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TEST REPORT

REPORT NO : 2019CB1075

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Applicant : MECH REF ENGINEERING SDN. BHD.
No. 40 & 42, Jalan Anggerik Mokara 31/47, Kota Kemuning,
40460 Shah Alam, Selangor.

Manufacturer : MECH REF ENGINEERING SDN. BHD.

Product : Insulation Panel (Polyurethane Core)

Reference Standard / Method of Test : MS ISO 8302: 2003
Thermal Insulation – Determination of Steady-State Thermal Resistance and Related Properties – Guarded Hot Plate Apparatus

Description of sample / Description of Test Specimen : One piece of Insulation Panel (Polyurethane Core) with size of 500 mm x 500 mm was received for testing.

Brand: MR
Polyurethane Core Density: 40 - 45 kg/m³
Nominal Thickness: 50 mm
Product Description: Self-supporting double skin metal faced insulating polyurethane rigid foam panels.

Date Received of Complete Application : 16 May 2019

Job No. : J20191430874

Description of Test Results / Overall Test Result : The results of the submitted test samples are described in page 2 of this test report.

Issued Date : 24 May 2019

Approved Signatories;

(MUHAMMAD HAZMIE BIN OTHMAN)
Testing Executive



(PA/PNOR SIHA BINTI RAJA ABDUL HANAN)
Head
Civil & Construction Section
Testing Services Department

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Test : MS ISO 8302: 2003
Method : Thermal Insulation – Determination of Steady-State Thermal Resistance and Related Properties – Guarded Hot Plate Apparatus

Objective : To determine the:
1) Thermal resistance, R (m²K/W)
2) Thermal conductivity, λ (W/mK)

Apparatus : The apparatus was a single specimen type for the sample thickness ranges from 10 mm to 200 mm.

Test Procedure : The test has been conducted in general conformance with the MS ISO 8302: 2003 Thermal Insulation – Determination of Steady-State Thermal Resistance and Related Properties – Guarded Hot Plate Apparatus.
The measurement was computed at single temperature of 20 °C at temperature difference of 15 K temperature.

$$\text{Thermal Resistance} = \frac{\text{Temperature Difference} \times \text{Surface Area}}{\text{Total Heat Supplied}} = \frac{\Delta T \cdot A}{Q}$$

$$\text{Thermal Conductivity} = \frac{\text{Sample Thickness}}{\text{Thermal Resistance}} = \frac{d}{R}$$

Sample Setup : Insulation Panel (Polyurethane Core) test sample with size of 500 mm x 500 mm was laid horizontally in the hot plate apparatus.
Brand: MR
Polyurethane Core Density: 40 - 45 kg/m³
Nominal Thickness: 50 mm

Test Result : Measured Thickness: 50.68 mm

PARAMETER	SYMBOL	UNIT	TEST 1
Measured Temperature	T	°C	20
Temperature Difference	ΔT	K	15
Thermal Conductivity*	λ	W/mK	0.026
Thermal Resistance	R	m ² K/W	1.964
Thermal Transmittance	U	W/m ² K	0.509

*Calculation of thermal conductivity is based on the measured thickness



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