

# AWTA PRODUCT TESTING

**AS/NZS 4859.1:2002 - Materials for the thermal insulation of buildings. Part 1: General criteria and technical provisions (Section 2.3) - (Thermal Resistance)**

Date:	04-Jul-11		
Project Number:	187912		
Sample Description and orientation:	Clients Ref: PIRE45 Polyisocyanurate Foam		
	Sample 1	Sample 2	Mean
Test Plate Area:	$6.58 \times 10^{-2}$	$6.58 \times 10^{-2}$	$6.58 \times 10^{-2}$ m <sup>2</sup>
Hot Surface Temperature:	24.001	24.000	24.000 °C
Cold surface Temperature:	22.090	22.183	22.137 °C
ΔT	1.911	1.817	1.864 °C
Mean Temperature	23.046	23.092	23.069 °C
Relative Humidity	65.000	65.000	65.000 %
Heat Flux:	1.54	1.45	1.496 W/m <sup>2</sup>
Bare Plate Resistance	0.063	m <sup>2</sup> /KW	
Total Thermal Resistance (R)	1.37	1.27	1.319 m <sup>2</sup> /KW
Thermal Resistance [R]	1.306	1.206	1.256 m <sup>2</sup> /KW
Tested Thickness	27.0	mm * #	Δ Thickness
Recovered Thickness	27.0	mm	0.0 mm
Client Nominated Thickness	25.0	mm	-2.0 mm
Error and Uncertainty of Measurement U <sub>95</sub>	8.400%	* Calculated in accordance with ISO GUM.	
Coverage Factor	1.980	* Calculated in accordance with ISO GUM.	
Plate emissivity	0.810	*5	
Test Method:	ISO8302:1991 - Thermal insulation - Determination of steady-state thermal resistance and related properties - Guarded hot plate apparatus.		
Wind Velocity:			0.00 m/s
Mass Change:			
Mass <sup>Initial</sup>	341.80	339.50	340.65 g
Mass <sup>Final</sup>	341.80	339.50	340.65 g
Δ mass	0.00	0.00	0.00 %
Dimensions (Complete Specimen)			
Thickness	27.00	mm	0.027 m
Width	498.00	mm	0.498 m
Length	498.00	mm	0.498 m
Tested Volume	0.0067	m <sup>3</sup>	
Density (ρ)	50.87	kg/m <sup>3</sup>	
Transfer Factor (γ)	0.0218	0.0215	0.0217 W/mK (Calculated) <sup>*1</sup>
Apparent Thermal Conductivity (λ <sub>k</sub> )	0.0207	0.0224	0.0215 W/mK (Calculated) <sup>*2</sup>
U - Value	0.730	0.788	0.759 W/(K.m <sup>2</sup> ) (Calculated) <sup>*3</sup>
Calculated R-Value for recovered thickness	N/A	m <sup>2</sup> /KW	(Calculated) <sup>*4</sup>
Calculated R-Value for client nominated thickness	N/A	m <sup>2</sup> /KW	(Calculated) <sup>*4</sup>

Acceptable

Tested on Guarded Hotplate Apparatus Model:10.5 S/N 306-401 Manufactured by: Measurement Technology Northwest System componentry includes Guarded Hotplate Assembly, Airflow Hood with variable speed fans, Ambient and Hotplate temperature sensors, RH and Windspeed sensors, Control and Logging System and Environmental Chamber. All Specimens are tested in a horizontal position.

# Where applicable. The mass applied is 9.836 kg

## Test plate dimension is 260mm x 260mm, Complete guarded apparatus dimension is 510mm x 510mm.

\*1 Calculated in accordance with ISO8302:1991(E) Section 3.5.2

\*2 Calculated in Accordance with ASTM C653-97 Section 3.2.1.

\*3 Calculated as 1/R.

\*4 Linear interpolation based on nominal thickness from measured R-Value

Kelvin units and measured Temperature (°C) units may be read as interchangeable where variations from absolute zero are not required.

\*5 Plate emissivity was measured by CSIRO using a TASCO Osaka Model THI-300, S/N 826 041.