



## **REPORT ON FIRE RESISTANCE TEST OF BOARD PARTITION SYSTEM**

Client : PalmEco Tech Ltd.

Project : Fire Resistance Test on Board Partition System  
in accordance with BS EN 1364-1: 1999

Client Ref. : --

Report No. : 130209FU130026

Date of Report Issue : 07 May 2013



## CONTENTS

	Page
1. Introduction	1
2. Summary	1
3. Client Information	2
4. Test Specimen	2-10
5. Equipment	11
6. Test Procedure	11
7. Test Data and Information	12-22
8. Performance Criteria	23
9. Conclusion	23
10. Field of Direct Application of Test Results	24
11. Limitation	24
Appendix A - Test Photographs	25-27



Client Ref. : --  
Report No. : 130209FU130026

Page 1 of 27



## REPORT ON FIRE RESISTANCE TEST

### 1. Introduction

Fugro Technical Services (Guangzhou) Limited was commissioned by PalmEco Tech Ltd. to determine the fire resistance performance of a 'Palmeco Fire Board' partition system in accordance with BS EN 1364-1: 1999.

The board partition system is required to provide a fire separating function and the test was therefore conducted in accordance with BS EN 1364-1: 1999, 'Fire resistance tests for non-loadbearing elements – Part 1: Walls'. This test report should be read in conjunction with that Standard and with BS EN 1363-1: 1999, 'Fire resistance tests – Part 1: General requirement' and BS EN 1363-2: 1999, 'Fire resistance tests – Part 2: Alternative and additional procedures'.

The specimen was received on 27 March 2013 and given a Lab. Sample I.D.:FU130026.

The test was conducted on 29 March 2013. The test was witnessed by Mr. Wilfred Lau, a representative of PalmEco Tech Ltd.

### 2. Summary

The performance of the specimen was judged against the criteria for insulation and integrity, as required by BS EN 1364-1: 1999, and the results obtained were as follows:

Integrity	Sustained flaming	132 minutes, no failure
	Gap gauge	132 minutes, no failure
	Cotton pad	132 minutes, no failure
Insulation		87 minutes

The test was discontinued after a period of 132 minutes at the request of the client.

Certified by : Chan Chun Wai Ivan  
Chan Chun Wai Ivan  
Manager (Product Testing Laboratory)

Date of Report Issued : 07/05/2013

FU-R-39(31/05/2012)



Client Ref. : --  
Report No. : 130209FU130026

Page 2 of 27



### 3. Client Information

Client : PalmEco Tech Ltd.

Client Address : Room 903, 9/F., Champion Building 287-291 Des Voeux Road  
Central Sheung Wan, Hong Kong.

Manufacturer : Zhongshan Palmeco Building Materials Co., Ltd.

Manufacturer Address : 中山市神湾镇神溪工业园军民路三号.

### 4. Test Specimen

The board partition system had overall nominal dimensions of 3060 mm high by 3050 mm wide by 74 mm thick. The specimen was a sandwich construction. It was comprised of a layer of 12 mm thick 'Palmeco Fire Board' mounted on each side of galvanized steel frame and a layer of 50 mm thick ceramic fibre blanket was filled in between the boards. The steel frame was consisted of the top and bottom runners with overall sizes of 50 mm by 24 mm by 0.6 mm thick, the other studs with overall sizes of 50 mm by 32 mm by 0.6 mm thick. The boards were fixed to the steel frame using M3.5 by 25 mm long self-tapping stainless steel screws at a spacing of 200 mm approximately along the edge joints.

Description of the test specimen is shown in Schedule of Components and illustrated in Figures 1 to 6. The description is based on a detailed survey of the specimen and the information supplied by the client.

Fugro Technical Services (Guangzhou) Limited was not involved in the selection of the specimen.

The specimen was installed into a prepared aperture of concrete lined supporting frame to form the test construction, and shown in Figure 7. The 30 mm gap between the free edge of the specimen on the right side, when viewed from the unexposed surface, and the concrete supporting frame was filled with a mineral fibre blanket.

Installation was conducted by the client on 27 & 28 March 2013.

After installation, the specimen was stored in the test laboratory. Throughout this period of the storage, both the temperature and relative humidity of laboratory were measured and recorded as being within a range of from 21.1°C to 25.4°C and 68% to 79% respectively.

FU-R-39(31/05/2012)



Client Ref. : --  
Report No. : 130209FU130026

Page 3 of 27

**Schedule of Components**

(Refer to Figure 1 to 6. Unless stated otherwise, all values are nominal, and all information in this Schedule of Components is supplied by the manufacture.)

Item	Description
1 Lining	
Brand	: Palmeco
Manufacturer	: Zhongshan Palmeco Building Materials Co., Ltd.
Model	: Palmeco fire board
Composition	: Magnesium oxide, magnesium chloride, palm fibre, perlite, coal flyash.
Density	: 1100 kg/m <sup>3</sup> *
Size	: 1220 mm by 2440 mm *
Moisture content	: 10%
Thickness	: 12 mm *
Fixing method	: Screwed to steel frame
2 Steel Frame	
Material	: Galvanized Steel
Size	: 50 mm by 32 mm and 50 mm by 24 mm *
Thickness	: 0.6 mm *
Spacing	: 610 mm *
Fixing method	: Bolted to test frame by M4 anchor at a spacing of 500 mm
3 Fibre Insulation	
Brand	: Luyang
Manufacturer	: Shandong Luyang Share Co., Ltd.
Model	: LYGX-112 *
Material	: Ceramic fibre
Density	: 100 kg/m <sup>3</sup>
Thickness	: 50 mm *
4 Filler	
Manufacturer	: HILTI
Model	: CP606
5 Anchor Bolt	
Material	: Stainless Steel
Size	: Ø4 mm by 150 mm *
6 Screw	
Material	: Stainless Steel
Size	: Ø3.5 mm by 25 mm *

\* Verified by the laboratory

FU-R-39(31/05/2012)

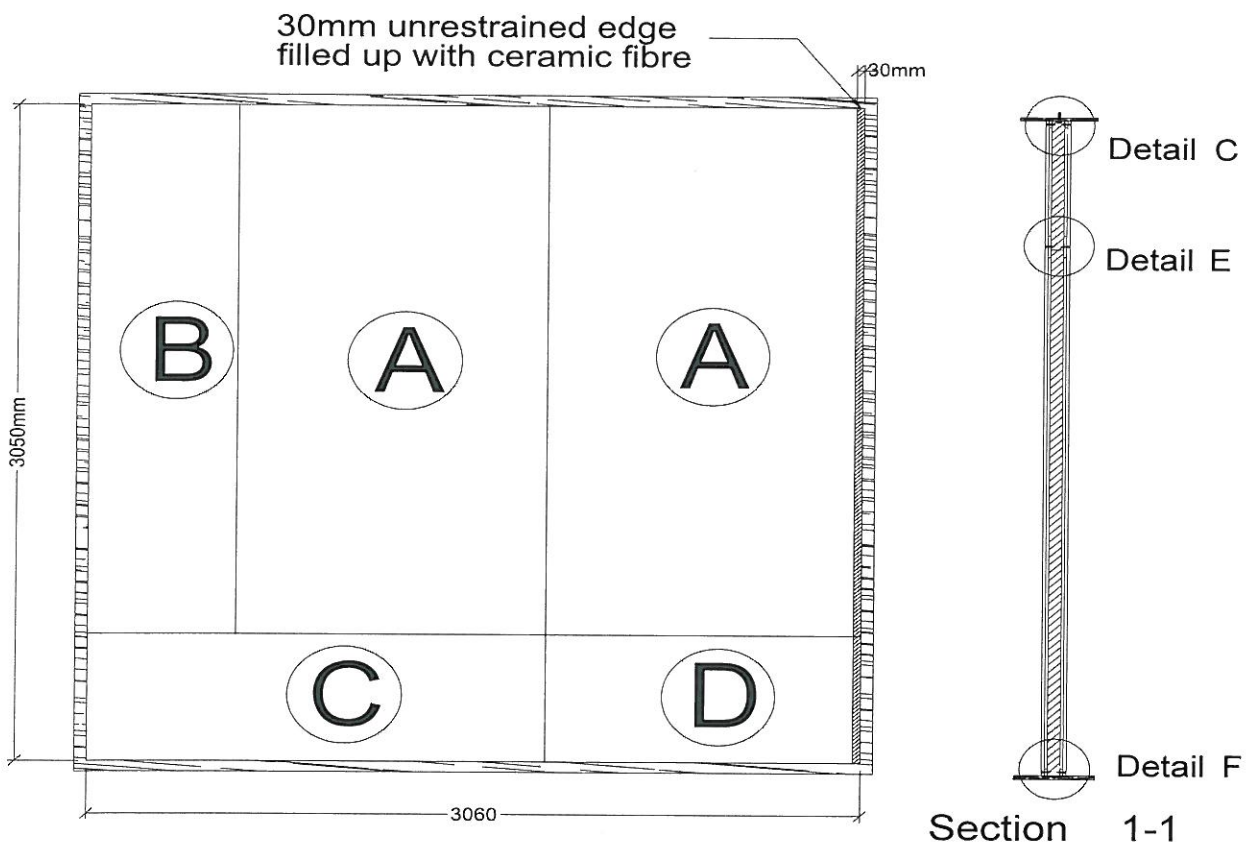


Figure 1 - Elevation of the Unexposed Surface of the Specimen

All dimensions are in mm.

All components and dimensions indicated have been verified by the Laboratory.

FU-R-39(31/05/2012)

Client Ref. : --  
Report No. : 130209FU130026

Page 5 of 27

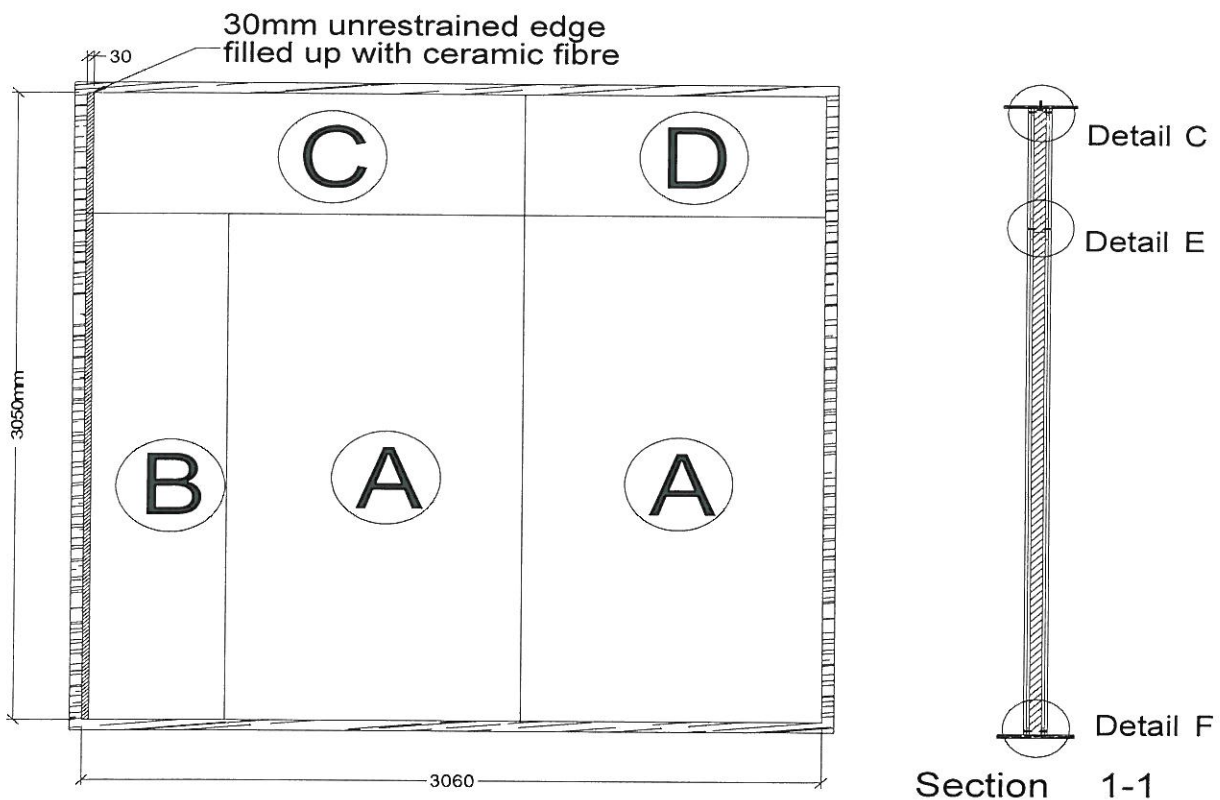


Figure 2 - Elevation of the Exposed Surface of the Specimen

All dimensions are in mm.

All components and dimensions indicated have been verified by the Laboratory.

FU-R-39(31/05/2012)



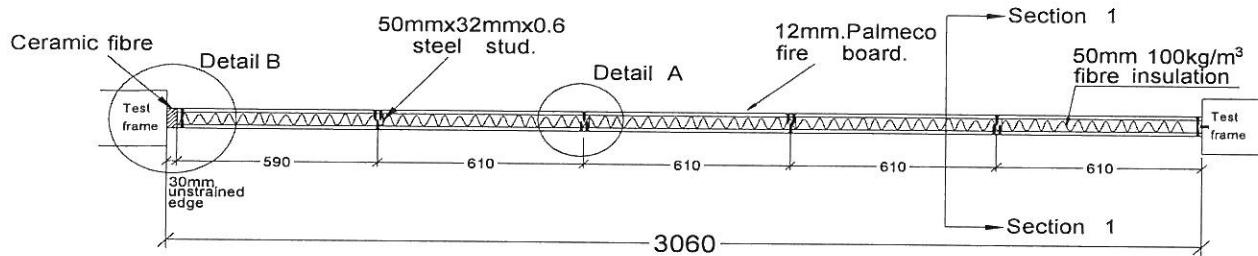


Figure 3 - Top View of the Specimen

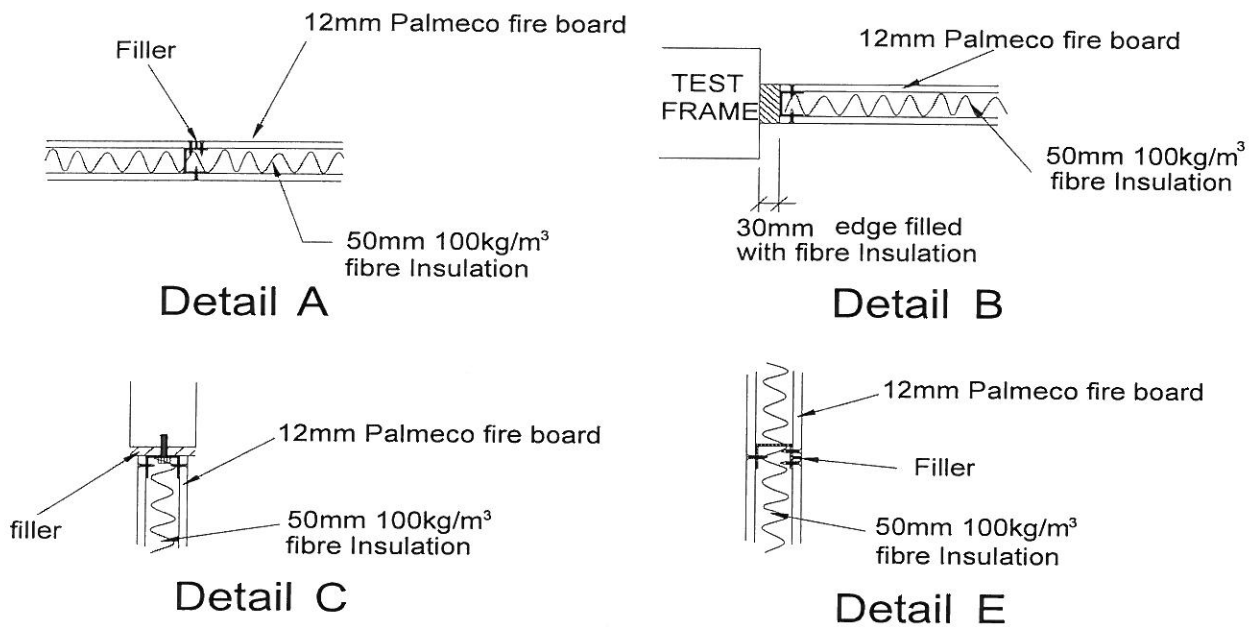


Figure 4 - Details of the Specimen

All dimensions are in mm.

All components and dimensions indicated have been verified by Laboratory.

FU-R-39(31/05/2012)

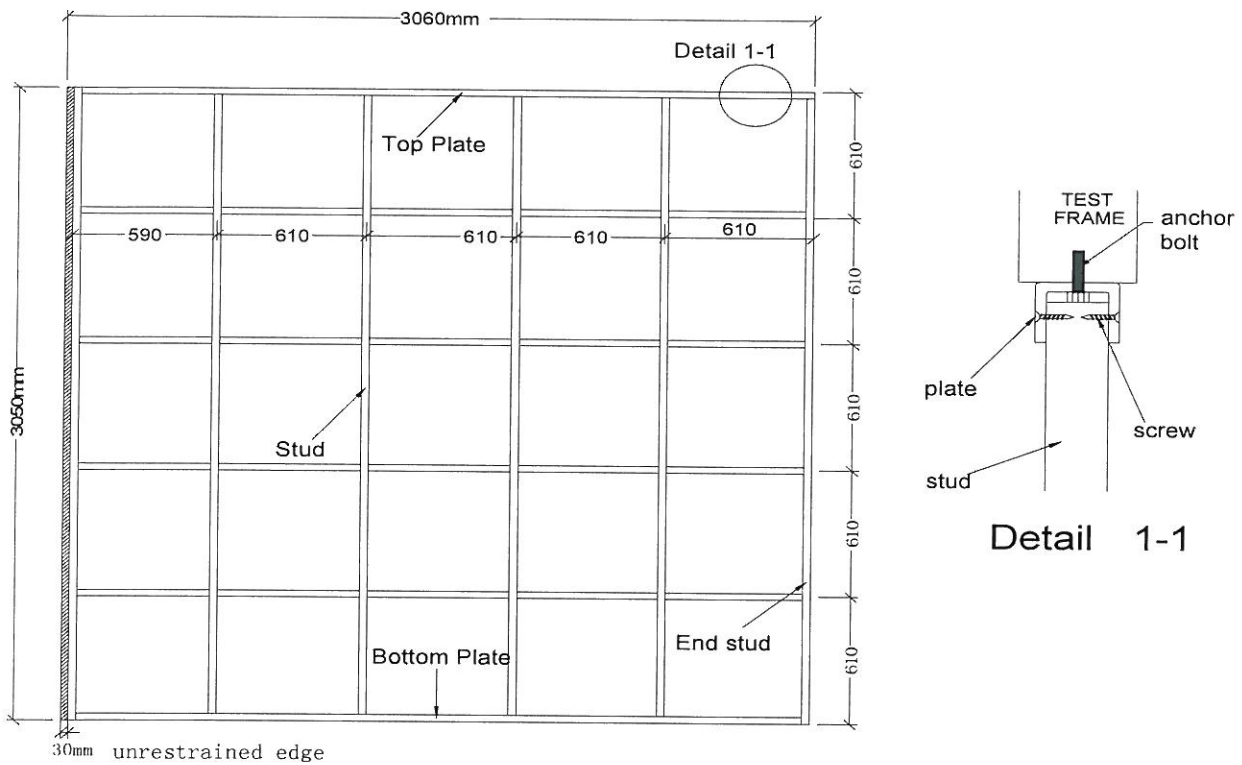


Figure 5 - General Arrangement of the Steel Frame of the Specimen

All dimensions are in mm.

FU-R-39(31/05/2012)

Client Ref. : --  
Report No. : 130209FU130026

Page 8 of 27

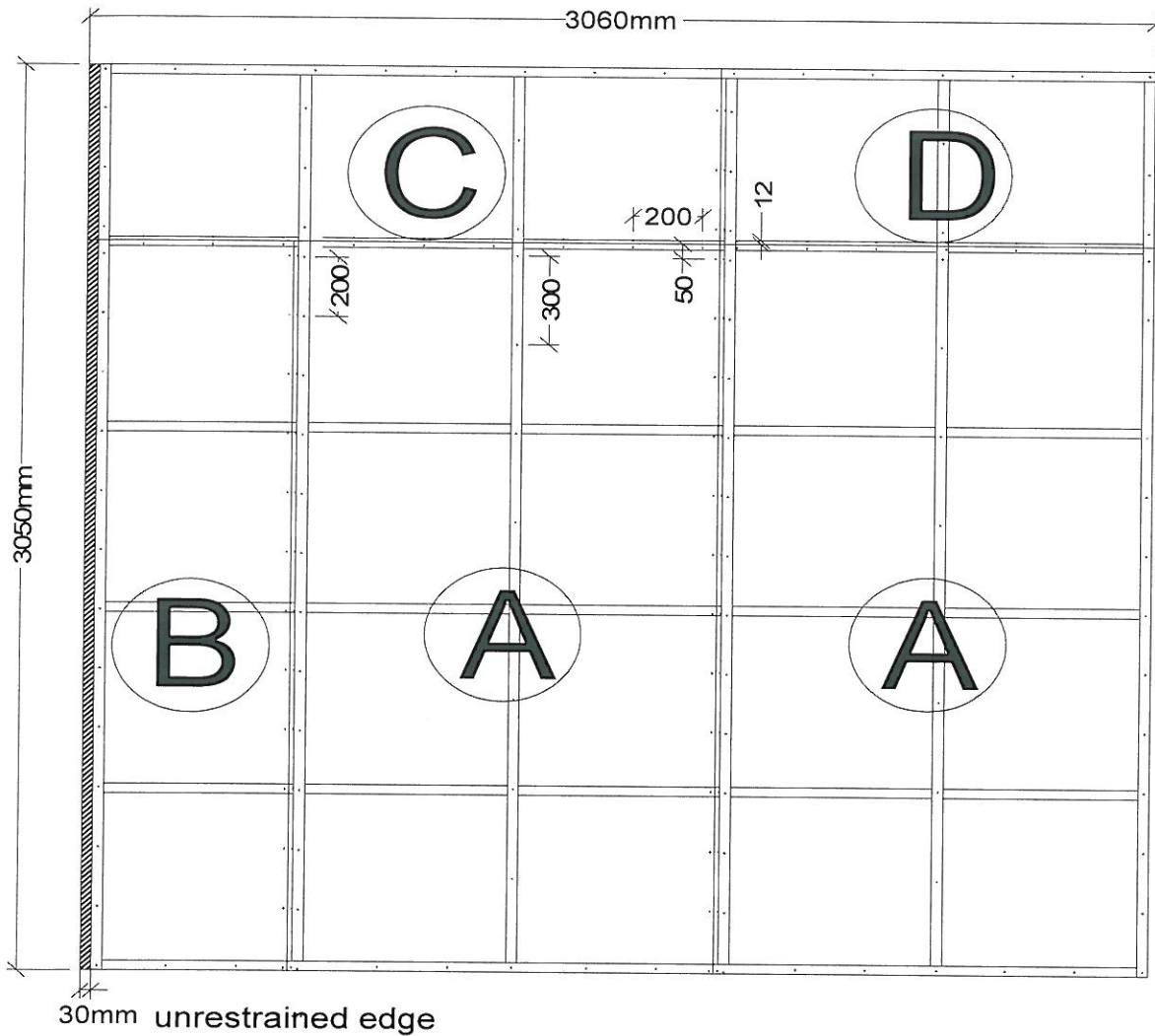
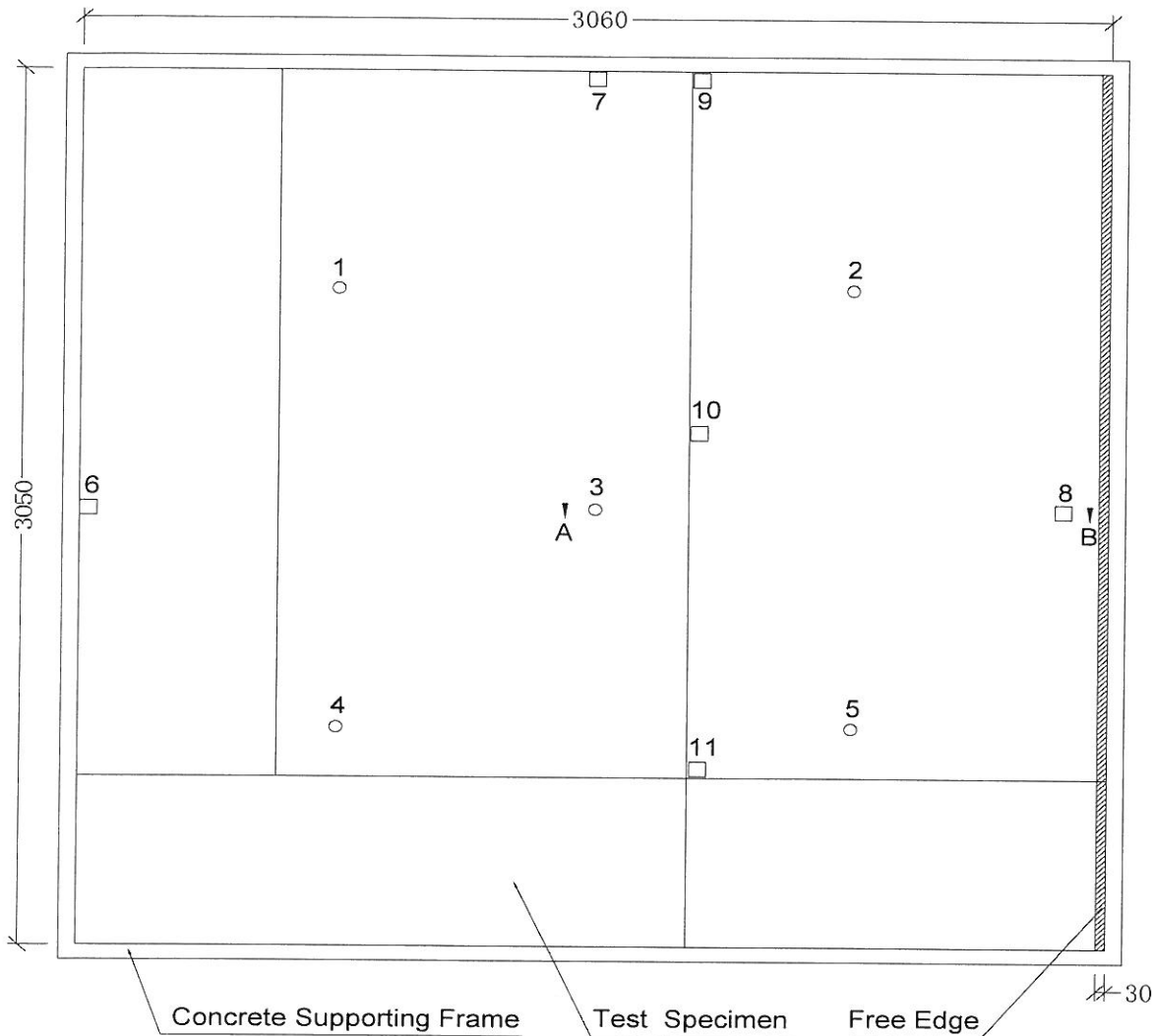


Figure 6 - General Arrangement of the Fixings of the Specimen

All dimensions are in mm.

FU-R-39(31/05/2012)





- positions for thermocouples for average and maximum temperature rise
  - positions for thermocouples for maximum temperature rise
  - ▼ positions for deflection measurements
- All dimensions are in mm.

Figure 7 - Elevation Diagram of Test Construction

FU-R-39(31/05/2012)

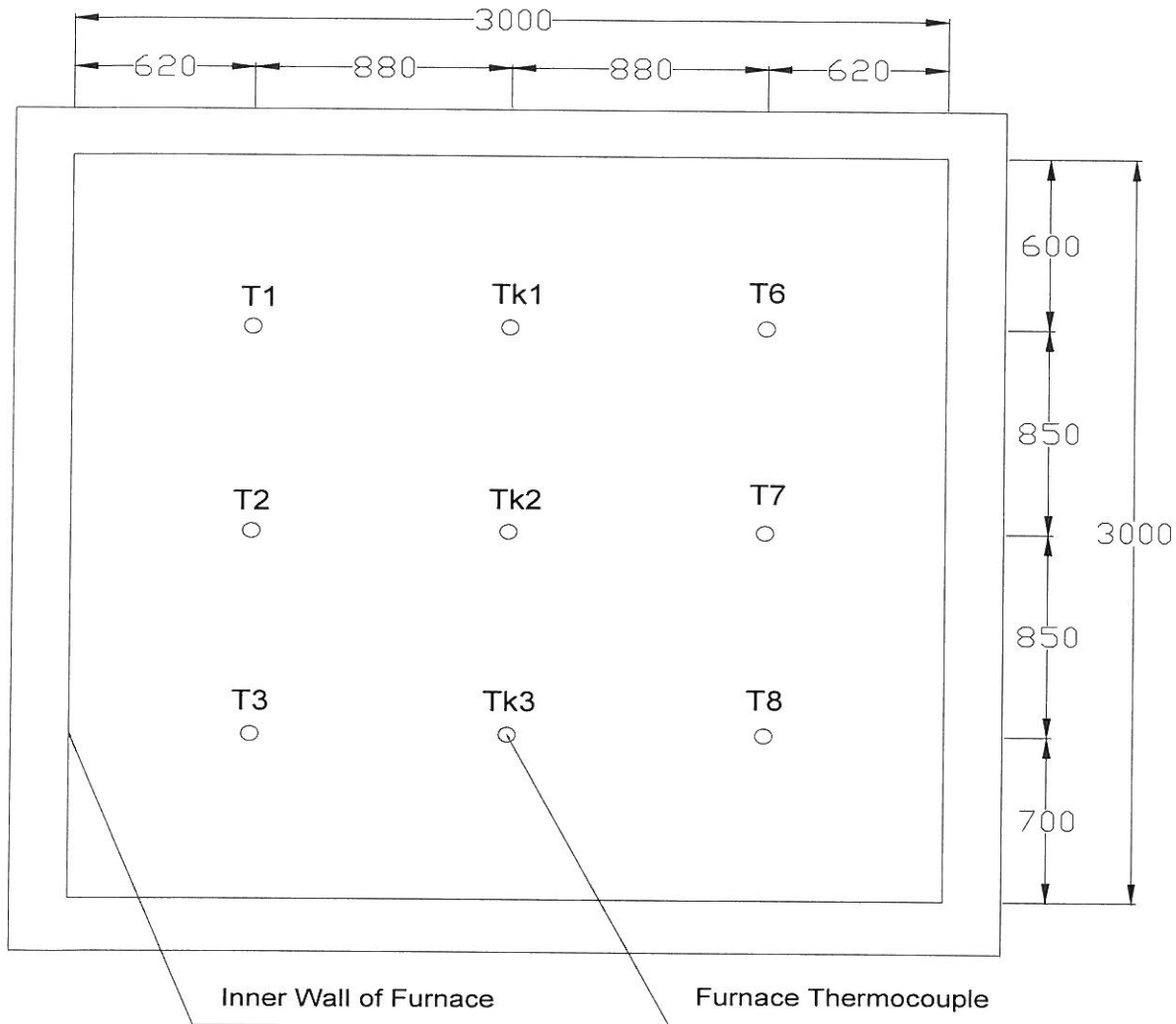


Figure 8 - Locations of Furnace Thermocouples

FU-R-39(31/05/2012)

Client Ref. : --  
Report No. : 130209FU130026

Page 11 of 27



## 5. Equipment

Nine plate thermocouples were installed and maintained 100 mm away from the exposed surface of the specimen to monitor the furnace temperature. The locations of the furnace thermocouples are shown in Figure 8.

A pressure sensor was installed to control the furnace pressure.

Thermocouples were installed to monitor the temperature of the unexposed surface of the specimen at the following locations:

- a) At five locations on the specimen to monitor the average temperature of the unexposed surface, one located close to the centre of the specimen and one close to the centre of each quarter section.
- b) At six locations on the specimen which may be expected to reach higher temperatures than the average surface temperature. Thermocouples 6, 7, 9, 10 and 11 were positioned at locations 15 mm as measured from a joint to the centre of the thermocouple. Thermocouple 8 was positioned at location 100 mm in from the free edge.
- c) The locations and reference numbers of the various unexposed surface thermocouples are shown in Figure 7.

A roving thermocouple was provided to measure temperature on the unexposed surface of the specimen at any position that might appear to be hotter than the temperatures indicated by the fixed thermocouples.

Cotton pads and gap gauges were used to evaluate the integrity of the specimen.

A steel ruler was used to measure the lateral deflections of the specimen relative to fixed wires. The measurement locations are shown in Figure 7.

## 6. Test Procedure

The test was conducted in accordance with the procedure specified in BS EN 1364-1: 1999 Clause 10.

The ambient temperature of test area was measured at commencement of the test.

The furnace temperature was controlled so that the average furnace temperature and tolerances complied with the requirements of BS EN 1363-1: 1999, Clause 5.1. Nine furnace thermocouples were used to determine the average furnace temperature.

FU-R-39(31/05/2012)



Client Ref. : --  
Report No. : 130209FU130026

Page 12 of 27



The furnace pressure was controlled so that it complied with the requirements of BS EN 1363-1: 1999, Clause 5.2. The calculated furnace pressure relative to the laboratory atmosphere at the top of the specimen was  $17 \pm 3$  Pa.

The temperature of the unexposed surface was monitored by means of eleven thermocouples fixed to the unexposed surface of the specimen. Thermocouples 1 to 5 were used to determine the average temperature of the unexposed surface of the specimen. All thermocouples were used to determine the maximum temperature of the unexposed surface of the specimen.

During the test, the temperatures and pressures were continuously monitored and were recorded at one minute intervals.

The roving thermocouple was also used, if considered necessary, to determine compliance with the insulation criterion.

Cotton pads and gap gauges were used to determine compliance with the integrity criteria. The specimen was also monitored for the occurrence of any sustained flaming on the unexposed surface which would result on failure to comply with the integrity criteria.

A steel ruler was used to measure the lateral deflection of the specimen during the test.

## 7. Test Data and Information

The following data were recorded during the fire resistance test:

- a) The actual average furnace temperature/ time curve as well as the standard furnace temperature/ time curve, are shown in Figure 9.
- b) The furnace pressures relative to laboratory atmosphere, at 2030 mm below the top of the specimen, are shown in Figure 10.
- c) The average and maximum temperature rises of the unexposed surface of the specimen are shown in Figure 11 and 12. The individual temperatures recorded on the unexposed surface of the specimen are shown in Table 1.
- d) The lateral deflections of the specimen are shown in Table 2.

A summary of the observations made on the general behaviour of the specimen is given in Table 3.

The ambient air temperature in the vicinity of the test construction was  $22.8^{\circ}\text{C}$  at the start of the test and increased by  $3.2^{\circ}\text{C}$  at the termination of test.



Client Ref. : --  
Report No. : 130209FU130026

Page 13 of 27

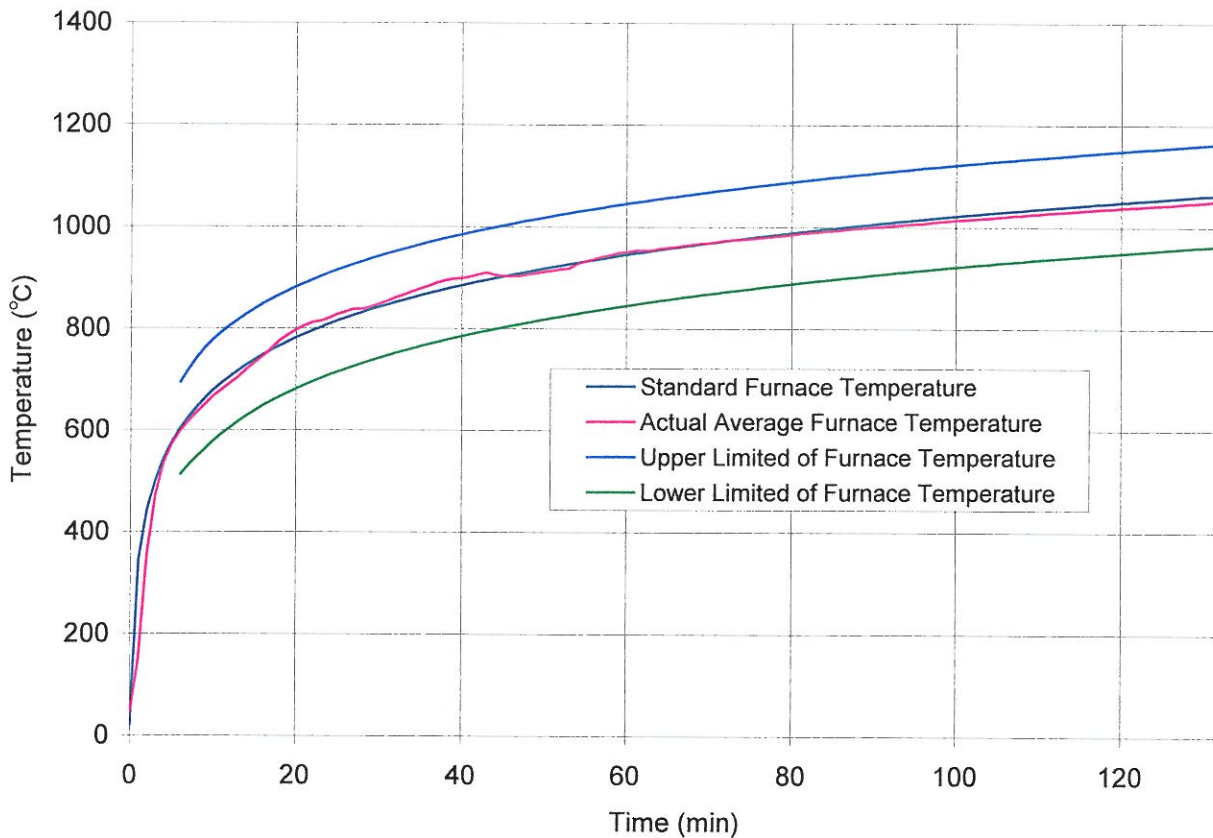


Figure 9 - Actual Average Furnace Temperature/Time Curve and Standard Furnace Temperature/Time Curve

FU-R-39(31/05/2012)



Client Ref. : --  
Report No. : 130209FU130026

Page 14 of 27

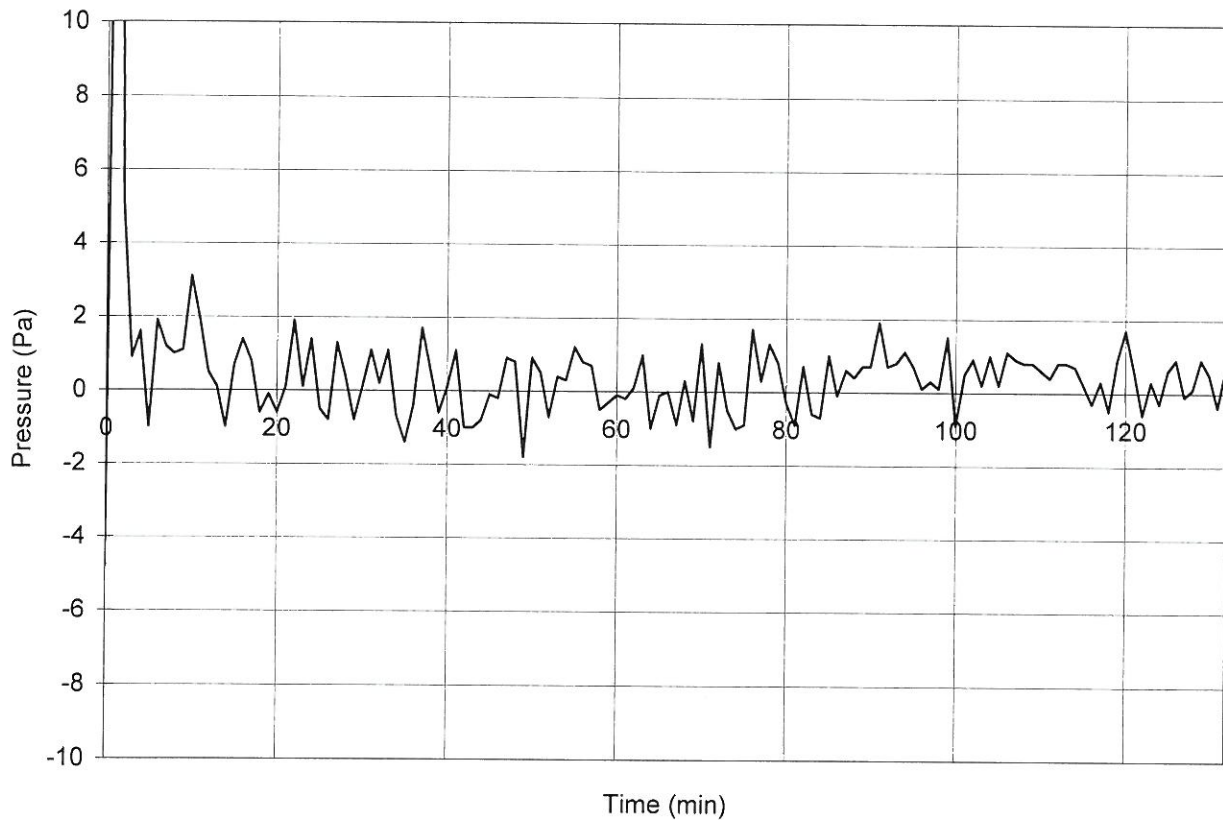


Figure 10 - Furnace Pressures Relative to the Laboratory Atmosphere

Graph showing recorded furnace pressure at 2030 mm below the top of the specimen.

FU-R-39(31/05/2012)





Client Ref. : --  
Report No. : 130209FU130026

Page 15 of 27

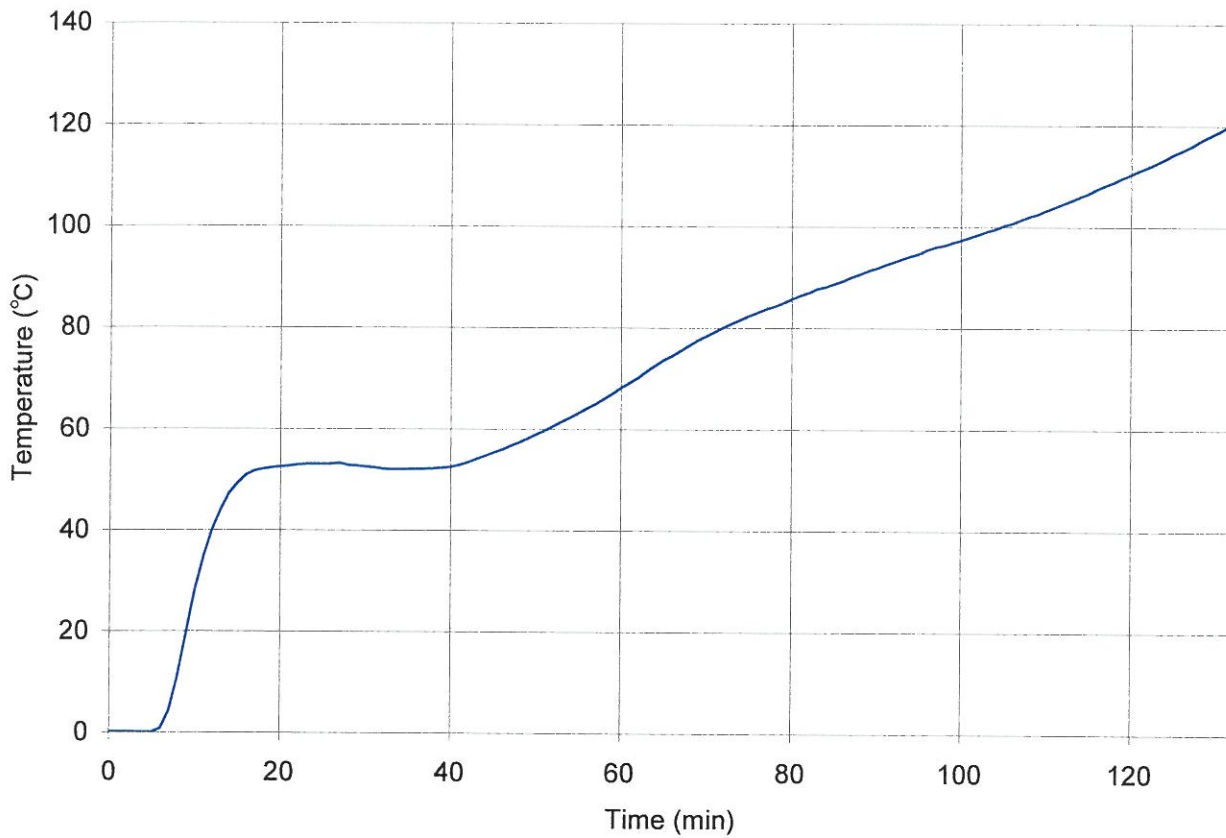


Figure 11 - Average Temperature Rise of the Unexposed Surface of the Specimen

FU-R-39(31/05/2012)



Client Ref. : --  
Report No. : 130209FU130026

Page 16 of 27

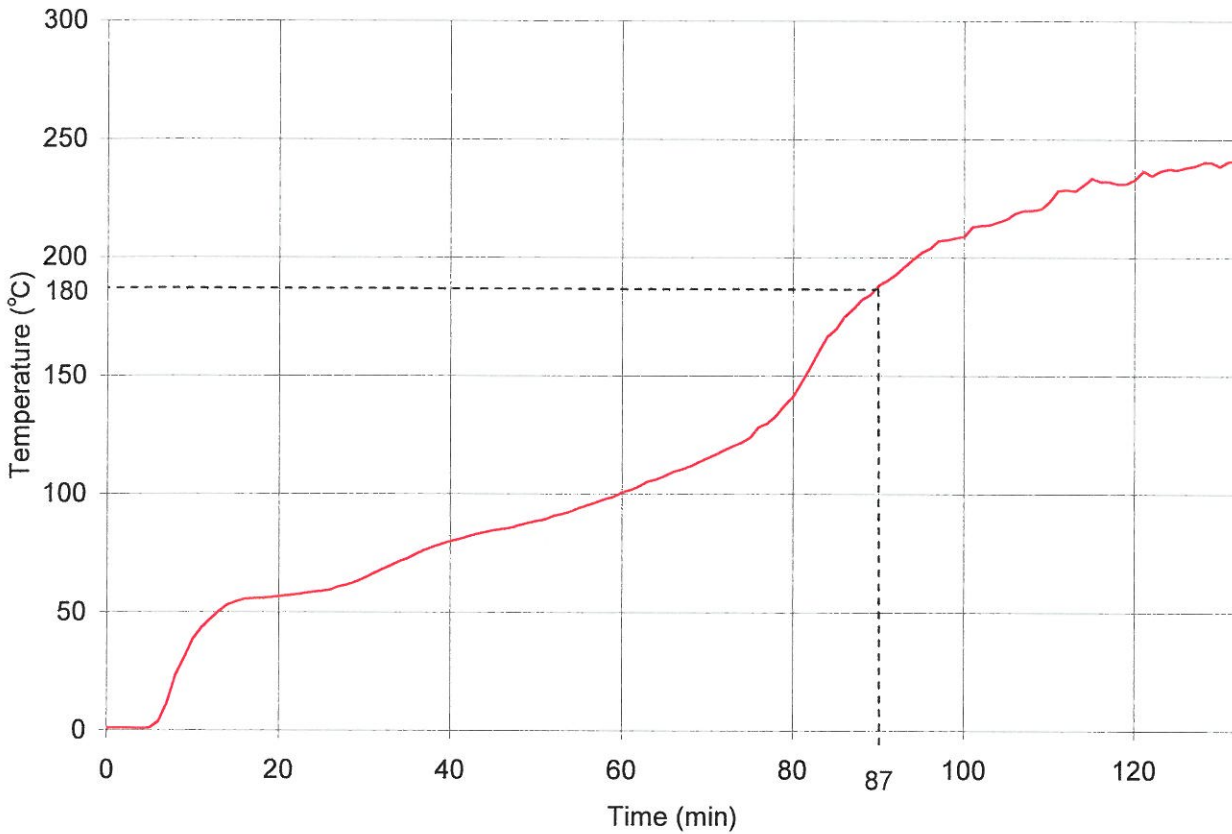


Figure 12 - Maximum Temperature Rise of the Unexposed Surface of the Specimen

FU-R-39(31/05/2012)

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Client Ref. : --  
Report No. : 130209FU130026

Page 17 of 27



Table 1 Individual Temperatures Recorded on the Unexposed Surface of the Specimen

Time (mins)	Thermocouple No.										
	1	2	3	4	5	6	7	8	9	10	11
0	22.3	22.3	23.4	21.5	23.1	22.2	22.0	22.0	22.4	20.9	22.2
1	22.3	22.3	23.4	21.6	23.1	22.3	22.1	22.0	22.6	21.6	22.4
2	22.3	22.3	23.4	21.6	23.0	22.2	22.1	21.8	22.4	21.9	22.3
3	22.3	22.3	23.4	21.6	23.0	22.2	22.0	21.9	22.4	21.8	22.3
4	22.2	22.3	23.3	21.6	23.0	22.0	21.8	21.8	22.2	22.0	22.2
5	22.2	22.4	23.5	21.6	23.1	22.0	21.9	21.8	22.5	22.0	22.3
6	23.0	22.4	26.1	21.7	23.3	22.0	22.1	22.3	24.4	23.3	22.7
7	28.3	24.1	34.0	22.5	25.1	22.4	25.5	28.3	33.1	26.8	24.0
8	36.2	32.3	43.7	25.5	30.8	24.6	34.3	39.2	45.8	35.4	27.5
9	43.5	43.6	52.6	30.8	39.2	29.2	45.7	48.7	52.9	43.3	33.9
10	51.2	53.2	60.3	38.0	50.3	39.4	57.0	57.0	60.9	50.9	43.4
11	57.9	60.0	65.9	44.9	58.1	50.3	64.3	63.3	65.4	57.7	50.8
12	62.5	64.7	69.5	52.5	63.4	58.8	69.3	67.6	69.2	62.9	56.5
13	66.3	68.3	72.1	58.5	67.2	64.8	72.5	70.9	72.1	66.8	60.4
14	69.6	71.4	74.4	62.8	70.2	69.3	75.4	73.7	74.8	69.7	64.3
15	71.9	73.4	75.2	66.1	72.4	72.3	76.9	75.1	76.3	71.9	67.5
16	73.6	75.1	76.0	68.4	74.1	74.6	77.9	76.2	77.6	73.3	69.2
17	74.2	76.0	76.0	69.8	74.9	76.1	78.2	76.7	77.6	74.3	70.6
18	74.8	76.4	76.0	70.7	75.0	77.2	78.2	76.5	78.1	74.9	71.4
19	75.2	76.6	76.1	71.0	75.1	77.9	78.3	76.2	78.6	75.6	72.2
20	75.6	76.7	76.2	71.2	75.3	78.1	78.4	76.6	79.1	76.4	72.6
21	76.0	76.7	76.4	71.5	75.2	78.0	78.5	76.7	79.5	77.2	72.6
22	76.3	77.1	76.5	71.6	75.3	78.0	78.7	76.8	79.9	77.0	72.5
23	76.5	77.1	76.7	71.8	75.6	78.1	79.0	77.0	80.4	77.4	73.0
24	76.6	77.2	76.5	71.9	75.7	78.2	78.9	77.3	80.9	77.8	73.4
25	76.3	77.4	76.6	71.7	75.7	78.4	78.8	77.3	81.3	78.6	73.6
26	76.5	77.2	76.5	72.0	75.7	78.5	78.9	77.4	81.9	79.3	73.6
27	76.8	77.2	76.4	72.3	75.8	79.1	79.8	77.9	83.3	78.7	74.0
28	76.5	76.7	76.2	71.7	75.6	78.9	79.8	77.6	84.0	80.3	73.9
29	76.3	76.4	76.0	71.7	75.5	79.0	80.4	77.6	85.2	80.6	74.2
30	76.2	75.9	76.0	71.4	75.4	79.3	80.9	77.3	86.9	80.1	74.2
31	76.2	75.7	76.0	71.4	75.2	79.6	82.3	77.1	88.8	79.9	74.6
32	76.0	75.2	76.0	70.9	75.0	79.3	83.1	76.6	90.4	80.3	74.4
33	76.0	75.1	76.2	70.7	74.6	79.5	84.5	76.2	92.0	79.8	74.4

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Client Ref. : --  
Report No. : 130209FU130026

Page 18 of 27



Table 1 Individual Temperatures Recorded on the Unexposed Surface of the Specimen(cont'd)

Time (mins)	Thermocouple No.										
	1	2	3	4	5	6	7	8	9	10	11
34	76.2	74.8	76.9	70.2	74.4	79.5	86.2	75.8	93.8	80.6	74.8
35	76.9	74.3	77.4	70.1	74.0	79.3	87.3	75.6	95.1	82.4	75.2
36	78.0	73.8	78.0	69.6	73.5	79.1	88.4	75.5	97.1	83.7	75.3
37	78.9	73.3	78.9	69.2	73.0	78.7	90.2	75.7	98.7	84.8	75.9
38	79.6	72.8	79.6	68.9	72.5	78.7	91.6	76.4	100.0	86.2	76.4
39	79.9	72.6	80.4	68.9	72.2	78.6	93.0	77.5	101.3	87.2	76.9
40	80.0	72.5	81.1	69.4	71.9	78.5	94.0	78.6	102.5	88.0	77.8
41	79.8	72.6	82.0	70.5	71.9	78.8	94.5	79.3	103.3	88.2	78.7
42	79.8	73.4	82.7	71.5	72.2	79.0	95.5	79.9	104.4	89.0	78.3
43	79.8	74.5	83.7	72.5	72.5	79.8	96.5	80.3	105.4	90.0	78.7
44	79.6	75.3	84.9	73.2	73.0	80.5	96.9	80.1	106.2	91.2	78.9
45	79.7	75.9	86.1	73.7	73.7	81.4	98.1	80.2	107.0	91.6	79.1
46	79.7	76.2	87.5	74.3	74.5	81.9	98.7	80.0	107.6	93.0	79.5
47	79.7	76.8	89.1	74.8	75.5	83.0	99.3	80.0	108.2	95.2	79.7
48	79.9	77.3	90.6	75.4	76.1	83.9	100.2	80.0	109.2	95.7	80.5
49	80.1	78.0	92.0	76.1	76.9	85.0	101.3	80.3	110.2	98.0	81.7
50	80.6	78.5	93.5	76.9	77.8	86.0	102.3	80.3	111.0	100.2	82.3
51	80.9	79.0	94.8	77.4	78.8	86.5	103.3	80.4	111.7	100.8	83.0
52	81.6	79.7	96.3	78.3	79.6	87.6	104.4	81.1	113.1	104.0	84.7
53	82.4	80.5	97.6	78.9	80.4	88.9	105.8	81.6	113.9	104.6	85.8
54	82.9	81.1	98.8	79.8	81.3	89.7	106.9	81.9	115.1	106.4	86.7
55	83.7	81.9	99.9	80.7	82.3	90.6	108.2	82.7	116.5	107.5	88.3
56	84.6	82.7	100.8	81.7	83.2	91.7	109.5	83.4	117.8	109.3	89.9
57	85.4	83.6	101.8	82.6	84.1	92.6	110.8	84.1	119.0	111.3	91.1
58	86.3	84.6	102.7	83.6	85.3	94.0	112.6	84.9	120.3	112.6	92.8
59	87.2	85.8	103.5	84.7	86.3	94.6	113.2	85.4	121.2	112.6	94.2
60	88.4	86.8	104.4	85.9	87.6	95.8	108.0	86.4	123.1	115.2	95.3
61	89.2	88.2	105.2	87.0	88.8	97.0	108.4	87.0	124.3	117.7	96.6
62	90.2	89.4	106.1	87.9	89.9	98.1	110.0	87.8	125.7	118.5	98.2
63	91.2	91.1	107.0	89.3	91.1	99.7	111.0	88.9	127.7	119.5	99.5
64	92.2	92.5	107.8	90.5	92.3	100.6	112.1	89.7	128.7	121.3	100.0
65	93.3	93.9	108.5	91.7	93.3	102.0	113.4	90.6	130.2	123.4	101.5
66	94.1	94.9	109.2	92.7	94.3	102.7	114.5	91.5	131.9	127.0	102.0
67	94.9	96.2	110.1	93.8	95.1	103.8	115.2	92.2	132.9	129.1	103.3

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Client Ref. : --  
Report No. : 130209FU130026

Page 19 of 27



Table 1 Individual Temperatures Recorded on the Unexposed Surface of the Specimen(cont'd)

Time (mins)	Thermocouple No.										
	1	2	3	4	5	6	7	8	9	10	11
68	95.9	97.4	110.8	95.1	96.1	104.6	116.8	93.1	134.2	131.6	104.0
69	96.9	98.4	111.8	96.0	97.1	105.9	118.9	93.7	136.0	132.3	105.4
70	97.6	99.3	112.5	97.0	97.9	106.5	120.1	94.5	137.8	135.3	106.3
71	98.5	100.3	113.2	98.0	98.7	107.5	122.3	95.4	139.2	137.8	106.4
72	99.3	101.1	114.4	99.0	99.5	108.4	123.9	96.1	141.2	138.7	107.3
73	100.2	101.7	115.2	99.7	100.1	109.5	126.2	96.9	142.8	140.4	108.0
74	100.8	102.6	115.8	100.4	101.0	110.2	126.1	97.4	144.2	143.4	108.7
75	101.5	103.5	116.5	101.4	101.6	111.3	128.2	98.3	146.4	146.1	108.9
76	102.4	104.0	117.0	102.3	102.4	112.3	129.7	98.8	147.9	150.8	110.6
77	103.0	104.9	118.0	102.7	102.8	112.8	130.3	99.4	150.2	152.4	111.0
78	103.5	105.5	118.4	103.4	103.3	113.6	132.7	100.0	152.8	155.5	111.6
79	104.2	106.2	119.0	104.2	103.9	114.5	131.3	100.3	155.1	159.9	112.0
80	104.9	106.9	119.8	105.1	104.6	115.5	134.1	100.8	157.9	163.7	113.1
81	105.7	107.7	120.2	105.9	105.1	116.5	131.5	101.4	161.9	169.6	113.9
82	106.6	108.4	120.6	106.3	105.6	117.5	134.4	101.7	164.0	175.8	114.2
83	107.1	109.1	121.5	107.2	106.5	118.6	137.1	102.5	167.2	182.7	115.1
84	107.5	109.4	122.0	107.4	106.9	119.3	141.1	102.9	169.9	189.0	115.8
85	108.2	110.2	122.3	108.0	107.7	120.2	144.7	103.4	173.7	192.2	116.2
86	108.7	110.7	122.9	108.6	108.2	121.2	150.1	103.7	176.6	197.3	117.2
87	109.3	111.8	123.8	109.2	109.0	122.3	152.2	104.2	179.3	200.6	117.5
88	109.9	112.5	124.2	109.7	109.5	123.2	154.8	104.6	182.3	204.6	118.1
89	110.7	113.4	124.9	110.3	110.1	124.2	157.9	105.2	185.6	206.8	118.5
90	111.1	113.9	125.3	110.8	110.8	125.5	163.4	105.6	188.2	210.7	119.5
95	113.8	117.1	128.6	113.2	113.4	131.2	184.4	107.6	199.9	224.5	122.4
100	115.8	119.7	132.3	115.7	116.0	137.0	197.7	109.5	209.7	231.4	124.4
105	117.7	122.8	135.9	118.3	119.0	143.3	203.4	111.9	220.6	238.7	124.8
110	120.1	126.0	140.0	121.0	121.8	150.1	207.6	113.5	230.3	246.2	124.6
115	122.3	129.6	144.5	124.0	125.2	155.1	211.4	115.3	238.6	256.0	126.6
120	124.9	133.2	149.9	127.6	128.8	161.8	214.1	117.0	245.4	255.3	130.2
125	127.6	137.0	155.9	131.0	132.8	168.4	216.9	119.5	250.4	259.6	132.7
130	130.5	141.0	162.3	135.0	136.8	174.8	219.2	121.3	253.5	261.1	134.6
132	131.7	142.7	164.9	136.6	138.8	177.3	220.2	122.2	255.8	263.0	135.2

FU-R-39(31/05/2012)

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Client Ref. : --  
Report No. : 130209FU130026

Page 20 of 27



Table 2 Lateral Deflections of the Specimen as Viewed from the Unexposed Surface

Time (mins)	Deflections (mm)	
	A	B
0	0	0
20	40	11
40	84	30
60	111	31
80	103	26
100	97	24
110	103	21
120	105	21

Positive deflections indicate movement towards the heat source.





Client Ref. : --  
Report No. : 130209FU130026

Page 21 of 27



Table 3 Observations Made during the Test

Unless stated otherwise, all observations made from the unexposed side.

Time (min:sec)	Observations
00:00	The test commences.
10:10	Liquid marks are visible on the specimen.
11:50	Liquid marks are visible at the bottom of the specimen.
17:30	Smoke release is visible from the bottom of the specimen.
18:20	Smoke release is visible from the top left corner of the specimen.
24:00	Visible lateral deflection is observed on the specimen, and the specimen moves towards the heat source.
30:00	No integrity or insulation failure has occurred.
31:30	Smoke release continues to increase from the specimen.
60:00	No integrity or insulation failure has occurred.
60:50	The gap between the boards continues to increase at the vertical joint near thermocouple 10.
66:50	Smoke release decreases from the specimen.
73:30	The gap between the boards continues to increase at the horizontal joint.
81:30	The gap between the boards continues to increase at the vertical joint near thermocouple 10. Black discolouration is visible at the position.
87:54	Thermocouple 10 is recorded a temperature of 204.6°C, in excess of 180°C above the initial mean unexposed surface temperature of 2.4°C. <b>Insulation failure of the specimen</b> is deemed to occur.
90:00	No integrity failure has occurred.
92:10	Cracks are observed on the board near thermocouple 6.
110:40	Integrity is checked using a cotton pad placed at the vertical joint near thermocouple 10. No flaming or glowing of the cotton pad is visible.

FU-R-39(31/05/2012)

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Client Ref. : --  
Report No. : 130209FU130026

Page 22 of 27



Table 3 Observations Made during the Test (cont'd)

Time (min:sec)	Observations
119:05	Integrity is checked using a cotton pad placed at the vertical joint near thermocouple 10 again. No flaming or glowing of the cotton pad is visible.
120:00	No integrity failure has occurred.
126:05	The gaps between the boards continues to increase near thermocouple 11.
127:50	Cracks are observed on the board at the top left and right corner of the specimen.
131:20	Cracks are observed on the board near thermocouple 9.
132:30	Test is terminated.

FU-R-39(31/05/2012)

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GZ114/0812

Client Ref. : --  
Report No. : 130209FU130026

Page 23 of 27



## 8. Performance Criteria

The performance of the specimen was assessed against the criteria for integrity and insulation in accordance with BS EN 1364-1: 1999. The performance criteria for failure were given as follows:

**Integrity:** The test specimen continues to maintain its separating function during the test without either:

- a) causing the ignition of a cotton pad when applied; or
- b) permitting the penetration of a gap gauge as follows:
  - i) whether the 6 mm gap gauge can be passed through the test specimen such that the gauge projects into the furnace, and can be moved a distance of 150 mm along the gap; or
  - ii) whether the 25 mm gap gauge can be passed through the specimen such that the gauge projects into the furnace; or
- c) resulting in sustained flaming for a period of time greater than 10 seconds.

**Insulation:** The test specimen continues to maintain its separating function during the test without developing temperatures on its unexposed surface which either:

- a) increase the average temperature above the initial average temperature by more than 140°C; or
- b) increase at any location (including the roving thermocouple) above the initial average temperature by more than 180°C.

The performance criteria "insulation" shall automatically be assumed not to be satisfied when the "integrity" criterion ceases to be satisfied.

## 9. Conclusion

A specimen of a 'Palmeco Fire Board' partition system has been subjected to a fire resistance test in accordance with BS EN 1364-1: 1999.

The fire resistance performance of the specimen was judged against the criteria for insulation and integrity, and the specimen satisfied the performance requirements for the following period:

Integrity	Sustained flaming	132 minutes, no failure
	Gap gauge	132 minutes, no failure
	Cotton pad	132 minutes, no failure
Insulation		87 minutes

The test was discontinued after a period of 132 minutes at the request of the client.

FU-R-39(31/05/2012)



Client Ref. : --  
Report No. : 130209FU130026

Page 24 of 27



## 10. Field of Direct Application of Test Results

**General:** 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.

### Materials and construction - General:

Unless otherwise stated in the following text the materials and construction of the tested assembly shall be the same as that tested.

The results of the fire test are directly applicable to similar constructions where one or more of the changes listed below are made and the construction continues to comply with the appropriate design code for its stiffness and stability.

- a) The height of the construction may be decreased.
- b) The thickness of the construction may be increased.
- c) The thickness of component materials may be increased.
- d) The linear dimensions of boards but not thickness may be decreased.
- e) The stud spacing may be decreased.
- f) The distance of fixing centres of boards may be decreased.
- g) The number of fixings used to attach the steel frame to supporting frame may be increased and the distance between fixings may be decreased.

**Extension of width:** The width of an identical construction may be increased.

## 11. Limitation

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, constructional details, 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 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.

FU-R-39(31/05/2012)

Client Ref. : --  
Report No. : 130209FU130026

Page 25 of 27



## Appendix A - Test Photographs



Photo 1 - The unexposed surface of the specimen before the test



Photo 2 - The unexposed surface of the specimen during the test

FU-R-39(31/05/2012)



Client Ref. : --  
Report No. : 130209FU130026

Page 26 of 27

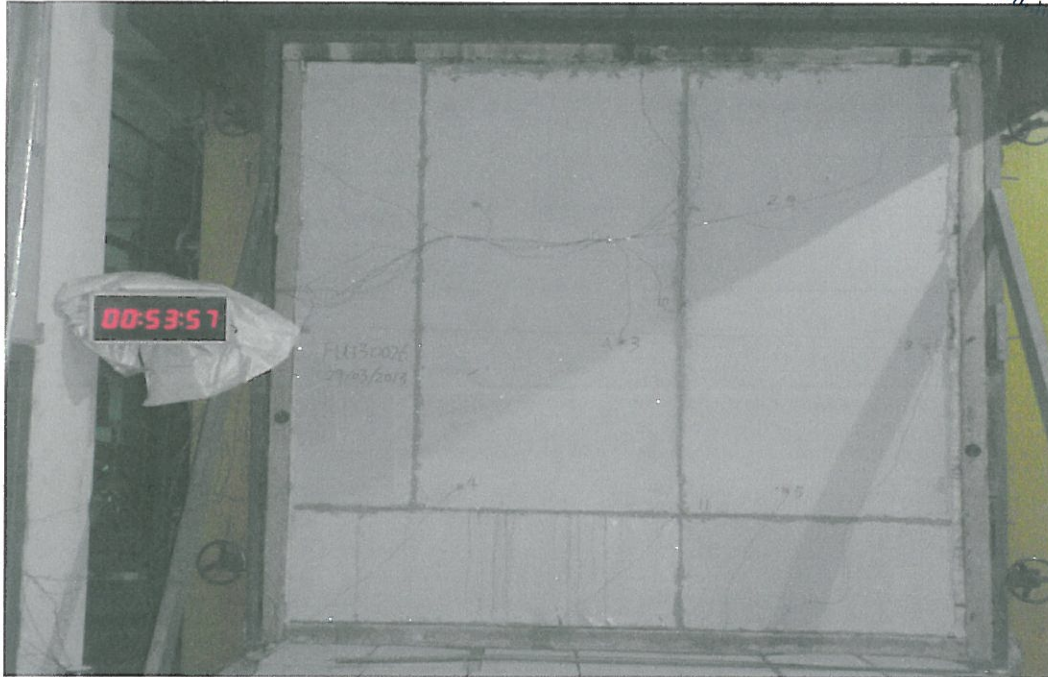


Photo 3 - The unexposed surface of the specimen during the test



Photo 4 - The unexposed surface of the specimen during the test

FU-R-39(31/05/2012)



Client Ref. : --  
Report No. : 130209FU130026

Page 27 of 27

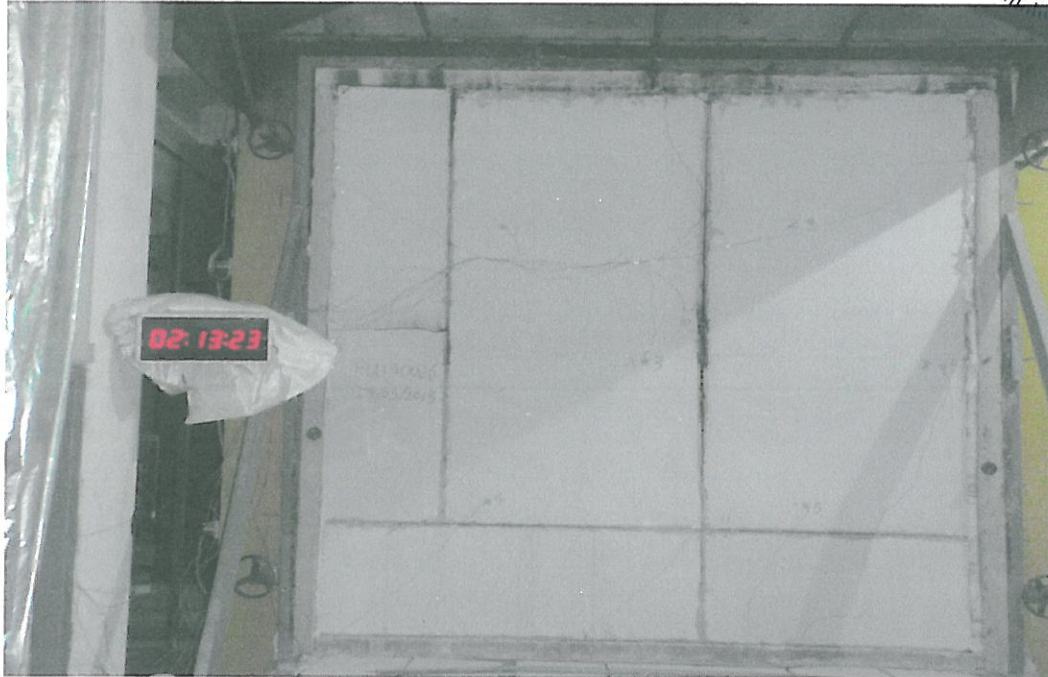


Photo 5 - The unexposed surface of the specimen after the test

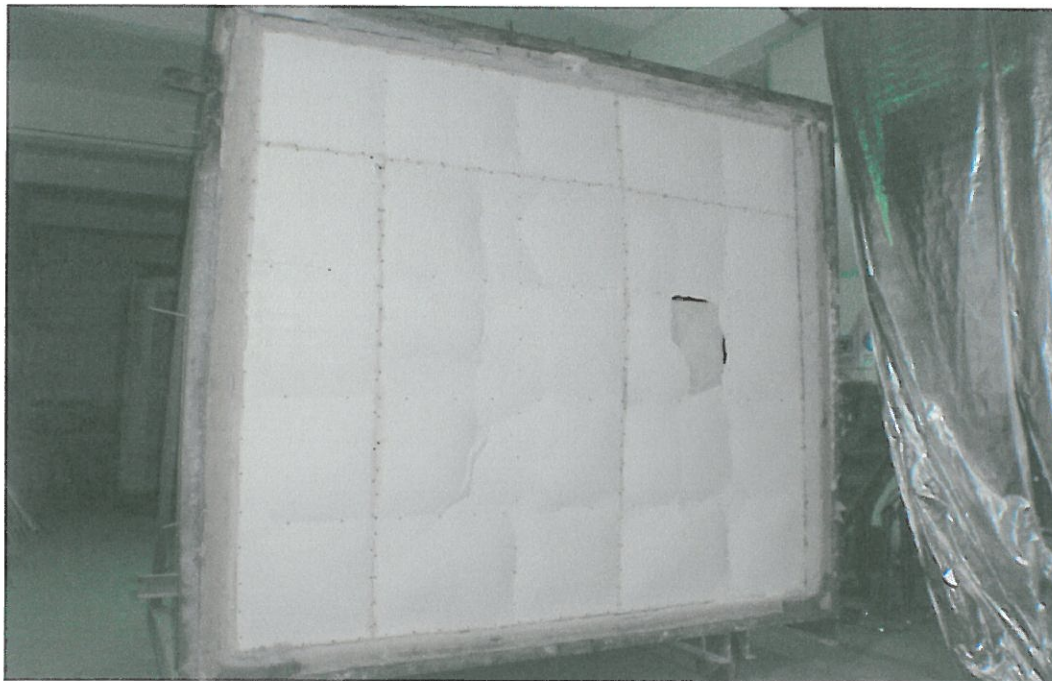


Photo 6 - The exposed surface of the specimen after the test

**\*\* End of Report \*\***

FU-R-39(31/05/2012)