



University of
Salford
MANCHESTER

THERMAL MEASUREMENT LABORATORY



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1660

UKAS Test Report

Thermal Resistance of Therman 44 Sample 3

Wood International Agency Ltd

Project: 00310

Test No.: 3048

Your Order No.: 4141

Date of Issue: 31 October 2023

Signed:

Mr. I G Rattigan
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Approved:

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1. Test Results

Test standard:	ISO 8301:1991 / BS EN 12667:2001
Product Standard:	Not Applicable
Measured Sample Thickness:	44.09 mm
Conditioned Sample Density:	305.5 kg/m ³

Mean Temperature [°C]	Apparent Thermal Conductivity [W/mK]	Thermal Resistance [m ² K/W]
10.0	0.0745	0.592

The results only apply to the sample tested as described in this report.

The reported expanded uncertainty of $\pm 2.5\%$ is based on a standard uncertainty multiplied by a coverage factor $k=2$, providing a level of confidence of approximately 95%.

The uncertainty evaluation has been carried out in accordance with UKAS requirements.

2. Client

Wood International Agency Ltd, Wood House, 16 King Edward Road, Brentwood, Essex, CM14 4HL.

3. Sample Details, Preparation and Conditioning

Miscellaneous Product supplied and identified by the client as "Therman 44 Sample 3, Batch: SC23077, Production Date: 21/02/2023" was received by the Thermal Measurement Laboratory on the 5 October 2023. This was conditioned at 23°C and 50% RH for 2 days to constant mass then wrapped in a plastic envelope prior to testing.

Measured specimen thickness:	0.04409	m
Relative thickness change during test:	0.00	%
Dimensions:	0.299 × 0.300	m
Relative volume change during test:	0.00	%
Mass before test:	1208.2	g
Mass after test:	1208.5	g
Relative mass change during test:	0.02	%
Relative mass change during drying:	N/A	%
Relative mass change during conditioning:	-0.03	%
Density of conditioned material as tested:	305.5	kg/m ³

4. Methodology

LaserComp FOX 304 Instrument, single specimen heat flow meter apparatus, located in the Thermal Measurement Laboratory

Heat flow meter method to ISO 8301:1991 / BS EN 12667:2001

Serial Number: 1311644-F304

Heat flux direction: Vertically upwards

Edge heat losses minimised by additional edge temperature controls.

All temperature, dimensional and heat flow measurements are traceable to national standards.

5. Thickness Measurement

The mean measured thickness was determined by the FOX 304 Instrument by measuring the hot and cold plate separation at each corner. The separation was checked with calibrated electronic calipers.

6. General Test Details

Start date and time of test:	11 October 2023 at 21:03
Finish date and time of test:	12 October 2023 at 13:12
Ambient laboratory temperature during the test:	22 °C
Type and pressure of gas surrounding specimens:	Air at atmospheric pressure
Interface medium between specimen and plates:	None
Water-tight envelope surrounding the specimen:	20µm plastic film

7. Setpoint Details

To measure the thermal conductivity of the specimen at the required temperatures, a single setpoint was programmed into the test apparatus software with the results being as follows:

Mean Temperature [°C]	Temperature difference [°C]	Density of heat flow rate [W/m ²]	Setpoint duration [hh:mm]
10.0	12.1	20.45	16:09

8. Date of Last Heat Flow Meter Calibration Check

The heat flow meter calibration was checked on 30 September 2023 using Item 1) and found to be within specification.

Calibrations are used that are based on:

- 1) Stable, aged greater than 25 years; 50mm EPS with thermal resistance at 10°C of 1.41m²K/W, which was last calibrated in the University of Salford UKAS accredited guarded hotplate in 2019.
- 2) 34mm IRM-440 Resin Bonded Glass Fibre Board, ID No: S312 with thermal resistance at 10°C of 1.13m²/K/W. Last calibrated at IRMM. Valid from July 2014 and is due to be recalibrated in July 2032

9. Errors in measured property

The maximum expected error in the measured Thermal Resistance is within 2.5%. This includes errors arising from non-compliances.

10. Non-compliances

The test conformed to the requirements of Standard Test Method ISO 8301:1991 / BS EN 12667:2001.

11. Name of Test Operator/s

Mr. I G Rattigan, Quality Manager

12. Management system requirements of ISO/IEC 17025:2017

The laboratory operates a management system which meets both the technical competence requirements and management system requirements of ISO/IEC 17025:2017 that are necessary for the laboratory to constantly deliver technically valid test results within its accredited scope.

*** Sample Retention Period - Unless advised otherwise by the client, samples will be retained for up to 1month from the test completion date. After this time the samples will be destroyed.**

END OF REPORT