STATEMENT OF BASIS

For the issuance of Air Permit # 0039-AOP-R18 AFIN: 60-00003

1. PERMITTING AUTHORITY:

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

2. APPLICANT:

3M Company— 3M Industrial Mineral Products Division
3110 Walters Drive
Little Rock, Arkansas 72216

3. PERMIT WRITER:

Alexander Sudibjo

4. NAICS DESCRIPTION AND CODE:

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

5. ALL SUBMITTALS:

The following is a list of ALL permit applications included in this permit revision.

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
9/14/2022	Modification	N/A

6. REVIEWER'S NOTES:

With this permit modification, the facility is making the following changes:

- Update the PM, PM_{10}, VOC, methanol, toluene, and vinyl acetate emission limits for the scrubbers (SN-115, 154, & 155). The new emissions are based on 90 tons per hour throughput and current stack testing data and Safety Data Sheets.
- Update the PM and PM_{10} emission limits for the Overburden Removal (SN-50) to correct for a typographical error made during past emission calculations. Previous emission limits were calculated with an emission factor that is an order of magnitude smaller than the correct factor. Throughput at the source has not changed since initial operation in 1947.

- Add two existing stockpiles (SN-451 & 452) that were not included in the permit.
- Retire the Crusher (SN-03) and Crusher Surge Bin (SN-04). The equipment are no longer in use but remain onsite.
- Remove the No. 3 Conveyor (SN-14), A.C. Crusher Surge Bin (SN-16), and Automated Mixing System (SN-311) from the permit. The equipment have been removed from the facility.
- Add a new tube conveyor and loadout chute as A-13 insignificant activities and a 100 gallon kerosene tank as an A-2 insignificant activity.
- Remove opacity requirements for two screens (SN-30 & 32) as they are either inside or underground.

The facility's permitted annual emissions are increasing by 13.69 tpy PM and 10.87 tpy PM_{10}. The facility's permitted annual emissions are decreasing by 1.83 tpy toluene and 5.24 tpy vinyl acetate.

The facility also requested to change the opacity reading requirement for baghouses subject to CAM (SN-108, 111, 112, 113, 116, 211, and 214) from daily to weekly and remove the opacity observation requirements for baghouses not subject to CAM (SN-101-106, 117-119, 124, and 153). These changes are not included in the permit because the facility did not provide justification for changing the CAM and alternate compliance method for meeting the opacity limits.

7. COMPLIANCE STATUS:

As of September 14, 2022, there are no compliance issues with the facility. ECHO (https://echo.epa.gov/detailed-facility-report?fid=110040995199&ej_type=EJ) shows no violation identified as of April 10, 2023.

8. PSD/GHG APPLICABILITY:

a) Did the facility undergo PSD review in this permit (i.e., BACT, Modeling, etc.)? N
If yes, were GHG emission increases significant?

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 for 8(b), explain why this permit modification is not PSD. The increases from this modification is below the significant rates.

9. SOURCE AND POLLUTANT SPECIFIC REGULATORY APPLICABILITY:

Source	Pollutant	Regulation (NSPS, NESHAP or PSD)
SN-446	NO_X and CO	NSPS JJJJ and NESHAP ZZZZ
SN-447	Source	NESHAP ZZZZ

10. UNCONSTRUCTED SOURCES:

Unconstructed Source	Permit Approval Date	Extension Requested Date	Extension Approval Date	If Greater than 18 Months without Approval, List Reason for Continued Inclusion in Permit
N/A				

11. PERMIT SHIELD – TITLE V PERMITS ONLY:

Did the facility request a permit shield in this application? N
(Note - permit shields are not allowed to be added, but existing ones can remain, for minor modification applications or any Rule 18 requirement.)

If yes, are applicable requirements included and specifically identified in the permit? If not, explain why.

For any requested inapplicable regulation in the permit shield, explain the reason why it is not applicable in the table below.

Source	Inapplicable Regulation	Reason
N/A		

12. COMPLIANCE ASSURANCE MONITORING (CAM) – TITLE V PERMITS ONLY:

List sources potentially subject to CAM because they use a control device to achieve compliance and have pre-control emissions of at least 100 percent of the major source level. List the pollutant of concern and a brief summary of the CAM plan (temperature monitoring, CEMs, opacity monitoring, etc.) and frequency requirements of § 64.

Source	Pollutant Controlled	Cite Exemption or CAM Plan Monitoring and Frequency
115, 154, 155	PM_{10}	Liquid Flow (continuous) and visible emissions (weekly)
108, 111, 112, 113, 116, 211, 214	PM_{10}	Controlled by baghouse, visible emissions (daily)

13. EMISSION CHANGES AND FEE CALCULATION:

See emission change and fee calculation spreadsheet in Appendix A.

14. AMBIENT AIR EVALUATIONS:

The following are results for ambient air evaluations or modeling.

a) NAAQS

A NAAQS evaluation is not required under the Arkansas State Implementation Plan, National Ambient Air Quality Standards, Infrastructure SIPs and NAAQS SIP per Ark. Code Ann. § 8-4-318, dated March 2017 and the DEQ Air Permit Screening Modeling Instructions.

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	2.09E-06	Y
Arsenic	0.01	0.0011	7.44E-06	Y
Beryllium	0.01	0.0011	2.99E-06	Y
Cadmium	0.01	0.0011	8.84E-06	Y
Chromium	0.5	0.055	8.92E-03	Y
Cobalt	0.02	0.0022	2.82E-04	Y
Lead	0.05	0.055	6.24E-05	Y
Manganese	0.2	0.022	3.34E-03	Y
Mercury	0.01	0.0011	3.68E-06	Y
POM	0.2	0.022	2.29E-05	Y
Selenium	0.2	0.022	1.61E-06	Y
Vinyl Acetate	35.21	3.87	0.72	Y

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 Y
If exempt, explain: the facility does not have H_2S emissions.

15. 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 “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).

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%	
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%	

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
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%	
446	AP-42 3.2-2 NSPS JJJJ*	All in lb/MMBtu 0.00999 $PM/PM_{10}/PM_{2.5}$ 0.000588 SO_2 5.2 CO* 0.13 NO_X* 0.118 VOC 116.98 CO_2	N/A		Emergency Engine
451			None	N/A	
452			None	N/A	

16. TESTING REQUIREMENTS:

The permit requires testing of the following sources.

SN	Pollutants	Test Method	Test Interval	Justification
N/A				

17. 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				

18. 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
	diesel sulfur content used oil sulfur content HAPs constituent	0.3% by weight 0.33% by weight See Specific Condition #33		per delivery	Y
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

SN	Recorded Item	Permit Limit	Frequency	Report (Y/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
07,09,115,154,155,114,128, 129,167,168,171,172,184,212, 213,216	Opacity	20%	weekly	N
03,156,157,175,183,215,310		40%		N
101-106,108,111-113,116-119,124,153,211,214,303,307, 308		5%	Once per two weeks	N
446	Hours of operation	500	Calendar year	N
447	Hours of operation	500	Calendar year	N
447	Maintenance records	500/1000 hours, or annually	Annually	N

19. OPACITY:

SN	Opacity	Justification for limit	Compliance Mechanism
Baghouses	5%/20% for baghouses that smoke	dept. guidance	Recordkeeping, observation schedule
Non-baghouse sources that are not inside or underground	20/40%	dept. guidance for post/pre 1972 sources	Wet suppression

20. DELETED CONDITIONS:

Former SC	Justification for removal
30	The facility was required to perform an initial testing to comply with the 4.8 lb/hr PM limit. This is a holdover condition after the test was performed and wouldn't make sense after the emission limit is changed. And it is redundant

Former SC	Justification for removal
	with Specific Conditions #27 and #28.

21. GROUP A INSIGNIFICANT ACTIVITIES:

The following is a list of Insignificant Activities including revisions by this permit.

Source Name	Group A Category	Emissions (tpy)						
		PM/ PM_{10}	SO_2	VOC	CO	NO_x	HAPs	
							Single	Total
12,000 gal Diesel AST (CS6)	A-13			0.01				
22,000 gal slate oil AST (CS2)	A-13			0.03				
Tube Conveyor	A-13	0.013						
Loadout System	A-13	0.013						
100 gal Kerosene AST (AS19)	A-2			9.99E-05				
3,500 gal Used Oil AST (CS5)	A-3			3.65E-03				
1,000 gal Diesel AST (CS28)	A-3			1.04E-03				
1,000 gal Lube Oil AST (CS14)	A-3			1.07E-03				
1,000 gal Used Oil AST (CS15)	A-3			1.07E-03				
280 gal Used Oil AST (CS16)	A-3			2.35E-04				
430 gal Lube Oil AST (CS21)	A-3			4.67E-04				
200 gal Solvents AST (CS29)	A-3			8.54E-04				
300 gal Engine Oil AST (CS34)	A-3			2.61E-04				
8,000 gal Diesel AST (AS1)	A-3			0.02				
500 gal Motor Oil AST (AS18)	A-3			2.69E-03				
300 gal Hydraulic Oil AST (AS3)	A-3			3.06E-04				
300 gal Motor Oil AST (AS4)	A-3			3.06E-04				
300 gal Used Oil AST (AS12)	A-3			3.06E-04				
300 gal Lube Oil AST (AS24)	A-3			3.06E-04				
300 gal Lube Oil AST (AS25)	A-3			3.06E-04				
300 gal Lube Oil AST (AS26)	A-3			3.06E-04				

Source Name	Group A Category	Emissions (tpy)						
		PM/ PM_{10}	SO_2	VOC	CO	NO_x	HAPs	
							Single	Total
300 gal Diesel Fuel AST (AS33)	A-3			4.74E-04				
9,400 gal Diesel Fuel AST (AS35)	A-3			0.01				
8,000 gal DREW AST (CS)	A-3			2.37E-03				

22. VOIDED, SUPERSEDED, OR SUBSUMED PERMITS:

The following is a list of all active permits voided/superseded/subsumed by the issuance of this permit.

Permit #
0039-AOP-R17

APPENDIX A – EMISSION CHANGES AND FEE CALCULATION

Fee Calculation for Major Source

Revised 03-11-16

Facility Name: 3M
Permit Number: 0039-AOP-R18
AFIN: 60-000003

$/ton factor	27.27	Annual Chargeable Emissions (tpy)	812.15
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)	14.21
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		607	620.69	13.69	13.69	620.69
PM_{10}		381.59	392.46	10.87		
$PM_{2.5}$		0	0	0		
SO_2		7.7	7.9	0.2	0.2	7.9
VOC		44.4	44.59	0.19	0.19	44.59
CO		330.6	330.56	-0.04		
NO_X		138.84	138.97	0.13	0.13	138.97
Lead	☐	2.26E-04	2.74E-04	0.000048		

Pollutant (tpy)	Check if Chargeable Emission	Old Permit	New Permit	Change in Emissions	Permit Fee Chargeable Emissions	Annual Chargeable Emissions
Chromium	☐	0.04	3.91E-02	-0.0009		
Manganese	☐	0.02	1.46E-02	-0.0054		
Cobalt	☐	0.01	1.23E-03	-0.00877		
Arsenic	☐	2.64E-05	3.26E-05	0.0000062		
Cadmium	☐	2.80E-05	3.88E-05	0.0000108		
Beryllium	☐	1.08E-05	1.31E-05	0.0000023		
Methanol	☐	9.5	9.5	0		
Toluene	☐	4.2	2.37	-1.83		
Antimony	☐	7.61E-06	9.14E-06	0.00000153		
Benzene	☐	0.00245	2.39E-03	-6E-05		
Dichlorobenzene	☐	1.37E-06	1.37E-03	0.00136863		
Formaldehyde	☐	0.093	9.06E-02	-0.0024		
Hexane	☐	2.05	2.05	0		
Mercury	☐	1.24E-05	1.61E-05	0.0000037		
Nickel	☐	1.01E-04	1.31E-04	0.00003		
POM	☐	9.47E-05	1.01E-04	0.0000063		
Selenium	☐	5.77E-06	7.06E-06	0.00000129		
Vinyl Acetate	☐	8.39	3.15	-5.24		
Total Combustion HAPs	☐	0.2	0.2	0		
	☐	0	0	0		
	☐	0	0	0		
	☐	0	0	0		
	☐	0	0	0		
	☐	0	0	0		
	☐	0	0	0		
	☐	0	0	0		
	☐	0	0	0		
	☐	0	0	0		