

EXECUTIVE SUMMARY

United Ethanol, LLC – Milton, Wisconsin
American Engineering Testing, Inc. Test Date September 15, 2009

Particulate matter emissions testing was conducted on Boiler #2 (S13) on September 15, 2009. The results are summarized below:

Emission Unit Tested	Pollutant	Emission Unit Limit	Test Result
Boiler #2 (S13)	Particulate Matter	0.00745 Lbs/MMBtu	0.0019 Lbs/MMBtu

Boiler #2 (S13)				
Particulate Matter (PM) Results September 15, 2009				
<u>Air Flow Data</u>	<u>Run #1</u>	<u>Run #2</u>	<u>Run #3</u>	<u>Average</u>
Stack Temperature, °F	290	289	289	289
Stack Oxygen, %	5.7	5.5	4.1	5.1
Stack Carbon Dioxide, %	8.7	8.8	9.6	9.0
Moisture, %	15.5	15.4	16.9	15.9
Stack Flow Rate, DSCFM	14,400	14,300	14,000	14,233
Isokinetic Variation, %	97.8	96.6	99.7	98.0
Fd, dscf/106 Btu	8710	8710	8710	8710
<u>Total Particulate Emission Results</u>				
Particulate Concentration, grains/dscf	0.0012	0.0009	0.0015	0.0012
Particulate Mass Rate, lbs/hr	0.144	0.104	0.176	0.142
Particulate Mass Rate, lbs/million Btu	0.0020	0.0014	0.0023	0.0019
<u>Operating Data</u>				
Heat Input, MMBtu/hr	95.9	95.7	95.2	95.6

1 Introduction

This document reports the results of the test program conducted at:

United Ethanol, LLC
Milton, Wisconsin

Compliance testing was conducted September 15, 2009 on Boiler #2 (S13). Testing was performed to demonstrate compliance with Wisconsin Department of Natural Resources (WDNR) air permit No. 07-DCF-239.

On-site American Engineering Testing personnel included Mr. Luke Westrich, Mr. Andy Frechette, and Mr. Mark Peterson (Barr Engineering). Testing was coordinated by Mr. Dennis Hatfield of RMT, Inc. and Mr. Norm Scheels of United Ethanol, LLC. Testing was witnessed by Mr. Brian Barbieur and Mr. Jason Treutel from the (WDNR).

2 Process and Control Equipment Descriptions

United Ethanol, LLC is an ethanol production facility. This facility produces ethanol utilizing the dry-mill process.

Boiler #2 (S13) is a natural gas fired boiler that provides steam for the ethanol production process.

2.1 Testing Conditions

Testing was conducted near the maximum boiler production rate. Boiler operating data was provided by United Ethanol, LLC and is included in Appendix D.

3 Summary of Results

3.1 Boiler #2 (S13) Particulate Matter Emissions Testing

The particulate matter emission rate of Boiler #2 (S13) was determined on September 15, 2009.

Testing was conducted during the time frame listed below:

Run #1 – 08:15-09:18 hrs. – 09/15/09

Run #2 – 10:40-11:43 hrs. – 09/15/09

Run #3 – 13:22-14:25 hrs. – 09/15/09

A summary of the monitoring follows:

1. The Particulate Matter emissions from Boiler #2 were determined in accordance with EPA Method 5 and EPA Other Test Method (OTM) 28 (also known as the dry impinger method for determining condensable particulate emissions). The results reflect a field train blank correction (as outlined in OTM-28) that was performed before the actual sampling. The field train blank result was slightly higher than the maximum blank correction allowed to be subtracted. As a result 0.002 grams was subtracted (proportionately to the inorganic/organic field train blank result) from each run. Negative filter weights (indicated by italicized numbers) were corrected up to zero for the calculations. The results are summarized in Table 1. Emission results for the individual test runs are enclosed in Appendix A. Analytical lab results are located in Appendix B.
2. The stack gas oxygen and carbon dioxide content were measured in accordance with EPA Method 3A and stack gas moisture content was determined in accordance with EPA Method 4. The run #2 integrated bag sample ruptured after 45 minutes into the test run. The final 15-minute sample was captured and analyzed. This shortened sample was approved by Jason Treutel of the WDNR. The results are summarized in Table 1. Emission results for the individual test runs are enclosed in Appendix C.
3. Volumetric airflow measurements were conducted in accordance with EPA Method 2. A minimum of one measurement was conducted during each run for the determination of mass emission rates. Air flow results and field data sheets are enclosed in Appendix A.
4. The Particulate Matter emissions averaged 0.0019 lbs/MMBtu during the three test runs.

4 Test Procedures

Testing was conducted in accordance with the methods and procedures detailed in the following sections.

4.1 Volumetric Airflow Measurement

The location of the sampling sites and sampling points were determined in accordance with EPA Method 1. Upstream and downstream distances to flow disturbances were measured and used to determine the minimum number of traverse points. The test location is depicted in Figure 1.

The stack gas velocity and volumetric flow rate were determined in accordance with EPA Method 2. An inclined liquid manometer in conjunction with an S-type pitot tube was used to measure the pressure differential at each traverse point. The stack temperature was measured using a digital thermometer and a type-k thermocouple. Ambient pressure was determined using a calibrated altimeter. EPA Method 3A was used to determine the stack gas molecular weight from integrated samples collected during each test run. EPA Method 4 was used to determine the stack gas moisture content.

Calibration data for equipment used during testing is enclosed in Appendix F. Calculations and nomenclatures used are enclosed in Appendix E.

4.2 Particulate Matter Measurement

Particulate matter measurements were conducted in accordance with EPA Method 5. Total condensable particulate matter measurements were conducted in accordance with EPA Method OTM 28.

Calibration data for the equipment used during the testing is enclosed in Appendix F. Calculations and nomenclatures used are enclosed in Appendix E.

5 Signatures

The services performed by American Engineering Testing, Inc. for this project have been conducted in a manner consistent with that level of skill and care ordinarily exercised by other members of the profession currently practicing in this area. The results included in this report relate only to the items being tested and at the time and conditions present during this test.

We verify that the data presented in this test report are, to the best of our knowledge and belief, true, accurate, and complete.

Report Prepared By:
American Engineering Testing, Inc.



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Report Reviewed By:
American Engineering Testing, Inc.



Robert R. Elliott
Manager, Environmental Field Department