

# IGNIS ADVISORY NOTE

## LIKELY PERFORMANCE OF 10MM RESCOM MgO WALL SYSTEM

Evaluation No. IGNS-5248 Issue 01 Revision 00 [2017]

### 1 Introduction

Ignis Solutions has been engaged to evaluate the likely performance of the Rescom MgO wall system that incorporates the 10mm Rescom MgO wall panel.

The 10mm board system was tested by SGS labs in China in accordance with AS 1530.4. SGS is accredited with an ILAC Signatory.

The test provides an initial Fire Resistance Level in the form of Structural adequacy / Integrity / Insulation to be -/90/60.

The subject test included 75mm light gauge steel joists and mineral wool of 50kg/m<sup>3</sup>. It is proposed for the system to be upgraded to include 90mm timber studs at 450mm centres as well as equivalent insulation such that an FRL of -/90/90 is achieved. To achieve this the insulation is required to be increased by 23 minutes.

### 2 SGS Fire Resistance Testing

As detailed above, SGS completed testing of the 10mm board in the following configuration within their test report SHCCM150401181 dated 03 June 2015.

- Exposed face: 10mm Rescom MgO board
- Interlayer: C75 Light-gauge steel joists + Mineral wool
- Unexposed face: 10mm Rescom MgO board

The wall system being a lightweight panel system is not loadbearing.

#### INTEGRITY

Failure in relation to integrity shall be deemed to have occurred when evaluated as follows:

- Cotton pad** – The cotton pad in its frame shall be applied against the surface of the test specimen over the crack, fissure or flaming under examination, until ignition of the cotton pad (defined as glowing or flaming) or for a maximum of 30s.
- Gap gauges** – Gap gauges are used to evaluate the size of any opening in the surface of the test specimen at time intervals that will be terminated by the apparent rate of the specimen deterioration.
  - a) A 6mm gap gauge can be passed through the specimen so that the gap gauge projects into the furnace and the gauge can be moved a distance of 150mm along the gap; or
  - b) A 25mm gap gauge can be passed through the specimen so that the gap gauge projects into the furnace.
- Flaming** – Sustained flaming on the surface of the unexposed surface for 10s or longer constitutes integrity failure.

The SGS report detailed that failure of integrity did not occur and the test was terminated after 90 minutes.

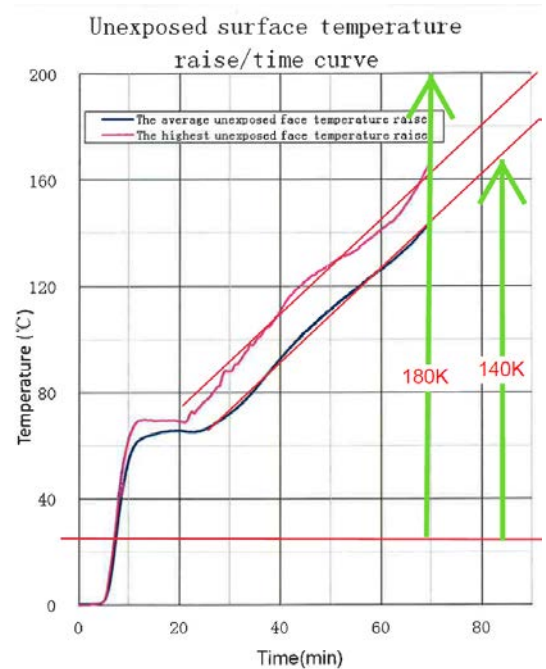
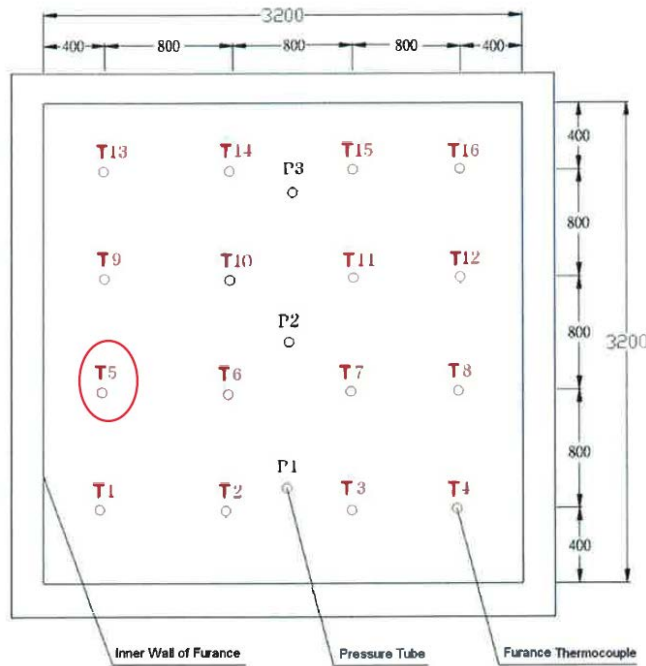
#### INSULATION

Failure in relation to insulation shall be deemed to have occurred when measured by the thermocouples on the unexposed surface, the specimen is deemed to have failed when-

- a) The mean temperature of the unexposed surface of the test specimen exceeds the initial temperature by more than 140 K; or
- b) The temperature at any location on the unexposed surface of the test specimen exceeds the initial temperature by more than 180K.

The SGS test details that insulation failed after 67 minutes based on thermocouple 5 this is only a 156K rise,

from an initial temperature of 25°C The failure point based on AS 1530.4 failure criteria of 180K for an individual thermocouple is 205°C. The average would be 165°C which is not breached until approximately 85 minutes based on the trendline detailed below.



### 3 Wall Enhancement

As detailed above, the tested wall system included a light gauge steel structure 75mm in width on a 600mm stud spacing. It is proposed that the wall system be enhanced with a timber structure of at least 90mm in width and at 450mm centres. Based on the above results an increase in insulation resistance of 5 minutes is required to achieve an FRL of -/90/90.

It is considered that the increase in the wall system design to a 90mm timber stud and 450mm centres is likely to resolve the 5 minutes.

### 4 Conclusion

Based on the above review it is considered that the use of 90mm timber studs at 450mm centres whilst maintaining the insulation with a density of at least 50kg/m<sup>3</sup> is likely to achieve the required FRL of -/90/90.

**Benjamin Hughes-Brown** FIEAust CPEng NER

Managing Director  
Chartered Professional Engineer