mostardi platt

Compliance Emissions Test Report

Knauf Insulation
EU-WBWALB Forming Stack West
Albion, Michigan
May 29, 2019

Report Submittal Date
June 18, 2019

Project No. M191005B

888 Industrial Drive
Elmhurst, Illinois 60126
630-993-2100

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1.0 EXECUTIVE SUMMARY

MOSTARDI PLATT conducted a compliance emissions test program for Knauf Insulation on May 29, 2019 on the EU-WBWALB Forming Stack West in Albion, Michigan. This report summarizes the results of the test program and test methods used.

The test location, test date, and test parameters are summarized below.

TEST INFORMATION		
Test Location	**Test Date**	**Test Parameters**
EU-WBWALB Forming Stack West	May 29, 2019	Total Particulate Matter (TPM) and Visible Emissions (VE)

The purpose of the test program was to demonstrate emissions during normal operating conditions. Selected results of the test program are summarized below. A complete summary of emission test results follows the narrative portion of this report.

TEST RESULTS					
Test Location	**Test Date**	**Source Condition**	**Test Parameter**	**Emission Limit**	**Emission Rate**
EU-WBWALB Forming Stack West	5/29/19	Normal	TPM	23.98 lb/hr *	4.990 lb/hr
				5.33 lb/ton of glass pulled *	See Knauf CBI letter
			VE	20% *	0%

*The Emission Limit for the EU-WBWALB are combined for the Forming Stack East and Forming Stack West

The identification of individuals associated with the test program is summarized below.

TEST PERSONNEL INFORMATION		
Location	**Address**	**Contact**
Test Coordinator	Knauf Insulation One Knauf Drive Shelbyville, Indiana 46176	Mr. Adam Estes (317) 421-4702 (phone) Adam.Estes@knaufinsulation.com
Test Facility	Knauf Insulation 1000 E. North Street Albion, Michigan 49224	
Testing Company Representative	Mostardi Platt 888 Industrial Drive Elmhurst, Illinois 60126	Mr. Christopher S. Trezak Senior Project Manager (630) 993-2100 (phone) ctrezak@mp-mail.com

The test crew consisted of Messrs. C. Eldridge, R. Simon, and C. Trezak of Mostardi Platt.

2.0 TEST METHODOLOGY

Emission testing was conducted following the methods specified in 40 CFR, Part 60, Appendix A, and 40 CFR, Part 51, Appendix M. Schematics of the test section diagrams and sampling trains used are included in Appendix A and B, respectively. Calculation examples and nomenclature are included in Appendix C and laboratory analysis data are found in Appendix D. Copies of analyzer print-outs and field data sheets for each test run are included in Appendix E and F, respectively.

The following methodologies were used during the test program:

Method 1 Traverse Point Determination

Test measurement points were selected in accordance with Method 1. The characteristics of the measurement location are summarized below.

TEST POINT INFORMATION						
Location	Duct Diameter (Feet)	Area (Square Feet)	Upstream Diameters	Downstream Diameters	Test Parameter	Number of Sampling Points
EU-WBWALB Forming Stack West	5.95	27.805	>0.5	>2.0	TPM	24

Method 2 Volumetric Flowrate Determination

Gas velocity was measured following Method 2, for purposes of calculating stack gas volumetric flow rate at the test location. An S-type pitot tube, differential pressure gauge, thermocouple and temperature readout was used to determine gas velocity at each sample point at the test location. All of the equipment used was calibrated in accordance with the specifications of the Method. Calibration data are presented in Appendix G.

Method 3A Oxygen (O_2)/Carbon Dioxide (CO_2) Determination

Stack gas molecular weight was determined in accordance with Method 3A at the test location. An ECOM analyzer was used to determine stack gas oxygen and carbon dioxide content and, by difference, nitrogen content. All of the equipment used was calibrated in accordance with the specifications of the Method and calibration data are included in Appendix G. Copies of the gas cylinder certifications are included in Appendix H.

Method 5 Particulate Determination

Stack gas particulate concentrations and emission rates were determined in accordance with Method 5 at the test location. An Environmental Supply Company, Inc. sampling train was used to sample stack gas at an isokinetic rate, as specified in the Method. Particulate matter in the sample probe was recovered using an acetone rinse. The probe wash and filter catch were analyzed by Mostardi Platt in accordance with the Method in the Elmhurst, Illinois laboratory. Laboratory data are found in Appendix D. All of the equipment used was calibrated in accordance with the specifications of the Method. Calibration data are presented in Appendix G.

Method 202 Condensable Particulate Determination

Stack gas condensable particulate matter concentrations and emission rates were determined in accordance with USEPA Method 202, in conjunction with Method 5 filterable particulate sampling at the test location. This method applies to the determination of condensable particulate matter (CPM) emissions from stationary sources. It is intended to represent condensable matter as material that condenses after passing through a filter and as measured by this method.

The CPM was collected in the impinger portion of the Method 5 (Appendix A, 40CFR60) type sampling trains. The impinger contents were immediately purged after each run with nitrogen (N_2) to remove dissolved sulfur dioxide (SO_2) gases from the impinger contents. The impinger solution was then extracted with hexane. The organic and aqueous fractions were then taken to dryness and the residues weighed. A correction was made for any ammonia present due to laboratory analysis procedures. The total of both fractions represents the CPM.

All sample recovery was performed at the test site by the test crew. Mostardi Platt personnel at the laboratory in Elmhurst, Illinois, performed all final particulate sample analyses. Laboratory data are found in Appendix D. All of the equipment used was calibrated in accordance with the specifications of the Method. Calibration data are presented in Appendix G.

Method 9 Visible Emission Determination

Visible emissions are determined in accordance with Method 9. The observer stood at a distance providing a clear view of the emissions with the sun oriented in the 140° sector to their back. As much as possible, the line of vision is approximately perpendicular to the plume direction.

Opacity observations were made at the point of greatest opacity in the portion of the plume where condensed water vapor was not present. Observations were made at 15-second intervals for the duration of the test run. Tests were a minimum of 60 minutes and conducted simultaneously with the USEPA Method 5/202 particulate matter testing.

Visible emissions observations were conducted and recorded by Mr. C. Trezak, who is a certified visual emissions observer. A copy of Mr. Trezak's certification is presented in Appendix I.