NORTH CAROLINA DIVISION OF AIR QUALITY

Application Review

Issue Date:

Region: Mooresville Regional Office
County: Stanly
NC Facility ID: 8400013
Inspector's Name: Denise Hayes
Date of Last Inspection: 09/09/2021
Compliance Code: B / Violation - emissions

Facility Data

Applicant (Facility's Name): Carolina Stalite Company

Facility Address:
Carolina Stalite Company
12423 Old Aquadale Road
Norwood, NC 28128

SIC: 3295 / Minerals, Ground Or Treated
NAICS: 212399 / All Other Nonmetallic Mineral Mining

Facility Classification: Before: Title V **After:** Title V
Fee Classification: Before: Title V **After:** Title V

Permit Applicability (this application only)

SIP: 02D .0511, .0515, .0516, .0521, .0524, .0530, .0614, .1100, .1806,
NSPS: Subpart UUU
NESHAP:
PSD:
PSD Avoidance: 02Q .0317
NC Toxics: 02D .1100
112(r):
Other:

Contact Data

Facility Contact	Authorized Contact	Technical Contact
Joe Konzelmann Environmental Compliance Supervisor (704) 279-2166 PO Box 1037 Salisbury, NC 28145+1037	Jody Wall General Manager (704) 636-5231 PO Box 1037 Salisbury, NC 28145+1037	Tim Agner Manager of Engineering Services (704) 279-2166 PO Box 1037 Salisbury, NC 28145+1037

Application Data

Application Number: 8400013.21A
Date Received: 12/30/2020
Application Type: Renewal
Application Schedule: TV-Renewal

Existing Permit Data
Existing Permit Number: 03225/T42
Existing Permit Issue Date: 08/29/2017
Existing Permit Expiration Date: 09/30/2021

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2020	214.01	92.79	0.0100	0.2000	9.11	0.1988	0.1375 [Fluorides (sum of all fluoride]
2019	213.70	92.71	0.0100	0.2000	9.19	0.2315	0.1605 [Fluorides (sum of all fluoride]
2018	247.57	118.42	0.0100	0.2000	11.46	0.2870	0.1995 [Fluorides (sum of all fluoride]
2017	29.25	16.31	---	0.0400	3.85	0.3772	0.2805 [Fluorides (sum of all fluoride]
2016	---	---	---	---	0.0200	---	.00E+00 [Antimony & Compounds (total ma]

Review Engineer: Urva Patel

Review Engineer's Signature: **Date:**

Comments / Recommendations:
Issue 03225/T43
Permit Issue Date:
Permit Expiration Date:

1. Purpose of Application:

Currently, Carolina Stalite Company (Carolina Stalite) holds Title V Permit No. 03225T42 with an expiration date of September 30, 2021. The Title V renewal permit application (**Application No. 8400013.21A**) was received on January 26, 2021, which was at least six months prior to the expiration date of the Title V permit. Therefore, the existing permit shall not expire until the renewal permit has been issued or denied. All terms and conditions of the existing permit shall remain in effect until the renewal permit has been issued or denied.

2. Facility Description:

Carolina Stalite Company Aquadale Properties, LLC (Carolina Stalite) currently operates a lightweight aggregate plant at Norwood, NC. Carolina Stalite crushes shale to make lightweight aggregate and manufactured soil for sale. The facility processes the aggregate in kilns that are permitted to burn coal, and fuel oil to make lightweight aggregate for the construction industry. The aggregate raw material, in the form of rock, is received from an adjacent quarry, heat expanded in the kilns, and then crushed and screened to size.

Air emission activities at the facility include direct fired rotary kilns for heating and expanding Argillite Slate to produce light weight aggregate (LWA). The expanded LWA material is crushed, screened, and sized for shipping. General operations include conveying, handling, and storage activities. Carolina Stalite is currently permitted for three LWA kilns (ID Nos. ES-7, ES-8, and ES-9). Two of these, kiln Nos. 7 and 8, have been installed and are operational. However, kiln No. 7 was shut down on October 26, 2010 due to economic reasons and has not been operated since that time. The third kiln, No. 9, has not yet been installed. Once kiln No. 9 commences operation, kiln No. 7 is no longer allowed to operate. All three kilns are permitted to burn coal, No 2-fuel oil, and natural gas. Wheel loaders are used to load material into trucks and rail cars for shipment to Carolina Stalite customers.

Manufactured Soil:
Carolina Stalite blends lightweight aggregate with other quality natural products to create custom soils used in various horticultural and other non-structural applications. These materials are mixed on site with a loader, and shipped in bulk. Materials used in Carolina Stalite Manufactured Soils are LWA, compost, local soils, sand, and brick chips.

When in operation, the facility normally operates seven days per week.

Carolina Stalite is a major source under Prevention of Significant Deterioration (PSD) rules and has undergone Best Available Control Technology (BACT) analyses as discussed below. Carolina Stalite is also a minor source of hazardous air pollutants (HAPs).

3. History / Background / Application Chronology:

Permit History

October 10, 2016	Air Quality Permit No. 03225T41 was issued with a permit expiration date of September 30, 2021 for renewal of the air permit.
August 29, 2017	Air Quality Permit No. 03225T42 issued with an expiration date of September 30, 2021. This minor modification included replacement of the existing bagfilter (ID No. CD-8B; 4:1 air to cloth ratio) with another unit.

Application Chronology

January 26, 2021	Received this application for TV-renewal (8400013.21A).

January 26, 2021	Sent acknowledgement letter indicating that the application (8400013.21A) for Title V permit renewal was complete.
August 10, 2021	Draft permit and technical review sent to Supervisor for internal comment prior to external comment.
January 5, 2022	Sent query to the facility regarding the operational status of kilns ES-7 and ES-9 and a detailed facility description. Response to the query received on January 18, 2022.
January 14, 2022	Sent query to regional office (Ms. Denise Hayes) regarding status of emission sources **(ID Nos. ES-MSH-1, ES-MSH-2, ES-MSH-3, ES-MSH-4, ES-MSC-1, ES-MSC-2, ES-MSC-3, ES-MSL-1, and ES-7)** and received response on January 18, 2022. Please, see Section 6 for detailed information.
Date, 2021	Draft permit and technical review sent to Applicant, Regional Office, and SSCB for comment prior to public notice and EPA review.
Date, 2021	Draft permit and technical review sent to 30-day public and 45-day EPA review periods,
Date, 2021	Renewed permit issued.

4. Summary of Changes to the Existing Permit (Permit No. 03225T42):

Page No.	Section	Description of Changes
Cover Letter	N/A	• Updated cover letter with application number, permit numbers, dates, fee class, PSD increment statement, and Director name.
Permit Cover	N/A	• Inserted new issuance and complete application date, application number, facility information.
3	--	• "List of Acronyms" has been moved to Page 3 of the permit.
Permit	Section 1 and 2	• Revised formatting and font size as per current permit shell.
9 15 23 27	2.1 A. Table 2.1 B. Table 2.1 C. Table 2.1 D. Table	• Revised table – summary of limits and/or standard as per the most current permitting language.
12 17 25	2.1 A.4.d 2.1 B.3.c 2.1 C.3.d	• Revised "Monitoring" for all permit condition as per the most current permitting language.
10 11 13 15 17 18 21 22 24 25 28 30 32 34 37	2.1 A.1.g 2.1 A.2.h 2.1 A.4.f 2.1 B.1.h 2.1 B.3.e 2.1 B.4.h 2.1 B.5.n 2.1 B.6.e 2.1 C.1.e 2.1 C.3.f 2.1 D.2.e 2.1 E.1.i 2.1 E.3.k 2.1 E.5.d 2.2 A.1.p	• Revised "Reporting" for all permit condition as per the most current permitting language.
14	2.1 B	• Revised "Heading" as per permitted emission sources table - Section 1.
15	2.1 B.1.d	• Revised permit condition as per kilns testing requirements.

Page No.	Section	Description of Changes
16	2.1 B.2.d	• Revised monitoring condition as per current permit language.
19	2.1 B.5.g	• Revised testing condition as per completion of test on Kiln 8.
19	2.1 B.5.j	• Revised Monitoring/Recordkeeping permit condition as per current permit language.
20	2.1 B.5.k	• Revised Monitoring/Recordkeeping permit condition as per current permit language.
21	2.1 B.6	• Revised permit condition formatting as per current shell.
22	2.1 B.6.d	• Revised permit condition formatting as per current shell and current permit language.
30	2.1 E.2.e	• Revised permit condition formatting as per current shell and current permit language.
50	2.2 B.1.b.iv	• Removed requirement of testing of benzene ad nickel for Kiln 8.
51	2.2 C.1	• Added 15A NCAC 02Q. 0504 for these emission sources (**ID Nos. ES-9, RCS-91, RCS-94, RCS-95, FCS-44, FCS-45, FCS-46, FCS-47, RCS-92, RCS-93, DS-3C, FP-2, CCH-3**, **CCS-1, CCB-4, and CCB-5**) and control devices (**ID Nos. CD-9B, DS-3CB, FCS-44S, FCS-47S and FP-2S**)
53	Section 3	• Moved "List of Insignificant Activities" to Section 2.3 in accordance with the updated formatting for TV permits.
54	Section 4	• Updated General Conditions from version 5.1 (08/03/2017) to current shell version 6 (01/07/2022).

5. Compliance Status:

Division of Air Quality (DAQ) has reviewed the compliance status of this facility. During the most recent inspection conducted on September 09, 2021, Denise Hayes of the Mooresville Regional Office indicated that the facility appeared to be in compliance with all applicable requirements. Additionally, a signed Title V Compliance Certification (Form E5) indicating that the facility was in compliance with all applicable requirements was submitted with Application No. 8400013.21A.

Five-year Compliance History:

- On March 24, 2022, Notice of Violation (NOV) and Notice of Recommendation of Enforcement was issued for not complying with the SO_2 emissions limit in Specific Condition 2.1.B.2 of Air Permit No. 03225T42. There were two (2) exceedances of the applicable standard, which occurred on July 27, 2021 (2.4 lb/MMBtu) and October 30, 2021 (2.6 lb/MMBtu) from unknown causes.
- The facility was inspected on September 9, 2021 and appeared to be in compliance with all applicable air quality regulations.
- On January 22, 2021, Notice of Violation (NOV) was issued for failure to perform the required test on the lightweight aggregate kiln (**ID No. ES-8**) on-time. (with in required timeframe). This issue was resolved on March 9, 2021.
- The facility was inspected on August 31, 2020 and appeared to be in compliance with all applicable air quality regulations.
- On June 11, 2019, NOV was issued for inadequate monitoring of the wet suppression systems (**ID Nos. APJC-1S, FCS-6S, and FCS-3S**) installed on the crushers (**ID Nos. APJC-1, FCS-2, and FCS-3**) for proper operation.
- On July 29, 2019, Facility sent NOV response.
- The facility was inspected on May 21, 2019 and appeared in violation of 15A NCAC 02D .0511 for not performing the required daily monitoring and recordkeeping. The facility appeared to be in compliance with all other applicable air quality regulations.

- The facility was inspected on August 23, 2018 and appeared to be in compliance with all applicable air quality regulations.
- On February 7, 2018, Notice of Deficiency (NOD) was issued for late quarterly report.
- On December 19, 2017, NOV was issued for failure to monitoring, recordkeeping and reporting of SO_2 (Sulfur Dioxide) CEMS (Continuous Emission Monitoring System) which results in exceedance of SO_2 emission limits. Malfunction incident reports indicated absence of corrective actions to the malfunction incident.
- The facility was inspected on March 28, 2016 and appeared to be in compliance with all applicable air quality regulations.

6. New/Modified Equipment/Changes in Emissions:

This application is submitted as Title V – renewal. There is no modification/change associated with this permit application.

On January 28, 2022 Mr. Tim Agner responded on following DAQ query:

DAQ 1. Please, provide detailed facility description including manufacturing of aggregate and manufactured soil, PSD status, current major source status etc.

Facility Response:

Facility Description:

The Carolina Stalite Company, Aquadale Properties, LLC Aquadale facility is located at 12423 Old Aquadale Road, Norwood, North Carolina. Air emission activities at the facility include direct fired rotary kilns for heating and expanding Argillite Slate to produce light weight aggregate (LWA). The expanded LWA material is crushed, screened, and sized for shipping. General operations include conveying, handling, and storage activities. There are two existing LWA kilns, No. 7 and No. 8. The kilns are permitted to burn coal, No 2-fuel oil, and natural gas. Wheel loaders are used to load material into trucks and rail cars for shipment to Stalite customers.

Manufactured Soil:

Stalite blends lightweight aggregate with other quality natural products to create custom soils used in various horticultural and other non-structural applications. These materials are mixed on site with a loader and shipped in bulk. Materials used in Stalite Manufactured Soils are LWA, compost, local soils, sand, and brick chips.

PSD:

PSD emission limits are maintained for all sources as per the applicable air quality permit requirements. Best Available Control Technology (BACT) remains unchanged at the current time. Stalite continues limited construction on future PSD sources.

Major Sources:

Kiln 7 (ES-7) is NOT operating at this time; it could be operational if additional production were required. Stalite continues to operate Kiln 8 (ES-8) and will continue construction of Kiln 9 (ES-9).

DAQ 2. Please, provide shut-down date for Kiln (ID No. ES-7). Would you like to remove ES-7 from the permit?

Facility Response:

Kiln 7 (ES-7) was shut down on October 26, 2010 due to economic reason. Stalite would like to keep Kiln 7 in the permit until the construction of Kiln 9 is complete and the unit is operational as noted in the current permit.

DAQ 3. Please, provide the status of ES-9 operation at present.
Facility Response:

Due to economic conditions Stalite will continue limited construction annually to maintain the current status of the ES-9 construction permit. Stalite plans to intensify construction of Kiln 9 (ES-9) during this permit cycle, providing economic conditions improve.

As per email from Ms. Denise Hayes (Mooresville Regional Office) on January 18, 2022, the material feed hoppers (**ID Nos. ES-MSH-1 through ES-MSH-4**), conveyors (**ID Nos. ES-MSC-1 through ES-MSC-3**) and loader (**ID No. ES-MSL-1**) have not been installed. The facility is currently just using a frontend loader for the manufactured soil operation.

7. Regulatory Review – State Rules

Carolina Stalite is subject to following regulations. Unless specifically noted, a detailed discussion of the following list of permit conditions is not included as applicability status has not changed. For some regulations below, more discussion is provided for clarification and background, as necessary. When necessary, the permit was updated to reflect the most current requirements and permit language for all applicable regulations. DAQ has reviewed the regulations and other than the changes discussed below, no changes to the permit are required. The facility is expected to be in continued compliance.

- 15A NCAC 02D .0501(e): COMPLIANCE WITH NATIONAL AMBIENT AIR QUALITY STANDARDS
  This facility is subject to this regulation. Compliance is achieved by the Permittee limiting raw material storage, finished product storage, coal storage, raw material processed, and total coal combusted to levels specified in the condition.

  In accordance with 15A NCAC 02D .0501(e), Carolina Stalite previously demonstrated via air modeling the alternative mix of controls as allowed under 15A NCAC 02D .0501(d) was equivalent to the existing requirements of the state implementation plant (SIP) in total allowed emissions, enforceability, reliability, and environmental impact. This requirement mandates the emission source be operated in association with a control device or in such manner that the emission source will not violate the 02D .0400 ambient air quality standards for total suspended particles (TSP), PM_{10}, and sulfur dioxide (SO_2). The modeling analysis was based upon the limitations specified in Section 2.2 A.1 in the air permit. Carolina Stalite has to conduct monitoring, recordkeeping, and reporting to ensure compliance with the limitations. No other changes to the permit are required, and continued compliance is expected.

- 15A NCAC 02D .0511: PARTICULATES FROM LIGHTWEIGHT AGGREGATE PROCESSES
  This regulation requires that the Permittee not cause, allow, or permit any material to be produced, handled, transported, or stockpiled without taking measures to reduce to a minimum any particulate matter from becoming airborne to prevent the ambient air quality standards for particulate matter, both PM_{10}, and total suspended particulates, from being exceeded beyond the property line. In addition, emissions from all crushers shall be controlled by wet suppression. The Permittee has installed (or will install prior to operation) water sprays where needed for compliance.
  The following emission sources at Carolina Stalite are subject to this rule:
  - One portable self-propelled jaw crusher with integral feeder and conveyor is controlled by water spray (**ID No. APJC-1S**) - Compliance with this regulation is demonstrated by conducting daily observations for each day of calendar year period, recordkeeping, and reporting.

- Two short head crushers (**ID Nos. FCS-2 and FCS-3**) are controlled by water sprays (**ID Nos. FCS-6S and FCS-3S,** respectively) - Compliance with this regulation is demonstrated by – conducting daily observations for each day of calendar year period, recordkeeping, and reporting.
- Conveyors, screens, and transfer points **(ID Nos. RCS-12, RCS-23 through RCS-30, RCS-91, RCS-94, RCS-95, APJC-1, FCS-2 through FCS-5, FCS-8, FCS-10 through FCS-14, FCS-17, FCS-19, FCS-20, FCS-22 through FCS-30, FCS-36, FCS-38 through FCS-47, FCS-C1 through FCS-C5, FP, FP-2, PS-1, PSC-1 through PSC-5, PSH-1 and ATS**-1) – Compliance with this regulation is demonstrated by controlling particulate matter emissions from conveyors and transfer points such that the applicable opacity standards in 02D .0521 are not exceeded.
- Kiln (**ID No. ES-7**) associated with bagfilter (**ID No. CD-7B**), and Kiln (**ID No. ES-8**) associated with bagfilter (**ID No. CD-8B**) – Compliance with this regulation is demonstrated by taking a measure to reduce to a minimum any particulate matter from becoming airborne to prevent the ambient air quality standards for particulate matter, both PM_{10} and total suspended particulates, from being exceeded beyond the property line and reduce PM by at least 95% by weight before being discharge to the atmosphere by testing the bagfilter (**ID Nos. CD-7B and CD-8B**); by inspections and maintenance of the bagfilters as recommended by the manufacturer, monthly visual inspection of ductwork and material collection unit for leaks, annual internal bagfilter inspection and maintenance, recordkeeping, and reporting.
  PM test was performed on Kiln 8 (**ID No. ES-8**) on September 25, 2018, to verify compliance with this regulation. It resulted in 99.7% of reduction of PM which is above the 95% of total PM reduction.

- Kiln feed coal hopper (**ID No. CCH-2**), Coal hopper (**ID No. CCH-3**), Kiln coal conveyor belts (**ID Nos. CCB-2 and CCB-3**), Coal conveyor (**ID Nos. CCB-4 and CCB-5**), Coal storage area (**ID No. CCS**) – Compliance with this regulation is demonstrated by controlling particulate matter emissions from conveyors, transfer points, hoppers and storage area such that the applicable opacity standards in 02D .0521 are not exceeded.
- Manufactured soil operation included Pile Activities **(ID No. ES-MSO),** Four 20 ton Material Feed Hoppers **(ID Nos. ES-MSH-1, ES-MSH-2, ES-MSH-3 and ES-MSH-4),** Two Material Conveyors (24 inches wide each) **(ID Nos. ES-MSC-1 and ES-MSC-2),** One Radial Stacker Conveyor **(ID No. ES-MSC-3),** One Portable Loader (Super Sac Bagger) **(ID No. ES-MSL-1**) – Compliance with this regulation is demonstrated by taking a measure to reduce to a minimum any particulate matter from becoming airborne to prevent the ambient air quality standards for particulate matter, both PM_{10} and total suspended particulates, from being exceeded beyond the property line and controlling particulate matter emissions from manufactured soil operation such that the applicable opacity standards in 02D .0521 are not exceeded. No monitoring, recordkeeping and reporting is required.
- Kiln (**ID No. ES-9**) associated with the bagfilter (**ID No. CD-9B**) - Compliance with this regulation is demonstrated by taking a measure to reduce to a minimum any particulate matter from becoming airborne to prevent the ambient air quality standards for particulate matter, both PM_{10} and total suspended particulates, from being exceeded beyond the property line and reduce PM by at least 95% by weight before being discharge to the atmosphere by testing the bagfilter (**ID No. CD-9B**); by inspections and maintenance of the bagfilters as recommended by the manufacturer, monthly visual inspection of ductwork and material collection unit for leaks, annual internal bagfilter inspection and maintenance, recordkeeping, and reporting.

- 15A NCAC 02D .0515: PARTICULATES FROM MISCELLANEOUS INDUSTRIAL PROCESSES
  This rule applies to stacks, vents, or outlets emitting particulates from industrial processes with no other applicable standards. The allowable emission rate is in terms of pounds per hour and is calculated using the following equations:

For process rates up to 30 tons per hour:
$E = 4.10(P)^{0.67}$

For process rates greater than 30 tons per hour:
$E = 55.0(P)^{0.11} - 40$

Where: E = Allowable emission rate in pounds per hour
P = Process weight in tons per hour

The following emission sources at Carolina Stalite Company are subject to 02D .0515:

- The raw material storage silos **(ID Nos. RCS-18 through RCS-20, RCS-92, RCS-93)** - Particulate matter emissions are uncontrolled. Compliance is demonstrated by maintaining records of the process weight. No reporting requirements are required.
- The dust silo **(ID No. DSC-1)** is controlled by one bagfilter **(ID No. DSC-1B)** installed on the inlet and water spray installed on the screw auger dust unloading system **(ID No. DSC-2B)**. The dust silo **(ID No. DS-3C)** is controlled by one bagfilter **(ID No. DS-3CB)** - Compliance is demonstrated by inspections and maintenance as recommended by the manufacturer, monthly visual inspection of ductwork and material collection unit for leaks, annual internal bagfilter inspection, maintenance, recordkeeping, and reporting.
- The coal silo **(ID No. CCS-1)** - Particulate matter emissions are uncontrolled. Compliance is demonstrated by maintaining records of the process weight. No reporting requirements are required.

- 15A NCAC 02D .0516: SULFUR DIOXIDE EMISSIONS FROM COMBUSTION SOURCES
This regulation applies to any source of combustion that emits sulfur dioxide, which is formed by the combustion of sulfur in fuels, wastes, ores, and other substances. This rule does not apply to sources subject to sulfur dioxide standards in NSPS and MACT standards under 02D .0524 and .1111, respectively. Sources subject to this standard have an emission limit of 2.3 pounds of sulfur dioxide per million BTU heat input. The following emission sources at Carolina Stalite Company are subject to this rule:
  - Engines **(ID Nos. PSG-1, APJC-1-Eng, and ATS-1-Eng) -** Compliance with this regulation is demonstrated by fuel supplier sampling when No. 4 fuel oil or No. 6 fuel oil is being combusted in this source. No monitoring/recordkeeping/reporting is required.
  - Two lightweight aggregate kilns including clinker coolers (**ID Nos. ES-7 and ES-8**) with associated bagfilters (**ID Nos. CD-7B and CD-8B,** respectively) - Compliance with this regulation is demonstrated by monitoring, recordkeeping, and reporting sulfur dioxide CEMS data. a sulfur dioxide CEMS (including any required diluent monitor system) is installed on the exhaust stack of each kiln **(ID Nos. ES-7 and ES-8)** for monitoring and recordkeeping purposes. Semiannual reporting of a sulfur dioxide emissions contains a summary of the three-hour rolling averages and maximum sulfur dioxide emissions, and a CEMS performance report is required.
    - 15A NCAC 02D .0516 regulation requires CEMS monitor down time shall not exceed 2 percent. The 2% MD threshold specified for good O&M purposes in this permit is an exception, due to the past compliance history of the facility.
    - 15A NCAC 02Q .0317 (for 02D .0530) regulation requires CEMS monitor down time shall not exceed 5 percent during calendar quarter. The purpose and intent of 5% MD threshold for the PSD regulation is different from 2% MD threshold (6% and 3% for all other facilities) for good O&M.

To demonstrate compliance with PSD Avoidance and/or PSD BACT regulation:
The additional language for data substitution procedure and 5% MD threshold is added in the permit in order:
1) to prevent the facility from reporting zero emissions for the hours when the emission unit is operating and the CEMS data are not available, and
2) requires facility to report % MD for the operating hours when CEMS data are not available but filled in with data substitution procedure.

Note, for all other facilities, the CEMS evaluation for good O&M purposes is based on 6% for one quarter and 3% for two consecutive quarter. This threshold is generally not specified in the permit. It is evaluated during the review of quarterly CEMS EERs based on guidance document NCCEP (North Carolina's Continuous Monitoring Enforcement Plan).

- One lightweight aggregate rotary expansion kiln with clinker cooler fired with coal/No. 2 fuel oil (**ID No. ES-9**) with associated lime slurry injection system and bagfilter (**ID No. CD-9B**) - Compliance with this regulation is demonstrated by performing inspections and maintenance as recommended by the manufacturer, an annual inspection of spray nozzles, lime slurry feed system, and the cleaning/calibration of all associated instrumentation. A sulfur dioxide CEMS is used for monitor and recordkeeping. Semiannual reporting of a sulfur dioxide emissions report contains a summary report of monitoring and recordkeeping activities, and continuous emissions monitoring data showing the 24-hour daily block values in pounds per million Btu for each 24-hour daily block averaging period.

- 15A NCAC 02D .0521: CONTROL OF VISIBLE EMISSIONS
This regulation applies to fuel burning operations and industrial processes where visible emissions can be reasonably expected to occur. Sources subject to visible emissions standards under specifically identified rules under 02D (including .0508, .0524, and .1111) are required to meet the standards of those rules instead of the standards in 02D .0521.

  These following sources are required to conduct weekly observations to ensure compliance with the 40 percent opacity visible emissions standard, along with recordkeeping and reporting.
  - Conveyors (**ID No. RCS-12, RCS-23 through RCS-30**), Storage Raw Material Silos (**ID Nos. RCS-18 through RCS-20**), Short Head Crusher (**ID No. FCS-2**), Conveyors (**ID Nos. FCS-4, FCS-10, FCS-12, FCS-14, FCS-17**), Screens (**ID Nos. FCS-22 through FCS-25**), Storage Hoppers (**ID Nos. FCS-27, FCS-41**), Engine (**ID No. PSG-1**), and Finished Product Storage Area (**ID No. FP**), Lightweight aggregate kiln (**ID No. ES-7**), One kiln feed coal hopper (**ID No. CCH-2**), Two kiln coal conveyor belts (**ID Nos. CCB-2 and CCB-3**), Coal storage areas (**ID No. CCS**)

  These following sources are required to conduct weekly observations to ensure compliance with the 20 percent opacity visible emissions standard, along with recordkeeping and reporting.
  - Conveyors (**ID Nos. RCS-91 through RCS-95**) Portable Conveyor **(ID No. APJC-1**), Portable diesel engine (**ID No. APJC-1-Eng**), Short head Conveyor (**ID No. FCS-3**), Conveyors (**ID Nos. FCS-5, FCS-8, FCS-11, FCS-13, FCS-19, FCS-20, FCS-26, FCS-28 through FCS-30, FCS-44 through FCS-47**), Clinker Pile (**ID No. FP-2**), Conveyors (**ID Nos. FCS-C1 through FCS-C5**), Dust Siloes (**ID Nos. DSC-1 and DS-3C**), Portable screener (**ID No. PS-1**), Portable conveyors (**ID Nos. PSC-1 through PSC-5**), Portable screener feed hopper (**ID No. PSH-1**), and Portable screener diesel engine (**ID No. APS-1-Eng), One coal hopper (ID No. CCH-3**), Two coal conveyors (**ID Nos. CCB-4 and CCB-5**), One coal silo (**ID No. CCS-1**), Pile Activities (**ID No. ES-MSO**), Four 20 ton Material Feed Hoppers (**ID Nos. ES-MSH-1, ES-MSH-2, ES-MSH-3 and ES-MSH-4**), Two Material Conveyors (24 inches wide each) (**ID Nos. ES-MSC-1 and ES-**

MSC-2), One Radial Stacker Conveyor (**ID No. ES-MSC-3**), One Portable Loader (Super Sac Bagger) (**ID No. ES-MSL-1**)

There are no changes to the 02D .0521 permit condition as a part of this renewal and modification. Compliance with this regulation is expected.

- 15A NCAC 02D .0524: NEW SOURCE PERFORMANCE STANDARDS (40 CFR Part 60 Subpart UUU)
  The lightweight aggregate rotary expansion kilns including clinker coolers (ID Nos. ES-8 and ES-9) are subject to the "Standards of Performance for Calciners and Dryers in Mineral Industries," 40 CFR Part 60 Subpart UUU.

  See Section 8, below, for a detailed discussion regarding NSPS requirements.

- 15A NCAC 02D .0530: PREVENTION OF SIGNIFICANT DETERIORATION
  This facility is subject to this regulation. See Section 8, below, for more detailed discussion.

- 15A NCAC 02D .0540: PARTICULATES FROM FUGITIVE NON-PROCESS DUST EMISSION SOURCES
  This regulation requires that the Permittee not cause or allow fugitive non-process dust emissions to cause or contribute to substantive complaints. The permit condition also indicates procedures that the Permittee must follow if substantive complaints are received. Continued compliance is expected.

- 15A NCAC 02D .0614: COMPLIANCE ASSURANCE MONITORING

  The lightweight aggregate kilns (**ID Nos. ES-7, ES-8, and ES-9**) are subject to this regulation. See Section 8, below, for more detailed discussion on CAM.

- 15A NCAC 02D .1806: CONTROL AND PROHIBITION OF ODOROUS EMISSIONS (State-enforceable only)
  This regulation requires that the Permittee not operate the facility without implementing management practices or installing and operating odor control equipment sufficient to prevent odorous emissions from the facility from causing or contributing to objectionable odors beyond the facility's boundary. Continued compliance is expected.

- 15A NCAC 02D .1100: CONTROL OF TOXIC AIR POLLUTANTS
  The facility is currently subject to the modeled emissions rates per 15A NCAC 2D .1100 on a source-by-source basis. See Section 9 of this Document for a detailed discussion.

- 15A NCAC 02Q .0317: AVOIDANCE CONDITIONS FOR 15A NCAC 2D .0530: PREVENTION OF SIGNIFICANT DETERIORATION
  The facility has accepted avoidance conditions for 02D .0530, PSD, for PM and PM_{10}. More discussion on PSD avoidance is provided under Section 8.

8. NSPS, NESHAP/MACT, NSR/PSD, 112(r), CAM

NSPS

This facility is subject to New Source Performance Standards (NSPS), under 40 CFR Part 60. This permit renewal does not affect this status.

- 40 CFR 60 Subpart UUU for Standards of Performance for Calciners and Dryers in Mineral Industries – This regulation applies to each calciner and dryer at a mineral processing plant that is constructed, modified or reconstructed after April 23, 1986. Rotary kilns in the lightweight aggregate industry are considered calciners.[1] Therefore the lightweight aggregate kilns (**ID Nos. ES-8, and ES-9**) at this facility are subject to this regulation.

  [Per Sections 60.2 and 60.14 of 40CFR, the kiln 8 will be deemed as "modified". Per EPA applicability determination (EPA Region 4 letter from Douglas Neeley to Dr. van der Vaart dated October 9, 2002, copy attached), the kilns at Carolina Stalite facility may be subject to NSPS Subpart UUU, if it is constructed, modified or reconstructed after April 23, 1986. The kiln 8 is a "grandfathered" source for NSPS UUU, but it will be deemed "modified" due to installation of clinker cooler on kiln 8 and the increase in hourly particulate emission (measured as kg/hr) rate of kiln 8. Hence, the kiln 8 now becomes subject to this regulation. Note that per EPA, kilns at Carolina Stalite facility will be deemed as "calciner" for purposes of UUU Subpart. Also as per company, the kilns at this facility are considered expansion furnaces under "calciner" definition and are like perlite and vermiculite expansion furnaces in operation. For detailed information, see technical review of Permit no. 03225T20 issued on December 1, 2003 by Rahul Thaker]

  Both kilns (ID Nos. ES-8 and ES-9) must meet the following emission standards under NSPS:
  - PM emissions shall not exceed 0.092 gram per dry standard cubic meter (g/dscm) [0.040 grain per dry standard cubic foot (gr/dscf)]
  - Visible emissions shall not exceed 10 percent opacity (when not controlled by a wet scrubber).

  The most recent NSPS compliance testing for kiln 8 (**ID No. ES-8**) was conducted on September 12, 2019, and demonstrated compliance, as shown in the table below.

Pollutant	Test Result	Emission Limit	Compliance Indicated?
Particulate Matter	0.011 g/dscm	0.092 g/dscm	Yes

  The bagfilter is expected to continue to achieve compliance with the PM and opacity standards in NSPS Subpart UUU. NSPS Subpart UUU exempts perlite expansion furnaces or vermiculite expansion furnaces from the requirement of a continuous opacity monitor (COMs)., if the furnaces use a dry control device for PM. DAQ has concluded kiln 8 (**ID No. ES-8**) is similar in operation to a perlite rotary expansion furnace or a vermiculite expansion furnace and uses a dry control device (aka a bagfilter).[2] Thus, kiln ES-8 is exempt from requirements to install a COM, in accordance with 40 CFR 60.734(c).

  To ensure compliance with the opacity limit, the facility conducts weekly visible emission observations from the kiln and associated recordkeeping and reporting. No changes to the permit are required and continued compliance is anticipated.

  DAQ similarly exempts kiln 9 (**ID No. ES-9**) from the requirement of COM for PM emissions to be controlled by a baghouse.

[1] *Calciners and Dryers in Mineral Industries – Background Information for Proposed Standards*. EPA-450/3-85-025a. EPA/OAQPS. October 1985.
[2] PSD Preliminary Determination by Rahul Thaker (02/02/2010)

- 40 CFR 60 Subpart IIII for Standards of Performance for Stationary Compression Ignition Internal Combustion Engines – This regulation applies to compression ignition engines manufactured or reconstructed after July 11, 2005. These engines (**ID Nos. PSG-1, ATS-1-eng, RUC-1, and APJC-1-eng**) either predate the compliance date or are self-propelled and/or transportable and temporary. These units will not operate at the same location for a period of 12 consecutive months. The federal criteria indicate therefore they are regulated as "no-road engines" and are not subject.

NESHAP/MACT
This facility is NOT subject to the National Emission Standards for Hazardous Air Pollutants, 40 CFR 63. Since there are no proposed changes to the permit, this permit renewal does not trigger any additional NESHAP rules or requirements.

- 40 CFR 63, Subpart ZZZZ for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines – This regulation applies to stationary engines manufacture/reconstructed after July 12, 2006 at an area source of HAPs. These engines (**ID Nos. PSG-1, ATS-1-eng, RUC-1, and APJC-1-eng**) would possibly be subject; however, these engines are not stationary units. Therefore, this rule does not apply. This permit renewal does not affect this status.

NSR/PSD
Stanly County is designated as attainment/unclassifiable for CO, ozone and $PM_{2.5}$ (EPA has deferred classification for SO_2). The facility is a major source under the PSD program. The facility currently has PSD avoidance conditions for NOx, SO_2, PM, and PM_{10}. There is no potential increase in any PSD regulated pollutants above the major source threshold under this permit renewal as this permit renewal does not involve any modification that will results in a "significant emissions increase." Therefore, there are no PSD implications under this permit renewal.

- 15A NCAC 02Q .0317, Avoidance Conditions – The facility has accepted the following conditions to avoid applicability of 2D .0530, Prevention of Significant Deterioration (PSD):
  - Kilns ID Nos. ES-7 and ES-8: Combined total emissions of nitrogen oxides (NO_x) shall not exceed 416 tons per consecutive 12-month period.
  - Kiln ID No. ES-8: Emissions of nitrogen oxides (NO_x) shall not exceed 135.4 tons per consecutive 12-month period.
  - Kiln ID No. ES-8: Emissions of sulfur dioxide (SO_2) shall not exceed 343.2 tons per consecutive 12-month period.
  - Kiln ID No. ES-8: Emissions of particulate matter shall not exceed 36.8 tons per consecutive 12-month period.
  - Kiln ID No. ES-8: Emissions of PM_{10} shall not exceed 26.8 tons per consecutive 12-month period.

BACT Limits
Stalite is subject to BACT limits under 02D .0530 for PM_{10}, $PM_{2.5}$, NO_x and SO_2. The BACT limits are associated with the project to construct and operate one lightweight aggregate kiln (ID No. ES-9) and associated material handling and storage activities. The BACT limits were added to the permit under Air Permit No. 03225T36 issued on March 22, 2010, and the permit review for that permit provides details about the establishment of the BACT limits[3]. The BACT limits are provided in the table below, and no changes to the permit are required under this permit renewal.

[3] Rahul Thaker (03/22/2010)

Emission Source	Pollutant	BACT Limit	Control Devices
Light weight aggregate (ID No. ES-9)	SO_2	2.75 lb/ton of clinker (CEM: 30-day rolling average) and 1 %w coal sulfur content (based upon coal supplier certification per total shipment received)	lime slurry injection
	NOx (as NO_2)	0.84 lb/million Btu heat input (Stack Test: 3-hour average)	good combustion control
	PM_{10}	0.20 lb/ton of clinker (filterable and condensible) and 0.01 grain/dscf (filterable only) (Stack Test: 3-hour average)	baghouse
	$PM_{2.5}$	0.12 lb/ton of clinker (filterable and condensible) and 0.01grain/dscf (filterable only) (Stack Test: 3-hour average)	Baghouse
Raw Material Conveyors (ID Nos. RCS-91, RCS-94 and RCS-95)	PM_{10} (filterable only)	7% opacity (6-minute average)	None
	$PM_{2.5}$ (filterable only)	7% opacity (6-minute average)	None
Clinker Conveyors (ID Nos. FCS-44 and FCS-47)	PM_{10} (filterable only)	7% opacity (6-minute average)	water spray
	$PM_{2.5}$ (filterable only)	7% opacity (6-minute average)	water spray
Clinker Conveyors (ID Nos. FCS-45 and FCS-46)	PM_{10} (filterable only)	7% opacity (6-minute average)	None
	$PM_{2.5}$ (filterable only)	7% opacity (6-minute average)	None

Emission Source	Pollutant	BACT Limit	Control Devices
Coal Conveyors (ID Nos. CCB-4 and CCB-5)	PM_{10} (filterable only)	10% opacity (6-minute average)	None
	$PM_{2.5}$ (filterable only)	10% opacity (6-minute average)	None
Raw Material Silos (ID Nos. RCS-92 and RCS-93)	PM_{10} (filterable only)	7% opacity (6-minute average)	None
	$PM_{2.5}$ (filterable only)	7% opacity (6-minute average)	None
Dust Silo (ID No. DS-3C)	PM_{10} (filterable only)	7% opacity (6-minute average)	baghouse
	$PM_{2.5}$ (filterable only)	7% opacity (6-minute average)	baghouse
Coal Silo (ID No. CCS-1)	PM_{10} (filterable only)	20% opacity (6-minute average)	None
	$PM_{2.5}$ (filterable only)	20% opacity (6-minute average)	None
Clinker Pile (ID No. FP-2)	PM_{10} (filterable only)	No visible emissions (Method 22)	water spray
	$PM_{2.5}$ (filterable only)	No visible emissions (Method 22)	water spray
Coal Hopper (ID No. CCH-3)	PM_{10} (filterable only)	10% opacity (6-minute average)	None
	$PM_{2.5}$ (filterable only)	10% opacity (6-minute average)	None

Rule 15A NCAC 02D .0530(l) incorporates by reference 40 CFR 51.21(r)(2) regarding the period of validity of approval to construct. The permit extension provision in 40 CFR 52.21(r)(2) establishes that "approval to construct [a new major stationary source or major modification] shall become invalid if construction is not commenced within 18 months after receipt of such approval, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time." In a letter dated November 10, 2010, Carolina Stalite stated they had started foundation work on kiln ES-9. Construction began on October 27, 2010, although construction of the kiln and associated equipment has not been completed at this time. Should the facility want to complete construction of this emission source in future, Carolina Stalite may need to request an extension or conduct a re-evaluation of the BACT limits.[4] The BACT limits for kiln ES-9 will not be updated under this permit renewal.

112(r)

This facility is not subject to the requirements of the Chemical Accident Release Prevention Program, Section 112(r) of the Clean Air Act requirements because it does not store any of the regulated substances

[4] Page, Stephen (Office of Air Quality Planning and Standards). Guidance to Regional Air Division Directors, Regions 1-10. 2014 January 31. https://www.epa.gov/sites/production/files/2015-07/documents/extend14.pdf

in quantities above applicability thresholds. But the facility is subject to the General Duty requirements of 112(r).

Compliance Assurance Monitoring (CAM)
Pursuant to 40 CFR 64.2, the provisions of the Compliance Assurance Monitoring (CAM) rule are applicable to emission units that meet all the following criteria:

Criteria #1: The unit is subject to an emission limitation AND uses a control device to achieve compliance with the limit;
Criteria #2: The unit has pre-control potential emissions that are equal to or greater than 100% of the amount (in tpy) required for a source to be classified as a major source; and,
Criteria #3: The unit is not exempt under 40 CFR 64.2(b).

Emission Unit	Criteria #1: Does the Source Use a Control Device?	Criteria #2: Pre-control PTE ≥100% of major source thresholds?	Criteria #3: Exempt Under 40 CFR 64.2(b)?	CAM Source?
ES-7	**Yes (PM)**	**Yes**	**No**	**Yes**
ES-8	**Yes (PM)**	**Yes**	**No**	**Yes**
ES-9	**Yes (PM, PM_{10}, $PM_{2.5}$)**	**Yes**	**No**	**Yes**

Kilns 7 and 8 (**ID Nos. ES-7 and ES-8**) are subject to CAM requirements. Kilns 7 and 8 (**ID Nos. ES-7 and ES-8**) are currently controlled by bagfilters (**ID Nos. CD-7B and CD-8B**) and are subject to CAM. Requirements for CAM for these emission sources were added under Air Permit No. 03225T30 issued on May 23, 2007. The CAM result was met through 02D .0511(PM) and 02D .0524 (PM and visible emissions) by monitoring.

Kiln 9 (**ID No. ES-9**) is subject to CAM requirements. Kiln ES-9, which will be controlled by bagfilter (ID No. CD-9B), was added to the permit under Air Permit No. 03225T36 issued on March 22, 2010. As indicated in the permit application for the TV permit renewal, this kiln is subject to CAM because pre-controlled emissions of PM_{10} and SO_2 exceed the major source threshold. A CEMS for SO_2 on kiln ES-9 is required to ensure compliance with 15A NCAC 02D .0516. The CEMS is considered sufficient monitoring such that a CAM plan is not required for this pollutant. A CAM plan is required for particulate matter (PM, PM_{10}, and $PM_{2.5}$) and was included in the application for permit renewal. Stalite proposes daily visible emission monitoring with five excursions allowed per 6-month period. It met through regulation 02D .0511 (PM), 02D .0524 (PM and visible emissions), 02D .0530 (PM_{10} and $PM_{2.5}$) by monitoring.

(ES-9 has not been installed. **ES-7** was shut down since October 26, 2010 due to economic reason and has not been operated since.)

The facility is currently subject to CAM. This permit renewal does not affect this status. The facility is expected to be in continued compliance.

9. Facility-Wide Air Toxics:

Carolina Stalite is currently subject to modeled emissions rates determined for 15A NCAC 02D .1100 on a source-by-source basis. Compliance was demonstrated on a source-by-source basis for the facility and the current permit contains source-by-source TAP limits. The most recent air modeling was conducted when a crusher, portable screen feed hopper and two engines were added to the permit under Air Quality

Permit No. 03225T38 issued on October 12, 2011. The current permit contains two sets of limits to ensure toxic air pollutants do not exceed acceptable ambient levels. One set of limits is to be followed before the commencement of operation of kiln (**ID No. ES-9**), and the other applies after the commencing operation of this kiln.

The requirement of emission limits for benzene and nickel were met with testing conducted on October 25, 2018. Therefore, testing requirement for Benzene and Nickel for Kiln 8 (Section 2.2 B.1.b.iv) was removed from the permit (as per test Report dated 02/08/2019).

Stalite Carolina did not request any changes to the emission limits. Therefore, this permit renewal application does not trigger air toxics review. No further air toxics evaluation is required at this time. Continued compliance is expected.

10. Facility Emission Review:

This renewal is without modification and actual emissions are not expected to change with this permit action. Actual emissions for 2016 through 2020 are reported in the header of this permit review.

11. Public Notice/EPA and Affected State(s) Review

A notice of the DRAFT Title V Permit shall be made pursuant to 15A NCAC 02Q .0521. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Consistent with 15A NCAC 02Q .0525, the EPA will have a concurrent 45-day review period. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 02Q .0522, a copy of each permit application, each proposed permit and each final permit shall be provided to EPA. Also, pursuant to 02Q .0522, a notice of the DRAFT Title V Permit shall be provided to each affected State at or before the time notice is provided to the public under 02Q .0521 above.

South Carolina is an affected state and Mecklenburg County Air Quality is a local program within 50 miles of the facility.

Notice of the DRAFT Title V Permit to Affected States ran from XXXX YY, 2022 to XXXX YY, 2022. ***Summarize comments from Affected States.***

Public Notice of the DRAFT Title V Permit ran from XXXX YY, 2022 to XXXX YY, 2022. ***Summarize comments from the public***.

EPA's 45-day review period ran concurrent with the 30-day Public Notice, from XXXX YY, 2022 to XXXX YY, 2022. ***Summarize comments from*** EPA and U.S. EPA Region 4 ***that were received regarding the DRAFT Title V Permit***.

12. Other Regulatory Considerations:

- A Permit Application fee is NOT required for Permit Application No. 8400013.21A as this was a renewal without modification.
- A P.E. Seal is NOT required for Permit Application No. 8400013.21A.
- A 30-day public notice and 45-day EPA review is required for Permit Application No. 8400013.21A as noted above.
- A Zoning Determination is NOT required for Permit Application No. 8400013.21A.

13. Recommendations/Conclusion:

TBD