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Filterable and Total Particulate Matter Compliance Emissions Test Report

Banks Hardwoods Inc.
Baghouse Collector No. 5
White Pigeon, Michigan
September 28 and 29, 2023

Report Submittal Date
November 6, 2023

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Mostardi Platt

Project No. M233313

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

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1.0 EXECUTIVE SUMMARY

Mostardi Platt conducted a filterable particulate matter (FPM) compliance emissions test program for Banks Hardwoods Inc. on September 28 and 29, 2023 on the Baghouse Collector No. 5 in White Pigeon, Michigan. This report summarizes the results of the test program and test methods used.

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

Location	Test Parameters	Test Methods
Baghouse Collector No. 5	Filterable Particulate Matter (FPM)	USEPA Method 5, 40CRF60, Appendix A, and Method 202 40CFR51, Appendix M. All PM will be considered $PM_{2.5}$ and PM_{10}
	$PM_{2.5}$	
	PM_{10}	
	Total Particulate Matter (PM_{10})	

The purpose of the test program was to demonstrate compliance with the above listed requirements.

Selected results of the test program are summarized below. A complete summary of emission test results follows the narrative portion of this report.

Run 2 did not pass the post-test leak check, and therefore the emissions are based on Runs 1, 3, and 4

Test Location	Test Date	Test Parameter	Emission Limit	Emission Rate
Baghouse Collector No. 5	9/28/2023	FPM	0.01 lb/1000 lb	0.001 lb/1000 lb
		$PM_{2.5}$	0.26 lb/hr	0.250 lb/hr
		PM_{10}	0.58 lb/hr	0.250 lb/hr

Operating data as provided by Banks Hardwoods Inc. is included in Appendix A.

The identifications of the individuals associated with the test program are summarized below.

TEST PERSONNEL INFORMATION		
Location	**Address**	**Contact**
Test Facility	Bank Hardwoods Inc. 69937 M-103 White Pigeon, MI 49099	Kevin Zhu (847)258-8980 (phone) Kevin.Zhu@erm.com
Testing Company Representative	Mostardi Platt 888 Industrial Drive Elmhurst, IL 60126	Stuart Burton Director/ Regional Manager (630) 993-2100 sburton@mp-mail.com

The test crew consisted of H. Hoeksema, J. Dockins, P. Coleman and S. Burton of Mostardi Platt.

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2.0 TEST METHODOLOGY

Emission testing was conducted following the procedures 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 B and C, respectively. Calculation examples and nomenclature are included in Appendix D and laboratory analysis data are found in Appendix E. Copies of computerized data sheet print-outs and field data sheets for each test run are included in Appendix F and G, 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	Stack Dimensions (Feet)	No. of Ports	Port Length (Inches)	Upstream Diameters	Downstream Diameters	Test Parameter	Number of Sampling Points
Baghouse Collector No. 5	3.833' x 5.833'	5	Hole in duct	42"	138"	TPM	25

Method 2 Volumetric Flowrate Determination

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

Method 5 Filterable Particulate Matter (FPM) Determination

Stack gas FPM concentrations and emission rates are determined in accordance with USEPA Method 5, 40CFR60, Appendix A with filter and probe temperatures between 248 degrees +/- 25 degrees Fahrenheit. An Environmental Supply Company, Inc. sampling train is used to sample stack gas at an isokinetic rate, as specified in the Method utilizing Pallflex TX40HI45 filters. Particulate matter in the sample probe is recovered using an acetone rinse. The probe wash and filter catch are analyzed by Mostardi Platt in accordance with the Method in the Elmhurst, Illinois laboratory. Sample analysis data and Calibration data are presented in Appendix of the final report. All of the equipment used is calibrated in accordance with the specifications of the Method.

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Method 202 Condensable Particulate Determination

Stack gas condensable particulate matter concentrations and emission rates is determined in accordance with USEPA Method 202, in conjunction with Method 5 and 201A sampling. 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 is collected in the impinger portion of the Method 5/202 sampling train. The impinger contents are immediately purged after each run with nitrogen (N_2) to remove dissolved sulfur dioxide (SO_2) gases from the impinger contents. The impinger solution is then extracted with hexane. The organic and aqueous fractions are then taken to dryness and the residues weighed. A correction is made for any ammonia present due to laboratory analysis procedures. The total of both fractions represents the CPM.

The samples were analyzed by an approved laboratory following the procedures specified in the Method. Copies of all sample analysis sheets, explanations of nomenclature and calculations, and raw field data sheets are included in the Appendix.

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3.0 TEST RESULT SUMMARIES

Client: Banks Hardwoods Inc.
Facility: White Pigeon, Michigan
Test Location: Baghouse Collector No. 5
Test Method: 5/202

Source Condition	Normal	Normal	Normal	
Date	9/28/23	9/28/23	9/29/23	
Start Time	6:25	12:41	6:15	
End Time	8:38	14:54	8:28	Runs 1, 3, and 4
	Run 1	Run 3	Run 4	Average
Stack Conditions				
Average Gas Temperature, °F	74.5	78.9	74.7	76.0
Flue Gas Moisture, percent by volume	1.8%	1.8%	1.7%	1.8%
Average Flue Pressure, in. Hg	29.22	29.22	29.28	29.24
Gas Sample Volume, dscf	85.609	84.77	86.794	85.724
Average Gas Velocity, ft/sec	35.350	35.301	35.664	35.438
Gas Volumetric Flow Rate, acfm	41,141	41,084	41,507	41,244
Gas Volumetric Flow Rate, dscfm	38,968	38,596	39,451	39,005
Gas Volumetric Flow Rate, scfm	39,695	39,316	40,115	39,709
Isokinetic Variance	100.9	100.8	101.0	100.9
Filterable Particulate Matter (Method 5)				
grams collected	0.00184	0.00306	0.00362	0.00284
grains/dscf	0.0003	0.0006	0.0006	0.0005
lb/hr	0.111	0.184	0.218	0.171
lb/1000 lb of stack gas	0.001	0.001	0.001	0.001
Condensable Particulate Matter (Method 202)				
grams collected	0.00167	0.00157	0.00060	0.00128
grains/dscf	0.0003	0.0003	0.0001	0.0002
lb/hr	0.101	0.095	0.040	0.079
lb/1000 lb of stack gas	0.001	0.001	0.000	0.000
Total Particulate Matter (5/202)				
grams collected	0.00351	0.00463	0.00420	0.00411
grains/dscf	0.0006	0.0009	0.0007	0.0007
lb/hr	0.212	0.279	0.258	0.250
lb/1000 lb of stack gas	0.001	0.002	0.001	0.001

Run 2 did not pass the post test leak check, and therefore the emissions are based on Runs 1, 3, and 4

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4.0 CERTIFICATION

Mostardi Platt is pleased to have been of service to Banks Hardwoods Inc. If you have any questions regarding this test report, please do not hesitate to contact us at 630-993-2100.

As project manager, I hereby certify that this test report represents a true and accurate summary of emissions test results and the methodologies employed to obtain those results, and the test program was performed in accordance with the methods specified in this test report.

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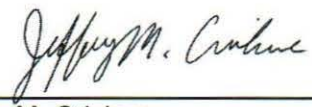
Stuart L. Burton — Program Manager



Jeffrey M. Crivlare — Quality Assurance

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APPENDICES

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Appendix A - Operating Data

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The plant ran 39, 479 BF on 9/28 for an 8 hour shift; 4,935 BF per hour and 25,035 BF on 9/29 for a 5 hour product operation; 5,007 BF per hour, through Plant 5. All machines associated with the source emission testing location were running and at the maximum output.

Banks Hardwoods, Inc.
69937 M-103
White Pigeon, MI 49099
www.BanksHardwoods.com

REAL AMERICAN HARDWOOD

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Appendix B - Test Section Diagram

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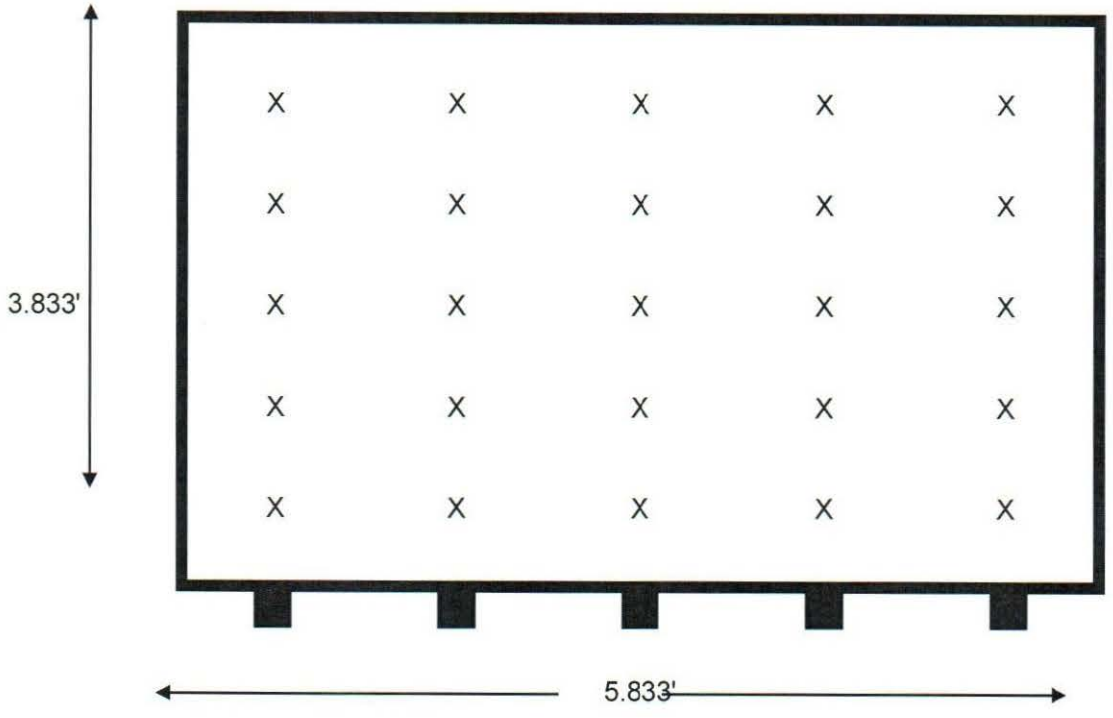
EQUAL AREA TRAVERSE FOR RECTANGULAR DUCTS



Job: Banks Hardwoods, Inc.
White Pigeon, MI

Date: September 28, 2023

Test Location: Baghouse Collector No. 5 Exhaust

Length: 3.833 Feet

Width: 5.833 Feet

Area: 22.36 Square Feet

No. Test Ports: 5

Tests Points per Port: 5

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Appendix C - Sample Train Diagrams

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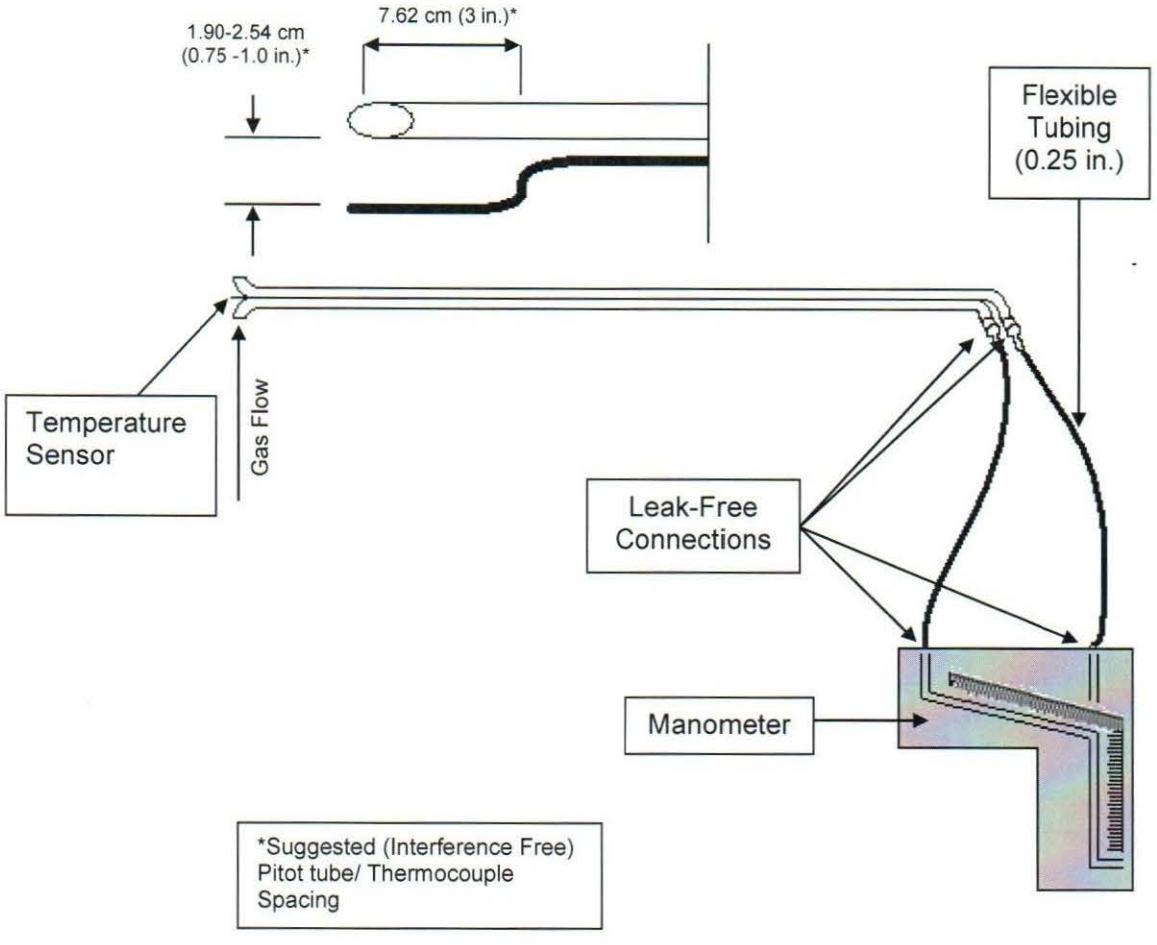
USEPA Method 2 – Type S Pitot Tube Manometer Assembly



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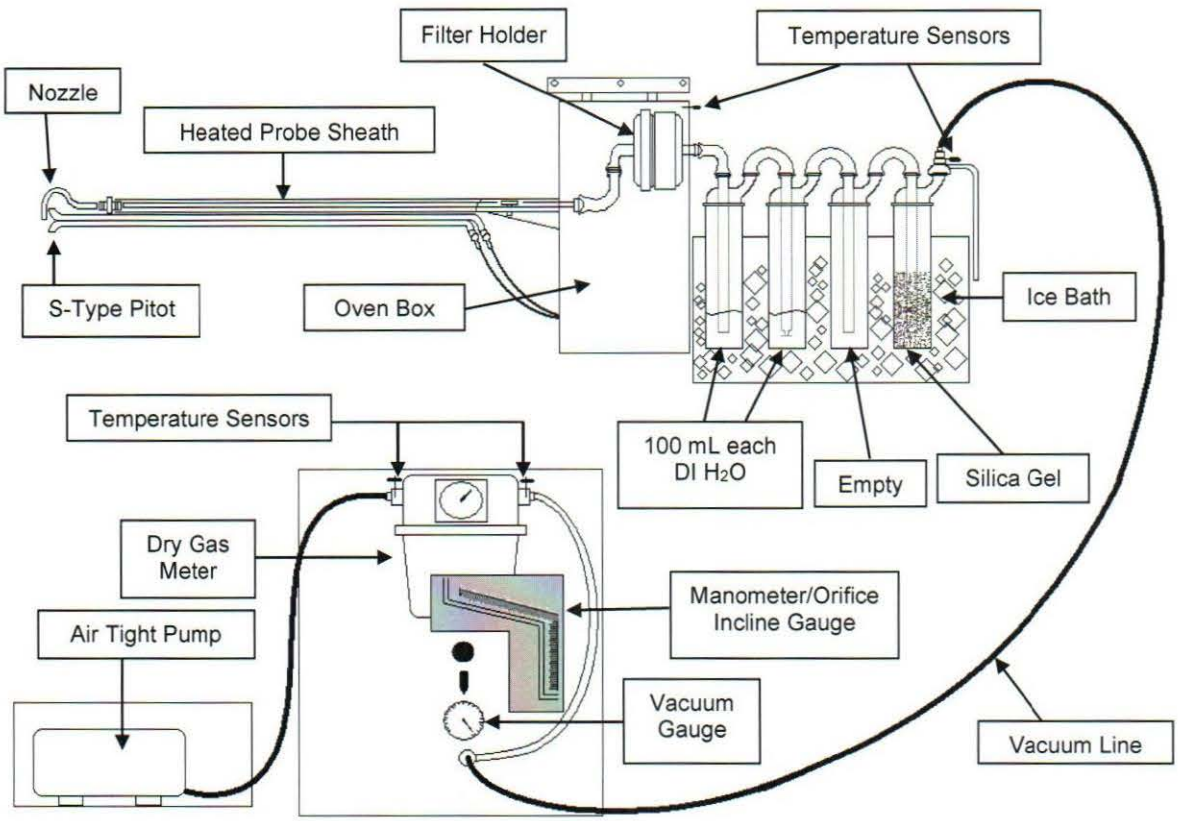
USEPA Method 5- Particulate Matter Sample Train Diagram



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Appendix D - Calculation Nomenclature and Formulas

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