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COB RESEARCH INSTITUTE
HEAT FLOW METER TEST REPORT

SCOPE OF WORK
COB WALL MATERIAL - ASTM C518

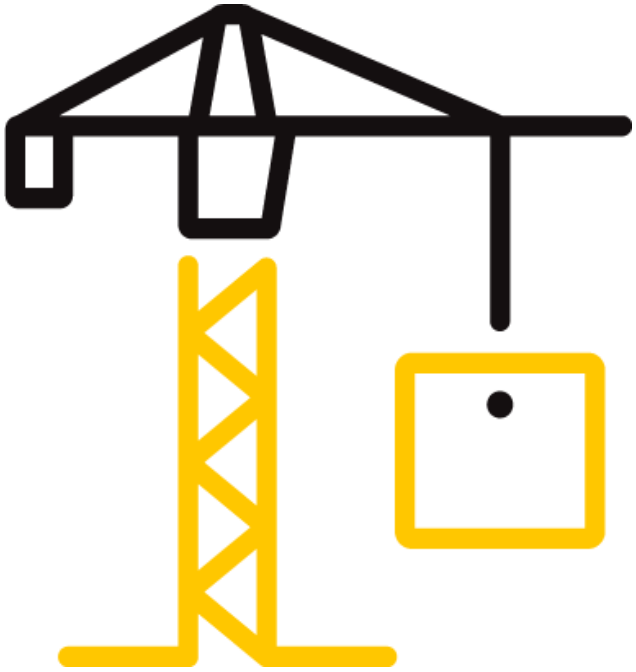
REPORT NUMBER
N1637.01-116-25 R0

TEST DATE
12/14/2021 to 12/17/2021

ISSUE DATE
12/20/21

PAGES
9

DOCUMENT CONTROL NUMBER
RT-R-AMER-Test-7906 (10/08/21)



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TEST REPORT FOR COB RESEARCH INSTITUTE
Report No.: N1637.01-116-25 R0
Date: 12/20/21

REPORT ISSUED TO
COB RESEARCH INSTITUTE
1828 Fifth Street
Berkeley, California 94710

SECTION 1
SUMMARY

SERIES/MODEL: Cob Wall Material

Architectural Testing, Inc. (an Intertek company) dba Intertek Building & Construction (B&C) was contracted to perform heat flow meter testing. Results obtained are tested values and were secured using the designated test methods. The testing conforms with all requirements of the referenced specification with the exception that results are report in Imperial units.

Intertek B&C is an accredited testing laboratory and all testing was conducted in full compliance with ASTM approved procedures and specifications.

Intertek B&C will service this report for the entire test record retention period. The test record retention period ends four years after the test date. Test records, such as detailed drawings, datasheets, or other pertinent project documentation, will be retained for the entire test record retention period. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

For INTERTEK B&C:

COMPLETED BY:	Benjamin W. Green	**REVIEWED BY:**	Eric S. Leitner
TITLE:	Project Lead	**TITLE:**	Manager - Thermal Testing & Simulations
SIGNATURE:	Digitally Signed by: Benjamin W. Green	**SIGNATURE:**	Digitally Signed by: Eric S. Leitner
DATE:	12/20/21	**DATE:**	12/20/21

BWG:bwg

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SECTION 2
TEST METHODS

The product were evaluated in accordance with the following:

ASTM C518-21, Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus

SECTION 3
TEST SPECIMEN DESCRIPTION

SERIES/MODEL	Cob Wall Material
PRODUCT TYPE	Cob Wall Material
SPECIMEN TEST SIZE	12" x 12"

**This product is not a compressible sample.*

SPECIMEN CONSTRUCTION	The test specimens were provided by the client as three blocks of material measuring approximately 3.5" x 12" x 12". Each block was resurfaced to provide samples with flat and parallel top and bottom surfaces. See Appendix B: Photographs.

SECTION 4
TEST CONDITIONS

COLD PLATE TEMPERATURE	50°F nominal
WARM PLATE TEMPERATURE	100°F nominal
MEAN SPECIMEN TEMPERATURE	75°F nominal
AVERAGE TEMPERATURE GRADIENT	50°F/inch nominal
HEAT FLOW ORIENTATION	Vertical Heat Flow (Down)
SPECIMEN CONFIGURATION	Single horizontal specimen
METERING AREA	4" x 4" heat flux transducer on warm side plate

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SECTION 5
EQUIPMENT

DESCRIPTION	SERIAL #	ASSET #	CALIBRATION DATE
Dial Calipers (0-12")	52-008-012-0	INT01848	12/21/20
Adams Scale (CBK 70A)	17960300	65197	12/18/20
Digital Indicators (0-1")	17960305	65196	12/21/20
Temp/Humidity Transmitter	12961265	63736	12/17/20

SECTION 6
CALIBRATION INFORMATION

Calibration Material	NIST Standard Reference Material 1450d, Fibrous Glass Board, Serial Number 357, dated January 20, 2012, no expiration.	
Material Thermal Resistance	**4.39**	hr·ft2·°F/ Btu

SECTION 7
TEST RESULTS (IP Units)

Test Specimen ID	Sample Name	Avg. Heat Flux (Btu/hr·ft²)	Avg. Thermal Conductance (C) (Btu/hr·ft²·°F)	Avg. Thermal Resistance (R) (hr·ft²·°F/Btu)	Avg. Thermal Resistivity (r) (hr·ft²·°F/Btu-in)	Apparent Thermal Conductivity (k) (Btu-in/hr·ft²·°F)	Specimen Avg. Thickness (inches)	†Specimen Avg. Density (Lbs/Ft3)
1	Sample 1	26.80	0.537	1.86	0.65	1.545	2.877	78.97
2	Sample 2	26.01	0.521	1.92	0.73	1.367	2.626	76.33
3	Sample 3	30.48	0.610	1.64	0.54	1.846	3.025	74.69

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SECTION 7 (continued)

TEST RESULTS (SI Units)

Test Specimen ID	Sample Name	Avg. Heat Flux (W/m^2)	Avg. Thermal Conductance (C) ($W/m^2 \cdot K$)	Avg. Thermal Resistance (Rsi) ($m^2 \cdot K/W$)	Avg. Thermal Resistivity (r) ($m \cdot K/W$)	Apparent Thermal Conductivity (k) ($W/m \cdot K$)	Specimen Avg. Thickness (mm)	†Specimen Avg. Density (kg/m^3)
1	Sample 1	84.54	3.049	0.33	4.51	0.223	73.08	1264.93
2	Sample 2	82.06	2.956	0.34	5.06	0.197	66.70	1222.67
3	Sample 3	96.14	3.465	0.29	3.74	0.266	76.84	1196.42

†The density of the sample was determined by dividing the average weight of the sample by its volume. The weight was measured using a calibrated scale and the volume was determined by measuring the length, width, and height of the sample.

ANSI/NCSL Z540-2-1997 Type B uncertainty for this test was: 4%

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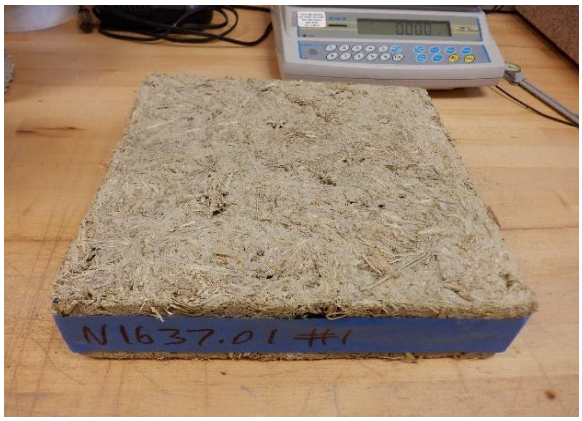
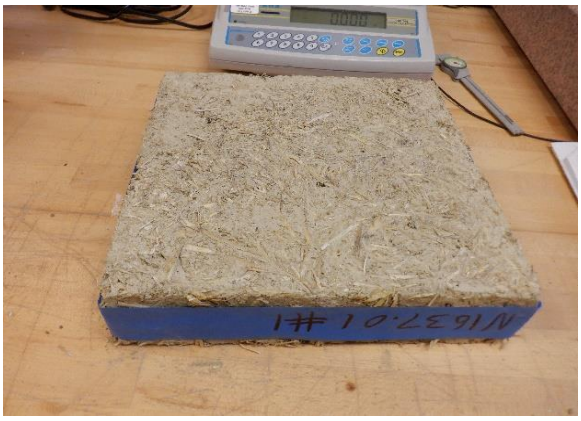
SECTION 8
PICTURES

Cob Wall Material (Sample 1)





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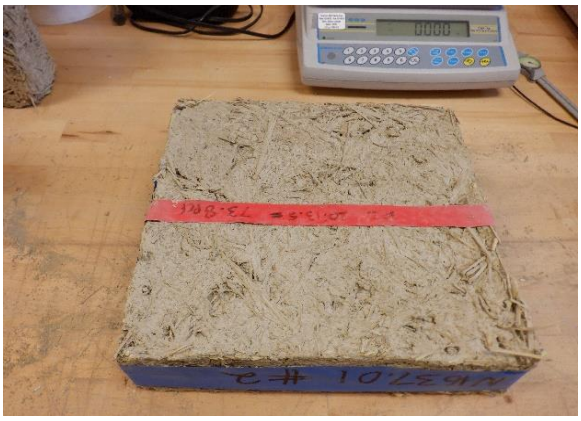
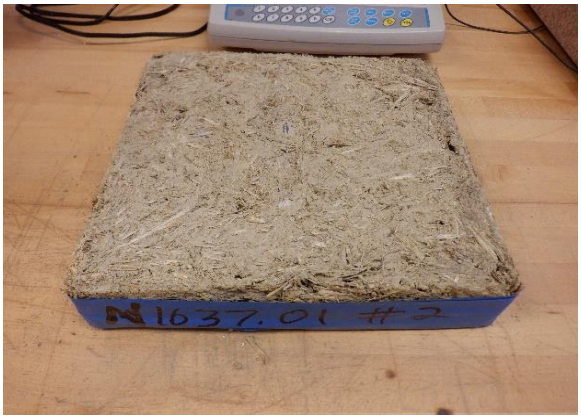
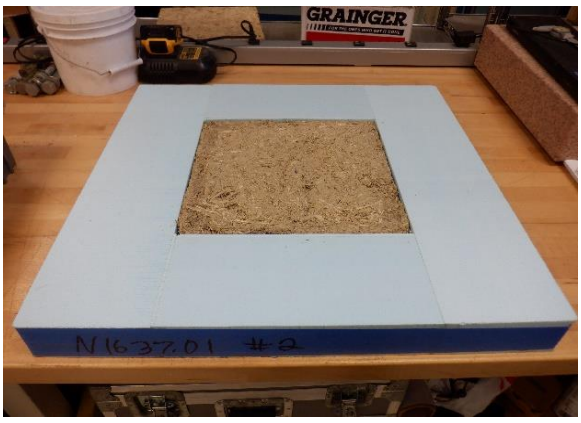
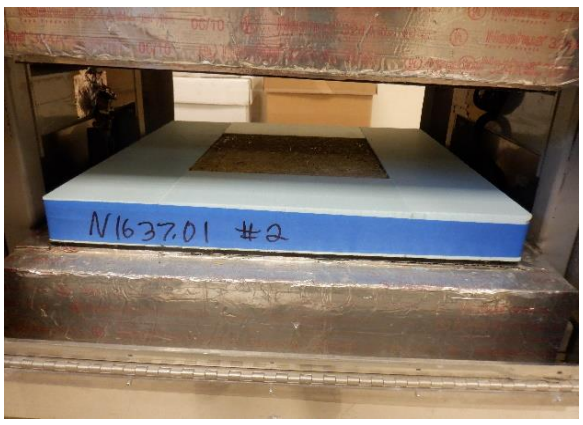
SECTION 8 (continued)
PICTURES

Cob Wall Material (Sample 2)









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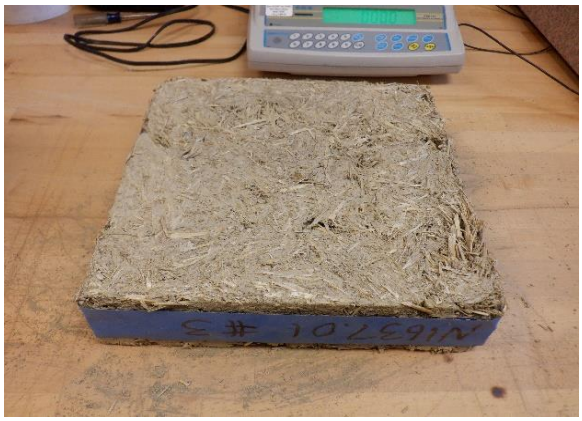
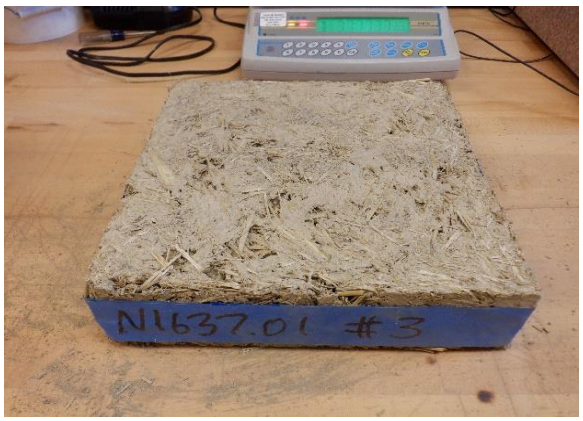
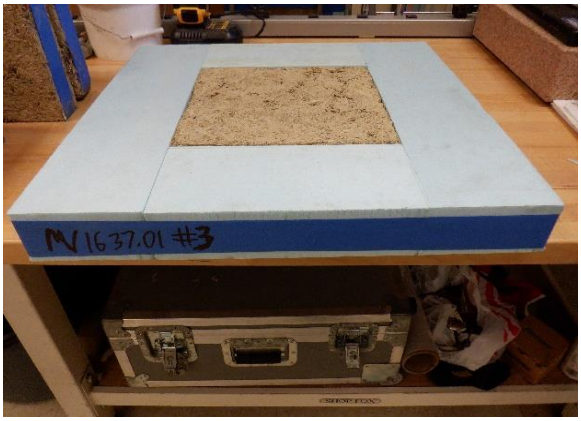
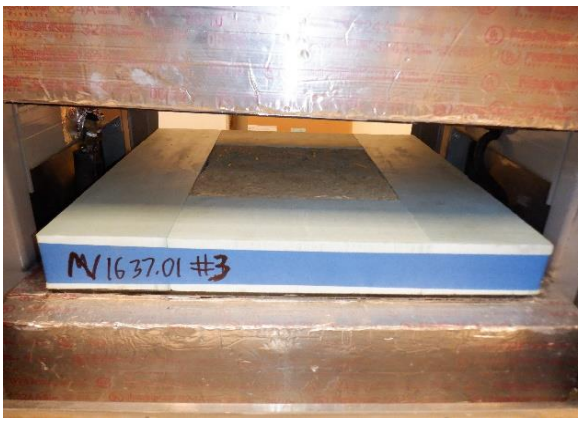
SECTION 8 (continued)
PICTURES

Cob Wall Material (Sample 3)









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SECTION 9

REVISION LOG

REVISION #	DATE	PAGES	REVISION
.01 R0	12/20/21	N/A	Original Report Issued to Customer.