



**ASTM C 1363-2011 THERMAL PERFORMANCE
TEST REPORT**

Rendered to:

AMERILUX INTERNATIONAL, LLC

SERIES/MODEL: 40mm Clear Thermoclick filled with Lumira™ Aerogel

TYPE: Multi-Cellular Panel

Summary of Results	
Standardized Thermal Transmittance (U-Factor)	0.10
Unit Size:	37" x 39-3/8"

Reference must be made to Report No. C6946.01-301-46, dated 04/23/13 for complete test specimen description and data.

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ASTM C 1363-2011 THERMAL PERFORMANCE TEST REPORT

Rendered to:

AMERILUX INTERNATIONAL, LLC
1212 Enterprise Drive
DePere, Wisconsin 54115

Report Number: C6946.01-301-46
Test Date: 03/27/13
Report Date: 04/01/13
Revision 1 Date: 04/23/13

Test Sample Identification:

Series/Model: 40mm Clear Thermoclick filled with Lumira™ Aerogel

Type: Multi-Cellular Panel

Overall Size: 37" x 39-3/8"

Test Sample Submitted by: Client

Test Procedure: The thermal transmittance (U) was determined in general accordance with ASTM C 1363-2011, *Standard Test Method for the Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus*.

Test Results Summary:

Thermal Transmittance (U): 0.10 Btu/hr·ft²·F

Test Sample Description:

Overall Size: 37" x 39-3/8"

Construction:

Two extruded multi-cellular panels filled with Lumira™ Aerogel, oriented vertically.*

Glazing Deflection:

	N/A
Edge Gap Width	N/A
Estimated center gap width upon receipt of specimen in laboratory (after stabilization)	N/A
Center gap width at laboratory ambient conditions on day of testing	N/A
Center gap width at test conditions	N/A

**See Appendix A for Cross Sectional Drawing*

N/A Non-Applicable

Measured Test Data

Areas

1. Test Specimen Projected Area (A_s)	10.12 ft ²
2. Metering Box Opening Area (A_{mb})	36.47 ft ²
3. Metering Box Baffle Area (A_{bl})	32.13 ft ²
4. Surround Panel Interior Exposed Area (A_{sp})	26.35 ft ²

Heat Flows

1. Total Measured Input into Metering Box (Q_{total})	175.99 Btu/hr
2. Surround Panel Heat Flow (Q_{sp})	80.56 Btu/hr
3. Surround Panel Thickness	4.00 inches
4. Surround Panel Conductance	0.0459 Btu/hr·ft ² ·F
5. Metering Box Wall Heat Flow (Q_{mb})	0.57 Btu/hr
6. EMF vs Heat Flow Equation (equivalent information)	0.0235*EMF + -1.226
7. Flanking Loss Heat Flow (Q_n)	25.22 Btu/hr
8. Net Specimen Heat Loss (Q_s)	69.65 Btu/hr

The sample was inspected for the formation of frost or condensation, which may influence the surface temperature measurements. The sample showed no evidence of condensation/frost at the conclusion of the test.

The test sample was installed in a vertical orientation, the exterior of the specimen was exposed to the cold side. The direction of heat transfer was from the interior (warm side) to the exterior (cold side) of the specimen. The data acquisition frequency is 5 minutes

ANSI/NCSL Z540-2-1997 type B uncertainty for this test was 12.40%.

Required annual calibrations for the Architectural Testing Inc. 'thermal test chamber' (ICN 004287) in Fresno, California were last conducted in March 2013 in accordance with Architectural Testing Inc. calibration procedure. A CTS Calibration verification was performed March 2013. A Metering Box Wall Transducer and Surround Panel Flanking Loss Characterization was performed July 2012.

Thermal Transmittance (U-factor)

Test Conditions

1. Average Metering Room Air Temperature (t_h)	69.80 F
2. Average Cold Side Air Temperature (t_c)	-0.61 F
3. Average Guard/Environmental Air Temperature	72.00 F
4. Metering Room Average Relative Humidity	12.52 %
5. Metering Room Maximum Relative Humidity	12.60 %
6. Metering Room Minimum Relative Humidity	12.46 %
7. Measured Cold Side Wind Velocity (Perpendicular Flow)	13.01 mph
8. Measured Warm Side Wind Velocity (Parallel Flow)	0.04 mph
9. Measured Static Pressure Difference Across Test Specimen	0.00" \pm 0.04"H ₂ O

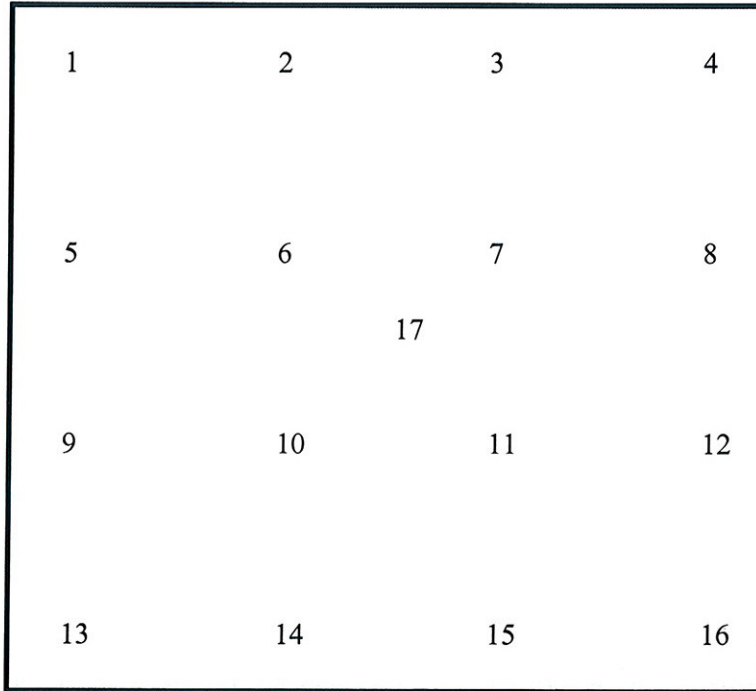
Results

1. Thermal Conductance	0.11 Btu/hr·ft ² ·F
2. Thermal Resistance	9.31 hr·ft ² ·F/Btu
3. Overall Thermal Resistance (R_u)	10.23 hr·ft ² ·F/Btu
4. Warm Side Surface Resistance (R_h)	0.77 hr·ft ² ·F/Btu
5. Cold Side Surface Resistance (R_c)	0.15 hr·ft ² ·F/Btu
6. Warm Side Surface Conductance (h_h)	1.30 Btu/hr·ft ² ·F
7. Cold Side Surface Conductance (h_c)	6.46 Btu/hr·ft ² ·F
8. Thermal Transmittance of Test Specimen (U)	0.10 Btu/hr·ft ² ·F

Test Duration

1. The environmental systems were started at 08:34 hours, 03/26/13.
2. The test parameters were considered stable for two consecutive four hour test periods from 23:45 hours, 03/26/13 to 07:45 hours, 03/27/13.
3. The thermal performance test results were derived from 03:45 hours, 03/27/13 to 07:45 hours, 03/27/13.

Surface Temperatures



Individual Surface Temperature Measurements					
Thermocouple	Warm Side (F)	Cold Side (F)	Thermocouple	Warm Side (F)	Cold Side (F)
1	64.85	0.58	10	64.57	0.56
2	65.17	0.43	11	64.35	0.29
3	65.05	0.37	12	64.24	0.25
4	64.80	0.42	13	64.46	0.40
5	64.61	0.86	14	64.58	0.38
6	64.80	0.71	15	64.20	0.47
7	64.66	0.15	16	64.03	0.34
8	64.46	0.42	17	63.48	0.62
9	64.47	0.47			

- 1. Average Warm Side Surface Temperature 64.52 F
- 2. Average Cold Side Surface Temperature 0.46 F

Architectural Testing, Inc. will service this report for the entire test record retention period. Test records that are retained such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation will be retained by Architectural Testing, Inc. for the entire test record retention period. The test record retention end date for this report is March 27, 2017.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC.

Tested By:



Digitally Signed by: William Smeds

William Simon Smeds
Technician

Reviewed By:



Digitally Signed by: Kenny C. White

Kenny C. White
Laboratory Manager
Individual-In-Responsible-Charge

WSS:ms
C6946.01-301-46

Attachments (pages): This report is complete only when all attachments listed are included.
Appendix-A: Drawing (1)



Architectural Testing, Inc. is accredited by the International Accreditation Service (IAS) under the specific test methods listed under lab code TL-144, in accordance with the recognized International Standard ISO/IEC 17025:2005. The laboratory's accreditation or test report in no way constitutes or implies product certification, approval, or endorsement by IAS.

Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
0	04/01/13	All	Original Report Issue. Work requested by Mr. Tim Fikkert of Amerilux International, LLC
1	04/23/13	Cover, 1, 2	Revised series/model and Construction section of the test sample description.

Appendix A: Drawing

