STATEMENT OF BASIS

Knauf Insulations
Lanett, AL
Chambers County
302-0011

This proposed Title V Major Source Operating Permit renewal is issued under the provisions of ADEM Admin. Code R. 335-3-16. The above named applicant has requested authorization to perform the work or operate the facility shown on the application and drawings, plans, and other documents attached hereto or on file with the Air Division of the Alabama Department of Environmental Management, in accordance with the terms and conditions of this permit.

Knauf Insulation operates a fiberglass manufacturing facility in the Huguley Industrial Park in Lanett, Alabama. To make fiberglass, raw materials (such as sand, limestone, borax, etc.) are fed into a furnace that melts them at a temperature of 2,500 °F and chemically combines them to form molten glass. The molten glass is then fed into spinners, which form thin strands of glass. When fiberglass mats, an ecose binder is sprayed onto the glass simultaneously. From here, the fiberglass is dropped onto a conveyor belt, forming a continuous layer of fiberglass. The conveyor takes the fiberglass through a curing oven (which sets the binder) and then through a cooling section where air is blown through it. It is then cut into manageable units, trimmed and then packaged.

Knauf Insulation also makes an unbonded product that is not formed into a mat. During this process, oil is sprayed on the fiberglass during the forming process, resulting in a final product ready for shipping. Also made is an uncured fiberglass mat.

Knauf Insulation was issued its existing Major Source Operating Permit (MSOP) on April 7, 2014 with an expiration date of April 6, 2019. Per ADEM Rule 335-3-16-.12(2), an application for permit renewal shall be submitted at least six (6) months, but not more than eighteen (18) months, before the date of expiration of the permit. Based on this rule, the application for renewal was due to the Department no later than October 6, 2018, but no earlier than October 6, 2017. An application for permit renewal was received by the Department on October 4, 2018. Additional information was received on August 1, 2019.

The following are significant sources of air pollution for this facility:

Raw Material Handling
Glass Melting Furnace – Line 621
Wool Fiberglass Process – Line 621
Glass Melting Furnace – Line 622
Wool Fiberglass Process – Lines 622 (A&B)

The following is a summary of facility-wide emissions:

Pollutant	TPY
PM[1]	260.69
SO_2[1]	8.88
NO_x[1]	91.45
CO[1]	137.05
VOC[1]	58.11
Total HAP[1]	0.0055
GHG (CO_2e)[2]	81,830.9

[1] Based on 2017 actual emissions
[2] Based on 2018 actual emissions

Batch House Raw Material Handling

Description:

Glass raw materials are received from off-site via rail or truck, stored in silos, conveyed, and mixed for batch feed material into the glass melting furnaces. Recycled cullet and E.S.P. dust from on-site are also stored in silos, conveyed, and mixed into the batch material. These silos are controlled by dust collectors that vent inside the batch house. Any opacity would be noticed exiting building vents or openings.

This process is comprised of the following units:

Stack No.	Description	Manufacture Date	Installation Date	Rated Process Capacity (lb/hr)
0-1	Raw Material Unload with Dust Collector	1987	1987	Confidential
0-2 to 0-6	#1 Batch Distributor with Dust Collectors	1987	1987	Confidential
0-7 to 0-9	#2 Batch Distributor with Dust Collectors	1987	1987	Confidential
0-10 to 0-18	Conveying and Mixing with Dust Collectors	1987	1987	Confidential

Applicability:

- This source is subject to the applicable requirements of ADEM Admin. Code R. 335-3-16-.03, "*Major Source Operating Permits*".

- These sources are subject to the applicable requirements of ADEM Admin. Code R. 335-3-4-.01(1), "*Visible Emissions*".

- This source has enforceable limits in place in order to comply with the applicable provisions of ADEM Admin. Code R. 335-3-14-.04. "*Air Permits Authorizing Construction in Clean Air Areas [Prevention of Significant Deterioration]*".

- The raw material unloading is subject to 40 CFR 64, *Compliance Assurance Monitoring.* Pre-control potential particulate matter emissions exceed 100 TPY. See Appendix, "Compliance Monitoring Plan".

Emissions Standards:

Opacity

- These sources are subject to the applicable requirements of ADEM Admin. Code R. 335-3-4-.01(1), "*Visible Emissions*", which states that no person shall discharge into the atmosphere from any source of emission, particulate of an opacity greater than that designated as twenty (20%) percent opacity, as determined by a six (6) minute average. During one six (6) minute period in any sixty (60) minute period, a person may discharge into the atmosphere from any source of emission, particulate of opacity not greater than that designated as forty percent (40%) opacity. If visible emissions are observed, the opacity should be determined using Method 9 of 40 CFR Part 60, Subpart A. [ADEM Admin. Code R. 335-3-4-.01(1)]

Particulate

- All silos that store raw material shall be equipped with a baghouse. [ADEM Admin. Code R. 335-3-14-.04(9) BACT]

- All railcar unloading of raw materials shall be done within an area enclosed by a top cover and two sides. [ADEM Admin. Code R. 335-3-14-.04(9) BACT]

- The exit concentration of particulate matter emissions of each baghouse shall not exceed 0.04 grains per dry standard cubic foot. [ADEM Admin. Code R. 335-3-14-.04(9) BACT]

Compliance and Performance Test Methods and Procedures:

- If testing is required, particulate matter (PM) emission shall be determined in accordance with Method 5 of 40 CFR 60, Appendix A. [ADEM Admin. Code R. 335-3-1-.05]

- Visible emissions observations (VEO) shall be conducted in accordance with Method 9 of 40 CFR 60, Appendix A.

Emission Monitoring:

- The raw material unloading emission monitoring requirements under 40 CFR Part 64, "*Compliance Monitoring Plan*" can be found in Appendix A. [40 CFR Part 64]

Compliance Assurance Monitoring Analysis:

The raw material unloading has potential pre-control emissions over 100% of the major source amount for particulate matter. A dust collector is used to comply with the above mentioned particulate matter emissions limit. Based on §64.2, the raw material unloading is subject to the requirements of Compliance Assurance Monitoring. Knauf will monitor visible emissions daily from stack and building vents. With the post control PTE < 100, Knauf is required to have a monitoring frequency of 1 time per day (minimum) per §64.4. This monitoring approach provides reasonable assurance of compliance with the particulate limit for raw material handling. The proposed CAM Plan is specified in Appendix A.

Recordkeeping and Reporting Requirements:

- Daily observations of each batch house opening shall be recorded and kept on file for at least 5 years. If the observation indicates emissions greater than normal, the following shall be recorded. [ADEM Admin. Code R. 335-3-16-.05]

    - The time and date of the visual observation
    - The action(s) taken (if any) to repair the silo dust collector(s)

Glass Melting Furnace – Line 621

Description

Mixed batch raw materials are fed into the furnace where they are heated to produce molten glass. The process is permitted to operate using a non-HAP-based ECOSE™ Technology binder, making it an area source for HAP.

40 CFR Part 60 Subpart CC, "*Standards of Performance for Glass Manufacturing Plants*" applies to each glass melting furnace that commences construction or modification after June 15, 1979 , therefore this process is subject to the requirements of Subpart CC.

This process is comprised of the following unit:

Unit No.	Description	Manufacture Date	Installation Date	Rated Process Capacity (lb/hr)
1-1	Glass Melting Furnace – Line 621 with Dry ESP	1987	1987	Confidential

Applicability:

- This source is subject to the applicable requirements of ADEM Admin. Code R. 335-3-16-.03, "*Major Source Operating Permits*".
- This source has enforceable limits in place in order to comply with the applicable provisions of ADEM Admin. Code R. 335-3-14-.04. "*Air Permits Authorizing Construction in Clean Air Areas [Prevention of Significant Deterioration]*".
- This source has enforceable limits in place in order to prevent it from being subject to the provisions of ADEM Admin. Code R. 335-3-14-.04 *"Air Permits Authorizing Construction in Clean Air Areas [Prevention of Significant Deterioration]"*.
- This source is subject to ADEM Admin. Code R. 335-3-4-.01(1), "*Control of Particulate Emissions – Visible Emissions*".
- This source is subject to the applicable requirements of 40 CFR 60 Subpart CC "*Standards of Performance for Glass Manufacturing Plants*".
- This source is subject to the applicable requirements of 40 CFR 60 Subpart A, "*General Provisions.*"
- This source is subject to the applicable requirements of 40 CFR 63 Subpart NN, *"National Emission Standards for Hazardous Air Pollutants for Wool Fiberglass Manufacturing at Area Sources"*.
- This source is subject to 40 CFR 64, *Compliance Assurance Monitoring.* Pre-control potential particulate matter emissions exceed 100 TPY.

Emissions Standards:

Opacity

- ADEM Admin. Code R. 335-3-4-.01(1)(a)(b), states no person shall discharge particulate emissions of an opacity greater than that designated as twenty (20%) opacity, as determined by a six minute average. During one six (6) minute period in any sixty (60) minute period, a person may discharge into the atmosphere from any source of emissions forty (40%) percent opacity. If visible emissions are observed, the opacity should be determined using Method 9 of 40 CFR Part 60, Subpart A. [ADEM Admin. Code R. 335-3-4-.01]

Particulate

- Particulate matter emissions from this source shall not exceed the lesser of 0.19 lbs per ton of glass produced or 1.5 lbs per hour. [ADEM Admin. Code R. 335-3-14-.04(9) BACT]

- The Permittee shall not cause to be discharged into the atmosphere from any glass melting furnace fired exclusively with either a gaseous fuel or a liquid fuel, particulate matter at emission rates exceeding 0.25 g of particulate/kg (0.5 lb/ton) of glass produced. [40 CFR §60.292 (a)(1)]

- During routine maintenance of the electrostatic precipitator, this glass melting furnace is exempt from the particulate matter limits specified in 40 CFR §60.292(a) if: [40 CFR §60.292(e) Subpart CC]

    - Routine maintenance in each calendar year does not exceed 6 days;
    - Routine maintenance is conducted in a manner consistent with good air pollution control practices for minimizing emissions; and
    - A report is submitted to the Administrator 10 days before the start of the routine maintenance (if 10 days cannot be provided, the report must be submitted as soon as practicable) and the report contain an explanation of the schedule of the maintenance.

Nitrogen Oxides

- Nitrogen oxide (NO_x) emissions from this source shall not exceed 12.0 lbs per hour. [ADEM Admin. Code R. 335-3-14-.04(9) BACT]

Carbon Monoxide

- Carbon monoxide (CO) emissions from this source shall not exceed 3.0 lbs per hour. [ADEM Admin. Code R. 335-3-14-.04 Anti-PSD]

Chromium Compounds

- The Permittee shall not discharge or cause to be discharged into the atmosphere emissions in excess of 0.00025 lb of chromium compounds per ton of glass pulled (0.25 lb per thousand tons glass pulled). [40 CFR §63.882(a)]

Operational Standards

- The Permittee must initiate corrective action within one hour when any 3-hour block average of the monitored ESP parameters are outside the limits established during performance testing and complete corrective actions in a timely manner according to the procedures in the operations, maintenance, and monitoring plan. [40 CFR §63.882(b)(2)(i)]

- The Permittee must implement a Quality Improvement Plan consistent with the compliance assurance monitoring provisions when any monitored ESP parameter is outside the limit established during performance testing for more than 5 percent of the total operating time in a 6-month block reporting period. [40 CFR §63.882(b)(2)(ii)]

- The Permittee must operate the ESP such that the monitored ESP parameters are not outside the limit established during performance testing for more than 10 percent of the total operating time in a 6-month block reporting period. [40 CFR §63.882(b)(2)(iii)]

Compliance and Performance Test Methods and Procedures:

- If testing is required, visible emissions observations shall be conducted in accordance with Method 9 of 40 CFR 60, Appendix A. [ADEM Admin. Code R. 335-3-1-.05]

- If testing is required, particulate matter (PM) emissions shall be determined in accordance with Method 5 of 40 CFR 60, Appendix A. [ADEM Admin. Code R. 335-3-1-.05]

- Chromium compound emissions shall be determined by Method 29 of 40 CFR Part 60, Appendix A. [40 CFR §63.885]

- Nitrogen oxide (NO_x) emissions shall be determined by Method 7 of 40 CFR Part 60, Appendix A. [ADEM Admin. Code R. 335-3-1-.05]

- Carbon monoxide (CO) emissions shall be determined by Method 10 of 40 CFR Part 60, Appendix A. [ADEM Admin. Code R. 335-3-1-.05]

- Direct measurement of material balance using good engineering practice shall be used to determine the amount of glass pulled during the performance test. The rate of glass produced is defined as the weight of glass pulled from the affected facility during the performance test divided by the number of hours taken to perform the performance test. [40 CFR §60.296(d)(3)]

Emission Monitoring:

- A monitor shall be maintained at a location on the electrostatic precipitator exhaust stack which shall continuously record the opacity in the exhaust stack. [ADEM Admin. Code R. 335-3-16-.05(c)(1)]

- Emissions tests for particulate matter are to be conducted at intervals not to exceed one year following the date of initial compliance testing. All test reports must be submitted to the Department within 30 days of completion of testing. [ADEM Admin. Code R. 335-3-16-.05(c)(1)]

- The unit's emission monitoring requirements under 40 CFR Part 64, "*Compliance Assurance Monitoring*", can be found in Appendix A.

- The Permittee shall monitor the ESP according to the procedures in the operations, maintenance, and monitoring plan, which shall contain the following:

    - The ESP operating parameters to be monitored and the minimum and/or maximum values that will be used to identify any operational problems;
    - A schedule for monitoring the ESP operating parameters;
    - Recordkeeping procedures, consistent with the recordkeeping requirements of §63.1386, to show that the ESP operating parameters are within the limits established during the performance test; and
    - Procedures for the proper operation and maintenance of the ESP.

Compliance Assurance Monitoring Analysis:

The Glass Melting Furnace – Line 621 has potential pre-control emissions over 100% of the major source threshold for particulate matter. Knauf uses a dry electrostatic precipitator (DESP) to control particulate matter emissions. Based on §64.2, the Glass Melting Furnace – Line 621 is subject the requirements of Compliance Assurance Monitoring. Knauf maintains and operates a Continuous Opacity Monitor (COM) to monitor opacity as well as a monitor to track voltage on the DESP. Voltage set points will be set annually during compliance testing. This monitoring approach provides reasonable assurance of compliance with particulate limit for the glass melting furnace. The proposed CAM Plan is specified in Appendix A.

Recordkeeping and Reporting Requirements:

- Records shall be kept of ESP parameter values used to monitor ESP performance, including any period when the values deviated from the established limits, 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. [40 CFR §63.886, §63.1386(d)(2)(ii)]

- During periods of startups and shutdowns, records shall be kept of the type of fuel used to heat the furnace during startup/shutdown to demonstrate only natural gas or other clean fuels were used; and records shall be kept showing the furnace emissions were controlled using the ESP operated at the parameters established during performance testing. [40 CFR §63.888, §63.1389(f)]

- A written report of the excess opacity emissions, as defined below, will be submitted to the Department for each calendar quarter within the month following the end of the quarter. The reports will include the following information. [ADEM Admin. Code 335-3-16-.05(c)(3)]

    - The magnitude of excess emissions over 20% computed from six-minute averages (data recorded during periods of opacity monitoring system breakdowns, repairs, calibration checks, and zero and span adjustments shall not be included in the data averages)
    - The date and time of commencement and completion of each time period of excess emissions
    - The nature and cause of the excess emissions (if known) and the corrective action taken or preventative measures adopted
    - The date and time identifying each period during which the opacity monitoring system was inoperative (except for zero and span checks) and the nature of the system repairs or adjustments
    - When no excess emissions have occurred and the opacity monitoring system was not inoperative or did not require repairs or adjustments, such information will be stated in the report

- A semi-annual monitoring report shall be submitted to the Department within 60 days after the end of each 6-month period according to the requirements in ADEM Admin. Code R. 335-3-16-.05(c)(3). [ADEM Admin. Code R. 335-3-16-.05(3)]

- Each semi-annual report shall contain the following information: [ADEM Admin. Code R. 335-3-16-.05(3)]

    - A detailed description of every instance in which visible emissions greater than ten (20%) percent opacity were observed, to include the date, time, cause of the visible emissions, and the corrective action taken.
    - The periods when the secondary voltage of the ESP was outside the operating parameters established during performance testing. If no deviations occurred, the report should say that no deviations occurred.
    - A statement certifying that all required monitoring, recordkeeping, and reporting requirements were accomplished as required.

Emissions:

Based on permit limits and stack test data, the expected emissions from this unit are as follows:

Emission Point	Pollutant	Allowable Emissions		Pre-Control Actual Emissions		Controlled Actual Emissions	
		(lb/hr)	(TPY)	(lb/hr)	(TPY)	(lb/hr)	(TPY)
1-1	PM	1.5	6.6	83.0	363.54	0.83	3.63
1-1	NOx	12.00	52.6	12.0	52.6		
1-1	SO_2			0.046	0.232		
1-1	CO	3.0	13.14	0.1	0.44		
1-1	Chromium			0.0001	0.0004		

Wool Fiberglass Process – Line 621

Description

Molten glass from the furnace falls into a rotating disk with perforated side walls which spins the glass into fibers. A natural gas burner and compressed air attenuate the fibers to a very small diameter. The fibers are spray-coated with a non-phenol-formaldehyde binder/glue and collected on a porous conveyor by drawing air through the conveyor. The moist mat is sent to a curing oven where it is sized and cured. Then the mat is cooled by pulling ambient air through the mat. The mat is then trimmed and packaged.

40 CFR Part 60 Subpart PPP, "*Standard of Performance for Wool Fiberglass Insulation Manufacturing Plants*" applies to each rotary spin wool fiberglass insulation manufacturing line that commences construction, modification, or reconstruction after February 7, 1984. Therefore, this process is subject to the requirements of Subpart PPP.

Knauf is not subject to the requirements of 40 CFR 63 Subpart NNN, "*National Emission Standards for Hazardous Air Pollutants for Wool Fiberglass Manufacturing*" because Knauf is an area source of HAPs due to the removal of its use of phenol-formaldehyde binders at the facility.

This process is comprised of the following units:

Stack No.	Description	Manufacture Date	Installation Date	Rated Process Capacity (lb/hr)
1-2	Wool Fiberglass Process with Wet Scrubbers and Forming controlled by a Wet Electrostatic Precipitator	1987	1987	Confidential
1-3	Curing Oven with Thermal Oxidizer	N/A	N/A	N/A
1-4	Trimming, Backing, and Packaging with Dust Collector	N/A	N/A	N/A
1-5 & 2-6	Unbonded Forming with Baghouse	N/A	N/A	N/A
1-6	Blue Label Separation	N/A	N/A	N/A

Applicability:

- The manufacturing line is subject to the applicable requirements of ADEM Admin. Code R. 335-3-16-.03, "*Major Source Operating Permits*".

- This source has enforceable limits in place in order to comply with the applicable provisions of ADEM Admin. Code R. 335-3-14-.04. "*Air Permits Authorizing Construction in Clean Air Areas [Prevention of Significant Deterioration]*".

- This source has enforceable limits in place in order to prevent it from being subject to the provisions of ADEM Admin. Code R. 335-3-14-.04 *"Air Permits Authorizing Construction in Clean Air Areas [Prevention of Significant Deterioration]"*.

- This source is subject to ADEM Admin. Code R. 335-3-4-.01(1), "*Control of Particulate Emissions – Visible Emissions*".

- The manufacturing line is subject to the applicable requirements of 40 CFR 60 Subpart PPP "*Standard of Performance for Wool Fiberglass Insulation Manufacturing Plants*".

- This source is subject to the applicable requirements of 40 CFR 60 Subpart A, "*General Provisions.*"

- The manufacturing line is subject to the applicable requirements of 40 CFR 64, *"Compliance Assurance Monitoring".*

Emissions Standards:

Opacity

- ADEM Admin. Code R. 335-3-4-.01(1)(a)(b) states no person shall discharge particulate emissions of an opacity greater than that designated as twenty (20%) opacity, as determined by a six minute average. During one six (6) minute period in any sixty (60) minute period, a person may discharge into the atmosphere from any source of emissions forty (40%) percent opacity. If visible emissions are observed, the opacity should be determined using Method 9 of 40 CFR Part 60, Subpart A. [ADEM Admin. Code R. 335-3-4-.01]

Particulate

- The combined particulate matter emissions from the forming section, curing oven, and the cooling section shall not exceed the lesser of 4.87 pounds per ton (lb/ton) of glass produced or 38.55 pounds per hour (lb/hr). [ADEM Admin. Code R. 335-3-14-.04(9) BACT]

- No owner or operator subject to the provisions of 40 CFR 60 Subpart PPP 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. [40 CFR §60.682]

Nitrogen Oxides

- Nitrogen oxide (NO_x) emissions from the 621 Curing Oven shall not exceed 12.0 pounds per hour (lb/hr). [ADEM Admin. Code R. 335-3-14-.04(9) BACT]

Carbon Monoxides

- Carbon monoxide (CO) emissions from the 621 Curing Oven shall not exceed 20.4 pounds per hour (lb/hr). [ADEM Admin. Code R. 335-3-14-.04 Anti-PSD]

- Carbon monoxide (CO) emissions from the 621 Forming Section shall not exceed 17.0 pounds per hour (lb/hr). [ADEM Admin. Code R. 335-3-14-.04 Anti-PSD]

Formaldehyde

- No phenol formaldehyde binders shall be used in this process. [ADEM Admin. Code R. 335-3-14-.04 (Anti-PSD)]

Operational Standards

- The scrubbers shall not operate with a pressure drop across the venturi of less than 3 inches of water column. [ADEM Admin. Code R. 335-3-16-.05]

Compliance and Performance Test Methods and Procedures:

- If testing is required, visible emissions observations shall be conducted in accordance with Method 9 of 40 CFR 60, Appendix A. [ADEM Admin. Code R. 335-3-1-.05]

- If testing is required, particulate matter (PM) emissions shall be determined in accordance with Method 5 of 40 CFR 60, Appendix A. [ADEM Admin. Code R. 335-3-1-.05]

- The NO_x emissions shall be determined by Method 7 of 40 CFR Part 60, Appendix A. [ADEM Admin. Code R. 335-3-1-.05]

- The CO emissions shall as determined by Method 10 of 40 CFR Part 60, Appendix A. [ADEM Admin. Code R. 335-3-1-.05]

- The Permittee 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. [40 CFR §60.685(b)]

- The Permittee shall determine compliance with the particulate matter standard of 4.87 pounds per ton as follows: [40 CFR §60.685(c)]

    - The emission rate (E) of particulate matter shall be computed for each run using the following equation:

        $$E = (C_t Q_{sd}) / (P_{avg} K)$$

        where:

E	=	emission rate of particulate matter, (lb/ton).
C_t	=	concentration of particulate matter, (gr/dscf).
Q_{sd}	=	volumetric flow rate of effluent gas, (dscf/hr).
P_{avg}	=	average glass pull rate, (ton/hr).
K	=	conversion factor, (7,000 gr/lb)

    - Method 5E shall be used to determine the particulate matter concentration (C_t) and the volumetric flow rate (Q_{sd}) of the effluent gas. The sampling time and sample volume shall be at least 120 minutes and 90.1 dscf.
    - Pursuant to the May 15, 2006 alternative method approval letter *(Abstract for [0600088] - Appendix B)* from the EPA Office of Air Quality and Standards and the subsequent Federal Register notice dated July 26, 2007, the Permittee shall use continuous glass pull rate monitoring (Subpart NNN 63.1384(a)(3)) through the use of continuous glass flow cameras in lieu of the monitoring requirements specified in 40 CFR 60.685(c)(3).
    - To comply with §60.684(d), the Permittee shall record measurements as required in §60.684(a) and (b) using the monitoring devices in §60.683(a) and (b) during the particulate matter runs.[54 FR 6680, Feb. 14, 1989]

Emission Monitoring:

- Particulate matter emissions tests are to be conducted at intervals not to exceed one year following the date of initial compliance testing. All test reports must be submitted to the Department within 30 days of completion of testing. [ADEM Admin. Code R. 335-3-16-.05(c)(1)]

- 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 Permittee 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 °C," in *Standard Methods for the Examination of Water and Wastewater,* 15th Edition, 1980 (incorporated by reference—see §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 ±5 percent over their operating range. [40 CFR §60.683(b)]

- All monitoring devices required under this section are to be recalibrated quarterly in accordance with procedures under §60.13(b). [40 CFR §60.683(c)]

- This source's emission monitoring requirements under 40 CFR Part 64, "*Compliance Assurance Monitoring*", can be found in Appendix A.

Compliance Assurance Monitoring Analysis:

The Wool Fiberglass Process – Line 621 has potential pre-control emissions over 100% of the major source amount for particulate matter. Knauf uses a series of control equipment (such as a wet scrubber, wet electrostatic precipitator (WESP), and a settling chamber) to control particulate matter, carbon monoxide, and nitrogen oxide. Based on §64.2, the Glass Melting Furnace – Line 621 is subject to the requirements of Compliance Assurance Monitoring. Knauf will continuously monitor the following:

- Wet Scrubber ΔP
- Wet Scrubber water flow (GPM)
- Secondary voltage on the WESP

Voltage set points will be set annually by compliance testing. This monitoring approach provides reasonable assurance of compliance with the particulate limit. The proposed CAM Plan is specified in Appendix A.

Recordkeeping and Reporting Requirements:

- A semi-annual monitoring report shall be submitted to the Department within 60 days after the end of each 6-month period. [ADEM Admin. Code 335-3-16-.05(c)(3)]

- The semi-annual report shall contain the following: [ADEM Admin. Code R. 335-3-16-.05(3)]

    - The periods when the pressure drop across a venturi scrubber was less than 3 inches of water column and the corrective action taken.
    - The periods when a venturi scrubber's water flow rate was outside the operating parameters established during compliance testing.
    - The periods when the current, voltage, and water flow rate of the wet electrostatic precipitator were outside the operating parameters established during compliance testing.

- The quarterly calibrations of the required monitors.

Emissions:

Based on permit limits and stack test data, the expected emissions from this unit are as follows:

Emission Point	Pollutant	Allowable Emissions		Pre-Control Actual Emissions		Controlled Actual Emissions	
		(lb/hr)	(TPY)	(lb/hr)	(TPY)	(lb/hr)	(TPY)
1-2 & 1-3	PM	38.55	168.85	57.58	252.2	13.907	60.91
1-2	NO_x			0.62	2.7		
1-2	CO	17.0	74.5	5.9	25.84		
1-2	SO_x			0.31	1.35		
1-2	Formaldehyde						
1-2	Phenol						
1-2	Methanol			4.79	20.96		
1-3	NO_x	12.0	52.6	6.3	27.59		
1-3	CO	20.4	89.35	8.2	35.92		
1-5	PM			0.17	0.76		
1-6	PM			0.17	0.76		

Glass Melting Furnace – Line 622

Description

Mixed batch raw materials are fed into the furnace where they are heated to produce molten glass. The process is permitted to operate using a non-HAP-based ECOSE™ Technology binder, making it an area source for HAP.

40 CFR Part 60 Subpart CC, "*Standards of Performance for Glass Manufacturing Plants*" applies to each glass melting furnace that commences construction or modification after June 15, 1979. Therefore, this process is subject to the requirements of Subpart CC.

This process is not subject to the requirements of 40 CFR 63 Subpart NNN, "*National Emission Standards for Hazardous Air Pollutants for Wool Fiberglass Manufacturing*" because Knauf is classified as an area source when using the ECOSE binder. This process is subject to the requirements of 40 CFR 63 Subpart NN, *"National Emission Standards for Hazardous Air Pollutants for Wool Fiberglass Manufacturing at Area Sources"*.

This process is comprised of the following unit:

Unit No.	Description	Manufacture Date	Installation Date	Rated Process Capacity (lb/hr)
2-1	Glass Melting Furnace – Line 622 with Dry ESP	1995	1995	Confidential

Applicability:

- This source is subject to the applicable requirements of ADEM Admin. Code R. 335-3-16-.03, "*Major Source Operating Permits*".
- This source has enforceable limits in place in order to comply with the applicable provisions of ADEM Admin. Code R. 335-3-14-.04, "*Air Permits Authorizing Construction in Clean Air Areas [Prevention of Significant Deterioration]*".
- This source has enforceable limits in place in order to prevent it from being subject to the provisions of ADEM Admin. Code R. 335-3-14-.04, *"Air Permits Authorizing Construction in Clean Air Areas [Prevention of Significant Deterioration]"*.
- This source is subject to ADEM Admin. Code R. 335-3-4-.01(1), "*Control of Particulate Emissions – Visible Emissions*".
- This source is subject to the applicable requirements of 40 CFR 60 Subpart CC, "*Standards of Performance for Glass Manufacturing Plants*".
- This source is subject to the applicable requirements of 40 CFR 60 Subpart A, "*General Provisions*".
- This source is subject to the applicable requirements of 40 CFR 63 Subpart NN, "*National Emission Standards for Hazardous Air Pollutants for Wool Fiberglass Manufacturing at Area Sources"*.

- This source is subject to 40 CFR 64, "*Compliance Assurance Monitoring"*. Pre-control potential particulate matter emissions exceed 100 TPY. See Appendix A, "Compliance Monitoring Plan".

Emissions Standards:

Opacity

- ADEM Admin. Code R. 335-3-4-.01(1)(a)(b), states no person shall discharge particulate emissions of an opacity greater than that designated as twenty (20%) opacity, as determined by a six minute average. During one six (6) minute period in any sixty (60) minute period, a person may discharge into the atmosphere from any source of emission forty (40%) percent opacity. If visible emissions are observed, the opacity should be determined using Method 9 of 40 CFR Part 60, Subpart A. [ADEM Admin. Code R. 335-3-4-.01]

Particulate

- Particulate matter emissions from this source shall not exceed 2.44 lbs per hour. [ADEM Admin. Code R. 335-3-14-.04(9) BACT]

- No owner or operator of a glass melting furnace subject to the provisions of this subpart shall cause to be discharged into the atmosphere from any glass melting furnace fired exclusively with either a gaseous fuel or a liquid fuel, particulate matter at emission rates exceeding 0.25 g of particulate/kg of glass produced (0.5 lb/ton). [40 CFR §60.292(a)(1)]

- During routine maintenance of the electrostatic precipitator, this glass melting furnace is exempt from the particulate matter limits specified in §60.292(a) if: [40 CFR §60.292(e)]

    - Routine maintenance in each calendar year does not exceed 6 days;
    - Routine maintenance is conducted in a manner consistent with good air pollution control practices for minimizing emissions; and
    - A report is submitted to the Administrator 10 days before the start of the routine maintenance (if 10 days cannot be provided, the report must be submitted as soon as practicable) and the report contain an explanation of the schedule of the maintenance.

Nitrogen Oxides

- Nitrogen oxides (NO_x) emissions from this source shall not exceed 12.0 lbs per hour. [ADEM Admin. Code R. 335-3-14-.04 (9) BACT]

Carbon Monoxides

- Carbon monoxides (CO) emissions from this source shall not exceed 3.0 lbs per hour. [ADEM Admin. Code R. 335-3-14-.04 Anti-PSD]

Chromium Compounds

- Chromium compounds (CrC) emissions from this source shall not exceed 0.00025 lb/ton glass pulled. [ADEM Admin. Code R. 335-3-11-.06 (39) and 40 CFR §63.882(a)]

Operational Standards

- The Permittee must initiate corrective action within one hour when any 3-hour block average of the monitored ESP parameters are outside the limits established during performance testing and complete corrective actions in a timely manner according to the procedures in the operations, maintenance, and monitoring plan. [40 CFR §63.882(b)(2)(i)]

- The Permittee must implement a Quality Improvement Plan consistent with the compliance assurance monitoring provisions when any monitored ESP parameter is outside the limit established during performance testing for more than 5 percent of the total operating time in a 6-month block reporting period. [40 CFR §63.882(b)(2)(ii)]

- The Permittee must operate the ESP such that the monitored ESP parameters are not outside the limit established during performance testing for more than 10 percent of the total operating time in a 6-month block reporting period. [40 CFR §63.882(b)(2)(iii)]

Compliance and Performance Test Methods and Procedures:

- If testing is required, particulate matter (PM) emissions shall be determined in accordance with Method 5 of 40 CFR 60, Appendix A. [ADEM Admin. Code R. 335-3-1-.05]

- If testing is required, visible emissions observations shall be conducted in accordance with Method 9 40 of CFR 60, Appendix A. [ADEM Admin. Code R. 335-3-1-.05]

- Nitrogen oxide (NO_x) emissions shall be determined by Method 7 of 40 CFR Part 60, Appendix A. [ADEM Admin. Code R. 335-3-1-.05]

- Carbon monoxide (CO) emissions shall be determined by Method 10 of 40 CFR Part 60, Appendix A. [ADEM Admin. Code R. 335-3-1-.05]

- Chromium compound (CrC) emissions shall be determined by Method 29 of 40 CFR Part 60, Appendix A. [ADEM Admin. Code R. 335-3-11-.06 (39) and 40 CFR §63.885]

- The Permittee shall conduct a performance test to demonstrate compliance with the chromium compound limit. The Permittee shall conduct the performance test according to the procedures in Subpart A of 40 CFR Part 63. [40 CFR §63.884(a)]

- The Permittee must meet all applicable performance test requirements contained in 40 CFR Part 63 Subpart NNN. [40 CFR §63.884(b)]

Emission Monitoring:

- A monitor shall be installed and maintained at a location on the electrostatic precipitator exhaust stack which shall continuously record the opacity in the exhaust stack. The type and location of the monitor must be approved by the Director prior to installation. [ADEM Admin. Code R. 335-3-16-.05(c)(1)]

- Emissions tests for particulate matter are to be conducted at intervals not to exceed one year following the date of initial compliance testing. All test reports must be submitted to the Department within 30 days of completion of testing. [ADEM Admin. Code R. 335-3-16-.05(c)(1)]

- The Permittee shall monitor the ESP according to the procedures in the operations, maintenance, and monitoring plan, which shall contain the following: [40 CFR §63.883 and §63.1383(c)]

    - The ESP operating parameters to be monitored and the minimum and/or maximum values that will be used to identify any operational problems;
    - A schedule for monitoring the ESP operating parameters;
    - Recordkeeping procedures, consistent with the recordkeeping requirements of §63.1386, to show that the ESP operating parameters are within the limits established during the performance test; and
    - Procedures for the proper operation and maintenance of the ESP.

- This source's emission monitoring requirements under 40 CFR Part 64, "*Compliance Assurance Monitoring*", can be found in Appendix A.

Compliance Assurance Monitoring Analysis:

The Glass Melting Furnace – Line 622 has potential pre-control emissions over 100% of the major source amount for particulate matter. Knauf uses a dry electrostatic precipitator (DESP) to control particulate matter emissions. Based on §64.2, the Glass Melting Furnace – Line 622 is subject to the requirements of Compliance Assurance Monitoring. Knauf maintains and operates a Continuous Opacity Monitor (COM) to monitor opacity as well as a monitor to measure voltage on the DESP. Voltage set points will be set annually during compliance testing. This monitoring approach provides reasonable assurance of compliance with particulate limit for raw material handling. The proposed CAM Plan is specified in Appendix A.

Recordkeeping and Reporting Requirements:

- Records shall be kept of ESP parameter values used to monitor ESP performance, including any period when the values deviated from the established limits, 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. [40 CFR §63.886, §63.1386(d)(2)(ii)]

- During periods of startups and shutdowns, records shall be kept of the type of fuel used to heat the furnace during startup/shutdown to demonstrate only natural gas or other clean fuels were used; and records shall be kept showing the furnace emissions were controlled using the ESP operated at the parameters established during performance testing. [40 CFR §63.888, §63.1389(f)]

- A written report of the excess opacity emissions, as defined below, will be submitted to the Department for each calendar quarter within the month following the end of the quarter. The reports will include the following information. [ADEM Admin. Code 335-3-16-.05(c)(3)]

    - The magnitude of excess emissions over 20% computed from six-minute averages (data recorded during periods of opacity monitoring system breakdowns, repairs, calibration checks, and zero and span adjustments shall not be included in the data averages)
    - The date and time of commencement and completion of each time period of excess emissions
    - The nature and cause of the excess emissions (if known) and the corrective action taken or preventative measures adopted

- The date and time identifying each period during which the opacity monitoring system was inoperative (except for zero and span checks) and the nature of the system repairs or adjustments
- When no excess emissions have occurred and the opacity monitoring system was not inoperative or did not require repairs or adjustments, such information will be stated in the report

- A semi-annual monitoring report shall be submitted to the Department within 60 days after the end of each 6-month period according to the requirements in ADEM Admin. Code R. 335-3-16-.05(c)(3). [ADEM Admin. Code R. 335-3-16-.05(c)(3)]

- Each semi-annual report shall contain the following information: [ADEM Admin. Code R. 335-3-16-.05(c)(3) and §63.886]

  - A detailed description of every instance in which visible emissions greater than twenty (20%) percent opacity were observed, to include the date, time, cause of the visible emissions, and the corrective action taken.
  - The periods when the secondary voltage of the ESP was outside the operating parameters established during performance testing.
  - A statement certifying that all required monitoring, recordkeeping, and reporting requirements were accomplished as required.

Emissions:

Based on permit limits and stack test data, the expected emissions from this unit are as follows:

Emission Point	Pollutant	Allowable Emissions		Pre-Control Actual Emissions		Controlled Actual Emissions	
		(lb/hr)	(TPY)	(lb/hr)	(TPY)	(lb/hr)	(TPY)
2-1	PM	2.44	10.69	65.0	284.7	0.65	2.85
2-1	NOx	12.00	52.6	7.0	30.66		
2-1	SO_2			0.053	0.232		
2-1	CO	3.0	13.14	3.0	13.14		
2-1	Chromium	.00025	.0011	0.0001	0.0004		

Wool Fiberglass Process – Line 622 A & B

Description

Molten glass from the furnace falls into a rotating disk with perforated side walls which spins the glass into fibers. A natural gas burner and compressed air attenuate the fibers to a very small diameter. The fibers are spray coated with an ECOSE™ binder/glue and collected on a porous conveyor by drawing air through the conveyor. This moist mat is sent to a curing oven where it is sized and cured. Then the mat is cooled by pulling ambient air through the mat.

40 CFR Part 60 Subpart PPP, "*Standard of Performance for Wool Fiberglass Insulation Manufacturing Plants*" applies to each rotary spin wool fiberglass insulation manufacturing line that commences construction, modification, or reconstruction after February 7, 1984. Therefore, this process is subject to the requirements of Subpart PPP.

This process is not subject to the requirements of 40 CFR 63 Subpart NNN, "*National Emission Standards for Hazardous Air Pollutants for Wool Fiberglass Manufacturing*" because Knauf is an area source of HAPs when using only the ECOSE binder.

This process is comprised of the following units:

Stack No.	Description	Manufacture Date	Installation Date	Rated Process Capacity (lb/hr)
2-2	Wool Fiberglass Process with Wet Scrubbers (622 Unbonded forming, 622A and 622B)	1995	1995	Confidential
2-3	Curing Oven (622A) with RTO	N/A	N/A	N/A
2-4	Trimming, Backing, and Packaging (622A) with Dust Collector	N/A	N/A	N/A
2-5	Unbonded Separation with Baghouse	N/A	N/A	N/A
2-7	Curing Oven (622B) with RTO	N/A	N/A	N/A
2-8	Unbonded Bagger with Baghouse	N/A	N/A	N/A

Applicability:

- This source is subject to the applicable requirements of ADEM Admin. Code R. 335-3-16-.03, "*Major Source Operating Permits*".

- This source has enforceable limits in place in order to comply with the applicable provisions of ADEM Admin. Code R. 335-3-14-.04. "*Air Permits Authorizing Construction in Clean Air Areas [Prevention of Significant Deterioration]*".

- This source has enforceable limits in place in order to prevent it from being subject to the provisions of ADEM Admin. Code R. 335-3-14-.04 *"Air Permits Authorizing Construction in Clean Air Areas [Prevention of Significant Deterioration]"*.

- This source is subject to the applicable requirements of 40 CFR 60 Subpart PPP, "*Standard of Performance for Wool Fiberglass Insulation Manufacturing Plants*".

- This process is subject to 40 CFR 64, "*Compliance Assurance Monitoring"*. Pre-control potential particulate matter emissions exceed 100 TPY. See Appendix A, "Compliance Monitoring Plan".

Emissions Standards:

Opacity

- ADEM Admin. Code R. 335-3-4-.01(1)(a)(b) states no person shall discharge particulate emissions of an opacity greater than that designated as twenty (20%) opacity, as determined by a six minute average. During one six (6) minute period in any sixty (60) minute period, a person may discharge into the atmosphere from any source of emissions forty (40%) percent opacity. If visible emissions are observed, the opacity should be determined using Method 9 of 40 CFR Part 60, Subpart A. [ADEM Admin. Code R. 335-3-4-.01]

Particulate

- The combined particulate matter emissions from the forming sections, the curing ovens, and the cooling section shall not exceed the lesser of 6.83 lb/ton pounds per ton of glass produced or 62.64 pounds per hour. [ADEM Admin. Code R. 335-3-14-.04(9) BACT]

- According to the provisions of 40 CFR 60 Subpart PPP, the Permittee shall not 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. [40 CFR §60.682]

Nitrogen Oxides

- Nitrogen oxides (NO_x) emissions from the regenerative thermal oxidizers on the 622A Curing Oven shall not exceed 12.0 pounds per hour (lb/hr). [ADEM Admin. Code R. 335-3-14-.04(9) BACT]

Carbon Monoxides

- Carbon monoxides (CO) emissions from the regenerative thermal oxidizers on the 622A Curing Oven shall not exceed 20.4 pounds per hour (lb/hr). [ADEM Admin. Code R. 335-3-14-.04 Anti-PSD]

- Carbon monoxides (CO) emissions from the 622 Forming Sections shall not exceed 14.5 pounds per hour (lb/hr). [ADEM Admin. Code R. 335-3-14-.04 Anti-PSD]

Operational Standards

- The scrubbers shall not operate with a pressure drop across the venture of less than 3 inches of water column. [ADEM Admin. Code R. 335-3-16-.05]

- No phenol formaldehyde binders shall be used in this process. [ADEM Admin. Code R. 335-3-14-.04 (Anti-PSD)]

Compliance and Performance Test Methods and Procedures:

- If testing is required, visible emissions observations shall be determined in accordance with Method 9 of 40 CFR 60, Appendix A. [ADEM Admin. Code R. 335-3-1-.05]

- If testing is required, particulate matter (PM) emission shall be determined in accordance with Method 5 of 40 CFR 60, Appendix A. [ADEM Admin. Code R. 335-3-1-.05]

- The NO_x emissions shall be determined by Method 7 of 40 CFR Part 60, Appendix A. [ADEM Admin. Code R. 335-3-1-.05]

- The CO emissions shall as determined by Method 10 of 40 CFR Part 60, Appendix A. [ADEM Admin. Code R. 335-3-1-.05]

- The Permittee 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. [40 CFR §60.685(b)]

- The Permittee shall determine compliance with the particulate matter standards as follows: [40 CFR §60.685(c)]

    - The emission rate (E) of particulate matter shall be computed for each run using the following equation:

      $E= (C_t Q_{sd})/ (P_{avg} K)$

      where:

E	=	emission rate of particulate matter, (lb/ton).
C_t	=	concentration of particulate matter, (gr/dscf).
Q_{sd}	=	volumetric flow rate of effluent gas, (dscf/hr).
P_{avg}	=	average glass pull rate, (ton/hr).
K	=	conversion factor, (7,000 gr/lb)

    - Method 5E shall be used to determine the particulate matter concentration (C_t) and the volumetric flow rate (Q_{sd}) of the effluent gas. The sampling time and sample volume shall be at least 120 minutes and 90.1 dscf.
    - Pursuant to the May 15, 2006 alternative method approval letter *(Abstract for [0600088] -Appendix B)* from the EPA Office of Air Quality and Standards and the subsequent Federal Register notice dated July 26, 2007, the Permittee shall use continuous glass pull rate monitoring (Subpart NNN 63.1384(a)(3)) through the use of continuous glass flow cameras in lieu of the monitoring requirements specified in 40 CFR 63.685(c)(3)
    - To comply with §60.684(d), the Permittee shall record measurements as required in §60.684 (a) and (b) using the monitoring devices in §60.683 (a) and (b) during the particulate matter runs.[54 FR 6680, Feb. 14, 1989]

Emission Monitoring:

- Particulate matter emissions tests are to be conducted at intervals not to exceed one year following the date of initial compliance testing. All test reports must be submitted to the Department within 30 days of completion of testing. [ADEM Admin. Code R. 335-3-16-.05(c)(1)]

- The Permittee 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 Permittee 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 °C," in *Standard Methods for the Examination of Water and Wastewater,* 15th Edition, 1980 (incorporated by reference—see §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 ±5 percent over their operating range. [40 CFR §60.683(b)]

- All monitoring devices required under this section are to be recalibrated quarterly in accordance with procedures under §60.13(b). [40 CFR §60.683(c)]

- This source's emission monitoring requirements under 40 CFR Part 64, "*Compliance Assurance Monitoring*", can be found in Appendix A.

Compliance Assurance Monitoring Analysis:

The Wool Fiberglass Process – Line 622 A&B has potential pre-control emissions over 100% of the major source amount for particulate matter. Knauf uses a series of control equipment (such as a wet scrubber, wet electrostatic precipitator (WESP), and a settling chamber) to control particulate matter, carbon monoxide, and nitrogen oxide. Based on §64.2, the Glass Melting Furnace – Line 621 is subject to the requirements of Compliance Assurance Monitoring. Knauf will continuously monitor the following:

- Wet Scrubber ΔP
- Wet Scrubber water flow (GPM)
- Secondary voltage on the WESP
- WESP water flow (GPM)
- WESP water solid percent

Voltage, water flows, and water solid percent set points will be set annually during compliance testing. This monitoring approach provides reasonable assurance of compliance with the particulate limits. The proposed CAM Plan is specified in Appendix A.

Recordkeeping and Reporting Requirements:

- A semi-annual monitoring report shall be submitted to the Department within 60 days after the end of each 6-month period according to the requirements in ADEM Admin. Code R. 335-3-16-.05(c)(3). [ADEM Admin. Code R. 335-3-16-.05(c)(3)]

- The semi-annual report shall contain the following: [ADEM Admin. Code R. 335-3-16-.05(3)]

    - The periods when the pressure drop across a venturi scrubber was less than 10 inches of water column and the corrective action taken.

- The periods when a venturi scrubber's water flow rate was outside the operating parameters established during compliance testing.
- The quarterly calibrations of the required monitors.

Emissions:

Based on permit limits and stack test data, the expected emissions from this unit are as follows:

Emission Point	Pollutant	Allowable Emissions		Pre-Control Actual Emissions		Controlled Actual Emissions	
		(lb/hr)	(TPY)	(lb/hr)	(TPY)	(lb/hr)	(TPY)
2-2 & 1-3	PM	62.64	274.36	103.06	451.4	56.34	246.8
2-2	NO_x			1.7	7.45		
2-2	CO	14.5	63.5	12.4	54.3	6.2	27.16
2-2	SO_x			0.36	1.56		
2-2	Methanol			5.49	24.04		
2-3	NO_x	12.0	52.6	12.0	52.6		
2-3	CO	20.4	89.35	20.4	89.35		
2-5	PM			0.17	0.74		
2-6	PM			0.17	0.74		
2-7	PM			0.26	1.14		
2-7	CO	10.0	43.8	10.0	43.8		
2-8	PM			0.26	1.14		

Tanks

Tank Number	Tank Contents	Tank Size (Gallons)
T-101	Ammonium Sulfate Dissolver	3,000
T-102	Mineral Oil Tank	15,000
T-103	Ammonium Sulfate	4,000
T-104	Binder Batch Mix Tank	2,000
T-105	Binder Hold Tank (621)	3,000
T-106	Binder Hold Tank (622)	3,000
T-109	Resin Storage (Phenolic)	12,000
T-110	Ecose Storage Tank	12,000
T-111	Aqueous Ammonia Storage	8,500
T-114	Mineral Oil Emulsifier	1,000
T-115	Emulsified Mineral Oil	4,000
T-116	Wash Water Accumulation Tank	5,600
T-117	Wash Water Accumulation Tank	5,600
T-118	Cake Mix Tank	4,000
T-119	Wash Water Mixer Tank	4,000
T-120	Pre-Coat Tank	1,600
T-121	Filtered Water Storage	15,000
T-122	Filtered Water Storage	15,000
T-124	Wash Water Storage	25,000
08V000	TSA Storage Tank	6,000
LT-103	Ammonia Sulfate Tank	160
LT-104	Aqueous Ammonia Weigh Tank	40
LT-105	Silane Weigh Tank	4

Applicability:

- These tanks are subject to the applicable requirements of ADEM Admin. Code R. 335-3-16-.03, "*Major Source Operating Permits*".

- These tanks are not subject to the applicable requirements of 40 CFR 60 Subpart K_b, "*Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984*". Subpart K_b applies to vessels with a capacity greater than or equal 75 m^3 (approx. 19,813 gallons) used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification is commenced after July 23, 1984. None of the tanks would meet that definition.

Emissions Standards:

- There are no unit specific emissions standards that apply to these tanks.

Compliance and Performance Test Methods and Procedures:

- There are no unit specific compliance and performance test methods or procedures that apply to these tanks.

Emission Monitoring:

- There are no unit specific emissions monitoring requirements that apply to these tanks.

Recordkeeping and Reporting Requirements:

- There are no unit specific recordkeeping and reporting requirements that apply to these tanks.

Emissions:

The emissions from these tanks are negligible.

The tank section has been removed from the permit as there are no regulations specific to the tanks.

Recommendations:

I recommend that Knauf be issued a renewed permit as specified in ADEM Admin. Code R. 335-3-16-.12(2) pending a public comment period and EPA review.

_____ January 3, 2020

Skyler Sanderson Date
Energy Branch
Air Division

APPENDIX A
COMPLIANCE MONITORING PLAN

CAM Plan for Raw Material Unloading and Conveying Dust Collector

	Indicator 1
I. Indicator	Visible Emissions
Measurement Approach	Visible emissions observation by person familiar with Method 22
II. Indicator Range	An excursion for visible emissions is defined as the presence of any visible emissions above normal. Normal emissions from the raw material handling dust collectors would be defined as zero visible emissions. Excursions trigger an inspection, corrective action, and a reporting requirement.
III. Performance Criteria	
A. Data Representativeness	Measurement is being made at the emission point (dust collector exhaust and building openings).
B. Verification of Operation Status	NA
C. QA/QC Practices and Criteria	The observer will be familiar with Reference Method 22.
D. Monitoring Frequency	Measured once daily
E. Data Collection Procedures	The visible emissions observation will be recorded with the time and date. No observation required for days when specific source is not operated.
F. Averaging Period	Instantaneous

CAM Plan for Glass Melting Furnace – Line 621– Dry ESP (EP 1-1)

	Indicator 1	Indicator 2
I. Indicator	Opacity	Secondary Voltage
Measurement Approach	COMs	Voltmeter
II. Indicator Range	While the unit is operating, an excursion is defined as an opacity measurement exceeding 20% opacity. Excursions trigger an inspection, corrective action, and a reporting requirement.	While the unit is operating, an excursion is defined as a voltage outside of the value established during periodic compliance testing. Excursions trigger an inspection, corrective action, and a reporting requirement.
III. Performance Criteria A. Data Representativeness	Measurement is being made inside the exhaust of the baghouse.	The voltmeter measures the voltage at the control panel.
B. Verification of Operation Status	NA	NA
C. QA/QC Practices and Criteria	The COMs will be operated in accordance with 40 CFR, Part 60, Appendix B, and Performance Specifications 1 (PS1).	The voltmeter must be calibrated, operated, and maintained according to the manufacturer's guidance.
D. Monitoring Frequency	Measured once every 10 seconds	Measured once every minute
E. Data Collection Procedures	The opacity values are recorded by a plant data acquisition system, and historical data may be retrieved at any time.	The voltage values are recorded by a plant data acquisition system, and historical data may be retrieved at any time.
F. Averaging Period	6-minute average	180-minute average

CAM Plan for Wool Fiberglass Process – Line 621– Wet Scrubber (1-2)

	Indicator 1	Indicator 2
I. Indicator	Pressure Drop	Water Flow
Measurement Approach	Differential Pressure Gauge	Flow Meter
II. Indicator Range	While the unit is operating, an excursion is defined as a pressure differential outside of the value established during periodic compliance testing. Excursions trigger an inspection, corrective action, and a reporting requirement.	While the unit is operating, an excursion is defined as a flow rate outside of the value established during periodic compliance testing. Excursions trigger an inspection, corrective action, and a reporting requirement.
III. Performance Criteria A. Data Representativeness	The differential pressure gauge measures the pressure differential between the inlet and outlet of the scrubber.	The flow meter measures the flow rate at the inlet of the scrubber.
B. Verification of Operation Status	NA	NA
C. QA/QC Practices and Criteria	The differential pressure gauge must be calibrated, operated, and maintained according to the manufacturer's guidance.	The flow meter must be calibrated, operated, and maintained according to the manufacturer's guidance.
D. Monitoring Frequency	Measured once every minute	Measured once every minute
E. Data Collection Procedures	The pressure differential values are recorded by a plant data acquisition system, and historical data may be retrieved at any time.	The flow rate values are recorded by a plant data acquisition system, and historical data may be retrieved at any time.
F. Averaging Period	180-minute average	180-minute average

CAM Plan for Wool Fiberglass Process – Line 621 – Wet ESP (1-2)

	Indicator 1
I. Indicator	Secondary Voltage
Measurement Approach	Voltmeter
II. Indicator Range	While the unit is operating, an excursion is defined as a voltage outside of the value established during periodic compliance testing. Excursions trigger an inspection, corrective action, and a reporting requirement.
III. Performance Criteria A. Data Representativeness	The voltmeter measures the voltage at the control panel.
B. Verification of Operation Status	NA
C. QA/QC Practices and Criteria	The voltmeter must be calibrated, operated, and maintained according to the manufacturer's guidance.
D. Monitoring Frequency	Measured once every minute
E. Data Collection Procedures	The voltage values are recorded by a plant data acquisition system, and historical data may be retrieved at any time.
F. Averaging Period	180-minute average

CAM Plan for Glass Melting Furnace – Line 622– Dry ESP (EP 2-1)

	Indicator 1	Indicator 2
I. Indicator	Opacity	Secondary Voltage
Measurement Approach	COMs	Voltmeter
II. Indicator Range	While the unit is operating, an excursion is defined as an opacity measurement exceeding 20% opacity. Excursions trigger an inspection, corrective action, and a reporting requirement.	While the unit is operating, an excursion is defined as a voltage outside of the value established during periodic compliance testing. Excursions trigger an inspection, corrective action, and a reporting requirement.
III. Performance Criteria A. Data Representativeness	Measurement is being made inside the exhaust of the baghouse.	The voltmeter measures the voltage at the control panel.
B. Verification of Operation Status	NA	NA
C. QA/QC Practices and Criteria	The COMs will be operated in accordance with 40 CFR, Part 60, Appendix B, and Performance Specifications 1 (PS1).	The voltmeter must be calibrated, operated, and maintained according to the manufacturer's guidance.
D. Monitoring Frequency	Measured once every 10 seconds	Measured once every minute
E. Data Collection Procedures	The opacity values are recorded by a plant data acquisition system and historical data may be retrieved at any time.	The voltage values are recorded by a plant data acquisition system and historical data may be retrieved at any time.
F. Averaging Period	6-minute average	180-minute average

CAM Plan for Wool Fiberglass Process – Line 622 (A&B) – Wet Scrubbers (2-2)

	Indicator 1	Indicator 2
I. Indicator	Pressure Drop	Water Flow
Measurement Approach	Differential Pressure Gauge	Flow Meter
II. Indicator Range	While the unit is operating, an excursion is defined as a pressure differential outside of the value established during periodic compliance testing. Excursions trigger an inspection, corrective action, and a reporting requirement.	While the unit is operating, an excursion is defined as a flow rate outside of the value established during periodic compliance testing. Excursions trigger an inspection, corrective action, and a reporting requirement.
III. Performance Criteria A. Data Representativeness	The differential pressure gauge measures the pressure differential between the inlet and outlet of the scrubber.	The flow meter measures the flow rate at the inlet of the scrubber.
B. Verification of Operation Status	NA	NA
C. QA/QC Practices and Criteria	The differential pressure gauge must be calibrated, operated, and maintained according to the manufacturer's guidance.	The flow meter must be calibrated, operated, and maintained according to the manufacturer's guidance.
D. Monitoring Frequency	Measured once every minute	Measured once every minute
E. Data Collection Procedures	The pressure differential values are recorded by a plant data acquisition system, and historical data may be retrieved at any time.	The flow rate values are recorded by a plant data acquisition system, and historical data may be retrieved at any time.
F. Averaging Period	180-minute average	180-minute average