STORK®
Materials Technology

Stork Twin City Testing Corporation

662 Cromwell Avenue
Saint Paul, MN 55114
USA

Telephone :(651) 645-3601
Toll Free :(888) 645-TEST
Telefax :(651) 659-7348
Website :www.storktct.com

Investigative Chemistry
Non Destructive Testing
Metallurgical Analysis

Geotechnical
Failure Analysis
Materials Testing

Construction Materials
Product Evaluation
Welder Qualification

EFFECTIVE THERMAL RESISTANCE TESTING OF SOLAR CHOICE HEATER PANELS

Prepared for:
Acoustical Surfaces
Attn: Mr. Mark Klein
123 Columbia Court North
Chaska, MN 55318

Client Purchase Order Number: 0028338

Prepared By:

Briana Hinrichs
Testing Technician
Product Evaluation Department

Reviewed By:

William Stegeman
Advanced Materials Dept. Mgr.
Phone: 651-659-7230

The test results contained in this report pertain only to the samples submitted for testing and not necessarily to all similar products.

JOB NUMBER: 30160 10-11287 **PAGE:** 2 of 3
DATE: January 11, 2010

EFFECTIVE THERMAL RESISTANCE TESTING OF SOLAR CHOICE HEATER PANELS

INTRODUCTION:

This report presents the results of Effective Thermal Resistance Tests conducted on samples of solar choice heater panels. The testing was authorized by Mr. Mark Klein of Acoustical Surfaces on January 7, 2010. The testing and data analysis were completed on January 11, 2010.

The scope of our work was limited to conducting effective thermal resistance tests on the samples submitted and reporting the results.

SUMMARY OF RESULTS:

Effective Thermal Resistance

Sample	Effective R Value
Solar Choice Heater Panels	1.73

SAMPLE IDENTIFICATION:

The samples were identified as solar choice heater panels. There were four panels sent in. They consisted of a metal panel surrounded by a clear plastic cover. One side of the metal was colored a black color.

TEST METHOD:

The specimen was allowed to condition at standard laboratory conditions of 72 ± 4°F and 50 ± 5% relative humidity for at least 40 hours prior to testing. The thermal resistance testing was conducted using ASTM Standard C518-04, "Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus" as a procedural guide. The specimen was placed in a Netzsch Heat Flow Meter, model HFM 436/3/1 ER. Steady-state heat flux measurements were made at a mean temperature of approximately 75°F using a hot face temperature of approximately 100°F and a cold face temperature of approximately 50°F. Specimen thermal resistance and thermal conductivity were determined by comparing the heat flux measurements of the specimen to measurements made on a known Standard Reference Material. Resistance values obtained from the Heat Flow Meter are best utilized for homogenous specimens.

Three of the panels were placed side by side in the HFM with the dark side facing the hot plate for testing.

JOB NUMBER: 30160 10-11287 **PAGE:** 3 of 3
DATE: January 11, 2010

TEST METHOD Continued:

Test Method	Test Method Title	Deviations from Method
ASTM C518-04, Used as a procedural guide as specimens were not homogenous.	Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus	The effective thermal resistance testing was conducted using ASTM Standard C518-04, as a procedural guide. Since the specimen was not homogenous the values stated are for Effective Resistivity for the specimen tested and may vary slightly for other specimens based upon the actual composition of each specimen.

CALIBRATED TEST EQUIPMENT:

Netzsch Heat Flow Meter, model HFM 436/3/1 ER, S# 284A-1107-606000788, calibrated 12/4/09, due 12/4/10.

UNCALIBRATED TEST EQUIPMENT:

Neslab Chiller, model RTE-110, S# 89CML91040-7

TEST DATA:

SAMPLE IDENTIFICATION	SOLAR CHOICE HEATER
Thickness, in	0.757
TEST CONDITIONS:	
Temperature Gradient °F/in	64.99
Mean Temperature, °F	75.24
Temperature Range, °F	49.18
Test Time, min	21.95
RESULTS:	
Thermal Conductivity, Btu·in/(h·ft²·°F)	0.438
Thermal Conductance, Btu/(h·ft²·°F)	0.579
Thermal Resistivity, °F·ft²·h/Btu/in	2.28
Thermal Resistance, °F·ft²·h/Btu	**1.73**

REMARKS:

The test materials will be retained for 14 days from the date of this report and then discarded unless we receive written notification requesting otherwise.

F:\Product\123FILES\10-Data\11287 Acoustical Surfaces\11287 Acoustic Surfaces Rpt.doc