

# consultants advisory note

## MgO Corp ResCom® 10mm panel ASTM E119 Compliance

The purpose of this letter is to validate the test report relating to the ResCom 10mm panel under Australian conditions is equivalent to the requirements of the ASTM E119 for the fire resistance rating of the building element under Clause 703.3 procedure 4, Section 703 of the International Construction Code.

I Benjamin Hughes-Brown, Chartered Professional Engineer, Fellow Member 2590091 of the Institution of Engineers Australia in accordance with the Washington Accord and a director of Ignis Solutions confirm that the following detail validates the use of the test report evidence presented in relation to the ResCom 10mm panel and that the panel meets the provisions of a Fire Resistance Rating where an integrity of 90 minutes and insulation of 60 minutes is achieved.

The ResCom 10mm panel has been testing in accordance with AS 1530.4:2005 by SGS on 28 April 2015 in their test report SHCCM150401181 dated 03 June 2014.

The ResComm 10mm panel has originally been tested in accordance with Australian requirements under the Building Code of Australia (BCA). Fire Resistance Levels (FRL's) of products used in the BCA are to comply with the requirements of BCA Specification A2.3 Fire-Resistance of Building Elements.

Under Clause 2(b) of Specification A2.3, a building element meets the requirements of this Specification if it is identical with a prototype that has been submitted to the Standard Fire Test, or an equivalent or more severe test, and the FRL achieved by the prototype without the assistance of an active fire suppression system is confirmed in a report from a Registered Testing Authority which –

- (i) Describes the method and conditions of the test and the form of construction of the tested prototype in full; and
- (ii) Certifies that the application of restraint to the prototype complied with the Standard Fire Test.

In accordance with Clause A2.2(a)(i) of the BCA a test report is to be issued by a Registered Testing Authority. The BCA defines a Registered Testing Authority as –

- (a) An organisation registered by the National Association of Testing Authorities (NATA) to tests in the relevant field; or
- (b) An organisation outside Australia registered by an authority recognized by NATA through a mutual recognition agreement; or
- (c) An organisation recognized as being a Registered Testing Authority under legislation at the time the test was undertaken.

Test organisations around the world are recognised through the ILAC MRA which is a mutual recognition arrangement. The MRA provides significant technical underpinning to the calibration, testing, medical testing and inspection results of the accredited conformity assessment bodies and in turn delivers confidence in the acceptance of results. Accreditation bodies that are signatories to the ILAC MRA have been peer evaluated in accordance with the requirements of ISO/IEC 17011 to demonstrate their competence. The ILAC MRA signatories then assess and accredit conformity assessment bodies according to the relevant international standards including testing laboratories using ISO/IEC 17025.

In accordance with Clause A1.1 of the BCA, Standard Fire Test – means the Fire-resistance Tests of Elements of Building Construction as described in AS 1530.4.

The standard fire curve is detailed in figure 2.3 of AS 1530.4 and provided below. The standard time-temperature curve is widely accepted and used by most of the standards and testing agencies. It is based on the maximum induction of the severity of a fire completely burning out an ordinary brick, wood-joisted building loaded with combustible contents. The use of this curve, together with information on the fire loading, is used to estimate the severity of a fire. The equivalent time-temperature curve for ASTM E119 is provided along side the AS 1530.4 test requirements below.

**FIGURE 1:**  
STANDARD FIRE CURVE AS1530.4 AND ASTM E119-2011

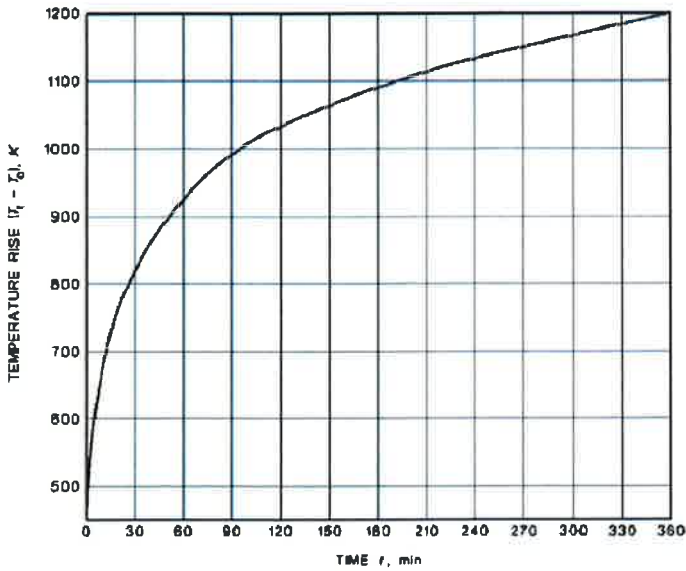


FIGURE 2.3 STANDARD TIME vs TEMPERATURE RISE CURVE

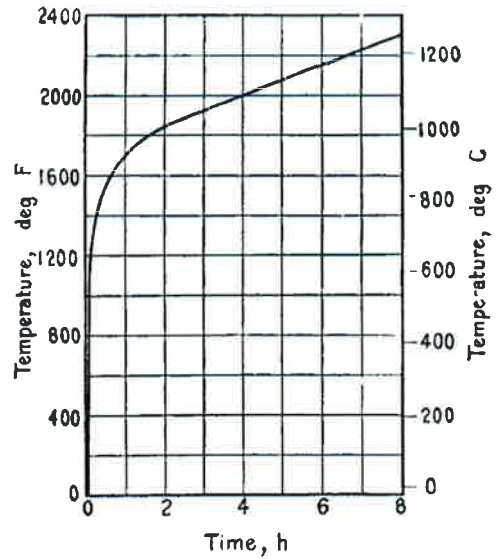


FIG. 1 Time-Temperature Curve

Source: AS 1530.4 and ASTM E119-2011

**FIGURE 2:**  
STANDARD FIRE CURVE DATA AS1530.4 AND ASTM E119-2011

**TABLE 2.1**  
**RELATION BETWEEN FURNACE**  
**TEMPERATURE AND TIME**

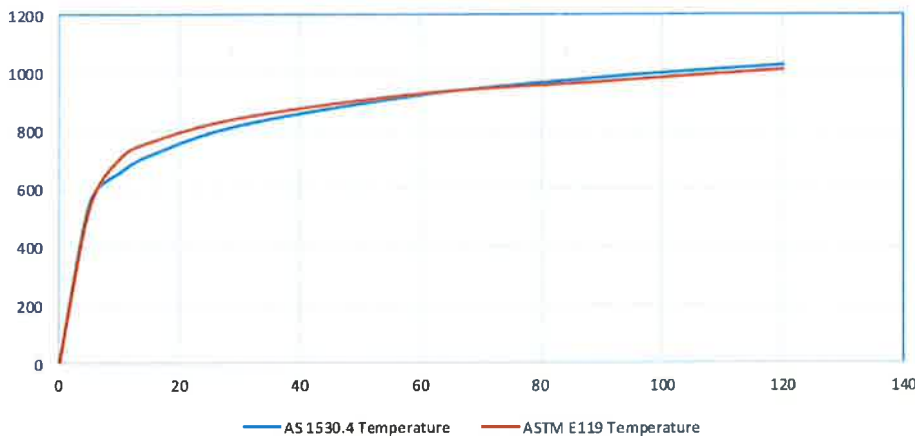
Time (t) min	Temperature rise in furnace (T <sub>1</sub> - T <sub>0</sub> ) K
5	556
10	659
15	718
30	821
60	925
90	986
120	1 029
180	1 090
240	1 133
360	1 193

1000°F (538°C)	at 5 min
1300°F (704°C)	at 10 min
1550°F (843°C)	at 30 min
1700°F (927°C)	at 1 h
1850°F (1010°C)	at 2 h
2000°F (1093°C)	at 4 h
2300°F (1260°C)	at 8 h or over

Source: AS 1530.4 and ASTM E119-2011

**FIGURE 3:**  
STANDARD FIRE CURVE GRAPH AS1530.4 AND ASTM E119-2011

Comparison between time temperature curve



Source: AS 1530.4 and ASTM E119-2011



SGS has undertaken testing of the 10mm product in accordance with AS 1530.4 in their report SHCCM150401181. The specimen was installed into a prepared masonry wall with the opening size 3010mm width by 3010mm height. C75 light gage steel joists were fixed to masonry wall by expansion bolts. The exposed and unexposed face testing panels were fixed to C75 light gage steel joists by self-tapping screw (spaced about 10mm). Gaps between the sample panels as well as gaps around the specimen and masonry wall were covered by a fire resistance bolting and glue. The specimen had a single layer of 10mm ResCom board on either side of the C75 light gage steel joists with mineral wool (50kg/m3) within the wall cavity.

The tested specimen has been subjected to a fire resistance test in accordance with AS 1530.4-2005. The fire resistance of the specimen was judged against the criteria for insulation and integrity. The following observations were recorded:

Time	Observation
00:00	Furnace fired
05:00	Produced smoking
18:00	The specimen had a slight deflection towards the furnace
45:00	The specimen had an evident deflection
60:00	Unexposed surface no change
91:00	The specimen kept insulation and terminated the test

The following graph details the furnace temperature against the time curve:

**FIGURE 4:**

**STANDARD FIRE CURVE FROM TEST DATA**

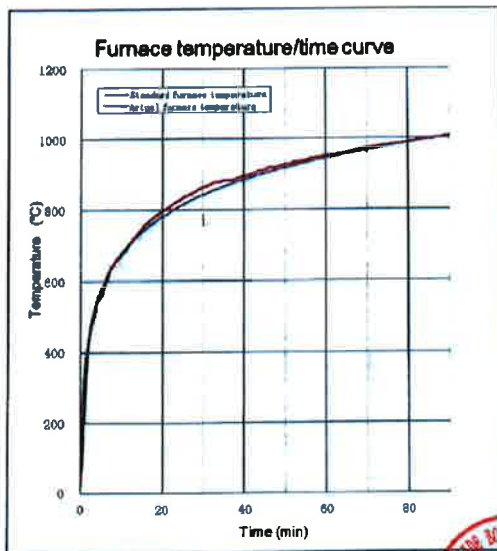


Figure 3 - Actual Mean Furnace Temperature/Time Curve and Standard Furnace Temperature/Time Curve

Source: SGS AS 1530.4 test curve

The test produced the following results:

Fire Resistance Level/Rating	Minutes
Structural Adequacy	-
Integrity	60
Insulation	90

Based on the evidence presented above, the test reports are considered valid and the Australian fire testing provide a result equivalent to that of ASTM E119-2011 where by the tested prototype within the wall structure achieved a fire resistance rating of Integrity to 60 minutes and Insulation to 90 minutes and therefore equivalence under the requirements of Clause 703.3 procedure 4, Section 703 of the International Construction Code.

Regards,

Benjamin Hughes-Brown | FIEAust CPEng NER  
 Chartered Professional Engineer  
 CPEng, NPER (Fire Safety / Mech) 2590091, RPEQ 11498, BPB-C10-1875, EF-39394 TDJ-CC6504  
 MFireSafety (UWS), BEng (UTS), GradDipBushFire (UWS), DipEngPrac (UTS), DipEng (CIT)  
 FIEAust, MIPENZ, MSFS, MFPAA, AAIBS

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