



Mitchell E. Daniels, Jr.
Governor

Thomas W. Easterly
Commissioner

100 North Senate Avenue
Indianapolis, Indiana 46204
(317) 232-8603
(800) 451-6027
www.IN.gov/idem

TO: Interested Parties / Applicant
DATE: December 27, 2005
RE: Knauf / 145-21234-00001
FROM: Paul Dubenetzky
Chief, Permits Branch
Office of Air Quality

Notice of Decision: Approval – Effective Immediately

Please be advised that on behalf of the Commissioner of the Department of Environmental Management, I have issued a decision regarding the enclosed matter. Pursuant to IC 13-17-3-4 and 326 IAC 2, this permit modification is effective immediately, unless a petition for stay of effectiveness is filed and granted, and may be revoked or modified in accordance with the provisions of IC 13-15-7-1.

If you wish to challenge this decision, IC 4-21.5-3-7 and IC 13-15-7-3 require that you file a petition for administrative review. This petition may include a request for stay of effectiveness and must be submitted to the Office Environmental Adjudication, 100 North Senate Avenue, Government Center North, Room 1049, Indianapolis, IN 46204, **within eighteen (18) days of the mailing of this notice**. The filing of a petition for administrative review is complete on the earliest of the following dates that apply to the filing:

- (1) the date the document is delivered to the Office of Environmental Adjudication (OEA);
- (2) the date of the postmark on the envelope containing the document, if the document is mailed to OEA by U.S. mail; or
- (3) The date on which the document is deposited with a private carrier, as shown by receipt issued by the carrier, if the document is sent to the OEA by private carrier.

The petition must include facts demonstrating that you are either the applicant, a person aggrieved or adversely affected by the decision or otherwise entitled to review by law. Please identify the permit, decision, or other order for which you seek review by permit number, name of the applicant, location, date of this notice and all of the following:

- (1) the name and address of the person making the request;
- (2) the interest of the person making the request;
- (3) identification of any persons represented by the person making the request;
- (4) the reasons, with particularity, for the request;
- (5) the issues, with particularity, proposed for considerations at any hearing; and
- (6) identification of the terms and conditions which, in the judgment of the person making the request, would be appropriate in the case in question to satisfy the requirements of the law governing documents of the type issued by the Commissioner.

Pursuant to 326 IAC 2-7-18(d), any person may petition the U.S. EPA to object to the issuance of a Title V operating permit or modification within sixty (60) days of the end of the forty-five (45) day EPA review period. Such an objection must be based only on issues that were raised with reasonable specificity during the public comment period, unless the petitioner demonstrates that it was impracticable to raise such issues, or if the grounds for such objection arose after the comment period.

To petition the U.S. EPA to object to the issuance of a Title V operating permit, contact:

U.S. Environmental Protection Agency
401 M Street
Washington, D.C. 20406

If you have technical questions regarding the enclosed documents, please contact the Office of Air Quality, Permits Branch at (317) 233-0178. Callers from within Indiana may call toll-free at 1-800-451-6027, ext. 3-0178.



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
We make Indiana a cleaner, healthier place to live.

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Mr. Steven Aldridge
Knauf Insulation GmbH
One Knauf Drive
Shelbyville, IN 46176

December 27, 2005

Re: Third Significant Permit Modification SPM
145-21234-00001 of Part 70 Operating
Permit 145-6038-0000, issued on
September 14, 1999

Dear Mr. Aldridge:

On February 28, 2005, the Office of Air Quality (OAQ) received an application from Knauf Insulation GmbH to expand their Shelbyville plant, located at One Knauf Drive, Shelbyville, Indiana, Shelby County. In addition to the expansion, three (3) existing permitted furnaces, associated manufacturing lines, and raw material handling systems will retire as part of the project.

Pursuant to the provisions of 326 IAC 2-7-12(d), a permit modification is hereby approved as described in the attached Technical Support Document (TSD). Please find enclosed the entire modified permit document for final issuance.

This decision is subject to the Indiana Administrative Orders and Procedures Act - IC 4-21.5-3-5. If you have any questions on this matter, please contact Ms. Iryn Calilung at the Indiana Department Environmental Management, Office of Air Quality, 100 North Senate Avenue, Indianapolis, Indiana 46204 or by telephone at (317) 233-5692 or toll free at 1-800-451-6027 extension 3-5692.

Sincerely,

Original Signed By
Nisha Sizemore
Paul Dubenetzky
Assistant Commissioner
Office of Air Quality

cc: File - Shelby County
U.S. EPA, Region V
Shelby County Health Department
Air Compliance Section Inspector - DJK
Compliance Branch - KA



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PART 70 OPERATING PERMIT OFFICE OF AIR QUALITY

**Knauf Insulation GmbH
 One Knauf Drive
 Shelbyville, Indiana 46176**

(herein known as the Permittee) is hereby authorized to operate subject to the conditions contained herein, the source described in Section A (Source Summary) of this permit.

This permit is issued in accordance with 326 IAC 2 and 40 CFR Part 70 Appendix A and contains the conditions and provisions specified in 326 IAC 2-7 and 326 IAC 2-1-3.2 as required by 42 U.S.C. 7401, et. seq. (Clean Air Act as amended by the 1990 Clean Air Act Amendments), 40 CFR Part 70.6, IC 13-15 and IC 13-17.

Operation Permit No.: T145-6038-00001	
Original Signed and Issued by: Janet G. McCabe, Assistant Commissioner Office of Air Quality	Issuance Date: September 14, 1999 Expiration Date: September 14, 2004

First Significant Permit Modification No.:	145-11969-00001,	issued on July 6, 2000
Second Significant Permit Modification No.:	145-14586-00001,	issued on November 20, 2001
First Reopening No.:	145-13486-00001,	issued on January 7, 2002
First Administrative Amendment:	145-15521-00001,	issued on July 15, 2002
Second Administrative Amendment: No.:	145-18469-00001,	issued on December 17, 2003

Third Significant Permit Modification 145-21234-00001	Pages Affected: Entire Permit
Issued by: Original Signed By: Nisha Sizemore Paul Dubenetzky Assistant Commissioner, Office of Air Quality	Issuance Date: December 27, 2005 Expiration Date: September 14, 2004



TABLE OF CONTENTS

A SOURCE SUMMARY

A.1	General Information	[326 IAC 2-7-4(c)] [326 IAC 2-7-5(15)]
A.2	Emission Units and Pollution Control Equipment Summary	[326 IAC 2-7-4(c)(3)]
A.3	Specifically Regulated Insignificant Activities	[326 IAC 2-7-1(21)] [326 IAC 2-7-4(c)]
A.4	Part 70 Permit Applicability	[326 IAC 2-7-2]

B GENERAL CONDITIONS

B.1	Permit No Defense	[326 IAC 2-1-10] [IC 13]
B.2	Definitions	[326 IAC 2-7-1]
B.3	Permit Term	[326 IAC 2-7-5(2)]
B.4	Enforceability	[326 IAC 2-7-7(a)]
B.5	Termination of Right to Operate	[326 IAC 2-7-10] [326 IAC 2-7-4(a)]
B.6	Severability	[326 IAC 2-7-5(5)]
B.7	Property Rights or Exclusive Privilege	[326 IAC 2-7-5(6)(D)]
B.8	Duty to Supplement and Provide Information	[326 IAC 2-7-4(b)] [326 IAC 2-7-5(6)(E)]
B.9	Compliance with Permit Conditions	[326 IAC 2-7-5(6)(A)] [326 IAC 2-7-5(6)(B)]
B.10	Certification	[326 IAC 2-7-4(f)] [326 IAC 2-7-6(1)]
B.11	Annual Compliance Certification	[326 IAC 2-7-6(5)]
B.12	Preventive Maintenance Plan	[326 IAC 2-7-5(1),(3)and (13)] [326 IAC 2-7-6(1)and(6)]
B.13	Emergency Provisions	[326 IAC 2-7-16]
B.14	Permit Shield	[326 IAC 2-7-15]
B.15	Multiple Exceedances	[326 IAC 2-7-5(1)(E)]
B.16	Deviations from Permit Requirements and Conditions	[326 IAC 2-7-5(3)(C)(ii)]
B.17	Permit Modification, Reopening, Revocation and Reissuance, or Termination	
B.18	Permit Renewal	[326 IAC 2-7-4]
B.19	Permit Amendment or Modification	[326 IAC 2-7-11][326 IAC 2-7-12]
B.20	Permit Revision Under Economic Incentives and Other Programs	
B.21	Changes Under Section 502(b)(10) of the Clean Air Act	[326 IAC 2-7-20(b)]
B.22	Operational Flexibility	[326 IAC 2-7-20]
B.23	Construction Permit Requirement	[326 IAC 2]
B.24	Inspection and Entry	[326 IAC 2-7-6(2)]
B.25	Transfer of Ownership or Operation	[326 IAC 2-1-6] [326 IAC 2-7-11]
B.26	Annual Fee Payment	[326 IAC 2-7-19] [326 IAC 2-7-5(7)]

C SOURCE OPERATION CONDITIONS

Emission Limitations and Standards [326 IAC 2-7-5(1)]

- C.1 Particulate Matter Emission Limitations
For Processes with Process Weight Rates [326 IAC 6-3-2(c)]
- C.2 Opacity [326 IAC 5-1]
- C.3 Open Burning [326 IAC 4-1] [IC 13-17-9]
- C.4 Incineration [326 IAC 4-2] [326 IAC 9-1-2]
- C.5 Fugitive Dust Emissions [326 IAC 6-4]
- C.6 Operation of Equipment [326 IAC 2-7-6(6)]
- C.7 Stack Height [326 IAC 1-7]
- C.8 Asbestos Abatement Projects [326 IAC 14-10] [326 IAC 18]
[40 CFR 61.140]
- Testing Requirements [326 IAC 2-7-6(1)]**
- C.9 Performance Testing [326 IAC 3-6]
- Compliance Monitoring Requirements [326 IAC 2-7-5(1)] [326 IAC 2-7-6(1)]**
- C.10 Compliance Schedule [326 IAC 2-7-6(3)]
- C.11 Compliance Monitoring [326 IAC 2-7-5(3)] [326 IAC 2-7-6(1)]
- C.12 Maintenance of Monitoring Equipment [326 IAC 2-7-5(3)(A)(iii)]
- C.13 Monitoring Methods [326 IAC 3]
- C.14 Pressure Gauge and
Other Instrument Specifications [326 IAC 2-1.1-11]
[326 IAC 2-7-5(3)] [326 IAC 2-7-6(1)]
- Corrective Actions and Response Steps [326 IAC 2-7-5] [326 IAC 2-7-6]**
- C.15 Emergency Reduction Plans [326 IAC 1-5-2] [326 IAC 1-5-3]
- C.16 Risk Management Plan [326 IAC 2-7-5(12)] [40 CFR 68.215]
- C.17 Compliance Monitoring Plan -
Failure to Take Response Steps [326 IAC 2-7-5]
- C.18 Actions Related to Noncompliance
Demonstrated by a Stack Test [326 IAC 2-7-5]
- Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]**
- C.19 Emission Statement [326 IAC 2-7-5(3)(C)(iii)]
[326 IAC 2-7-5(7)] [326 IAC 2-7-19(c)]
- C.20 Monitoring Data Availability [326 IAC 2-7-6(1)] [326 IAC 2-7-5(3)]
- C.21 General Record Keeping Requirements [326 IAC 2-7-5(3)]
- C.22 General Reporting Requirements [326 IAC 2-7-5(3)(C)]
- Stratospheric Ozone Protection**
- C.23 Compliance with 40 CFR 82 and 326 IAC 22-1
- Retirement of Existing Operations**
- C.24 Retirement of Existing Operations [326 IAC 2-3]

D.1 FACILITY OPERATION CONDITIONS - FURN 602 and MFG 602

- Emission Limitations and Standards** [326 IAC 2-7-5(1)]
- D.1.1 **General Provisions Relating to NSPS and Particulate Matter (PM) Limitation** [326 IAC 12]
[40 CFR Part 60, Subpart A]
[40 CFR 60.290, Subpart CC]
- D.1.2 **Particulate Matter Emission Limitation** [326 IAC 11-4]
- D.1.3 **Preventive Maintenance Plan** [326 IAC 2-7-5(13)]
- Compliance Determination Requirements**
- D.1.4 **Testing Requirements** [326 IAC 2-7-6(1),(6)]
- D.1.5 **Particulate Matter (PM) Compliance Monitoring Requirements** [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]
- D.1.6 **Visible Emissions Notations**
- D.1.7 **Parametric Monitoring**
- D.1.8 **Electrostatic Precipitator Inspections**
- D.1.9 **Broken or Failed Electrostatic Precipitators Detection**
- Record Keeping and Reporting Requirements** [326 IAC 2-7-5(3)] [326 IAC 2-7-19]
- D.1.10 **Record Keeping Requirements**
- D.1.11 **Reporting Requirements**

D.2 FACILITY OPERATION CONDITIONS - Nine (9) fiberglass pipe insulation lines

- Emission Limitations and Standards** [326 IAC 2-7-5(1)]
- D.2.1 **General Provisions Relating to NSPS and Particulate Matter (PM)** [326 IAC 12]
[40 CFR Part 60, Subpart A]
[40 CFR 60.680]
- D.2.2 **Preventive Maintenance Plan** [326 IAC 2-7-5(13)]
- Compliance Determination Requirements**
- D.2.3 **Testing Requirements** [326 IAC 2-7-6(1),(6)]
- D.2.4 **Particulate Matter (PM) Control**
- Compliance Monitoring Requirements** [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]
- D.2.5 **Visible Emissions Notations**
- D.2.6 **Parametric Monitoring**
- D.2.7 **Dust Collector Inspections**
- D.2.8 **Dust Collector Failure Detection**
- Record Keeping and Reporting Requirements** [326 IAC 2-7-5(3)] [326 IAC 2-7-19]
- D.2.9 **Record Keeping Requirements**
- D.2.10 **Reporting Requirements**

D.3 FACILITY OPERATION CONDITIONS - Raw Material and Handling Systems

- Emission Limitations and Standards** [326 IAC 2-7-5(1)]
- D.3.1 Particulate Matter (PM) PSD Minor Limits [326 IAC 2-2]
- D.3.2 Preventive Maintenance Plan [326 IAC 2-7-5(13)]
- Compliance Determination Requirements**
- D.3.3 Baghouse Operation
- Compliance Monitoring Requirements** [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]
- D.3.4 Bag Leak Detection System (BLDS)
- Record Keeping and Reporting Requirements** [326 IAC 2-7-5(3)] [326 IAC 2-7-19]
- D.3.5 Record Keeping Requirements

D.4 FACILITY OPERATION CONDITIONS - FURN 611

- Emission Limitations and Standards** [326 IAC 2-7-5(1)]
- D.4.1 PSD Minor Limits [326 IAC 2-2]
- D.4.2 NO_x LAER and NO₂ PSD BACT Requirements [326 IAC 2-3] [326 IAC 2-2]
- D.4.3 NO_x Emission Offset [326 IAC 2-3]
- D.4.4 Particulate Matter Emission Limitations [326 IAC 11-4-2]
- D.4.5 Preventive Maintenance Plan [326 IAC 2-7-5(13)]
- Compliance Determination Requirements**
- D.4.6 Baghouse Operation [326 IAC 2-7-6(6)]
[40 CFR Part 63, Subpart NNN]
- D.4.7 Testing Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-6(6)]
[326 IAC 2-1.1-11]
[40 CFR Part 63, Subpart NNN]
- Compliance Monitoring Requirements** [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]
- D.4.8 Bag Leak Detection System [40 CFR Part 63, Subpart NNN]
- D.4.9 Visible Emissions Notations
- Record Keeping and Reporting Requirements** [326 IAC 2-7-5(3)] [326 IAC 2-7-19]
- D.4.10 Record Keeping Requirements
- National Emission Standards for Hazardous Air Pollutants (NESHAP) Requirements** [326 IAC 2-7-5(1)]
- D.4.11 General Provisions Relating to NESHAP for Wool Fiberglass Manufacturing [326 IAC 20-1]
[40 CFR Part 63, Subpart A]
- D.4.12 NESHAP Wool Fiberglass Manufacturing Requirements [40 CFR Part 63, Subpart NNN]

D.5 FACILITY OPERATION CONDITIONS - FORMING and CURING/COOLING

- Emission Limitations and Standards** [326 IAC 2-7-5(1)]
- D.5.1 PSD Minor Limits [326 IAC 2-2]
- D.5.2 VOC Emission Offset Minor Limits [326 IAC 2-3]
- D.5.3 NO_x LAER and NO₂ PSD BACT Requirements [326 IAC 2-3] [326 IAC 2-2]
- D.5.4 Clean Units [326 IAC 2-3.2] [326 IAC 2-2.2]
- D.5.5 Volatile Organic Compound (VOC) BACT Requirements [326 IAC 8-1-6]
- D.5.6 Particulate Matter Emission Limitations [326 IAC 11-4-2]

- D.5.7 Preventive Maintenance Plan [326 IAC 2-7-5(13)]
Compliance Determination Requirements
- D.5.8 Low NOx Burners Operation [326 IAC 2-3] [326 IAC 2-7-6(6)]
[326 IAC 2-2]
- D.5.9 Wet Electrostatic Precipitator (ESP) Operation [326 IAC 2-7-6(6)]
[40 CFR Part 60, Subpart PPP]
[326 IAC 2-3] [326 IAC 11-4-2]
- D.5.10 Regenerative Thermal Oxidizers (RTOs) Operation [326 IAC 2-7-6(6)]
[40 CFR 63, Subpart NNN]
[326 IAC 2-2] [326 IAC 2-3]
[326 IAC 8-1-6]
- D.5.11 Testing Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-6(6)]
- D.5.12 Thermal Oxidizer Operating Temperature [326 IAC 8-1-6] [326 IAC 2-3]
- D.5.13 Thermal Oxidizer Parametric Monitoring [326 IAC 8-1-6] [326 IAC 2-3]
Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]
- D.5.14 Visible Emissions Notations [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]
- D.5.15 Wet Electrostatic Precipitator (ESP) Parametric Monitoring
Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]
- D.5.16 Record Keeping Requirements
- D.5.17 Reporting Requirements

E.1 NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP) REQUIREMENTS

- E.1.1 General Provisions Relating to NESHAP for Wool Fiberglass Manufacturing
- E.1.2 NESHAP Wool Fiberglass Manufacturing Requirements [40 CFR Part 63, Subpart NNN]

E.2 NEW STATIONARY SOURCES PERFORMANCE STANDARDS (NSPS)) REQUIREMENTS

- E.2.1 General Provisions Relating to NSPS [326 IAC 12-1]
[40 CFR Part 60, Subpart A]
- E.2.2 NSPS Wool Fiberglass Insulation Manufacturing Plants [40 CFR Part 60, Subpart PPP]

Part 70 Operating Permit Certification
Part 70 Operating Permit Emergency/Deviation Occurrence Report
Part 70 Operating Permit Quarterly Compliance Monitoring Report

SECTION A SOURCE SUMMARY

This permit is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ). The information describing the source contained in conditions A.1 through A.3 is descriptive information and does not constitute enforceable conditions. However, the Permittee should be aware that a physical change or a change in the method of operation that may render this descriptive information obsolete or inaccurate may trigger requirements for the Permittee to obtain additional permits or seek modification of this permit pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

A.1 General Information [326 IAC 2-7-4(c)] [326 IAC 2-7-5(15)]

The Permittee owns and operates a stationary wool fiberglass insulation manufacturer.

Responsible Official: Vice President of Operations
Source Address: One Knauf Drive, Shelbyville, IN 46176
Mailing Address: One Knauf Drive, Shelbyville, IN 46176
SIC Code: 3296
County Location: Shelby
County Status: Nonattainment for the 8-hour ozone standard
Attainment for all other criteria pollutants
Source Status: Part 70 Permit Program
Major Source, under PSD Rules
Major Source, under Emission Offset Rules
Major Source under Section 112 of the CAA
1 of 28 Listed Source Categories
Clean Unit Source

A.2 Emission Units and Pollution Control Equipment Summary [326 IAC 2-7-4(c)(3)] [326 IAC 2-7-5(15)]

This stationary source consists of the following emission units and pollution control devices:

SECTION D.1

(a) FURN 602 -- Stack 2-1

One (1) gas-fired (with electric boost) glass melting furnace, identified as Unit ID # FURN 602, installed in 1983, operating at a rated heat input capacity of 30 MMBtu per hour, combusting natural gas, utilizing one (1) dry electrostatic precipitator for particulate control, exhausting through one (1) stack ID #2-1.

(b) MFG 602 -- Stack 2-2

One (1) fiberglass manufacturing line consisting of forming, curing, and cooling sections, identified as Unit ID # MFG 602, installed in 1983, operating at a rated heat input capacity of 40 MMBtu per hour, combusting natural gas, utilizing one (1) wet electrostatic precipitator for particulate control, and one (1) natural gas fired afterburner with a rated combined heat input capacity of 30 MMBtu per hour, exhausting through one (1) stack ID #2-2.

SECTION D.2

(c) Nine (9) fiberglass pipe insulation production lines consisting of nine (9) natural gas fired curing ovens, identified as Unit ID # LINE 3001 - 3009, respectively, each with a maximum heat input capacity of 5 MMBtu per hour, each exhausting through two (2) stacks ID # 7-2 and 7-3, 8-2 and 8-3, 9-2 and 9-3, 10-2 and 10-3, 11-2 and 11-3, 12-2 and 12-3, 13-2 and 13-3, 14-2 and 14-3, and 16-2 and 16-3, respectively, each with a trimming process utilizing a dust collector for particulate control, each exhausting through stack ID # 7-4, 8-4, 9-4, 10-4, 11-4, 12-4, 13-4, 14-4, and 16-4, respectively; LINE 3001-3005 and 3008 each constructed in April 1996, LINE 3006-3007 each constructed in December 1994, and LINE 3009 constructed October 1997.

SECTION D.3

(d) Raw Material and Handling Systems

(1) The nominal capacities of these units have been classified as confidential information.

Table 2 - - Raw Material and Handling Systems			
Emission Unit	Emission Unit ID	Stack ID	Control Device *
Silica sand storage silos	Silo61	6-1	Baghouse
Nepheline Syenite storage silos	Silo62	6-2	Baghouse
Soda ash storage silos	Silo63	6-3	Baghouse
Limestone storage silo	Silo64	6-4	Baghouse
Dolomite storage silo	Silo65	6-5	Baghouse
Minor ingredient storage silo	Silo66	6-6	Baghouse
Spare storage silo	Silo67	6-7	Baghouse
Borax storage silo	Silo69	6-9	Baghouse
CNSMR cullet storage silo	Silo612	6-12	Baghouse
Knauf cullet storage silo	Silo613	6-13	Baghouse
Raw material unloader	RMUNLDR616	6-16	Baghouse
Gathering belt/Weigh Scales	GTHRNGBLT617	6-17	Baghouse
Batch mixer/Check Scale	BMXR618	6-18	Baghouse
611 Furnace day bins	DB619	6-19	Baghouse
Knauf cullet handling	KCHNDLNG620	6-20	--
Resin unloading	RUNLDNG626	6-26	--
Binder storage	BSTG627	6-27	--
Binder mixing	BMXG	6-28	--
* Controlled emissions exhaust inside the building.			

- (2) Thirty eight (38) binder mixing and miscellaneous storage tanks, ranging from 50 gallons to 15,000 gallons.

Volatile organic compound (VOC) emissions from these storage tanks vent inside the binder building and are then ducted to the inlet of the wet electrostatic precipitator (ESP) (Stack 6-22).

SECTION D.4

- (e) FURNACE 611 -- Stack 6-21
One (1) electrically heated glass melting furnace, identified as FURN 611.

This furnace is common to:

- (1) 611 FORMING,
- (2) 612 FORMING,
- (3) 613 FORMING,
- (4) 613 CURING/COOLING,
- (5) 614 FORMING, and
- (6) 614 CURING/COOLING.

- The nominal capacity of FURN 611 is 300 tons of molten glass per day.
- The particulate emissions from FURN 611 are controlled by a baghouse, identified as FURN 611 Baghouse.
- Controlled emissions from FURN 611 exhaust through a stack identified as Stack 6-21.

SECTION D.5

- (f) Stack 6-22
 - (1) 611 FORMING
One (1) fiberglass forming section, identified as 611 FORMING, utilizing natural gas for fiberization. Products formed in 611 FORMING are ready for packaging.

- The nominal capacity of 611 FORMING has been classified as confidential information.
- The particulate emissions from 611 FORMING are controlled by a wet electrostatic precipitator (ESP). This wet ESP is common to all the forming sections.
- Controlled emissions from 611 FORMING exhaust through a stack identified as Stack 6-22.

- (2) 612 FORMING
One (1) fiberglass forming section, identified as 612 FORMING, utilizing natural gas for fiberization. Products formed in 612 FORMING are ready for packaging.

- The nominal capacity of 612 FORMING has been classified as confidential information.

- The particulate emissions from 612 FORMING are controlled by a wet electrostatic precipitator (ESP). This wet ESP is common to all the forming sections.
- Controlled emissions from 612 FORMING exhaust through a stack identified as Stack 6-22.

(3) 613 FORMING

One (1) fiberglass forming section, identified as 613 FORMING, utilizing natural gas for fiberization. Products formed in 613 FORMING are routed to the 613 CURING/COOLING.

- The nominal capacity of 613 FORMING has been classified as confidential information.
- The particulate emissions from 613 FORMING are controlled by a wet electrostatic precipitator (ESP) This wet ESP is common to all the forming sections.
- Controlled emissions from 613 FORMING exhaust through a stack identified as Stack 6-22.

(4) 614 FORMING

One (1) fiberglass forming section, identified as 614 FORMING, utilizing natural gas for fiberization. Products formed in 614 FORMING are routed to the 614 CURING/COOLING.

- The nominal capacity of 614 FORMING has been classified as confidential information.
- The particulate emissions from 614 FORMING are controlled by a wet electrostatic precipitator (ESP). This wet ESP is common to all the forming sections.
- Controlled emissions from 614 FORMING exhaust through a stack identified as Stack 6-22.

(g) Stack 6-29

(1) 613 CURING/COOLING

One (1) fiberglass curing/cooling section, identified as 613 CURING/COOLING, consisting of natural gas fired curing oven(s), duct burners, and edge coat dryer burner.

- The nominal capacity of 613 CURING/COOLING has been classified as confidential information.
- The volatile organic compound (VOC), hazardous air pollutants (HAPs),

- and condensible particulate emissions from 613 CURING/COOLING are controlled by two (2) regenerative thermal oxidizers (RTOs), each rated at 2 million Btu per hour.
- The NOx emissions from each curing oven, duct burner and edge coat dryer of 613 CURING/COOLING are reduced by low NOx burners.
 - Controlled emissions from 613 CURING/COOLING exhaust through a stack identified as Stack 6-29.

(2) 614 CURING/COOLING

One (1) fiberglass curing/cooling section, identified as 614 CURING/COOLING, consisting of natural gas fired curing oven(s) and duct burners.

- The nominal capacity of 614 CURING/COOLING has been classified as confidential information.
- The volatile organic compound (VOC), hazardous air pollutants (HAPs), and condensible particulate emissions from 614 CURING/COOLING are controlled by the same two (2) regenerative thermal oxidizers (RTOs), each rated at 2 million Btu per hour, that control VOC emissions from 613 CURING/COOLING.
- The NOx emissions from each curing oven and duct burner of 614 CURING/COOLING are reduced by low NOx burners.
- Controlled emissions from 614 CURING/COOLING exhaust through a stack identified as Stack 6-29.

A.3 Specifically Regulated Insignificant Activities [326 IAC 2-7-1(21)] [326 IAC 2-7-4(c)]
[326 IAC 2-7-5(15)]

This stationary source also includes the following insignificant activities which are specifically regulated, as defined in 326 IAC 2-7-1(21):

- (1) Other categories with emissions below insignificant thresholds:
 - (a) Fiberglass trimming with dust collector with PM emission less than twenty-five (25) pounds per day

A.4 Part 70 Permit Applicability [326 IAC 2-7-2]

This stationary source is required to have a Part 70 permit by 326 IAC 2-7-2 (Applicability) because:

- (a) It is a major source, as defined in 326 IAC 2-7-1(22);
- (b) It is a source in a source category designated by the United States Environmental Protection Agency (U.S. EPA) under 40 CFR 70.3 (Part 70 - Applicability).

SECTION B GENERAL CONDITIONS

B.1 Permit No Defense [326 IAC 2-1-10] [IC 13]

- (a) Indiana statutes from IC 13 and rules from 326 IAC, quoted in conditions in this permit, are those applicable at the time the permit was issued. The issuance or possession of this permit shall not alone constitute a defense against an alleged violation of any law, regulation or standard, except for the requirement to obtain a Part 70 permit under 326 IAC 2-7.
- (b) This prohibition shall not apply to alleged violations of applicable requirements for which the Commissioner has granted a permit shield in accordance with 326 IAC 2-1-3.2 or 326 IAC 2-7-15, as set out in this permit in the Section B condition entitled "Permit Shield."

B.2 Definitions [326 IAC 2-7-1]

Terms in this permit shall have the definition assigned to such terms in the referenced regulation. In the absence of definitions in the referenced regulation, any applicable definitions found in IC 13-11, 326 IAC 1-2 and 326 IAC 2-7 shall prevail.

B.3 Permit Term [326 IAC 2-7-5(2)]

This permit is issued for a fixed term of five (5) years from the effective date, as determined in accordance with IC 4-21.5-3-5(f) and IC 13-15-5-3.

B.4 Enforceability [326 IAC 2-7-7(a)]

- (a) All terms and conditions in this permit, including any provisions designed to limit the source's potential to emit, are enforceable by IDEM.
- (b) Unless otherwise stated, terms and conditions of this permit, including any provisions to limit the source's potential to emit, are enforceable by the United States Environmental Protection Agency (U.S. EPA) and citizens under the Clean Air Act.

B.5 Termination of Right to Operate [326 IAC 2-7-10] [326 IAC 2-7-4(a)]

The Permittee's right to operate this source terminates with the expiration of this permit unless a timely and complete renewal application is submitted at least nine (9) months prior to the date of expiration of the source's existing permit, consistent with 326 IAC 2-7-3 and 326 IAC 2-7-4(a).

B.6 Severability [326 IAC 2-7-5(5)]

The provisions of this permit are severable; a determination that any portion of this permit is invalid shall not affect the validity of the remainder of the permit.

B.7 Property Rights or Exclusive Privilege [326 IAC 2-7-5(6)(D)]

This permit does not convey any property rights of any sort, or any exclusive privilege.

B.8 Duty to Supplement and Provide Information [326 IAC 2-7-4(b)] [326 IAC 2-7-5(6)(E)]

- (a) The Permittee, upon becoming aware that any relevant facts were omitted or incorrect information was submitted in the permit application, shall promptly submit such supplementary facts or corrected information to:
- Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue
Indianapolis, Indiana 46204
- (b) The Permittee shall furnish to IDEM, OAQ within a reasonable time, any information that IDEM, OAQ may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit.
- (c) Upon request, the Permittee shall also furnish to IDEM, OAQ copies of records required to be kept by this permit. If the Permittee wishes to assert a claim of confidentiality over any of the furnished records, the Permittee must furnish such records to IDEM, OAQ, along with a claim of confidentiality under 326 IAC 17. If requested by IDEM, OAQ, or the U.S. EPA, to furnish copies of requested records directly to U. S. EPA, and if the Permittee is making a claim of confidentiality regarding the furnished records, then the Permittee must furnish such confidential records directly to the U.S. EPA along with a claim of confidentiality under 40 CFR 2, Subpart B.

B.9 Compliance with Permit Conditions [326 IAC 2-7-5(6)(A)] [326 IAC 2-7-5(6)(B)]

- (a) The Permittee must comply with all conditions of this permit. Noncompliance with any provisions of this permit constitutes a violation of the Clean Air Act and is grounds for:
- (1) Enforcement action;
 - (2) Permit termination, revocation and reissuance, or modification; or
 - (3) Denial of a permit renewal application.
- (b) If shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

B.10 Certification [326 IAC 2-7-4(f)] [326 IAC 2-7-6(1)]

- (a) Any application form, report, or compliance certification submitted under this permit shall contain certification by a responsible official of truth, accuracy, and completeness. This certification, and any other certification required under this permit, shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

- (b) One (1) certification shall be included, on the attached Certification Form, with each submittal.
- (c) A responsible official is defined at 326 IAC 2-7-1(34).

B.11 Annual Compliance Certification [326 IAC 2-7-6(5)]

- (a) The Permittee shall annually submit a compliance certification report which addresses the status of the source's compliance with the terms and conditions contained in this permit, including emission limitations, standards, or work practices. The certification shall cover the time period from January 1 to December 31 of the previous year, and shall be submitted in letter form no later than July 1 of each year to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Quality
100 North Senate Avenue
Indianapolis, Indiana 46204

and

United States Environmental Protection Agency, Region V
Air and Radiation Division, Air Enforcement Branch - Indiana (AE-17J)
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

- (b) The annual compliance certification report required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ on or before the date it is due.
- (c) The annual compliance certification report shall include the following:
 - (1) The identification of each term or condition of this permit that is the basis of the certification;
 - (2) The compliance status;
 - (3) Whether compliance was continuous or intermittent;
 - (4) The methods used for determining compliance of the source, currently and over the reporting period consistent with 326 IAC 2-7-5(3);
 - (5) Such other facts, as specified in Sections D of this permit, as IDEM, OAQ may require to determine the compliance status of the source.

The submittal by the Permittee does require the certification by the “responsible official” as defined by 326 IAC 2-7-1(34).

B.12 Preventive Maintenance Plan [326 IAC 2-7-5(1),(3) and (13)] [326 IAC 2-7-6(1) and (6)]
[326 IAC 1-6-3]

- (a) If required by specific condition(s) in Section D of this permit, the Permittee shall prepare and maintain Preventive Maintenance Plans (PMP) within ninety (90) days after issuance of this permit, including the following information on each facility:
- (1) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices;
 - (2) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions; and
 - (3) Identification and quantification of the replacement parts that will be maintained in inventory for quick replacement.

If due to circumstances beyond its control, the PMP cannot be prepared and maintained within the above time frame, the Permittee may extend the date an additional ninety (90) days provided the Permittee notifies:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue
Indianapolis, Indiana 46204

- (b) The Permittee shall implement the Preventive Maintenance Plans as necessary to ensure that lack of proper maintenance does not cause or contribute to a violation of any limitation on emissions or potential to emit.
- (c) PMP's shall be submitted to IDEM, OAQ upon request and shall be subject to review and approval by IDEM, OAQ.

B.13 Emergency Provisions [326 IAC 2-7-16]

- (a) An emergency, as defined in 326 IAC 2-7-1(12), is not an affirmative defense for an action brought for noncompliance with a federal or state health-based emission limitation, except as provided in 326 IAC 2-7-16.
- (b) An emergency, as defined in 326 IAC 2-7-1(12), constitutes an affirmative defense to an action brought for noncompliance with a health-based or technology-based emission limitation if the affirmative defense of an emergency is demonstrated through properly signed, contemporaneous operating logs or other relevant evidence that describe the following:

- (1) An emergency occurred and the Permittee can, to the extent possible, identify the causes of the emergency;
- (2) The permitted facility was at the time being properly operated;
- (3) During the period of an emergency, the Permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards or other requirements in this permit;
- (4) For each emergency lasting one (1) hour or more, the Permittee notified IDEM, OAQ within four (4) daytime business hours after the beginning of the emergency, or after the emergency was discovered or reasonably should have been discovered;

Telephone Number: 1-800-451-6027 (ask for Office of Air Quality,
Compliance Section), or

Telephone Number: 317-233-5674 (ask for Compliance Section)

Facsimile Number: 317-233-5967

- (5) For each emergency lasting one (1) hour or more, the Permittee submitted notice, either in writing or facsimile, of the emergency to:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue
Indianapolis, Indiana 46204

within two (2) working days of the time when emission limitations were exceeded due to the emergency.

The notice fulfills the requirement of 326 IAC 2-7-5(3)(C)(ii) and must contain the following:

- (A) A description of the emergency;
- (B) Any steps taken to mitigate the emissions; and
- (C) Corrective actions taken.

The notification which shall be submitted by the Permittee does not require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

- (6) The Permittee immediately took all reasonable steps to correct the emergency.

- (c) In any enforcement proceeding, the Permittee seeking to establish the occurrence of an emergency has the burden of proof.
- (d) This emergency provision supersedes 326 IAC 1-6 (Malfunctions) for sources subject to this rule after the effective date of this rule. This permit condition is in addition to any emergency or upset provision contained in any applicable requirement.
- (e) IDEM, OAQ may require that the Preventive Maintenance Plans required under 326 IAC 2-7-4-(c)(9) be revised in response to an emergency.
- (f) Failure to notify IDEM, OAQ by telephone or facsimile of an emergency lasting more than one (1) hour in compliance with (b)(4) and (5) of this condition shall constitute a violation of 326 IAC 2-7 and any other applicable rules.
- (g) Operations may continue during an emergency only if the following conditions are met:
 - (1) If the emergency situation causes a deviation from a technology-based limit, the Permittee may continue to operate the affected emitting facilities during the emergency provided the Permittee immediately takes all reasonable steps to correct the emergency and minimize emissions.
 - (2) If an emergency situation causes a deviation from a health-based limit, the Permittee may not continue to operate the affected emissions facilities unless:
 - (A) The Permittee immediately takes all reasonable steps to correct the emergency situation and to minimize emissions; and
 - (B) Continued operation of the facilities is necessary to prevent imminent injury to persons, severe damage to equipment, substantial loss of capital investment, or loss of product or raw materials of substantial economic value.

Any operation shall continue no longer than the minimum time required to prevent the situations identified in (g)(2)(B) of this condition.

B.14 Permit Shield [326 IAC 2-7-15]

- (a) This condition provides a permit shield as addressed in 326 IAC 2-7-15.
- (b) This permit shall be used as the primary document for determining compliance with applicable requirements established by previously issued permits. Compliance with the conditions of this permit shall be deemed in compliance with any applicable requirements as of the date of permit issuance, provided that:
 - (1) The applicable requirements are included and specifically identified in this permit;

or

- (2) The permit contains an explicit determination or concise summary of a determination that other specifically identified requirements are not applicable.
- (c) If, after issuance of this permit, it is determined that the permit is in nonconformance with an applicable requirement that applied to the source on the date of permit issuance, including any term or condition from a previously issued construction or operation permit, IDEM, OAQ shall immediately take steps to reopen and revise this permit and issue a compliance order to the Permittee to ensure expeditious compliance with the applicable requirement until the permit is reissued. The permit shield shall continue in effect so long as the Permittee is in compliance with the compliance order.
- (d) No permit shield shall apply to any permit term or condition that is determined after issuance of this permit to have been based on erroneous information supplied in the permit application.
- (e) Nothing in 326 IAC 2-7-15 or in this permit shall alter or affect the following:
 - (1) The provisions of Section 303 of the Clean Air Act (emergency orders), including the authority of the U.S. EPA under Section 303 of the Clean Air Act;
 - (2) The liability of the Permittee for any violation of applicable requirements prior to or at the time of this permit's issuance;
 - (3) The applicable requirements of the acid rain program, consistent with Section 408(a) of the Clean Air Act; and
 - (4) The ability of U.S. EPA to obtain information from the Permittee under Section 114 of the Clean Air Act.
- (f) This permit shield is not applicable to any change made under 326 IAC 2-7-20(b)(2) (Sections 502(b)(10) of the Clean Air Act changes) and 326 IAC 2-7-20(c)(2) (trading based on State Implementation Plan (SIP) provisions).
- (g) This permit shield is not applicable to modifications eligible for group processing until after IDEM, OAQ has issued the modifications. [326 IAC 2-7-12(c)(7)]
- (h) This permit shield is not applicable to minor Part 70 permit modifications until after IDEM, OAQ has issued the modification. [326 IAC 2-7-12(b)(8)]

B.15 Multiple Exceedances [326 IAC 2-7-5(1)(E)]

Any exceedance of a permit limitation or condition contained in this permit, which occurs contemporaneously with an exceedance of an associated surrogate or operating parameter established to detect or assure compliance with that limit or condition, both arising out of the same act or occurrence, shall constitute a single potential violation of this permit.

B.16 Deviations from Permit Requirements and Conditions [326 IAC 2-7-5(3)(C)(ii)]

- (a) Deviations from any permit requirements (for emergencies see Section B - Emergency Provisions), the probable cause of such deviations, and any response steps or preventive measures taken shall be reported to:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue
Indianapolis, Indiana 46204

using the attached Quarterly Deviation and Compliance Monitoring Report, or its equivalent. Deviations that are required to be reported by an applicable requirement shall be reported according to the schedule stated in the applicable requirement and do not need to be included in this report.

The notification by the Permittee does require the certification by the “responsible official” as defined by 326 IAC 2-7-1(34).

- (b) A deviation is an exceedance of a permit limitation or a failure to comply with a requirement of the permit or a rule. It does not include:
- (1) An excursion from compliance monitoring parameters as identified in Section D of this permit unless tied to an applicable rule or limit; or
 - (2) Failure to implement elements of the Preventive Maintenance Plan unless lack of maintenance has caused or contributed to a deviation.

A Permittee’s failure to take the appropriate response step when an excursion of a compliance monitoring parameter has occurred is a deviation.

- (c) Emergencies shall be included in the Quarterly Deviation and Compliance Monitoring Report.

**B.17 Permit Modification, Reopening, Revocation and Reissuance, or Termination
[326 IAC 2-7-5(6)(C)] [326 IAC 2-7-8(a)] [326 IAC 2-7-9]**

- (a) This permit may be modified, reopened, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a Part 70 permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated

noncompliance does not stay any condition of this permit. [326 IAC 2-7-5(6)(C)]

- (b) This permit shall be reopened and revised under any of the circumstances listed in IC 13-15-7-2 or if IDEM, OAQ determines any of the following:
 - (1) That this permit contains a material mistake.
 - (2) That inaccurate statements were made in establishing the emissions standards or other terms or conditions.
 - (3) That this permit must be revised or revoked to assure compliance with an applicable requirement. [326 IAC 2-7-9(a)(3)]
- (c) Proceedings by IDEM, OAQ to reopen and revise this permit shall follow the same procedures as apply to initial permit issuance and shall affect only those parts of this permit for which cause to reopen exists. Such reopening and revision shall be made as expeditiously as practicable. [326 IAC 2-7-9(b)]
- (d) The reopening and revision of this permit, under 326 IAC 2-7-9(a), shall not be initiated before notice of such intent is provided to the Permittee by IDEM, OAQ at least thirty (30) days in advance of the date this permit is to be reopened, except that IDEM, OAQ may provide a shorter time period in the case of an emergency. [326 IAC 2-7-9(c)]

B.18 Permit Renewal [326 IAC 2-7-4]

- (a) The application for renewal shall be submitted using the application form or forms prescribed by IDEM, OAQ, and shall include the information specified in 326 IAC 2-7-4. Such information shall be included in the application for each emission unit at this source, except those emission units included on the trivial or insignificant activities list contained in 326 IAC 2-7-1(21) and 326 IAC 2-7-1(40).

Request for renewal shall be submitted to:

Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue
Indianapolis, Indiana 46204

- (b) Timely Submittal of Permit Renewal [326 IAC 2-7-4(a)(1)(D)]
 - (1) A timely renewal application is one that is:
 - (A) Submitted at least nine (9) months prior to the date of the expiration of this permit; and
 - (B) If the date postmarked on the envelope or certified mail receipt, or affixed

by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ on or before the date it is due. [326 IAC 2-5-3]

- (2) If IDEM, OAQ, upon receiving a timely and complete permit application, fails to issue or deny the permit renewal prior to the expiration date of this permit, this existing permit shall not expire and all terms and conditions shall continue in effect, including any permit shield provided in 326 IAC 2-7-15, until the renewal permit has been issued or denied.
- (c) **Right to Operate After Application for Renewal [326 IAC 2-7-3]**
If the Permittee submits a timely and complete application for renewal of this permit, the source's failure to have a permit is not a violation of 326 IAC 2-7 until IDEM, OAQ takes final action on the renewal application, except that this protection shall cease to apply if, subsequent to the completeness determination, the Permittee fails to submit by the deadline specified in writing by IDEM, OAQ, any additional information identified as being needed to process the application.
- (d) **United States Environmental Protection Agency Authority [326 IAC 2-7-8(e)]**
If IDEM, OAQ fails to act in a timely way on a Part 70 permit renewal, the U.S. EPA may invoke its authority under Section 505(e) of the Clean Air Act to terminate or revoke and reissue a Part 70 permit.

B.19 Permit Amendment or Modification [326 IAC 2-7-11] [326 IAC 2-7-12]

- (a) The Permittee must comply with the requirements of 326 IAC 2-7-11 or 326 IAC 2-7-12 whenever the Permittee seeks to amend or modify this permit.
- (b) Any application requesting an amendment or modification of this permit shall be submitted to:

Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue
Indianapolis, Indiana 46204

Any such application should be certified by the "responsible official" as defined by 326 IAC 2-7-1(34) only if a certification is required by the terms of the applicable rule.
- (c) The Permittee may implement administrative amendment changes addressed in the request for an administrative amendment immediately upon submittal of the request. [326 IAC 2-7-11(c)(3)]

B.20 Permit Revision Under Economic Incentives and Other Programs [326 IAC 2-7-5(8)]
[326 IAC 2-7-12 (b)(2)]

- (a) No Part 70 permit revision shall be required under any approved economic incentives, marketable Part 70 permits, emissions trading, and other similar programs or processes for changes that are provided for in a Part 70 permit.
- (b) Notwithstanding 326 IAC 2-7-12(b)(1)(D)(i) and 326 IAC 2-7-12(c)(1), minor Part 70 permit modification procedures may be used for Part 70 modifications involving the use of economic incentives, marketable Part 70 permits, emissions trading, and other similar approaches to the extent that such minor Part 70 permit modification procedures are explicitly provided for in the applicable State Implementation Plan (SIP) or in applicable requirements promulgated or approved by the U.S. EPA.

B.21 Changes Under Section 502(b)(10) of the Clean Air Act [326 IAC 2-7-20(b)]

The Permittee may make Section 502(b)(10) of the Clean Air Act changes (this term is defined at 326 IAC 2-7-1(36)) without a permit revision, subject to the constraint of 326 IAC 2-7-20(a) and the following additional conditions:

- (a) For each such change, the required written notification shall include a brief description of the change within the source, the date on which the change will occur, any change in emissions, and any permit term or condition that is no longer applicable as a result of the change.
- (b) The permit shield, described in 326 IAC 2-7-15, shall not apply to any change made under 326 IAC 2-7-20(b).

B.22 Operational Flexibility [326 IAC 2-7-20]

- (a) The Permittee may make any change or changes at the source that are described in 326 IAC 2-7-20(b), (c), or (e), without a prior permit revision, if each of the following conditions is met:
 - (1) The changes are not modifications under any provision of Title I of the Clean Air Act;
 - (2) Any approval required by 326 IAC 2-1 has been obtained;
 - (3) The changes do not result in emissions which exceed the emissions allowable under this permit (whether expressed herein as a rate of emissions or in terms of total emissions);
 - (4) The Permittee notifies the:

Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue
Indianapolis, Indiana 46204

and

United States Environmental Protection Agency, Region V
Air and Radiation Division, Regulation Development Branch - Indiana (AR-18J)
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

in advance of the change by written notification at least ten (10) days in advance of the proposed change. The Permittee shall attach every such notice to the Permittee's copy of this permit; and

- (5) The Permittee maintains records on-site which document, on a rolling five (5) year basis, all such changes and emissions trading that are subject to 326 IAC 2-7-20(b), (c), or (e) and makes such records available, upon reasonable request, for public review.

Such records shall consist of all information required to be submitted to IDEM, OAQ in the notices specified in 326 IAC 2-7-20(b), (c)(1), and (e)(2).

- (b) For each such Section 502(b)(10) of the Clean Air Act change, the required written notification shall include the following:
 - (1) A brief description of the change within the source;
 - (2) The date on which the change will occur;
 - (3) Any change in emissions; and
 - (4) Any permit term or condition that is no longer applicable as a result of the change.

The notification which shall be submitted by the Permittee does not require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

- (c) Emission Trades [326 IAC 2-7-20(c)]

The Permittee may trade increases and decreases in emissions in the source, where the applicable SIP provides for such emission trades without requiring a permit revision, subject to the constraints of Section (a) of this condition and those in 326 IAC 2-7-20(c).

- (d) Alternative Operating Scenarios [326 IAC 2-7-20(d)]
The Permittee may make changes at the source within the range of alternative operating scenarios that are described in the terms and conditions of this permit in accordance with 326 IAC 2-7-5(9). No prior notification of IDEM, OAQ, or U.S. EPA is required.
- (e) Backup fuel switches specifically addressed in, and limited under, Section D of this permit shall not be considered alternative operating scenarios. Therefore, the notification requirements of part (a) of this condition do not apply.

B.23 Construction Permit Requirement [326 IAC 2]

Except as allowed by Indiana P.L. 130-1996 Section 12, as amended by P.L. 244-1997, modification, construction, or reconstruction shall be approved as required by and in accordance with 326 IAC 2.

B.24 Inspection and Entry [326 IAC 2-7-6(2)]

Upon presentation of proper identification cards, credentials, and other documents as may be required by law, and subject to the Permittee's right under all applicable laws and regulations to assert that the information collected by the agency is confidential and entitled to be treated as such, the Permittee shall allow IDEM, OAQ, U.S. EPA, or an authorized representative to perform the following:

- (a) Enter upon the Permittee's premises where a Part 70 source is located, or emissions related activity is conducted, or where records must be kept under the conditions of this permit;
- (b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- (c) Inspect, at reasonable times, any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit;
- (d) Sample or monitor, at reasonable times, substances or parameters for the purpose of assuring compliance with this permit or applicable requirements; and
- (e) Utilize any photographic, recording, testing, monitoring, or other equipment for the purpose of assuring compliance with this permit or applicable requirements.
[326 IAC 2-7-6(6)]

B.25 Transfer of Ownership or Operation [326 IAC 2-1-6] [326 IAC 2-7-11]

Pursuant to 326 IAC 2-1-6 and 326 IAC 2-7-11:

- (a) In the event that ownership of this source is changed, the Permittee shall notify IDEM, OAQ, Permits Branch, within thirty (30) days of the change. Notification shall include a written agreement containing a specific date for transfer of permit responsibility,

coverage, and liability between the Permittee and the new owner.

- (b) The written notification shall be sufficient to transfer the permit to the new owner by an administrative amendment pursuant to 326 IAC 2-7-11. The notification which shall be submitted by the Permittee does not require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).
- (c) IDEM, OAQ shall reserve the right to issue a new permit.

B.26 Annual Fee Payment [326 IAC 2-7-19] [326 IAC 2-7-5(7)]

- (a) The Permittee shall pay annual fees to IDEM, OAQ, within thirty (30) calendar days of receipt of a billing. If the Permittee does not receive a bill from IDEM, OAQ the applicable fee is due April 1 of each year.
- (b) Failure to pay may result in administrative enforcement action, or revocation of this permit.
- (c) The Permittee may call the following telephone numbers: 1-800-451-6027 or 317-233-0425 (ask for OAQ, Technical Support and Modeling Section), to determine the appropriate permit fee.

SECTION C SOURCE OPERATION CONDITIONS

Entire Source

Emission Limitations and Standards [326 IAC 2-7-5(1)]

C.1 Particulate Matter Emission Limitations For Processes with Process Weight Rates Less Than One Hundred (100) pounds per hour [326 IAC 6-3-2(c)]

Pursuant to 326 IAC 6-3-2(c), the allowable particulate matter emissions rate from any process not already regulated by 326 IAC 6-1 or any New Source Performance Standard, and which has a maximum process weight rate less than 100 pounds per hour shall not exceed 0.551 pounds per hour.

C.2 Opacity [326 IAC 5-1]

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Exemptions), opacity shall meet the following, unless otherwise stated in this permit:

- (a) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period, as determined in 326 IAC 5-1-4.
- (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

C.3 Open Burning [326 IAC 4-1] [IC 13-17-9]

The Permittee shall not open burn any material except as provided in 326 IAC 4-1-3, 326 IAC 4-1-4 or 326 IAC 4-1-6. The previous sentence notwithstanding, the Permittee may open burn in accordance with an open burning approval issued by the Commissioner under 326 IAC 4-1-4.1. 326 IAC 4-1-3 (a)(2)(A) and (B) are not federally enforceable.

C.4 Incineration [326 IAC 4-2][326 IAC 9-1-2]

The Permittee shall not operate an incinerator or incinerate any waste or refuse except as provided in 326 IAC 4-2 and 326 IAC 9-1-2.

C.5 Fugitive Dust Emissions [326 IAC 6-4]

The Permittee shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4 (Fugitive Dust Emissions). 326 IAC 6-4-2(4) is not federally enforceable.

C.6 Operation of Equipment [326 IAC 2-7-6(6)]

Except as otherwise provided in this permit, all air pollution control equipment listed in this permit and used to comply with an applicable requirement shall be operated at all times that the emission units vented to the control equipment are in operation.

C.7 Stack Height [326 IAC 1-7]

The Permittee shall comply with the applicable provisions of 326 IAC 1-7 (Stack Height Provisions), for all exhaust stacks through which a potential (before controls) of twenty-five (25) tons per year or more of particulate matter or sulfur dioxide is emitted.

C.8 Asbestos Abatement Projects [326 IAC 14-10] [326 IAC 18] [40 CFR 61.140]

- (a) Notification requirements apply to each owner or operator. If the combined amount of regulated asbestos containing material (RACM) to be stripped, removed or disturbed is at least 260 linear feet on pipes or 160 square feet on other facility components, or at least thirty-five (35) cubic feet on all facility components, then the notification requirements of 326 IAC 14-10-3 are mandatory. All demolition projects require notification whether or not asbestos is present.
- (b) The Permittee shall ensure that a written notification is sent on a form provided by the Commissioner at least ten (10) working days before asbestos stripping or removal work or before demolition begins, per 326 IAC 14-10-3, and shall update such notice as necessary, including, but not limited to the following:
 - (1) When the amount of affected asbestos containing material increases or decreases by at least twenty percent (20%); or
 - (2) If there is a change in the following:
 - (A) Asbestos removal or demolition start date;
 - (B) Removal or demolition contractor; or
 - (C) Waste disposal site.
- (c) The Permittee shall ensure that the notice is postmarked or delivered according to the guidelines set forth in 326 IAC 14-10-3(2).
- (d) The notice to be submitted shall include the information enumerated in 326 IAC 14-10-3(3).

All required notifications shall be submitted to:

Indiana Department of Environmental Management
Asbestos Section, Office of Air Quality
100 North Senate Avenue
Indianapolis, Indiana 46204

The notifications do not require a certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

- (e) **Procedures for Asbestos Emission Control**
The Permittee shall comply with the emission control procedures in 326 IAC 14-10-4 and 40 CFR 61.145(c). Per 326 IAC 14-10-4 emission control requirements are mandatory for any removal or disturbance of RACM greater than three (3) linear feet on pipes or three (3) square feet on any other facility components or a total of at least 0.75 cubic feet on all facility components.

- (f) **Indiana Accredited Asbestos Inspector**
The Permittee shall comply with 326 IAC 14-10-1(a) that requires the owner or operator, prior to a renovation/demolition, to use an Indiana Accredited Asbestos Inspector to thoroughly inspect the affected portion of the facility for the presence of asbestos. The requirement that the inspector be accredited is federally enforceable.

Testing Requirements [326 IAC 2-7-6(1)]

C.9 Performance Testing [326 IAC 3-6]

- (a) All testing shall be performed according to the provisions of 326 IAC 3-6 (Source Sampling Procedures), except as provided elsewhere in this permit, utilizing methods approved by IDEM, OAQ.

A test protocol, except as provided elsewhere in this permit, shall be submitted to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Quality
100 North Senate Avenue
Indianapolis, Indiana 46204

no later than thirty-five (35) days prior to the intended test date. The Permittee shall submit a notice of the actual test date to the above address so that it is received at least two weeks prior to the test date.

- (b) All test reports must be received by IDEM, OAQ within forty-five (45) days after the completion of the testing. An extension may be granted by the Commissioner, if the source submits to IDEM, OAQ, a reasonable written explanation within five (5) days prior to the end of the initial forty-five (45) day period.

The documentation submitted by the Permittee does not require certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

Compliance Monitoring Requirements [326 IAC 2-7-5(1)] [326 IAC 2-7-6(1)]

C.10 Compliance Schedule [326 IAC 2-7-6(3)]

The Permittee:

- (a) Has certified that all facilities at this source are in compliance with all applicable requirements; and
- (b) Has submitted a statement that the Permittee will continue to comply with such requirements; and
- (c) Will comply with such applicable requirements that become effective during the term of this permit.

C.11 Compliance Monitoring [326 IAC 2-7-5(3)] [326 IAC 2-7-6(1)]

Compliance with applicable requirements shall be documented as required by this permit. The Permittee shall be responsible for installing any necessary equipment and initiating any required monitoring related to that equipment, no more than ninety (90) days after receipt of this permit. If due to circumstances beyond its control, this schedule cannot be met, the Permittee may extend compliance schedule an additional ninety (90) days provided the Permittee notifies:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue
Indianapolis, Indiana 46204

in writing, prior to the end of the initial ninety (90) day compliance schedule, with full justification of the reasons for the inability to meet this date.

The notification which shall be submitted by the Permittee does require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

C.12 Maintenance of Monitoring Equipment [326 IAC 2-7-5(3)(A)(iii)]

- (a) In the event that a breakdown of the monitoring equipment occurs, a record shall be made of the times and reasons of the breakdown and efforts made to correct the problem. To the extent practicable, supplemental or intermittent monitoring of the parameter should be implemented at intervals no less frequent than required in Section D of this permit until such time as the monitoring equipment is back in operation. In the case of continuous monitoring, supplemental or intermittent monitoring of the parameter should be implemented at intervals no less than one (1) hour until such time as the continuous monitor is back in operation.
- (b) The Permittee shall install, calibrate, quality assure, maintain, and operate all necessary monitors and related equipment. In addition, prompt corrective action shall be initiated whenever indicated.

C.13 Monitoring Methods [326 IAC 3]

Any monitoring or testing performed to meet the applicable requirements of this permit shall be performed according to the provisions of 326 IAC 3, 40 CFR 60, Appendix A, or other approved methods as specified in this permit.

C.14 Pressure Gauge and Other Instrument Specifications [326 IAC 2-1.1-11] [326 IAC 2-7-5(3)] [326 IAC 2-7-6(1)]

- (a) Whenever a condition in this permit requires the measurement of pressure drop across any part of the unit or its control device, the gauge employed shall have a scale such that the expected normal reading shall be no less than twenty percent (20%) of full scale and be accurate within plus or minus two percent ($\pm 2\%$) of full scale reading. Such gauges shall be calibrated every six (6) months.
- (b) Whenever a condition in this permit requires the measurement of an operating temperature, duct pressure, fan amperage, primary and secondary current, primary and secondary voltage, and inlet water flow rate, the instruments employed shall have a scale such that the expected normal reading shall be no less than twenty percent (20%) of full scale and be accurate within plus or minus two percent ($\pm 2\%$) of full scale reading.
- (c) The Permittee may request the IDEM, OAQ approve the use of a pressure gauge or other instrument that does not meet the above specifications provided the Permittee can demonstrate an alternative pressure gauge or other instrument specification will adequately ensure compliance with permit conditions requiring the measurement of pressure drop or other parameters.

Corrective Actions and Response Steps [326 IAC 2-7-5] [326 IAC 2-7-6]

C.15 Emergency Reduction Plans [326 IAC 1-5-2] [326 IAC 1-5-3]

Pursuant to 326 IAC 1-5-2 (Emergency Reduction Plans; Submission):

- (a) The Permittee prepared and submitted written emergency reduction plans (ERPs) consistent with safe operating procedures on March 19, 1999.
- (b) If the ERP is disapproved by IDEM, OAQ, the Permittee shall have an additional thirty (30) days to resolve the differences and submit an approvable ERP.
- (c) These ERPs shall state those actions that will be taken, when each episode level is declared, to reduce or eliminate emissions of the appropriate air pollutants.
- (d) Said ERPs shall also identify the sources of air pollutants, the approximate amount of reduction of the pollutants, and a brief description of the manner in which the reduction will be achieved.
- (e) Upon direct notification by IDEM, OAQ, that a specific air pollution episode level is in effect, the Permittee shall immediately put into effect the actions stipulated in the

approved ERP for the appropriate episode level. [326 IAC 1-5-3]

C.16 Risk Management Plan [326 IAC 2-7-5(12)] [40 CFR 68.215]

If a regulated substance, subject to 40 CFR 68, is present in a process in more than the threshold quantity, 40 CFR 68 is an applicable requirement and the Permittee shall:

- (a) Submit:
- (1) A compliance schedule for meeting the requirements of 40 CFR 68 by the date provided in 40 CFR 68.10(a); or
 - (2) As a part of the compliance certification submitted under 326 IAC 2-7-6(5), a certification statement that the source is in compliance with all the requirements of 40 CFR 68, including the registration and submission of a Risk Management Plan (RMP); and
 - (3) A verification to IDEM, OAQ that a RMP or a revised plan was prepared and submitted as required by 40 CFR 68.
- (b) Provide annual certification to IDEM, OAQ that the Risk Management Plan is being properly implemented.

All documents submitted pursuant to this condition shall include the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

C.17 Compliance Monitoring Plan - Failure to Take Response Steps [326 IAC 2-7-5][326 IAC 2-7-6] [326 IAC 1-6]

- (a) The Permittee is required to implement a compliance monitoring plan to ensure that reasonable information is available to evaluate its continuous compliance with applicable requirements. This compliance monitoring plan is comprised of:
- (1) This condition;
 - (2) The Compliance Determination Requirements in Section D of this permit;
 - (3) The Compliance Monitoring Requirements in Section D of this permit;
 - (4) The Record Keeping and Reporting Requirements in Section C (Monitoring Data Availability, General Record Keeping Requirements, and General Reporting Requirements) and in Section D of this permit; and
 - (5) A Compliance Response Plan (CRP) for each compliance monitoring condition of this permit. CRP's shall be submitted to IDEM, OAQ upon request and shall be subject to review and approval by IDEM, OAQ. The CRP shall be prepared within ninety (90) days after issuance of this permit by the Permittee and

maintained on site, and is comprised of :

- (A) Response steps that will be implemented in the event that compliance related information indicates that a response step is needed pursuant to the requirements of Section D of this permit; and
 - (B) A time schedule for taking such response steps including a schedule for devising additional response steps for situations that may not have been predicted.
- (b) For each compliance monitoring condition of this permit, appropriate response steps shall be taken when indicated by the provisions of that compliance monitoring condition. Failure to perform the actions detailed in the compliance monitoring conditions or failure to take the response steps within the time prescribed in the Compliance Response Plan, shall constitute a violation of the permit unless taking the response steps set forth in the Compliance Response Plan would be unreasonable.
- (c) After investigating the reason for the excursion, the Permittee is excused from taking further response steps for any of the following reasons:
- (1) The monitoring equipment malfunctioned, giving a false reading. This shall be an excuse from taking further response steps providing that prompt action was taken to correct the monitoring equipment.
 - (2) The Permittee has determined that the compliance monitoring parameters established in the permit conditions are technically inappropriate, has previously submitted a request for an administrative amendment to the permit, and such request has not been denied or;
 - (3) An automatic measurement was taken when the process was not operating; or
 - (4) The process has already returned to operating within "normal" parameters and no response steps are required.
- (d) Records shall be kept of all instances in which the compliance related information was not met and of all response steps taken. In the event of an emergency, the provisions of 326 IAC 2-7-16 (Emergency Provisions) requiring prompt corrective action to mitigate emissions shall prevail.

C.18 Actions Related to Noncompliance Demonstrated by a Stack Test [326 IAC 2-7-5] [326 IAC 2-7-6]

- (a) When the results of a stack test performed in conformance with Section C - Performance Testing, of this permit exceed the level specified in any condition of this permit, the Permittee shall take appropriate corrective actions. The Permittee shall submit a description of these corrective actions to IDEM, OAQ, within thirty (30) days of receipt of the test results. The Permittee shall take appropriate action to minimize emissions from the affected facility while the corrective actions are being implemented. IDEM, OAQ shall

notify the Permittee within thirty (30) days, if the corrective actions taken are deficient. The Permittee shall submit a description of additional corrective actions taken to IDEM, OAQ within thirty (30) days of receipt of the notice of deficiency. IDEM, OAQ reserves the authority to use enforcement activities to resolve noncompliant stack tests.

- (b) A retest to demonstrate compliance shall be performed within one hundred twenty (120) days of receipt of the original test results. Should the Permittee demonstrate to IDEM, OAQ that retesting in one-hundred and twenty (120) days is not practicable, IDEM, OAQ may extend the retesting deadline. Failure of the second test to demonstrate compliance with the appropriate permit conditions may be grounds for immediate revocation of the permit to operate the affected facility.

The documents submitted pursuant to this condition do not require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

C.19 Emission Statement [326 IAC 2-7-5(3)(C)(iii)][326 IAC 2-7-5(7)][326 IAC 2-7-19(c)][326 IAC 2-6]

- (a) The Permittee shall submit an annual emission statement certified pursuant to the requirements of 326 IAC 2-6, that must be received by July 1 of each year and must comply with the minimum requirements specified in 326 IAC 2-6-4. The annual emission statement shall meet the following requirements:
 - (1) Indicate actual emissions of criteria pollutants from the source, in compliance with 326 IAC 2-6 (Emission Reporting);
 - (2) Indicate actual emissions of other regulated pollutants from the source, for purposes of Part 70 fee assessment.
- (b) The annual emission statement covers the twelve (12) consecutive month time period starting January 1 and ending December 31. The annual emission statement must be submitted to:

Indiana Department of Environmental Management
Technical Support and Modeling Section, Office of Air Quality
100 North Senate Avenue
Indianapolis, Indiana 46204
- (c) The annual emission statement required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ on or before the date it is due.

C.20 Monitoring Data Availability [326 IAC 2-7-6(1)] [326 IAC 2-7-5(3)]

- (a) With the exception of performance tests conducted in accordance with Section C-Performance Testing, all observations, sampling, maintenance procedures, and record keeping, required as a condition of this permit shall be performed at all times the equipment is operating at normal representative conditions.
- (b) As an alternative to the observations, sampling, maintenance procedures, and record keeping of subsection (a) above, when the equipment listed in Section D of this permit is not operating, the Permittee shall either record the fact that the equipment is shut down or perform the observations, sampling, maintenance procedures, and record keeping that would otherwise be required by this permit.
- (c) If the equipment is operating but abnormal conditions prevail, additional observations and sampling should be taken with a record made of the nature of the abnormality.
- (d) If for reasons beyond its control, the operator fails to make required observations, sampling, maintenance procedures, or record keeping, reasons for this must be recorded.
- (e) At its discretion, IDEM may excuse such failure providing adequate justification is documented and such failures do not exceed five percent (5%) of the operating time in any quarter.
- (f) Temporary, unscheduled unavailability of staff qualified to perform the required observations, sampling, maintenance procedures, or record keeping shall be considered a valid reason for failure to perform the requirements stated in (a) above.

C.21 General Record Keeping Requirements [326 IAC 2-7-5(3)][326 IAC 2-7-6]

- (a) Records of all required monitoring data and support information shall be retained for a period of at least five (5) years from the date of monitoring sample, measurement, report, or application. These records shall be kept at the source location for a minimum of three (3) years and available upon the request of an IDEM, OAQ representative. The records may be stored elsewhere for the remaining two (2) years as long as they are available upon request. If the Commissioner makes a written request for records to the Permittee, the Permittee shall furnish the records to the Commissioner within a reasonable time.
- (b) Records of required monitoring information shall include, where applicable:
 - (1) The date, place, and time of sampling or measurements;
 - (2) The dates analyses were performed;
 - (3) The company or entity performing the analyses;
 - (4) The analytic techniques or methods used;

- (5) The results of such analyses; and
 - (6) The operating conditions existing at the time of sampling or measurement.
- (c) Support information shall include, where applicable:
- (1) Copies of all reports required by this permit;
 - (2) All original strip chart recordings for continuous monitoring instrumentation;
 - (3) All calibration and maintenance records;
 - (4) Records of preventive maintenance shall be sufficient to demonstrate that improper maintenance did not cause or contribute to a violation of any limitation on emissions or potential to emit. To be relied upon subsequent to any such violation, these records may include, but are not limited to: work orders, parts inventories, and operator's standard operating procedures. Records of response steps taken shall indicate whether the response steps were performed in accordance with the Compliance Response Plan required by Section C - Compliance Monitoring Plan - Failure to take Response Steps, of this permit, and whether a deviation from a permit condition was reported. All records shall briefly describe what maintenance and response steps were taken and indicate who performed the tasks.
- (d) All record keeping requirements not already legally required shall be implemented within ninety (90) days of permit issuance.

C.22 General Reporting Requirements [326 IAC 2-7-5(3)(C)]

- (a) To affirm that the source has met all the compliance monitoring requirements stated in this permit the source shall submit a Quarterly Compliance Monitoring Report. Any deviation from the requirements and the date(s) of each deviation must be reported.
- (b) The report required in (a) of this condition and reports required by conditions in Section D of this permit shall be submitted to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Quality
100 North Senate Avenue
Indianapolis, Indiana 46204
- (c) Unless otherwise specified in this permit, any notice, report, or other submission required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be

considered timely if received by IDEM, OAQ on or before the date it is due.

- (d) Unless otherwise specified in this permit, any quarterly report shall be submitted within thirty (30) days of the end of the reporting period.
- (e) All instances of deviations as described in Section B- Deviations from Permit Requirements Conditions must be clearly identified in such reports.
- (f) Any corrective actions or response steps taken as a result of each deviation must be clearly identified in such reports.
- (g) The first report shall cover the period commencing on the date of issuance of this permit and ending on the last day of the reporting period.

The documents submitted pursuant to this condition do not require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

Stratospheric Ozone Protection

C.23 Compliance with 40 CFR 82 and 326 IAC 22-1

Pursuant to 40 CFR 82 (Protection of Stratospheric Ozone), Subpart F, except as provided for motor vehicle air conditioners in Subpart B, the Permittee shall comply with the standards for recycling and emissions reduction:

- (a) Persons opening appliances for maintenance, service, repair, or disposal must comply with the required practices pursuant to 40 CFR 82.156.
- (b) Equipment used during the maintenance, service, repair, or disposal of appliances must comply with the standards for recycling and recovery equipment pursuant to 40 CFR 82.158.
- (c) Persons performing maintenance, service, repair, or disposal of appliances must be certified by an approved technician certification program pursuant to 40 CFR 82.161.

Retirement of Existing Operations

C.24 Retirement of Existing Operations [326 IAC 2-3]

Pursuant to 326 IAC 2-3, the Permittee shall permanently discontinue the operation of the following operations:

- (a) MFG 601 - - Stack 1-1 and Stack 1-2
 - (1) One (1) electrically heated glass melting furnace, identified as Unit ID # FURN 601, installed in 1978, exhausting through ID # 1-1.
 - (2) One (1) fiberglass manufacturing line consisting of forming, curing, and cooling

sections, identified as Unit ID # MFG 601, installed in 1978, operating at a rated heat input capacity of 30 million (MM) British thermal units (Btu) per hour, combusting natural gas, utilizing one (1) wet electrostatic precipitator for particulate control, and two (2) natural gas fired thermal oxidizers with a rated combined heat input capacity of 36 MMBtu per hour, exhausting through one (1) stack ID #1-2.

- (b) MFG 603 - - Stack 3-1 and Stack 3-2
 - (1) One (1) electrically heated glass melting furnace, identified as Unit ID # FURN 603, installed in 1978, exhausting through one (1) stack ID #3-1.
 - (2) One (1) fiberglass manufacturing line consisting of forming section, identified as Unit ID # MFG 603, installed in 1978, operating at a rated heat input capacity of 15 million (MM) British thermal units (Btu) per hour, combusting natural gas, utilizing two (2) wet scrubbers for particulate control, exhausting through one (1) stack ID #3-2.

- (c) MFG 605 - - Stack 5-1, Stack 5-2, Stack 5-3, Stack 5-4, and Stack 5-5
 - (1) One (1) natural gas-fired glass melting furnace, identified as Unit ID # FURN 605, installed in 1983, operating at a rated heat input capacity of 10 MMBtu per hour, utilizing a baghouse for particulate control and exhausting through one (1) stack ID #5-1.
 - (2) One (1) fiberglass manufacturing line consisting of forming, curing, and cooling sections, identified as Unit ID # MFG 605, installed in 1983, operating at a rated heat input capacity of 20 MMBtu per hour, combusting natural gas, exhausting through four (4) stacks ID #5-2, 5-3, 5-4, and 5-5.

- (d) Eight (8) storage silos, identified as Unit ID # SILO 01, SILO 02, SILO 03, SILO 04, SILO 05, SILO 06, SILO 07, and SILO 08, used to store limestone, dolomite, feldspar, borax, sand, soda ash, post consumer cullet, and a spare, respectively, each utilizing a baghouse for particulate control, each exhausting through stacks S/V ID #0-1 through 0-8, respectively.

- (e) One (1) batch raw material receiving bin, identified as Unit ID # RMH 02, three (3) day bins, identified as Unit ID # DB 01, DB 03, and DB 05, used to store raw materials for FURN 601, FURN 603, and FURN 605, respectively, and one (1) intermediate batch bin, identified as Unit ID #DB 02A, each utilizing a baghouse for particulate control, exhausting through stacks S/V ID # 0-10 through 0-15.

SECTION D.1 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

- (a) **FURN 602 - - Stack 2-1**
 One (1) gas-fired (with electric boost) glass melting furnace, identified as Unit ID # FURN 602, installed in 1983, operating at a rated heat input capacity of 30 MMBtu per hour, combusting natural gas, utilizing one (1) dry electrostatic precipitator for particulate control, exhausting through one (1) stack ID #2-1.
- (b) **MFG 602 - - Stack 2-2**
 One (1) fiberglass manufacturing line consisting of forming, curing, and cooling sections, identified as Unit ID # MFG 602, installed in 1983, operating at a rated heat input capacity of 40 MMBtu per hour, combusting natural gas, utilizing one (1) wet electrostatic precipitator for particulate control, and one (1) natural gas fired afterburner with a rated combined heat input capacity of 30 MMBtu per hour, exhausting through one (1) stack ID #2-2.

Emission Limitations and Standards [326 IAC 2-7-5(1)]

D.1.1 **General Provisions Relating to NSPS and Particulate Matter Emission Limitation [326 IAC 12] [40 CFR Part 60, Subpart A] [40 CFR 60.290, Subpart CC]**

- (a) The provisions of 40 CFR Part 60, Subpart A - General Provisions, which are incorporated by reference in 326 IAC 12-1, apply to the facilities described in this section except when otherwise specified in 40 CFR Part 60, Subpart CC.
- (b) Pursuant to 326 IAC 12 (40 CFR 60.290, Subpart CC) "Standard of Performance for Glass Manufacturing Plants", the particulate matter emissions from the one (1) gas-fired (with electric boost) glass melting furnace (FURN 602) shall be limited to 0.25 grams of particulate per kilogram of glass produced.

D.1.2 **Particulate Matter Emission Limitation [326 IAC 11-4-4]**

Pursuant to 326 IAC 11-4-4 (Fiberglass Insulation Manufacturing - Emission Limitation), emission limitations for particulate matter have been set forth in Indiana's State Implementation Plan (SIP) as follows:

Process/Facility	Max. Hourly Emissions (lbs/hour)	Max. Yearly Emissions (tons/yr)
MFG 602 forming + oven	33.27	145.7

D.1.3 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for the control devices described in Section D.1.

Compliance Determination Requirements

D.1.4 Testing Requirements [326 IAC 2-7-6(1),(6)]

The PM₁₀ testing on Unit ID # FURN 602 and Unit ID # MFG 602 shall be repeated at least once every two (2) years from the date of the most recent valid compliance demonstration, utilizing 40 CFR Part 60 Appendix A, Method 5E (Determination of Particulate Emissions from the Wool Fiberglass Insulation Manufacturing Industry) or other test methods as approved by the Commissioner.

In addition to these requirements, IDEM may require compliance testing when necessary to determine if the facility is in compliance.

D.1.5 Particulate Matter (PM)

The wet electrostatic precipitator (for MFG 602), and the dry electrostatic precipitator (for FURN 602) for PM control shall be in operation at all times when MFG 602, and FURN 602 are in operation and exhausting to the outside atmosphere.

Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

D.1.6 Visible Emissions Notations

- (a) Daily visible emission notations of MFG 602 stack exhaust (Stack 2-2) and FURN 602 (Stack 2-1) shall be performed during normal daylight operations when exhausting to the atmosphere. A trained employee shall record whether emissions are normal or abnormal.
- (b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.
- (c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.
- (d) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.
- (e) The Compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when an abnormal emission is observed.

D.1.7 Parametric Monitoring

- (a) The Permittee shall record the total secondary voltage across each of the wet electrostatic precipitators used in conjunction with the manufacturing line (MFG 602), at least once daily when the manufacturing line (MFG 602) are in operation. The Compliance Response Plan for these units shall establish the appropriate ranges and shall contain troubleshooting contingency and response steps for when the voltage reading is outside of the stated ranges for any one reading.
- (b) The Permittee shall record the total secondary voltage across the dry electrostatic precipitator used in conjunction with FURN 602, at least once daily when FURN 602 is in operation. The Compliance Response Plan for these units shall establish the appropriate ranges and shall contain troubleshooting contingency and response steps for when the voltage reading is outside of the stated ranges for any one reading.

The instruments used for determining the voltage shall comply with Section C - Pressure Gauge and other Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ, and shall be calibrated quarterly.

D.1.8 Electrostatic Precipitator Inspections

An inspection shall be performed each calendar quarter of all electrostatic precipitators controlling manufacturing line (MFG 602) and FURN 602.

D.1.9 Broken or Failed Electrostatic Precipitators Detection

In the event that electrostatic precipitators failure has been observed, the Permittee shall take appropriate response steps in accordance with its Compliance Response Plan.

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

D.1.10 Record Keeping Requirements

- (a) To document compliance with Condition D.1.6 - [Visible Emissions Notations](#), the Permittee shall maintain records of daily visible emission notations of the manufacturing lines (MFG 602 and FURN 602) stack exhausts.
- (b) To document compliance with Condition D.1.7 - [Parametric Monitoring](#), the Permittee shall maintain the following:
 - (1) Daily records of the following operational parameters during normal operation:

Daily secondary voltage readings for the electrostatic precipitators.
 - (2) Documentation of all response steps implemented, per event .

- (c) To document compliance with Condition D.1.8 - [Electrostatic Precipitator Inspections](#), the Permittee shall maintain records of the results of the inspections required under Condition D.1.8 - [Electrostatic Precipitator Inspections](#).
- (d) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

D.1.11 Reporting Requirements

A quarterly summary of the information to document compliance with Conditions D.1.1 - [General Provisions Relating to NSPS and Particulate Matter Emission Limitation](#), and D.1.2 - [Particulate Matter Emission Limitation](#), shall be submitted to the address listed in Section C - General Reporting Requirements, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported.

SECTION D.2 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Nine (9) fiberglass pipe insulation production lines consisting of nine (9) natural gas fired curing ovens, identified as Unit ID # LINE 3001 - 3009, respectively, each with a maximum heat input capacity of 5 MMBtu per hour, each exhausting through two (2) stacks ID # 7-2 and 7-3, 8-2 and 8-3, 9-2 and 9-3, 10-2 and 10-3, 11-2 and 11-3, 12-2 and 12-3, 13-2 and 13-3, 14-2 and 14-3, and 16-2 and 16-3, respectively, each with a trimming process utilizing a dust collector for particulate control, each exhausting through stack ID # 7-4, 8-4, 9-4, 10-4, 11-4, 12-4, 13-4, 14-4, and 16-4, respectively; LINE 3001-3005 and 3008 each constructed in April 1996, LINE 3006-3007 each constructed in December 1994, and LINE 3009 constructed October 1997.

Emission Limitations and Standards [326 IAC 2-7-5(1)]

D.2.1 General Provisions Relating to NSPS and Particulate Matter Limitation (PM) [326 IAC 12] [40 CFR Part 60, Subpart A] [40 CFR 60.680]

- (a) The provisions of 40 CFR Part 60, Subpart A - General Provisions, which are incorporated by reference in 326 IAC 12-1, apply to the facilities described in this section except when otherwise specified in 40 CFR Part 60, Subpart PPP.
- (b) Pursuant to 326 IAC 12 (40 CFR 40 CFR 60.680, Subpart PPP) "Standard of Performance for Wool Fiberglass Insulation Manufacturing Plants", the particulate matter emissions from the nine (9) fiberglass pipe insulation production lines shall be limited to 5.5 kg/Mg (11.0 lb/ton) of glass pulled.

D.2.2 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for these control devices.

Compliance Determination Requirements

D.2.3 Testing Requirements [326 IAC 2-7-6(1),(6)]

The PM test shall be repeated at least once every five (5) years from the date of the most recent valid compliance demonstration, utilizing 40 CFR Part 60 Appendix A, Method 5E (Determination of Particulate Emissions from the Wool Fiberglass Insulation Manufacturing Industry) or other test methods as approved by the Commissioner.

In addition to these requirements, IDEM may require compliance testing when necessary to determine if the facility is in compliance.

D.2.4 Particulate Matter (PM) Control

Each dust collector for PM control on the fiberglass trimming process shall be in operation at all times when the its fiberglass pipe insulation production line is in operation.

Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

D.2.5 Visible Emissions Notations

- (a) Daily visible emission notations of the nine (9) fiberglass pipe insulation production lines stack exhaust shall be performed during normal daylight operations when exhausting to the atmosphere. A trained employee shall record whether emissions are normal or abnormal.
- (b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.
- (c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.
- (d) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.
- (e) The Compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when an abnormal emission is observed.

D.2.6 Parametric Monitoring

The Permittee shall record the leak detector picoampere (pA) for each dust collector on the fiberglass trimming operation used in conjunction with the nine (9) fiberglass pipe insulation production lines, at least once daily when the nine (9) fiberglass production lines are in operation. Unless operated under conditions for which the Compliance Response Plan specifies otherwise, leak detectors will be operated at a maximum set point of 11 pA or a range established during a stack test. The Compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when the pA display reading is outside of the above mentioned range for any one reading.

D.2.7 Dust Collector Inspections

An inspection shall be performed each calendar quarter of all dust collectors controlling the nine (9) fiberglass pipe insulation production lines.

D.2.8 Broken or Failed Dust Collector Detection

In the event that dust collector failure has been observed the Permittee shall take appropriate response steps in accordance with its Compliance Response Plan.

Record Keeping and Reporting Requirement [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

D.2.9 Record Keeping Requirements

- (a) To document compliance with Condition D.2.4 - [Particulate Matter Control](#), the Permittee shall maintain records of daily visible emission notations of the nine (9) fiberglass pipe insulation production lines taken in accordance with Condition D.2.5 - [Visible Emissions Notations](#).
- (b) To document compliance with Condition D.2.6 - [Parametric Monitoring](#), the Permittee shall maintain the following:
 - (1) Daily records of picoampere readings.
 - (2) Documentation of all response steps implemented, per event.
- (c) To document compliance with Condition D.2.7 - [Dust Collector Inspections](#), the Permittee shall maintain records of the results of the inspections required under Condition D.2.7 - [Dust Collector Inspections](#).
- (d) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

D.2.10 Reporting Requirements

A quarterly summary of the information to document compliance with Condition D.2.1 - [Provisions Relating to NSPS and Particulate Matter Limitation](#), shall be submitted to the address listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported.

SECTION D.3 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Raw Material and Handling Systems

- (1) The nominal capacities of these units have been classified as confidential information.

Raw Material and Handling Systems			
Emission Unit	Emission Unit ID	Stack ID	Control Device *
Silica sand storage silos	Silo61	6-1	Baghouse
Nepheline Syenite storage silos	Silo62	6-2	Baghouse
Soda ash storage silos	Silo63	6-3	Baghouse
Limestone storage silo	Silo64	6-4	Baghouse
Dolomite storage silo	Silo65	6-5	Baghouse
Minor ingredient storage silo	Silo66	6-6	Baghouse
Spare storage silo	Silo67	6-7	Baghouse
Borax storage silo	Silo69	6-9	Baghouse
CNSMR cullet storage silo	Silo612	6-12	Baghouse
Knauf cullet storage silo	Silo613	6-13	Baghouse
Raw material unloader	RMUNLDR616	6-16	Baghouse
Gathering belt/Weigh Scales	GTHRNGBLT617	6-17	Baghouse
Batch mixer/Check Scale	BMXR618	6-18	Baghouse
611 Furnace day bins	DB619	6-19	Baghouse
Knauf cullet handling	KCHNDLNG620	6-20	--
Resin unloading	RUNLDNG626	6-26	--
Binder storage	BSTG627	6-27	--
Binder mixing	BMXG	6-28	--
* Controlled emissions exhaust inside the building.			

- (2) Thirty eight (38) binder mixing and miscellaneous storage tanks, ranging from 50 gallons to 15,000 gallons.

Volatile organic compound (VOC) emissions from these storage tanks vent inside the binder building and are then ducted to the inlet of the wet electrostatic precipitator (ESP) (Stack 6-22).

Emission Limitations and Standards [326 IAC 2-7-5(1)]

D.3.1 Particulate Matter (PM) PSD Minor Limits [326 IAC 2-2]

In order to render the 326 IAC 2-2 (PSD) requirements not applicable, the Permittee shall not exceed the following emission rates:

Emission Unit ID	Stack ID	PTE (pounds/hour)
Silo61	6-1	0.014
Silo62	6-2	0.0042
Silo63	6-3	0.0059
Silo64	6-4	0.00168
Silo65	6-5	0.0042
Silo69	6-9	0.0059
RMUNLDR616	6-16	0.24
GTHRNGBLT617	6-17	0.051
BMXR618	6-18	1.88
DB619	6-19	0.031

Therefore, the requirements of 326 IAC 2-2 shall not apply to the expansion.

Compliance with these PM and PM₁₀ limits satisfies the allowable particulate emission rates specified in 326 IAC 6-3 (Process Operations).

D.3.2 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for each baghouse, used to control the particulate emissions from the following:

Emission Units	
Silo61	Silo69
Silo62	Silo612
Silo63	Silo613
Silo64	RMUNLDR616
Silo65	GTHRNGBLT617
Silo66	BMXR618
Silo67	DB619

Compliance Determination Requirements

D.3.3 Baghouse Operation

The baghouses for PM control shall be in operation at all times when the following are in operation.

Emission Units	
Silo61	Silo69
Silo62	Silo612
Silo63	Silo613
Silo64	RMUNLDR616
Silo65	GTHRNGBLT617
Silo66	BMXR618
Silo67	DB619

Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

D.3.4 Bag Leak Detection System (BLDS)

(a) The Permittee shall install and operate continuous bag leak detection systems (BLDS) for the following:

Emission Unit ID	Stack ID	Control Device
Silo61	6-1	Baghouse
Silo62	6-2	Baghouse
Silo63	6-3	Baghouse
Silo64	6-4	Baghouse
Silo65	6-5	Baghouse
Silo66	6-6	Baghouse
Silo67	6-7	Baghouse
Silo69	6-9	Baghouse
Silo612	6-12	Baghouse
Silo613	6-13	Baghouse
RMUNLDR616	6-16	Baghouse
GTHRNGBLT617	6-17	Baghouse
BMXR618	6-18	Baghouse
DB619	6-19	Baghouse

The bag leak detection systems shall meet the following requirements:

- (i) The bag leak detection systems must be certified by the manufacturer to be capable of detecting particulate matter emissions.
 - (ii) The bag leak detection system sensor must provide output of relative particulate matter loading.
 - (iii) The bag leak detection system must be equipped with an alarm system that will alarm when an increase in relative particulate loading is detected over a preset level.
 - (iv) The bag leak detection system shall be installed and operated in a manner consistent with available written guidance from the U.S. Environmental Protection Agency or, in the absence of such written guidance, the manufacturer's written specifications and recommendations for installation, operation, and adjustment of the system.
 - (v) The initial adjustment of the system shall, at a minimum, consist of establishing the baseline output by adjusting the sensitivity (range) and the averaging period of the device, and establishing the alarm set points and the alarm delay time.
 - (vi) In no event shall the sensitivity be increased by more than 100 percent or decreased by more than 50 percent over a 365 day period unless such adjustment follows a complete baghouse inspection, which demonstrates the baghouse is in good operating condition.
 - (vii) The bag detector must be installed downstream of the baghouses.
- (b) In the event of a bag leak detection system alarm:
- (i) For multi-compartment units, the affected compartments will be shut down immediately until the failed units have been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the emergency provisions of this permit (Section C- Emergency Provisions).
 - (ii) Within eight (8) business hours of the determination of failure, reasonable response steps according to the timetable described in the Compliance Response Plan shall be initiated.

For any failure with corresponding reasonable response steps and timetable not described in the Compliance Response Plan, reasonable response steps shall be devised within eight (8) business hours of discovery of the failure and shall include a timetable for completion. Failure to take reasonable response steps in accordance with Section C - Compliance Response Plan - Preparation, Implementation, Records and Reports, shall be considered a deviation from this permit.

- (c) If operations continue after bag failure is observed and it will be 10 days or more after the failure is observed before the failed units will be repaired or replaced, the Permittee shall promptly notify the IDEM, OAQ of the expected date the failed units will be repaired or replaced.

The notification shall also include the status of the applicable compliance monitoring parameters with respect to normal, and the results of any response actions taken up to the time of notification.

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

D.3.5 Record Keeping Requirements

- (a) To document compliance with Condition D.3.2 - Preventive Maintenance Plan, the Permittee shall maintain records of any additional inspections prescribed by the Preventive Maintenance Plan and make such records available upon request to IDEM, OAQ, and the US EPA.
- (b) To document compliance with Condition D.3.4 - Bag Leak Detection System (BLDS), the Permittee shall maintain records of explanation of the corrective actions taken, when the cause of the exceedance was corrected, and make such records available upon request to IDEM, OAQ, and the US EPA.
- (c) Records necessary to demonstrate compliance shall be available within 30 days of the end of each compliance period.
- (d) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

SECTION D.4 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

FURNACE 611 - - Stack 6-21

One (1) electrically heated glass melting furnace, identified as FURN 611.

This furnace is common to:

- (1) 611 FORMING,
- (2) 612 FORMING,
- (3) 613 FORMING,
- (4) 613 CURING/COOLING,
- (5) 614 FORMING, and
- (6) 614 CURING/COOLING.

- The nominal capacity of FURN 611 is 300 tons of molten glass per day.
- The particulate emissions from FURN 611 are controlled by a baghouse, identified as FURN 611 Baghouse.
- Controlled emissions from FURN 611 exhaust through a stack identified as Stack 6-21.

Emission Limitations and Standards [326 IAC 2-7-5(1)]

D.4.1 PSD Minor Limits [326 IAC 2-2]

In order to render the 326 IAC 2-2 (PSD) requirements not applicable, the following conditions shall apply to the FURN 601 (Stack 6-21):

- (a) The PM and PM₁₀ emissions shall not exceed 2.02 pounds per hour.
PM₁₀ includes filterable and condensable PM₁₀.
- (b) The CO emissions shall not exceed 0.75 pounds per hour.

Therefore, the requirements of 326 IAC 2-2 shall not apply to the expansion.

D.4.2 NO_x LAER and NO₂ PSD BACT Requirements [326 IAC 2-3] [326 IAC 2-2]

Pursuant to 326 IAC 2-3 (Emission Offset) and 326 IAC 2-2 (Prevention of Significant Deterioration), the Permittee shall comply with the following requirements:

- (a) FURN 611 shall be powered by electricity only.
- (b) FURN 611 shall not produce greater than 300 tons per day of molten glass.

D.4.3 NO_x Emission Offset [326 IAC 2-3]

Pursuant to 326 IAC 2-3 (Emission Offset), the Permittee shall permanently acquire and offset 90.97 tons of NO_x emissions from PSI Energy, Noblesville Generating Station.

These NO_x emissions credits fulfilled the requirements of Emission Offset under 326 IAC 2-3.

D.4.4 Particulate Matter Emission Limitations [326 IAC 11-4-2]

Pursuant to 326 IAC 11-4-2(a)(2), the particulate matter content from FURN 611 (Stack 6-21) shall not exceed 0.25 grain per dry standard cubic feet.

D.4.5 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for the FURN 611 Baghouse.

Compliance Determination Requirements

D.4.6 Baghouse Operation [326 IAC 2-7-6(6)] [40 CFR Part 63, Subpart NNN]

Except as otherwise provided by statute or rule or in this permit, the FURN 611 Baghouse for particulate control shall be in operation and control emissions at all times when FURN 611 is in operation and exhausting to the outside atmosphere.

D.4.7 Testing Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-6(6)] [326 IAC 2-1.1-11] [40 CFR Part 63, Subpart NNN]

(a) Within sixty (60) day from achieving maximum capacity of the proposed expansion, but no later than one hundred and eighty (180) days after initial startup of the FURN 611, the Permittee shall conduct performance tests on Stack 6-21 for the following:

- (1) PM/PM₁₀ - - to verify compliance with the PM /PM₁₀ limitations in Condition D.4.1 - PSD Minor Limits, Condition D.4.4 - Particulate Matter Emission Limitations, and 40 CFR Part 63, Subpart NNN;
- (2) CO - - to verify compliance with the CO PSD Minor Limits in Condition D.4.1 - PSD Minor Limits;

using the procedures set forth in 40 CFR 60, Appendix A; 40 CFR Part 51, Appendix M; or other methods as approved by the Commissioner

- (b) The PM/PM₁₀ test shall be repeated at least once every two (2) years from the date of the most recent valid compliance demonstration.

PM₁₀ includes filterable and condensible PM₁₀.
- (c) The CO test shall be repeated at least once every five (5) years from the date of the most recent valid compliance demonstration.
- (d) Testing shall be conducted in accordance with Section C - Performance Testing.

Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

D.4.8 Bag Leak Detection System [40 CFR Part 63, Subpart NNN]

- (a) Pursuant to 40 CFR Part 63, Subpart NNN, the Permittee shall install, calibrate, maintain, and continuously operate a bag leak detection system for the FURN 611 Baghouse.
- (b) Refer to Condition D.4.12 - NESHAP Wool Fiberglass Manufacturing Requirements - of this permit for additional applicable compliance monitoring of the FURN 611 Baghouse.

D.4.9 Visible Emissions Notations

- (a) Daily visible emission notations of FURN 611 (Stack 6-21) shall be performed during normal daylight operations when exhausting to the atmosphere.

A trained employee shall record whether emissions are normal or abnormal.
- (b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.
- (c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.
- (d) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.
- (e) The Compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when an abnormal emission is observed. Failure to take response steps in accordance with Section C - Compliance Response Plan - Preparation, Implementation, Records, and Reports, shall be considered a deviation from this permit.

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

D.4.10 Record Keeping Requirements

- (a) To document compliance with Condition D.4.3 - NOx LAER Requirements, the Permittee shall maintain records of the actual molten glass produced and make such records available upon request to IDEM, OAQ, and the US EPA.
- (b) To document compliance with Condition D.4.5- Preventive Maintenance Plan, the Permittee shall maintain records of any additional inspections prescribed by the Preventive Maintenance Plan and make such records available upon request to IDEM, OAQ, and the US EPA.
- (c) To document compliance with Condition D.4.9 - Visible Emissions Notations, the Permittee shall maintain records of daily visible emission notations of the baghouse exhaust and make such records available upon request to IDEM, OAQ, and the US EPA.
- (d) Records necessary to demonstrate compliance shall be available within 30 days of the end of each compliance period.
- (e) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

National Emission Standards for Hazardous Air Pollutants (NESHAP) Requirements [326 IAC 2-7-5(1)]

D.4.11 General Provisions Relating to NESHAP for Wool Fiberglass Manufacturing [326 IAC 20-1] [40 CFR Part 63, Subpart A]

Pursuant to 40 CFR 63.1380, the Permittee shall comply with the provisions of 40 CFR Part 63, Subpart A – General Provisions, which are incorporated by reference as 326 IAC 20-1-1 for the FURN 611 as specified in Appendix A of 40 CFR Part 63, Subpart NNN in accordance with the schedule in 40 CFR 63 Subpart NNN.

D.4.12 NESHAP Wool Fiberglass Manufacturing Requirements [40 CFR Part 63, Subpart NNN]

Pursuant to CFR Part 63, Subpart NNN the Permittee shall comply with the provisions of 40 CFR Part 63.1380, for FURN 611, as specified as follows:

Sec. 63.1380

Applicability.

- (a) Except as provided in paragraphs (b) and (c) of this section, the requirements of this subpart apply to the owner or operator of each wool fiberglass manufacturing facility that is a major source or is located at a facility that is a major source.
- (b) The requirements of this subpart apply to emissions of hazardous air pollutants (HAPs), as measured according to the methods and procedures in this subpart, emitted from the following new and existing sources at a wool fiberglass manufacturing facility subject to this subpart:
 - (1) Each new and existing glass-melting furnace located at a wool fiberglass manufacturing facility;

Sec. 63.1381 Definitions.

Terms used in this subpart are defined in the Clean Air Act, in Sec. 63.2, or in this section as follows:

Bag leak detection system means systems that include, but are not limited to, devices using triboelectric, light scattering, and other effects to monitor relative or absolute particulate matter (PM) emissions.

Bonded means wool fiberglass to which a phenol-formaldehyde binder has been applied.

Building insulation means bonded wool fiberglass insulation, having a loss on ignition of less than 8 percent and a density of less than 32 kilograms per cubic meter (kg/m³) (2 pounds per cubic foot [lb/ft³]).

Cold top electric furnace means an all-electric glass-melting furnace that operates with a temperature of 120 deg. C (250 deg. F) or less as measured at a location 46 to 61 centimeters (18 to 24 inches) above the molten glass surface.

Flame attenuation means a process used to produce wool fiberglass where molten glass flows by gravity from melting furnaces, or pots, to form filaments that are drawn down and attenuated by passing in front of a high-velocity gas burner flame.

Glass-melting furnace means a unit comprising a refractory vessel in which raw materials are charged, melted at high temperature, refined, and conditioned to produce molten glass. The unit includes foundations, superstructure and retaining walls, raw material charger systems, heat exchangers, melter cooling system, exhaust system, refractory brick work, fuel supply and electrical boosting equipment, integral control systems and instrumentation, and appendages for conditioning and distributing molten glass to forming processes. The forming apparatus, including flow channels, is not considered part of the glass-melting furnace.

Glass pull rate means the mass of molten glass that is produced by a single glass-melting furnace or that is used in the manufacture of wool fiberglass at a single manufacturing line in a specified time period. Hazardous Air Pollutant (HAP) means any air pollutant listed in or pursuant to section 112(b) of the Clean Air Act.

Heavy-density product means bonded wool fiberglass insulation manufactured on a flame attenuation manufacturing line and having a loss on ignition of 11 to 25 percent and a density of 8 to 48 kg/m³ (0.5 to 3 lb/ft³).

Incinerator means an enclosed air pollution control device that uses controlled flame combustion to convert combustible materials to noncombustible gases.

Loss on ignition (LOI) means the percent decrease in weight of wool fiberglass after it has been ignited. The LOI is used to monitor the weight percent of binder in wool fiberglass.

Manufacturing line means the manufacturing equipment for the production of wool fiberglass that consists of a forming section where molten glass is fiberized and a

fiberglass mat is formed and which may include a curing section where binder resin in the mat is thermally set and a cooling section where the mat is cooled.

New source means any affected source the construction or reconstruction of which is commenced after March 31, 1997.

Pipe product means bonded wool fiberglass insulation manufactured on a flame attenuation manufacturing line and having a loss on ignition of 8 to 14 percent and a density of 48 to 96 kg/m³ (3 to 6 lb/ft³).

Rotary spin means a process used to produce wool fiberglass building insulation by forcing molten glass through numerous small orifices in the side wall of a spinner to form continuous glass fibers that are then broken into discrete lengths by high-velocity air flow. Any process used to produce bonded wool fiberglass building insulation by a process other than flame attenuation is considered rotary spin.

Wool fiberglass means insulation materials composed of glass fibers made from glass produced or melted at the same facility where the manufacturing line is located.

Wool fiberglass manufacturing facility means any facility manufacturing wool fiberglass on a rotary spin manufacturing line or on a flame attenuation manufacturing line.

Sec. 63.1382 Emission standards

(a) Emission limits--

(1) Glass-melting furnaces.

On and after the date the initial performance test is completed or required to be completed under Sec. 63.7 of this part, whichever date is earlier, the owner or operator shall not discharge or cause to be discharged into the atmosphere in excess of 0.25 kilogram (kg) of particulate matter (PM) per megagram (Mg) (0.5 pound [lb] of PM per ton) of glass pulled for each new or existing glass-melting furnace.

(b) Operating limits. On and after the date on which the performance test required to be conducted by Secs. 63.7 and 63.1384 is completed, the owner or operator must operate all affected control equipment and processes according to the following requirements.

(1)(i) The owner or operator must initiate corrective action within 1 hour of an alarm from a bag leak detection system and complete corrective actions in a timely manner according to the procedures in the operations, maintenance, and monitoring plan.

(ii) The owner or operator must implement a Quality Improvement Plan (QIP) consistent with the compliance assurance monitoring provisions of 40 CFR part 64, subpart D when the bag leak detection system alarm is sounded for more than 5 percent of the total operating time in a 6-month block reporting period.

(5)(i) The owner or operator must initiate corrective action within 1 hour when the average glass pull rate of any 4-hour block period for glass melting furnaces equipped with continuous glass pull rate monitors, or daily glass

pull rate for glass melting furnaces not so equipped, exceeds the average glass pull rate established during the performance test as specified in Sec. 63.1384, by greater than 20 percent and complete corrective actions in a timely manner according to the procedures in the operations, maintenance, and monitoring plan.

- (ii) The owner or operator must implement a QIP consistent with the compliance assurance monitoring provisions of 40 CFR part 64, subpart D when the glass pull rate exceeds, by more than 20 percent, the average glass pull rate established during the performance test as specified in Sec. 63.1384 for more than 5 percent of the total operating time in a 6-month block reporting period.
- (iii) The owner or operator must operate each glass-melting furnace such that the glass pull rate does not exceed, by more than 20 percent, the average glass pull rate established during the performance test as specified in Sec. 63.1384 for more than 10 percent of the total operating time in a 6-month block reporting period.

Sec. 63.1383 Monitoring requirements.

On and after the date on which the performance test required to be conducted by Secs. 63.7 and 63.1384 is completed, the owner or operator must monitor all affected control equipment and processes according to the following requirements.

- (a) The owner or operator of each wool fiberglass manufacturing facility must prepare for each glass-melting furnace, rotary spin manufacturing line, and flame attenuation manufacturing line subject to the provisions of this subpart, a written operations, maintenance, and monitoring plan. The plan must be submitted to the Administrator for review and approval as part of the application for a part 70 permit. The plan must include the following information:
 - (1) Procedures for the proper operation and maintenance of process modifications and add-on control devices used to meet the emission limits in Sec. 63.1382;
 - (2) Procedures for the proper operation and maintenance of monitoring devices used to determine compliance, including quarterly calibration and certification of accuracy of each monitoring device according to the manufacturers's instructions; and
 - (3) Corrective actions to be taken when process parameters or add-on control device parameters deviate from the limit(s) established during initial performance tests.
- (b)(1) Where a baghouse is used to control PM emissions from a glass-melting furnace, the owner or operator shall install, calibrate, maintain, and continuously operate a bag leak detection system.
 - (i) The bag leak detection system must be certified by the manufacturer to be capable of detecting PM emissions at concentrations of 10 milligrams per actual cubic meter (0.0044 grains per actual cubic foot) or less.

- (ii) The bag leak detection system sensor must produce output of relative PM emissions.
- (iii) The bag leak detection system must be equipped with an alarm system that will sound automatically when an increase in relative PM emissions over a preset level is detected and the alarm must be located such that it can be heard by the appropriate plant personnel.
- (iv) For positive pressure fabric filter systems, a bag leak detection system must be installed in each baghouse compartment or cell.

If a negative pressure or induced air baghouse is used, the bag leak detection system must be installed downstream of the baghouse. Where multiple bag leak detection systems are required (for either type of baghouse), the system instrumentation and alarm may be shared among the monitors.

- (v) A triboelectric bag leak detection system shall be installed, operated, adjusted, and maintained in a manner consistent with the U.S. Environmental Protection Agency guidance, "Fabric Filter Bag Leak Detection Guidance" (EPA-454/R-98-015, September 1997). Other bag leak detection systems shall be installed, operated, adjusted, and maintained in a manner consistent with the manufacturer's written specifications and recommendations.
- (vi) Initial adjustment of the system shall, at a minimum, consist of establishing the baseline output by adjusting the range and the averaging period of the device and establishing the alarm set points and the alarm delay time.
- (vii) Following the initial adjustment, the owner or operator shall not adjust the range, averaging period, alarm setpoints, or alarm delay time except as detailed in the approved operations, maintenance, and monitoring plan required under paragraph (a) of this section. In no event shall the range be increased by more than 100 percent or decreased more than 50 percent over a 365-day period unless a responsible official as defined in Sec. 63.2 of the general provisions in subpart A of this part certifies that the baghouse has been inspected and found to be in good operating condition.

- (2) The operations, maintenance, and monitoring plan required by paragraph (a) of this section must specify corrective actions to be followed in the event of a bag leak detection system alarm. Example corrective actions that may be included in the plan include the following:
 - (i) Inspecting the baghouse for air leaks, torn or broken bags or filter media, or any other conditions that may cause an increase in emissions.
 - (ii) Sealing off defective bags or filter media.

- (iii) Replacing defective bags or filter media, or otherwise repairing the control device.
 - (iv) Sealing off a defective baghouse compartment.
 - (v) Cleaning the bag leak detection system probe, or otherwise repairing the bag leak detection system.
 - (vi) Shutting down the process producing the particulate emissions.
- (f)(1) The owner or operator of an existing glass-melting furnace equipped with continuous glass pull rate monitors must monitor and record the glass pull rate on an hourly basis. For glass-melting furnaces that are not equipped with continuous glass pull rate monitors, the glass pull rate must be monitored and recorded once per day.
- (2) On any new glass-melting furnace, the owner or operator must install, calibrate, and maintain a continuous glass pull rate monitor that monitors and records on an hourly basis the glass pull rate.

Sec. 63.1384 Performance test requirements.

- (a) The owner or operator subject to the provisions of this subpart shall conduct a performance test to demonstrate compliance with the applicable emission limits in Sec. 63.1382.

Compliance is demonstrated when the emission rate of the pollutant is equal to or less than each of the applicable emission limits in Sec. 63.1382.

The owner or operator shall conduct the performance test according to the procedures in 40 CFR part 63, subpart A and in this section.

- (1) All monitoring systems and equipment must be installed, operational, and calibrated prior to the performance test.
- (2) Unless a different frequency is specified in this section, the owner or operator must monitor and record process and/or add-on control device parameters at least every 15 minutes during the performance tests. The arithmetic average for each parameter must be calculated using all of the recorded measurements for the parameter.
- (3) During each performance test, the owner or operator must monitor and record the glass pull rate for each glass-melting furnace and, if different, the glass pull rate for each rotary spin manufacturing line and flame attenuation manufacturing line. Record the glass pull rate every 15 minutes during any performance test required by this subpart and determine the arithmetic average of the recorded measurements for each test run and calculate the average of the three test runs.
- (4) The owner or operator shall conduct a performance test for each existing and new glass-melting furnace.

- (b) To determine compliance with the PM emission limit for glass-melting furnaces, use the following equation:

$$E = \frac{C \times Q \times K_1}{P} \quad (\text{Equation 1})$$

Where:

- E = Emission rate of PM, kg/Mg (lb/ton) of glass pulled;
C = Concentration of PM, g/dscm (gr/dscf);
Q = Volumetric flow rate of exhaust gases, dscm/h (dscf/h);
K₁ = Conversion factor, 1 kg/1,000 g (1 lb/7,000 gr); and
P = Average glass pull rate, Mg/h (tons/h).

Sec. 63.1385 Test methods and procedures.

- (a) The owner or operator shall use the following methods to determine compliance with the applicable emission limits:
- (1) Method 1 (40 CFR part 60, appendix A) for the selection of the sampling port location and number of sampling ports;
 - (2) Method 2 (40 CFR part 60, appendix A) for volumetric flow rate;
 - (3) Method 3 or 3A (40 CFR part 60, appendix A) for O₂ and CO₂ for diluent measurements needed to correct the concentration measurements to a standard basis;
 - (4) Method 4 (40 CFR part 60, appendix A) for moisture content of the stack gas;
 - (5) Method 5 (40 CFR part 60, appendix A) for the concentration of PM. Each run shall consist of a minimum run time of 2 hours and a minimum sample volume of 60 dry standard cubic feet (dscf). The probe and filter holder heating system may be set to provide a gas temperature no greater than 177 plus-minus 14 deg. C (350 plus-minus 25 deg. F);
 - (10) An alternative method, subject to approval by the Administrator.
- (b) Each performance test shall consist of 3 runs. The owner or operator shall use the average of the three runs in the applicable equation for determining compliance.

Sec. 63.1386 Notification, recordkeeping, and reporting requirements.

- (a) Notifications.
As required by Sec. 63.9(b) through (h) of this part, the owner or operator shall submit the following written initial notifications to the Administrator:
- (4) Notification of intention to construct a new major source or reconstruct a major source; of the date construction or reconstruction commenced; of the anticipated date of startup; of the actual date of startup, where the initial startup of a new or reconstructed source occurs after June 14,

2002, and for which an application for approval or construction or reconstruction is required (See Sec. 63.9(b)(4) and (5) of this part);

- (5) Notification of special compliance obligations;
 - (6) Notification of performance test; and
 - (7) Notification of compliance status.
- (b) **Performance test report.**
As required by Sec. 63.10(d)(2) of the general provisions, the owner or operator shall report the results of the initial performance test as part of the notification of compliance status required in paragraph (a)(7) of this section.
- (c) **Startup, shutdown, and malfunction plan and reports.**
- (1) The owner or operator shall develop and implement a written plan as described in Sec. 63.6(e)(3) of this part that contains specific procedures to be followed for operating the source and maintaining the source during periods of startup, shutdown, and malfunction and a program of corrective action for malfunctioning process modifications and control systems used to comply with the standard. In addition to the information required in Sec. 63.6(e)(3), the plan shall include:
 - (i) Procedures to determine and record the cause of the malfunction and the time the malfunction began and ended;
 - (ii) Corrective actions to be taken in the event of a malfunction of a control device or process modification, including procedures for recording the actions taken to correct the malfunction or minimize emissions; and
 - (iii) A maintenance schedule for each control device and process modification that is consistent with the manufacturer's instructions and recommendations for routine and long-term maintenance.
 - (2) The owner or operator shall also keep records of each event as required by Sec. 63.10(b) of this part and record and report if an action taken during a startup, shutdown, or malfunction is not consistent with the procedures in the plan as described in Sec. 63.10(e)(3)(iv) of this part.
- (d) **Recordkeeping.**
- (1) As required by Sec. 63.10(b) of this part, the owner or operator shall maintain files of all information (including all reports and notifications) required by the general provisions and this subpart:
 - (i) The owner or operator must retain each record for at least 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. The most

recent 2 years of records must be retained at the facility. The remaining 3 years of records may be retained off site;

- (ii) The owner or operator may retain records on microfilm, on a computer, on computer disks, on magnetic tape, or on microfiche; and
 - (iii) The owner or operator may report required information on paper or on a labeled computer disk using commonly available and EPA-compatible computer software.
- (2) In addition to the general records required by Sec. 63.10(b)(2) of this part, the owner or operator shall maintain records of the following information:
- (i) Any bag leak detection system alarms, including the date and time of the alarm, when corrective actions were initiated, the cause of the alarm, an explanation of the corrective actions taken, and when the cause of the alarm was corrected;
 - (ix) Glass pull rate, including any period when the pull rate exceeded the average pull rate established during the performance test by more than 20 percent, the date and time of the exceedance, when corrective actions were initiated, the cause of the exceedance, an explanation of the corrective actions taken, and when the cause of the exceedance was corrected.
- (e) Excess emissions report.**
As required by Sec. 63.10(e)(3)(v) of this part, the owner or operator shall report semiannually if measured emissions are in excess of the applicable standard or a monitored parameter deviates from the levels established during the performance test. The report shall contain the information specified in Sec. 63.10(c) of this part as well as the additional records required by the recordkeeping requirements of paragraph (d) of this section. When no deviations have occurred, the owner or operator shall submit a report stating that no excess emissions occurred during the reporting period.

SECTION D.5 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

FORMING - - Stack 6-22

- (1) **611 FORMING**
One (1) fiberglass forming section, identified as 611 FORMING, utilizing natural gas for fiberization. Products formed in 611 FORMING are ready for packaging.
- The nominal capacity of 611 FORMING has been classified as confidential information.
 - The particulate emissions from 611 FORMING are controlled by a wet electrostatic precipitator (ESP). This wet ESP is common to all the forming sections.
 - Controlled emissions from 611 FORMING exhaust through a stack identified as Stack 6-22.
- (2) **612 FORMING**
One (1) fiberglass forming section, identified as 612 FORMING, utilizing natural gas for fiberization. Products formed in 612 FORMING are ready for packaging.
- The nominal capacity of 612 FORMING has been classified as confidential information.
 - The particulate emissions from 612 FORMING are controlled by a wet electrostatic precipitator (ESP) This wet ESP is common to all the forming sections.
 - Controlled emissions from 612 FORMING exhaust through a stack identified as Stack 6-22.
- (3) **613 FORMING**
One (1) fiberglass forming section, identified as 613 FORMING, utilizing natural gas for fiberization. Products formed in 613 FORMING are routed to the 613 CURING/COOLING.
- The nominal capacity of 613 FORMING has been classified as confidential information.
 - The particulate emissions from 613 FORMING are controlled by a wet electrostatic precipitator (ESP) This wet ESP is common to all the forming sections.
 - Controlled emissions from 613 FORMING exhaust through a stack identified as Stack 6-22.

(4) 614 FORMING

One (1) fiberglass forming section, identified as 614 FORMING, utilizing natural gas for fiberization. Products formed in 614 FORMING are routed to the 614 CURING/COOLING.

- The nominal capacity of 614 FORMING has been classified as confidential information.
- The particulate emissions from 614 FORMING are controlled by a wet electrostatic precipitator (ESP). This wet ESP is common to all the forming sections.
- Controlled emissions from 614 FORMING exhaust through a stack identified as Stack 6-22.

CURING/COOLING - - Stack 6-29

(5) 613 CURING/COOLING

One (1) fiberglass curing/cooling section, identified as 613 CURING/COOLING, consisting of natural gas fired curing oven(s), duct burners, and edge coat dryer burner.

- The nominal capacity of 613 CURING/COOLING has been classified as confidential information.
- The volatile organic compound (VOC), hazardous air pollutants (HAPs) and condensable particulate emissions from 613 CURING/COOLING are controlled by two (2) regenerative thermal oxidizers (RTOs), each rated at 2 million Btu per hour.
- The NOx emissions from each curing oven, duct burner and edge coat dryer of 613 CURING/COOLING are reduced by low NOx burners.
- Controlled emissions from 613 CURING/COOLING exhaust through a stack identified as Stack 6-29.

(6) 614 CURING/COOLING

One (1) fiberglass curing/cooling section, identified as 614 CURING/COOLING, consisting of natural gas fired curing oven(s) and duct burners.

- The nominal capacity of 614 CURING/COOLING has been classified as confidential information.
- The volatile organic compound (VOC), hazardous air pollutants (HAPs), and condensable particulate emissions from 614 CURING/COOLING are controlled by the same two (2) regenerative thermal oxidizers (RTOs), each rated at 2 million Btu per hour, that control VOC emissions from 613 CURING/COOLING.
- The NOx emissions from each curing oven and duct burner of 614 CURING/COOLING are reduced by low NOx burners.
- Controlled emissions from 614 CURING/COOLING exhaust through a stack identified as Stack 6-29.

Emission Limitations and Standards [326 IAC 2-7-5(1)]

D.5.1 PSD Minor Limits [326 IAC 2-2]

In order to render the 326 IAC 2-2 (PSD) requirements not applicable, the following conditions shall apply to the forming sections (Stack 6-22) and curing/cooling sections (Stack 6-29) combined:

- (a) The PM and PM₁₀ emissions after control shall not exceed 4.4 pounds per ton of glass pulled and 55.0 pounds per hour.

PM₁₀ includes filterable and condensible PM₁₀.

Compliance with these PM and PM₁₀ limits satisfies the allowable particulate emission rates specified in 326 IAC 6-3 (Process Operations).

- (b) The CO emissions shall not exceed 52.5 pounds per hour.
- (c) The SO₂ emissions shall not exceed 2.5 pounds per hour.
- (d) The molten glass to be formed, cured and cooled by MFG 611 shall not exceed 107,310 tons of molten glass per 12-consecutive month period, with compliance determined at the end of each month.

Therefore, the requirements of 326 IAC 2-2 shall not apply to the expansion.

D.5.2 VOC Emission Offset Minor Limits [326 IAC 2-3]

In order to render the 326 IAC 2-3 (Emission Offset) requirements not applicable, the VOC emissions after control from the forming sections (Stack 6-22) and curing/cooling sections (Stack 6-29) combined shall not exceed 28.13 pounds per hour.

Therefore, the requirements of 326 IAC 2-3 shall not apply to the expansion.

D.5.3 NO_x LAER and NO₂ PSD BACT Requirements [326 IAC 2-3] [326 IAC 2-2]

Pursuant to 326 IAC 2-3 (Emission Offset) and 326 IAC 2-2 (Prevention of Significant Deterioration (PSD)), the Permittee shall comply with the following requirements:

- (a) Low NO_x burners shall be installed and utilized to reduce the NO_x emissions from the following operations:
-- 613 CURING/COOLING; and
-- 614 CURING/COOLING.
- (b) The NO_x emissions after control from the forming sections (Stack 6-22) and curing/cooling sections (Stack 6-29) combined shall not exceed 2.66 pounds of NO_x per ton of glass pulled and 33.25 pounds per hour.
- (c) The loss on ignition (LOI) of the binders used by the 611 FORMING, 612 FORMING, 613 FORMING, 614 FORMING, 613 CURING/COOLING, and 614 CURING/COOLING combined shall not exceed 18%.

D.5.4 Clean Units [326 IAC 2-3.2] [326 IAC 2-2.2]

- (a) 613 CURING/COOLING
 - (1) Pursuant to 326 IAC 2-3.2 (Clean Unit) and 326 IAC 2-2.2 (Clean Unit), the 613 CURING/COOLING is classified as Clean Unit for NOx.
 - (2) The Clean Unit designation for 613 CURING/COOLING is in effect for ten (10) years from its initial start up.
 - (3) In order to maintain the clean unit designation for 613 CURING/COOLING, the Permittee shall comply with the NOx limits specified in Conditions D.5.3 and D.4.2 of this permit.
- (b) 614 CURING/COOLING
 - (1) Pursuant to 326 IAC 2-3.2 (Clean Unit) and 326 IAC 2-2.2 (Clean Unit), the 614 CURING/COOLING is classified as Clean Unit for NOx.
 - (2) The Clean Unit designation for 614 CURING/COOLING is in effect for ten (10) years from its initial start up.
 - (3) In order to maintain the clean unit designation for 614 CURING/COOLING, the Permittee shall comply with the NOx limits specified in Conditions D.5.3 and D.4.2 of this permit.

D.5.5 Volatile Organic Compound (VOC) BACT Requirements [326 IAC 8-1-6]

- (a) 611 FORMING

The VOC emissions before control from 611 FORMING shall not exceed 4.7 pounds per hour. Therefore, the requirements of 326 IAC 8-1-6 are not applicable.
- (b) 612 FORMING

Pursuant to 326 IAC 8-1-6, the following BACT requirements apply:

 - (1) The VOC emissions before control from 612 FORMING shall not exceed 6.1 pounds per hour of VOC emissions.
 - (2) The loss on ignition (LOI) of the binders used by 612 FORMING shall not exceed 18%.
- (c) 613 FORMING and 613 CURING/COOLING

Pursuant to 326 IAC 8-1-6, the following BACT requirements apply:

 - (1) A Regenerative Thermal Oxidizer (RTO) shall be installed and utilized to control the VOC and HAPs emissions from the 613 CURING/COOLING.
 - (2) The overall control efficiency of each RTO shall be at least 95% when controlling the VOC emissions from the 613 CURING/COOLING.
 - (3) The combined VOC emissions after control from 613 FORMING and 613 CURING/COOLING shall not exceed 9.0 pounds per hour of VOC emissions.
 - (4) The loss on ignition (LOI) of the binders used by 613 FORMING and 613

CURING/COOLING combined shall not exceed 18%.

- (d) 614 FORMING and 614 CURING/COOLING
Pursuant to 326 IAC 8-1-6, the following BACT requirements apply:
- (1) A Regenerative Thermal Oxidizer (RTO) shall be installed and utilized to control the VOC and HAPs emissions from the 614 CURING/COOLING.
 - (2) The overall control efficiency of each RTO shall be at least 95% when controlling the VOC emissions from the 614 CURING/COOLING.
 - (3) The combined VOC emissions after control from the 614 FORMING and 614 CURING/COOLING shall not exceed 8.4 pounds per hour of VOC emissions.
 - (4) The loss on ignition (LOI) of the binders used by 614 FORMING and 614 CURING/COOLING combined shall not exceed 18%.
- (e) Stack 6-22 and Stack 6-29
Pursuant to 326 IAC 8-1-6, the combined VOC emissions from Stack 6-22 and Stack 6-29 shall not exceed 2.25 pounds per ton of molten glass and 28.13 pounds per hour.

D.5.6 Particulate Matter Emission Limitations [326 IAC 11-4-2]

Pursuant to 326 IAC 11-4-2(a), the particulate matter content from Stack 6-22 shall not exceed 0.025 grain per dry standard cubic feet.

Stack 6-22 is the stack exhaust of the following forming sections:

- 611 FORMING,
- 612 FORMING,
- 613 FORMING, and
- 614 FORMING.

D.5.7 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for the wet electrostatic precipitator (ESP), and RTOs.

Compliance Determination Requirements

D.5.8 Low NOx Burners Operation [326 IAC 2-3] [326 IAC 2-7-6(6)] [326 IAC 2-2]

Except as otherwise provided by statute or rule or in this permit, the low NOx burners for NOx control shall be in operation and control emissions from the:

- 613 CURING/COOLING and
- 614 CURING/COOLING

at all times when any of these forming and curing/cooling sections are in operation.

D.5.9 Wet Electrostatic Precipitator (ESP) Operation [326 IAC 2-7-6(6)] [40 CFR Part 60, Subpart PPP]
[326 IAC 2-3] [326 IAC 11-4-2]

Except as otherwise provided by statute or rule or in this permit, the wet electrostatic precipitator (ESP) for particulate control shall be in operation and control emissions from the:

- 611 FORMING,
- 612 FORMING,
- 613 FORMING, and
- 614 FORMING

at all times when any of these forming sections are in operation.

D.5.10 Regenerative Thermal Oxidizers (RTOs) Operation [326 IAC 2-7-6(6)] [40 CFR 63, Subpart NNN]
[326 IAC 2-2] [326 IAC 2-3] [326 IAC 8-1-6]

Except as otherwise provided by statute or rule or in this permit, the RTOs for volatile organic compound (VOC), hazardous air pollutants and condensable particulates control shall be in operation and control emissions from the:

- 613 CURING/COOLING and/or
- 614 CURING/COOLING

at all times when any of these curing/cooling sections are in operation.

D.5.11 Testing Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-6(6)]

(a) Within sixty (60) days after achieving maximum capacity of the proposed modification, but no later than one hundred and eighty (180) days after initial startup of the proposed expansion, the Permittee shall perform compliance testing on Stack 6-22 and Stack 6-29 for the following:

- (1) NO_x -- to verify compliance with the NO_x limitations in Condition D.5.3 - NO_x LAER and NO₂ PSD BACT Requirements;
- (2) VOC -- to verify compliance with the VOC limitations in Condition D.5.2 - VOC Emission Offset Minor Limits, and Condition D.5.5 - Volatile Organic Compound (VOC) BACT Requirements;
- (3) RTO's overall control efficiency -- to verify compliance with the overall control efficiency requirement in Condition D.5.5 - Volatile Organic Compound (VOC) BACT Requirements;
- (4) PM/ PM₁₀ -- to verify compliance with the PM/PM₁₀ limitations in Condition D.5.1 - PSD Minor Limits, Condition D.5.6 - Particulate Matter Emission Limitations, and 40 CFR Part 60, Subpart PPP;
- (5) CO -- to verify compliance with the CO limitation in Condition D.5.1 - PSD Minor Limits;

utilizing the procedures set forth in 40 CFR 60, Appendix A; 40 CFR Part 51, Appendix M; or other methods as approved by the Commissioner.

Stack 6-22 is the stack exhaust of the following forming sections:

- 611 FORMING,
- 612 FORMING,
- 613 FORMING, and
- 614 FORMING.

Stack 6-29 is the stack exhaust of the following:

- 613 CURING/COOLING,
- 614 CURING/COOLING, and
- two (2) RTOs.

- (b) The NO_x tests shall be repeated at least once every year from the date of the last valid compliance demonstrations.
- (c) The VOC tests shall be repeated at least once every two (2) years from the date of the last valid compliance demonstrations.
- (d) The PM/PM₁₀ tests shall be repeated at least once every two (2) years from the date of the last valid compliance demonstration.

PM₁₀ includes filterable and condensable PM₁₀.

- (e) The CO test shall be repeated at least once every two (2) years from the date of the last valid compliance demonstration.
- (f) In addition to these requirements, IDEM may require compliance testing when necessary to determine if the facility is in compliance.
- (g) Testing shall be conducted in accordance with Section C - Performance Testing.

D.5.12 Thermal Oxidizer Operating Temperature [326 IAC 8-1-6] [326 IAC 2-3]

- (a) A continuous monitoring system shall be calibrated, maintained, and operated on the thermal oxidizer for measuring operating temperature. For the purposes of this condition, continuous shall mean no less than once per minute.

The output of this system shall be recorded as a 3-hour average. From the initial operation of the thermal oxidizer until the approved stack test results are available, the Permittee shall operate the thermal oxidizer at or above the 3-hour average temperature of 1,475°F.
- (b) The Permittee shall determine the 3-hour average temperature from the most recent valid stack test that demonstrates compliance with VOC limits in Condition D.5.2 - VOC Emission Offset Minor Limits and Condition D.5.5 - Volatile Organic Compound (VOC) BACT Requirements, as approved by IDEM.

- (c) On and after the date the approved stack test results are available, the Permittee shall operate the thermal oxidizer at or above the 3-hour average temperature as observed during the compliant stack test.
- (d) Refer to Section E.1 - NESHAP Wool Fiberglass Manufacturing Requirements, of this permit for additional applicable compliance monitoring for the RTOs.

D.5.13 Thermal Oxidizer Parametric Monitoring [326 IAC 8-1-6] [326 IAC 2-3]

- (a) The Permittee shall determine the appropriate duct pressure or fan amperage from the most recent valid stack test that demonstrates compliance with VOC limits in Condition D.5.2 VOC Emission Offset Minor Limits and Condition D.5.5 - Volatile Organic Compound (VOC) BACT Requirements, as approved by IDEM.
- (b) The duct pressure or fan amperage shall be observed at least once per day when the thermal oxidizer is in operation. On and after the date the approved stack test results are available, the duct pressure or fan amperage shall be maintained within the normal range as established in most recent compliant stack test.

Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

D.5.14 Visible Emissions Notations [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

- (a) Visible emission notations of Stack 6-22 exhaust and Stack 6-29 exhaust shall be performed once per shift during normal daylight operations when exhausting to the atmosphere.

A trained employee shall record whether emissions are normal or abnormal.

Stack 6-22 is the stack exhaust of the following forming sections:

- 611 FORMING,
- 612 FORMING,
- 613 FORMING, and
- 614 FORMING.

Stack 6-29 is the stack exhaust of the following:

- 613 CURING/COOLING,
- 614 CURING/COOLING, and
- two (2) RTOs.

- (b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.
- (c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.
- (d) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.

- (e) The Compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when an abnormal emission is observed. Failure to take response steps in accordance with Section C - Compliance Response Plan - Preparation, Implementation, Records, and Reports, shall be considered a deviation from this permit.

D.5.15 Wet Electrostatic Precipitator (ESP) Parametric Monitoring

- (a) The Permittee shall determine the appropriate primary and secondary current (amperes) and voltage in each electrical field and the inlet water flow rate of the wet electrostatic precipitator (ESP) from the most recent valid stack test that demonstrates compliance with particulate limits in Conditions D.5.1 - PSD Minor limits, and Condition D.5.6 - Particulate Matter Emission Limitations, as approved by IDEM.
- (b) The primary and secondary current (amperes) and voltage in each electrical field and the inlet water flow rate of the wet electrostatic precipitator (ESP) shall be observed at least once per shift when the wet electrostatic precipitator (ESP) is in operation. On and after the date the approved stack test results are available, the appropriate primary and secondary current (amperes) and voltage in each electrical field and the inlet water flow rate shall be maintained within the normal range as established in most recent compliant stack test.
- (c) Refer to Section E.2 - NSPS Wool Fiberglass Insulation Manufacturing Plants, of this permit for additional applicable compliance monitoring for the wet electrostatic precipitator (ESP).

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

D.5.16 Record Keeping Requirements

- (a) To document compliance with Condition D.5.1- PSD Minor Limits, Condition D.5.2 - VOC Emission Offset Minor Limits, and Condition D.5.5 - Volatile Organic Compound (VOC) BACT Requirements, the Permittee shall maintain records that are complete and sufficient to establish compliance. Records maintained shall be taken monthly and make such records available upon request to IDEM, OAQ, and the US EPA.

Examples of such records include but are not limited to:

- (1) Records shall include purchase orders, invoices, and material safety data sheets (MSDS), manufacturer's certified product data sheets, and calculations necessary to verify the type and amount of binder used; and
 - (2) A log of the dates of use.
- (b) To document compliance with Condition D.5.7- Preventive Maintenance Plan, the Permittee shall maintain the records of any additional inspections prescribed by the Preventive Maintenance Plan and make such records available upon request to IDEM, OAQ, and the US EPA.
 - (c) To document compliance with Condition D.5.12 - Thermal Oxidizer Operating Temperature, the Permittee shall maintain the records of the 3-hour average operating

temperature of the thermal oxidizer and make such records available upon request to IDEM, OAQ, and the US EPA.

- (d) To document compliance with Condition D.5.13 - Thermal Oxidizer Parametric Monitoring, the Permittee shall maintain the records of the once per day readings of the duct pressure or fan amperage of the thermal oxidizer and make such records available upon request to IDEM, OAQ, and the US EPA.
- (e) To document compliance with Condition D.5.14 - Visible Emissions Notations, the Permittee shall maintain the records of once per shift visible emission notations of Stack 6-22 exhaust and Stack 6-29 exhaust and make such records available upon request to IDEM, OAQ, and the US EPA.
- (f) To document compliance with Condition D.5.15 - Wet Electrostatic Precipitator (ESP) Parametric Monitoring, the Permittee shall maintain the once per shift records of the primary and secondary current (amperes) and voltage in each electrical field and the inlet water flow rate of the wet electrostatic precipitator (ESP) and make such records available upon request to IDEM, OAQ, and the US EPA.
- (g) Records necessary to demonstrate compliance shall be available within 30 days of the end of each compliance period.
- (h) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit and make such records available upon request to IDEM, OAQ, and the US EPA.

D.5.17 Reporting Requirements

To document compliance with Condition D.5.1 - PSD Minor Limits, the Permittee shall submit a quarterly summary of the actual amount of glass produced, using the Annual Molten Glass Production Report or its equivalent, located at the end of this permit. These reports shall be submitted not later than thirty (30) calendar days following the end of each calendar quarter and in accordance with Condition C - General Reporting Requirements of this permit.

**SECTION E.1 NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS
(NESHAP) REQUIREMENTS [326 IAC 2-7-5(1)]**

Facility Description [326 IAC 2-7-5(15)]

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

FORMING - - Stack 6-22

(1) 613 FORMING

One (1) fiberglass forming section, identified as 613 FORMING, utilizing natural gas for fiberization. Products formed in 613 FORMING are routed to the 613 CURING/COOLING.

- The nominal capacity of 613 FORMING has been classified as confidential information.
- The particulate emissions from 613 FORMING are controlled by the same wet electrostatic precipitator (ESP) that control the particulate emissions from 611 FORMING and 612 FORMING.
- Controlled emissions from 613 FORMING exhaust through a stack identified as Stack 6-22.

(2) 614 FORMING

One (1) fiberglass forming section, identified as 614 FORMING, utilizing natural gas for fiberization. Products formed in 614 FORMING are routed to the 614 CURING/COOLING.

- The nominal capacity of 614 FORMING has been classified as confidential information.
- The particulate emissions from 614 FORMING are controlled by the same wet electrostatic precipitator (ESP) that control the particulate emissions from 611 FORMING, 612 FORMING, and 613 FORMING.
- Controlled emissions from 614 FORMING exhaust through a stack identified as Stack 6-22.

CURING/COOLING - - Stack 6-29

(3) 613 CURING/COOLING

One (1) fiberglass curing/cooling section, identified as 613 CURING/COOLING, consisting of natural gas fired curing oven(s), duct burners, and edge coat dryer burner.

- The nominal capacity of 613 CURING/COOLING has been classified as confidential information.
- The volatile organic compound (VOC) and hazardous air pollutants (HAPs) emissions from 613 CURING/COOLING are controlled by two (2) regenerative thermal oxidizers (RTOs), each rated at 2 million Btu per hour.
- The NOx emissions from each curing oven, duct burner and edge coat dryer of 613

	CURING/COOLING are reduced by low NOx burners.
--	Controlled emissions from 613 CURING/COOLING exhaust through a stack identified as Stack 6-29.
(4)	614 CURING/COOLING One (1) fiberglass curing/cooling section, identified as 614 CURING/COOLING, consisting of natural gas fired curing oven(s) and duct burners.
--	The nominal capacity of 614 CURING/COOLING has been classified as confidential information.
--	The volatile organic compound (VOC) and hazardous air pollutants (HAPs) emissions from 614 CURING/COOLING are controlled by the same two (2) regenerative thermal oxidizers (RTOs), each rated at 2 million Btu per hour, that control VOC emissions from 613 CURING/COOLING.
--	The NOx emissions from each curing oven and duct burner of 614 CURING/COOLING are reduced by low NOx burners.
--	Controlled emissions from 614 CURING/COOLING exhaust through a stack identified as Stack 6-29.

E.1.1 General Provisions Relating to NESHAP for Wool Fiberglass Manufacturing
[326 IAC 20-1] [40 CFR Part 63, Subpart A]

Pursuant to 40 CFR 63.1380, the Permittee shall comply with the provisions of 40 CFR Part 63, Subpart A – General Provisions, which are incorporated by reference as 326 IAC 20-1-1 for:

- 613 FORMING and 613 CURING/COOLING; and
- 614 FORMING and 614 CURING/COOLING,

as specified in Appendix A of 40 CFR Part 63, Subpart NNN in accordance with schedule in 40 CFR 63 Subpart NNN.

E.1.2 NESHAP Wool Fiberglass Manufacturing Requirements [40 CFR Part 63, Subpart NNN]

Pursuant to CFR Part 63, Subpart NNN the Permittee shall comply with the provisions of 40 CFR Part 63.1380, for:

- 613 FORMING and 613 CURING/COOLING; and
- 614 FORMING and 614 CURING/COOLING,

as specified as follows:

Sec. 63.1380 Applicability.

- (a) Except as provided in paragraphs (b) and (c) of this section, the requirements of this subpart apply to the owner or operator of each wool fiberglass manufacturing facility that is a major source or is located at a facility that is a major source.
- (b) The requirements of this subpart apply to emissions of hazardous air pollutants (HAPs), as measured according to the methods and procedures in this subpart, emitted from the following new and existing sources at a wool fiberglass manufacturing facility subject to this subpart:

- (2) Each new and existing rotary spin wool fiberglass manufacturing line producing a bonded wool fiberglass building insulation product; and

Sec. 63.1381 Definitions.

Terms used in this subpart are defined in the Clean Air Act, in Sec. 63.2, or in this section as follows:

Bag leak detection system means systems that include, but are not limited to, devices using triboelectric, light scattering, and other effects to monitor relative or absolute particulate matter (PM) emissions.

Bonded means wool fiberglass to which a phenol-formaldehyde binder has been applied.

Building insulation means bonded wool fiberglass insulation, having a loss on ignition of less than 8 percent and a density of less than 32 kilograms per cubic meter (kg/m³ (2 pounds per cubic foot [lb/ft³]).

Cold top electric furnace means an all-electric glass-melting furnace that operates with a temperature of 120 deg. C (250 deg. F) or less as measured at a location 46 to 61 centimeters (18 to 24 inches) above the molten glass surface.

Flame attenuation means a process used to produce wool fiberglass where molten glass flows by gravity from melting furnaces, or pots, to form filaments that are drawn down and attenuated by passing in front of a high-velocity gas burner flame.

Glass-melting furnace means a unit comprising a refractory vessel in which raw materials are charged, melted at high temperature, refined, and conditioned to produce molten glass. The unit includes foundations, superstructure and retaining walls, raw material charger systems, heat exchangers, melter cooling system, exhaust system, refractory brick work, fuel supply and electrical boosting equipment, integral control systems and instrumentation, and appendages for conditioning and distributing molten glass to forming processes. The forming apparatus, including flow channels, is not considered part of the glass-melting furnace.

Glass pull rate means the mass of molten glass that is produced by a single glass-melting furnace or that is used in the manufacture of wool fiberglass at a single manufacturing line in a specified time period. Hazardous Air Pollutant (HAP) means any air pollutant listed in or pursuant to section 112(b) of the Clean Air Act.

Heavy-density product means bonded wool fiberglass insulation manufactured on a flame attenuation manufacturing line and having a loss on ignition of 11 to 25 percent and a density of 8 to 48 kg/m³ (0.5 to 3 lb/ft³).

Incinerator means an enclosed air pollution control device that uses controlled flame combustion to convert combustible materials to noncombustible gases.

Loss on ignition (LOI) means the percent decrease in weight of wool fiberglass after it has been ignited. The LOI is used to monitor the weight percent of binder in wool fiberglass.

Manufacturing line means the manufacturing equipment for the production of wool fiberglass that consists of a forming section where molten glass is fiberized and a fiberglass mat is formed and which may include a curing section where binder resin in the mat is thermally set and a cooling section where the mat is cooled.

New source means any affected source the construction or reconstruction of which is commenced after March 31, 1997.

Pipe product means bonded wool fiberglass insulation manufactured on a flame attenuation manufacturing line and having a loss on ignition of 8 to 14 percent and a density of 48 to 96 kg/m³ (3 to 6 lb/ft³).

Rotary spin means a process used to produce wool fiberglass building insulation by forcing molten glass through numerous small orifices in the side wall of a spinner to form continuous glass fibers that are then broken into discrete lengths by high-velocity air flow. Any process used to produce bonded wool fiberglass building insulation by a process other than flame attenuation is considered rotary spin.

Wool fiberglass means insulation materials composed of glass fibers made from glass produced or melted at the same facility where the manufacturing line is located.

Wool fiberglass manufacturing facility means any facility manufacturing wool fiberglass on a rotary spin manufacturing line or on a flame attenuation manufacturing line.

Sec. 63.1382 Emission standards

(a) Emission limits--

(2) Rotary spin manufacturing lines.

On and after the date the initial performance test is completed or required to be completed under Sec. 63.7 of this part, whichever date is earlier, the owner or operator shall not discharge or cause to be discharged into the atmosphere in excess of:

(ii) 0.4 kg of formaldehyde per megagram (0.8 lb of formaldehyde per ton) of glass pulled for each new rotary spin manufacturing line.

(b) **Operating limits.**

On and after the date on which the performance test required to be conducted by Secs. 63.7 and 63.1384 is completed, the owner or operator must operate all affected control equipment and processes according to the following requirements.

(8) (i) The owner or operator must initiate corrective action within 1 hour when the monitored process parameter level(s) is outside the limit(s) established during the performance test as specified in Sec. 63.1384 for the process modification(s) used to control formaldehyde emissions and complete corrective actions in a timely manner according to the procedures in the operations, maintenance, and monitoring plan.

- (ii) The owner or operator must implement a QIP consistent with the compliance assurance monitoring provisions of 40 CFR part 64, subpart D when the process parameter(s) is outside the limit(s) established during the performance test as specified in Sec. 63.1384 for more than 5 percent of the total operating time in a 6-month block reporting period.
- (iii) The owner or operator must operate the process modifications such that the monitored process parameter(s) is not outside the limit(s) established during the performance test as specified in Sec. 63.1384 for more than 10 percent of the total operating time in a 6-month block reporting period.
- (9) The owner or operator must use a resin in the formulation of binder such that the free-formaldehyde content of the resin used does not exceed the free-formaldehyde range contained in the specification for the resin used during the performance test as specified in Sec. 63.1384.
- (10) The owner or operator must use a binder formulation that does not vary from the specification and operating range established and used during the performance test as specified in Sec. 63.1384. For the purposes of this standard, adding or increasing the quantity of urea and/or lignin in the binder formulation does not constitute a change in the binder formulation.

Sec. 63.1383 Monitoring requirements.

On and after the date on which the performance test required to be conducted by Secs. 63.7 and 63.1384 is completed, the owner or operator must monitor all affected control equipment and processes according to the following requirements.

- (a) The owner or operator of each wool fiberglass manufacturing facility must prepare for each glass-melting furnace, rotary spin manufacturing line, and flame attenuation manufacturing line subject to the provisions of this subpart, a written operations, maintenance, and monitoring plan. The plan must be submitted to the Administrator for review and approval as part of the application for a part 70 permit. The plan must include the following information:
 - (1) Procedures for the proper operation and maintenance of process modifications and add-on control devices used to meet the emission limits in Sec. 63.1382;
 - (2) Procedures for the proper operation and maintenance of monitoring devices used to determine compliance, including quarterly calibration and certification of accuracy of each monitoring device according to the manufacturers's instructions; and
 - (3) Corrective actions to be taken when process parameters or add-on control device parameters deviate from the limit(s) established during initial performance tests.
- (g) (1) The owner or operator who uses an incinerator to control formaldehyde emissions from forming or curing shall install, calibrate, maintain, and

operate a monitoring device that continuously measures and records the operating temperature in the firebox of each incinerator.

- (2) The owner or operator must inspect each incinerator at least once per year according to the procedures in the operations, maintenance, and monitoring plan. At a minimum, an inspection must include the following:
 - (i) Inspect all burners, pilot assemblies, and pilot sensing devices for proper operation and clean pilot sensor, as necessary;
 - (ii) Ensure proper adjustment of combustion air and adjust, as necessary;
 - (iii) Inspect, when possible, internal structures, for example, baffles, to ensure structural integrity per the design specifications;
 - (iv) Inspect dampers, fans, and blowers for proper operation;
 - (v) Inspect for proper sealing;
 - (vi) Inspect motors for proper operation;
 - (vii) Inspect combustion chamber refractory lining and clean and repair/replace lining, as necessary;
 - (viii) Inspect incinerator shell for corrosion and/or hot spots;
 - (ix) For the burn cycle that follows the inspection, document that the incinerator is operating properly and make any necessary adjustments; and
 - (x) Generally observe that the equipment is maintained in good operating condition.
 - (xi) Complete all necessary repairs as soon as practicable.
- (j) The owner or operator must monitor and record the free-formaldehyde content of each resin shipment received and used in the formulation of binder.
- (k) The owner or operator must monitor and record the formulation of each batch of binder used.
- (l) The owner or operator must monitor and record at least once every 8 hours, the product LOI and product density of each bonded wool fiberglass product manufactured.
- (m) For all control device and process operating parameters measured during the initial performance tests, the owners or operators of glass-melting furnaces, rotary spin manufacturing lines or flame attenuation manufacturing lines subject to this subpart may change the limits established during the initial performance tests if additional performance testing is conducted to verify that, at the new

control device or process parameter levels, they comply with the applicable emission limits in Sec. 63.1382. The owner or operator shall conduct all additional performance tests according to the procedures in this part 63, subpart A and in Sec. 63.1384.

Sec. 63.1384 Performance test requirements.

(a) The owner or operator subject to the provisions of this subpart shall conduct a performance test to demonstrate compliance with the applicable emission limits in Sec. 63.1382. Compliance is demonstrated when the emission rate of the pollutant is equal to or less than each of the applicable emission limits in Sec. 63.1382. The owner or operator shall conduct the performance test according to the procedures in 40 CFR part 63, subpart A and in this section.

- (1) All monitoring systems and equipment must be installed, operational, and calibrated prior to the performance test.
- (2) Unless a different frequency is specified in this section, the owner or operator must monitor and record process and/or add-on control device parameters at least every 15 minutes during the performance tests. The arithmetic average for each parameter must be calculated using all of the recorded measurements for the parameter.
- (8) The owner or operator must conduct a performance test for each rotary spin manufacturing line, subject to this subpart, while producing the building insulation with the highest LOI expected to be produced on that line; and for each flame attenuation manufacturing line, subject to this subpart, while producing the heavy-density product or pipe product with the highest LOI expected to be produced on the affected line.
- (9) The owner or operator of each rotary spin manufacturing line and flame attenuation manufacturing line regulated by this subpart must conduct performance tests using the resin with the highest free-formaldehyde content. During the performance test of each rotary spin manufacturing line and flame attenuation manufacturing line regulated by this subpart, the owner or operator shall monitor and record the free-formaldehyde content of the resin, the binder formulation used, and the product LOI and density.
- (10) During the performance test, the owner or operator of a rotary spin manufacturing line or flame attenuation manufacturing line who plans to use process modifications to comply with the emission limits in Sec. 63.1382 must monitor and record the process parameter level(s), as specified in the operations, maintenance, and monitoring plan, which will be used to demonstrate compliance after the initial performance test.
- (12) During the performance test, the owner or operator of a rotary spin manufacturing line or affected flame attenuation manufacturing line shall continuously record the operating temperature of each incinerator and record the average during each 1-hour test; the average operating temperature of the three 1-hour tests shall be used to monitor compliance.

(13) Unless disapproved by the Administrator, an owner or operator of a rotary spin or flame attenuation manufacturing line regulated by this subpart may conduct short-term experimental production runs using binder formulations or other process modifications where the process parameter values would be outside those established during performance tests without first conducting performance tests. Such runs must not exceed 1 week in duration unless the Administrator approves a longer period. The owner or operator must notify the Administrator and postmark or deliver the notification at least 15 days prior to commencement of the short-term experimental production runs. The Administrator must inform the owner or operator of a decision to disapprove or must request additional information prior to the date of the short-term experimental production runs. Notification of intent to perform an experimental short-term production run shall include the following information:

- (i) The purpose of the experimental production run;
- (ii) The affected line;
- (iii) How the established process parameters will deviate from previously approved levels;
- (iv) The duration of the experimental production run;
- (v) The date and time of the experimental production run; and
- (vi) A description of any emission testing to be performed during the experimental production run.

(c) To determine compliance with the emission limit for formaldehyde for rotary spin manufacturing lines and flame attenuation forming processes, use the following equation:

$$E = \frac{C \times MW \times Q \times K_1 \times K_2}{K_3 \times P \times 10^6} \quad (\text{Equation 2})$$

Where:

- E = Emission rate of formaldehyde, kg/Mg (lb/ton) of glass pulled;
- C = Measured volume fraction of formaldehyde, ppm;
- MW = Molecular weight of formaldehyde, 30.03 g/g-mol;
- Q = Volumetric flow rate of exhaust gases, dscm/h (dscf/h);
- K₁ = Conversion factor, 1 kg/1,000 g (1 lb/453.6 g);
- K₂ = Conversion factor, 1,000 L/m³ (28.3 L/ft³);
- K₃ = Conversion factor, 24.45 L/g-mol; and
- P = Average glass pull rate, Mg/h (tons/h).

Sec. 63.1385 Test methods and procedures.

- (a) The owner or operator shall use the following methods to determine compliance with the applicable emission limits:
- (1) Method 1 (40 CFR part 60, appendix A) for the selection of the sampling port location and number of sampling ports;
 - (2) Method 2 (40 CFR part 60, appendix A) for volumetric flow rate;
 - (3) Method 3 or 3A (40 CFR part 60, appendix A) for O₂ and CO₂ for diluent measurements needed to correct the concentration measurements to a standard basis;
 - (4) Method 4 (40 CFR part 60, appendix A) for moisture content of the stack gas;
 - (6) Method 316 or Method 318 (appendix A of this part) for the concentration of formaldehyde. Each run shall consist of a minimum run time of 1 hour;
 - (7) Method contained in appendix A of this subpart for the determination of product LOI;
 - (8) Method contained in appendix B of this subpart for the determination of the free-formaldehyde content of resin;
 - (9) Method contained in appendix C of this subpart for the determination of product density;
 - (10) An alternative method, subject to approval by the Administrator.
- (b) Each performance test shall consist of 3 runs. The owner or operator shall use the average of the three runs in the applicable equation for determining compliance.

Sec. 63.1386 Notification, recordkeeping, and reporting requirements.

- (a) Notifications.
As required by Sec. 63.9(b) through (h) of this part, the owner or operator shall submit the following written initial notifications to the Administrator:
- (4) Notification of intention to construct a new major source or reconstruct a major source; of the date construction or reconstruction commenced; of the anticipated date of startup; of the actual date of startup, where the initial startup of a new or reconstructed source occurs after June 14, 2002, and for which an application for approval or construction or reconstruction is required (See Sec. 63.9(b)(4) and (5) of this part);
 - (5) Notification of special compliance obligations;
 - (6) Notification of performance test; and (7) Notification of compliance status.

- (b) **Performance test report.**
As required by Sec. 63.10(d)(2) of the general provisions, the owner or operator shall report the results of the initial performance test as part of the notification of compliance status required in paragraph (a)(7) of this section.
- (c) **Startup, shutdown, and malfunction plan and reports.**
(1) The owner or operator shall develop and implement a written plan as described in Sec. 63.6(e)(3) of this part that contains specific procedures to be followed for operating the source and maintaining the source during periods of startup, shutdown, and malfunction and a program of corrective action for malfunctioning process modifications and control systems used to comply with the standard. In addition to the information required in Sec. 63.6(e)(3), the plan shall include:
- (i) Procedures to determine and record the cause of the malfunction and the time the malfunction began and ended;
 - (ii) Corrective actions to be taken in the event of a malfunction of a control device or process modification, including procedures for recording the actions taken to correct the malfunction or minimize emissions; and
 - (iii) A maintenance schedule for each control device and process modification that is consistent with the manufacturer's instructions and recommendations for routine and long-term maintenance.
- (2) The owner or operator shall also keep records of each event as required by Sec. 63.10(b) of this part and record and report if an action taken during a startup, shutdown, or malfunction is not consistent with the procedures in the plan as described in Sec. 63.10(e)(3)(iv) of this part.
- (d) **Recordkeeping.**
(1) As required by Sec. 63.10(b) of this part, the owner or operator shall maintain files of all information (including all reports and notifications) required by the general provisions and this subpart:
- (i) The owner or operator must retain each record for at least 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. The most recent 2 years of records must be retained at the facility. The remaining 3 years of records may be retained off site;
 - (ii) The owner or operator may retain records on microfilm, on a computer, on computer disks, on magnetic tape, or on microfiche; and
 - (iii) The owner or operator may report required information on paper or on a labeled computer disk using commonly available and EPA-compatible computer software.

- (2) In addition to the general records required by Sec. 63.10(b)(2) of this part, the owner or operator shall maintain records of the following information:
- (v) The formulation of each binder batch and the LOI and density for each product manufactured on a rotary spin manufacturing line or flame attenuation manufacturing line subject to the provisions of this subpart, and the free formaldehyde content of each resin shipment received and used in the binder formulation;
 - (vi) Process parameter level(s) for RS and FA manufacturing lines that use process modifications to comply with the emission limits, including any period when the parameter level(s) deviated from the established limit(s), the date and time of the deviation, when corrective actions were initiated, the cause of the deviation, an explanation of the corrective actions taken, and when the cause of the deviation was corrected;
 - (viii) Incinerator operating temperature and results of periodic inspection of incinerator components, including any period when the temperature fell below the established average or the inspection identified problems with the incinerator, the date and time of the problem, when corrective actions were initiated, the cause of the problem, an explanation of the corrective actions taken, and when the cause of the problem was corrected;
 - (ix) Glass pull rate, including any period when the pull rate exceeded the average pull rate established during the performance test by more than 20 percent, the date and time of the exceedance, when corrective actions were initiated, the cause of the exceedance, an explanation of the corrective actions taken, and when the cause of the exceedance was corrected.

(e) Excess emissions report.

As required by Sec. 63.10(e)(3)(v) of this part, the owner or operator shall report semiannually if measured emissions are in excess of the applicable standard or a monitored parameter deviates from the levels established during the performance test. The report shall contain the information specified in Sec. 63.10(c) of this part as well as the additional records required by the recordkeeping requirements of paragraph (d) of this section. When no deviations have occurred, the owner or operator shall submit a report stating that no excess emissions occurred during the reporting period.

**SECTION E.2 NEW STATIONARY SOURCES PERFORMANCE STANDARDS (NSPS)
REQUIREMENTS [326 IAC 2-7-5(1)]**

Facility Description [326 IAC 2-7-5(15)]

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

FORMING - - Stack 6-22

(1) 613 FORMING

One (1) fiberglass forming section, identified as 613 FORMING, utilizing natural gas for fiberization. Products formed in 613 FORMING are routed to the 613 CURING/COOLING.

- The nominal capacity of 613 FORMING has been classified as confidential information.
- The particulate emissions from 613 FORMING are controlled by the same wet electrostatic precipitator (ESP) that control the particulate emissions from 611 FORMING and 612 FORMING.
- Controlled emissions from 613 FORMING exhaust through a stack identified as Stack 6-22.

(2) 614 FORMING

One (1) fiberglass forming section, identified as 614 FORMING, utilizing natural gas for fiberization. Products formed in 614 FORMING are routed to the 614 CURING/COOLING.

- The nominal capacity of 614 FORMING has been classified as confidential information.
- The particulate emissions from 614 FORMING are controlled by the same wet electrostatic precipitator (ESP) that control the particulate emissions from 611 FORMING, 612 FORMING, and 613 FORMING.
- Controlled emissions from 614 FORMING exhaust through a stack identified as Stack 6-22.

CURING/COOLING - - Stack 6-29

(3) 613 CURING/COOLING

One (1) fiberglass curing/cooling section, identified as 613 CURING/COOLING, consisting of natural gas fired curing oven(s), duct burners, and edge coat dryer burner.

- The nominal capacity of 613 CURING/COOLING has been classified as confidential information.
- The volatile organic compound (VOC) and hazardous air pollutants (HAPs) emissions from 613 CURING/COOLING are controlled by two (2) regenerative thermal oxidizers (RTOs), each rated at 2 million Btu per hour.
- The NOx emissions from each curing oven, duct burner and edge coat dryer of 613 CURING/COOLING are reduced by low NOx burners.

- Controlled emissions from 613 CURING/COOLING exhaust through a stack identified as Stack 6-29.
- (4) 614 CURING/COOLING
One (1) fiberglass curing/cooling section, identified as 614 CURING/COOLING, consisting of natural gas fired curing oven(s) and duct burners.
 - The nominal capacity of 614 CURING/COOLING has been classified as confidential information.
 - The volatile organic compound (VOC) and hazardous air pollutants (HAPs) emissions from 614 CURING/COOLING are controlled by the same two (2) regenerative thermal oxidizers (RTOs), each rated at 2 million Btu per hour, that control VOC emissions from 613 CURING/COOLING.
 - The NOx emissions from each curing oven and duct burner of 614 CURING/COOLING are reduced by low NOx burners.
 - Controlled emissions from 614 CURING/COOLING exhaust through a stack identified as Stack 6-29.

E.2.1 General Provisions Relating to NSPS [326 IAC 12-1] [40 CFR Part 60, Subpart A]

The provisions of 40 CFR Part 60, Subpart A - General Provisions, which are incorporated by reference in 326 IAC 12-1, apply to:

- 613 FORMING and 613 CURING/COOLING; and
 - 614 FORMING and 614 CURING/COOLING,
- as described in this section except when otherwise specified in 40 CFR Part 60, Subpart PPP.

E.2.2 NSPS Wool Fiberglass Insulation Manufacturing Plants [40 CFR Part 60, Subpart PPP]

Pursuant to 40 CFR Part 60, Subpart PPP the Permittee shall comply with the provisions of 40 CFR Part 60.680 for:

- 613 FORMING and 613 CURING/COOLING; and
- 614 FORMING and 614 CURING/COOLING,

as specified as follows:

Sec. 60.680 Applicability and designation of affected facility.

- (a) The affected facility to which the provisions of this subpart apply is each rotary spin wool fiberglass insulation manufacturing line.
- (b) The owner or operator of any facility under paragraph (a) of this section that commences construction, modification, or reconstruction after February 7, 1984, is subject to the requirements of this subpart.

Sec. 60.681 Definitions.

As used in this subpart, all terms not defined herein shall have the meaning given them in the Act and in subpart A of this part.

Glass pull rate means the mass of molten glass utilized in the manufacture of wool fiberglass insulation at a single manufacturing line in a specified time period.

Manufacturing line means the manufacturing equipment comprising the forming section, where molten glass is fiberized and a fiberglass mat is formed; the curing section, where the binder resin in the mat is thermally "set;" and the cooling section, where the mat is cooled.

Rotary spin means a process used to produce wool fiberglass insulation by forcing molten glass through numerous small orifices in the side wall of a spinner to form continuous glass fibers that are then broken into discrete lengths by high velocity air flow.

Wool fiberglass insulation means a thermal insulation material composed of glass fibers and made from glass produced or melted at the same facility where the manufacturing line is located.

Sec. 60.682 Standard for particulate matter.

On and after the date on which the performance test required to be conducted by Sec. 60.8 is completed, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from any affected facility any gases which contain particulate matter in excess of 5.5 kg/Mg (11.0 lb/ton) of glass pulled.

Sec. 60.683 Monitoring of operations.

(b) An owner or operator subject to the provisions of this subpart who uses a wet electrostatic precipitator control device to comply with the mass emission standard shall install, calibrate, maintain, and operate monitoring devices that measure the primary and secondary current (amperes) and voltage in each electrical field and the inlet water flow rate.

In addition, the owner or operator shall determine the total residue (total solids) content of the water entering the control device once per day using Method 209A, "Total Residue Dried at 103-105 deg. C," in Standard Methods for the Examination of Water and Wastewater, 15th Edition, 1980 (incorporated by reference--see Sec. 60.17). Total residue shall be reported as percent by weight. All monitoring devices required under this paragraph are to be certified by their manufacturers to be accurate within plus-minus 5 percent over their operating range.

(c) All monitoring devices required under this section are to be recalibrated quarterly in accordance with procedures under Sec. 60.13(b).

Sec. 60.684 Recordkeeping and reporting requirements.

(b) At 30-minute intervals during each 2-hour test run of each performance test of a wet electrostatic precipitator control device and at least once every 4 hours thereafter, the owner or operator shall record the measurements required by Sec. 60.683(b), except that the concentration of total residue in the water shall be recorded once during each performance test and once per day thereafter.

(c) Records of the measurements required in paragraphs (a) and (b) of this section must be retained for at least 2 years.

- (d) Each owner or operator shall submit written semiannual reports of exceedances of control device operating parameters required to be monitored by paragraphs (a) and (b) of this section and written documentation of, and a report of corrective maintenance required as a result of, quarterly calibrations of the monitoring devices required in Sec. 60.683(c). For the purpose of these reports, exceedances are defined as any monitoring data that are less than 70 percent of the lowest value or greater than 130 percent of the highest value of each operating parameter recorded during the most recent performance test.
- (e) The requirements of this section remain in force until and unless the Agency, in delegating enforcement authority to a State under section 111(c) of the Act, approves reporting requirements or an alternative means of compliance surveillance adopted by such State. In that event, affected facilities within the State will be relieved of the obligation to comply with this section, provided that they comply with the requirements established by the State.

Sec. 60.685 Test methods and procedures.

- (a) In conducting the performance tests required in Sec. 60.8, the owner or operator shall use as reference methods and procedures the test methods in appendix A of this part or other methods and procedures as specified in this section, except as provided in Sec. 60.8(b).
- (b) The owner or operator shall conduct performance tests while the product with the highest loss on ignition (LOI) expected to be produced by the affected facility is being manufactured.
- (c) The owner or operator shall determine compliance with the particulate matter standard in Sec. 60.682 as follows:
 - (1) The emission rate (E) of particulate matter shall be computed for each run using the following equation:
$$E = (Ct Qsd)/(Pavg K)$$
where:
 - E = emission rate of particulate matter, kg/Mg (lb/ton).
 - Ct = concentration of particulate matter, g/dscm (gr/dscf).
 - Qsd = volumetric flow rate of effluent gas, (dscm/hr)
 - Pavg = average glass pull rate, Mg/hr (ton/hr).
 - K = 1,000 g/kg (7,000 gr/lb).
 - (2) Method 5E shall be used to determine the particulate matter concentration (Ct) and the volumetric flow rate (Qsd) of the effluent gas. The sampling time and sample volume shall be at least 120 minutes and 2.55 dscm (90.1 dscf).
 - (3) The average glass pull rate (Pavg) for the manufacturing line shall be the arithmetic average of three glass pull rate (Pi) determinations taken at intervals of at least 30 minutes during each run.

The individual glass pull rates (Pi) shall be computed using the following equation:

$$P_i = K' L_s W_m M [1.0 - (LOI/100)]$$

where:

Pi	=	glass pull rate at interval "i", Mg/hr (ton/hr).
Ls	=	line speed, m/min (ft/min).
Wm	=	trimmed mat width, m (ft).
M	=	mat gram weight, g/m ² (lb/ft ²).
LOI	=	loss on ignition, weight percent.
K'	=	conversion factor, 6 x 10 ⁵ (min-Mg)/ (hr-g) [3 x 10 ² (min-ton)/(hr-lb)].

- (i) ASTM D2584-68 (Reapproved 1985) or 94 (incorporated by reference--see Sec. 60.17), shall be used to determine the LOI for each run.
 - (ii) Line speed (Ls), trimmed mat width (Wm), and mat gram weight (M) shall be determined for each run from the process information or from direct measurements.
- (d) To comply with Sec. 60.684(d), the owner or operator shall record measurements as required in Sec. 60.684 (a) and (b) using the monitoring devices in Sec. 60.683 (a) and (b) during the particulate matter runs.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY**
100 North Senate Avenue, Indianapolis, Indiana 46204

**PART 70 OPERATING PERMIT
CERTIFICATION**

Source Name: Knauf Insulation GmbH
Source Address: One Knauf Drive, Shelbyville, Indiana 46176
Mailing Address: One Knauf Drive, Shelbyville, Indiana 46176
Part 70 Permit No.: T145-6038-00001

This certification shall be included when submitting monitoring, testing reports/results or other documents as required by this permit.

Please check what document is being certified:

- Annual Compliance Certification Letter
- Test Result (specify)
- Report (specify)
- Notification (specify)
- Other (specify)

I certify that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

Signature:

Printed Name:

Title/Position:

Date:

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY, COMPLIANCE BRANCH
100 North Senate Avenue, Indianapolis, Indiana 46204
Phone: 317-233-5674, Fax: 317-233-5967**

**PART 70 OPERATING PERMIT
EMERGENCY/DEVIATION OCCURRENCE REPORT**

Source Name: Knauf Insulation GmbH
Source Address: [One Knauf Drive, Shelbyville, Indiana 46176](#)
Mailing Address: [One Knauf Drive, Shelbyville, Indiana 46176](#)
Part 70 Permit No.: T145-6038-00001

This form consists of 2 pages

Page 1 of 2

Check either No. 1 or No. 2	
1.	This is an emergency as defined in 326 IAC 2-7-1(12) <input type="checkbox"/> The Permittee must notify the Office of Air Quality (OAQ), within four (4) business hours (1-800-451-6027 or 317-233-5674, ask for Compliance Section); and The Permittee must submit notice in writing or by facsimile within two (2) days (Facsimile Number: 317-233-5967), and follow the other requirements of 326 IAC 2-7-16
2.	This is a deviation, reportable per 326 IAC 2-7-5(3)(c) <input type="checkbox"/> The Permittee must submit notice in writing within ten (10) calendar days

If any of the following are not applicable, mark N/A

Facility/Equipment/Operation:
Control Equipment:
Permit Condition or Operation Limitation in Permit:
Description of the Emergency/Deviation:
Describe the cause of the Emergency/Deviation:

Page 2 of 2 Part 70 Operating Permit Emergency/Deviation Occurrence Report

If any of the following are not applicable, mark N/A

Date/Time Emergency/Deviation started:
Date/Time Emergency/Deviation was corrected:
Was the facility being properly operated at the time of the emergency/deviation? Y N Describe:
Type of Pollutants Emitted: TSP, PM-10, SO ₂ , VOC, NO _x , CO, Pb, other:
Estimated amount of pollutant(s) emitted during emergency/deviation:
Describe the steps taken to mitigate the problem:
Describe the corrective actions/response steps taken:
Describe the measures taken to minimize emissions:
If applicable, describe the reasons why continued operation of the facilities are necessary to prevent imminent injury to persons, severe damage to equipment, substantial loss of capital investment, or loss of product or raw materials of substantial economic value:

Form Completed by:
Title/Position
Telephone:
Date:

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF AIR QUALITY, COMPLIANCE BRANCH
 100 North Senate Avenue, Indianapolis, Indiana 46204**

**PART 70 OPERATING PERMIT
 QUARTERLY DEVIATION AND COMPLIANCE MONITORING REPORT**

Source Name: Knauf Insulation GmbH
 Source Address: One Knauf Drive, Shelbyville, Indiana 46176
 Mailing Address: One Knauf Drive, Shelbyville, Indiana 46176
 Part 70 Permit No.: T145-6038-00001

Months: _____ **to** _____ **Year:** _____

This report is an affirmation that the source has met all the requirements stated in this permit. This report shall be submitted quarterly based on a calendar year. Any deviation from the requirements, the date(s) of each deviation, the probable cause of the deviation, and the response steps taken must be reported. Deviations that are required to be reported by an applicable requirement shall be reported according to the schedule stated in the applicable requirement and do not need to be included in this report. Additional pages may be attached if necessary.	
If no deviations occurred, please specify in the box marked "No deviations occurred this reporting period".	
<input type="checkbox"/> NO DEVIATIONS OCCURRED THIS REPORTING PERIOD.	
<input type="checkbox"/> THE FOLLOWING DEVIATIONS OCCURRED THIS REPORTING PERIOD	
Permit Requirement (specify permit condition #)	
Date of Deviation:	Duration of Deviation:
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	
Permit Requirement (specify permit condition #)	
Date of Deviation:	Duration of Deviation:
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	

Page 2 of 2 Part 70 Operating Permit Quarterly Deviation And Compliance Monitoring Report

Permit Requirement (specify permit condition #)	
Date of Deviation:	Duration of Deviation:
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	
Permit Requirement (specify permit condition #)	
Date of Deviation:	Duration of Deviation:
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	
Permit Requirement (specify permit condition #)	
Date of Deviation:	Duration of Deviation:
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	

Form Completed by:
Title/Position
Telephone:
Date:

Attach a signed certification to complete this report.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF AIR QUALITY
 Compliance Branch
 100 North Senate Avenue, Indianapolis, Indiana 46204**

ANNUAL MOLTEN GLASS PRODUCTION REPORT

Source Name: Knauf Insulation GmbH
 Source Address: One Knauf Drive, Shelbyville, Indiana 46176
 Mailing Address: One Knauf Drive, Shelbyville, Indiana 46176
 Part 70 Permit No.: T145-6038-00001
 Facility: MFG 611
 Limit: 107,310 tons of molten glass per 12-consecutive month period, with compliance determined at the end of each month.

Reporting Year:

Month	Glass Production		
	Column 1	Column 2	Column 1 + Column 2
	This month (tons/month)	Previous 11 Months	12- Month Total (tons/year)

Form Completed By:
Title/Position:
Date:
Telephone:

A certification by the responsible official as defined by 326 IAC 2-7-1(34) is required for this report.

**Indiana Department of Environmental Management
Office of Air Quality**

Technical Support Document (TSD)
Prevention of Significant Deterioration (PSD)
Emission Offset (EO)
Significant Source Modification (SSM) of a Part 70 Source
Significant Permit Modification (SPM) of Part 70 Operating Permit

Source Background and Description
--

Source Name:	Knauf Insulation GmbH
Source Location:	One Knauf Drive, Shelbyville, IN 46176
Mailing Address:	One Knauf Drive, Shelbyville, IN 46176
Responsible Official:	Vice President of Operations
County:	Shelby
SIC Code:	3296
Source Categories:	1 of 28 Listed Source Categories Major PSD and EO Source Major Source under Section 112 of the CAA Part 70 Source Clean Unit Source
Part 70 Operating Permit :	145-6038-00001, issued on September 14, 1999
Permit Number:	EO/SSM 145-20887-00001 SPM 145-21234-00001
Permit Writer:	Iryn Calilung 317/233-5692

Permitting History

The following table summarizes the approvals issued to Knauf Insulation GmbH since the issuance of their Part 70 Operating Permit. Approvals are arranged in ascending order based on their issuance dates.

Table 1 - - Issued Approvals	
Permit Number	Issuance Date
Part 70 Permit 145-6038-00001	September 14, 1999
First Significant Permit Modification 145-11969-00001	July 6, 2000
Second Significant Permit Modification 145-14586-00001	November 20, 2001
First Reopening 145-13486-00001	January 7, 2002
First Administrative Amendment 145-15521-00001	July 15, 2002
Second Administrative Amendment 145-18481-00001	December 17, 2003

Existing approvals indicated the source location and address of this plant to be 240 Elizabeth Street, Shelbyville, Indiana 46176. This address is being amended to One Knauf Drive, Shelbyville, Indiana 46176.

General Description of the Proposed Modification

On February 28, 2005, the Office of Air Quality (OAQ) received an application from Knauf Insulation GmbH to expand their Shelbyville plant, located at One Knauf, Shelbyville, Indiana, Shelby County. The fiberglass insulation products manufactured in this plant are commercial/industrial products, rather than residential insulation products.

The expansion project will consist of the following processes:

- (1) **Raw Material Handling**
The primary glass materials for the glass include silica sand, soda ash, limestone, borax, and post-consumer recycled glass (cullet). The glass raw materials are received in bulk by rail car and truck. The bulk materials are unloaded from the trucks and rail cars by a mechanical conveying system to storage silos. All conveying and storage areas are enclosed.
- (2) **Glass Melting**
The raw materials are heated in the electric glass melting furnace, to a temperature of approximately 2,500 °F. The raw materials are then transformed through a sequence of chemical reactions to molten glass. Raw materials fed into the glass furnace where electrodes melt the raw materials into molten glass. All glass melting is done electronically.
- (3) **Fiberglass Manufacturing Line, consisting of the following:**
 - (a) **Glass Fiber Forming and Binder Application**
A rotary spin process is used to form glass fibers. Molten glass from the furnace is continuously poured into a rotating cylinder or spinner. Centrifugal force causes the molten glass to flow through small holes of the spinner. The emerging fibers are entrained in a high velocity air stream, and binder is applied to bond the fibers. The binders consist of a solution of phenol-formaldehyde resin, water, urea, organo silane, a catalyst and ammonia.
 - (b) **Fiberglass Mat Forming**
The glass fibers are pulled onto a perforated flyte conveyor belt directly below the spinners, by suction from fans pulling through the perforated conveyor belt. The fibers are collected on the conveyor to form a fiberglass mat. Each spinner contributes fiberized glass to the mat causing the mat to increase in thickness as it travels through the forming section. The thickness of the fiberglass mat is controlled by the conveyor speed.
 - (c) **Curing the Binder-Coated Fiber Glass Mat**
After the mat is formed, it continues on a conveyor to the curing oven. Upper and lower perforated flytes in the oven compress and cure the thermo setting binder on the fiberglass mat to the desired thickness. The purpose of the curing oven is to drive off the moisture remaining on the fibers and thermally cure the binder.
 - (d) **Cooling the Fiber Glass Mat**
After the fiber glass mat has been cured, it passes over a cooling section where ambient room air is induced through the mat.

- (4) Facing (backing material) Application
Facing material (backing) is applied to some of the commercial/industrial products. A water based adhesive is used to glue the facings to the fiberglass mat.
- (5) Cutting and Packaging
The mat edges are trimmed and cut. The trimmed edge waste is recycled using an air conveyer system back to the forming section to be included with the new fiber glass mat being formed.

In addition to these new emission units, three (3) existing permitted furnaces, associated manufacturing lines, and raw material handling systems will retire as part of the project. These three (3) manufacturing lines are identified as MFG 601, MFG 603 and MFG 605.

Confidential Information

The following information regarding the proposed expansion has been submitted by Knauf Insulation GmbH as confidential information:

- (1) Basic Plant Layout and Dimensions;
- (2) Stack Information;
- (3) Process Equipment and Throughput;
- (4) Process Flow Diagrams;
- (5) Nominal or Maximum Capacities of the Emission Units, Except For the Nominal Capacity of the Entire Proposed Expansion;
- (6) Average Production Rates;
- (7) Material Safety Data Sheets; and
- (8) Emission Factors and Emission Rates.

Emission Units Descriptions

The proposed fiberglass insulation expansion will consist of the following emission units. The nominal capacities of these emission units have been classified as confidential information per Knauf Insulation GmbH submission and as part of their application.

- (a) Raw Material and Handling Systems
 (1) The nominal capacities of these units have been classified as confidential information.

Table 2 - - Raw Material and Handling Systems			
Emission Unit	Emission Unit ID	Stack ID	Control Device *
Silica sand storage silos	Silo61	6-1	Baghouse
Nepheline Syenite storage silos	Silo62	6-2	Baghouse
Soda ash storage silos	Silo63	6-3	Baghouse
Limestone storage silo	Silo64	6-4	Baghouse
Dolomite storage silo	Silo65	6-5	Baghouse
Minor ingredient storage silo	Silo66	6-6	Baghouse
Spare storage silo	Silo67	6-7	Baghouse
Borax storage silo	Silo69	6-9	Baghouse
CNSMR cullet storage silo	Silo612	6-12	Baghouse
Knauf cullet storage silo	Silo613	6-13	Baghouse
Raw material unloader	RMUNLDR616	6-16	Baghouse
Gathering belt/Weigh Scales	GTHRNGBLT617	6-17	Baghouse
Batch mixer/Check Scale	BMXR618	6-18	Baghouse
611 Furnace day bins	DB619	6-19	Baghouse
Knauf cullet handling	KCHNDLNG620	6-20	--
Resin unloading	RUNLDNG626	6-26	--
Binder storage	BSTG627	6-27	--
Binder mixing	BMXG	6-28	--
* Controlled emissions exhaust inside the building.			

- (2) Thirty eight (38) binder mixing and miscellaneous storage tanks, ranging from 50 gallons to 15,000 gallons.

Volatile organic compound (VOC) emissions from these storage tanks vent inside the binder building and are then ducted to the inlet of the wet electrostatic precipitator (ESP) (Stack 6-22).

(b) FURNACE 611 -- Stack 6-21

One (1) electrically heated glass melting furnace, identified as FURN 611. This furnace is common to:

- (1) 611 FORMING,
- (2) 612 FORMING,
- (3) 613 FORMING,
- (4) 613 CURING/COOLING,
- (5) 614 FORMING, and
- (6) 614 CURING/COOLING.

- The nominal capacity of FURN 611 is 300 tons of molten glass per day.
- The particulate emissions from FURN 611 are controlled by a baghouse, identified as FURN 611 Baghouse.
- Controlled emissions from FURN 611 exhaust through a stack identified as Stack 6-21.

(c) Stack 6-22

(1) 611 FORMING

One (1) fiberglass forming section, identified as 611 FORMING, utilizing natural gas for fiberization. Products formed in 611 FORMING are ready for packaging.

- The nominal capacity of 611 FORMING has been classified as confidential information.
- The particulate emissions from 611 FORMING are controlled by a wet electrostatic precipitator (ESP). This wet ESP is common to all the forming sections.
- Controlled emissions from 611 FORMING exhaust through a stack identified as Stack 6-22.

(2) 612 FORMING

One (1) fiberglass forming section, identified as 612 FORMING, utilizing natural gas for fiberization. Products formed in 612 FORMING are ready for packaging.

- The nominal capacity of 612 FORMING has been classified as confidential information.
- The particulate emissions from 612 FORMING are controlled by a wet electrostatic precipitator (ESP). This wet ESP is common to all the forming sections.
- Controlled emissions from 612 FORMING exhaust through a stack identified as Stack 6-22.

(3) 613 FORMING

One (1) fiberglass forming section, identified as 613 FORMING, utilizing natural gas for fiberization. Products formed in 613 FORMING are routed to the 613 CURING/COOLING.

- The nominal capacity of 613 FORMING has been classified as confidential information.
- The particulate emissions from 613 FORMING are controlled by a wet electrostatic precipitator (ESP). This wet ESP is common to all the forming sections.
- Controlled emissions from 613 FORMING exhaust through a stack identified as Stack 6-22.

(4) 614 FORMING

One (1) fiberglass forming section, identified as 614 FORMING, utilizing natural gas for fiberization. Products formed in 614 FORMING are routed to the 614 CURING/COOLING.

- The nominal capacity of 614 FORMING has been classified as confidential information.

- The particulate emissions from 614 FORMING are controlled by a wet electrostatic precipitator (ESP. This wet ESP is common to all the forming sections.
- Controlled emissions from 614 FORMING exhaust through a stack identified as Stack 6-22.

(d) Stack 6-29

(1) 613 CURING/COOLING

One (1) fiberglass curing/cooling section, identified as 613 CURING/COOLING, consisting of natural gas fired curing oven(s), duct burners, and edge coat dryer burner.

- The nominal capacity of 613 CURING/COOLING has been classified as confidential information.
- The volatile organic compound (VOC), hazardous air pollutants (HAPs), and condensible particulate emissions from 613 CURING/COOLING are controlled by two (2) regenerative thermal oxidizers (RTOs), each rated at 2 million Btu per hour.
- The NOx emissions from each curing oven, duct burner and edge coat dryer of 613 CURING/COOLING are reduced by low NOx burners.
- Controlled emissions from 613 CURING/COOLING exhaust through a stack identified as Stack 6-29.

(2) 614 CURING/COOLING

One (1) fiberglass curing/cooling section, identified as 614 CURING/COOLING, consisting of natural gas fired curing oven(s) and duct burners.

- The nominal capacity of 614 CURING/COOLING has been classified as confidential information.
- The volatile organic compound (VOC), hazardous air pollutants (HAPs), and condensible particulate emissions from 614 CURING/COOLING are controlled by the same two (2) regenerative thermal oxidizers (RTOs), each rated at 2 million Btu per hour, that control VOC emissions from 613 CURING/COOLING.
- The NOx emissions from each curing oven and duct burner of 614 CURING/COOLING are reduced by low NOx burners.
- Controlled emissions from 614 CURING/COOLING exhaust through a stack identified as Stack 6-29.

Table 3 - - Summary of Emission Units, Stacks and Controls		
Emission Unit ID	Stack ID	Add-on Control Device
FURN 611	6-21	Baghouse (Particulate)
611 FORMING	6-22	Wet ESP (Particulate)
612 FORMING		
613 FORMING		
614 FORMING		
613 CURING/COOLING	6-29	RTOs (VOC, HAPs and Condensable Particulate)
614 CURING/COOLING		Low NOx Burners (NOx)

Existing Manufacturing Lines to Retire

The following existing emission units are going to be retired upon operation of the proposed expansion:

- (a) MFG 601 - - Stack 1-1 and Stack 1-2
 - (1) One (1) electrically heated glass melting furnace, identified as Unit ID # FURN 601, installed in 1978, exhausting through ID # 1-1.
 - (2) One (1) fiberglass manufacturing line consisting of forming, curing, and cooling sections, identified as Unit ID # MFG 601, installed in 1978, operating at a rated heat input capacity of 30 million (MM) British thermal units (Btu) per hour, combusting natural gas, utilizing one (1) wet electrostatic precipitator for particulate control, and two (2) natural gas fired thermal oxidizers with a rated combined heat input capacity of 36 MMBtu per hour, exhausting through one (1) stack ID #1-2.
- (b) MFG 603 - - Stack 3-1 and Stack 3-2
 - (1) One (1) electrically heated glass melting furnace, identified as Unit ID # FURN 603, installed in 1978, exhausting through one (1) stack ID #3-1.
 - (2) One (1) fiberglass manufacturing line consisting of forming section, identified as Unit ID # MFG 603, installed in 1978, operating at a rated heat input capacity of 15 million (MM) British thermal units (Btu) per hour, combusting natural gas, utilizing two (2) wet scrubbers for particulate control, exhausting through one (1) stack ID #-3-2.
- (c) MFG 605 - - Stack 5-1, Stack 5-2, Stack 5-3, Stack 5-4, and Stack 5-5
 - (1) One (1) natural gas-fired glass melting furnace, identified as Unit ID # FURN 605, installed in 1983, operating at a rated heat input capacity of 10 MMBtu per hour, utilizing a baghouse for particulate control and exhausting through one (1) stack ID #5-1.
 - (2) One (1) fiberglass manufacturing line consisting of forming, curing, and cooling sections, identified as Unit ID # MFG 605, installed in 1983, operating at a rated heat input capacity of 20 MMBtu per hour, combusting natural gas, exhausting through four (4) stacks ID #5-2, 5-3, 5-4, and 5-5.
- (d) Eight (8) storage silos, identified as Unit ID # SILO 01, SILO 02, SILO 03, SILO 04, SILO 05, SILO 06, SILO 07, and SILO 08, used to store limestone, dolomite, feldspar, borax, sand, soda ash, post consumer cullet, and a spare, respectively, each utilizing a baghouse for particulate control, each exhausting through stacks S/V ID #0-1 through 0-8, respectively.
- (e) One (1) batch raw material receiving bin, identified as Unit ID # RMH 02, four (4) day bins, identified as Unit ID # DB 01, DB 02, DB 03, and DB 05, used to store raw materials for FURN 601, FURN 602, FURN 603, and FURN 605, respectively, and one (1) intermediate batch bin, identified as Unit ID #DB 02A, each utilizing a baghouse for particulate control, exhausting through stacks S/V ID # 0-10 through 0-15.

Control Devices Specifications

Table 4 - - Control Devices Specifications					
Stack ID	Emission Unit ID	Control Device	Flow Rate	Grain Loading	Efficiency (%)
6-1	Silo61	Baghouse	980	0.0017	
6-2	Silo62	Baghouse	980	0.0005	
6-3	Silo63	Baghouse	980	0.0007	
6-4	Silo64	Baghouse	980	0.0002	
6-5	Silo65	Baghouse	980	0.0005	
6-6	Silo66	Baghouse	980	Neg	
6-7	Silo67	Baghouse	980	Neg	
6-9	Silo69	Baghouse	980	0.0007	
6-12	Silo612	Baghouse	980	Neg	
6-13	Silo613	Baghouse	980	Neg	
6-16	RMUNLDR616	Baghouse	980	0.0285	
6-17	GTHRNGBLT617	Baghouse	980	0.0061	
6-18	BMXR618	Baghouse	980	0.2244	
6-19	DB619	Baghouse	980	0.0037	
6-20	KCHNDLNG620	--	--	--	
6-21	FURN 611	Baghouse	38,500	0.0061	99
6-22	611 FORMING	Wet ESP	633,000	0.0101	75
	612 FORMING				
	613 FORMING				
	614 FORMING				
	Binder Mixing and Storage Tanks				
6-26	RUNLDNG626	--	--	--	--
6-27	BSTG627	--	--	--	--
6-28	BMXG	--	--	--	--
6-29	613 CURING/COOLING	2 RTOs (2 MMBtu/hour each)	56,500 acfm	--	95
	614 CURING/COOLING	Low NOx Burners	--	--	50

Emission Calculations

See Appendix A - - Emission Calculations - - of this TSD for the calculations. The table below summarizes the potential to emit of the proposed expansion, including collateral emissions from the use of add-on control devices.

Table 5 - - Potential to Emit After Control of the New Emission Units (tons/year)						
Emission Unit ID	Stack ID	PM/PM ₁₀	NO _x	CO	VOC	SO ₂
Silo61	6-1	0.062	--	--	--	--
Silo62	6-2	0.018	--	--	--	--
Silo63	6-3	0.025	--	--	--	--
Silo64	6-4	0.009	--	--	--	--
Silo65	6-5	0.018	--	--	--	--
Silo66	6-6	0	--	--	--	--
Silo67	6-7	0	--	--	--	--
Silo69	6-9	0.025	--	--	--	--
Silo612	6-12	0	--	--	--	--
Silo613	6-13	0	--	--	--	--
RMUNLDR616	6-16	0.21	--	--	--	--
GTHRNGBLT617	6-17	0.223	--	--	--	--
BMXR618	6-18	0.223	--	--	--	--
DB619	6-19	0.136	--	--	--	--
KCHNDLNG620	6-20	0	--	--	--	--
RUNLDNG626	6-26	0	--	--	--	--
BSTG627	6-27	0	--	--	--	--
BMXG	6-28	0	--	--	--	--
FURN 611	6-21	8.82	0	3.29	0	0
MFG 611 (611 FORMING, 612 FORMING, 613 FORMING, 614 FORMING, 613 CURING/COOLING, 614 CURING/COOLING)	6-22 and 6-29	240.90	145.64	229.95	123.18	10.95
RTOs		--	1.8	--	--	--
Total		250.67	147.44	233.24	123.18	10.95

**Potential To Emit (PTE) After Control of the Proposed Expansion
 (New Emission Units Only)**

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as “ the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U.S. EPA.□

See Table 5 for the summary and Appendix A - - Emissions Calculations - - of this TSD for the itemized emissions.

Table 6 - - - Total PTE of the Proposed Expansion After Control	
Pollutant	Total PTE (tons/year)
PM/PM ₁₀	250.67
NO _x	147.44
CO	233.24
VOC	123.18
SO ₂	10.95
Sulfuric Acid Mist	--
Fluorides	--
Lead	--
Beryllium	--
Mercury	--
Any single HAPs	Greater than 10 tons/year
Total HAPs	Greater than 25 tons/year

Permitting Level Determination

- (1) Approval to construct
 Pursuant to 326 IAC 2-7-10.5(f)(1) and 326 IAC 2-7-10.5(f)(4), the proposed expansion is processed as a significant source modification because the potential to emit of the proposed expansion is greater than 25 tons per year and it is a modification under 326 IAC 2-3 Emission Offset (EO) for NO_x and 326 IAC 2-2 (PSD) for NO₂.

The approval to construct for Knauf Insulation GmbH is identified as **EO/SSM 145-20887-00001**.

- (2) Approval to operate
 Pursuant to 326 IAC 2-7-12(d), the significant source modification is incorporated to the existing Part 70 Operating permit as a significant permit modification.

The approval to operate for Knauf Insulation GmbH is identified as **SPM 145-21234-00001**.

County Attainment Status

- (1) Knauf Insulation GmbH is located in Shelby County, Indiana.

Table 7 - - - Shelby County	
Pollutant	Status
PM ₁₀	Attainment
PM _{2.5}	Attainment
SO ₂	Attainment
NO ₂	Attainment
1-Hour Ozone	Attainment
8-Hour Ozone	Nonattainment
CO	Attainment
Lead	Attainment

- (2) Volatile organic compounds (VOC) and Nitrogen Oxides (NO_x) - - 8 hour zone standard

VOC and NO_x are regulated under the Clean Air Act (CAA) for the purposes of attaining and maintaining the National Ambient Air quality Standards (NAAQS) for ozone. Therefore, VOC and NO_x emissions are considered when evaluating the rule applicability relating to the ozone standards.

Shelby County has been designated as nonattainment for the 8-hour ozone standard. Therefore, VOC and NO_x emissions were reviewed pursuant to the requirements for Emission Offset 326 IAC 2-3.

- (3) Criteria Pollutants

Shelby County has been classified as attainment or unclassifiable for all the other pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

PSD and Emission Offset Applicability Determination

- (1) To determine if this proposed modification/project will be a major modification, the emissions increases occurring at all new or modified units, and any other increases at existing emissions units not being modified, which could experience emissions increases that will result from the change have to be determined. Since this type of operation is one of the 28 listed source categories under 326 IAC 2-2-1(gg), the fugitive particulate matter emissions are counted toward determination of PSD applicability.
- (2) Project -- 326 IAC 2-2-1(qq)
 -- means a physical change in, or change in the method of operation of an existing major source.
 -- in this specific case, the project is the installation of new manufacturing lines and the removal of existing manufacturing lines.

Table 8 - - Major Applicability Determination					
Pollutant	PTE After Control of the New Emissions Units (tons/year) See Table 6	Past Actual Emissions of the Retiring Emission Units (tons/year) See Table 9 below	Net Emissions (tons/year)	PSD/EO Significant Level (tons/year) [326 IAC 2-2-1(xx)]	Subject to Major Review (Y/N)
PM/PM ₁₀	250.67	236.70	13.97	25/15	No
NO_x	145.64	62.94	82.70	40	Yes
CO	233.24	141.30	91.94	100	No
VOC	123.18	84.05	39.13	40	No
SO ₂	10.95	--	10.95	40	No

- (3) Net Emissions = (PTE New Emission Units) + (Net Emissions of the Retiring Units)
 = (PTE New Emission Units)+(Future Actual - Past Actual of Retiring Units)
 = (PTE New Emission Units)+(0- Past Actual of Retiring Units)
 = PTE New Emission Units - Past Actual of Retiring Units
 = If less than the significant levels, major source new source review requirements do not apply.
 or
 = If greater than the significant levels, major source new source review requirements apply.
- (4) The proposed project is minor for PM/PM₁₀, CO, VOC, and SO₂, because the net emissions are less than the PSD significant levels.
- (5) The proposed project is major for ozone because the NO_x net emissions are greater than the Emission Offset significant level.

Past Actual Emissions of MFG 601, MFG 603 and MFG 605

The following table summarizes the baseline actual emissions of the manufacturing lines 601, 603 and 605 that will retire upon the start up of the proposed expansion.

Since these lines are going to be retired, their future actual emissions will be zero.

Table 9 - - Average Baseline Actual Emissions (tons/year)					
Operations	PM/ PM ₁₀	NO _x	CO	VOC	SO ₂
MFG 601					
2004	96.05	33.9	92.55	39.33	--
2003	96.05	33.9	92.55	39.33	--
<i>Average</i>	96.05	33.9	92.55	39.33	--
MFG 603					
2004	47.88	2.76	14.15	15.37	--
2003	47.88	2.76	14.15	15.37	--
<i>Average</i>	47.88	2.76	14.15	15.37	--
MFG 605					
2004	92.81	25.84	34.6	29.35	--
2003	92.81	25.84	34.6	29.35	--
<i>Average</i>	92.81	25.84	34.6	29.35	--
Total	236.7	62.94	141.30	84.05	--

Baseline Actual Emission - - 326 IAC 2-2-1(e) and 326 IAC 2-2-1(jj)(1)(B)
 - - 326 IAC 2-3-1(d) and 326 IAC 2-3-1(dd)(1)(B)

Baseline period used: calendar years January 2003 to December 2004

These actual emissions are not consistent with the information in the OAQ Emission Inventory Database, because Knauf Insulation GmbH submitted revised actual emissions as part of this application (see Table 9 of the Appendix A - - Emissions Calculations - - for the itemized actual emissions).

Average = [(2004 actual emissions) + (2003 actual emissions)]/2 = tons/year

Total = (601 average actual emissions)+(603 average actual emissions)+(603 average actual emissions)
 = tons/year

Federal Rule Applicability Determination

- (1) New Source Performance Standards (NSPS) 40 CFR Part 60
 - (a) 40 CFR Part 60, Subpart PPP - - Standard of Performance for Wool Fiberglass Insulation Manufacturing Plants [40 CFR 60.680]
 - (1) 613 FORMING, 613 CURING/COOLING, 614 FORMING, and 614 CURING/COOLING are each subject to 40 CFR Part 60, Subpart PPP because construction is expected to commence after February 7, 1984. [40 CFR 60.680a and b]

This NSPS will apply upon start up of the new affected units.
 - (2) The particulate matter (PM) emissions from 613 FORMING, 613 CURING/COOLING, 614 FORMING, and 614 CURING/COOLING shall each be limited to 11.0 pounds of particulate per ton of glass pulled. [40 CFR 60.682]
 - (b) 40 CFR 60.290, Subpart CC - - Standard of Performance for Glass Manufacturing Plants
There are no 40 CFR Part 60, Subpart CC requirements specified in the proposed permit because this subpart does not apply to electric melters. [40 CFR 60.290(c)]
 - (c) 40 CFR Part 60, Subpart Kb
There are no 40 CFR Part 60, Subpart Kb requirements specified in the proposed permit because each storage tank has less than 75 cubic meters capacity. The biggest tank has a capacity of 15,000 gallons (56.78 cubic meters).
 - (d) Non applicable portions of the NSPS will not be included in the permit.
- (2) National Emission Standards for Hazardous Air Pollutants (NESHAP) 40 CFR Part 63
40 CFR Part 63, Subpart NNN - - National Emission Standards for Hazardous Air Pollutants for Wool Fiberglass Manufacturing
 - (a) Applicability
 - (1) Even prior to this proposed expansion, Knauf Insulation GmbH is subject to 40 CFR Part 63, Subpart NNN. This NESHAP will apply upon start up of the new affected units.
 - (2) FURN 611 is subject to NESHAP 40 CFR Part 63, Subpart NNN because the source is a major source for hazardous air pollutants.
 - (3) 613 FORMING, 613 CURING/COOLING, 614 FORMING, and 614 CURING/COOLING are subject to NESHAP 40 CFR Part 63, Subpart NNN because the source is a major source for hazardous air pollutants.
 - (4) Non applicable portions of the NESHAP will not be included in the permit.
 - (b) General Provisions
The provisions of 40 CFR 63 Subpart A – General Provisions, which are incorporated as 326 IAC 20-1-1, apply to the facility described in this section except when otherwise specified in 40 CFR 63 Subpart NNN.

- (c) Emission Limits and Standards
 - (1) PM - - 40 CFR 63.1382(a)(1)
The owner or operator shall not discharge or cause to be discharged into the atmosphere in excess of 0.5 pounds of PM per ton of glass pulled for the FURN 611.
 - (2) Formaldehyde - - 40 CFR 63.1382(a)(2)(ii)
The owner or operator shall not discharge or cause to be discharged into the atmosphere in excess of 0.8 pounds of formaldehyde per ton of glass pulled for each 613 FORMING, 613 CURING/COOLING, 614 FORMING, and 614 CURING/COOLING.
 - (3) Operating limits - - 40 CFR 63.1382(b)
The owner or operator must operate all affected control equipment and processes according to the requirements specified in 40 CFR 63.1382(b).
 - (d) Monitoring requirements - - 40 CFR 63.1383
The owner or operator must monitor all affected control equipment and processes according to the requirements specified in 40 CFR 63.1383.
 - (e) Performance Test - - 40 CFR 63.1384 (a)
The owner or operator shall conduct a performance test to demonstrate compliance with the applicable PM and Formaldehyde emission limits.

Compliance is demonstrated when the emission rate of the pollutant is equal to or less than each of the applicable emission limits.

The owner or operator shall conduct the performance test according to the procedures in 40 CFR Part 63, subpart A and 40 CFR Part 63, Subpart NNN.
 - (f) Notification, recordkeeping, and reporting requirements - - 40 CFR 63.1386
The owner or operator shall comply with the applicable notification, record keeping and reporting requirements specified in 40 CFR 63.1386.
- (3) Prevention of Significant Deterioration (PSD) 40 CFR 52.21
 - (a) The proposed project is minor for PM/PM₁₀, CO, VOC, and SO₂, because the net emission increases are less than the PSD significant levels.
 - (b) The proposed project is major for NO₂, because the net emission increase is greater than the PSD significant level (see Appendix B for the NO₂ PSD BACT Analysis).
 - (4) 40 CFR 64 (Compliance Assurance Monitoring)
 - (a) FURN 611 - - Stack 6-21
 - (1) FURN 601 is subject to the requirements of 40 CFR 64 because its potential to emit PM/PM₁₀ is greater than 100 tons per year before control (FURN 611 Baghouse).
 - (2) The PTE PM/PM₁₀ will be less than 100 tons per year after control.

See Table 4 of Appendix A - - Emissions Calculations - - for the calculations.

- (c) The FURN 611 Baghouse will be monitored according to the applicable compliance monitoring requirements specified in 40 CFR Part 63, Subpart NNN. According to this subpart, a bag leak detection system will be required.

- (b) 611 FORMING, 612 FORMING, 613 FORMING, and 614 FORMING - - Stack 6-22
 - (1) Each forming section is subject to the requirements of 40 CFR 64 because the potential to emit PM/PM₁₀ of each forming section is greater than 100 tons per year before control (wet electrostatic precipitator).

 - (2) The PTE PM/PM₁₀ of each forming section will be less than 100 tons per year after control.

See Table 7 of Appendix A - - Emissions Calculations - - for the calculations.

 - (3) Wet ESP - - Stack 6-22
The Wet ESP will be monitored according to the applicable compliance monitoring requirements specified in 40 CFR Part 60, Subpart PPP (Wool Fiberglass Insulation Manufacturing Plants).

- (c) 613 CURING/COOLING and 614 CURING/COOLING - - Stack 6-29
 - (1) Each curing/cooling section is subject to the requirements of 40 CFR 64 because the potential to emit condensible PM/PM₁₀ of each curing/cooling section is greater than 100 tons per year before control (RTO).

 - (2) The PTE condensible PM/PM₁₀ of each curing/cooling section will be less than 100 tons per year after control.

 - (3) Each curing/cooling section is subject to the requirements of 40 CFR 64 because the potential to emit VOC of each forming section is greater than 100 tons per year before control (RTO).

 - (4) The PTE VOC of each curing/cooling section will be less than 100 tons per year after control.

See Table 8 of Appendix A - - Emissions Calculations - - for the calculations.

 - (5) RTOs - - Stack 6-29
The RTOs will be monitored according to the applicable compliance monitoring requirements specified in 40 CFR Part 63, Subpart NNN (Wool Manufacturing Fiberglass).

Emission Offset Evaluation

The following summarizes the emission offset evaluation conducted for NOx emissions generated by the proposed expansion. See Table 8 of this TSD for the NOx emissions applicability determination for Emission Offset.

- (1) **Shelby County**
Knauf Insulation GmbH is located in Shelby County.
Shelby County is designated as nonattainment area for the 8-hour ozone standard.
- (2) **Authority - 326 IAC 2-3**
The Office of Air Quality (OAQ) has the authority to grant a permit pursuant to 326 IAC 2-3 and 40 CFR 51.166 (Nonattainment Rules) only when the source is located in a designated nonattainment area as specified in 40 CFR 81.315.
- (3) **Applicable State and Federal Requirements Demonstration - - IAC 2-3-3(a)(1)**
Applicable State and Federal requirements determinations have been made to demonstrate that Knauf Insulation GmbH complies with them.

Refer to the State and Federal Rule Applicability Sections of this TSD for the detailed evaluations of the applicable state and federal requirements.

- (4) **Lowest Achievable Emission Rate (LAER) - - 326 IAC 2-3-3(a)(2)**
IDEM conducted a LAER analysis for NOx emissions. Detailed LAER analysis for the proposed expansion is shown in Appendix B - - NO_x LAER Analysis - - of this TSD. This LAER Analysis also satisfies the PSD BACT requirements for NO₂.
- (5) **In Compliance - - 326 IAC 2-3-3(a)(3)**
There are no pending enforcement actions for Knauf Insulation GmbH, IN.
- (6) **Alternatives - - 326 IAC 2-3-3(a)(4)**
Knauf Insulation GmbH decided to pursue the expansion in the plant located in Shelbyville, Indiana. Several factors considered where to locate the expansion are: productivity of the local workforce, the access of the raw materials, the ability to distribute products, and the technical knowledge of the plant's staff. The plant in Shelbyville Indiana is an existing plant, a workforce already exists at the plant and will allow the retention of approximately 350 local jobs.

The expansion will cost \$150 million in installing new manufacturing lines and replacing older manufacturing lines. In implementing the state and federal air regulations, it is expected that the new manufacturing lines will use better add on control devices.

- (7) **Actual Emissions Of The Same Pollutant From an Existing Source - - 326 IAC 2-3-3(a)(5),
326 IAC 2-3-3(b)(1) and 326 IAC 2-3-5**

On October 22, 2001, PSI Energy was approved for the re-powering of their Noblesville Generating Station, IN. On February 28, 2003, three (3) coal fired boilers (Nos. 1, 2, and 3) were retired and replaced with three (3) combustion turbines (Nos. 3, 4, and 5). These turbines commenced operation in 2003. As a result of the re-powering of the station, NOx emissions were reduced. As documented for the review of the re-powering of the Noblesville Generating Station, the project reduced the NOx emissions by 2,047.07 tons of NOx emissions as net emissions

decrease. Based on IDEM's preliminary evaluation, a NOx net decrease of 1968.01 tons is available as emission credit.

On February 8, 2005, the Office of Air Quality (OAQ) received a letter from PSI Energy for the transfer of NOx emissions from the Noblesville Generating Station to Knauf Insulation GmbH for emission offset purposes.

- (8) Federally Enforceable - - IAC 2-3-3(b)(8)
The NOx emissions credits are permanent and federally enforceable by the incorporation of the Significant Source Modification 057-14278-00004, issued on October 22, 2001 to PSI Energy's Part 70 Operating Permit 057-7173-00004, issued on April 13, 2004. The NOx emissions were specified at a maximum permitted amount of 184.99 tons per year of NOx emissions for the three (3) combustion turbines.
- (9) Credits Not Relied Upon for Major Permit - - IAC 2-3-3(b)(8)
The net NOx emissions decreases from PSI Energy due to the re-powering of the Noblesville Generating station have not been relied upon by PSI for major review or permitting.
- (10) Offset Ratio - - 326 IAC 2-3-3(a)(5)(A)
The emission offset shall be such that there will be reasonable further progress toward attainment of the applicable ambient air quality standard and greater than one-for one.

For Knauf Insulation GmbH, the maximum offset requirement will be 1.1 to 1.

- (11) Tons per Year to be Offset - - 326 IAC 2-3-3(a)(6)
The NOx potential to emit of the proposed expansion is 82.7 tons per year (see Table 8 of this TSD).

The following NOx emissions are the NOx emissions credit needed by Knauf Insulation GmbH to offset the NOx emissions generated by the proposed expansion:

$$\text{NOx} = (82.7 \text{ tons/year}) * (1.1) = 90.97 \text{ tons per year}$$

- (12) Emission Reductions Due to Other Rules - - 326 IAC 2-3-3(b)(9), 326 IAC 2-3-3(b)(12),
and 326 IAC 2-3-3(b)(13)

The NOx emissions transferred from PSI Energy to Knauf Insulation GmbH were not generated by PSI Energy through the Acid Rain Program, NOx Trading, Pollution Control Project (PCP), Plant wide Applicability Limitation (PAL) or Clean Unit provisions.

- (13) Approval to Construct - - 326 IAC 2-3-3(a)(7)
Knauf Insulation GmbH submitted a construction application on February 28, 2005. The approval to construct is identified as **Significant Source Modification No.: 145-20887-00001**.

State Rules Applicability Determination

- (1) Pursuant to 326 IAC 2-1.1-4 (Federal Provisions), in case of a conflict between the state rules and a provision of federal law or regulation, the more stringent requirement applies.
- (2) 326 IAC 1-6-3 and 326 IAC 2-7-5(13) (Preventive Maintenance Plan (PMP))
Knauf Insulation GmbH is subject to the PMP requirements. Development, implementation, and maintenance of PMPs will be required for the following control devices:
 - (a) Wet Electrostatic Precipitator,
 - (b) RTO, and
 - (c) Baghouses.

This determination is based on previous evaluations made for the Part 70 Operating Permit.

- (3) 326 IAC 1-7-1 (Stack Height Requirements)
Stack 6-22 and Stack 6-29 are subject to this requirement because the particulate matter emissions are greater than 25 tons per year.

Stack ID	Outlet Diameter (feet)	Height (feet)	Maximum Outlet Flow Rate (acfm)	Outlet Gas Temperature (°F)
6-22	26	200	633,000	100
6-29	4	125	74,000	500

- (4) 326 IAC 2-1.1-6 (Public Notice)
 - (a) Unless otherwise stated, information used in this review was derived from the application submitted by the applicant on February 28, 2005.

Additional information was received on April 21, 2005; April 28, 2005; May 24, 2005; May 25, 2005; June 7, 2005; June 9, 2005; June 13, 2005; June 22, 2005; June 23, 2005; July 8, 2005; July 26, 2005; August 4, 2005; August 8, 2005; and August 18, 2005.
 - (b) The applicant has provided a copy of the application in the Shelbyville-Shelby County Public Library, 57 West Broadway, Shelbyville, IN 46176.
 - (c) A notice of the preliminary findings will be published in the most circulated newspaper in the area. There will be a 30-day comment period.
- (5) 326 IAC 2-1.1-8 (Time periods for determination on permit applications)
Pursuant to 326 IAC 2-1.1-8(a)(1), a final action needs to be issued no later than 270 calendar days from the receipt of the application, taking into account actions that can suspend the time period.

The application was received on February 28, 2005.

- (6) 326 IAC 2-2-2 (Prevention of Significant Deterioration (PSD) Applicability)
- (a) 1 of 28 Listed Source Categories
 Knauf Insulation GmbH is one of the 28 listed source categories under 326 IAC 2-2-1(gg).
 - (b) PSD Major Source
 Knauf Insulation GmbH is classified as an existing major stationary source because one or more regulated pollutants will be emitted at a rate of 100 tons per year or more.
 - (c) Proposed Expansion
 - (1) The proposed project is minor for PM/PM₁₀, CO, VOC, and SO₂; because the net emissions are less than the PSD significant levels (see the PSD and Emission Offset Applicability Determination section of this TSD).
 - (2) The proposed project is major for NO₂ because the net emissions are greater than the PSD significant level (see Appendix B for the PSD BACT Analysis).

- (7) Clean Unit
 Pursuant to 326 IAC 2-3.2 (Clean Unit), the following emission units are classified as Clean Units because they have been reviewed under the Emission Offset program and will achieve emissions reductions by implementing work practices or operation of add on control devices.

The Clean Unit designations for these emission units and pollutants will be in effect for ten (10) years after the initial start up of their corresponding control devices.

Table 11 - - Clean Units		
Emission Unit/Operations	Pollutants	Control Technology
613 CURING/COOLING	NO _x	Low NO _x Burners
614 CURING/COOLING		Low NO _x Burners

The forming sections are not designated as Clean Units for NO_x because there are no add-on control devices proposed to control the NO_x emissions.

- (8) 326 IAC 2-4.1 (Major Sourced of Hazardous Air Pollutants (HAPs))
 Knauf Insulation GmbH is considered a major source in terms of hazardous air pollutant (HAP) emissions because hazardous air pollutants (HAPs) are emitted at greater than 10 tons per year for single HAP or 25 tons per year for any combination.

According to 40 CFR Part 63, Subpart NNN (National Emission Standards for Hazardous Air Pollutants for Wool Fiberglass Manufacturing), the formaldehyde emissions from the manufacturing line shall be limited to 0.8 pounds of formaldehyde per ton of glass pulled for each new manufacturing line. A manufacturing line consists of forming, curing, and cooling.

- (9) 326 IAC 2-6-1 (Emission Reporting)
 Knauf Insulation GmbH is subject to this requirement because at least one regulated pollutant has the potential to emit of 100 tons per year or more.

- (10) 326 IAC 2-7 (Part 70 Program)
 Knauf Insulation GmbH is an existing Part 70 source because at least one regulated pollutant has the potential to emit of 100 tons per year or more.
- The Part 70 Operating Permit 145-6038-00001 for Knauf Insulation GmbH was issued on September 14, 1999.
- (11) 326 IAC 2-8 (FESOP)
 This program does not apply because Knauf Insulation GmbH is a Part 70 source.
- (12) 326 IAC 3-5-1 (Continuous Monitoring of Emissions)
 There are no existing continuous emissions monitor systems (CEMS) in the plant.
- (13) 326 IAC 4-1 (Open Burning)
 Knauf Insulation GmbH LLC shall not open burn material except as provided in 326 IAC 4-1-3, 326 IAC 4-1-4, or 326 IAC 4-1-6.
- (14) 326 IAC 5-1 (Opacity limitations)
 The opacity standard specified 326 IAC 5-1 applies, except otherwise specified under 326 IAC 2-2 (PSD), 326 IAC 2-3 (EO) or 40 CFR Part 60.
- (15) 326 IAC 6-1 (PM Nonattainment limitation)
 This rule does not apply to Knauf Insulation GmbH because it is not located in any of the counties or areas specified in 326 IAC 6-1-7.
- (16) 326 IAC 6-2 (Particulate Emission Limitations for Sources of Indirect Heating)
 This rule does not apply because there are no boilers involved in this proposed expansion.
- (17) 326 IAC 6-3 (Particulate Emission For Manufacturing Process)
 (a) The following operations involved in this expansion are subject to 326 IAC 6-3. Compliance with the particulate limits specified such that the requirements under 326 IAC 2-2 (PSD) satisfies the requirements in 326 IAC 6-3.

Emission Unit ID	Stack ID	PM/PM ₁₀ PTE After Control	
		(tons/year)	(lbs/hour)
Silo61	6-1	0.062	0.014
Silo62	6-2	0.018	0.004
Silo63	6-3	0.025	0.006
Silo64	6-4	0.009	0.002
Silo65	6-5	0.018	0.004
Silo69	6-9	0.025	0.006
RMUNLDR616	6-16	0.21	0.05
GTHRNGBLT617	6-17	0.223	0.051
BMXR618	6-18	0.223	0.051
DB619	6-19	0.136	0.031

Table 12 - - Particulate Limits			
Emission Unit ID	Stack ID	PM/PM ₁₀ PTE After Control	
		(tons/year)	(lbs/hour)
KCHNDLNG620	6-20	0	0.0
613 CURING/COOLING	6-29	13.14	3
614 CURING/COOLING		8.76	2

See Appendix A - - Emission Calculations - - of this TSD for the PM/PM₁₀ PTE After Control calculations.

- (b) These facilities are not subject to 326 IAC 6-3 because they are subject to 326 IAC 11-4-1.
- (1) FURN 611,
 - (2) 611 FORMING,
 - (3) 612 FORMING,
 - (4) 613 FORMING, and
 - (5) 614 FORMING.
- (18) 326 IAC 7-1 (Sulfuric Dioxide (SO₂) Limitation)
 Knauf Insulation GmbH is subject to this rule, however, there are no specific SO₂ limitations that apply to natural gas fueled emission units.
- (19) 326 IAC 8-1-6 (New Facilities, General Reduction Requirements)
 The new additional manufacturing lines will emit VOC emissions greater than 25 tons per year. Knauf Insulation GmbH will control these VOC emissions by using a regenerative thermal oxidizer.
- Detailed VOC BACT analysis for the proposed expansion is shown in Appendix C - - VOC BACT Analysis - - of this TSD.
- (20) 326 IAC 9 (Carbon Monoxide (CO) Emission Rules)
 This rule does not apply because there are no applicable requirements specified for fiberglass insulation manufacturing lines.
- (21) 326 IAC 10 (Nitrogen Oxides (NO_x) Rules)
 This rule does not apply to Knauf Insulation GmbH C because it is not located in Clark County or Floyd County.
- (22) 326 IAC 11-4-1 (Fiberglass Insulation Manufacturing)
 Knauf Insulation GmbH is subject to 326 IAC 11-4-1 because it produces fiberglass insulation products, an existing plant after June 19, 1979 and it is located in Shelby County.

Table 13 - - Particulate Allowable Limits			
Operations	326 IAC 11-4-2 PM Limit (grains/dscf)	Proposed Add-on Control and PM Specifications (gr/dscf)	
Forming	0.025	Wet ESP	0.0101
Furnace	0.25	Baghouse	0.0061

Table 14 - - Particulate Allowable and Proposed PTE				
Operations	326 IAC 11-4-2 Allowable		Proposed	
	Loading (grains/dscf)	PM/PM ₁₀ (tons/year)	Loading (gr/dscf)	PM/PM ₁₀ (tons/year)
Forming	0.025	594.11	0.0101	240.02
Furnace	0.25	361.35	0.0061	8.82

(a) Methodology and Assumptions:

Forming Flow Rate - - 633,000 dscf/min

Furnace Flow Rate - - 38,500 dscf/min

$$\text{PM/PM}_{10} \text{ PTE after control} = (\text{flow rate dscf/min}) * (\text{grain/dscf}) * (1 \text{ lb}/7,000 \text{ grains}) * (60 \text{ min/hr}) * (8760 \text{ hr/yr}) * (1 \text{ ton}/2000 \text{ lb}) = \text{tons/year}$$

(b) The use Wet ESP (for the Forming sections) and the Baghouse (for the furnace) comply with the applicable requirements.

(c) There are no applicable requirements specified for the curing and cooling sections under 326 IAC 11-4-2.

(23) 326 IAC 12 (New Source Performance Standards (NSPS))
 This rule incorporates by reference the 40 CFR Part 60. Applicability determinations with this rule have been addressed under the Federal Rules Applicability of this TSD.

(24) 326 IAC 13 (Motor Vehicles Emissions)
 Not applicable.

(25) 326 IAC 14 (Hazardous Air Pollutants (HAPs) Emission)
 This rule incorporates by reference 40 CFR Part 61. The requirements for asbestos abatement projects under 40 CFR Part 61, Subpart M have been included in the permit for this source.

(26) 326 IAC 15 (Lead Rules)
 Knauf Insulation GmbH is not one of the listed sources subject to this rule.

(27) 326 IAC 16 (Environmental Assessment, Activities of State Agencies)
 Environmental assessments and environmental impact studies for recommendations or reports on proposals for legislation and other major state actions significantly affecting the quality of the

human environment have to be performed. However, 326 IAC 16 and the Indiana Code 13-12-4-8 specifically state that an environmental impact statement is not required under state law for the issuance of a license or permit by any state agency. Therefore, no environmental impact statement under 326 IAC 16 has been performed for this permit. Similar provisions exempt PSD permit actions from the National Environmental Policy Act [15 USC 793(c)(1)].

- (28) 326 IAC 17 (Public Records)
Knauf Insulation GmbH requested additional information to be treated as confidential information. The information has been processed as confidential materials.
- (29) 326 IAC 19 (Mobile Source Rules)
These particular rules are applicable to employees in Lake and Porter Counties only. These rules are not applicable because Knauf Insulation GmbH is located in Shelby County.
- (30) 326 IAC 20 (Hazardous Air Pollutants HAPs)
This rule incorporates by reference 40 CFR Part 63. Applicability determinations with this rule have been addressed under the Federal Rules Applicability of this TSD.
- (31) 326 IAC 21 (Acid Deposition Control)
This rule incorporates by reference the federal Acid Rain Program. There are no acid rain applicable requirements included in the permit for this source.
- (32) 326 IAC 22 (Stratospheric Ozone Protection)
This rule incorporates by reference the 40 CFR part 82. The standards for recycling and emissions reduction under 40 CFR Part 82 have been included in the permit for this source.
- (33) 326 IAC 23 (Lead Based Paint Program)
This rule does not apply because this source will not perform operations using lead-based paints.

Endangered Species

The Clean Air Act (CAA) does not contain or express requirement for the applicant or the permitting agency to analyze or consider the impact of hazardous air pollutants on endangered species when applying for or making a decision on a PSD permit. The CAA only requires impacts to endangered species be considered when the US EPA modifies the HAPs list or promulgates a NESHAP. (42 USC 7412).

In addition, Indiana's state rules do not require the performance of studies or analyses to determine the effect of toxic emissions from a source on federal or state-listed endangered species in the PSD permitting process. Endangered species are protected under state and federal laws, which prohibit the unlawful taking of an endangered species. IC 14-22-34 and 16 USC 701 et. seq.

The OAQ is not aware of any federally-listed endangered species within the vicinity of this source. Based on the location of the plant and the air quality analysis done, the impact of the new plant in an industrial area would not affect habitats of endangered species. Therefore, emissions from this source will not adversely affect any federally-listed endangered species or any state-listed endangered species. Below is a listing of endangered, threatened or rare species in Indiana.

Table 15 - - Endangered, Threatened or Rare Species in Indiana			
Common Name	Type	County	Town Name
White Cat's Paw Pearlymussel	Mollusk	Allen	Fort Wayne, Cedarville, Woodburn, Grabill
		Kosciusko	Burket , Leesburg
Eastern Fanshell Pearlymussel	Mollusk	Wabash	Lagro, Wabash
Clubshell	Mollusk	Allen	Fort Wayne, Woodburn, Grabill, Cedarville
		Kosciusko	South Whitley, Mentone, Burket , Leesburg
		Huntington	Mount Etna
		Wabash	North Manchester
Northern Riffleshell	Mollusk	Allen	Fort Wayne, Grabill, Cedarville
		Kosciusko	Mentone, Burket , Leesburg, North Webster
Peregrine Falcon	Bird	Allen	Fort Wayne
		Kosciusko	North Webster
Indiana Bat Or Social Myotis	Mammal	Kosciusko	Warsaw
		Huntington	Mount Etna
		Wabash	Roann
Prairie White-Fringed Orchid	Plant	Noble	Merriam, Kendallville

Compliance Determination and Monitoring
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The OAQ has evaluated the compliance monitoring requirements and recommends the following:

- (1) Baghouses - - Raw Material and Handling Operations
 Bag leak detection systems (BLDS) will be used to monitor the operation of the baghouses.
- (2) Baghouse - - Stack 6-21
 The FURN 611 Baghouse will be monitored according to the applicable compliance monitoring requirements specified in 40 CFR Part 63, Subpart NNN. According to this subpart, a bag leak detection system will be required.
- (3) Wet ESP - - Stack 6-22
 The Wet ESP will be monitored according to the applicable compliance monitoring requirements specified in 40 CFR Part 60, Subpart PPP (Wool Fiberglass Insulation Manufacturing Plants).
- (4) RTOs - - Stack 6-29
 The RTOs will be monitored according to the applicable compliance monitoring requirements specified in 40 CFR Part 63, Subpart NNN (Wool Manufacturing Fiberglass).

Compliance Testing Requirements

- (1) The following pollutants will be required to be tested.
 - (a) NO_x,
 - (b) PM and PM₁₀,
 - (c) VOC, and
 - (d) CO.
- (2) Testing requirements are subject to the provisions of 326 IAC 3-6.

Public Health and Safety

The Office of Air Quality (OAQ) issues technically sound permits that are protective of public health. Within the boundaries of the law, the OAQ has conducted appropriate analysis of the impacts of this proposed facility on human health. State Implementation Plan (SIP) requirements are examples of health-based standards, because the SIP requirements were proposed by the state and approved by the U.S. EPA for the purposes of maintaining the National Ambient Air Quality Standards (NAAQS). These standards are health-based standards and based on the assessment of public health risks associated with certain levels of pollution in the ambient environment. The Clean Air Act (CAA) requires each state to develop air quality plans and outlines how the standards will be met.

U.S. EPA has established ambient levels that are protective of human health. Anticipated emissions can be modeled and the resulting ambient levels compared to the federal standard. If levels are not expected to increase above U.S. EPA's ambient standard, it is appropriate to conclude that the proposed facility will not pose an increased threat to public health.

Noise, Odor and Zoning

The Office of Air Quality (OAQ) does not have jurisdiction over noise pollution, odor and zoning.

Environmental Justice (EJ)

Based on the 2000 US Census, there are 12.5% of Indiana residents who identified themselves as racial minority. An area is classified as High Racial Minority if it falls between 18.75% to 24.99%. Shelby County, IN, where Knauf Insulation GmbH is located does not fall under this classification.

Based on the 1990 US Census, 28% of Indiana residents lived in households that received an income less than or equal to twice the poverty level. This is classified a Low Income Household. Shelby County, IN does not fall under this classification.

If the source being reviewed is going to be located in an area considered to be either a High Racial Minority or Low Income Household, the OAQ attempts to publish the notice for the public review in a non-English newspaper, and holds a public meeting prior to the issuing a final action. Since Shelby County is neither of these classifications, the OAQ will only publish the notice in a most circulated newspaper in the area.

For more information on EJ, please refer to <http://www.in.gov/idem/environmentaljustice>.

Proposed Part 70 Operating Permit Changes

Appendix E - - Part 70 Operating Permit Proposed Changes - - of this TSD shows the proposed revisions to the Part 70 Operating Permit 145-6038-00001, issued on September 14, 1999.

Recommendation and Conclusion

- (1) Based on the facts, conditions and evaluations made, OAQ recommends to the IDEM Commissioner that the **EO/SSM 145-20887-00001** and **SPM 145-21234-00001** be approved.
- (2) A copy of the preliminary findings is also available on the Internet at: www.IN.gov/idem/air/permits/Air-Permits-Online.
- (3) For additional information about air permits and how the public and interested parties can participate, refer to the IDEM's Guide for Citizen Participation and Permit Guide on the Internet at: www.IN.gov/idem/guides.

TSD Appendices

The following are the appendices of this TSD:

- (1) Appendix A -- Emissions Calculations
- (2) Appendix B -- NO_x LAER Analysis and NO₂ PSD BACT Analysis
- (3) Appendix C -- VOC BACT Analysis
- (4) Appendix D -- Air Quality Impact Analysis
- (5) Appendix E -- Part 70 Operating Permit Proposed Changes

IDEM Contact

Questions regarding this proposed permit can be directed to Iryn Calilung at the Indiana Department Environmental Management, Office of Air Quality, 100 North Senate Avenue, Indianapolis, Indiana 46204 or by telephone at (317) 233-5692 or toll free at 1-800-451-6027 extension 3-5692.

**Indiana Department of Environmental Management
Office of Air Quality**

Addendum to the Technical Support Document (TSD)
Prevention of Significant Deterioration (PSD)
Emission Offset (EO)
Significant Source Modification (SSM) of a Part 70 Source
Significant Permit Modification (SPM) of Part 70 Operating Permit

Source Background and Description
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Source Name:	Knauf Insulation GmbH
Source Location:	One Knauf Drive, Shelbyville, IN 46176
Mailing Address:	One Knauf Drive, Shelbyville, IN 46176
Responsible Official:	Vice President of Operations
County:	Shelby
SIC Code:	3296
Source Categories:	1 of 28 Listed Source Categories Major PSD and EO Source Major Source under Section 112 of the CAA Part 70 Source Clean Unit Source
Part 70 Operating Permit :	145-6038-00001, issued on September 14, 1999
Permit Number:	EO/SSM 145-20887-00001 SPM 145-21234-00001
Permit Writer:	Iryn Calilung 317/233-5692

Public Notification

On September 15, 2005, the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ) had a notice published in The Shelbyville News, stating that Knauf Insulation GmbH submitted an application to expand their Shelbyville plant, located at One Knauf Drive, Shelbyville, Indiana, Shelby County, by installing a new fiberglass manufacturing line.

The public comment period for the draft permit ended on October 15, 2005. The purpose of the 30-day public comment period is to allow anyone the opportunity to review and provide comments regarding the draft permit and its supporting documents. Comments regarding this permit do not demonstrate that the draft permit failed to meet the requirements for a permit. IDEM addressed those concerns, and if necessary, amended the draft permit. In many instances, the IDEM has amended the permit and has satisfied both State and Federal regulations.

Comments Received

On October 5, 2005, Ethan Chatfield of the US EPA Region 5 submitted comments on the above referenced draft permit. On October 14, 2005, the OAQ received comments from Barnes and Thornburg LLP, on behalf of Knauf Insulation GmbH. The comments are summarized in the subsequent pages, with IDEM's corresponding responses.

In addition, the OAQ has initiated some minor revisions to the draft permit to correct typographical errors or to provide further clarity.

The IDEM does not amend the Technical Support Document (TSD). The TSD is maintained to document the original review. This addendum to the TSD is used to document responses to comments and changes made from the time the permit was drafted until a final decision is made.

Changes to the draft permit due to these comments are shown in ~~strikeout~~ fonts for deleted languages and **bold** fonts for new languages.

US EPA Region 5 Comments and IDEM's Responses

EPA Comment No. 1: Cover Page of the Draft Permit

It is not clear from the title of this permit that this is a NSR permit containing LAER requirements. Please revise the name of the permit so that the public clearly knows that this is a nonattainment New Source Review permit and not just a Title V permit modification.

IDEM Response No. 1:

IDEM has revised the cover page of the Significant Source Modification 145-20887-00001 to indicate that the air approval is also major source review under Prevention of Significant Deterioration and Emission Offset. However, the Part 70 Operating Permit itself was not modified because Section A.2 already indicates the status of the source.

EPA Comment No. 2: Section D.1 of the Draft Permit

This Section D.1 includes a NSPS, Subpart CC, but the general Part 60 Subpart A requirements were not in this section.

IDEM Response No. 2:

Even though the units indicated in Section D.1 of the permit were not involved in the proposed expansion of the plant, the general provisions to the NSPS have been added as follows:

D.1.1 General Provisions Relating to NSPS and Particulate Matter Emission

Limitation [326 IAC 12] [40 CFR Part 60, Subpart A] [40 CFR 60.290, Subpart CC]

(a) The provisions of 40 CFR Part 60, Subpart A - General Provisions, which are incorporated by reference in 326 IAC 12-1, apply to the facilities described in this section except when otherwise specified in 40 CFR Part 60, Subpart CC.

(b) Pursuant to 326 IAC 12 (40 CFR 60.290, Subpart CC) "Standard of Performance for Glass Manufacturing Plants", the particulate matter emissions from the one (1) gas-fired (with electric boost) glass melting furnace (FURN 602) shall be limited to 0.25 grams of particulate per kg of glass produced.

EPA Comment No. 3: Section D.2 of the Draft Permit
The 40 CFR Part 60, Subpart A requirements for the units in Section D.2 can not be located.

IDEM Response No. 3:
Even though the units indicated in Section D.2 of the permit were not involved in the proposed expansion of the plant, the general provisions to the NSPS have been added as follows:

D.2.1 **General Provisions Relating to NSPS and** Particulate Matter Limitation (PM)
[326 IAC 12] [40 CFR Part 60, Subpart A] [40 CFR 60.680]

- (a) **The provisions of 40 CFR Part 60, Subpart A - General Provisions, which are incorporated by reference in 326 IAC 12-1, apply to the facilities described in this section except when otherwise specified in 40 CFR Part 60, Subpart PPP.**
- (b) Pursuant to 326 IAC 12 (40 CFR 40 CFR 60.680, Subpart PPP) "Standard of Performance for Wool Fiberglass Insulation Manufacturing Plants", the particulate matter emissions from the nine (9) fiberglass pipe insulation production lines shall be limited to 5.5 kg/Mg (11.0 lb/ton) of glass pulled.

EPA Comment No. 4: Conditions D.1.4 and D.2.3 of the Draft Permit
(a) The timing of the PM₁₀ testing requirements is confusing. Please clarify.
(b) In addition, please explain why the test methods and procedure requirements under 40 CFR 60.296(d) were excluded from the permit. These requirements must be used to demonstrate compliance with Conditions D.1.1 and D.2.1.

IDEM Response No. 4:
Clarification has been made to Conditions D.1.4 and D.2.3 as follows:

D.1.4 Testing Requirements [326 IAC 2-7-6(1),(6)]

The PM₁₀ testing on Unit ID # FURN 602 and Unit ID # MFG 602 shall be repeated at least once every two (2) years from the date of ~~this~~ **the most recent** valid compliance demonstration, **utilizing 40 CFR Part 60 Appendix A, Method 5E (Determination of Particulate Emissions from the Wool Fiberglass Insulation Manufacturing Industry) or other test methods as approved by the Commissioner.**

In addition to these requirements, IDEM may require compliance testing when necessary to determine if the facility is in compliance.

D.2.3 Testing Requirements [326 IAC 2-7-6(1),(6)]

The PM test shall be repeated at least once every five (5) years from the date of ~~this~~ **the most recent** valid compliance demonstration, **utilizing 40 CFR Part 60 Appendix A, Method 5E (Determination of Particulate Emissions from the**

Wool Fiberglass Insulation Manufacturing Industry) or other test methods as approved by the Commissioner.

In addition to these requirements, IDEM may require compliance testing when necessary to determine if the facility is in compliance.

- EPA Comment No. 5: Conditions D.4.4 and D.4.7 of the Draft Permit:
- (a) Should the rule citation in Condition D.4.4 be 326 IAC 11-4-2(a)(2)?
 - (b) Should the condition to be referenced in Condition D.4.7 be Condition D.4.4 and not Condition D.4.5?

IDEM Response No. 5:
IDEM agrees and made the following changes:

D.4.4 Particulate Matter Emission Limitations [326 IAC 11-4-2]

Pursuant to 326 IAC 11-4-2~~(b)~~**(a)(2)**, the particulate matter content from FURN 611 (Stack 6-21) shall not exceed 0.25 grain per dry standard cubic feet.

D.4.7 Testing Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-6(6)] [326 IAC 2-1.1-11] [40 CFR Part 63, Subpart NNN]

(a) Within sixty (60) day from achieving maximum capacity of the proposed expansion, but no later than one hundred and eighty (180) days after initial startup of the FURN 611, the Permittee shall conduct performance tests on Stack 6-21 for the following:

- (1) PM/PM₁₀ - - to verify compliance with the PM /PM₁₀ limitations in Condition D.4.1 - PSD Minor Limits, Condition D.4.5 ~~4~~ Particulate Matter Emission Limitations, and 40 CFR Part 63, Subpart NNN;
- (2) CO - - to verify compliance with the Condition D.4.1 - PSD Minor Limits;

using the procedures set forth in 40 CFR 60, Appendix A; **40 CFR Part 51, Appendix M; Methods 1 to 5** or other methods as approved by the Commissioner

- EPA Comment No. 6: Conditions D.5.1, D.5.2, and D.5.3(b) of the Draft Permit
Please explain why emission limitations for multiple stacks were combined. BACT/LAER limits should generally be included for each source or emission unit at the facility.

IDEM Response No. 6:
IDEM recognizes that the Emission Offset Program (326 IAC 2-3) requires a pollutant-specific LAER determination on each emission unit associated with the proposed expansion. Each emission unit must achieve the lowest possible emission rate. However, LAER can also be established for an entire facility or line. If a more effective and practical LAER exists for an entire facility or line, then this LAER should be evaluated in terms of enforceability as a practical matter.

In addition, the LAER determination for Knauf Insulation GmbH was conducted using the same interpretation that was used in 40 CFR Part 63, Subpart NNN; that a fiberglass insulation manufacturing line consists of the forming, curing, and cooling operations. The US EPA has defined the "manufacturing line" as the affected facility for purposes of wool fiberglass manufacturing operations. This includes the forming, curing, and cooling sections, together.

Subpart NNN defines the affected facility as a wool fiberglass "manufacturing line," which is defined as follows:

Manufacturing line means the manufacturing equipment for the production of wool fiberglass that consists of a forming section where molten glass is fiberized and a fiberglass mat is formed and which may include a curing section where binder resin in the mat is thermally set and a cooling section where the mat is cooled.

See 40 CFR 63.1381 (emphasis added as underline), 40 CFR 60.680 and 40 CFR 60.681.

IDEM's characterization of the emission facilities for LAER reflects the same EPA characterizations included in this NESHAP.

There are no changes to the draft permit due to this comment.

EPA Comment No. 7: Condition D.5.11 of the Draft Permit

- (a) Since this facility is located in an 8-hr ozone nonattainment area with VOC emissions greater than 120 tons per year and NOx greater than 140 tons per year, it is suggested that NOx and VOC CEMs be required to demonstrate compliance.
- (b) In addition, it is suggested that PM and CO testing frequency be increased since the PTE for these units is near 250 tons per year.
- (c) Lastly, the destruction efficiency testing requirement for the RTO to demonstrate compliance with Conditions D.5.5(c) and D.5.5(d) was not specified.

IDEM Response No. 7:

- (a) IDEM agrees that continuous emission monitoring systems are the best compliance tools, however, outside of the Part 70 permitting program and 40 CFR Part 64 (Compliance Assurance Monitoring), there are a limited number of State and Federal rules which require a continuous emission monitor. In lieu of VOC and NOx continuous emission monitors, the permit was established with the compliance monitoring, testing, and reporting requirements that would sufficiently enforce and document the VOC and NOx limits to assure compliance with state and federal regulations. This permit requires VOC and NOx stack testing every two (2) years, which is a direct measurement of the amount of emissions being emitted from the stack. At the time of this permit review, there are no applicable requirements that specify continuous emission monitors are required to be installed.

- (b) The PM testing was required to be conducted once every two (2) years. This testing frequency is consistent with the other testing requirements for this plant.

The CO testing frequency has been changed from once every five (5) years to once every two (2) years to be consistent with the other testing requirements for this plant.

D.5.11(e) The CO test shall be repeated at least once every ~~five (5)~~ **two (2)** years from the date of the last valid compliance demonstration.

- (c) IDEM agrees that the overall control efficiency of the RTO should be confirmed through compliance testing. Condition D.5.11 has been revised as follows:

D.5.11(a) Within sixty (60) days after achieving maximum capacity of the proposed modification, but no later than one hundred and eighty (180) days after initial startup of the proposed expansion, the Permittee shall perform compliance testing on Stack 6-22 and Stack 6-29 for the following:

- (1) NO_x -- to verify compliance with the NO_x limitations in Condition D.5.3 - NO_x LAER and NO₂ PSD BACT Requirements;
- (2) VOC -- to verify compliance with the VOC limitations in Condition D.5.2 - VOC Emission Offset Minor Limits, and Condition D.5.5 - Volatile Organic Compound (VOC) BACT Requirements;
- (3) RTO's overall control efficiency -- to verify compliance with the overall control efficiency requirement in Condition D.5.5 - Volatile Organic Compound (VOC) BACT Requirements;**
- ~~(3)~~ **(4)** PM/ PM₁₀ -- to verify compliance with the PM/PM₁₀ limitations in Condition D.5.1 - PSD Minor Limits, Condition D.5.6 - Particulate Matter Emission Limitations, and 40 CFR Part 60, Subpart PPP;
- ~~(4)~~ **(5)** CO -- to verify compliance with the CO limitation in Condition D.5.1 - PSD Minor Limits;

utilizing the procedures set forth in 40 CFR 60, Appendix A; **40 CFR Part 51, Appendix M; Methods 1-5** or other methods as approved by the Commissioner.

EPA Comment No. 8: Pages 4 and 5 of 10 of Appendix A: Emission Calculations

- (a) There is a typographical error on the FURN number. Should it be 611 instead of 601?
- (b) Also, there is a typographical error in the first sentence on page 4 of 10.

IDEM Response No. 8:

IDEM corrected the typographical errors as follows:

The following tables summarize the potential to emit of the FURN ~~601~~ **611**.

Table 3 - - Potential to Emit (PTE) of FURN 611 (tons/year)						
Emission Unit ID	Stack ID	PM/PM ₁₀	NO _x	CO	VOC	SO ₂
Emission Factor	6-21	See table below	--	--	--	--
PTE (After Control)			0	3.29	0	0
FURN 611 Maximum Capacity = 300 tons per day = 12.5 tons per hour PTE = (12.5 tons/hour)*(Emission Factors)*(8760 hours/year)*(1 ton/2000 lbs) = tons/year CO PTE = (3.29 tons/year)*(1 year/8760 hours)*(2000 lbs/1 ton) = 0.75 pounds per hour						

Emission factors used are either from AP-42 (Compilation of Emission Factors) for combustion emissions and **or** engineering estimates made by Knauf Insulation GmbH for the manufacturing line emissions.

EPA Comment No. 9: Page 5 of 10 of Appendix A: Emission Calculations

- (a) Please explain why there are no estimated NOx, or VOC emissions for FURN 611. It is recognized that fuel is not being combusted, but won't there be some emissions from the melting process?
- (b) In addition there is not enough information describing the source of emission factors on this and subsequent pages. Is AP-42 being used? If so, please specify which Chapter and Section of AP-42?

IDEM Response No. 9:

Furnace FURN 611 is an electric furnace. Therefore, there would be no emissions due to combustion. It is also classified as a "cold-top" electric furnace, which means there is a continuous blanket on top of the batch that minimizes any emissions from the batch.

In addition, there are no organics in the batch, so there would be no reason to believe that VOC emissions would emanate from the furnace.

AP-42 was not used for the furnace because there are no AP-42 emission factors for this type of furnace.

EPA Comment No. 10: Page 9 of 10 of Appendix A: Emission Calculations

The past actual emissions appear to be based on 8760 hours of operation per year for MFG lines 601, 603 and 605. Please verify that all three of these lines operated nonstop at full capacity during the baseline period, Jan. 2003 through Dec. 2004.

IDEM Response No. 10:

Furnaces FURN 601, FURN 603, and FURN 605 operated continuously for the calendar years 2003 and 2004. Fiberglass melting furnaces do not shut down unless a furnace relining operation occurs, which did not occur for these three (3) furnaces during these years. The manufacturing lines operated most of the times during those years, with the exception of infrequent maintenance (2% of the total operating time).

The following table summarizes the revised actual emissions of the retiring forming, curing and cooling emission units, taking into account the minimal downtime due to maintenance.

Actual Emissions of Retiring Lines Taking Into Account 2% Maintenance Time for Forming and Curing/Cooling Sections								
MFG Line	PM/PM ₁₀		NO _x		CO		VOC	
	(lbs/hr)	(tons/yr)	(lbs/hr)	(tons/yr)	(lbs/hr)	(tons/yr)	(lbs/hr)	(tons/yr)
601	21.93	95.05	7.74	33.31	21.13	90.70	8.98	38.55
603	10.93	46.92	0.63	2.70	3.23	13.86	3.51	15.06
605	21.19	90.99	5.87	25.32	7.9	33.9	6.7	28.76
Total	54.05	232.96	14.24	61.33	32.26	138.46	19.19	82.37

The following table summarizes the revised major source applicability determination due to the adjustment of the baseline actual emissions of the retiring existing units. Under this evaluation, there is no change in the potential to emit of the new units.

Revised Major Source Applicability Determination					
Pollutant	PTE After Control of the New Emissions Units (tons/year) See Table 6 of the TSD	Past Actual Emissions of the Retiring Emission Units (tons/year)	Net Emissions (tons/year)	PSD/EO Significant Level (tons/year) [326 IAC 2-2-1(xx)]	Subject to Major Review (Y/N)
PM/PM₁₀	250.67	232.96	17.71	25/15	Yes
NO_x	145.64	61.33	84.31	40	Yes
CO	233.24	138.46	94.78	100	No
VOC	123.18	82.37	40.81	40	Yes
SO ₂	10.95	--	10.95	40	No

Based on the revised major source application determination, the proposed project will be major for PM₁₀, NO_x and VOC. Knauf Insulation GmbH accepted an annual production limitation for the forming, curing, and cooling sections of the expansion, such that the project will be minor for PM₁₀ and VOC emissions. The limited annual production is equivalent to the annual maximum production minus the 2% downtime due to maintenance of these specific sections. The maximum production of 300 tons per day was maintained.

$$\text{Limited Annual Production} = (300 \text{ tons/day}) \times (365 \text{ days/year}) \times (0.98) = 107,310 \text{ tons/year}$$

The following table summarizes the limited PTE of the proposed expansion based on the limited annual production of 107,310 tons per year of molten glass.

MFG 611 Limited PTE at 107,310 tons/year			
Pollutant	Emission Factor (lbs/ton)	Limited PTE	
		(lbs/hour)	(tons/year)
PM/PM ₁₀	4.4	55	236.08
NO _x	2.66	33.25	142.73
CO	4.2	52.5	225.35
VOC	2.25	28.13	120.73
SO ₂	0.2	2.5	10.73
PTE = (300 tons/day) * (Emission Factor lbs/ton) * (1 day/24 hours) = lbs/hour PTE = (300 tons/day) * (Emission Factor lbs/ton) * (365 day/1 year) * 0.98 * (1 ton/2000 lbs) = tons/year			

The table summarizes the revised major source applicability determination due to the adjustment of the baseline actual emissions of the retiring existing units and the limited PTE of the proposed expansion. Based on this, the project is major for NO_x emissions, which is the same conclusion made prior to the adjustment of the baseline actual emissions.

Revised Major Source Applicability Determination					
Pollutant	PTE After Control and Annual Production Limit of the New Emissions Units (tons/year)	Past Actual Emissions of the Retiring Emission Units (tons/year)	Net Emissions (tons/year)	PSD/EO Significant Level (tons/year) [326 IAC 2-2-1(xx)]	Subject to Major Review (Y/N)
PM/PM ₁₀	236.08	232.96	3.12	25/15	No
NO_x	142.73	61.33	81.4	40	Yes
CO	225.35	138.46	86.54	100	No
VOC	120.73	82.37	38.36	40	No
SO ₂	10.73	10.73	10.73	40	No

D.5.1 PSD Minor Limits [326 IAC 2-2]

In order to render the 326 IAC 2-2 (PSD) requirements not applicable, the following conditions shall apply to the forming sections (Stack 6-22) and curing/cooling sections (Stack 6-29) combined:

- (a) The PM and PM₁₀ emissions after control shall not exceed 4.4 pounds per ton of glass pulled and 55.0 pounds per hour.

PM₁₀ includes filterable and condensible PM₁₀.

Compliance with these PM and PM₁₀ limits satisfies the allowable particulate emission rates specified in 326 IAC 6-3 (Process Operations).
- (b) The CO emissions shall not exceed 52.5 pounds per hour.
- (c) The SO₂ emissions shall not exceed 2.5 pounds per hour.
- (d) The molten glass to be formed, cured and cooled by MFG 611 shall not exceed 107,310 tons of molten glass per 12-consecutive month period, with compliance determined at the end of each month.**

Therefore, the requirements of 326 IAC 2-2 shall not apply to the expansion.

D.5.16 Record Keeping Requirements

- (a) To document compliance with **Condition D.5.1 - PSD Minor Limits**, Condition D.5.2 - VOC Emission Offset Minor Limits, and Condition D.5.5 - Volatile Organic Compound (VOC) BACT Requirements, the Permittee shall maintain records that are complete and sufficient to establish compliance. Records maintained shall be taken monthly and make such records available upon request to IDEM, OAQ, and the US EPA.

Due to the annual production limitation, Conditions D.5.1, D.5.16 and D.5.17 have been revised as follows

Examples of such records include but are not limited to:

- (1) Records shall include purchase orders, invoices, and material safety data sheets (MSDS), manufacturer's certified product data sheets, and calculations necessary to verify the type and amount of binder used; and
- (2) A log of the dates of use.

D.5.17 Reporting Requirements

To document compliance with Condition D.5.1 - PSD Minor Limits, the Permittee shall submit a quarterly summary of the actual amount of glass produced, using the Annual Molten Glass Production Report or its equivalent, located at the end of this permit. These reports shall be submitted not later than thirty (30) calendar days following the end of each calendar quarter and in accordance with Condition C - General Reporting Requirements of this permit.

In addition to these changes, a reporting form for the glass annual production limit has been added in the final permit.

EPA Comment No. 11: Page 9 of 10 (assumption 4) of Appendix A: Emission Calculations
According to correspondence to IDEM from Knauf dated August 8, 2005, the PM emissions are based on Method 5E; not "Method 5 and 202". According to the August 8, 2005 Knauf Insulation GmbH correspondence, the back-half emission data was approximated using a ratio of the front to back half PM data at "similar sources at other Knauf plants". This methodology does not seem appropriate for a source attempting to net out of PSD by just over 1 ton per year of PM10 emissions. It is strongly suggested that the facility conduct PM/PM₁₀ emission testing using Method 5 and 202 to determine past actual emission estimates.

IDEM Response No. 11:

Method 5 (Determination of Particulate Emissions From Stationary Sources) and (Method 202 (Determination of Condensable Particulate Emissions From Stationary Sources) were not the methods used to determine the particulate emissions for these fiberglass manufacturing lines, because Method 5E (Determination of Particulate Emissions from the Wool Fiberglass Insulation Manufacturing Industry) is the approved method specifically designed for determining particulate emissions for fiberglass manufacturing lines. This method is applicable for the determination of particulate emissions from wool fiberglass insulation manufacturing sources.

Testing was performed on similar sources and a reasonable estimate was applied to manufacturing lines MFG 603 and MFG 605. Knauf Insulation GmbH used the best available data on hand to generate reasonable estimates. This approach has been historically accepted by both EPA and IDEM.

Also, due to the addition of the annual glass production limit, the PM and PM₁₀ net emission increase has decreased and it is now more than 1 ton per year under the PSD significant levels for PM and PM₁₀.

EPA Comment No. 12: Page 9 of 10 (assumptions 5 and 6) of Appendix A: Emission Calculations Based on the stack test reports provided by Knauf, EPA Method 25A was used to determine VOC emissions from manufacturing lines MFG 601, MFG 603, and MFG 605. Method 25A is not an appropriate test method for this particular type of gas stream and could result in a gross under-approximation of past actual emissions and PTE after control emissions of the new emission units. Since this testing data is being relied upon for the facility to net out of review in a nonattainment area by less than 1 ton per year, it is suggested that this aspect of the netting analysis be re-analyzed.

IDEM Response No. 12:

Method 25A (Determination of Total Gaseous Organic Concentration Using Flame Ionization Analyzer) is the appropriate test method for VOC emissions from fiberglass manufacturing lines because this test method applies to the measurement of total gaseous organic concentration of vapors consisting primarily of aromatic hydrocarbons and with gas streams containing VOC concentration of less than 50 ppm. Fiberglass manufacturing lines normally contains gas streams with 12 ppm VOC concentration. This has been the approved method used for compliance demonstration for Knauf plants. It is the method used by continuous emission monitoring systems, and it provides adequate data. Again, Knauf used the best available data on hand to calculate its emissions.

EPA Comment No. 13: Page 9 of 10 (assumption 7) of Appendix A: Emission Calculations

- (a) Please explain why the actual NOx emission factor for manufacturing line MFG 601 was considered "not representative of actual NOx emissions" and data from Knauf's California plant are being used. If NOx data collected at the manufacturing line MFG 601 was not considered accurate, why has additional emission testing not been performed to verify actual emissions?
- (b) Additionally, why is the maximum production rate being used to estimate past actual emissions? Shouldn't the average production rate data be used?

IDEM Response No. 13:

- (a) Knauf's Shasta Lake data was used for manufacturing line MFG 601 because the Shasta Lake line is similar to MFG 601. Knauf used the best available data on hand. Knauf's existing permits did not specify NOx testing, and there are no NOx tests conducted by Knauf that IDEM staff observed and approved. IDEM do not rely on NOx test results that were not approved. The NOx tests conducted by Knauf's Shasta Lake were approved by their permitting agency.
- (b) Seventy-seven (77) tons of glass per day is the actual production rate, not the maximum production rate, for MFG 601. The maximum production rate for furnace FURN 601 is approximately 100 tons per day.

EPA Comment No. 14: Page 3 of 10 of Appendix B and C: LAER Analysis and BACT Analysis

- (a) There is typographical error in Table 1. Should it be "614 Curing/Cooling"?
- (b) Also, please explain why "Combustion Due to NG usage" plus "Ammonia Converted to NOx" does not equal the "Total NOx Emissions" column for the "613 Curing and Cooling" emission unit line item.

IDEM Response No. 14:

IDEM corrected the typographical errors as follows:

Table 1 - - NO _x Potential to Emit (tons/year)				
Emission Unit ID	Stack ID	Total NO _x Emissions	Combustion Due to Natural Gas Usage	Ammonia Converted to NO _x Emissions
611 FORMING	6-22	13.14	13.14	0
612 FORMING		13.14	13.14	0
613 FORMING		17.52	17.52	0
614 FORMING		17.52	17.52	0
613 CURING/COOLING	6-29	40.52	6.0	33.42 34.52
613 4 CURING/COOLING		43.80	4.9	38.9
2 RTOs		1.8	1.8	--
Total		147.44	74.02	72.32 73.42
Total NO _x Emissions = NO _x emissions due to combustion of natural gas + Ammonia converted to NO _x emissions due to curing + RTOs NO _x emissions due to natural gas usage				

- EPA Comment No. 15: Page 4 of Appendixes B and C: LAER Analysis and BACT Analysis
- (a) There are currently low temperature selective catalytic reduction (SCR) systems that are available and potentially technically feasible for this application. Exclusion of SCR based on RTO temperature output does not appear to be a reasonable justification.
 - (b) Has IDEM or Knauf Insulation GmbH researched the feasibility of using a regenerative catalytic oxidizer (RCO) instead of the regenerative thermal oxidizer (RTO) to reduce VOC emissions without the collateral NO_x and CO emissions from incineration?

IDEM Response No. 15:
 The SCR system and RCOs were excluded as an add-on control options for several reasons, including the following:

- (1) Due to the exhaust stream, fouling of the catalyst in the SCR or RCO would occur.

Binders that are necessary for the manufacturing process could make their way to the catalyst bed. Also, glass fibers could cause plugging of the catalyst bed.
- (2) The temperature of the exhaust of the manufacturing line is not conducive to proper operation of a SCR system.
- (3) SCR technology and RCOs have not been demonstrated in practice for this category of source.

Pursuant to 326 IAC 2-3-1(y), LAER means the most stringent emission rate "achieved in practice by the class or category of stationary source."

No SCR technology has been required for NO_x emission reductions from similar facilities.

No RCO has been required for VOC emission reductions from similar facilities.

Knauf Insulation GmbH Comments and IDEM's Responses

Knauf Comment No. 1: Section A.1 - General Information of the Draft Permit

The Responsible Official reference in Section A.1 should be changed from "Robert Kranz" to "Jon Pereira".

IDEM Response No. 1:

To minimize amendments due to change in personnel, the Responsible Official is identified by title or position:

A.1 General Information [326 IAC 2-7-4(c)] [326 IAC 2-7-5(15)]

The Permittee owns and operates a stationary wool fiberglass insulation manufacturer.

Responsible Official: ~~Robert Kranz~~ **Vice President of Operations**
Source Address: One Knauf Drive, Shelbyville, IN 46176
Mailing Address: One Knauf Drive, Shelbyville, IN 46176
SIC Code: 3296
County Location: Shelby
County Status: Nonattainment for the 8-hour ozone standard
Attainment for all other criteria pollutants
Source Status: Part 70 Permit Program
Major Source, under PSD Rules
Major Source, under Emission Offset Rules
Major Source under Section 112 of the CAA
1 of 28 Listed Source Categories
Clean Unit Source

Knauf Comment No. 2: Condition D.1.4 of the Draft Permit

To provide clarification, the testing requirements under Condition D.1.4 should be changed as follows:

D.1.4 Testing Requirements [326 IAC 2-7-6(1),(6)]

The PM₁₀ testing on Unit ID # FURN 602 and Unit ID # MFG 602 shall be repeated at least once every two (2) years **following the date of the initial compliance demonstration** ~~from the date of the most recent valid compliance demonstration.~~

In addition to these requirements, IDEM may require compliance testing when necessary to determine if the facility is in compliance.

IDEM Response No. 2:

IDEM did not make the changes as recommended because Condition D.1.4 has already been clarified based on the US EPA Region 5 comment (see EPA Comment No. 4).

Knauf Comment No. 3: Condition D.4.12 of the Draft Permit

Sections 63.1382(b)(3)(ii), (ii), and (iii) in Condition D.4.12 should be removed because temperature monitoring is not required for cold top electric furnaces that have particulate control devices installed. Since FURN 611 will utilize a baghouse for particulate control, the temperature monitoring requirements do not apply.

IDEM Response No. 3:

IDEM agrees and made the following changes:

- ~~D.4.12.(3)(i)~~ The owner or operator must initiate corrective action within 1 hour when any 3-hour block average temperature of a cold top electric furnace as measured at a location 46 to 61 centimeters (18 to 24 inches) above the molten glass surface, exceeds 120 deg. C (250 deg. F) and complete corrective actions in a timely manner according to the procedures in the operations, maintenance, and monitoring plan.
- ~~(ii)~~ The owner or operator of a cold top electric furnace must implement a QIP consistent with the compliance assurance monitoring provisions of 40 CFR part 64, subpart D when the temperature, as measured at a location 46 to 61 centimeters (18 to 24 inches) above the molten glass surface, exceeds 120 deg. C (250 deg. F) for more than 5 percent of the total operating time in a 6-month block reporting period.
- ~~(iii)~~ The owner or operator must operate the cold top electric furnace such that the temperature does not exceed 120 deg. C (250 deg. F) as measured at a location 46 to 61 centimeters (18 to 24 inches) above the molten glass surface, for more than 10 percent of the total operating time in a 6-month reporting period.

Knauf Comment No. 4: Affidavit of Construction and Condition C.24 of the Draft Permit

- (a) The instruction in paragraph (7), related to the Affidavit of Construction, and Condition C. 24 should be modified to indicate that the retirement of the existing units will occur approximately 90 days after the initial start up of the new equipment. Some overlap will be necessary to maintain production of marketable products while debugging the new equipment, and because the same employees responsible for starting up the new equipment will be the ones who are shutting down the old equipment. Thus, the requirement of the old equipment will not occur until 90 days after the initial operation of the new equipment.
- (b) Condition C.24(e) should be modified to remove DB02 and FURN 602 since those units will not be retired.

IDEM Response No. 4:

- (a) IDEM did not make the changes as recommended because the reductions due to the removal of existing units have to be creditable upon initial start up of the new proposed expansion.

There are no changes to the draft permit due to this comment.

- (b) Since units DB02 and FURN 602 were not included in the creditable reductions from the removal of units, and no emission decreases were used in the analysis, IDEM agrees and made the following changes:

- C.24(e) One (1) batch raw material receiving bin, identified as Unit ID # RMH 02, ~~four (4)~~ **three (3)** day bins, identified as Unit ID # DB 01, ~~DB 02~~, DB 03, and DB 05, used to store raw materials for FURN 601, ~~FURN 602~~, FURN 603, and FURN 605, respectively, and one (1) intermediate batch bin, identified as Unit ID #DB 02A, each utilizing a baghouse for particulate control, exhausting through stacks S/V ID # 0-10 through 0-15.

IDEM Contact

Questions regarding this proposed permit can be directed to Ms. Iryn Calilung at the Indiana Department Environmental Management, Office of Air Quality, 100 North Senate Avenue, Indianapolis, Indiana 46204 or by telephone at (317) 233-5692 or toll free at 1-800-451-6027 extension 3-5692.

**Indiana Department of Environmental Management
Office of Air Quality**

Appendix A - - Emission Calculations
Technical Support Document (TSD)
Prevention of Significant Deterioration (PSD)
Emission Offset (EO)
Significant Source Modification (SSM) of a Part 70 Source
Significant Permit Modification (SPM) of Part 70 Operating Permit

Source Background and Description
--

Source Name:	Knauf Insulation GmbH
Source Location:	One Knauf Drive, Shelbyville, IN 46176
Mailing Address:	One Knauf Drive, Shelbyville, IN 46176
Responsible Official:	Vice President of Operations
County:	Shelby
SIC Code:	3296
Source Categories:	1 of 28 Listed Source Categories Major PSD and EO Source Major Source under Section 112 of the CAA Part 70 Source Clean Unit Source
Part 70 Operating Permit :	145-6038-00001, issued on September 14, 1999
Permit Number:	EO/SSM 145-20887-00001 SPM 145-21234-00001
Permit Writer:	Iryn Calilung 317/233-5692

Proposed Expansion

On February 28, 2005, the Office of Air Quality (OAQ) received an application from Knauf Insulation GmbH to expand their Shelbyville plant, located at One Knauf, Shelbyville, Indiana, Shelby County. The fiberglass insulation products manufactured in this plant are commercial/industrial products, rather than residential insulation products.

The proposed fiberglass insulation expansion will consist of the following emission units. The nominal capacities of these emission units have been classified as confidential information per Knauf Insulation GmbH submission and as part of their application. The overall maximum capacity of the proposed expansion is 300 tons of molten glass per day.

- | | | | |
|-----|-----------------------------------|----|-----------------|
| (a) | Raw Material and Handling Systems | | |
| (b) | FURNACE 611 | -- | Stack 6-21; |
| (c) | 611 FORMING | -- | Stack 6-22; |
| (d) | 612 FORMING | -- | Stack 6-22; |
| (e) | 613 FORMING | -- | Stack 6-22; |
| (f) | 613 CURING/COOLING | -- | Stack 6-29; |
| (g) | 614 FORMING | -- | Stack 6-22; and |
| (h) | 614 CURING/COOLING | -- | Stack 6-29. |

In addition to these new emission units, three (3) existing permitted furnaces, associated manufacturing lines, and raw material handling systems will retire as part of the project. These three (3) manufacturing lines are identified as MFG 601, MFG 603, and MFG 605.

Process Emissions

- (1) Raw Material Handling
 - (a) Particulate matter emissions are generated by the glass raw material handling operations. Baghouses control the particulate emissions.
 - (b) Volatile organic compound (VOC) emissions are emitted from the binder mixing and miscellaneous storage tanks.
- (2) Glass Melting
Particulate matter emissions are generated by the glass melting operations. A baghouse controls the particulate emissions. No emissions expected from combustion because the furnace is 100% electrically heated.
- (3) Fiberglass Manufacturing Line:
 - (a) Glass Fiber Forming and Binder Application
Particulate matter, Volatile organic compound (VOC) emissions are generated by the forming and binder application operations, in addition to the emissions due to combustion of natural gas as fuel. A wet electrostatic precipitator (ESP) controls the particulate emissions.
 - (b) Fiberglass Mat Forming
Particulate matter and Volatile organic compound (VOC) are emissions generated by the forming and binder application operations, in addition to the emissions due to combustion of natural gas as fuel. A wet electrostatic precipitator (ESP) controls the particulate emissions.
 - (c) Curing the Binder-Coated Fiber Glass Mat
Particulate matter and Volatile organic compound (VOC) emissions are generated by the heating of the binder, in addition to the emissions due to the combustion of natural gas as fuel. Regenerative thermal oxidizers (RTOs) control the VOC and HAPs emissions. Due to the conversion of ammonia in the RTO, additional NOx emissions are generated.
 - (d) Cooling the Fiber Glass Mat
Particulate matter and Volatile organic compound (VOC) emissions are generated by the cooling of the fiberglass mat.
- (4) Facing (backing material) Application
No regulated pollutant is emitted because a water based adhesive is used to glue to the fiberglass mat.
- (5) Cutting and Packaging
Particulate matter is the only regulated pollutant that is generated by the trimming of the fiberglass mat. The dust develops during cutting and packaging operations is collected with an air evacuation system and filtered with a dust collector system that is exhausted inside the building.

Emission Unit PTE

The following table summarizes the potential to emit (PTE) after control of each emission unit:

Table 1 - - Potential to Emit After Control of the New Emission Units (tons/year)						
Emission Unit ID	Stack ID	PM/PM ₁₀	NO _x	CO	VOC	SO ₂
Silo61	6-1	0.062	--	--	--	--
Silo62	6-2	0.018	--	--	--	--
Silo63	6-3	0.025	--	--	--	--
Silo64	6-4	0.009	--	--	--	--
Silo65	6-5	0.018	--	--	--	--
Silo66	6-6	0	--	--	--	--
Silo67	6-7	0	--	--	--	--
Silo69	6-9	0.025	--	--	--	--
Silo612	6-12	0	--	--	--	--
Silo613	6-13	0	--	--	--	--
RMUNLDR616	6-16	0.21	--	--	--	--
GTHRNGBLT617	6-17	0.223	--	--	--	--
BMXR618	6-18	0.223	--	--	--	--
DB619	6-19	0.136	--	--	--	--
KCHNDLNG620	6-20	0	--	--	--	--
RUNLDNG626	6-26	0	--	--	--	--
BSTG627	6-27	0	--	--	--	--
BMXG	6-28	0	--	--	--	--
FURN 611	6-21	8.82	0	3.29	0	0
MFG 611 (611 FORMING, 612 FORMING, 613 FORMING, 614 FORMING, 613 CURING/COOLING, 614 CURING/COOLING)	6-22 and 6-29	240.90	145.64	229.95	123.18	10.95
RTOs		--	1.8	--	--	--
Total		250.67	147.44	233.24	123.18	10.95

Methodology

- (1) Methodology:
 PTE after control = (Maximum capacity tons/hour)*(Emission Factor pounds/ton)*(8760 hours/year)*(1 ton/2000 lbs)*(1 - Eff%) = tons/year

Emission factors used are either from AP-42 (Compilation of Emission Factors) for combustion emissions and engineering estimates made by Knauf Insulation GmbH for the manufacturing line emissions.

The emission factors were based on the Knauf Shasta Lake test results and adjusted to accommodate the differences in loss of ignition (LOI) and products produced.

- (2) Since the nominal capacities are classified as confidential emissions, the detailed emissions calculations are also classified as confidential information. The Office of Air Quality (OAQ) has verified the calculations submitted by Knauf Insulation GmbH, as part of their application, to be correct.

Raw Material Handling Operations PTE

The following table summarizes the potential to emit of the raw material handling operations:

Table 2 - PTE After Control Based on Baghouses Specifications					
Emission Unit ID	Stack ID	Flow Rate (dscf/min)	Grain Loading (grain/dscf)	PTE (lbs/hour)	PTE (tons/year)
Silo61	6-1	980	0.0017	0.014	0.062
Silo62	6-2	980	0.0005	0.0042	0.0184
Silo63	6-3	980	0.0007	0.0059	0.0257
Silo64	6-4	980	0.0002	0.00168	0.0073
Silo65	6-5	980	0.0005	0.0042	0.0184
Silo66	6-6	980	Neg	--	--
Silo67	6-7	980	Neg	--	--
Silo69	6-9	980	0.0007	0.0059	0.0257
Silo612	6-12	980	Neg	--	--
Silo613	6-13	980	Neg	--	--
RMUNLDR616	6-16	980	0.0285	0.24	1.05
GTHRNGBLT617	6-17	980	0.0061	0.051	0.22
BMXR618	6-18	980	0.2244	1.88	8.26
DB619	6-19	980	0.0037	0.031	0.14

PM/PM₁₀ PTE after control = (flow rate dscf/min)*(grain/dscf)*(1 lb/7,000 grains)*(60 min/hr) = lbs/hour
 = (PTE after control lbs/hour)*(8760 hr/yr) *(1 ton/2000 lb) = tons/year

Furnace PTE

The following tables summarize the potential to emit of the FURN 601.

Table 3 - - Potential to Emit (PTE) of FURN 611 (tons/year)						
Emission Unit ID	Stack ID	PM/PM ₁₀	NO _x	CO	VOC	SO ₂
Emission Factor	6-21	See table below	--	--	--	--
PTE (After Control)			0	3.29	0	0
<p>FURN 611 Maximum Capacity = 300 tons per day = 12.5 tons per hour</p> <p>PTE = (12.5 tons/hour)*(Emission Factors)*(8760 hours/year)*(1 ton/2000 lbs) = tons/year</p> <p>CO PTE = (3.29 tons/year)*(1 year/8760 hours)*(2000 lbs/1 ton) = 0.75 pounds per hour</p>						

Table 4 - - FURN 611 PM/PM10 PTE						
Emission Unit ID	Stack ID	Flow Rate (dscf/min)	Grain Loading (grain/dscf)	PTE (lbs/hour)	PTE (tons/year)	
					After Control	Before Control
FURN 611	6-21	38,500	0.0061	2.01	8.82	882
<p>Particulate Add-on Control Device - - Baghouse (99% control efficiency)</p> <p>PM/PM₁₀ PTE after control = (flow rate dscf/min)*(grain/dscf)*(1 lb/7,000 grains)*(60 min/hr) = lbs/hour = (PTE after control lbs/hour)*(8760 hr/yr) *(1 ton/2000 lb) = tons/year</p> <p>PM/PM₁₀ PTE before control = (PM/PM₁₀ PTE after control)/(1-%) = (8.82 tons/year)/(1-0.99) = 882 tons/year</p>						

MFG 611 (Forming, Cooling and Curing) PTE

The following table summarizes the evaluations of the emission factors applicable to Knauf Insulation GmbH.

Table 5 - - Emission Factors Determination			
Pollutant	Knauf Shasta Lake Emission Factors at 8% LOI (lbs/ton)	Safety Factors	Knauf Insulation GmbH Emission Factors at 18% LOI (lbs/ton)
PM/PM ₁₀	1.49	1.3	4.4
NO _x	1.365	1.15	2.6
CO	2.1	-	4.2
VOC	0.8	1.25	2.25
SO ₂	0.01	10	0.2

Methodology and Assumptions:

- (1) The Knauf Shasta Lake emission factors were based on the most representative tests, conducted by Knauf Shasta Lake on March 31, 2004 and December 11, 2002. The test results were adjusted to the maximum allowable 8% LOI.
- (2) The maximum allowable LOI for Knauf Insulation GmbH, IN is 18%. This is 2.25 times the LOI used in Knauf Shasta Lake.
- (3) Safety factors depended on the pollutant specific characteristics, reliability of the data, and if LOI has significant impact on the emissions.
- (4) Knauf Insulation GmbH Emission Factors at 18% LOI
 = (Knauf Shasta Lake Emission Factor at 8% LOI)*(LOI Adjustment 2.25)*(Safety Factor)
 = lbs/ton
- (5) 40% of the NO_x emissions are due to combustion and 50% of the NO_x emissions are due to the increased in ammonia.
- (6) The detailed evaluation and adjustment of the CO emissions factor has been requested by Knauf Insulation GmbH to be confidential information.
- (7) The safety margin for SO₂ is high because the tested levels are very low as to be within the margin of error of the test method.

The following table summarizes the total PTE of the entire MFG 611.

Table 6 - - PTE After Control of the MFG 611			
Pollutant	Emission Factor (lbs/ton)	PTE	
		(lbs/hour)	(tons/year)
PM/PM ₁₀	4.4	55	240.90
NO _x	2.66	33.25	145.64
CO	4.2	52.5	229.95
VOC	2.25	28.13	123.19
SO ₂	0.2	2.5	10.95

PTE = (300 tons/day)*(Emission Factor lbs/ton)*(1 day/24 hours) = lbs/hour
 PTE = (300 tons/day)*(Emission Factor lbs/ton)*(365 day/1 year)*(1 ton/2000 lbs) = tons/year

611, 612, 613, and 614 Forming Sections PTE

Table 7 - - Potential to Emit (PTE) After Control of the Forming Sections (tons/year)

Emission Unit ID	Stack ID	PM/PM ₁₀	NO _x	CO	VOC	SO ₂
611 FORMING	6-22	35.92	13.14	21.90	20.60	2.5
612 FORMING		45.99	13.14	21.90	26.28	2.5
613 FORMING		74.46	17.52	35.04	- -	2.19
614 FORMING		61.32	17.52	43.8	- -	2.19

- (1) Add-on Control Device for Particulate - - Wet ESP (75% efficiency)
- (2) PTE before control = PTE after control for NO_x, CO, VOC and SO₂.
- (3) PTE after control = (Nominal capacities)*(emission rates)*(8760 hours/year)*(1 ton/2000 lbs)
= tons/year
- (4) PTE before control = (PTE after control)/(1 - %)
= tons/year
- (5) PTE PM/PM₁₀ before control

Table 7a - - PM/PM₁₀ Before Control

Forming	(tons/year)	(lbs/hour)
611 FORMING	143.68	32.76
612 FORMING	183.96	41.94
613 FORMING	297.84	67.91
614 FORMING	245.28	55.92

- (6) The VOC emissions from the 613 and 614 FORMING have been incorporated in the 613 and 614 CURING/COOLING (see Table 8 below).

613 and 614 Curing and Cooling Sections PTE

Table 8 - - Potential to Emit After Control of the New Emission Units (tons/year)

Emission Unit ID	Stack ID	PM/PM ₁₀	NO _x	CO	VOC	SO ₂
613 CURING/COOLING	6-29	14.45	40.52	54.75	39.42	1.11
614 CURING/COOLING		8.76	43.8	52.56	36.88	0.46

- (1) Add-on control devices
 - (a) Condensible Particulate and VOC - - RTO (95% efficiency)
 - (b) NO_x - - Low NO_x Burners for the combustion units (50% efficiency)
- (2) PTE before control = PTE after control for CO and SO₂.
- (3) PTE after control = (Nominal capacities)*(emission rates)*(8760 hours/year)*(1 ton/2000 lbs)
= tons/year
- (4) PTE before control = (PTE after control)/(1 - %) = tons/year
- (5) PTE PM/PM₁₀ before control

Table 8a - - PM/PM ₁₀ Before Control	
Curing and Cooling	(tons/year)
613 CURING/COOLING	289
614 CURING/COOLING	175.2

- (6) PTE NO_x before control
 - (a) The NO_x Emissions from the curing and cooling sections are due to combustion of natural gas and the Ammonia converted to NO_x emissions due to curing.

Table 8b - - Itemized NO _x of the curing and cooling sections			
Emission Unit ID	Total NO _x Emissions	Combustion Due to Natural Gas Usage	Ammonia Converted to NO _x Emissions
613 CURING/COOLING	40.52	6.0	34.52
613 CURING/COOLING	43.80	4.9	38.9

- (b) The Low NO_x burners control the NO_x emissions due to combustion only.

Table 8c - - NO _x Before Control	
Curing and Cooling	(tons/year)
613 CURING/COOLING	12.0
614 CURING/COOLING	9.8

- (7) PTE VOC before control
 The VOC emissions from the 613 and 614 CURING/COOLING also account for the VOC emissions from the 613 and 614 FORMING.

Table 8c - - VOC Before Control	
Curing and Cooling	(tons/year)
613 CURING/COOLING	788.4
614 CURING/COOLING	737.6

Past Actual Emissions of MFG 601, MFG 603 and MFG 605

Table 9 - - Actual Emissions of Retiring Lines								
MFG Line	PM/PM ₁₀		NO _x		CO		VOC	
	(lbs/hr)	(tons/yr)	(lbs/hr)	(tons/yr)	(lbs/hr)	(tons/yr)	(lbs/hr)	(tons/yr)
601	21.93	96.05	7.74	33.9	21.13	92.55	8.98	39.33
603	10.93	47.88	0.63	2.76	3.23	14.15	3.51	15.37
605	21.19	92.81	5.87	25.84	7.9	34.6	6.7	29.35
Total	54.05	236.74	14.24	76.48	32.26	141.3	19.19	84.05

Methodology and Assumptions:

- (1) MFG 601 - - consists of FURN 601, and forming, curing, and cooling.
- (2) MFG 603 - - consists of FURN 603 and forming.
- (3) MFG 605 - - consists of FURN 605, forming, curing, and cooling.
- (4) The PM actual emissions were based on the tests conducted by Knauf Insulation GmbH on February 12, 2002 and April 23 to 24, 2002. Approved EPA Methods 5 and 202 tests were used.
- (5) The NO_x, CO and VOC actual emissions from MFG 603 and MFG 605 were estimated based on diagnostic testing conducted by Knauf Insulation GmbH on October 26 to 28, 2004.
- (6) The CO and VOC actual emissions from MFG 601 were estimated based on diagnostic testing conducted by Knauf Insulation GmbH on October 26 to 28, 2004.
- (7) The NO_x actual emissions from MFG 601 were based on the Knauf Shasta Lake emission factor of 2.1 pounds per ton glass (see Appendix A - - Emissions Calculations for the Knauf Shasta Lake Emission Factors). The maximum production rate of the retiring manufacturing lines was 77 tons per day of glass.

IDEM Contact

Questions regarding this proposed permit can be directed to Iryn Calilung at the Indiana Department Environmental Management, Office of Air Quality, 100 North Senate Avenue, Indianapolis, Indiana 46204 or by telephone at (317) 233-5692 or toll free at 1-800-451-6027 extension 3-5692.

**Indiana Department of Environmental Management
Office of Air Quality**

Appendix B - - NO_x LAER Analysis and NO₂ PSD BACT Analysis
Technical Support Document (TSD)
Prevention of Significant Deterioration (PSD)
Emission Offset (EO)
Significant Source Modification (SSM) of a Part 70 Source
Significant Permit Modification (SPM) of Part 70 Operating Permit

Source Background and Description
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Source Name:	Knauf Insulation GmbH
Source Location:	One Knauf Drive, Shelbyville, IN 46176
Mailing Address:	One Knauf Drive, Shelbyville, IN 46176
Responsible Official:	Vice President of Operations
County:	Shelby
SIC Code:	3296
Source Categories:	1 of 28 Listed Source Categories Major PSD and EO Source Major Source under Section 112 of the CAA Part 70 Source Clean Unit Source
Part 70 Operating Permit : Permit Number:	145-6038-00001, issued on September 14, 1999 EO/SSM 145-20887-00001 SPM 145-21234-00001
Permit Writer:	Iryn Calilung 317/233-5692

Lowest Achievable Emission Rate (LAER)

- (1) 326 IAC 2-3-1(y) and 40 CFR 51.165(a)(1)(xiii)
Lowest achievable emission rate (LAER) means, for any source, the more stringent rate of emissions based on the most stringent emissions limitation of the following:
- (a) Contained in the implementation plan of any state for the class or category of stationary source unless the owner or operator of the proposed stationary source demonstrates that the limitations are not achievable.
 - (b) Achieved in practice by the class or category of stationary source. This limitation, when applied to a modification, means the lowest achievable emissions rate for the new or modified emissions unit within the stationary source.
 - (c) In no event shall the application of the lowest achievable emission rate allow a proposed new or modified stationary source to emit any pollutant in excess of the amount allowable under applicable new source standards of performance.
- (2) The Emission Offset Program (326 IAC 2-3) requires a LAER pollutant-specific review to be performed on each emission unit associated with the proposed expansion. Each emission unit must achieve the lowest possible emission rate. Once LAER has been decided for each emission unit, LAER is also assessed for the entire facility or line. If some more effective LAER exists by

controlling the facility or line, then this LAER will be evaluated in terms of enforceability in practical manner.

- (3) In addition, all emission units which have an increase in emissions due to the proposed modification also must undergo LAER analysis.
- (4) The emissions from each emission unit undergoing LAER analysis are compared to those of similar operation which are contained in the state implementation plan of any State, to those previously-issued LAER/BACT determinations, as well as those contained within the applicable new source performance standard (NSPS) or National Emissions Standards for Hazardous Air Pollutants (NESHAP).
- (5) Transfer of control technology between source categories for the purpose of determining LAER for a source can be considered. There are two (2) types of potentially transferable control technologies:
 - (a) Gas Stream Controls - - Any sources that produce similar gas streams that could be controlled by the same control technology by the same or similar technology. Determinations and decisions are based on the gas stream characteristics, such as composition and concentration.
 - (b) Process Controls and Modifications - - Determinations and decisions are based primarily on the similarity of the process. Source of the same category has to clearly demonstrate the unique process characteristics that preclude it from using the LAER technology used by a similar but not necessarily identical source.
- (6) The LAER determinations are based upon a comparison of emissions from the operation to the emissions from other similar operations on a normalized basis. This means that LAER limit should be specified at normalized factors, such as production capacity, sizes, or other specifications.
- (7) Little weight is given to economics in LAER determinations. Cost of control could be considered not achievable only if no new plants of similar industry and if emission limits were based on levels achievable only with the contemplated control technology.
- (8) The most stringent emission limit contained in a SIP for a source category may be considered as LAER unless a more stringent emission limitation has been achieved in practice, or unless the SIP limitation is demonstrated to be unachievable by the source.
- (9) Once the LAER is determined, the standards are specified in enforceable permit conditions. Permit conditions should be specified such that continued utilization of the control technology determined as LAER is required, even during periods of reduced operating rates.

The following LAER determinations are based on the information obtained from the permit application submitted by Knauf Insulation GmbH, the EPA RACT/BACT/LAER (RBLCL) Clearinghouse, and electronic versions of permits available at the websites of other permitting agencies.

NO_x Potential to Emit (PTE) of the Proposed Expansion

- (1) Knauf Insulation GmbH is proposing to expand their Shelbyville plant by installing new additional fiberglass insulation manufacturing lines. The plant is located in Shelby County, which is classified as nonattainment for the 8-hour ozone standards.

The following table summarizes the emission units subject to the LAER requirements for NO_x emissions.

Table 1 - - NO _x Potential to Emit (tons/year)				
Emission Unit ID	Stack ID	Total NO _x Emissions	Combustion Due to Natural Gas Usage	Ammonia Converted to NO _x Emissions
611 FORMING	6-22	13.14	13.14	0
612 FORMING		13.14	13.14	0
613 FORMING		17.52	17.52	0
614 FORMING		17.52	17.52	0
613 CURING/COOLING	6-29	40.52	6.0	33.42
613 CURING/COOLING		43.80	4.9	38.9
2 RTOs		1.8	1.8	--
Total		147.44	74.02	72.32
Total NO _x Emissions = NO _x emissions due to combustion of natural gas + Ammonia converted to NO _x emissions due to curing + RTOs NO _x emissions due to natural gas usage				

- (2) There are two (2) main components of the operations that contribute to the formation of NO_x emissions:
- (a) NO_x emissions formed during combustion:
 The fiberglass insulation manufacturing lines use natural gas as fuel. NO_x emissions occur through the thermal dissociation and subsequent reaction of nitrogen and oxygen molecules in the combustion air. Due to the characteristically low fuel nitrogen content of natural gas, NO_x emissions formed through the fuel NO_x mechanism are minimal.
- Table 1 shows that the NO_x emissions due to combustion of natural gas are approximately 74.02 tons per year. These NO_x potential to emit due to combustion were determined after the application of Low NO_x burners for the curing and cooling sections of the manufacturing line (see Emission Calculations of the TSD for the detailed calculations).
- (b) NO_x emissions formed during curing:
 The thermal curing of binder results in release of ammonia. A portion of this ammonia is converted to NO_x as it passes the regenerative thermal oxidizer (RTO). This RTO is an add-on control device that will be used to control the VOC and condensable particulate emissions from the curing ovens. Approximately greater than 50% of the NO_x emissions are due to this formation. These NO_x emissions are considered collateral emissions due to the use of the RTO for VOC emissions control.

Table 1 shows that the collateral NO_x emissions due to the use of RTO are approximately 72.32 tons per year.

NO_x Control Technology Feasibility Study

The following control alternatives were evaluated to control the NO_x emissions from the forming, curing and cooling operations of the proposed fiberglass manufacturing lines:

Table 2 - - NO _x BACT Control Analysis	
Control technology	Evaluation
<p style="text-align: center;">Low NO_x Burner (LNB)</p> <p style="text-align: center;">Technically Feasible –Yes</p> <p style="text-align: center;">LAER - Yes</p>	<p>Low NO_x burner (LNB) technology utilizes advanced burner design to reduce NO_x formation through the restriction of oxygen, flame temperature and/or residence time. The use of LNB is the most common control technology for NO_x emissions generated by the combustion of natural gas.</p> <p>Low NO_x burners will be considered as LAER for controlling the NO_x combustion emissions from the curing and cooling sections of the manufacturing lines.</p>
<p style="text-align: center;">Selective Catalytic Reduction (SCR)</p> <p style="text-align: center;">Technically Feasible – No</p> <p style="text-align: center;">LAER - No</p>	<p>SCR is a post combustion technology that uses a catalyst and ammonia injection to promote the removal of NO_x at certain exhaust stream parameters such as inlet NO_x concentration, volumetric flow, and temperature range. SCR requires an operating temperature range 500⁰F to 900⁰F for normal catalyst. The optimum operating temperature range is 700⁰F to 750⁰F.</p> <p>The RTO generates the NO_x emissions due to the release of ammonia during thermal curing. The operating temperature of the RTO is not conducive for the optimum operating temperature of the SCR. In addition, the glass fiber would cause fouling of the catalyst bed.</p> <p>SCR is not technically feasible to control the NO_x collateral emissions generated during the binder curing.</p>
<p style="text-align: center;">Selective Non-Catalytic Reduction (SNCR)</p> <p style="text-align: center;">Technically Feasible – No</p> <p style="text-align: center;">LAER - No</p>	<p>The operating temperature range for SNCR is 1,600⁰F to 2,000⁰F.</p> <p>The RTO generates the NO_x emissions due to the release of ammonia during thermal curing. The operating temperature of the RTO is not conducive for the optimum operating temperature of the SNCR.</p> <p>SNCR is not technically feasible to control the NO_x collateral emissions generated during the binder curing.</p>

Summary of Similar Sources (SIC Code 3296)

The table below summarizes existing sources of similar operations (SIC Code 3296) that are listed in the EPA RACT/BACT/LAER (RBLA) Clearinghouse database and other resources, such as other permitting agencies websites.

Sources are listed in alphabetical order.

Table 3 - - Sources with SIC Code 3296	
Sources Name	Products
American Rockwool, Inc., TX	Mineral Wool Products/Insulation
Armstrong World Industries, OR	Not Fiberglass Insulation
Certainteed Corp, CA	Residential/Light Density Fiberglass Insulation
Certainteed Corp, KS	Residential/Light Density Fiberglass Insulation
Guardian Fiberglass (Inwood), WV	Residential/Light Density Fiberglass Insulation
Johns Manville (Schuller), GA	Residential/Light Density Fiberglass Insulation
Johns Manville, IN	Residential/light Density Insulation
Johns Manville, OH	Commercial/Industrial Fiberglass Insulation
Knauf, AL	Residential/Light Density Fiberglass Insulation
Knauf, Belgium	Residential & Commercial/Industrial Insulation
Knauf, CA	Residential Fiberglass Insulation
Knauf, England	Residential & Commercial/Industrial Insulation
Knauf, France	Not Fiberglass Insulation – Polystyrene Foam Insulation
Knauf, Germany	Not Fiberglass Insulation – Polystyrene Foam Insulation
Knauf, Insulation GmbH, IN	Commercial/Industrial Fiberglass Insulation

Sources that manufacture residential fiberglass products or Polystyrene Foam Insulation are eliminated for comparison in this review because Knauf Insulation GmbH, Shelbyville, Indiana manufactures commercial and industrial fiberglass products. Difference in products significantly affects the potential to emit of the manufacturing line. Volatile organic compound (VOC) and particulate emissions depend on the type and amount of binder used and the binder's loss on ignition (LOI) during the curing process (see table below). Higher LOI results in higher VOC and particulate emissions. An RTO installed to control the VOC emissions will result in additional NOx collateral emissions.

Table 4 - - Loss on Ignition (LOI)	
Insulation Products	LOI (%)
Residential	4% to 10%
Commercial/Industrial	4% to 25%
Knauf, Insulation GmbH, IN	Maximum of 18%

NO_x Existing BACT/LAER Emission Limitations

The use of the low NO_x burners is determined to be the control technology for the control of NO_x emissions due to natural gas combustion from the curing and cooling sections of the proposed manufacturing lines.

Search of the RACT/BACT/LAER Clearinghouse resulted in the following list of sources for NO_x limits for similar operations. Limits are arranged in an ascending order.

Table 5 - - NO _x BACT/LAER Existing Limits		
Company Name/Operation	NO _x Limit	Control technology
Certaineed Corp., KS 300 tons/day	1 pound per ton of glass pulled	Combustion Control
Knauf, IN (proposed) (2005) (300 tons/day) 611 FORMING; 612 FORMING; 613 FORMING and 613 CURING/COOLING; and 614 FORMING and 614 CURING/COOLING	2.66 pounds per ton of glass pulled 33.25 pounds per hour	Low NO _x Burners (curing and cooling only)
Knauf, CA	2.79 pounds per ton of glass pulled	Low NO _x Burners
Guardian Fiberglass(Inwood), WV (2002) Melting and Refining Line 1 Curing and Cooling Line 1 Line 1 Capacity 7500 lbs/hour	0.023 pounds per ton 3.01 pounds per ton 3.033 pounds per ton of glass pulled (total)	Electric arc melter and combustion
Guardian Fiberglass(Inwood), WV (2002) Melting and Refining Line 2 Curing and Cooling Line 2 Line 2 Capacity 8000 lbs/hour	0.020 pounds per ton 3.51 pounds per ton 3.53 pounds per ton of glass pulled (total)	Electric arc melter and combustion
Johns Manville, GA	6.05 pounds per ton of glass pulled	--
Johns Manville, OH (2001) Product Curing Unit 30 381 lbs/hour to 880 lbs/hour	0.25 pounds per hour 1.1 tons per year	--
Johns Manville, OH (2001) Handwrap Product Curing	0.41 pounds per hour 1.81 tons per year	--
Johns Manville, OH (2001) Product Curing Unit 38	0.87 pounds per hour 4.25 tons per year	--
Johns Manville, OH (2001) Forming and Collection Unit 38	0.88 pounds per hour 3.83 tons per year	--
Johns Manville, OH (2001) Product Curing Unit 37	1.67 pounds per hour 7.32 tons per year	--
American Rockwood, TX (1998) EAF Mineral Wool	1.85 pounds per hour 7.06 tons per year	--
Johns Manville, OH (2001) Forming and Collection Unit 37	2.85 pounds per hour 12.48 tons per year	--

Table 5 - - NO _x BACT/LAER Existing Limits		
Company Name/Operation	NO _x Limit	Control technology
Johns Manville, IN	Not major for NO _x	- -

- (1) Certainteed Corp., KS
 Certainteed Corp., KS has a NO_x limit of 1 pound per ton of glass pulled. This NO_x limit can not be used for this review because of the difference in products and the designs of the manufacturing lines.
- (a) Products
 Certainteed Corp., KS, manufactures residential insulation products, while Knauf Insulation GmbH, IN, manufactures commercial and industrial insulation products. As indicated in the previous discussions, binders used for commercial and industrial insulation products have higher LOI, which results in higher emissions.
- (b) Design
 Certainteed Corp., KS, manufacturing line does not include an add-on control device such as RTO on the curing sections of the line. As previously indicated, additional NO_x emissions are generated by the natural gas combustion in the RTO and the conversion of ammonia to NO_x from the process exhaust due to high temperature. Certainteed Corp., KS does not utilize an add-on control for VOC emissions, while Knauf Insulation GmbH, IN will utilize an RTO.
- (2) Knauf, CA
 The NO_x limit (2.79 lbs/ton of glass pulled) specified for Knauf, CA will not be considered as LAER under this review because the proposed NO_x limit for Knauf, IN is more stringent.
- (3) Guardian Fiberglass (Inwood), WV
 The NO_x limits (0.020 lbs/ton of glass pulled and 0.023 lbs/ton of glass pulled) for Guardian Fiberglass, WV encompassed the NO_x emissions from the melting and refining sections of the manufacturing lines only. The NO_x proposed limit (2.66 lbs/ton of glass pulled) for Knauf Insulation GmbH accounts for the NO_x emissions from the Forming, Curing and Cooling operations of the manufacturing lines. There are no expected NO_x emissions from the melting and refining sections of the manufacturing lines proposed by Knauf Insulation GmbH, IN.

To make an accurate comparison of the limits, the NO_x limits specified for the melting and refining sections of the lines for Guardian Fiberglass, WV should be added to the NO_x limits specified for the forming, curing and cooling operations of the manufacturing lines (see Table 5).

Based on the comparison shown in the table below (Table 6), the NO_x limit proposed for Knauf Insulation GmbH is more stringent than the existing NO_x limits for Guardian Industries. In addition, it is also not an accurate evaluation to compare these plants because of the difference in the products they manufactured.

Based on the information mentioned above, the NO_x limits specified for Guardian Industries, WV will not be considered as LAER under this review.

Table 6 - - Knauf, IN and Guardian, WV Comparison			
Source Name	Operations (lbs/ton of glass pulled)		
	Melting and Refining	Curing and Cooling	Total for the Line
Knauf, IN (<i>proposed</i>)	- -	2.66	2.66
Guardian Fiberglass, WV Line 1	0.023	3.01	3.033
Guardian Fiberglass, WV Line 2	0.020	3.51	3.53

(4) Other Sources

(a) Johns Manville, GA

The NO_x limit (6.05 lbs/ton of glass pulled) specified for Johns Manville, GA, will not be considered as LAER under this review because the proposed NO_x limit for Knauf, IN is more stringent.

(b) Johns Manville (JM) Ohio

The six (6) Johns Manville (JM) Ohio referenced in the bottom half of the table are pipe insulation manufacturing lines based on their low production capacity (381 to 880 lbs/hr). This plant burnt down about a year ago and is not in operation today. The JM furnace, forming and curing processes for their pipe insulation production are different than the processes proposed for the Knauf's IN plant.

(c) American Rockwood, TX

American Rockwood, TX was eliminated for comparison because of the difference in products manufactured.

Proposed NO_x LAER - - Knauf Insulation GmbH, IN

Based on the information provided above, the NO_x LAER standards and mass limitations for the proposed expansion are:

- (1) The NO_x LAER determination was conducted using the same interpretation in 40 CFR Part 63, Subpart NNN: that a fiberglass insulation manufacturing line consists of the forming, curing and cooling operations.
- (2) In terms of the LAER analysis, the 613 FORMING, 613 CURING/COOLING and one RTO are considered as one process.
- (3) In terms of the LAER analysis, the 614 FORMING, 614 CURING/COOLING and one RTO are considered as one process.
- (4) Low NO_x burners will be used to control the NO_x emissions from:
 - 613 CURING/COOLING, and
 - 614 CURING/COOLING,due to the combustion of natural gas.
- (5) There is no add-on control device used to control the NO_x emissions from the:
 - 611 FORMING,
 - 612 FORMING,
 - 613 FORMING, and
 - 614 FORMINGdue to the combustion of natural gas.
- (6) There is no add-on control device used to control the NO_x emissions from the:
 - 611 FORMING;
 - 612 FORMING;
 - 613 CURING/COOLING; and
 - 614 CURING/COOLINGdue to the binder curing, because these NO_x emissions are considered collateral emissions.
- (7) The combined NO_x emissions from Stack 6-22 and Stack 6-29:
 - 611 FORMING;
 - 612 FORMING;
 - 613 FORMING and 613 CURING/COOLING; and
 - 614 FORMING and 614 CURING/COOLING

shall not exceed 2.66 pounds of NO_x per ton of glass pulled, which is equivalent to 33.25 pounds per hour of NO_x emissions, based on a 3-hour average.

$$\text{NO}_x = (2.66 \text{ pounds/ton}) \times (300 \text{ tons/day}) \times (1 \text{ day/24 hours}) = 33.25 \text{ pounds per hour}$$

- (8) There are no NO_x emissions estimated for the FURN 611.

These proposed standards and mass limitations also satisfy the 326 IAC 2-2 (PSD) requirements for NO₂.

IDEM Contact

Questions regarding this proposed permit can be directed to Iryn Calilung at the Indiana Department Environmental Management, Office of Air Quality, 100 North Senate Avenue, Indianapolis, Indiana 46204 or by telephone at (317) 233-5692 or toll free at 1-800-451-6027 extension 3-5692.

**Indiana Department of Environmental Management
Office of Air Quality**

Appendix C - - VOC BACT Analysis
Technical Support Document (TSD)
Prevention of Significant Deterioration (PSD)
Emission Offset (EO)
Significant Source Modification (SSM) of a Part 70 Source
Significant Permit Modification (SPM) of Part 70 Operating Permit

Source Background and Description
--

Source Name:	Knauf Insulation GmbH
Source Location:	One Knauf Drive, Shelbyville, IN 46176
Mailing Address:	One Knauf Drive, Shelbyville, IN 46176
Responsible Official:	Vice President of Operations
County:	Shelby
SIC Code:	3296
Source Categories:	1 of 28 Listed Source Categories Major PSD and EO Source Major Source under Section 112 of the CAA Part 70 Source Clean Unit Source
Part 70 Operating Permit :	145-6038-00001, issued on September 14, 1999
Permit Number:	EO/SSM 145-20887-00001 SPM 145-21234-00001
Permit Writer:	Iryn Calilung 317/233-5692

Volatile Organic Compound (VOC) Best Available Control technology (BACT)

326 IAC 8-1-6 requires a best available control technology (BACT) review to be performed on the proposed modification because the new additional manufacturing lines have VOC potential to emit greater than 25 tons per year (see Table 1 below).

BACT is a mass emission limitation based on the maximum degree of pollution reduction of volatile organic compound (VOC) emissions, which is achievable on a case-by-case basis.

BACT analysis takes into account the energy, environmental, and economic impacts on the source. These reductions may be determined through the application of available control techniques, process design, work practices, and operational limitations. Such reductions are necessary to demonstrate that the emissions remaining after application of BACT will not cause or contribute to air pollution, thereby protecting public health and the environment.

The Office of Air Quality (OAQ) makes BACT determinations by following these steps.

- (1) The first step is to identify all control technologies.
- (2) The second step is to eliminate technically infeasible options.
- (3) The third step is to rank the remaining control technologies by effectiveness.
- (4) The fourth step is to evaluate the most effective controls and document results.
- (5) The last step is to select the BACT control and mass emission limit.

Once the technically feasible control technologies have been identified, they are ranked in order of control effectiveness, with the most effective control alternative on top. The ranked alternatives are reviewed in terms of environmental, energy, and economic impacts specific to the proposed modification. If the analysis determines that the evaluated alternative is not appropriate as BACT due to any of the impacts, then the next most effective is evaluated. This process is repeated until a control alternative is chosen as BACT.

The proposed BACT must provide emission limitations which are at least as stringent as the federally-approved State Implementation Plan (SIP) or the federal New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP).

In going through the feasible controls, there may be several different limits that have been set as BACT for the same control technology. The permitting agency has to choose the most stringent limit as BACT unless the applicant demonstrates in a convincing manner why that limit is not feasible. The final BACT determination would be the technology with the most stringent corresponding limit that is economically feasible.

There is no requirement in the State or Federal regulations to require innovative control to be used as BACT. Innovative control means a control that has not been demonstrated in a commercial application on similar units. Innovative controls are normally given a waiver from the BACT requirements due to the uncertainty of actual control efficiency.

VOC BACT requires that the applicant installs the best available control technology, not create new ones. Based on this, the OAQ will not evaluate or require any innovative controls for this BACT analysis. Only available and proven control technologies are evaluated. A control technology is considered available when there are sufficient data indicating that the technology results in a reduction in emissions of regulated pollutants.

The following VOC determinations are based on the information obtained from the permit application submitted by Knauf Insulation GmbH, the EPA RACT/BACT/LAER (RBLA) Clearinghouse, and electronic versions of permits available at the websites of other permitting agencies.

VOC Potential to Emit (PTE) of the Proposed Expansion

- (1) Knauf Insulation GmbH is proposing to expand their Shelbyville plant by installing new additional fiberglass insulation manufacturing line. The plant is located in Shelby County.

The following table summarizes the emission units with VOC emissions. See Table 8 of Appendix A - - Emissions Calculations - - for the detailed calculations.

Table 1 - - VOC PTE				
Emission Unit ID	Add-on Control Devices	Stack ID	VOC (tons/year)	
			After Control	Before Control
611 FORMING	- -	6-22	20.60	20.60
612 FORMING	- -	6-22	26.28	26.28
613 FORMING and 613 CURING/COOLING	RTO (2 MMBtu/hour) for curing/cooling only	6-22 and 6-29	39.42	788.4
614 FORMING and 614 CURING/COOLING	RTO (2 MMBtu/hour) for curing/cooling only	6-22 and 6-29	36.88	737.6

- (2) 611 FORMING
 The 611 FORMING will generate VOC emissions less than 25 tons per year before control, therefore VOC BACT requirements under 326 IAC 8-1-6 do not apply.
- (3) 612 FORMING
- (a) The 612 FORMING will generate VOC emissions greater than 25 tons per year, therefore VOC BACT requirements under 326 IAC 8-1-6 apply.
 - (b) Search of the RACT/BACT/LAER Clearinghouse resulted with no sources of similar operations that control the forming portion only.
 - (c) Incineration is not technically feasible because the air volume of the forming section is too large and the air stream is too cool and moist to allow incineration.
 - (d) However, to proactively address any concern, cost analysis was conducted for the use of an add-on control (incinerator). At 95% overall control efficiency, it will cost approximately \$362,000 per ton of VOC to minimize the VOC emissions generated by 612 FORMING. Also, an additional 66.47 tons per year of NOx emissions will be generated as collateral emissions from the incinerator.
 - (e) Based on this information, no add-on control is technically, economically and environmentally feasible to control the VOC emissions generated by the 612 FORMING.

- (4) 613 FORMING and 613 CURING/COOLING and 614 FORMING and 614 CURING/COOLING
- (a) The VOC BACT determination was conducted using the same interpretation in 40 CFR Part 63, Subpart NNN: that a fiberglass insulation manufacturing line consists of the forming, curing and cooling operations.
- (b) In terms of VOC BACT analysis, the 613 FORMING and 613 CURING/COOLING are considered as one process.
- (c) In terms of VOC BACT analysis, the 614 FORMING and 614 CURING/COOLING are considered as one process.
- (d) The 613 FORMING and 613 CURING/COOLING combined will generate VOC emissions greater than 25 tons per year, therefore VOC BACT requirements under 326 IAC 8-1-6 apply.
- (e) The 614 FORMING and 614 CURING/COOLING combined will generate VOC emissions greater than 25 tons per year, therefore VOC BACT requirements under 326 IAC 8-1-6 apply.
- (f) The VOC emissions from:
- 613 FORMING and 613 CURING/COOLING; and
 - 614 FORMING and 614 CURING/COOLING
- were determined at 95% overall control efficiency of each RTO.
- (g) VOC emissions are generated during the curing of the binders. The type of products manufactured by the plant significantly affects the potential to emit of the manufacturing line. VOC and particulate emissions depend on the type and amount of binder used and the binder's loss on ignition (LOI) during the curing process (see table below). Higher LOI results in higher VOC and particulate emissions. An RTO will be installed to control the VOC emissions.

Insulation Products	LOI (%)
Residential	4% to 10%
Commercial/Industrial	4% to 25%
Knauf Insulation GmbH, IN	Maximum of 18%

Summary of Similar Sources (SIC Code 3296)

The table below summarizes existing sources of similar operations (SIC Code 3296) that are listed in the EPA RACT/BACT/LAER (RBL) Clearinghouse database and other resources, such as other permitting agencies websites.

Sources are listed in alphabetical order.

Table 3 - - Sources with SIC Code 3296	
Sources Name	Products
American Rockwood, Inc., TX	Mineral Wool Products/Insulation
Armstrong World Industries, OR	Not Fiberglass Insulation
Certainteed Corp, CA	Residential/Light Density Fiberglass Insulation
Certainteed Corp, KS	Residential/Light Density Fiberglass Insulation
Guardian Fiberglass (Inwood), WV	Residential/Light Density Fiberglass Insulation
Johns Manville (Schuller), GA	Residential/Light Density Fiberglass Insulation
Johns Manville, IN	Residential/light Density Insulation
Johns Manville, OH	Commercial/Industrial Fiberglass Insulation
Knauf, AL	Residential/Light Density Fiberglass Insulation
Knauf, Belgium	Residential & Commercial/Industrial Insulation
Knauf, CA	Residential Fiberglass Insulation
Knauf, England	Residential & Commercial/Industrial Insulation
Knauf, France	Not Fiberglass Insulation – Polystyrene Foam Insulation
Knauf, Germany	Not Fiberglass Insulation – Polystyrene Foam Insulation
Knauf Insulation GmbH, IN	Commercial/Industrial Fiberglass Insulation

Sources that manufacture residential fiberglass products or Polystyrene Foam Insulation are eliminated from comparison in this review because Knauf Insulation GmbH, Shelbyville, Indiana manufactures commercial and industrial fiberglass products. Difference in products significantly affects the potential to emit of the manufacturing line. Volatile organic compound (VOC) and particulate emissions depend on the type and amount of binder used and the binder's loss on ignition (LOI) during the curing process (see table below). Higher LOI results in higher VOC and particulate emissions. An RTO will be installed to control the VOC emissions.

Table 4 - - Loss on Ignition (LOI)	
Insulation Products	LOI (%)
Residential	4% to 10%
Commercial/Industrial	4% to 25%
Knauf Insulation GmbH, IN	Maximum of 18%

VOC Existing BACT Emission Limitations

The use of the RTO is determined to be the control technology for the control of VOC emissions from the proposed manufacturing lines.

Search of the RACT/BACT/LAER Clearinghouse resulted in the following list of sources for VOC limits for similar operations. The RBLC indicates a wide range of VOC BACT emission limits (see table below).

There are only 2 sources indicated in the RBLC which utilized VOC add-on control devices for VOC emissions reduction.

The following provides details why some sources were not used for comparison:

- (1) American Rockwood, TX
American Rockwood, TX was eliminated for comparison because of the difference in products manufactured.
- (2) Guardian Fiberglass (Inwood), WV
Guardian Fiberglass (Inwood), WV uses oxidization to control VOC emissions. Knauf Insulation GmbH, IN will also reduced VOC emissions by oxidation.

The VOC BACT numerical limits were not considered under this review because of the difference in products manufactured. As previously indicated, the amount of VOC emissions generated depends on the type of binders used and their LOI. Guardian Fiberglass (Inwood), WV manufactures Residential/Light Density Fiberglass Insulation products, which requires binders with lower LOI than the binders used for Commercial/Industrial Fiberglass Insulation products.

- (3) Johns Manville (JM) Ohio
This plant burnt down about a year ago and is not in operation today. The JM furnace, forming and curing processes for their pipe insulation production are different than the processes proposed for the Knauf's IN plant.

Sources are arranged in an alphabetical order.

Table 5 - - VOC BACT/LAER Existing Limits		
Company Name/Operation	VOC Limit	Control technology
American Rockwood, TX (1998) EAF Mineral Wool	0.05 pounds per hour 0.22 tons per year	- -
Guardian Fiberglass(Inwood), WV (2002) Curing and Cooling Line 2 Melting and Refining Line 2 Forming Line 2 Line 2 Capacity 8000 lbs/hour	0.09 pounds/ton 0.2150 pounds/ton 2.13 pounds/ton 2.005 pounds per ton of glass pulled (total)	Thermal Oxidizer
Guardian Fiberglass(Inwood), WV (2002) Curing and Cooling Line 1 Melting and Refining Line 1 Forming Line 1 Line 1 Capacity 7500 lbs/hour	0.0770 pounds/ton 0.2150 pounds/ton 2.13 pounds/ton 2.422 pounds per ton of glass pulled (total)	Thermal Oxidizer
Johns Manville, OH (2001) Product Curing Unit 30 381 lbs/hour to 880 lbs/hour	0.67 pounds per hour	- -
Johns Manville, OH (2001) Product Curing Unit 38 381 lbs/hour to 880 lbs/hour	2.56 pounds per hour	
Johns Manville, OH (2001) Forming Unit 31 381 lbs/hour to 880 lbs/hour	2.4 pounds per hour	- -
Johns Manville, OH (2001) Forming and Collection Unit 37 381 lbs/hour to 880 lbs/hour	1.81 pounds per hour	- -
Johns Manville, OH (2001) Product Curing Unit 37 381 lbs/hour to 880 lbs/hour	1.02 pounds per hour	- -
Knauf, IN (proposed) (2005) (300 tons/day) 612 FORMING 613 FORMING and 613 CURING/COOLING 614 FORMING and 614 CURING/COOLING	6.1 pounds per hour 9.0 pounds per hour 8.4 pounds per hour	Regenerative Thermal Oxidizer (95% efficiency) for curing/cooling only LOI = 18%

Proposed VOC BACT - - Knauf Insulation GmbH, IN

Based on the information provided above, the VOC BACT standards and mass limitations for the proposed expansion are:

- (1) 613 FORMING, 613 CURING/COOLING, 614 FORMING and 614 CURING/COOLING**
- (a) The VOC BACT determination was conducted using the same interpretation in 40 CFR Part 63, Subpart NNN: that a fiberglass insulation manufacturing line consists of the forming, curing, and cooling operations.**
- (A) In terms of the VOC BACT analysis, the 613 FORMING and 613 CURING/COOLING are considered as one process.**
- (B) In terms of the VOC BACT analysis, the 614 FORMING and 614 CURING/COOLING are considered as one process.**
- (b) An RTO will be installed for each:**
-- 613 CURING/COOLING; and
-- 614 CURING/COOLING
to control the VOC emissions.
- Each RTO will operate at least 95% over all control efficiency.**
- (c) The VOC emissions after control from the 613 FORMING and 613 CURING/COOLING combined shall not exceed 9.0 pounds per hour of VOC emissions, based on a 3-hour average.**
- VOC = (39.42 tons/year)*(1 year/8760 hours)*(2000 lbs/1 ton)**
= 9.0 pounds per hour
- (d) The VOC emissions after control from the 614 FORMING and 614 CURING/COOLING combined shall not exceed 8.4 pounds per hour of VOC emissions, based on a 3-hour average.**
- VOC = (36.88 tons/year)*(1 year/8760 hours)*(2000 lbs/1 ton)**
= 8.4 pounds per hour
- (e) No add-on control is technically, economically, and environmentally feasible to control the VOC emissions generated by 613 FORMING.**
- (f) No add-on control is technically, economically, and environmentally feasible to control the VOC emissions generated by 614 FORMING.**

(2) 612 FORMING

- (a) No add-on control is technically, economically, and environmentally feasible to control the VOC emissions generated by 612 FORMING.**
- (b) The VOC emissions from the 612 FORMING shall not exceed 6.1 pounds per hour of VOC emissions.**

$$\begin{aligned} \text{VOC} &= (26.8 \text{ tons/year}) * (1 \text{ year}/8760 \text{ hours}) * (2000 \text{ lbs}/1 \text{ ton}) \\ &= 6.1 \text{ pounds per hour} \end{aligned}$$

- (3) The loss on ignition of the binders shall not exceed 18%.**

(4) Stack 6-22 and Stack 6-29

The combined VOC emissions from Stack 6-22 and Stack 6-29 shall not exceed 2.25 pounds per ton of molten glass and 28.13 pounds per hour, based on a 3-hour average.

IDEM Contact

Questions regarding this proposed permit can be directed to Iryn Calilung at the Indiana Department Environmental Management, Office of Air Quality, 100 North Senate Avenue, Indianapolis, Indiana 46204 or by telephone at (317) 233-5692 or toll free at 1-800-451-6027 extension 3-5692.

**Indiana Department of Environmental Management
Office of Air Quality**

Appendix D - - Air Quality Impact Analysis
Technical Support Document (TSD)
Prevention of Significant Deterioration (PSD)
Emission Offset (EO)
Significant Source Modification (SSM) of a Part 70 Source
Significant Permit Modification (SPM) of Part 70 Operating Permit

Source Background and Description
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Source Name:	Knauf Insulation GmbH
Source Location:	One Knauf Drive, Shelbyville, IN 46176
Mailing Address:	One Knauf Drive, Shelbyville, IN 46176
Responsible Official:	Vice President of Operations
County:	Shelby
SIC Code:	3296
Source Categories:	1 of 28 Listed Source Categories Major PSD and EO Source Major Source under Section 112 of the CAA Part 70 Source Clean Unit Source
Part 70 Operating Permit :	145-6038-00001, issued on September 14, 1999
Permit Number:	EO/SSM 145-20887-00001 SPM 145-21234-00001
Air Modeler:	Krista Gremos

Proposed Project

Knauf Insulation GmbH proposes to expand its current fiberglass manufacturing in Shelby County. The expansion project will consist of installing batch and binder raw material handling systems, a new electrically heated glass melting furnace (FURN 611), and a new manufacturing line (MFG 611) to produce industrial/commercial fiberglass insulation products.

This expansion project includes the retirement of three (3) existing furnaces, associated manufacturing lines, and raw materials handling systems (MFG 601, MFG 603, and MFG 605).

Mostardi Platt Environmental prepared the permit application for Knauf Insulation GmbH.

The Modeling Section in the Office of Air Quality (QAQ) received the permit application on March 3, 2005. A revised modeling portion was requested and was received on May 20, 2005.

This Appendix D - - Air Quality Impact Analysis - - of the TSD provides the air quality analysis review of the permit application.

Analysis Summary

A prevention of significant deterioration (PSD) review is based on a comparison of the potential to emit (PTE) emission rates to the PSD significant emission thresholds.

IDEM requires modeling for any emissions increase that exceeds PSD significant emission rates in an attainment area for that pollutant.

Areas designated as nonattainment are subject to stricter air quality analysis. Shelby County is nonattainment for ozone. Therefore, an additional analysis is required for those pollutants that are considered precursors to ozone and show a net increase in emissions.

NOx emissions were subject to this analysis for Knauf Insulation GmbH.

Based on the modeling results, the Knauf Insulation GmbH will not have a significant impact upon federal air quality standards.

Air Quality Impact Objectives

The purpose of the air quality impact analysis in the permit application is to accomplish the following objectives.

Each objective is individually addressed in this document in each section outlined below.

- Part A Establish which pollutants require an air quality analysis based on PSD significant emission rates.

- Part B Provide analyses of actual stack heights with respect to Good Engineering Practice (GEP) and describe the meteorological data used, the model used in the analysis, and the receptor grid used for the analyses.

- Part C Determine the significant impact level, the area impacted by the source's emissions and background air quality levels.

- Part D Demonstrate that the source will not cause or contribute to a violation of the National Ambient Air Quality Standard (NAAQS) or PSD increment if the applicant exceeds significant impact levels.

- Part E Perform a qualitative analysis of the source's impact on general growth, soils, vegetation and visibility in the impact area with emphasis on any Class I areas.

 The nearest Class I area is Kentucky's Mammoth Cave National Park.

- Part F Summarize the Air Quality Analysis

Part A -- Pollutants Analyzed for Air Quality Impact

- (1) **Applicability**
 The PSD requirements, 326 IAC 2-2, apply in attainment and unclassifiable areas and require an air quality impact analysis of each regulated pollutant emitted in significant amounts by a major stationary source or modification.

Significant emission levels for each pollutant are defined in 326 IAC 2-2-1 and in the Code of Federal Register (CFR) 52.21(b)(23)(i).

Areas designated as nonattainment are subject to stricter air quality analysis.

- (2) **Proposed Project Emissions**
 Particulate Matter less than 10 microns (PM₁₀), Sulfur Dioxide (SO₂), Nitrogen Dioxide (NO₂) and Volatile Organic Compounds (VOC)(Ozone (O₃) precursors), and Carbon Monoxide (CO) are the pollutants that will be emitted from the proposed project.

Therefore, an air quality analysis is required for these pollutants, which exceeded their significant emission rates, except as noted, as shown in Table 1:

Table 1 - - Significant Emission Rates for PSD			
Pollutant	Source Emission Rate (Facility Totals After Netting) (tons/year)	Significant Emission Rate (tons/year)	Preliminary AQ Analysis Required
PM ₁₀	13.98	15.0	No
NO ₂	95.7	40.0	Yes
NO _x ¹	95.7	40.0	No – See Footnote Below
VOCs (O ₃) ²	39.84	40.0	No
CO	83.44	100.0	No
SO ₂	8.73	40.0	No

¹ Shelby County is nonattainment for ozone; however, offsets greater than 1:1 were obtained and no further analysis was required.

² An air quality analysis was not performed for VOCs because it is a photochemically reactive pollutant and did not exceed an emission threshold of 250 tons per year. A cursory review is performed when the threshold is exceeded but does not involve modeling.

Source emission rates came from Tables 2 and 3, pages 1-8 and 1-9 of the permit application.

Part B -- Good Engineering Practice (GEP), Met Data, Model Used, Receptor Grid

- (1) **Stack Height Compliance with Good Engineering Practice (GEP)**
Stacks should comply with GEP requirements established in 326 IAC 1-7-1. If stacks are lower than GEP, excessive ambient concentrations due to aerodynamic downwash may occur. Stacks taller than 65 meters (213 feet) are limited to GEP, the stack height for establishing emission limitations. The GEP stack height takes into account the distance and dimensions of nearby structures, which would affect the downwind wake of the stack. The downwind wake is considered to extend five times the lesser of the structure's height or width.

A GEP stack height is determined for each nearby structure by the following formula:

$$H_g = H + 1.5L$$

Where: H_g is the GEP stack height
 H is the structure height
 L is the structure's lesser dimension (height or width)

- (2) **Proposed Project Stack**
Since the stack height of the modification was below GEP stack height the effect of aerodynamic downwash will be accounted for in the air quality analysis for the project.
- (3) **Meteorological Data**
The meteorological data used in the Industrial Source Complex Plume Rise Model Enhancements (ISC PRIME) model consisted of 1990 through 1994 surface data from the Indianapolis Airport Weather Service station merged with the mixing heights from Dayton, Ohio Airport National Weather Service station.

The meteorological data was purchased through the National Oceanic and Atmospheric Administration (NOAA) and National Climatic Data Center (NCDC) and preprocessed into ISC PRIME ready format using U.S.EPA's PCRAMMET.

- (4) **Model Description**
OAQ used ISC PRIME Version 04269 to determine maximum off-property concentrations or impacts for each pollutant. All regulatory default options were utilized in the U.S. EPA approved model, as listed in the 40 Code of Federal Register Part 51, Appendix W "Guideline on Air Quality Models".

The Auer Land Use Classification Scheme was used to determine the land use in the area. The area is considered primarily rural; therefore, a rural classification was used.

Surface terrain data from the U.S. Geological Survey was used for all receptors. Terrain out to 50 km in each direction from the proposed plant site was provided by the consultant for use in the model to ensure that the model properly evaluated simple, complex, and intermediate terrain impacts.

- (5) **Receptor Grid**
OAQ modeling utilized the same receptor grids generated by Mostardi Platt Environmental. The receptor grid extended to approximately 48 kilometers from the plant for all analysis except the Level 3 Analysis. The receptor grid for this analysis extended out 1 kilometer past the significant impact area. Since all of the proposed emission sources have stack heights less than GEP stack height, receptors were closely spaced to identify the influence of aerodynamic building downwash.

Part C - - Significant Impact Level/Area (SIA) and Background Air Quality Levels

A significant impact analysis is conducted to determine whether a more refined analysis is required. NO₂ emissions exceeded the significant emission rate, and so an analysis was performed for that pollutant. Shelby County is nonattainment for ozone but offsets were obtained which were greater than 1:1, and so no ozone air quality analysis was required.

The PSD significant impact level is defined by the following time period in Table 2 below with all maximum-modeled concentrations from the worst case operating scenarios.

The significant impact level is defined by the following time period in Table 2 below with all maximum-modeled concentrations from the worst case operating scenarios.

Table 2 - - Significant Impact Analysis				
Pollutant	Time Averaging Period	Maximum Modeled Impacts ($\mu\text{g}/\text{m}^3$)	Significant Impact Level ($\mu\text{g}/\text{m}^3$)	Refined AQ Analysis Required
NO ₂	Annual	0.81	1.0	No

Since the maximum modeled impact, $0.81 \mu\text{g}/\text{m}^3$ was below the significant impact level of $1.0 \mu\text{g}/\text{m}^3$, no further analysis was required.

Part D - - NAAQS and PSD Increment

No analysis was required since the modeled impact was below the PSD significant impact level.

Part E - Qualitative Analysis

No analysis was required since the modeled impact was below the PSD significant impact level.

Part F - Summary of Air Quality Analysis

Knauf Insulation GmbH has applied for a construction permit to expand its current fiberglass facility in Shelby County.

Mostardi Platt Environmental Incorporated of Indianapolis, Indiana prepared the permit application.

Shelby County is designated as attainment for NO₂, and since NO₂ emissions exceeded the annual significant emissions rate, that pollutant was modeled. The resulting maximum modeled impact from these emissions was below the significant impact level, and no further analysis was required.