

# TEST REPORT

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UKAS Testing  
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Order No.: Ender Birlik Internal  
Reference No.: TT09/127 (R)

Signatory: **Dr.A.Simpson**

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## Thermal Resistance of Plasterboard coated with Derin Heat Insulating Paint and Air Surface Resistance Layer

**Client** Derin Boya ve Denizcilik, San.Tic.Ltd.Sti,No:20, 34959 Orhanli-Tuzla-Istanbul/Turkey  
Provink Ltd, 24 Vale Crescent, London, SW15 3PN

**1. Sample** 9.5 mm nominal thickness plasterboard coated with Derin Heat Insulating Paint /Interior /Exterior (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 coated plasterboard and air surface resistance

Air Temperature °C	Warm Plasterboard Surface Temperature °C	Cold Plasterboard Surface Temperature °C	Thermal Resistance Plasterboard/Surface m <sup>2</sup> K/W
25.49	17.84	13.34	0.159 ±3%

*A. Simpson*

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## 4. Test Details

		Value For Specimen As-Tested
Initial specimen thickness	m	0.0099
Relative thickness change during test	%	0.10
Dimensions	m	0.304 x 0.302
Relative volume change during test	%	0.10
Mass before test	g	594.4
Mass after test	g	594.4
Relative mass change during test	%	0.00
Relative mass change during drying	%	N/A
Relative mass change during conditioning	%	0.05
Density of conditioned plasterboard as tested	$\frac{\text{kg}}{\text{m}^3}$	651
Temperature of Air	$^{\circ}\text{C}$	25.49
Temperature of painted plasterboard surface (warm)	$^{\circ}\text{C}$	17.84
Temperature of plasterboard surface (cold)	$^{\circ}\text{C}$	13.34
Temperature drop across plasterboard/air surface	K	12.15
Temperature drop across plasterboard	K	4.50
Temperature drop across air surface layer	K	7.65
Density of heat flow rate	$\text{W}/\text{m}^2$	76.6
Thermal Resistance of plasterboard & paint & air surface	$\text{m}^2\text{K}/\text{W}$	0.1588
Thermal Resistance of plasterboard & paint	$\text{m}^2\text{K}/\text{W}$	0.0588
Thermal Resistance of air surface layer	$\text{m}^2\text{K}/\text{W}$	0.1000
Date of completion of the test		6 May, 2009
Duration of test	hrs	120 "
Ambient temperature surrounding the apparatus during the test	$^{\circ}\text{C}$	23

*A. Simpson*

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### **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 < 0.5%

### **9. The Experimental System**

An identical plasterboard panel to that used in Report No.TT09/126 was coated with Derin Heat Insulating Paint /Interior /Exterior by client. After conditioning, the panel was instrumented with thermocouples. The coated face of the panel faced a matt black plate heat source, with an embedded thin calibrated heat flow meter, 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 Resistance Increase**

The increase in thermal resistance of 9.5 mm nominal thickness plasterboard coated with Derin Heat Insulating Paint /Interior /Exterior by the client, over that for plasterboard painted with Matt Emulsion Paint (Report TT 09/129,  $R = 0.142 \text{ m}^2\text{K/W}$ ) is 12.1%.

*A. Simpson*