STATEMENT OF BASIS

For the issuance of Draft Air Permit # 0039-AOP-R12 AFIN: 60-00003

1. PERMITTING AUTHORITY:

Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, Arkansas 72118-5317

2. APPLICANT:

3M Company (3M Industrial Mineral Products Division)
Highway 365 and Walters Drive
Little Rock, Arkansas 72216

3. PERMIT WRITER:

Christopher Riley

4. NAICS DESCRIPTION AND CODE:

NAICS Description: Clay and Ceramic and Refractory Minerals Mining
NAICS Code: 212325

5. SUBMITTALS:

Date of Application	Type of Application (New, Renewal, Modification, Deminimis/Minor Mod, or Administrative Amendment)	Short Description of Any Changes That Would Be Considered New or Modified Emissions
10/19/2011	Renewal	None - Change in emission factors for existing sources only
7/3/12	Minor Mod + Mod	Replace SN-115 and 154 (No. 1 and 2 Cooler Scrubber)
6/20/2013	Minor Mod	Replace SN-155 (No. 3 Cooler Scrubber)

6. REVIEWER'S NOTES:

3M Company (3M Industrial Mineral Products Division) (60-00003) operates a facility located at Highway 365 and Walters Drive, Little Rock, AR 72216. This facility has submitted a Title V permit renewal with modifications. The modifications are:

- Replacement of SN-115 (No. 1 Cooler Scrubber), SN-154 (No. 2 Cooler Scrubber), and SN-155 (No. 3 Cooler Scrubber)
- Removing SN-1(Tertiary Crusher Baghouse), SN-02 (Transfer Tower), 24 (Alternate Truck Loadout), 60 (Parallel Crusher), 61 (No. 45 Conveyor), 62 (No. 46 Conveyor), 109 (JB Conveyor), 110 (No. 7 Filler Tank [BH]), 120 (Sodium Silicate Bin), 125 (Waste conveyor), 130 (Sodium Silicate Plant Boiler), 150 (IC Circuit – Silo No. 1 [BH]), 151 (IC Circuit – Silo No. 2 [BH]), 152 (IC Circuit – Silo No. 3 [BH]), 176 (Conveyor No. 31A [Silicate Plant]), 185 (Pugmill), 191 (Bucket Elv. No. 27 [Silicate Plt.]), 304 (Traincar Unloading [Silica]), 305 (Truck Loading at Coloring Pugmill), and 312 (Truck Loading Color Batch Mixer) from the permit
- Addition of SN-444 (Gasoline tank [arch] 550 gal) and SN-445 (Gasoline tank [college] 270 gal) as well as NESHAP 6C conditions
- Updated Emission Factors and Calculations
  Emission changes this revision: +81.28 tpy Total PM, +17.75 tpy PM_{10}, -53.4 tpy SO_2, +0.33 tpy VOC, +187.2 tpy CO, -62.5 tpy NO_X, -0.082 tpy Lead, +1.32 tpy Chromium, +0.92 Manganese, -0.147 tpy Cobalt, -0.008 tpy Arsenic, -0.008tpy Cadmium, -0.009 tpy Beryllium, -5.067 tpy Toluene, +0.0006 tpy Antimony, +0.0024 tpy Benzene, +0.0014tpy Dichlorobenzene, +0.085 tpy Formaldehyde, +2.06 tpy Hexane, +0.0009 Mercury, +0.0071 tpy Nickel, +0.049 tpy POM, and +0.0005 tpy Selenium

7. COMPLIANCE STATUS:

The following summarizes the current compliance of the facility including active/pending enforcement actions and recent compliance activities and issues.

No violations as of most recent inspection (July, 2014)

8. PSD APPLICABILITY:

a) Did the facility undergo PSD review in this permit (i.e., BACT, Modeling, etc.)? N

b) Is the facility categorized as a major source for PSD? Y

- *Single pollutant ≥ 100 tpy and on the list of 28 or single pollutant ≥ 250 tpy and not on list*

If yes, explain why this permit modification is not PSD.
Emissions increases do not exceed levels for PSD major modification

9. SOURCE AND POLLUTANT SPECIFIC REGULATORY APPLICABILITY:

Source	Pollutant	Regulation (NSPS, NESHAP or PSD)
SN-444 and SN-445	N/A	NESHAP 6C

10. EMISSION CHANGES AND FEE CALCULATION:

See emission change and fee calculation spreadsheet in Appendix A.

11. AMBIENT AIR EVALUATIONS:

a) Reserved.

b) Non-Criteria Pollutants:
The non-criteria pollutants listed below were evaluated. Based on Department procedures for review of non-criteria pollutants, emissions of all other non-criteria pollutants are below thresholds of concern.

1st Tier Screening (PAER)

Estimated hourly emissions from the following sources were compared to the Presumptively Acceptable Emission Rate (PAER) for each compound. The Department has deemed the PAER to be the product, in lb/hr, of 0.11 and the Threshold Limit Value (mg/m^3), as listed by the American Conference of Governmental Industrial Hygienists (ACGIH).

Pollutant	TLV (mg/m^3)	PAER (lb/hr) = 0.11 × TLV	Proposed lb/hr	Pass?
Antimony	0.5	0.055	0.0001387	Y
Arsenic	0.01	0.0011	0.000463	Y
Beryllium	0.01	0.0011	0.0001977	Y
Cadmium	0.01	0.0011	0.0004	Y
Chromium	0.5	0.055	0.3904	N
Cobalt	0.02	0.0022	0.01875	N
Lead	0.05	0.055	0.00405	Y
Manganese	0.2	0.022	0.0145	Y
Mercury	0.01	0.0011	0.000198	Y
POM	0.2	0.022	0.011326	Y
Selenium	0.2	0.022	0.0001044	Y

2nd Tier Screening (PAIL)

AERMOD air dispersion modeling was performed on the estimated hourly emissions from the following sources, in order to predict ambient concentrations beyond the property boundary. The Presumptively Acceptable Impact Level (PAIL) for each compound has been deemed by the Department to be one one-hundredth of the Threshold Limit Value as listed by the ACGIH.

Pollutant	PAIL ($\mu g/m^3$) = 1/100 of Threshold Limit Value	Modeled Concentration ($\mu g/m^3$)	Pass?
Chromium*	5	2.5	Y
Cobalt*	0.2	0.09	Y

*Emissions listed in the previous table for all pollutants have either not changed or decreased in this modification. Past modeling results are displayed in the tables.

c) H_2S Modeling:

A.C.A. §8-3-103 requires hydrogen sulfide emissions to meet specific ambient standards. Many sources are exempt from this regulation, refer to the Arkansas Code for details.

Is the facility exempt from the H_2S Standards N/A
If exempt, explain: No H_2S emitted

12. CALCULATIONS:

Operational flexibility is maintained at the Arch Street quarry by overestimating some emissions from the stone processing operations. Emission rates from all equipment are calculated at maximum equipment capacities assuming that they are only controlled with wet suppression. Emissions for the baghouse control device, which is frequently used, were also estimated. This allows for numerous possibilities of equipment configuration. Emissions at Arch Street are dependent on a limited annual throughput.

College Station emissions are based on continuous annual operation at equipment rated maximum capacity except emissions that result from fuel oil combustion at the dryers and kilns. These sources may use natural gas year-round but only a limited annual amount of fuel oil is permitted. The tons per year values listed for these sources in this permit are the sum of the potential natural gas emissions and the limited fuel oil emissions. The lb/hr emissions listed are the worst case of either oil or gas.

Another variable operating scenario at the College Station plant involves the transport of material from the pugmills in the crushing and screening area to various stockpiles. The two alternatives are truck transport and a conveyerized transport system. Emissions have

been estimated both ways and are double counted in this permit to provide maximum flexibility.

Some permit emission rates are higher than the emission rates if calculated using the current AP-42 emission factors. This is because 3-M requested to be permitted at rates listed in previous permits which are based on older factors.

All HAPs are calculated as a weight fraction of particulate matter. Weight fractions for the Anaturally occurring@ HAPs were determined from independent testing done on dust collected from various points at the 3M facility. See application information for specific test results. HAP weight fractions from the pigment usage are determined by calculating the pigment HAP fractions resulting in the finished product. This is done by applying the amount of HAPs that are in a specific amount of pigment to the amount of product that the amount of pigment will color. It is assumed that the dust resulting at and down stream from the coloring area will contain the same HAP weight fraction as the colored product. Compliance mechanisms are in place to verify the factors used for pigment HAP emission rates. The calculation attachment includes the HAP weight fractions used to determine naturally occurring HAP emissions. Those weight fractions were determined from independent testing.

Emissions from SN-108, SN-111, SN-112, SN-113, and SN-116 are from EPA AP-42, Section 1.3, Table 1.3-1. Emissions from SN-101 thru SN-106, SN-124, SN-153, SN-156, SN-157, SN-215, SN-216, FS-312, and FS-313 are from EPA AP-42, Chapter 11.19.2. Emissions from FS-308 are from EPA AP-42, Section 13.2.4, Table 13.2.4-1. HAPs emissions calculations from these sources when combusting used oil are based on the testing.

Emissions from SN-115, SN-154, and SN-155 slate oil and adhesion promoter were historically assumed to be insignificant and were previously not quantified. VOC and HAP emissions were based on MSDS information, EPA Method 24 analyses, and engineering tests. The calculations included a 20 % safety factor. The emissions are based on worse case of the two processes (existing and new with DREW) and limited to a combined total tpy for VOC (38.0 tpy) and methanol (9.5 tpy).

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
9		PM/PM_{10}	Wet Suppression	80%	
10		PM/PM_{10}	Wet Suppression	80%	
20		PM/PM_{10}	Wet Suppression	80%	
28		PM/PM_{10}	Wet Suppression	80%	
101		PM/PM_{10}	Baghouse	99.9%/99.5%	

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
102		PM/PM_{10}	Baghouse	99.9%/99.5%	
103		PM/PM_{10}	Baghouse	99.9%/99.5%	
104		PM/PM_{10}	Baghouse	99.9%/99.5%	
105		PM/PM_{10}	Baghouse	99.9%/99.5%	
106		PM/PM_{10}	Baghouse	99.9%/99.5%	
108		PM/PM_{10}	Baghouse	99.9%/99.5%	
111		PM/PM_{10}	Baghouse	99.9%/99.5%	
112		PM/PM_{10}	Baghouse	99.9%/99.5%	
113		PM/PM_{10}	Baghouse	99.9%/99.5%	
114		PM/PM_{10}	Scrubber	98%	
115		PM/PM_{10}	Scrubber	98%	
116		PM/PM_{10}	Baghouse	99.9%/99.5%	
117		PM/PM_{10}	Baghouse	99.9%/99.5%	
118		PM/PM_{10}	Baghouse	99.9%/99.5%	
119		PM/PM_{10}	Baghouse	99.9%/99.5%	
124		PM/PM_{10}	Baghouse	99.9%/99.5%	
128		PM/PM_{10}	Scrubber	98%	
129		PM/PM_{10}	Scrubber	98%	
153		PM/PM_{10}	Baghouse	99.9%/99.5%	
154		PM/PM_{10}	Scrubber	98%	
155		PM/PM_{10}	Scrubber	98%	
211		PM/PM_{10}	Baghouse	99.9%/99.5%	
214		PM/PM_{10}	Baghouse	99.9%/99.5%	
311		PM/PM_{10}	Baghouse	99.9%/99.5%	

13. TESTING REQUIREMENTS:

The permit requires testing of the following sources.

SN	Pollutants	Test Method	Test Interval	Justification
N/A				

14. MONITORING OR CEMS:

The permittee must monitor the following parameters with CEMS or other monitoring equipment (temperature, pressure differential, etc.)

SN	Parameter or Pollutant to be Monitored	Method (CEM, Pressure Gauge, etc.)	Frequency	Report (Y/N)
N/A				

15. RECORDKEEPING REQUIREMENTS:

The following are items (such as throughput, fuel usage, VOC content, etc.) that must be tracked and recorded.

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
01-58	Arch Street throughput	3 MM tons/yr	monthly	Y
108, 111-113, 116	diesel fuel/used oil	2.5 MM gal/yr combined	monthly	Y
108, 111-113, 116	diesel sulfur content used oil sulfur content HAPs constituent	0.3% by weight 0.33% by weight See Specific Condition #33	per delivery	Y

SN	Recorded Item	Permit Limit		Frequency	Report (Y/N)
pigment application and subsequent sources	record of product labels, MSDS sheets, analysis of heavy metal content in product, or calculated content based on composition of pigments used by the facility	lead compounds	0.024 lb/ton (.0012% by weight)	per pigment material change	Y
		chromium compounds	6.5 lb/ton (0.325% by weight)		
		manganese compounds	0.3 lb/ton (0.015% by weight)		
		cobalt compounds	4 lb/ton (0.2 % by weight)		
115, 154, 155	scrubber liquid flow	70 GPM each		Daily	N

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
	Annual bubbled limits	VOC – 38.0 tpy Methanol – 9.5 tpy	Monthly	N
	Slate oil, Adhesion promoters and DREW composition limits. Records of MSDS sheets, product labels, EPA Method 24 analyses, engineering tests, or calculations using Department approved methodology	Methanol – 1.39 lb/gal (16.14% by weight) Toluene – 0.02 lb/gal (0.24% by weight)	Per material change	N
114, 128, 129	scrubber liquid flow	100 GPM each	Daily	N
444, 445	Monthly Throughput	10,000 Gallons/Month	Monthly	N
101-106,108,111-113,116-119,124,153,211,214,311	Opacity	5%	weekly	N
07,09,115,154,155,114,128,129,167,168,171,172,184, 212,213,216		20%		

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
03,156,157,175,183,215,310		40%		
303,307,308		5%	Once per two weeks	N

16. OPACITY:

SN	Opacity	Justification for limit	Compliance Mechanism
all sources (excluding baghouses)	20/40%	dept. guidance for post/pre 1972 sources	wet suppression
baghouses	5%/20% for baghouses that smoke	dept. guidance	recordkeeping, observation schedule

17. DELETED CONDITIONS:

Former SC	Justification for removal
N/A	

18. GROUP A INSIGNIFICANT ACTIVITIES:

Source Name	Group A Category	Emissions (tpy)						
		PM/PM_{10}	SO_2	VOC	CO	NO_x	HAPs	
							Single	Total
12,000 Gallon Diesel Tank (College Station)	A-13			0.072				
20,000 Gallon Oil Tank (College Station)	A-13			0.0023				
20,000	A-13			0.0023				

Source Name	Group A Category	Emissions (tpy)						
		PM/PM_{10}	SO_2	VOC	CO	NO_x	HAPs	
							Single	Total
Gallon Oil Tank (College Station)								

19. VOIDED, SUPERSEDED, OR SUBSUMED PERMITS:

List all active permits voided/superseded/subsumed by the issuance of this permit.

Permit #
0039-AOP-R11

APPENDIX A – EMISSION CHANGES AND FEE CALCULATION

Fee Calculation for Major Source

Revised 08-25-14

Facility Name:
Permit Number:
AFIN:

$/ton factor	23.89	Annual Chargeable Emissions (tpy)	692.93
Permit Type	Modification	Permit Fee $	1000

Minor Modification Fee $	500
Minimum Modification Fee $	1000
Renewal with Minor Modification $	500
Check if Facility Holds an Active Minor Source or Minor Source General Permit	☐
If Hold Active Permit, Amt of Last Annual Air Permit Invoice $	0
Total Permit Fee Chargeable Emissions (tpy)	-34.29
Initial Title V Permit Fee Chargeable Emissions (tpy)	

HAPs not included in VOC or PM: *Chlorine, Hydrazine, HCl, HF, Methyl Chloroform, Methylene Chloride, Phosphine, Tetrachloroethylene, Titanium Tetrachloride*

Air Contaminants: *All air contaminants are chargeable unless they are included in other totals (e.g., H2SO4 in condensible PM, H2S in TRS, etc.)*

Pollutant (tpy)	Check if Chargeable Emission	Old Permit	New Permit	Change in Emissions	Permit Fee Chargeable Emissions	Annual Chargeable Emissions
PM		499.12	580.4	81.28	81.28	580.4
PM_{10}		328.45	346.2	17.75		
SO_2		61.1	7.7	-53.4	-53.4	7.7
VOC		44.2	44.53	0.33	0.33	44.53
CO		143.2	330.4	187.2		
NO_X		122.8	60.3	-62.5	-62.5	60.3
Lead	☐	0.1	0.018	-0.082		
Chromium	☐	1.29	2.61	1.32		

Pollutant (tpy)	Check if Chargeable Emission	Old Permit	New Permit	Change in Emissions	Permit Fee Chargeable Emissions	Annual Chargeable Emissions
Manganese	☐	0.06	0.98	0.92		
Cobalt	☐	0.23	0.083	-0.147		
Arsenic	☐	0.01	0.002	-0.008		
Cadmium	☐	0.01	0.002	-0.008		
Beryllium	☐	0.01	0.001	-0.009		
Methanol	☐	9.5	9.5	0		
Toluene	☐	5.07	0.0039	-5.0661		
Antimony	☐	0	0.0006	0.0006		
Benzene	☐	0	0.0024	0.0024		
Dichlorobenzene	☐	0	0.0014	0.0014		
Formaldehyde	☐	0	0.085	0.085		
Hexane	☐	0	2.06	2.06		
Mercury	☐	0	0.0009	0.0009		
Nickel	☐	0	0.0071	0.0071		
POM	☐	0	0.049	0.049		
Selenium	☐	0	0.0005	0.0005		
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