

**Shasta County Department of Resource Management**

**Air Quality Management District**

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**Evaluation Report**

**Regarding Proposed Issuance of a Renewed  
Title V Operating Permit to**

**Knauf Insulation, GmbH**

**for Equipment Located at:**

**3100 Ashby Road  
City of Shasta Lake, CA 96019**

**May 2014**

**Evaluation Report  
Regarding Proposed Renewal of a  
Title V Operating Permit  
Knauf Insulation, GmbH**

## **Introduction**

The District proposes to renew a Title V operating permit to Knauf Insulation, GmbH (Knauf). This evaluation, with the proposed Title V operating permit, sets forth the legal and factual basis for the conditions contained in the proposed permit.

## **Facility Description**

Knauf Insulation is a fiberglass manufacturing facility that produces both blanket insulation and blown insulation. The insulation is produced from silica sand, recycled glass, and other materials as specified in the application. The glass is initially melted in an electric furnace operating at 2500°F. The insulation is produced on the forming line where the glass is formed into fine strands in spinners and laid down onto a moving conveyor. Some of the glass is diverted to the unbonded insulation forming line. The forming lines (bonded and unbonded) are heated with natural gas burners with a total heat input of 55 MMBTU/Hr. The exhaust from the forming lines feed through seven venturi scrubbers in parallel operating at a minimum of three (3) inches water across the venturi throat.

The uncured mat from the forming process enters a natural gas fired curing oven where the binder is thermally set or cured. The oven exhaust gases pass through a Regenerative Thermal Oxidizer (RTO). The cured glass fiber mat then passes over a cooling section where cool air is pulled down through the mat and conveyor. Emissions from this section are minor in comparison to the emissions of the forming section. The exhaust gases from the cooling section are fed through a scrubber and are combined with the forming exhaust and pass through the Wet Electrostatic Precipitator (WESP). The RTO and WESP exhaust gases are combined prior to being fed into the main stack.

The finished fiberglass wool mat is trimmed and backed. The volatile organic compound emissions from the application of the backing are insignificant since a water-based adhesive is used. Some of the fiberglass wool mat trimmings and other scrap is processed into Class B blowing insulation by removing the backing, and grinding the wool. The unbonded fiberglass insulation is produced by four spinners without the use of a binder.

Since the initial Title V permit was issued, Knauf has submitted two requests for modification to the Title V permit. The first was to reduce the minimum pressure drop across each of the of scrubbers from 10 inches of water column to 3 inches of water column. That modification was reviewed, approved, and incorporated into the Title V permit on April 22, 2011. The second modification request was the applicability of 40 CFR part 63, subpart NNN. When Knauf started production in 2002, the facility used a phenol-formaldehyde based binder in the fiberglass process. Using this binder the facility was subject to the requirements in subpart NNN. The facility has since switched from the phenol-formaldehyde based binder to a binder consisting of a non-toxic, renewable formulation. That modification request was reviewed, approved, and incorporated into the Title V permit on September 18, 2012. As part of the application, Knauf requested that the applicable parts of subpart NNN remain in the permit in the event that the facility reverts back to the phenol-formaldehyde based binder.

The Title V evaluation and draft Title V permit was notified to the public on October 25, 2013. There were no public inquiries into the Title V and there were no public comments received during the 30-day comment period. On December 3, 2013, the Title V evaluation and draft Title V permit was submitted to EPA Region IX for the 45-day review and comment period. Comments were received by the District via phone call and email. The EPA comments have been incorporated into the Title V permit.

This evaluation will address the renewal of Knauf Insulation's Title V Permit.

## **EQUIPMENT DESCRIPTION**

The major equipment located at the Knauf Insulation facility includes:

### **RAW MATERIALS HANDLING AND MIXING (Permit To Operate #97-PO-26)**

- One (1) Raw Material Unloading Dust Collector (Griffen Model JV-9-F)
- Three (3) Sand Bin Dust Collectors (Griffen Model JV-9-F)
- Two (2) Consumer Cullet Bin Dust Collectors (Griffen Model JV-9-F)
- One (1) Dolomite Bin Dust Collector (Griffen Model JV-9-F)
- One (1) Limestone Bin Dust Collector (Griffen Model JV-9-F)
- One (1) (Spare) Bin Dust Collector (Griffen Model JV-9-F)
- One (1) Borax Bin Dust Collector (Griffen Model JV-9-F)
- One (1) Soda Ash Bin Dust Collector (Griffen Model JV-9-F)
- One (1) Feldspar Bin Dust Collector (Griffen Model JV-9-F)
- One (1) Knauf Cullet Dust Collector (Griffen Model JV-9-F)
- One (1) Weigh Scales/Conveyor Dust Collector (Griffen Model JV-9-F)
- One (1) Check Scale/Batch Mixer Dust Collector (Griffen Model JV-9-F)
- One (1) Day Bin #1 Dust Collector (Griffen Model JV-9-F)
- One (1) Day Bin #2 Dust Collector (Griffen Model JV-9-F)
- One (1) Liquid Urea Tank
- Two (2) Phenolic Resin Tanks
- Two (2) Resin-Urea Premix Tanks
- One (1) Outdoor Mineral Oil Tank
- One (1) Outdoor Aqueous Ammonia Tank
- Two (2) Ammonium Sulfate Mix Tanks
- One (1) Organosilane Weigh Tank
- One (1) Binder Mix Tank
- Two (2) Binder Supply Hold Tanks

### **GLASS MELTING (Permit To Operate #97-PO-27)**

- Electric Glass Melting Furnace
- Two (2) 15 MMBtu North American Burner Systems, (Model 8520)
- One (1) 25,800 ACFM Custom System Dual Chamber Dust Collector (Model WP238-10)
- One (1) Marley NC Series Cooling Tower, Serial No. 169921-001

### **FIBERGLASS FORMING/CURING/COOLING LINES (Permit To Operate #97-PO-28)**

- One (1) Natural Gas-Fired Forming Section
- One (1) Natural Gas-Fired Curing Oven w/ Low NOx/CO Burners (Maxon Cyclomax 3.7MM Btu/hr.)
- One (1) Volatile Organic Compound Binder Application Process
- Six (6) 10" P Venturi Scrubbers on Bonded Wool Forming Line (Fisher-Klosterman Model MS1100-H)
- One (1) 10" P Venturi Scrubber on Blowing Wool Forming Line (Fisher-Klosterman Model MS1200-H)
- One (1) 400,000 ACFM, 600 GPM Wet Electrostatic Precipitator (Research Cottrell Dual Chamber)
- Two (2) 1400°F Thermal Oxidizers w/ Low NOx/CO Burners (Maxon-Kinedizer 18M) on Curing Oven
- One (1) Fisher-Klosterman Model MS600L Venturi Scrubber on Cooling Line
- One (1) United McGill Regenerative Thermal Oxidizer

### **FIBERGLASS TRIMMING AND PACKAGING (Permit To Operate #97-PO-29)**

- One (1) 9874 ACFM Trimming-Packaging Cyclone (1) & Dust Collector Assembly (Farr 48L SPCC)
- One (1) 9874 ACFM Class B Blowing Wool Cyclones (2) & Dust Collector Assembly (Farr 48L SPCC)
  - One (1) 10,000 ACFM Class A Summit Wool Production Condenser
  - One (1) 10,000 ACFM Class A Premier Tech Refeed Condenser
- One (1) 15,708 ACFM Class A Blowing Wool North Dust Collector Assembly (Farr 378 BRF12)
- One (1) 15,708 ACFM Class A Blowing Wool Center Dust Collector Assembly (Farr 378 BRF12)
  - Five (5) High Density Filter Modules (Farr R1GA-FLOW200 Glide/Pack)
  - One (1) Pacific Filtration Systems Pulse Jet Cartridge Dust Collector (Model RP-2)

### **INTERNAL COMBUSTION ENGINES (Authorization to Operate #02-PO-09)**

- One (1) Caterpillar 1108 hp Diesel Engine, Model 3412 STA
- One (1) Clark Diesel 160hp Diesel Engine, Model JU6H-UF30
- One (1) Detroit Diesel-Allison 100 hp Diesel Engine, Model PDFP-04YT

### **INTERNAL COMBUSTION ENGINE (Authorization to Operate #02-PO-10)**

- One (1) Caterpillar 145 hp Natural Gas Engine, Model 3306

### **INSIGNIFICANT EMISSION SOURCES**

As approved by the U.S. Environmental Protection Agency (EPA), all equipment exempted from permit, pursuant to Shasta County Air Quality Management District (District) Rule 2.5, are considered an insignificant activity. These activities include the following:

- Cooling Tower
- Welding Equipment
- Propane Storage Tanks
- Fuel Oil Tank
- Minor Printing Equipment
- Laboratory Fume Hood
- Solvent Cleaning Equipment
- Portable Propane Heaters
- Aerosol Paint Cans
- Painting Operations
- Adhesive Application

### **APPLICABLE FEDERAL REQUIREMENTS**

Based upon the information submitted in the application and the District's review, the following applicable federal requirements apply to this facility:

#### **SIP Requirements:**

#### **District Rule 1 – Title and Definitions**

**Rule 1:2**      Definitions

This rule lists the definitions used throughout the District rulebook. This rule is an administrative rule. The District believes that the environmental benefits are not such that this rule should be included in the proposed Title V permit.

**District Rule 2 - Permit**

**Rule 2.1 and 2.1A**      New Source Review, Permits Required

These are the District's requirements for preconstruction permits and permits to operate. This rule is an administrative and procedural rule that is applied when a source is modified or constructed. This rule is applicable to this facility when new construction or modifications are commenced. The District feels that the environmental benefits are not such that this rule should be included in the proposed Title V permit.

**Rule 2:4**      Permits to Sell or Rent Incinerators

This rule pertains to the use of incinerators. There are no incinerators at this facility. Therefore, this requirement is not applicable to this facility.

**Rule 2:5**      Exemptions

This rule lists the types of devices or operations that the Air Pollution Control Officer may exempt. This rule is address in District Rule 5, Attachment 1 (insignificant activities). Therefore, the District believes that the environmental benefits are not such that this rule should be included in the proposed Title V permit.

**Rule 2:6**      Open Burning (2:6.a.4.c & 2:6.b)

This rule lists the regulations required to conduct open burning operations. Knauf Insulation does not conduct open burning operations at this facility. This requirement is not included in the proposed Title V permit.

**Rule 2:7**      Conditions for Open Burning

This rule lists the regulations required to conduct open burning operations. Knauf Insulation does not conduct open burning operations at this facility. This requirement is not included in the proposed Title V permit.

**Rule 2:8**      Agricultural Burning

This rule lists the regulations required to conduct open burning operations Knauf Insulation does not conduct open burning operations at this facility. This requirement is not included in the proposed Title V permit.

**Rule 2:10**      Action on Applications

This rule requires that an application for an Authority to Construct be filed in a manner and on the form prescribed by the Air Pollution Control Officer. This rule is an administrative rule and the District feels that the environmental benefits are not such that this rule should be included in the proposed Title V permit.

**Rule 2:12**     Expiration of Applications

This rule requires that an Authority to Construct application will expire after the Permit to Operate has been issued or eighteen (18) months after the Authority to Construct was issued unless construction has commenced on the site or at a time extension is granted by the Air Pollution Control Officer. It also states that a Permit to Operate application will expire two years after being issued. This rule is an administrative rule and the District believes that the environmental benefits are not such that this rule should be included in the proposed Title V permit.

**Rule 2:14**     Testing Facilities

This rule requires the operator to provide and maintain testing and sampling facilities as specified in the Authority to Construct or Permit to Operate. This requirement is included in the proposed Title V permit.

**Rule 2:21**     Defacing Permit (formerly Rule 2:24)

This rule requires that a permit not be defaced. This requirement is included in the proposed Title V permit.

**Rule 2:23**     Posting of Permit

This rule requires that the permit be posted. This requirement is included in the proposed Title V permit.

**Rule 2:25**     Public Records

This rule adopts by reference all state and federal rules for air contaminants. This requirement is included in the proposed Title V permit.

**District Rule 3 - Prohibitions and Enforcement**

**Rule 3:1**     Applicability of State Laws

This rule adopts by reference all state and federal rules for air contaminants. This requirement is included in the proposed Title V permit.

**Rule 3:2**     Specific Air Contaminants

This rule specifies limits for emissions of:

1. Combustion particulate matter in gr/dscf;
2. Particulate matter less than or equal to 10 microns in gr/dscf;
3. All other particulate matter in gr/dscf;
4. Particulate matter process weight: maximum hourly emissions as a function of process weight in tons per hour;
5. Oxides of Sulfur (as SO<sub>2</sub>) in ppm;
6. Oxides of Nitrogen (as NO<sub>2</sub>) in ppm; and
7. Opacity.

The requirements of this rule are included in the proposed Title V permit. Other permit conditions found in this title V Permit limiting emissions from the facility are more stringent than the emission limitations of the rule and , therefore, subsume the requirements of this rule for this particulate emission unit.

**Rule 3:3**      Gasoline Loading, Transfer and Dispensing

This rule requires that for stationary storage tanks that are used for retail sales, which are larger than 1.0 cubic meters, have an ARB-certified Phase I vapor recovery system install and used during fuel transfer. Knauf does not have any fuel storage tanks larger than 1.0 cubic meters, therefore, this requirement is not included in the proposed Title V permit.

**Rule 3:4**      Industrial Use of Organic Solvents

This rule requires that a control device achieving 85 percent control be utilized unless listed emission limits (in pounds per day) of solvent discharge into the atmosphere are met. This requirement is included in the proposed Title V permit.

**Rule 3:6**      Circumvention

This rule requires that emissions cannot be concealed by circumvention. This requirement is included in the proposed title V permit.

**Rule 3:9**      Recommendations of Air Pollution Control Officer

This rule states that no recommendation of the Air Pollution Control Officer is a guarantee that the recommended device or process will result in compliance. This rule is an administrative rule, and the District believes that the environmental benefits are not such that this rule should be included in the proposed Title V permit.

**Rule 3:11**      Local Rules

This rule states that any city or public agency, having authority to do so, may enact by ordinance more restrictive rules than contained in the District's rulebook. Because this permit is a federal permit and does not concern local rules, the District believes that the environmental benefits are not such that this rule should be included in the proposed Title V permit.

**Rule 3:12**      Reduction of Matter of Animal Origin (Except Curing of Glue)

Knauf Insulation does not conduct any reduction of animal matter at this facility. This requirement is not included in the proposed Title V permit.

**Rule 3:14**      Petroleum Solvent Dry Cleaners

Knauf Insulation does not conduct any petroleum solvent dry cleaning at this facility. This requirement is not included in the proposed Title V permit.

**Rule 3:15**      Cutback Asphalt Paving Materials

Knauf Insulation does not conduct any operation that contains emulsified asphalt materials. This requirement is not included in the proposed Title V permit.

**Rule 3:17**     Organic Solvent Degreasing Operations

This rule required degreasing operations to meet both design and operating practice specifications. This rule was repealed by the District when the District adopted a revised organic solvent operations rule. The new rule has not been submitted for inclusion into the SIP. Because the District has repealed this rule, the equipment that would be regulated is listed as insignificant and is regulated by District Rule 3:4 (included as a permit condition). The District believes that the environmental benefits are not such that this rule should be included in the proposed Title V Operating Permit.

**Rule 5**             Additional Procedures for Issuing Permits to Operate for Sources Subject to Title V of the Federal Clean Air Act Amendments of 1990

This rule lists the requirements of the Title V program. All specific applicable requirements imposed by this rule are included in the proposed Title V permit.

**NON-SIP Requirements:**

**Rule 2:3**             Toxics New Source Review for Complying with Federal Clean Air Act Section 112(g)

A screening health risk analysis was previously done during the initial permitting process. There will be no increase in emissions with this application, therefore a health risk analysis was not required to be done.

**Rule 2:11**         Fees

This rule is not included in the SIP and is therefore not evaluated in this permit action.

**Prevention of Significant Deterioration (PSD) Permitting**

This regulation sets the procedures for the review of new or modifications of existing major stationary emission sources. Knauf was issued the original PSD permit as part of the District's Authority to Construct for the facility. Subsequently, EPA has become the permitting authority for PSD permits. Any portions of 40 CFR 63, subpart NNN that is incorporated into the current PSD permit shall remain in effect and remain in the Title V permit until the time that Knauf Insulation submits an application to EPA Region IX to have subpart NNN removed from the PSD permit.

**40 CFR 60, Subpart PPP**

The New Source Performance Standard (NSPS) for wool fiberglass insulation manufacturing plants was incorporated into the Title V permit when the facility was initially permitted. All the applicable requirements from the NSPS are currently included into the conditions of the current Title V Permit.

**40 CFR 60, Subpart IIII**

Knauf Insulation has a total of two diesel fired engines used during emergencies, one (1) 1108hp Caterpillar diesel fired backup generator and one (1) 100 hp Detroit-Diesel/Allison diesel fired fire-pump engine that were constructed prior to the applicability requirement date found in 40 CFR Part 60, Subpart IIII, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*. Therefore, those engines are not subject to this NSPS subpart.

Knauf Insulation has one diesel-fired internal combustion engine that powers an emergency fire-pump that is subject to Subpart III. The original installed engine was replaced in 2007, with a 160hp Clark Diesel engine. This diesel engine meets the applicability requirements found in Subpart III. Therefore, this engine will be subject to the following emission standards as specified in Table 4:

1. NMHC + NO<sub>x</sub> = 7.8 gr/HP-hr,
2. CO = 3.7 gr/HP-hr, and
3. PM = 0.60 gr/HP-hr.

The above emission limits have been added to Title V permit as Condition E2. The Clark Diesel meets these emission limits.

In addition to the above emission requirements, the Clark Diesel engine will be subject to the following standards:

1. The facility must operate and maintain the 160hp Clark Diesel engine as it did when the equipment was installed and the equipment must be maintained over the entire life of the engine [60.4206],
2. The facility must use diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel [60.4207(b)],
3. Testing and maintenance of the Clark Diesel engine shall be limited to no more than 50 hours per year [60.4211(f)].

The above standards are currently in the Title V permit as Conditions G25 ,E7, and E5, respectfully.

#### **40 CFR 60, Subpart JJJJ**

Knauf Insulation has one natural gas fired engines used during emergencies, a 145 hp Caterpillar engine, that was constructed prior to the applicability requirement date found in 40 CFR Part 60, Subpart JJJJ, *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines*. Therefore, this engine is not subject to this NSPS subpart.

#### **40 CFR 63, Subpart NNN**

The requirements of this subpart apply to the emissions of hazardous air pollutants from new or existing rotary spin wool fiberglass manufacturing line producing a bonded wool fiberglass insulation product. The definition of a wool fiberglass manufacturing facility is defined as "...any facility manufacturing wool fiberglass on a rotary spin manufacturing line...". A rotary spin is defined as "...a process used to produce wool fiberglass building insulation...". The definition of building insulation is "...means bonded wool fiberglass insulation...". Bonded is defined as "means wool fiberglass to which a phenol-formaldehyde binder has been applied." The phenol-formaldehyde binder has been replaced with a binder formulation that does not contain any hazardous air pollutants. Section 63.1380 (c) states the requirements of this subpart do not apply to a manufacturing facility that has demonstrated to the Administrator it is not a major source for hazardous air pollutants. Published in the Federal Register Vol. 69, No. 130 on Thursday, July 8, 2004, EPA determined that if a facility switches from a phenol-formaldehyde binder to an acrylic binder, then the facility no longer meets the definition of a "wool fiberglass manufacturing facility" as defined in 40 CFR 63.1381, and therefore is no longer subject to Subpart NNN. The new binder formulation at Knauf Insulation is not an acrylic binder. In conversations between EPA, Region 4, and Knauf Insulation, EPA has determined that the same Applicability Determination Index, which is quoted in the Federal Register, is

applicable to the binder change at Knauf Insulation. Therefore, 40 CFR 63, Subpart NNN is no longer applicable when Knauf Insulation is using a non phenol-formaldehyde binder. The Shasta County Air Quality Management District, which has delegated authority from EPA for Subpart NNN of Part 63, concurs with this determination.

In the application for the modification, Knauf Insulation had requested that subpart NNN be removed from the operating conditions, while utilizing the Ecosse binder formula. But the facility has also requested that the subpart NNN requirements remain in the Title V Permit if the facility makes the decision to change back to a phenol-formaldehyde binder formulation at some point in the future. A section will be added to the Title V Permit for when a phenol-formaldehyde binder is utilized at the facility. A new condition will be added stating the facility shall give written notification to the District and EPA Region IX at least 30 days prior to switching back to the phenol-formaldehyde binder.

The sections of subpart NNN that pertain to particulate matter are included as operating conditions in the Prevention of Significant Deterioration Permit (PSD). To ensure consistency between the PSD Permit and the Title V Permit, the sections of Subpart NNN, that have been included in the PSD Permit, shall remain as operating conditions in the Title V Permit.

Section 63.1382 paragraph (a) - This limits the particulate matter emissions from the furnace stack and the formaldehyde emissions from the main stack. The particulate matter emissions are limited to 0.5 lb of pm per ton of glass pulled. The particulate matter limit specified in subpart NNN is less stringent than the Best Available Control Technology (BACT) determination that was done during the permit modification to increase the fiberglass production limit from 194 tons/day to 225 tons/day. The BACT determination limits the particulate matter to 0.07 lbs per ton of glass pulled and this requirement is in permit condition B2.

The formaldehyde emissions are limited to 1.8 lb of formaldehyde per ton of glass pulled. This is less stringent than the limits specified in permit condition H2. The formaldehyde limit is based on the information that was submitted in the original PSD/Authority to Construct application in table 2.3-1, which was based on actual test results from the Knauf Lanett facility. With an emission limit of 2 lb of formaldehyde per hour and a maximum production limit of 225 tons fiberglass per day, the formaldehyde limit was calculated to be 0.21 lb of formaldehyde per ton of glass pulled.

Section 63.1382 paragraph (b) – This paragraph specifies the operating limit requirements for the installed control equipment and the process controls.

The owner/operator must initiate corrective action within one-hour of an alarm from a bag leak detector, and complete the corrective actions in a timely manner. As previously mention, to stay consistent with the PSD permit, this requirement will remain in the Title V Permit in conditions A2, B5, B7, and D4.

The owner/operator must initiate corrective action within one hour when any of the following occur:

- any three-hour block average of the monitored ESP parameters is outside the limit established during the performance test,
- any four-hour average of the glass pull rate exceeds the level established during the performance test by greater than 20 percent,
- the average pressure drop, liquid flow rate, or chemical feed rate for any three-hour block is outside the limits established during the performance test for each wet scrubbing device, or
- any monitored process parameter level(s) are outside the limit(s) established during the performance test.

These requirements are covered in conditions H5 through H7.

The owner or operator must implement a Quality Improvement Plan (QIP) consistent with the compliance assurance monitoring provisions in 40CFR64, Subpart D, if the above deviations occur for more than five percent of the total operating time during a six-month period. This requirement is covered by conditions B22 and C23.

The owner or operator must operate the incinerator used to control the formaldehyde emissions so that any three-hour block average temperature in the firebox does not fall below the average established during the performance test. This is covered by condition H4.

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. Also, the owner or operator must use a binder formulation that does not vary from the specification and operating range established and used during the subject performance test. These requirements are covered by condition H3.

Section 63.1383 paragraph (a) – A written operations, maintenance, and monitoring (OM&M) plan must be prepared for the glass-melting furnace and rotary spin manufacturing line. This requirement is covered in conditions B9 and H9.

Section 63.1383 paragraph (b) – This paragraph specifies the requirements for when a baghouse is used to control particulate matter emissions from a glass-melting furnace. The owner/operator shall install, calibrate, maintain, and continuously operate a bag leak detection system. The OM&M plan must specify correction actions to be followed in the event of a bag leak detection alarm. These requirements are covered in conditions A2, B4, and D4.

Section 63.1383 paragraph (c) – This paragraph specifies the requirements for when an ESP is used to control particulate matter emissions from a glass-melting furnace. The owner/operator must monitor the ESP according to the procedures in the OM&M plan. This requirement is covered in conditions B9 and H9. Elements of the OM&M plan, pertaining to the wet ESP, can be found in conditions C6 and C11.

Section 63.1383 paragraph (f)(2) – This paragraph required that the owner/operator must install a continuous glass pull rate monitor that monitors and records on an hourly basis the glass pull rate on any new glass-melting furnace. This requirement is covered by condition C9.

Section 63.1383 paragraph (g) – This paragraph required that the owner/operator shall install, calibrate, maintain, and operate a monitoring device that continuously measures and records the operating temperature in the firebox of each thermal incinerator. This requirement is covered by condition C11.

Section 63.1383 paragraph (h) – This paragraph requires that when a wet scrubbing device is used, the owner/operator must install, calibrate, maintain, and operate monitoring devices that continuously monitor and record the gas pressure drop across each scrubber and scrubbing liquid flow rate to each scrubber, according to the OM&M plan. The pressure drop monitor is to be certified to be accurate within  $\pm 1$ ” Water Column, and the flow rate monitor is to be certified to be accurate  $\pm 5$  percent over the operating range of the gauges. The owner/operator must continuously monitor and record the feed rate of any chemical added to the scrubbing liquid. These requirements are covered by conditions B9, C5, C11, and C26.

Section 63.1383 paragraph (i) – This paragraph requires the owner/operator that uses process modifications to control formaldehyde emissions must establish a correlation between formaldehyde emissions and the process parameters to be monitored. The owner/operator must monitor the established parameter(s) according to the procedures in the OM&M plan. These requirements are covered by conditions H9 and H17.

Section 63.1383 paragraph (j) & (k) – This paragraph requires the owner/operator to monitor and record the free-formaldehyde content of each resin shipment. Additionally, the owner/operator must monitor and record the formulation of each batch of binder used. These requirement is covered by condition H11.

Section 63.1383 paragraph (l) – This paragraph requires that the owner/operator monitor and record the product LOI and product density every eight hours for each bonded wool fiberglass product manufactured. This requirement is covered by condition H28.

Section 63.1384 – This section specifies the performance testing requirements. The facility shall conduct the performance test in accordance with 40CFR63 subpart A and the following requirements:

- the facility must monitor and record all process and emission control equipment parameters every 15 minutes. And this data shall set the minimum and maximum set points for the process and emission control equipment,
- the glass pull rate must be monitored and recorded every 15 minutes and the average must be calculated for each test run,
- testing shall be done while producing the insulation with the highest LOI content, and resin with the highest free-formaldehyde content, and
- short term experimental production runs, where the process parameters could be outside the established limits, are allowed with the proper agency notification.

All of the testing requirements of this section are currently in the existing Title V permit, and shall remain in the appropriate sections.

Section 63.1385 – This section specifies the test methods to be used to show compliance:

- Test Methods 1-5,
- Test Method 316 or 318 for formaldehyde concentration,
- Test Method contained in appendix A for product LOI,
- Test Method contained in appendix B for free-formaldehyde content of the resin, and
- Test Method contained in appendix C for product density.

Alternate testing methods are allowed if approved by the administrator. These testing requirements are covered by conditions B9, B13, B14, F14, H12, H14, and H15.

Section 63.1386 paragraph (a) and (b) – This paragraph specifies the notification requirements of the facility, that includes the initial notification and initial testing. The initial notifications and initial testing have been previously completed by the facility, and not part of the current Title V permit. Except, if the facility switches back to a formaldehyde based binder, then an initial testing notification would be required. The testing notification is covered by condition H10.

Section 63.1386 paragraph (c) – This paragraph specifies the requirements for startup, shutdown, and malfunction procedures. The owner/operator shall develop a written plan that contains the specific procedures during periods of startup, shutdown, and malfunctions. The owner/operator shall also keep records of each event. These requirements are covered by conditions F7, G3, and H9.

Section 63.1386 paragraph (d) – This paragraph specifies the recordkeeping requirements. Subparagraph 1 requires that all the records be maintained by the facility for at least 5 years. Also, the owner/operator shall maintain records on the following devices:

- Bag leak detectors,
- ESP parameters,
- Binder formulation,
- LOI,
- Product density,
- Process parameters,
- Scrubber pressure drop and liquid flow rate,
- Incinerator operating temperature, and
- Glass pull rate

These requirements are all covered in the appropriate sections of the Title V Permit.

Section 63.1386 paragraph (e) – This paragraph specifies that the owner/operator shall report semi-annually if measured emissions are in excess of the applicable standard or a monitored parameter deviates from the levels established during the performance testing. This requirement is covered by conditions B24, B25, B26, C20, C21, and C25.

#### **40 CFR 63, Subpart ZZZZ**

Knauf has a total of four emergency internal combustion engines located at this facility. Of the four engines, one of the diesel fired compression engines was replaced after the applicability date of June 12, 2006, and therefore the 160hp Clark Diesel is considered a new engine. The other three engines, the 1108hp Caterpillar, the 100hp Detroit Diesel, and the 145hp Caterpillar, were constructed before June 12, 2006 and are considered existing engines with respect to Subpart ZZZZ.

For the existing emergency engines, there are no emission standards. The existing engines are subject to the following operating limitations specified in Table 2d of Subpart ZZZZ:

1. Change oil & filter every 500 hours of operation or annually, whichever comes first.
2. For the Compression Ignition engines, inspect air cleaner every 1000 hours of operation or annually, whichever comes first.
3. For the Spark Ignition engine, inspect the spark plugs every 1000 hours of operation or annually, whichever comes first.
4. Inspect all hoses and belts every 500 hours or annually, whichever comes first and replace as necessary.

The above operating/maintenance requirements have been added to the Title V permit as condition E8.

The existing emergency engines are also subject to:

1. The engines must be equipped with a non-resettable hour meter.
2. The engines are limited to a maximum of 50 hours per year for maintenance and testing.
3. The engines must be operated and maintained in accordance to the operation and maintenance manuals.

4. The facility must keep records of the maintenance conducted on the engines.
5. The facility must keep records of the hours of operation, including the hours for maintenance and testing.

The above standards are currently in the Title V permit. The above engines are not subject to the fuel requirements, performance testing, initial compliance and notification requirement in Subpart ZZZZ.

For the Clark Diesel engine, since it is considered a new engine, it must meet the requirement of this part by meeting the requirements of the NSPS IIII for Compression Ignition engines. No further requirements apply for new emergency engines under Subpart ZZZZ.

### **Compliance Assurance Monitoring**

The purpose of the Compliance Assurance Monitoring (CAM) plan is to provide a reasonable assurance of compliance with the applicable regulations. The requirements of this part shall apply to a pollutant-specific emissions unit, at a major source that is required to obtain a Part 70 or 71 Permit, if the unit satisfies all of the following criteria:

- (1) The unit is subject to an emission limitation or standard for the applicable regulated air pollutant (or a surrogate thereof), other than an emission limitation or standard that is exempt under paragraph (b)(1) of 40 CFR Part 64.2;
- (2) The unit uses a control device to achieve compliance with any such emission limitation or standard; and
- (3) The unit has potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source. For purposes of this paragraph, "potential pre-control device emissions" shall have the same meaning as "potential to emit" as defined in 40 CFR 64.1, except that emission reductions achieved by the applicable control device shall not be taken into account.

The post-control emissions for all pollutants at Knauf are less than the 100 tons per year major source threshold. But the pre-control emissions for particulate matter would be above the major source threshold. Therefore, Knauf Insulation is required to submit a Compliance Assurance Monitoring plan that provides for reasonable assurance of continuous compliance of the PM<sub>10</sub> concentration limits. Knauf has several different types of emission control equipment on the exhaust stream to control the PM<sub>10</sub> emissions. Knauf has submitted a CAM plan that will be incorporated into the Title V Permit as conditions F20 and F21.

### **Permit Streamlining**

The particulate matter requirements of NNN are included and are, in some instances, subsumed by other more stringent conditions in the Title V Permit. The following streamlining demonstration for 40 CFR Part 63, Subpart NNN, *National Emissions Standards for Hazardous Air Pollutants for Wool Fiberglass Manufacturing*, will compare and identify where a more stringent rule applies to this facility.

### Step 1. Side-by-Side Comparison of Applicable Requirements:

PM <sub>10</sub>			
Regulatory Basis	SIP, Rule 3:2	PSD/NSR Permit	NESHAP 40 CFR Part 63, Subpart NNN
Emission Standards	- 0.05 grains/DSCF (1.1 pounds per ton of glass pulled)	- 0.67 lb/hr and 0.07 lb/ton of glass pulled on a 3-hour rolling average; and - 2.9 tons/year, on a 12-month rolling sum. (Filterable and condensable PM)	- 0.5 pounds per ton of glass pulled (Filterable)
Monitoring	None	-Continuous bag leak detection system and corrective action requirements - Continuous glass pull rate monitor that records glass pull rate on an hourly basis - Continuous opacity monitor	- Prepare a written O&M plan for each affected glass-melting furnace and manufacturing line. - Continuously operate a bag leak detection system. - An existing glass-melting furnace equipped with a continuous glass pull rate monitors must monitor and record the glass pull rate on an hourly basis.
Recordkeeping	None	- Retain records of the hourly glass rate production averaged on a daily and weekly basis in tons of glass pulled per day -Record hours of operation of the glass melting furnace on a daily basis. - Retain records of performance test measurements. - Retain records of all calculations and measurements. - Retain records of each occurrence of the alarm for the bag leak detection system; the corrective action(s) taken for each occurrence of the alarm; and the duration for completing each correction action(s). - All records are to be retained for a minimum of 5 years.	- Retain all general records required by 40 CFR 63.10(b)(2). - Retain records of each occurrence of the alarm for the bag leak detection system; the corrective action(s) taken for each occurrence of the alarm; and the duration for completing each correction action(s). - Retain records for the glass pull rate on an hourly basis - Retain records of any period that the glass pull rate exceeds the average pull rate during the performance test by more than 20%; date and time of each occurrence and the corrective action; and when the exceedance was corrected. - All records are to be retained for a minimum of 5 years.
Testing	Approved EPA test methods.	- Annual PM testing using EPA Methods 1 through 5, and 202	- Initial performance test using EPA methods 1 through 5.
Reporting	None	- Semi-annual report of all excess emissions and monitoring systems performance. - Semi-annual written report of each occurrence of the alarm for the bag leak detection system; the corrective action(s) taken for each occurrence of the alarm; and the duration for completing each corrective action(s).	- Semi-annual report of all excess emissions and monitoring systems performance. - Semi-annual report of each occurrence of the alarm for the bag leak detection system; the corrective action(s) taken for each occurrence of the alarm; and the duration for completing each corrective action(s). - Semi-annual written report of the glass pull rate on an hourly basis. - Semi-annual written report of each occurrence when the glass pull rate exceeds the average pull rate during the performance test by more than 20%; date and time of each occurrence; the corrective action(s) taken for each occurrence; and the duration for completing each corrective action(s).

## **Step 2. Select most stringent emission limit or performance standard:**

For the PM<sub>10</sub> the limit specified in the NSR/PSD Permit is more stringent than the limit specified in either 40 CFR 63, Subpart NNN or the State SIP requirements. The facility shall be limited for PM<sub>10</sub> at the furnace stack to 0.67 lb/hr and 0.07 lb/ton of glass pulled.

## **Step 3. Conditions ensuring compliance with applicable requirements**

The facility will show compliance at the furnace stack for particulate matter by meeting the streamlined condition B2, with annual particulate testing for the filterable and condensable particulate.

The facility shall retain records for the glass pull rate on an hourly basis at all times. The glass pull rate shall be included in the semi-annual report.

The facility shall retain records of any period that the glass pull rate exceeds the average pull rate during the performance test by more than 20%, the date and time of each occurrence and the corrective action take, and when the exceedance was corrected. These records are only required when the NESHAP is applicable and shall be included in the semi-annual report.

These requirements and associated monitoring and recordkeeping requirement assure compliance.

## **Permitting Actions Taken Prior to the Permit Renewal**

Knauf has submitted two permit modification applications since the original Title V permit was issued. The first modification was to lower the minimum pressure drop across the scrubbers from 10" to 3" water column. The facility performed emission testing at the lowered pressure with a negligible affect on the emissions. This modification was incorporated into the Title V permit in April 2011.

The second modification Knauf proposed using a renewable resource-based binder in lieu of the phenol-formaldehyde based binder at the facility. The District reviewed and incorporated this modification into the Title V permit in October 2013.

## **Specific Permit Actions and Modifications**

1. During the review and evaluation process it was noted that the supplemental testing requirements for the increased production rate and installation of the Regenerative Thermal Oxidizer will be completed prior to the issuance of the Title V renewal. Title V condition C12.a), supplemental testing requirements for the increased production rate, and condition C12.c), supplemental testing requirements for the installation of the Regenerative Thermal Oxidizer, have been removed from the permit.
2. During the review of the current Title V permit conditions, a couple of typographical errors were discovered and corrected.
3. Updated the mailing address of EPA Region IX, Enforcement Division, in condition G42.b).
4. During the review and evaluation process, it was noted that condition H9 was a duplicate condition as part of condition H3.b). Condition H9 was removed from the permit.
5. Condition E2 was added to the Title V permit to fulfill the requirements of 40 CFR Part 60, Subpart III.
6. Condition E8 was added to the Title V permit to fulfill the requirements of 40 CFR Part 63, Subpart ZZZZ.

7. Renumbered conditions in Section E, due to the addition of permit conditions.
8. Remove (District-only requirement, not Federally enforceable) notation from permit conditions H12.
9. Conditions F21 and F22 were added to the Title V permit to fulfill the requirements of the Continuous Monitoring (CAM) Plan requirements of 40 CFR Part 64.

### **CONCLUSIONS AND RECOMMENDATION**

The proposed Title V Permit for the Knauf Insulation, GmbH facility is an affected facility with respect to the requirements of District Rule 5, ADDITIONAL PROCEDURES FOR ISSUING PERMITS TO OPERATE FOR SOURCE SUBJECT TO TITLE V OF THE CLEAN AIR ACT AMENDMENTS OF 1990 (adopted 9-28-93 and amended 5-8-01).

Therefore, it is the recommendation of the District that the Title V Operating Permit for Knauf Insulation, GmbH be renewed.