

DRAFT/PROPOSED

AIR EMISSION PERMIT NO. 16300002- 005

Major Amendment

IS ISSUED TO

3M Co

3M COTTAGE GROVE SPECIALTY ADDITIVES

10746 Innovation Road

Cottage Grove, Washington County, Minnesota 55016

The emission units, control equipment and emission stacks at the stationary source authorized in this permit amendment are as described in the Permit Applications Table.

The conditions included in Stage 1 of this permit action are effective on the Stage 1 Issuance Date shown below. Stage 1 conditions authorize construction of the facility and the operation of the emissions units at the address listed above until final action is taken on Stage 2. Air Emission Permit No. 16300002-004, remains effective until the Stage 2 Issue Date shown below.

Beginning on the Stage 2 Issue Date shown below, Air Emission Permit No. 16300002-005, supersedes Air Emission Permit No. 16300002-004 and authorizes the Permittee to operate the stationary source at the address listed above unless otherwise noted in Table A. The Permittee must comply with all the conditions of the permit. Any changes or modifications to the stationary source must be performed in compliance with Minn. R. 7007.1150 to 7007.1500. Terms used in the permit are as defined in the state air pollution control rules unless the term is explicitly defined in the permit.

Unless otherwise indicated, all the Minnesota rules cited as the origin of the permit terms are incorporated into the State Implementation Plan under 40 CFR § 52.1220 and as such are enforceable by U.S. Environmental Protection Agency (EPA) Administrator or citizens under the Clean Air Act.

Permit Type: Federal; Part 70/Limits to Avoid NSR;

Operating Permit Issue Date: March 24, 2005

Stage 1 Issue Date – Authorization to Construct and Operate: <date>

Stage 2 Issue Date – Major Amendment: <date>

Operating Permit Expiration: March 24, 2010* -- All Title I Conditions do not expire.

* The Permittee may continue to operate this facility after the expiration date of the permit, per the provision under Minn. R. 7007.0450, subp. 3. (Title V Reissuance Application was received September 28, 2009.)

Stage 1 Issuance:

Stage 2 Issuance:

Don Smith, P.E., Manager
Air Quality Permits Section
Industrial Division
for John Linc Stine
Commissioner
Minnesota Pollution Control Agency

Don Smith, P.E., Manager
Air Quality Permits Section
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for John Linc Stine
Commissioner
Minnesota Pollution Control Agency

Permit Applications Table

Permit Type	Application Date	Permit Action
Total Facility Operating Permit	April 17, 1995	001
Major Amendment	December 15, 2005	003
Major Amendment	August 19, 2009; March 22, 2012 (Supplemental information August 31, 2012)	004
Major Amendment	September 20, 2012	005

(Permit Action 002 – application withdrawn)

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NOTICE TO THE PERMITTEE:

Your stationary source may be subject to the requirements of the Minnesota Pollution Control Agency's (MPCA) solid waste, hazardous waste, and water quality programs. If you wish to obtain information on these programs, including information on obtaining any required permits, please contact the MPCA general information number at:

Metro Area	651-296-6300
Outside Metro Area	1-800-657-3864
TTY	651-282-5332

The rules governing these programs are contained in Minn. R. chs. 7000-7105. Written questions may be sent to: Minnesota Pollution Control Agency, 520 Lafayette Road North, St. Paul, Minnesota 55155-4194.

Questions about this air emission permit or about air quality requirements can also be directed to the telephone numbers and address listed above.

PERMIT SHIELD:

Subject to the limitations in Minn. R. 7007.1800, compliance with the conditions of this permit shall be deemed compliance with the specific provision of the applicable requirement identified in the permit as the basis of each condition. However, the permit shield does not apply to any national ambient air quality standard adopted under section 109 of the Clean Air Act and any state ambient air quality standard under Minn. R. ch. 7009.

Subject to the limitations of Minn. R. 7007.1800 and 7017.0100, subp. 2, notwithstanding the conditions of this permit specifying compliance practices for applicable requirements, any person (including the Permittee) may also use other credible evidence to establish compliance or noncompliance with applicable requirements.

FACILITY DESCRIPTION:

The 3M Cottage Grove Specialty Additives facility manufactures specialty glass products. The operations cover by this permit (buildings 74, 101 and 110) together with the operations covered the permits for 3M Cottage Grove – Abrasive Systems Division (Building 112) and 3M Cottage Grove – Building 19 & 111, constitute a single source under Prevention of Significant Degredation (PSD) regulations.

Emissions from the Specialty Additives facility result from raw material handling, fuel combustion, and from production processes. Direct electrical heating is used on the glass melter with natural gas used to heat the start-up of the melter and diesel used for the back-up generator. Natural gas is used on the glass bubble makers.

AMENDMENT DESCRIPTION:

The application seeks authorization to expand the glass furnace (EU022), to increase the hourly throughput capacity of the furnace and the associated fritting system (EU024), and to modify the fan associated with the fabric filter that currently controls the fritting system (CE025).

TABLE A: LIMITS AND OTHER REQUIREMENTS

A-1 02/19/13

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

Table A contains limits and other requirements with which your facility must comply. The limits are located in the first column of the table (What To do). The limits can be emission limits or operational limits. This column also contains the actions that you must take and the records you must keep to show that you are complying with the limits. The second column of Table A (Why to do it) lists the regulatory basis for these limits. Appendices included as conditions of your permit are listed in Table A under total facility requirements.

Subject Item: Total Facility

What to do	Why to do it
This facility, along with 3M Cottage Grove Abrasive Systems Division (ID 16300017) and 3M Cottage Grove Building 19 and 111 (ID 16300133) constitute a single source under PSD regulations.	hdr
NAAQS/MAAQs MODELING REQUIREMENTS	hdr
This permit requires modeling to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS). The Permittee may not make any change at the source that would result in an increase in SO ₂ emissions until it can be demonstrated that emissions from the facility as permitted do not cause an exceedance of the NAAQS. This includes changes that might otherwise qualify as insignificant modifications and minor or moderate amendments. This is a state-only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	40 CFR pt. 50; Minn. Stat. Section 116.07, subds. 4a & 9; Minn. R. 7007.0100, subp. 7(A), 7(L) & 7(M); Minn. R. 7007.0800, subps. 1, 2 & 4; Minn. R. 7009.0010-7009.0080
The parameters used in PM < 10 micron modeling are listed in Appendix II of this permit. The purpose of listing the parameters in the appendix is to provide a benchmark for future changes.	40 CFR pt. 50; Minn. Stat. Section 116.07, subds. 4a & 9; Minn. R. 7007.0100, subp. 7(A), 7(L) & 7(M); Minn. R. 7007.0800, subps. 1, 2 & 4; Minn. R. 7009.0010-7009.0080
Modeling Triggers: For changes that do not require a permit amendment and affect any modeled parameter or emission rate documented in Appendix III, or are an addition to the information documented in Appendix III, a Remodeling Submittal requirement is not triggered at the time of the change. The Permittee shall keep updated records on site of all parameters and emission rates. The Permittee shall submit any changes to parameters and emission rates with the next required Remodeling Submittal.	40 CFR pt. 50; Minn. Stat. Section 116.07, subds. 4a & 9; Minn. R. 7007.0100, subp. 7(A), 7(L) & 7(M); Minn. R. 7007.0800, subps. 1, 2 & 4; Minn. R. 7009.0010-7009.0080
For changes that require a minor, moderate, or major permit amendment and affect any modeled parameter or emission rate documented in Appendix III, or are an addition to the information documented in Appendix III, a Remodeling Submittal requirement is triggered. The Permittee shall include previously made changes to parameters and emission rates that did not trigger a Remodeling Submittal.	
Remodeling Submittal: The Permittee must submit to the MPCA for approval changes meeting the above criteria and must wait for a written approval before making such changes (see introduction of Table B of this permit for MPCA mailing information). For minor amendments, written approval of the modeling may be given before permit issuance; however, this approval applies only to the modeling and not to any other changes. The information submitted must include, for stack and vent sources, source emission rate, location, height, diameters, exit velocity, exit temperature, discharge direction, use of rain caps or rain hats, and, if applicable, locations and dimensions of nearby buildings. For non-stack/vent sources, this includes the source emissions rate, location, size and shape, release height, and, if applicable, any emissions rate scalars, and the initial lateral dimensions and initial vertical dimensions and adjacent building heights.	40 CFR pt. 50; Minn. Stat. Section 116.07, subds. 4a & 9; Minn. R. 7007.0100, subp. 7(A), 7(L) & 7(M); Minn. R. 7007.0800, subps. 1, 2 & 4; Minn. R. 7009.0010-7009.0080
Remodeling Submittal, continued: The plume dispersion characteristics due to the revisions of the information must be equivalent to or better than the dispersion characteristics modeled based on the 10/26/2011 modeling report submittal. The Permittee shall demonstrate this equivalency in the proposal. If the information does not demonstrate equivalent or better dispersion characteristics, or if a conclusion cannot readily be made about the dispersion, the Permittee must submit full remodeling.	40 CFR pt. 50; Minn. Stat. Section 116.07, subds. 4a & 9; Minn. R. 7007.0100, subp. 7(A), 7(L) & 7(M); Minn. R. 7007.0800, subps. 1, 2 & 4; Minn. R. 7009.0010-7009.0080
EMISSION CAP LIMITS	hdr
This permit establishes limits on the facility to keep it a minor source under New Source Review for PM, PM < 10 microns, PM < 2.5 microns, SO ₂ , NO _x and VOC. The Permittee cannot make any change at the source that would make the source a major source under New Source Review until a permit amendment has been issued. This includes changes that might otherwise qualify as insignificant modifications and minor or moderate amendments.	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
OPERATIONAL REQUIREMENTS	hdr

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-2** 02/19/13

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

The Permittee shall comply with National Primary and Secondary Ambient Air Quality Standards, 40 CFR pt. 50, and the Minnesota Ambient Air Quality Standards, Minn. R. 7009.0010 to 7009.0080. Compliance shall be demonstrated upon written request by the MPCA.	40 CFR pt. 50; Minn. Stat. Section 116.07, subds. 4a & 9; Minn. R. 7007.0100, subp. 7(A), 7(L), & 7(M); Minn. R. 7007.0800, subps. 1, 2 & 4; Minn. R. 7009.0010-7009.0080
Circumvention: Do not install or use a device or means that conceals or dilutes emissions, which would otherwise violate a federal or state air pollution control rule, without reducing the total amount of pollutant emitted.	Minn. R. 7011.0020
Air Pollution Control Equipment: Operate all pollution control equipment whenever the corresponding process equipment and emission units are operated, unless otherwise noted in Table A.	Minn. R. 7007.0800, subp. 2; Minn. R. 7007.0800, subp. 16(J)
Operation and Maintenance Plan: Retain at the stationary source an operation and maintenance plan for all air pollution control equipment. At a minimum, the O & M plan shall identify all air pollution control equipment and control practices and shall include a preventative maintenance program for the equipment and practices, a description of (the minimum but not necessarily the only) corrective actions to be taken to restore the equipment and practices to proper operation to meet applicable permit conditions, a description of the employee training program for proper operation and maintenance of the control equipment and practices, and the records kept to demonstrate plan implementation.	Minn. R. 7007.0800, subps. 14 and 16(J)
Operation Changes: In any shutdown, breakdown, or deviation the Permittee shall immediately take all practical steps to modify operations to reduce the emission of any regulated air pollutant. The Commissioner may require feasible and practical modifications in the operation to reduce emissions of air pollutants. No emissions units that have an unreasonable shutdown or breakdown frequency of process or control equipment shall be permitted to operate.	Minn. R. 7019.1000, subp. 4
Fugitive Emissions: Do not cause or permit the handling, use, transporting, or storage of any material in a manner which may allow avoidable amounts of particulate matter to become airborne. Comply with all other requirements listed in Minn. R. 7011.0150.	Minn. R. 7011.0150
Noise: The Permittee shall comply with the noise standards set forth in Minn. R. 7030.0010 to 7030.0080 at all times during the operation of any emission units. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 7030.0010 - 7030.0080
Inspections: The Permittee shall comply with the inspection procedures and requirements as found in Minn. R. 7007.0800, subp. 9(A).	Minn. R. 7007.0800, subp. 9(A)
The Permittee shall comply with the General Conditions listed in Minn. R. 7007.0800, subp. 16.	Minn. R. 7007.0800, subp. 16
PERFORMANCE TESTING	hdr
Performance Testing: Conduct all performance tests in accordance with Minn. R. ch. 7017 unless otherwise noted in Tables A or B.	Minn. R. ch. 7017
Performance Test Notifications and Submittals: Performance Tests are due as outlined in Tables A and B of the permit. See Table B for additional testing requirements. Performance Test Notification (written): due 30 days before each Performance Test Performance Test Plan: due 30 days before each Performance Test Performance Test Pre-test Meeting: due 7 days before each Performance Test Performance Test Report: due 45 days after each Performance Test Performance Test Report - Microfiche Copy: due 105 days after each Performance Test The Notification, Test Plan, and Test Report may be submitted in alternative format as allowed by Minn. R. 7017.2018.	Minn. R. 7017.2018; Minn. R. 7017.2030, subps. 1-4, Minn. R. 7017.2035, subps. 1-2
Limits set as a result of a performance test (conducted before or after permit issuance) apply until superseded as stated in the MPCA's Notice of Compliance letter granting preliminary approval. Preliminary approval is based on formal review of a subsequent performance test on the same unit as specified by Minn. R. 7017.2025, subp. 3. The limit is final upon issuance of a permit amendment incorporating the change.	Minn. R. 7017.2025, subp. 3
MONITORING REQUIREMENTS	hdr
Monitoring Equipment Calibration: Annually calibrate all required monitoring equipment (any requirements applying to continuous emission monitors are listed separately in this permit).	Minn. R. 7007.0800, subp. 4(D)

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-3**

02/19/13

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

Operation of Monitoring Equipment: Unless otherwise noted in Tables A or B, monitoring a process or control equipment connected to that process is not necessary during periods when the process is shutdown, or during checks of the monitoring systems, such as calibration checks and zero and span adjustments. If monitoring records are required, they should reflect any such periods of process shutdown or checks of the monitoring system.	Minn. R. 7007.0800, subp. 4(D); 40 CFR Section 70.6(a)(3)(i)(C)
RECORDKEEPING	hdr
Recordkeeping: Retain all records required by this permit for a period of at least five (5) years from the date of monitoring, sample, measurement, or report. Records shall be retained at the stationary source for at least two (2) years, after which they may be transferred to and retained at the 3M Center for at least three (3) years. Records which must be retained at this location for at least two (2) years include all calibration and maintenance records, all original recordings for continuous monitoring instrumentation, and copies of all reports required by the permit. Records must conform to the requirements listed in Minn. R. 7007.0800, subp. 5(A).	Minn. R. 7007.0800, subp. 5(C)
Recordkeeping: Maintain records describing any insignificant modifications (as required by Minn. R. 7007. 1250, subp. 3) including records of the emissions resulting from those changes.	Minn. R. 7007. 0800, subp. 5(B)
Recordkeeping: Maintain records describing any changes contravening permit terms (as required by Minn. R. 7007.1350 subp. 2), including records of the emissions resulting from those changes.	Minn. R. 7007. 0800, subp. 5(B); 40 CFR Section 70.4(b)(12)
If the Permittee determines that no permit amendment or notification is required prior to making a change, the Permittee must retain records of all calculations required under Minn. R. 7007.1200. For expiring permits, these records shall be kept for a period of five years from the date the change was made or until permit reissuance, whichever is longer. The records shall be kept at the stationary source for the current calendar year of operation and may be kept at the stationary source or office of the stationary source for all other years. The records may be maintained in either electronic or paper format.	Minn. R. 7007.1200, subp. 4
REPORTING and SUBMITTALS	hdr
Shutdown Notifications: Notify the Commissioner at least 24 hours in advance of a planned shutdown of any control equipment or process equipment if the shutdown would cause any increase in the emissions of any regulated air pollutant. If the owner or operator does not have advance knowledge of the shutdown, notification shall be made to the Commissioner as soon as possible after the shutdown. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 3. At the time of notification, the owner or operator shall inform the Commissioner of the cause of the shutdown and the estimated duration. The owner or operator shall notify the Commissioner when the shutdown is over.	Minn. R. 7019.1000, subp. 3
Breakdown Notifications: Notify the Commissioner within 24 hours of a breakdown of more than one hour duration of any control equipment or process equipment if the breakdown causes any increase in the emissions of any regulated air pollutant. The 24-hour time period starts when the breakdown was discovered or reasonably should have been discovered by the owner or operator. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 2. At the time of notification or as soon as possible thereafter, the owner or operator shall inform the Commissioner of the cause of the breakdown and the estimated duration. The owner or operator shall notify the Commissioner when the breakdown is over.	Minn. R. 7019.1000, subp. 2
Notification of Deviations Endangering Human Health or the Environment: As soon as possible after discovery, notify the Commissioner or the state duty officer, either orally or by facsimile, of any deviation from permit conditions which could endanger human health or the environment.	Minn. R. 7019.1000, subp. 1
Notification of Deviations Endangering Human Health or the Environment Report: Within 2 working days of discovery, notify the Commissioner in writing of any deviation from permit conditions which could endanger human health or the environment. Include the following information in this written description: 1. the cause of the deviation; 2. the exact dates of the period of the deviation, if the deviation has been corrected; 3. whether or not the deviation has been corrected; 4. the anticipated time by which the deviation is expected to be corrected, if not yet corrected; and 5. steps taken or planned to reduce, eliminate, and prevent reoccurrence of the deviation.	Minn. R. 7019.1000, subp. 1

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-4**

02/19/13

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

Application for Permit Amendment: If a permit amendment is needed, submit an application in accordance with the requirements of Minn. R. 7007.1150 through Minn. R. 7007.1500. Submittal dates vary, depending on the type of amendment needed.	Minn. R. 7007.1150 - 7007.1500
Extension Requests: The Permittee may apply for an Administrative Amendment to extend a deadline in a permit by no more than 120 days, provided the proposed deadline extension meets the requirements of Minn. R. 7007.1400, subp. 1(H).	Minn. R. 7007.1400, subp. 1(H)
Emission Inventory Report: due on or before April 1 of each calendar year following permit issuance, to be submitted on a form approved by the Commissioner.	Minn. R. 7019.3000 - 7019.3100
Emission Fees: due 60 days after receipt of an MPCA bill.	Minn. R. 7002.0005 - 7002.0095

TABLE A: LIMITS AND OTHER REQUIREMENTS

A-5 02/19/13

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

Subject Item: GP 001 Fabric Filter Requirements (CAM)

Associated Items: CE 004 Fabric Filter - Medium Temperature i.e., 180 F<T<250 F
 CE 024 Fabric Filter - High Temperature, i.e., T>250 Degrees F
 CE 025 Fabric Filter - Medium Temperature i.e., 180 F<T<250 F
 CE 026 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
 CE 027 Fabric Filter - Medium Temperature i.e., 180 F<T<250 F
 CE 034 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
 CE 035 Fabric Filter - Medium Temperature i.e., 180 F<T<250 F

What to do	Why to do it
The Permittee shall operate and maintain each fabric filter in GP001 at all times that an emission unit in GP002 that exhausts to a fabric filter is in operation. The Permittee shall document periods of non-operation of the control equipment. The requirements of this group apply individually to each fabric filter in GP001, including all new, modified, or replaced fabric filters added as allowed by GP001.	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
If the Permittee replaces any existing fabric filter, adds a new fabric filter, or modifies an existing fabric filter listed in GP001, such equipment is subject to all of the requirements of GP001. Prior to making such a change, the Permittee shall apply for and obtain the appropriate permit amendment, as applicable. A permit amendment is required if the change will be subject to a newly applicable requirement or requires revisions to the limits or monitoring and recordkeeping in this permit.	Title I Condition: To avoid classification as major source and modification under 40 CFR Section 52.21 & Minn. R. 7007.3000
EMISSION LIMITATIONS	hdr
The Permittee shall operate and maintain each fabric filter such that it achieves a control efficiency for Total Particulate Matter: greater than or equal to 99 percent control efficiency	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
The Permittee shall operate and maintain each fabric filter equipment such that it achieves a control efficiency for PM < 10 micron: greater than or equal to 93 percent control efficiency	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
The Permittee shall operate and maintain each fabric filter such that it achieves a control efficiency for PM < 2.5 micron: greater than or equal to 93 percent control efficiency	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
OPERATING REQUIREMENTS	hdr
The Permittee shall operate and maintain the fabric filters in accordance with the Operation and Maintenance (O & M) Plan. The Permittee shall keep copies of the O & M Plan available onsite for use by staff and MPCA staff.	Minn. R. 7007.0800, subp. 14
Replacing Control Devices: The Permittee shall operate and maintain any new, modified, or replaced fabric filter according to the manufacturer's specifications until a new pressure drop limit is set pursuant to Minn. R. 7017.2025, subp. 3.	Minn. R. 7007.0800, subps. 4, 5 and 14
See individual CE level (CE 004, 024, 025, 026, 027, 034, or 035) for required pressure drop ranges for each fabric filter.	hdr
MONITORING AND RECORDKEEPING	hdr
Pressure Drop Recordkeeping: The Permittee shall, once every 24 hours, read and record the pressure drop across the fabric filter. The Permittee shall record the time and date of each pressure drop reading, and whether or not the observed pressure drop was within the range specified in this permit. Recorded values outside the range specified in this permit are considered Deviations as defined by Minn. R. 7007.0100, subp. 8a. The Permittee shall also record and maintain the date of each bag replacement for all fabric filters.	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000; 40 CFR Section 64.3; Minn. R. 7017.0200
Visible Emissions: The Permittee shall check each fabric filter stack for any visible emissions using Method 22, daily during periods of daylight operation when the monitored pressure drop is outside of the range specified in the permit or during periods of inoperation of pressure drop monitoring equipment.	Minn. R. 7007.0800, subp. 4 and 14
Recordkeeping: The Permittee shall record the time and date of each visible emission inspection, and whether or not any visible emissions were observed. Any visible emissions are considered Deviations as defined by Minn. R. 7007.0100, subp. 8a. If the emission unit is not operating, the Permittee shall record that the process is not operating.	Minn. R. 7007.0800, subps. 2 and 14

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-6**

02/19/13

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

Periodic Inspections: At least once per calendar quarter, or more frequently as required by the manufacturing specifications, the Permittee shall inspect the control equipment components. The Permittee shall maintain a written record of these inspections.	40 CFR Section 64.3; Minn. R. 7017.0200
Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - the recorded pressure drop is outside the required operating range; or - the fabric filter or any of its components are found during the inspections to need repair. Corrective actions shall return the pressure drop to within the permitted range, and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the fabric filter. The Permittee shall keep a record of the type and date of any corrective action taken for each filter.	40 CFR Section 64.7(d); Minn. R. 7017.0200
Monitoring Equipment: The Permittee shall install and maintain the necessary monitoring equipment for measuring and recording pressure drop as required by this permit. The monitoring equipment must be installed, in use, and properly maintained when the monitored fabric filter is in operation.	40 CFR Section 64.7(b); Minn. R. 7017.0200
The Permittee shall calibrate the pressure gauge at least once every 12 months and shall maintain a written record of any action resulting from the calibration.	40 CFR Section 64.3; Minn. R. 7017.0200
Documentation of Need for Improved Monitoring: If the Permittee fails to achieve compliance with an emission limitation or standard for which the monitoring did not provide an indication of an excursion or exceedance while providing valid data, or the results of compliance or performance testing document a need to modify the existing pressure drop range, the Permittee shall promptly notify the MPCA and, if necessary, submit a permit amendment application to address the necessary monitoring change.	40 CFR Section 64.7(e); Minn. R. 7017.0200
PERFORMANCE TESTS	hdr
Performance Test: due 365 days after Startup of a new, modified, or replaced control device to measure Particulate Matter emissions to demonstrate compliance with applicable emission limitations.	Minn. R. 7017.2020, subp. 1
Performance Test: due 365 days after Startup of a new, modified, or replaced control device to measure Opacity to demonstrate compliance with applicable emission limitations.	Minn. R. 7017.2020, subp. 1

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-7** 02/19/13

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

Subject Item: GP 002 Emission Cap Limits

Associated Items: CE 004 Fabric Filter - Medium Temperature i.e., 180 F<T<250 F
CE 024 Fabric Filter - High Temperature, i.e., T>250 Degrees F
CE 025 Fabric Filter - Medium Temperature i.e., 180 F<T<250 F
CE 026 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
CE 027 Fabric Filter - Medium Temperature i.e., 180 F<T<250 F
EU 003 Glass Bubble Maker #18
EU 004 Glass Bubble Maker #20
EU 005 Glass Bubble Maker #21
EU 022 Glass Furnace #74-04A
EU 023 Glass Furnace #74-04B
EU 024 Fritting Systems #74-05
EU 025 Impact Mill
EU 026 Agglomerator System #74-04
EU 034 Emergency Backup Generator #55

What to do	Why to do it
EMISSION LIMITATIONS	hdr
Total Particulate Matter: less than or equal to 110 tons/year using 12-month Rolling Sum to be calculated by the 21st day of each month for the previous 12-month period. All PM-emitting equipment in GP002 and insignificant activities under Minn. R. 7007.1300 are subject to this limit.	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
PM < 10 micron: less than or equal to 110 tons/year using 12-month Rolling Sum to be calculated by the 21st day of each month for the previous 12-month period. All PM < 10 microns-emitting equipment in GP002 and insignificant activities under Minn. R. 7007.1300 are subject to this limit.	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
PM < 2.5 micron: less than or equal to 110 tons/year using 12-month Rolling Sum to be calculated by the 21st day of each month for the previous 12-month period. All PM < 2.5 microns-emitting equipment in GP002 and insignificant activities under Minn. R. 7007.1300 are subject to this limit.	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
Sulfur Dioxide: less than or equal to 120 tons/year using 12-month Rolling Sum to be calculated by the 21st day of each month for the previous 12-month period. All SO ₂ -emitting equipment in GP002 and insignificant activities under Minn. R. 7007.1300 are subject to this limit.	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
Nitrogen Oxides: less than or equal to 135 tons/year using 12-month Rolling Sum to be calculated by the 21st day of each month for the previous 12-month period. All NO _x -emitting equipment in GP002 and insignificant activities under Minn. R. 7007.1300 are subject to this limit.	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
Volatile Organic Compounds: less than or equal to 110 tons/year using 12-month Rolling Sum to be calculated by the 21st day of each month for the previous 12-month period as described later in this permit. All VOC-emitting equipment in GP002 and insignificant activities under Minn. R. 7007.1300 are subject to this limit.	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
OPERATING REQUIREMENTS	hdr
The Permittee shall vent emissions from EU003, EU004, EU005, EU022, EU024, EU025, and EU026 to a control device meeting the permit requirements for GP001 at all times EU003, EU004, EU005, EU022, EU024, EU025, and EU026 are in operation.	Title I Condition: To avoid classification as major source and modification under 40 CFR Section 52.21 & Minn. R. 7007.3000

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-8**

02/19/13

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

Equipment Labeling: The Permittee shall permanently affix a unique number to each control equipment for tracking purposes. The numbers shall correlate the unit to the appropriate CE and GP numbers used in this permit. The number can be affixed by placard, stencil, or other means. The number shall be maintained so that it is readable and visible at all times from a safe distance. If equipment is added, it shall be given a new unique number; numbers from replaced or removed equipment shall not be reused.	Minn. R. 7007.0800, subp. 2
RECORDKEEPING REQUIREMENTS	hdr
Daily Recordkeeping: Once each day of operation, the Permittee shall calculate record, and maintain records of the total quantity of all materials processed or used at the facility which results in emission of PM, PM < 10 microns, PM < 2.5 microns, SO ₂ , NO _x , or VOC. For combustion equipment in GP 002 the Permittee shall maintain daily records of the amount of fuel used. For the glass bubble making process equipment in GP 002 (EUs 003-005, 022-026), the Permittee shall maintain daily records of the production rate or process throughput. Alternatively, the Permittee may record the hours of operation of PM, PM < 10 microns, PM < 2.5 microns, SO ₂ , NO _x , and VOC-emitting units. The records must provide adequate data to calculate emissions of PM, PM < 10 microns, PM < 2.5 microns, SO ₂ , NO _x , and VOC.	Title I Condition: To avoid classification as major source and modification under 40 CFR Section 52.21 & Minn. R. 7007.3000
Monthly Recordkeeping: By the 21st day of each month, the Permittee shall calculate and record the PM, PM < 10 microns, PM < 2.5 microns, SO ₂ , NO _x , and VOC emissions for the previous month and the 12-month rolling sum emissions for the previous 12 month period by summing the monthly emissions data for the previous 12 months.	Title I Condition: To avoid classification as major source and modification under 40 CFR Section 52.21 & Minn. R. 7007.3000
Material Content: Material content shall be determined by either a material Safety Data Sheet (MSDS) or a Letter of Certification, provided by the supplier for each material used, or other agency approved method. If a material content range is given, the highest number in the range shall be used in all compliance calculations. When using the MSDS as the basis of calculating Particulate Matter emissions, the Permittee shall assume that Particulate Matter consists entirely of PM < 10 microns. Documentation of material content shall be maintained on-site and provided when requested.	Minn. R. 7007.0800, subps. 4 and 5
Calculation Records: For combustion equipment in GP 001 the Permittee shall calculate emissions based on fuel usage and emission factors specific to the type of combustion equipment in GP 002. For the glass bubble making process equipment in GP 002 (EUs 003-005, 022-026), the Permittee shall calculate emissions based on production rate or process throughput of each unit and emission factors specific to each unit in GP 002. The Permittee shall maintain an up to date list of all emission factors used in the 12-month rolling sum calculations for all equipment in GP 002. For emission factors that are based on material content, the Permittee shall comply with the Material Content requirement of GP 002. (continued below)	Minn. R. 7007.0800, subps. 4 and 5
Calculation Records continued: If the Permittee uses uncontrolled emission factors in calculating the emissions from units in GP 002 that are controlled as required by this permit by fabric filters meeting the requirements of GP 001, the Permittee may take credit for the control efficiencies required by GP 001 when calculating PM, PM < 10 micron, and PM < 2.5 micron emissions. If the Permittee uses hours of operation for calculating the emissions from the units in GP002, the maximum permitted production rate shall be used to determine emissions for PM, PM < 10 microns, PM < 2.5 microns, SO ₂ , NO _x , and VOCs if actual production rates are not available.	Minn. R. 7007.0800, subps. 4 and 5
Insignificant Activities: The Permittee shall evaluate the emissions from changes made under Minn. R. 7007.1300 on a monthly basis, and shall include emissions from insignificant activities in the monthly rolling sum. The Permittee shall maintain an up-to-date list of all insignificant activities on site. All changes made in accordance with Minn. R. 7007.1300 and Minn. R. 7007.1250 subp. 1A are subject to the requirements of GP002.	Title I Condition: To avoid classification as major source and modification under 40 CFR Section 52.21 & Minn. R. 7007.3000

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-9** 02/19/13

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

Subject Item: EU 003 Glass Bubble Maker #18**Associated Items:** CE 004 Fabric Filter - Medium Temperature i.e., 180 F<T<250 F

GP 002 Emission Cap Limits

SV 003 052 Vent for Fabric Filter for Former 18

What to do	Why to do it
EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.053 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011. 0735.	Title I Condition: Limit taken to avoid classification as a major source or major modification under 40 CFR Section 52.21 & Minn. R. 7007.3000; Minn. R. 7011.0715, subp. 1(A)
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 1(B)
CONTROL EQUIPMENT REQUIREMENTS (see GP001 and CE004 for additional control equipment requirements)	hdr
The Permittee shall operate and maintain a fabric filter that meets the requirements of GP001 at all times that EU 003 is in operation.	Title I Condition: Limit taken to avoid classification as a major source or major modification under 40 CFR Section 52.21 & Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2 and 14
RECORDKEEPING (see GP002 for recordkeeping requirements)	hdr

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-10**

02/19/13

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

Subject Item: EU 004 Glass Bubble Maker #20**Associated Items:** CE 034 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

GP 002 Emission Cap Limits

SV 004 054 Vent for fabric Filter for Former 20

What to do	Why to do it
EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.05 grains/dry standard cubic foot of exhaust gas.	Title I Condition: Limit taken to avoid classification as a major source or major modification under 40 CFR Section 52.21 & Minn. R. 7007.3000; Minn. R. 7011.0715, subp. 1(A)
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 1(B)
CONTROL EQUIPMENT REQUIREMENTS (see GP001 and CE034 for additional control equipment requirements)	hdr
The Permittee shall operate and maintain fabric filter a fabric filter that meets the requirements of GP001 at all times EU 004 is in operation.	Title I Condition: Limit taken to avoid classification as a major source or major modification under 40 CFR Section 52.21 & 7007.3000; Minn. R. 7007.0800, subp. 2 and 14
RECORDKEEPING (see GP002 for recordkeeping requirements)	hdr

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-11**

02/19/13

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

Subject Item: EU 005 Glass Bubble Maker #21**Associated Items:** CE 035 Fabric Filter - Medium Temperature i.e., 180 F<T<250 F

GP 002 Emission Cap Limits

SV 013 Maker 21 Fabric Filter Stack

What to do	Why to do it
EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.057 grains/dry standard cubic foot of exhaust gas.	Title I Condition: Limit taken to avoid classification as a major source or major modification under 40 CFR Section 52.21 & Minn. R. 7007.3000; Minn. R. 7011.0715, subp. 1(A)
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 1(B)
CONTROL EQUIPMENT REQUIREMENTS (See GP001, CE005 and CE035 for additional control equipment requirements)	hdr
The Permittee shall operate and maintain a fabric filter that meets the requirements of GP001 at all times EU 005 is in operation.	Title I Condition: Limit taken to avoid classification as a major source or major modification under 40 CFR Section 52.21 & 7007.3000; Minn. R. 7007.0800, subp. 2 and 14
RECORDKEEPING (see GP002 for recordkeeping requirements)	hdr

TABLE A: LIMITS AND OTHER REQUIREMENTS

A-12 02/19/13

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

Subject Item: EU 022 Glass Furnace #74-04A**Associated Items:** CE 024 Fabric Filter - High Temperature, i.e., T>250 Degrees F

GP 002 Emission Cap Limits

SV 007 065 Vent for Fabric Filter for Reject Hopper, Remelt Feeder, and Glass Furnace

What to do	Why to do it
The Permittee is authorized to expand EU022 at any time during the life of permit 16300002-005.	[Stage 1] Minn. R. 7007.0800, subp. 2
EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.010 grains/dry standard cubic foot of exhaust gas. Applicable during electric heating.	Title I Condition: limit to avoid classification as a major source or major modification under 40 CFR Section 52.21 & Minn. R. 7007.3000; most stringent, meets limit set by Minn. R. 7011.0715, subp. 1(A)
PM < 10 micron: less than or equal to 0.010 grains/dry standard cubic foot of exhaust gas. Applicable during electric heating.	Title I Condition: limit to avoid classification as a major source or major modification under 40 CFR Section 52.21 & Minn. R. 7007.3000; Minn. R. 7017.2025, subp. 3(C)
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 1(B)
OPERATING REQUIREMENTS	hdr
The Permittee shall not operate EU022 and EU023 simultaneously. EU022 represents normal production operation with electric heating.	Title I Condition: limit to avoid classification as a major source or major modification under 40 CFR Section 52.21 & Minn. R. 7007.3000
Production: less than or equal to 4,400 lbs/hour using 24-hour Block Average . This limit applies after Computer Dispersion Modeling Protocol and Computer Dispersion Modeling Results demonstrating compliance with the SO2 NAAQS have been approved by the MPCA.	[Stage 1] Title I Condition: limit to avoid classification as a major source or major modification under 40 CFR Section 52.21 & Minn. R. 7007.3000; Minn. R. 7017.2025, subp. 3(C)
Production: less than or equal to 3530 lbs/hour using 24-hour Block Average .	[Stage 1] Title I Condition: limit to avoid classification as a major source or major modification under 40 CFR Section 52.21 & Minn. R. 7007.3000; Minn. R. 7017.2025, subp. 3(C)
The Permittee shall operate and maintain a fabric filter that meets the requirements of GP001 at all times EU 022 is in operation.	Title I Condition: Limit taken to avoid classification as a major source or major modification under 40 CFR Section 52.21 & Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2 and 14
PERFORMANCE TESTING	hdr
Performance Test: due 180 days after Computer Dispersion Modeling Results demonstrating compliance with SO2 NAAQS have been approved by the MPCA. The Performance Test shall measure Total Particulate Matter emissions.	Minn. R. 7017.2020, subp. 1
Performance Test: due 180 days after Computer Dispersion Modeling Results demonstrating compliance with SO2 NAAQS have been approved by the MPCA. The Performance Test shall measure PM < 10 micron emissions.	Minn. R. 7017.2020, subp. 1
Performance Test: due 180 days after Computer Dispersion Modeling Results demonstrating compliance with SO2 NAAQS have been approved by the MPCA. The Performance Test shall measure PM < 2.5 micron emissions.	Minn. R. 7017.2020, subp. 1
RECORDKEEPING (see GP002 for additional recordkeeping requirements)	hdr
For each startup and shutdown of operation of EU022 the Permittee shall record: 1. the date and time of each startup 2. the date and time of each shutdown 3. a statement documenting whether EU023 is also in operation	Minn. R. 7007.0800, subps. 4 and 5
Recordkeeping: On each day of operation, the Permittee shall maintain records of the weight of each product container and hours of production in each 24-hour period.	Title I Condition: limit to avoid classification as a major source or major modification under 40 CFR Section 52.21 & Minn. R. 7007.3000; Minn. R. 7007.0800, subps. 4 and 5
Recordkeeping: By the 21st day of each month, the Permittee shall calculate the block average pounds/hour production rate for each calendar day in the previous month from the daily records of product weight and hours of production.	Minn. R. 7007.0800, subps. 4 and 5
CONTROL EQUIPMENT REQUIREMENTS (See GP 001 and CE 024 for further control equipment requirements)	hdr

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-13**

02/19/13

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

Subject Item: EU 023 Glass Furnace #74-04B**Associated Items:** GP 002 Emission Cap Limits

SV 008 066 Vent for Bypass for Glass Furnace

What to do	Why to do it
EMISSION LIMITATIONS	hdr
Total Particulate Matter: less than or equal to 0.30 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735.	Minn. R. 7011.0610, subp. 1(A)(1)
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity.	Minn. R. 7011.0610, subp. 1(A)(2)
Sulfur Dioxide: less than or equal to 2.0 lbs/million Btu heat input . The potential to emit from the unit is 0.0006 lb/MMBtu due to equipment design and allowable fuels.	Minn. R. 7011.0610, subp. 2(A)(2)
OPERATING REQUIREMENTS	hdr
The Permittee shall not operate EU022 and EU023 simultaneously. EU023 bypass is used only during warm-up of this unit with natural gas. No raw materials are fed to this unit during this time.	Title I Condition: limit to avoid classification as a major source or major modification under 40 CFR Section 52.21 & Minn. R. 7007.3000
Fuel Usage: less than or equal to 2.88 million cubic feet/year using 12-month Rolling Sum using only natural gas for fuel for startup. Electric heating is used for normal operation after startup.	Title I Condition: limit to avoid classification as a major source or major modification under 40 CFR Section 52.21 & Minn. R. 7007.3000
Fuel type: natural gas only.	Minn. R. 7005.0100, subp. 35a
RECORDKEEPING (see GP002 for additional recordkeeping requirements)	hdr
For each startup and shutdown of operation of EU023 the Permittee shall record: 1. the date and time of each startup 2. the date and time of each shutdown 3. a statement documenting whether EU022 is also in operation	Minn. R. 7007.0800, subps. 4 and 5
Recordkeeping: The Permittee shall record the time and date of each visible emission inspection, and whether or not any visible emissions were observed. Any visible emissions are considered Deviations as defined by Minn. R. 7007.0100, subp. 8a. If the emission unit is not operating, the Permittee shall record that the process is not operating.	Minn. R. 7007.0200; Minn. R. 7007.0800, subps. 2 and 14
Daily Recordkeeping. For each day of operation with natural gas, the Permittee shall record the total quantity of natural gas used.	Title I Condition: recordkeeping for limit to avoid classification as a major source under 40 CFR Section 52.21 & Minn. R. 7007.3000
Monthly Recordkeeping. By the 21st of the month, the Permittee shall calculate and record the following: 1)The total natural gas usage in EU 023 for the previous calendar month using the daily fuel usage records. 3) The 12-month rolling sum fuel usage for the previous 12-month period by summing the monthly fuel usage data for the previous 12 months.	Minn. R. 7007.0800, subps. 4 and 5

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-14** 02/19/13

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

Subject Item: EU 024 Fritting Systems #74-05**Associated Items:** CE 025 Fabric Filter - Medium Temperature i.e., 180 F<T<250 F

GP 002 Emission Cap Limits

SV 009 067 Vent for Fabric Filter for Fritting System

What to do	Why to do it
The Permittee is authorized to expand EU024 at any time during the life of permit 16300002-005.	[Stage 1] Minn. R. 7007.0800, subp. 2
EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.0140 grains/dry standard cubic foot of exhaust gas.	Title I Condition: limit to avoid classification as a major source or major modification under 40 CFR Section 52.21 & Minn. R. 7007.3000; most stringent, meets limit set by Minn. R. 7011.0715, subp. 1(A)
PM < 10 micron: less than or equal to 0.0140 grains/dry standard cubic foot of exhaust gas.	Title I Condition: limit to avoid classification as a major source or major modification under 40 CFR Section 52.21 & Minn. R. 7007.3000; Minn. R. 7017.2025, subp. 3(C)
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 1(B)
OPERATING REQUIREMENTS	hdr
Production: less than or equal to 4,400 lbs/hour using 24-hour Block Average . This limit applies after Computer Dispersion Modeling Protocol and Computer Dispersion Modeling Results demonstrating compliance with the SO2 NAAQS have been approved by the MPCA.	[Stage 1] Title I Condition: limit to avoid classification as a major source or major modification under 40 CFR Section 52.21 & Minn. R. 7007.3000; Minn. R. 7017.2025, subp. 3(C)
Production: less than or equal to 3530 lbs/hour using 24-hour Block Average .	[Stage 1] Title I Condition: limit to avoid classification as a major source or major modification under 40 CFR Section 52.21 & Minn. R. 7007.3000; Minn. R. 7017.2025, subp. 3(C)
The Permittee shall operate and maintain a fabric filter the meets the requirements of GP001 at all times EU024 is in operation.	Title I Condition: Limit taken to avoid classification as a major source or major modification under 40 CFR Section 52.21 & Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2 and 14
PERFORMANCE TESTING	hdr
Performance Test: due 180 days after Computer Dispersion Modeling Results demonstrating compliance with SO2 NAAQS have been approved by the MPCA. The Performance Test shall measure Total Particulate Matter emissions.	Minn. R. 7017.2020, subp. 1
Performance Test: due 180 days after Computer Dispersion Modeling Results demonstrating compliance with SO2 NAAQS have been approved by the MPCA. The Performance Test shall measure PM < 10 micron emissions.	Minn. R. 7017.2020, subp. 1
Performance Test: due 180 days after Computer Dispersion Modeling Results demonstrating compliance with SO2 NAAQS have been approved by the MPCA. The Performance Test shall measure PM < 2.5 micron emissions.	Minn. R. 7017.2020, subp. 1
RECORDKEEPING (see GP002 for additional recordkeeping requirements)	hdr
Recordkeeping: On each day of operation, the Permittee shall maintain records of the weight of each product container and hours of production in each 24-hour period.	Title I Condition: limit to avoid classification as a major source or major modification under 40 CFR Section 52.21 & Minn. R. 7007.3000; Minn. R. 7007.0800, subps. 4 and 5
Recordkeeping: By the 21st day of each month, the Permittee shall calculate the block average pounds/hour production rate for each calendar day in the previous month from the daily records of product weight and hours of production.	Minn. R. 7007.0800, subps. 4 and 5
CONTROL EQUIPMENT REQUIREMENTS (See GP001 and CE025 for additional control equipment requirements)	hdr

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-15**

02/19/13

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

Subject Item: EU 025 Impact Mill**Associated Items:** CE 026 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

GP 002 Emission Cap Limits

SV 010 068 Vent for Fabric Filter for Impact Mill

What to do	Why to do it
EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.016 grains/dry standard cubic foot of exhaust gas.	Title I Condition: limit to avoid classification as a major source or major modification under 40 CFR Section 52.21 & Minn. R. 7007.3000; most stringent, meets limit set by Minn. R. 7011.0715, subp. 1(A)
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 1(B)
CONTROL EQUIPMENT REQUIREMENTS (See GP001 and CE026 for additional control equipment requirements)	hdr
The Permittee shall operate and maintain a fabric filter that meets the requirements of GP001 at all times that EU 025 is in operation.	Title I Condition: Limit taken to avoid classification as a major source or major modification under 40 CFR Section 52.21 & Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2 and 14
RECORDKEEPING (see GP002 for recordkeeping requirements)	hdr

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-16**

02/19/13

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

Subject Item: EU 026 Agglomerator System #74-04**Associated Items:** CE 027 Fabric Filter - Medium Temperature i.e., 180 F<T<250 F

GP 002 Emission Cap Limits

SV 011 069 Vent for Fabric Filter for Cyclone and Dryer/Agglomerator System

What to do	Why to do it
EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.029 grains/dry standard cubic foot of exhaust gas.	Title I Condition: limit to avoid classification as a major source under 40 CFR Section 52.21 & Minn. R. 7007.3000; most stringent, meets limit set by Minn. R. 7011.0715, subp. 1(A)
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 1(B)
Production limit: The emission unit shall be operated at an hourly production rate less than or equal to 5,980 lb/h, calculated as a daily average as specified below, unless a new range is set by permit reopening or permit amendment, based on the values recorded during the most recent MPCA approved performance test where compliance was demonstrated.	Minn. R. 7017.2025, subp. 3(C)
Recordkeeping: The Permittee shall maintain records of the weight of each product container and the hours of production in each 24-hour period. By the 21st day of each month, the Permittee shall calculate an average pounds/hour production rate for each calendar day in the previous month from this data.	Minn. R. 7007.0800. subp. 4(B)
CONTROL EQUIPMENT REQUIREMENTS (See GP001 and CE027 for additional control equipment requirements)	hdr
The Permittee shall operate and maintain a fabric filter that meets the requirements of GP001 at all times that EU 026 is in operation.	Title I Condition: Limit taken to avoid classification as a major source and modification under 40 CFR Section 52.21 & Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2 and 14
RECORDKEEPING (see GP002 for recordkeeping requirements)	hdr

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-17**

02/19/13

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

Subject Item: EU 034 Emergency Backup Generator #55**Associated Items:** GP 002 Emission Cap Limits

SV 012 073 Vent for Emergency Generator

What to do	Why to do it
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.2300, subp. 1
Sulfur Dioxide: less than or equal to 0.5 lbs/million Btu heat input . This limit is met with fuel oil containing less than or equal to 0.5 % sulfur by weight.	Minn. R. 7011.2300, subp. 2
Fuel type: No. 2 fuel oil only.	Minn. R. 7005.0100, subp. 35a
Daily Inspections: The Permittee shall check SV012 for any visible emissions once each day of operation during daylight hours.	Minn. R. 7007.0200; Minn. R. 7007.0800, subps. 2 and 14
RECORDKEEPING (see GP002 for additional recordkeeping requirements)	hdr
Fuel Supplier Certification: Obtain and maintain a fuel supplier certification for each shipment of No. 2 fuel oil, certifying the Sulfur Content of Fuel: less than or equal to 0.5 percent by weight	Minn. R. 7007.0800, subps. 4 & 5
Hours of Operation: The Permittee shall maintain documentation of hours of operation on site that the unit is an emergency diesel generator by design that qualifies under the U.S. EPA memorandum entitled "Calculating Potential to Emit (PTE) for Emergency Generators" dated September 6, 1995, based on operation of no more than 500 hours per year.	Minn. R. 7007.0800, subp. 4 & 5
The Permittee shall keep records of fuel type and usage on a monthly basis.	Minn. R. 7007.0800, subp. 5
Recordkeeping: The Permittee shall record the time and date of each visible emission inspection, and whether or not any visible emissions were observed. Any visible emissions are considered Deviations as defined by Minn. R. 7007.0100, subp. 8a. If the emission unit is not operating, the Permittee shall record that the process is not operating.	Minn. R. 7007.0200; Minn. R. 7007.0800, subps. 2 and 14

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-18**

02/19/13

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

Subject Item: CE 004 Fabric Filter - Medium Temperature i.e., 180 F<T<250 F**Associated Items:** EU 003 Glass Bubble Maker #18

GP 001 Fabric Filter Requirements (CAM)

GP 002 Emission Cap Limits

What to do	Why to do it
See GP 001 for baghouse control, monitoring, recordkeeping, reporting, and other requirements.	hdr
The Permittee shall operate and maintain a fabric filter that meets the requirements of GP001 at all times that any emission unit controlled by the fabric filter (EU 003) is in operation. The Permittee shall document periods of non-operation of the control equipment.	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
Pressure Drop: greater than or equal to 1 inches of water column and less than 30 inches of water column , unless a new range is set pursuant to Minn. R. 7017.2025, subp. 3 based on the values recorded during the most recent MPCA-approved performance test where compliance was demonstrated. The new range shall be implemented upon receipt of the Notice of Compliance letter granting preliminary approval. The range is final upon issuance of a permit amendment incorporating the change. The Permittee shall record the pressure drop at least once every 24 hours. Pressure drop less than the minimum above, when due to replacement of filter bags is not a deviation and should not be reported on the semiannual deviation reports. After bag replacement, the pressure drop must return to at least the minimum within 21 working days, or corrective action must be taken.	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-19**

02/19/13

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

Subject Item: CE 005 Fabric Filter - Medium Temperature i.e., 180 F<T<250 F

What to do	Why to do it
CE005 is being replaced by CE035. Once CE035 is in operation this unit will be retired or removed.	hdr
See GP 001 for baghouse control, monitoring, recordkeeping, reporting, and other requirements.	hdr
The Permittee shall operate and maintain a fabric filter that meets the requirements of GP001 at all times that any emission unit controlled by the fabric filter (EU 005) is in operation. The Permittee shall document periods of non-operation of the control equipment.	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
Pressure Drop: greater than or equal to 1 inches of water column and less than 30 inches of water column , unless a new range is set pursuant to Minn. R. 7017.2025, subp. 3 based on the values recorded during the most recent MPCA-approved performance test where compliance was demonstrated. The new range shall be implemented upon receipt of the Notice of Compliance letter granting preliminary approval. The range is final upon issuance of a permit amendment incorporating the change. The Permittee shall record the pressure drop at least once every 24 hours. Pressure drop less than the minimum above, when due to replacement of filter bags is not a deviation and should not be reported on the semiannual deviation reports. After bag replacement, the pressure drop must return to at least the minimum within 21 working days, or corrective action must be taken.	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-20**

02/19/13

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

Subject Item: CE 024 Fabric Filter - High Temperature, i.e., T>250 Degrees F**Associated Items:** EU 022 Glass Furnace #74-04A

GP 001 Fabric Filter Requirements (CAM)

GP 002 Emission Cap Limits

What to do	Why to do it
See GP 001 for baghouse control, monitoring, recordkeeping, reporting, and other requirements.	hdr
The Permittee shall operate and maintain a fabric filter that meets the requirements of GP001 at all times that any emission unit controlled by the fabric filter (EU 022) is in operation. The Permittee shall document periods of non-operation of the control equipment.	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
Pressure Drop: greater than or equal to 1 inches of water column and less than 10 inches of water column , unless a new range is set pursuant to Minn. R. 7017.2025, subp. 3 based on the values recorded during the most recent MPCA-approved performance test where compliance was demonstrated. The new range shall be implemented upon receipt of the Notice of Compliance letter granting preliminary approval. The range is final upon issuance of a permit amendment incorporating the change. The Permittee shall record the pressure drop at least once every 24 hours. Pressure drop less than the minimum above, when due to replacement of filter bags is not a deviation and should not be reported on the semiannual deviation reports. After bag replacement, the pressure drop must return to at least the minimum within 21 working days, or corrective action must be taken.	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-21**

02/19/13

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

Subject Item: CE 025 Fabric Filter - Medium Temperature i.e., 180 F<T<250 F**Associated Items:** EU 024 Fritting Systems #74-05

GP 001 Fabric Filter Requirements (CAM)

GP 002 Emission Cap Limits

What to do	Why to do it
See GP 001 for baghouse control, monitoring, recordkeeping, reporting, and other requirements.	hdr
The Permittee shall operate and maintain a fabric filter that meets the requirements of GP001 at all times that any emission unit controlled by the fabric filter (EU 024) is in operation. The Permittee shall document periods of non-operation of the control equipment.	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
Pressure Drop: greater than or equal to 1 inches of water column and less than 10 inches of water column , unless a new range is set pursuant to Minn. R. 7017.2025, subp. 3 based on the values recorded during the most recent MPCA-approved performance test where compliance was demonstrated. The new range shall be implemented upon receipt of the Notice of Compliance letter granting preliminary approval. The range is final upon issuance of a permit amendment incorporating the change. The Permittee shall record the pressure drop at least once every 24 hours. Pressure drop less than the minimum above, when due to replacement of filter bags is not a deviation and should not be reported on the semiannual deviation reports. After bag replacement, the pressure drop must return to at least the minimum within 21 working days, or corrective action must be taken.	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-22**

02/19/13

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

Subject Item: CE 026 Fabric Filter - Low Temperature, i.e., T<180 Degrees F**Associated Items:** EU 025 Impact Mill

GP 001 Fabric Filter Requirements (CAM)

GP 002 Emission Cap Limits

What to do	Why to do it
See GP 001 for baghouse control, monitoring, recordkeeping, reporting, and other requirements.	hdr
The Permittee shall operate and maintain a fabric filter that meets the requirements of GP001 at all times that any emission unit controlled by the fabric filter (EU 025) is in operation. The Permittee shall document periods of non-operation of the control equipment.	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
Pressure Drop: greater than or equal to 1 inches of water column and less than 10 inches of water column , unless a new range is set pursuant to Minn. R. 7017.2025, subp. 3 based on the values recorded during the most recent MPCA-approved performance test where compliance was demonstrated. The new range shall be implemented upon receipt of the Notice of Compliance letter granting preliminary approval. The range is final upon issuance of a permit amendment incorporating the change. The Permittee shall record the pressure drop at least once every 24 hours. Pressure drop less than the minimum above, when due to replacement of filter bags is not a deviation and should not be reported on the semiannual deviation reports. After bag replacement, the pressure drop must return to at least the minimum within 21 working days, or corrective action must be taken.	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-23**

02/19/13

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

Subject Item: CE 027 Fabric Filter - Medium Temperature i.e., 180 F<T<250 F**Associated Items:** EU 026 Agglomerator System #74-04

GP 001 Fabric Filter Requirements (CAM)

GP 002 Emission Cap Limits

What to do	Why to do it
See GP 001 for baghouse control, monitoring, recordkeeping, reporting, and other requirements.	hdr
The Permittee shall operate and maintain a fabric filter that meets the requirements of GP001 at all times that any emission unit controlled by the fabric filter (EU 026) is in operation. The Permittee shall document periods of non-operation of the control equipment.	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
Pressure Drop: greater than or equal to 1 inches of water column and less than 30 inches of water column , unless a new range is set pursuant to Minn. R. 7017.2025, subp. 3 based on the values recorded during the most recent MPCA-approved performance test where compliance was demonstrated. The new range shall be implemented upon receipt of the Notice of Compliance letter granting preliminary approval. The range is final upon issuance of a permit amendment incorporating the change. The Permittee shall record the pressure drop at least once every 24 hours. Pressure drop less than the minimum above, when due to replacement of filter bags is not a deviation and should not be reported on the semiannual deviation reports. After bag replacement, the pressure drop must return to at least the minimum within 21 working days, or corrective action must be taken.	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-24**

02/19/13

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

Subject Item: CE 034 Fabric Filter - Low Temperature, i.e., T<180 Degrees F**Associated Items:** EU 004 Glass Bubble Maker #20

GP 001 Fabric Filter Requirements (CAM)

What to do	Why to do it
See GP 001 for baghouse control, monitoring, recordkeeping, reporting, and other requirements.	hdr
The Permittee shall operate and maintain a fabric filter that meets the requirements of GP001 at all times that any emission unit controlled by the fabric filter (EU 004) is in operation. The Permittee shall document periods of non-operation of the control equipment.	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
Pressure Drop: greater than or equal to 1 inches of water column and less than 20 inches of water column , unless a new range is set pursuant to Minn. R. 7017.2025, subp. 3 based on the values recorded during the most recent MPCA-approved performance test where compliance was demonstrated. The new range shall be implemented upon receipt of the Notice of Compliance letter granting preliminary approval. The range is final upon issuance of a permit amendment incorporating the change. The Permittee shall record the pressure drop at least once every 24 hours. Pressure drop less than the minimum above, when due to replacement of filter bags is not a deviation and should not be reported on the semiannual deviation reports. After bag replacement, the pressure drop must return to at least the minimum within 21 working days, or corrective action must be taken.	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-25**

02/19/13

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

Subject Item: CE 035 Fabric Filter - Medium Temperature i.e., 180 F<T<250 F**Associated Items:** EU 005 Glass Bubble Maker #21

GP 001 Fabric Filter Requirements (CAM)

What to do	Why to do it
See GP 001 for baghouse control, monitoring, recordkeeping, reporting, and other requirements.	hdr
<p>The Permittee is authorized to install the piece of control equipment described in this permit as CE 035 and vent EU 005 to CE 035. CE035 is replacing CE005.</p> <p>The Permittee shall operate, and maintain a fabric filter that meets the requirements of GP001 at all times that any emission unit controlled by the fabric filter (EU 005) is in operation. The Permittee shall document periods of non-operation of the control equipment.</p>	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
<p>Pressure Drop: greater than or equal to 1 inches of water column and less than 20 inches of water column , unless a new range is set pursuant to Minn. R. 7017.2025, subp. 3 based on the values recorded during the most recent MPCA-approved performance test where compliance was demonstrated. The new range shall be implemented upon receipt of the Notice of Compliance letter granting preliminary approval. The range is final upon issuance of a permit amendment incorporating the change. The Permittee shall record the pressure drop at least once every 24 hours.</p> <p>Pressure drop less than the minimum above, when due to replacement of filter bags is not a deviation and should not be reported on the semiannual deviation reports. After bag replacement, the pressure drop must return to at least the minimum within 21 working days, or corrective action must be taken.</p>	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000

TABLE B: SUBMITTALS**B-1** 02/19/13

Facility Name: 3M Cottage Grove Specialty Additives
Permit Number: 16300002 - 005

Each submittal must be postmarked or received by the date specified in the applicable Table. Those submittals required by parts 7007.0100 to 7007.1850 must be certified by a responsible official, defined in Minn. R. 7007.0100, subp. 21. Other submittals shall be certified as appropriate if certification is required by an applicable rule or permit condition.

Send submittals that are required to be submitted to the U.S. EPA regional office to:

Chief Air Enforcement
Air and Radiation Branch
EPA Region V
77 West Jackson Boulevard
Chicago, Illinois 60604

Table B lists most of the submittals required by this permit. Please note that some submittal requirements may appear in Table A or, if applicable, within a compliance schedule located in Table C. Table B is divided into two sections in order to separately list one-time only and recurrent submittal requirements.

Send submittals that are required by the Acid Rain Program to:

U.S. Environmental Protection Agency
Clean Air Markets Division
1200 Pennsylvania Avenue NW (6204N)
Washington, D.C. 20460

Send any application for a permit or permit amendment to:

Fiscal Services
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

Also, where required by an applicable rule or permit condition, send to the Permit Document Coordinator notices of:

- accumulated insignificant activities,
- installation of control equipment,
- replacement of an emissions unit, and
- changes that contravene a permit term.

Unless another person is identified in the applicable Table, send all other submittals to:

AQ Compliance Tracking Coordinator
Industrial Division
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

TABLE B: ONE TIME SUBMITTALS OR NOTIFICATIONS**B-2** 02/19/13

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

What to send	When to send	Portion of Facility Affected
Application for Permit Reissuance	due 180 days before expiration of Existing Permit	Total Facility
Computer Dispersion Modeling Protocol	due before Startup of operations at EU022 and EU024 at increased production rate of 4400 lb/hr. for SO ₂ . This protocol will describe the proposed modeling methodology and input data, in accordance with MPCA modeling guidance for Title V air dispersion modeling analyses.	Total Facility
Computer Dispersion Modeling Results	due before Startup of operations at EU022 and EU024 at increased production rate of 4400 lb/hr for SO ₂ . The submittal should adhere to MPCA modeling guidance for Title V air dispersion modeling analyses and the information approved by the MPCA in the modeling protocol.	Total Facility
Notification of the Actual Date of Initial Startup	due 15 days after Initial Startup of CE035.	CE035

TABLE B: RECURRENT SUBMITTALS**B-3** 02/19/13

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

What to send	When to send	Portion of Facility Affected
Semiannual Deviations Report	due 30 days after end of each calendar half-year starting 03/24/2005. The first semiannual report submitted by the Permittee shall cover the calendar half-year in which the permit is issued. The first report of each calendar year covers January 1 - June 30. The second report of each calendar year covers July 1 - December 31. If no deviations have occurred, the Permittee shall submit the report stating no deviations.	Total Facility
Annual Report	due 31 days after end of each year following Permit Issuance. The Permittee shall submit an annual report by January 31st that describes the changes made at the facility during the previous calendar year using the latest MPCA application forms. The report shall include the emission unit, stack/vent, group, and control equipment data for any new or replaced units or control devices. The report shall document the PM, PM < 10 micron, PM < 2.5 micron, SO ₂ , NO _x and VOC 12-month rolling sum calculations for the previous calendar year. The report shall be submitted with the annual Compliance Certification listed in Table B. As part of the Annual Report, the Permittee shall verify and certify that the facility has maintained minor source status for New Source Review.	GP002
Compliance Certification	due 30 days after end of each calendar year starting 03/24/2005 (for the previous calendar year). To be submitted on a form approved by the Commissioner, both to the Commissioner and to the US EPA regional office in Chicago. This report covers all deviations experienced during the calendar year.	Total Facility

Appendix I – Insignificant Activities and General Applicable Requirements

Minn. R.	Rule Description of the Activity	General Applicable Requirement
7007.1300 subp. 3(I)	Individual emissions units at a stationary source, each of which have a potential to emit the following pollutants in amounts less than: 1) 2 tpy of carbon monoxide and 2) 1 tpy of each nitrogen oxide, sulfur dioxide, particulate matter, particulate matter less than ten microns, volatile organic compounds (including hazardous air pollutant-containing VOC), and ozone. <i>3M Cottage Grove Specialty Additives has 2 screeners that are designated insignificant activities under this subpart</i>	Minn. R. 7011.0715 (PM and opacity)
7007.1300 subp. 4	Emission units with emissions less than A. Potential emissions of 5.7 pounds per hour or actual emissions of two tons per year of carbon monoxide; B. Potential emissions of 2.28 pounds per hour or actual emissions of one ton per year for particulate matter, particulate matter less than ten microns, nitrogen oxide, sulfur dioxide, and VOCs <i>3M Cottage Grove Specialty Additives has the following emission units/activities that qualify as insignificant activities under this subpart: product storage silos, lime storage silo, raw material bins, bag dump stations, reject hopper material collection, additive bag feeders, bag baler, dryer, packaging room, powder pusher, silica storage silo, trailer loading</i>	Minn. R. 7011.0715 (PM and opacity)
7007.4110	Equipment venting PM/PM ₁₀ inside a building, provided that emissions from the equipment are filtered through an air cleaning system and vented inside of the building 100% of the time. <i>3M Cottage Grove Specialty Additives has the following emission units/activities that qualify as insignificant activities under this subpart: blend hopper, offline packaging systems, nuisance dust system, bins, blenders, remelt feeder, reject hopper, mill product collection, remelt transport, floated products line, oversize box, weigh hoppers</i>	Minn. R. 7011.0715 (PM and opacity)

Appendix II – Stack Modeled Parameters

Stack Modeled Parameters										
Type	Modeling ID*	SV #	EU #	Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temperature (K)	PM ₁₀ Emission Rate (g/sec)	PM ₁₀ Emission Rate (lb/hr)
POINT	CGTAP009	009	009, 010, 011	Maker 11 Oxidizer	18.1	0.915	54.266	672.039	0.066	0.523818
POINT	CGTAP010	010	012, 014	Maker 14 Oxidizer	18.3	0.915	54.266	672.039	0.066	0.523818
POINT	CGTAP012	012	011B	Maker 11 Zone 1 Exhaust	12.3	0.534	17.952	366.483	0.012	0.09524
POINT	CGTAP013	013	011B	Maker 11 Zone 2 Exhaust	12.6	0.534	27.456	366.483	0.012	0.09524
POINT	CGTAP014	014	011B	Maker 11 Zone 3 Exhaust	12.6	0.534	33.792	366.483	0.012	0.09524
POINT	CGTAP015	015	011B	Maker 11 Zone 4 Exhaust	13.5	0.357	70.875	366.483	0.012	0.09524
POINT	CGTAP016	016	011B	Maker 11 Zone 5 Exhaust	12.4	0.357	23.625	366.483	0.012	0.09524
POINT	CGTAP018	018	014B	Maker 14 Zone 1 Exhaust	14.9	0.457	35.071	366.483	0.006	0.04762
POINT	CGTAP019	019	014B	Maker 14 Zone 2 Exhaust	14.9	0.457	35.071	366.483	0.006	0.04762
POINT	CGTAP020	020	014B	Maker 14 Zone 3 Exhaust	14.9	0.457	54.619	366.483	0.006	0.04762
POINT	CGTAP021	021	014B	Maker 14 Zone 4 Exhaust	14.4	0.344	48.26	366.483	0.006	0.04762
POINT	CGTAPGEN	IA	IA	Emergency Generator - IA	0.4	0.102	37.95	857.59	0.03	0.238099
POINT	CGBUB052	003	003	Maker 18	12.8	1.22	22.638	366.483	0.19	1.507962
POINT	CGBUB074	004	004	Maker 20	18.3	1.22	28.298	377.594	0.894	7.095357
POINT	CGBUB055	005	005	Maker 21	18.3	1.22	22.638	366.483	0.894	7.095357
POINT	CGBUB056	006	007, 008, 009, 010	Blend Hoppers and Tote to Bin Transfer	13.6	0.305	48.51	293.15	0	0
POINT	CGBUB065	007	021, 022, 035	Glass Furnace #74-04A, Remelt Feeder, Reject Hopper	13.2	0.446	18.521	408.15	0.048	0.380959
POINT	CGBUB066	008	023	Glass Furnace Bypass	12.2	2.219	1.832	588.706	0.000126	0.001
POINT	CGBUB067	009	024	Fritting Systems #74-05	13.1	0.286	51.536	380.372	0.082	0.650805

APPENDIX MATERIAL – APPENDIX I INSIGNIFICANT ACTIVITIES AND GENERAL APPLICABLE REQUIREMENTS
 Facility Name: 3M Cottage Grove Specialty Additives
 Permit Number: 16300002-005

Stack Modeled Parameters										
Type	Modeling ID*	SV #	EU #	Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temperature (K)	PM ₁₀ Emission Rate (g/sec)	PM ₁₀ Emission Rate (lb/hr)
POINT	CGBUB068	010	025	Impact Mill	25.3	0.61	29.915	322.039	0.291	2.309563
POINT	CGBUB069	011	026	Dryer/Agglomerator System	18.8	0.357	18.9	388.706	0.095	0.753981
POINT	CGBUB073	012	034	Emergency Generator	9.1	0.204	43.226	294.261	0	0
POINT	CGBUBIA1	NA	NA	Dryer – IA	11.2	0.152	2.665	316.483	0.044	0.349212
POINT	CGBUBIA2	NA	NA	Packaging Station - IA	8.2	0.152	64.37	294.261	0	0
POINT	CGBUBIA3	NA	NA	Silica Storage Silo – IA	18	0.204	0.001	294.261	0.009	0.07143
POINT	CGBUB062	NA	062	Lime Storage Silo – IA	20.3	0.204	0.001	294.261	0.027	0.214289
POINT	CGBUB063	NA	063	Raw Material Bins (7), Weigh Hoppers (4)	31.4	0.204	12.608	294.261	0.167	1.325419
POINT	CGBUB064	NA	064	Bag Dump Stations (4)	13.5	0.253	0.001	294.261	0	0
POINT	CGBUBIA4	NA	013	Product Storage Silo	13.7	0.356	0.001	294.261	0.034	0.269846
POINT	CGBUBIA5	NA	014	Product Storage Silo	13.7	0.356	0.001	294.261	0.034	0.269846
POINT	CGBUBIA6	NA	NA	Packaging Room	8.2	0.152	64.37	294.261	0.095	0.753981
POINT	CGINC010	010	008	Incinerator Stack (Kiln)	50.1	1.601	14.503	349.539	0.226	1.793681
POINT	CGAUT001	001	001	Feeder System	3.7	0.344	6.234	283.706	0.001	0.007937
POINT	CGAUT002	002	004	Grinder	3.7	0.305	0.001	303.15	0.001	0.007937
POINT	CGAUT003	003	002	Extruder	10.3	0.233	22.174	322.039	0.001	0.007937
POINT	CGAUT004	004	002, 003	Extruder/Casting Die	13.7	0.344	6.975	307.039	0.019	0.150796
POINT	CGAUT005	005	005	Corona Treater	9.3	0.152	0.001	290.928	0	0
POINT	CGAUT006	006	006	Laminator Casting Die	11.4	0.525	0.001	294.261	0.006	0.04762
POINT	CGAUT007	007	007	Oven	11.4	0.525	0.001	287.594	0	0
POINT	CGAUT008	008	007	Oven	10.8	0.788	0.001	280.372	0	0
POINT	CGAUT009	009	008, 009	Corona Treater, Duster	11	0.23	0.001	297.594	0.006	0.04762
POINT	CGAUT010	010	010-019, 024-027	Dust Collector	8.3	0.91	14.535	294.261	0.001	0.007937

APPENDIX MATERIAL – APPENDIX II STACK MODELED PARAMETERS

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002-005

Stack Modeled Parameters										
Type	Modeling ID*	SV #	EU #	Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temperature (K)	PM ₁₀ Emission Rate (g/sec)	PM ₁₀ Emission Rate (lb/hr)
POINT	CGAUT011	011	020	Heating Equipment	9.9	0.736	10.516	326.483	0	0
POINT	CGAUT012	012	021	Heating Equipment	10.6	0.474	16.34	328.15	0	0
POINT	CGAUT014	014	028	PM-4 Dryer and Heating Equipment	9.9	0.873	1.419	322.039	0	0
POINT	CGAUT015	015	029	PM-2 Dryer	14.6	0.381	7.451	322.039	0	0
POINT	CGAUT016	016	030	Roof Gas Heater	10.7	0.267	9.318	1144.26	0.005	0.039683
POINT	CGAUT017	017	031	Baghouse Emissions	8.3	0.909	14.535	294.261	0	0
POINT	CGAUT018	018	032	Heating Equipment	9.6	0.736	2.199	326.483	0	0
POINT	CGAUT019	019	033	Heating Equipment	9.6	0.736	2.199	326.483	0	0
POINT	CGAUT020	020	034	Heating Equipment	9.6	0.736	2.199	326.483	0	0
POINT	CGAUT021	021	035	Heating Equipment	9.6	0.736	2.199	326.483	0	0
POINT	CGAUT022	022	036	Heating Equipment	9.6	0.736	2.199	326.483	0	0
POINT	CGAUT023	023	037	Heating Equipment	9.6	0.736	2.199	326.483	0	0
POINT	AB112001	001	001	Batch Oven #1	13.1	0.457	10.061	435.928	0.03	0.238099
POINT	AB112002	002	002	Batch Oven #2	13.1	0.915	2.875	435.928	0.03	0.238099
POINT	AB112003	003	003	Small Cartridge Filter	6.6	0.305	12.936	293.15	0.008	0.063493
POINT	AB112004	004	004	Large Cartridge Filter	6.6	0.457	17.823	293.15	0.126	1.000017
POINT	AB112005	005	005	Prefire Kiln	14.6	0.254	13.982	305.372	0.003	0.02381
POINT	AB112006	006	006	Old Kiln	12.8	0.305	2.264	755.372	0.05	0.396832
POINT	AB112007	007	007	New Kiln #3	19.8	0.343	20.442	560.928	0.405	3.21434
POINT	AB112008	008	008	Kiln #1 Burner	19.8	1.067	0.001	866.483	0.004	0.031747
POINT	AB112009	009	009	Kiln #2 Burner	19.8	1.067	0.001	866.483	0.004	0.031747
POINT	AB112010	010	010	Kilns #1 & #2	19.8	0.61	2.07	330.372	0.001	0.007937
POINT	AB112018	018	018	New Emergency Generator	3	0.152	37.903	880.372	0.057	0.452389
POINT	AB112024	024	026	Oven #3	13.1	0.915	2.875	435.928	0.076	0.603185
POINT	AB112026	026	029-031, 038-042,	New Crushing & Screening Room	22.8	0.843	11.853	293.15	0.266	2.111147

APPENDIX MATERIAL – APPENDIX II STACK MODELED PARAMETERS

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002-005

Stack Modeled Parameters										
Type	Modeling ID*	SV #	EU #	Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temperature (K)	PM ₁₀ Emission Rate (g/sec)	PM ₁₀ Emission Rate (lb/hr)
			048-050							
POINT	AB112036	036	043	Dust Collector	11.9	0.393	18.268	293.15	0.004	0.031747
POINT	AB112037	037	033	Oven #4	13.1	0.915	7.187	435.928	0.076	0.603185
POINT	AB112038	038	047	Emergency Generator	2.4	0.098	27.729	749.261	0.002	0.015873
POINT	CGABIA1	NA	015	Old Area Mixer – IA	10.1	0.254	14.53	319.261	0.01	0.079366
POINT	CGABIA2	NA	028	New Dryer – IA	17.2	0.254	14.53	305.372	0.033	0.261909
POINT	CGABIA3	NA	NA	Mineral Treatment – IA	5.5	0.102	0.001	293.15	0.021	0.166669
POINT	CGABIA4	NA	NA	Mineral Blender - IA	9.1	0.203	0.001	293.15	0.076	0.603185
POINT	CGTSS01	001	001, 002, 022, 025, 026	HMC/SAE Line	10.2	0.649	12.575	305.372	0	0
POINT	CGTSS05	006	007-014, 024	Pilot Coater, Oven, TO	14.3	1.015	12.282	1033.15	0.021	0.166669
POINT	CGTSS06	006	005	Emergency Generator	12.8	0.102	14.553	422.039	0.0000126	0.0001
POINT	CGTSS07	007	006	Emergency Generator	11.1	0.102	14.553	422.039	0.0000126	0.0001
POINT	CGTSS08	008	015	Glass Maker	15.2	0.447	7.515	533.15	0.064	0.507945
POINT	CGTSS09	009	016, 023	TCP Unit	15.2	0.256	16.592	378.706	0.001	0.007937
POINT	CGTSSIA1	NA	ISO041	Vibrating Screen (Rotex)	9.91	1.264	3.123	294.261	0.126	1.000017
POINT	CGTSSIA2	NA	ISO042	Vibrating Screen (Tysifter)	9.91	1.264	3.123	294.261	0.126	1.000017
POINT	CGTSSIA3	NA	ISO044	HIS Web Cleaner (Hoffman)	14.3	1.02	12.28	1033.15	0.025	0.198416
POINT	CGTSSIA4	NA	ISO045	Waft Web Cleaner (Herbert)	14.3	1.02	12.28	1033.15	0.025	0.198416
POINT	CGCHM182	182	099	Bldg 4 Eclipse Boiler Vent	15.6	0.152	6.468	533.15	0.004	0.031747
POINT	CGCHM117	117	100	Bldg 4 Heatec Boiler Vent	14.2	0.152	6.468	533.15	0.003	0.02381

APPENDIX MATERIAL – APPENDIX II STACK MODELED PARAMETERS

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002-005

Stack Modeled Parameters										
Type	Modeling ID*	SV #	EU #	Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temperature (K)	PM ₁₀ Emission Rate (g/sec)	PM ₁₀ Emission Rate (lb/hr)
POINT	CGCHM097	97	101	Bldg 25 Emergency Generator	2.2	0.12	0.001	533.15	0.005	0.039683
POINT	CGCHM236	236	050	Bldg 70 Emergency Generator	2.56	0.152	0.001	533.15	0.003	0.02381
POINT	CGCMGEN	IA	IA	Emergency Generator - IA	1.6	0.102	0.001	857.59	0.03	0.238099
POINT	CGOPT001	001	001	Vent for Mixing Hood	8.99	0.31	6.254	293.15	0.000125998	0.001
POINT	CGOPT003	003	003, 004	Vent for Mixing Hood/Tape Casting	14.2	0.526	0.001	293.15	0.0000576	0.000457
POINT	CG19IA1	NA	NA	Laser Fan – IA	9.6	0.199	11.12	293.15	0.011	0.087303
POINT	CG19IA2	NA	NA	Sinter Press 1 – IA	10.7	0.445	5.019	293.15	0.003	0.02381
POINT	CG19IA3	NA	NA	Grinding Room – IA	5.8	0.344	0.001	293.15	0.006	0.04762
POINT	CG19IA4	NA	NA	BL Area – IA	10.1	0.339	15.677	293.15	0.002	0.015873
POINT	CG19IA5	NA	NA	Sinter Press 2 – IA	11.3	0.396	15.5	293.15	0.093	0.738108
POINT	CG111IA1	NA	NA	Segmented Assembly – IA	10.4	0.426	8.278	293.15	0.144	1.142876
POINT	CG111IA2	NA	NA	R-Press Oven Fan – IA	13.4	0.542	0.001	293.15	0.003	0.02381
POINT	CG111IA3	NA	NA	R-Press Spray Hood Fan –IA	13.3	0.409	5.01	293.15	0.014	0.111113
POINT	CG111IA4	NA	NA	BL-OG Room Fan – IA	9.9	0.305	3.667	293.15	0.002	0.015873
POINT	CGSS003	003	003	Emergency Generator WWTP, Building 137	1.1	0.089	0.001	394.26	0.001	0.007937
POINT	CGSS005	IA	IA	Emergency Generator Building 111	3.048	0.152	0.001	394.261	0.06665289	0.529
POINT	CGSSIA01	IA	IA	Fire Pump Building 113 - IA	4.6	0.152	55.625	648.706	0.08454457	0.671
POINT	CGSSIA02	IA	IA	Fire Pump Building 109 - IA	3.4	0.127	56.108	730.372	0.08038665	0.638
POINT	CGSSIA03	IA	IA	Emergency Generator Building 115 - IA	2.896	0.051	0.001	394.261	0.001007983	0.008
POINT	CGSSIA04	IA	IA	Emergency Generator Building 116 - IA	1.676	0.063	0.001	394.261	0.003401943	0.027
POINT	CGSSIA05	IA	IA	Emergency Generator Building 22 - IA	4.977	0.038	0.001	394.261	0.000881985	0.007
POINT	CGSSIA07	IA	IA	Emergency Generator	2.438	0.051	0.001	394.261	0.002897952	0.023

APPENDIX MATERIAL – APPENDIX II STACK MODELED PARAMETERS

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002-005

Stack Modeled Parameters										
Type	Modeling ID*	SV #	EU #	Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temperature (K)	PM ₁₀ Emission Rate (g/sec)	PM ₁₀ Emission Rate (lb/hr)
				Building 144 - IA						
VOLUME	CGTAPIA	IA	IA	Building 110 IAs	6.4				0.02	0.158733
VOLUME	CGINCIA1	NA	NA	B47 Natural Gas Furnace - IA	11				0.000282	0.002238
VOLUME	CGINCIA2	NA	NA	B145 Natural Gas Furnace, B145 Emergency Generator, Lime Silo - IA	18.4				0.4	3.174657
VOLUME	CGCHEMB4	003-006, 009, 016-024	052, 055, 056	Building 4 Sources	15.2				0.163	1.293673
VOLUME	CGCHEMB6	032, 051-054	007	Building 6 Sources	12.1				0.023	0.182543
VOLUME	CGCHEMB7	082, 087, 092-095, 064, 066-069	015, 069	Building 7 Sources	14.9				0.016	0.126986
VOLUME	CGPA_1	NA	NA	Paved Haul Road A	2.59				0.00017	0.001349
VOLUME	CGPA_2	NA	NA	Paved Haul Road A	2.59				0.00034	0.002698
VOLUME	CGPA_3	NA	NA	Paved Haul Road A	2.59				0.00051	0.004048
VOLUME	CGPA_4	NA	NA	Paved Haul Road A	2.59				0.000679	0.005389
VOLUME	CGPA_5	NA	NA	Paved Haul Road A	2.59				0.00051	0.004048
VOLUME	CGPA_6	NA	NA	Paved Haul Road A	2.59				0.00034	0.002698
VOLUME	CGPA_7	NA	NA	Paved Haul Road A	2.59				0.00017	0.001349
VOLUME	CGPA_8	NA	NA	Paved Haul Road A	2.59				0.00034	0.002698
VOLUME	CGPA_9	NA	NA	Paved Haul Road A	2.59				0.00051	0.004048
VOLUME	CGPA_10	NA	NA	Paved Haul Road A	2.59				0.000679	0.005389
VOLUME	CGPA_11	NA	NA	Paved Haul Road A	2.59				0.000849	0.006738
VOLUME	CGPA_12	NA	NA	Paved Haul Road A	2.59				0.000849	0.006738
VOLUME	CGPA_13	NA	NA	Paved Haul Road A	2.59				0.000849	0.006738
VOLUME	CGPA_14	NA	NA	Paved Haul Road A	2.59				0.000849	0.006738

APPENDIX MATERIAL – APPENDIX II STACK MODELED PARAMETERS

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002-005

Stack Modeled Parameters										
Type	Modeling ID*	SV #	EU #	Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temperature (K)	PM ₁₀ Emission Rate (g/sec)	PM ₁₀ Emission Rate (lb/hr)
VOLUME	CGPA_15	NA	NA	Paved Haul Road A	2.59				0.000849	0.006738
VOLUME	CGPA_16	NA	NA	Paved Haul Road A	2.59				0.000849	0.006738
VOLUME	CGPA_17	NA	NA	Paved Haul Road A	2.59				0.000849	0.006738
VOLUME	CGPA_18	NA	NA	Paved Haul Road A	2.59				0.000849	0.006738
VOLUME	CGPA_19	NA	NA	Paved Haul Road A	2.59				0.000849	0.006738
VOLUME	CGPA_20	NA	NA	Paved Haul Road A	2.59				0.000849	0.006738
VOLUME	CGPA_21	NA	NA	Paved Haul Road A	2.59				0.000849	0.006738
VOLUME	CGPA_22	NA	NA	Paved Haul Road A	2.59				0.000849	0.006738
VOLUME	CGPA_23	NA	NA	Paved Haul Road A	2.59				0.000849	0.006738
VOLUME	CGPA_24	NA	NA	Paved Haul Road A	2.59				0.000849	0.006738
VOLUME	CGPA_25	NA	NA	Paved Haul Road A	2.59				0.000849	0.006738
VOLUME	CGPB_1	NA	NA	Paved Haul Road B	2.59				0.000442	0.003508
VOLUME	CGPB_2	NA	NA	Paved Haul Road B	2.59				0.000442	0.003508
VOLUME	CGPB_3	NA	NA	Paved Haul Road B	2.59				0.000442	0.003508
VOLUME	CGPB_4	NA	NA	Paved Haul Road B	2.59				0.000442	0.003508
VOLUME	CGPB_5	NA	NA	Paved Haul Road B	2.59				0.000442	0.003508
VOLUME	CGPB_6	NA	NA	Paved Haul Road B	2.59				0.000442	0.003508
VOLUME	CGPB_7	NA	NA	Paved Haul Road B	2.59				0.000442	0.003508
VOLUME	CGPB_8	NA	NA	Paved Haul Road B	2.59				0.000442	0.003508
VOLUME	CGPB_9	NA	NA	Paved Haul Road B	2.59				0.000442	0.003508
VOLUME	CGPC_1	NA	NA	Paved Haul Road C	2.59				0.00012	0.000952
VOLUME	CGPC_2	NA	NA	Paved Haul Road C	2.59				0.00012	0.000952
VOLUME	CGPC_3	NA	NA	Paved Haul Road C	2.59				0.00012	0.000952
VOLUME	CGPC_4	NA	NA	Paved Haul Road C	2.59				0.00012	0.000952
VOLUME	CGPC_5	NA	NA	Paved Haul Road C	2.59				0.00012	0.000952
VOLUME	CGPC_6	NA	NA	Paved Haul Road C	2.59				0.00012	0.000952
VOLUME	CGPC_7	NA	NA	Paved Haul Road C	2.59				0.00012	0.000952
VOLUME	CGPC_8	NA	NA	Paved Haul Road C	2.59				0.00012	0.000952
VOLUME	CGPC_9	NA	NA	Paved Haul Road C	2.59				0.00012	0.000952

APPENDIX MATERIAL – APPENDIX II STACK MODELED PARAMETERS

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002-005

Stack Modeled Parameters										
Type	Modeling ID*	SV #	EU #	Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temperature (K)	PM ₁₀ Emission Rate (g/sec)	PM ₁₀ Emission Rate (lb/hr)
VOLUME	CGPD_1	NA	NA	Paved Haul Road D	2.59				0.00237	0.01881
VOLUME	CGPD_2	NA	NA	Paved Haul Road D	2.59				0.00237	0.01881
VOLUME	CGPD_3	NA	NA	Paved Haul Road D	2.59				0.00237	0.01881
VOLUME	CGPD_4	NA	NA	Paved Haul Road D	2.59				0.00237	0.01881
VOLUME	CGPD_5	NA	NA	Paved Haul Road D	2.59				0.00237	0.01881
VOLUME	CGPD_6	NA	NA	Paved Haul Road D	2.59				0.00237	0.01881
VOLUME	CGPD_7	NA	NA	Paved Haul Road D	2.59				0.00237	0.01881
VOLUME	CGPD_8	NA	NA	Paved Haul Road D	2.59				0.00237	0.01881
VOLUME	CGPD_9	NA	NA	Paved Haul Road D	2.59				0.00237	0.01881
VOLUME	CGPD_10	NA	NA	Paved Haul Road D	2.59				0.00237	0.01881
VOLUME	CGPD_11	NA	NA	Paved Haul Road D	2.59				0.00237	0.01881
VOLUME	CGPD_12	NA	NA	Paved Haul Road D	2.59				0.00237	0.01881
VOLUME	CGPD_13	NA	NA	Paved Haul Road D	2.59				0.00237	0.01881
VOLUME	CGPD_14	NA	NA	Paved Haul Road D	2.59				0.00237	0.01881
VOLUME	CGPD_15	NA	NA	Paved Haul Road D	2.59				0.00237	0.01881
VOLUME	CGPD_16	NA	NA	Paved Haul Road D	2.59				0.00237	0.01881
VOLUME	CGPD_17	NA	NA	Paved Haul Road D	2.59				0.00237	0.01881
VOLUME	CGPD_18	NA	NA	Paved Haul Road D	2.59				0.00237	0.01881
VOLUME	CGPD_19	NA	NA	Paved Haul Road D	2.59				0.00237	0.01881
VOLUME	CGPD_20	NA	NA	Paved Haul Road D	2.59				0.00237	0.01881
VOLUME	CGPD_21	NA	NA	Paved Haul Road D	2.59				0.00237	0.01881
VOLUME	CGPD_22	NA	NA	Paved Haul Road D	2.59				0.00237	0.01881
VOLUME	CGPD_23	NA	NA	Paved Haul Road D	2.59				0.00237	0.01881
VOLUME	CGPD_24	NA	NA	Paved Haul Road D	2.59				0.00189	0.015
VOLUME	CGPD_25	NA	NA	Paved Haul Road D	2.59				0.00142	0.01127
VOLUME	CGPD_26	NA	NA	Paved Haul Road D	2.59				0.000947	0.007516
VOLUME	CGPD_27	NA	NA	Paved Haul Road D	2.59				0.000473	0.003754
VOLUME	CGPD_28	NA	NA	Paved Haul Road D	2.59				0.000947	0.007516
VOLUME	CGPD_29	NA	NA	Paved Haul Road D	2.59				0.000473	0.003754

APPENDIX MATERIAL – APPENDIX II STACK MODELED PARAMETERS

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002-005

Stack Modeled Parameters										
Type	Modeling ID*	SV #	EU #	Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temperature (K)	PM ₁₀ Emission Rate (g/sec)	PM ₁₀ Emission Rate (lb/hr)
VOLUME	CGPE_1	NA	NA	Paved Haul Road E	2.59				0.000525	0.004167
VOLUME	CGPE_2	NA	NA	Paved Haul Road E	2.59				0.000525	0.004167
VOLUME	CGPE_3	NA	NA	Paved Haul Road E	2.59				0.000525	0.004167
VOLUME	CGPE_4	NA	NA	Paved Haul Road E	2.59				0.000525	0.004167
VOLUME	CGPE_5	NA	NA	Paved Haul Road E	2.59				0.000525	0.004167
VOLUME	CGPF_1	NA	NA	Paved Haul Road F	2.59				0.000364	0.002889
VOLUME	CGPF_2	NA	NA	Paved Haul Road F	2.59				0.000364	0.002889
VOLUME	CGPF_3	NA	NA	Paved Haul Road F	2.59				0.000364	0.002889
VOLUME	CGPF_4	NA	NA	Paved Haul Road F	2.59				0.000364	0.002889
VOLUME	CGPF_5	NA	NA	Paved Haul Road F	2.59				0.000364	0.002889
VOLUME	CGPF_6	NA	NA	Paved Haul Road F	2.59				0.000364	0.002889
VOLUME	CGPF_7	NA	NA	Paved Haul Road F	2.59				0.000364	0.002889
VOLUME	CGPG_1	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_2	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_3	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_4	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_5	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_6	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_7	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_8	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_9	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_10	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_11	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_12	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_13	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_14	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_15	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_16	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_17	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278

APPENDIX MATERIAL – APPENDIX II STACK MODELED PARAMETERS

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002-005

Stack Modeled Parameters										
Type	Modeling ID*	SV #	EU #	Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temperature (K)	PM ₁₀ Emission Rate (g/sec)	PM ₁₀ Emission Rate (lb/hr)
VOLUME	CGPG_18	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_19	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_20	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_21	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_22	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_23	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_24	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_25	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_26	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_27	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_28	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_29	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_30	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_31	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_32	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_33	NA	NA	Paved Haul Road G	2.59				0.0000805	0.000639
VOLUME	CGPG_34	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_35	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_36	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_37	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_38	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_39	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_40	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_41	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_42	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_43	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_44	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPG_45	NA	NA	Paved Haul Road G	2.59				0.000161	0.001278
VOLUME	CGPH_1	NA	NA	Paved Haul Road H	2.59				0.00161	0.012778

APPENDIX MATERIAL – APPENDIX II STACK MODELED PARAMETERS

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002-005

Stack Modeled Parameters										
Type	Modeling ID*	SV #	EU #	Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temperature (K)	PM ₁₀ Emission Rate (g/sec)	PM ₁₀ Emission Rate (lb/hr)
VOLUME	CGPH_2	NA	NA	Paved Haul Road H	2.59				0.00161	0.012778
VOLUME	CGPH_3	NA	NA	Paved Haul Road H	2.59				0.00161	0.012778
VOLUME	CGPH_4	NA	NA	Paved Haul Road H	2.59				0.00161	0.012778
VOLUME	CGPH_5	NA	NA	Paved Haul Road H	2.59				0.00161	0.012778
VOLUME	CGPH_6	NA	NA	Paved Haul Road H	2.59				0.00161	0.012778
VOLUME	CGPH_7	NA	NA	Paved Haul Road H	2.59				0.00161	0.012778
VOLUME	CGPH_8	NA	NA	Paved Haul Road H	2.59				0.00161	0.012778
VOLUME	CGPH_9	NA	NA	Paved Haul Road H	2.59				0.00161	0.012778
VOLUME	CGPH_10	NA	NA	Paved Haul Road H	2.59				0.00161	0.012778
VOLUME	CGPH_11	NA	NA	Paved Haul Road H	2.59				0.00161	0.012778
VOLUME	CGPH_12	NA	NA	Paved Haul Road H	2.59				0.00161	0.012778
VOLUME	CGPH_13	NA	NA	Paved Haul Road H	2.59				0.00161	0.012778
VOLUME	CGPH_14	NA	NA	Paved Haul Road H	2.59				0.000807	0.006405
VOLUME	CGPI_1	NA	NA	Paved Haul Road I	2.59				0.00184	0.014603
VOLUME	CGPI_2	NA	NA	Paved Haul Road I	2.59				0.00184	0.014603
VOLUME	CGPI_3	NA	NA	Paved Haul Road I	2.59				0.00184	0.014603
VOLUME	CGPI_4	NA	NA	Paved Haul Road I	2.59				0.00184	0.014603
VOLUME	CGPI_5	NA	NA	Paved Haul Road I	2.59				0.00184	0.014603
VOLUME	CGPI_6	NA	NA	Paved Haul Road I	2.59				0.00184	0.014603
VOLUME	CGPI_7	NA	NA	Paved Haul Road I	2.59				0.00184	0.014603
VOLUME	CGPI_8	NA	NA	Paved Haul Road I	2.59				0.00184	0.014603
VOLUME	CGPJ_1	NA	NA	Paved Haul Road J	2.59				0.00179	0.014207
VOLUME	CGPJ_2	NA	NA	Paved Haul Road J	2.59				0.00179	0.014207
VOLUME	CGPJ_3	NA	NA	Paved Haul Road J	2.59				0.00179	0.014207
VOLUME	CGPJ_4	NA	NA	Paved Haul Road J	2.59				0.00179	0.014207
VOLUME	CGPJ_5	NA	NA	Paved Haul Road J	2.59				0.00179	0.014207
VOLUME	CGPJ_6	NA	NA	Paved Haul Road J	2.59				0.00179	0.014207
VOLUME	CGPJ_7	NA	NA	Paved Haul Road J	2.59				0.00179	0.014207
VOLUME	CGPJ_8	NA	NA	Paved Haul Road J	2.59				0.00179	0.014207

APPENDIX MATERIAL – APPENDIX II STACK MODELED PARAMETERS

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002-005

Stack Modeled Parameters										
Type	Modeling ID*	SV #	EU #	Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temperature (K)	PM ₁₀ Emission Rate (g/sec)	PM ₁₀ Emission Rate (lb/hr)
VOLUME	CGPJ_9	NA	NA	Paved Haul Road J	2.59				0.00179	0.014207
VOLUME	CGPJ_10	NA	NA	Paved Haul Road J	2.59				0.00179	0.014207
VOLUME	CGPJ_11	NA	NA	Paved Haul Road J	2.59				0.00179	0.014207
VOLUME	CGPJ_12	NA	NA	Paved Haul Road J	2.59				0.00179	0.014207
VOLUME	CGPJ_13	NA	NA	Paved Haul Road J	2.59				0.00179	0.014207
VOLUME	CGPJ_14	NA	NA	Paved Haul Road J	2.59				0.00179	0.014207
VOLUME	CGPJ_15	NA	NA	Paved Haul Road J	2.59				0.00179	0.014207
VOLUME	CGPJ_16	NA	NA	Paved Haul Road J	2.59				0.000895	0.007103
VOLUME	CGPK_1	NA	NA	Paved Haul Road K	2.59				0.000451	0.003579
VOLUME	CGPK_2	NA	NA	Paved Haul Road K	2.59				0.000451	0.003579
VOLUME	CGPK_3	NA	NA	Paved Haul Road K	2.59				0.000451	0.003579
VOLUME	CGPK_4	NA	NA	Paved Haul Road K	2.59				0.000451	0.003579
VOLUME	CGPK_5	NA	NA	Paved Haul Road K	2.59				0.000451	0.003579
VOLUME	CGPK_6	NA	NA	Paved Haul Road K	2.59				0.000451	0.003579
VOLUME	CGPK_7	NA	NA	Paved Haul Road K	2.59				0.000451	0.003579
VOLUME	CGPK_8	NA	NA	Paved Haul Road K	2.59				0.000451	0.003579
VOLUME	CGPK_9	NA	NA	Paved Haul Road K	2.59				0.000451	0.003579
VOLUME	CGPK_10	NA	NA	Paved Haul Road K	2.59				0.000225	0.001786
VOLUME	CGPK_11	NA	NA	Paved Haul Road K	2.59				0.000451	0.003579
VOLUME	CGPK_12	NA	NA	Paved Haul Road K	2.59				0.000451	0.003579
VOLUME	CGPK_13	NA	NA	Paved Haul Road K	2.59				0.000451	0.003579
VOLUME	CGPK_14	NA	NA	Paved Haul Road K	2.59				0.000451	0.003579
VOLUME	CGPK_15	NA	NA	Paved Haul Road K	2.59				0.000451	0.003579
VOLUME	CGPK_16	NA	NA	Paved Haul Road K	2.59				0.000451	0.003579
VOLUME	CGPK_17	NA	NA	Paved Haul Road K	2.59				0.000225	0.001786
VOLUME	CGPK_18	NA	NA	Paved Haul Road K	2.59				0.000451	0.003579
VOLUME	CGPK_19	NA	NA	Paved Haul Road K	2.59				0.000451	0.003579
VOLUME	CGPL_1	NA	NA	Paved Haul Road L	2.59				0.00179	0.014207
VOLUME	CGPL_2	NA	NA	Paved Haul Road L	2.59				0.00179	0.014207

APPENDIX MATERIAL – APPENDIX II STACK MODELED PARAMETERS

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002-005

Stack Modeled Parameters										
Type	Modeling ID*	SV #	EU #	Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temperature (K)	PM ₁₀ Emission Rate (g/sec)	PM ₁₀ Emission Rate (lb/hr)
VOLUME	CGPL_3	NA	NA	Paved Haul Road L	2.59				0.00179	0.014207
VOLUME	CGPL_4	NA	NA	Paved Haul Road L	2.59				0.00179	0.014207
VOLUME	CGPL_5	NA	NA	Paved Haul Road L	2.59				0.00179	0.014207
VOLUME	CGPL_6	NA	NA	Paved Haul Road L	2.59				0.00179	0.014207
VOLUME	CGPL_7	NA	NA	Paved Haul Road L	2.59				0.00179	0.014207
VOLUME	CGPL_8	NA	NA	Paved Haul Road L	2.59				0.00179	0.014207
VOLUME	CGPL_9	NA	NA	Paved Haul Road L	2.59				0.00179	0.014207
VOLUME	CGPL_10	NA	NA	Paved Haul Road L	2.59				0.00179	0.014207
VOLUME	CGPL_11	NA	NA	Paved Haul Road L	2.59				0.00179	0.014207
VOLUME	CGPL_12	NA	NA	Paved Haul Road L	2.59				0.00179	0.014207
VOLUME	CGPL_13	NA	NA	Paved Haul Road L	2.59				0.00179	0.014207
VOLUME	CGPL_14	NA	NA	Paved Haul Road L	2.59				0.00179	0.014207
VOLUME	CGPL_15	NA	NA	Paved Haul Road L	2.59				0.00179	0.014207
VOLUME	CGPL_16	NA	NA	Paved Haul Road L	2.59				0.00179	0.014207
VOLUME	CGPM_1	NA	NA	Paved Haul Road M	2.59				0.000601	0.00477
VOLUME	CGPM_2	NA	NA	Paved Haul Road M	2.59				0.0012	0.009524
VOLUME	CGPM_3	NA	NA	Paved Haul Road M	2.59				0.0012	0.009524
VOLUME	CGPM_4	NA	NA	Paved Haul Road M	2.59				0.0012	0.009524
VOLUME	CGPM_5	NA	NA	Paved Haul Road M	2.59				0.0012	0.009524
VOLUME	CGPM_6	NA	NA	Paved Haul Road M	2.59				0.0012	0.009524
VOLUME	CGPM_7	NA	NA	Paved Haul Road M	2.59				0.0012	0.009524
VOLUME	CGPM_8	NA	NA	Paved Haul Road M	2.59				0.0012	0.009524
VOLUME	CGPM_9	NA	NA	Paved Haul Road M	2.59				0.0012	0.009524
VOLUME	CGPM_10	NA	NA	Paved Haul Road M	2.59				0.000601	0.00477
VOLUME	CGPM_11	NA	NA	Paved Haul Road M	2.59				0.0012	0.009524
VOLUME	CGPM_12	NA	NA	Paved Haul Road M	2.59				0.0012	0.009524
VOLUME	CGPM_13	NA	NA	Paved Haul Road M	2.59				0.0012	0.009524
VOLUME	CGPM_14	NA	NA	Paved Haul Road M	2.59				0.0012	0.009524
VOLUME	CGPM_15	NA	NA	Paved Haul Road M	2.59				0.0012	0.009524

APPENDIX MATERIAL – APPENDIX II STACK MODELED PARAMETERS

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002-005

Stack Modeled Parameters										
Type	Modeling ID*	SV #	EU #	Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temperature (K)	PM ₁₀ Emission Rate (g/sec)	PM ₁₀ Emission Rate (lb/hr)
VOLUME	CGPM_16	NA	NA	Paved Haul Road M	2.59				0.0012	0.009524
VOLUME	CGPM_17	NA	NA	Paved Haul Road M	2.59				0.000601	0.00477
VOLUME	CGPM_18	NA	NA	Paved Haul Road M	2.59				0.0012	0.009524
VOLUME	CGPM_19	NA	NA	Paved Haul Road M	2.59				0.0012	0.009524
VOLUME	CGPM_20	NA	NA	Paved Haul Road M	2.59				0.0012	0.009524
VOLUME	CGPM_21	NA	NA	Paved Haul Road M	2.59				0.0012	0.009524
VOLUME	CGPM_22	NA	NA	Paved Haul Road M	2.59				0.000601	0.00477
VOLUME	CGPM_23	NA	NA	Paved Haul Road M	2.59				0.0012	0.009524
VOLUME	CGPM_24	NA	NA	Paved Haul Road M	2.59				0.0012	0.009524
VOLUME	CGPM_25	NA	NA	Paved Haul Road M	2.59				0.0012	0.009524
VOLUME	CGPN_1	NA	NA	Paved Haul Road N	2.59				0.00108	0.008572
VOLUME	CGPN_2	NA	NA	Paved Haul Road N	2.59				0.00108	0.008572
VOLUME	CGPN_3	NA	NA	Paved Haul Road N	2.59				0.00108	0.008572
VOLUME	CGPN_4	NA	NA	Paved Haul Road N	2.59				0.00108	0.008572
VOLUME	CGPN_5	NA	NA	Paved Haul Road N	2.59				0.00108	0.008572
VOLUME	CGPN_6	NA	NA	Paved Haul Road N	2.59				0.00108	0.008572
VOLUME	CGPN_7	NA	NA	Paved Haul Road N	2.59				0.00108	0.008572
VOLUME	CGPN_8	NA	NA	Paved Haul Road N	2.59				0.00108	0.008572
VOLUME	CGPN_9	NA	NA	Paved Haul Road N	2.59				0.00108	0.008572
VOLUME	CGPO_1	NA	NA	Paved Haul Road O	2.59				0.000117	0.000929
VOLUME	CGPO_2	NA	NA	Paved Haul Road O	2.59				0.000117	0.000929
VOLUME	CGPO_3	NA	NA	Paved Haul Road O	2.59				0.000117	0.000929
VOLUME	CGPO_4	NA	NA	Paved Haul Road O	2.59				0.000117	0.000929
VOLUME	CGPO_5	NA	NA	Paved Haul Road O	2.59				0.000117	0.000929
VOLUME	CGPO_6	NA	NA	Paved Haul Road O	2.59				0.000117	0.000929
VOLUME	CGPP_1	NA	NA	Paved Haul Road P	2.59				0.00225	0.017857
VOLUME	CGPP_2	NA	NA	Paved Haul Road P	2.59				0.00225	0.017857
VOLUME	CGPP_3	NA	NA	Paved Haul Road P	2.59				0.00225	0.017857
VOLUME	CGPP_4	NA	NA	Paved Haul Road P	2.59				0.00225	0.017857

APPENDIX MATERIAL – APPENDIX II STACK MODELED PARAMETERS

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002-005

Stack Modeled Parameters										
Type	Modeling ID*	SV #	EU #	Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temperature (K)	PM ₁₀ Emission Rate (g/sec)	PM ₁₀ Emission Rate (lb/hr)
VOLUME	CGPP_5	NA	NA	Paved Haul Road P	2.59				0.00225	0.017857
VOLUME	CGPP_6	NA	NA	Paved Haul Road P	2.59				0.00225	0.017857
VOLUME	CGPP_7	NA	NA	Paved Haul Road P	2.59				0.00225	0.017857
VOLUME	CGPP_8	NA	NA	Paved Haul Road P	2.59				0.00225	0.017857
VOLUME	CGPP_9	NA	NA	Paved Haul Road P	2.59				0.00225	0.017857
VOLUME	CGPP_10	NA	NA	Paved Haul Road P	2.59				0.00225	0.017857
VOLUME	CGPP_11	NA	NA	Paved Haul Road P	2.59				0.00225	0.017857
VOLUME	CGPP_12	NA	NA	Paved Haul Road P	2.59				0.00225	0.017857
VOLUME	CGPQ_1	NA	NA	Paved Haul Road Q	2.59				0.000277	0.002198
VOLUME	CGPQ_2	NA	NA	Paved Haul Road Q	2.59				0.000553	0.004389
VOLUME	CGPQ_3	NA	NA	Paved Haul Road Q	2.59				0.000553	0.004389
VOLUME	CGPQ_4	NA	NA	Paved Haul Road Q	2.59				0.000553	0.004389
VOLUME	CGPQ_5	NA	NA	Paved Haul Road Q	2.59				0.000553	0.004389
VOLUME	CGPQ_6	NA	NA	Paved Haul Road Q	2.59				0.000553	0.004389
VOLUME	CGPQ_7	NA	NA	Paved Haul Road Q	2.59				0.000553	0.004389
VOLUME	CGPR_1	NA	NA	Paved Haul Road R	2.59				0.00169	0.013413
VOLUME	CGPR_2	NA	NA	Paved Haul Road R	2.59				0.00169	0.013413
VOLUME	CGPR_3	NA	NA	Paved Haul Road R	2.59				0.00169	0.013413
VOLUME	CGPR_4	NA	NA	Paved Haul Road R	2.59				0.00169	0.013413
VOLUME	CGPR_5	NA	NA	Paved Haul Road R	2.59				0.00169	0.013413
VOLUME	CGPR_6	NA	NA	Paved Haul Road R	2.59				0.00169	0.013413
VOLUME	CGPR_7	NA	NA	Paved Haul Road R	2.59				0.00169	0.013413
VOLUME	CGPR_8	NA	NA	Paved Haul Road R	2.59				0.00169	0.013413
VOLUME	CGPR_9	NA	NA	Paved Haul Road R	2.59				0.00169	0.013413
VOLUME	CGPR_10	NA	NA	Paved Haul Road R	2.59				0.00169	0.013413
VOLUME	CGPS_1	NA	NA	Paved Haul Road S	2.59				0.000322	0.002556
VOLUME	CGPS_2	NA	NA	Paved Haul Road S	2.59				0.000322	0.002556
VOLUME	CGPS_3	NA	NA	Paved Haul Road S	2.59				0.000322	0.002556
VOLUME	CGPS_4	NA	NA	Paved Haul Road S	2.59				0.000322	0.002556

APPENDIX MATERIAL – APPENDIX II STACK MODELED PARAMETERS

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002-005

Stack Modeled Parameters										
Type	Modeling ID*	SV #	EU #	Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temperature (K)	PM ₁₀ Emission Rate (g/sec)	PM ₁₀ Emission Rate (lb/hr)
VOLUME	CGPS_5	NA	NA	Paved Haul Road S	2.59				0.000322	0.002556
VOLUME	CGPS_6	NA	NA	Paved Haul Road S	2.59				0.000322	0.002556
VOLUME	CGPS_7	NA	NA	Paved Haul Road S	2.59				0.000322	0.002556
VOLUME	CGPS_8	NA	NA	Paved Haul Road S	2.59				0.000322	0.002556
VOLUME	CGPS_9	NA	NA	Paved Haul Road S	2.59				0.000322	0.002556
VOLUME	CGPS_10	NA	NA	Paved Haul Road S	2.59				0.000322	0.002556
VOLUME	CGPS_11	NA	NA	Paved Haul Road S	2.59				0.000322	0.002556
VOLUME	CGPS_12	NA	NA	Paved Haul Road S	2.59				0.000322	0.002556
VOLUME	CGPS_13	NA	NA	Paved Haul Road S	2.59				0.000322	0.002556
VOLUME	CGPS_14	NA	NA	Paved Haul Road S	2.59				0.000322	0.002556
VOLUME	CGPS_15	NA	NA	Paved Haul Road S	2.59				0.000322	0.002556
VOLUME	CGPS_16	NA	NA	Paved Haul Road S	2.59				0.000322	0.002556
VOLUME	CGPS_17	NA	NA	Paved Haul Road S	2.59				0.000322	0.002556
VOLUME	CGPS_18	NA	NA	Paved Haul Road S	2.59				0.000322	0.002556
VOLUME	CGPS_19	NA	NA	Paved Haul Road S	2.59				0.000258	0.002048
VOLUME	CGPS_20	NA	NA	Paved Haul Road S	2.59				0.000193	0.001532
VOLUME	CGPS_21	NA	NA	Paved Haul Road S	2.59				0.000129	0.001024
VOLUME	CGPS_22	NA	NA	Paved Haul Road S	2.59				0.0000644	0.000511
VOLUME	CGPS_23	NA	NA	Paved Haul Road S	2.59				0.000129	0.001024
VOLUME	CGPS_24	NA	NA	Paved Haul Road S	2.59				0.000193	0.001532
VOLUME	CGPS_25	NA	NA	Paved Haul Road S	2.59				0.000258	0.002048
VOLUME	CGPS_26	NA	NA	Paved Haul Road S	2.59				0.000322	0.002556
VOLUME	CGPS_27	NA	NA	Paved Haul Road S	2.59				0.000322	0.002556
VOLUME	CGPS_28	NA	NA	Paved Haul Road S	2.59				0.000322	0.002556
VOLUME	CGPS_29	NA	NA	Paved Haul Road S	2.59				0.000322	0.002556
VOLUME	CGPS_30	NA	NA	Paved Haul Road S	2.59				0.000322	0.002556
VOLUME	CGPS_31	NA	NA	Paved Haul Road S	2.59				0.000322	0.002556
VOLUME	CGPS_32	NA	NA	Paved Haul Road S	2.59				0.000322	0.002556
VOLUME	CGPS_33	NA	NA	Paved Haul Road S	2.59				0.000322	0.002556

APPENDIX MATERIAL – APPENDIX II STACK MODELED PARAMETERS

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002-005

Stack Modeled Parameters										
Type	Modeling ID*	SV #	EU #	Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temperature (K)	PM ₁₀ Emission Rate (g/sec)	PM ₁₀ Emission Rate (lb/hr)
VOLUME	CGPS_34	NA	NA	Paved Haul Road S	2.59				0.000322	0.002556
VOLUME	CGPT_1	NA	NA	Paved Haul Road T	2.59				0.000877	0.00696
VOLUME	CGPT_2	NA	NA	Paved Haul Road T	2.59				0.000877	0.00696
VOLUME	CGPT_3	NA	NA	Paved Haul Road T	2.59				0.000877	0.00696
VOLUME	CGPT_4	NA	NA	Paved Haul Road T	2.59				0.000877	0.00696
VOLUME	CGPT_5	NA	NA	Paved Haul Road T	2.59				0.000877	0.00696
VOLUME	CGPT_6	NA	NA	Paved Haul Road T	2.59				0.000877	0.00696
VOLUME	CGPT_7	NA	NA	Paved Haul Road T	2.59				0.000877	0.00696
VOLUME	CGPT_8	NA	NA	Paved Haul Road T	2.59				0.000877	0.00696
VOLUME	CGPT_9	NA	NA	Paved Haul Road T	2.59				0.000877	0.00696
VOLUME	CGPT_10	NA	NA	Paved Haul Road T	2.59				0.000877	0.00696
VOLUME	CGPT_11	NA	NA	Paved Haul Road T	2.59				0.000877	0.00696
VOLUME	CGPT_12	NA	NA	Paved Haul Road T	2.59				0.000877	0.00696
VOLUME	CGPT_13	NA	NA	Paved Haul Road T	2.59				0.000877	0.00696
VOLUME	CGPT_14	NA	NA	Paved Haul Road T	2.59				0.000877	0.00696
VOLUME	CGPT_15	NA	NA	Paved Haul Road T	2.59				0.000877	0.00696
VOLUME	CGPT_16	NA	NA	Paved Haul Road T	2.59				0.000877	0.00696
VOLUME	CGPT_17	NA	NA	Paved Haul Road T	2.59				0.000877	0.00696
VOLUME	CGPT_18	NA	NA	Paved Haul Road T	2.59				0.000877	0.00696
VOLUME	CGPT_19	NA	NA	Paved Haul Road T	2.59				0.000877	0.00696
VOLUME	CGPT_20	NA	NA	Paved Haul Road T	2.59				0.000877	0.00696
VOLUME	CGPU_1	NA	NA	Paved Haul Road U	2.59				0.000877	0.00696
VOLUME	CGPU_2	NA	NA	Paved Haul Road U	2.59				0.000877	0.00696
VOLUME	CGPU_3	NA	NA	Paved Haul Road U	2.59				0.000877	0.00696
VOLUME	CGPU_4	NA	NA	Paved Haul Road U	2.59				0.000877	0.00696
VOLUME	CGPU_5	NA	NA	Paved Haul Road U	2.59				0.000877	0.00696
VOLUME	CGPU_6	NA	NA	Paved Haul Road U	2.59				0.000877	0.00696
VOLUME	CGPU_7	NA	NA	Paved Haul Road U	2.59				0.000877	0.00696
VOLUME	CGPU_8	NA	NA	Paved Haul Road U	2.59				0.000877	0.00696

APPENDIX MATERIAL – APPENDIX II STACK MODELED PARAMETERS

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002-005

Stack Modeled Parameters										
Type	Modeling ID*	SV #	EU #	Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temperature (K)	PM ₁₀ Emission Rate (g/sec)	PM ₁₀ Emission Rate (lb/hr)
VOLUME	CGPU_9	NA	NA	Paved Haul Road U	2.59				0.000877	0.00696
VOLUME	CGPU_10	NA	NA	Paved Haul Road U	2.59				0.000877	0.00696
VOLUME	CGPU_11	NA	NA	Paved Haul Road U	2.59				0.000877	0.00696
VOLUME	CGPU_12	NA	NA	Paved Haul Road U	2.59				0.000877	0.00696
VOLUME	CGPU_13	NA	NA	Paved Haul Road U	2.59				0.000877	0.00696
VOLUME	CGPU_14	NA	NA	Paved Haul Road U	2.59				0.000877	0.00696
VOLUME	CGPU_15	NA	NA	Paved Haul Road U	2.59				0.000877	0.00696
VOLUME	CGPU_16	NA	NA	Paved Haul Road U	2.59				0.000877	0.00696
VOLUME	CGPU_17	NA	NA	Paved Haul Road U	2.59				0.000877	0.00696
VOLUME	CGPU_18	NA	NA	Paved Haul Road U	2.59				0.000877	0.00696
VOLUME	CGPU_19	NA	NA	Paved Haul Road U	2.59				0.000877	0.00696
VOLUME	CGPU_20	NA	NA	Paved Haul Road U	2.59				0.000877	0.00696
VOLUME	CGUV_1	NA	NA	Paved Haul Road V	2.59				0.0036	0.028572
VOLUME	CGUV_2	NA	NA	Paved Haul Road V	2.59				0.0036	0.028572
VOLUME	CGUV_3	NA	NA	Paved Haul Road V	2.59				0.0036	0.028572
VOLUME	CGUV_4	NA	NA	Paved Haul Road V	2.59				0.0036	0.028572
VOLUME	CGUV_5	NA	NA	Paved Haul Road V	2.59				0.0036	0.028572
VOLUME	CGUV_6	NA	NA	Paved Haul Road V	2.59				0.0036	0.028572
VOLUME	CGUV_7	NA	NA	Paved Haul Road V	2.59				0.0036	0.028572
VOLUME	CGUV_8	NA	NA	Paved Haul Road V	2.59				0.0036	0.028572
VOLUME	CGUV_9	NA	NA	Paved Haul Road V	2.59				0.0036	0.028572
VOLUME	CGUV_10	NA	NA	Paved Haul Road V	2.59				0.0036	0.028572
VOLUME	CGUV_11	NA	NA	Paved Haul Road V	2.59				0.0036	0.028572
VOLUME	CGUV_12	NA	NA	Paved Haul Road V	2.59				0.0036	0.028572
VOLUME	CGUV_13	NA	NA	Paved Haul Road V	2.59				0.0036	0.028572
VOLUME	CGUV_14	NA	NA	Paved Haul Road V	2.59				0.0036	0.028572
VOLUME	CGUV_15	NA	NA	Paved Haul Road V	2.59				0.0036	0.028572
VOLUME	CGUV_16	NA	NA	Paved Haul Road V	2.59				0.0036	0.028572
VOLUME	CGUV_17	NA	NA	Paved Haul Road V	2.59				0.0036	0.028572

APPENDIX MATERIAL – APPENDIX II STACK MODELED PARAMETERS

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002-005

Stack Modeled Parameters										
Type	Modeling ID*	SV #	EU #	Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temperature (K)	PM ₁₀ Emission Rate (g/sec)	PM ₁₀ Emission Rate (lb/hr)
VOLUME	CGUG_1	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_2	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_3	NA	NA	Unpaved Haul Road G	2.59				0.000337	0.002675
VOLUME	CGUG_4	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_5	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_6	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_7	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_8	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_9	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_10	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_11	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_12	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_13	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_14	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_15	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_16	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_17	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_18	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_19	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_20	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_21	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_22	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_23	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_24	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_25	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_26	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_27	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_28	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_29	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349

APPENDIX MATERIAL – APPENDIX II STACK MODELED PARAMETERS

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002-005

Stack Modeled Parameters										
Type	Modeling ID*	SV #	EU #	Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temperature (K)	PM ₁₀ Emission Rate (g/sec)	PM ₁₀ Emission Rate (lb/hr)
VOLUME	CGUG_30	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_31	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_32	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_33	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_34	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_35	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_36	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_37	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_38	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_39	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_40	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_41	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_42	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_43	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_44	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_45	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_46	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_47	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_48	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_49	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_50	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_51	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_52	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_53	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_54	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_55	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_56	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_57	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349
VOLUME	CGUG_58	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349

APPENDIX MATERIAL – APPENDIX II STACK MODELED PARAMETERS

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002-005

Stack Modeled Parameters										
Type	Modeling ID*	SV #	EU #	Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temperature (K)	PM ₁₀ Emission Rate (g/sec)	PM ₁₀ Emission Rate (lb/hr)
VOLUME	CGUG_59	NA	NA	Unpaved Haul Road G	2.59				0.000674	0.005349

* Key: CGTAP = 3M Cottage Grove Tape Manufacturing
 CGBUB = 3M Cottage Grove Specialty Additives
 CGINC = 3M Cottage Grove Corporate Incinerator
 CGAUT = 3M Cottage Grove Building 17
 AB112 = 3M Cottage Grove Abrasives Systems Division
 CGAB = 3M Cottage Grove Abrasives Systems Division
 CGTSS = 3M Cottage Grove TCM Division
 CGCHM = 3M Cottage Grove Film and Materials Resource Division
 CGOPT = 3M Cottage Grove Optical Division
 CG19 = 3M Cottage Grove Building 19
 CG111 = 3M Cottage Grove Building 111
 CGSS = 3M Cottage Grove Center Utilities

APPENDIX MATERIAL – APPENDIX II STACK MODELED PARAMETERS

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002-005

Appendix III – 3M Cottage Grove Specialty Additives Stack Modeled Parameters

Stack Modeled Parameters										
Type	Modeling ID*	SV #	EU #	Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temperature (K)	PM ₁₀ Emission Rate (g/sec)	PM ₁₀ Emission Rate (lb/hr)
POINT	CGBUB052	003	003	Maker 18	12.8	1.22	22.638	366.483	0.19	1.507962
POINT	CGBUB074	004	004	Maker 20	18.3	1.22	28.298	377.594	0.894	7.095357
POINT	CGBUB055	005	005	Maker 21	18.3	1.22	22.638	366.483	0.894	7.095357
POINT	CGBUB056	006	007, 008, 009, 010	Blend Hoppers and Tote to Bin Transfer	13.6	0.305	48.51	293.15	0	0
POINT	CGBUB065	007	021, 022, 035	Glass Furnace #74-04A, Remelt Feeder, Reject Hopper	13.2	0.446	18.521	408.15	0.048	0.380959
POINT	CGBUB066	008	023	Glass Furnace Bypass	12.2	2.219	1.832	588.706	0.000126	0.001
POINT	CGBUB067	009	024	Fritting Systems #74-05	13.1	0.286	51.536	380.372	0.082	0.650805
POINT	CGBUB068	010	025	Impact Mill	25.3	0.61	29.915	322.039	0.291	2.309563
POINT	CGBUB069	011	026	Dryer/Agglomerator System	18.8	0.357	18.9	388.706	0.095	0.753981
POINT	CGBUB073	012	034	Emergency Generator	9.1	0.204	43.226	294.261	0	0
POINT	CGBUBIA1	NA	NA	Dryer – IA	11.2	0.152	2.665	316.483	0.044	0.349212
POINT	CGBUBIA2	NA	NA	Packaging Station - IA	8.2	0.152	64.37	294.261	0	0
POINT	CGBUBIA3	NA	NA	Silica Storage Silo – IA	18	0.204	0.001	294.261	0.009	0.07143
POINT	CGBUB062	NA	062	Lime Storage Silo – IA	20.3	0.204	0.001	294.261	0.027	0.214289
POINT	CGBUB063	NA	063	Raw Material Bins (7), Weigh Hoppers (4)	31.4	0.204	12.608	294.261	0.167	1.325419
POINT	CGBUB064	NA	064	Bag Dump Stations (4)	13.5	0.253	0.001	294.261	0	0
POINT	CGBUBIA4	NA	013	Product Storage Silo	13.7	0.356	0.001	294.261	0.034	0.269846
POINT	CGBUBIA5	NA	014	Product Storage Silo	13.7	0.356	0.001	294.261	0.034	0.269846
POINT	CGBUBIA6	NA	NA	Packaging Room	8.2	0.152	64.37	294.261	0.095	0.753981

APPENDIX MATERIAL – APPENDIX III 3M COTTAGE GROVE SPECIALTY ADDITIVES STACK MODELED PARAMETERS

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002-005