

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

Rendered to:

ECOLITE CONCRETE USA

SERIES/MODEL: Exterior Concrete Wall Panel System

TYPE: Wall Panel

Summary of Results	
Standardized Thermal Transmittance (U-Factor)	0.23
Unit Size	48" x 48"

Reference must be made to Report No. 93541.02-301-46, dated 11/19/09 for complete test specimen description and data.

ASTM C 1363-2005 THERMAL PERFORMANCE TEST REPORT

Rendered to:

ECOLITE CONCRETE USA
2091 Las Palmas Drive Suite E
Carlsbad, California 92011

Report Number: 93541.02-301-46
Test Date: 08/04/09
Report Date: 10/16/09
Revision 1 Date: 11/19/09
Expiration Date: 08/04/13

Test Sample Identification:

Series/Model: Exterior Concrete Wall Panel System

Type: Wall Panel

Overall Size: 48" x 48"

Test Sample Submitted by: Ecolite Concrete - Carlsbad, California

Construction:

The specimen consisted 2" thick 85 pcf lightweight concrete* with steel studs (5.5 x 1.625 54 mil*) at the perimeter and 12' on center vertically. The steel studs were set into the concrete approximately 1" from the exterior of the concrete. Between the studs R-13 paper faced batt insulation was placed and a sheet of 5/8" drywall was screwed into the studs.

**Stated per Client/Manufacturer*

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) 0.23 Btu/hr-ft²-F

Measured Test Data

Areas

1. Test Specimen Projected Area (A_s)	16.00 ft ²
2. Metering Box Opening Area (A_{mb})	27.51 ft ²
3. Metering Box Baffle Area (A_{b1})	23.02 ft ²
4. Surround Panel Interior Exposed Area (A_{sp})	11.51 ft ²

Heat Flows

1. Total Measured Input into Metering Box (Q_{total})	288.68 Btu/hr
2. Surround Panel Heat Flow (Q_{sp})	27.90 Btu/hr
3. Surround Panel Thickness	6.00 inches
4. Surround Panel Conductance	0.0374 Btu/hr·ft ² ·F
5. Metering Box Wall Heat Flow (Q_{mb})	-11.61 Btu/hr
6. EMF vs Heat Flow Equation (equivalent information)	0.0260*EMF + 0.523
7. Flanking Loss Heat Flow (Q_n)	10.36 Btu/hr
8. Net Specimen Heat Loss (Q_s)	262.03 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 calibration of the Architectural Testing Inc. 'thermal test chamber' (ICN 004287) in Fresno, California was conducted in March 2009 in accordance with Architectural Testing Inc. calibration procedure.

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 1.96%.

Thermal Transmittance (U-factor)

Test Conditions

1. Average Metering Room Air Temperature (t_h)	69.81 F
2. Average Cold Side Air Temperature (t_c)	-0.34 F
3. Average Guard/Environmental Air Temperature	72.00 F
4. Metering Room Average Relative Humidity	14.28 %
5. Measured Cold Side Wind Velocity (Perpendicular Flow)	15.62 mph
6. Measured Static Pressure Difference Across Test Specimen	0.00" \pm 0.04"H ₂ O

Results

1. Thermal Conductance	0.28 Btu/hr·ft ² ·F
2. Thermal Resistance	3.62 hr·ft ² ·F/Btu
3. Overall Thermal Resistance (R_u)	4.28 hr·ft ² ·F/Btu
4. Warm Side Surface Resistance (R_h)	0.56 hr·ft ² ·F/Btu
5. Cold Side Surface Resistance (R_c)	0.11 hr·ft ² ·F/Btu
6. Warm Side Surface Conductance (h_h)	1.80 Btu/hr·ft ² ·F
7. Cold Side Surface Conductance (h_c)	9.26 Btu/hr·ft ² ·F
8. Thermal Transmittance of Test Specimen (U)	0.23 Btu/hr·ft ² ·F

Test Duration

1. The environmental systems were started at 12:35 hours, 08/03/09.
2. The test parameters were considered stable for two consecutive four hour test periods from 23:46 hours, 08/03/09 to 07:46 hours, 08/04/09.
3. The thermal performance test results were derived from 03:46 hours, 08/04/09 to 07:46 hours, 08/04/09.

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	65.01	2.36	9	64.62	0.97
2	64.74	1.74	10	64.20	1.09
3	65.86	1.72	11	50.45*	0.71
4	54.10*	1.35	12	65.16	0.71
5	65.37	1.73	13	58.27	1.34
6	49.70*	1.55	14	64.51	1.27
7	65.52	2.63	15	60.37	0.72
8	63.39	0.77	16	49.77*	2.19

1. Average Warm Side Surface Temperature 60.69 F
2. Average Cold Side Surface Temperature 1.43 F

** Indicates the thermocouple was placed on the drywall at the steel stud*

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.

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93541.02-301-46

Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
0	10/16/09	All	Original Report Issue. Work requested by Mr. Waco Merchant of Ecolite Concrete USA
1	11/19/09	1	Corrected concrete thickness and type