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.

summary

AP-42 Section 12.2
Reference
Report Sect. 4
Reference 125

Figure 1

SOTDAT/STEEL LIBRARY SYSTEM

Report Title: see report

Plant and Location: Inland / E. Chicago

SCC: 30300303

Testing Date(s): 4/20/79

By Whom: Almega

Stack Test Review Attached:

Reviewed By:

Problems Seen by Reviewer:

Confidentiality Status: Portions claimed Confidential

If status is confidential, list confidential pages or sections:

Edited Copy for release included

Source of Determination of the Confidentiality Status:

Report Encoded By:

Date Encoded:

Form Numbers:

Comments:

NO. 9 JACA-53

THE ALMEGA CORPORATION

607 C Country Club Drive
Bensenville, Illinois 60106
Phone: (312) 595-0175

April 25, 1979

Inland Steel Company
3210 Watling Street
East Chicago, Indiana 46312

Attention: Connie Wingard

Subject: #11 Battery: Coke Side Emission Control System
Scrubber Exhaust Particulate Emission Test: One Spot Car
Inland Steel Company: East Chicago, Indiana
The Almega Corporation Project I-5280

Gentlemen:

INTRODUCTION

Particulate emission testing was conducted on the scrubber exhaust of the coke side emission control system one spot car of the No. 11 Battery at the East Chicago, Indiana, plant of Inland Steel on April 20, 1979.

Purpose of this test series was to determine degree of compliance of this scrubber exhaust with applicable Indiana and USEPA codes.

Testing of this scrubber exhaust was conducted following the procedures as requested by Inland Steel and approved by the agencies after verbal discussions with Mr. Meryl Jackson of The Almega Corporation. The test procedures used utilized methods 1 through 5 of the code of Federal Regulations (Ref. 1).

Emission testing was conducted by Mr. H. M. Taylor and Mr. D. Chapman of The Almega Corporation using a Western Precipitation Method 5 EPA sampling train.

The plant was operated normally by Inland Steel personnel who monitored operations of Battery No. 11 during the tests.

This report summarizes the test methods, procedures, and findings of this test series. Attached as appendices is a complete documentation of all procedures, field test and laboratory analysis data.

SUMMARY OF TEST FINDINGS

Findings of this test series are summarized in Table 1. The field test and laboratory analysis data, calculation summaries and equipment calibration data are included in Appendix G.

Nomenclature is given in Appendix H.

DISCUSSION OF TEST FINDINGS

1. Coke production for each push was tons. For each test repetition covering 12 coke pushes, coke produced was tons.

2. Scrubber stack particulate emissions in lbs. per ton of coke pushed are calculated below:

Test Repetition #	1	2	3
Particulate emission lbs/hr	1.838	1.756	1.788
Test Time mins.	34.57	40.75	41.77
Coke production tons/test run			
Particulate emissions* lbs/ton of coke			

*For test repetition #1, this is calculated from:

$$1.838 \times \frac{34.57}{60} = 0.0040$$

lbs/ton of coke

3. Particulate emission test results both in lbs/hr and lbs/ton for each of the three test repetitions indicates extremely good reproducibility of emission rates during the test series.

4. Since the stack gas velocities and temperatures varied between the time the coke was pushed into the car to the commencement of the water sprays at the quench tower, isokinetic sampling rate during each test repetition was extremely difficult to calculate. However, using the stack gas temperatures and velocity head readings obtained at the beginning and the end of each sampling point and calculating the average for each test repitition, isokinetic sampling rates ranged from 100.1 to 97.4, 92.8 to 96.4 and 88.2 to 90.9% for test runs #1, #2 and #3, respectively. Based upon the nature of the process itself,

Emission testing was conducted by H. M. Taylor and D. Chapman of The Almega Corporation as per the Code of Federal Regulations, Title 40, Methods 1 through 5 (Ref. 1) and following the protocol as requested by Inland Steel and detailed in Appendix A.

Findings of this test series indicate particulate emissions as follows:

Test Repetition No.	Coke Production tons/test run	Particulate Concentration grains/scf db	Particulate Emission Rate lbs/ton of coke
1		0.0203	
2		0.0192	
3		0.0168	

The Almega Corporation is pleased to have been of service to Inland Steel Company.

Respectfully submitted,

THE ALMEGA CORPORATION

H. M. Taylor

H. M. Taylor

HMT:nw

The Almega Corporation

SUMMARY OF EMISSION TEST DATA

TABLE: 1

PLANT: Inland Steel Company, East Chicago, Indiana

LOCATION: #11 Battery: Coke Side Emission Control System: Scrubber Exhau

OPERATOR: H. M. Taylor and D. Chapman

TEST DATE: April 20, 1979

REPETITION #:	1	2	3
STACK GAS			
Average Temperature, °F	147.6	147.8	140.6
Velocity average fps	43.32	43.34	49.49
Volume flow x 10^6 scf db	0.6351	0.6413	0.7447
Volume flow x 10^3 acfm	14.51	14.52	16.58
Moisture %	15.42	14.61	14.19
Carbon Dioxide %	0.87	0.80	0.97
Oxygen %	18.83	18.67	18.67
PARTICULATE SAMPLE			
Time, mins:	34.57	40.75	41.77
Volume scf db	22.095	25.212	28.385
Particulates collected, grams	0.0290	0.0313	0.0309
Isokinetic Ratio, I% $90 \leq I \leq 110$	98.75	94.60	89.60
PARTICULATE			
Concentration grains/scf db	0.0203	0.0192	0.0168
x 10^{-6} lbs/scf db	2.89	2.74	2.40
Emission lbs/hr	1.838	1.756	1.788

COKE PRODUCTION RATE*: tons/test run

(12 pushes at 22.09 tons/push)

PARTICULATE*

Emissions lbs/ton of coke

*See (1) in Discussion Section of Report