

Report of...

Emission Testing

performed for...

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APR 04 2014

AIR QUALITY DIV.

Almond Products

Spring Lake, Michigan

on the

Sand Stripper Exhaust

January 21 and 22, 2014

190.04

Network Environmental, Inc.
Grand Rapids, MI

Performed For:

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TABLE OF CONTENTS

	<u>Page</u>
I. Introduction	1
II. Presentation of Results	2-3
II.1 Table 1 – HF Emission Results	2
II.2 Table 2 – HCl Emission results	3
III. Discussion of Results	4
IV. Source Description	4
V. Sampling and Analytical Protocol	4-5
V.1 HF/HCl	5
V.2 Exhaust Gas Parameters	5
Figure 1 – HF/HCl Sampling Train Diagram	6

Appendices

Sampling Train & Exhaust Gas Parameters	A
Analytical Data	B
Field Data	C
Calculations	D
Raw Data	E

I. INTRODUCTION

Network Environmental, Inc. was retained by Almond Products, Inc. of Spring Lake, Michigan to perform emission testing on their Sand Stripper Oven Exhaust. The purpose of the testing was to determine the HCl and HF emissions from the oven exhaust to compare these emissions to the Michigan Department of Environmental Quality (MDEQ) - Air Quality Division Permit to Install No. 340-08C limits.

The testing was performed on the exhaust of the Sand Stripper Oven that bakes off the epoxy (E90H226) and the Teflon (F59A PTFE) coating from racks used in parts coating. The following testing methods were employed to conduct the sampling:

- Hydrogen Chloride (HCl) and Hydrogen Fluoride (HF) – U.S. EPA Method 26A
- Exhaust Gas Parameters – U.S. EPA Methods 1 through 4

R. Scott Cargill and David D. Engelhardt of Network Environmental, Inc conducted the sampling in the study on January 21 and 22, 2014. Assisting in the study was Mr. Chris Stebbins of Almond Products. Mr. Tom Gasloli and Ms. April Lazzaro of the MDEQ – Air Quality Division were present to observe the sampling and source operation.

The results of the testing are summarized in Table 1 and Table 2 (Section II.1 and II.2) as follows:

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II. PRESENTATION OF RESULTS

**II.1 TABLE 1
HYDROGEN FLUORIDE (HF) EMISSION RESULTS
SAND STRIPPER OVEN EXHAUST
PTFE COATED RACKS (F59A)
ALMOND PRODUCTS
SPRING LAKE, MICHIGAN
JANUARY 21, 2014**

Sample	Time	Air Flow Rate DSCFM ⁽¹⁾	Mass Rate		
			Lbs/Hr ⁽²⁾	Lbs/Dry Coating Solid ⁽³⁾	Lbs/Batch ⁽⁴⁾
1	9:55-11:28	3,122	1.98	0.039	2.97
2	12:37-15:09	3,009	2.08	0.042	3.12
3	14:57-16:30	3,126	1.60	0.030	2.40
Average		3,086	1.89	0.037	2.83

(1)= Dry Standard Cubic Feet Per Minute (STP = 68°F & 29.92 in. Hg)

(2)= Pounds Per Hour

(3)= Pounds Per Dry Coating Solid

(4)= Pounds Per Batch (90 minute batch)

**II.2 TABLE 2
HYDROGEN CHLORIDE (HCl) EMISSION RESULTS
SAND STRIPPER OVEN EXHAUST
EPOXY COATED RACKS (E90H226)
ALMOND PRODUCTS
SPRING LAKE, MICHIGAN
JANUARY 22, 2014**

Sample	Time	Air Flow Rate DSCFM ⁽¹⁾	Mass Rate		
			Lbs/Hr ⁽²⁾	Lbs/Dry Coating Solid ⁽³⁾	Lbs/Batch ⁽⁴⁾
1	8:26-9:58	3,144	0.014	4.00E ⁻⁴	0.021
2	10:58-12:39	3,212	0.008	2.22E ⁻⁴	0.012
3	14:07-15:39	3,098	0.010	2.27E ⁻⁴	0.015
Average		3,151	0.011	2.83E⁻⁴	0.016

(1)= Dry Standard Cubic Feet Per Minute (STP = 68°F & 29.92 in. Hg)

(2)= Pounds Per Hour

(3)= Pounds Per Dry Coating Solid

(4)= Pounds Per Batch (90 minute batch)

III. DISCUSSION OF RESULTS

III.1 Table 1 (Hydrogen Fluoride Emission Results)

- Sample Dates & Times
- Air Flow Rates in terms of Dry Standard Cubic Feet Per Minute (DSCFM) (STP = 68 °F & 29.92 in. Hg)
- Mass emission rates in terms of Pounds Per Hour (Lbs/Hr)
- Mass emission rates in terms of Pounds Per Dry Coating Solid
- Mass emission rates in terms of Pounds Per Batch

III.2 Table 2 (Hydrogen Chloride Emission Results)

- Sample Dates & Times
- Air Flow Rates in terms of Dry Standard Cubic Feet Per Minute (DSCFM) (STP = 68 °F & 29.92 in. Hg)
- Mass emission rates in terms of Pounds Per Hour (Lbs/Hr)
- Mass emission rates in terms of Pounds Per Dry Coating Solid
- Mass emission rates in terms of Pounds Per Batch

IV. SOURCE DESCRIPTION

The process is a Keppel Seghers Fluid Clean B-3111/TNV/CEF/LIS Fluidized Bed Sand Stripper used in removing epoxy and Teflon (PTFE) coatings from metal parts racks used in the coating industry. The oven is equipped with an afterburner control system. The oven is natural gas fired.

V. SAMPLING AND ANALYTICAL PROTOCOL

The sampling location for the exhaust was on the 23 inch diameter exhaust at a location that meets the 8 duct diameter downstream and 2 duct diameter upstream requirement of U.S. EPA Method 1. There are 2 sample ports located at 90° from each other and on the same plane.

Prior to the sampling, a preliminary cyclonic/turbulent flow check was conducted on the exhaust stack. The sampling met the requirements of Method 1.

Twelve (12) sampling points (six per port) were used for the HF/HCL sampling and initial velocity traverse. The sampling point dimensions were as follows:

<u>Sample Point</u>	<u>Dimension (Inches)</u>
1	1.01
2	3.36
3	6.81
4	16.19
5	19.64
6	21.99

V.1 HF/HCl - The HF/HCl emission sampling was conducted in accordance with U.S. EPA Method 26A. Three (3) samples were collected from the exhaust stack under each rack coating type. Each sample was ninety (90) minutes in duration and had a minimum sample volume of thirty (30) dry standard cubic feet. The samples were collected isokinetically in a sulfuric acid solution (0.1N H₂SO₄). The filters were discarded and not analyzed.

The samples were recovered and refrigerated until they were analyzed. The impinger catch was analyzed for HF and HCl from the 0.1N H₂SO₄ solution. The samples were analyzed by HPLC/IC. All the quality assurance and quality control procedures listed in the methods were incorporated in the sampling and analysis. Figure 1 is a diagram of the sampling train.

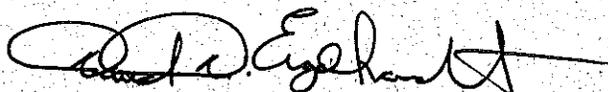
V.2 Exhaust Gas Parameters – The exhaust gas parameters (air flow rate, temperature, moisture and density) were determined in conjunction with the other sampling by employing U.S. EPA Methods 1 through 4. Air flow rates, temperatures and moistures were determined using the sampling train. Bags were collected and analyzed by Orsat in order to determine gas density.

This report was prepared by:



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This report was reviewed by:



David D. Engelhardt
Vice President

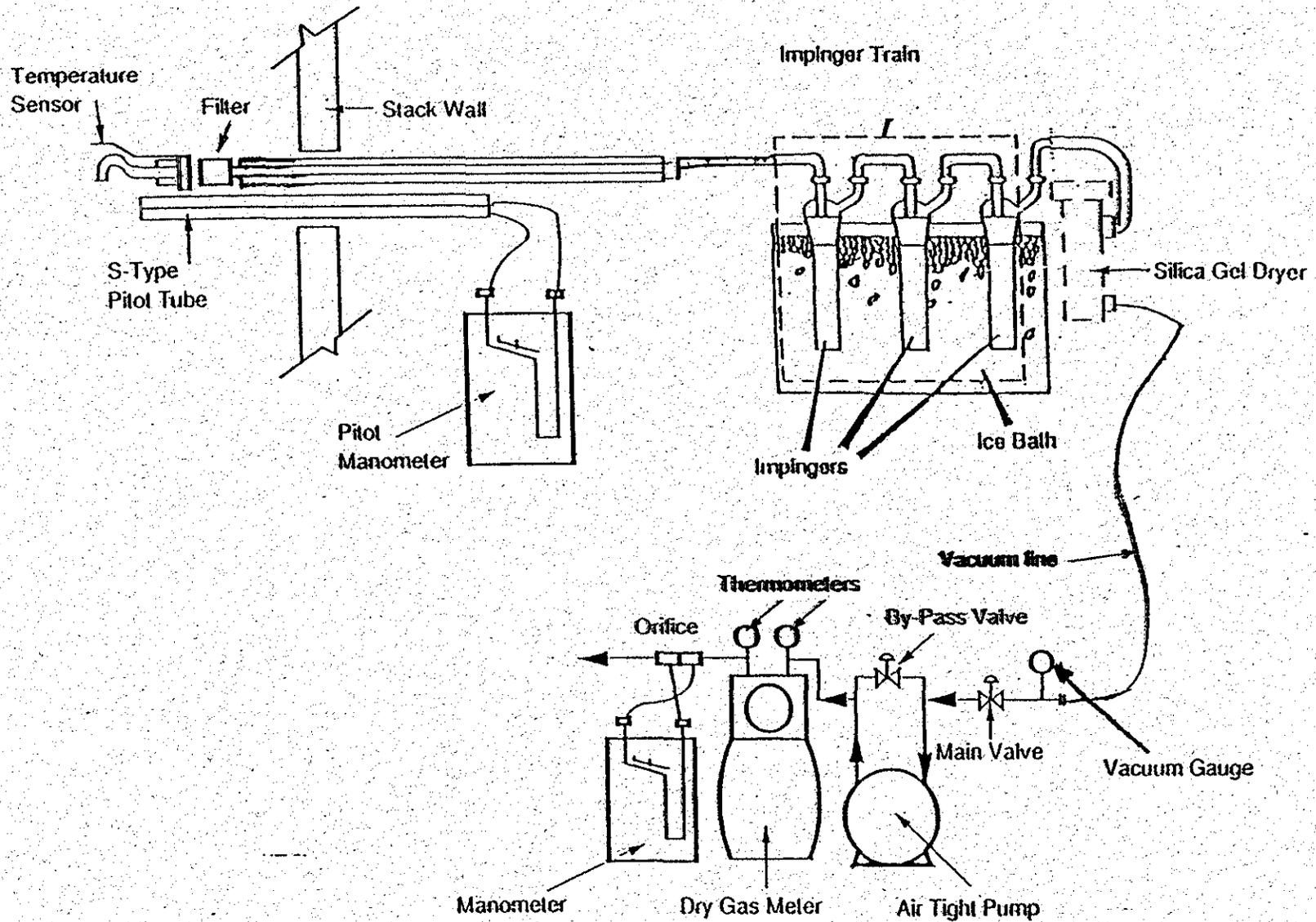


Figure 1
HF and HCL Sampling Train