

# ZENOVA LTD. TEST REPORT

**SCOPE OF WORK**

THERMAL RESISTANCE TESTING ON “INSULATION RENDER” IN ACCORDANCE WITH ASTM C518-17(MODIFIED)

**REPORT NUMBER**

104439953TOR-001

**TEST DATE**

09/04/20

**ISSUE DATE**

09/11/20

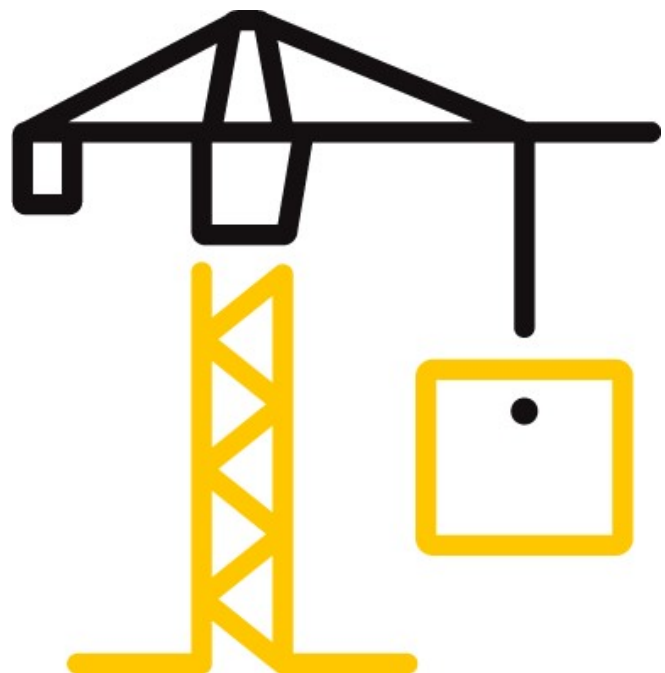
**PAGES**

7

**DOCUMENT CONTROL NUMBER**

GFT-OP-10c (AUGUST 27, 2018)

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## TEST REPORT FOR ZENOVA LTD.

Report No.: 104439953TOR-001

Date: 09/11/20

### REPORT ISSUED TO

#### ZENOVA LTD.

Shawn Pringle

15a Shenfield Road

Brentwood ESSEX, CM15 8AG GBR

U.K

### SECTION 1

#### SCOPE

Intertek Building & Construction (B&C) was contracted by Zenova Ltd., to perform testing in accordance with ASTM C518-17 *Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus*, on their *Insulation Render* product. Results obtained are tested values and were attained by using the designated test method(s). Testing was conducted at the Intertek test facility in Mississauga, Ontario.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. 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, representative samples of test specimens, or other pertinent project documentation, will be retained for the entire test record retention period.

### SECTION 2

#### SUMMARY OF TEST RESULTS

Zenova Ltd. product identified and evaluated in this report has achieved the test results presented in Section 8 of this report.

For INTERTEK B&C:

<b>COMPLETED BY:</b>	Mandeep Singh	<b>REVIEWED BY:</b>	Igor Radovic, P. Eng.
<b>TITLE:</b>	Lab Technician Building & Construction	<b>TITLE:</b>	Lab Manager Building & Construction
<b>SIGNATURE:</b>		<b>SIGNATURE:</b>	
<b>DATE:</b>	09/11/20	<b>DATE:</b>	09/11/20

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### SECTION 3

#### TEST METHOD(S)

The specimens were evaluated in accordance with the following standard test methods:

**ASTM C518-17(Modified)**, *Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus*

### SECTION 4

#### MATERIAL SOURCE/INSTALLATION

Test ready samples were shipped to Intertek Building & Construction (B&C) by Zenova Ltd. Three (3) specimen with nominal measurements of 250 mm long by 264 mm wide by 9 mm thick (9.8 in. × 10.4 in. × 0.4 in) were received. The test sample identification is as provided by the client and Intertek accepts no responsibility for any inaccuracies therein.

### SECTION 5

#### EQUIPMENT

ASSET #	DESCRIPTION	CAL DUE DATE
280-01-0075	Scale	07/27/21
280-01-0909	Digital Calliper	07/27/21
280-01-1237	Netsch Heat Flow Meter	Verify Before Use

### SECTION 6

#### TEST PROCEDURE

##### 6.1 CONDITIONING

All specimens were conditioned for a minimum of 88 hours, at a temperature of  $23 \pm 2^{\circ}\text{C}$  ( $73 \pm 3.6^{\circ}\text{F}$ ) and a relative humidity of  $50 \pm 5\%$ .

##### 6.2 DENSITY

The density was determined on the samples measuring nominally 250 mm long by 264 mm wide by 9 mm thick (9.8 in. × 10.4 in. × 0.4 in). The specimens were weighed, and then measured for

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length, width, and thickness at three points for each dimension. The density was calculated as follows:

$$D = W_s / V$$

Where

D	=	Density, kg/m <sup>3</sup>
W <sub>s</sub>	=	Weight of specimen, kg
V	=	Volume of specimen, m <sup>3</sup>

**6.3 THERMAL RESISTANCE**

The specimens were tested in accordance with ASTM C518-17 "Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus". All samples were tested within 1% of the following mean temperature 73.4°F (23°C). The specimens were tested in a Netzsch Lambda 436 Heat Flow Meter (HFM). The HFM was verified prior to testing using a NIST traceable calibration panel and was found to be within 3% of the conductivity value.

**DEVIATIONS:**

- a) The reference material used to verify the HFM apparatus was not of similar density as the material tested.
- b) The specimen tested were smaller than the required 12 in. by 12 in. dimensions, at 10 in. by 10 in. nominally and therefore edge heat losses may have contributed to the inaccuracy of the results.

**SECTION 7****TEST SPECIMEN DESCRIPTION**

A total of three (3) test ready samples were provided. Three (3) specimens, with nominal measurements of 9.8 in. × 10.4 in. × 0.4 in.

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**SECTION 8**

**TEST RESULTS**

A summary of test results for Coated Specimen is shown in Tables 1 with SI and Imperial units, respectively. A full set of test data is presented in Appendix A.

<b>Table 1: Thermal Resistance Test Results for Zenova Insulation Render</b>			
<b>Mean Specimen Test Thickness (in.)</b>	<b>Mean Test Temperature (°C)</b>	<b>Thermal Resistance (°F·ft<sup>2</sup>·h/Btu)</b>	<b>Thermal Conductivity (Btu in./h·ft<sup>2</sup>·°F)</b>
0.421	24.1	0.905	0.482

**SECTION 9**

**CONCLUSION**

Intertek has conducted testing for Zenova Ltd. for evaluation of thermal resistance properties in their *Insulation Render* product. Testing was conducted in accordance with the following standard test methods:

**ASTM C518 –17(Modified)**, *Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus*

The product identified and evaluated in this report has achieved the test results presented in Section 8 of this report.

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### SECTION 10

### APPENDIX A: TEST DATA



Total Quality. Assured.

**Test:** Thermal Transmission Properties  
**Date:** 2020/09/04  
**Client:** Zenova LTD  
**Product:** Zenova Insulation Render  
**Test Method(s):** ASTM C518-17 Test Method For Steady State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus  
**Conditioning:** 88 hours at a temperature of 23 ± 2°C and relative humidity of 50 ± 5%  
**Equipment:** Netsch Heat Flow Meter 280-01-1237 Cal: Verify Before Use  
 Caliper 280-01-0909 Cal. Due. July 27, 2021  
 Scale 280-01-0075 Cal. Due July 27, 2021  
 Conditioning Chamber 280-01-1201 Cal Due June 5, 2021

Project No: G104439953

Eng/Tech: M. Singh

Reviewer: I. Radovic

Test Date: 2020/09/04

Calibration File: 1450D211

			SI		IMPERIAL		SI		IMPERIAL		SI		IMPERIAL		SI		IMPERIAL				
	SI	IMPERIAL	SI	IMPERIAL	SI	IMPERIAL	SI	IMPERIAL	SI	IMPERIAL	SI	IMPERIAL	SI	IMPERIAL	SI	IMPERIAL	SI	IMPERIAL			
Density	kg/m <sup>3</sup>	lbs/ft <sup>3</sup>			156.39	9.76			1674.70	104.55			1697.42	105.97			1808.19	112.88			
Thickness	mm	in.			1.0198	25.90	1.02		0.4097	10.41	0.41			0.4241	10.77	0.42			0.4282	10.88	0.43
Upper Plate (Tup)	°C	°F			94.18	34.54	94.18		95.04	35.02	95.04			94.92	34.96	94.92			94.95	34.97	94.95
Lower Plate (Tlp)	°C	°F			53.84	12.13	53.84		55.73	13.18	55.73			55.59	13.11	55.59			55.67	13.15	55.67
Differential (Tdelta)	°C	°F			40.34	22.41	40.34		39.31	21.84	39.31			39.33	21.85	39.33			39.28	21.82	39.28
Mean temp (Tm(ulp))	°C	°F			74.01	23.34	74.01		75.39	24.10	75.39			75.26	24.03	75.26			75.31	24.06	75.31
Rate Heat Flux	W/m <sup>2</sup>	Btu/h-ft <sup>2</sup>			28.214	8.952			133.421	42.313			133.154	42.228					144.950	45.975	
Conductance	W/m <sup>2</sup> ·K	Btu/h-ft <sup>2</sup> ·°F			1.259	0.222			6.109	1.076			6.094	1.074					6.643	1.170	
Thermal Resistance	K·m <sup>2</sup> /W	°F·ft <sup>2</sup> /h·Btu	0.793986	4.506165	0.794	4.506	0.163694	0.929025	0.164	0.929	0.164107	0.931365	0.164	0.931	0.150543	0.854386	0.151	0.854			
Thermal Conductivity	W/m·K	Btu·in./h·ft <sup>2</sup> ·°F	0.032687	0.226620	0.033	0.227	0.065372	0.453228	0.065	0.453	0.068837	0.477251	0.069	0.477	0.07441	0.515894	0.074	0.516			
Resistivity	K·m/W	°F·ft <sup>2</sup> /h·Btu·in.			30.593	4.413			15.297	2.206			14.527	2.095					13.439	1.938	
Resistance at 25 mm	K·m <sup>2</sup> /W	°F·ft <sup>2</sup> /h·Btu			0.766	4.349			0.393	2.232			0.381	2.162					0.346	1.964	
Test Duration	min	min			54				39				39						39		
Constant Mass %	%	%							1.19				1.52						1.66		
Calibr. Panel Conductivity					0.033	0.227															
Percent Error	%	%																			
Verification Check:			OK																		



Total Quality. Assured.

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**SECTION 11**  
**REVISION LOG**

REVISION #	DATE	PAGES	REVISION
0	09/11/20	N/A	Original Report Issue