STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: 052016-003 Project Number: 2015-05-005

Installation Number: 097-0176

Parent Company: Owens Corning

Parent Company Address: 1 Owens Corning Pkwy, Toledo, OH 43659

Installation Name: Owens Corning Insulating Systems, LLC

Installation Address: 1983 State Line Road, Joplin, MO 64804

Location Information: Jasper County, S11, T27N, R34W

Application for Authority to Construct was made for:
A new mineral wool manufacturing installation. This review was conducted in accordance with Section (8), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

☐ Standard Conditions (on reverse) are applicable to this permit.

☑ Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

David Little

Prepared by
David Little, PE
Environmental Engineer III

Lynda L Moore

Director or Designee
Department of Natural Resources

MAY 12 2016

Effective Date

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within 18 months from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within 18 months after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Air Pollution Control Program's Compliance/Enforcement Section of the anticipated date of startup of these air contaminant sources. The information must be made available within 30 days of actual startup. Also, you must notify the Department of Natural Resources' Southwest Regional Office at 20400 W. Woodland, Springfield, MO 65807-5912 within 15 days after the actual startup of these air contaminant sources.

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant sources(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."

Owens Corning Insulating Systems, LLC
Jasper County, S11, T27N, R34W

1. Cupola (EU-05a)
   A. The fuel shall exclusively consist of any combination of metallurgical coke, carbon based anodes, and natural gas. Solid fuel usage shall not exceed [redacted] tph at any time. Solid fuel usage shall not exceed [redacted] tons on a 12-month period.
      1) Owens Corning Insulating Systems LLC (OCIS) shall install and operate a weigh belt/hopper or other means to continuously monitor and record the solid fuel usage.
      2) Coke sulfur content shall not exceed [redacted]% by weight at any time. Anode sulfur content shall not exceed [redacted]% by weight at any time.
      3) Anodes shall not exceed [redacted]% by weight of the fuel mix at any time. Anodes shall not exceed [redacted]% by weight of the fuel mix on a 12-month rolling average.
      4) OCIS shall keep vendor records on site representative of each solid fuel type and sulfur content. A change of materials or vendors requires new vendor records. As an alternative to vendor sulfur records, OCIS may conduct representative sulfur testing on each solid fuel delivery.
      5) OCIS shall record the anode type e.g. green, baked, or spent and industry e.g. primary aluminum, chlorine, silicon, ferroalloy, calcium carbide, yellow phosphorus, etc. OCIS shall calculate the project PTE for any change in anode type from spent primary aluminum prior to its usage. A project PTE exceeding the values in 10 CSR 10-6.061(3)(A)3. requires a construction permit prior to using the new anode type/industry.

   B. The melt material charging rate, i.e. total charge minus fuel, shall not exceed [redacted] tph at any time. The melt material charge shall not exceed [redacted] tons on a 12-month period. OCIS shall install and operate a weigh belt/hopper or other means to continuously monitor and record the charge rate.

   C. The charge shall exclusively consist of any combination, including zero amounts, of iron/steel furnace slag, copper smelting slag, feldspar, basalt (trap rock), dolomite, limestone, and briquettes (shot bricks) consisting of up to three materials: recycled blowing chamber shot, mineral wool fibers,

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

and Portland cement.

1) The following compositions by weight % shall not be exceeded:
   a) Iron/steel furnace slag: chromium [redacted]%, manganese [redacted]%, sulfur [redacted]%
   b) Copper slag: chromium [redacted]%, manganese [redacted]%, sulfur [redacted]%
   c) Feldspar: manganese [redacted]%
   d) Trap rock: manganese [redacted]%, chromium [redacted]%
   e) Shot bricks: shot sulfur [redacted]%, cement sulfur [redacted]%
2) OCIS shall keep vendor records on site representative of each material type and respective composition. A change of materials or vendors requires new vendor records. As an alternative to vendor weight % records, OCIS may conduct representative testing on each delivery.
3) OCIS shall keep records on site of each melt material's usage rate, date, and time.

D. The cupola shall not be operated more than [redacted] hours, inclusive of startup and shutdown, on a 12-month rolling average. Periods of non-operation do not count towards this limit.
1) The total time in startup, normal operation, and shutdown shall be continuously recorded. The three modes of operation shall be indicated.
2) Startup and shutdown shall have the same definitions as found in 40 CFR 63 Subpart DDD.
3) OCIS shall not receive anodes into the combined coke/anode bunker for 24 hours prior to a planned shutdown and shall only commence receipt of anodes into the combined coke/anode bunker after planned startup. The anodes shall only be charged from the designated coke/anode bunker and designated coke/anode day bin in the mix building. OCIS shall keep records on site comparing planned startup and shutdown date and time to anode receipt date and time.
4) OCIS shall record planned versus unplanned startups and shutdowns.

E. All emissions from the BC-10 conveyor transfer into cupola receiving hopper (EU-02.13), cupola receiving hopper (EU-05.5), and cupola (EU-05a) shall be captured and controlled by the following in series:
1) Good combustion practices including, but not limited to:
   a) Combustion tuning, combustion temperature, air/fuel mixing.
   b) OCIS shall develop a written good combustion practices log for the cupola including the following items. The log shall be kept on site and a copy submitted with the initial and renewal operating permit applications.
      i. Manufacturer's specifications for the above parameters, site specific specifications for the above parameters obtained through stack testing, CEMS data, operational experience, etc.
      ii. Criteria for monitoring, inspecting, preventative maintenance,

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

and training.
iii. Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
iv. Recommended frequency and dates performed of all above schedules, incidents, activities, and actions.

2) Maximum energy efficiency including but not limited to:
   a) Heat recovery/preheated air.
   b) Recycled material usage, as available.
   c) Oxygen supplementation.
   d) Cupola shell reflective and mass insulation.
   e) Minimization of air infiltration into the cupola.
   f) Insulating steam and condensate lines and fittings.
   g) Mechanical transport systems where possible, high efficiency motors, variable frequency drives, high efficiency fans, optimization of compressed air systems, efficient lighting.
   h) OCIS shall develop a written energy efficiency log including the following items. The log shall be kept on site and a copy submitted with the initial and renewal operating permit applications:
      i. Manufacturer's specifications for the above parameters, site specific specifications for the above parameters obtained through stack testing, CEMS data, operational experience, etc.
      ii. Criteria for monitoring, inspecting, preventative maintenance, and training.
      iii. Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
      iv. Recommended frequency and dates performed of all above schedules, incidents, activities, and actions.

3) Cyclone (CD-01)
   a) The cyclone shall be operated and maintained in accordance with the manufacturer's specifications which shall be kept on site.
   b) The cyclone shall be equipped with a gauge or meter to determine pressure drop. Pressure drop shall be maintained within the range established in the SOP report from Special Condition 22.K. Pressure drop shall be recorded at least once daily. Days of no operation shall be indicated.
   c) OCIS shall maintain an operating and maintenance log for the cyclone which shall include the following:
      i. Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
      ii. Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
      iii. Dates of all above schedules, incidents, activities, and actions.

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

4) Thermal oxidizer (CD-02)
   a) The thermal oxidizer shall be operated and maintained in accordance with the manufacturer's specifications and with the SOP report from Special Condition 22.K. A copy of the manufacturer's specifications shall be kept on site.
   b) The thermal oxidizer shall be equipped with a device measuring operating temperature and operate within the requirements of 40 CFR 63 Subpart DDD, National Emission Standards for Hazardous Air Pollutants for Mineral Wool Production.
   c) OCIS shall maintain an operating and maintenance log for the thermal oxidizer which shall include the following:
      i. Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
      ii. Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
      iii. Dates of all above schedules, incidents, activities, and actions.

5) Dry sorbent injection (DSI) (CD-03).
   a) The DSI system shall consist of two injection locations, located between the thermal oxidizer and heat exchanger, and located between the heat exchanger and cupola baghouse.
   b) OCIS shall keep vendor records on site of each sorbent delivery type.
   c) The sodium bicarbonate sorbent shall be milled to optimize control efficiency.
   d) The DSI shall be operated and maintained in accordance with the manufacturer's specifications and with the SOP report from Special Condition 22.K. A copy of the manufacturer's specifications shall be kept on site.
   e) The DSI sorbent injection rates shall be continuously monitored and recorded for each location.
   f) OCIS shall maintain an operating and maintenance log for the DSI which shall include the following:
      i. Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
      ii. Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
      iii. Dates of all above schedules, incidents, activities, and actions.

6) Baghouse (CD-04)
   a) The baghouse shall be operated and maintained in accordance with the manufacturer's specifications which shall be kept on site.
   b) The baghouse shall be equipped with a bag leak detection system and operate within the requirements of 40 CFR 63 Subpart DDD,

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

National Emission Standards for Hazardous Air Pollutants for Mineral Wool Production.

c) Replacement filters for the baghouse shall be kept on hand at all times. The bags shall be made of material appropriate for operating conditions expected to occur (e.g. temperature limits, acidic and alkali resistance, and abrasion resistance). The replacement filter material type and weight shall meet or exceed the specifications of the existing filter. The air to cloth ratio or air to filter ratio shall not be increased when filter replacement is performed.

d) OCIS shall maintain an operating and maintenance log for the baghouse which shall include the following:
   i. Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
   ii. Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
   iii. Dates of all above schedules, incidents, activities, and actions.

F. OCIS shall not exceed the following cupola temporary BACT emission limits. Final BACT limits shall be established according to Special Condition 25.

1) PM
   [redacted] lb/ton melt, inclusive of startup and shutdown, on a 30-day rolling average.
2) PM_{10} total
   a) [redacted] lb/ton melt, inclusive of startup and shutdown, on a 24-hour period.
   b) [redacted] lb/ton melt, inclusive of startup and shutdown, on a 30-day rolling average.
3) $PM_{2.5}$ total
   a) [redacted] lb/ton melt, inclusive of startup and shutdown, on a 24-hour period.
   b) [redacted] lb/ton melt, inclusive of startup and shutdown, on a 30-day rolling average.
4) SO_2
   a) [redacted] lb/ton melt, exclusive of startup and shutdown, on a 1-hour period.
   b) [redacted] lb/ton melt, inclusive of startup and shutdown, on a 30-day rolling average.
5) NO_X
   a) [redacted] lb/ton melt, exclusive of startup and shutdown, on a 1-hour period.
   b) [redacted] lb/ton melt, inclusive of startup and shutdown, on a 30-day rolling average.

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

6) VOC
   [redacted] lb/ton melt, inclusive of startup and shutdown, on a 3-hour period.
7) CO
   [redacted] lb/ton melt, inclusive of startup and shutdown, on a 1-hour period.
8) Reduced Sulfur Compounds (RSC)
   [redacted] lb/ton melt, inclusive of startup and shutdown, on a 30-day rolling average.
9) Sulfuric Acid Mist (SAM)
   [redacted] lb/ton melt, inclusive of startup and shutdown, on a 30-day rolling average.
10) GHG
   [redacted] lb CO_2e/ton melt, inclusive of startup and shutdown, on a 30-day rolling average.

G. OCIS shall not exceed the following cupola non-BACT emission limits, each inclusive of startup and shutdown:
1) PM_{10} total
   a) 2.018 lb/hr on a 30-day period.
   b) 2.481 lb/hr on a 24-hr period.
2) $PM_{2.5}$ total
   a) 1.930 lb/hr on a 30-day period.
   b) 2.415 lb/hr on a 24-hr period.
3) SO_2
   a) 19.185 lb/hr on a 30-day period.
   b) 21.750 lb/hr on a 1-hr period.
4) NO_X
   a) 10.782 lb/hr on a 30-day period.
   b) 11.474 lb/hr on a 1-hr period.
5) CO
   1.764 lb/hr on a 1-hr period.
6) SAM
   16.750 lb/hr on a 30-day period.

2. Emission Limit Compliance - Cupola
A. OCIS shall operate CEMS for PM, SO_2, NO_X, CO, and CO_2 and all necessary auxiliary monitoring equipment. The CEMS shall be installed in the cupola exhaust downstream of the baghouse (CD-04) but upstream of the blowing chamber's and cupola's common exhaust.

B. CEMS certification shall be made pursuant to the applicable performance specification in 40 CFR Part 60, Appendix B.

C. Periodic quality assurance assessments shall be conducted according to the procedures outlined in 40 CFR Part 60, Appendix F.

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

D. OCIS shall install and operate a data acquisition and handling system to calculate emissions in units of the emission limitations in Special Conditions 1.F. and 1.G.

E. Compliance with the PM, PM_{10}, and $PM_{2.5}$ emission limits in Special Condition 1.F.1), 1.F.2), 1.F.3), 1.G.1), and 1.G.2) for the cupola shall be demonstrated by use of the required PM CEMS and the cupola stack test. The data gathered from the CEMS shall be adjusted as follows:

$PM = PM_{CEM}$
$PM_{10} = PM_{CEM} + CPM - PM_{>10}$
$PM_{2.5} = PM_{CEM} + CPM - PM_{>2.5}$
Where,
PM_{CEM} = reported value from the PM CEMS.
CPM = mass fraction of condensable particulate matter to filterable particulate matter from the cupola stack test data, multiplied by PM_{CEM}.
$PM_{>10}$ = mass fraction of PM_{10} filterable to filterable particulate matter from the cupola stack test, multiplied by PM_{CEM}.
$PM_{>2.5}$ = mass fraction of $PM_{2.5}$ filterable from the cupola stack test multiplied by PM_{CEM}.

F. Compliance with the SO_2 emission limits in Special Conditions 1.F.4) and 1.G.3) for the cupola shall be demonstrated by the use of the required SO_2 CEMS.

G. Compliance with the NO_X emission limits in Special Conditions 1.F.5) and 1.G.4) for the cupola shall be demonstrated by the use of the required NO_X CEMS.

H. Compliance with the CO emission limits in Special Conditions 1.F.7) and 1.G.5) for the cupola shall be demonstrated through the use of the required CO CEMS.

I. Compliance with the GHG emission limit in Special Condition 1.F.10) for the cupola shall be demonstrated through the use of the required CO_2 CEMS and the cupola stack tests. The data gathered from the CEMS shall be adjusted as follows:

$GHG = CO_{2CEM} + CH_4 * 25 + N_2O * 298$
Where,
CO_{2CEM} = reported value from the CO_2 CEMS.
CH_4 = mass fraction of methane to carbon dioxide from the cupola stack test data, multiplied by CO_{2CEM}.
N_2O = mass fraction of nitrous oxide to carbon dioxide from the cupola stack test data, multiplied by CO_{2CEM}.

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

J. Compliance with the VOC emission limit in Special Condition 1.F.6) for the cupola shall be demonstrated by the use of the required CO CEMS and the cupola stack test. The data gathered from the CEMS shall be adjusted as follows:

$VOC = CO_{CEM} * VOC_{TEST}$

Where,

CO_{CEM} = reported value from the CO CEMS.

VOC_{TEST} = mass fraction of volatile organic compounds to carbon monoxide from the cupola stack test.

K. Compliance with the RSC emission limit in Special Condition 1.F.8) for the cupola shall be demonstrated by the use of the required CO CEMS and the cupola stack test. The data gathered from the CEMS shall be adjusted as follows:

$RSC = CO_{CEM} * RSC_{TEST}$

Where,

CO_{CEM} = reported value from the CO CEMS.

RSC_{TEST} = mass fraction of reduced sulfur compounds to carbon monoxide from the cupola stack test.

L. Compliance with the SAM emission limits in Special Conditions 1.F.9) and 1.G.6) for the cupola shall be demonstrated by the use of the required SO_2 CEMS and the cupola stack test. The data gathered from the CEMS shall be adjusted as follows:

$SAM = SO_{2CEM} * SAM_{TEST}$

Where,

SO_{2CEM} = reported value from the SO_2 CEMS

SAM_{TEST} = mass fraction of sulfuric acid to sulfur dioxide from the cupola stack test.

3. Blowing Chamber (EU-05b)

A. All products that OCIS manufactures shall not exceed either 3% loss on ignition (LOI) or 4% LOI. Products not exceeding 3.5% LOI shall be deemed “3% LOI”. Products exceeding 3.5% LOI but not exceeding 4% LOI shall be deemed “4% LOI”. LOI shall be determined by Special Condition 22.C. OCIS shall continuously monitor and record binder flowrate (gph) and binder solids rate (tph), and record LOI at least once per product per 8-hr period.

B. OCIS shall not manufacture more than [redacted] tons of melt for 4% LOI product in any 12-month period. OCIS shall keep monthly records sufficient to demonstrate compliance.

C. All emissions from the fiberizing spinners, forming chamber, primary mat

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

forming, primary mat handling and lapping, pendulum, collectively called blowing chamber (EU-05b); edge trim, edge trim conditioning, edge trim material separation, edge trim storage silo, and edge trim metered re-feed system, collectively called edge trim (EU-05c); and blowing chamber waste conveyor, wash water collection, and binder dilution, collectively called the wash water system (EU-05d) shall be captured and controlled by the following in series:

1) Good operating practices including, but not limited to:
   a) Maintaining proper spinner velocity.
   b) Minimizing shot formation.
   c) Binder application method, nozzle type, nozzle pressure and spray pattern to maximize transfer efficiency to the fibers.
   d) Minimization of melt temperature.
   e) Use of low VOC lubricants.
   f) Minimizing VOC content of recycled wash water.
   g) OCIS shall develop a written good operating practices log for the blowing chamber and edge trim including the following items. The log shall be kept on site and a copy submitted with the initial and renewal operating permit applications.
      i. Manufacturer's specifications for the above parameters, site specific specifications for the above parameters obtained through stack testing, CEMS data, operational experience, etc.
      ii. Criteria for monitoring, inspecting, preventative maintenance, and training.
      iii. Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
      iv. Recommended frequency and dates performed of all above schedules, incidents, activities, and actions.

2) Maximum energy efficiency including but not limited to:
   a) Mechanical transport systems where possible, high efficiency motors, variable frequency drives, high efficiency fans, optimization of compressed air systems, efficient lighting.
   b) OCIS shall develop a written energy efficiency log including the following items. The log shall be kept on site and a copy submitted with the initial and renewal operating permit applications:
      i. Manufacturer's specifications for the above parameters, site specific specifications for the above parameters obtained through stack testing, CEMS data, operational experience, etc.
      ii. Criteria for monitoring, inspecting, preventative maintenance, and training.
      iii. Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
      iv. Recommended frequency and dates performed of all above

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

schedules, incidents, activities, and actions.

3) Stone wool filter (CD-05)
   a) The stone wool filter shall consist of stone wool (mineral wool) slabs.
   b) The stone wool filter shall be operated in the driest practical manner. Water may be directly applied to the filter for cleaning, but this water shall be drained from the filter before startup.
   c) The stone wool filter shall be equipped with a gauge or meter to measure pressure drop across the control device. The pressure drop shall be maintained in accordance with the SOP report from Special Condition 22.K. Pressure drop shall be recorded at least once daily. Days of no operation shall be indicated.
   d) Replacement filters shall be kept on hand at all times. The filters shall be made of material appropriate for operating conditions expected to occur (e.g. temperature limits, acidic and alkali resistance, and abrasion resistance). The replacement filter material type and weight shall meet or exceed the specifications of the existing filter. The air to cloth ratio or air to filter ratio shall not be increased when filter replacement is performed.
   e) OCIS shall maintain an operating and maintenance log for the stone wool filter which shall include the following:
      i. Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
      ii. Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
      iii. Dates of all above schedules, incidents, activities, and actions.

D. OCIS shall not exceed the following blowing chamber temporary BACT emission limits for 3% LOI product. Each limit is inclusive of startup and shutdown. The averaging period for each limit is a 3-hour period. Final BACT limits shall be established according to Special Condition 25.
   1) PM [redacted] lb/ton melt.
   2) PM_{10} total [redacted] lb/ton melt.
   3) $PM_{2.5}$ total [redacted] lb/ton melt.
   4) SO_2 [redacted] lb/ton melt.
   5) NO_X [redacted] lb/ton melt.
   6) VOC [redacted] lb/ton melt.
   7) CO [redacted] lb/ton melt.
   8) Reduced Sulfur Compounds (RSC) [redacted] lb/ton melt.
   9) GHG [redacted] lb CO_2e/ton melt.

E. OCIS shall not exceed the following blowing chamber temporary BACT emission limits for 4% LOI product. Each limit is inclusive of startup and

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

shutdown. The averaging period for each limit is a 3-hour period. Final BACT limits shall be established according to Special Condition 25.

1) PM [redacted] lb/ton melt.
2) PM_{10} total [redacted] lb/ton melt.
3) $PM_{2.5}$ total [redacted] lb/ton melt.
4) SO_2 [redacted] lb/ton melt.
5) NO_X [redacted] lb/ton melt.
6) VOC [redacted] lb/ton melt.
7) CO [redacted] lb/ton melt.
8) Reduced Sulfur Compounds (RSC) [redacted] lb/ton melt.
9) GHG [redacted] lb CO_2e/ton melt.

F. OCIS shall not exceed the following blowing chamber non-BACT emission limits for 3% LOI product, each inclusive of startup and shutdown. The averaging period for each limit is a 3-hour period.

1) PM_{10} total 45.907 lb/hr.
2) $PM_{2.5}$ total 42.609 lb/hr.
3) SO_2 9.74E-03 lb/hr.
4) NO_X 0.917 lb/hr.
5) CO 13.228 lb/hr.

G. OCIS shall not exceed the following blowing chamber non-BACT emission limits for 4% LOI product, each inclusive of startup and shutdown. The averaging period for each limit is a 3-hour period.

1) PM_{10} total 49.480 lb/hr.
2) $PM_{2.5}$ total 45.896 lb/hr.
3) SO_2 9.74E-03 lb/hr.
4) NO_X 0.917 lb/hr.
5) CO 13.228 lb/hr.

4. Emission Limit Compliance – Blowing Chamber

A. Blowing chamber startup and shutdown shall have the same definitions as those for the cupola, respectively.

B. Compliance with the emission limits in Special Conditions 3.D., 3.E., 3.F., and 3.G. for the blowing chamber shall be demonstrated by use of the blowing chamber 3% LOI and 4% LOI stack tests.

5. Curing Oven (EU-07a)

A. The curing oven shall be fired exclusively with natural gas. Startup begins when the curing oven burners are ignited and ends when fiber enters the oven. Shutdown begins when the last fiber exits the oven and ends when the curing oven burners are extinguished.

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

B. All emissions from the curing oven shall be captured and controlled by the following in series:

1) Good operating practices including, but not limited to:
   a) Maintaining proper line speed.
   b) Minimization of excess binder entering the curing oven.
   c) Minimization of binder oxidation through proper burner placement and oven temperature.
   d) Use of low VOC lubricants.
   e) OCIS shall develop a written good operating practices log for the curing oven including the following items. The log shall be kept on site and a copy submitted with the initial and renewal operating permit applications.
      i. Manufacturer's specifications for the above parameters, site specific specifications for the above parameters obtained through stack testing, CEMS data, operational experience, etc.
      ii. Criteria for monitoring, inspecting, preventative maintenance, and training.
      iii. Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
      iv. Recommended frequency and dates performed of all above schedules, incidents, activities, and actions.

2) Good combustion practices including, but not limited to:
   a) Combustion tuning, combustion temperature, air/fuel mixing.
   b) OCIS shall develop a written good combustion practices log for the curing oven including the following items. The log shall be kept on site and a copy submitted with the initial and renewal operating permit applications.
      i. Manufacturer's specifications for the above parameters, site specific specifications for the above parameters obtained through stack testing, CEMS data, operational experience, etc.
      ii. Criteria for monitoring, inspecting, preventative maintenance, and training.
      iii. Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
      iv. Recommended frequency and dates performed of all above schedules, incidents, activities, and actions.

3) Maximum energy efficiency including but not limited to:
   a) Heat recovery/preheated air.
   b) Curing oven insulation.
   c) Minimization of air infiltration into the curing oven.
   d) Mechanical transport systems where possible, high efficiency motors, variable frequency drives, high efficiency fans, optimization

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

of compressed air systems, efficient lighting.

e) OCIS shall develop a written energy efficiency log including the following items. The log shall be kept on site and a copy submitted with the initial and renewal operating permit applications:
   i. Manufacturer's specifications for the above parameters, site specific specifications for the above parameters obtained through stack testing, CEMS data, operational experience, etc.
   ii. Criteria for monitoring, inspecting, preventative maintenance, and training.
   iii. Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
   iv. Recommended frequency and dates performed of all above schedules, incidents, activities, and actions.

4) Low NO_X burners (CD-06)
   a) The low NO_X burners shall be operated and maintained in accordance with the manufacturer's specifications.
   b) OCIS shall maintain an operating and maintenance log for the low NO_X burners which shall include the following:
      i. Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
      ii. Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
      iii. Dates of all above schedules, incidents, activities, and actions

5) Stone wool filter (CD-07)
   a) The stone wool filter shall consist of stone wool (mineral wool) slabs.
   b) The stone wool filter shall be operated in the driest practical manner. Water may be directly applied to the filter for cleaning, but this water shall be drained from the filter before startup.
   c) The stone wool filter shall be equipped with a gauge or meter to measure pressure drop across the control device. The pressure drop shall be maintained in accordance with the SOP report from Special Condition 22.K. Pressure drop shall be recorded at least once daily. Days of no operation shall be indicated.
   d) Replacement filters shall be kept on hand at all times. The filters shall be made of material appropriate for operating conditions expected to occur (e.g. temperature limits, acidic and alkali resistance, and abrasion resistance). The replacement filter material type and weight shall meet or exceed the specifications of the existing filter. The air to cloth ratio or air to filter ratio shall not be increased when filter replacement is performed.
   e) OCIS shall maintain an operating and maintenance log for the

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

stone wool filter which shall include the following:
i. Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
ii. Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
iii. Dates of all above schedules, incidents, activities, and actions.

6) Regenerative thermal oxidizer (RTO) (CD-08)
a) The RTO shall be operated and maintained in accordance with the manufacturer's specifications and with the SOP report from Special Condition 22.K. A copy of the manufacturer's specifications shall be kept on site.
b) The RTO shall be equipped with a device measuring operating temperature and operate within the requirements of 40 CFR 63 Subpart DDD, National Emission Standards for Hazardous Air Pollutants for Mineral Wool Production.
c) The heat recovery bed and replacement schedule shall be followed, according to the SOP report in Special Condition 22.K.
d) OCIS shall maintain an operating and maintenance log for the RTO which shall include the following:
i. Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
ii. Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
iii. Dates of all above schedules, incidents, activities, and actions.

C. OCIS shall not exceed the following curing oven temporary BACT emission limits for 3% LOI product. Each limit is inclusive of startup and shutdown. The averaging period for each limit is a 3-hour period. Final limits shall be established according to Special Condition 25:
1) PM [redacted] lb/ton melt.
2) PM_{10} total [redacted] lb/ton melt.
3) $PM_{2.5}$ total [redacted] lb/ton melt.
4) SO_2 [redacted] lb/ton melt.
5) NO_X [redacted] lb/ton melt.
6) VOC [redacted] lb/ton melt.
7) CO [redacted] lb/ton melt.
8) Reduced Sulfur Compounds (RSC) [redacted] lb/ton melt.
9) GHG [redacted] lb CO_2e/ton melt.

D. OCIS shall not exceed the following curing oven temporary BACT emission limits for 4% LOI product. Each limit is inclusive of startup and shutdown. The averaging period for each limit is a 3-hour period. Final limits shall be established according to Special Condition 25:

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

1) PM [redacted] lb/ton melt.
2) PM_{10} total [redacted] lb/ton melt.
3) $PM_{2.5}$ total [redacted] lb/ton melt.
4) SO_2 [redacted] lb/ton melt.
5) NO_X [redacted] lb/ton melt.
6) VOC [redacted] lb/ton melt.
7) CO [redacted] lb/ton melt.
8) Reduced Sulfur Compounds (RSC) [redacted] lb/ton melt.
9) GHG [redacted] lb CO_2e/ton melt.

E. OCIS shall not exceed the following curing oven non-BACT emission limits for 3% LOI product. Each limit is inclusive of startup and shutdown. The averaging period for each limit is a 3-hour period.
1) PM_{10} total 5.406 lb/hr.
2) $PM_{2.5}$ total 4.545 lb/hr.
3) SO_2 0.268 lb/hr.
4) NO_X 13.496 lb/hr.
5) CO 16.665 lb/hr.

F. OCIS shall not exceed the following curing oven non-BACT emission limits for 4% LOI product. Each limit is inclusive of startup and shutdown. The averaging period for each limit is a 3-hour period.
1) PM_{10} total 5.810 lb/hr.
2) $PM_{2.5}$ total 4.884 lb/hr.
3) SO_2 0.298 lb/hr.
4) NO_X 17.152 lb/hr.
5) CO 20.453 lb/hr.

6. Emission Limit Compliance – Curing Oven
Compliance with the emission limits in Special Conditions 5.C., 5.D., 5.E., and 5.F. for the curing oven shall be demonstrated by use of the curing oven 3% LOI and 4% LOI stack tests.

7. Cooling Section (EU-07b)
A. Cooling section startup and shutdown shall have the same definitions as those for the curing oven, respectively.

B. All emissions from the cooling section shall be captured and controlled by the following in series:
1) Good operating practices including, but not limited to:
a) Maintaining proper line speed.
b) Minimizing uncured binder entering cooling section.
c) Minimizing air infiltration from the curing oven.
d) Use of low VOC lubricants.

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

e) OCIS shall develop a written good operating practices log for the cooling section including the following items. The log shall be kept on site and a copy submitted with the initial and renewal operating permit applications.
   i. Manufacturer's specifications for the above parameters, site specific specifications for the above parameters obtained through stack testing, CEMS data, operational experience, etc.
   ii. Criteria for monitoring, inspecting, preventative maintenance, and training.
   iii. Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
   iv. Recommended frequency and dates performed of all above schedules, incidents, activities, and actions.

2) Maximum energy efficiency including but not limited to:
   a) Mechanical transport systems where possible, high efficiency motors, variable frequency drives, high efficiency fans, optimization of compressed air systems, efficient lighting.
   b) OCIS shall develop a written energy efficiency log including the following items. The log shall be kept on site and a copy submitted with the initial and renewal operating permit applications:
      i. Manufacturer's specifications for the above parameters, site specific specifications for the above parameters obtained through stack testing, CEMS data, operational experience, etc.
      ii. Criteria for monitoring, inspecting, preventative maintenance, and training.
      iii. Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
      iv. Recommended frequency and dates performed of all above schedules, incidents, activities, and actions.

3) Stone wool filter (CD-09)
   a) The stone wool filter shall consist of stone wool (mineral wool) slabs.
   b) The stone wool filter shall be operated in the driest practical manner. Water may be directly applied to the filter for cleaning, but this water shall be drained from the filter before startup.
   c) The stone wool filter shall be equipped with a gauge or meter to measure pressure drop across the control device. The pressure drop shall be maintained in accordance with the SOP report from Special Condition 22.K. Pressure drop shall be recorded at least once daily. Days of no operation shall be indicated.
   d) Replacement filters shall be kept on hand at all times. The filters shall be made of material appropriate for operating conditions

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

expected to occur (e.g. temperature limits, acidic and alkali resistance, and abrasion resistance). The replacement filter material type and weight shall meet or exceed the specifications of the existing filter. The air to cloth ratio or air to filter ratio shall not be increased when filter replacement is performed.

e) OCIS shall maintain an operating and maintenance log for the stone wool filter which shall include the following:
   i. Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
   ii. Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
   iii. Dates of all above schedules, incidents, activities, and actions.

C. OCIS shall not exceed the following cooling section temporary BACT emission limits for 3% LOI product. Each limit is inclusive of startup and shutdown. The averaging period for each limit is a 3-hour period. Final limits shall be established according to Special Condition 25.
1) PM [redacted] lb/ton melt.
2) PM_{10} total [redacted] lb/ton melt.
3) $PM_{2.5}$ total [redacted] lb/ton melt.
4) SO_2 [redacted] lb/ton melt.
5) NO_X [redacted] lb/ton melt.
6) VOC [redacted] lb/ton melt.
7) CO [redacted] lb/ton melt.
8) Reduced Sulfur Compounds (RSC) [redacted] lb/ton melt.
9) GHG [redacted] lb CO_2e/ton melt.

D. OCIS shall not exceed the following cooling section temporary BACT emission limits for 4% LOI product. Each limit is inclusive of startup and shutdown. The averaging period for each limit is a 3-hour period. Final limits shall be established according to Special Condition 25.
1) PM [redacted] lb/ton melt.
2) PM_{10} total [redacted] lb/ton melt.
3) $PM_{2.5}$ total [redacted] lb/ton melt.
4) SO_2 [redacted] lb/ton melt.
5) NO_X [redacted] lb/ton melt.
6) VOC [redacted] lb/ton melt.
7) CO [redacted] lb/ton melt.
8) Reduced Sulfur Compounds (RSC) [redacted] lb/ton melt.
9) GHG [redacted] lb CO_2e/ton melt.

E. OCIS shall not exceed the following cooling section non-BACT emission limits for 3% LOI product. The averaging period for each limit is a 3-hour period. Each limit is inclusive of startup and shutdown.

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

1) PM_{10} total 4.798 lb/hr.
2) $PM_{2.5}$ total 4.415 lb/hr.
3) SO_2 3.46E-02 lb/hr.
4) NO_X 3.386 lb/hr.
5) CO 0.244 lb/hr.

F. OCIS shall not exceed the following cooling section non-BACT emission limits for 4% LOI product. The averaging period for each limit is a 3-hour period. Each limit is inclusive of startup and shutdown.
1) PM_{10} total 5.156 lb/hr.
2) $PM_{2.5}$ total 4.744 lb/hr.
3) SO_2 3.83E-02 lb/hr.
4) NO_X 4.515 lb/hr.
5) CO 0.244 lb/hr.

8. Emission Limit Compliance – Cooling Section
Compliance with the emission limits in Special Conditions 7.C., 7.D., 7.E., and 7.F. for the cooling section shall be demonstrated by use of the cooling section 3% LOI and 4% LOI stack tests.

9. Saw Kerf (EU-07d)
A. The saws shall not be operated in production mode more than [redacted] hours on a 12-month rolling average. The saws may be operated for maintenance or other non-production times when no product is present. The operating time shall be continuously recorded with periods of production and non-production noted.

B. All emissions from the thickness cutting (EU-07c), saw kerf (EU-07d), length cutting, and saws kerf dust handling collectively called saw kerf (EU-07d) shall be captured and controlled by the following:
1) Baghouse (CD-10)
a) The baghouse shall be operated and maintained in accordance with the manufacturer's specifications which shall be kept on site.
b) The baghouse shall be equipped with a bag leak detection system, which shall be operated and maintained in accordance with manufacturer's specifications, which shall be kept on site.
c) Replacement filters for the baghouse shall be kept on hand at all times. The bags shall be made of material appropriate for operating conditions expected to occur (e.g. temperature limits, acidic and alkali resistance, and abrasion resistance). The replacement filter material type and weight shall meet or exceed the specifications of the existing filter. The air to cloth ratio or air to filter ratio shall not be increased when filter replacement is performed.

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

d) OCIS shall maintain an operating and maintenance log for the baghouse which shall include the following:
   i. Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
   ii. Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
   iii. Dates of all above schedules, incidents, activities, and actions.

C. The baghouse flowrate shall not exceed [redacted] scfm on a 24-hr average. OCIS shall demonstrate compliance by establishing a flowrate versus amperage curve prior to startup for commercial operation. Amperage shall be monitored and recorded at least once daily. The resulting flowrate shall be recorded at least once daily.

D. The baghouse shall emit into the common exhaust EP-07.

E. OCIS shall not exceed the PM and PM_{10} filterable BACT emission limits of [redacted] grains per dscf. OCIS shall not exceed the $PM_{2.5}$ filterable BACT emission limit of [redacted] grains per dscf. Compliance shall be demonstrated by the saw kerf stack test.

10. Laminating (EU-11)
A. All emissions from laminating shall be controlled by the following:
   1) Good operating practices including, but not limited to:
      a) Use of minimal melt temperature.
      b) Use of low VOC lubricants.
      c) OCIS shall develop a written good operating practices log for laminating including the following items. The log shall be kept on site and a copy submitted with the initial and renewal operating permit applications.
         i. Criteria for monitoring, inspecting, preventative maintenance, and training.
         ii. Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
         iii. Recommended frequency and dates performed of all above schedules, incidents, activities, and actions.

B. The melt temperature shall not exceed 355 F. OCIS shall monitor and record the melt temperature once per 8 hour period.

C. OCIS shall exclusively use a polyethylene (polyolefin) based laminating adhesive film. The adhesive film shall not be spray applied. OCIS shall demonstrate compliance by obtaining the adhesive film manufacturer's MSDS/SDS for each material type. A change of material or vendors

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

requires new vendor records. OCIS shall maintain these records on site.

D. OCIS shall not use more than [redacted] pounds of adhesive film per 8-hour period. OCIS shall record the adhesive film thickness from the vendor specification, surface area, density, clock-hours used, and calculated usage rate. OCIS shall maintain these records on site.

11. Packaging (EU-10)

A. All emissions from packaging shall be controlled by the following:

1) Good operating practices including, but not limited to:
   a) Minimizing melt temperature.
   b) Minimizing melt area on each package.
   c) Use of low VOC lubricants.
   d) OCIS shall develop a written good operating practices log for packaging including the following items. The log shall be kept on site and a copy submitted with the initial and renewal operating permit applications.
      i. Manufacturer's specifications for the above parameters, site specific specifications for the above parameters obtained through operational experience, etc.
      ii. Criteria for monitoring, inspecting, preventative maintenance, and training.
      iii. Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
      iv. Recommended frequency and dates performed of all above schedules, incidents, activities, and actions.

B. The melt temperature shall not exceed 355 °F. OCIS shall monitor and record the melt temperature once per 8 hour period

C. OCIS shall exclusively use a polyethylene based packaging material for sealing. OCIS shall demonstrate compliance by obtaining the packaging manufacturer's MSDS/SDS for each material type. A change of material or vendors requires new vendor records. OCIS shall maintain these records on site.

E. OCIS shall not seal more than [redacted] packages per 8-hour period. OCIS shall record the number of packages sealed, clock-hours used, and calculated rate. OCIS shall maintain these records on site.

F. OCIS shall exclusively use thermal transfer methods when printing on the packaging.

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

12. Mix Building (EU-08)

A. The material handling day bins and associated conveyors, drop points, etc (herein collectively called mix building (EU-08)) shall not be operated in production mode more than [redacted] hours on a 12-month rolling average. The mix building may be operated for maintenance or other non-production times. The operating time shall be continuously recorded with periods of production and non-production noted.

B. All emissions from the mix building as indicated in the document, *PSD Construction Permit Application Addendum, Owens Corning Insulating Systems, LLC Mineral Wool Plant Joplin, Missouri Jasper County, Missouri, November 2015*, *Table 2-2*, also summarized in Table 4 of this permit, shall be captured and controlled by the following:

1) Baghouse (CD-11)
   a) The baghouse shall be operated and maintained in accordance with the manufacturer's specifications which shall be kept on site.
   b) The baghouse shall be equipped with a bag leak detection system, which shall be operated and maintained in accordance with manufacturer's specifications, which shall be kept on site.
   c) Replacement filters for the baghouse shall be kept on hand at all times. The bags shall be made of material appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance). The replacement filter material type and weight shall meet or exceed the specifications of the existing filter.
   d) OCIS shall maintain an operating and maintenance log for the baghouse which shall include the following:
      i. Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
      ii. Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
      iii. Dates of all above schedules, incidents, activities, and actions.

C. The baghouse flowrate shall not exceed [redacted] scfm on a 24-hr average. OCIS shall demonstrate compliance by establishing a flowrate versus amperage curve prior to startup for commercial operation. Amperage shall be monitored and recorded at least once daily. The resulting flowrate shall be recorded at least once daily.

D. OCIS shall not exceed the PM and PM_{10} filterable BACT emission limits of [redacted] grains per dscf. OCIS shall not exceed the $PM_{2.5}$ filterable BACT emission limit of [redacted] grains per dscf. Compliance shall be demonstrated by the mix building stack test.

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

13. Receiving and Shipping
    A. OCIS shall not exceed the limits in Table 1.

Table 1: Material Throughput Limits

Activity	Limit (tons per day)
Truck Receiving	
Shared limit: Dolomite, limestone, shot bricks, slags, feldspar, trap rock, coke, anodes	[redacted]
Shared limit: Resin, urea, ammonia, emulsified oil, silane, ammonium sulfate, silicone	[redacted]
Shared limit: Lime, sodium bicarbonate, oxygen	[redacted]
Shared limit: Bags, film, wrap	[redacted]
Pallets	[redacted]
Truck Shipping	
Shared limit: Waste from stone, coke, anodes , shot, iron tap, pit, line fallout, product change	[redacted]
Waste (fly ash) from heat recovery system	[redacted]
Waste from saw kerf baghouse	[redacted]
Process waste bunker located outside of mix building, consisting of fibers and binder residue with process oil	[redacted]
Final products	[redacted]
Rail Receiving	
Shared limit: dolomite, limestone, shot bricks, slags, feldspar, trap rock, coke, and anodes	[redacted]

    B. OCIS shall keep daily records on site to demonstrate compliance with the throughput limits in Special Condition 13.A. Records shall include activity, daily throughput, and measurement method. Shipping receipts showing the material name, weight, and date are a valid method.

14. Material Handling
    A. All emissions from the emission units as indicated in the document, *PSD Construction Permit Application Addendum, Owens Corning Insulating Systems, LLC Mineral Wool Plant Joplin, Missouri Jasper County, Missouri, November 2015*, *Table 2-2*, as well as rail receiving (EU-02.0) shall be controlled by water spray or water spray carryover.

    B. The water spray shall be operated and maintained in accordance with the manufacturer's specifications, e.g. spray pattern, droplet size, spray angle, nozzle placement, water pressure, etc. The manufacturer's specifications shall be kept on site.

    C. OCIS shall establish a watering SOP according to Special Condition 22.K.

15. Urea, Sorbent, Fly Ash Transfer
    A. Usage Limitations

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

1) OCIS shall not receive more than [redacted] tons per 12-month period of urea to storage silo (EU-03.0), lime to storage silo (EU-06.0), and sodium bicarbonate to storage silo (EU-06.1). The limit is shared among the silos.
2) OCIS shall keep monthly records on site sufficient to demonstrate compliance with the throughput limit in Special Condition 15.A.1). Records shall include combined throughput, date, and measurement method.

B. All emissions shall be captured and controlled by the following:

1) Urea silo receiving (EU-03.0) using baghouse (CD-12) and urea LIW feeder (EU-03.1) using baghouse (CD-13)
   a) The baghouses shall be operated and maintained in accordance with the manufacturer's specifications which shall be kept on site.
   b) The baghouses shall be equipped with a pressure drop gauge. Pressure drop shall be maintained in accordance with filter manufacturer's specifications, which shall be kept on site. Pressure drop shall be recorded at least once daily. Days of no operation shall be indicated.
   c) Replacement filters for the baghouses shall be kept on hand at all times. The bags shall be made of material appropriate for operating conditions expected to occur (e.g. temperature limits, acidic and alkali resistance, and abrasion resistance). The replacement filter material type and weight shall meet or exceed the specifications of the existing filter. The air to cloth ratio or air to filter ratio shall not be increased when filter replacement is performed.
   d) OCIS shall maintain an operating and maintenance log for the baghouses which shall include the following:
      i. Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
      ii. Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
      iii. Dates of all above schedules, incidents, activities, and actions.

2) Lime silo receiving (EU-06.0) using baghouse (CD-14) and sodium bicarbonate silo receiving (EU-06.1) using baghouse (CD-15)
   a) The baghouses shall be operated and maintained in accordance with the manufacturer's specifications which shall be kept on site.
   b) The baghouses shall be equipped with a pressure drop gauge. Pressure drop shall be maintained in accordance with filter manufacturer's specifications, which shall be kept on site. Pressure drop shall be recorded at least once daily. Days of no operation shall be indicated.

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

c) Replacement filters for the baghouses shall be kept on hand at all times. The bags shall be made of materials appropriate for operating conditions expected to occur (e.g. temperature limits, acidic and alkali resistance, and abrasion resistance). The replacement filter material type and weight shall meet or exceed the specifications of the existing filter. The air to cloth ratio or air to filter ratio shall not be increased when filter replacement is performed.
d) OCIS shall maintain an operating and maintenance log for the baghouses which shall include the following:
   i. Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
   ii. Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
   iii. Dates of all above schedules, incidents, activities, and actions.

3) Fly ash silo filling (EU-04.0) using baghouse (CD-16) and fly ash silo shipping (EU-04.1) using baghouse (CD-17)
   a) The baghouses shall be operated and maintained in accordance with the manufacturer's specifications which shall be kept on site.
   b) The baghouses shall be equipped with a pressure drop gauge. Pressure drop shall be maintained in accordance with filter manufacturer's specifications, which shall be kept on site. Pressure drop shall be recorded at least once daily. Days of no operation shall be indicated.
   c) Replacement filters for the baghouses shall be kept on hand at all times. The bags shall be made of material appropriate for operating conditions expected to occur (e.g. temperature limits, acidic and alkali resistance, and abrasion resistance). The replacement filter material type and weight shall meet or exceed the specifications of the existing filter. The air to cloth ratio or air to filter ratio shall not be increased when filter replacement is performed.
   d) OCIS shall maintain an operating and maintenance log for the baghouses which shall include the following:
      i. Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
      ii. Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
      iii. Dates of all above schedules, incidents, activities, and actions.

C. The baghouse flowrates shall not exceed the following values, each on a 24-hour average.
   1) CD-12: [redacted] scfm

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

2) CD-13: [redacted] scfm
3) CD-14: [redacted] scfm
4) CD-15: [redacted] scfm
5) CD-16: [redacted] scfm
6) CD-17: [redacted] scfm
7) Compliance shall be demonstrated using manufacturer's specifications, which shall be kept on site.

D. OCIS shall not exceed the following grains per dscf PM, PM_{10} filterable, and $PM_{2.5}$ filterable BACT emission limits:
1) CD-12: [redacted]
2) CD-13: [redacted]
3) CD-14: [redacted]
4) CD-15: [redacted]
5) CD-16: [redacted]
6) CD-17: [redacted]
7) Compliance shall be demonstrated using filter manufacturer's specifications, which shall be kept on site.

16. Tanks and Binder Preparation
A. All emissions from the tanks and binder preparation as indicated in Table 2 shall be captured and controlled by the following:
1) Good operating practices including, but not limited to:
a) Fixed roof tanks with proper breather vent settings
b) Submerged fill
c) White shell for tanks located outdoors
d) A leak detection and repair program consisting of EPA Method 21 and the following:
i. Identifying components
ii. Leak definition
iii. Monitoring components
iv. Repairing components
v. Recordkeeping
e) OCIS shall develop a written good operating practices log for the tanks and binder preparation including the following items. The log shall be kept on site and a copy submitted with the initial and renewal operating permit applications.
i. Manufacturer's specifications for the above parameters, site specific specifications for the above parameters obtained through stack testing, CEMS data, operational experience, etc.
ii. Criteria for monitoring, inspecting, preventative maintenance, and training.
iii. Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

iv. Recommended frequency and dates performed of all above schedules, incidents, activities, and actions

Table 2: Tanks and Binder Preparation Subject to GOP

Identifier	Description	Subject to GOP?
TK-01	Resin tank	Yes
TK-02	Resin tank	Yes
N/A	Ammonia tank	
TK-09	Silicone tank	Yes
TK-08	Oil emulsion tank	Yes
N/A	Silane liquid IBC	
TK-07	Silane hydrolyzation tank	Yes
TK-16	Silane usage tank	Yes
N/A	Ammonia sulfate bulk bag	
N/A	Ammonia sulfate feeder	
N/A	Ammonia sulfate hydrolyzation	
N/A	Ammonia sulfate usage tank	
N/A	Hydrolyzed urea tank	
N/A	Hydrolyzed urea tank	
TK-10	Resin/urea react tank	Yes
TK-11	Resin/urea react tank	Yes
TK-12	Resin/urea react tank	Yes
TK-13	Mix tank	Yes

2) All emissions from the resin tanks TK-01 and TK-02 shall also be captured and controlled by the curing oven's RTO per Special Condition 5.B.6).

17. Emergency Engines (EU-15, EU-16)

A. OCIS shall exclusively fire ultra-low sulfur diesel in the emergency engines. OCIS shall demonstrate compliance by obtaining the sulfur content from the MSDS/SDS or other vendor supplied record for each delivery. All records shall be kept on site.

B. Each emergency engine shall not be rated above 300 horsepower. OCIS shall demonstrate compliance by obtaining the manufacturer's specifications showing the engine serial number and rated horsepower. All records shall be kept on site.

C. OCIS shall not operate the emergency engines each more than 100 hours per 12-month period, inclusive of maintenance, readiness testing and all non-emergency usage, but exclusive of emergency situations. Each engine shall be equipped with a non-resettable hour meter. OCIS shall keep monthly records of the hours and reason for operating.

D. OCIS shall control all emissions from the emergency engines using the following:

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

1) Good operating practices including, but not limited to:
   a) Following manufacturer's guidelines.
   b) OCIS shall develop a written good operating practices log for the emergency engines including the following items. The log shall be kept on site and a copy submitted with the initial and renewal operating permit applications.
      i. Manufacturer's guidelines.
      ii. Criteria for monitoring, inspecting, preventative maintenance, and training.
      iii. Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
      iv. Recommended frequency and dates performed of all above schedules, incidents, activities, and actions.

E. BACT Limits
1) The emergency engines shall not exceed the PM, CO and NOx BACT emission limits equal to the applicable emission standards in 40 CFR 60 Subpart IIII, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*. Compliance with the BACT limits shall be demonstrated through compliance with the NSPS standards.
2) The emergency engines shall not exceed the following BACT emission limits. Compliance shall be demonstrated by using ultra low sulfur diesel, good operating practices, and installation of Tier 3 (40 CFR 89) or Tier 4 (40 CFR 1039) engines.
   a) PM_{10} total, 0.19 gram / mechanical kilowatt (kWm)
   b) $PM_{2.5}$ total, 0.19 gram / kWm
   c) SO_2, 2.2E-03 lb/hr
   d) VOC, 5.0E-01 lb/hr
   e) GHG (CO_2e as CO_2, CH_4, and N_2O), 226.93 lb/hr

18. Miscellaneous Heaters
A. Miscellaneous heaters as indicated in Table 4 shall be exclusively fired with natural gas.

B. OCIS shall control all emissions from the miscellaneous heaters using the following:
1) Good operating practices
   a) Manufacturer's specifications.
   b) OCIS shall develop a written good operating practices log for the miscellaneous heaters including the following items. The log shall be kept on site and a copy submitted with the initial and renewal operating permit applications.
      i. Manufacturer's specifications.

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

ii. Criteria for monitoring, inspecting, preventative maintenance, and training.
iii. Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
iv. Recommended frequency and dates performed of all above schedules, incidents, activities, and actions.

2) Maximum energy efficiency including but not limited to:
a) Building insulation.
b) High efficiency fans.
c) OCIS shall develop a written energy efficiency log including the following items. The log shall be kept on site and a copy submitted with the initial and renewal operating permit applications:
i. Manufacturer's specifications for the above parameters, site specific specifications for the above parameters obtained through operational experience.
ii. Criteria for monitoring, inspecting, preventative maintenance, and training.
iii. Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
iv. Recommended frequency and dates performed of all above schedules, incidents, activities, and actions.

C. The miscellaneous heaters shall not exceed the PM, PM_{10}, $PM_{2.5}$, SO_2, NOx, VOC, CO, RSC, SAM, and GHG BACT emission limits equal to the respective emission factors from *AP 42, Fifth Edition, Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Chapter 1.4 Natural Gas Combustion, July 1998*. Compliance shall be demonstrated through good operating practices.

19. Haul Roads

A. OCIS shall pave all haul roads except unpaved segments URHDEL1, URHDEL2, URHDEL3, and BUNKAREA as identified in the document, *Section 8 Ambient Air Quality Impact Analysis (AAQIA) for the Owens Corning Insulating Systems, LLC (Owens Corning)*, dated March 3, 2016, with materials such as asphalt, concrete, or other materials subject to approval by the Air Pollution Control Program.

B. Maintenance and/or repair of all road surfaces shall be conducted as necessary to ensure that the physical integrity of the pavement is adequate to achieve control of fugitive emissions from these areas while the plant is operating.

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

C. OCIS shall establish a paved haul roads cleaning practice according to Special Condition 22.K.

D. OCIS shall control dust from all unpaved haul roads at this site using water or surfactant. The following conditions also apply to unpaved haul roads:
1) The water application rate shall not be less than 100 gallons per 1,000 square feet at least once every day.
2) A quarter inch or more rainfall during the preceding 24 hours shall substitute for one daily water application.
3) Water/surfactant application shall not be required when the ground is frozen or when there will be no traffic on the roads.
4) OCIS shall keep the following records on site:
a) A daily log initialed by the responsible facility operator consisting of roads watered, quantity of water/chemical application used and notation if there was a quarter inch or greater rainfall within the past 24 hours, or that the facility was not in operation.
b) Water tank size, total area of roads to be watered, and the resultant number of fills necessary to accomplish the required application rate.
c) Records of watering equipment breakdowns and repairs.

20. Demonstration of 100% Capture Efficiency
A. Cupola
1) OCIS shall continuously monitor and record the static pressure at the beginning of the cupola exhaust duct and at a point directly above the cupola where charge is fed into the cupola.
2) The static pressure at each location shall be negative at all times the cupola is operating, except during an upset condition including a temperature at the inlet of any one of the cupola emission control devices or the blast air heaters that would risk damage to that device, or a failure of the cupola exhaust fan or motor or any other situation that would pose a safety risk and/or damage to a piece of equipment which requires the automatic opening of the cupola emergency atmospheric exhaust bypass stack.

B. Blowing chamber
1) OCIS shall monitor and record the air velocity at least once weekly at the opening in the blowing chamber adjacent to the spinners. The velocity shall indicate flow into the blowing chamber at all times the blowing chamber is operating.
2) OCIS shall monitor and record the static pressure at least once quarterly at the opening in the blowing chamber where shot falls out. The static pressure shall be negative at all times the blowing chamber

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

is operating.

3) OCIS shall conduct a study to determine the appropriate velocity/pressure needed at each location needed to demonstrate 100% capture efficiency. The study shall consider American Conference of Governmental Industrial Hygienists recommendations and EPA Method 204 requirements. A copy of the study, engineering calculations, and results shall be submitted in an amendment application not more than 180 days after the startup of commercial operation.
4) Exhaust fan motor amperage shall be operated within the range established in the SOP from Special Condition 22.K. Fan motor amperage shall be recorded at least once daily.

C. Curing oven

1) OCIS shall monitor and record the air velocity at least once weekly at the openings in the curing oven for uncured pack charge and cured pack discharge. The velocity shall indicate flow into the curing oven at each location at all times the curing oven is operating.
2) OCIS shall conduct a study to determine the appropriate velocity needed at each location needed to demonstrate 100% capture efficiency. The study shall consider American Conference of Governmental Industrial Hygienists recommendations and EPA Method 204 requirements. A copy of the study, engineering calculations, and results shall be submitted in an amendment application not more than 180 days after the startup of commercial operation.
3) Exhaust fan motor amperage shall be operated within the range established in the SOP from Special Condition 22.K. Fan motor amperage shall be recorded at least once daily.

D. Cooling section

1) OCIS shall monitor and record the air velocity at least once weekly above the cured pack in the cooling section. At least two locations along the length of the pack shall be sampled during each monitoring event. The velocity shall indicate downward flow into the pack at each location at all times the cooling section is operating.
2) OCIS shall conduct a study to determine the appropriate velocity needed at each location needed to demonstrate 100% capture efficiency. The study shall consider American Conference of Governmental Industrial Hygienists recommendations and EPA Method 204 requirements. A copy of the study, engineering calculations, and results shall be submitted in an amendment application not more than 180 days after the startup of commercial operation.

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

3) Exhaust fan motor amperage shall be operated within the range established in the SOP from Special Condition 22.K. Fan motor amperage shall be recorded at least once daily.

E. Saw kerf
1) OCIS shall monitor and record the static pressure at each saw exhaust duct at least once quarterly. The static pressure shall be negative at all times the saws are operating.
2) OCIS shall demonstrate and record negative pressure at each opening in the building 10 feet upstream of the first saw and 10 feet downstream of the last saw the size of a window, man door, or larger. Sampling shall be conducted at least once quarterly using visual indication such as streamers, powder puff, smoke, or other method preapproved by the Air Pollution Control Program. Increases in the number of openings or the total surface area of opening shall only occur if negative pressure is demonstrated at each opening.
3) Baghouse fan amperage shall be operated within the range established in the SOP from Special Condition 22.K. Fan motor amperage shall be recorded at least once daily.

F. Mix building
1) OCIS shall monitor and record the static pressure at each dust pickup point as indicated in the OCIS document, *DUST COLLECTION FLOW DIAGRAM, drawing number P103831, revision C, dated 11/03/2015* at least once quarterly. The static pressure shall be negative at all times the mix building is operating.
2) OCIS shall maintain no visible emissions exiting from the mix building at all times. Compliance shall be demonstrated using EPA Method 9, however no readings shall be higher than zero. Compliance shall be demonstrated once weekly while the mix building is operating.
3) Fan amperage shall be operated within the range established in the SOP from Special Condition 22.K. Fan amperage shall be recorded at least once daily.

G. OCIS shall demonstrate 100% capture efficiency at the transfer of material from BC-10 conveyor into the cupola hopper (EU-02.13) by using sealed enclosures around BC-10 conveyor and the cupola receiving hopper (EU-05.5).

H. OCIS shall use a sealed enclosure around the transfer from the bulk bag to the LIW feeder.

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

21. Restriction of Public Access

A. OCIS shall preclude public access to property that is considered within the non-ambient air zone with respect to the air quality impact analysis conducted for this permit. Installation and maintenance of a fence or other physical barrier shall be the means to preclude public access. A map showing property boundary (precluded areas) can be found in *Section 8 Ambient Air Quality Impact Analysis (AAQIA) for the Owens Corning Insulating Systems, LLC (Owens Corning)*, dated March 3, 2016.

B. OCIS shall complete construction of the physical barrier to enclose the area prior to commencing operation of any emission unit contained in this permit.

22. Emission (Stack) Testing

A. OCIS shall test each pollutant and location indicated in Table 3.

Table 3: Emission Testing, Pollutants and Locations

Pollutant	Cupola	Blowing Chamber sum of ducts A,B,C,D	Curing Oven	Cooling Section	Saws Baghouse	Mix Building Baghouse
PM	x	x	x	x	x	x
PM_{10} total	x	x	x	x	x filterable only	x filterable only
$PM_{2.5}$ total	x	x	x	x	x filterable only	x filterable only
SO_2	x	x	x	x		
NO_X	x	x	x	x		
CO	x	x	x	x		
CO_2	x	x	x	x		
CH_4	x	x	x	x		
N_2O	x	x	x	x		
VOC	x	x	x	x		
RSC	x	x	x	x		
SAM	x	x	x	x		
HF	x	x				
HCL	x	x				
Fluorides (minus HF)	x	x				

B. Emissions shall be tested for the duration or volume specified in the test method. If the results are below the detection limit, then the emission rate shall be reported as the detection limit or the results shall be reported as measured with an expression of the false positive risk. Alternatively, the testing duration or volume may be increased such that a limit of detection is reached. In such case the emission rate (lb/hr) shall consider the longer sampling time, e.g. a lower emission rate may be achieved by extending

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

the sampling time.

C. Separate tests shall be performed to represent "3% LOI" range and "4% LOI" range as defined in Special Condition 3.A. to demonstrate compliance with the blowing chamber, curing oven, and cooling section limits.
   1) LOI shall be determined using OCIS test method W-05Db.
   2) The specific LOI value in the ranges shall be recorded during the test runs.

D. Haul Roads
   1) Silt loading shall not exceed [redacted] grams per square meter (g/m^2) on any paved haul road individual sample. This is not a BACT limit.

   2) Compliance with the silt loading limitation shall be demonstrated by conducting silt loading sampling (as defined in Appendix C.1 and C.2 of *AP-42 Compilation of Air Pollution Emission Factors*, Fifth Edition).
      a) Silt loading sampling shall be conducted using a vacuum equipped with HEPA filtration.
      b) Each sample area shall be large enough to obtain 300 grams of material.
      c) The sampling locations shall be representative (as defined in Appendix C of AP-42), however at least 3 samples shall be obtained consisting of:
         i. Along the western Stateline Road entrance road, between Stateline Road and OCIS buildings.
         ii. In the paved area immediately adjacent to the southern edge of the unpaved storage bunker area.
         iii. In the fines shipping area.

   3) Sampling shall be conducted at the midpoint of the cleaning cycle (e.g. if cleaning is scheduled every 24 hours, then sampling shall be conducted at the midpoint of 12 hours). The cleaning method and frequency shall be conducted at the same method and frequency in the SOP report from Special Condition 22.K. that corresponds to a compliant test, or more often. Cleaning may be temporarily suspended during adequate precipitation or inclement weather (i.e. rain exceeding 0.25 inches per day being sufficient to maintain no visible emissions, or roads covered in snow or ice). If rain exceeding 0.25 inches per day occurs, then sampling shall be conducted at the midpoint of the next cleaning cycle. Record of the cleaning schedule, actual cleanings conducted, and daily precipitation shall be kept on site.

   4) Analysis of samples shall be conducted in accordance with ASTM C 136 method. The silt calculation shall add all mass retained in the

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

vacuum bag to the mass passing the #200 sieve.

5) Testing shall be conducted according to the following schedule:
   a) Initial testing shall be conducted according to Special Condition 22.G. Should the testing yield no exceedance of the limit during this period then,
   b) Testing shall be conducted once a quarter for four consecutive quarters. Should the testing yield no exceedance of the limit during this period then,
   c) Testing shall be conducted once annually.
   d) If at any time an exceedance is shown, testing shall be conducted within 30 days and progress in a manner according to the above schedule.

6) Two copies (one hardcopy, one electronic) of the full test report and results shall be submitted to the Compliance/Enforcement Section within 60 days of completion of the initial testing. At a minimum, the report shall include sample road segment locations, recent weather conditions, HEPA vacuum bag model number, cleaning method and schedule, sampling date/time, tons of material received and shipped on the sampling day compared to the permitted capacity, legible copies of the raw data sheets, analytical instrument laboratory data, and complete sample calculations from the required EPA Method for at least one sample run. Subsequent test results shall be kept on site.

7) If the results show that the silt loading exceeds the [redacted] g/m^2 limit on two consecutive tests (i.e. if one or more of the three required samples per test shows an exceedance, then the entire test shows an exceedance, but two consecutive tests are needed to show an exceedance of the limit), then OCIS shall evaluate what effects the exceedance would have had on the ambient modeling of this project. OCIS shall submit the results of any such evaluation, in a complete Application for Authority to Construct to the Permits Section within 90 days of completing the silt loading test results report required in Special Condition 22.D.6) of this permit.

E. Material Handling

1) The water spray application rates shall be sufficient as to not exceed 5% opacity at each of the following locations:
   a) Each of 2 main openings at rail receiving shed (EU-02.0)
   b) Transfer from truck and radial stacker to 8 storage bunkers (EU-01.0 to EU-01.8)
   c) Mix building hopper (EU-02.11)
   d) Coke/anode waste bunker (EU-01.9)
   e) Stone waste bunker (EU-01.10)

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

2) Opacity shall be demonstrated using EPA Method 9 and shall be conducted according to the following schedule:
   a) Initial testing shall be conducted according to Special Condition 22.G. Should the testing yield no exceedance of the limit during this period then,
   b) Testing shall be conducted once a quarter for four consecutive quarters. Should the testing yield no exceedance of the limit during this period then,
   c) Testing shall be conducted once annually during July or August.
   d) If at any time an exceedance is shown, testing shall be conducted within 30 days and progress in a manner according to the above schedule.

3) The water application rates and locations shall be maintained and recorded within the values in the SOP report from Special Condition 22.K.

4) Water application rates may be reduced or suspended during a precipitation event, in such case the precipitation date, time and duration, and the reduced application rates shall be recorded.

5) If freezing conditions occur then water spray shall not be curtailed. The water spray may contain antifreeze additives, and if so, shall contain no more than 0.5% VOC by weight. A copy of the additive MSDS/SDS indicating VOC content shall be kept on site.

6) Two copies (one hardcopy, one electronic) of the full test report and results shall be submitted to the Compliance/Enforcement Section within 60 days of completion of the initial testing. At a minimum, the report shall include opacity reading locations, date and time; watering locations, watering rates, recent weather conditions, tons of material received and shipped on the opacity testing day compared to the permitted capacity, legible copies of the raw data sheets, and complete sample calculations from the required EPA Method for at least one sample run. Subsequent test results shall be kept on site.

7) If the results show that the opacity exceeds the 5% limit on two consecutive tests (i.e. if one or more of the 13 required locations per test shows an exceedance, then the entire test shows an exceedance, but two consecutive tests are needed to show an exceedance of the limit), then OCIS shall evaluate what effects the exceedance would have had on the ambient modeling of this project. OCIS shall submit the results of any such evaluation, in a complete Application for

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

Authority to Construct to the Permits Section within 90 days of completing the opacity test results report required in Special Condition 22.E.6) of this permit.

F. All cupola, blowing chamber, curing oven, cooling section, and saws tests shall be performed at the maximum melt to charge efficiency, i.e. no carbonate (dolomite or limestone) charge, except cupola CO_2 tests shall be performed with and without carbonates. Testing shall be performed at the maximum capacity, [redacted] tph nonfuel charge, [redacted] tph coke, and [redacted] tph anodes. If it is impractical to test at maximum capacity, emission units may be tested at less than the maximum capacity; in this case, subsequent operation of the emission unit(s) is limited to 110 percent of the test rate until a new test is conducted. Once the emission units are so limited, operation at higher capacities is allowed for no more than 15 total days for the purpose of additional compliance testing to regain the authority to operate at the maximum capacity.

G. Initial testing shall be performed within 60 days after achieving the maximum capacity of the respective process. Initial testing shall be performed not later than 180 days after initial start-up for commercial operation and shall be conducted in accordance with the procedures in this permit and the approved test plan.

H. A completed Proposed Test Plan Form (enclosed) shall be submitted to the Compliance/Enforcement Section at least 60 days prior to the proposed test date so that the Air Pollution Control Program may arrange a pretest meeting, if necessary, and assure that the test date is acceptable for an observer to be present. The Proposed Test Plan may serve the purpose of notification and must be approved by the Director prior to conducting the required emission testing. Each proposed test method shall be approved by the Air Pollution Control Program prior to conducting the respective test.

I. Two copies (one hardcopy, one electronic) of the full test report shall be submitted to the Compliance/Enforcement Section within 60 days of completion of any required testing. The report shall include legible copies of the raw data sheets, analytical instrument laboratory data, and complete sample calculations from the required test method for at least one sample run. The report shall include the following values present during each test:
1) Cupola
   a) Charge rate of each raw material (tph)
   b) Charge rate of each fuel (tph)
   c) Sulfur content of each raw material (weight %)

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

d) Sulfur content of each fuel (weight %)

2) Blowing chamber
   a) Charge rate of each raw material (tph)
   b) Charge rate of each fuel (tph)
   c) Sulfur content of each raw material (weight %)
   d) Sulfur content of each fuel (weight %)
   e) Unbonded fiber rate (tph)
   f) Usage rate of each binder raw material (tph)
   g) LOI
   h) Finished product (tph) and name
3) Curing oven
   a) Charge rate of each raw material (tph)
   b) Unbonded fiber rate (tph)
   c) Usage rate of each binder raw material (tph)
   d) LOI
   e) Finished product (tph) and name
4) Cooling section
   a) Charge rate of each raw material (tph)
   b) Unbonded fiber rate (tph)
   c) Usage rate of each binder raw material (tph)
   d) LOI
   e) Finished product (tph) and name
5) Saws' baghouse
   a) Charge rate of each raw material (tph)
   b) Unbonded fiber rate (tph)
   c) Finished product (tph) and name
6) Mix building
   a) Receiving rate into the mix building (tph)
   b) Discharge rate from the mix building (tph)

J. The test reports are to fully account for all operational and emission parameters addressed both in the permit conditions as well as in any other applicable state or federal rules or regulations. Applicable NSPS and MACT standards may have separate test requirements than this permit.

K. OCIS shall submit a standard operating procedure (SOP) report to the Compliance/Enforcement Section, including but not limited to, establishing ranges for the parameters indicated below. The SOP report shall show how the ranges were developed (e.g. directly from compliant testing, calculations from test data, fan motor amperage/air flowrate curve, manufacturer's specifications which shall be included). The SOP report shall be submitted within 60 days of the submittal of the initial test report in Special Condition 22.I.
   1) Cupola – cyclone pressure drop, thermal oxidizer temperature, lime

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

and sodium bicarbonate injection rate (lb/hr) for each location, baghouse pressure drop.
2) Blowing chamber – stone wool filter pressure drop, replacement schedule, and required fan motor amperage needed to demonstrate 100% capture efficiency.
3) Curing oven – curing oven temperature, stone wool filter pressure, replacement schedule, and required fan motor amperage needed to demonstrate 100% capture efficiency; RTO temperature, RTO bed type and replacement schedule.
4) Cooling section – stone wool filter pressure drop, replacement schedule, and required fan motor amperage needed to demonstrate 100% capture efficiency.
5) Saw kerf baghouse fan motor amperage needed to demonstrate 100% capture efficiency.
6) Mix building baghouse required fan motor amperage needed to demonstrate 100% capture efficiency.
7) Charge material, fuel handling, and waste handling units as indicated in Special Condition 14.A. – water application rate for each required location (e.g. gal/ton, gal/hr).
8) Haul road cleaning method and schedule.

L. Subsequent testing shall be conducted at the following frequencies:
1) Cupola once annually, except any pollutant monitored by CEMS shall be stack tested at a frequency at least as often as necessary for RATA.
2) Blowing chamber, curing oven, and cooling section each once annually.
3) Haul roads silt content, frequency in Special Condition 22.D.5).
4) Material handling moisture content, frequency in Special Condition 22.E.5).
5) The saws baghouse and mix building baghouse shall each be tested once every five years.

23. Post Construction Monitoring

A. OCIS shall install, operate, and maintain a system of ambient air monitoring stations for NO_X. OCIS shall install, operate, and maintain these ambient NO_X monitoring networks within 180 days of startup for commercial operation[1] of the equipment and processes covered by this construction permit, according to the following specifications.

B. OCIS shall submit a Quality Assurance Project Plan (QAPP) for NO_X for department approval at least 90 days prior to startup of the monitoring

1 Startup for commercial operation is defined as the first day salable product is made.

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

stations. The QAPP shall contain the specifications of the monitoring program noted in this special condition and include:
1) The conditions under which the monitoring may be discontinued;
2) The date sampling will commence; and,
3) The nature of the information to be reported (e.g. hourly concentrations).

C. The initial NO_X monitoring network approved under this permit shall consist of no less than one monitor.

D. OCIS shall conduct meteorological monitoring in conjunction with the NO_X monitoring plan. This meteorological monitoring shall occur at a minimum of one site as described by an approved QAPP for meteorological data and continue for the duration of the sampling period. Justification for use of other meteorological data, such as nearby airport data, in lieu of conducting site specific meteorological monitoring may be submitted as part of the QAPP.

E. OCIS shall locate all NO_X monitors such that the monitors will measure ambient air quality for each pollutant in all areas of maximum impact, as approved by the department.

F. OCIS shall report the data collected in accordance with this special condition to the department on a quarterly basis.

G. If concentrations are monitored that exceed the NAAQS for NO_X, then OCIS shall report the monitored information (the beginning and ending date and time, and the value for the applicable standard time period) within 30 days of the event, or as approved in the QAPP, to the Compliance/Enforcement Section.

H. Concentrations resulting from this monitoring greater than the NAAQS attributed to operations permitted herein represent cause for reopening this permit. OCIS shall:
1) Conduct a comprehensive review of the results and develop a corrective action plan; and,
2) Submit the corrective action plan to the Compliance/Enforcement Section within 90 days of the initial report of the event for approval; and,
3) Implement the corrective action plan immediately upon department approval.

I. The monitors shall be in operation a minimum of one year prior to the submittal of any request for discontinuation. To discontinue monitoring,

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

OCIS shall submit a written request to the Air Pollution Control Program. The monitors shall remain in operation until approval for discontinuation has been granted by the Air Pollution Control Program. The written request shall contain at a minimum:

1) An analysis of the monitored data with respect to each applicable standard;
   i. If the monitored data is less than 80% of the standard, then once the data has been quality assured by the Air Pollution Control Program OCIS will be able to discontinue the monitor.
   ii. If the monitored data is greater than or equal to 80% of the standard and OCIS would like to discontinue the monitor, then OCIS shall submit a justification based on the monitored data on why OCIS should be able to discontinue. The justification shall include a detailed technical discussion of OCIS' impact on the monitored data. A comparison of the monitored data against the plant operation information gathered may also be used to support the justification.

24. As-Built Evaluation

A. OCIS shall notify the Permits Section in writing before the initial startup for commercial operation of any emission unit in this permit of any changes to the as-built MHDR, location, or model release parameters compared to this permit's application or the *Section 8 Ambient Air Quality Impact Analysis (AAQIA) for the Owens Corning Insulating Systems, LLC (Owens Corning)*, dated March 3, 2016.

B. OCIS shall submit an as-built report within 180 days of initial startup for commercial operation. The report shall contain at minimum the updated MHDR, location, and model release parameters for the installation.

25. Temporary BACT

A. OCIS shall submit a proposed BACT study to the Permits Section at least 30 days prior to startup for commercial operation. The proposal must be approved before beginning the BACT study. The BACT study shall begin no later than 30 days after approval. The BACT study shall end one year after commencing.

B. OCIS shall monitor and record the following information during the BACT study:
   1) Usage rate of all cupola raw materials and their sulfur wt%.
   2) Usage rate of all fuels (tph, MMBtu/hr input), and their sulfur wt%.
   3) All binder raw materials (tph), binder usage rate (tph).
   4) LOI.
   5) Charge rate (identify melt materials versus fuel), fiber rate, and

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

finished product rate (tph).
6) Product name and individual target LOI.
7) All criteria from the SOP report.
8) CEMS and Compliance/Enforcement Section verified stack tested emission rates in the units of measure of the limits required for this permit.
9) At least three complete stack tests from each the cupola (only the cupola PM_{10}, $PM_{2.5}$, VOC, RSC, SAM, CH_4, and N_2O), blowing chamber, curing oven, and cooling section shall be conducted for each "3% LOI" and "4% LOI" ranges. At least two individual target LOIs shall be tested within each LOI range.
10) Startup and shutdown periods.
11) Times and dates linking all of the above.

C. OCIS shall submit an application to amend this permit within 180 days of the completion of the BACT study. In addition to the material necessary to deem an application complete, the application shall include the following information:
1) A copy of the BACT study.
2) A copy of the SOP report from Special Condition 22.K.
3) An evaluation of each temporary BACT limit in this permit, considering if permitted emission limits, the basis of the limit, and the averaging periods are appropriate, and if amended or additional emission limits, basis, and averaging periods are necessary. (E.g. the blowing chamber, curing oven, and cooling section are permitted with zero SAM emissions, but stack testing may show an emission rate. Also changing from melt based to binder based limits.) At a minimum, the evaluation shall rely upon:
a) All respective information in the BACT study.
b) A statistical analysis including but not limited to the mean, standard deviation, regression analysis, data outliers and the reason why they are outliers. Where CEMS are used, the emissions mean and standard deviation shall be calculated for every 15 minute period.
c) A prediction of emission rates based upon monitored parameters.
4) Where limits are requested to be increased, the criteria in the November 19, 1987 EPA document, *Request for Determination on Best Available Control Technology (BACT) Issues -- Ogden Martin Tulsa Municipal Waste Incinerator Facility*, shall first be satisfied. The criteria include all of the following:
a) The units were constructed in conformity with the permit.
b) Errors, faulty data, or incorrect assumptions contained in the permit application resulted in inappropriate BACT emission limits and the applicant did not intentionally act to misrepresent of conceal data.
c) The applicant investigated and reported all available options to

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

reduce emissions to a lower, if not the permitted limit.

5) The permit amendment shall be publically noticed.

26. Record Keeping Requirements
OCIS shall maintain all records required by this permit for not less than five years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request. These records shall include MSDS/SDS or certified product data sheets for all materials used.

27. Reporting Requirements

A. OCIS shall report all CEMS monitored emissions in the semi-annual monitoring report and in the annual compliance certification.

B. OCIS shall electronically submit all Relative Accuracy Test Audit (RATA), quality assurance, and quality control reports used to demonstrate compliance with all CEMS monitored emission limits with the semi-annual monitoring report and with the annual compliance certification for the 3-year period beginning with commencement of operations under this permit. After the 3-year period, the reports shall be kept on site.

C. OCIS shall report to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than 10 days after the end of the month during which any record required by this permit shows an exceedance of a limitation imposed by this permit.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (8) REVIEW
Project Number: 2015-05-005
Installation ID Number: 097-0176
Permit Number:

Installation Address:	Parent Company:
Owens Corning Insulating Systems, LLC	Owens Corning
1983 State Line Road	1 Owens Corning Pkwy
Joplin, MO 64804	Toledo, OH 43659

Jasper County, S11, T27N, R34W

REVIEW SUMMARY

- Owens Corning Insulating Systems, LLC has applied for authority to construct a mineral wool manufacturing installation.

- The application was deemed complete on November 6, 2015.

- Several HAPs exceed the respective SMAL.

- 40 CFR 60 Subpart IIII, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*, applies to the emergency engine. The engine is Tier 3 rated or better.

- 40 CFR 60 Subpart VVa, *Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006*, does not apply. The installation will emit formaldehyde, methanol, phenol, and other chemicals listed in §60.489. However, the installation will not produce as an intermediate or final product any of those chemicals. Formaldehyde, methanol, and phenol are components of the purchased phenol-formaldehyde (phenolic) resin.

- 40 CFR 61 Subpart V, *National Emission Standards for Equipment Leaks (Fugitive Emission Sources)*, does not apply. The phenolic resin contains the highest HAP weight %. The resin MSDS indicates the sum of formaldehyde and phenol is less than [redacted]% by weight. Therefore, none of the equipment is in VHAP service and the installation is not subject.

- 40 CFR 63 Subpart FFFF, *National Emission Standard for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing*, does not apply. The installation does manufacture an intermediate resin (binder urea resin SIC 282, or adhesive SIC 289) subject to §63.2435(b)(1)(i), and the installation processes, uses, or generates an organic HAP in (b)(2), and the binder preparation tanks are not subject to another MACT in (b)(3). However, the manufactured binder is not an *isolated intermediate*,

as the manufactured binder tanks TK-10, 11, 12, and 13 are used for mixing, not solely storing. There is no manufactured binder tank used solely for storage. Therefore the installation is not subject.

- 40 CFR 63 Subpart DDD, *National Emission Standards for Hazardous Air Pollutants for Mineral Wool Production*, applies to the installation. The cupola is open-top and includes slag as a raw material. The collection chamber is vertical.

- 40 CFR 63 Subpart ZZZZ, *National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*, applies to the emergency engines. However, according to §63.6590(c)(6) the engines must meet the requirements of this part by meeting the requirements of 40 CFR 60 Subpart IIII.

- Emissions are controlled by the add-on controls indicated in Table 4. BACT requires additional controls including, but not limited to, good operating and combustion practices that are indicated in the special conditions.

- This review was conducted in accordance with Section (8) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of PM_{10}, VOC, CO_2e, and HAPs are above the major source threshold. Potential emissions of PM, PM_{10}, $PM_{2.5}$, SO_2, NO_X, VOC, CO, SAM, RSC, and CO_2e are above the respective PSD significant emission rate.

- This installation is located in Jasper County, an attainment area for all criteria pollutants.

- This installation is not on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation's major source level is 250 tons per year and fugitive emissions are not counted toward major source applicability.

- Ambient air quality modeling was performed to determine the ambient impact of PM_{10}, $PM_{2.5}$, SO_2, NO_X, CO, and SAM. Modeling was not performed for HAPs exceeding the SMAL because the units that emit these HAPs in amounts exceeding the SMAL are subject to MACT DDD, which completed the risk and technology review on July 29, 2015. It is the Air Pollution Control Program's policy not to model after the RTR has been completed.

- Emissions testing is required.

- Submittal of a part 70 operating permit application is required for this installation within 1 year of startup for commercial operation.

- Approval of this permit is recommended with special conditions.

PROJECT DESCRIPTION

OCIS has applied for a construction permit to manufacture bonded mineral wool insulation. The new installation will be located on Stateline Rd west of Joplin at the former Mars Petcare installation. Raw materials including iron/steel/copper slags and non-metallic minerals will be received by rail and truck from offsite, stored, and melted in a cupola. The cupola will be fired with metcoke and spent primary aluminum reduction anodes, also received from offsite. Other anodes may be used. Melt will be spun into fibers in a vertical blowing/collecting chamber, where a formaldehyde/urea/phenol based binder will be applied. The binder will be manufactured on-site from delivered materials. Bonded mineral wool will be cured in an oven, cooled, packaged, and shipped. Products will fall into a 3% LOI range or a 4% LOI range. Some products will be laminated to facings prior to packaging. The installation will be major source under construction permits and a part 70 source under operating permits. The SIC is 3296, and the NAICS is 327993. Emission units, maximum design rates, and control devices are summarized in Table 4.

Table 4: Emission Unit Summary

Emission Point	Add-on Control Device	Emission Unit	Description	Limited MHDR
EP-01.0	Watering	EU-01.0	Slag Storage Bunker	confidential
EP-01.1		EU-01.1	Copper Slag Storage Bunker	
EP-01.2		EU-01.2	Coke Storage Bunker	
EP-01.3		EU-01.3	Trap Rock Storage Bunker	
EP-01.4		EU-01.4	Feldspar Storage Bunker	
EP-01.5		EU-01.5	Anodes Storage Bunker	
EP-01.6		EU-01.6	Shot Brick Storage Bunker	
EP-01.7		EU-01.7	Limestone Storage Bunker	
EP-01.8		EU-01.8	Dolomite Storage Bunker	
EP-01.9		EU-01.9	Coke/Anodes Waste Bunker (Outside of Mix Building)	
EP-01.10		EU-01.10	Stone Waste Bunker (Outside of Mix Building)	
EP-01.11		EU-01.11	Shot Storage Pile (Outside of Cupola Building)	
EP-01.12		EU-01.12	Raw Material (Stone) Waste Container	
EP-01.13		EU-01.13	Coke/Anodes Waste Container	
EP-01.14		EU-01.14	Shot Shipping Container #1	
EP-01.15		EU-01.15	Shot Shipping Container #2	
EP-01.16		EU-01.16	Shot Shipping Container #3	
EP-01.17		EU-01.17	Shot Shipping Container #4	
EP-01.18		EU-01.18	Shot Shipping Container #5	
EP-01.19		EU-01.19	Shot Shipping Container #6	
EP-01.20		EU-01.20	Shot Shipping Container #7	
EP-02.0		EU-02.0	Transfer of Raw Material from Rail Car to Hopper on BC-1 Conveyor Inside a Rail Car Delivery Bay	
EU-02.1		EU-02.1	Raw Material Drop from Rail Unloader BC-1 to Radial Stacker BC-2	
EP-02.2		EU-02.2	Slag Transfer from Radial Stacker BC-2 to Storage Bunkers	
EP-02.3		EU-02.3	Copper Slag Transfer from Radial Stacker BC-2 to Storage Bunkers	
EP-02.4		EU-02.4	Coke Transfer from Radial Stacker BC-2 to Storage Bunkers	
EP-02.5		EU-02.5	Trap Rock Transfer from Radial Stacker BC-2 to Storage Bunkers	
EP-02.6		EU-02.6	Feldspar Transfer from Radial Stacker BC-2 to Storage Bunkers	
EP-02.7		EU-02.7	Anodes Transfer from Radial Stacker BC-2 to Storage Bunkers	
EP-02.8		EU-02.8	Shot Bricks Transfer from Truck to Storage Bunkers	
EP-02.9		EU-02.9	Limestone Transfer from Truck to Storage Bunkers	
EP-02.10		EU-02.10	Dolomite Transfer from Truck to Storage Bunkers	
EP-02.11		EU-02.11	Raw Materials Transfer From Storage Bunkers to Batch Preparation System Feed Hopper via Front-End Loader (Front End Loader to BC-3)	

EP-02.12		EU-02.12	Raw Material Transfer from Belt Feeder BC-3 to High Angle Conveyor BC-4 that leads to Mix Building	
EP-02.14		EU-02.14	Waste Transfer from Coke Waste Conveyor BC-8 to Coke Waste Pile (3% of Purchased Raw Material)	
EP-02.15		EU-02.15	Waste Transfer from Stone Waste Conveyor BC-7 to Stone Pile (3% of Purchased Raw Material)	
EP-02.16		EU-02.16	Waste Transfer from Coke Waste Pile to Shipping Container via Front-end Loader	
EP-02.17		EU-02.17	Waste Transfer from Stone Waste Pile to Shipping Container via Front-end Loader	
EP-02.18		EU-02.18	Shot Transfer from Cupola Building to Shot Storage Pile	
EP-02.19		EU-02.19	Shot from Shot Storage Pile to Shipping Container	
EP-02.20		EU-02.20		
EP-02.21		EU-02.21		
EP-02.22		EU-02.22		
EP-02.23		EU-02.23		
EP-02.24		EU-02.24		
EP-02.25		EU-02.25		
EP-03.0	CD-12 baghouse	EU-03.0	Pneumatic Delivery of Urea to Storage Silo	
EP-03.1	CD-13 baghouse	EU-03.1	Urea Dust Ventilation	
EP-04.0	CD-16 baghouse	EU-04.0	Mechanical Loading of Fly Ash into Fly Ash Silo	
EP-04.1	CD-17 baghouse	EU-04.1	Mechanical Loading of Fly Ash into Truck	
EP-05	Routed to cupola	EU-02.13	Raw Material Transfer from Cupola Conveyor BC-10 to Cupola Receiving Hopper	
	CD-01 cyclone, CD-02 thermal oxidizer, CD-03 DSI, CD-04 baghouse	EU-05a	Cupola	
	CD-05 stone wool filter	EU-05b	Blowing Chamber	
	Routed to blowing chamber	EU-05c	Pack Edge Trim Operation (Inside Production Buildings 1)	
	Routed to blowing chamber	EU-05d	Wash Water System	
	Routed to cupola	EU-05e	Raw Material Transfer from Lift Conveyor to Cupola Rotary Charger (Inside Production Building 1)	
EP-06.0	CD-14 baghouse	EU-06.0	Pneumatic Delivery of Sorbent (Lime)	
EP-06.1	CD-15 baghouse	EU-06.1	Pneumatic Delivery of Sorbent (Sodium Bicarbonate)	
EP-07	CD-06 Low NO_X burners, CD-07 Stone wool filter, CD-08 RTO	EU-07a	Curing Oven	
	CD-09 stone wool filter	EU-07b	Cooling Section	
	CD-10 baghouse	EU-07c	Width Cutter, Thickness Cutting & Saws Kerf (Inside Production Buildings 1 and 2)	
		EU-07d		
	Curing Oven's RTO CD-08	TK-01 TK-02	Phenol-Formaldehyde Resin Tanks (Outdoors)	
	None	TK-07	Silane System - Hydrolization Tank (Indoors)	
	None	TK-16	Silane System - Usage Tank (Indoors)	

	None	TK-08	CrystalCer90 Tank (Outdoors)	
	None	TK-09	Silicone Tank (Outdoors)	
	None	N/A	Ammonia Tank	
	None	N/A	Ammonia Sulfate Bulk Bags, Hydrolyzation	
	None	N/A	Hydrolyzed Urea Tanks	
	None	TK-10 TK-11 TK-12	“Pre-Mix” Resin-Urea React Tanks (Outdoors)	
	None	TK-13	Mix Tank (Indoors)	
EP-08	Dust Collector For Mix Building CD-11	EU-08.0	Material Transfer from High Angle Conveyor BC-4 to Shuttle Conveyor BC-5	
		EU-08.1	Material Transfer from Shuttle Conveyor BC-5 to Cupola Day Bin #1	
		EU-08.2	Material Transfer from Shuttle Conveyor BC-5 to Cupola Day Bin #2	
		EU-08.3	Material Transfer from Shuttle Conveyor BC-5 to Cupola Day Bin #3	
		EU-08.4	Material Transfer from Shuttle Conveyor BC-5 to Cupola Day Bin #4	
		EU-08.5	Material Transfer from Shuttle Conveyor BC-5 to Cupola Day Bin #5	
		EU-08.6	Material Transfer from Cupola Day Bin #1 to Batch Screening & Metering Feed #1	
		EU-08.7	Material Transfer from Cupola Day Bin #2 to Batch Screening & Metering Feed #2	
		EU-08.8	Material Transfer from Cupola Day Bin #3 to Batch Screening & Metering Feed #3	
		EU-08.9	Material Transfer from Cupola Day Bin #4 to Batch Screening & Metering Feed #4	
		EU-08.10	Material Transfer from Cupola Day Bin #5 to Batch Screening & Metering Feed #5	
		EU-08.11	Batch Screening & Metering Feed #1 to Process Conveyor BC-6	
		EU-08.12	Batch Screening & Metering Feed #2 to Process Conveyor BC-6	
		EU-08.13	Batch Screening & Metering Feed #3 to Process Conveyor BC-6	
		EU-08.14	Batch Screening & Metering Feed #4 to Process Conveyor BC-6	
		EU-08.15	Batch Screening & Metering Feed #5 to Process Conveyor BC-6	
		EU-08.16	Batch Screening & Metering Feed #1 to Process Conveyor BC-8	
		EU-08.17	Batch Screening & Metering Feed #2 to Stone Waste Conveyor BC-8	
		EU-08.18	Batch Screening & Metering Feed #3 to Stone Waste Conveyor BC-8	
		EU-08.19	Batch Screening & Metering Feed #4 to Stone Waste Conveyor BC-8	
		EU-08.20	Batch Screening & Metering Feed #5 to Coke/Anode Waste Conveyor BC-7	
		EU-08.21	Material Transfer from Process Conveyor BC-6 to High Angle Conveyor BC-9	
		EU-08.22	Material Transfer from High Angle Conveyor BC-9 to Cupola Conveyor BC-10	
EP-09	None	TK-15	Diesel Fuel Storage Tank	
EP-10	None	EU-10	Packaging (in Warehouse)	
EP-11	None	EU-11	Adhesive Application System (Laminator)	
EP-12.0	Watering, or vacuum, etc	EU-12.0	Truck Delivery to Raw Material Storage Bunkers (Paved)	
EP-12.1		EU-12.1	Final Product Pickup (Paved)	
EP-12.2		EU-12.2	Truck Delivery for Binder Raw Materials Phenolic Resin (Paved)	
EP-12.3		EU-12.3	Truck Pickup of Stone, Coke, Anodes Waste (Paved)	
EP-12.3a		EU-12.3a	Truck Pickup of Stone, Coke, Anodes Waste (Paved)	
EP-12.4		EU-12.4	Truck Pickup of Iron Tapping & Pit Melting (Paved)	
EP-12.4a		EU-12.4a	Truck Pickup of Iron Tapping & Pit Melting (Paved)	
EP-12.5		EU-12.5	Truck Pickup of Shot (Paved)	
EP-12.5a		EU-12.5a	Truck Pickup of Shot (Paved)	
EP-12.5		EU-12.5	Truck pickup of containers with Line Fallout and Product Change (Paved)	
EP-12.6a		EU-12.6a	Front End Loader from Stone/Coke Waste Pile to Waste Storage Area (Paved)	
EP-12.6b		EU-12.6b	Front End Loader to Waste Containers (Paved)	

EP-12.7a		EU-12.7a	Front End Loader from Cupola to Waste Area (Paved)	
EP-12.7b		EU-12.7b	Front End Loader to Waste Containers (Paved)	
EP-12.8		EU-12.8	Truck Delivery of Sorbents (Lime and Sodium Carbonate) (Paved)	
EP-12.9		EU-12.9	Truck Delivery for Binder Raw Materials Urea (Paved)	
EP-12.10		EU-12.10	Truck Delivery for Binder Raw Materials Ammonia (Paved)	
EP-12.11		EU-12.11	Truck Delivery for Binder Raw Materials Crystal Clr Oil(Paved)	
EP-12.12		EU-12.12	Van Delivery for Binder Raw Materials Silane (Paved)	
EP-12.13		EU-12.13	Truck Delivery for Binder Raw Materials Ammonium Sulfate (Paved)	
EP-12.14		EU-12.14	Truck Delivery for Binder Raw Materials Silicone (Paved)	
EP-12.15		EU-12.15	Truck Pickup of Fly Ash (Cupola APC & Heat Recovery System) (Paved)	
EP-12.16		EU-12.16	Truck Pickup of Sizing Saws Baghouse Waste (Paved)	
EP-12.17		EU-12.17	Truck drop off of Bagging Material (Paved)	
EP-12.18		EU-12.18	Truck drop off of Oxygen (Paved)	
EP-12.19		EU-12.19	Truck drop off of Pallets (Paved)	
EP-13.0		EU-13.0	Truck Delivery to Raw Material Storage Bunkers (Unpaved)	
EP-13.1		EU-13.1a	Front End Loader from Raw Material Storage Bunker to Feed Hopper (Unpaved)	
		EU-13.1b	Front End Loader from Stone/Coke Waste Pile to Storage Containers (Unpaved)	
EP-15	None	EU-15	Diesel Emergency Fire Pump	
EP-16	None	EU-16	Diesel Emergency Cupola Cooling Pump	

Miscellaneous HVAC Heaters		
Emission Unit	Description	MHDR (MMBtu/hr input)
BINDGEN1	MUA-XX - Binder Area	confidential
UHXXGEN1	UH-XX - Spinner Area	
COMPSEGN	Production Bld. Compressor Room	
PRODGEN1	Production Bld. UH-XX (1)	
PRODGEN2	Production Bld. UH-XX (2)	
PRODGEN3	Production Bld. UH-XX (3)	
PRODGEN4	Production Bld. UH-XX (4)	
PRODGEN5	Production Bld. UH-XX (5)	
PRODGEN6	Production Bld. UH-XX (6)	
PRODGEN7	Production Bld. UH-XX (7)	
PRODGEN8	Production Bld. UH-XX (8)	
PRODGEN9	Production Bld. UH-XX (9)	
SHIPGEN	Production Bld. UH-XX Shipping Office	
LOADGEN1	Production Bld. UH-XX Loading Dock Area	
LOADGEN2	Production Bld. UH-XX Loading Dock Area	
STRGGEN	Production Bld. UH-XX Parts Storage	
MNTNCGEN	Production Bld. UH-XX Maintenance Area	
ELECGEN2	Production Bld. Electrical Room 2 UH-XX	
ELECGEN3	Production Bld. Electrical Room 3 UH-XX	
ESTWHGN1	Electrical Room 3 East Warehouse & Packaging -1	
ESTWHGN2	Electrical Room 3 East Warehouse & Packaging -2	
ESTWHGN3	Electrical Room 3 East Warehouse & Packaging -3	
ESTWHGN4	Electrical Room 3 East Warehouse & Packaging -4	
ESTWHGN5	Electrical Room 3 East Warehouse & Packaging -5	
ESTWHGN6	Electrical Room 3 East Warehouse & Packaging -6	
ESTWHGN7	Electrical Room 3 East Warehouse & Packaging -7	
ESTWHGN8	Electrical Room 3 East Warehouse & Packaging -8	
WTWHGEN1	West Warehouse - 1	
WTWHGEN2	West Warehouse - 2	
WTWHGEN3	West Warehouse - 3	
WTWHGEN4	West Warehouse - 4	
WTWHGEN5	West Warehouse - 5	
WTWHGEN6	West Warehouse - 6	
WTWHGEN7	West Warehouse - 7	
WTWHGEN8	West Warehouse - 8	

The installation will not source any raw materials from mining waste, e.g. regional lead

and zinc chat.

The Air Pollution Control Program approved activities at the site prior to permit issuance. A complete list of the activities is available in the five page document titled, *Toro Preliminary Site Work, Contract 11, Summary of Work*, dated 4/17/2015. Activities of concern include road and building subgrades, a new rail spur, new storm and sanitary piping, new fire protection and sprinkler piping, new pavements, new electrical service, new lighting, new doors, new ventilation, and new water piping. New electrical service and lighting was approved only for demolition and construction work, while service to emission units or new high voltage service must wait for permit issuance. New ventilation was approved only in cases not related to emission units. The remaining activities are permanent to the new installation. Some of the activities are similar in nature to those that have been specifically prohibited in longstanding EPA policy.

OCIS requested confidentiality for MHDR and other sensitive information. This is the redacted public permit. A confidential version was issued under project 2015-05-029.

EMISSIONS/CONTROLS EVALUATION

Melt and Fiber Rate

The application was submitted with a cupola melt discharge rate of [redacted] tph, however a charge rate of [redacted] tph. The melt discharge rate was calculated assuming [redacted]% mass retention when using recipes with carbonates such as dolomite and limestone. Carbonates are expected to lose mass in the cupola to CO_2 emissions. However, most recipes do not include carbonates. Therefore the potential melt discharge rate is much closer to [redacted] tph, which would increase the PTE and ambient impacts from the cupola and downstream units (blowing chamber, curing oven, and cooling section).

MACT DDD defines melt and melt rate. However, the definitions seem to contradict. *Melt* means raw materials, excluding coke, that are charged into the cupola, heated to a molten state, and discharged to the fiber forming and collection process. *Melt rate* means the mass of molten material discharged from a single cupola over a specified time period. OCIS claims melt discharge from the cupola can't be reliably monitored on a continuous basis. OCIS can continuously monitor the charge rate into the cupola.

The application uses a melt discharge to fiber conversion rate of [redacted]% and [redacted]% in different calculations. The application calculated emissions from units downstream of the cupola using the lower fiber conversion rate of [redacted]%. SO_2, NO_X, and CO model inputs for these units were calculated based upon lb/ton of fiber, not lb/ton of melt. Therefore the potential emissions and ambient impacts should be higher.

PTE and ambient impacts are lower than they should be considering the [redacted]% charge/discharge conversion and [redacted]% melt/fiber conversion. The permit contains annual cupola charge and fuel limits; and cupola, blowing chamber, curing oven, and cooling section lb/hr emission limits to ensure the PTE and ambient impacts remain valid. The limits could be changed upon revised compliant modeling.

Cupola Startup and Shutdown

OCIS indicated startup CO emissions could be so high as to cause a reduction in or zero natural gas to be used in the thermal oxidizer, and upsets to the other control devices. Therefore, startup and shutdown sulfur input has been reduced by reducing the anode content of the fuel mix. This should reduce the SO_2, RSC (primarily from COS which has a numerical MACT limit), and SAM emissions in the event the DSI system is not as effective during startup. Specific to MACT DDD, if the cupola emission controls cannot be operated within parameters established during the compliant MACT stack tests, then during startup and shutdown the cupola must use only clean fuels and be operated with 3% oxygen over the fuel demand for oxygen. The MACT does not define clean fuels, however metcoke is cleaner than anodes concerning sulfur related emissions. The cupola will have oxygen supplementation capability.

The 1-hour SO_2 lb/ton of melt permit limit excludes startup and shutdown periods because data isn't available to establish a limit during those times. Similarly, the numerical MACT limits do not apply during startup and shutdown. Compliance is demonstrated with CEMS for all of the cupola's SO_2 permit limits. Compliance is demonstrated with the SAM limits using SO_2 CEMS as a surrogate, and a ratio of SAM/SO_2 stack testing.

Normal operation was estimated at [redacted] hours per year, and is limited by permit special conditions. This indirectly limits annual operation of the blowing chamber, curing oven, and cooling section.

Cupola

Emissions were calculated using factors obtained from testing completed at the OCIS mineral wool installation located in Wabash, Indiana, the formerly OCIS owned mineral wool installation located in Phenix City, Alabama, the Waupaca iron cupola located in Tell City, Indiana, and MACT DDD background data tests; as well as OCIS' own mass balance. Emission factors were adjusted as needed to represent OCIS' melt rate, fuel to melt ratio, control devices, and BACT. 100% capture efficiency is required. No fugitive emissions have been assumed. The cupola will be controlled by a cyclone, thermal oxidizer, DSI, baghouse, good operating and combustion practices, and energy efficiency.

The cupola will be a major source of the HAP COS. COS is also a VOC and a constituent of RSC. RSC is a PSD regulated pollutant.

Blowing Chamber

Emissions were calculated using factors obtained from the Wabash and Phenix City installations, as well as OCIS' own mass balance. Factors were developed for the two product classes to be manufactured, 3% LOI and 4% LOI. Factors were adjusted to represent BACT. LOI is a measurement of the amount of binder in the cured product. Different binder amounts are needed for different product end uses. Binder is applied in the area designated as the blowing chamber. Emissions are a result of the melt and binder. 100% capture efficiency is required. No fugitive emissions have been assumed. The blowing chamber will be controlled by a stone wool filter and good operating practices.

Curing Oven
Emissions were calculated using factors obtained from the Wabash and Phenix City mineral wool installations, as well as OCIS fiberglass installations. Factors were adjusted to represent BACT. Curing oven emissions are influenced mostly by binder and the oven's natural gas usage. Fiberglass binder is similar to mineral wool binder. 100% capture efficiency is required, notwithstanding an inevitable emission portion that is entrained in the conveyed mineral wool pack and emits at the cooling section. No fugitive emissions have been assumed. The curing oven will be controlled by a stone wool filter, low NO_X burners, RTO, good operating and combustion practices, and energy efficiency.

Cooling Section
Emissions were calculated using factors obtained from the Wabash and Phenix City installations, as well as vendor estimates. Factors were adjusted to represent BACT. Cooling section emissions are a result of carryover from the curing oven. 100% capture efficiency is required. No fugitive emissions have been assumed. MACT DDD contains limits for the curing oven, but the cooling section is not a MACT regulated source. VOC and HAP emissions are an order of magnitude less than the curing oven. The cooling section will be controlled by a stone wool filter and good operating practices.

Saws
Emissions were calculated using vendor grain/scf values and flowrates. 100% capture efficiency is required. No fugitive emissions have been assumed.

Adhesive Film Laminating
Emissions were calculated using factors obtained from the AWMA document, *Development of Emission Factors for Polyethylene Processing*, 1996 for LDPE extrusion coating at 355 °F. The facings will arrive with a polyolefin laminating adhesive film already applied. The film will be activated by applying heat, but less than 355 °F. Potential emissions are very low, in the hundred thousandths of tpy.

Packaging
Emissions were calculated using the same reference as adhesive film laminating. There are [redacted] compression baggers and [redacted] multipack machines. Emissions are generated from melting the plastic bag to create a seal. Potential emissions are very low, in the hundredths of tpy.

Charge Material and Fuel Handling
Emissions were calculated using an equation obtained from the U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Chapter 13.2.4 Aggregate Handling and Storage. Moisture content was provided by OCIS. Control efficiency for water spray was added using a comparison of controlled and uncontrolled conveyor emission factors from AP-42 Chapter 11.19.2 Crushed Stone Processing and Pulverized Mineral Processing. Control efficiency was added rather than increasing the moisture content because the water spray devices may fog or mist the area surrounding the material rather than directly apply water to the material. Therefore, the control achieved may not be directly measurable in the material's added moisture content.

Emission units in the mix building are controlled by baghouse. Emissions were calculated using vendor grain/scf values and flowrates. 100% capture efficiency is required. No fugitive emissions have been assumed from the mix building.

Binder Preparation

Several raw materials including formaldehyde/phenol resin, silane, urea, silicone, petrolatum, ammonia, ammonium sulfate, and water will be received into tanks and reacted to form binder. The unreacted resin tanks will be controlled by the curing oven RTO. All tanks will be controlled by good operating practices.

HVAC

Emissions were calculated using factors obtained from AP-42 Chapter 1.4 Natural Gas Combustion. Emissions will be controlled by good combustion practices.

Emergency Engines

Emissions were calculated using factors obtained from AP-42 Chapter 3.3 Gasoline and Diesel Industrial Engines. The engines will be rated for nonroad Tier 3 or Tier 4. For pollutants with tier standards, the standards were used instead of the AP-42 factors. Emissions will be controlled by good combustion practices.

Haul Roads

Emissions were calculated using equations obtained from AP-42 Chapter 13.2.1 Paved Roads and Chapter 13.2.2 Unpaved Roads. OCIS selected a paved road silt loading value less than the values in AP-42, and silt testing is required. Emissions will be controlled by water application, surfactants, or sweeping, or vacuuming.

The following table provides an emissions summary for this project. Complete confidential emission calculations can be found in the confidential permit file. A significant amount of throughput limits, emission limits, monitoring, and stack testing are required to validate the potential emissions.

Table 5: Emissions Summary (tpy)

Pollutant	Regulatory *De Minimis* Levels	Potential Emissions of the Cupola	Potential Emissions of the Blowing Chamber	Potential Emissions of the Curing Oven	Potential Emissions of the Cooling Section	Potential Emissions of the Installation
PM	25.0	7.35	47.71	9.57	8.07	93.46
PM_{10}	15.0	8.40	194.18	22.85	20.28	265.19
$PM_{2.5}$	10.0	8.04	180.20	19.21	18.66	236.23
SO_2	40.0	79.91	0.04	1.14	0.15	81.25
NOx	40.0	44.91	3.82	59.26	15.04	125.84
VOC	40.0	31.58	410.73	26.66	3.23	472.68
CO	100.0	7.35	55.09	72.57	1.02	138.39
Lead	0.6	8.55E-03	7.26E-02	N/A	N/A	0.08
Fluorides (excluding HF)	3.0	N/A	N/A	N/A	N/A	N/A
SAM	7.0	61.51	N/A	N/A	N/A	61.51
H_2S	10.0	1.23	N/A	N/A	N/A	1.23
TRS	10.0	1.23	N/A	N/A	N/A	1.23
RSC	10.0	30.83	0.91	0.06	0.26	32.06
GHG (CO_2e)	75,000	62,941.27	9,972.56	6,285.31	994.94	83,504.66
GHG (mass)	0.0	62,400.80	9,573.85	5,808.83	753.44	81,828.13
Combined HAPs	25.0	33.22	233.51	7.47	0.70	275.24
Formaldehyde	[1] 2.0	1.53	171.89	4.41	0.42	178.46
Methanol	[1] 10.0	N/A	33.79	1.69	6.46E-03	35.49
Phenol	[1] 0.1	6.18E-04	26.08	1.32	0.02	27.42
COS	[1] 5.0	29.61	0.91	5.53E-02	0.26	30.84
Arsenic Compounds	[1] 0.005	5.59E-03	4.75E-02	N/A	N/A	0.05
Chromium VI Comp.	[1] 0.002	2.29E-04	1.95E-03	N/A	N/A	2.18E-03
Dioxins/Furans	[1] 6E-07	9.57E-07	N/A	N/A	N/A	9.57E-07
Hydrogen Chloride	[1] 10.0	0.88	N/A	N/A	N/A	0.88
Hydrogen Fluoride	[1] 0.1	1.10	N/A	N/A	N/A	1.10
Lead Compounds	[1] 0.01	8.55E-03	7.26E-02	N/A	N/A	0.08
Manganese Compounds	[1] 0.8	2.62E-02	0.22	N/A	N/A	0.25
Mercury Compounds	[1] 0.01	7.67E-04	6.52E-03	N/A	N/A	7.31E-03
Selenium Compounds	[1] 0.1	4.05E-02	0.34	N/A	N/A	0.38

N/A = Not applicable
Natural gas combustion at the curing oven contributes negligible amounts of some metal HAPs.
[1] = SMAL

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (8) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of PM_{10}, VOC, CO_2e, and HAPs are above the major source threshold. Potential emissions of PM, PM_{10}, $PM_{2.5}$, SO_2, NO_X, VOC, CO, SAM, RSC, and CO_2e are above the respective PSD significant emission rate.

APPLICABLE REQUIREMENTS

Owens Corning Insulating Systems, LLC shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved. For a complete list of applicable requirements for your installation, please consult your operating permit.

GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information,* 10 CSR 10-6.110
    - Per 10 CSR 10-6.110(4)(B)2.B(II) and (4)(B)2.C(II) a full EIQ is required for the first full calendar year the equipment (or modifications) approved by this permit are in operation.

- *Operating Permits*, 10 CSR 10-6.065

- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170

- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220

- *Restriction of Emission of Odors*, 10 CSR 10-6.165

SPECIFIC REQUIREMENTS

- *Restriction of Emission of Particulate Matter From Industrial Processes*, 10 CSR 10-6.400 does not apply. All emission units are either fugitive, emit less than 0.5 lb/hr of PM filterable, or are subject to a federally enforceable requirement to operate a control device that removes 90% of PM filterable emissions. However, the blowing chamber, curing oven, and cooling section are controlled by stone wool filters. Stone wool filters are very efficient at removing PM filterable according to the European BAT document, however a tested control efficiency could not be obtained. OCIS assumed 99+% removal, via engineering estimate. This permit assumed at least 90% was achievable.

- *New Source Performance Regulations*, 10 CSR 10-6.070
    - 40 CFR 60 Subpart IIII, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*

- *MACT Regulations*, 10 CSR 10-6.075
    - 40 CFR 63 Subpart DDD, *National Emission Standards for Hazardous Air Pollutants for Mineral Wool Production*
    - 40 CFR 63 Subpart ZZZZ, *National Emissions Standards for Hazardous*

- *Control of Sulfur Dioxide Emissions*, 10 CSR 10-6.261 applies to the cupola, blowing chamber, and cooling section. However, no emission limits exist in the rule for these units. The curing oven and natural gas fired miscellaneous HVAC units are exempt.

- *Restriction of Particulate Matter Emissions From Fuel Burning Equipment Used for Indirect Heating*, 10 CSR 10-6.405 does not apply. The cupola provides indirect heat to binder preparation tanks. However, that is not the primary purpose of the cupola. Therefore, according to 10 CSR 10-6.405(1)(B) the rule does not apply to the cupola. The installation will include small natural gas fired water heaters. However, they are the only applicable units. Therefore, according to 10 CSR 10-6.405(1)(D) the installation is exempt.

AMBIENT AIR QUALITY IMPACT ANALYSIS

Ambient air quality modeling was performed to determine the ambient impact of PM_{10}, $PM_{2.5}$, SO_X, NO_X, CO, SAM, and other various pollutants for soils deposition. SAM modeling is solely a state requirement. The installation was not required to undergo any preconstruction monitoring, but is required to complete post construction NO_X monitoring. For further details see the attached memo, *Section 8 Ambient Air Quality Impact Analysis (AAQIA) for the Owens Corning Insulating Systems, LLC (Owens Corning)*, dated March 3, 2016.

BACT

OCIS conducted a BACT analysis for PM, PM_{10}, $PM_{2.5}$, SO_2, NO_X, VOC, CO, SAM, RSC, and GHG (CO_2e). The analysis can be found in the application and addendums, which are incorporated by reference into this permit. The Air Pollution Control Program agrees with the control devices chosen, but offers further discussion below.

Form of the Limits

OCIS proposed limits at the blowing chamber, curing oven, and cooling section in the form of lb/ton fiber. The program selected lb/ton melt to be consistent with the cupola and MACT.

OCIS proposed limits at the blowing chamber, curing oven, and cooling section in the form of one limit for a short term averaging period and one limit for a long term averaging period. The short term limits were based upon the higher emitting 4% LOI product. The long term limits were based upon manufacturing 3% LOI product 80% of the year and 4% LOI product 20% of the year. The program selected individual limits for 3% LOI product and 4% for both short and long term periods.

Temporary BACT

OCIS selected BACT emission limits at the cupola, blowing chamber, curing oven, and cooling section generally from the highest stack test available or the MACT limits. Initially the program felt lower limits were more appropriate. However, not enough

information was available to ensure OCIS could comply with lower limits at all times, including startup and shutdown. Many of the limits are based upon stack testing which represent a small window of operation, and specific raw materials and control device configurations that may differ from the proposed installation. Therefore, the program selected limits with some being slightly higher than it originally felt were appropriate. In some cases the selected limits match the OCIS proposed limits, but none of the limits exceed what OCIS proposed. The MACT PM limit was chosen for the cupola as the stack test results were reasonably close to it. The MACT COS limit was not chosen since the MACT limit is based upon cupolas without thermal oxidation, which controls COS; and since the tested emission rates are significantly less than the MACT limit. The formaldehyde, methanol, and phenol MACT limits for the combined blowing chamber and curing oven were reduced to calculate their contribution to the blowing chamber and curing oven VOC limits.

The program chose to make all BACT emission limits at these units temporary. Very few mineral wool installations have undergone PSD permitting recently. The RBLC for mineral wool cupolas and associated mineral wool processes is not robust, unlike the dozens and dozens of RBLC results for boilers, turbines, and other frequent PSD permitted sources. The available stack test data is also not robust for every pollutant. Final BACT limits are to be set following a site specific operational study.

Cupola Design and Fuel

OCIS' cupola will combust coke, anodes, and possibly small amounts of natural gas to ignite coke. The primary fuels are coke and anodes. Other melting technologies and primary fuels exist according to other PSD permits and the European document, *Best Available Techniques (BAT) Reference Document for the Manufacture of Glass*, Industrial Emissions Directive 2010/75/EU (Integrated Pollution Prevention and Control), 2013. However these technologies may redefine the source. Once a cupola is selected, the use of coke and anodes are supported by the BACT analysis.

Waste Recycling

OCIS submitted the application including recycled wool waste materials (shot bricks) as a feasible GHG BACT emission control (energy efficiency) at the cupola, stating "Recycled wool waste materials can melt at a lower temperature and thus reduce the fuel energy demand, saving in both raw materials and energy usage." However, OCIX later requested its removal as BACT, stating shot bricks do not melt at a lower temperature compared to the virgin melt materials and therefore do not offer energy savings. OCIS stressed the possible lack of availability of shot bricks as another reason to remove their use from BACT. Three European documents state recycled material usage reduces coke consumption or reduces cupola emissions; they are the 2013 BAT document, the Environmental Technology Best Practice Programme document, and the Industrial Minerals document. Therefore, the permit includes shot bricks as cupola GHG BACT, but only on an as-available basis.

The European documents also describe direct injection of recycled mineral wool materials into the cupola melting zone, rather than charging with traditional shot bricks. Shot bricks contain sulfur, therefore direct injection allows energy savings and sulfur emissions reduction. However, OCIS has stated the technology is proprietary.

Blowing Chamber Stone Wool Filter

The European BAT document states stone wool filter control efficiency is improved if operated in a dry manner. The blowing chamber is a damp environment and therefore the stone wool filter cannot be operated in a totally dry manner. OCIS also plans to use water to clean the filter, however the cleaning water must be removed before startup.

Binder

OCIS will use a traditional binder that emits major amounts of formaldehyde, phenol, methanol, and VOC. Alternative binders exist with different chemistries that are marketed as low or no formaldehyde/phenol and low VOC. Competitors advertise mineral wool made with these alternative binders. A resin manufacturer markets formaldehyde free resin designed for mineral fiber insulation. The program feels that a BACT analysis would consider alternative binders to not redefine the source, and to be technically feasible since other installations use the binders. However, OCIS states alternative binders are proprietary, that it has not been able to implement their own alternative binders, and that due to product specifications only OCIS can decide when to use alternative binders.

Material and Fuel Handing, Haul Roads

OCIS proposed melt material, solid fuel handling, and haul road BACT opacity limits. The RBLC contains many BACT limits supporting the use of opacity as BACT. However, opacity is not a regulated NSR pollutant for PSD purposes. Opacity is a qualitative indication of PM emissions. The permit contains opacity limits for units subject to BACT, however the opacity limits are not BACT.

Cost Analysis

OCIS proposed a natural gas cost of $5.2 per MMBtu. However, natural gas cost has averaged below $5 for several years, and has been decreasing since 2014. However, a lower natural gas price did not make any controls economically feasible that previously weren't feasible.

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (8), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, it is recommended that this permit be granted with special conditions.

PERMIT DOCUMENTS

The following documents received from Owens Corning are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated April 29, 2015, received May 1, 2015, designating Owens Corning as the owner and operator of the installation.
- *Responses to Questions from David Little on 07.10.15 V2.0_Trainity-Frank Section*, received July 31, 2015.
- *OCIS - Responses to Questions from David Little on 07 10 15 V4 0*, received August 13, 2015.
- *OCIS - Responses to Questions from David Little on 07 10 15 V4 0*, received August 14, 2015.
- *Master_OCIS Mineral Wool Plant_PSD Calculations*, received August 21, 2015.
- *Charge Matrix 8.1.14*, received September 2, 2015.
- *OCIS – Responses to Questions from David Little on 08.14.15 V3.0*, received September 2, 2015.
- *OCIS – Responses to Questions from David Little on 08.25.15 V1.0*, received September 2, 2015.
- *CONFIDENTIAL_PSD Application Owens Corning Insulation Facility 5.1*, received September 14, 2015.
- *+2015 Melt-to-Shot Comparison*, received October 15, 2015.
- *+Anode MSDS and Analysis*, received October 15, 2015.
- *+HVAC PTE*, received October 15, 2015.
- *+Midwest Scaling Protocol August 2004*, received October 15, 2015.
- *+Raw Material HAP calcs*, received October 15, 2015.
- *CopperSlag SDS*, received October 15, 2015.
- *cupola energy conservation EPA 1976*, received October 15, 2015.
- *Gooseneck Sampling Nozzle*, received October 15, 2015.
- *Metallurgical Coke SDS Walter*, received October 15, 2015.
- *OCIS – 91 pages Responses to Questions from David Little on 09 11 15, 9 15 15, 9 18 15, 9 23 15, 9 24 15 V3.0*, received October 15, 2015.
- *Report-SBARpanel_Wool-Emissions*, received October 15, 2015.
- *HVAC Data Request_v0.4*, received October 21, 2015.
- *Master_OCIS Mineral Wool Plant_PSD Calcs*, received October 21, 2015.
- *HVAC Data Request_v0.5*, received October 22, 2015.
- *public GHG BACT v2*, received October 27, 2015.
- *CONFIDENTIAL_Revised PSD Application Owens Corning Insulation Facility v7.0*, received November 5, 2015. (herein *PSD Construction Permit Application Addendum, Owens Corning Insulating Systems, LLC Mineral Wool Plant Joplin, Missouri Jasper County, Missouri,* November 2015).
- *Master_OCIS Mineral Wool Plant_PSD Calculations_v7.0*, received November 5, 2015.
- *CONFIDENTIAL_Reduced Sulfur Compounds BACT Analyses v 3.0*, received November 6, 2015.
- *OCIS Mineral Wool Plant_PSD Calculations_v8.0*, received November 13, 2015.

- *Copy of Appendix D-2 BACT Cost Tables OCIS v5 5*, received November 18, 2015.
- *MDNR Modeling Questions 11-18-15 – Comments back to company 11 18 15 Comments back to MDNR 11.18.15*, received November 18, 2015.
- *comments on 91 pages and application amendment OCIS Responses_V2.0*, received November 20, 2015.
- *Master_OCIS Mineral Wool Plant_PSD Calculations_v8.2*, received November 20, 2015.
- *Proposed BACT Limits vs Draft Permit Limits V1.0 (2)*, received January 1, 2016.
- *cost analysis*, received February 2, 2016.
- *CEMS Support Justification*, received February 5, 2016.
- *LOI Test W-05Db*, received February 16, 2016.
- *TORO Oxygen_consumption_statement*, received February 22, 2016.
- *PUBLIC_Reduced Sulfur Compounds BACT Analyses v 3*, received February 25, 2016.
- *1 Rail Unloading_June 3*, created November 17, 2015.
- *2 radial stacker BC-2,* created November 17, 2015.
- *2 radial stacker BC-4 Gen*, created November 17, 2015.
- *3 apron feeder BC-3_July*, created November 17, 2015.
- *3 high angle conveyor BC-4_July*, created November 17, 2015.
- *3 loader to hopper BC-3 Gen*, created November 17, 2015.
- *4 mix building air flow and tph 2016-02-08 P103831RC REVIEW*, created February 9, 2016.
- *4 mix building General_July*, created November 17, 2015.
- *4 waste coke conveyor BC-7*, created November 17, 2015.
- *4 waste stone conveyor BC-8*, created November 17, 2015.
- *Blowing Chamber Filter, received 2016-02-05*, received February 5, 2016.
- *blowing chamber, received 2016-02-08*, received February 8, 2016.
- *Capture 2016-02-02*, received February 2, 2016.
- *cooling section and filter, received 2015-02-05*, received February 5, 2016.
- *Cooling Section Filter, received 2016-02-05*, received February 5, 2016.
- *cupola 0511115004-02_Lay-out_Toro, received 2016-02-05*, received February 5, 2016.
- *cupola APC elevation view, received 2016-02-08*, received February 8, 2016.
- *cupola APC plan view, received 2016-02-08*, received February 8, 2016.
- *Cupola Raw Materials Batching System Visual Overview, received 2016-02-08*, received February 8, 2016.
- *curing oven, received 2016-02-08*, received February 8, 2016.
- *Loader_CAT950M*, created November 17, 2015.
- *site drawing 2015-11-18 TORO Arrangements_EDR_10_14_2015 Model*, created November 19, 2015.
- *site drawing P102990 Rev D*, created October 21, 2015.
- *adhesive film 2016-02-03*, received February 3, 2016.
- *adhesive film Article Notification 2016-02-02*, received February 2, 2016.
- *adhesive film former manufacturer Dow Integral E100*, received January 21, 2016.
- *Ammonia*, received August 17, 2015.
- *Antiblock Additive MSDS,* received August 17, 2015.

- *Emulsified Oil-Mineral Oil*, received August 18, 2015.
- *Henkel 452A*, received August 17, 2015.
- *ice melt UniMelt, received 2016-02-18*, received February 18, 2016.
- *Poly Bag Resin MSDS,* received August 17, 2015.
- *Resin*, received August 17, 2015.
- *Shrink Film Resin MSDS*, received August 17, 2015.
- *Silane Solution*, received August 17, 2015.
- *Silicone*, received August 17, 2015.
- *thermal transfer printing ribbon 2016-02-03*, received February 3, 2016.
- *thermal transfer printing ribbon MSDS 2016-02-03*, received February 3, 2016.
- *2015-10-15 +fmkbcnox stack test*, created October 20, 2015.
- *2015-10-15 +fmkcoolpm_0001 stack 'test' vendor quote,* created October 20, 2015.
- *2015-10-15 +fmknox stack test*, created October 20, 2015.
- *2015-10-15 +fmkpm2,5 stack test*, created October 20, 2015.
- *2016-02-09 CO_2 Wabash Cupola Gas Handling_Sorbent System Modifications*, received February 9, 2016.
- *2016-02-10 CO_2 Cupola 2 Analysis 6-19-15*, received February 10, 2016.
- *2016-02-10 CO_2 Cupola 2 Analysis 6-22-15*, received February 10, 2016.
- *2016-02-10 CO_2 Cupola 4 Analysis 6-22-15*, received February 10, 2016.
- *2016-02-10 CO_2, SO_2 stack test results June 2015*, received February 10, 2016.
- *2016-02-11 cupola COS stack test results fmkcos*, received February 11, 2016.
- *TORO Stack Tests – cupola p1, blowing chamber p51, oven p93, cooling p101, extra p114*, created August 17, 2015.
- *2014-12-05 Items proposed to be completed prior to Air Permit 11-6-14*, created December 9, 2014.
- *2015-01-09 Items proposed to be completed prior to Air Permit Rev 1*, created January 12, 2015.
- *2015-03-25 Items proposed to be completed prior to Air Permit Rev 1 1-09-15*, created March 25, 2015.
- *2015-04-22 Toro Pre Permit Site Work Joplin 01200.11 rev A* (herein *Toro Preliminary Site Work, Contract 11, Summary of Work*, dated 4/17/2015).
- *2015-05-029 confidential draft 12 entire permit OCIS comments*, received March 1, 2016.

The following documents are also incorporated by reference into this permit:

- Confidential email communication among: Robin Edmiston – Bennett, Frank Kristie, and Paul Lewandowski of Owens Corning; Kasi Dubbs, Ramon Nelson of Trinity Consultants; and David Little, Kelly Robson, Dawn Froning, Alana Hess, J Luebbert, Susan Heckenkamp, and Kendall Hale of the Air Pollution Control Program.
- Email communication among Robert Cheever EPA, Susan Fairchild EPA, and David Little.
- Email communication among Andy Hawkins EPA, Lance Avey EPA, Kelly Robson, and Dawn Froning
- *2015-05-029 confidential draft 1 cupola partial.*
- *2015-05-029 confidential draft 2 blowing chamber partial.*
- *2015-05-029 confidential draft 3 curing oven partial.*

- *2015-05-029 confidential draft 4 cupola, blowing chamber, curing oven partial.*
- *2015-05-029 confidential draft 5 cooling section partial.*
- *2015-05-029 confidential draft 6 special conditions except tanks, laminating, post-construction monitoring.*
- *2015-05-029 confidential draft 7 cupola temporary BACT limits.*
- *2015-05-029 confidential draft 8 cupola and blowing chamber temporary BACT limits.*
- *2015-05-029 confidential draft 9 all temporary BACT limits.*
- *2015-05-029 confidential draft 10 all special conditions.*
- *2015-05-029 confidential draft 11 all special conditions.*
- *2015-05-029 confidential draft 12 entire permit.*
- *2015-05-029 public draft 13 entire permit.*
- *2015-05-029 confidential*, version 3/1/2016.
- *Section 8 Ambient Air Quality Impact Analysis (AAQIA) for the Owens Corning Insulating Systems, LLC (Owens Corning)*, March 3, 2016.
- *Section 8 Ambient Air Quality Impact Analysis (AAQIA) for the Owens Corning Insulating Systems, LLC (Owens Corning) – Revision.*

The following documents are permit references:

- EPA RACT/BACT/LAER Clearinghouse (RBCL) https://cfpub.epa.gov/rblc/
- EPA AP 42, Fifth Edition, *Compilation of Air Pollutant Emission Factors*, Volume 1: *Stationary Point and Area Sources.*
- EPA MACT DDD rule notices, http://www3.epa.gov/airtoxics/minwool/minwopg.html
- EPA MACT DDD ICR data, received November 19, 2015.
- EPA *Source Category Survey: Mineral Wool Industry*, EPA-450/3-80-016, March 1980.
- EPA *Iron and Steel Foundries Manual Emissions Testing of Cupola Baghouse at Waupaca Foundry in Tell City, Indiana*, EPA-454/R-99-017A, June 1999.
- EPA *Primary Aluminum Industry: Technical Support Document for Proposed MACT Standards*, July 1996.
- *Best Available Techniques (BAT) Reference Document for the Manufacture of Glass*, Joint Research Centre Reference Report, 2013.
- *BRIQUETTING ENABLES EFFICIENT RECYCLING OF ROCK MINERAL WOOL PROCESS RESIDUES*, Environmental Technology Best Practice Programme, FP102, March 1988.
- *Alumina in a spin*, Industrial Minerals, Mike O'Driscoll, August 2006, www.indmin.com/pdfs/697/67082/**2006**08036.pdf
- Knauf Ecose insulation alternative binder, http://www.knaufinsulation.com/sites/corporate.knaufinsulation.net/files/Mineral%20wool%20with%20ECOSE%20Techn.pdf
- Georgia Pacific alternative binder, http://www.gp-chemicals.com/Formaldehyde-Free_Resin_Product_Category
- *Development of Emission Factors for Polyethylene Processing*, J. Air & Waste Manage. Assoc. 46: 569-580, June 1996.
- *1 railcar receiving, from website not from applicant*, created November 4, 2015.

APPENDIX A
Abbreviations and Acronyms

% ..... percent
ºF ..... degrees Fahrenheit
acfm ..... actual cubic feet per minute
BACT ..... Best Available Control Technology
BMPs ..... Best Management Practices
Btu..... British thermal unit
CAM ..... Compliance Assurance Monitoring
CAS..... Chemical Abstracts Service
CEMS ..... Continuous Emission Monitor System
CFR ..... Code of Federal Regulations
CO ..... carbon monoxide
CO_2..... carbon dioxide
CO_2e..... carbon dioxide equivalent
COMS..... Continuous Opacity Monitoring System
CSR..... Code of State Regulations
dscf ..... dry standard cubic feet
EIQ ..... Emission Inventory Questionnaire
EP..... Emission Point
EPA ..... Environmental Protection Agency
EU..... Emission Unit
fps ..... feet per second
ft ..... feet
GACT ..... Generally Available Control Technology
GHG ..... Greenhouse Gas
gpm..... gallons per minute
gr..... grains
GWP..... Global Warming Potential
HAP..... Hazardous Air Pollutant
hr..... hour
hp ..... horsepower
lb ..... pound
lbs/hr..... pounds per hour
MACT ..... Maximum Achievable Control Technology
$\mu g/m^3$..... micrograms per cubic meter
m/s ..... meters per second
Mgal ..... 1,000 gallons
MW ..... megawatt
MHDR..... maximum hourly design rate
MMBtu.... Million British thermal units
MMCF..... million cubic feet
MSDS ..... Material Safety Data Sheet
NAAQS... National Ambient Air Quality Standards
NESHAPs National Emissions Standards for Hazardous Air Pollutants
NO_x..... nitrogen oxides
NSPS..... New Source Performance Standards
NSR..... New Source Review
PM ..... particulate matter
$PM_{2.5}$..... particulate matter less than 2.5 microns in aerodynamic diameter
PM_{10}..... particulate matter less than 10 microns in aerodynamic diameter
ppm..... parts per million
PSD ..... Prevention of Significant Deterioration
PTE..... potential to emit
RACT..... Reasonable Available Control Technology
RAL ..... Risk Assessment Level
SCC..... Source Classification Code
scfm ..... standard cubic feet per minute
SDS ..... Safety Data Sheet
SIC..... Standard Industrial Classification
SIP..... State Implementation Plan
SMAL ..... Screening Model Action Levels
SO_x..... sulfur oxides
SO_2..... sulfur dioxide
tph..... tons per hour
tpy ..... tons per year
VMT..... vehicle miles traveled
VOC..... Volatile Organic Compound

The following comment was received from public notice.

Wondering if there is an air pollution map attached or submitted with this permit that would show wind direction as well as pollute travel...thank you..
http://dnr.mo.gov/env/apcp/public-notices/owens-joplin2016psdd.pdf
It is the planned corning plant in jasper county missouri. Am also wondering if coal will be used at all in the plant. By the permit I see natural gas for a few things.

OCIS Response
Yes. When you go to the website below you will see a selection titled "Modeling Memo". This document includes maps of the area that show the predicted dispersion of air emissions of the various pollutants for which there are National Ambient Air Quality Standards. These maps show ambient air levels of the pollutants at various distances from the facility's property line in all directions.
http://dnr.mo.gov/env/apcp/permit-public-notices.htm

Yes, the Owens Corning Plant would be located in Jasper County Missouri.

Section 2.2.1 of the application, Project Description, lists the raw materials and fuels that will be used.
"The raw materials that will be used in the Cupola include various slags such as those from steel and copper smelting operations, and other ingredients such as trap rock, limestone, feldspar, and dolomite. The fuels that will be used in the Cupola include carbon in the form of coke and reclaimed anodes, but there will be no coal used.

Program Response
The modeling memo contains maps of wind direction and predicted pollution dispersion. The modeling memo was available on the department's website during public notice. Public notice has ended. The final permit and modeling memo are available at http://dnr.mo.gov/env/apcp/air_permits.htm

Yes, this is the planned Owens Corning plant in Jasper County, Missouri.

Coal use is not permitted at the plant.

The following 19 comments were submitted by EPA Region 7.

Comment 1
MDNR has redacted several portions of the draft prevention of significant deterioration (PSD) Permit for OCIS claiming the information as confidential business information (CBI). EPA does not believe that much of the redacted information should be treated as CBI because they are emission data, standards or limitations which are not eligible for treatment as confidential treatment under 40 C.F.R. §2.301. EPA believes the following information should be publicly available and not redacted in the Permit.

(a)The best available control technology (BACT) limits for the Cupola, Blowing Chamber, Curing Oven, Cooling Section and Saw Kerf.

(b)Section 3, of the PSD application, submitted by OCIS in April of 2015 and amended in November 2015, indicates that the BACT emission rates for particulate matter (PM); carbon monoxide (CO); carbonyl sulfide (COS); hydrogen fluoride (HF); hydrogen chloride (HCl); methanol; phenol; and formaldehyde are all set at the standard established by the maximum achievable control technology (MACT) as written in the National Emission Standards for Hazardous Air Pollutants for Mineral Wool Production (40 CFR Part 63, Subpart DDD). These MACT standards are publically available information and are standards pursuant to 40 C.F.R. §2.301 and therefore should not be redacted in the PSD permit.

(c)The emission rates of sulfur dioxide (SO_2), nitrogen oxides (NOx), volatile organic compounds (VOC), reduced sulfur compounds (RSC) and greenhouse gases (GHG) are emission data pursuant to 40 C.F.R. §2.301 and are therefore not eligible for CBI.

(d)Special Condition 22. D. provides for the emission testing of haul roads and the draft PSD Permit has redacted the silt loading requirement of the haul roads. MDNR has considered the silt loading to be considered confidential business information (CBI). However, MDNR does not provide a basis for substantiating the claim that the haul road emission factor is CBI.

OCIS Response

OCIS's primary concern is that the plant technology and the capacity of the plant equipment be maintained as confidential. With respect to plant capacity, OCIS requests that the any information in the permit that directly states the capacity or that would allow the public to determine the capacity be maintained as confidential. For example, where the permit includes an emission limit in lb/ton and also includes a limit in lb/hr, the public could divide the hourly rate by the emissions factor to determine the hourly processing capacity of the equipment. Thus, emission limits in lb/ton with corresponding limits in lb/hr should be confidential.

Program Response

(a) The lb/ton and grain/dscf BACT limits were held confidential so that the production capacity could not be calculated. The project underwent ambient modeling, and the lb/hr emission rates for each emission unit are public data. Therefore, if the BACT limits are made public, then the production capacity can be calculated. Also, the program requested MACT DDD tested emission factors for other mineral wool plants from EPA. EPA provided the lb/hr emission rates but withheld the lb/ton emission factors as CBI.
(b) The lb/ton BACT limits were held confidential for the reasons in response (a).
(c) All lb/hr emission rates are public in the draft permit. VOC, RSC, and GHG lb/hr emission rates do not appear in the special conditions because in the special conditions the lb/hr emission rates are limits necessary to comply with ambient air quality standards. VOC, RSC, and GHG did not undergo ambient modeling, therefore they don't have direct lb/hr limits in either the confidential

or public permit.

(d) Silt loading was held confidential so that the production capacity could not be calculated. All other variables in the equation used to calculate the emission factors are either common values that can be reasonably estimated or are published. The lb/hr emission rates are public data. Therefore, if the silt loading values are made public, then the production capacity can be calculated.

Comment 2

Once the requirement for BACT has been determined, all sources of the specific air pollutant, subject to BACT, shall be subject to the top-down BACT analysis and BACT controls shall be in place for all of the sources of the specific pollutant. The PSD Construction Permit Application, submitted by OCIS in April 2015 and amended in November 2015, indicates that all but two storage tanks and the binder mix area are sources of volatile organic compounds (VOCs). Therefore, these areas are subject to a BACT analysis and installation of BACT controls. However, neither the application nor draft PSD Permit on public notice address BACT for all sources of VOC. Therefore, EPA recommends OCIS amend their PSD application to include the BACT analysis for all sources of the air pollutants subject to BACT. Then MDNR should amend the draft PSD Permit to reflect current and complete BACT for all sources of all pollutants subject to BACT.

OCIS Response

No response.

Program Response

All sources of VOC have been addressed. The application includes an incomplete VOC BACT analysis for tanks. The program noticed this during the permit review and requested OCIS to address all available controls including add-on controls. OCIS provided a more robust VOC BACT analysis via email, which is incorporated by reference to this permit. Add-on control devices were eliminated for cost reasons from all tanks, excluding TK-01 and TK-02. All tanks are subject to the BACT control of good operating practices including leak detection and repair, with tanks TK-01 and TK-02 also being subject to the RTO. Potential VOC emissions from all of the tanks combined is approximately 0.2 tpy, excluding TK-01 and TK-02.

Comment 3

Special Condition 25 details the Permittee requirements for conducting a post-startup BACT study to confirm and set permanent BACT limits. Special Condition 25.B. requires three complete stack tests from each of the blowing chamber, curing oven and cooling section. However, the cupola, which has the greatest number of temporary BACT limits in the draft PSD permit, does not appear within the list of emission units to be tested. EPA recommends MDNR require OCIS to conduct cupola testing during this post-startup period to verify and confirm permanent BACT emission limits.

Special Condition 25. C. 4) specifies that if OCIS requests a relaxation of the temporary BACT limits, as a result of the post-startup BACT determination study, OCIS must

satisfy the criteria in the November 19, 1987 EPA document Request for Determination on Best Available Control Technology (BACT) Issues - Ogden Martin Tulsa Municipal Waste Incinerator Facility. EPA recommends MDNR detail the exact criteria OCIS is expected to satisfy in this Special Condition.

OCIS Response
No response.

Program Response
The cupola is equipped with CEMS for several pollutants and this data carries a hierarchy over discrete stack tests for those pollutants. However, the program agrees with EPA that stack tests must be required for cupola pollutants not monitored by CEMS such as PM_{10}, $PM_{2.5}$, VOC, RSC, SAM, and GHG (CH_4 and N_2O contributions). These requirements have been added to Special Condition 25.B.9).

The exact criteria from the Ogden Memo have been added to Special Condition 25.C.4).

Comment 4
This PSD Permit application and amendment submitted by OCIS appears to rely heavily upon capture efficiency as an integral part of the control scheme to achieve BACT and to meet Ambient Air Quality Impact Analysis (AAIQA). The draft permit includes Special Condition 20 which details all Permittee requirements to achieve 100% capture efficiency. Special Condition 20.A. requires continuous static pressure monitoring and recording at the cupola, however, the static pressure monitoring and recording at the blowing chamber, curing oven and cooling section monitoring and recording is a mix of daily, weekly, quarterly and as appropriate. Also, the draft permit requires, either daily or quarterly monitoring and recording of static pressure at the saw kerf and mix building. If 100% capture efficiency is critical to achieving emission unit control and ambient air quality, then it appears to EPA that continuous monitoring and recording is more appropriate. If continuous static pressure monitoring and recording at the cupola is achievable, then it would appear continuous static pressure monitoring and recording at the blowing chamber, curing oven, cooling section, saw kerf and mix building is also achievable. Finally, air flow velocity and motor amperage would appear to be two measures readily adaptable to continuous monitoring and recording. Therefore, EPA recommends MDNR and OCIS strongly consider continuous monitoring and recording of the parameters to verify static pressure required to meet 100% capture efficiency.

OCIS Response
The blowing chamber, curing oven, and cooling section are designed for 100% capture. OCIS believes that the monitoring frequency for capture efficiency in the draft permit is sufficient for verifying that the units operate with 100% capture. There are a number of openings in the equipment, and in order to continuously demonstrate 100% capture, each opening would need to be continuously monitored. OCIS has estimated that continuous monitoring to demonstrate 100% capture would require the following:

- 5 static pressure transmitters plus an underdetermined number of air inflow velocity sensors for the blowing chamber
- 5 static pressure transmitters plus an underdetermined number of air inflow velocity sensors for the curing oven
- 5 static pressure transmitters plus an underdetermined number of air inflow velocity sensors for the cooling section

The Saw Kerf Baghouse controls dust generated from the cutting of the length and width of the mineral wool mats. There are approximately 15 dust pick up points, all of which are vented to the baghouse to capture 100% of the dust. OCIS has estimated that continuous monitoring to demonstrate 100% capture would require a static pressure transmitter at each of the pick-up points.

The Mix Building houses the equipment used to prepare the raw materials for delivery to the Cupola (conveyors, day bins, batch metering systems, etc.). The Mix Building Baghouse controls the dust generated in the Mix Building. There are approximately 30 dust pickup points, all of which are vented to the baghouse to capture 100% of the dust. OCIS has estimated that continuous monitoring to demonstrate 100% capture would require a static pressure transmitter at each of the pick-up points.

OCIS believes that continuous monitoring is not necessary to demonstrate 100% emission capture and that the proposed monitoring requirements are sufficient to assure 100% capture. For equipment designed for 100% capture, periodic checks of the capture efficiency are sufficient to demonstrate that the equipment is operating with 100% capture. The continuous monitoring requirements suggested by Region 7 will create a set of extremely burdensome and impractical technical and administrative issues without providing any additional degree of compliance assurance. The continuous monitoring approach for these sources was explored in detail during the permitting process and the operational challenges created by the nature and amount of single emission points associated with these sources were recognized an accounted for in the draft permit requirements.

Program Response

Without the cupola exhaust fan, the area above the cupola and the cupola exhaust duct would operate at positive pressure. With correct exhaust design and operation these areas operate at negative pressure. Continuous monitoring was required since these areas are naturally at positive pressure. OCIS also monitors continuously for worker safety.

Continuous monitoring was not required at the blowing chamber since it is operated at negative pressure. Negative pressure facilitates the buildup of the mineral wool pack at the collection chain. The chamber is designed for 100% capture efficiency which must consider air expansion from heat escaping the melt. Blowing chamber operation is more predictable and less variable than the cupola. Therefore continuous monitoring was reduced compared to the cupola. However, monitoring is required for each opening and the fan amperage. Fan

operation is static under normal operation. OCIS is also required to conduct a study at the openings to determine the velocity needed to obtain 100% capture efficiency. Therefore no additional monitoring requirement has been added. Any indication of fugitive emissions is a violation of this permit and may require improved capture, revised BACT, or revised ambient modeling.

Continuous monitoring was not required at the curing oven and cooling section because they are designed for 100% capture efficiency. 100% capture efficiency keeps prevents workers from being exposed to binder and combustion emissions. Normal operation of these processes is static in nature. Therefore continuous monitoring was reduced compared to the cupola. However, monitoring is required for each opening and the fan amperage. Fan operation is static under normal operation. OCIS is also required to conduct a study at the openings to determine the velocity needed to obtain 100% capture efficiency. Therefore no additional monitoring requirement has been added. Any indication of fugitive emissions is a violation of this permit and may require improved capture, revised BACT, or revised ambient modeling.

100% capture efficiency is expected at the saws and mix building through a combination of monitoring pressure at local capture devices and room/building openings, and monitoring fan amperage. Each of several ducts/pick-up points is required to have negative pressure. The processes being captured are expected to be static during normal operation. Fan operation is static during normal operation. Therefore no additional monitoring requirement has been added. Any indication of fugitive emissions from the saw room or mix building is a violation of this permit and may require improved capture, revised BACT, or revised ambient modeling.

Comment 5

Section 2.2.7 of the OCIS PSD Construction Permit Application submitted in April 2015 and Section 2.1.2 of the PSD amendment dated November 2015, describe the process used by OCIS to prepare their binder solution for use within the overall mineral wool manufacturing process. Based on the discussion in both sections, it appear that this binder preparation process might be subject to 40 C.F.R. Part 63, Subpart OOO; *"National Emission Standards for Hazardous Air Pollutants: Manufacture of Amino/Phenolic Resins."* (MACT OOO) 40 C.F.R. §63.1400 says these standards are applicable to processes that produce amino/phenolic resins and 40 C.F.R. §63.1402 defines amino/phenolic resin as one or both amino resin or phenolic resin. Amino resin is further defined as a thermoset resin produced through the reaction of formaldehyde or formaldehyde solutions with compounds that contain amino group including melamine, urea and urea derivatives. The binder, being prepared by OCIS for their mineral wool manufacturing process is described as phenol- formaldehyde resin reacting with aqueous urea. The draft PSD permit includes a review of the applicability of 40 C.F.R. Part 63 Subpart FFFF, *"National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing."* However, the PSD permit review summary does not address MACT OOO. Therefore, EPA recommends MDNR prepare and include a review of MACT OOO in this PSD permit describing how this MACT OOO standard is or is not applicable to the OCIS-Joplin facility.

OCIS Response

At the Joplin plant, OC will purchase a phenolic resin. The phenolic resin will be comprised of ~50% water, ~14% free formaldehyde, and ~36% phenol/formaldehyde compounds (which is the phenolic resin). The purchased phenolic resin will be reacted with urea in one of three react tanks (TK-10, TK-11, TK-12) to convert the free formaldehyde in the resin to urea/formaldehyde compounds (which are referred to as amino resins). The output from the reaction tanks is an aqueous mixture of phenolic resin and amino resin that contains <1% free formaldehyde. The purpose of reacting the purchased phenolic resin with urea is to tie up the free formaldehyde that is a tramp contaminant in the purchased phenolic resin to minimize the amount of formaldehyde that is released from the binder.

The process of reacting a phenolic resin with urea to tie up the free formaldehyde is the same process that is either currently employed or that has been employed at a number of fiberglass insulation plants and mineral wool insulation plants across the U.S., including a number of OCIS plants. OCIS conducted a brief review and has not identified a single plant for which a similar resin process is or has been subject to MACT OOO. The definition of amino resin in MACT OOO is "*a thermoset resin produced through the reaction of formaldehyde, or a formaldehyde containing solution (e.g., aqueous formaldehyde), with compound(s) that contain the amino group; these compounds include melamine, urea, and urea derivatives. Formaldehyde substitutes are exclusively aldehydes.* MACT OOO does not further define *"the reaction of formaldehyde, or a formaldehyde containing solution (e.g., aqueous formaldehyde)*". Based on past precedent established by states and/or EPA for not including this regulation as applicable at other plants engaging in a similar process, OCIS does not believe EPA considers purchased phenolic resin to be "a formaldehyde containing solution". If the purchased phenolic resin is not considered a formaldehyde containing solution, then the process of converting phenolic resin to amino resin is not subject to MACT OOO. This is further supported by a review of the economic background document for MACT OOO (EPAHQ-OAR-2004-0369-0025). All of the affected facilities considered in the rulemaking for MACT OOO are chemical plants. This suggests EPA did not intend for the rule to apply to a mineral wool plant that purchases phenolic resin.

Program Response

OCIS purchases and produces two formaldehyde resins, namely phenolic resin and amino resin, respectively. OCIS purchases phenolic resin which is a reaction between phenol and formaldehyde. OCIS produces amino resin which is a reaction between the free formaldehyde in the purchased phenolic resin with urea added onsite. The resulting resin is therefore a mixture of phenolic resin and amino resin, or phenol-formaldehyde-urea. It is referred to within the industry as premix or binder. Since OCIS produces amino resin it would appear MACT OOO applies. However, EPA has not applied this rule to fiberglass or mineral wool production facilities that produce amino resin onsite. The rule docket *EPA-HQ-OAR-2012-0133-0020 – Amino Phenolic Resin Facility*

Identification Information, Table 1 – Facility Identification Information does not include fiberglass or mineral wool production facilities, although these facilities existed at the time of the rulemaking.

Comment 6

Special Condition 15. C. sets the baghouse flow rates for CD-12, CD-13, CD-14, CD-15, CD-16 and CD-17 on a 24-hour average. The special condition requires the permittee to "determine compliance using manufacturer's specifications." However, there is no requirement for the permittee to measure, record and calculate the 24-hour flowrate to verify achievement of compliance. Additionally, Special Condition 15. D. relies on manufacturer's specifications to demonstrate compliance grain loading at the discharge of these same six (6) baghouses. Again, Special Condition 15. D. does not include a permittee requirement to monitor, record and calculate compliance verification with the BACT limits. EPA recommends MDNR include a monitoring and record keeping requirement in Special Conditions 15. C. and a requirement to periodically stack test to verify compliance with the stated BACT limits in Condition 15.D.

OCIS Response

The baghouses referred to in EPA's comment are small baghouses associated with the pneumatic transfer of urea, sorbent, or fly ash that are predicted to have less than a total of 0.2 lb/hr of PM released from the baghouse. Due to the very low level of emissions expected from the baghouses, OCIS believes manufacturer data should be relied upon for demonstrating compliance with the airflow and grain loading levels included in the permit.

Program Response

Each baghouse has a PM PTE of 0.6 to 0.0003 tpy. Manufacturer's specifications for flowrate and grain loading are sufficient to demonstrate compliance with the emission rates for these sources. The necessary air flowrates are quite low. The air flowrates are not expected to be highly variable during normal operation for each respective unit. The grain/dscf limits meet BACT, but are not the lowest achievable, i.e. the filters aren't meeting HEPA requirements. These small sources are common among many industries that transfer similar materials. The grain/dscf limits are similar to other permitted limits that have been demonstrated routinely. Therefore, because the units are commonplace, the BACT limits are routine and achievable, and the flowrates are low, then use of manufacturer's specifications suffice. Monitoring of pressure drop across the filters is required.

Comment 7

Special Condition 12. B. refers to Table 2-2 in Owens Coming Insulation System PSD construction permit application addendum for the list of mix building emission points to be captured and controlled by baghouse CD-11. However, table 2-2 is a summary of all of the emission units and emission points for the proposed OCIS installation. The specific emission units and emission points affiliated with the mix building baghouse CD-11 are not readily identifiable. Additionally, the PSD construction permit application addendum is not a part of the permit to construct and is not enforceable. EPA believes the appropriate list of emission units and

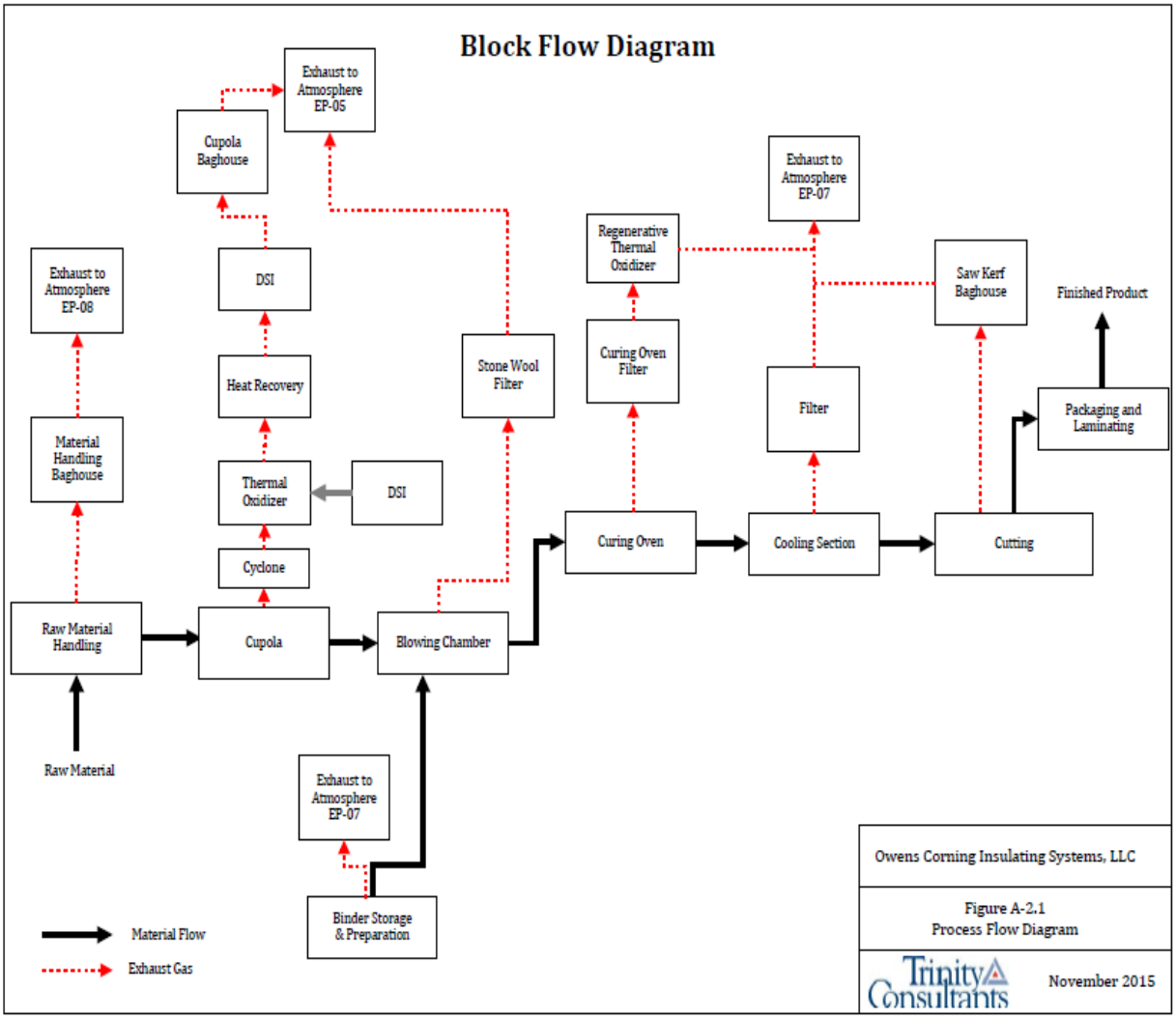
emission points should be extracted from Table 2-2 and placed into Special Condition 12. B. This approach would be consistent with Special Condition 13. A.; Special Condition 16. A; and Special Condition 22 which have embedded tables.

Special Condition 12. B. says the mix building emission points are summarized on page 43 of 106 of the PSD construction permit application addendum, *Figure A-2.2 Process Flow Diagram.* However, the PSD permit application addendum available for public review only has 98 pages and there is no *Figure A-2.2 Process Flow Diagram.* EPA recommends MDNR provide a table of the mix building emission points and relative information. EPA also recommends MDNR provide a OCIS mineral wool manufacturing process flow diagram to aid in the public review of this draft PSD permit.

Special Condition 18. A. refers to Table 4. However, the draft permit to construct does not include a Table 4. EPA recommends MDNR include a Table 4 listing the miscellaneous heaters subject to Special Condition 18.

OCIS Response

OCIS is providing a public version of the process flow diagram in the form of a block flow diagram.



Program Response

Table 2-2 shows the mix building emission units using emission point EP-08 and the emission unit description containing the phrase “inside mix building”. The amendment addendum is identified in the incorporated by reference list and is enforceable. The tables in Special Conditions 13.A., 16.A., and 22 represent permit requirements that did not appear in the application. Those tables were created as they could not be incorporated by reference.

The mix building emission units are identified in Table 4 under EP-08. The reference in the public permit to Figure A-2.2 Process Flow Diagram has been deleted as this figure is found only in the confidential permit application.

Table 4 is located in the permit and contains a subheading specifically for the miscellaneous heaters.

Comment 8

Special Condition 9. C. sets a maximum flow rate through the Saw Kerf baghouse and requires the permittee to demonstrate compliance by establishing a flow rate

versus amperage curve prior to startup of commercial operation. Special Condition 9. C. also requires that the amperage be monitored and recorded at least once daily and the resulting flow rate to be recorded at least once daily. Air flow rate and amperage are two (2) measurements which would appear to be easily and conveniently monitored and recorded on a continuous basis. Therefore EPA suggests that OCIS and MDNR consider the continuous monitoring and flow rate through baghouse CD-10.

Special Condition 10. B. requires the permittee to monitor and record melt temperature in the laminating process once per 8-hour period. Temperature monitoring and recording are readily adaptable to continuous monitoring and recording and EPA suggests OCIS and MDNR consider continuous temperature monitoring and recording of the laminating process.

OCIS Response

The saws kerf baghouse is required to have a bag leak detection system. Thus, OCIS does not believe continuous monitoring of the airflow rate should be required by the permit to verify the performance of the baghouse.

The laminating process will have negligible levels of VOC (PTE = 4.03E-05 tpy). Thus, OCIS does not believe continuous monitoring of the laminating process should be required by the permit.

Program Response

The emission units and control device are not expected to have wide variations in performance when operating normally. There is sufficient monitoring of flowrate through a combination of following manufacturer's specifications, monitoring fan motor amperage, stack testing, and a bag leak detection system.

Laminating occurs at a temperature lower than the temperature used to calculate the PTE. Emissions are temperature dependent, with higher temperatures resulting in higher PTE. Therefore the PTE is conservative. The PTE includes 0.02 tpy of VOC and 0.004 tpy of PM. Product quality requires melt temperatures stay constant. There is no incentive to laminate at a temperature above the temperature used to calculate the PTE. Therefore, continuous monitoring was not required.

Comment 9

Special Condition 19. A. requires the permittee to pave all haul roads except unpaved segments URHDELI , URHDEL2, URHDEL3 and BUNKAREA, as identified in *Section 8 Ambient Air Quality Impact Analysis (AAQIA) for the Owens Corning Insulation Systems, LLC (OCIS)* dated March 3, 2016. However, these undefined acronyms defining unpaved haul road segments could not be identified in the AAQIA. EPA suggests MDNR define the acronyms "URHDEL" and "BUNKAREA" and provide an accurate location of these unpaved haul road segments. Additionally, the acronym "LIW", as used in both Special Conditions 15. B. and 20. H., and the acronym ASTM, used in Special Condition 22. D. 4), are not defined in either the body of the draft permit or in Appendix A. EPA deems Appendix A to be a very handy and useful

addition that can greatly assist permit reviewers. However, Appendix A should be tailored to each permit and EPA suggests MDNR include all of this draft permit abbreviations and acronyms in Appendix A.

OCIS Response
No response.

Program Response
The unpaved segments are identified Table 3 and Table 5 in the above referenced document. URHDEL stands for unpaved haul road delivery. BUNKAREA stands for the bunker area. The acronyms are labels of emission units/points, and could take the form of EU-##, which typically are not defined in a permit. The location coordinates are provided in the referenced document. LIW stands for loss in weight. ASTM is the common acronym for the American Society for Testing and Materials.

Comment 10
Special Condition 1. A. 5) requires the permittee to calculate project potential-to-emit (PTE) for any change in anode type from spent primary aluminum prior to its usage. However, the special condition does not indicate the calculation methodology to be used to determine if the change is a significant change as defined in 10 CSR 10-6.061(3)(A)3. EPA suggests that MDNR specify the formula(s) to be used by the permittee to determine cupola PTE resulting from the changing of anodes.

OCIS Response
No response.

Program Response
A prescriptive PTE calculation method was not included as the effect on each pollutant for all of the anode types is not known. The method may differ per pollutant or per anode type. The calculation methods should be consistent with the methods used in this permit, e.g. other tested data, mass balance, etc.

Comment 11
Special Condition 1. E. 3); Special Condition 3. C. 3); Special Condition 5. B. 5); Special Condition 7. B. 3) and Special Conditions 15. B. 1), 2), and 3) all require air pollution control devices which require the determination of pressure drop across the control device and require the permittee to operate within an established range. However, none of these special conditions require the permittee to record the pressure drop, during process operation, to verify compliance. Therefore, EPA suggests that MDNR include a pressure drop recording requirement to verify the air pollution control devices are operating at their established pressure drop.

OCIS Response
No response.

Program Response
Recording requirements have been added.

Comment 12
Special Condition 1. E. 4); Special Condition 1. E. 6); and Special Condition 5. B. 6) all require the permittee to equip and operate pollution control devices with measuring devices to meet the requirements of 40 C.F.R. Part 63 Subpart DDD. EPA suggests that MDNR include the specific appropriate paragraph, from 40 CFR 63, Subpart DDD, in all three (3) of these special conditions.

OCIS Response
No response.

Program Response
The MACT requirements exist without a permit condition requiring them. The MACT requirements were referenced only because the permit needs a measurement method and the MACT requires a method anyhow. It is longstanding program practice to not insert MACT paragraphs into construction permit special conditions. The MACT paragraphs will be including in the operating permit.

Comment 13
Special Condition 2. E. requires the permittee to demonstrate the cupola is meeting its emission limits for PM, PM10 and PM2.5 through the use of data gathered from the PM continuous emissions monitoring system (CEMS) and the cupola stack test. EPA suggests that MDNR include the specifics of the required cupola stack test, including but not limited to the test method the Permittee is required to use.

OCIS Response
No response.

Program Response
Special Condition 22.H. requires the test method to be approved prior to conducting the test. The Permits Section is not the program lead for stack testing. In some cases where permits have prescribed a test method, an inappropriate method has been chosen in the permit which later created a burden on the source, the Compliance/Enforcement Section, and the Permits Section. However, since the draft permit contains many limits on the test method average, the test method average has been replaced with a 3-hour period.

Comment 14
Special Condition 4. B. requires the permittee to demonstrate compliance with the blowing chamber BACT and non-BACT emission limits by use of the "blowing chamber 3% LOI and 4% LOI stack tests." Additionally, Special Condition 6 requires the permittee to demonstrate compliance with the curing oven BACT and non-BACT emission limits by use of the curing oven 3% LOI and 4% LOI stack tests. EPA suggests MDNR add additional specificity regarding the requirements of the 3% LOI and 4% LOI stack tests.

OCIS Response
No response.

Program Response
Special Condition 22 contains stack test requirements.

Comment 15
Special Condition 22 requires the permittee to stack test each pollutant and location specified in Table 3. However, there are no test methods included with Table 3 indicating the methods the permittee is required to follow to develop the required data. EPA suggests MDNR include the test method(s) the permittee is required to follow.

OCIS Response
No response.

Program Response
Special Condition 22.H. requires the test method to be approved prior to conducting the test. The Permits Section is not the program lead for stack testing. In some cases where permits have prescribed a test method, an inappropriate method has been chosen in the permit which later created a burden on the source, the Compliance/Enforcement Section, and the Permits Section.

Comment 16
Special Condition 5. B. 6) c) requires the permittee to replace the regenerative thermal oxidizer (RTO) heat recovery bed according to the Standard Operating Procedure (SOP) report as developed in Special Condition 20. N. However, there is no Special Condition 20. N. in this draft Permit to Construct, therefore EPA suggests MDNR correct this reference.

OCIS Response
No response.

Program Response
The reference has been changed to Special Condition 22.K.

Comment 17
Special Condition 22. L. requires that subsequent testing be conducted once annually, except for haul roads, material handling moisture content, pollutants monitored by CEMS, saws baghouse and mix building baghouse. EPA suggests that MDNR identify the more customary specific annual testing OCIS is required to conduct and not specify the testing OCIS is not required to conduct.

OCIS Response
No response.

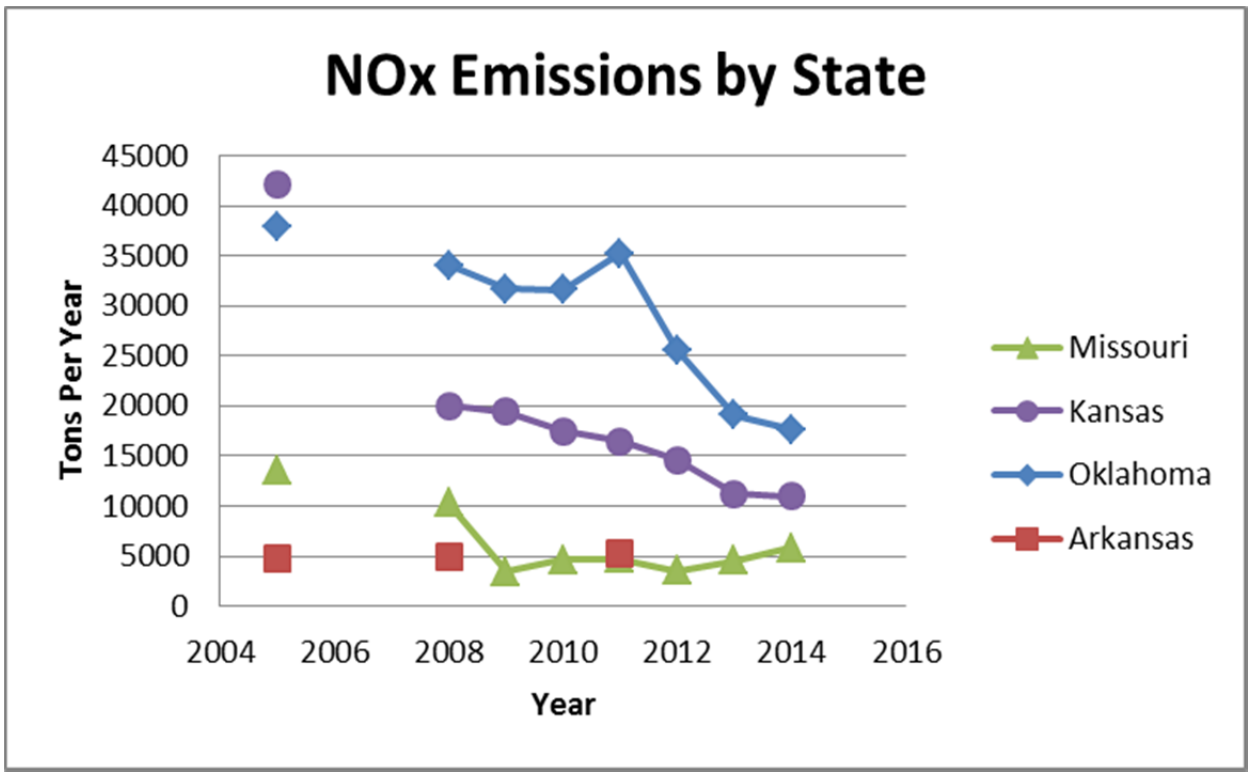
Program Response
The cupola, blowing chamber, curing oven, and cooling section have been added.

Comment 18
The Modeling Memo touches on the use of the beta option ARM2 in modeling demonstration for NOx. Since ARM2 is beta option that MDNR needed approval from the EPA 7 Regional Office to use, a more detailed discussion of ARM2 would be recommended to be included in the Modeling Memo. Particularly, MDNR in communications with EPA Region 7 provided an analysis of the in- stack ratios of the combined NOx emissions from the cupola and blowing chamber which provided justification to use the minimum N02/NOx ratio of 0.2 in ARM2. Also, MDNR states that Owen Coming meets criteria #3 (i.e., background ozone data does not have multiple days each year above 80-90 ppb) for use of ARM2, yet 2011 and 2012 did see multiple days above 80 ppb. MDNR correctly followed EPA guidance and did an additional analysis to show that all but 1 of high background ozone days coincided with maximum modeled NOx impacts, thus justifying that Owen Coming NOx modeling meets criteria #3 for ARM2. In addition, it could be pointed out that the Joplin region in 2011 and 2012 experienced extreme summer temperatures outside of climatological norms, which led to the possibility of anomalous high ozone during those years. This can be pointed out to say that under normal regional meteorological summertime conditions, the Joplin area has ozone concentrations that fit the criteria for use of ARM2.

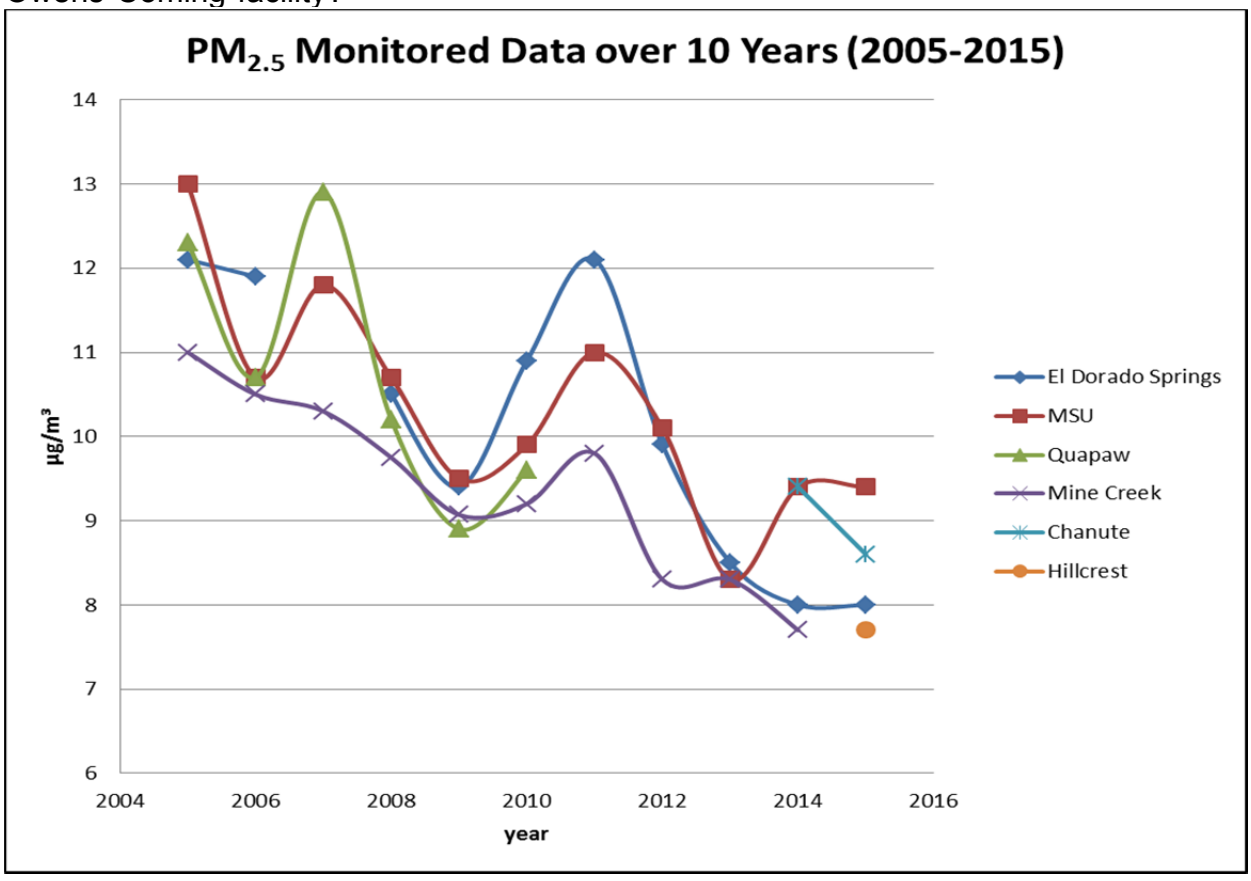
OCIS Response
No response.

Program Response
On March 2, 2016 the program sent a detailed email to EPA Region 7 requesting to use ARM2 for the OCIS project. This email detailed our how OCIS met the three criteria EPA had set forth in a memorandum dated September 30, 2014 for one to be able to use ARM2 in a NO_x analysis. On March 7, 2016 EPA Region 7 granted the program the approval to use ARM2 for the OCIS modeling analysis. In comment 18 above EPA requests that the program include a more detailed description of how OCIS meets the requirements for use of ARM2 in the modeling memo itself. For this information please refer to Section XI in the revised modeling memo entitled, "*Section 8 Ambient Air Quality Impact Analysis (AAQIA) for the Owens Corning Insulating Systems, LLC (Owens Corning) – Revision*."

Comment 19
MDNR provided a qualitative analysis for impacts of secondary PM2.5 from Owens Coming precursor emissions. In its analysis MDNR looked at trends in regional emissions inventories and regional monitors that measure $PM_{2.5}$. In its analysis of the National Emissions Inventory, MDNR plots "Facility wide totals of NOx, SOx and $PM_{2.5}$ were pulled and combined to get a total amount of emissions per year for each state."



It is not clear what exactly the emissions data that make up these graphs. For example, are all mobile, area, and point sources included? Is it the statewide inventory, or a summation of a few counties from each state located near the new Owens Coming facility?



Also, the likely impacts of year-to-year variability in meteorology is apparent in the graph of monitor trends of $PM_{2.5}$. The overall trend is downward, but the spikes in 2007 and 2011 are likely due meteorological phenomena. Drawing conclusions from emission trends to monitored concentrations should be done with caution without an attempt to tease out the variability of meteorology.

Finally, The UTM Northing Coordinate for East Warehouse & Packaging Generator (ESTWHGN8) of 41004015.9 appears to be incorrect. There appears to be an extra "0" in the location input.

OCIS Response
No response.

Program Response
In comment 19 EPA requested more information on the data contained within the pollutant emissions graphs within Section XVI of the modeling memo. Point source emissions data was collected from EPA's National Emissions Inventory (NEI) Database for the counties surrounding the OCIS facility in Missouri, Kansas, Oklahoma and Arkansas. The point source emissions were collected to see if a direct correlation could be made between emissions being released directly from a particular facility to a spike at a $PM_{2.5}$ monitor within the area.

Secondly, EPA cautioned that drawing conclusions from emission trends to monitored concentrations should be done with caution without also looking into any roll that changes in the meteorology might have played in the monitored concentrations. The program agrees that an evaluation of the meteorological data during days of high monitored concentrations, or visual spikes in the data, at each of the monitors should be conducted. The results of this review can be found in Section XVI of the revised modeling memo entitled, "*Section 8 Ambient Air Quality Impact Analysis (AAQIA) for the Owens Corning Insulating Systems, LLC (Owens Corning) – Revision*."

Upon review, EPA was correct that an extra zero was mistakenly added to the Northing of emission point ESTWHGN8. This mistake was noticed within Table 1: Owens Corning – Point Sources Emission Rates & Stack Parameters of the modeling memo. Once the error was found each of the modeling input files was also checked to determine the extent of the error. Since the error persisted within most of the modeling inputs files, all of the modeling was re-run with the correct UTM. Please see the revised memo entitled "*Section 8 Ambient Air Quality Impact Analysis (AAQIA) for the Owens Corning Insulating Systems, LLC (Owens Corning) – Revision*" for the results of this corrected analysis.

Ms. Robin Edmiston-Bennett
ISB Environmental Network Leader
Owens Corning Insulating Systems, LLC
400 Case Avenue
Newark, OH 43055

RE: New Source Review Permit - Project Number: 2015-05-005

Dear Ms. Edmiston-Bennett:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix A for a list of common abbreviations and acronyms used in the permit. Also, note the special conditions on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files. Operation in accordance with these conditions, your new source review permit application, and with your operating permit is necessary for continued compliance. The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

If you were adversely affected by this permit decision, you may be entitled to pursue an appeal before the administrative hearing commission pursuant to Sections 621.250 and 643.075.6 RSMo. To appeal, you must file a petition with the administrative hearing commission within thirty days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the administrative hearing commission, whose contact information is: Administrative Hearing Commission, United States Post Office Building, 131 West High St, Third Floor, P.O. Box 1557, Jefferson City, Missouri 65102, phone: 573-751-2422, fax: 573-751-5018, website: www.oa.mo.gov/ahc.

If you have any questions regarding this permit, please do not hesitate to contact David Little, at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Susan Heckenkamp
New Source Review Unit Chief

SH:dlj
Enclosures
c: Southwest Regional Office
PAMS File: 2015-05-005

Permit Number: