

## TEST REPORT

No. : SHCCM150401181

Date : Jun. 03, 2015

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MAGNESIUM OXIDE BOARD CORPORATION PTY LTD.  
SUITE 1 8/175 OCEAN DRIVE TWIN WATERS QLD 4564



The following sample(s) was/ were submitted and identified on behalf of the client as:

Sample Name : MAGNESIUM OXIDE BOARD CORPORATION RESCOM<sup>®</sup> MgO BOARD  
Sample Number : SHCCM150401181  
Test Required : AS 1530.4-2005 Method for fire tests on building materials, components and structures part 4: Fire-resistance test of elements of construction  
Product specification : 10mm ResCom<sup>®</sup> Wall and Ceiling Board  
Product or Lot No. : ResCom<sup>®</sup> CMA-CM40009  
Manufacturer : MGO CORP. ASIA SHANDONG HENGYI SCIENCE & TECHNOLOGY CO., LTD.  
Date of Receipt : Apr. 28, 2015  
Test Period : Apr. 28, 2015 to Jun. 03, 2015  
Test result(s) : For further details, please refer to the following page(s)

\*\*\*\*\* To be continued\*\*\*\*\*

Signed for SGS-CSTC Standards  
Technical Services (Shanghai) Co., Ltd.

Erin Huang  
Authorized signatory



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### 1. Introduction

Determine the fire resistance of the non-load bearing vertical separating elements in accordance with section 3 of AS 1530.4-2005: Method for fire tests on building materials, components and structures part 4: Fire-resistance test of elements of construction.

The sample with 3000mm length by 2980mm width by 95mm thickness was symmetrical separating element, and one side was exposed to a time-temperature curve as dictated by the Clause 2.10 of AS 1530.4 for a period of 91 minutes under Non-loaded conditions.

### 2. Test Specimen

2.1 The direction of specimen tested was a random surface

Because of the specimen is a vertical symmetrical separating element

2.2 Description of specimen:

The nominal installation dimensions of the specimen are 3000 mm length by 2980 mm width by 95mm thickness.

The product specification as follows:

Exposed face: two 3000x1220x10mm panels + one 3000x540x10mm panels, with density about 1300kg/m<sup>3</sup>

Interlayer: C75 Lightgauge Steel Joists + mineral wool (about 50kg/m<sup>3</sup>).

Unexposed face: two 2400x1200x10mm panels + one 3000x540x10mm panels, with density about 1300kg/m<sup>3</sup>

2.3 The method of assembly and installation of the test specimen:

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 (space about 10mm). Gaps between sample panels as well as gaps around of the specimen and masonry wall were covered by fire resistance belting and glue (provided by client). Installation was conducted by a representative of Lab on 21 MAY 2015. The drawing of installation is provided by applicant. The detail is show in figure 1.

\*\*\*\*\* To be continued\*\*\*\*\*



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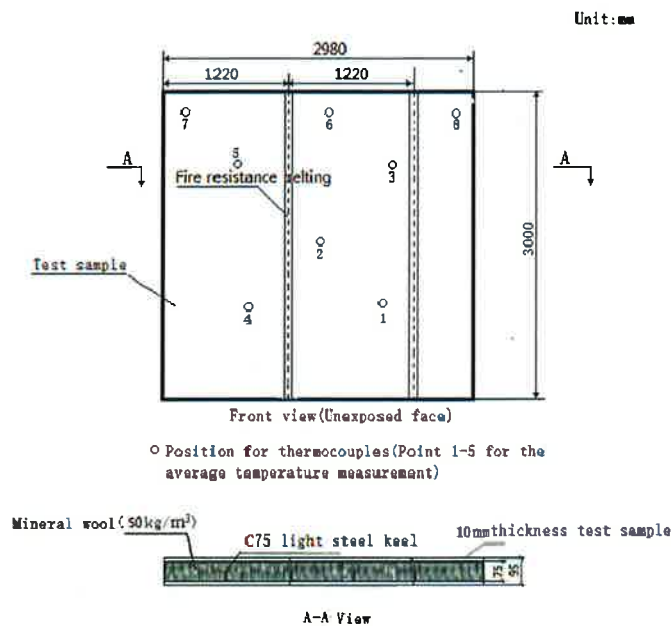


Figure 1 - The drawing of installation

### 3. Equipment

Sixteen mineral insulated thermocouples were kept at 100 mm away from the surface of the specimen, and were provided to monitor the temperature of the furnace. The locations and reference numbers of the furnace thermocouples are shown in Figure 2.

A pressure sensor was provided to monitor the furnace pressure.

Cotton pads and gap gauges were available to evaluate the impermeability of the specimen to hot gases.

\*\*\*\*\* To be continued\*\*\*\*\*



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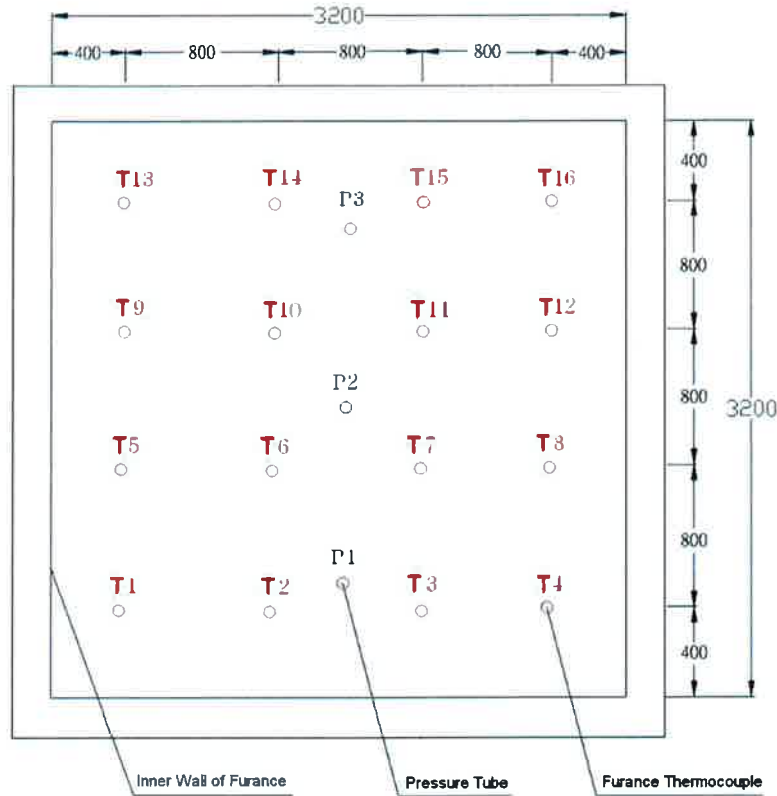


Figure 2 - Plan of Furnace Thermocouples

\*\*\*\*\* To be continued\*\*\*\*\*



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### 4. Test procedure

The test was conducted in accordance with the procedure specified in AS 1530.4-2005, section 3.

The ambient temperature of test area was 25°C at commencement of test with variation of 0°C during the test.

The furnace was controlled so that the mean furnace temperature, deviation from the mean furnace temperature and uniformity of temperature distribution complied with the requirement of AS 1530.4-2005.

Sixteen furnace thermocouples were used to determine the mean furnace temperature.

The furnace pressure was controlled to comply with the requirements of AS 1530.4-2005, Clause 2.10.3.

The furnace shall be operated such that a pressure of 0 Pa is established at a height of approximately 500 mm above the notional floor level.

Cotton pads and gap gauges were used to determine the integrity. The sustained flaming on the unexposed surface was also checked to determine the integrity. The thermocouples specified in clause 2.2.3.1 were used to determine the insulation of specimen.

### 5. Test Results

The following data were recorded during the test:

- The actual mean furnace temperature/ time curve and the standard furnace temperature/ time curve, which were shown in Figure 3.
- The furnace pressures relative to laboratory atmosphere, at a height of approximately 500 mm above the notional floor level, which were shown in Figure 4.
- The mean and maximum temperature raises of the unexposed surface of were shown in Figure 5. The individual temperatures recorded on the unexposed surface of the specimen were shown in Table 1.

A summary of the observations made on the general behaviour of the specimen was given in Table 2.

\*\*\*\*\* To be continued\*\*\*\*\*



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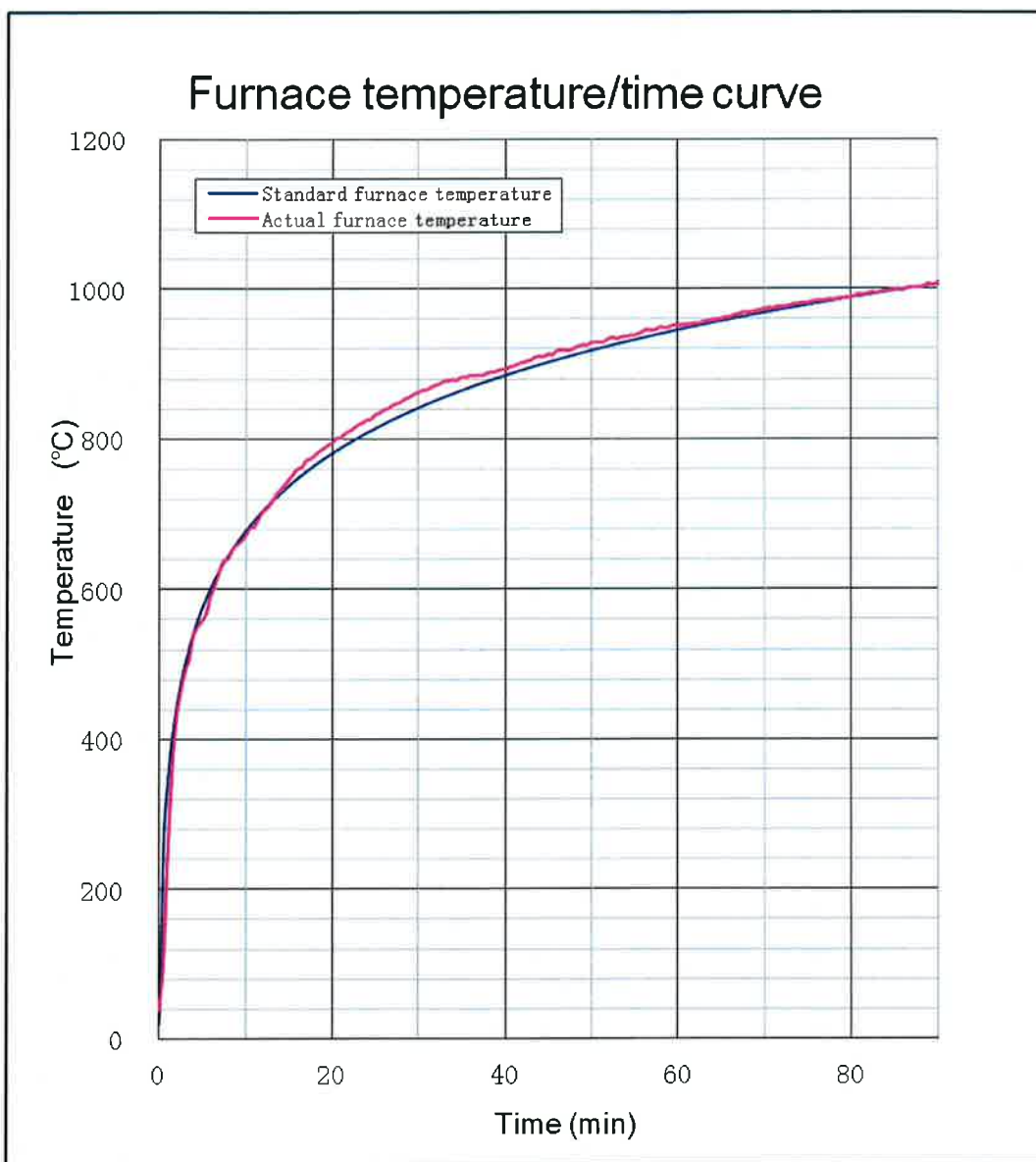


Figure 3 - Actual Mean Furnace Temperature/Time Curve and Standard Furnace Temperature/Time Curve

\*\*\*\*\* To be continued\*\*\*\*\*



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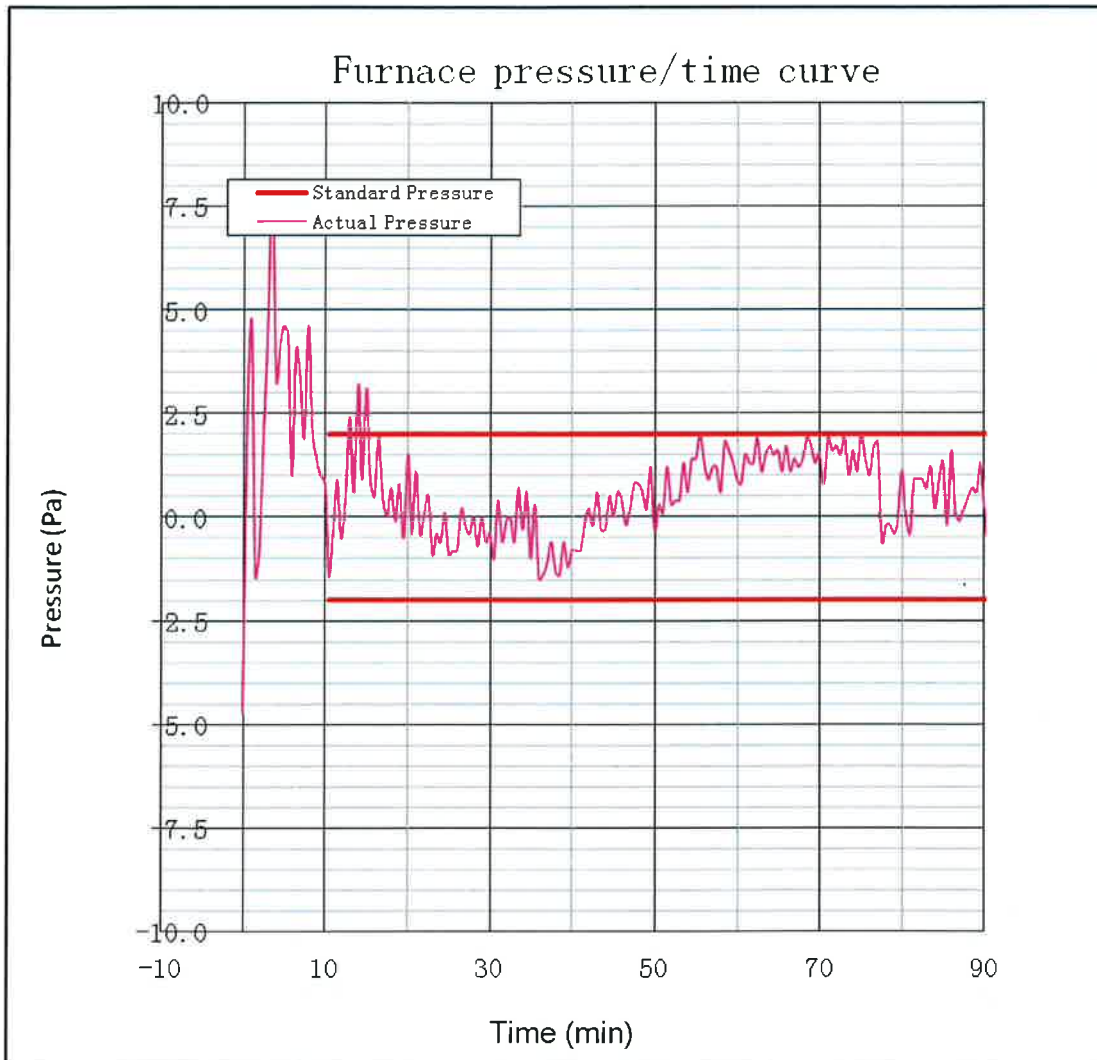


Figure 4 - Furnace Pressures Relative to Laboratory Atmosphere  
(500 mm above the notional floor level)

\*\*\*\*\* To be continued\*\*\*\*\*



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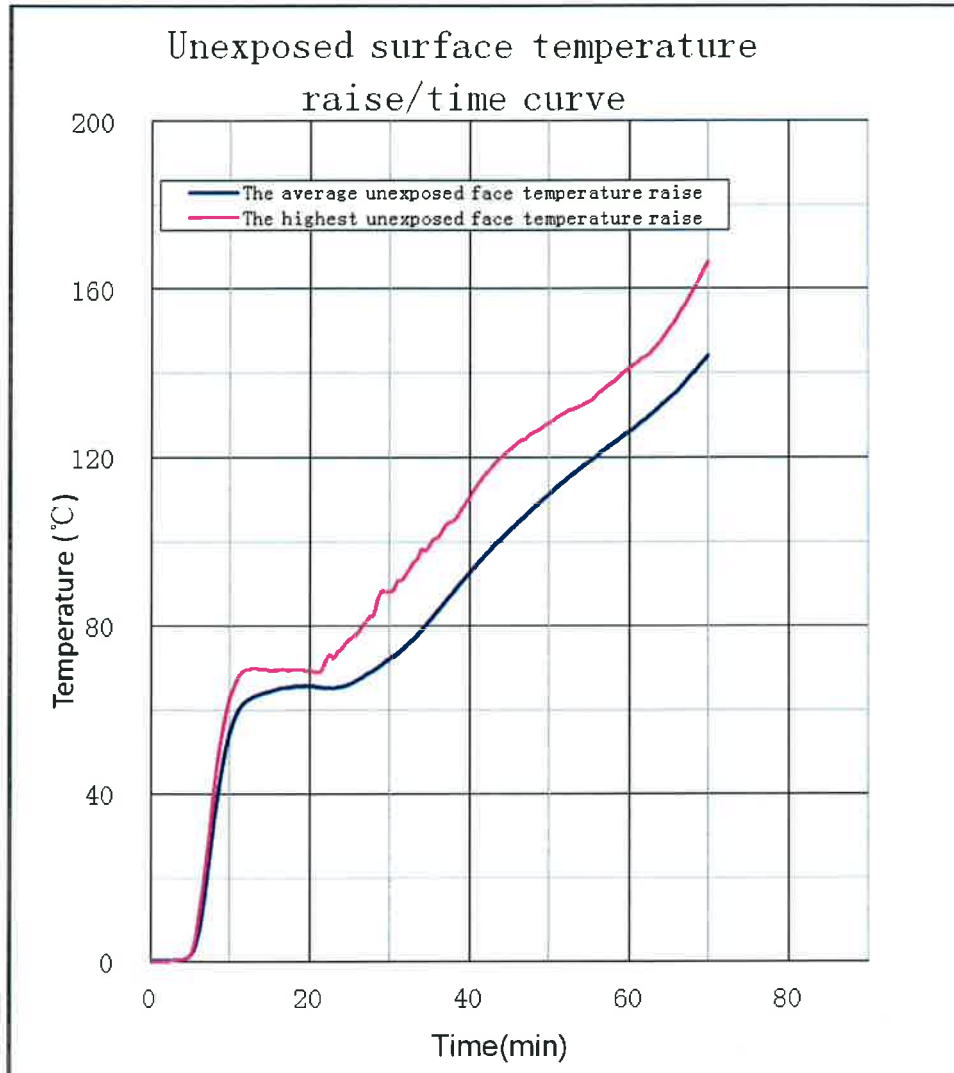


Figure 5 - Temperature raise/time curve

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Table 1 Individual Temperatures Recorded on the Unexposed Surface of the Specimen (unit: °C)

Time (min)	1	2	3	4	5	6	7	8
0.0	25	24	25	24	24	23	23	23
5.0	26	26	27	26	26	26	24	24
6.0	32	32	31	32	30	35	27	27
7.0	46	43	41	47	40	49	38	31
8.0	63	56	60	67	52	55	52	37
9.0	75	67	76	80	65	68	66	46
10.0	81	74	85	88	74	84	77	54
15.0	86	83	93	94	89	91	88	78
16.0	86	84	93	94	90	91	89	81
18.0	87	85	94	95	92	92	89	84
20.0	87	85	93	94	92	94	90	87
22.0	85	85	94	94	92	97	90	88
24.0	85	85	98	95	92	100	90	88
26.0	84	86	102	98	94	103	94	88
28.0	87	86	105	102	95	108	97	89
30.0	90	86	109	106	98	113	101	90
32.0	94	86	113	110	100	117	105	92
34.0	99	87	117	116	104	123	110	93
36.0	103	88	122	123	108	126	115	95
38.0	108	89	127	129	113	130	121	98
40.0	112	90	130	135	119	133	125	101
42.0	116	92	134	141	126	135	129	104
44.0	119	94	137	145	132	137	132	106

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Time (min)	1	2	3	4	5	6	7	8
46.0	123	98	139	148	138	139	135	109
48.0	126	103	141	151	143	140	137	113
50.0	128	108	143	153	148	143	139	116
52.0	131	114	144	156	151	144	141	119
54.0	133	120	145	157	155	146	143	121
56.0	135	125	147	160	157	148	145	124
58.0	137	129	148	163	160	149	147	126
60.0	139	133	149	166	164	151	149	128
62.0	141	137	151	169	167	153	151	130
64.0	142	141	152	173	172	156	153	133
66.0	144	143	153	177	178	157	155	134
67.0	146	146	154	179	181	158	156	135
68.0	147	148	155	182	184	159	157	136
69.0	148	151	156	185	188	160	158	137
70.0	150	152	157	188	191	161	159	138

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Table 2 Observations during the Test

Time (min:sec)	Observations
00:00	Furnace fired.
05:00	Produced smoking
18:00	The specimen had a slight deflection towards the furnace
45:00	The specimen had a evident deflection
60:00	Unexposed surface no change
91:00	The specimen kept insulation and terminated the test

### 6. Performance Criteria (AS 1530.4-2005, Clause 2.12.2 and 2.12.3)

#### 6.1 Integrity

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

##### 6.1.1 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.

##### 6.1.2 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 determined by the apparent rate of the specimen deterioration.

a) a 6 mm 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 150 mm along the gap; or

b) a 25 mm gap gauge can be passed through the specimen so that the gap gauge projects into the furnace.

##### 6.1.3 Flaming

Sustained flaming on the surface of the unexposed surface for 10s or longer constitutes integrity failure.

\*\*\*\*\* To be continued\*\*\*\*\*



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## 6.2 Insulation

Failure in relation to insulation shall be deemed to have occurred when measured by 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 180 K

## 7. Conclusion

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 as specified clause 6 of this report, and the specimen satisfied the performance requirements for the following period:

Insulation	Integrity
67min	90 min

The test was terminated after a period of 91 minutes.

## STATEMENT:

The results of these fire tests may be used to directly assess fire hazard, but it should be recognized that a single test method will not provide a full assessment of fire hazard under all fire conditions

This report details methods of construction, the test conditions and the results obtained when the specific element of construction described herein was tested following the procedure outlined in this standard. Any significant variation with respect to size, constructional details, loads, stresses, edge or end conditions, other than those allowed under the field of direct application in the relevant test method, is not covered by this report.

Because of the nature of fire resistant and the consequent difficulty in quantifying the uncertainty of measurement of fire resistant, it is not possible to provide a stated degree of accuracy of the result.

Note: The test was performed by SGS internal laboratory.

Statement: Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

\*\*\*\*\* To be continued\*\*\*\*\*



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Test photos:



Unexposed face before the test



Unexposed face after the test



Exposed face before the test



Exposed face after the test

\*\*\*\*\* To be continued\*\*\*\*\*



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Inner structure of installation

\*\*\*\*\* End of report \*\*\*\*\*



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