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DI0290/DU02

Thermal Resistance of an Insulation Sample MgO Corp Board CM-11-A0007

MAGNESIUM OXIDE BOARD CORPORATION PTY LTD (HQ)

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All tests reported herein have been undertaken at the BRANZ Ltd laboratories located in Judgeford, Porirua, New Zealand, unless stated otherwise.

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ACCREDITED FOR TECHNICAL COMPETENCE

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   ii. Nothing in this Agreement shall exclude or limit BRANZ's liability to a Client for death or personal injury or for fraud or any other matter resulting from BRANZ's negligence for which it would be illegal to exclude or limit its liability.
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      - The date of performance by BRANZ of the service which gives rise to the claim;

        or
      - The date when the service should have been completed in the event of any alleged non-performance.

b. Indemnification: The Client shall guarantee, hold harmless and indemnify BRANZ and its officers, employees, agents or subcontractors against all claims (actual or threatened) by any third party for loss, damage or expense of whatsoever nature including all legal expenses and related costs and howsoever arising relating to the performance, purported performance or non-performance, of any Services.

c. Without limiting clause b above, the Client shall guarantee, hold harmless and indemnify BRANZ and its officers, employees, agents or subcontractors against all claims (actual or threatened) by any party for loss, damage or expense of whatsoever nature including all legal expenses and related costs arising out of:
   i. any failure by the Client to provide accurate and sufficient information to BRANZ to perform the Services;
   ii. any misstatement or misrepresentation of the Outputs, including Public Outputs;
   iii. any defects in the Products the subject of the Services; or
   iv. any changes, modifications or alterations to the Products the subject of the Services.

Thermal Resistance of an Insulation Sample MgO Corp Board CM-11-A0007

1. CLIENT

Leighton Building & Construction Pty Ltd
Factory 5, 59-63 Chapel Street, Glenorchy, TAS 7010, Australia

2. LIMITATION

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

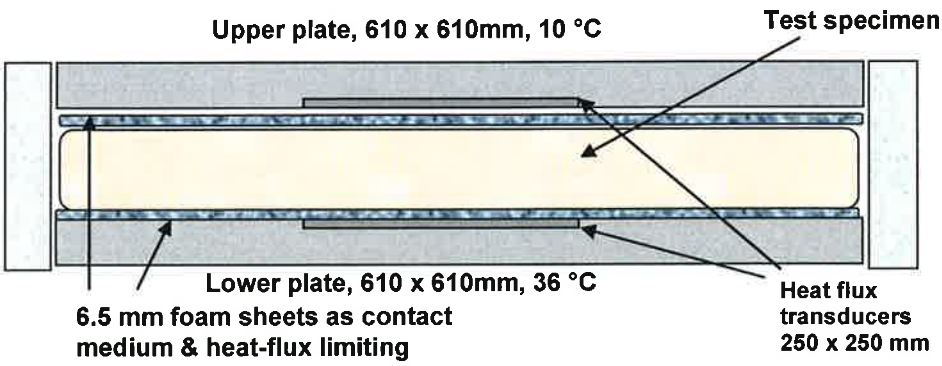
3. DESCRIPTION OF SAMPLE

The specimen was supplied by the client and consisted of three pieces of 20 mm thick magnesium oxide board. The dimensions of the samples were 600 x 600 mm. One sample was randomly selected for the test.

4. DESCRIPTION OF EQUIPMENT

The test equipment used was a LaserComp Fox 600 heat flow meter (HFM). The specimen for testing is placed horizontally in the apparatus, with upward heat flow (figure 1). 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.

Figure 1. Apparatus



5. PROCEDURE

The test setup (figure 1) consisted of the sample sandwiched between sheets of 6.5 mm compressible foam plastic. The foam sheets act as contact media between the apparatus plates and the sample, minimising contact thermal resistance. Since the

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foam sheets add additional insulation they also serve the purpose of limiting the heat-flux to values that can be measured accurately by the apparatus.

The thermal resistance of the sample is determined by subtracting the thermal resistances of the foam sheets (previously measured) from the total measured thermal resistance of the test specimen (sample plus two foam sheets).

The specimens were tested to the requirements of ASTM C518-10 and the data was recorded as below.

The HFM calibration was checked immediately before testing commenced using the two foam sheets, BRANZ secondary reference sample '2xfoam', and then the samples were tested on 24th of Sep 2012.

6. RESULTS

Sample reference	D5396
HFM plate spacing (mm)	33.0
Thickness of foam sheets (mm)	13.0
Sample thickness (mm)	20.0
Sample weight (kg)	7971
Sample density (kg/m^3)	1107
Mean temperature (°C)	23.0
Temperature difference (K)	26.0
Heat flux (W/m^2)	63.22
Difference between heat-flux transducers (%)	1.3
Total thermal resistance(m^2.K/W ± 3%)	0.417
Thermal resistance of foam sheets (m^2.K/W ± 3%)	0.372
Thermal resistance of sample (m^2.K/W)	0.045
Thermal conductivity of sample (W/mK)	0.44
Estimated uncertainty in results (%)	10

7. REFERENCES

ASTM C518-10 *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, 2010.

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