

**ASTM C 1363-2005 THERMAL PERFORMANCE
TEST REPORT**

Rendered to:

BRISTOLITE SKYLIGHTS

SERIES/MODEL:

**Nano Insulgel - ALT-CM-2-CPM/16 mm CNANO
Thermally Broken Aluminum Frame / Prismatic over Nano Silica Aerogel filled 16 mm
Polycarbonate Multi-Wall Glazing
TYPE: Dome Assembly Only**

Summary of Results	
Standardized Thermal Transmittance (U-Factor)	0.20
Unit Size	48" x 48"
Layer 1	0.174" Clear 100% Impact Modified Prismatic Acrylic with 11" Rise
Layer 2	16 mm thick Lexan Structured Clear Polycarbonate Nano Insulgel Filled Glazing Panel

Reference must be made to Report No. A9280.01-301-46, dated 06/01/11 for complete test specimen description and data.

ASTM C 1363-2005 THERMAL PERFORMANCE TEST REPORT

Rendered to:

BRISTOLITE SKYLIGHTS
401 E. Goetz Ave.
Santa Ana, California 92707

Report Number: A9280.01-301-46
Test Date: 04/18/11
Report Date: 05/26/11
Revision 1 Date: 06/01/11
Test Record Retention Date: 04/18/15

Test Sample Identification:

Series/Model: Nano Insulgel - ALT-CM-2-CPM/16 mm CNANO
Thermally Broken Aluminum Frame / Prismatic over Nano Silica
Aerogel filled 16 mm Polycarbonate Multi-Wall Glazing

Type: Dome Assembly Only

Overall Size: 48" x 48"

Surround Panel Opening Size: 45" x 45"

Test Sample Submitted by: Client

Test Procedure: The thermal transmittance (U) was determined in general accordance with ASTM C 1363-2005, *Standard Test Method for the Thermal Performance of Building Assemblies by Means of Hot Box Apparatus*.

Test Results Summary:

Thermal Transmittance (U) 0.20 Btu/hr·ft²·F

Test Sample Description:

Overall Size: 48" x 48"

Surround Panel Opening Size: 45" x 45"

Construction: No frame members.

Glazing Information:

Layer 1	0.174" Clear 100% Impact Modified Prismatic Acrylic with 11" Rise
Layer 2	16 mm thick Lexan Structured Clear Polycarbonate Nano Insulgel Filled Glazing Panel

Glazing Deflection (in):

	Glazing
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

**Stated per Client/Manufacturer*

N/A Non-Applicable

Measured Test Data

Areas

1. Test Specimen Projected Area (A_s)	14.06 ft ²
2. Metering Box Opening Area (A_{mb})	36.47 ft ²
3. Metering Box Baffle Area (A_{b1})	32.13 ft ²
4. Surround Panel Interior Exposed Area (A_{sp})	22.41 ft ²

Heat Flows

1. Total Measured Input into Metering Box (Q_{total})	287.31 Btu/hr
2. Surround Panel Heat Flow (Q_{sp})	68.35 Btu/hr
3. Surround Panel Thickness	4.00 inches
4. Surround Panel Conductance	0.0458 Btu/hr·ft ² ·F
5. Metering Box Wall Heat Flow (Q_{mb})	9.57 Btu/hr
6. EMF vs Heat Flow Equation (equivalent information)	0.0235*EMF + -1.226
7. Flanking Loss Heat Flow (Q_n)	14.07 Btu/hr
8. Net Specimen Heat Loss (Q_s)	195.32 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.

A full calibration of the Architectural Testing Inc. 'thermal test chamber' (ICN 004287) in Fresno, California was conducted in April 2010 in accordance with Architectural Testing Inc. calibration procedure. A calibration check was performed September 2010.

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.

ANSI/NCSL Z540-2-1997 type B uncertainty for this test was 4.18%.

Thermal Transmittance (U-factor)

Test Conditions

1. Average Metering Room Air Temperature (t_h)	69.79 F
2. Average Cold Side Air Temperature (t_c)	-0.90 F
3. Average Guard/Environmental Air Temperature	72.00 F
4. Metering Room Average Relative Humidity	7.13 %
5. Metering Room Maximum Relative Humidity	7.33 %
6. Metering Room Minimum Relative Humidity	6.95 %
7. Measured Cold Side Wind Velocity (Perpendicular Flow)	15.09 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	0.24 Btu/hr·ft ² ·F
2. Thermal Resistance	4.19 hr·ft ² ·F/Btu
3. Overall Thermal Resistance (R_u)	5.09 hr·ft ² ·F/Btu
4. Warm Side Surface Resistance (R_h)	0.75 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)	1.33 Btu/hr·ft ² ·F
7. Cold Side Surface Conductance (h_c)	6.67 Btu/hr·ft ² ·F
8. Thermal Transmittance of Test Specimen (U)	0.20 Btu/hr·ft ² ·F

Test Duration

1. The environmental systems were started at 12:53 hours, 04/17/11.
2. The test parameters were considered stable for two consecutive four hour test periods from 00:45 hours, 04/18/11 to 08:45 hours, 04/18/11.
3. The thermal performance test results were derived from 04:45 hours, 04/18/11 to 08:45 hours, 04/18/11.

Surface Temperatures

+1	+2	+3	+4
+5	+6	+7	+8
+9	+10	+11	+12
+13	+14	+15	+16

<u>Individual Surface Temperature Measurements</u>					
Thermocouple	Warm Side (F)	Cold Side (F)	Thermocouple	Warm Side (F)	Cold Side (F)
1	60.50	1.56	9	59.02	0.82
2	59.90	1.67	10	59.22	1.22
3	60.70	1.62	11	59.24	0.84
4	60.79	1.63	12	59.48	0.84
5	59.43	1.45	13	58.03	0.77
6	59.74	1.83	14	57.82	0.69
7	59.54	1.39	15	58.39	0.54
8	59.50	1.38	16	58.02	0.67

1. Average Warm Side Surface Temperature 59.33 F
2. Average Cold Side Surface Temperature 1.18 F

Detailed drawings, data sheets, representative samples of test specimens, a copy of this report, or other pertinent project documentation will be retained by Architectural Testing, Inc. for a period of four years from the original test date. At the end of this retention period such materials shall be discarded without notice and the service life of this report by Architectural Testing will expire. Results obtained are tested values and were secured by using the designated test methods. 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(s) tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC.

Tested By:

Reviewed By:

William Simon Smeds
Technician

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

WSS:ss
A9280.01-301-46

Attachments (pages): This report is complete only when all attachments listed are included.

Appendix-A: Drawings (1)

Revision Log

Rev. #	Date	Page(s)	Revision(s)
0	05/26/11	All	Original Report Issue. Work requested by Mr. Rick Beets of Bristolite Skylights
1	06/01/11	Cover, 1	Corrected Series/Model Name

Appendix A: Drawings

Architectural Testing, Inc.
Test sample complies with these details
conditions are noted

A 9 2 8 0 MAY 2 4 2 0 1 1

Report # Date

Tech

100% IMPACT-MODIFIED
PRISMATIC ACRYLIC
OUTER DOME

16 mm LEXAN STRUCTURED
POLYCARBONATE NANO
INSULGEL FILLED GLAZING PANEL

