TEST REPORT

THERMAL MEASUREMENT LABORATORY
School of Computing, Science & Engineering
Brindley Building, The University of Salford
Salford, M7 9NU, England.

Tel: 0161 295 5172 or 3114 or 5115
Fax: 0161 295 4442
E-mail: a.simpson@salford.ac.uk

UKAS Testing
No. 1660
CPD Notified Laboratory
No. 1145

Date of Issue: 18 April, 2005
Your Order No.: Paul Clarke
Internal Reference No.: TT05/20

Signatory: **Dr.A.Simpson**

THERMAL RESISTANCE OF PLASTERBOARD AND PTS-CWV-6405-B TREATED PAPER AND AIR SURFACE RESISTANCE LAYER

Client Thermilate Europe Ltd., 7 Northumberland Street, Huddersfield, HD1 1RL, UK

1. Sample 9.5 mm nominal thickness plasterboard and PTS-CWV-6405-B treated paper (supplied by client) + 25 mm air surface resistance layer.

Product Standard applicable to tested specimens - N/A

2. Method Single specimen heat flow meter method. Heat flux direction – vertically downwards. Apparatus HFM1. The apparatus was calibrated against UKAS accredited EN 12667 guarded hot plate apparatus. Edge heat losses reduced by 125 mm edge insulation

3. Thermal Resistance of Thermilate coated plasterboard and air surface resistance

Air Temperature °C	Warm Plasterboard Surface Temperature °C	Cold Plasterboard Surface Temperature °C	Thermal Resistance Plasterboard/Surface m^2K/W
24.48	16.83	13.55	0.199 ± 3%

A. Simpson

4. Test Details

		Value For Specimen As-Tested
Initial specimen thickness	m	0.00980
Relative thickness change during test	%	0.20
Dimensions	m	0.308 x 0.305
Relative volume change during test	%	0.20
Mass before test	g	611.0
Mass after test	g	611.6
Relative mass change during test	%	0.10
Relative mass change during drying	%	N/A
Relative mass change during conditioning	%	0.00
Density of conditioned plasterboard as tested	kg/m^3	663.7
Temperature of Air	^oC	24.48
Temperature of painted plasterboard surface (warm)	^oC	16.83
Temperature of cold plasterboard surface	^oC	13.55
Temperature drop across plasterboard/air surface	K	10.93
Temperature drop across plasterboard	K	3.28
Temperature drop across air surface layer	K	7.65
Density of heat flow rate	W/m^2	55.0
Thermal Resistance of plasterboard/air surface	m^2K/W	0.199
Thermal Resistance of plasterboard	m^2K/W	0.060
Thermal Resistance of air surface layer	m^2K/W	0.139
Date of completion of the test		15 April 2005
Duration of test	hrs	45
Ambient temperature surrounding the apparatus during the test	^oC	21 - 22

5. Temperature Sensors

The temperature difference was determined by measuring the temperature of each surface with Chromel / Alumel (K type) thermocouples.

6. Thickness Measurement

The mean thickness of the plasterboard was determined by measuring the thickness at each corner and the centre edge with vernier calipers, before and after test.

7. Method and temperatures of conditioning

The specimen was conditioned for 23°C and 50% RH to constant mass before testing.

8. Errors in measured property

The maximum expected error in the measured thermal resistance of plasterboard/ air surface layer is within 3.0 %.

The measurement repeatability during the last 24 hours of thermal equilibrium was < 0.2%

9. The Experimental System

An identical plasterboard panel to that used in Report No.TT04/134 was coated with PTS-CWV-6405-B treated paper by the client. This was instrumented with thermocouples, as well as a thin calibrated heat flow meter. The paper face of the panel faced a matt black plate heat source positioned 50 mm above the panel. The air temperature was measured by thermocouples sited within the 50 mm air gap, at a distance of 25 mm above the painted face of the panel.

10. Name of Test Operator/s

A. Simpson

11. Thermal Energy Savings

The increase in thermal resistance of 9.5 mm nominal thickness plasterboard and PTS-CWV-6405-B treated paper, over that for plain spray painted plasterboard (Report TT 04/134, R = 0.136 m^2K/W) is 46.3 %.