Note: This is a reference cited in *AP 42, Compilation of Air Pollutant Emission Factors, Volume I Stationary Point and Area Sources.* AP42 is located on the EPA web site at www.epa.gov/ttn/chief/ap42/

The file name refers to the reference number, the AP42 chapter and section. The file name "ref02_c01s02.pdf" would mean the reference is from AP42 chapter 1 section 2. The reference may be from a previous version of the section and no longer cited. The primary source should always be checked.

AP42 Section:	11.20
Background Chapter	4
Reference:	9
Title:	Emission Test, Chandler Materials Company, Tulsa, Oklahoma, Wilson-Wright, Incorporated, Tulsa, OK, July 30, 1975.

AP-42 Section 11.26
Reference
Report Sect. 4
Reference 9

TULSA CITY-COUNTY HEALTH DEPARTMENT

4616 East 15th • 918 939-2671
Tulsa, Oklahoma 74112

April 14, 1980

Mr. William H. Maxwell
Senior Environmental Engineer
Midwest Research Institute
4505 Creedmoor Road
Raleigh, NC 27612

Dear Mr. Maxwell:

Pursuant to your letter of March 18, 1980, I am enclosing a copy of the 1975 stack test report from the Chandler Materials Light Aggregate Plant, Tulsa, Oklahoma.

Referring to our conversation of March 27, 1980, I wish to reiterate the caution with which this data be used for the purpose of developing New Source Performance Standards (NSPS). According to current standards, this stack test information is inadequate for emissions estimates. As such, any use of this material for final evaluation of NSPS would be highly questionable.

Presently the Chandler Materials plant is undergoing vast modification. As such, the enclosed data is also outdated in reference to the existing plant.

Should you find you have further questions, please do not hesitate to contact me at 918-939-2671 extension 206.

Sincerely,

Linda Johnson

Linda Johnson, M.S.
Air Quality Control

LJ:ob
enc.

MIDWEST RESEARCH INSTITUTE
4505 Creedmoor Road
Raleigh, N.C. 27612
Telephone (919) 781-5750

March 18, 1980

Mr. William Gibbons
Permits Department
Tulsa City/County Health Department
4216 East 15th Street
Tulsa, Oklahoma 74112

Dear Mr. Gibbons:

The United States Environmental Protection Agency (EPA) is obtaining information on various air pollution sources leading toward the development of new source performance standards for certain industries. EPA has contracted with Midwest Research Institute (MRI) to assist in the development of standards for the clay, shale, and slate sintering industry.

During our telephone conversation on March 13, 1980, you indicated that source test data was available for the Tulsa facility of Chandler Materials Company. I would like to request a copy of this test report. I am particularly interested in data on particulate, sulfur dioxide, and fluoride emissions from this industry. Any other information that you may have regarding the Chandler Materials Tulsa facility would be appreciated.

If possible, I would like to obtain this information by the first of April. If you have any questions, feel free to contact me at (919) 781-5750. Thank you for your assistance.

Sincerely yours,

William H. Maxwell
Senior Environmental Engineer

cc: Reid Iversen, EPA

WILSON-WRIGHT, INC. POLLUTION DIVISION

BOX 2528 TULSA, OKLA. 74101 [redacted]

File No. 3328
July 30, 1975

RDR

Chandler Materials Company
P. O. Box 627
Tulsa, Oklahoma 74101

Attn: Mr. Jim Chandler

Gentlemen:

The following pages report our test for particulate matter emitted from the stack of your scrubbing tower through which the combustion gas from your kilns flow.

These tests were made to verify that the emission from this control device conforms with the Air Quality Standards in this Oklahoma district.

The control divice on your plant at Choctaw, Oklahoma was tested for compliance in April of 1974. These tests were requested at that time for your plant in Tulsa, Oklahoma These two poants and control devices are almost identical.

During the tests, sixteen (16) tons of blue shale were processed per hour. Particulate emission during the tests follow:

	Run 2	Run 3
Grains per standard cubic foot	0.067	0.063
Pounds per ton of shale processed	1.31	1.26

1.28

We enjoy serving you.

Yours Truly

Clair C Wilson

Clair C. Wilson

WILSON-WRIGHT, INC. POLLUTION DIVISION

BOX 2526 TULSA, OKLA. 74101 [illegible]

File 3328 Chandler Materials Co.

The Tulsa plant has four (4) rotary kilns fired with natural gas through which blue shale is processed into a light weight aggregate. The exhaust gases from the kilns are manifolded into the suction of a blower. The blower discharges into a water scrubber.

The gas is sprayed with water and flows upward through a stationary fan. The gas is sprayed with water again and flows upward through a second stationary fan. These fans separate the water droplets by centrifugal action. This gas is then discharged into the air.

The blue shale feed rate is controlled by weight and the rate recorded. Normal feed rate is four (4) tons of shale per hour to each of the four (4) kilns, a total of sixteen tons (16) tons per hour. The natural gas flow rate is recorded on an orifice meter and is approximately One million cu. ft. per day.

Fine particulates of the blue shale are emitted from the scrubber stack. Additionally, the gas effluent was checked for sulfur dioxide. A test for florides will be completed later.

The process is continuous steady operation with little if any variation. Reduced demand is met with the shut-down of one of the kilns.

It was impractical to extend the 98 inch diameter stack an additional fifty-eight (58) feet. Straightening vanes were placed in the stack to circumvent this. These vanes were set on top of the last fan. During the first run, drops of spray water collected in the cyclone. The vanes were then raised one foot above the stationary fan.

The pitot tube was calibrated in June and the wet test meter was set with a Bell Prover in Febuary.

WILSON · WRIGHT, INC. POLLUTION DIVISION

BOX 2526 TULSA, OKLA. 74101 (918) 584-6060

File 3328 Stack No. 1 Chandler Materials Co.

$K_pC^{p\,tese}$ = (85.48)(.800) = 68.384

run No.	1	2	3
delta p test	.077	.073	.075
square root delta p	.277	.270	.273
Stack Temp °R	600	598	598
Stack Pres. In. Hg.	29.49	29.47	29.47
Mol wt wet gas	26.72	27.33	27.37
Stack Velocity Vsavg.	16.55	15.92	16.12
Fraction Water in stack gas	.2066	.1560	.1497
Fraction Dry Gas	.7934	.8440	.8503
Dry gas velocity feet per second at 68 °F, 29.92 In. Hg.	11.39	11.68	11.92
Tip Area Sq. Ft. .000767			
θ Sampling time min.	100	100	100
Theoretical std. cu. ft through tip	52.43	53.77	54.87
Actual std cu. ft through tip	51.50	52.49	51.70
% of isokenetic	98.2	97.6	94.2
Stack Area sq. ft. 52.38			
Qs dry std cu. ft./hour	2148700	2203526	2248535
Grains per dry s.c.f.	.113	.067	.063
Pounds per hour	~~34.7~~	21.0	20.2

20.5

~~35.3 Avg.~~

26.27 Pounds @ 16 T/hr [illegible]

WILSON-WRIGHT, INC. **POLLUTION DIVISION**

BOX 2526 TULSA, OKLA. 74101 (918) 584-6060

Job No. 3328 Chandler Materials

Stack No. 1

Diameter, inches 98
Area, Square Feet 52.38

Number sampling points 20

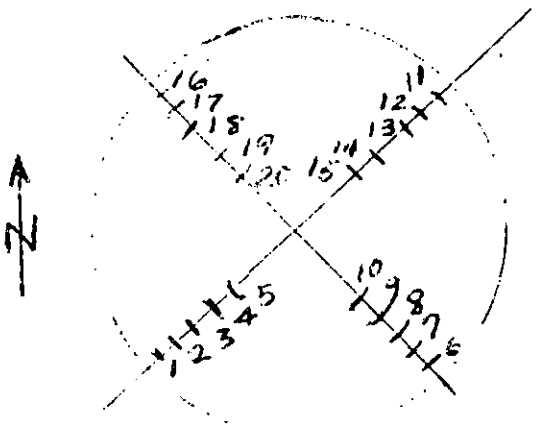
Point Numbers				In. from Wall
1	6	11	16	2.51
2	7	12	17	8.00
3	8	13	18	14.35
4	9	14	19	22.16
5	10	15	20	33.50

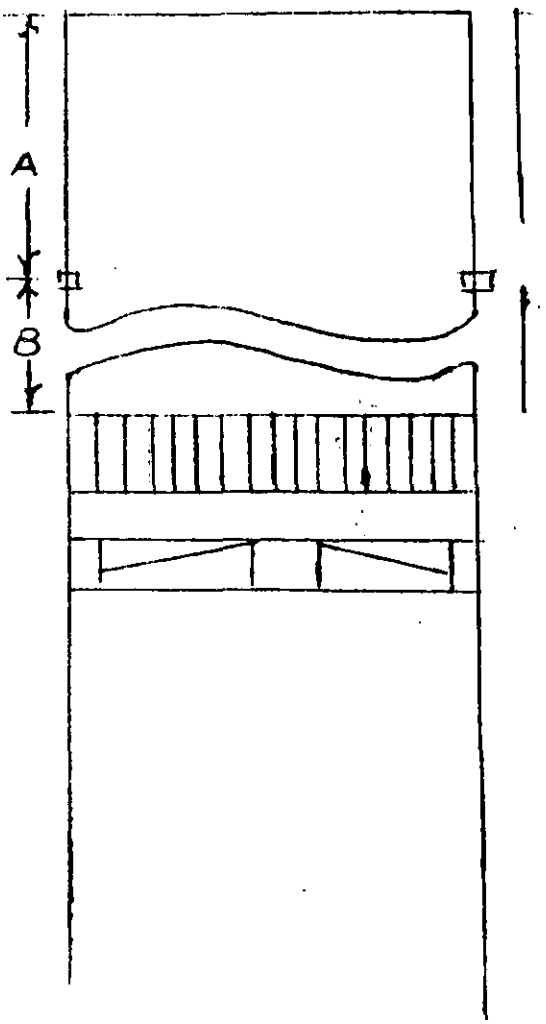
Sampling ports location

A. Below top. feet 6.0

B. Above Disturbance, ft. 2.0

C. Last disturbance: Straightening vanes 5.5 inches in diameter and 15 inches long covering stack area. These are 12 inches above the stationary fan above the spray nozzles.





WILSON & WRIGHT, INC. POLLUTION DIVISION

BOX 2526 TULSA, OKLA. 74101 (918) 584-6080

VELOCITY TRAVERSE DATA

Job No. 3328 Stack No. 1

Stack Diameter, inches 98.000

Date June 30, 1975 Time 10:00
Barometric Pressure, In. Hg. 29.49
Static Stack Pres. In. Water 0
Stack Pres. In. Hg. Abs. =Ps 29.49

Run No. 1 Pitot Coef. .800 gas Sp. Grav. est. .925

Traverve Point Number	Velocity Head In. water	Square Root Vel. Head	Stack Temp. °F =Ts	Velocity, ft./min. @ Ts	@ 68 °F
1	.03	.18	140	669.2	588.9
2	.050	.223	140	799.9	703.9
3	.060	.244	140	876.2	771.1
	.035	.187	140	669.2	588.9
5	.030	.173	140	619.6	545.2
6	.050	.223	140	799.9	703.9
7	.065	.254	140	912.0	802.6
	.075	.273	140	979.7	862.1
9	.065	.254	140	912.0	802.6
10	.090	.300	140	1073.2	944.4
11	.035	.187	140	669.2	588.9
12	.060	.244	140	876.2	771.1
13	.085	.291	140	1042.9	917.8
14	.080	.282	140	1011.8	890.4
15	.070	.264	140	946.4	832.9
16	.070	.264	140	946.4	832.9
17	.075	.273	140	979.7	862.1
18	.100	.316	140	1131.2	995.5
19	.080	.282	140	1011.8	890.4
20	.075	.273	140	979.7	862.1
Average	.064	.250	140	895.3	787.9

Fraction Water = Bwm .200 Fraction Dry Gas = Bd .800 x 787.9 = 630.3

$\frac{1}{630.3}$ = .001586 square feet sampling tip area for one cubic foot per minute at 68 °F of dry gas through the meter barometric pressure.

3/8 inch tip = 0.000767 sq. ft. area = 0.5 cu. ft. per min at meter

WILSON-WRIGHT, INC. POLLUTION DIVISION
BOX 2526 TULSA, OKLA. 74101 (918) 584-6060

REPORT NO.
PAGE OF
DATE 19
COMPANY

PARTICULATE FIELD DATA

Job No. 3328 Stack No. 1 Run No. 1 Date June 30, 1975 Time 12:35

Probe Lenght, m 2 Heater Coef. .800 Nozzle Dia., In. .375
Sample Box No. 1 Heater Setting °F 240 Ambient Temperature °F 95
°eter Box No. 1 Delta Ha Assumed Water % 20

Run No. 1 Barometer, In. Hg. 29.49 Operator

SAMPLE POINT NO.	TIME θ min.	PRESSURE Stack Ps In. Hg.	TEMP. Stack Ts °F	VELOCITY HEAD ΔPs In. H2O	METER Diff. (H) In. H2O	VOLUME Meter Vm Cu. Ft.	TEMP. Meter Ts °F	TEMPERATURES Box °F	TEMPERATURES Impinger °F	DRY STANDARD Vmc Cu. Ft.
1	5.0	29.49	140	.035	.350	1.900	95	240	32	1.776
2	5.0	29.49	140	.070	.450	2.500	95	240	32	2.337
3	5.0	29.49	140	.090	.530	2.980	95	240	32	2.785
4	5.0	29.49	140	.115	.610	3.415	95	240	32	3.192
5	5.0	29.49	140	.085	.540	3.007	95	240	32	2.811
6	5.0	29.49	140	.030	.300	1.500	95	240	32	1.402
7	5.0	29.49	140	.045	.340	2.248	95	240	32	2.101
8	5.0	29.49	140	.095	.540	3.245	93	240	32	3.044
9	5.0	29.49	140	.075	.470	2.700	93	240	32	2.533
10	5.0	29.49	140	.075	.470	2.949	93	240	32	2.766
11	5.0	29.49	140	.030	.300	1.761	95	240	32	1.646
12	5.0	29.49	140	.098	.600	3.009	95	240	32	2.813
13	5.0	29.49	140	.115	.610	3.426	95	240	32	3.202
14	5.0	29.49	140	.060	.400	2.810	95	240	32	2.626
15	5.0	29.49	140	.060	.400	2.740	93	240	32	2.570
16	5.0	29.49	140	.035	.350	1.790	93	240	32	1.679
17	5.0	29.49	140	.105	.580	3.590	93	240	32	3.368
18	5.0	29.49	140	.170	.770	3.950	93	240	32	3.706
19	5.0	29.49	140	.090	.530	3.040	93	240	32	2.852
20	5.0	29.49	140	.070	.450	2.440	93	240	32	2.289
Total	100.0					55.000				51.507
Average		29.49	140	.077	.479		94	240	32	

WILSON-WRIGHT, INC. POLLUTION DIVISION

BOX 2526 TULSA, OKLA. 74101 (918) 584-6060

VELOCITY TRAVERSE DATA

Job No. 3328 Stack No. 1

Stack Diameter, inches 98.00

Date July 2, 1975 Time
Barometric Pressure, In. Hg. 29.47
Static Stack Pres. In. Water 0
Stack Pres. In. Hg. Abs. =Ps 29.47

Run No. Pitot Coef. .800 gas Sp. Grav. est. .933

Traverve Point Number	Velocity Head In. water	Square Root Vel. Head	Stack Temp. °F =Ts	Velocity, ft./min. @ Ts	@ 68 °F
0	.035	.187	138	665.5	587.6
2	.065	.254	138	906.9	800.7
3	.050	.223	138	795.4	702.3
4	.040	.200	138	711.4	628.1
5	.020	.141	138	503.0	444.1
6	.040	.200	138	711.4	628.1
7	.045	.212	138	754.6	666.2
8	.085	.291	138	1037.1	915.7
9	.060	.244	138	871.3	769.3
10	.100	.316	138	1124.9	993.2
11	.040	.200	138	711.4	628.1
12	.075	.273	138	974.2	860.1
13	.095	.308	138	1096.4	968.0
14	.095	.308	138	1096.4	968.0
15	.085	.291	138	1037.1	915.7
16	.050	.223	138	795.4	702.3
17	.075	.273	138	974.2	860.1
18	.110	.331	138	1179.8	1041.7
19	.090	.300	138	1067.1	942.2
20	.070	.264	138	941.1	831.0
Average	.066	.252	138	897.7	792.6

Fraction Water = Bwm .180 Fraction Dry Gas = Bd .820 x 792.6 = 649.9

$\frac{1}{649.9}$ = .001538 square feet sampling tip area for one cubic foot per minute at 68 °F of dry gas through the meter barometric pressure.

3/8 inch tip = .000767 sq. ft. area = 0.499 cu. ft. per minute at meter

WILSON-WRIGHT, INC. **POLLUTION DIVISION**
BOX 2526 TULSA, OKLA. 74101 (918) 584-6060

REPORT NO.
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COMPANY

PARTICULATE FIELD DATA

Job No. 3328 Stack No. 1 Run No. 2 Date 7-2-75 Time 11:20

Probe Lenght, m 2 Heater Coef. .800 Nozzle Dia., In. .375
Sample Box No. 1 Heater Setting °F 240 Ambient Temperature °F 90
Meter Box No. 1 Delta Ha Assumed Water % 18

Run No. 2 Barometer, In. Hg. 29.47 Operator

SAMPLE POINT NO.	TIME θ min.	PRESSURE Stack Ps In. Hg.	TEMP. Stack Ts °F	VELOCITY HEAD ΔPs In. H2O	METER Diff. ()_ In. H2O	VOLUME Meter Vm Cu. Ft.	TEMP. Meter Ts °F	TEMPERATURES Box °F	Impinger °F	DRY STANDARD Vmc Cu. Ft.
1	5.0	29.47	138	.035	.300	2.070	85	240	32	1.969
2	5.0	29.47	138	.040	.320	2.620	86	240	32	2.488
3	5.0	29.47	138	.075	.470	3.085	87	240	32	2.924
4	5.0	29.47	138	.095	.540	2.975	88	240	32	2.814
5	5.0	29.47	138	.085	.550	3.398	88	240	32	3.215
6	5.0	29.47	138	.050	.360	2.392	88	240	32	2.263
7	5.0	29.47	138	.065	.430	2.560	89	240	32	2.417
8	5.0	29.47	138	.095	.540	3.070	89	240	32	2.899
9	5.0	29.47	138	.080	.510	2.930	90	240	32	2.762
10	5.0	29.47	138	.090	.530	2.960	90	240	32	2.790
11	5.0	29.47	138	.045	.340	2.040	90	240	32	1.923
12	5.0	29.47	138	.070	.450	2.590	90	240	32	2.441
13	5.0	29.47	138	.090	.530	3.190	90	240	32	3.007
14	5.0	29.47	138	.085	.520	3.250	90	240	32	3.063
15	5.0	29.47	138	.085	.510	2.760	90	240	32	2.601
16	5.0	29.47	138	.035	.300	1.900	90	240	32	1.791
17	5.0	29.47	138	.080	.490	2.660	90	240	32	2.507
18	5.0	29.47	138	.100	.550	3.350	91	240	32	3.152
19	5.0	29.47	138	.095	.540	3.330	92	240	32	3.127
20	5.0	29.47	138	.070	.450	2.486	92	240	32	2.335
Total	20.0					55.616				52.496
Average		29.47	138	.073	.461		89	240	32	

WILSON-WRIGHT, INC. POLLUTION DIVISION
BOX 2526 TULSA, OKLA. 74101 (918) 584-6060

REPORT NO.
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COMPANY

PARTICULATE FIELD DATA

Job No. 3328 Stack No. 1 Run No. 3 Date July 2, 1975 Time 4:00

Probe Lenght, m 2 Heater Coef. .800 Nozzle Dia., In. .375
Sample Box No. 1 Heater Setting °F 240 Ambient Temperature °F 92
Meter Box No. 1 Delta Ha Assumed Water % 18

Run No. 3 Barometer, In. Hg. 29.47 Operator

SAMPLE POINT NO.	TIME θ min.	PRESSURE Stack Ps In. Hg.	TEMP. Stack Ts °F	VELOCITY HEAD ΔPs In. H2O	METER Diff. ΔH In. H2O	VOLUME Meter Vm Cu. Ft.	TEMP. Meter Ts °F	TEMPERATURES Box °F	Impinger °F	DRY STANDARD Vmc Cu. Ft.
16	5.0	29.47	138	.040	.320	2.046	93	240	32	1.918
17	5.0	29.47	138	.085	.510	2.889	93	240	32	2.708
18	5.0	29.47	138	.095	.540	3.237	93	240	32	3.035
19	5.0	29.47	138	.090	.530	3.208	93	240	32	3.007
20	5.0	29.47	138	.075	.470	2.700	93	240	32	2.531
11	5.0	29.47	138	.040	.320	2.050	93	240	32	1.922
12	5.0	29.47	138	.075	.470	2.350	92	240	32	2.207
13	5.0	29.47	138	.095	.540	2.870	92	240	32	2.695
14	5.0	29.47	138	.095	.540	4.190	92	240	32	3.935
15	5.0	29.47	138	.085	.510	1.790	92	240	32	1.681
1	.0	29.47	138	.035	.300	1.975	92	240	32	1.855
2	5.0	29.47	138	.075	.470	2.895	92	240	32	2.719
3	5.0	29.47	138	.075	.470	2.880	92	240	32	2.705
4	.0	29.47	138	.095	.540	3.070	92	240	32	2.883
5	5.0	29.47	138	.085	.520	2.860	92	240	32	2.686
6	5.0	29.47	138	.045	.370	1.990	92	240	32	1.869
7	5.0	29.47	138	.065	.430	2.640	92	240	32	2.479
8	5.0	29.47	138	.085	.520	3.160	92	240	32	2.968
9	5.0	29.47	138	.090	.530	3.300	92	240	32	3.099
10	5.0	29.47	138	.090	.530	2.975	92	240	32	2.794
21										
Total	100.0					55.075				51.705
Average		29.47	138	.0757	.471		92	240	32	

WILSON-WRIGHT, INC. POLLUTION DIVISION

BOX 2526 TULSA, OKLA. 74101 (918) 584-6060

File No. 3328 Chandler Material Co.

Analytical Data

Run No.	Container No.	Final Weight grams	Initial Weight grams	Weight Gain grams
1	1	105.2335	105.0335	.1910
1	2	86.1943	86.0612	.1331
1	3	.9030	.8255	.0775
1	4	105.9251	105.9175	.0076
Total				.3792
2	1	143.6836	143.6344	.0492
2	2	138.9439	138.9287	.0152
2	3	.9307	.9211	[illegible]
2	4	85.3162	85.2779	[illegible]
Total				[illegible]
3	1	89.1149	89.0763	.0386
3	2	88.4491	88.4374	.0117
3	3	.9340	.8152	.1188
3	4	96.3046	96.2619	.0427
Total				.2137
	Impinger No.			
1	1	[illegible]	[illegible]	[illegible]
1	2	[illegible]	[illegible]	[illegible]
1	3*	[illegible]	[illegible]	86.8000
1	4	[illegible]	[illegible]	12.0000
Total				234.3000
2	1	[illegible]	[illegible]	15[illegible].8000
2	2	576.[illegible]	[illegible]	[illegible]
2	3	450.6000	[illegible]	2.5000
2	4	[illegible]	[illegible]	9.6000
Total				[illegible]
3	1	667.[illegible]	[illegible]	140.[illegible]
3	2	564.6000	531.[illegible]	32.[illegible]
3	3	46[illegible].3000	459.1000	1.2000
3	4	59[illegible].8000	576.[illegible]	17.7000
Total				194.3000

* Volume of water in cyclone added to total

WILSON-WRIGHT, INC. POLLUTION DIVISION

BOX 2528 TULSA, OKLA. 74101 (918) 584-6080

File Number 3328 Stack Number 1 Chandler Materials Co.

Analytical Data: Gas Analysis

Composition: Mol %	Run No. 1	2	3
Hydrogen	.00	.00	.00
Nitrogen	81.66	81.12	81.57
Oxygen	16.13	16.41	16.05
Carbon Dioxide	2.21	2.47	2.38
Carbon Monoxide	.00	.00	.00
Methane	.00	.00	.00
Total	100.00	100.00	100.00
Mol. Weight	28.99	29.05	29.02
Grams Water	284.70	205.90	193.20
Std Cu. Ft Gas	51.50	52.49	51.70
Fraction Water	.2066	.1560	.1497
Spec. Gravity	.9226	.9434	.9449
% E A	297.14	327.82	292.64

WILSON-WRIGHT, INC. POLLUTION DIVISION

BOX 2528 TULSA, OKLA. 74101 [redacted]

Chandler Materials Company File No. 3328

SO_2 DETERMINATIONS

RUN NO.	1	2	3
St. Cu. Ft of Gas	51.50	52.49	51.70
Gm. Moles of Gas	60.64	61.80	60.87
PPM MOLS/MILLION MOLS	18.3	7.8	4.3

FLOURIDE DETERMINATIONS

RUN. NO.	1	2	3
Cu. Ft. of Gas	8.0	8.0	8.0
Gm. Moles of Gas	8.82	8.82	8.82
PPM MOLS/MILLION MOLS	17.	19.	18.

DRAFT/WP
d3006-4/971130
03/30/92 1

DATA RATING: C (or D)
LITTLE DOCUMENTATION
TEST METHODS NOT IDENTIFIED
REF 4-9

Emission Test Report
Review Checklist

Reviewer: R. MARINSHAW
Review Date: 11/17/92

A. Background Information

1. Facility name: CHANDLER MATERIALS COMPANY

   Location: TULSA, OK

2. Source category: LIGHTWEIGHT AGGREGATE

3. Test date: 1975

4. Test sponsor: CHANDLER

5. Testing contractor: WILSON - WRIGHT, INC.

6. Purpose of test: COMPLIANCE

7. Pollutants measured

   PM PM-10 CO SO_2 NO_x VOC Pb CO_2

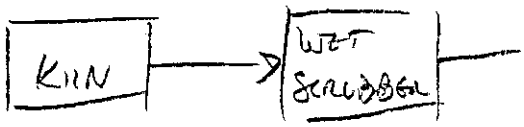
   Others (list): Fluorides

8. Process overview: On an attached page provide a block diagram of the unit operations and associated air pollution control systems at the facility. Identify process tested with letters from the beginning of the alphabet (A, B, C, etc.) and APC systems with letters from end of alphabet (V, W, X, etc.). Also identify test locations with Arabic numerals (1,2,3, ...). Using the ID symbols from that sketch complete the table below that identifies processes or unit operations tested.

Test ID	Process	Process ID	Emissions tested		APCD (controlled emissions only)
			Uncontrolled	Controlled	
1	KILN / GAS FIRED	A			WET SCRUBBER

B. Process Information

1. Provide a brief narrative description of the process. With as much detail as possible, (e.g., if a furnace or conveyor system is used, identify the type of unit) describe the equipment used for those operations tested. (Note: If process description provided in test report is adequate, attach copy or reproduce here.)



2. For each process tested list feedstock materials and products. Indicate if activity factors are for feed (F) rate or product (P) rate.

Process ID	Feedstock materials	Products	Basis for activity factor	F/P
KILN	SHALE	KWA	SHALE FEED	F

Basis for data: Pg 3
(Indicate page/table Nos. in test report)

3. For each process or operation tested and each test run note process capacity and operating rate during test.

Process ID	Capacity	Units	Test run	Process rate	Units
			1	16	TONS/HR
			2	16	"
			3	16	"
			4		
			1		
			2		
			3		
			4		
			1		
			2		
			3		
			4		
			1		
			2		
			3		
			4		

Basis for data: Pg 3

C. Air Pollution Control Systems Tested

1. For each air pollution control system pollution control system identified in A.8, note the following

ID	Type of APCD	Manufacturer	Model No.
	WET SCRUBBER		

Note: Be as specific as possible in identifying APCD. For example, indicate "pulse jet fabric filter" rather than simply "fabric filter."
NO DETAILS

2. For each system identified above, provide a narrative description. For fugitive systems describe capture techniques as well as the removal techniques (use a separate page if necessary)

3. Using the attached parameter list for guidance complete the table below. (Use additional pages as needed.)

APCD ID	Parameter	Units	Readings			
			Run 1	Run 2	Run 3	Run 4
Type of APCD:						
Type of APCD:						
Type of APCD:						

NO DATA

D. Sampling and Analysis Methods

1. Complete the following table

Test location	Pollutant	S & A method	Reference/ conditional method	Deviations noted
	NO DATA		Y/N	Y/N
			Y/N	Y/N
			Y/N	Y/N
			Y/N	Y/N
			Y/N	Y/N
			Y/N	Y/N
			Y/N	Y/N
			Y/N	Y/N
			Y/N	Y/N
			Y/N	Y/N
			Y/N	Y/N
			Y/N	Y/N
			Y/N	Y/N
			Y/N	Y/N
			Y/N	Y/N
			Y/N	Y/N
			Y/N	Y/N
			Y/N	Y/N
			Y/N	Y/N
			Y/N	Y/N
			Y/N	Y/N
			Y/N	Y/N
			Y/N	Y/N
			Y/N	Y/N
			Y/N	Y/N

2. If a method used was not a reference or conditional method, provide a narrative discussion including any data manipulation needed to make results correspond to reference or conditional method results.

METHODS NOT SPECIFIED

3. Describe any deviations identified above.

E. Emission Data Documentation

1. Tabulate the following stack gas data from the test report. (Use additional pages as needed.)

Test ID	Parameter	Units	Values reported			
			Run 1	Run 2	Run 3	Run 4
	Stack temperature	°R	600	598	598	
	Moisture					
	Oxygen					
	Volumetric flow, actual					
	Volumetric flow, standard	DSCFH	2148700	2203526	2248535	
	Percent isokinetic		98.2	97.6	94.2	
	Pollutant concentration:					
	PM	gr/dscf	0.113	0.067	0.063	
	CO_2	%	2.21	2.47	2.38	
	SO_2	PPM	18.3	7.8	4.3	
	HCl	PPM	17	19	18	
	Stack temperature					
	Moisture					
	Oxygen					
	Volumetric flow, actual					
	Volumetric flow, standard					
	Percent isokinetic					
	Pollutant concentration:					
	Stack temperature					
	Moisture					
	Oxygen					
	Volumetric flow, actual					
	Volumetric flow, standard					
	Percent isokinetic					
	Pollutant concentration:					

2. Tabulate pollutant mass flux rates

Test ID	Pollutant	Units	Mass flux rates			
			Run 1	Run 2	Run 3	Run 4
	PM	lbs/hr	34.7	21.	20.2	
	CO_2	lbs/hr	5456	6254	6149	
	SO_2	"	6.70	2.93	1.65	
	~~Ft~~					

3. Present example emission factor calculations below.

PM	34.7/16 =	2.17
	21.0/16 =	1.31
	20.2/16 =	1.26
CO_2	5456/16 =	341
	6254/16 =	391
	6149/16 =	384
SO_2	6.70/16 =	0.42
	2.93/16 =	0.18
	1.65/16 =	0.10

4. Tabulate emission factors

Process	Pollutant	Units	Average emission factor	
			Uncontrolled	Controlled
Kiln	PM	lbs/ton		1.58
	CO_2	"		372
	SO_2	"		0.23

ATTACHMENT A
APCD PARAMETERS

Type of APCD	Parameters
Fabric filter	Cleaning mechanism Bag type Cleaning frequency Air to cloth ratio (A/C) Pressure drop Inlet temperature
ESP	Type (wet or dry) Number of fields Rapping cycle (if dry) Specific Collection Area (SCA) Particulate resistivity (if known) Spark rate Current and power levels
Venturi (or other high energy) scrubber	Pressure drop Liquid/gas (L/G) ratio Mist eliminator type
Packed-bed scrubber	Packing depth L/G ratio Caustic use (Y/N) pH Mist eliminator type
Carbon absorber	Bed depth Superficial gas velocity Bed temperature Desorption mechanism (media) Flue-gas moisture Cycle length Time-on-line after breakthrough