

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/](http://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.

# CalMat Co

P. O. BOX 2950, LOS ANGELES, CALIFORNIA 90051 (213) 258-2777  
3200 SAN FERNANDO ROAD, LOS ANGELES, CALIFORNIA 90065

AP-42 Section 11.6  
Reference 52  
Report Sect. 4  
Reference 57



December 18, 1989

*Don't know air ducting*

Dr. John Croom  
QA Inc.  
3898 Westwood Path  
Stone Mountain, GA 30083

Dear John:

After checking my records, it appears that the only data which we have submitted for the AP-42 revision is the three months of CEM emissions measurements at our Colton plant (my letter of June 2, 1987 to Frank Noonan). Accordingly, I am sending to you emissions data summaries for our Mojave, California plant from the last seven annual source tests.

The kiln for which these data were obtained is of the preheater/precalciner design with a nominal clinker production rate of 150 tph. Start-up was in 1982. Fuel types and production rates for the source test periods are:

<u>Test Date</u>	<u>Fuel Burned</u>	<u>Clinker Prod/n,tph</u>	
5/23-5/24/83	coal	142 -	<i>only time</i>
5/15/84	coal	151 -	<i>marked used</i>
5/13/85	coal,gas	138	<i>in est.</i>
5/12/86	coal,gas,oil	131	
5/18/87	coal,gas	147	<i>Gas would</i>
6/28/88	coal	131 -	
5/16/89	coal,gas	141	<i>bias high</i>

Only the data summary sheet and introductory statement page from each source test report is enclosed. As you know, John, the full source test reports are quite voluminous. If EPA really does need the full report we can provide it, but we'll need some time to make the copies.

I hope this information will be of some assistance. Please call if you have any questions.

Sincerely,

*David S. Cahn*  
David S. Cahn

Vice President Regulatory Matters

Encl.

*Have said that testing met Cal + EPA specs. could not read entire rpt. per*

CalMat Compai  
P. O. Box 910  
Mojave, California

*Ref 36 Paccalamer Kiln  
Rated B by PSIM & d  
MAI*

*Assume Breating for  
other pollutants also*

**MOJAVE PLANT  
(KILN, CLINKER COOLE  
AND CRUSHER BAGHOUSE.**

Prepared by

Pape & Steiner Environmental Services  
5801 Norris Road  
Bakersfield, California 93308

**ANNUAL COMPLIANCE TEST**

May 15, 16 and 17, 1989

EPA Permit NSR 4-4-8; SJ 78-73

Kern County A/C Numbers 1003026A, 1003027A  
and 1003001B

Report PS-89-1839/Project 6571-89

Test Team Leader: Vernon McKnight

Approved by:

*Vernon McKnight*  
Vernon McKnight, Project Manager  
June 27, 1989



SECTION 1  
INTRODUCTION

At the request of CalMat Company, Pape & Steiner Environmental Services conducted a series of annual compliance tests on the outlets of the Kiln baghouse, Clinker Cooler baghouse and Crusher baghouse from May 15 through May 17, 1989.

Triplicate tests for particulates, sulfates and SO<sub>2</sub> were conducted on the effluent of the Kiln baghouse using EPA Method 5/8 equipment and procedures. Triplicate tests for NO<sub>x</sub>, CO, CO<sub>2</sub> and O<sub>2</sub> were conducted on the Kiln baghouse effluent using CARB Method 1-100. Triplicate hydrocarbon tests were also performed using a GC-FID procedure. Triplicate tests for particulates were conducted on the effluent of the Clinker Cooler baghouse using EPA Method 5 equipment and procedures. Run No. 1 of the Clinker Cooler test was performed during an upset in the operation of the kiln. Due to limited operating time, duplicate tests for particulate were conducted on the Crusher baghouse using EPA Method 5 equipment and procedures. The APCD representative was aware of the problems and agreed to accept duplicate runs for both the Clinker Cooler and Crusher baghouses.

Messrs. Vernon McKnight, Harvey Lopez and Keith Boone conducted the test work for Pape & Steiner Environmental Services. These tests were

observed by Ms. Linda Chester and Messrs. Bob Johnson and Tom Bowman of the Kern County APCD. Mr. Ervin Way of CalMat Co. was on site to assist with the test work and insure each process was operating properly during the test program.

CalMat Company  
P. O. Box 910  
Mojave, California 93501

**MOJAVE PLANT**  
**(KILN, CLINKER COOLER,**  
**AND CRUSHER BAGHOUSES)**

Prepared by  
Pape & Steiner Environmental Services  
5801 Norris Road  
Bakersfield, California 93308

**ANNUAL COMPLIANCE TEST**

June 28 through 30, 1988

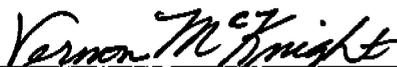
EPA Permit NSR 4-4-8; SJ 78-73

Kern County A/C Numbers 1003026A, 1003027A  
and 1003001B

Report PS-88-1534/Project 6293-88

Test Team Leader: Vernon McKnight

Approved by:

  
Vernon McKnight, Project Manager  
August 10, 1988



SECTION 1  
INTRODUCTION

At the request of CalMat Company, Pape & Steiner Environmental Services conducted a series of annual compliance tests on the outlets of the Kiln baghouse, Clinker Cooler baghouse and Crusher baghouse from June 28 through June 30, 1988.

Triplicate tests for particulates, sulfates and SO<sub>2</sub> were conducted on the effluent of the Kiln baghouse using EPA Method 5/8 equipment and procedures. Triplicate tests for NO<sub>x</sub>, CO, CO<sub>2</sub> and O<sub>2</sub> were conducted on the Kiln baghouse effluent using CARB Method 1-100. Triplicate hydrocarbon tests were also performed using a GC-FID procedure. Triplicate tests for particulates were conducted on the effluent of the Clinker Cooler and Crusher baghouses using EPA Method 5 equipment and procedures.

Messrs. Vernon McKnight and Keith Boone conducted the test work for Pape & Steiner Environmental Services. These tests were observed by Ms. Linda Chester of the Kern County APCD. Mr. Louis Yett of CalMat Co. was on site to assist with the test work and insure each process was operating properly during the test program.

CalMat Company  
P. O. Box 910  
Mojave, California 93501

JUN 18 1987

**MOJAVE PLANT**  
**(KILN, CLINKER COOLER,  
AND CRUSHER BAGHOUSES)**

Prepared by  
Pape & Steiner Environmental Services  
5801 Norris Road  
Bakersfield, California 93308

**ANNUAL COMPLIANCE TEST**  
May 18 through 20, 1987

EPA Permit. NSR 4-4-8; SJ 78-73  
Kern County A/C Numbers 1003026A, 1003027A  
and 1003001B

Report PS-87-1125/Project 5984-87

Test Team Leader: Ralph Pape

Approved by: Ralph Pape  
Ralph Pape, Project Manager  
June 17, 1987

**SUMMARY OF SOURCE TEST RESULTS**

Company CalMat      Test Date 05/18/87      APCD No. 1003026A      Unit No. Kiln

POLLUTANT	INLET			OUTLET			Removal Percent	Emission Factor Outlet
	Concentration @ 12% CO <sub>2</sub>		Mass Flow Rate lb/hr	Concentration @ 12% CO <sub>2</sub>		Mass Flow Rate lb/hr		
	gr/scf	ppm <sub>v</sub>		gr/scf	ppm <sub>v</sub>			
Particulate				0.0071			12.68	
				0.0064			11.43	
				0.0054			9.69	
				0.0063			11.27	
Sulfate				0.0008			1.37	1b/MMBtu as Sulfur
				0.0007			1.17	
				0.0009			1.61	
				0.0008			1.38	
SO <sub>2</sub> (wet)					41.15		87.23	1b/MMBtu as Sulfur
					35.72		75.45	
					32.73		69.33	
					36.53		77.34	
NO <sub>x</sub> as NO <sub>2</sub> (dry)					569.67	918.66	796.02	
					566.50	947.70	789.62	
					553.17	908.42	773.00	
					563.11	924.93	786.21	
HC					11.52		5.60	
					15.11		7.33	
					9.99		4.86	
					12.21		5.93	
CO					158.50		134.81	
					209.83		178.03	
					180.33		153.39	
					182.89		155.41	

Scrubber Liquor Analysis: Chlorides - Specific Gravity -

For Kern County Use Only

Comments

SECTION 1  
INTRODUCTION

At the request of CalMat Company, Pape & Steiner Environmental Services conducted a series of annual compliance tests on the outlets of the Kiln baghouse, Clinker Cooler baghouse and Crusher baghouse from May 18 through May 20, 1987.

Triplicate tests for particulates, sulfates and SO<sub>2</sub> were conducted on the effluent of the Kiln baghouse using EPA Method 5/8 equipment and procedures. Triplicate tests for NO<sub>x</sub>, CO, CO<sub>2</sub> and O<sub>2</sub> were conducted on the Kiln baghouse effluent using CARB Method 1-100. Triplicate hydrocarbon tests were also performed using a GC-FID procedure. Triplicate tests for particulates were conducted on the effluent of the Clinker Cooler and Crusher baghouses using EPA Method 5 equipment and procedures.

Messrs. Ralph Pape and Bill Harris conducted the test work for Pape & Steiner Environmental Services. These tests were observed by Ms. Linda Chester of the Kern County APCD. Mr. Louis Yett of CalMat Co. was on site to assist with the test work and insure each process was operating properly during the test program.

CalMat Company  
P. O. Box 910  
Mojave, California 93501

**MOJAVE PLANT**  
**(KILN, CLINKER COOLER,**  
**AND CRUSHER BAGHOUSES)**

Prepared by  
Pape & Steiner Environmental Services  
5801 Norris Road  
Bakersfield, California 93308

**ANNUAL COMPLIANCE TEST**  
May 12 through 15, 1986

EPA Permit NSR 4-4-8; SJ 78-73  
Kern County A/C Numbers 10030261, 1003027A  
and 1003001B

Report PS-86-765/Project 5695-86

Test Team Leader: Ralph Pape

Approved by: *Ralph Pape*  
Ralph Pape, Project Manager  
June 25, 1986

SUMMARY OF SOURCE TEST RESULTS

Company CalMat Company

Test Date 05/12/86 APCD No. 1003026A

Unit No.

Kiln

POLLUTANT	INLET			OUTLET				Removal Percent	Emission Factor Outlet
	Concentration		Mass Flow Rate lb/hr	gr/scf	Concentration		Mass Flow Rate lb/hr		
	@ 12% CO <sub>2</sub>	ppm <sub>v</sub>			@ 12% CO <sub>2</sub>	ppm <sub>v</sub>			
Particulate				0.0080 0.0076 0.0060 <u>0.0072</u>		0.0061 0.0057 0.0045 <u>0.0054</u>		14.61 13.36 10.92 <u>12.96</u>	
Sulfate				0.0003 0.0003 0.0004 <u>0.0004</u>		0.0003 0.0003 0.0003 <u>0.0003</u>		0.61 0.59 0.81 <u>0.67</u>	lb/MMBtu as Sulfur
SO <sub>2</sub> (wet)						60.14 65.17 66.87 <u>64.06</u>		129.66 134.93 143.83 <u>136.14</u>	lb/MMBtu as Sulfur
NO <sub>x</sub> as NO <sub>2</sub> (dry)						150.23 163.04 171.60 <u>161.62</u>	262.72 275.01 289.26 <u>275.66</u>	213.78 220.37 239.97 <u>224.70</u>	
HC						4.18 3.46 7.37 <u>5.00</u>		2.07 1.63 3.58 <u>2.43</u>	
CO (data on P. 4-7)						100.75 84.88 78.19 <u>87.94</u>	176.19 143.17 131.80 <u>150.39</u>	87.27 69.83 66.85 <u>74.55</u>	

Scrubber Liquor Analysis: Chlorides -

Specific Gravity -

For Kern County Use Only

Comments

SECTION 1  
INTRODUCTION

At the request of CalMat Company, Pape & Steiner Environmental Services conducted a series of annual compliance tests on the outlets of the Kiln baghouse, Clinker Cooler baghouse and Crusher baghouse from May 12 through May 15, 1986.

Triplicate tests for particulates, sulfates and SO<sub>2</sub> were conducted on the effluent of the Kiln baghouse using EPA Method 5/8 equipment and procedures. Triplicate tests for NO<sub>x</sub>, CO, CO<sub>2</sub> and O<sub>2</sub> were conducted on the Kiln baghouse effluent using CARB Method 1-100. Triplicate hydrocarbon tests were also performed using a GC-FID procedure. Triplicate tests for particulates were conducted on the effluent of the Clinker Cooler baghouse using EPA Method 5 equipment and procedures.

A single test was completed on the effluent of the Crusher baghouse. The Crusher became jammed during Test 2 and this sample was discarded. Kern County APCD determined one test would be satisfactory and the test series be complete after the use of explosives would not free the jam in the Crusher.

Messrs. Ralph Pape, Bill Harris and Dan Cartner conducted the test work for Pape & Steiner Environmental Services. These tests were observed

by Mr. Bob Johnson of the Kern County APCD. Mr. Steve Regis of CalMat Co. was on site to assist with the test work and insure each process was operating properly during the test program.

CalMat Company  
P. O. Box 910  
Mojave, California 93501

**MOJAVE PLANT**  
**(KILN, CRUSHER, AND CLINKER BAGHOUSES)**

Prepared by  
Pape & Steiner Environmental Services  
5801 Norris Road  
Bakersfield, California 93308

**ANNUAL COMPLIANCE TEST**

**May 13-15, 1985**

Kern County A/C Numbers 1003026A, 1003001B, 1003027A

EPA Permit NSR 4-4-8; SJ 78-73

Report PS-85-469/Project 5451-85

Test Team Leader: Jim Steiner

Approved by:

  
Jim Steiner, Project Manager  
June 5, 1985

SUMMARY OF SOURCE TEST RESULTS

Company CalMat Company

Test Date 05/13/85 APCD No. 1003026A

Unit No. Kiln

Pollutants	Emissions										Removal %		Emission Factor lb/MMBtu		
	Inlet					Outlet					Inlet	Outlet	Inlet	Outlet	
	Concentration Wet		Mass Flow Rate lb/hr	Concentration Wet			Mass Flow Rate lb/hr	Concentration Wet							
	gr/scf	@ 12% CO2		ppmv	gr/scf	@ 12% CO2		ppmv	@ 3% O2						
Particulate				0.0034			0.0019				5.88				0.03
				0.0034			0.0005				3.25				0.02
				0.0005			0.0005				5.86				0.03
Sulfate				0.0005			0.0005				5.00				0.02
				0.0004			0.0003				0.86				
				0.0004			0.0003				0.45				
				0.0004			0.0005				0.86				
				0.0004			0.0004				0.72				
SO2											32.47				
							15.64				34.75				
							16.83				34.57				
							16.90				33.93				
							16.46								
NOx as NO2 (dry)							387.50				532.17				
							396.33				536.45				
							394.33				540.35				
							892.39				533.36				
							2.75/18.70				535.27				
							1.74/17.41				1.31/8.93				
							2.26/15.06				0.83/8.28				
							2.25/17.06				1.06/7.08				
Scrubber Liquor Analysis: Chlorides --	Specific Gravity --														
For Kern County Use Only:															
Remarks	CO (ppm, dry) = 179.17, 181.00, 194.67; Average 184.95														
	(lb/hr) = 149.73, 150.56, 160.24; Average 153.51														
	Test 1, 2, 3 216.0 TPH														

SECTION 1  
INTRODUCTION

At the request of CalMat Company, Pape & Steiner Environmental Services conducted a series of annual compliance tests on the outlets of the kiln baghouse, crusher baghouse, and clinker cooler baghouse from May 13 through May 15, 1985.

Triplicate tests for particulates, sulfates and  $SO_2$  were conducted on the effluent of the kiln baghouse using EPA Method 5/8 equipment and procedures. Triplicate tests for  $NO_x$  and CO were conducted on the kiln baghouse effluent using CARB Method 1-100. Triplicate hydrocarbon tests were also performed using a GC-FID procedure. Triplicate tests for particulates were conducted on the effluents of the crusher and clinker cooler baghouses using EPA Method 5 equipment and procedures.

Messrs. Jim Steiner and Craig Werden conducted the test work for Pape & Steiner. These tests were observed by Ms. Linda Chester of the Kern County APCD. Mr. Steve Regis of CalMat Company was on site to assist with the test work and insure each process was operating properly during the test program.

California Portland Cement  
Oak Creek Road  
Mojave, California 93501

**MOJAVE PLANT**  
**(KILN, CLINKER, AND CRUSHER BAGHOUSES)**

Prepared by

Pape & Steiner Environmental Services  
5801 Norris Road  
Bakersfield, California 93308

**ANNUAL COMPLIANCE TEST**

May 15 - 18, 1984

Kern County A/C Numbers  
1003001B, 1003026A, 1003027A

EPA Permit NSR 4-4-8; SJ 78-73

Report PS-84-249/Project 5233-84

Test Team Leader: Jim Steiner

Approved



Jim Steiner, Project Manager  
June 12, 1984

SUMMARY OF SOURCE TEST RESULTS

Company California Portland Cement Test Date 5/15/84 APCD No. 1003026A Unit No. Kiln

Pollutants	Emissions										Removal %		Emission Factor lb/Ton			
	Inlet					Outlet										
	Concentration Wet		Mass Flow Rate lb/hr	gr/scf	@ 12% CO <sub>2</sub>	ppmv	Concentration Wet		Mass Flow Rate lb/hr	@ 3% O <sub>2</sub>	ppmv					
	gr/scf	@ 12% CO <sub>2</sub>					gr/scf	@ 3% O <sub>2</sub>								
Particulate			0.0042					7.46								0.03
			0.0062					11.06								0.05
			0.0041					7.61								0.03
			0.0048					8.71								0.04
Sulfate			0.0010					1.88								
			0.0011					1.89								
			0.0010					1.90								
			0.0010					1.89								
SO <sub>2</sub>								143.76								
								154.17								
								154.80								
								150.91								
NO <sub>x</sub> as NO <sub>2</sub> (dry)								503.48			605.94					
								501.70			606.71					
								546.62			658.34					
								517.27			623.66					
HC (C1, >C1)								0.54/24.20			1.1/48.9					
								0.00/13.36			0.0/27.0					
								0.00/15.06			0.0/30.3					
								0.18/17.54			0.37/35.40					

Scrubber Liquor Analysis: Chlorides -- Specific Gravity --

For Kern County Use Only: CO - Avg. 173.17 lb/hr (see p. 4-7)

Remarks Feed Rates = 231, 236, 245 Tons/hour Avg 237.3

SECTION 1  
INTRODUCTION

At the request of the California Portland Cement Company, Pape & Steiner Environmental Services conducted a series of annual compliance tests on the outlets of the kiln baghouse, crusher baghouse, and clinker cooler baghouse from May 15 to May 18, 1984.

Triplicate tests for particulates and sulfates were conducted on the effluent of the kiln baghouse using EPA Method 5/8 equipment and procedures. Triplicate tests for NO<sub>x</sub>, SO<sub>2</sub>, and CO were conducted on the kiln baghouse effluent using EPA Procedures dated November 19, 1981. Triplicate hydrocarbon tests were also performed using a GC-FID procedure. Triplicate tests for particulates were conducted on the effluents of the crusher and clinker cooler baghouses using EPA Method 5 equipment and procedures.

Messrs. Jim Steiner and Jim Oblak conducted the test work for Pape & Steiner. These tests were observed by Ms. Linda Chester of the Kern County APCD. Mr. Steve Whitley of California Portland Cement was on site to assist with the test work and insure each process was operating properly during the test program.

California Portland Cement  
Oak Creek Road  
Mojave, California 93501

**MOJAVE PLANT**  
**(KILN, CLINKER, AND CRUSHER BAGHOUSES)**

Prepared by

Pape & Steiner Environmental Services  
5801 Norris Road  
Bakersfield, California 93308

**ANNUAL COMPLIANCE TEST**

May 23-26, 1983

KCAPCD A to C Numbers  
1003001B, 10030026A, 1003027A

Report PS-83-93/Project 5081-83

Test Team Leader: Jim Steiner

Approved

  
\_\_\_\_\_  
Jim Steiner, Project Manager



SECTION 1  
INTRODUCTION

At the request of the California Portland Cement Company, Pape & Steiner Environmental Services conducted a series of annual compliance tests on the outlets of the kiln baghouse, crusher baghouse, and clinker cooler baghouse from May 23 to May 26, 1983

Triplicate tests for particulates were conducted on the effluent of each baghouse using EPA Method 5 equipment and procedures. Triplicate tests for  $\text{NO}_x$  and  $\text{SO}_2$  were conducted on the baghouse effluent serving the kiln using EPA Procedures dated November 19, 1981.

Messrs. Jim Steiner and Jim Oblak conducted the test work for Pape & Steiner Environmental Services. These tests were observed by Ms. Linda Chester of the Kern County APCD. Mr. Perry Vogan of California Portland Cement assisted with the test work and insured each process was operating properly during the test program.