

INITIAL TITLE V AIR PERMIT APPLICATION REVIEW

APPLICANT:	SITE LOCATION:	COUNTY:	
PPG Industries Fiber Glass Products	Shelby	Cleveland	
TECHNICAL CONTACT:	PHONE:	RESPONSIBLE OFFICIAL:	TITLE:
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Rahul P. Thaker		September 16, 2003	
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APPLICATION NUMBER:	EXISTING PERMIT NUMBERS:	NEW PERMIT NUMBER:	
230153A5.A	01958R42	01958T43	

I. Introduction

The U.S. Environmental Protection Agency (EPA) has given a full approval to North Carolina's Title V operating permits program effective on October 1, 2001. Title V facilities are required to obtain an operating permit which addresses all applicable regulations under the State Implementation Plan, Federal Implementation Plan, and other provisions of the Clean Air Act (CAA). The Title V Operating Permit will define all of the facility's obligations under the CAA.

This Title V Air Permit Application Review intends to convey all pertinent emissions data, rules, policies, and engineering assumptions used to construct the proposed Title V operating permit. The primary source of information used to construct the proposed permit is the above referenced air permit application and the permit.

II. Background Information

Pursuant to 15A NCAC 2Q .0506, PPG Industries Fiber Glass Products, Inc. submitted its initial Title V application to the DAQ on May 10, 1996. The application was considered complete for processing on July 9, 1996.

The Title V operating permit replaces an existing Construction and Operation Permit No. 01958R42, issued on May 9, 2003 and scheduled to expire on February 29, 2004.

III. Facility Description

PPG's Shelby ("PPG") facility manufactures fiberglass, which is used in the manufacture of reinforced plastics used in automobile bodies, fume scrubbers, pipes, underground storage tanks, roofing shingles, fishing rods, etc. Textile fiberglass is also produced which has end uses in circuit boards. The fiberglass produced at the facility is chopped, wound, or made into mats. The raw materials for the process received by railcar and bags are clay, limestone, silica sand, colemanite, sodium sulfate, fluorspar, boric acid, ulexite, rutile, and rouge.

It operates under SIC 3229.

This facility is a Title V facility due to its potential emissions exceeding 100 tons per year each for PM-10, SO₂, NO_x, and CO. In addition, it is a Title V facility due to HAP potential emissions exceeding 10 tons per year for a single HAP (dibutyl pthalate).

IV. Statement of Compliance

The DAQ has reviewed the compliance status of this facility. Based on the latest inspection of July 9 and 28, 2003, the facility was in compliance with all applicable requirements included in permit 01958R42. The applicant has certified that the facility will be in compliance with all applicable requirements at the time of permit issuance and will continue to comply with all these requirements. The applicant has certified that the facility will be in compliance with any applicable requirements taking effect during the term of the permit and will meet such requirements on a timely basis.

V. Summary of Emission Sources and Control Devices

The following table contains a summary of all permitted emission sources and associated air pollution control devices and appurtenances:

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
506	fiberglass melting furnace using only environmentally friendly batch (EFB) ¹ technology - 2,600 pounds glass per hour maximum allowable pull rate (natural gas / No. 2 fuel oil-fired recycle scrap fiberglass or batch raw material). Furnace process consisting of: (a) oxygen fired melter (ID No. 506M) (b) natural gas / No. 2 fuel oil-fired refiner (ID No. 506R) (c) natural gas / No. 2 fuel oil-fired forehearth (ID No. 506F)	NA	NA

¹ EFB is a modified raw material feed to the furnaces containing no more than 0 %w fluoride. At the present time, furnace 506, 508, 510, 514, 516, 520, and 524 have been converted to EFB. The conversion of remaining furnaces 525 and 526 will be as per the schedule included in Section 2.3 A. of the permit.

508	fiberglass melting furnace using only EFB technology - 2,600 pounds glass per hour maximum allowable pull rate (natural gas / No. 2 fuel oil-fired recycle scrap fiberglass or batch raw material). Furnace process consisting of: (a) oxygen fired melter (ID No. 508M) (b) natural gas / No. 2 fuel oil-fired refiner (ID No. 508R) (c) natural gas / No. 2 fuel oil-fired forehearth (ID No. 508F)	NA	NA
510	fiberglass melting furnace using only EFB technology - 2,600 pounds glass per hour maximum allowable pull rate. Furnace process consisting of: (a) oxygen fired melter (ID No. 510M) (b) natural gas / No. 2 fuel oil-fired refiner (ID No. 510R) (c) natural gas / No. 2 fuel oil-fired forehearth (ID No. 510F)	NA	NA
514	fiberglass melting furnace using only EFB technology - 2,600 pounds glass per hour maximum allowable pull rate. Furnace process consisting of: (a) oxygen fired melter (ID No. 514M) (b) natural gas / No. 2 fuel oil-fired refiner (ID No. 514R) (c) natural gas / No. 2 fuel oil-fired forehearth (ID No. 514F)	NA	NA
516	fiberglass melting furnace using only EFB technology - 2,600 pounds glass per hour maximum allowable pull rate. Furnace process consisting of: (a) oxygen fired melter (ID No. 516M) (b) natural gas / No. 2 fuel oil-fired refiner (ID No. 516R) (c) natural gas / No. 2 fuel oil-fired forehearth (ID No. 516F)	NA	NA
520 NSPS	fiberglass melting furnace using only EFB technology - 7,280 pounds glass per hour maximum allowable pull rate. Furnace process consisting of: (a) oxygen fired melter (ID No. 520M) (b) natural gas / No. 2 fuel oil-fired refiner (ID No. 520R) (c) two natural gas / No. 2 fuel oil-fired forehearths (ID No. 520F-A and 520F-B)	NA	NA
524 NSPS	fiberglass melting furnace using only EFB technology - 16,200 pounds glass per hour maximum allowable pull rate. Furnace process consisting of: (a) oxygen fired melter equipped with electric boost (ID No. 524M) (b) natural gas / No. 2 fuel oil-fired refiner (ID No. 524R) (c) natural gas / No. 2 fuel oil-fired forehearth (ID No. 524F)	NA	NA

525	fiberglass melting furnace using only EFB technology - 15,822 pounds glass per hour maximum allowable pull rate. Furnace process consisting of: (a) oxygen fired melter (ID No. 525M) (b) natural gas / No. 2 fuel oil-fired refiner (ID No. 525R) (c) natural gas / No. 2 fuel oil-fired forehearth (ID No. 525F)	NA	NA
526 NSPS	fiberglass melting furnace using only EFB technology - 20,000 pounds glass per hour maximum allowable pull rate. Furnace process consisting of: (a) oxygen fired melter (ID No. 526M) (b) natural gas / No. 2 fuel oil-fired refiner (ID No. 526R) (c) natural gas / No. 2 fuel oil-fired forehearth (ID No. 526F)	NA	NA
525FBSB#1 & 525FBSB#2	two furnace and batch storage bins serving furnace 525 (30 tons/hr nominal process rate each)	DC100 and DC101	two baghouses (10:1 gas-to-cloth ratio each)
524FBSB#1 & 524FBSB#2	two furnace and batch storage bins serving furnace 524 (30 tons/hr nominal process rate each)	DC102 and DC103	two baghouses (10:1 gas-to-cloth ratio each)
520FBSB#1 & 520FBSB#2	two furnace and batch storage bin serving furnace 520 (10 tons/hr nominal process rate each)	DC104 and DC105	two baghouses (10:1 gas-to-cloth ratio each)
506FBSB	one furnace and batch storage bin serving furnace 506 (10 tons/hr nominal process rate)	DC106	one baghouse (10:1 gas-to-cloth ratio)
508FBSB	one furnace and batch storage bin serving furnace 508 (10 tons/hr nominal process rate)	DC107	one baghouse (10:1 gas-to-cloth ratio)
510FBSB	one furnace and batch storage bin serving furnace 510 (10 tons/hr nominal process rate)	DC108	one baghouse (10:1 gas-to-cloth ratio)
514FBSB	one furnace and batch storage bin serving furnace 514 (10 tons/hr nominal process rate)	DC110	one baghouse (10:1 gas-to-cloth ratio)
516FBSB	one furnace and batch storage bin serving furnace 516 (10 tons/hr nominal process rate)	DC111	one baghouse (10:1 gas-to-cloth ratio)
19RAW	nineteen raw material storage silos (34 tons/hr nominal process rate each)	DC112 through DC120, DC124 through DC127, DC153, DC154, and DC 132 through DC135	nineteen baghouses (10:1 gas-to-cloth ratio each)

ESDC119 (silo #7) ESDC120 (silo #8) ESDC121 (silo #9) ESDC123 (silo #10) PSD	four batch storage silos (34 tons/hr nominal process rate each)	DC131 (silo#7) DC121 (silo#9) DC122 (silo#9) DC123 (silo#10) DC152 (silo#10)	five baghouses (10:1 gas-to-cloth ratio each), installed two each on silo #9 and silo #10, and one on silo #7
ES130	one hydrated lime storage silo (___ nominal process rate)	DC130	one baghouse (10:1 gas-to-cloth ratio each)
ESWC140	one natural gas-fired fluid bed dryer/wet chop dryer (6,400 lbs/hr nominal process rate, 5.26 million Btu/hr nominal heat input rate)	CDWC140	two-stage filter system (180 square feet of cloth area)
HF98	one fiberglass coating line and associated natural gas-fired drying oven (685 lbs/hr nominal capacity, 6.0 million Btu/hr nominal heat input rate)	NA	NA
ESWC367 ESWC368 ESWC369	three wetcut natural gas-fired fiberglass dryers (1.25 tons/hr nominal process rate each, 5.5 million Btu/hr nominal heat input rate each)	EPWC367 EPWC368 EPWC369	three sly wet scrubbers (65 gallon per minute liquid injection rate each) installed one each on each dryer
ES373 ES374 ES375	three natural gas-fired in-line dryers supporting furnace 520 (1,300 dry lbs/hr nominal production rate each, 1.0 million Btu/hr nominal heat input rate each)	EC373A & EC373B EC374A & EC374B EC375A & EC375B	one venturi scrubber (44 gallons per minute liquid injection rate) installed in series with one dual cyclone (18 inches in diameter each) on each dryer
ES378 ES381	two natural gas-fired in-line dryers supporting furnace 526 (1,584 dry lbs/hr nominal production rate each, ___ million Btu/hr nominal heat input rate each)	CD378A & CD378B CD381A & CD381B	one venturi scrubber (52 gallons per minute liquid injection rate) installed in series with one dual cyclone (36 inches in diameter each) on each dryer
ES379 ES380	two natural gas-fired in-line dryers supporting furnace 526 (2,143 dry lbs/hr nominal production rate each, ___ million Btu/hr nominal heat input rate each)	CD379A & CD379B CD380A & CD380B	one venturi scrubber (72 gallons per minute liquid injection rate) installed in series with one dual cyclone (41 inches in diameter each) on each dryer

ES376	one natural gas-fired in-line dryer supporting furnace 525 (1,300 dry lbs/hr nominal production rate, 1.0 million Btu/hr nominal heat input rate)	EC376A & EC376B	one venturi scrubber (44 gallons per minute liquid injection rate) installed in series with one dual cyclone (18 inches in diameter each)
ES377B	one insulation curing line (4,000 lb/hr nominal production rate, 4.0 million Btu/hr nominal heat input rate)	CD377A & CD377B	one packed bed scrubber (56 gallons per minute liquid injection rate) installed in series with one cyclone (40 inches in diameter)
ESML74	one natural gas-fired chopped strand mat line (8,400 lb/hr nominal process rate, 3.24 million Btu/hr nominal heat input rate)	NA	NA
ES97	one binder mix room ventilation (12,000 lbs/hr nominal process rate)	97EC	one cartridge filter (3,048 square feet of filter area)
ESCC96	one caustic brush cleaning system (2,600 lbs/hr nominal process rate)	CDWS96	one packed cross-flow scrubber (34 gallons per minute liquid injection rate)
ESDG85 ESDG86 ESDG88A ESDG88B	four diesel-fired emergency generators (two 1200 hp each and two 1800 hp each)	NA	NA
ESB83A ESB83B	two natural gas/No. 2 fuel oil fired boilers (25.1 million Btu/hr nominal heat input rate each)	NA	NA

VI. Emission Source-by-Source Evaluation

A. Fiberglass melting furnace No. 506 (2,600 pounds per hour maximum allowable glass pull rate) using only EFB technology and process consisting of:

- a. One direct oxygen fired melter (ID No. 506M),
- b. One natural gas / No. 2 fuel oil-fired refiner (ID No. 506R), and
- c. One natural gas / No. 2 fuel oil-fired forehearth (ID No. 506F)

Fiberglass melting furnace No. 508 (2,600 pounds per hour maximum allowable glass pull rate) using only EFB technology and process consisting of:

- a. One direct oxygen fired melter (ID No. 508M),
- b. One natural gas / No. 2 fuel oil-fired refiner (ID No. 508R), and
- c. One natural gas / No. 2 fuel oil-fired forehearth (ID No. 508F)

1. Description

These fiberglass furnaces consist of three areas: the melter, the refiner, and the forehearth. The melter is the portion where the raw material is introduced (a mixture of clay, limestone, silica sand, colemanite, sodium sulfate, fluorspar, boric acid, ulexite, rutile, rouge, and emission control residue or recycled scrap fiberglass) and melted. The molten glass flows through a tapered channel called the refiner. The molten glass then flows from the refiner to the forehearth, which contains bushings on the bottom. The bushings are electrically heated (precise temperature control) platinum plates with numerous small holes. The glass flows through the holes in the bushings by gravity, and is also pulled as it flows out, thereby creating thin filaments. A binder is applied to the filaments prior to winding. The binder protects the glass filaments, and provides a bond between the glass and resin (epoxies, polyesters, etc.) when used in industrial applications.

For each furnace, there is usually a melter stack, and then separate stacks for the refiner and forehearth.

2. Applicable Regulatory Requirements

The following provides a summary of emission and/or operation limits for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter (from melter, refiner, and forehearth)	$E = 4.10P^{0.67}$ where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515

sulfur dioxide	2.3 pounds per million Btu heat input each	15A NCAC 2D .0516
visible emissions	40 percent opacity each	15A NCAC 2D .0521
particulate matter (from melter, refiner, and forehearth)	56.2 tons per consecutive 12-month period combined total	15A NCAC 2D .0530 (PSD avoidance)
nitrogen oxides	181.9 tons per consecutive 12-month period combined total	15A NCAC 2D .0530 (PSD avoidance)
sulfur dioxide	141.0 tons per consecutive 12-month period each	15A NCAC 2D .0530 (PSD avoidance)
carbon monoxide	5.69 tons per consecutive 12-month period each	15A NCAC 2D .0530 (PSD avoidance)
toxic air pollutants	See Section VII. State-enforceable only	15A NCAC 2D .1100
odorous emissions	See Section VII. State-enforceable only	15A NCAC 2D .1806
toxic air pollutants	See Section VII. State-enforceable only	15A NCAC 2Q .0711

a. 2D .0515 “Particulates from Miscellaneous Industrial Processes”

i. Regulation Analysis

The allowable particulate emission limit from each furnace (melter, refiner and forehearth) is calculated by the following equation:

$$E = 4.10P^{0.67}$$

where E = allowable emission rate for particulate matter in pounds per hour,

and P = process weight in tons per hour

Liquid and gaseous fuels, and stoichiometric combustion oxygen are not considered as part of the process weight. For the purpose of compliance with 15A NCAC 2D .0515, the process rate is the pull rate divided by 0.776. As the maximum allowable pull rate for each furnace is 2600 lbs/hr, the allowable PM emission rate for each furnace (melter, refiner and forehearth) will be 5.79 lbs/hr, using the above equation. The permittee has estimated the potential PM emission rate at 5.25 lbs/hr using the source test measurement for each furnace. Hence, compliance with the allowable PM emission limit is expected.

Annual testing will be required for each melter as per Section VII to demonstrate compliance with this requirement. In the event that a fiberglass melting furnace (melter only) exceeds 80 percent of its particulate emission limit (established as 0.88 multiplied by the emissions rate in Section VI. A. 2. a. i. above), during the stack test, the Permittee shall schedule and conduct stack tests once per year thereafter. If the result of any test for the melter is greater than 0.88 multiplied by the allowable emissions rate in Section VI. A. 2. a. i. above, the Permittee shall be deemed in noncompliance with 15A NCAC 2D .0515.

ii. Monitoring/Recordkeeping Requirements

The Permittee shall maintain production records sufficient to determine process weight rate and shall make these records available to a DAQ authorized representative upon request. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0515 if the production records are not maintained.

iii. Reporting Requirements

The Permittee shall submit semi-annually summary reports of monitoring, recordkeeping, and testing activities.

b. 2D .0516 "Sulfur Dioxide Emissions from Combustion Sources"

i. Regulatory Analysis

Sulfur dioxide emissions from any source of combustion that is discharged from any vent, stack, or chimney shall not exceed 2.3 pounds per million Btu heat input. There are no control devices to control emissions of sulfur dioxide.

The permittee has estimated the potential SO₂ emission rate at 32.2 lbs/hr for each furnace using the source test measurement. Also, the maximum firing rate for each furnace is 20.14 million Btu/hr. Hence, the potential emission rate will be 1.6 lbs/million Btu. So, compliance is expected.

No testing is required to assure compliance with this requirement.

ii. Monitoring/Recordkeeping/Reporting Requirements.

No monitoring/recordkeeping/reporting is required for sulfur dioxide emissions from the firing of natural gas and No. 2 fuel oil in these sources.

c. 2D .0521 "Control Of Visible Emissions"

i. Regulatory Analysis

Visible emissions from the furnace (melter, refiner, and forehearth) shall not be more than 40 percent opacity when averaged over a six-minute period. However, six-minute averaging periods may exceed 40 percent not more than once in any hour and not more than four times in any 24-hour period. In no event shall the six-minute average exceed 90 percent opacity.

Testing for visible emission is not required.

ii. Monitoring/Recordkeeping Requirements

To assure compliance, once a day the Permittee shall observe the emission points from the furnace (melter, refiner, and forehearth) for any visible emissions above normal. The Permittee shall establish "normal" for the source in the first 30 days following the furnace reaches the steady state condition. If visible emissions from these sources are observed to be above normal, the Permittee shall either: (a) be deemed to be in noncompliance with 15A NCAC 2D .0521 or (b) demonstrate that the percent opacity from the emission points of the emission sources in accordance with 15A NCAC 2D .0501(c)(8) is below the limit given in Section VI. A. 2.c.i. above. If the demonstration in (b) above cannot be made, the Permittee shall be deemed to be in noncompliance with 15A NCAC 2D .0521.

The results of the monitoring shall be maintained in a logbook (written or electronic format) on-site and made available to an authorized representative upon request. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0521 if these records are not maintained.

iii. Reporting Requirements

The Permittee shall submit semiannually summary reports of the visible emission observations.

d. 2D .0530 "Prevention of Significant Deterioration (PSD Avoidance)"

i. Regulatory Analysis

To comply with this permit and avoid the applicability of 15A NCAC 2D .0530 "Prevention of Significant Deterioration," as requested by the Permittee, emissions from the furnace (ID Nos. 506 and 508), including the melter, refiner, and forehearth, shall not exceed the following limitations:

<u>Pollutant</u>	<u>Emissions Limitation</u>
sulfur dioxide	141.0 tons per consecutive 12-month period each
particulate (filterable and condensable)	56.2 tons per consecutive 12-month period combined total
nitrogen oxides	181.9 tons per consecutive 12-month period combined total
carbon monoxide	5.69 tons per consecutive 12-month period each

The Permittee shall conduct annual testing of fiberglass melting furnace (ID Nos. 506 and 508) for the pollutants listed in the Table below. These tests shall be conducted and the results submitted no later than March 31 annually. If the results of this test are above the limit given in Section VI. A. 2. d. i. above, the Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530.

Testing and monitoring/recordkeeping/reporting for PM is not required because the worst case potential emission rate, combined total for two furnace 506 and 508 is only 22.14 tons/yr, which is very less than the PSD avoidance limit of 56.2 tons/yr combined total for these furnaces. For other pollutants some emission data for NO_x and SO₂ are available from the permittee when firing with natural gas. The data suggest the potential emission rates for these pollutants are very less than the respective PSD avoidance limits. However, no estimate for emissions when firing No.2 fuel oil has been provided and it is likely that emissions of SO₂, NO_x, and CO will be higher. Hence, the testing, and monitoring/recordkeeping/reporting requirements are justified.

Affected Facility	Pollutant/Process Parameter	Test Method
Furnace 506 and 508	sulfur dioxide	per approved protocol

Affected Facility	Pollutant/Process Parameter	Test Method
	nitrogen oxides	per approved protocol
	carbon monoxide	per approved protocol
	production rate	per approved protocol
	furnace specific emission factor for sulfur dioxide	calculated from above
	furnace specific emission factor for nitrogen oxides	calculated from above
	furnace specific emission factor for carbon monoxide	calculated from above

ii. Monitoring/Recordkeeping Requirements

Sulfur Dioxide - The permittee shall record monthly the sulfur dioxide emissions from furnace 506 (melter, refiner, and forehearth) and 508 (melter, refiner, and forehearth). Monthly emissions shall be based on the actual production rate of the furnace multiplied by an emission factor determined during the last annual testing of furnace 506 and 508. The permittee shall maintain each monthly record on file for a minimum of three (3) years. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if the above records are not kept or if the sulfur dioxide emissions exceed the limit stated in Section VI. A. 2. d. i. above. No monitoring/recordkeeping is required when burning natural gas in the furnace 506 and 508.

Nitrogen oxides - The permittee shall record monthly the nitrogen oxide emissions from furnace 506 (melter, refiner, and forehearth) and 508 (melter, refiner, and forehearth). Monthly emissions shall be based on the actual production rate of the furnace multiplied by an emission factor determined during the last annual testing of furnace 506 and 508. The permittee shall maintain each monthly record on file for a minimum of three (3) years. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if the above records are not kept or if the nitrogen oxide emissions exceed the limit stated in Section VI. A. 2. d. i. above. No monitoring/recordkeeping is required when burning natural gas in the furnace 506 and 508.

Carbon Monoxide - The permittee shall record monthly the carbon monoxide emissions from furnace 506 (melter, refiner, and forehearth)

and 508 (melter, refiner, and forehearth). Monthly emissions shall be based on the actual production rate of the furnace multiplied by an emission factor determined during the last annual testing of furnace 506 and 508. The permittee shall maintain each monthly record on file for a minimum of three (3) years. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if the above records are not kept or if the carbon monoxide emissions exceed the limit stated in Section VI. A. 2. d. i. above. No monitoring/recordkeeping is required when burning natural gas in the furnace 506 and 508.

iii. Reporting Requirements

The Permittee shall submit a summary report, acceptable to the Regional Air Quality Supervisor, of monitoring and recordkeeping activities within 30 days after each calendar year quarter. The report shall contain the following: The monthly sulfur dioxide, nitrogen oxide and carbon monoxide emissions for the previous 14 months. The emissions must be calculated for each of the 12-month periods over the previous 14 months.

B. Fiberglass melting furnace No. 510 (2,600 pounds per hour maximum allowable glass pull rate) using only EFB technology and process consisting of:

- a. One direct oxygen fired melter (ID No. 510M),
- b. One natural gas / No. 2 fuel oil-fired refiner (ID No. 510R), and
- c. One natural gas / No. 2 fuel oil-fired forehearth (ID No. 510F)

Fiberglass melting furnace No. 514 (2,600 pounds per hour maximum allowable glass pull rate) using only EFB technology and process consisting of:

- a. One direct oxygen fired melter (ID No. 514M),
- b. One natural gas / No. 2 fuel oil-fired refiner (ID No. 514R), and
- c. One natural gas / No. 2 fuel oil-fired forehearth (ID No. 514F)

Fiberglass melting furnace No. 516 (2,600 pounds per hour maximum allowable glass pull rate) using only EFB technology and process consisting of:

- a. One direct oxygen fired melter (ID No. 516M),
- b. One natural gas / No. 2 fuel oil-fired refiner (ID No. 516R), and
- c. One natural gas / No. 2 fuel oil-fired forehearth (ID No. 516F)

1. Description

See Section VI. A.1.

2. Applicable Regulatory Requirements

The following provides a summary of emission and/or operation limits for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter (from melter, refiner, and forehearth)	$E = 4.10P^{0.67}$ where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
sulfur dioxide	2.3 pounds per million Btu heat input each	15A NCAC 2D .0516
visible emissions	40 percent opacity each	15A NCAC 2D .0521
particulate matter (from melter, refiner, and forehearth)	21.37 tons per consecutive 12-month period each	15A NCAC 2D .0530 (PSD avoidance)
nitrogen oxides	91.98 tons per consecutive 12-month period each	15A NCAC 2D .0530 (PSD avoidance)
sulfur dioxide	141.04 tons per consecutive 12-month period each	15A NCAC 2D .0530 (PSD avoidance)
toxic air pollutants	See Section VII. State-enforceable only	15A NCAC 2D .1100
odorous emissions	See Section VII. State-enforceable only	15A NCAC 2D .1806
toxic air pollutants	See Section VII. State-enforceable only	15A NCAC 2Q .0711

a. 2D .0515 “Particulates from Miscellaneous Industrial Processes”

i. Regulation Analysis

The allowable particulate emission limit from each furnace (melter, refiner and forehearth) is calculated by the following equation:

$$E = 4.10P^{0.67}$$

where E = allowable emission rate for particulate matter in pounds per hour,

and P = process weight in tons per hour

Liquid and gaseous fuels, and stoichiometric combustion oxygen are not considered as part of the process weight. For the purpose of compliance with 15A NCAC 2D .0515, the process rate is the pull rate divided by 0.776. As the maximum allowable pull rate for each furnace is 2600 lbs/hr, the allowable PM emission rate for each furnace (melter, refiner and forehearth) will be 5.79 lbs/hr, using the above equation. The permittee has estimated the potential PM emission rate at 5.25 lbs/hr (furnace 510) and 4.88 lbs/hr (furnace 514 and 516 each), using the source test measurements. Hence, compliance with the allowable PM emission limit is expected.

Annual testing will be required for each melter as per Section VII to demonstrate compliance with this requirement. In the event that a fiberglass melting furnace (melter only) exceeds 80 percent of its particulate emission limit (established as 0.88 multiplied by the emissions rate in Section VI. B. 2. a. i. above), during the stack test, the Permittee shall schedule and conduct stack tests once per year thereafter. If the result of any test for the melter is greater than 0.88 multiplied by the allowable emissions rate in Section VI. B. 2. a. i. above, the Permittee shall be deemed in noncompliance with 15A NCAC 2D .0515.

ii. Monitoring/Recordkeeping Requirements

The Permittee shall maintain production records sufficient to determine process weight rate and shall make these records available to a DAQ authorized representative upon request. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0515 if the production records are not maintained.

iii. Reporting Requirements

The Permittee shall submit semi-annually summary reports of monitoring, recordkeeping, and testing activities.

b. 2D .0516 "Sulfur Dioxide Emissions from Combustion Sources"

i. Regulatory Analysis

Sulfur dioxide emissions from any source of combustion that is discharged from any vent, stack, or chimney shall not exceed 2.3 pounds per million Btu heat input. There are no control devices to control emissions of sulfur dioxide.

The permittee has estimated the potential SO₂ emission rate at 32.2 lbs/hr for each furnace using the source test measurement. Also, the maximum firing rate for each furnace is 20.14 million Btu/hr. Hence, the potential emission rate will be 1.6 lbs/million Btu. So, compliance is expected.

No testing is required to assure compliance with this requirement.

ii. Monitoring/Recordkeeping/Reporting Requirements.

No monitoring/recordkeeping/reporting is required for sulfur dioxide emissions from the firing of natural gas and No. 2 fuel oil in these sources.

c. 2D .0521 "Control Of Visible Emissions"

i. Regulatory Analysis

Visible emissions from the furnace (melter, refiner, and forehearth) shall not be more than 40 percent opacity when averaged over a six-minute period. However, six-minute averaging periods may exceed 40 percent not more than once in any hour and not more than four times in any 24-hour period. In no event shall the six-minute average exceed 90 percent opacity.

Testing for visible emission is not required.

ii. Monitoring/Recordkeeping Requirements

To assure compliance, once a day the Permittee shall observe the emission points from the furnace (melter, refiner, and forehearth) for any visible emissions above normal. The Permittee shall establish "normal" for the source in the first 30 days following the furnace reaches the steady state condition. If visible emissions from these sources are observed to be above normal, the Permittee shall either: (a) be deemed to be in noncompliance with 15A NCAC 2D .0521 or (b) demonstrate that the percent opacity from the emission points of the emission sources in accordance with 15A NCAC 2D .0501(c)(8) is below the limit given in Section VI. B. 2.c.i. above. If the demonstration in (b) above cannot be made, the Permittee shall be deemed to be in noncompliance with 15A NCAC 2D .0521.

The results of the monitoring shall be maintained in a logbook (written or electronic format) on-site and made available to an authorized representative upon request. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0521 if these records are not maintained.

iii. Reporting Requirements

The Permittee shall submit semiannually summary reports of the visible emission observations.

d. 2D .0530 "Prevention of Significant Deterioration (PSD Avoidance)"

i. Regulatory Analysis

To comply with this permit and avoid the applicability of 15A NCAC 2D .0530 "Prevention of Significant Deterioration," as requested by the Permittee, emissions from the furnaces (ID Nos. 510, 514, and 516), including the melter, refiner, and forehearth, shall not exceed the following limitations:

<u>Pollutant</u>	<u>Emissions Limitation</u>
sulfur dioxide	141.04 tons per consecutive 12-month period each
particulate (filterable and condensable)	21.37 tons per consecutive 12-month period each
nitrogen oxides	91.98 tons per consecutive 12-month period each

The Permittee shall conduct annual testing of fiberglass melting furnace (ID Nos. 510, 514, and 516) for the pollutants listed in the table below. These tests shall be conducted and the results submitted no later than March 31 annually. If the results of this test are above the limit given in Section VI. B. 2. d. i. above, the Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530.

Testing and monitoring/recordkeeping/reporting for PM is not required because the worst case potential emission rate for each furnace is only 11.07 tons/yr, which is very less than the PSD avoidance limit of 21.37 tons/yr for each of these furnaces. For other pollutants some emission data for NOx and SO2 are available from the permittee when firing with natural gas. The data suggests the potential emission rates for these pollutants are very less than the respective PSD avoidance limits. However, no estimate for emissions when firing No.2 fuel oil has been provided and it is likely that emissions of SO2 and NOx will be higher. Hence, the testing, and monitoring/recordkeeping/reporting requirements are justified.

Affected Facility	Pollutant	Test Method
Furnace 510, 514, and 516	sulfur dioxide	per approved protocol
	nitrogen oxides	per approved protocol
	production rate	per approved protocol
	furnace specific emission factor for sulfur dioxide	calculated from above
	furnace specific emission factor for nitrogen oxides	calculated from above

ii. Monitoring/Recordkeeping Requirements

Sulfur Dioxide - The permittee shall record monthly the sulfur dioxide emissions from furnace 510 (melter, refiner, and forehearth), 514 (melter, refiner, and forehearth), and 516 (melter, refiner, and forehearth). Monthly emissions shall be based on the actual production rate of the furnace multiplied by an emission factor determined during the last annual testing of furnace 510, 514, and 516. The permittee shall maintain each monthly record on file for a minimum of three (3) years. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if the above records are not kept or if the sulfur dioxide emissions exceed the limit stated in Section VI. B. 2. d. i. above. No monitoring/recordkeeping is required when burning natural gas in the furnace 510, 514, and 516.

Nitrogen oxides - The permittee shall record monthly the nitrogen oxide emissions from furnace 510 (melter, refiner, and forehearth), 514 (melter, refiner, and forehearth), and 516 (melter, refiner, and forehearth). Monthly emissions shall be based on the actual production rate of the furnace multiplied by an emission factor determined during the last annual testing of furnace 510, 514, and 516. The permittee shall maintain each monthly record on file for a minimum of three (3) years. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if the above records are not kept or if the nitrogen oxide emissions exceed the limit stated in Section VI. B. 2. d. i. above. No monitoring/recordkeeping is required when burning natural gas in the furnace 510, 514, and 516.

iii. Reporting Requirements

The Permittee shall submit a summary report, acceptable to the Regional Air Quality Supervisor, of monitoring and recordkeeping activities within 30 days after each calendar year quarter. The report shall contain the following: The monthly sulfur dioxide and nitrogen oxide emissions for the previous 14 months. The emissions must be calculated for each of the 12-month periods over the previous 14 months.

C. Fiberglass melting furnace No. 520 (7,280 pounds per hour maximum allowable glass pull rate) using only EFB technology and process consisting of:

- a. One direct oxygen fired melter (IDNo. 520M),
- b. One natural gas / No. 2 fuel oil-fired refiner (ID No. 520R), and
- c. Two natural gas / No. 2 fuel oil-fired forehearths (ID No. 520FA and 520FB)

1. Description

See Section VI. A.1.

2. Applicable Regulatory Requirements

The following provides a summary of emission and/or operation limits for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
sulfur dioxide	2.3 pounds per million Btu heat input each	15A NCAC 2D .0516
visible emissions (from melter while in compliance with 40 CFR 60.292, and refiner and forehearth)	20 percent opacity each	15A NCAC 2D .0521
particulate matter (from melter)	See Section VII.	15A NCAC 2D .0524 (NSPS Subpart CC)
visible emissions (from melter while in compliance with 40 CFR 60.293)	See Section VII.	15A NCAC 2D .0524 (NSPS Subpart CC)
particulate matter (from melter, refiner, and forehearth)	108.7 tons per consecutive 12-month period	15A NCAC 2D .0530 (PSD avoidance)
fluorides	41.35 tons per consecutive 12-month period	15A NCAC 2D .0530 (PSD avoidance)

toxic air pollutants	See Section VII. State-enforceable only	15A NCAC 2D .1100
odorous emissions	See Section VII. State-enforceable only	15A NCAC 2D .1806
toxic air pollutants	See Section VII. State-enforceable only	15A NCAC 2Q .0711

a. 2D .0516 "Sulfur Dioxide Emissions from Combustion Sources"

i. Regulatory Analysis

Sulfur dioxide emissions from any source of combustion that is discharged from any vent, stack, or chimney shall not exceed 2.3 pounds per million Btu heat input. There are no control devices to control emissions of sulfur dioxide.

The worst case potential PM emission rate estimate is not available from the permit application.

No testing is required to assure compliance with this requirement.

ii. Monitoring/Recordkeeping/Reporting Requirements.

No monitoring/recordkeeping/reporting is required for sulfur dioxide emissions from the firing of natural gas and No. 2 fuel oil in these sources.

b. 2D .0521 "Control Of Visible Emissions"

i. Regulatory Analysis

Visible emissions from the furnace (melter, refiner, and forehearth) shall not be more than 20 percent opacity when averaged over a six-minute period. However, six-minute averaging periods may exceed 20 percent not more than once in any hour and not more than four times in any 24-hour period. In no event shall the six-minute average exceed 87 percent opacity.

Testing for visible emission is not required.

ii. Monitoring/Recordkeeping Requirements

To assure compliance, once a day the Permittee shall observe the emission points from the furnace (melter, refiner, and forehearth) for any visible emissions above normal. The Permittee shall establish "normal" for the source in the first 30 days following the furnace reaches the steady state condition. If visible emissions from these sources are observed to be above normal, the Permittee shall either: (a) be deemed to be in noncompliance with 15A NCAC 2D .0521 or (b) demonstrate that the percent opacity from the emission points of the emission sources in accordance with 15A NCAC 2D .0501(c)(8) is below the limit given in Section VI. C.2.b.i. above. If the demonstration in (b) above cannot be made, the Permittee shall be deemed to be in noncompliance with 15A NCAC 2D .0521.

The results of the monitoring shall be maintained in a logbook (written or electronic format) on-site and made available to an authorized representative upon request. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0521 if these records are not maintained.

iii. Reporting Requirements

The Permittee shall submit semiannually summary reports of the visible emission observations.

c. 2D .0530 "Prevention of Significant Deterioration (PSD Avoidance)"

i. Regulatory Analysis

To comply with this permit and avoid the applicability of 15A NCAC 2D .0530 "Prevention of Significant Deterioration," as requested by the Permittee, emissions from the furnace (ID No. 520), including the melter, refiner, and forehearth, shall not exceed the following limitations:

<u>Pollutant</u>	<u>Emissions Limitation</u>
PM-10 (filterable and condensable)	108.7 tons per consecutive 12-month period (from melter, refiner, and forehearth)
particulates	97.15 tons per consecutive 12-month period (from melter)

<u>Pollutant</u>	<u>Emissions Limitation</u>
fluorides	41.35 tons per consecutive 12-month period (from melter, refiner, and forehearth) 36.34 tons per consecutive 12-month period (from melter)

ii. Monitoring/Recordkeeping/Reporting Requirements

Testing and monitoring/recordkeeping/reporting for PM and fluorides both are not required because the worst case potential emission rates for this furnace are only 31 tons/yr (particulates) and 7.17 tons/yr (fluorides). These emissions are very less than the respective PSD avoidance limits. Hence, no testing and monitoring/recordkeeping/reporting requirements are needed to assure compliance with this requirement.

D. Fiberglass melting furnace No. 524 (16,200 pounds per hour maximum allowable glass pull rate) using only EFB technology and process consisting of:

- a. One direct oxygen fired melter equipped with electric boost (ID No. 524M),
- b. One natural gas / No. 2 fuel oil-fired refiner (ID No. 524R), and
- c. One natural gas / No. 2 fuel oil-fired forehearth (ID No. 524F)

1. Description

See Section VI. A.1.

2. Applicable Regulatory Requirements

The following provides a summary of emission and/or operation limits for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
sulfur dioxide	2.3 pounds per million Btu heat input	15A NCAC 2D .0516
visible emissions (from melter while in compliance with 40 CFR 60.292, and refiner and forehearth)	20 percent opacity	15A NCAC 2D .0521

particulate matter (from melter)	See Section VII.	15A NCAC 2D .0524 (NSPS Subpart CC)
visible emissions (from melter while in compliance with 40 CFR 60.293)	See Section VII.	15A NCAC 2D .0524 (NSPS Subpart CC)
particulate matter (from melter, refiner, and forehearth)	72.33 tons per consecutive 12-month period	15A NCAC 2D .0530 (PSD avoidance)
PM-10 (from melter, refiner, and forehearth)	58.19 tons per consecutive 12-month period	15A NCAC 2D .0530 (PSD avoidance)
nitrogen oxides	91.20 tons per consecutive 12-month period	15A NCAC 2D .0530 (PSD avoidance)
sulfur dioxide	114.4 tons per consecutive 12-month period	15A NCAC 2D .0530 (PSD avoidance)
fluorides	93.1 tons per consecutive 12-month period	15A NCAC 2D .0530 (PSD avoidance)
toxic air pollutants	See Section VII. State-enforceable only	15A NCAC 2D .1100
odorous emissions	See Section VII. State-enforceable only	15A NCAC 2D .1806
toxic air pollutants	See Section VII. State-enforceable only	15A NCAC 2Q .0711

a. 2D .0516 "Sulfur Dioxide Emissions from Combustion Sources"

i. Regulatory Analysis

Sulfur dioxide emissions from any source of combustion that is discharged from any vent, stack, or chimney shall not exceed 2.3 pounds per million Btu heat input. There are no control devices to control emissions of sulfur dioxide.

The permittee has estimated the potential SO₂ emission rate at 38.92 lbs/hr for the furnace using the source test measurement. Also, the maximum firing rate for the furnace is 57.43 million Btu/hr. Hence, the potential emission rate will be 0.68 lbs/million Btu. So, compliance is expected.

No testing is required to assure compliance with this requirement.

ii. Monitoring/Recordkeeping/Reporting Requirements.

No monitoring/recordkeeping/reporting is required for sulfur dioxide emissions from the firing of natural gas and No. 2 fuel oil in these sources.

b. 2D .0521 "Control Of Visible Emissions"

i. Regulatory Analysis

Visible emissions from the furnace (melter, refiner, and forehearth) shall not be more than 20 percent opacity when averaged over a six-minute period. However, six-minute averaging periods may exceed 20 percent not more than once in any hour and not more than four times in any 24-hour period. In no event shall the six-minute average exceed 87 percent opacity.

Testing for visible emission is not required.

ii. Monitoring/Recordkeeping Requirements

To assure compliance, once a day the Permittee shall observe the emission points from the furnace (melter, refiner, and forehearth) for any visible emissions above normal. The Permittee shall establish "normal" for the source in the first 30 days following the furnace reaches the steady state condition. If visible emissions from these sources are observed to be above normal, the Permittee shall either: (a) be deemed to be in noncompliance with 15A NCAC 2D .0521 or (b) demonstrate that the percent opacity from the emission points of the emission sources in accordance with 15A NCAC 2D .0501(c)(8) is below the limit given in Section VI. D.2.b.i. above. If the demonstration in (b) above cannot be made, the Permittee shall be deemed to be in noncompliance with 15A NCAC 2D .0521.

The results of the monitoring shall be maintained in a logbook (written or electronic format) on-site and made available to an authorized representative upon request. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0521 if these records are not maintained.

iii. Reporting Requirements

The Permittee shall submit semiannually summary reports of the visible emission observations.

c. 2D .0530 "Prevention of Significant Deterioration (PSD Avoidance)"

i. Regulatory Analysis

To comply with this permit and avoid the applicability of 15A NCAC 2D .0530 "Prevention of Significant Deterioration," as requested by the Permittee, emissions from the furnace (ID No. 524), including the melter, refiner, and forehearth, shall not exceed the following limitations:

<u>Pollutant</u>	<u>Emissions Limitation</u>
sulfur dioxide	114.4 tons per consecutive 12-month period
particulate (filterable and condensable)	72.33 tons per consecutive 12-month period
PM-10 (filterable and condensable)	58.19 tons per consecutive 12-month period
nitrogen oxides	91.2 tons per consecutive 12-month period
fluorides	93.1 tons per consecutive 12-month period

The Permittee shall conduct annual testing of fiberglass melting furnace (ID No. 524) for the pollutants listed in the Table below. These tests shall be conducted and the results submitted no later than March 31 annually. If the results of this test are above the limit given in Section VI. D. 2. c. i. above, the Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530.

Testing and monitoring/recordkeeping/reporting for fluorides is not required because the worst case potential emission rate for the furnace is only 15.97 tons/yr, which is very less than the PSD avoidance limit of 93.1 tons/yr.

For particulates, the worst case emission rate appears to indicate that the permittee is violating the PSD avoidance limit for PM. For other pollutants emission data are not available. Hence, the testing and monitoring/recordkeeping/reporting requirements for PM, NO_x, and SO₂ are justified.

Affected Facility	Pollutant/Process Parameter	Test Method
Furnace 524	sulfur dioxide	per approved protocol
	particulate (filterable and condensible)	Method 5 and 202
	PM-10 (filterable and condensible)	Method 201 and 202
	nitrogen oxides	per approved protocol
	production rate	per approved protocol
	furnace specific emission factor for sulfur dioxide	calculated from above
	furnace specific emission factor for particulate	calculated from above
	furnace specific emission factor for PM-10	calculated from above
	furnace specific emission factor for nitrogen oxides	calculated from above

ii. Monitoring/Recordkeeping Requirements

Sulfur Dioxide - The permittee shall record monthly the sulfur dioxide emissions from furnace 524 (melter, refiner, and forehearth). Monthly emissions shall be based on the actual production rate of the furnace multiplied by an emission factor determined during the last annual testing of furnace 524. The permittee shall maintain each monthly record on file for a minimum of three (3) years. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if the above records are not kept or if the sulfur dioxide emissions exceed the limit stated in Section VI. D. 2. c. i. above. No monitoring/recordkeeping is required when burning natural gas in the furnace 524.

Particulates - The permittee shall record monthly the particulate emissions from furnace 524 (melter, refiner, and forehearth). Monthly emissions shall be based on the actual production rate of the furnace multiplied by an emission factor determined during the last annual testing of furnace 524. The annual testing shall include condensible and filterable particulate emission from the melter, refiner, and forehearth. The permittee shall maintain each monthly record on file for a minimum of three (3) years. The Permittee shall be deemed in noncompliance

with 15A NCAC 2D .0530 if the above records are not kept or if the particulate emissions exceed the limit stated in Section VI. D. 2. c.i. above. No monitoring/recordkeeping is required when burning natural gas in the furnace 524.

PM-10 - The permittee shall record monthly the PM-10 emissions from furnace 524 (melter, refiner, and forehearth). Monthly emissions shall be based on the actual production rate of the furnace multiplied by an emission factor determined during the last annual testing of furnace 524. The annual testing shall include condensible and filterable particulate emission from the melter, refiner, and forehearth. The permittee shall maintain each monthly record on file for a minimum of three (3) years. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if the above records are not kept or if the PM-10 emissions exceed the limit stated in Section VI. D. 2. c. i. above. No monitoring/recordkeeping is required when burning natural gas in the furnace 524.

Nitrogen oxides - The permittee shall record monthly the nitrogen oxide emissions from furnace 524 (melter, refiner, and forehearth). Monthly emissions shall be based on the actual production rate of the furnace multiplied by an emission factor determined during the last annual testing of furnace 524. The permittee shall maintain each monthly record on file for a minimum of three (3) years. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if the above records are not kept or if the nitrogen oxide emissions exceed the limit stated in Section VI. D. 2. c. i. above. No monitoring/recordkeeping is required when burning natural gas in the furnace 524.

iii. Reporting Requirements

The Permittee shall submit a summary report, acceptable to the Regional Air Quality Supervisor, of monitoring and recordkeeping activities within 30 days after each calendar year quarter. The report shall contain the following: The monthly sulfur dioxide, particulate, PM-10, and nitrogen oxide emissions for the previous 14 months. The emissions must be calculated for each of the 12-month periods over the previous 14 months.

E. Fiberglass melting furnace No. 525 (15,822 pounds per hour maximum allowable glass pull rate) using only EFB technology and process consisting of:

- a. **One direct oxygen fired melter (ID No. 525M),**
- b. **One natural gas / No. 2 fuel oil-fired refiner (ID No. 525R), and**
- c. **One natural gas / No. 2 fuel oil-fired forehearth (ID No. 525F)**

1. Description

See Section VI. A.1.

2. Applicable Regulatory Requirements

The following provides a summary of emission and/or operation limits for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter (from melter, refiner, and forehearth)	$E = 4.10P^{0.67}$ where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
sulfur dioxide	2.3 pounds per million Btu heat input	15A NCAC 2D .0516
visible emissions	20 percent opacity	15A NCAC 2D .0521
particulate matter	11.55 pounds per hour	15A NCAC 2D .0524 (NSPS avoidance)
particulate matter (from melter, refiner, and forehearth)	81.63 tons per consecutive 12-month period	15A NCAC 2D .0530 (PSD avoidance)
PM-10 (from melter, refiner, and forehearth)	71.63 tons per consecutive 12-month period	15A NCAC 2D .0530 (PSD avoidance)
nitrogen oxides	100 tons per consecutive 12-month period	15A NCAC 2D .0530 (PSD avoidance)
sulfur dioxide	164.69 tons per consecutive 12-month period	15A NCAC 2D .0530 (PSD avoidance)
carbon monoxide	114.55 tons per consecutive 12-month period	15A NCAC 2D .0530 (PSD avoidance)
fluorides	106.23 tons per consecutive 12-month period	15A NCAC 2D .0530 (PSD avoidance)
toxic air pollutants	See Section VII. State-enforceable only	15A NCAC 2D .1100

odorous emissions	See Section VII. State-enforceable only	15A NCAC 2D .1806
toxic air pollutants	See Section VII. State-enforceable only	15A NCAC 2Q .0711

a. 2D .0515 “Particulates from Miscellaneous Industrial Processes”

i. Regulation Analysis

The allowable particulate emission limit from each furnace (melter, refiner and forehearth) is calculated by the following equation:

$$E = 4.10P^{0.67}$$

where E = allowable emission rate for particulate matter in pounds per hour,

and P = process weight in tons per hour

Liquid and gaseous fuels, and stoichiometric combustion oxygen are not considered as part of the process weight. For the purpose of compliance with 15A NCAC 2D .0515, the process rate is the pull rate divided by 0.776. As the maximum allowable pull rate for each furnace is 15,822 lbs/hr, the allowable PM emission rate for each furnace (melter, refiner and forehearth) will be 19.43 lbs/hr, using the above equation. The permittee has estimated the potential PM emission rate at 18.69 lbs/hr, using the source test measurements. Hence, compliance with the allowable PM emission limit is expected.

Annual testing will be required for each melter as per Section VII to demonstrate compliance with this requirement. In the event that a fiberglass melting furnace (melter only) exceeds 80 percent of its particulate emission limit (established as 0.88 multiplied by the emissions rate in Section VI. E. 2. a. i. above), during the stack test, the Permittee shall schedule and conduct stack tests once per year thereafter. If the result of any test for the melter is greater than 0.88 multiplied by the allowable emissions rate in Section VI. E. 2. a. i. above, the Permittee shall be deemed in noncompliance with 15A NCAC 2D .0515.

ii. Monitoring/Recordkeeping Requirements

The Permittee shall maintain production records sufficient to determine process weight rate and shall make these records available to a DAQ authorized representative upon request. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0515 if the production records are not maintained.

iii. Reporting Requirements

The Permittee shall submit semi-annually summary reports of monitoring, recordkeeping, and testing activities.

b. 2D .0516 "Sulfur Dioxide Emissions from Combustion Sources"

i. Regulatory Analysis

Sulfur dioxide emissions from any source of combustion that is discharged from any vent, stack, or chimney shall not exceed 2.3 pounds per million Btu heat input. There are no control devices to control emissions of sulfur dioxide.

The permittee has estimated the potential SO₂ emission rate at 37.60 lbs/hr for the furnace using the source test measurement. Also, the maximum firing rate for the furnace is 57.75 million Btu/hr. Hence, the potential emission rate will be 0.65 lb/million Btu. So, compliance is expected.

No testing is required to assure compliance with this requirement.

ii. Monitoring/Recordkeeping/Reporting Requirements

No monitoring/recordkeeping/reporting is required for sulfur dioxide emissions from the firing of natural gas and No. 2 fuel oil in these sources.

c. 2D .0521 "Control Of Visible Emissions"

i. Regulatory Analysis

Visible emissions from the furnace (melter, refiner, and forehearth) shall not be more than 20 percent opacity when averaged over a six-minute period. However, six-minute averaging periods may exceed 20

percent not more than once in any hour and not more than four times in any 24-hour period. In no event shall the six-minute average exceed 87 percent opacity.

Testing for visible emission is not required.

ii. Monitoring/Recordkeeping Requirements

To assure compliance, once a day the Permittee shall observe the emission points from the furnace (melter, refiner, and forehearth) for any visible emissions above normal. The Permittee shall establish "normal" for the source in the first 30 days following the furnace reaches the steady state condition. If visible emissions from these sources are observed to be above normal, the Permittee shall either: (a) be deemed to be in noncompliance with 15A NCAC 2D .0521 or (b) demonstrate that the percent opacity from the emission points of the emission sources in accordance with 15A NCAC 2D .0501(c)(8) is below the limit given in Section VI. E.2.c.i. above. If the demonstration in (b) above cannot be made, the Permittee shall be deemed to be in noncompliance with 15A NCAC 2D .0521.

The results of the monitoring shall be maintained in a logbook (written or electronic format) on-site and made available to an authorized representative upon request. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0521 if these records are not maintained.

iii. Reporting Requirements

The Permittee shall submit semiannually summary reports of the visible emission observations.

d. 2D .0524 "New Source Performance Standards (NSPS Avoidance)"

i. Regulatory Analysis

To comply with this permit and avoid the applicability of 15A NCAC 2D .0524 "New Source Performance Standards," as requested by the Permittee, particulate matter emissions from the furnace No. 525, (melter only), shall not exceed 11.55 lbs/hr. To assure compliance with this requirement, the permittee shall use only the EFB in the furnace.

ii. Monitoring/Recordkeeping/Reporting Requirements

The monitoring/recordkeeping/reporting requirements of Section VI. E. 2. a.ii. and iii. above shall be sufficient to assure compliance with the avoidance requirement of 15 A NCAC 2D .0524.

e. 2D .0530 "Prevention of Significant Deterioration (PSD Avoidance)"

i. Regulatory Analysis

To comply with this permit and avoid the applicability of 15A NCAC 2D .0530 "Prevention of Significant Deterioration," as requested by the Permittee, emissions from the furnace (ID No. 525), including the melter, refiner, and forehearth, shall not exceed the following limitations:

<u>Pollutant</u>	<u>Emissions Limitation</u>
sulfur dioxide	164.69 tons per consecutive 12-month period
particulate (filterable and condensable)	81.63 tons per consecutive 12-month period
PM-10 (filterable and condensable)	71.63 tons per consecutive 12-month period
nitrogen oxides	100 tons per consecutive 12-month period
carbon monoxide	114.55 tons per consecutive 12-month period
fluorides	106.23 tons per consecutive 12-month period

The Permittee shall conduct annual testing of fiberglass melting furnace (ID No. 525) for the pollutants listed in the table below. These tests shall be conducted and the results submitted no later than March 31 annually. If the results of this test are above the limit given in Section VI. E. 2. e. i. above, the Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530.

Testing and monitoring/recordkeeping/reporting for fluorides is not required because the worst case potential emission rate for the furnace is only 15.59 tons/yr, which is very less than the PSD avoidance limit of 106.23 tons/yr.

For particulates, the worst case emission rate appears to indicate that the permittee may be emitting PM very close to its PSD avoidance limit (67.38 tons/yr v/s 71.63 tons/yr). For other pollutants emission data are not available. Hence, the testing and

monitoring/recordkeeping/reporting requirements for PM, NOx, SO2, and CO are justified.

Affected Facility	Pollutant/Process Parameter	Test Method
Furnace 525	sulfur dioxide	per approved protocol
	particulate (filterable and condensable)	Method 5 and 202
	PM-10 (filterable and condensable)	Method 20 and 202
	nitrogen oxides	per approved protocol
	carbon monoxide	per approved protocol
	production rate	per approved protocol
	furnace specific emission factor for sulfur dioxide	calculated from above
	furnace specific emission factor for particulate	calculated from above
	furnace specific emission factor for PM-10	calculated from above
	furnace specific emission factor for nitrogen oxides	calculated from above
	furnace specific emission factor for carbon monoxide	calculated from above

ii. Monitoring/Recordkeeping Requirements

Sulfur Dioxide - The permittee shall record monthly the sulfur dioxide emissions from furnace 525 (melter, refiner, and forehearth). Monthly emissions shall be based on the actual production rate of the furnace multiplied by an emission factor determined during the last annual testing of furnace 525. The permittee shall maintain each monthly record on file for a minimum of three (3) years. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if the above records are not kept or if the sulfur dioxide emissions exceed the limit stated in Section VI. E. 2. e. i. above. No monitoring/recordkeeping is required when burning natural gas in the furnace 525.

Particulates - The permittee shall record monthly the particulate

emissions from furnace 525 (melter, refiner, and forehearth). Monthly emissions shall be based on the actual production rate of the furnace multiplied by an emission factor determined during the last annual testing of furnace 525. The annual testing shall include condensible and filterable particulate emission from the melter, refiner, and forehearth. The permittee shall maintain each monthly record on file for a minimum of three (3) years. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if the above records are not kept or if the particulate emissions exceed the limit stated in Section VI. E. 2. e. i. above. No monitoring/recordkeeping is required when burning natural gas in the furnace 525.

PM-10 - The permittee shall record monthly the PM-10 emissions from furnace 525 (melter, refiner, and forehearth). Monthly emissions shall be based on the actual production rate of the furnace multiplied by an emission factor determined during the last annual testing of furnace 525. The annual testing shall include condensible and filterable particulate emission from the melter, refiner, and forehearth. The permittee shall maintain each monthly record on file for a minimum of three (3) years. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if the above records are not kept or if the PM-10 emissions exceed the limit stated in Section VI. E. 2. e. i. above. No monitoring/recordkeeping is required when burning natural gas in the furnace 525.

Nitrogen oxides - The permittee shall record monthly the nitrogen oxide emissions from furnace 525 (melter, refiner, and forehearth). Monthly emissions shall be based on the actual production rate of the furnace multiplied by an emission factor determined during the last annual testing of furnace 525. The permittee shall maintain each monthly record on file for a minimum of three (3) years. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if the above records are not kept or if the nitrogen oxide emissions exceed the limit stated in Section VI. E. 2. e. i. above. No monitoring/recordkeeping is required when burning natural gas in the furnace 525.

Carbon monoxide - The permittee shall record monthly the carbon monoxide emissions from furnace 525 (melter, refiner, and forehearth). Monthly emissions shall be based on the actual production rate of the furnace multiplied by an emission factor determined during the last annual testing of furnace 525. The permittee shall maintain each

monthly record on file for a minimum of three (3) years. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if the above records are not kept or if the carbon monoxide emissions exceed the limit stated in Section VI. E. 2. e. i. above. No monitoring/recordkeeping is required when burning natural gas in the furnace 525.

iii. Reporting Requirements

The Permittee shall submit a summary report, acceptable to the Regional Air Quality Supervisor, of monitoring and recordkeeping activities within 30 days after each calendar year quarter. The report shall contain the following: The monthly sulfur dioxide, particulate, PM-10, nitrogen oxides, and carbon monoxide emissions for the previous 14 months. The emissions must be calculated for each of the 12-month periods over the previous 14 months.

F. Fiberglass melting furnace No. 526 (20,000 pounds per hour maximum allowable glass pull rate) using only EFB technology and process consisting of:

- a. One direct oxygen fired melter (ID No. 526M),
- b. One natural gas / No. 2 fuel oil-fired refiner (ID No. 526R), and
- c. One natural gas / No. 2 fuel oil-fired forehearth (ID No. 526F)

1. Description

See Section VI. A.1.

2. Applicable Regulatory Requirements

The following provides a summary of emission and/or operation limits for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
sulfur dioxide	2.3 pounds per million Btu heat input	15A NCAC 2D .0516

visible emissions (from melter while in compliance with 40 CFR 60.292, and refiner and forehearth)	20 percent opacity	15A NCAC 2D .0521
particulate matter (from melter)	See Section VII.	15A NCAC 2D .0524 (NSPS Subpart CC)
visible emissions (from melter while in compliance with 40 CFR 60.293)	See Section VII.	15A NCAC 2D .0524 (NSPS Subpart CC)
sulfur dioxide	114.37 tons per consecutive 12-month period	15A NCAC 2D .0530 (PSD avoidance)
fluorides	222.04 tons per consecutive 12-month period	15A NCAC 2D .0530 (PSD avoidance)
toxic air pollutants	See Section VII. State-enforceable only	15A NCAC 2D .1100
odorous emissions	See Section VII. State-enforceable only	15A NCAC 2D .1806
toxic air pollutants	See Section VII. State-enforceable only	15A NCAC 2Q .0711

a. 2D .0516 "Sulfur Dioxide Emissions from Combustion Sources"

i. Regulatory Analysis

Sulfur dioxide emissions from any source of combustion that is discharged from any vent, stack, or chimney shall not exceed 2.3 pounds per million Btu heat input. There are no control devices to control emissions of sulfur dioxide.

The permittee has estimated the potential SO₂ emission rate at 169.86 lbs/hr for the furnace using the source test measurement. Also, the maximum firing rate for each furnace is 78.84 million Btu/hr. Hence, the potential emission rate will be 2.15 lb/million Btu. So, compliance is expected.

No testing is required to assure compliance with this requirement.

ii. Monitoring/Recordkeeping/Reporting Requirements.

No monitoring/recordkeeping/reporting is required for sulfur dioxide emissions from the firing of natural gas and No. 2 fuel oil in these sources.

b. 2D .0521 "Control Of Visible Emissions"

i. Regulatory Analysis

Visible emissions from the furnace (melter, refiner, and forehearth) shall not be more than 20 percent opacity when averaged over a six-minute period. However, six-minute averaging periods may exceed 20 percent not more than once in any hour and not more than four times in any 24-hour period. In no event shall the six-minute average exceed 87 percent opacity.

Testing for visible emission is not required.

ii. Monitoring/Recordkeeping Requirements

To assure compliance, once a day the Permittee shall observe the emission points from the furnace (melter, refiner, and forehearth) for any visible emissions above normal. The Permittee shall establish "normal" for the source in the first 30 days following the furnace reaches the steady state condition. If visible emissions from these sources are observed to be above normal, the Permittee shall either: (a) be deemed to be in noncompliance with 15A NCAC 2D .0521 or (b) demonstrate that the percent opacity from the emission points of the emission sources in accordance with 15A NCAC 2D .0501(c)(8) is below the limit given in Section VI. F.2.b.i. above. If the demonstration in (b) above cannot be made, the Permittee shall be deemed to be in noncompliance with 15A NCAC 2D .0521.

The results of the monitoring shall be maintained in a logbook (written or electronic format) on-site and made available to an authorized representative upon request. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0521 if these records are not maintained.

iii. Reporting Requirements

The Permittee shall submit semiannually summary reports of the visible emission observations.

c. 2D .0530 "Prevention of Significant Deterioration (PSD Avoidance)"

i. Regulatory Analysis

To comply with this permit and avoid the applicability of 15A NCAC 2D .0530 "Prevention of Significant Deterioration," as requested by the Permittee, emissions from the furnace (ID No. 526), including the melter, refiner, and forehearth, shall not exceed the following limitations:

<u>Pollutant</u>	<u>Emissions Limitation</u>
sulfur dioxide	114.37 tons per consecutive 12-month period
fluorides	222.04 tons per consecutive 12-month period

The Permittee shall conduct annual testing of fiberglass melting furnace (ID No. 526) for the pollutants listed in the table below. These tests shall be conducted and the results submitted no later than March 31 annually. If the results of this test are above the limit given in Section VI. F. 2. c. I. above, the Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530.

Testing and monitoring/recordkeeping/reporting for fluorides is not required because the worst case potential emission rate for this furnace is only 19.71 tons/yr, which is very less than the PSD avoidance limit of 222.04 tons/yr.

For SO₂, the emission data is not available. Hence, the testing and monitoring/recordkeeping/reporting requirements for SO₂ are justified.

Affected Facility	Pollutant/Process Parameter	Test Method
Furnace 526	sulfur dioxide	per approved protocol
	production rate	per approved protocol
	furnace specific emission factor for sulfur dioxide	calculated from above

ii. Monitoring/Recordkeeping Requirements

Sulfur Dioxide - The permittee shall record monthly the sulfur dioxide emissions from furnace 526 (melter, refiner, and forehearth). Monthly emissions shall be based on the actual production rate of the furnace multiplied by an emission factor determined during the last annual testing of furnace 525. The permittee shall maintain each monthly record on file for a minimum of three (3) years. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if the above records are not kept or if the sulfur dioxide emissions exceed the limit stated in Section VI. F. 2. c. i. above. No monitoring/recordkeeping is required when burning natural gas in the furnace 525.

iii. Reporting Requirements

The Permittee shall submit a summary report, acceptable to the Regional Air Quality Supervisor, of monitoring and recordkeeping activities within 30 days after each calendar year quarter. The report shall contain the following: The monthly sulfur dioxide emissions for the previous 14 months. The emissions must be calculated for each of the 12-month periods over the previous 14 months.

G. Two bagfilters (10:1 gas-to-cloth ratio each, ID Nos. DC100 and DC101) installed one each on furnace and batch storage silos serving furnace 525 (30 tons/hr nominal process rate each, ID Nos. 525FBSB#1 and 525FBSB#2)

Two bagfilters (10:1 gas-to-cloth ratio each, ID Nos. DC102 and DC103) installed one each on furnace and batch storage silos serving furnace 524 (30 tons/hr nominal process rate each, ID Nos. 524FBSB#1 and 524FBSB#2)

Two bagfilters (10:1 gas-to-cloth ratio each, ID Nos. DC104 and DC105) installed one each on furnace and batch storage silos serving furnace 520 (10 tons/hr nominal process rate each, ID Nos. 520FBSB#1 and 520BSB#2)

One bagfilter (10:1 gas-to-cloth ratio, ID No. DC106) installed on furnace and batch storage silo serving furnace 506 (10 tons/hr nominal process rate, ID No. 506FBSB)

One bagfilter (10:1 gas-to-cloth ratio, ID No. DC107) installed on furnace and batch storage silo serving furnace 508 (10 tons/hr nominal process rate, ID No. 508FBSB)

One bagfilter (10:1 gas-to-cloth ratio, ID No. DC108) installed on furnace and batch storage silo serving furnace 510 (10 tons/hr nominal process rate, ID No. 510FBSB)

One bagfilter (10:1 gas-to-cloth ratio, ID No. DC110) installed on furnace and batch storage silo serving furnace 514 (10 tons/hr nominal process rate, ID No. 514FBSB)

One bagfilter (10:1 gas-to-cloth ratio, ID No. DC111) installed on furnace and batch storage silo serving furnace 516 (10 tons/hr nominal process rate, ID No. 516FBSB)

Nineteen bagfilters (10:1 gas-to-cloth ratio each, ID Nos. DC112 through DC120, DC124 through DC127, DC153, DC154, and DC 132 through DC135) installed one each on nineteen raw material storage bins (34 tons/hr nominal process rate each, ID No. 19RAW)

One baghouse (10:1 gas-to-cloth ratio, ID No. DC130) installed on one hydrated lime storage silo (___ nominal process rate, ID No. ES130)

1. Description

These are various storage silos/bins. The particulate emissions from each silo/bin is controlled by a bagfilter.

2. Applicable Regulatory Requirements

The following provides a summary of emission and/or operation limits for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter	$E = 4.10P^{0.67}$ for P # 30 tons/hr $E = 55.0 P^{0.11} - 40$ for P >30 tons/hr where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
visible emissions	20 percent opacity each	15A NCAC 2D .0521
particulate matter	23.04 tons per consecutive 12-month period combined total (ID Nos. 19RAW and ES130) 1.05 tons per consecutive 12-month period each (ID Nos. 506FBSB, 508FBSB, 510FBSB, 514FBSB, 516FBSB, 520FBSB#1, 520FBSB#2, 524FBSB#1, 524FBSB#2, 525FBSB#1, 525FBSB#2, 526FBSB#1, and 526FBSB#2)	15A NCAC 2D .0530 (PSD avoidance)

toxic air pollutants	See Section VII. State-enforceable only	15A NCAC 2D .1100
odorous emissions	See Section VII. State-enforceable only	15A NCAC 2D .1806
toxic air pollutants	See Section VII. State-enforceable only	15A NCAC 2Q .0711

a. 2D .0515 ‘Particulates from Miscellaneous Industrial Processes’

i. Regulation Analysis

The allowable particulate emission limit from each source is calculated by the following equation:

$$E = 4.10P^{0.67}$$

where E = allowable emission rate for particulate matter in pounds per hour,

and P = process weight in tons per hour

The following Table shows allowable v/s potential PM emission rate for each of the above sources.

Source ID	Process Rate tons/hr	Allowable Emission Rate lbs/hr	Potential Emission Rate lbs/hr	Compliance with 2D .0515 ?
525FBSB#1	30	40.0	0.1	Yes
525FBSB#2	30	40.0	0.1	Yes
524FBSB#1	30	40.0	0.1	Yes
524FBSB#2	30	40.0	0.1	Yes
520FBSB#1	10	19.2	0.03	Yes
520FBSB#2	10	19.2	0.03	Yes
506FBSB	10	19.2	0.03	Yes
508FBSB	10	19.2	0.03	Yes
510FBSB	10	19.2	0.03	Yes
514FBSB	10	19.2	0.03	Yes

516FBSB	10	19.2	0.03	Yes
19RAW	34	43.54	0.09	Yes
ES130	-	-	-	-

Stack testing to demonstrate compliance with 2D .0515 for these sources is not required.

ii. Monitoring/Recordkeeping Requirements

Particulate matter emissions from the above listed emission sources shall be controlled by their respective bagfilters. To assure compliance, the Permittee shall perform inspections and maintenance as recommended by the manufacturer. In addition to the manufacturer's inspection and maintenance recommendations, or if there is no manufacturer's inspection and maintenance recommendations, as a minimum, the inspection and maintenance requirement shall include the following:

- (A) a monthly visual inspection of the system ductwork and material collection unit for leaks; and
- (B) an annual (for each 12 month period following the initial inspection) internal inspection of the bagfilter's structural integrity.

The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0515 if the ductwork and bagfilters are not inspected and maintained.

The permittee shall record the monitoring results in a logbook. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0515 if these records are not maintained.

iii. Reporting Requirements

The Permittee shall submit the results of any maintenance performed on the bagfilters within 30 days of a written request by the DAQ. In addition, the permittee shall submit semiannually a summary report of monitoring, recordkeeping, or testing activities.

b. 2D .0521 "Control Of Visible Emissions"

i. Regulatory Analysis

Visible emissions from the source shall not be more than 20 percent opacity when averaged over a six-minute period. However, six-minute averaging periods may exceed 20 percent not more than once in any hour and not more than four times in any 24-hour period. In no event shall the six-minute average exceed 87 percent opacity.

Testing for visible emission is not required.

ii. Monitoring/Recordkeeping Requirements

To assure compliance, once a month the Permittee shall observe the emission points from the above listed emission sources for any visible emissions above normal. The Permittee shall establish "normal" for the source in the first 30 days following the effective date of permit. If visible emissions from these sources are observed to be above normal, the Permittee shall either: (a) be deemed to be in noncompliance with 15A NCAC 2D .0521 or (b) demonstrate that the percent opacity from the emission points of the emission sources in accordance with 15A NCAC 2D .0501(c)(8) is below the limit given in Section VI. G. 2. b.i. above. If the demonstration in (b) above cannot be made, the Permittee shall be deemed to be in noncompliance with 15A NCAC 2D .0521.

The results of the monitoring shall be maintained in a logbook (written or electronic format) on-site and made available to an authorized representative upon request. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0521 if these records are not maintained.

iii. Reporting Requirements

The Permittee shall submit semiannually summary reports of the visible emission observations.

c. 2D .0530 "Prevention of Significant Deterioration (PSD Avoidance)"

i. Regulatory Analysis

To comply with this permit and avoid the applicability of 15A NCAC

2D .0530 "Prevention of Significant Deterioration," as requested by the Permittee, combined total of particulate matter emissions from sources (ID Nos. 19RAW and ES130) shall not exceed 23.04 tons per consecutive 12-month period combined total.

To comply with this permit and avoid the applicability of 15A NCAC 2D .0530 "Prevention of Significant Deterioration," as requested by the Permittee, particulate matter emissions from sources (ID Nos. ID Nos. 506FBSB, 508FBSB, 510FBSB, 514FBSB, 516FBSB, 520FBSB#1, 520FBSB#2, 524FBSB#1, 524FBSB#2, 525FBSB#1, 525FBSB#2, 526FBSB#1, and 526FBSB#2) shall not exceed 1.05 tons per consecutive 12-month period each.

No stack testing is required to assure compliance with this requirement.

ii. Monitoring/Recordkeeping Requirements

Monitoring/recordkeeping requirements in Section VI. G. 2. a. ii. shall be sufficient to assure compliance with 15A NCAC 2D .0530. If the requirements of Section VI. G. 2. a. ii. are not performed, the permittee shall be deemed in noncompliance with 15A NCAC 2D .0530.

iii. Reporting Requirements

Reporting requirements in Section VI. G. 2. a. iii. shall be sufficient to assure compliance with 15A NCAC 2D .0530.

H. One baghouse (10:1 gas-to-cloth ratio, ID No. CDDC119) installed on batch silo #7 (34 tons/hr nominal process rate, ID No. ESDC119),

One batch silo #8 (34 tons/hr nominal process rate, ID No. ESDC120),

Two baghouses (10:1 gas-to-cloth ratio each, ID Nos. CDDC121 & CDDC122) installed on one batch silo #9 (34 tons/hr nominal process rate, ID No. ESDC121),

Two baghouses (10:1 gas-to-cloth ratio each, ID Nos. CDDC123 & CDDC152) installed on one batch silo #10 (34 tons/hr nominal process rate, ID No. ESDC123)

1. Description

These are some other storage silos. The particulate emissions from each silo (except

silo #8) is controlled by one or two bagfilters.

2. Applicable Regulatory Requirements

The following provides a summary of emission and/or operation limits for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
visible emissions	20 percent opacity each	15A NCAC 2D .0521
particulate matter	7.45 tons per consecutive 12-month period combined total	15A NCAC 2D .0530
toxic air pollutants	See Section VII. State-enforceable only	15A NCAC 2D .1100
odorous emissions	See Section VII. State-enforceable only	15A NCAC 2D .1806
toxic air pollutants	See Section VII. State-enforceable only	15A NCAC 2Q .0711

a. 2D .0521 "Control Of Visible Emissions"

i. Regulatory Analysis

Visible emissions from each source shall not be more than 20 percent opacity when averaged over a six-minute period. However, six-minute averaging periods may exceed 20 percent not more than once in any hour and not more than four times in any 24-hour period. In no event shall the six-minute average exceed 87 percent opacity.

Testing for visible emission is not required.

ii. Monitoring/Recordkeeping Requirements

To assure compliance, once a month the Permittee shall observe the emission points from the above listed emission sources for any visible emissions above normal. The Permittee shall establish "normal" for the source in the first 30 days following the effective date of permit. If visible emissions from these sources are observed to be above normal, the Permittee shall either: (a) be deemed to be in noncompliance with

15A NCAC 2D .0521 or (b) demonstrate that the percent opacity from the emission points of the emission sources in accordance with 15A NCAC 2D .0501(c)(8) is below the limit given in Section VI. H. 2. a.i. above. If the demonstration in (b) above cannot be made, the Permittee shall be deemed to be in noncompliance with 15A NCAC 2D .0521.

The results of the monitoring shall be maintained in a logbook (written or electronic format) on-site and made available to an authorized representative upon request. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0521 if these records are not maintained.

iii. Reporting Requirements

The Permittee shall submit semiannually summary reports of the visible emission observations.

b. 2D .0530 "Prevention of Significant Deterioration (PSD Avoidance)"

i. Regulatory Analysis

To comply with 15A NCAC 2D .0530 "Prevention of Significant Deterioration," Best Available Control Technology (BACT) limit for particulate matter emissions from sources (ID Nos. ESDC119, ESDC120, ESDC121, and ESDC123) shall not exceed 7.45 tons per consecutive 12-month period combined total.

No stack testing is required to assure compliance with this requirement.

ii. Monitoring/Recordkeeping Requirements

For batch silo # 8 (ID No. ESDC120), the Permittee shall maintain production records sufficient to determine process weight rate and shall make these records available to a DAQ authorized representative upon request. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if the production records are not maintained.

Particulate matter emissions from the emission sources (ID Nos. ESDC119, ESDC121, and ESDC123) shall be controlled by their respective bagfilters. To assure compliance, the Permittee shall

perform inspections and maintenance as recommended by the manufacturer. In addition to the manufacturer's inspection and maintenance recommendations, or if there is no manufacturer's inspection and maintenance recommendations, as a minimum, the inspection and maintenance requirement shall include the following:

- (A) a monthly visual inspection of the system ductwork and material collection unit for leaks; and
- (B) an annual (for each 12 month period following the initial inspection) internal inspection of the bagfilter's structural integrity.

The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if the ductwork and bagfilters are not inspected and maintained.

The permittee shall record the monitoring results in a logbook. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if these records are not maintained.

iii. Reporting Requirements

The Permittee shall submit the results of any maintenance performed on the bagfilters within 30 days of a written request by the DAQ. In addition, the permittee shall submit semiannually a summary report of monitoring, recordkeeping, or testing activities.

I. One two-stage filter system (180 feet of cloth area, ID No. CDWC140) installed on one natural gas-fired fluid bed dryer/wet chop dryer (6,400 lbs/hr nominal process rate, 5.6 million Btu/hr nominal heat input rate, ID No. ESWC140)

1. Description

This is an emission source where chopped fiberglass strands are dried. The particulate emissions are controlled by a two-stage filter system.

2. Applicable Regulatory Requirements

The following provides a summary of emission and/or operation limits for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter	$E = 4.10P^{0.67}$ for P # 30 tons/hr $E = 55.0 P^{0.11} - 40$ for P >30 tons/hr where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
sulfur dioxide	2.3 lbs/million Btu	15A NCAC 2D .0516
visible emissions	20 percent opacity	15A NCAC 2D .0521
toxic air pollutants	See Section VII. State-enforceable only	15A NCAC 2D .1100
odorous emissions	See Section VII. State-enforceable only	15A NCAC 2D .1806
toxic air pollutants	See Section VII. State-enforceable only	15A NCAC 2Q .0711

a. 2D .0515 “Particulates from Miscellaneous Industrial Processes”

i. Regulation Analysis

The allowable particulate emission limit from the source is calculated by the following equation:

$$E = 4.10P^{0.67}$$

where E = allowable emission rate for particulate matter in pounds per hour,

and P = process weight in tons per hour

Based on the process rate of 6,400 lbs/hr, the allowable PM emission rate is 8.94 lbs/hr. The permittee has estimated the potential PM emission rate to be 3.84 lbs/hr. Hence, compliance is expected. Stack testing is not required to assure compliance with this requirement.

ii. Monitoring/Recordkeeping Requirements

Particulate matter emissions from the above listed emission sources shall be controlled by a filter system. To assure compliance, the

Permittee shall perform inspections and maintenance as recommended by the manufacturer. In addition to the manufacturer's inspection and maintenance recommendations, or if there is no manufacturer's inspection and maintenance recommendations, as a minimum, the inspection and maintenance requirement shall include the following:

- (A) a monthly visual inspection of the system ductwork and material collection unit for leaks; and
- (B) an annual (for each 12 month period following the initial inspection) internal inspection of the filter system's structural integrity.

The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0515 if the ductwork and filter system are not inspected and maintained.

The permittee shall record the monitoring results in a logbook. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if these records are not maintained.

iii. Reporting Requirements

The Permittee shall submit the results of any maintenance performed on the filter system within 30 days of a written request by the DAQ. In addition, the permittee shall submit semiannually a summary report of monitoring, recordkeeping, or testing activities.

b. 2D .0516 "Sulfur Dioxide Emissions from Combustion Sources"

i. Regulatory Analysis

Sulfur dioxide emissions from any source of combustion that is discharged from any vent, stack, or chimney shall not exceed 2.3 pounds per million Btu heat input. There are no control devices to control emissions of sulfur dioxide.

Negligible SO₂ emissions are expected due to firing of natural gas. Compliance is expected. No testing is required to assure compliance with this requirement.

ii. Monitoring/Recordkeeping/Reporting Requirements.

No monitoring/recordkeeping/reporting is required for sulfur dioxide emissions from the firing of natural gas in this source.

c. 2D .0521 "Control Of Visible Emissions"

i. Regulatory Analysis

Visible emissions from the source shall not be more than 20 percent opacity when averaged over a six-minute period. However, six-minute averaging periods may exceed 20 percent not more than once in any hour and not more than four times in any 24-hour period. In no event shall the six-minute average exceed 87 percent opacity.

Testing for visible emission is not required.

ii. Monitoring/Recordkeeping Requirements

To assure compliance, once a week the Permittee shall observe the emission points from the above listed emission sources for any visible emissions above normal. The Permittee shall establish "normal" for the source in the first 30 days following the effective date of permit. If visible emissions from these sources are observed to be above normal, the Permittee shall either: (a) be deemed to be in noncompliance with 15A NCAC 2D .0521 or (b) demonstrate that the percent opacity from the emission points of the emission sources in accordance with 15A NCAC 2D .0501(c)(8) is below the limit given in Section VI. I. 2. c.i. above. If the demonstration in (b) above cannot be made, the Permittee shall be deemed to be in noncompliance with 15A NCAC 2D .0521.

The results of the monitoring shall be maintained in a logbook (written or electronic format) on-site and made available to an authorized representative upon request. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0521 if these records are not maintained.

iii. Reporting Requirements

The Permittee shall submit semiannually summary reports of the visible emission observations.

J. One fiberglass coating line (685 lbs/hr nominal process rate, ID Nos. HF98), equipped with a natural gas-fired drying oven (6.0 million Btu/hr nominal heat input rate)

1. Description

This is a fiberglass coating line. The emissions are uncontrolled.

2. Applicable Regulatory Requirements

The following provides a summary of emission and/or operation limits for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter	$E = 4.10P^{0.67}$ for P # 30 tons/hr $E = 55.0 P^{0.11} - 40$ for P >30 tons/hr where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
sulfur dioxide	2.3 lbs/million Btu	15A NCAC 2D .0516
visible emissions	20 percent opacity	15A NCAC 2D .0521
particulate matter	8.76 tons per consecutive 12-month period	15A NCAC 2D .0530 (PSD avoidance)
toxic air pollutants	See Section VII. State-enforceable only	15A NCAC 2D .1100
odorous emissions	See Section VII. State-enforceable only	15A NCAC 2D .1806
toxic air pollutants	See Section VII. State-enforceable only	15A NCAC 2Q .0711

a. 2D .0515 “Particulates from Miscellaneous Industrial Processes”

i. Regulation Analysis

Emissions of particulate matter from this source shall not exceed an allowable emission rate as calculated by the following equation: [15A NCAC 2D .0515(a)]

$$E = 4.10 * (P)^{0.67} \quad \text{for P # 30 tons/hr, or}$$

$$E = 55.0 * (P)^{0.11} - 40 \quad \text{for } P > 30 \text{ tons/hr}$$

Where E = allowable emission rate in pounds per hour
 P = process weight in tons per hour

Liquid and gaseous fuels and combustion air are not considered as part of the process weight.

Based on the process rate of 685 lbs/hr, the allowable PM emission rate is 2 lbs/hr. Although the worst case potential emission rate estimate is not available in the Title V application, it is expected that the source will comply with the emission limit. Stack testing is not required to assure compliance with this requirement.

ii. Monitoring/Recordkeeping Requirements

The Permittee shall maintain production records sufficient to determine process weight rate and shall make these records available to a DAQ authorized representative upon request. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0515 if the production records are not maintained.

iii. Reporting Requirements

The Permittee shall submit semiannually a summary report of monitoring, recordkeeping, or testing activities.

b. 2D .0516 "Sulfur Dioxide Emissions from Combustion Sources"

i. Regulatory Analysis

Sulfur dioxide emissions from any source of combustion that is discharged from any vent, stack, or chimney shall not exceed 2.3 pounds per million Btu heat input. There are no control devices to control emissions of sulfur dioxide.

Negligible SO₂ emissions are expected due to firing of natural gas. Compliance is expected. No testing is required to assure compliance with this requirement.

ii. Monitoring/Recordkeeping/Reporting Requirements.

No monitoring/recordkeeping/reporting is required for sulfur dioxide emissions from the firing of natural gas in this source.

c. 2D .0521 "Control Of Visible Emissions"

i. Regulatory Analysis

Visible emissions from the source shall not be more than 20 percent opacity when averaged over a six-minute period. However, six-minute averaging periods may exceed 20 percent not more than once in any hour and not more than four times in any 24-hour period. In no event shall the six-minute average exceed 87 percent opacity.

Testing for visible emission is not required.

ii. Monitoring/Recordkeeping Requirements

To assure compliance, once a day the Permittee shall observe the emission points from the above listed emission source for any visible emissions above normal. The Permittee shall establish "normal" for the source in the first 30 days following the effective date of permit. If visible emissions from the source are observed to be above normal, the Permittee shall either: (a) be deemed to be in noncompliance with 15A NCAC 2D .0521 or (b) demonstrate that the percent opacity from the emission points of the emission sources in accordance with 15A NCAC 2D .0501(c)(8) is below the limit given in Section VI. J. 2. c.i. above. If the demonstration in (b) above cannot be made, the Permittee shall be deemed to be in noncompliance with 15A NCAC 2D .0521.

The results of the monitoring shall be maintained in a logbook (written or electronic format) on-site and made available to an authorized representative upon request. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0521 if these records are not maintained.

iii. Reporting Requirements

The Permittee shall submit semiannually summary reports of the visible emission observations.

d. 2D .0530 "Prevention of Significant Deterioration (PSD Avoidance)"

i. Regulatory Analysis

To comply with this permit and avoid the applicability of 15A NCAC 2D .0530 "Prevention of Significant Deterioration," as requested by the Permittee, emissions of particulate matter from the source shall not exceed 8.76 tons per consecutive 12-month period.

ii. Monitoring/Recordkeeping Requirements

Monitoring/recordkeeping requirements in Section VI. J. 2. a. ii. shall be sufficient to assure compliance with 15A NCAC 2D .0530. If the requirements of Section VI. J. 2. a. ii. are not performed, the permittee shall be deemed in noncompliance with 15A NCAC 2D .0530.

iii. Reporting Requirements

Reporting requirements in Section VI. J. 2. a. iii. shall be sufficient to assure compliance with 15A NCAC 2D .0530.

K. Three sly wet scrubbers (65 gallon per hour minimum scrubbing liquid injection rate, ID Nos. EPWC367, EPWC368 and EPWC369) installed one each on three wetcut natural gas-fired fiberglass dryers (2,500 lbs/hr nominal production rate each, 5.5 million Btu/hr nominal heat input rate each, ID Nos. EPWC367, EPWC368 and EPWC369)

One venturi scrubber (44 gallons per minute minimum scrubbing liquid injection rate, ID No. EC373A) installed in series with one dual cyclone (18 inches in diameter each, ID No. EC373B) installed on one natural gas-fired in line dryer supporting furnace 520 (1,300 dry lbs/hr nominal production rate, 1.0 million Btu/hr nominal heat input rate, ID No. ES373)

One venturi scrubber (44 gallons per minute minimum scrubbing liquid injection rate, ID No. EC374A) installed in series with one dual cyclone (18 inches in diameter each, ID No. EC374B) installed on one natural gas-fired in line dryer supporting furnace 520 (1,300 dry lbs/hr nominal production rate, 1.0 million Btu/hr nominal heat input rate, ID No. ES374)

One venturi scrubber (44 gallons per minute minimum scrubbing liquid injection rate, ID No. EC375A) installed in series with one dual cyclone (18 inches in diameter each, ID No. EC375B) installed on one natural gas-fired in line dryer supporting furnace 520 (1,300 dry lbs/hr nominal production rate, 1.0 million Btu/hr nominal heat input rate, ID No. ES375)

One venturi scrubber (52 gallons per minute minimum scrubbing liquid injection rate, ID No. EC378A) installed in series with one dual cyclone (36 inches in diameter each, ID No. EC378B) installed on one natural gas-fired in line dryer supporting furnace 526 (1,584 dry lbs/hr nominal production rate, ____ million Btu/hr nominal heat input rate, ID No. ES378)

One venturi scrubber (72 gallons per minute minimum scrubbing liquid injection rate, ID No. EC379A) installed in series with one dual cyclone (41 inches in diameter each, ID No. EC379B) installed on one natural gas-fired in line dryer supporting furnace 526 (2,143 dry lbs/hr nominal production rate, ____ million Btu/hr nominal heat input rate, ID No. ES379)

One venturi scrubber (72 gallons per minute minimum scrubbing liquid injection rate, ID No. EC380A) installed in series with one dual cyclone (41 inches in diameter each, ID No. EC380B) installed on one natural gas-fired in line dryer supporting furnace 526 (2,143 dry lbs/hr nominal production rate, ____ million Btu/hr nominal heat input rate, ID No. ES380)

One venturi scrubber (52 gallons per minute minimum scrubbing liquid injection rate, ID No. EC381A) installed in series with one dual cyclone (36 inches in diameter each, ID No. EC381B) installed on one natural gas-fired in line dryer supporting furnace 526 (1,584 dry lbs/hr nominal production rate, ____ million Btu/hr nominal heat input rate, ID No. ES381)

One venturi scrubber (44 gallons per minute minimum scrubbing liquid injection rate, ID No. EC376A) installed in series with one dual cyclone (18 inches in diameter each, ID No. EC376B) installed on one natural gas-fired in line dryer supporting furnace 525 (1,300 dry lbs/hr nominal production rate, 1.0 million Btu/hr nominal heat input rate, ID No. ES376)

1. Description

These are natural gas fired dryers supporting different furnaces. The PM emissions are controlled by associated cyclones and wet scrubbers.

2. Applicable Regulatory Requirements

The following provides a summary of emission and/or operation limits for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter	$E = 4.10P^{0.67}$ for P # 30 tons/hr $E = 55.0 P^{0.11} - 40$ for P >30 tons/hr where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
sulfur dioxide	2.3 lbs/million Btu each	15A NCAC 2D .0516
visible emissions	20 percent opacity each	15A NCAC 2D .0521
toxic air pollutants	See Section VII. State-enforceable only	15A NCAC 2D .1100
odorous emissions	See Section VII. State-enforceable only	15A NCAC 2D .1806
toxic air pollutants	See Section VII. State-enforceable only	15A NCAC 2Q .0711

a. 2D .0515 “Particulates from Miscellaneous Industrial Processes”

i. Regulation Analysis

The allowable particulate emission limit from each source is calculated by the following equation:

$$E = 4.10P^{0.67}$$

where E = allowable emission rate for particulate matter in pounds per hour,

and P = process weight in tons per hour

The following Table shows allowable v/s potential PM emission rate for each of the above sources.

Source ID	Process Rate tons/hr	Allowable Emission Rate lbs/hr	Potential Emission Rate lbs/hr	Compliance with 2D .0515 ?
EPWC367	1.25	4.76	0.075	Yes
EPWC368	1.25	4.76	0.075	Yes

EPWC369	1.25	4.76	0.075	Yes
ES373	0.65	3.07	0.0014	Yes
ES374	0.65	3.07	0.0014	Yes
ES375	0.65	3.07	0.0014	Yes
ES376	0.65	3.07	0.0014	Yes
ES378	0.79	3.5	NA	-
ES379	1.07	4.29	NA	-
ES380	1.07	4.29	NA	-
ES381	0.79	3.5	NA	-

As indicated above, because the PM emissions from the emission sources are controlled by cyclones and wet scrubbers, compliance with 2D .0515 is expected to be achieved. Testing for PM is not required.

ii. Monitoring/Recordkeeping Requirements

Particulate matter emissions from the above listed emission sources shall be controlled by their respective cyclones and wet scrubbers. To assure compliance, the Permittee shall perform inspections and maintenance as recommended by the manufacturer. In addition to the manufacturer's inspection and maintenance recommendations, or if there is no manufacturer's inspection and maintenance recommendations, as a minimum, the inspection and maintenance requirement shall include the following:

- (A) a monthly external visual inspection of the system ductwork and material collection unit for leaks;
- (B) an annual inspection of cyclone's structural integrity;
- (C) an annual inspection of spray nozzles and packing materials, and perform maintenance and repair when necessary to assure proper operation of the wet scrubbers; and
- (D) an annual inspection, cleaning, and calibration of all associated instrumentation.

The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0515 if the cyclones and wet scrubbers are not inspected and maintained.

The Permittee shall install, operate, and maintain a scrubbing liquid flowmeter on each wet scrubber. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0515 if the scrubbing liquid flow rate for each wet scrubber is not maintained above

the above prescribed limits or the scrubbing liquid flow meter is not installed and operated.

The permittee shall record the the results of any inspection and maintenance, and monitoring in a logbook. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0515 if these records are not maintained.

iii. Reporting Requirements

The Permittee shall submit a report of maintenance performed on cyclones and wet scrubbers within 30 days of request. The Permittee shall submit semiannually a summary report of monitoring, recordkeeping, or testing activities.

b. 2D .0516 "Sulfur Dioxide Emissions from Combustion Sources"

i. Regulatory Analysis

Sulfur dioxide emissions from any source of combustion that is discharged from any vent, stack, or chimney shall not exceed 2.3 pounds per million Btu heat input. There are no control devices to control emissions of sulfur dioxide.

Negligible SO₂ emissions are expected due to firing of natural gas. Compliance is expected. No testing is required to assure compliance with this requirement.

ii. Monitoring/Recordkeeping/Reporting Requirements

No monitoring/recordkeeping/reporting is required for sulfur dioxide emissions from the firing of natural gas in these sources.

c. 2D .0521 "Control Of Visible Emissions"

i. Regulatory Analysis

Visible emissions from the source shall not be more than 20 percent opacity when averaged over a six-minute period. However, six-minute averaging periods may exceed 20 percent not more than once in any hour and not more than four times in any 24-hour period. In no event shall the six-minute average exceed 87 percent opacity.

Testing for visible emission is not required.

ii. Monitoring/Recordkeeping Requirements

To assure compliance, once a day the Permittee shall observe the emission points from the above listed emission sources for any visible emissions above normal. The Permittee shall establish “normal” for the source in the first 30 days following the effective date of permit. If visible emissions from these sources are observed to be above normal, the Permittee shall either: (a) be deemed to be in noncompliance with 15A NCAC 2D .0521 or (b) demonstrate that the percent opacity from the emission points of the emission sources in accordance with 15A NCAC 2D .0501(c)(8) is below the limit given in Section VI. K. 2. c.i. above. If the demonstration in (b) above cannot be made, the Permittee shall be deemed to be in noncompliance with 15A NCAC 2D .0521.

The results of the monitoring shall be maintained in a logbook (written or electronic format) on-site and made available to an authorized representative upon request. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0521 if these records are not maintained.

iii. Reporting Requirements

The Permittee shall submit semiannually summary reports of the visible emission observations.

L. One natural gas-fired chopped strand mat line (8,400 lbs/hr nominal process rate, ID No. ESML74)

1. Description

Fiber glass strands are chopped into a flat screen to form a mat. A resin and water sprays are applied after which the chopped strand mat is heated by passing through an oven and then pressed before being wound into rolls.

2. Applicable Regulatory Requirements

The following provides a summary of emission and/or operation limits for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
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particulate matter	$E = 4.10P^{0.67}$ for P # 30 tons/hr $E = 55.0 P^{0.11} - 40$ for P >30 tons/hr where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
sulfur dioxide	2.3 lbs/million Btu	15A NCAC 2D .0516
visible emissions	40 percent opacity each	15A NCAC 2D .0521
toxic air pollutants	See Section VII. State-enforceable only	15A NCAC 2D .1100
odorous emissions	See Section VII. State-enforceable only	15A NCAC 2D .1806
toxic air pollutants	See Section VII. State-enforceable only	15A NCAC 2Q .0711

a. 2D .0515 “Particulates from Miscellaneous Industrial Processes”

i. Regulation Analysis

The allowable particulate emission limit from the source is calculated by the following equation:

$$E = 4.10P^{0.67}$$

where E = allowable emission rate for particulate matter in pounds per hour,

and P = process weight in tons per hour

Based on the process rate of 8,400 lbs/hr, the allowable PM emission rate is 10.7 lbs/hr. The Permittee has estimated the worst case potential PM emission rate of 5.04 lbs/hr based upon the EPA emission factor. Hence, compliance with the allowable PM emission limit is expected. Testing is not required for PM.

ii. Monitoring/Recordkeeping Requirements

The Permittee shall maintain production records sufficient to determine process weight rate and shall make these records available to a DAQ authorized representative upon request. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0515 if the production records are not maintained.

iii. Reporting Requirements

The Permittee shall submit semiannually a summary report of monitoring, recordkeeping, or testing activities.

b. 2D .0516 "Sulfur Dioxide Emissions from Combustion Sources"

i. Regulatory Analysis

Sulfur dioxide emissions from any source of combustion that is discharged from any vent, stack, or chimney shall not exceed 2.3 pounds per million Btu heat input. There are no control devices to control emissions of sulfur dioxide.

Negligible SO₂ emissions are expected due to firing of natural gas. Compliance is expected. No testing is required to assure compliance with this requirement.

ii. Monitoring/Recordkeeping/Reporting Requirements

No monitoring/recordkeeping/reporting is required for sulfur dioxide emissions from the firing of natural gas in this source.

c. 2D .0521 "Control Of Visible Emissions"

i. Regulatory Analysis

Visible emissions from the source shall not be more than 40 percent opacity when averaged over a six-minute period. However, six-minute averaging periods may exceed 40 percent not more than once in any hour and not more than four times in any 24-hour period. In no event shall the six-minute average exceed 90 percent opacity.

Testing for visible emission is not required.

ii. Monitoring/Recordkeeping Requirements

To assure compliance, once a week the Permittee shall observe the emission points from the above listed emission sources for any visible emissions above normal. The Permittee shall establish "normal" for the source in the first 30 days following the effective date of permit. If visible emissions from these sources are observed to be above normal, the Permittee shall either: (a) be deemed to be in noncompliance with 15A NCAC 2D .0521 or (b) demonstrate that the percent opacity from the emission points of the emission sources in accordance with 15A NCAC 2D .0501(c)(8) is below the limit given in Section VI. L. 2. c.i. above. If the demonstration in (b) above cannot be made, the Permittee shall be deemed to be in noncompliance with 15A

NCAC 2D .0521.

The results of the monitoring shall be maintained in a logbook (written or electronic format) on-site and made available to an authorized representative upon request. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0521 if these records are not maintained.

iii. Reporting Requirements

The Permittee shall submit semiannually summary reports of the visible emission observations.

M. One cartridge filter (3,048 square feet of filter area, ID No. 97EC) installed on one binder mix room ventilation (12, 000 lbs/hr nominal process rate, ID No. ES97)

1. Description

Organic raw materials are pumped, poured, weighed, and mixed to form an aqueous based binder to be applied to fiber glass strands. Transfer points and mixing tanks are vented to exhaust any fumes or dusts through a dust collector.

2. Applicable Regulatory Requirements

The following provides a summary of emission and/or operation limits for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter	$E = 4.10P^{0.67}$ for P # 30 tons/hr $E = 55.0 P^{0.11} - 40$ for P >30 tons/hr where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
visible emissions	20 percent opacity	15A NCAC 2D .0521
volatile organic compounds	See Section VII.	15A NCAC 2D .0958
toxic air pollutants	See Section VII. State-enforceable only	15A NCAC 2D .1100
odorous emissions	See Section VII. State-enforceable only	15A NCAC 2D .1806

toxic air pollutants	See Section VII. State-enforceable only	15A NCAC 2Q .0711
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a. 2D .0515 “Particulates from Miscellaneous Industrial Processes”

i. Regulation Analysis

The allowable particulate emission limit from the source is calculated by the following equation:

$$E = 4.10P^{0.67}$$

where E = allowable emission rate for particulate matter in pounds per hour,

and P = process weight in tons per hour

Based on the process rate of 12,000 lbs/hr, the allowable PM emission rate is 13.62 lbs/hr. The Permittee has estimated the worst case potential PM emission rate of 0.02 lbs/hr based upon the mass balance method. Hence, compliance with the allowable PM emission limit is expected. Testing is not required for PM.

ii. Monitoring/Recordkeeping Requirements

Particulate matter emissions from the above listed emission source shall be controlled by the cartridge filter. To assure compliance, the Permittee shall perform inspections and maintenance as recommended by the manufacturer. In addition to the manufacturer’s inspection and maintenance recommendations, or if there is no manufacturer’s inspection and maintenance recommendations, as a minimum, the inspection and maintenance requirement shall include the following:

- (A) a monthly visual inspection of the system ductwork and material collection unit for leaks; and
- (B) an annual (for each 12 month period following the initial inspection) internal inspection of the cartridge filter's structural integrity.

The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0515 if the ductwork and cartridge filter are not inspected and maintained.

The results of inspection and maintenance shall be maintained in a logbook. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0515 if these records are not maintained.

iii. Reporting Requirements

The Permittee shall submit results of any maintenance performed on the cartridge filter within 30 days of request from DAQ. The Permittee shall submit semiannually a summary report of monitoring, recordkeeping, or testing activities.

b. 2D .0521 "Control Of Visible Emissions"

i. Regulatory Analysis

Visible emissions from the source shall not be more than 20 percent opacity when averaged over a six-minute period. However, six-minute averaging periods may exceed 20 percent not more than once in any hour and not more than four times in any 24-hour period. In no event shall the six-minute average exceed 87 percent opacity.

Testing for visible emission is not required.

ii. Monitoring/Recordkeeping Requirements

To assure compliance, once a month the Permittee shall observe the emission points from the above listed emission sources for any visible emissions above normal. The Permittee shall establish "normal" for the source in the first 30 days following the effective date of permit. If visible emissions from these sources are observed to be above normal, the Permittee shall either: (a) be deemed to be in noncompliance with 15A NCAC 2D .0521 or (b) demonstrate that the percent opacity from the emission points of the emission sources in accordance with 15A NCAC 2D .0501(c)(8) is below the limit given in Section VI. M. 2. b.i. above. If the demonstration in (b) above cannot be made, the Permittee shall be deemed to be in noncompliance with 15A NCAC 2D .0521.

The results of the monitoring shall be maintained in a logbook (written or electronic format) on-site and made available to an authorized representative upon request. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0521 if these records are not maintained.

iii. Reporting Requirements

The Permittee shall submit semiannually summary reports of the visible emission observations.

N. One packed cross flow scrubber (34 gallons per minute minimum scrubbing liquid injection rate, ID No. CDWS96) installed on one caustic brush cleaning system (2,600 lbs/hr nominal process rate, ID No. ESCC96)

1. Description

Fiber glass process equipment is placed in a molten caustic bath to dissolve glass residue so that the metal can be reprocessed. An area exhaust system utilizes a wet scrubber to capture any carryover of caustic droplets or vapors.

2. Applicable Regulatory Requirements

The following provides a summary of emission and/or operation limits for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter	$E = 4.10P^{0.67}$ for P # 30 tons/hr $E = 55.0 P^{0.11} - 40$ for P >30 tons/hr where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
visible emissions	20 percent opacity	15A NCAC 2D .0521
volatile organic compounds	See Section VII.	15A NCAC 2D .0958
toxic air pollutants	See Section VII. State-enforceable only	15A NCAC 2D .1100
odorous emissions	See Section VII. State-enforceable only	15A NCAC 2D .1806
toxic air pollutants	See Section VII. State-enforceable only	15A NCAC 2Q .0711

a. 2D .0515 “Particulates from Miscellaneous Industrial Processes”

i. Regulation Analysis

The allowable particulate emission limit from the source is calculated by the following equation:

$$E = 4.10P^{0.67}$$

where E = allowable emission rate for particulate matter in pounds per hour,
and P = process weight in tons per hour

Based on the process rate of 2,600 lbs/hr, the allowable PM emission rate is 4.89 lbs/hr. The Permittee has estimated the worst case potential PM emission rate of 0.1 lbs/hr based upon the mass balance method. Hence, compliance with the allowable PM emission limit is expected. Testing is not required for PM.

ii. Monitoring/Recordkeeping Requirements

Particulate matter emissions from the above listed emission source shall be controlled by the wet scrubber. To assure compliance, the Permittee shall perform inspections and maintenance as recommended by the manufacturer. In addition to the manufacturer's inspection and maintenance recommendations, or if there is no manufacturer's inspection and maintenance recommendations, as a minimum, the inspection and maintenance requirement shall include the following:

- (A) a monthly external visual inspection of the system ductwork and material collection unit for leaks;
- (B) an annual inspection of spray nozzles and packing materials, and perform maintenance and repair when necessary to assure proper operation of the wet scrubber; and
- (C) an annual inspection, cleaning, and calibration of all associated instrumentation.

The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0515 if the wet scrubber is not inspected and maintained.

The Permittee shall install, operate, and maintain a scrubbing liquid flowmeter on the wet scrubber. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0515 if the scrubbing liquid flow rate is not maintained above the above prescribed limit or the scrubbing liquid flow meter is not installed and operated.

iii. Reporting Requirements

The Permittee shall submit results of any maintenance performed on the wet scrubber within 30 days of request from DAQ. The Permittee shall submit semiannually a

summary report of monitoring, recordkeeping, or testing activities.

b. 2D .0521 "Control Of Visible Emissions"

i. Regulatory Analysis

Visible emissions from the source shall not be more than 20 percent opacity when averaged over a six-minute period. However, six-minute averaging periods may exceed 20 percent not more than once in any hour and not more than four times in any 24-hour period. In no event shall the six-minute average exceed 87 percent opacity.

Testing for visible emission is not required.

ii. Monitoring/Recordkeeping Requirements

To assure compliance, once a week the Permittee shall observe the emission points from the above listed emission source for any visible emissions above normal. The Permittee shall establish "normal" for the source in the first 30 days following the effective date of permit. If visible emissions from these sources are observed to be above normal, the Permittee shall either: (a) be deemed to be in noncompliance with 15A NCAC 2D .0521 or (b) demonstrate that the percent opacity from the emission points of the emission sources in accordance with 15A NCAC 2D .0501(c)(8) is below the limit given in Section VI. N. 2. b.i. above. If the demonstration in (b) above cannot be made, the Permittee shall be deemed to be in noncompliance with 15A NCAC 2D .0521.

The results of the monitoring shall be maintained in a logbook (written or electronic format) on-site and made available to an authorized representative upon request. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0521 if these records are not maintained.

iii. Reporting Requirements

The Permittee shall submit semiannually summary reports of the visible emission observations.

O. Four diesel-fired generators (1200, 1200, 1800, and 1800 horsepower respectively, ID Nos. ESDG85, ESDG86, ESDG88A, and ESDG88B)

1. Description

These are emergency use generators.

2. Applicable Regulatory Requirements

The following provides a summary of emission and/or operation limits for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
sulfur dioxide	2.3 pounds per million Btu heat input	15A NCAC 2D .0516
visible emissions	20 percent opacity each (ID Nos. ESDG88A and ESDG88B) 40 percent opacity each (ID Nos. ESDG85 and ESDG86)	15A NCAC 2D .0521
nitrogen oxide	40 tons per consecutive 12 month period	15A NCAC 2D .0530 (PSD Avoidance)
toxic air pollutants	as defined in specific conditions, Section 2.2 C.1. State-enforceable only	15A NCAC 2D .1100
odorous emissions	as defined in specific conditions, Section 2.2 C.2. State-enforceable only	15A NCAC 2D .1806
toxic air pollutants	as defined in specific conditions, Section 2.2 C.3. State-enforceable only	15A NCAC 2Q .0711

a. 2D .0516 "Sulfur Dioxide Emissions from Combustion Sources"

i. Regulatory Analysis

Sulfur dioxide emissions from any source of combustion that is discharged from any vent, stack, or chimney shall not exceed 2.3 pounds per million Btu heat input. There are no control devices to control emissions of sulfur dioxide.

Negligible SO₂ emissions are expected due to low concentration of sulfur (< 0.25% w) in diesel fuel. Compliance is expected. No testing is required to assure compliance with this requirement.

ii. Monitoring/Recordkeeping/Reporting Requirements

No monitoring/recordkeeping/reporting is required for sulfur dioxide emissions from the firing of natural gas in this source.

b. 2D .0521 "Control Of Visible Emissions"

i. Regulatory Analysis

Visible emissions from the source shall not be more than 20 percent opacity (ID Nos. ESDG88A and ESDG88B) or 40 percent opacity ID Nos. ESDG85 and ESDG86.

Testing for visible emission is not required.

ii. Monitoring/Recordkeeping Requirements

To assure compliance, once a month the Permittee shall observe the emission points from the above listed emission source for any visible emissions above normal. The Permittee shall establish "normal" for the source in the first 30 days following the effective date of permit. If visible emissions from these sources are observed to be above normal, the Permittee shall either: (a) be deemed to be in noncompliance with 15A NCAC 2D .0521 or (b) demonstrate that the percent opacity from the emission points of the emission sources in accordance with 15A NCAC 2D .0501(c)(8) is below the limit given in Section VI. O. 2. b.i. above. If the demonstration in (b) above cannot be made, the Permittee shall be deemed to be in noncompliance with 15A NCAC 2D .0521.

The results of the monitoring shall be maintained in a logbook (written or electronic format) on-site and made available to an authorized representative upon request. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0521 if these records are not maintained.

iii. Reporting Requirements

The Permittee shall submit semiannually summary reports of the visible emission observations.

c. 2D .0530 "Prevention of Significant Deterioration (PSD Avoidance)"

i. Regulatory Analysis

To comply with this permit and avoid the applicability of 15A NCAC 2D .0530 "Prevention of Significant Deterioration," as requested by the Permittee, nitrogen oxide emissions from emergency generators (ID Nos. ESDG85, ESDG86, ESDG88A, ESDG88B) shall not exceed 40 tons per consecutive 12-month period.

Testing for NOx is not required.

ii. Monitoring/Recordkeeping Requirements

In order to ensure compliance with the above limit, each emergency generator shall be limited to no more than 1000 hours of operation per consecutive 12 month period. The Permittee shall record monthly hours of operation for each emergency generator. The Permittee shall keep each monthly record on file for a minimum of three years. The permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if the above records are not kept or if the hours of operation for each emergency generator exceed 1000 hours per consecutive 12 month period.

iii. Reporting Requirements

The Permittee shall submit quarterly summary reports of the total hours of operation for each emergency generator for the previous fourteen (14) months.

P. Two natural gas/No. 2 fuel oil fired boilers (25.1 million Btu/hr each, ID Nos. ES83A and ES83B)

1. Description

These are natural gas/No. 2 fuel oil fired boilers.

2. Applicable Regulatory Requirements

The following provides a summary of emission and/or operation limits for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulates	0.40 lb/million Btu heat input each	15A NCAC 2D .0503
sulfur dioxide	2.3 lbs/million Btu heat input each	15A NCAC 2D .0516
visible emissions	20 percent opacity each	15A NCAC 2D .0521
toxic air pollutants	See Section VII. State-enforceable only	15A NCAC 2D .1100
odorous emissions	See Section VII. State-enforceable only	15A NCAC 2D .1806

toxic air pollutants	See Section VII. State-enforceable only	15A NCAC 2Q .0711
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a. 2D .0503 “Particulates from Fuel Burning Indirect Heat Exchangers”

i. Regulatory Analysis

These boilers are subject to 2D .0503(a) since natural gas and No. 2 fuel oil are burned for the primary purpose of producing heat by indirect heat transfer. Allowable emissions of particulate matter from fuel combustion shall be calculated as follows:

$$E = 1.090 \times Q^{0.2594}$$

Where E = allowable particulate emission rate per boiler, pounds per million Btu

Q = facility wide maximum heat input rate, million Btu per hour

The facilitywide heat input is 50.2 million Btu/hr. Hence, the allowable emission PM rate is 0.40 lb/million Btu. The permittee has estimated the worst case potential PM emission rate of 0.61 lb/hr which equates to 0.024 lb/million Btu. Hence, compliance is expected with this requirement.

ii. Monitoring/Recordkeeping/Reporting Requirements

No monitoring, recordkeeping or reporting is required.

b. 2D .0516 "Sulfur Dioxide Emissions from Combustion Sources"

i. Regulatory Analysis

Sulfur dioxide emissions from any source of combustion that is discharged from any vent, stack, or chimney shall not exceed 2.3 pounds per million Btu heat input. There are no control devices to control emissions of sulfur dioxide.

Negligible SO₂ emissions are expected due to low concentration of sulfur in natural gas (negligible) and fuel oil (0.3%w). Compliance is expected. No testing is required to assure compliance with this requirement.

ii. Monitoring/Recordkeeping/Reporting Requirements

No monitoring/recordkeeping/reporting is required for sulfur dioxide emissions from the firing of natural gas in this source.

c. 2D .0521 "Control Of Visible Emissions"

i. Regulatory Analysis

Visible emissions from these sources shall not be more than 20 percent opacity.

ii. Monitoring/Recordkeeping Requirements

No monitoring/recordkeeping/reporting is required for visible in this sources.

VII. Multiple Emission Source Limits

Furnace Nos. 520, 524, and 526 are subject to NSPS Subpart CC “Standards of Performance for Glass Manufacturing Plants”. The applicable requirements for emission standards, testing, monitoring, recordkeeping, and reporting will be included in the permit.

Emission sources; binder mix ventilation (ID No. ES97) and caustic brush cleaning system (ID No. ECC96) are subject to the requirements of work practice standards for VOC emissions under 2D .0958. This requirement will be included in the permit.

The facility is subject to the requirements of 2D .1100 and .1806, and 2Q .0711. These requirements will also be included in the permit.

Finally, the facility is subject to the requirements of SOC 2002-002 for the compliance issues associated with 2D .0521, .0524, and .0530. The SOC includes the implementation schedule for conversion to EFB technology for each furnace and the subsequent stack testing requirement for each furnace for opacity, PM, fluorides etc. All requirements of this SOC will be included in the permit.

VIII. MACT Applicability and Requirements

The facility is not subject to any MACT standard.

IX. Permit Shield (including non-applicable requirements)

In accordance with 2Q .0512 the permit will contain a provision stating that compliance with the terms, conditions, and limitations of the Title V permit shall be deemed in compliance with applicable requirements specifically identified in the permit, as of the date of permit issuance. If the permit does not expressly state that a permit shield exists then it shall be presumed not to

provide such a shield.

X. Insignificant Activities

The insignificant activities listed in the application have been reviewed and verified. Those sources which qualify for exemption from permitting under regulation NCAC 2Q .0503(8) will be attached to the cover letter of the permit.

Because an emission source or activity is insignificant does not mean that the emission source or activity is exempted from any applicable requirement or that the owner or operator of the source is exempted from demonstrating compliance with any applicable requirement.

XI. General Conditions

The "General Conditions" section of the Title V Operating Permit lists additional applicable rule requirements that the permittee must adhere to, as with any other permit condition. These requirements in general are common to all Title V facilities. The general conditions include provisions such as annual fee payment, permit renewal and expiration, transfer of ownership or operation, property rights, submission of documents, inspections and entry procedures, reopen for cause, and severability.

XII. Public Notice

Pursuant to 15A NCAC 2Q .0521, a notice for public hearing and comment period for the DRAFT Title V Operating Permit will be placed in the newspaper of general circulation in the area where the facility is located. The notice will provide for a 30 day comment period and a public hearing date. Copies of the public notice were also sent to persons included in the Title V mailing list, and EPA. In addition, notice of the DRAFT permit and opportunity for participation were given to any affected state on or before the time that the notice is provided to the public. Affected states as specified by 15A NCAC 2Q .0503(1) and 40 CFR 70.8(b) were South Carolina, Georgia, Tennessee and Virginia; North Carolina local air pollution control programs for Western North Carolina Regional Air Quality Agency (Buncombe County only), Mecklenburg County and Forsyth County; and the Catawba Indian Nation in York County, South Carolina and the Eastern Band of Cherokee Indians in Swain, Jackson and Graham Counties, North Carolina.

XIII. Recommendations

The initial Title V application for the PPG facility has been reviewed by the DAQ to determine compliance with all procedures and requirements under 15A NCAC 2Q .0500 and 40 CFR Part 70. The DAQ has made a determination that the facility is complying or will achieve

compliance as specified in the proposed permit with all applicable requirements. DAQ will propose the draft permit for comments through a newspaper notice.