) Submit a request to and obtain approval from the Administrator to conduct a performance test to revise your operating standard ranges or limits.

(2) After you receive approval from the Administrator, conduct a performance test to demonstrate that compliance with the emissions standards can be achieved at the revised operating conditions.

(3) Submit the performance test results and the revised operating, maintenance, and monitoring plan to the Administrator for approval.

(4) Pending Administrator approval of the revised operating, maintenance, and monitoring plan, you must comply with the provisions of your approved plan.

(b) If you are revising an aspect of the plan that does not require an additional performance test, for example, maintenance procedures, you must submit only a final plan to the Administrator for approval. Pending the Administrator's approval of the changes, you must comply with the provisions of your approved plan.

§ 63.2990 Can I conduct short-term experimental production runs that cause parameters to deviate from operating standards?

With the approval of the Administrator, you may conduct short-term experimental production runs during which your operating parameters deviate from the limits or ranges in your operating standards. Experimental runs may include, but are not limited to, runs using resin with a higher free-formaldehyde content than specified in the operation, maintenance, and monitoring plan, or using experimental pollution prevention techniques. To conduct a short-term experimental production run, you must complete the requirements in paragraphs (a) and (b)(1) through (6) of this section:

(a) Submit an application to the Administrator for approval at least 30 days before you conduct the test run.

(b) Prepare an application. Your application must include:

(1) The purpose of the experimental run.

(2) Identification of the affected line.

(3) An explanation of how the operating parameters will deviate from the previously approved ranges and limits.

(4) The duration of the experimental run.

(5) The date and time of the experimental run.

(6) A description of any emission testing to be performed during the experimental run.

Performance Test Requirements

§ 63.2991 When must I conduct performance tests?

You must conduct performance tests for each drying and curing oven subject to this subpart under the circumstances listed in paragraphs (a) and (b) of this section:

(a) *Initially.* You must conduct an initial performance test according to the dates specified in § 63.7. This performance test is used to demonstrate initial compliance and establish operating parameter limits and ranges to be used to demonstrate continuous compliance with the emission standards.

(b) *Every 5 Years.* You must conduct a performance test every 5 years as part of renewing your 40 CFR part 70 operating permit.

(c) *To change your operation, maintenance and monitoring plan.* You must conduct a performance test according to the requirements specified in § 63.2989.

§ 63.2992 How do I conduct a performance test?

(a) You must verify the performance of monitoring equipment as specified in § 63.2994.

(b) You must conduct the performance test according to the procedures in § 63.7.

(c) You must conduct the performance test under the conditions listed in paragraphs (c)(1) through (6) of this section:

(1) The resin must have the highest specified free-formaldehyde content that will be used.

(2) The binder formulation must have the highest urea formaldehyde content of all formulations that will be used.

(3) The resin used must have the highest UF resin solids content of all resins that will be used.

(4) The product made must have the highest UF resin solids content per ton of product of all products that will be manufactured.

(5) The product made must have the highest loss-on-ignition of all products that will be manufactured.

(6) You must operate at the maximum feasible production rate for the specific product.

(d) During the test, you must monitor and record the operating parameters that you will use to demonstrate continuous compliance after the test. These parameters are listed in table 1 of this subpart.

§ 63.2993 What test methods must I use in conducting performance tests?

(a) EPA Reference Method 1 (40 CFR part 60, appendix A) for selecting the sampling port location and the number of sampling ports.

(b) EPA Reference Method 2 (40 CFR part 60, appendix A) for measuring the volumetric flow rate.

(c) EPA Reference Method 316 (40 CFR part 60, appendix A) for measuring the concentration of formaldehyde.

(d) The method contained in appendix A of this subpart for determining the free-formaldehyde resin solids content or the resin purchase specification and the vendor specification sheet for each resin lot.

(e) The method in appendix B of this subpart for determining product loss-on-ignition.

§ 63.2994 How do I verify the performance of monitoring equipment?

Before conducting the performance test, you must take the steps listed in paragraphs (a) and (b) of this section:

(a) Install and calibrate all process equipment, control devices, and monitoring equipment.

(b) Conduct a performance evaluation of the continuous monitoring system (CMS) according to § 63.8(e) which specifies the general requirements and requirements for notifications, the site-specific performance evaluation plan, conduct of the performance evaluation, and reporting of performance evaluation results.

(c) If you use a thermal oxidizer, the temperature monitoring device must meet the performance and equipment specifications listed in paragraphs (c)(1) through (3) of this section:

(1) The temperature monitoring device must be installed at the exit of the combustion zone of each thermal oxidizer.

(2) The recorder response range must include zero and 1.5 times the average temperature required in § 63.2984(a)(1).

(3) The measurement method or reference method for calibration must be a National Institute of Standards and Technology calibrated reference thermocouple-potentiometer system or an alternate reference subject to the approval of the Administrator.

§ 63.2995 What equations must I use to determine compliance?

(a) *Percent reduction for formaldehyde.* To determine compliance with the percent reduction formaldehyde emission standard, use equation 1 as follows:

$$E_f = \frac{M_i - M_o}{M_i} \times 100 \qquad \text{(Eq. 1)}$$

Where:

E_f=Formaldehyde control efficiency, percent.

M_i=Mass flow rate of formaldehyde entering the control device, kilograms (pounds) per hour.

M_o=Mass flow rate of formaldehyde exiting the control device, kilograms (pounds) per hour.

(b) *Formaldehyde mass emissions rate.* To determine compliance with the kilogram per megagram (pound per ton) formaldehyde emission standard, use equation 2 as follows:

$$E = \frac{M}{P} \qquad \text{(Eq. 2)}$$

Where:

E=Formaldehyde mass emissions rate, kilograms (pounds) of formaldehyde per megagram (ton) of fiberglass mat produced.

M=Formaldehyde mass emissions rate, kilograms (pounds) per hour.

P=The wet-formed fiberglass mat production rate during the emissions sampling period, including any material trimmed from the final product, megagrams (tons) per hour.

(c) *Urea-formaldehyde (UF) resin solids content.* To determine the UF resin solids content, use equation 3 as follows:

$$\%UF = LOI \times A \qquad \text{(Eq. 3)}$$

Where:

%UF=Percent of urea-formaldehyde resin solids of wet-formed fiberglass mat produced, percent.

A=Ratio of the urea-formaldehyde resin solids to the total solids content of the binder formulation.

LOI=The loss-on-ignition of the wet-formed fiberglass mat, percent.

Monitoring, Recordkeeping, and Reporting Requirements

§ 63.2996 What must I monitor?

You must monitor the parameters listed in table 1 of this subpart and any other parameters specified on your operation, maintenance, and monitoring plan. The parameters must be monitored, at a minimum, at the corresponding frequencies listed in table 1 of this subpart.

§ 63.2997 What are the requirements for monitoring devices?

(a) If formaldehyde emissions are controlled using a thermal oxidizer, you must meet the requirements in paragraphs (a)(1) through (2) of this section:

(1) Install, calibrate, maintain, and operate a device to monitor and record continuously the thermal oxidizer temperature consistent with manufacturer's recommendations.

(2) Continuously monitor the thermal oxidizer temperature and determine and record average temperature in 15-minute and 3-hour block averages. You may determine the average temperature more frequently than every 15 minutes and every 3 hours, but not less frequently.

(b) If formaldehyde emissions are controlled by process modifications or a control device other than a thermal oxidizer, you must install, calibrate, maintain, and operate devices to monitor the parameters established in your operation, maintenance, and monitoring plan at the frequency established in the plan.

§ 63.2998 What records must I maintain?

You must maintain records according to the procedures of § 63.10. You are required to maintain the following types of records listed in paragraphs (a), (b), (c), (d) and (e)(1) through (4) of this section:

(a) All information required by the applicable general provisions. Table 2 of this subpart presents the applicable requirements of the general provisions.

(b) The approved operation, maintenance, and monitoring plan.

(c) Records of values of monitored parameters listed in table 1 of this subpart.

(d) Records of maintenance and inspections performed on the control devices.

(e) If an operating parameter excursion occurs, you must record:

(1) The date, time, and duration of the operating parameter excursion.

(2) A brief description of the cause of the operating parameter excursion.

(3) The dates and times at which corrective actions were initiated and completed.

(4) A brief description of the corrective actions taken to return the parameter to the limit or to within the range established in the operation, maintenance, and monitoring plan.

§ 63.2999 For how long must I maintain records?

You must maintain each record required by this subpart for 5 years. You must maintain the most recent 2 years of records at the facility. The remaining 3 years of records may be retained offsite.

§ 63.3000 What reports must I submit?

(a) You must submit all reports and notifications required by the applicable general provisions. Table 2 of this subpart presents the applicable requirements of the general provisions.

(b) You must include in the performance test reports required by § 63.10(d)(2) the values measured during the performance test for operating parameters listed in table 1 of this subpart. For the thermal oxidizer temperature, you must include 15-minute averages and the average for the three 1-hour test runs.

(c) You must submit to the Administrator the startup, shutdown, and malfunction plan required in § 63.6(e)(3) within 180 days of the compliance date. You must submit reports of any revisions to the plan semiannually. If no revisions are made within a semiannual period, you are not required to submit a report.

(d) If an operating parameter excursion occurs, you must comply with the reporting requirements for excess emissions and parameter monitoring exceedances in § 63.10(e)(3), which specifies the reporting frequency, excess emissions report content, and summary report content. In addition to the information required by § 63.10(e)(3), the report must contain the information recorded as a result of the operating parameter excursion, including the dates and times when the excursion commenced, corrective actions were taken, and the excursion ended and descriptions of the cause of the excursion and of the corrective actions taken. As required by § 63.10(e)(3), you must report quarterly if an excursion occurs, semiannually if no excursions occur.

Other Requirements and Information

§ 63.3001 What portions of the general provisions apply to me?

You must comply with the requirements of the general provisions of subpart A of this part, as specified in table 2 of this subpart.

§ 63.3002 Who enforces this subpart?

If the Administrator has delegated authority to your State, the State is the primary enforcement authority. If the Administrator has not delegated authority to your State, only EPA enforces this subpart.

§ 63.3003 Incorporation by reference.

(a) The following material is incorporated by reference in this section: chapters 3 and 5 of ''Industrial Ventilation: A Manual of Recommended Practice,'' American Conference of Governmental Industrial Hygienists, (22nd edition, 1995). The incorporation by reference of this material will be approved by the Director of the Office of the Federal Register as of the date of publication of the final rule according to 5 U.S.C. 552(a) and 1 CFR part 51. This material is incorporated as it exists on the date of approval and notice of any change in the material will be published in the **Federal Register**.

(b) The materials referenced in this section are incorporated by reference and are available for inspection at the Office of the Federal Register, 800 North Capital Street NW, Suite 700, 7th Floor, Washington, DC. The material is also available for purchase from the following address: Customer Service Department, American Conference of Governmental Industrial Hygienists (ACGIH), 1330 Kemper Meadow Drive, Cincinnati, OH 45240, telephone number (513) 742–2020.

§ 63.3004 What definitions must I understand?

In addition to the definitions in § 63.2, keywords used in this subpart are defined as follows:

Binder application vacuum exhaust means the exhaust from the vacuum system used to remove excess resin solution from the wet-formed fiberglass mat before it enters the drying and curing oven.

Binder formulation urea formaldehyde content means the urea

formaldehyde concentration of the binder, prepared from the urea-formaldehyde resin and water, as applied to the glass fibers to form the mat.

Drying and curing oven means the process section that evaporates excess moisture from a fiberglass mat and cures the resin that binds the fibers.

Fiberglass mat production rate means the weight of finished fiberglass mat produced per hour of production including any trim removed after the binder is applied and before final packaging.

Loss-on-ignition means the percentage decrease in weight of fiberglass mat measured before and after it has been ignited to burn off the applied binder. The loss-on-ignition is used to monitor the weight percent of binder in fiberglass mat.

Nonwoven wet-formed fiberglass mat manufacturing means the production of a fiberglass mat by bonding glass fibers to each other using a resin solution. Nonwoven wet-formed fiberglass mat manufacturing is also referred to as wet-formed fiberglass mat manufacturing.

Operating parameter excursion means any time an operating parameter deviates from the limit or range established in the operation, maintenance, and monitoring plan.

Thermal oxidizer means an air pollution control device that uses controlled flame combustion inside a combustion chamber to convert combustible materials to noncombustible gases.

§§ 63.3005—63.3079 [Reserved].

TABLE 1 OF SUBPART HHHH.—MINIMUM REQUIREMENTS FOR MONITORING AND RECORDKEEPING

You must monitor these parameters	At this frequency	And record for the monitored parameter
1. Thermal oxidizer temperature [a]	Continuously	15-minute and 3-hour block averages.
2. Other process or control device parameters specified in your operation, maintenance and monitoring (OMM) [b] plan.	As specified in your OMM	As specified in your OMM plan.
3. Resin free-formaldehyde content	For each lot	The value for each lot used during the operating day.
4. Binder formulation urea formaldehyde content	For each product manufactured	The value for each product manufactured during the operating day.
5. Urea-Formaldehyde (UF) resin solids content	For each product manufactured	The value for each product manufactured during the operating day.
6. Product UF resin solids content per ton of product manufactured.	For each product manufactured	The value for each product manufactured during the operating day.
7. Loss-on-ignition	For each product manufactured	The value for each product manufactured during the operating day.
8. Average hourly nonwoven wet-formed fiberglass mat production rate [c].		The value for each product manufactured during the operating day.

[a] Required if a thermal oxidizer is used to control formaldehyde emissions.
[b] Required if process modifications or a control device other than a thermal oxidizer is used to control emissions.
[c] Average production rate is a parameter that must be monitored, however, it is not an operating standard.

TABLE 2 OF SUBPART HHHH.—APPLICABILITY OF GENERAL PROVISIONS (40 CFR PART 63, SUBPART A) TO SUBPART HHHH

Citation	Requirement	Applies to subpart HHHH	Explanation
§ 63.1(a)(1)–(a)(4)	General Applicability	Yes.	
§ 63.1(a)(5)		No	[Reserved].
§ 63.1(a)(6)–(a)(8)		Yes.	
§ 63.1(a)(9)		No	[Reserved].
§ 63.1(a)(10)–(a)(14)		Yes.	
§ 63.1(b)	Initial Applicability Determination	Yes.	
§ 63.1(c)(1)	Applicability After Standard Established	Yes.	
§ 63.1(c)(2)		Yes	Some plants may be area sources.
§ 63.1(c)(3)		No	[Reserved].
§ 63.1(c)(4)–(c)(5)		Yes.	
§ 63.1(d)		No	[Reserved].
§ 63.1(e)	Applicability of Permit Program	Yes.	
§ 63.2	Definitions	Yes	Additional definitions in § 63.3004.
§ 63.3	Units and Abbreviations	Yes.	
§ 63.4(a)(1)–(a)(3)	Prohibited Activities	Yes.	
§ 63.4(a)(4)		No	[Reserved].
§ 63.4(a)(5)		Yes.	
§ 63.4(b)–(c)	Circumvention/Severability	Yes.	
§ 63.5(a)	Construction/Reconstruction	Yes.	
§ 63.5(b)(1)	Existing/Constructed/Reconstruction	Yes.	
§ 63.5(b)(2)		No	[Reserved].
§ 63.5(b)(3)–(b)(6)		Yes.	
§ 63.5(c)		No	[Reserved].
§ 63.5(d)	Application for Approval of Construction/Reconstruction.	Yes.	
§ 63.5(e)	Approval of Construction/Reconstruction	Yes.	
§ 63.5(f)	Approval of Construction/Reconstruction Based on State Review.	Yes.	

TABLE 2 OF SUBPART HHHH.—APPLICABILITY OF GENERAL PROVISIONS (40 CFR PART 63, SUBPART A) TO SUBPART HHHH—Continued

Citation	Requirement	Applies to subpart HHHH	Explanation
§ 63.6(a)	Compliance with Standards and Maintenance—Applicability.	Yes.	
§ 63.6(b)(1)–(b)(5)	New and Reconstructed Sources—Dates	Yes.	
§ 63.6(b)(6)		No	[Reserved].
§ 63.6(b)(7)		Yes.	
§ 63.6(c)(1)–(c)(2)	Existing Sources Dates	Yes	§ 63.2985 specifies dates.
§ 63.6(c)(3)–(c)(4)		No	[Reserved].
§ 63.6(c)(5)		Yes.	
§ 63.6(d)		No	[Reserved].
§ 63.6(e)	Operation and Maintenance Requirements	Yes	§§ 63.2984 and 63.2987 specify additional requirements
§ 63.6(f)	Compliance with Emission Standards	Yes.	
§ 63.6(g)	Alternative Standard	Yes.	
§ 63.6(h)	Compliance with Opacity/Visible Emissions Standards.	No	Subpart HHHH does not specify opacity or visible emission standards.
§ 63.6(i)(1)–(i)(14)	Extension of Compliance	Yes.	
§ 63.6(i)(15)		No	[Reserved].
§ 63.6(i)(16)		Yes.	
§ 63.6(j)	Exemption from Compliance	Yes.	
§ 63.7(a)	Performance Test Requirements—Applicability and Dates.	Yes.	
§ 63.7(b)	Notification of Performance Test	Yes.	
§ 63.7(c)	Quality Assurance Program/Test Plan	Yes.	
§ 63.7(d)	Testing Facilities	Yes.	
§ 63.7(e)	Conduct of Tests	Yes	§§ 63.2991—63.2994 specify additional requirements.
§ 63.7(f)	Alternative Test Method	Yes	EPA retains approval authority.
§ 63.7(g)	Data Analysis	Yes.	
§ 63.7(h)	Waiver of Tests	Yes.	
§ 63.8(a)(1)–(a)(2)	Monitoring Requirements—Applicability	Yes.	
§ 63.8(a)(3)		No	[Reserved].
§ 63.8(a)(4)		Yes.	
§ 63.8(b)	Conduct of Monitoring	Yes.	
§ 63.8(c)(1)–(c)(3)	Continuous Monitoring System (CMS) Operation and Maintenance.	Yes.	
§ 63.8(c)(4)		Yes.	
§ 63.8(c)(5)		No	Subpart HHHH does not specify opacity or visible emission standards.
§ 63.8(c)(6)–(c)(8)		Yes.	
§ 63.8(d)	Quality Control	Yes.	
§ 63.8(e)	CMS Performance Evaluation	Yes.	
§ 63.8(f)(1)–(f)(5)	Alternative Monitoring Method	Yes.	
§ 63.8(f)(6)	Alternative to Relative Accuracy Test	No	Subpart HHHH does not require the use of continuous emissions monitoring systems (CEMS).
§ 63.8(g)(1)	Data Reduction	Yes.	
§ 63.8(g)(2)	Data Reduction	No	Subpart HHHH does not require the use of CEMS or continuous opacity monitoring systems (COMS).
§ 63.8(g)(3)–(g)(5)	Data Reduction	Yes.	
§ 63.9(a)	Notification Requirements—Applicability	Yes.	
§ 63.9(b)	Initial Notifications	Yes.	
§ 63.9(c)	Request for Compliance Extension	Yes.	
§ 63.9(d)	New Source Notification for Special Compliance Requirements.	Yes.	
§ 63.9(e)	Notification of Performance Test	Yes.	
§ 63.9(f)	Notification of Visible Emissions/Opacity Test	No	Subpart HHHH does not specify opacity or visible emission standards.
§ 63.9(g)(1)	Additional CMS Notifications	Yes.	
§ 63.9(g)(2) and (g)(3)		No	Subpart HHHH does not require the use of COMS or CEMS.
§ 63.9(h)(1)–(h)(3)	Notification of Compliance Status	Yes.	
§ 63.9(h)(4)		No	[Reserved].
§ 63.9(h)(5)–(h)(6)		Yes.	
§ 63.9(i)	Adjustment of Deadlines	Yes.	
§ 63.9(j)	Change in Previous Information	Yes.	
§ 63.10(a)	Recordkeeping/Reporting—Applicability	Yes.	
§ 63.10(b)	General Recordkeeping Requirements	Yes	§ 63.2998 includes additional requirements.
§ 63.10(c)(1)	Additional CMS Recordkeeping	Yes.	
§ 63.10(c)(2)–(c)(4)		No	[Reserved].

TABLE 2 OF SUBPART HHHH.—APPLICABILITY OF GENERAL PROVISIONS (40 CFR PART 63, SUBPART A) TO SUBPART HHHH—Continued

Citation	Requirement	Applies to subpart HHHH	Explanation
§ 63.10(c)(5)–(c)(8)		Yes.	
§ 63.10(c)(9)		No	[Reserved].
§ 63.10(c)(10)–(c)(15)		Yes.	
§ 63.10(d)(1)	General Reporting Requirements	Yes	§ 63.3000 includes additional requirements.
§ 63.10(d)(2)	Performance Test Results	Yes	§ 63.3000 includes additional requirements.
§ 63.10(d)(3)	Opacity or Visible Emissions Observations	No	Subpart HHHH does not specify opacity or visible emission standards.
§ 63.10(d)(4)–(d)(5)	Progress Reports/Startup, Shutdown, and Malfunction Reports.	Yes.	
§ 63.10(e)(1)	Additional CMS Reports-General	No	Subpart HHHH does not require CEMS.
§ 63.10(e)(2)	Reporting results of CMS performance evaluations.	Yes.	
§ 63.10(e)(3)	Excess Emissions/CMS Performance Reports.	Yes.	
§ 63.10(e)(4)	COMS Data Reports	No	Subpart HHHH does not specify opacity or visible emission standards.
§ 63.10(f)	Recordkeeping/Reporting Waiver	Yes.	
§ 63.11	Control Device Requirements—Applicability	No	Facilities subject to subpart HHHH do not use flares as control devices.
§ 63.12	State Authority and Delegations	Yes.	
§ 63.13	Addresses	Yes.	
§ 63.14	Incorporation by Reference	No.	
§ 63.15	Availability of Information/Confidentiality	Yes.	

Appendix A to Subpart HHHH to Part 63—Method for Determining Free-Formaldehyde in Urea-Formaldehyde Resins by Sodium Sulfite (Iced & Cooled)

1.0 Scope

This procedure corresponds to the Housing and Urban Development method of determining free-formaldehyde in urea-formaldehyde resins. This method applies to samples that decompose to yield formaldehyde under the conditions of other free-formaldehyde methods. The primary use is for urea-formaldehyde resins.

2.0 Part A—Testing Resins

Formaldehyde will react with sodium sulfite to form the sulfite addition products and liberate sodium hydroxide (NaOH); however, at room temperature, the methylol groups present will also react to liberate NaOH. Titrate at 0 degrees Celsius (°C) to minimize the reaction of the methylol groups.

2.1 Apparatus Required.

2.1.1 Ice crusher.

2.1.2 One 100-milliliter (mL) graduated cylinder.

2.1.3 Three 400-mL beakers.

2.1.4 One 50-mL burette.

2.1.5 Analytical balance accurate to 0.1 milligrams (mg).

2.1.6 Magnetic stirrer.

2.1.7 Magnetic stirring bars.

2.1.8 Disposable pipettes.

2.1.9 Several 5-ounce (oz.) plastic cups.

2.1.10 Ice cube trays (small cubes).

2.2 Materials Required.

2.2.1 Ice cubes (made with distilled water).

2.2.2 A solution of 1 molar (M) sodium sulfite (Na_2SO_3) (63 grams (g) Na_2SO_3/500 mL water (H_2O) neutralized to thymolphthalein endpoint).

2.2.3 Standardized 0.1 normal (N) hydrochloric acid (Hcl).

2.2.4 Thymolphthalein indicator (1.0 g thymolphthalein/199 g methanol).

2.2.5 Sodium chloride (NaCl) (reagent grade).

2.2.6 Sodium hydroxide (NaOH).

2.3 Procedure.

2.3.1 Prepare sufficient quantity of crushed ice for three determinations (two trays of cubes).

2.3.2 Put 70 cubic centimeters (cc) of 1 M Na_2SO_3 solution into a 400-mL beaker. Begin stirring and add approximately 100 g of crushed ice and 2 g of NaCl. Maintain 0 °C during test, adding ice as necessary.

2.3.3 Add 10–15 drops of thymolphthalein indicator to the chilled solution. If the solution remains clear, add 0.1 N NaOH until the solution turns blue; then add 0.1 N HCl back to the colorless endpoint. If the solution turns blue upon adding the indicator, add 0.1 N HCl to the colorless endpoint.

2.3.4 On the analytical balance, accurately weigh the amount of resin indicated under the ''*Resin Sample Size*'' chart (see below) as follows.

RESIN SAMPLE SIZE

Approximate free HCHO	Sample weight (grams)
<0.5%	10
0.5—1.0%	5
1.0—3.0%	2
>3.0%	1

2.3.4.1 Pour about 1 inch of resin into a 5 oz. plastic cup.

2.3.4.2 Determine the gross weight of the cup, resin, and disposable pipette (with the narrow tip broken off) fitted with a small rubber bulb.

2.3.4.3 Pipette out the desired amount of resin into the stirring, chilled solution (approximately 1.5 to 2 g per pipette-full).

2.3.4.4 Quickly reweigh the cup, resin, and pipette with the bulb.

2.3.4.5 The resultant weight loss equals the grams of resin being tested.

2.3.5 Rapidly titrate the solution with 0.1 N HCl to the colorless endpoint described in Step 3 (2.3.3).

2.3.6 Repeat the test in triplicate.

2.4 Calculation.

2.4.1 The percent free-formaldehyde (%HCHO) is calculated as follows:

$$\%HCHO = \frac{(\text{mL } 0.1 \text{ N HCl})\ (\text{N of Acid})\ (3.003)}{\text{Weight of Sample}}$$

2.4.2 Compute the average percent free-formaldehyde of the three tests. *Note:* If the results of the three tests are not within a range of ±0.5 percent or if the average of the three tests does not meet expected limits, carry out Part B and then repeat Part A.

3.0 Part B—Standard Check

Part B ensures that test reagents used in determining percent free-formaldehyde in urea-formaldehyde resins are of proper concentration and that operator technique is correct. Should any doubts arise in either of these areas, the formaldehyde standard solution test should be carried out.

3.1 Preparation and Standardization of a 1 Percent Formalin Solution.

Prepare a solution containing approximately 1 percent formaldehyde from a stock 37 percent formalin solution. Standardize the prepared solution by titrating the hydroxyl ions resulting from the formation of the formaldehyde bisulfite complex.

3.2 Apparatus Required.

Note: All reagents must be American Chemical Society analytical reagent grade or better.

3.2.1 One 1-liter (L) volumetric flask (class A).
3.2.2 One 250-mL volumetric flask (class A).
3.2.3 One 250-mL beaker.
3.2.4 One 100-mL pipette (class A).
3.2.5 One 10-mL pipette (class A).
3.2.6 One 50-mL graduated cylinder (class A).
3.2.7 A pH meter, standardized using pH 7 and pH 10 buffers.
3.2.8 Magnetic stirrer.
3.2.9 Magnetic stirring bars.
3.2.10 Several 5-oz. plastic cups.
3.2.11 Disposal pippettes.
3.2.12 Ice cube trays (small cubes).

3.3 Materials Required.

3.3.1 A solution of 37 percent formalin.
3.3.2 Anhydrous Na_2SO_3.
3.3.3 Distilled water.
3.3.4 Standardized 0.100 N Hcl.
3.3.5 Thymolphthalein indicator (1.0 g thymolphthalein/199 g methanol).

3.4 Preparation of Solutions and Reagents.

3.4.1 Formaldehyde Standard Solution (approximately 1 percent). Measure, using a graduated cylinder, 27.0 mL of analytical reagent 37 percent formalin solution into a 1-L volumetric flask. Fill the flask to volume with distilled water.

Note: You must standardize this solution as described in section 3.5. This solution is stable for 3 months.

3.4.2 Sodium Sulfite Solution 1.0 M (used for standardization of Formaldehyde Standard Solution). Quantitatively transfer, using distilled water as the transfer solvent, 31.50 g of anhydrous Na_2SO_3 into a 250-mL volumetric flask. Dissolve in approximately 100 ml of distilled water and fill to volume. *Note:* You must prepare this solution daily, but the calibration of the Formaldehyde Standard Solution needs to be done only once.

3.4.3 Hydrochloric Acid Standard Solution 0.100 M. This reagent should be readily available as a primary standard that only needs to be diluted.

3.5 Standardization.

3.5.1 Standardization of Formaldehyde Standard Solution.

3.5.1.1 Pipette 100.0 mL of 1 M sodium sulfite into a stirred 250-mL beaker.

3.5.1.2 Using a standardized pH meter, measure and record the pH. The pH should be around 10. It is not essential the pH be 10; however, it is essential that the value be accurately recorded.

3.5.1.3 To the stirring Na_2SO_3 solution, pipette in 10.0 mL of Formaldehyde Standard Solution. The pH should rise sharply to about 12.

3.5.1.4 Using the pH meter as a continuous monitor, titrate the solution back to the original exact pH using 0.100 N HCl. Record the milliliters of HCl used as titrant.

Note: Approximately 30 to 35 mL of HCl will be required.

3.5.1.5 Calculate the concentration of the Formaldehyde Standard Solution using the equation as follows:

$$\%HCHO = \frac{(\text{mL HCl})\ (\text{N HCl})\ (3.003)}{\text{mL sample}}$$

3.6 *Procedure.*

3.6.1 Prepare a sufficient quantity of crushed ice for three determinations (two trays of cubes).

3.6.2 Put 70 cc of 1 M Na_2SO_3 solution into a 400-mL beaker. Begin stirring and add approximately 100 g of crushed ice and 2 g NaCl. Maintain 0 °C during the test, adding ice as necessary.

3.6.3 Add 10–15 drops of thymolphthalein indicator to the chilled solution. If the solution remains clear, add 0.1 N NaOH until the solution turns blue; then add 0.1 N HCl back to the colorless endpoint. If the solution turns blue upon adding the indicator, add 0.1 N HCl to the colorless endpoint.

3.6.4 On the analytical balance, accurately weigh a sample of Formaldehyde Standard Solution as follows.

3.6.4.1 Pour about 0.5 inches of Formaldehyde Standard Solution into a 5-oz. plastic cup.

3.6.4.2 Determine the gross weight of the cup, Formaldehyde Standard Solution, and a disposable pipette fitted with a small rubber bulb.

3.6.4.3 Pipette approximately 5 g of the Formaldehyde Standard Solution into the stirring, chilled Na_2SO_3 solution.

3.6.4.4 Quickly reweigh the cup, Formaldehyde Standard Solution, and pipette with the bulb.

3.6.4.5 The resultant weight loss equals the grams of Formaldehyde Standard Solution being tested.

3.6.5 Rapidly titrate the solution with 0.1 N HCl to the colorless endpoint in Step 3 (3.6.3).

3.6.6 Repeat the test in triplicate.

3.7 Calculation for Formaldehyde Standard Solution.

3.7.1 The percent free-formaldehyde (% HCHO) is calculated as follows:

$$\%HCHO = \frac{(\text{mL 0.1 N HCl})\ (\text{N Acid})\ (3.003)}{\text{Weight of Formaldehyde Standard Solution}}$$

3.7.2 The range of the results of three tests should be no more than ±5 percent of the actual Formaldehyde Standard Solution concentration. Report results to two decimal places.

3.8 Reference.

West Coast Adhesive Manufacturers Trade Association Test 10.1.

Appendix B to Subpart HHHH to Part 63—Method for the Determination of Loss-on-Ignition

1.0 *Purpose*

The purpose of this test is to determine the loss-on-ignition (LOI) of wet-formed fiberglass mat.

2.0 *Equipment*

2.1 Scale sensitive to 0.001 gram (g).
2.2 Drying oven equipped with a means of constant temperature regulation and mechanical air convection.
2.3 Furnace designed to heat to at least 625 °C (1,157 °F) and controllable to ±25 °C (±45 °F).
2.4 Crucible, high form, 250 milliliter (mL).
2.5 Desiccator.
2.6 Pan balance (see Note 2 in 4.9)

3.0 *Sample Collection Procedure*

3.1 Obtain a sample of mat in accordance with Technical Association of the Pulp and Paper Industry (TAPPI) method 1007 ''Sample Location.''

3.2 Use a 5-to 10-g sample cut into pieces small enough to fit into the crucible.

3.3 Place the sample in the crucible. (Note 1: To test without the use of a crucible, see Note 2 after Section 4.8.)

3.4 Condition the sample in the furnace set at 105 ± 3 °C (221 ± 9 °F) for 5 minutes ± 30 seconds.

4.0 *Procedure*

4.1 Condition each sample by drying for 5 minutes ± 30 seconds at 105 ± 3 °C (22 ± 5 °F).

4.2 Remove the test sample from the furnace and cool in the desiccator for 30 minutes in the standard atmosphere for testing glass textiles.

4.3 Place the empty crucible in the furnace at 625 ± 25 °C (1,157 ± 45 °F). After 30 minutes, remove and cool the crucible in the standard atmosphere (TAPPI method 1008) for 30 minutes.

4.4 Identify each crucible with respect to each test sample of mat.

4.5 Weigh the empty crucible to the nearest 0.001 g. Record this weight as the tare mass, T.

4.6 Place the test sample in the crucible and weigh to the nearest 0.001 g. Record this weight as the initial mass, A.

4.7 Place the test sample and crucible in the furnace and ignite at 625 ± 25 °C (1,157 ± 45 °F).

4.8 After ignition for at least 30 minutes, remove the test sample and crucible from the furnace and cool in the desiccator for 30 minutes in the standard atmosphere (TAPPI method 1008).

4.9 Remove each crucible, and test each sample separately from the desiccator, and immediately weigh each sample to the nearest 0.001 g. Record this weight as the ignited mass, B. (Note 2: When it is known that no ash residue separates from the test sample during the weighing and igniting processes, you may weigh the sample separately without the crucible. When this occurs, the tare mass (T) equals zero. With appropriate care, you can dry and weigh a single piece of mat and place with tongs into the ignition oven on appropriate refractory supports. When the ignition time is over, remove the sample as an intact fragile web and weigh it directly on a pan balance.)

5.0 *Calculation*

5.1 Calculate the LOI for each sample as follows:

$$\% \text{ LOI} = 100 \times (A - B)/(A - T)$$

Where:

A = initial mass of crucible and sample before ignition (g);

B = mass of crucible and glass residue after ignition (g); and

T = tare mass of crucible, (g) (see Note 2).

5.2 Report the percent LOI of the glass mat to the nearest 0.1 percent.

6.0 *Precision*

The repeatability of this test method for measurements on adjacent specimens from the same sample of mat is better than 1 percent.

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