

Thermal Resistance of an Insulation Sample

1. CLIENT

Expol Insulation, 105 Captain Springs Rd, Onehunga, Auckland 1061, New Zealand

2. LIMITATION

The results reported here relate only to the item/s tested.

3. DESCRIPTION OF TEST EQUIPMENT

The test equipment used was a LaserComp Fox 600 heat flow meter. The specimen for testing is placed horizontally in the apparatus, with upwards heat flow. The hot and cold plates each have a 250 mm x 250 mm heat flux transducer embedded in their surface. The edges of the specimen are insulated from the room ambient temperature.

4. PROCEDURE

The specimen was supplied by the client and consisted of one piece of black polystyrene insulation segment. The dimensions of the sample were approximately 600 x 600 mm. It was tested at its actual thickness, to the requirements of ASTM C518-04.

5. RESULTS

Nominal Upper Plate Temperature	9.9 °C
Nominal Lower Plate Temperature	36.1 °C
Nominal Difference in Temperature	26.2 K
Nominal Mean Temperature	23.0 °C

Measured results

Calibration check	29-Mar-10, SR08	
'grams per sq. metre'		1033
Sample weight	gram	372
Test date		30-Mar
Test thickness	mm	58.7
Density	kg/m ³	17.6
Temperature difference	K	26.2
Mean temperature	°C	23.0
Heat-flux	W/m ²	14.51
Thermal resistance	m ² K/W	1.811
Thermal conductivity	W/mK	0.0324
Difference between heat flux transducers	%	0.6

These measurements comply with the requirements of ASTM C518. The uncertainty in the measurements of thermal conductivity and thermal resistance are estimated to be $\pm 3\%$.

6. REFERENCES

ASTM C518-04 *Standard Test Method for Steady-State Heat Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.*
American Society for Testing and Materials, Philadelphia, PA, 2004