

TECHNICAL SUPPORT DOCUMENT
For
DRAFT/PROPOSED AIR EMISSION PERMIT NO. 16300002-005

This technical support document (TSD) is intended for all parties interested in the draft/proposed permit and to meet the requirements that have been set forth by the federal and state regulations (40 CFR § 70.7(a)(5) and Minn. R. 7007.0850, subp. 1). The purpose of this document is to provide the legal and factual justification for each applicable requirement or policy decision considered in the preliminary determination to issue the draft/proposed permit.

1. General Information

1.1 Applicant and Stationary Source Location:

Table 1. Applicant and Source Address

Applicant/Address	Stationary Source/Address (SIC Code: 3229)
3M Company Building 224-5W-03 St. Paul, MN 55144	3M Cottage Grove Specialty Additives 10746 Innovation Rd Cottage Grove Washington County
Contact: Tina Mumm Phone: 651-737-3606	

1.2 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 Degradation (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.

1.3 Description of the Activities Allowed by this Permit Action

This permit action is a major amendment to expand the glass furnace (EU022) and increase the hourly production limit of the glass furnace (EU022) and the fritting systems (EU024) from 3,530 lb/hr to 4,400 lb/hr. The facility also plans to modify the fan associated with the fabric filter that currently controls the fritting system (CE025). Existing limits for PM and PM₁₀ are not changing as part of this permit action,

therefore, there is no increase in potential to emit (PTE) for PM or PM₁₀. Increases of other criteria pollutants are listed in Table 3 below.

The capacity of the natural gas glass furnace (EU023) is not changing. This unit is used for startup and shutdown of EU022 and is not physically capable of producing any product.

Additional Changes made to permit:

- Moved “Emission Cap Limits” from facility level to GP002 in the permit. Revised language to reflect current PreCap language for control equipment.
- Additional monitoring and recordkeeping requirements were added for limits taken to avoid PSD
- Included limits on PM₁₀ for EU022 and EU024. These PM₁₀ emissions limits were used for emissions calculating purposes. In order to avoid an increase in PM₁₀ emissions and trigger re-modeling, the facility has accepted limits on PM₁₀.

1.4. Facility Emissions:

Table 2. Title I Emissions Increase Summary

Pollutant	Unlimited Potential Emissions from the Modification (tpy)	Limited Potential Emissions from the Modification (tpy)	NSR/112(g) Threshold for New Major Source (tpy)	NSR/ 112(g) Review Required? (Yes/No)
PM	5.70	5.70	250	No
PM ₁₀	5.70	5.70	250	No
PM _{2.5}	3.85	3.85	250	No
NO _x	4.63	4.63	250	No
SO ₂	16.38	16.38	250	No
CO	0	0	250	No
Ozone (VOC)	0	0	250	No
CO ₂ e*	0	0	100,000	No
Total HAPs	0	0	10/25	0

*Carbon dioxide equivalents as defined in Minn. R. 7007.0100.

Table 3. Non-Title I Emissions Increase Summary

Pollutant	After Change (lb/hr)	Before Change (lb/hr)	Net Change (lb/hr)	Insignificant Modification Thresholds (lb/hr <)	Minor and Moderate Amendment Thresholds (lb/hr < or ≥)	Type of Amendment (Minor or Moderate)

Pollutant	After Change (lb/hr)	Before Change (lb/hr)	Net Change (lb/hr)	Insignificant Modification Thresholds (lb/hr <)	Minor and Moderate Amendment Thresholds (lb/hr < or ≥)	Type of Amendment (Minor or Moderate)
PM ₁₀	1.3	1.3	0	0.855	3.42	NA
NO _x	0.84	1.6	0.22	2.28	9.13	NA
SO ₂	2.98	3.74	0.77	2.28	9.13	NA

Table 4. Facility Classification*

Classification	Major/Affected Source	Synthetic Minor/Area	Minor/Area
PSD		PM, PM ₁₀ , PM _{2.5} , SO ₂ , NO _x , VOC	CO
Part 70 Permit Program	PM, PM ₁₀ , PM _{2.5} , SO ₂ , NO _x , VOC		CO
Part 63 NESHAP	X		

*This classification is based on the aggregate PTE of the operations cover by this permit (buildings 74, 101 and 110) together with the permit for 3M Cottage Grove – Abrasive Systems Division (Building 112) and 3M Cottage Grove – Building 19 & 111.

2. Regulatory and/or Statutory Basis

New Source Review

The changes authorized by this amendment do not increase carbon dioxide equivalent (CO₂e) emissions, and therefore are not subject to regulation under NSR for CO₂e (“subject to regulation” is defined in 40 CFR § 52.21(b)(49)). In addition, the existing facility is subject to limits such that all other NSR regulated air pollutants are less than the major source thresholds for NSR (40 CFR § 52.21(b)(1)). Therefore, as defined by the federal rules, the facility is not considered an existing major source for NSR.

The underlying definition of stationary source for PSD requires grouping all facilities under common ownership or control which are on contiguous or adjacent property and which also have the same first two-digit SIC Code. At Cottage Grove, the Specialty Additives facility is classified as SIC Code 32xx as are the Abrasives Division facility and Building 19 and 111. Together with the limits established in the permits for these other two facilities, the entire stationary source (the three facilities combined) remains below major source thresholds under the PSD program.

Part 70 Permit Program

The facility is a major source under the Part 70 permit program.

New Source Performance Standards (NSPS)

For the operations covered by this permit, there are no applicable New Source Performance Standards.

National Emission Standards for Hazardous Air Pollutants (NESHAP)

The entire 3M Cottage Grove campus is considered a single major source under 40 CFR Part 63; however, there are no major source NESHAPs that apply to the operations covered by this permit.

Compliance Assurance Monitoring (CAM)

CAM currently applies to the facility. This permit action does not affect CAM applicability. The most recent CAM plan is attached to this TSD (see Attachment 4).

Environmental Review & AERA

The facility does not trigger any of the requirements for the need to conduct environmental review, i.e. an Environmental Assessment Worksheet (EAW), and is not required to perform an AERA.

Minnesota State Rules

No newly applicable Minnesota Standards of Performance are triggered by this permit action.

Table 6. Regulatory Overview of Units Affected by the Modification/Permit Amendment

Level*	Applicable Regulations	Comments:
Total Facility	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 Facility has been identified as possibly contributing to a violation of the SO ₂ National Ambient Air Quality Standard (NAAQS). As a result, the Facility is required to submit a computer dispersion modeling protocol before increasing emissions of SO ₂ .
Total Facility	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 Facility has been identified as possibly contributing to a violation of the SO ₂ NAAQS. As a result, the Facility is required to submit a computer dispersion modeling results demonstrating compliance with the SO ₂ NAAQS before increasing emissions of SO ₂ .
Total Facility	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 Facility completed computer dispersion modeling to demonstrate compliance with the PM ₁₀ NAAQS. The parameters used in PM ₁₀ modeling are listed in Appendix II of this permit. Based on the results of the modeling, the Permittee is required to re-model when changes that require a minor, moderate or major permit amendment affect any modeled parameter or emission rate documented in Appendix II.
GP001	Title I Condition: To avoid classification as a major source and modification under 40 CFR	The Permittee has taken limits to avoid major source status under 40 CFR Section 52.21 (see GP002). The requirements in this group allow the Permittee flexibility in replacing, modifying, or adding new fabric

Level*	Applicable Regulations	Comments:
	Section 52.21 and Minn. R. 7007.3000	filters. The requirements in this group apply to existing fabric filters in this group and any replaced, modified or new fabric filters. The Permittee is still required to obtain the appropriate amendment, as applicable, before making a change.
GP 002	Title I limit to avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000	Facility wide limits taken to avoid major source status under 40 CFR Section 52.21.
EU 022	Title I limit to avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000	The Facility has previously taken limits in calculating PM10 emissions to avoid major source and major modification status under 40 CFR Section 52.21 and Minn. R. 7007.3000. This permit action incorporates that limit into the permit.
	Title I limit to avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000	Modified production limit. This limit is being increased as part of this permit action. The facility is required to conduct a performance test to demonstrate that the existing particulate limit can be met at the increased production rate. The facility is allowed to construct this unit at the increased production rate; however, the facility cannot begin operation at the increased production rate until compliance with the SO ₂ NAAQS has been demonstrated.
EU 024	Title I limit to avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000	The Facility has previously taken limits in calculating PM10 emissions to avoid major source and major modification status under 40 CFR Section 52.21 and Minn. R. 7007.3000. This permit action incorporates that limit into the permit.
	Title I limit to avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000	Modified production limit. This limit is being increased as part of this permit action. The facility is required to conduct a performance test to demonstrate that the existing particulate limit can be met at the increased production rate. The facility is allowed to construct this unit at the increased production rate; however, the facility cannot begin operation at the increased production rate until compliance with the SO ₂ NAAQS has been demonstrated.

*Where the requirement appears in the permit (e.g., EU, SV, GP, etc.).

3. Technical Information

3.1 Emissions Increase Analysis

Attachment 1 to this TSD contains spreadsheets and supporting information prepared by the Minnesota Pollution Control Agency (MPCA) and the Permittee.

Calculation of PM/PM₁₀ PTE

The permit contains limits for PM and incorporates limits for PM₁₀ for EU022 and EU024. These limits were used to calculate the PTE for these units.

Calculation of PM2.5 and NOx PTE

Emission factors from AP-42 Table 11.15-1 were used to calculate PM2.5 and NOx emissions. For NOx, the combustion related NOx emissions were subtracted from the emission factor because EU022 is an electric furnace.

Calculation of SO2 and HAPs PTE

A materials mass balance was used to calculate SO2 and HAP emissions. The highest SO2 emitting material has a 0.024% SO2 content. For HAPs, the PTE calculation was based on the MSDS assumption of 1×10^{-5} for the weight fraction of PM emissions equal to HAP.

3.2 Dispersion Modeling

In 2004, through a cursory screening analysis of a number of facilities, the MPCA identified a number of facilities, including 3M Cottage Grove Specialty Additives, that may be exceeding the NAAQS. In order to resolve the potential NAAQS issue the facility conducted PM₁₀ dispersion modeling for the entire 3M Cottage Grove campus. Based on the modeling results and MPCA guidance, the facility is subject to "Tier 3" modeling requirements. Tier 3 requires the Permittee to submit a remodeling submittal for changes that requires a minor, moderate, or major amendment that affects any modeled parameter or emission rate has been added to the permit. The determination as to whether or not limits taken for modeling purposes are required to be listed as permit requirements is outside the scope of this permit action. As a result, no limits based on modeling are being incorporated into the permit as part of this permit action; limits based on modeling may be incorporated into the permit in future permit actions. Per MPCA practice, a table of the modeled parameters has been added to the permit as an appendix (see Appendix II). Although the applicability of any modeling-based PM10 limits were not evaluated in this permit action, the combination of the Tier 3 remodeling submittal requirements and the modeling parameter appendix are reasonable at this time to ensure that the Permittee shall not increase emissions significantly above the rates used to demonstrate compliance with the NAAQS and MAAQS until the time at which PM10 limits are incorporated, as applicable.

Table 7: NAAQS/MAAQS PM10 Modeling Results

Pollutant	Averaging Period	NAAQS Standard (µg/m ³)	MAAQS Standard (µg/m ³)	Total Modeled Concentration (includes background and nearby sources) (µg/m ³)	Percent of Standard (%)	
					NAAQS	MAAQS
PM ₁₀	24-hour	150	150	136.68	91.12%	91.12%
	Annual	--	50	37.42	--	74.84%

This NAAQS screening also identified 3M Cottage Grove Specialty Additives as possibly exceeding the NAAQS for SO₂. The Facility is required to demonstrate compliance with the SO₂ NAAQS through computer dispersion modeling before beginning operations at the increased production rate for EU022 and EU024. The Facility may construct EU022 to handle the increased production rate before demonstrating compliance with the SO₂ NAAQS. Additionally, the Facility may continue to operate EU022 and EU024 at the previously permitted production rate (3530 lb/hr). Once the Facility demonstrates compliance with the SO₂ NAAQS, the Facility may begin operation of EU022 and EU024 at the increased production rate (4400 lb/hr).

3.3 Periodic Monitoring and CAM

In accordance with the Clean Air Act, it is the responsibility of the owner or operator of a facility to have sufficient knowledge of the facility to certify that the facility is in compliance with all applicable requirements.

For CAM, the Permittee submitted a CAM proposal as required by 40 CFR § 64.3. It can be found in Attachment 4 to this TSD. Further discussion of decisions about CAM can be found in Table 7.

In evaluating the monitoring included in the permit, the MPCA considered the following:

- The likelihood of the facility violating the applicable requirements;
- Whether add-on controls are necessary to meet the emission limits;
- The variability of emissions over time;
- The type of monitoring, process, maintenance, or control equipment data already available for the emission unit;
- The technical and economic feasibility of possible periodic monitoring methods; and
- The kind of monitoring found on similar units elsewhere.

The table below summarizes the periodic monitoring requirements for those emission units for which the monitoring required by the applicable requirement is nonexistent or inadequate or where CAM applies.

Table 7. Changes to Periodic Monitoring as a Result of this Permit Action

Level*	Requirement (rule basis)	Additional Monitoring	Discussion
GP001	PM/PM ₁₀ ≤ various gr/DSCF Opacity ≤ 20% (Title I Condition To avoid classification as major source and modification under 40 CFR 52.21 & Minn. R.	Performance testing for PM and opacity	The emissions cap language (listed under GP002) was modified as part of this permit action. The new PreCap language limits all criteria pollutants to below major source thresholds but allows the Permittee to modify or install new control equipment that meets the requirements of GP001. Performance testing is required after modifying existing or installing new control equipment to demonstrate compliance with

Level*	Requirement (rule basis)	Additional Monitoring	Discussion
	7007.3000; Minn. R. 7017.2020, subp. 1)		existing emissions limitations.
GP001	Control Efficiency: PM $\geq 99\%$, PM ₁₀ /PM _{2.5} $\geq 93\%$ PM/PM ₁₀ \leq various gr/DSCF Opacity $\leq 20\%$ (Title I Condition To avoid classification as major source and modification under 40 CFR 52.21 & Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4 and 14)	Visible emission checks	The Permittee is now required to perform visible emission checks in the event that a fabric filter is operating outside the permitted range, or the pressure drop monitoring equipment for a fabric filter is not in operation.
GP002	12 month rolling sum limits on PM, PM ₁₀ , PM _{2.5} , SO ₂ , NO _x , & VOC \leq various tpy (Title I Condition: To avoid classification as major source and modification under 40 CFR Section 52.21 & Minn. R. 7007.3000)	Daily and monthly recordkeeping of emissions of criteria pollutants and hours of operation, 12-month rolling sum calculations, on-going material content records	In order to demonstrate compliance with limits on criteria pollutants, the Permittee is required to calculate and record emissions of criteria pollutants daily and use daily records of emissions to calculate the 12-month rolling sum of emissions of criteria pollutants monthly. These calculations are based off of the quantity of material produced, hours of operation and material content records.
EU022	PM/ PM ₁₀ ≤ 0.01 gr/DSCF, Opacity $\leq 20\%$ Minn. R. 7017.2020, subp. 1	Performance testing for PM, PM ₁₀ and opacity	The Permittee shall conduct a one time performance test to demonstrate compliance with PM, PM10, and opacity limits. This unit is subject to the requirements of CAM, therefore a one-time test is sufficient to demonstrate compliance with applicable limits.
	Production $\leq 4,400$ lb/hr (Title I Condition: To avoid classification as major source and modification under 40 CFR Section 52.21 & Minn. R. 7007.3000, Minn. R. 7007.0800, subps. 4 & 5)	Recordkeeping	In order to demonstrate compliance with the production limit, the Permittee is required to record and maintain records of weight of materials produced and hours of operation.

Level*	Requirement (rule basis)	Additional Monitoring	Discussion
EU024	PM/ PM ₁₀ ≤ 0.014 gr/DSCF, Opacity ≤ 20% (Title I Condition: To avoid classification as major source and modification under 40 CFR Section 52.21 & Minn. R. 7007.3000, Minn. R. 7017.2020, subp. 1)	Performance testing for PM, PM ₁₀ and opacity	The Permittee shall conduct a one time performance test to demonstrate compliance with PM, PM ₁₀ , and opacity limits. This unit is subject to the requirements of CAM, therefore a one-time test is sufficient to demonstrate compliance with applicable limits.
	Production ≤ 4,400 lb/hr (Title I Condition: To avoid classification as major source and modification under 40 CFR Section 52.21 & Minn. R. 7007.3000 Minn. R. 7007.0800, subps. 4 & 5)	Recordkeeping	In order to demonstrate compliance with the production limit, the Permittee is required to record and maintain records of weight of materials produced and hours of operation.

*Where the requirement appears in the permit (e.g., EU, SV, GP, etc.).

3.4 Insignificant Activities

3M Cottage Grove Specialty Additives has several operations which are classified as insignificant activities under the MPCA's permitting rules. These are listed in Appendix A to the permit.

The permit is required to include periodic monitoring for all emissions units, including insignificant activities, per EPA guidance. The insignificant activities at this Facility are only subject to general applicable requirements. Using the criteria outlined earlier in this TSD, the following table documents the justification why no additional periodic monitoring is necessary for the current insignificant activities.

Table 8. Insignificant Activities

Insignificant Activity	General Applicable Emission limit	Discussion
Individual emissions units with a PTE less than: 1) 2 tpy of CO and 2) 1 tpy of each NO _x , SO ₂ , PM, PM ₁₀ , and VOCs	PM, variable depending on airflow or process weight rate Opacity ≤ 20% (with exceptions)	The units at the 3M Cottage Grove Specialty Additives facility that qualify under this subpart are not expected to generate a significant amount of particulate matter.

Insignificant Activity	General Applicable Emission limit	Discussion
	(Minn. R. 7011.0715 and Minn. R. 7011.610)	
Emission units with emissions less than PTE of 5.7 pounds per hour or actual emissions of 2 tpy CO; PTE of 2.28 lb/hr or actual emissions of 1 tpy for NO _x , SO ₂ , PM, PM ₁₀ , and VOCs	PM, variable depending on airflow or process weight rate Opacity ≤ 20% (with exceptions) (Minn. R. 7011.0715 and Minn. R. 7011.610)	For the units at the 3M Cottage Grove Specialty Additives facility that qualify under this subpart, it is highly unlikely that they could violate the applicable requirement.
Equipment venting PM/PM ₁₀ inside a building, provided that emissions from the equipment are: a). filtered through an air cleaning system; and b). vented inside of the building 100% of the time	PM, variable depending on airflow Opacity ≤ 20% (Minn. R. 7011.0715)	For the units at the 3M Cottage Grove Specialty Additives facility that qualify under this subpart, it is highly unlikely that they could violate the applicable requirement. In addition, these units are vented inside a building, so testing for PM or opacity is not feasible.

3.5 Community Involvement

3M Cottage Grove provides community interaction through several avenues, including participation at City Council and Commission meetings, recurring community publications, and responding to direct inquiries from members of the public with information and tours. With regard to the permit amendment application for the melter rebuild (EU022), the most likely avenue of interaction will be through the City of Cottage Grove Environmental Commission. This commission is a formal body of nine members which advises the city council on environmental issues. 3M Cottage Grove interacts with the commission through attendance at its regular meetings and through informal meetings with commission members. Pending and recently issued permits are a common topic of discussion at these meetings.

3.6 Permit Organization

In general, the permit meets the MPCA Delta Guidance for ordering and grouping of requirements. One area where this permit deviates slightly from Delta guidance is in the use of appendices. While appendices are fully enforceable parts of the permit, in general, any requirement that the MPCA thinks should be electronically tracked (e.g., limits, submittals, etc.), should be in Table A or B of the permit. The main reason is that the appendices are word processing sections and are not part of the electronic tracking system. Violation of the appendices can be enforced, but the computer system will not automatically generate the necessary enforcement notices or documents. Staff must generate these.

Two-stage Issuance:

The Minnesota permitting rules (Minn. R. 7007.0750, subp. 7) allow the MPCA to separate the issuance of the construction provisions from the operation provisions of a permit. This approach allows a Permittee to commence construction after the completion of the 30-day public comment period, but prior to the completion of EPA's 45-day review period required by Part 70. Minn. R. 7007.0750, subp. 7 indicates that amendments to Part 70 permits that authorize construction or modification and include enforceable limitation(s) assumed to avoid being subject to a new source review program under part C or D of the act are eligible for two-stage issuance. This permit is eligible for 2-stage issuance because it is a major amendment to a Part 70 permit that authorizes a modification to EU 022 and an increase in production for EU022 and EU024. The production limits are Title I conditions assumed to avoid classification as a major source under the PSD program. Therefore, the modification of EU022 and the increase in production of EU022 and EU024 can be authorized after the 30-day public notice. Conditions that will be issued after the 30-day comment period, but prior to the completion of the EPA 45-day review period are marked with "[Stage I]" in the citation field.

3.6 Comments Received

The MPCA plans to issue this draft/proposed permit under the provisions of Minn. R. 7007.0750, subp. 7. This rule allows the MPCA to issue permits in two stages. The requirements issued in the first stage – the Stage 1 conditions – are the portions of the draft/proposed permit that relate to the construction activities authorized by the draft/proposed permit.

Examples of Stage 1 conditions include emissions limits, restrictions on hours of operation and the recordkeeping associated with that restriction, and requirements to demonstrate initial compliance. In this draft/proposed permit, Stage 1 conditions are identified as Title I Conditions to avoid classification as a major modification and can be found listed under EU022 and EU024 requirements. During the public comment period and prior to final permit issuance, the Stage 1 conditions are denoted in the permit by "[Stage 1]." These designations will be removed in Stage 2 (final) permit issuance.

This section will be completed after the conclusion of the referenced review periods.

Public Notice Period: <start date> - <end date>

EPA 45-day Review Period: <start date> - <end date>

4. Permit Fee Assessment

Attachment 3 to this TSD contains the MPCA's assessment of Application and Additional Points used to determine the permit application fee for this permit action as required by Minn. R. 7002.0019. The permit action includes one permit application, received after the effective date of the rule (July 1, 2009). The permit does not include any additional chargeable activities.

5. Conclusion

Based on the information provided by 3M Cottage Grove Specialty Additives, the MPCA has reasonable assurance that the proposed operation of the emission facility, as described in the Air Emission Permit

No. 16300002-005 and this TSD, will not cause or contribute to a violation of applicable federal regulations and Minnesota Rules.

Staff Members on Permit Team: Cindy Schafer (permit writer/engineer)
 Sarah Kilgriff (enforcement)
 Curt Stock (stack testing)
 Kelsey Suddard (peer reviewer)

AQ File No. 23AS; DQ 4125

Attachments: 1. Emissions Increase Calculation Spreadsheets
 2. CD-01 Forms
 3. Points Calculator
 4. CAM Plan

ATTACHMENT 1

EMISSIONS INCREASE CALCULATION SPREADSHEETS

Emissions Calculations
3M Cottage Grove Specialty Additives (Bldgs 74, 101, 110)
Furnace Rebuild Project - Existing Emissions

Unit ID	Stack ID	Unit Name	Pollutant	Maximum Rate (units/hr) units	Emission Factor (lb/units) (ref)	Emission Estimation Method	Emission Rate (lb/hr)	Uncontrolled Potential to Emit (PTE) (ton/yr)	Pollution Control Efficiency (%)	Controlled Potential to Emit (PTE) (lb/hr)	Controlled Potential to Emit (PTE) (ton/yr)	Notes
022	065	Glass Furnace	PM	3500 lb	1.078E-04	3 MN Rule 7011.0715	0.38	1.65	0	0.38	1.65	0.01 gr/dscf, permit limit
022	065	Glass Furnace	PM10	3500 lb	1.078E-04	3 MN Rule 7011.0715	0.38	1.65	0	0.38	1.65	0.01 gr/dscf, permit limit
022	065	Glass Furnace	PM2.5	3500 lb	1.000E-04	3 AP-42	0.35	1.53	0	0.35	1.53	
022	065	Glass Furnace	NOx	3500 lb	8.500E-04	3 AP-42	2.98	13.03	0	2.98	13.03	
022	065	Glass Furnace	SO2	3500 lb	2.400E-04	3 Mass Balance	0.84	3.68	0	0.84	3.68	
022	065	Glass Furnace	HAPs	3500 lb	1.00E-05	3 Mass Balance	0.000004	0.000017		0.000004	0.000017	
024	067	Fritting System	PM	3500 lb	2.643E-04	4 MN Rule 7011.0715	0.92	4.05	0	0.92	4.05	0.014 gr/dscf, permit limit
024	067	Fritting System	PM10	3500 lb	2.643E-04	4 MN Rule 7011.0715	0.92	4.05	0	0.92	4.05	0.014 gr/dscf, permit limit
024	067	Fritting System	PM2.5	3500 lb	1.000E-04	4 AP-42	0.35	1.53	0	0.35	1.53	
TOTAL PM EMISSIONS								5.70			5.70	
TOTAL PM10 EMISSIONS								5.70			5.70	
TOTAL PM2.5 EMISSIONS								3.07			3.07	
TOTAL SO2 EMISSIONS								3.68			3.68	
TOTAL NOx EMISSIONS								13.03			13.03	
TOTAL HAP EMISSIONS								0.000017			0.000017	

Notes:
1 - Air flow for the current Glass Furnace is 6125 acfm (or 4400 dscfm).
2 - Air flow for the current fritting system is 7000 acfm (or 5396 dscfm).

Emission Factor References:
3 - Glass Furnace
NOx: AP-42, Table 11.15-1, Pressed and Blown Glass Melting Furnance. This furnace is electric, so there is no fuel combusted. A correction was applied to the NOx emission factor to account for the portion of NOx emission due to fuel bound nitrogen. The fuel consumption rate for a similarly sized gas fired melting furance can be estimated by 0.2 lb/ton glass produced / 21 lb/MMscf burned = 0.0009524 MMscf/ton glass produced. An average nitrogen content of natural gas of 0.46% was found in Perry's. The NO2 emissions from fuel bound nitrogen is then: 0.0009525 MMscf/ton produced * 1,000,000 scf/MMscf * (1 lbmole N2 / 385.3 scf) * (2 lbmole NO / lbmole * N2)* (30 lb NO/lbmole) = 6.82 lb/ton produced. If this emission factor is subtracted from the NOx emission factor from Table 11.15-1 of AP-42, the new emission factor is: 8.5 lb/ton - 6.8 lb/ton = 1.7 lb/ton.
CO: AP-42, Table 11.15-1, Pressed and Blown Glass Melting Furnance. This furnace is electric, so there is no fuel combusted. It was assumed the CO emissions from glass melting are solely due to fuel combustion. So there are no CO emissions from the furnace.
VOC: Unlike some glass production facilities, this facility does not use raw materials containing VOC. The emission factor for process emissions of VOC cited in the reference is therefore not applicable
SO2: SO2 emissions are estimated using a mass balance. Based on the product emitting the highest SO2, 0.024% of SO2 in feed will be emitted.
PM, PM10: Based on permit limit of 0.01 gr/dscf.
PM2.5: Based on AP-42, Table 11.15-1, Pressed and Blown Glass Melting Furnance for baghouse control.
HAP: Weight fraction of 1E-05 of PM emissions equal HAP, based on MSDS.
Control: Control efficiency of baghouse in 99% for PM and PM10 (capture efficiency of 100 percent and collection efficiency of 99 percent).

4 - Fritting System
VOC: AIRS, Frit Manufacturer (3-05-013-01). Unlike some glass production facilities, this facility does not use raw materials containing VOC
PM, PM10: Based on permit limit of 0.014 gr/dscf
PM2.5: Based on AP-42, Table 11.15-1, Pressed and Blown Glass Melting Furnance for baghouse control.
Control: Control efficiency of baghouse in 99% for PM and PM10 (capture efficiency of 100 percent and collection efficiency of 99 percent).

Emissions Calculations
3M Cottage Grove Specialty Additives (Bldgs 74, 101, 110)
Furnace Rebuild Project - Proposed Scenario

Unit ID	Stack ID	Unit Name	Pollutant	Maximum Rate (units/hr) units	Emission Factor (lb/units) (ref)	Emission Estimation Method	Emission Rate (lb/hr)	Uncontrolled Potential to Emit (PTE) (ton/yr)	Pollution Control Efficiency (%)	Controlled Potential to Emit (PTE) (lb/hr)	Controlled Potential to Emit (PTE) (ton/yr)	Notes
022	065	Glass Furnace	PM	4400 lb	8.571E-05	3 MN Rule 7011.0715	0.38	1.65	0	0.38	1.65	0.01 gr/dscf, permit limit
022	065	Glass Furnace	PM10	4400 lb	8.571E-05	3 MN Rule 7011.0715	0.38	1.65	0	0.38	1.65	0.01 gr/dscf, permit limit
022	065	Glass Furnace	PM2.5	4400 lb	1.000E-04	3 AP-42	0.44	1.93	0	0.44	1.93	
022	065	Glass Furnace	NOx	4400 lb	8.500E-04	3 AP-42	3.74	16.38	0	3.74	16.38	
022	065	Glass Furnace	SO2	4400 lb	2.400E-04	3 Mass Balance	1.06	4.63	0	1.06	4.63	
022	065	Glass Furnace	HAPs	4400 lb	1.00E-05	3 Mass Balance	0.000004	0.000017		0.000004	0.000017	
024	067	Fritting System	PM	4400 lb	2.102E-04	4 MN Rule 7011.0715	0.92	4.05	0	0.92	4.05	0.014 gr/dscf, permit limit
024	067	Fritting System	PM10	4400 lb	2.102E-04	4 MN Rule 7011.0715	0.92	4.05	0	0.92	4.05	0.014 gr/dscf, permit limit
024	067	Fritting System	PM2.5	4400 lb	1.000E-04	4 AP-42	0.44	1.93	0	0.44	1.93	
TOTAL PM EMISSIONS								5.70			5.70	
TOTAL PM10 EMISSIONS								5.70			5.70	
TOTAL PM2.5 EMISSIONS								3.85			3.85	
TOTAL SO2 EMISSIONS								4.63			4.63	
TOTAL NOx EMISSIONS								16.38			16.38	
TOTAL HAP EMISSIONS								0.000017			0.000017	

Notes:
2 - Air flow for the Glass Furnace will not change as part of the project (Air flow = 4400 dscfm).
2 - Air flow for the fritting system post project is 10,000 acfm (or 7708 dscfm).

Emission Factor References:
3 - Glass Furnace

NOx: AP-42, Table 11.15-1, Pressed and Blown Glass Melting Furnace. This furnace is electric, so there is no fuel combusted. A correction was applied to the NOx emission factor to account for the portion of NOx emission due to fuel bound nitrogen. The fuel consumption rate for a similarly sized gas fired melting furnace can be estimated by 0.2 lb/ton glass produced / 21 lb/MMscf burned = 0.009524 MMscf/ton glass produced. An average nitrogen content of natural gas of 0.46% was found in Perry's. The NO2 emissions from fuel bound nitrogen is then: 0.009525 MMscf/ton produced * 1,000,000 scf/MMscf * (1 lbmole N2 / 385.3 scf) * (2 lbmole NO / lbmole) * 0.46% N2 * (30 lb NO/lbmole) = 6.82 lb/ton produced. If this emission factor is subtracted from the NOx emission factor from Table 11.15-1 of AP-42, the new emission factor is: 8.5 lb/ton - 6.8 lb/ton = 1.7 lb/ton.

CO: AP-42, Table 11.15-1, Pressed and Blown Glass Melting Furnace. This furnace is electric, so there is no fuel combusted. It was assumed the CO emissions from glass melting are solely due to fuel combustion. So there are no CO emissions from the furnace.

VOC: Unlike some glass production facilities, this facility does not use raw materials containing VOC. The emission factor for process emissions of VOC cited in the reference is therefore not applicable

SO2: SO2 emissions are estimated using a mass balance. Based on the product emitting the highest SO2, 0.024% of SO2 in feed will be emitted. Please see Title V renewal

PM, PM10: Based on permit limit of 0.01 gr/dscf.

PM2.5: Based on AP-42, Table 11.15-1, Pressed and Blown Glass Melting Furnace for baghouse control.

HAP: Weight fraction of 1E-05 of PM emissions equal HAP, based on MSDS.

Control: Control efficiency of baghouse in 99% for PM and PM10 (capture efficiency of 100 percent and collection efficiency of 99 percent).

4 - Fritting System

VOC: AIRS, Frit Manufacturer (3-05-013-01). Unlike some glass production facilities, this facility does not use raw materials containing VOC

PM, PM10: Based on permit limit of 0.014 gr/dscf

PM2.5: Based on AP-42, Table 11.15-1, Pressed and Blown Glass Melting Furnace for baghouse control.

Control: Control efficiency of baghouse in 99% for PM and PM10 (capture efficiency of 100 percent and collection efficiency of 99 percent).

Emissions Calculations

3M Cottage Grove Specialty Additives (Bldgs 74, 101, 110)

Furnace Rebuild Project - Emissions Comparison

Annual Emissions (tons per year)

Pollutant	Pre Project	Post Project	Difference	PSD Modification Threshold	Above PSD Threshold?
PM	5.70	5.70	0.00	25	No
PM10	5.70	5.70	0.00	15	No
PM2.5	3.07	3.85	0.79	10	No
NOx	3.68	4.63	0.95	40	No
SO2	13.03	16.38	3.35	40	No
HAPs	0.00	0.00	0.00	10/25	No

Hourly Emissions (lb/hr)

Pollutant	Pre Project	Post Project	Difference
PM	1.30	1.30	0.00
PM10	1.30	1.30	0.00
PM2.5	0.70	0.88	0.18
NOx	0.84	1.06	0.22
SO2	2.98	3.74	0.77
HAPs	0.00	0.00	0.00

ATTACHMENT 2

CD-01 FORMS



COMPLIANCE PLAN **CD-01**

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

Subject Item: Total Facility

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	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.
2.0		CD	hdr	NAAQS/MAAQs MODELING REQUIREMENTS
3.0		S/A	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	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.
4.0		S/A	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	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.
5.0		CD	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	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.
6.0		CD	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.
7.0		CD	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. 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.
8.0		CD	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: 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.
9.0		CD	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.



COMPLIANCE PLAN **CD-01**

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

10.0		CD	hdr	EMISSION CAP LIMITS
11.0		CD	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000	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.
12.0		CD	hdr	OPERATIONAL REQUIREMENTS
13.0		CD	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 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.
14.0		CD	Minn. R. 7011.0020	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.
15.0		CD	Minn. R. 7007.0800, subp. 2; Minn. R. 7007.0800, subp. 16(J)	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.
16.0		CD	Minn. R. 7007.0800, subps. 14 and 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.
17.0		CD	Minn. R. 7019.1000, subp. 4	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.
18.0		CD	Minn. R. 7011.0150	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.
19.0		CD	Minn. R. 7030.0010 - 7030.0080	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.
20.0		CD	Minn. R. 7007.0800, subp. 9(A)	Inspections: The Permittee shall comply with the inspection procedures and requirements as found in Minn. R. 7007.0800, subp. 9(A).
21.0		CD	Minn. R. 7007.0800, subp. 16	The Permittee shall comply with the General Conditions listed in Minn. R. 7007.0800, subp. 16.
22.0		CD	hdr	PERFORMANCE TESTING
23.0		CD	Minn. R. ch. 7017	Performance Testing: Conduct all performance tests in accordance with Minn. R. ch. 7017 unless otherwise noted in Tables A or B.
24.0		CD	Minn. R. 7017.2018; Minn. R. 7017.2030, subps. 1-4, Minn. R. 7017.2035, subps. 1-2	<p>Performance Test Notifications and Submittals:</p> <p>Performance Tests are due as outlined in Tables A and B of the permit. See Table B for additional testing requirements.</p> <p>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</p> <p>The Notification, Test Plan, and Test Report may be submitted in alternative format as allowed by Minn. R. 7017.2018.</p>



COMPLIANCE PLAN **CD-01**

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

25.0		CD	Minn. R. 7017.2025, subp. 3	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.
26.0		CD	hdr	MONITORING REQUIREMENTS
27.0		CD	Minn. R. 7007.0800, subp. 4(D)	Monitoring Equipment Calibration: Annually calibrate all required monitoring equipment (any requirements applying to continuous emission monitors are listed separately in this permit).
28.0		CD	Minn. R. 7007.0800, subp. 4(D); 40 CFR Section 70.6(a)(3)(i)(C)	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.
29.0		CD	hdr	RECORDKEEPING
30.0		CD	Minn. R. 7007.0800, subp. 5(C)	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).
31.0		CD	Minn. R. 7007. 0800, subp. 5(B)	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.
32.0		CD	Minn. R. 7007. 0800, subp. 5(B); 40 CFR Section 70.4(b)(12)	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.
33.0		CD	Minn. R. 7007.1200, subp. 4	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.
34.0		CD	hdr	REPORTING and SUBMITTALS
35.0		CD	Minn. R. 7019.1000, subp. 3	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.
36.0		CD	Minn. R. 7019.1000, subp. 2	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.



COMPLIANCE PLAN **CD-01**

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

37.0		CD	Minn. R. 7019.1000, subp. 1	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.
38.0		CD	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.
39.0		S/A	Minn. R. 7007.0800, subp. 6(A)(2)	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.
40.0		CD	Minn. R. 7007.1150 - 7007.1500	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.
41.0		S/A	Minn. R. 7007.0400, subp. 2	Application for Permit Reissuance: due 180 days before expiration of Existing Permit
42.0		CD	Minn. R. 7007.1400, subp. 1(H)	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).
43.0		S/A	Minn. R. 7007.0800, subp. 6(C)	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.
44.0		CD	Minn. R. 7019.3000 - 7019.3100	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.
45.0		CD	Minn. R. 7002.0005 - 7002.0095	Emission Fees: due 60 days after receipt of an MPCA bill.



COMPLIANCE PLAN **CD-01**

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

	NC/ CA	Type	Citation	Requirement
1.0		CD	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 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.
2.0		CD	Title I Condition: To avoid classification as major source and modification under 40 CFR Section 52.21 & 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.
3.0		CD	hdr	EMISSION LIMITATIONS
4.0		LIMIT	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 Total Particulate Matter: greater than or equal to 99 percent control efficiency
5.0		LIMIT	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
6.0		LIMIT	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
7.0		CD	hdr	OPERATING REQUIREMENTS
8.0		CD	Minn. R. 7007.0800, subp. 14	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.
9.0		CD	Minn. R. 7007.0800, subps. 4, 5 and 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.
10.0		CD	hdr	See individual CE level (CE 004, 024, 025, 026, 027, 034, or 035) for required pressure drop ranges for each fabric filter.
11.0		CD	hdr	MONITORING AND RECORDKEEPING
12.0		CD	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	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.



COMPLIANCE PLAN **CD-01**

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

13.0		CD	Minn. R. 7007.0800, subp. 4 and 14	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.
14.0		CD	Minn. R. 7007.0800, subps. 2 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.
15.0		CD	40 CFR Section 64.3; Minn. R. 7017.0200	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.
16.0		CD	40 CFR Section 64.7(d); 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.
17.0		CD	40 CFR Section 64.7(b); 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.
18.0		CD	40 CFR Section 64.3; 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.
19.0		CD	40 CFR Section 64.7(e); 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.
20.0		CD	hdr	PERFORMANCE TESTS
21.0		S/A	Minn. R. 7017.2020, subp. 1	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.
22.0		S/A	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.



COMPLIANCE PLAN **CD-01**

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

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	EMISSION LIMITATIONS
2.0		LIMIT	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000	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.
3.0		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.
4.0		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.
5.0		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 SO2-emitting equipment in GP002 and insignificant activities under Minn. R. 7007.1300 are subject to this limit.
6.0		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 NOx-emitting equipment in GP002 and insignificant activities under Minn. R. 7007.1300 are subject to this limit.
7.0		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.
8.0		CD	hdr	OPERATING REQUIREMENTS
9.0		CD	Title I Condition: To avoid classification as major source and modification under 40 CFR Section 52.21 & Minn. R. 7007.3000	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.



COMPLIANCE PLAN **CD-01**

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

10.0		CD	Minn. R. 7007.0800, subp. 2	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.
11.0		CD	hdr	RECORDKEEPING REQUIREMENTS
12.0		CD	Title I Condition: To avoid classification as major source and modification under 40 CFR Section 52.21 & Minn. R. 7007.3000	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.
13.0		CD	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.
14.0		CD	Minn. R. 7007.0800, subps. 4 and 5	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.
15.0		CD	Minn. R. 7007.0800, subps. 4 and 5	<p>Calculation Records:</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>(continued below)</p>
16.0		CD	Minn. R. 7007.0800, subps. 4 and 5	<p>Calculation Records continued:</p> <p>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.</p> <p>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, SO₂, NO_x, and VOCs if actual production rates are not available.</p>



COMPLIANCE PLAN **CD-01**

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

17.0		CD	Title I Condition: To avoid classification as major source and modification under 40 CFR Section 52.21 & Minn. R. 7007.3000	<p>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.</p> <p>All changes made in accordance with Minn. R. 7007.1300 and Minn. R. 7007.1250 subp. 1A are subject to the requirements of GP002.</p>
18.0		S/A	Minn. R. 7007.0800, subp. 2	<p>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, SO₂, 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.</p>



COMPLIANCE PLAN **CD-01**

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

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	EMISSION LIMITS
2.0		LIMIT	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)	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.
3.0		LIMIT	Minn. R. 7011.0715, subp. 1(B)	Opacity: less than or equal to 20 percent opacity
4.0		CD	hdr	CONTROL EQUIPMENT REQUIREMENTS (see GP001 and CE004 for additional control equipment requirements)
5.0		CD	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	The Permittee shall operate and maintain a fabric filter that meets the requirements of GP001 at all times that EU 003 is in operation.
6.0		CD	hdr	RECORDKEEPING (see GP002 for recordkeeping requirements)



COMPLIANCE PLAN **CD-01**

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

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	EMISSION LIMITS
2.0		LIMIT	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)	Total Particulate Matter: less than or equal to 0.05 grains/dry standard cubic foot of exhaust gas.
3.0		LIMIT	Minn. R. 7011.0715, subp. 1(B)	Opacity: less than or equal to 20 percent opacity
4.0		CD	hdr	CONTROL EQUIPMENT REQUIREMENTS (see GP001 and CE034 for additional control equipment requirements)
5.0		CD	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	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.
6.0		CD	hdr	RECORDKEEPING (see GP002 for recordkeeping requirements)



COMPLIANCE PLAN **CD-01**

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

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	EMISSION LIMITS
2.0		LIMIT	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)	Total Particulate Matter: less than or equal to 0.057 grains/dry standard cubic foot of exhaust gas.
3.0		LIMIT	Minn. R. 7011.0715, subp. 1(B)	Opacity: less than or equal to 20 percent opacity
4.0		CD	hdr	CONTROL EQUIPMENT REQUIREMENTS (See GP001, CE005 and CE035 for additional control equipment requirements)
5.0		CD	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	The Permittee shall operate and maintain a fabric filter that meets the requirements of GP001 at all times EU 005 is in operation.
6.0		CD	hdr	RECORDKEEPING (see GP002 for recordkeeping requirements)



COMPLIANCE PLAN **CD-01**

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

	NC/ CA	Type	Citation	Requirement
1.0		CD	[Stage 1] Minn. R. 7007.0800, subp. 2	The Permittee is authorized to expand EU022 at any time during the life of permit 16300002-005.
2.0		CD	hdr	EMISSION LIMITS
3.0		LIMIT	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)	Total Particulate Matter: less than or equal to 0.010 grains/dry standard cubic foot of exhaust gas. Applicable during electric heating.
4.0		LIMIT	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)	PM < 10 micron: less than or equal to 0.010 grains/dry standard cubic foot of exhaust gas. Applicable during electric heating.
5.0		LIMIT	Minn. R. 7011.0715, subp. 1(B)	Opacity: less than or equal to 20 percent opacity
6.0		CD	hdr	OPERATING REQUIREMENTS
7.0		CD	Title I Condition: limit to avoid classification as a major source or major modification under 40 CFR Section 52.21 & Minn. R. 7007.3000	The Permittee shall not operate EU022 and EU023 simultaneously. EU022 represents normal production operation with electric heating.
8.0		LIMIT	[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 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.
9.0		LIMIT	[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 .
10.0		CD	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	The Permittee shall operate and maintain a fabric filter that meets the requirements of GP001 at all times EU 022 is in operation.
11.0		CD	hdr	PERFORMANCE TESTING
12.0		S/A	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 Total Particulate Matter emissions.
13.0		S/A	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.
14.0		S/A	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.



COMPLIANCE PLAN **CD-01**

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

15.0		CD	hdr	RECORDKEEPING (see GP002 for additional recordkeeping requirements)
16.0		CD	Minn. R. 7007.0800, subps. 4 and 5	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
17.0		CD	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: 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.
18.0		CD	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.
19.0		CD	hdr	CONTROL EQUIPMENT REQUIREMENTS (See GP 001 and CE 024 for further control equipment requirements)



COMPLIANCE PLAN **CD-01**

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

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	EMISSION LIMITATIONS
2.0		LIMIT	Minn. R. 7011.0610, subp. 1(A)(1)	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.
3.0		LIMIT	Minn. R. 7011.0610, subp. 1(A)(2)	Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity.
4.0		LIMIT	Minn. R. 7011.0610, subp. 2(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.
5.0		CD	hdr	OPERATING REQUIREMENTS
6.0		CD	Title I Condition: limit to avoid classification as a major source or major modification under 40 CFR Section 52.21 & Minn. R. 7007.3000	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.
7.0		LIMIT	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.
8.0		CD	Minn. R. 7005.0100, subp. 35a	Fuel type: natural gas only.
9.0		CD	hdr	RECORDKEEPING (see GP002 for additional recordkeeping requirements)
10.0		CD	Minn. R. 7007.0800, subps. 4 and 5	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
11.0		CD	Minn. R. 7007.0200; Minn. R. 7007.0800, subps. 2 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.
12.0		CD	Title I Condition: recordkeeping for limit to avoid classification as a major source under 40 CFR Section 52.21 & Minn. R. 7007.3000	Daily Recordkeeping. For each day of operation with natural gas, the Permittee shall record the total quantity of natural gas used.
13.0		CD	Minn. R. 7007.0800, subps. 4 and 5	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.



COMPLIANCE PLAN **CD-01**

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

	NC/ CA	Type	Citation	Requirement
1.0		CD	[Stage 1] Minn. R. 7007.0800, subp. 2	The Permittee is authorized to expand EU024 at any time during the life of permit 16300002-005.
2.0		CD	hdr	EMISSION LIMITS
3.0		LIMIT	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)	Total Particulate Matter: less than or equal to 0.0140 grains/dry standard cubic foot of exhaust gas.
4.0		LIMIT	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)	PM < 10 micron: less than or equal to 0.0140 grains/dry standard cubic foot of exhaust gas.
5.0		LIMIT	Minn. R. 7011.0715, subp. 1(B)	Opacity: less than or equal to 20 percent opacity
6.0		CD	hdr	OPERATING REQUIREMENTS
7.0		LIMIT	[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 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.
8.0		LIMIT	[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 .
9.0		CD	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	The Permittee shall operate and maintain a fabric filter the meets the requirements of GP001 at all times EU024 is in operation.
10.0		CD	hdr	PERFORMANCE TESTING
11.0		S/A	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 Total Particulate Matter emissions.
12.0		S/A	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.
13.0		S/A	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.
14.0		CD	hdr	RECORDKEEPING (see GP002 for additional recordkeeping requirements)



COMPLIANCE PLAN **CD-01**

Facility Name: 3M Cottage Grove Specialty Additives

Permit Number: 16300002 - 005

15.0		CD	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: 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.
16.0		CD	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.
17.0		CD	hdr	CONTROL EQUIPMENT REQUIREMENTS (See GP001 and CE025 for additional control equipment requirements)



COMPLIANCE PLAN **CD-01**

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

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	EMISSION LIMITS
2.0		LIMIT	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)	Total Particulate Matter: less than or equal to 0.016 grains/dry standard cubic foot of exhaust gas.
3.0		LIMIT	Minn. R. 7011.0715, subp. 1(B)	Opacity: less than or equal to 20 percent opacity
4.0		CD	hdr	CONTROL EQUIPMENT REQUIREMENTS (See GP001 and CE026 for additional control equipment requirements)
5.0		CD	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	The Permittee shall operate and maintain a fabric filter that meets the requirements of GP001 at all times that EU 025 is in operation.
6.0		CD	hdr	RECORDKEEPING (see GP002 for recordkeeping requirements)



COMPLIANCE PLAN **CD-01**

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

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	EMISSION LIMITS
2.0		LIMIT	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)	Total Particulate Matter: less than or equal to 0.029 grains/dry standard cubic foot of exhaust gas.
3.0		LIMIT	Minn. R. 7011.0715, subp. 1(B)	Opacity: less than or equal to 20 percent opacity
4.0		CD	Minn. R. 7017.2025, subp. 3(C)	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.
5.0		CD	Minn. R. 7007.0800. subp. 4(B)	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.
6.0		CD	hdr	CONTROL EQUIPMENT REQUIREMENTS (See GP001 and CE027 for additional control equipment requirements)
7.0		CD	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	The Permittee shall operate and maintain a fabric filter that meets the requirements of GP001 at all times that EU 026 is in operation.
8.0		CD	hdr	RECORDKEEPING (see GP002 for recordkeeping requirements)



COMPLIANCE PLAN **CD-01**

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

	NC/ CA	Type	Citation	Requirement
1.0		LIMIT	Minn. R. 7011.2300, subp. 1	Opacity: less than or equal to 20 percent opacity
2.0		LIMIT	Minn. R. 7011.2300, subp. 2	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.
3.0		CD	Minn. R. 7005.0100, subp. 35a	Fuel type: No. 2 fuel oil only.
4.0		CD	Minn. R. 7007.0200; Minn. R. 7007.0800, subps. 2 and 14	Daily Inspections: The Permittee shall check SV012 for any visible emissions once each day of operation during daylight hours.
5.0		CD	hdr	RECORDKEEPING (see GP002 for additional recordkeeping requirements)
6.0		LIMIT	Minn. R. 7007.0800, subps. 4 & 5	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
7.0		CD	Minn. R. 7007.0800, subp. 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.
8.0		CD	Minn. R. 7007.0800, subp. 5	The Permittee shall keep records of fuel type and usage on a monthly basis.
9.0		CD	Minn. R. 7007.0200; Minn. R. 7007.0800, subps. 2 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.



COMPLIANCE PLAN **CD-01**

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

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	See GP 001 for baghouse control, monitoring, recordkeeping, reporting, and other requirements.
2.0		CD	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 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.
3.0		LIMIT	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 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.</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>



COMPLIANCE PLAN **CD-01**

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

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	CE005 is being replaced by CE035. Once CE035 is in operation this unit will be retired or removed.
2.0		CD	hdr	See GP 001 for baghouse control, monitoring, recordkeeping, reporting, and other requirements.
3.0		CD	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 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.
4.0		LIMIT	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 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.</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>



COMPLIANCE PLAN **CD-01**

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

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	See GP 001 for baghouse control, monitoring, recordkeeping, reporting, and other requirements.
2.0		CD	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 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.
3.0		LIMIT	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 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.</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>



COMPLIANCE PLAN **CD-01**

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

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	See GP 001 for baghouse control, monitoring, recordkeeping, reporting, and other requirements.
2.0		CD	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 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.
3.0		LIMIT	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 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.</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>



COMPLIANCE PLAN **CD-01**

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

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	See GP 001 for baghouse control, monitoring, recordkeeping, reporting, and other requirements.
2.0		CD	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 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.
3.0		LIMIT	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 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.</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>



COMPLIANCE PLAN **CD-01**

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

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	See GP 001 for baghouse control, monitoring, recordkeeping, reporting, and other requirements.
2.0		CD	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 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.
3.0		LIMIT	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 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.</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>



COMPLIANCE PLAN **CD-01**

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)

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	See GP 001 for baghouse control, monitoring, recordkeeping, reporting, and other requirements.
2.0		CD	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 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.
3.0		LIMIT	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>



COMPLIANCE PLAN **CD-01**

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)

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	See GP 001 for baghouse control, monitoring, recordkeeping, reporting, and other requirements.
2.0		CD	Title I Condition: To avoid classification as a major source and modification under 40 CFR Section 52.21 and Minn. R. 7007.3000	<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>
3.0		LIMIT	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>
4.0		S/A	Minn. R. 7007.0800, subp. 16(L)	Notification of the Actual Date of Initial Startup: due 15 days after Initial Startup of CE035.

ATTACHMENT 3
POINTS CALCULATOR

Points Calculator

1) AQ Facility ID No.: 16300002
 2) Facility Name: 3M Cottage Grove - Specialty Additives
 3) Small business? y/n? n
 4) DQ Numbers (including all rolled) : 4125
 5) Date of each Application Received: Sep. 20, 2012
 6) Final Permit No. 16300002-005
 7) Permit Staff Cindy Schafer
 8) "Work completed" in which .xls file (i.e. unit 2b, unit 1a, biofuels)?

Total Points	25
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<u>Application Type</u>	<u>DQ No.</u>	<u>Qty.</u>	<u>Points</u>	<u>Total Points</u>	<u>Details</u>
Administrative Amendment			1	0	
Minor Amendment			4	0	
Applicability Request			10	0	
Moderate Amendment			15	0	
Major Amendment	4125	1	25	25	
Individual State Permit (not reissuance)			50	0	
Individual Part 70 Permit (not reissuance)			75	0	

Additional Points

Modeling Review			15	0	
BACT Review			15	0	
LAER Review			15	0	
CAIR/Part 75 CEM analysis			10	0	
NSPS Review			10	0	
NESHAP Review			10	0	
Case-by-case MACT Review			20	0	
Netting			10	0	
Limits to remain below threshold			10	0	
Plantwide Applicability Limit (PAL)			20	0	
AERA review			15	0	
Variance request under 7000.7000			35	0	
Confidentiality request under 7000.1300			2	0	
<u>EAW review</u>					
Part 4410.4300, subparts 18, item A; and 29			15	0	
Part 4410.4300, subparts 8, items A & B; 10, items A to C; 16, items A & D; 17, items A to C & E to G; and 18, items B & C			35	0	
Part 4410.4300, subparts 4; 5 items A & B; 13; 15; 16, items B & C; and 17 item D			70	0	
			Add'l Points	0	

NOTES:

ATTACHMENT 4

CAM PLAN

**Compliance Assurance Monitoring (CAM) Plan
Operation of Fabric Filters for Particulate Control
Total Facility Title V Operating Permit
AQ Facility ID No.: 16300002**

**3M Company
3M Cottage Grove Specialty Additives, MN
3M Cottage Grove Materials Resource Division
February 2013**

CAM Applicability Determination:

The following criteria were evaluated to determine what sources are subject to CAM (40 CFR Part 64).

- The facility is a major source facility and is required to have Title V permit.
- All sources subject to CAM have an emission limitation or standard for the applicable regulated air pollutant that is NOT exempt.
- All sources use an add-on control device to achieve compliance with an emission limitation or standard.
- All sources have potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than major source threshold levels.
- All sources are NOT exempt backup utility power emission units that are municipally owned.

CAM Monitoring Approach

The following control equipment (CE) or baghouses are used to control particulate emissions from major sources for particulate emissions: CE 004, CE 005, CE 024, CE 025, CE 026, CE 027, & CE 034. As a part of this monitoring approach, each baghouse is monitored by overall baghouse pressure drop readings. The frequency and limits of the monitoring mechanism for all sources are explained below.

General Criteria:

Compliance Indicators for Particulate Matter Emission Limitations

1. Pressure drop (inches of water)

Indicator Ranges

Indicator - The measurement devices used to monitor and measure pressure drop across the baghouses. The facility has set the indicator ranges in inches of water for each baghouse. If the pressure drop is outside of the acceptable ranges listed below, corrective action and preventive maintenance is performed on the baghouse, in accordance with the facility's on-site baghouse standard operating procedures and baghouse preventative maintenance plans.

Acceptable Baghouse or Control Equipment (CE) Pressure Drop Ranges

CE No.	EU	Overall Pressure Drop (in wc)	
		Min	Max
004	EU-003 Bubble Maker # 18	1	30
005	EU-005 Bubble Maker # 21	1	30
035	EU-005 Bubble Maker # 21	1	20
024	EU-022 Glass Furnace	1	10
025	EU-024 Fritting System	1	10
026	EU-025 Impact Mill	1	10
027	EU-026 Agglomerator	1	10
034	EU-004 Bubble Maker # 20	1	20

A 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 semi-annual deviation reports. After bag replacement, the pressure drop must return to at least the minimum within 14 working days, or corrective actions must be taken. The one exception is for CE 027, the baghouse for EU 026. For this baghouse, the pressure drop must return to at least the minimum within 21 working days or corrective action must be taken. The justification for this longer time period is that this is a secondary baghouse is receives a lower loading rate than the other baghouses, and therefore it takes a longer time period to build up the pressure drop.

Performance Criteria:

Specifications for Obtaining Representative Data

Representative data

Data is collected at any time during the shift that the process is running. By not specifying a time or triggering event data collected is assumed to be random and reasonably represents the operation of the equipment.

Verification Procedures

Pressure Drop:

Once a pressure drop reading is taken and the reading is determined to be out of the range, Maintenance will be directed to verify that the reading is accurate using their electronic test

equipment. Once confirmation that the pressure drop is out of range, the emission unit (EU) served by this baghouse and the baghouse itself are immediately shut down, an incident report is created, and corrective action is initiated. Following the corrective action, The EU and its baghouse are brought back on line and pressure drops are taken to demonstrate that the CE is back in proper operation.

In addition, monthly, a qualified employee shall perform a records review. The recorded data is checked for omissions or excursions of allowable ranges. This information is then reviewed by the environmental engineer for any follow-up action.

Quality Assurance and Quality Control (QA/QC) Practices

Pressure Drop:

Routine preventative maintenance is completed quarterly in accordance with the facility's standard operating procedures and preventative maintenance plans, which includes an inspection of the baghouse systems to ensure proper operation of the equipment and that there are no obstructions in the pressure sensor lines going to the measurement devices.

Monitoring Frequency

Pressure drop readings are conducted at least once each day of operation by employees operating emission units. A continuous data acquisition and collection system generates records of pressure drop values in report form every two hours each day of operation. Records of the pressure drop readings are kept at the facility.

Rationale and Justification

Indicators and Monitoring Approach

Pressure drop - Indicator

Pressure drop was selected as one of the performance indicators because it is indicative of good operation and maintenance of a baghouse. When the baghouse is operating properly, it is pulsing between proper filter cleaning set points. Detecting pressure drop reading above or below the permitted or specified range is an indicator of potential operational problems. Instrument set points are set in between the permitted range to allow for corrective action and maintenance prior to exceeding the permitted ranges. Once repair maintenance is completed and the operation has restarted, a second pressure drop reading is taken to confirm compliance with the set point ranges.

References/Information Sources

1. CAM Technical Guidance Document Review Draft (9/12/97)-EPA