STATEMENT OF BASIS

For the issuance of Draft Air Permit # 0039-AOP-R11 AFIN: 60-00003

1. PERMITTING AUTHORITY:

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

2. APPLICANT:

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

3. PERMIT WRITER:

Andrea Sandage

4. PROCESS DESCRIPTION AND NAICS CODE:

NAICS Description: Ground or Treated Mineral and Earth Manufacturing
NAICS Code: 327992

5. SUBMITTALS:

11/12/2010 11/18/2010 1/26/2011

6. REVIEWER'S NOTES:

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 modification to increase the permitted emission rates for the Waste & Raw Granule Baghouse (SN-153). The following corrections were included to reflect the current facility operating process. These changes were included in previous applications but are not reflected in the permit. Removed SN-109 and SN-110. Removed SN-121 through SN-123 and SN-131 through SN-135 since emissions were rerouted to SN-115, SN-154, and SN-155. SN-116 and SN-195 corrected emissions typo. SN-199 through SN-210 changed emission factors. The permitted emission decreases are 177.0 tpy of PM, 114.8 tpy of PM_{10} and the increases are 0.3 tpy VOC, 3.7 tpy CO, and 4.4 tpy NO_x.

7. COMPLIANCE STATUS:

Stack testing was conducted on July 20-22, 2010 with the following results:

Source	Description	Test Date	Pollutant	Test Results (lbs/hr)	Test Results (tons/yr)	Permit Limit (tons/yr)	Status
SN-104	(C&S Line 3 Baghouse)	7/22/2010	PM PM_{10}	0.66 0.40	2.9 1.8	30.3 10.6	Pass Pass
SN-105	Filter Screen Baghouse	7/20/2010 7/21/2010	PM_{10}	0.09	0.4	0.5	Pass
SN-124	Coloring Feed End Baghouse	7/21/2010	PM_{10}	0.08	0.35	0.4	Pass
SN-153	**Waste & Raw Granule Baghouse**	**7/20/2010**	**PM_{10}**	**0.16**	**0.7**	**0.4**	**Fail**

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 not PSD?
The net emissions increase does not exceed the significance level.

9. SOURCE AND POLLUTANT SPECIFIC REGULATORY APPLICABILITY:

Source	Pollutant	Regulation (NSPS, NESHAP or PSD)
N/A		

10. EMISSION CHANGES AND FEE CALCULATION:

See emission change and fee calculation spreadsheet in Appendix A.

11. MODELING:

Criteria Pollutants - PM_{10} - 24-hr 6th high - 2005 - 2009 MET data – modeled 5 year

Pollutant	Emission Rate (lb/hr)	NAAQS Standard ($\mu g/m^3$)	Averaging Time	Modeled Concentration ($\mu g/m^3$)	Background Values NLR 2009 ($\mu g/m^3$)	Total Highest Concentration ($\mu g/m^3$)	% of NAAQS
PM_{10}	89.04	150	24-Hour	114.09	30	144.09	96.1

Emissions listed in the following table for all pollutants have not changed in recent past modifications (CO, NO_x, and Pb modeled for R5 - March 2006) Therefore, it is not necessary to update modeling results for these pollutants at this time. Past modeling results are displayed in the table.

Pollutant	Emission Rate (lb/hr)	NAAQS Standard ($\mu g/m^3$)	Averaging Time	Highest Concentration ($\mu g/m^3$)	% of NAAQS
CO	73.9	10,000	8-Hour	1890	18%
NO_x	48.1	40,000	1-Hour	7393	18%
		100	Annual	48.5	48%
Pb	0.64	0.15	Calendar quarter	0.76*	50%*

*lead requires calendar quarter averaging, the more conservative 24-hour average was used here. Therefore, modeling was done without building downwash and background.

Non-Criteria Pollutants: No change

Antimony compounds are determined to be permitted at deMinimis levels:

0.00009 lbs per hour * 4.38 = 0.0004 < 0.5 the RT therefore deMinimis

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?
Chromium*	0.5	0.0055	0.3904	N
Arsenic*	0.01	0.0011	0.0092	N
Beryllium*	0.01	0.0011	0.00004	Y
Cadmium*	0.01	0.0011	0.0095	N
Manganese*	0.2	0.022	0.0145	Y
Cobalt*	0.02	0.0022	0.0540	N
PCB*	0.5	0.55	0.0370	Y
Methanol	262.09	28.83	8.16	Y

Pollutant	TLV (mg/m^3)	PAER (lb/hr) = 0.11 × TLV	Proposed lb/hr	Pass?
Toluene	75.36	8.29	1.17	Y

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

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
Arsenic*	0.1	0.01	Y
Cadmium*	0.1	0.01	Y

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

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 that may or may not include the Tertiary Crusher Baghouse (SN-01). 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 "naturally 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).

13. TESTING REQUIREMENTS: no change

The permit requires testing of the following sources.

SN	Pollutants	Test Method	Test Interval	Justification
101-106, 108, 114, 124, 128, 129 and 153	PM	5	Initial	Department Guidance
101-106, 108, 114, 124, 128, 129 and 153	PM_{10}	201A or 5	Initial	Department Guidance
214	PM	5 and 202	Initial	Department Guidance
214	PM_{10}	201A and 202 or 5 and 202	Initial	Department Guidance

14. MONITORING OR CEMS no change

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: no change

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
01,101-108,110-119,125,128,129, 153, 214, 311	baghouse opacity	5%	weekly	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
	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

16. OPACITY: no change

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	daily recordkeeping, observation schedule

17. DELETED CONDITIONS:

Former SC	Justification for removal
N/A	

18. GROUP A INSIGNIFICANT ACTIVITIES: no change

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

19. VOIDED, SUPERSEDED, OR SUBSUMED PERMITS:

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

Permit #
0039-AOP-R10

20. CONCURRENCE BY:

The following supervisor concurs with the permitting decision.

Paula Parker, P.E.

APPENDIX A – EMISSION CHANGES AND FEE CALCULATION

Fee Calculation for Major Source

Revised 12-15-10

Facility Name: 3M Industrial Mineral Products Division
Permit Number: 0039-AOP-R11
AFIN: 60-00003

$/ton factor	22.07	Annual Chargeable Emissions (tpy)	727.39492
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)	-172.3
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	☑	676.2	499.2	-177	-177	499.2
PM_{10}	☐	443.3	328.5	-114.8		
SO_2	☑	61.1	61.1	0	0	61.1
VOC	☑	43.9	44.2	0.3	0.3	44.2
CO	☐	139.5	143.2	3.7		
NO_X	☑	118.4	122.8	4.4	4.4	122.8
Lead	☑	0.09492	0.09492	0	0	0.09492
Arsenic*	☐	0.0062	0.0062	0		
Beryllium*	☐	0.0002	0.0002	0		
Cadmium*	☐	0.0064	0.0064	0		
Chromium*	☐	1.3675	1.3675	0		
Cobalt*	☐	0.2349	0.2349	0		
Manganese*	☐	0.0629	0.0629	0		
PCB*	☐	0.0253	0.0253	0		
Methanol	☐	9.5	9.5	0		
Toluene	☐	5.07	5.07	0		