

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: 36

Title: Report on the Emissions to the
Atmosphere from a Lime Kiln
Baghouse at Marblehead Lime
Company

City of Chicago Department of
Environmental Control

July 1972

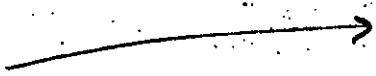
Ken: L. P. 116
7/25/72

F.P. [unclear]

see
NEDS data

TEST CONDUCTED AT
MARBLEHEAD LIME CO.
3245 E. 103rd ST.
CHICAGO, ILLINOIS

1 lb part-
ton product



2. time between
Water spray/settling
chamber followed
by baghouse

NOT USED
RUN-BY-RUN
TEST RESULTS DO NOT
CORRESPOND TO SUMMARY
TABLES. DATA INCOMPLETE

REPORT ON THE
EMISSIONS TO THE ATMOSPHERE
FROM A LIME KILN BAGHOUSE

TECHNICAL SERVICES DIVISION
DEPARTMENT OF ENVIRONMENTAL CONTROL

Test Personnel

- | | |
|-----------------|---|
| George Kimura | Environmental Control Engineer |
| Robert Malec | Environmental Sampling & Equipment Technician |
| Joseph Stoklosa | Environmental Sampling & Equipment Technician |
| James Turano | Environmental Sampling & Equipment Technician |

Department of Environmental Control
Technical Services
City of Chicago

TECHNICAL SERVICES DIVISION
DEPARTMENT OF ENVIRONMENTAL CONTROL

INTRODUCTION:

This report presents the results of tests conducted on July 11, 12 and 14, 1972, on a newly operational baghouse located at Marblehead Lime Company, 3245 E. 103rd Street.

The tests were requested by the Industrial Evaluations Section, Engineering Services, of the City of Chicago Department of Environmental Control.

The baghouse was used to control particulate emissions from two lime kilns designated as Nos. 1 and 2. The lime kilns were used to manufacture lime from limestone.

Sampling port holes in the baghouse stacks were laid out and installed by Marblehead Lime Co. as were the access walkways and ladders.

Production information on kilns 1 & 2 were furnished by Mr. Charles Norton, chief engineer for Marblehead.

The lime kilns were inspected by the writer several times during the days of the tests to verify that they were in operation.

Witnessing the tests for Marblehead Lime Co. were Messrs. Micheal Marksteiner and Graham Hutcheson, both engineers for Marblehead.

SUMMARY OF RESULTS

Company MARBLEHEAD LIME CO.
 Equipment tested BAGHOUSE - LIME KILNS #1 & #2

TEST NO.	PARTICULATE EMISSIONS TO ATM Grains per SCF
1	0.012
2	.017
3	.016
4	.014
5	.008
6	.008

SCF = Standard cubic foot @ 60° F and 30 inches Hg.

Code Limitation - Particulate Emissions: 0.10 grains/S
 per Section 17-2.4-1 of the Environmental Control Ordinance

TEST NO.	MASS RATE OF EMISSIONS Pounds per hour
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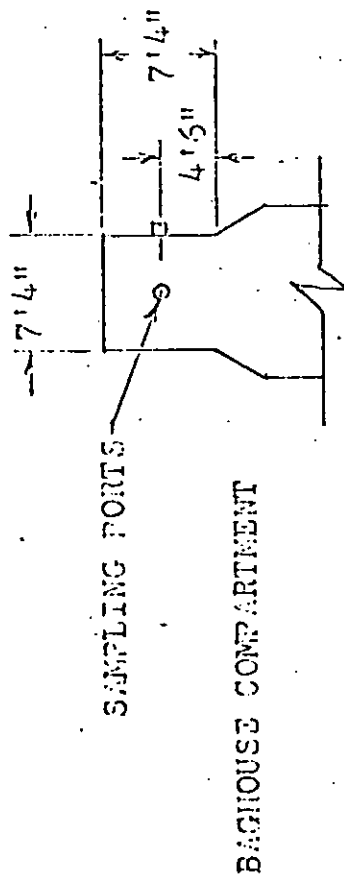
18 lb/hr
18 lbs product/hr

1 lb/hr
1 lb/hr
1 lb/hr
1 lb/hr
1 lb/hr
1 lb/hr

2.8
 3.7
 4.1
 3.2
 1.9
 1.9

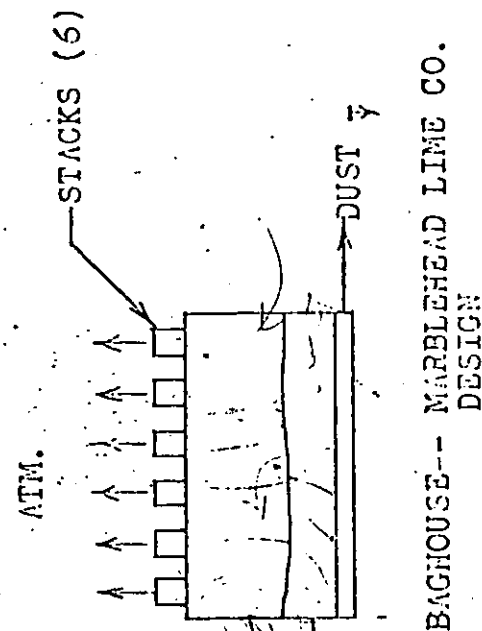
AVG $\approx$ 3 lb/hr
 per stack
 or 18 lb/hr for
 entire baghouse

TECHNICAL SERVICES DIVISION
 DEPARTMENT OF ENVIRONMENTAL CONTROL



ENLARGED DETAIL OF STACK

TECHNICAL SERVICES DIVISION
DEPARTMENT OF ENVIRONMENTAL CONTROL



12 COMPARTMENTS TOTAL

TOTAL NO. OF BAGS -

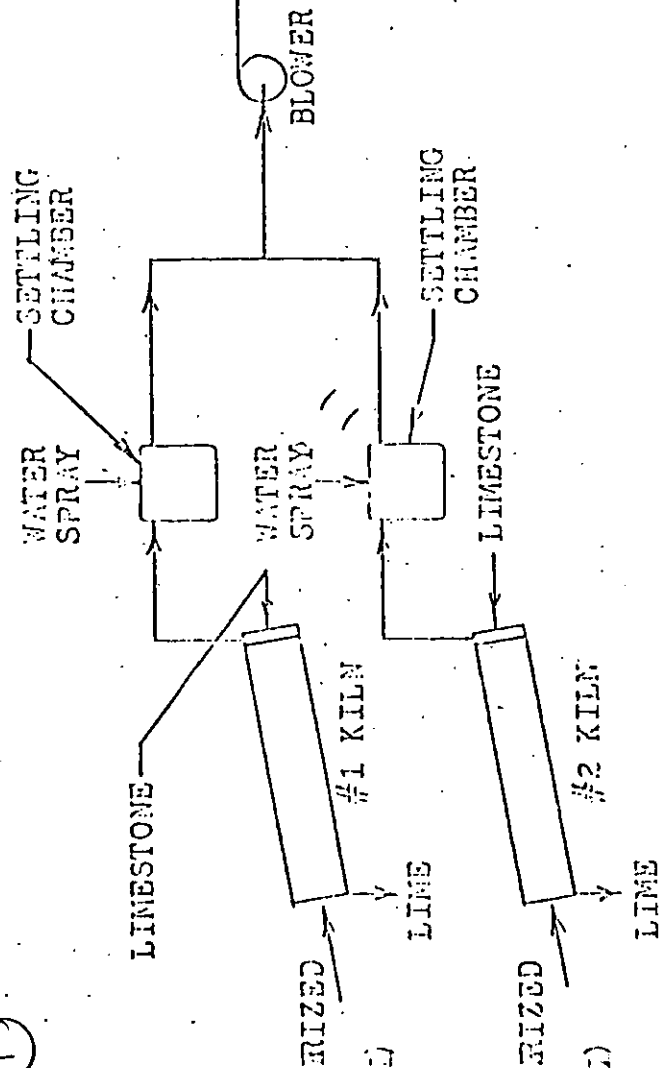
BAG SIZE:

AIR TO CLOTH RATIO:

METHOD OF CLEANING BAGS: REVERSE AIR PRESSURE

CLEANING CYCLE: 2 MIN. REVERSE AIR
CLEAN; 2 MIN. PAUSE; ON STARTUP FOR

4



SUMMARY OF DATA

Company MARBLEHEAD LIME CO. Location 3245 E. 103rd

Equipment tested BAGHOUSE - LIME KILN

SAMPLING DATA	TEST NO.		
	1	2	3
Date of test.	7/11/72	7/11/72	7/12/72
Time of test	11:15am	1:59pm	11:05am
Duration of test run, minutes	72	72	72
Total sampled volume, SCF	64.13	60.90	69.54
Total number of sampling points	24	24	24
Probe nozzle dia., inches	1/2	1/2	1/2

PARTICULATE DATA

TECHNICAL SERVICES DIVISION
DEPARTMENT OF ENVIRONMENTAL CONTROL

Particulates caught -

in filter, grams

.0237

.0183

.0373

in probe, grams

.0224

.0449

.0308

in impingers - benzene soluble

- dehydrated solids

.0028

.0038

.0031

Total particulates caught, grams

.0489

.0670

.0712

STACK GAS DATA

Gas volume flow, ft³/min,
stack condition

41,300

39,000

45,500

Gas volume flow, SCFM

27,100

25,700

29,600

Gas temp. at sampling point,
°F, average

336

331

340

% moisture in stack gas

4.9

5.2

4.9

MATERIAL FEED RATE OF PROCESS*

Tons/day
(production of
lime)

Kiln #1

225

225

217

Kiln #2

221

221

203

SUMMARY OF DATA

Company MARBLEHEAD LIME CO. Location 3245 E. 103rd St

Equipment tested BAGHOUSE - LINE KILN

SAMPLING DATA	TEST NO.		
	1	2	3
Date of test.	7/14/72	7/14/72	
Time of test.	10:55am	1:27pm	
Duration of test run, minutes	72	72	
Total sampled volume, SCF	67.62	67.07	
Total number of sampling points	24	24	
Probe nozzle dia., inches	1/2	1/2	

PARTICULATE DATA

TECHNICAL SERVICES DIVISION
DEPARTMENT OF ENVIRONMENTAL CONTROL

Particulates caught -		
in filter, grams	.0189	.0196
in probe, grams	.0156	.0133
in impingers - benzene soluble		
- dehydrated solids	.0021	.0014
Total particulates caught, grams	.0366	.0343

STACK GAS DATA

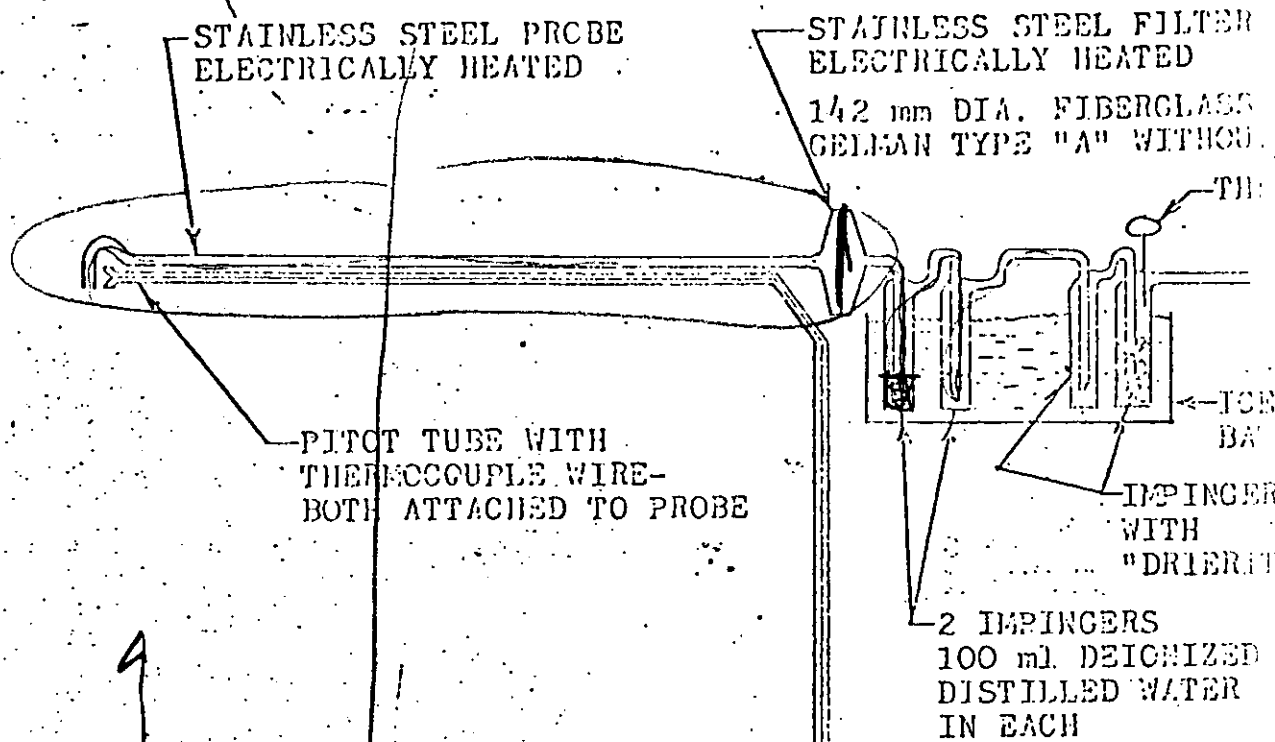
Gas volume flow, ft ³ /min, stack condition	44,900	44,300
Gas volume flow, SCFM	27,900	27,400
Gas temp. at sampling point, °F, average	366	371
% moisture in stack gas	5.7	5.8

MATERIAL FEED RATE OF PROCESS *

Tons/day	Kiln #1	216	216
	Kiln #2	214	214

average feed rate ~ 440 tons/day for 18 test.

(6)

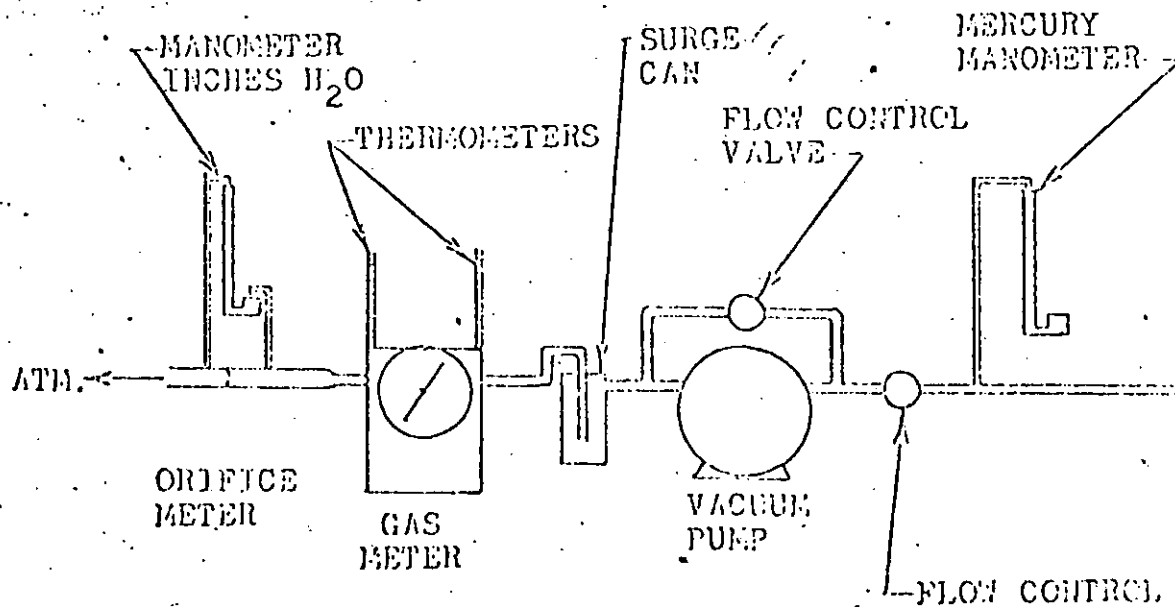


TECHNICAL SERVICES DIVISION
DEPARTMENT OF ENVIRONMENTAL CONTROL

VACUUM
TUBING

TEMPERATURE
POTENTIOMETER

MANOMETER



see
NEDS data

Ken: L. H. 111
7/15/72
F.P. [unclear]

TEST CONDUCTED AT
MARBLEHEAD LIME CO.
3245 E. 103rd ST.
CHICAGO, ILLINOIS

1 lb part-
ton product

2. lime kiln
Water spray/settling
chamber followed
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TEST NO.

MASS RATE OF EMISSIONS
Pounds per hour

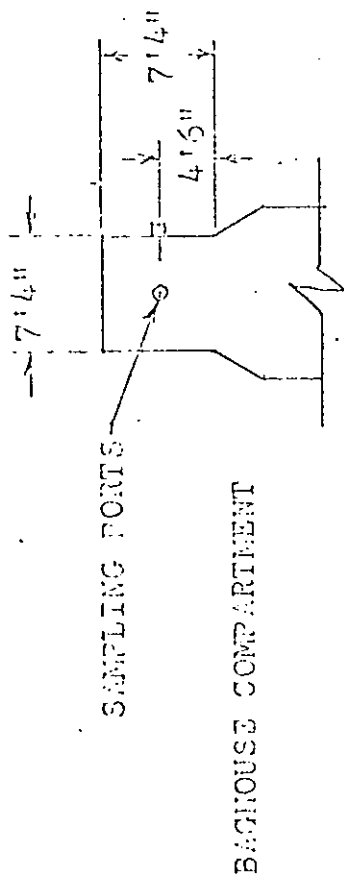
1
2
3
4
5
6

2.8
3.7
4.1
3.2
1.9
1.9

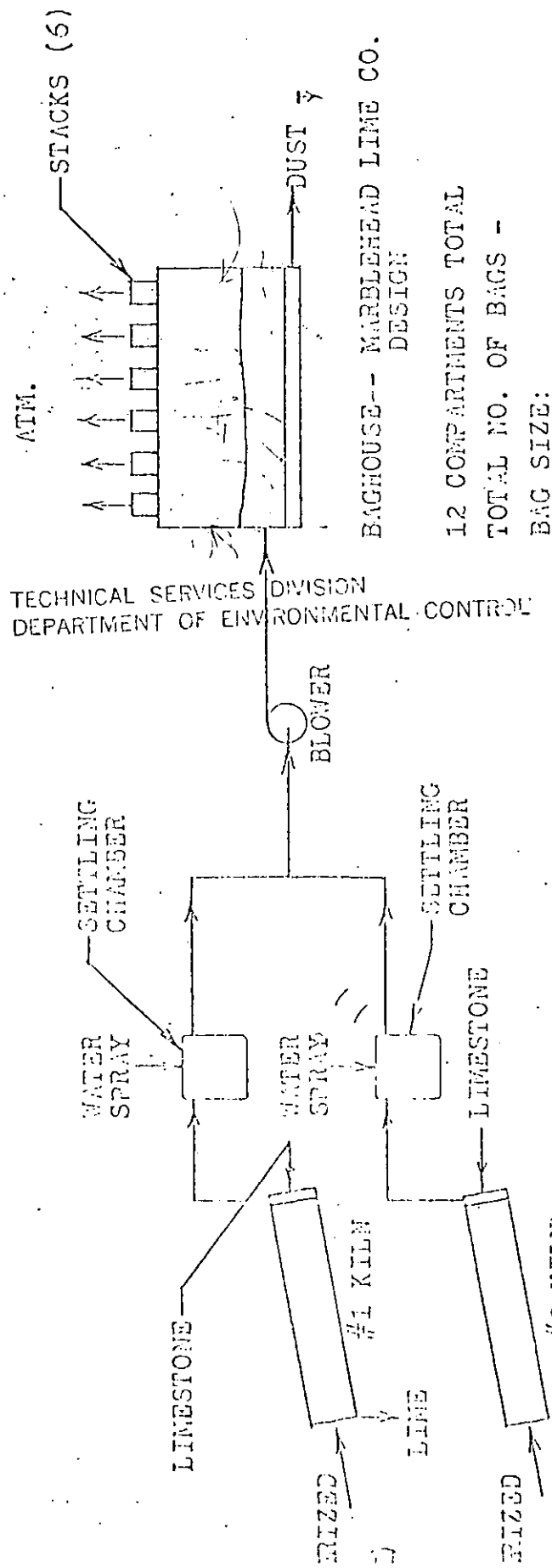
AVG ≈ 3 lb/hr
per station
or 18 lb/hr for
entire baghouse

TECHNICAL SERVICES DIVISION
DEPARTMENT OF ENVIRONMENTAL CONTROL

18 lb/hr
18 lbs product/hr
1 lb/hr
1 lb/hr
1 lb/hr
1 lb/hr
1 lb/hr



ENLARGED DETAIL OF STACK



TECHNICAL SERVICES DIVISION
DEPARTMENT OF ENVIRONMENTAL CONTROL

BAGHOUSE -- MARBLEHEAD LIME CO.
DESIGN

12 COMPARTMENTS TOTAL

TOTAL NO. OF BAGS -

BAG SIZE:

AIR TO CLOTH RATIO:

METHOD OF CLEANING BAGS: REVERSE AIR
PRESSURE

CLEANING CYCLE: 2 MIN. REVERSE AIR
CLEAN; 2 MIN. PAUSE; ON STREAM FOR

SUMMARY OF DATA

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Gas volume flow, SCFM 27,900 27,400

Gas temp. at sampling point, °F, average 366 371

% moisture in stack gas 5.7 5.8

MATERIAL FEED RATE OF PROCESS *

Tons/day Kiln #1 216 216

Kiln #2 214 214

*average moisture
into 2450
to 1 day
18 to 12*

