CHINA UNION BUILDING MATERIALS

We believe that passive fire protection is a crucial element of building safety that can save lives and prevent property damage.

We're provide wide range of fireproof board for building.

KINGTEC
HAWK PAN BOARD

4-hours Fire Rated Board Hoarding System Without Insulation

WE BUILD SAFE SPACES FOR EVERYONE.

Our fireproof board complies with BS and BS EN standards.

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INTRODUCTION

Depending on its location and function within a building, a wall, ceiling and E&M enclosure may need to meet various requirements during a fire. Fire-resisting walls that partition spaces and enclose compartments must act as a barrier to prevent the spread of fire from either side. Therefore, it is essential for these walls to meet all relevant criteria: integrity, insulation, and, if applicable, load-bearing capacity; all from both sides for the specified fire resistance duration.

Fire Compartmentation

Fire-resistant partitions serve as a means of compartmentalization, effectively separating various fire hazards.

Fire safe exit passage ways

In a fire, exit routes must be fire safe and fully compartmented to prevent fire spread. It's crucial to limit thermal heat transfer in walls to ensure a safe environment for occupants escaping.

Fire resistant party walls and Ceiling

One cannot control the fire risks posed by neighbors who share a common wall delineating different properties. Fire-resistant party walls and ceiling are essential in preventing the spread of fire from one unit to an adjacent one, thereby enhancing safety for all occupants.

INTRODUCTION

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Hawk Pan calcium silicate fire board systems are fire-resistant, lightweight, clean, and easy to install, making them ideal for a variety of building projects.

These products provide exceptional thermal insulation and fire protection across numerous applications. They are particularly well-suited for internal partitions, ceilings, and electrical and mechanical enclosures, especially within drywall construction.

In addition to protecting lives and assets, Hawk Pan help conserve space and energy, reduce CO2 emissions, and enhance overall efficiency.

Designed to safeguard timber, concrete, or steel structures, these boards can also function as self-supporting elements, such as partition walls and ceilings. With their aesthetically pleasing finish, they serve as an all-in-one architectural feature that facilitates quick construction while optimizing space.

Manufactures Certification

Hawk Pan under a Quality Management System compliant with the International Standard ISO 9001:2008.

TESTING AND THIRO-PARTY CERTIFICATION

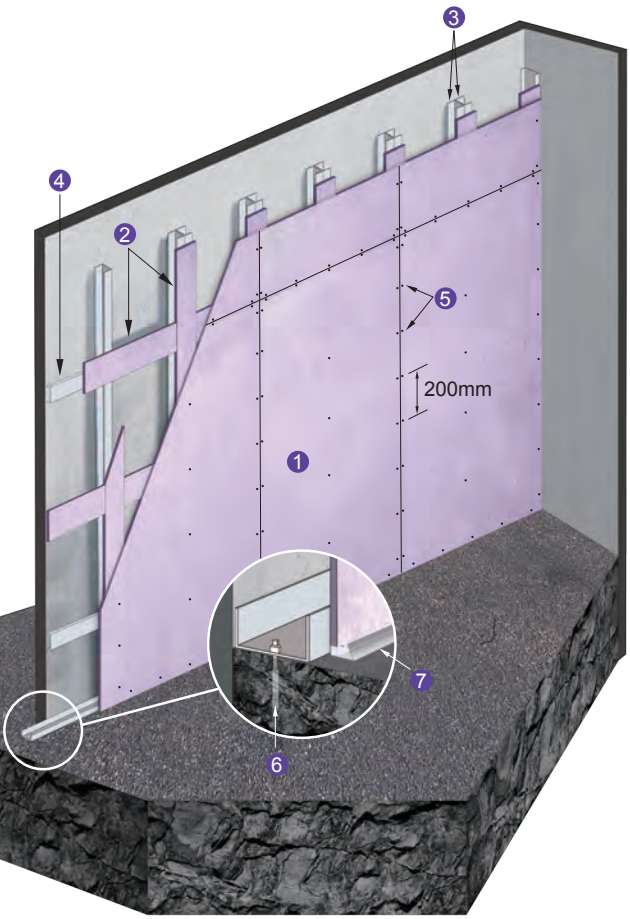
Hawk Pan calcium silicate board systems have been rigorously tested and evaluated to comply with the following standards:

BS 476: Part 4, 6 & 7
BS 476: Part 20: 1987
BS 476: Part 22: 1987

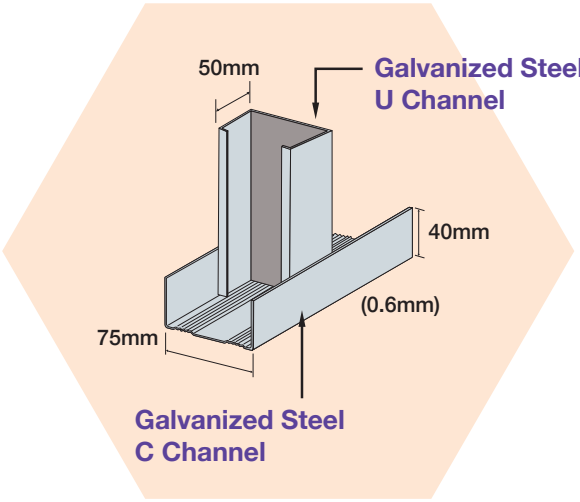
Key Benefits of Hawk Pan:

- Fire-resistant
- Extremely low thermal conductivity
- Excellent mechanical integrity
- Minimal shrinkage
- Non-combustible
- Corrosion-resistant
- Impact-resistant
- Moisture-resistant
- Low to no maintenance required
- Environmentally friendly and safe
- Compliant with international fire protection standards
- High thermal resistance and stability up to 1,100 degrees Celsius

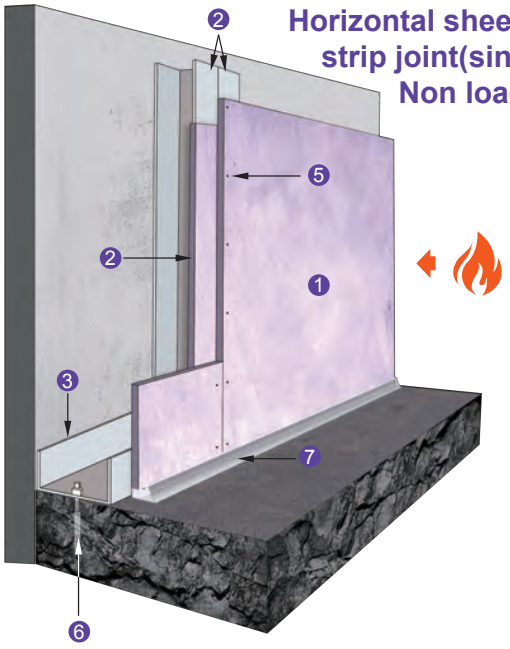
4 - hours fire insulation and integrity with fiew on either side



1. One layer of 9mm thick KINGTEC HAWK (fire rated board)
2. Fire Board Fillet (70 x 9mm)
3. 32mm x 50mm x 0.5mm thick Galvanized Steel U Channe lat nominal 610mm by 1220mm centres
4. 24mm x 50mm x 0.5mm thick Galvanized Steel C Channel
5. self-tapping screws M3.5 at nominal 250mm centres
6. M6 Anchor bolts at nominal 500mm centres
7. Firestop Acrylic Sealant



Fire resistance	FRL	-/240/-
	Standard	BS EN 1364: Part 1: 1999 BS EN 1363: Part 1: 1999
	Approval	IT 14-1919 FORTE
Construction	Maximum height	6000mm
	Partition length	Unlimited
	Partition thickness	Nominal 68mm



Horizontal sheeting with strip joint(single layer) Non loadbearing partition

FORTE
TESTING AND CONSULTANTS CO., LTD.

ilac-MRA

HKAS
HOKLAS 191
TEST

FIRE RESISTANCE TEST REPORT

PARTITION SYSTEM with SINGLE LAYER LINING

in accordance with ***BS EN 1364-1: 1999*** 0/240/240

Test Sponsor: **Kingtec Building Materials (HK & Macau) Limited**
Unit 1, 3/F., Block B, Shatin Industrial Centre,
5-7 Yuen Shun Circuit, Shatin, New Territories, Hong Kong.
Tel: 852-2640 8688 Fax: 852-2142 8128

Test Laboratory: **Forte Testing and Consultants Company Limited**
Contact Information:
Room 11, 2 Floor, Po Hong Centre, 2 Wang Tung Street,
Kowloon Bay, Kowloon, Hong Kong.
Tel: 852-2152 0638 Fax: 852-3186 2737

Report Number: **IT 14-190**

Date of Issue: **2014-10-20**

HOKLAS Approved Signatory:

Ir. Dr Chan Yuk Kit

1. Scope of Test

This report is a record of a fire resistance test conducted by Forte Testing and Consultants Co., Ltd, in conformity with requirements in *BS EN 1364-1: 1999 "Fire resistance tests for non-loadbearing elements – Part 1: Walls"* and particular requirements in *BS EN 1363-1: 1999 "Fire resistance tests – Part 1: General requirements"*.

The test subject was a partition system. The partition comprised of a single layer of "Hawk Pan" fire board lining with nominal thickness of 9 mm, and steel framework which was protected by 9 mm thick fillet boards. The specimen was supplied for test by Kingtec Building Materials (HK & Macau) Limited, the Sponsor.

The specimen achieved the following fire resistance:

INTEGRITY	**(E)**		**INSULATION**	**(I)**	
	Sustained Flaming	255 Minutes		Average Temp. Rise	6 Minutes
	Gap Gauge	255 Minutes		Max. Temp. Rise	7 Minutes
	Cotton Pad	255 Minutes			

2. Test Information

Test Laboratory:	FORTE Testing and Consultants Company Limited
Test Location:	West Side of Huan Xiang Shan, Xin Yu Road, Shajin, Baoan District, Shenzhen, Guangdong Province, China.
Test Sponsor:	Kingtec Building Materials (HK & Macau) Limited
ID no. of the Specimen:	QT 14-223A
Date Received:	2014-08-25
Test Number:	QT 14-223
Date Tested:	2014-09-02 **Start Time:** 14:26
Approved Test Operators from FORTE:	Ms. Cheng San Mei, Sammi
Witness of the Test:	Mr. Sammy Chan, Mr. James Yung and Ms. Lilian Tse– Official Delegates of the Sponsor
Report Issue Record:	Version 1 – 2014- 10 - 20

3. Construction Details of Specimen

3.1 Specimen Description

3.1.1 Board Configuration

The partition system has an overall size 3070 mm (width) x 3100 mm (height) comprised of a single layer of nominal 9 mm (thick) surface board. The surface was consisted of 5 sheets of boards including 2 numbers of board with nominal sizes 2440 mm (w) x 1220 mm (h), 1 number of board with nominal sizes 2440 mm (w) x 660 mm (h), 1 number of board with nominal sizes 2440 mm (w) x 630 mm (h) and 1 number of board with nominal sizes 630 mm (w) x 660 mm (h).

Surface boards were fixed to the framework by Ø3.5 mm X 35 mm flat screws at 160 – 200 mm centre to centre.

70 mm (w) x nominal 9 mm (t) board fillets were fixed on the exposed side of the steel framework under the surface boards. The fillets were fixed to the framework by Ø3.5 mm X 35 mm flat screws at approximate 150 – 200 mm centre to centre.

Fire sealant was caulked at all board joints and between the edges between boards and framework on the specimen.

The space between the space between free edge and the concrete support frame was filled by ceramic fibre.

3.1.2 Structural Framework

The structural framework of the partition was made of horizontal galvanized steel channels and vertical galvanized steel studs. The framework was secured to the test rig by M6 x 60 mm anchor bolts at 550 – 600 mm centre to centre.

Steel studs were sized 32 mm (flange) x 50 mm (depth) x 0.5 mm (t). First stud were for made of single stud; whereas the second to fifth studs were formed as double-stud configuration, which were made by fixing two studs back to back by screws at 500 – 600 mm centre to centre. Steel studs were inserted in between the head and base channels with 2-5 mm expansion gap at both ends of studs. Each end of the studs was fixed to channels by aluminium rivets.

Steel channels were sized of 24 mm (flange) x 50 mm (depth) x 0.5 mm (t). Head, base and three rows of stiffening horizontal channels were fixed to the boards. The stiffening channels were fitted between vertical studs and fixed to the studs at both end by aluminium rivets.

3.2 Material Schedule

Parts specifications of the specimen were summarized in the following tables.
A star mark "*" indicates those not being verified by FORTE.

Fire Board

Supplier:	Kingtec Building Materials (HK & Macau) Limited
Brand:	Hawk Pan
Material:	Calcium Silicate *
Nominal Density:	950 kg/m^3 *
Nominal Thickness:	9 mm
Location Applied:	Linings of the Specimen and Fillet on the Structural Framework

U-channel

Supplier:	Kingtec Building Materials (HK & Macau) Limited
Material:	Galvanized Steel
Sizes:	24 mm x 50 mm x 0.5 mm

C-channel

Supplier:	Kingtec Building Materials (HK & Macau) Limited
Material:	Galvanized Steel
Sizes:	32 mm x 50 mm x 0.5 mm

Fixing – Screws

Supplier:	Kingtec Building Materials (HK & Macau) Limited
Type:	Self-tapping Screws
Sizes:	Ø3.5 mm X 35 mm

Fixing – Rivets

Supplier:	Kingtec Building Materials (HK & Macau) Limited
Type:	Blind Rivet
Material:	Aluminum
Sizes:	Ø4 mm X 10 mm

Fixing – Anchor Bolts

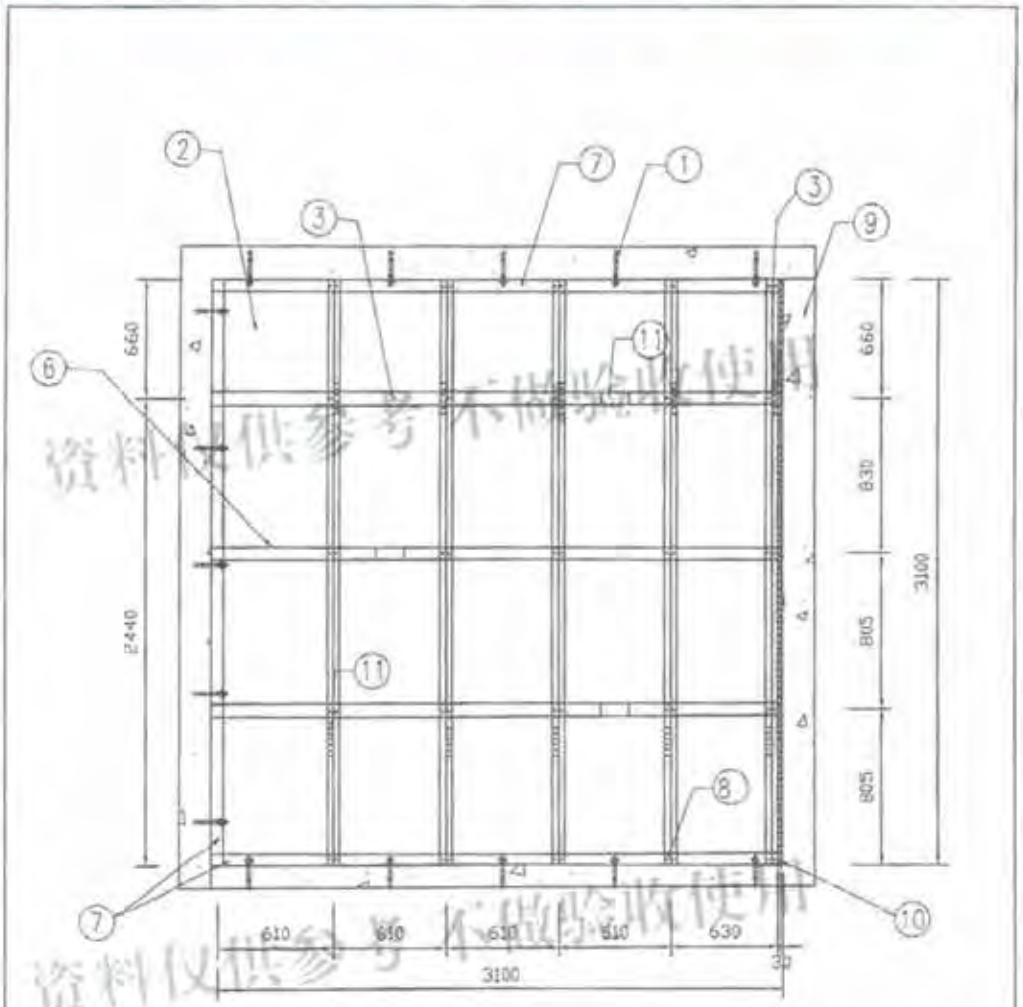
Supplier:	Kingtec Building Materials (HK & Macau) Limited
Type:	Expansion Anchor Bolt
Material:	Steel
Sizes:	Ø6 mm x 60 mm
Location Applied:	Perimeter Framework to Test Rig

Fire Sealant

Supplier:	Kingtec Building Materials (HK & Macau) Limited
Brand:	Lorient
Material:	Intumescent Mastics
Location Applied:	Joints Between Boards and Framework of Specimen – Fire and Non Fire Exposed Surface

3.3 Drawings on the Specimen provided by the Sponsor (Total 2 pages)

Drawings of Specimen provided by the Sponsor (1)



(STRUCTURAL FRAMEWORK)

① ANCHOR BOLT (Φ6*60mm)
② FIRE BOARD (2440*1220*9mm)
③ GALVANIZED STEEL C-CHANNEL ((C32*50*0.5mm)
④ SELF TAPPING SCREW (Φ3.5*35mm@250mm)
⑤ FIRE BOARD FILLET (70*9mm)
⑥ FIRE SEALANT
⑦ GALVANIZED STEEL C-CHANNEL (U24*50*0.5mm)
⑧ BLIND RIVETS (Φ4*10mm)
⑨ CONCRETE SUPPORTING RIG
⑩ CERAMIC FIBRE
⑪ CONNECTION CHANNEL (U24*50*0.5mm)

FIGURE 1

Drawings of Specimen provided by the Sponsor (2)

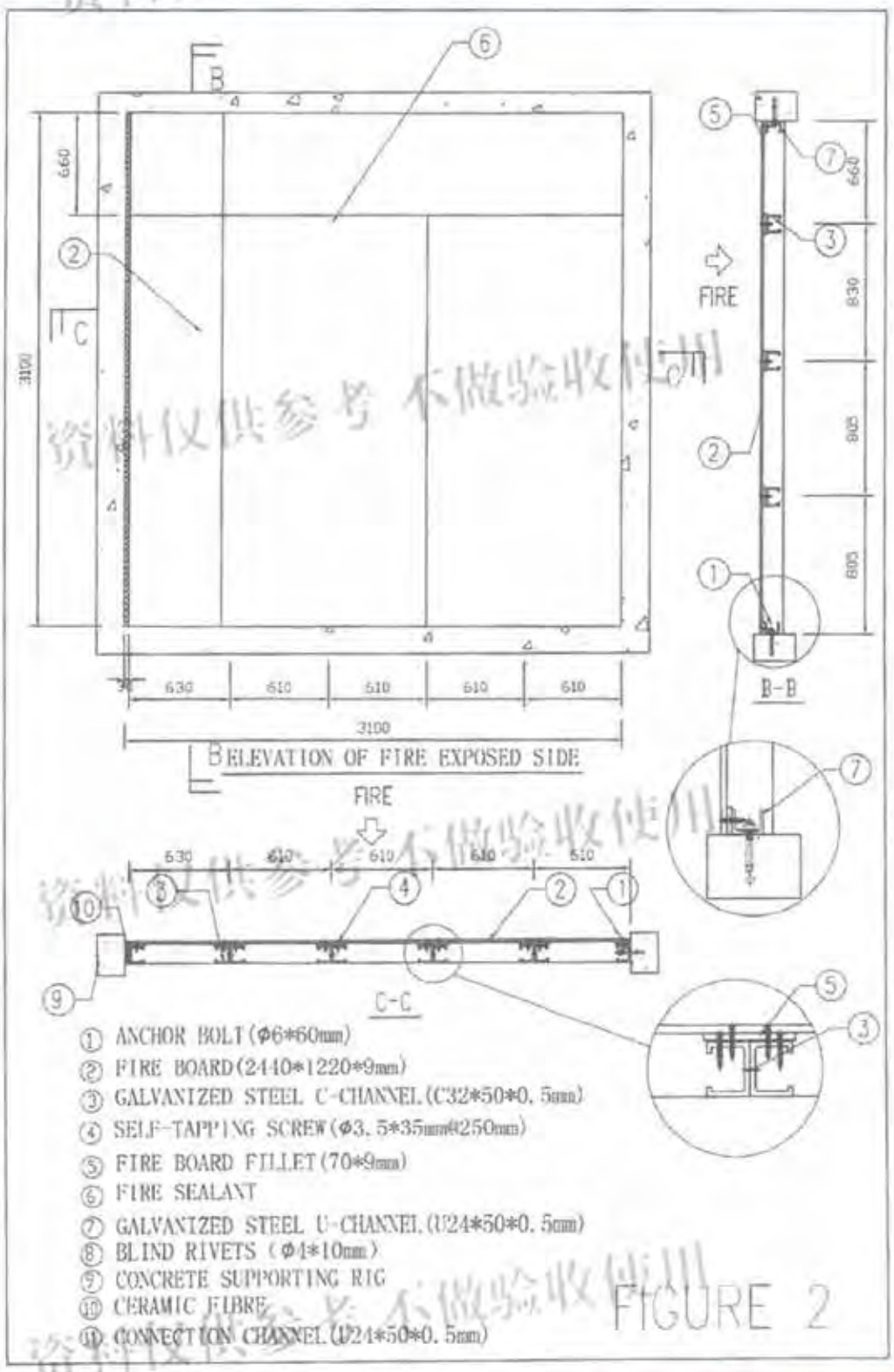


FIGURE 2

4. Specimen Condition

4.1 Selection of the Specimen

The specimen was selected by the Sponsor and submitted to the Test Location. FORTE did not involve in the selection of the specimen.

All the components of the test specimen were supplied by the Sponsor.

4.2 Verification of the Specimen

Additional components of the specimen such as lining and steel studs were transferred to the Test Location on 2014-08-25 by the Sponsor. Samples of the components were taken randomly for verification.

FORTE verified the specimen description given by the Sponsor to the best of its ability. In *section 3.2* of this report, items which had been verified by FORTE was clearly identified and distinguished from those relying on Sponsor's declaration.

4.3 Supporting Construction

The specimen was fixed into a supporting construction made of fully cured reinforced normal density concrete slabs provided by FORTE. The concrete slabs formed a structural opening 3110 mm (w) x 3110 mm (h).

4.4 Installation of the Specimen

The specimen was assembled and installed by workers delegated by the Sponsor on 2014-08-26 to 2014-08-29.

4.5 Specimen Conditioning

The specimen was stored in the Test Location from 2014-08-25, the date which components of the specimen were received, to 2014-09-02, the date which fire resistance test performed.

The average environment parameters in the Test Location within this period were:

Ambient Temperature (°C)	Relative Humidity (%)
32 ± 5	70 ± 5

4.6 Direction of Fire Side and Others

The Sponsor designated and installed that the steel framework was standing on the unexposed side.

The vertical free edge was set adjacent to the smaller board on the exposed face.

5. Test Method

5.1 Ambient Temperature

The ambient temperature was measured by a type K thermocouple. The measuring junction was positioned approximately 1500 mm away the test construction.

5.2 Heating Condition

The average temperature inside the furnace was monitored and controlled throughout the test according to the standard heating curve stated in *BS EN 1363-1:1999* given by the equation:

$$T = 345 \log_{10}(8t+1) + 20$$

Where,

T is the average furnace temperature, in degree Celsius

t is the time, in minutes

The temperature inside the furnace was measured in conformity with *BS EN 1363-1: 1999* by 9 numbers of plate thermometers. These thermometers were evenly distributed over a vertical plane approximately 100 mm from the exposed surface of the test construction.

The positions of furnace thermocouples are shown in *Figure 1*.

5.3 Unexposed Surface Temperature

The unexposed surface temperatures of specimen were measured by 15 numbers of type K thermocouples. These thermocouples were positioned and fixed on unexposed surface of specimen in conformity with *BS EN 1364-1: 1999*.

The positions of unexposed surface temperature measurement points are shown in *Figure 3*. The locations of thermocouples are explained in the following table.

Thermocouple	Description
U1 – U5	For average and maximum unexposed surface temperature rise
U6 – U14	For maximum unexposed surface temperature rise
U15 – U26	For additional information only and NOT assessed against insulation criterion; Data shown in Appendix A

5.4 Pressure Condition

The pressure inside the furnace was continuously monitored in compliance with *BS EN 1363-1: 1999* during the whole test. The pressure at a point 500 mm above the notional floor level was to be maintained 0 ±5 Pa by five minutes from commencement of the test and 0 ±3 Pa that from ten minutes onwards with respect to the atmosphere.

5.5 Deflection Measurements

Measurements of the deflection of the specimen were taken with a steel rule from cross line laser across the mid-height of the specimen with reference to *BS EN 1364-1:1999*.

The positions of deflection measurement points are shown in *Figure 2*.

Figure 1. Position of thermocouples and pressure measuring probe inside the furnace.

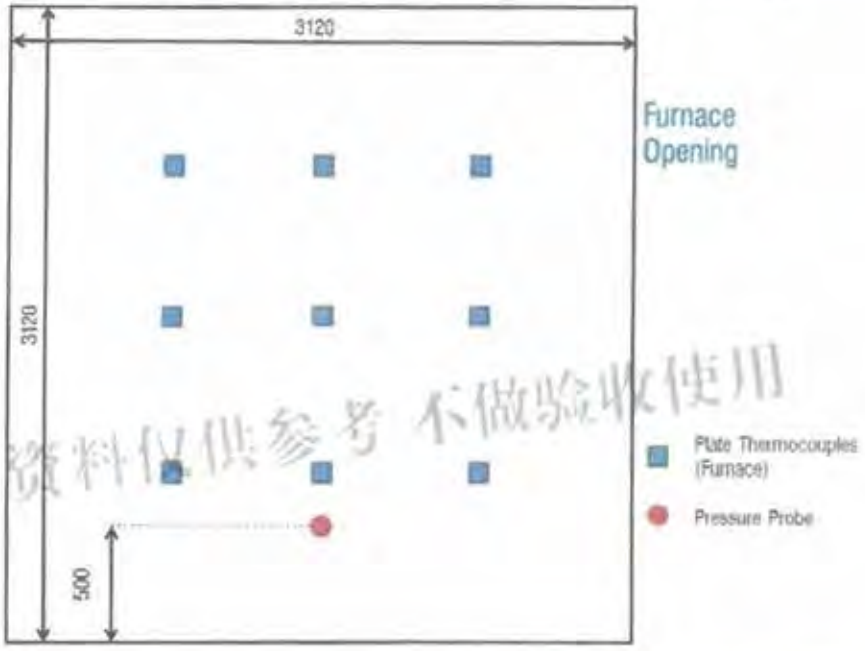
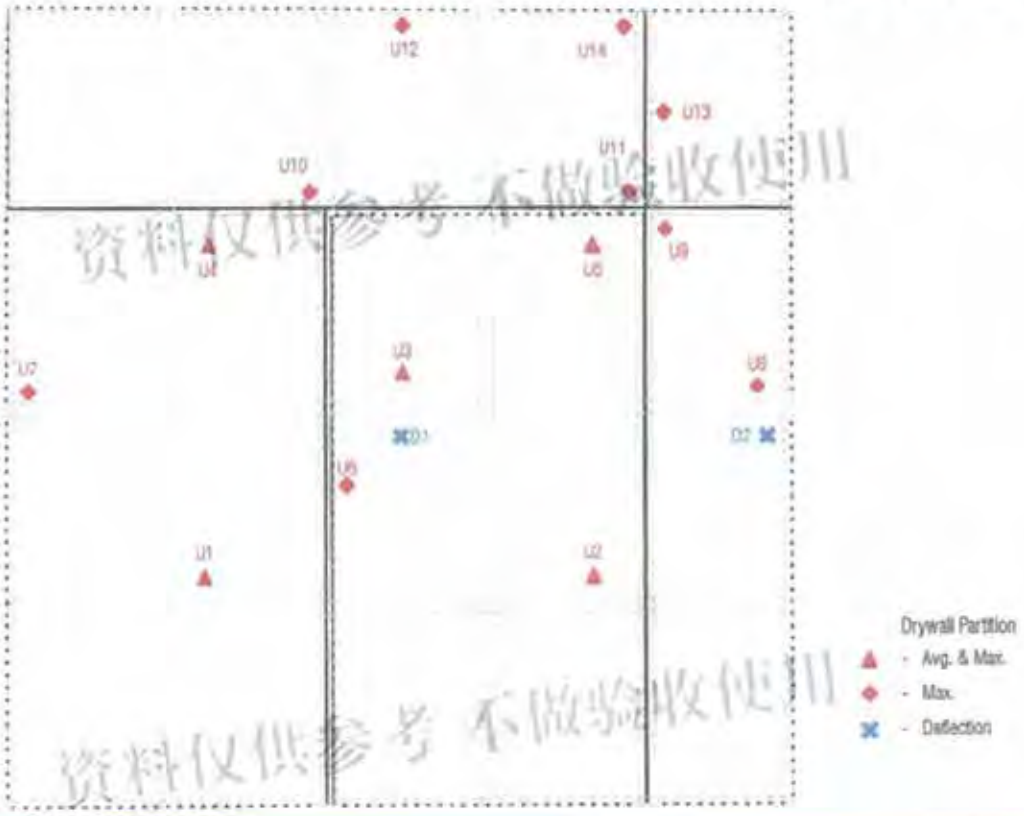


Figure 2. Positions of fixed surface thermocouples (U) and deflection measuring points (D) on the specimen.

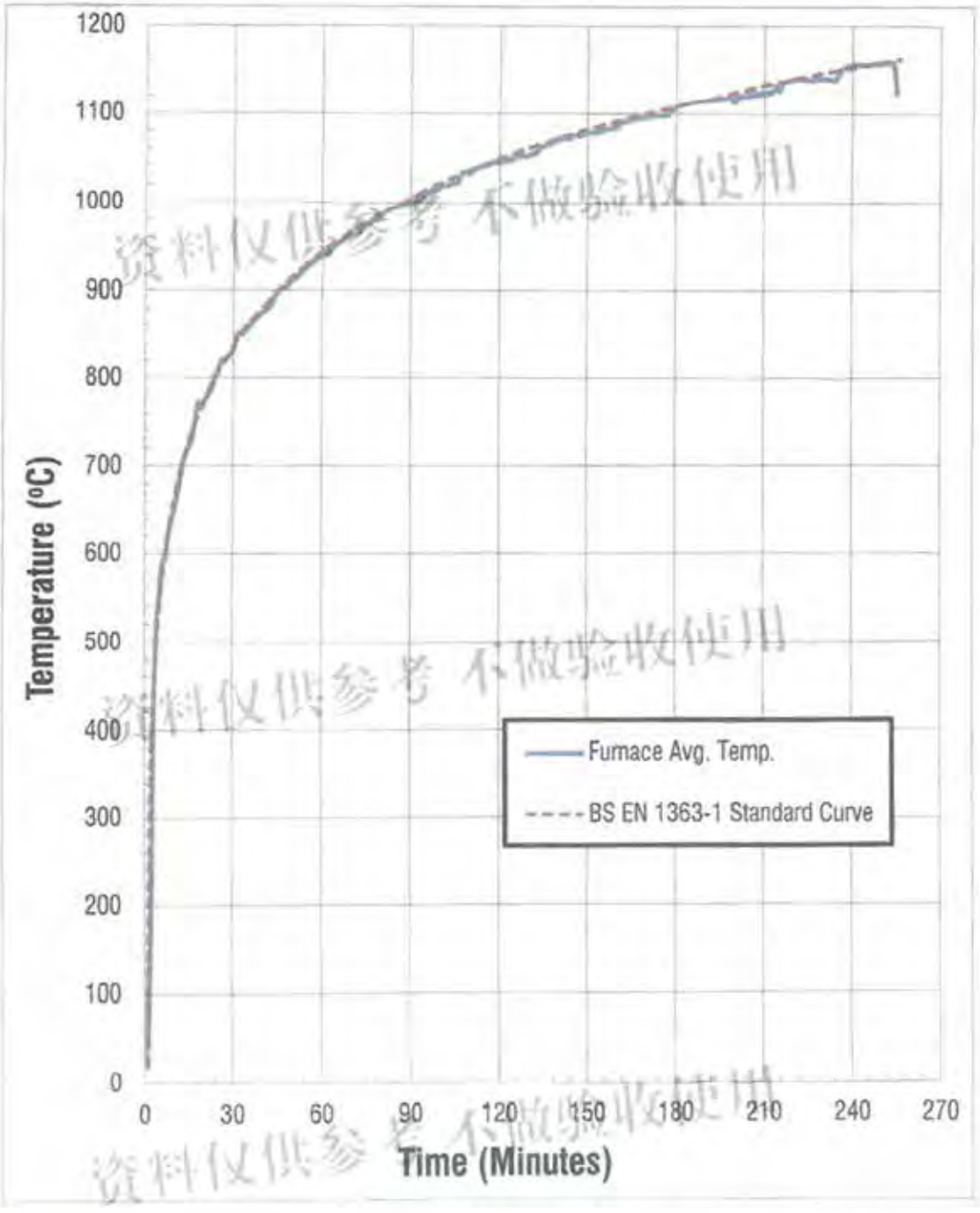


6. Test Data

6.1 Furnace Temperature

The furnace average temperature over the test period is shown in *Figure 3*.

Figure 3. Furnace average temperature over the test period.



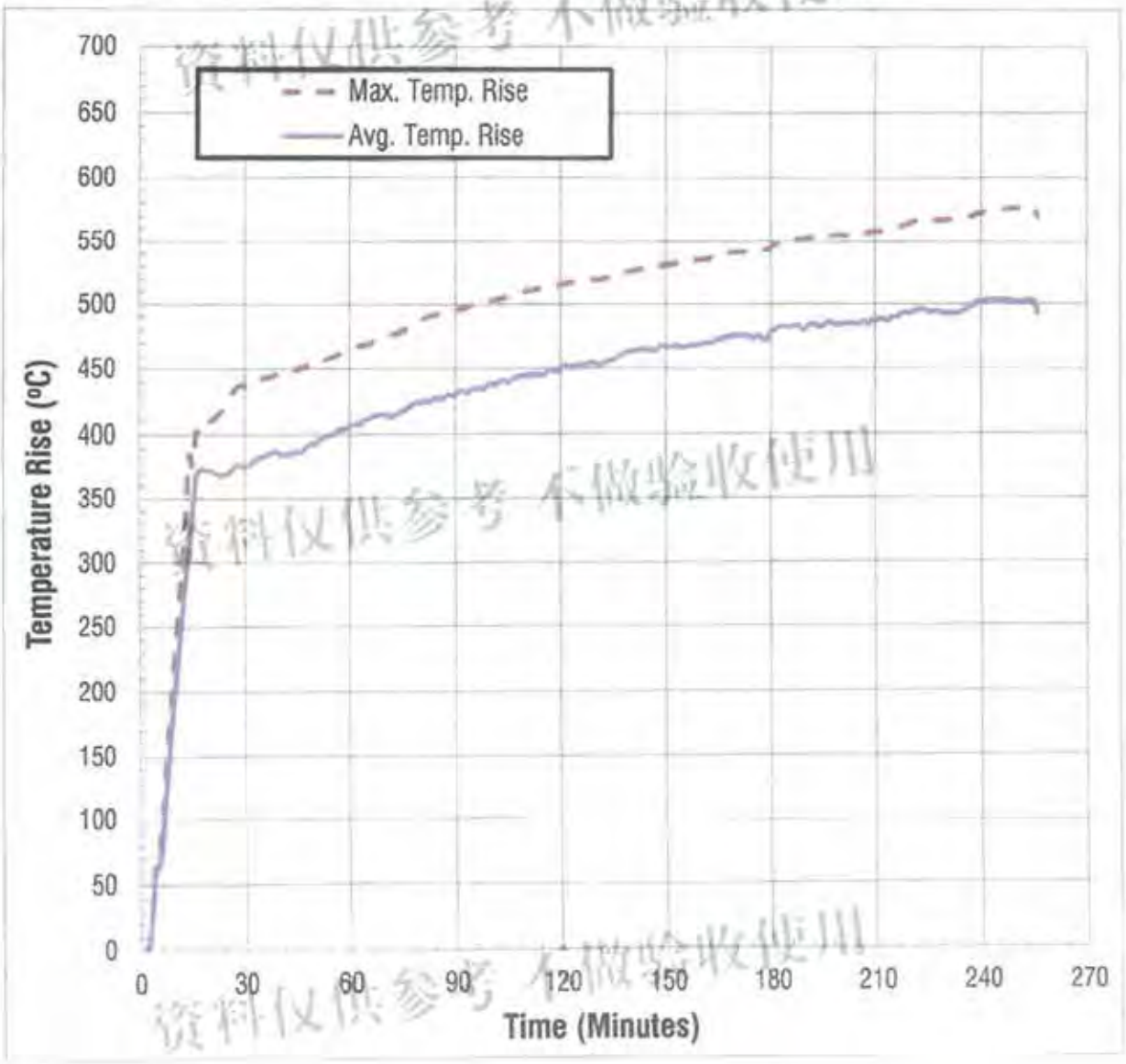
6.2 Unexposed Surface Temperature Rise

6.2.1 Fixed surface thermocouples

The temperature rises of unexposed surface of specimen measured by fixed surface thermocouples over the test period are shown in *Figure 4*.

The maximum temperature rise measured on U6 at 7.24 minute of test was 180.8°C, which was in excess of 180°C limit. The average temperature rise measured at specimen at 6.48 minute of test was 141.8°C, which was in excess of 140°C limit.

Figure 4. Average and maximum temperature rise of specimen over the test period.



6.2.2 Fixed surface thermocouples – Detailed Temperature Records

The outputs of the unexposed surface thermocouples on specimen are summarized in the following tables. Measurements were taken in °C.

Temperature outputs from unexposed surface temperature U1 to U8

Time (min)	U1	U2	U3	U4	U5	U6	U7	U8
0.0	34.7	34.7	34.9	34.8	35.2	34.4	33.6	33.4
1.0	35.8	35.9	36.5	36.7	37.0	36.3	34.9	34.2
2.0	49.3	52.9	57.0	56.5	63.7	57.4	48.6	46.7
3.0	94.3	94.6	95.9	98.4	97.7	95.1	88.4	89.9
4.0	95.4	96.6	97.0	98.9	100.1	97.9	94.8	94.0
5.0	97.6	106.0	110.8	122.0	131.5	128.0	101.9	95.3
6.0	128.6	141.2	147.5	159.5	169.2	167.7	136.1	109.4
7.0	162.9	172.1	180.8	194.3	200.2	202.5	162.6	140.8
8.0	198.3	204.6	212.9	225.2	230.1	239.1	195.8	170.5
9.0	227.9	230.6	241.5	250.4	255.4	272.3	218.0	196.5
10.0	256.0	258.1	271.5	278.1	280.5	307.3	236.9	223.3
20.0	378.8	395.3	400.0	428.1	428.4	407.7	369.5	422.3
30.0	381.4	404.8	402.8	435.7	435.9	420.7	397.5	400.1
40.0	392.4	412.0	406.9	446.9	443.6	426.4	421.1	414.1
50.0	402.0	426.6	419.1	452.5	455.8	441.2	424.0	414.7
60.0	413.1	437.0	431.5	466.2	466.6	454.9	437.1	426.0
70.0	417.2	442.5	436.4	477.4	474.8	462.5	433.6	439.4
80.0	428.3	450.3	444.8	489.2	488.4	474.6	441.6	443.5
90.0	434.2	455.0	454.1	497.4	496.1	481.6	450.7	448.5
100.0	440.0	459.2	458.4	503.8	501.6	492.0	457.5	457.0
110.0	444.7	470.5	467.4	510.5	512.0	497.8	468.8	467.3
120.0	451.5	477.5	474.9	516.4	517.5	501.4	475.0	473.8
130.0	453.8	475.9	476.4	519.4	516.1	508.1	483.9	474.7
140.0	460.5	486.6	489.7	526.7	531.0	511.6	487.1	489.2
150.0	463.1	490.4	491.0	532.2	533.9	515.1	492.9	489.9
160.0	467.8	496.9	491.2	536.0	534.7	517.5	500.9	494.5
170.0	473.1	503.5	494.8	542.7	540.6	524.2	501.5	500.3
180.0	475.2	503.9	501.4	550.4	542.9	526.4	515.8	505.9
190.0	481.0	511.3	502.6	553.1	546.5	532.7	512.9	510.3
200.0	480.4	511.5	503.8	554.1	547.9	534.0	515.2	510.4
210.0	484.5	513.9	508.0	559.7	550.0	536.2	523.8	515.7
220.0	489.0	524.0	515.0	562.5	558.3	543.5	517.2	521.6
230.0	488.0	521.2	510.5	562.7	556.8	545.7	518.1	520.7
240.0	495.7	530.0	521.5	570.3	568.6	552.0	524.4	527.1
250.0	497.1	529.6	520.1	570.7	565.0	553.6	528.0	528.6
255.0	487.1	521.7	512.6	561.2	556.4	541.1	521.2	522.3

Temperature outputs from unexposed surface temperature U9 to U14

Time (min)	U9	U10	U11	U12	U13	U14
0.0	33.4	34.4	34.3	34.8	34.2	35.0
1.0	34.2	35.7	36.2	36.2	35.6	36.3
2.0	46.7	56.8	55.6	55.1	55.0	53.7
3.0	89.9	97.3	96.8	95.9	97.2	96.3
4.0	94.0	98.3	98.1	97.8	98.1	98.2
5.0	95.3	124.1	125.1	122.5	121.6	118.1
6.0	109.4	158.8	162.7	157.4	159.3	154.3
7.0	140.8	188.2	194.9	187.1	187.5	181.4
8.0	170.5	215.6	223.4	213.5	212.8	207.2
9.0	196.5	239.3	246.7	234.8	231.3	227.9
10.0	261.3	272.8	257.0	251.7	247.7	232.9
20.0	422.1	447.7	441.0	438.7	424.5	441.5
30.0	440.9	471.6	465.1	443.0	428.7	454.9
40.0	448.0	484.4	477.7	451.1	438.2	461.4
50.0	456.8	488.9	483.5	453.4	444.0	470.5
60.0	467.7	501.7	490.7	463.2	456.2	476.3
70.0	474.5	511.9	500.5	474.1	462.6	485.9
80.0	481.2	523.7	512.3	490.1	475.9	498.8
90.0	489.7	530.9	521.4	498.8	484.7	509.0
100.0	494.1	538.3	527.6	504.3	489.1	516.4
110.0	503.4	545.9	536.7	510.3	498.0	523.6
120.0	507.2	551.2	542.1	515.2	504.5	529.0
130.0	517.2	554.5	547.4	518.1	506.9	534.5
140.0	520.9	561.8	556.2	524.6	515.7	541.3
150.0	522.6	566.5	560.6	529.5	518.7	546.4
160.0	526.7	570.0	560.9	532.2	521.6	546.7
170.0	528.2	576.5	564.1	538.7	525.5	550.6
180.0	532.1	582.4	570.1	542.8	529.3	555.0
190.0	537.9	588.5	574.8	548.7	532.9	561.5
200.0	540.3	589.8	576.6	550.5	534.1	563.7
210.0	538.5	593.1	580.2	552.3	537.4	565.5
220.0	546.4	600.7	588.1	560.5	544.9	573.9
230.0	547.5	601.9	589.7	561.6	544.5	576.7
240.0	556.9	608.2	597.8	569.3	555.4	583.9
250.0	556.8	610.8	601.4	571.0	555.1	587.7
255.0	548.3	604.8	592.1	560.2	546.9	578.4

6.3 Pressure

The furnace pressure over the test period is summarized in the following table.

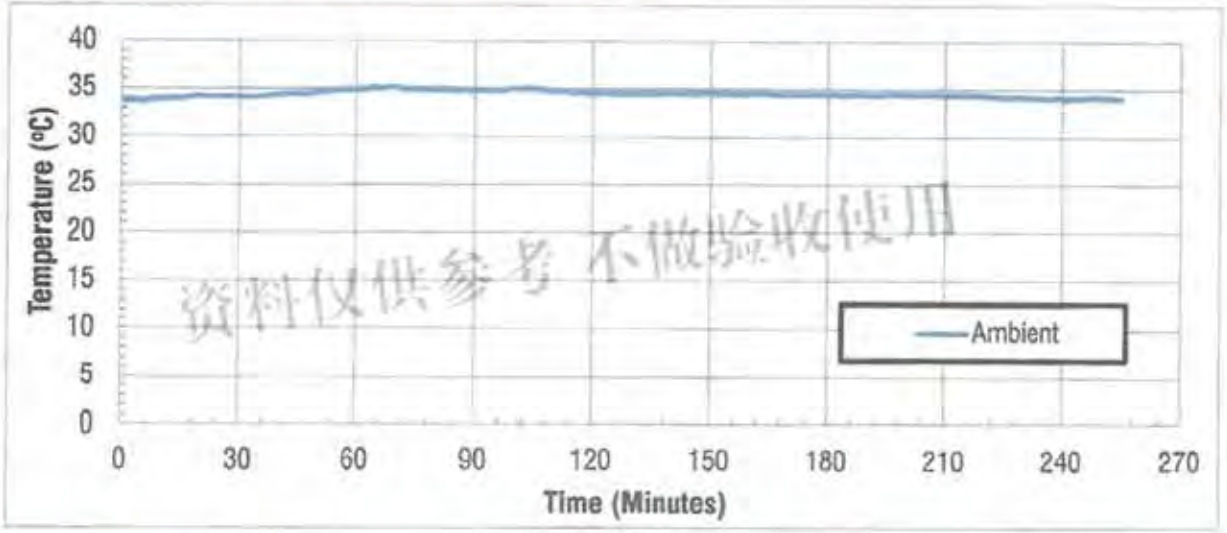
Time (min)	Pressure: 500 mm above notional floor level	Time (min)	Pressure: 500 mm above notional floor level
6	-2.5	140	0.8
10	-2.0	150	1.2
20	1.7	160	-1.5
30	1.5	170	1.1
40	-0.2	180	0.2
50	-0.9	190	0.5
60	2.8	200	-1.2
70	-1.0	210	-0.4
80	-0.7	220	-1.8
90	-1.4	230	0.5
100	-0.8	240	1.3
110	-1.2	250	-2.0
120	0.0	260	0.8
130	0.1	263	-1.7

6.4 Ambient Temperature

The ambient temperature over the test period was recorded and is shown in *Figure 5*.

The ambient temperature at the commencement of test was 32.3°C.

Figure 5. Ambient temperature over the test period.



6.5 Lateral Deflections

Measured lateral deflections over the test period are summarized in the following table. A positive measurement indicates a movement towards into the furnace and vice versa.

Measurements were taken in mm.

Maximum deflection measured on specimen was +68 mm at D1 at 240 and 250 minute of the test period.

Position \ Time (min)	0	30	60	90	120	150	180	210	220
D1	+0	+25	+57	+63	+63	+65	+66	+66	+66
D2	+0	+5	+10	+14	+14	+16	+13	+15	+18

Position \ Time (min)	230	240	250
D1	+67	+68	+68
D2	+18	+14	+19

6.6 Observations

Significant behaviours on the specimen during the test period are summarized in the following table.
Photos taken during the test period are also attached.

Time (min.sec)	Observation (from unexposed side)
00.00	Test Started.
07.06	The boards turned dull in appearance. Fire sealants at the gap between framework and fire board turned yellowish.
15.30	The boards turned deeper in color.
20.19	Smoke was released from the seams. A portion of the fire board turned dark brown at the top position of the specimen.
30.00	No integrity failure had occurred.
33.35	Light smoke was released from the seams.
35.28	Cotton fibre pad test was carried out over the lower right region on the specimen. No flaming or glowing on the cotton pad was observed.
49.53	The specimen was slightly deformed towards to furnace.
45.00	The specimen was stable. The center of the specimen move into the furnace.
60.00	No integrity failure had occurred.
95.00	The specimen was stable.
119.48	The specimen was stable.
120.00	No integrity failure had occurred.
146.31	Cotton fibre pad test was carried out over the upper left region on the specimen. No flaming or glowing on the cotton pad was observed.
168.08	The specimen was deformed towards to furnace.
178.16	Cotton fibre pad test was carried out over the upper left region on the specimen. No flaming or glowing on the cotton pad was observed.
179.59	Cotton fibre pad test was carried out over the upper right region on the specimen. No flaming or glowing on the cotton pad was observed.
180.00	The specimen was stable.
201.54	Glowing spots were observed at the crossing corner along second horizontal stud.
207.18	Cotton fibre pad test was carried out over the upper right region on the specimen. No flaming or glowing on the cotton pad was observed.
208.38	Cotton fibre pad test was carried out over the upper middle region on the specimen. No flaming or glowing on the cotton pad was observed.

Time (min.sec)	Observation Con't (from unexposed side)
209.43	Cotton fibre pad test was carried out over the upper left region on the specimen. No flaming or glowing on the cotton pad was observed.
220.08	The specimen was deformed towards to furnace.
235.45	Cotton fibre pad test was carried out over the upper left region on the specimen. No flaming or glowing on the cotton pad was observed.
236.34	Cotton fibre pad test was carried out over the upper right region on the specimen. No flaming or glowing on the cotton pad was observed.
237.30	Cotton fibre pad test was carried out over the upper left region on the specimen. No flaming or glowing on the cotton pad was observed.
240.00	No integrity failure had occurred.
250.00	The specimen was stable.
255.00	Test was terminated at request of the Sponsor.

6.7 Photos

Photo 1. Exposed surface of the specimen before test.

Photo 2. Unexposed surface of the specimen before commencement of test.

Photo 3. Unexposed surface of the specimen at 30 minute of test.

Photo 4. Unexposed surface of the specimen at 60 minute of test.

Photo 5. Unexposed surface of the specimen at 100 minute of test.

Photo 6. Unexposed surface of the specimen at 140 minute of test.

Photo 7. Unexposed surface of the specimen at 180 minute of test.

Photo 8. Unexposed surface of the specimen at 210 minute of test.

Photo 9. Unexposed surface of the specimen at 240 minute of test.

Photo 10. Unexposed surface of the specimen after the test.

Photo 11. Exposed surface of the specimen after test.

Test Results

Test was terminated after a period of 255 minutes at request of the Sponsor.

The test data obtained from the fire resistance test was assessed against performance criteria given in *BS EN 1364-1: 1999*. The test results are summarized in the following table.

Performance Criteria			Elapsed Time before Failure Occurrence
Integrity (E)			**255 minutes**
Criteria of Failure		**Description**	**Elapsed Time before Failure Occurrence**
Sustained Flaming		Continuous flaming for a period of time greater than 10 seconds on unexposed surface	255 minutes (No Failure)
Gap Gauge	Ø6 mm	Penetration of the gauge into the furnace through the specimens and movable along a 150 mm gap	255 minutes (No Failure)
	Ø25 mm	Penetration of the gauge into the furnace through the specimens	
Cotton Pad		Ignition of the cotton pad	255 minutes (No Failure)

Performance Criteria		Elapsed Time before Failure Occurrence
Insulation (I)		**6 minutes**
Criteria of Failure	**Description**	**Elapsed Time before Failure Occurrence**
Integrity Failure	The performance criterion "insulation" shall automatically be assumed not to be satisfied when the "integrity" criterion ceases to be satisfied	255 minutes (No Failure)
Average Temperature Rise	An increase of the average temperature of unexposed surface of the specimens above the initial average temperature by more than 140 °C	6 minutes
Maximum Temperature Rise	An increase of temperature at any other point of the specimens above the initial average temperature by more than 180 °C	7 minutes

7. Limitations

This report details the method of construction, the test conditions and the results obtained when the specific element of construction described herein was tested following the procedure outlined in *BS EN 1363-1*, and where appropriate *BS EN 1363-2*. Any significant deviation with respect to size, construction 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 resistance testing and the consequent difficulty in quantifying the uncertainty of measurement of fire resistance, it is not possible to provide a stated degree of accuracy of the result.

This report may only be reproduced in full by the Sponsor, without comment, abridgement, alteration or addition, unless otherwise agreed with written approval by FORTE.

8. Field of Direct Applications of Test Results

The field of direct application defines the allowable changes to the test specimen following a successful fire resistance test. These variations can be introduced automatically without the need for the sponsor to seek additional evaluation, calculation or approval.

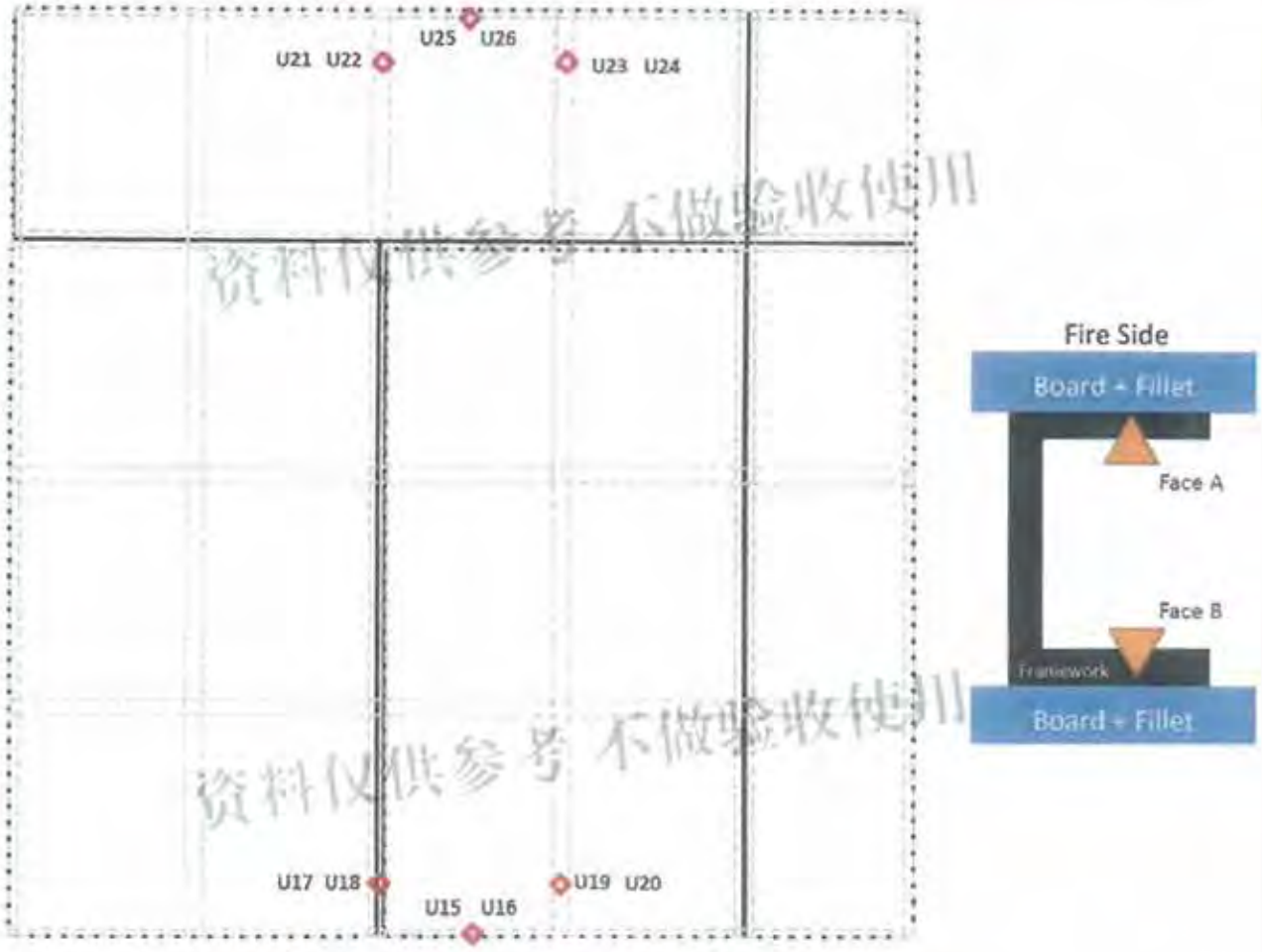
The series of rules and guidelines are defined in *Clause 13 "Field of direct application of test results", BS EN 1364-1: 1999* and relevant clauses and annexes.

The field of direct applications may only be defined following the identification of classification(s). The field of direct and, where applicable, extended application will be included in classification relevant documents.

Appendix A

A.1 Additional Temperature – Framework

Fixed surface thermocouples were attached to different locations of the framework to obtain additional information. Locations of these thermocouples are shown and summarized in the following figure and table.



Location of Additional Thermocouples

Position	Face A	Face B
100 mm below Top Edge	U22, U24	U21, U23
500 mm above Bottom Edge	U18, U20	U17, U19
Centre of Top Track	U26	U25
Centre of Bottom Track	U16	U15

A.2 Additional Thermocouples – Detailed Temperature Records

The outputs of the additional thermocouples on framework of the specimen are summarized in the following tables. Measurements were taken in °C.

Temperature outputs from unexposed surface temperature U15 to U20

Time (min)	U15	U16	U17	U18	U19	U20
0.0	32.8	32.0	34.0	33.8	34.2	34.2
5.0	39.7	36.2	57.4	44.4	58.3	43.8
10.0	93.2	68.5	97.7	85.2	97.2	84.7
20.0	98.3	91.4	159.9	120.6	171.5	120.2
30.0	151.6	110.4	236.2	150.4	252.0	158.2
40.0	183.6	132.2	278.7	174.0	288.9	180.3
50.0	201.4	142.7	298.4	186.0	305.3	188.8
60.0	215.7	150.8	312.7	193.6	316.4	195.4
70.0	223.8	150.8	318.4	190.9	321.1	193.4
80.0	228.8	153.3	318.1	187.4	320.3	190.4
90.0	235.8	158.0	321.7	188.9	322.4	191.4
100.0	242.8	161.7	327.3	191.5	325.1	194.1
110.0	250.3	167.6	332.2	196.1	328.8	196.1
120.0	256.1	172.9	335.2	198.2	332.7	197.8
130.0	262.5	176.8	336.4	198.4	334.4	199.1
140.0	270.4	186.9	343.2	205.1	340.5	204.8
150.0	274.4	187.9	343.6	204.7	341.7	204.1
160.0	279.4	192.5	343.3	207.8	344.2	207.9
170.0	285.2	196.8	345.9	209.4	349.2	212.5
180.0	285.1	196.4	343.9	206.3	346.4	207.7
190.0	290.1	199.5	347.6	208.2	348.9	209.1
200.0	292.8	199.9	349.1	209.0	348.7	208.2
210.0	296.6	204.4	352.6	212.5	351.4	212.4
220.0	299.6	208.4	356.3	215.6	354.0	215.5
230.0	301.9	207.9	356.6	214.8	353.3	211.6
240.0	304.2	211.0	360.5	218.6	357.5	218.5
250.0	306.4	213.2	362.6	217.6	356.9	213.3
255.0	307.6	213.6	361.4	214.9	356.3	215.1

Temperature outputs from unexposed surface temperature U21 to U26

Time (min)	U21	U22	U23	U24	U25	U26
0.0	34.5	33.1	33.1	32.3	32.9	32.9
5.0	57.2	49.2	57.6	48.3	76.6	46.4
10.0	91.2	93.3	96.1	92.8	95.1	77.2
20.0	161.1	147.0	182.9	151.6	115.2	117.1
30.0	247.5	199.2	266.3	196.7	182.0	145.7
40.0	293.4	229.4	309.9	222.6	220.7	165.3
50.0	315.2	239.7	336.8	234.0	241.0	174.6
60.0	331.0	250.5	352.4	242.7	257.6	185.5
70.0	335.1	253.3	360.8	246.7	270.8	192.2
80.0	337.1	254.6	364.3	247.5	283.3	199.6
90.0	341.2	257.5	369.4	250.8	295.3	206.4
100.0	343.2	260.8	373.3	253.5	304.0	210.8
110.0	346.9	264.9	376.6	257.6	309.8	214.4
120.0	350.1	268.4	379.9	261.3	314.9	216.7
130.0	352.4	268.8	383.0	261.4	321.8	221.1
140.0	353.7	271.2	385.4	266.2	324.7	223.5
150.0	357.5	274.0	386.5	267.4	329.7	226.4
160.0	359.1	274.8	388.0	268.9	333.1	228.2
170.0	359.9	275.2	389.3	268.7	336.5	233.2
180.0	362.7	278.9	389.4	270.5	341.3	236.0
190.0	365.0	279.4	392.7	271.6	345.3	238.9
200.0	366.2	279.2	394.5	271.4	349.5	243.4
210.0	344.0	286.0	395.2	274.2	352.4	245.2
220.0	341.1	286.7	397.8	274.5	356.4	249.2
230.0	344.8	285.8	400.3	274.6	360.9	251.9
240.0	129.3	288.7	403.6	279.3	360.4	250.4
250.0	123.0	291.6	405.1	280.2	369.4	257.6
255.0	120.3	293.2	404.9	281.1	369.2	256.4

END OF REPORT

FORTE
TESTING AND CONSULTANTS CO., LTD.

Flat 31, 5/F., My Loft, 9 Hoi Wing Road,
Tuen Mun, Hong Kong.
Tel.: (852) 2152 0638 Fax: (852) 3186 2723

Kingtec Building Materials (HK & Macau) Limited

Unit 1, 3/F., Block B, Shatin Industrial Centre,
5-7 Yuen Shun Circuit, Shatin, New Territories, Hong Kong.

Report Reference: IA15-030

Date: 22 April 2015

ASSESSEMENT ON FIRE RESISTANCE OF DRYWALL PARTITION SYSTEM WITH SINGLE LAYER LINING (240 MINUTES INTEGRITY)

Introduction

We were requested by Kingtec Building Materials (HK & Macau) Limited to provide an assessment of the fire performance of drywall partition system with 9 mm Hawk Pan Board single layer lining. This assessment report presents an appraisal of fire resistance performance of drywall partition system, which will satisfy the integrity criteria of BS 476: Part 22: 1987 not less than 240 minutes.

Contents

1. Assumptions and Limitations

It is assumed that the proposed assembly will be installed to a masonry or reinforced concrete structure or equivalent, which can provide a particular stability, integrity and insulation of fire resistance period. The materials and constituents of the proposed assembly are in similar manners and quality as tested or otherwise appraised by Forte Testing and Consultants Company Limited (FORTE). This assessment may only be reproduced in full by applicant.

2. Background

2.1 Test Report No.IT 14-190

A fire resistance test was conducted by FORTE in accordance with BS EN 1364-1: 1999 on a specimen of non-loadbearing drywall partition system, to determine its fire resistance performance. The test sponsor was Kingtec Building Materials (HK & Macau) Limited. The overall sizes of the specimen were 3,050 mm width by 3,100 mm height. It was constructed with one layer of 9 mm thick Hawk Pan Board which fixed to a side of 0.5 mm thick steel stud framework through a 9 mm thick by 70 mm width Hawk Pan Board fillet. The dual steel studs spaced at maximum 600 mm centres and it was located on unexposed fire side. The specimen satisfied the integrity criterion of the standard for 255 minutes. Full construction details of the partition system and the test results were recorded in the test report numbered IT 14-190.

---

3. Analysis

3.1 Drywall partition system with 240 integrity

It is proposed that the non-loadbearing drywall partition system construction 0.5 mm thick steel stud framework with 9 mm Hawk Pan Board fixed fillet on board side and single layer of 9 mm Hawk Pan Board lining on fire exposed side, will fulfill these requirements and acquire a fire resistance period of at not less than 240 minutes in accordance with integrity and insulation criteria of BS 476: Part 22:1987.

The details of the main components for proposed partition system are:

1) 9 mm Hawk Pan Board :
   Maximum size per sheet -1220 mm by 2440 mm
2) 9 mm Hawk Pan Board fillet with minimum 70 mm width
3) Galvanised steel U-channel:
   Minimum size – 32 mm (flange) by 50 mm by 0.5 mm thick
   24 mm (flange) by 50 mm by 0.5 mm thick

A layer of 9 mm Hawk Pan Board is screw fixed to a side of the steel stud framework. The spacing between the vertical steel channels is 600 mm. Minimum M4 self-tapping screws at 160 mm – 200 mm c/c are applied on the perimeter of the 9 mm thick Hawk Pan Board and framework members. The minimum 70 mm width fillet shall be located between the framework and the Hawk Pan Board and fixed on the steel framework by M4 flat screws with 150 mm – 200 mm c/c. All screws were located not less than 10 mm from board's edges. Fire sealant is applied to screws points and board's joints.

The fire resistance test report numbered IT14-190, demonstrated that non-loadbearing 9 mm thick Hawk Pan Board partition system has obtained more than 240 minutes integrity performance in accordance with BS 1364-1:1999. After detailed review of the test methods, BS 476: Part 22: 1987 and BS EN 1364-1: 1999, a summary of the primary differences of the test method is presented in Table 1.

Table 1: Gap analysis between BS 476: Part 22: 1987 and BS EN 1364-1: 1999

Parameter	BS 476 : Part 22	BS EN 1364-1: 1999
Standard fire curve	BS 476 : Part 20: 1987 $T = 345 \log_{10}(8t + 1) + 20$	EN 1363-1: 1999 $T = 345 \log_{10}(8t + 1) + 20$
Furnace thermocouple	Type K according to BS 4937.4 with diameter 0.75 mm - 1.5mm, insulated with twin bore porcelain insulators, hot junction project 25 mm from the insulator, or; Mineral insulated metal sheathed type K with overall diameter 1.5 mm, protected with porcelain insulator, hot junction project 25 mm from the insulator.	Plate thermometer, consisted of a mineral insulated steel sheathed type K according to IEC 584-1 with diameter 1 mm, connected to with a steel plate of final size 100 mm square
Furnace pressure	Neutral pressure plane at 1M	Neutral pressure plane at 500 mm
INTEGRITY: **Sustained flaming** **Cotton pad** **Gap gauges**	Failure shall be deemed to have occurred when one of the following occurs: Not less than 10s Applied for 10 – 15 seconds Employed after 5min : 6mm X 150mm (other than at sill level), 25mm dia. For any gap	Failure shall be deemed to have occurred when one of the following occurs: More than 10s Applied for 30 seconds Employed after 5min : 6mm X 150mm (other than at sill level), 25mm dia. For any gap
Deflection measurement	Monitor lateral deflection.	Deformation measurements to be made at specified locations.
Direct field of application	Not included.	Included.

The test specification and failure criteria for both BS 476 and BS EN 1364-1 are shown in table 1. The time/temperature relationship is the same for both test standards; however, the EN test is controlled using plate thermometers that, due to their slow response, result in the EN test being more severe than the BS test during the early stages of a test. However, unexposed surface temperature measuring points for the partition system under BS EN 1364-1 are more than the requirements stated in the standard of BS 476: Part 22. The Hawk Pan Board with 9 mm thick on the unexposed surface of the partition system remained intact, no notable fractures and without insulation failure observed from the test reports numbered IT14-190. There is no integrity between the joint of the board system during the fire test. Based upon the test evidence, the tested specific partition system with single layer of 9 mm thick Hawk Pan Board and the steel framework located to the fire unexposed side would be capable of achieving the integrity of not less than 240 minutes in accordance with BS 476: Part 22: 1987.

---

4. Assessment/Conclusion

It is concluded that the dry wall partition system with 9 mm Hawk Pan Board single lining detailed in Section 3 of this report will also achieve the fire resistance of not less than 240 minutes integrity if tests in accordance with BS 476: Part 22: 1987.

5. Term of validity

This assessment is issued on the basis of test data and information to hand at the time of issue and it is valid only if presented with proper test evidence(s) and all noted supporting data. If contradictory evidence becomes available to FORTE, the assessment will be unconditionally withdrawn and the applicant will be notified in writing. Similarly the assessment is invalidated if the assessed construction is subsequently tested since actual test data is deemed to take precedence over an expressed opinion. This assessment will expire on 22 April 2020, which time it is recommended that it be submitted to FORTE for re-appraisal.

For and on behalf of Forte Testing and Consultants Company Limited:

CHENG San Mei, Sammi
Laboratory Manager

Ir Dr CHAN Yuk Kit, James, RPE (Fire)
Managing Director

6. Declaration by the applicant

- We the undersigned confirm that we have read and complied with the obligations placed on us by this guide on undertaking assessments.
- We confirm that the component or element of structure, which is the subject of this assessment, has not to our knowledge been subjected to a fire test to the standard against which this assessment is being made.
- We agree to withdraw this assessment from circulation should the component or element of structure be the subject of a fire test to the standard against which this assessment is being made.
- We are not aware of any information that could affect the conclusions of this assessment.
- If we subsequently become aware of any such information we agree to ask FORTE to withdraw the assessment

Name: Sammy Chan Chee Wai

Signed: _____

For and on behalf of : _____

TEST REPORT

Your Ref: Email dated 28 Jun 2006 | Date: 04 Jul 2006

Our Ref: 54S063476/2A/LGJ | Page: 1 of 3

DID: 68653783 | Fax: 68621433

NOTE: This report is issued subject to PSB Corporation's "Terms and Conditions Governing Technical Services". The terms and conditions governing the issue of this report are set out as attached within this report.

SUBJECT:

Non-combustibility test on "Hawk" Calcium Silicate Board material submitted by Kingtec (Hong Kong) Building Materials Industiral Co., Ltd. on 30 May 2006.

TESTED FOR:

Jinte Constructional Material Industrial Limited Company
368 Ping An Road, Yichun City
Jiangxi Province
People's Republic of China

Attn: Mr Shi Po De

DATE OF TEST:

27 Jun 2006 and 28 Jun 2006

PURPOSE OF TEST:

To determine whether the material is non-combustible when it is exposed to the conditions of the test specified in British Standard 476: Part 4: 1970 "Fire Test on Building Materials and Structures - Non-combustibility Test for Materials".
The test was conducted at PSB Corporation fire test laboratory located at No. 10 Tuas Avenue 10, Singapore 639134.
fire propagation for products".

54S063476/2A/LGJ

PSB

DESCRIPTION OF SAMPLES:

42 pieces of sample, said to be "Hawk" (1244kg/m^3) Calcium Silicate Board material, each of nominal size of 40mm x 40mm x 8mm thickness were received. 6 blocks of specimen, each of nominal test size of 40mm x 40mm x 50mm thickness were prepared.

TEST PROCEDURE:

Specimens were exposed to the specified heating conditions (750 ± 10°C) in a furnace conforming to Clause 6 and illustrated in Figure 1, 2 and 3 of the Standard. The furnace was heated and its temperature stabilized at 750 ± 10°C for more than 10 minutes. One specimen was then inserted in the furnace, the whole operation was performed in less than 5 seconds. The temperature of the specimens and the furnace were measured by two separate Chromel/Alumel thermocouples continuously for 20 minutes on the chart of a recorder. The flaming time of the specimen was determined by a stop watch. The procedure was repeated twice for two other specimens, one at each time.

RESULTS:

Description	Specimen 1	Specimen 2	Specimen 3	Requirements
Time of continuous flaming (sec.)	0	0	0	<10
Temperature rise of furnace (°C)	0	17	15	<50
Temperature rise of sample (°C)	0	0	0	<50
Classification	Non-combustible	Non-combustible	Non-combustible	-

CONCLUSION:

A non-combustibility test for materials in accordance with British Standard 476 Part 4 : 1970 has been performed on the material as described in this report and the classification of the sample is non-combustible.

Mah Poh Huat
Associate Engineer

Chan Lung Toa
Product Manager
(Fire Safety & Security Products)
Mechanical

This Report is issued under the following conditions:

1. Results of the testing/calibration in the form of a report will be issued immediately after the service has been completed or terminated.

2. Unless otherwise requested, a report shall contain only technical results. Analysis and interpretation of the results and professional opinion and recommendations expressed thereupon, if required, shall be clearly indicated and additional fee paid for, by the Client.

3. This report applies to the sample of the specific product/equipment given at the time of its testing/calibration. The results are not used to indicate or imply that they are applicable to other similar items. In addition, such results must not be used to indicate or imply that PSB Corporation approves, recommends or endorses the manufacturer, supplier or user of such product/equipment, or that PSB Corporation in any way "guarantees" the later performance of the product/equipment.

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10. Unless otherwise stated, the tests are carried out in PSB Corporation Pte Ltd, No.1 Science Park Drive Singapore 118221.

June 2006

TEST REPORT

Your Ref Email dated 28 Jun 2006 | Date. 04 Jul 2006

Our Ref 54S063476/1A/OKH | Page 1 of 6

DID 68653783 | Fax 68621433

NOTE: This report is issued subject to PSB Corporation's "Terms and Conditions Governing Technical Services". The terms and conditions governing the issue of this report are set out as attached within this report.

SUBJECT:

Fire propagation test on "Hawk" Calcium Silicate Board material submitted by Kingtec (Hong Kong) Building Materials Industrial Co., Ltd. on 30 May 2006.

TESTED FOR:

Jinte Constructional Material Industrial Limited Company
368 Ping An Road, Yichun City
Jiangxi Province
People's Republic of China

Attn: Mr Shi Po De

DATE OF TEST:

16 Jun 2006

PURPOSE OF TEST:

To determine the Index of Performance of the material when it is exposed to the conditions of the test specified in British Standard 476 : Part 6 : 1989 "Method of test for fire propagation for products".
The test was conducted at PSB Corporation fire test laboratory located at No. 10 Tuas Avenue 10, Singapore 639134.

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LA-2001-0212-A
LA-2001-0213-F
LA-2001-0214-E
LA-2001-0215-B
LA-2001-0216-G
LA-2001-0217-G

The results reported herein have been performed in accordance with the laboratory's terms of accreditation under the Singapore Accreditation Council - Singapore Laboratory Accreditation Scheme. Tests marked "Not SAC-SINGLAS Accredited" in this Report are not included in the SAC-SINGLAS Accreditation Schedule for our laboratory.

DESCRIPTION OF SAMPLES:

6 pieces of sample, said to be "Hawk" (1244kg/m^3) Calcium Silicate Board material, each of nominal size of 225mm x 225mm x 8mm thickness were received.

TEST PROCEDURE:

Three specimens were tested with either face exposed to the specified heating conditions, in an apparatus conforming to paragraph 5 and illustrated in Figures 1 to 3 of the Standard.

The calibration and test procedures were as defined in paragraphs 8 and 9 respectively, of the specification. The apparatus was calibrated prior to test and the actual calibration curve obtained is shown in Figure 1 of this report.

RESULTS OF TEST:

The mean temperature rise above ambient obtained from three specimens is also shown in Figure 1 (i.e. with the actual calibration curve). The mean temperature readings for the material and the calibration curve were obtained at the following intervals from the start of the test: at 1/2 minute intervals up to 3 minutes, at 1 minute intervals from 4 to 10 minutes, and at 2 minutes intervals from 12 to 20 minutes.

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资料仅供参考 不作验收使用

RESULTS OF TEST: (Cont'd)

From these readings, the index of performance for the material was determined as follows:

$$s_1 = \sum_{t=0.5}^{t=3} \frac{\Theta_s - \Theta_c}{10t} \qquad s_2 = \sum_{t=4}^{t=10} \frac{\Theta_s - \Theta_c}{10t}$$

and $$s_3 = \sum_{t=12}^{t=20} \frac{\Theta_s - \Theta_c}{10t}$$

$$S = s_1 + s_2 + s_3$$

where S = Index of performance for each of the specimens tested and s_1, s_2 and s_3 are sub-indices

t = Time in minutes from the origin at which readings are taken.

Θ_s = Temperature rise in deg. C for the specimen at time, t

Θ_c = Temperature rise in deg. C for the calibration sheet at time, t

In computations only the positive value of $\frac{\Theta_s - \Theta_c}{10t}$ was used.

RESULTS OF TEST: (Cont'd)

The following test results were obtained for each specimen tested:

Specimen	Sub-Indices			Index of Performance
	S_1	S_2	S_3	S
A	0.0	0.0	0.0	0.0
B	0.0	0.0	0.0	0.0
C	0.0	0.0	0.0	0.0

CONCLUSION:

The test results obtained for the sample tested are as follows:

Index of overall performance, I = 0.0
(Fire propagation index)

Sub-index, I_1 = 0.0

Sub-index, I_2 = 0.0

Sub-index, I_3 = 0.0

REMARKS:

1. The test results relate only to the behaviour of the test specimens of the product under the particular conditions of test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.
2. The sample was tested with either exposed to the heat and backed with calcium silicate board.

Mah Poh Huat
Associate Engineer

Chan Lung Tca
Product Manager
(Fire Safety & Security Products)
Mechanical

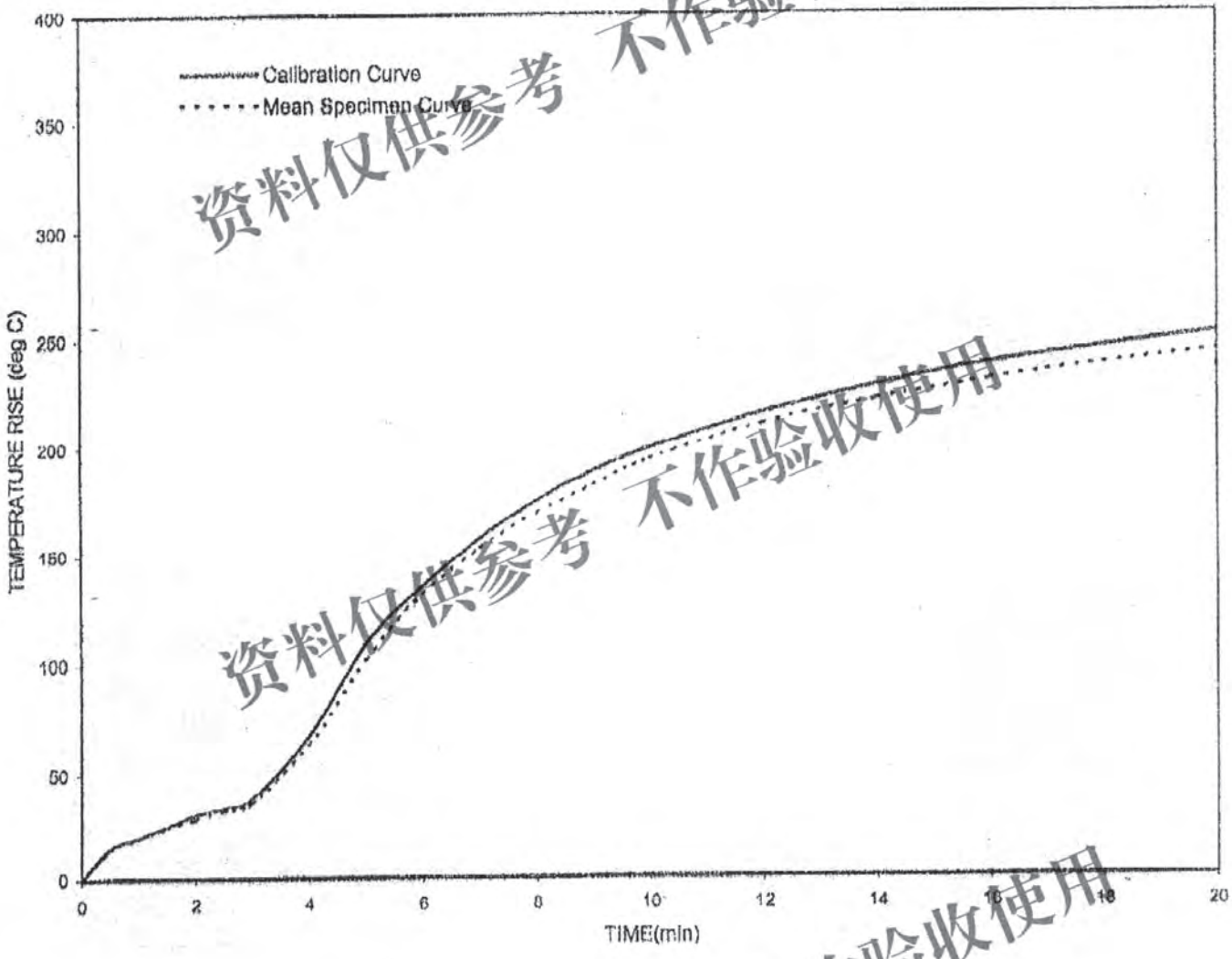

FIGURE 1 : COMPARISON OF MEAN SPECIMEN AND CALIBRATION CURVES

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June 2006

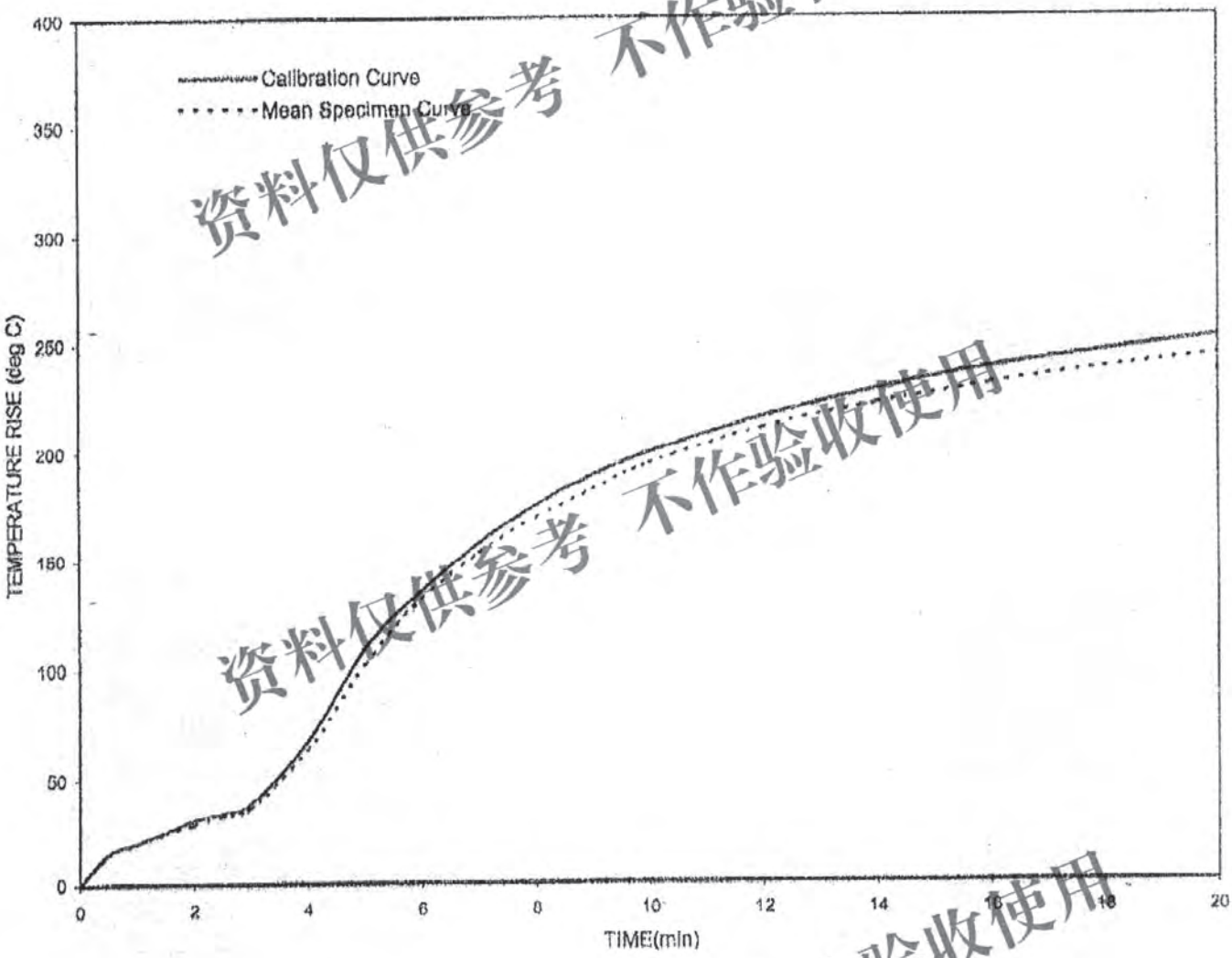

FIGURE 1 : COMPARISON OF MEAN SPECIMEN AND CALIBRATION CURVES

TEST REPORT

PSB Corporation

Your Ref: Email 26 Oct 05

Date: 28 Oct 2005

Our Ref: 64S055811/OKH

Page: 1 of 6

DID: 68653763

Fax: 68621433

NOTE: This report is issued subject to PSB Corporation's "Terms and Conditions Governing Technical Services". The terms and conditions governing the issue of this report are set out as attached within this report.

SUBJECT:

Large scale surface spread of flame test on "Hawk" Calcium Silicate Board material submitted by Kingtec Building Materials Industrial Co., Ltd. on 28 Sep 2005.

TESTED FOR:

Jinte Constructional Material Industrial Limited Company
368 Ping An Road, Yichun City
Jiangxi Province
People's Republic of China

Attn: Mr Shi Zi De

DATE OF TEST:

08 Oct 2005

PURPOSE OF TEST:

To determine the tendency of the surface of a material or a combination of materials to support the spread of flame across its surface and to classify the surface according to the test given in British Standard 476: Part 7: 1997.
The test was conducted at PSB Corporation fire test laboratory located at No. 10 Tuas Avenue 10, Singapore 639134.

香 港 認 可 處
Hong Kong Accreditation Service
創新科技署 Innovation and Technology Commission

RQA 1/003/25
Tel No. 2829 4870

12 December 2005

Mr. SZE Po Tak,
Director,
Kingtec (Hong Kong) Building Materials Industrial Co. Ltd,
Shop D, G/F, Lucky House Industrial Building,
64, Tong Mi Road,
Mongkok,
Kowloon

Dear Mr. SZE,

Mutual Recognition Agreement (MRA) Between HKAS and SAC-SINGLAS

I refer to your letter dated 6 December 2005 and the attached SAC-SINGLAS endorsed test reports dated 28 October 2005 and Ref No. 68653783 (Total 5 pages).

HKAS of Hong Kong and SAC-SINGLAS of Singapore are both signatories of the Asia Pacific Laboratory Accreditation Co-operation (APLAC) and the International Laboratory Accreditation Co-operation (ILAC) Multilateral Arrangements (MLA). Under the MLA, signatories accept laboratory accreditation granted by each other as equivalent and undertake to promote the acceptance of test reports endorsed by any signatories to the arrangements. This means that we will regard test report to BS 476:Part 7:1997 standard endorsed by SAC-SINGLAS as equivalent to test reports to the same respective test standards endorsed by HKAS under the Hong Kong Laboratory Accreditation Scheme (HOKLAS).

I hope the above information will be useful to you. If you have any further questions, please do not hesitate to contact the undersigned.

Yours sincerely,

(C K Cheung)
for Executive Administrator

香港灣仔告士打道七號入境事務大樓三十六樓 36/F, Immigration Tower, 7 Gloucester Road, Wan Chai, Hong Kong
電話 Tel: 2829 4837 傳真 Fax: 2824 1302 電郵 E-mail: hkas@itc.gov.hk 網址 Website: http://www.itc.gov.hk/hkas/

54S055811/OKH

PSBCorporation

DESCRIPTION OF SAMPLES:

9 pieces of sample, said to be "Hawk" Calcium Silicate Board material, each of nominal size of 885mm x 270mm x 8mm thickness were received. The bulk density of the sample was found to be about 1244kg/m^3.

TEST PROCEDURE:

Prior to test, the specimens were prepared and conditioned in accordance with paragraphs 5.3 to 5.6 of the standard and secured to a specimen holder as described in paragraph 6.3.

Six specimens were tested with either face exposed to the specified thermal radiation from the apparatus described in paragraph 6.1 of the standard. The intensity of the radiated heat incident on the specimen varies with distance from the hotter end, so that when the specified calibration panel is mounted in the place to be occupied by the specimen, the irradiance of the radiometer is as given in Table 1. The test was terminated when the flame front reached the 825mm reference line, or after 10 minutes has elapsed, whichever is the shorter.

Table 1 : Irradiance Along Horizontal Reference Line on the Calibration Board

Distance along reference line from inside edge of specimen holder	Irradiance kW/m^2		
mm	specified	min.	max.
75	32.5	32.0	33.0
225	21.0	20.5	21.5
375	14.5	14.0	15.0
525	10.0	9.5	10.5
675	7.0	6.5	7.5
825	5.0	4.5	5.5

RESULTS OF TEST:

Specimen No.	1	2	3	4	5	6
Spread of flame at first 1½ minutes (mm)	0	0	0	0	0	0
Distance (mm)	Time of spread of flame to indicated distance (minutes • seconds)					
Start of flaming	nil	nil	nil	nil	nil	nil
75	-	-	-	-	-	-
165	-	-	-	-	-	-
190						
215						
240						
265						
290						
375						
455						
500						
525						
600						
675						
710						
750						
785						
825						
865						
Time of maximum spread of flame (minutes • seconds)	-	-	-	-	-	-
Distance of maximum spread of flame (mm)	0	0	0	0	0	0
Comments	None					

54S055811/OKH

PSB Corporation

Classification of Surface Spread of Flame

Classification	Spread of flame at 1.5 min.		Final spread of flame	
	Limit (mm)	Limit for one specimen in sample (mm)	Limit (mm)	Limit for one specimen in sample (mm)
Class 1	165	165 + 25	165	165 + 25
Class 2	215	215 + 25	455	455 + 45
Class 3	265	265 + 25	710	710 + 75
Class 4	Exceeding the limits for class 3			

CONCLUSION:

In accordance with the class definitions specified in the Standard, the test results show that the sample tested has a Class One Surface Spread of Flame.

REMARKS:

1. The test results relate only to the behaviour of the test specimens of the product under the particular conditions of test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.
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May 2006