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.

Background Report Reference

AP-42 Section Number: 11.17

Background Chapter: 4

Reference Number: 37

Title: Stack Sampling at Round Rock Lime, Round Rock Texas

Texas Air Control Board

Texas Air Control Board

April 1974

(37)

Stack Sampling

at

Round Rock Lime

Round Rock, Texas

Week of April 29, 1974

see NEDS data

?

NOT USED
NO PROCESS
DATA

Conducted by
Texas Air Control Board
Austin, Texas

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Introduction

On April 30, 1974, the Lime Kiln stack at Round Rock Lime in Round Rock was sampled by a team from Source Sampling, Texas Air Control Board. The samples were taken to determine compliance with Regulation I, Rule 105.1 of the Texas Air Control Board which pertains to the emission of particulate.

Background Information

The team leader for this trip was Frank DeVooght, Engineering Assistant. Other team members were Charles Goerner, and Floy Parkhill.

Conclusion

At the time of sampling the stack was not in compliance with Regulation I, Rule 105.1. The allowable particulate emission rate was 64.2 pounds per hour. The pollutant mass rate was 237.0 pounds per hour. The plant was running at approximately 95% capacity during the sampling period.

SUMMARY OF RESULTS

Average Percent Water 13.18 %

Average Velocity 52.36 ft/sec

	Traverse One	Traverse Two	Traverse Three	Traverse Four	Average Value
Time Date	1150 - 1310 May 1, 1974	1500 - 1620 May 1, 1974	1050 - 1250 May 1, 1974	1510 - 1635 May 1, 1974	
Total Gas Emission Rate (ACFM)	110,134.1	105,711.7	112,261.0	110,937.3	109,761.0
Effective Stack Height (ft.)	258.7	250.9	260.5	259.2	257.3
Standard Effective Stack Height (ft.)	61.1	60.2	61.5	61.2	61.0
Particulate Allowable Emission Rate (lb/hr) Rule105.1	64.2	62.5	64.9	64.4	64.0
Particulate Pollutant Mass Rate (lb/hr)	237.0	220.7	196.5*	255.8*	227.5
Percent Isokinetic	100.0	99.0	96.3	93.5	97.2

* Samples 3 & 4 probe wash used benzene.

INPUT DATA

ROUND ROCK LIME, ROUND ROCK, TX APRIL 30, 1974

LIME KILN STACK

SAMPLE 1 1150 TO 1310

NOZ.AREA: .0004644 SQFT PITOT CALIB. FACTOR: .8010

TRAV. DURATION 60.0 MIN. VOL. DRY GAS METER: 25.99 CUFT

STACK: DIA,EXIT 6.67 FT, PORT 6.67 FT, HEIGHT 110.0 FT

ORSAT ANALYSIS: CO2 .085, O2 .122, CO .000, N2 .793

TEMP IN DEG F: DRY GAS METER AVER. 90.00, STACK AVER. 1159.00

MASS IN GRAMS: TOTAL IMP. GAIN 76.10 TOTAL PARTICULATE 1.4284

PARTICULATE IN IMP. .0122, SO2 .0000, H2S .0000,

H2SO4 .0000, FLUORIDE IONS .0000, SO3 .0000,CL2 .0000

PRESS: ATMOS 29.32 IN.HG, STACK .00 IN.H2O, AV.DELTA H .730 IN.H2O

PITOT TUBE DELTA P'S IN IN. H_2O

.290	.390	.420	.370	.310	.150	.190	.350
.400	.360	.300	.180				

RULE 107 PROCESS WEIGHT RATE .0 POUNDS PER HOUR

RULE 105.3 & 201.5 HEAT INPUT .0 MILLION BTU PER HOUR

RULES SELECTED 105.1

EXCESS AIR FLAG OFF PARTICAL SIZE FLAG LARGE

ACFM (UNCORRECTED FOR EXCESS AIR) WAS GREATER THAN (OR EQUAL TO) 100,000 CFM; SEE RULE 103.6

CALCULATION RESULTS

ROUND ROCK LIME, ROUND ROCK, TX APRIL 30, 1974

LIME KILN STACK

SAMPLE 1 1150 TO 1310

12.76 % H2O BW2 .000 NOZ.VOL. 87.859 CUFT EACF 1.000

AV.VEL.PORT 52.533 FT PER SEC M.WT. 28.34 EF.STK.HT. 258.7 FT

AFCM 110134.1 SCFM 35330.8 (NO EXCESS AIR CORRECTION)

RULE 105.1
369.4 % OF ALLOWABLE %ISO. 100.0 STD.EF.STK.HT. 61.1 FT
EMISS.RATES,LBS/HR: ALLOWABLE 64.2, POLL.MASS 237.0
THIS STACK WAS IN VIOLAION OF RULE 105.1

INPUT DATA

ROUND ROCK LIME, ROUND ROCK, TX APRIL 30, 1974

LIME KILN STACK

SAMPLE 2 1500 TO 1620

NOZ.AREA: .0004644 SQFT PITOT CALIB. FACTOR: .8010

TRAV. DURATION 60.0 MIN. VOL. DRY GAS METER: 25.43 CUFT

STACK: DIA,EXIT 6.67 FT, PORT 6.67 FT, HEIGHT 110.0 FT

ORSAT ANALYSIS: CO2 .085, O2 .122, CO .000, N2 .793

TEMP IN DEG F: DRY GAS METER AVER. 91.00, STACK AVER. 1106.00

MASS IN GRAMS: TOTAL IMP. GAIN 77.90 TOTAL PARTICULATE 1.3306

PARTICULATE IN IMP. .0105, SO2 .0000, H2S .0000,

H2SO4 .0000, FLUORIDE IONS .0000, SO3 .0000,CL2 .0000

PRESS: ATMOS 29.35 IN.HG, STACK .00 IN.H2O, AV.DELTA H .690 IN.H2O

PITOT TUBE DELTA P'S IN IN. H_2O

.180	.320	.370	.360	.310	.160	.260	.350
.400	.360	.310	.150				

RULE 107 PROCESS WEIGHT RATE .0 POUNDS PER HOUR

RULE 105.3 & 201.5 HEAT INPUT .0 MILLION BTU PER HOUR

RULES SELECTED 105.1

EXCESS AIR FLAG OFF PARTICAL SIZE FLAG LARGE

ACFM (UNCORRECTED FOR EXCESS AIR) WAS GREATER THAN (OR EQUAL TO) 100,000 CFM: SEE RULE 103.6

CALCULATION RESULTS

ROUND ROCK LIME, ROUND ROCK, TX APRIL 30, 1974

LIME KILN STACK

SAMPLE 2 1500 TO 1620

13.28 % H2O BW2 .000 NOZ.VOL. 83.491 CUFT EACF 1.000

AV.VEL.PORT 50.423 FT PER SEC M.WT. 28.27 EF.STK.HT. 250.9 FT

AFCM 105711.7 SCFM 35095.7 (NO EXCESS AIR CORRECTION)

RULE 105.1
352.9 % OF ALLOWABLE %ISO. 99.0 STD.EF.STK.HT. 60.2 FT
EMISS.RATES,LBS/HR: ALLOWABLE 62.5, POLL.MASS 220.7
THIS STACK WAS IN VIOLAION OF RULE 105.1

INPUT DATA

ROUND ROCK LIME, ROUND ROCK, TX APRIL 30, 1974

LIME KILN STACK

SAMPLE 3 1050 TO 1250

NOZ.AREA: .0004644 SQFT PITOT CALIB. FACTOR: .8128

TRAV. DURATION 60.0 MIN. VOL. DRY GAS METER: 25.98 CUFT

STACK: DIA,EXIT 6.67 FT, PORT 6.67 FT, HEIGHT 110.0 FT

ORSAT ANALYSIS: CO2 .085, O2 .122, CO .000, N2 .793

TEMP IN DEG F: DRY GAS METER AVER. 94.00, STACK AVER. 1130.00

MASS IN GRAMS: TOTAL IMP. GAIN 79.30 TOTAL PARTICULATE 1.1848

PARTICULATE IN IMP. .0156, SO2 .0000, H2S .0000,

H2SO4 .0000, FLUORIDE IONS .0000, SO3 .0000,CL2 .0000

PRESS: ATMOS 29.32 IN.HG, STACK .00 IN.H2O, AV.DELTA H .730 IN.H2O

PITOT TUBE DELTA P'S IN IN. H_2O

.300	.380	.440	.390	.320	.200	.180	.320
.390	.370	.320	.180				

RULE 107 PROCESS WEIGHT RATE .0 POUNDS PER HOUR

RULE 105.3 & 201.5 HEAT INPUT .0 MILLION BTU PER HOUR

RULES SELECTED 105.1

EXCESS AIR FLAG OFF PARTICAL SIZE FLAG LARGE

ACFM (UNCORRECTED FOR EXCESS AIR) WAS GREATER THAN (OR EQUAL TO) 100,000 CFM; SEE RULE 103.6

CALCULATION RESULTS

ROUND ROCK LIME, ROUND ROCK, TX APRIL 30, 1974

LIME KILN STACK

SAMPLE 3 1050 TO 1250

13.32 % H2O BW2 .000 NOZ.VOL. 86.175 CUFT EACF 1.000

AV.VEL.PORT 53.547 FT PER SEC M.WT. 28.27 EF.STK.HT. 260.5 FT

AFCM 112261.0 SCFM 36669.9 (NO EXCESS AIR CORRECTION)

RULE 105.1
302.8 % OF ALLOWABLE %ISO. 96.3 STD.EF.STK.HT. 61.5 FT
EMISS.RATES,LBS/HR: ALLOWABLE 64.9, POLL.MASS 196.5
THIS STACK WAS IN VIOLAION OF RULE 105.1

INPUT DATA

ROUND ROCK LIME, ROUND ROCK, TX APRIL 30, 1974

LIME KILN STACK

SAMPLE 4 1510 TO 1635 5-2-74

NOZ.AREA: .0004644 SQFT PITOT CALIB. FACTOR: .8245

TRAV. DURATION 60.0 MIN. VOL. DRY GAS METER: 25.05 CUFT

STACK: DIA,EXIT 6.67 FT, PORT 6.67 FT, HEIGHT 110.0 FT

ORSAT ANALYSIS: CO2 .085, O2 .122, CO .000, N2 .793

TEMP IN DEG F: DRY GAS METER AVER.101.00, STACK AVER. 1142.00

MASS IN GRAMS: TOTAL IMP. GAIN 75.50 TOTAL PARTICULATE 1.5418

PARTICULATE IN IMP. .0109, SO2 .0000, H2S .0000,

H2SO4 .0000, FLUORIDE IONS .0000, SO3 .0000,CL2 .0000

PRESS: ATMOS 29.25 IN.HG, STACK .00 IN.H2O, AV.DELTA H .660 IN.H2O

PITOT TUBE DELTA P'S IN IN. H_2O

.200	.340	.390	.360	.330	.190	.240	.330
.360	.340	.300	.170				

RULE 107 PROCESS WEIGHT RATE .0 POUNDS PER HOUR

RULE 105.3 & 201.5 HEAT INPUT .0 MILLION BTU PER HOUR

RULES SELECTED 105.1

EXCESS AIR FLAG OFF PARTICAL SIZE FLAG LARGE

ACFM (UNCORRECTED FOR EXCESS AIR) WAS GREATER THAN (OR EQUAL TO) 100,000 CFM; SEE RULE 103.6

CALCULATION RESULTS

ROUND ROCK LIME, ROUND ROCK, TX APRIL 30, 1974

LIME KILN STACK

SAMPLE 4 1510 TO 1635 5-2-74

13.35 % H2O BW2 .000 NOZ.VOL. 82.686 CUFT EACF 1.000

AV.VEL.PORT 52.916 FT PER SEC M.WT. 28.27 EF.STK.HT. 259.2 FT

AFCM 110937.3 SCFM 35880.2 (NO EXCESS AIR CORRECTION)

RULE 105.1
396.9 % OF ALLOWABLE %ISO. 93.5 STD.EF.STK.HT. 61.2 FT
EMISS.RATES,LBS/HR: ALLOWABLE 64.4, POLL.MASS 255.8
THIS STACK WAS IN VIOLAION OF RULE 105.1

AVERAGE RESULTS

ROUND ROCK LIME, ROUND ROCK, TX APRIL 30, 1974

LIME KILN STACK

13.18 % H2O BW2 .000 NOZ.VOL. 85.053 CUFT EACF 1.000

AV.VEL.PORT 52.355 FT PER SEC M.WT. 28.29 EF.STK.HT. 257.3 FT

AFCM 109761.0 SCFM 35744.2 (NO EXCESS AIR CORRECTION)

RULE 105.1
355.5 % OF ALLOWABLE %ISO. 97.2 STD.EF.STK.HT. 61.0 FT
EMISS.RATES,LBS/HR: ALLOWABLE 64.0, POLL.MASS 227.5
PERCENT OF ALLOWABLE FROM AVERAGE RESULTS: 355.4
THIS STACK WAS IN VIOLAION OF RULE 105.1

TEXAS AIR CONTROL BOARD
Laboratory
8520 Shoal Creek Boulevard
Austin, Texas 78758

Sample: Round Rock Lime
Round Rock, Texas

MSSL #

ACL # 1010

Description: Lime Kiln for Particulate

Delivered By: Charlie Goerner

Date Sampled: Week of April 29, 1974

LABORATORY ANALYSIS

Run	Filter (Part.gm.)	Impingers 1 & 2 (Part.gm.)	Probe Wash (Part.gm.)
1	0.0227	0.0122	1.3935
2	0.0198	0.0105	1.3003
3	0.0260	0.0156	1.1432*
4	0.0221	0.0109	1.5088*

*Probe Washes from runs 3 and 4 were collected in dry benzene.

May 2, 1974
Date Received

May 13, 1974
Date Reported

Henry J. Krauss
Analysis Performed by
Henry J. Krauss

Jim S. Payne
Approved by
Jim S. Payne

FORM NO. ACB-55

Texas Air Control Board
~~1100 West 49th Street~~ 8520 SHOAL CK. BLVD.
Austin, Texas - ~~78756~~
ATTENTION: FRANK DEVOOGHT

Date May 2, 1974

SAMPLING DATA AND PLANT OPERATIONAL STATUS

Firm Name ROUND ROCK LIME
Location of Plant ROUND ROCK
Type of Operation LIME PRODUCTION

SAMPLING DATA*

Type of Sample	Location	Duration
PARTICULATE — ISO-KINETIC SAMPLE	LIME KILN STACK	From 11:50 A to 1:10 P 5-1-74
	" " "	From 3:00 P to 4:20 P 5-1-74
	" " "	From 10:50 A to 12:50 A 5-2-74
	" " "	3:10 P to 4:35 P 5-2-74

Special Conditions

I certify that the above samples(s) is(are) representative of conditions at the time of the investigation:

Signature Frank DeVooght
Title Eng. Assistant

PLANT OPERATIONAL STATUS (During the sampling period)**

Process	Percent Capacity	Abatement Controls
Calcination of Limestone	95%	Wash Stream

Special Conditions none

I certify that the above statement is true to the best of my knowledge and belief:

Signature [illegible]
Title [illegible]

* To be completed and acknowledged by Air Control Program representative.
** To be completed and acknowledged by plant representative. It is understood that all the above information will be considered confidential.