

TEST REPORT

TEST REPORT NO.: R13G22

DATE OF ISSUE: 16 September 2013

Test Sponsor: **Hong Kong Standard Fire Resisting Door Manufacturing Co., Limited**

Address of Test Sponsor: Unit D, 1/F Building B, Mercantile Industrial & Warehouse Building, 16 – 24 Ta Chuen Ping Street, Kwai Chung, N.T.

Identification of Test Item: **Q13G53 – Fully Insulated Single-acting, Unequal Double-leaf Composite Timber Doorset**

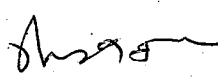

Test Method: Fire resistance test conducted in accordance with BS EN 1634-1: 2008

Date of Test: 26 July 2013

Ambient Temperature at the Time of Testing: 27 °C

Location of Testing Laboratory: Tuen Mun laboratory at DD134, Lung Kwu Tan, Tuen Mun, New Territories, Hong Kong

APPROVED SIGNATORY: _____

DATE: 16 SEP 2013

Ir Dr. YUEN Sai-wing, MHKIE (Fire)

The test results are valid only for the conditions under which the test was conducted. Hong Kong Accreditation Service (HKAS) has accredited this laboratory under Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS directory of accreditation laboratories. The results shown in this test report were determined by this laboratory in accordance with its terms of accreditation. This report may not be reproduced except in full.

Contents

Section	Description	Page
1.	Summary	3
2.	Introduction	4
3.	Test Specimen Construction	4
4.	Location of Testing Laboratory.....	4
5.	Equipment	5
6.	Conditioning	5
7.	Verification of Test Specimen	5
8.	Pre-test Measurements	5
9.	Test Procedures	6
10.	Test Data and Information	7
11.	Results	7
12.	Limitations	8
	Appendix A - Photos and Test Records	9
	Appendix B - Observation	20
	Appendix C - Data Recorded During the Test	21
	Appendix D - Information From Test Sponsor.....	25

Fire resistance test conducted in accordance with BS EN 1634-1: 2008 on a fully insulated single-acting, unequal double-leaf composite timber doorset.**1. Summary**

A specimen of fully insulated single-acting, unequal double-leaf composite timber doorset had been subjected to a test in accordance with BS EN 1634-1: 2008, in order to determine its fire resistance performance. As requested by the test sponsor, the specimen was mounted within concrete lined specimen holder and the fixing details were shown in the test sponsor's drawings (see the appendix). The specimen was mounted such that the door leaves swinging towards the heating conditions. The specimen was asymmetrical and only one side of the specimen was tested as per test sponsor's request, which was considered to be more critical.

The specimen had overall dimensions of 2,014 mm wide by 2,270 mm high. It was comprised of a timber door frame and unequal door leaves constructed by nominal 43 mm thick vermiculite board and perlite fireproof board core sandwiched by nominal 5 mm thick facings on both sides (refer to test sponsor's drawings). A 12 mm wide by 11 mm thick unequal rebate was incorporated in the meeting edge of door leaves. Left and right door leaves were with sizes of 750 mm and 1,040 mm wide respectively by 2,240 mm high by 54 mm thick and hung to the door frame by 3 nos. of stainless steel butt hinges with sizes of 102 mm by 102 mm by 3 mm thick. Left and right door leaves was incorporated with one number of nominal 25 mm thick 'Master' insulated glazed panel with vision sizes of 390 mm wide by 690 mm high and 690 mm wide by 390 mm high respectively. 1 no. of 'STARART' intumescent smoke seal with sizes of 12 mm wide by 4 mm thick was installed at each jamb and head of door frame. 1 no. of 'Acton Fire' intumescent fire seal with sizes of 30 mm wide by 4 mm thick was installed at top edges of door leaves, left and right vertical edge of left and right door leaf respectively. 1 no. of 'Acton Fire' intumescent fire and smoke seal with sizes of 10 mm wide by 4 mm thick and 1 no. of 'Acton Fire' intumescent fire seals with sizes of 30 mm wide by 4 mm thick were installed at the meeting edge of right and left door leaf respectively. 1 no. of 'Acton Fire' drop seal was installed at bottom of both door leaves. A 'POSSE' surface mounted overhead door closer was installed at unexposed and exposed sides of right and left door leaves respectively. A 'ROYAL WAND' lockset was installed on right door leaf. The doorset was unlatched and unlocked during the test.

The specimen satisfied the performance requirements specified in BS EN 1634-1: 2008 for the following periods:

Integrity:	Cotton Pad	71 Minutes (No failure)
	Gap Gauge	71 Minutes (No failure)
	Sustained Flaming	71 Minutes (No failure)
Insulation (I₁ excluding glazed panels):		69 Minutes
Insulation (glazed panels):		71 Minutes

The test was discontinued after a heating period of 71 minutes.

2. Introduction

The specimen was tested in accordance with BS EN 1634-1: 2008, 'Fire resistance tests for door and shutter assemblies – Part 1: Fire doors and shutters'.

This test report should be read in conjunction with BS EN 1363-1: 1999, 'Fire resistance tests – Part 1: General requirements'.

The specimen was mounted by the test sponsor. The test was led by Mr. Solaris Chan of Research Engineering Development Façade Consultants Limited and was witnessed by Mr. K.H. Wong, Mr. K.O. Wong, Mr. K.P. Tang, Ms. P.Y. Tang and Mr. S.L. Tang, the representatives of the test sponsor.

3. Test Specimen Construction

The specimen was installed into concrete specimen holders to form the test construction. A comprehensive description of the test construction is presented in the appendix, which is based on a survey of the specimen and information supplied by the test sponsor.

4. Location of Testing Laboratory

Tuen Mun laboratory at DD134, Lung Kwu Tan, Tuen Mun, New Territories, Hong Kong.

5. Equipment

Equipment includes:

Nine (9) 'type K' thermocouples to monitor the temperature of the furnace, which were kept at 100 mm from the exposed face of the specimen (see Figure 1).

Thirty-two (32) 'type K' thermocouples to monitor the temperature of the unexposed face of the specimen (see Figure 2).

A 'type K' roving thermocouple to measure temperature on hot spots of unexposed surface.

A micro-manometer provided to monitor the furnace pressure.

Cotton pads, 6 mm and 25 mm gap gauges.

A steel ruler to monitor the lateral deflection of the specimen.

A radiometer placed at 1,000 mm away from the unexposed surface to measure the radiation of unexposed surface of the specimen.

6. Conditioning

The specimen's storage, construction, and test preparation took place in the test laboratory over a total, combined time of 3 days. Throughout this period of time, both of the temperature and humidity of the laboratory were measured and recorded as being within a range of 27 °C to 28 °C and 85 % to 87 % respectively.

7. Verification of Test Specimen

In order to ensure the description of the test specimen, and in particular its construction, is on conformity with the test specimen, the laboratory shall either oversee the fabrication of the test specimens or request an additional test specimens.

In this case, additional test specimens were supplied by the test sponsor. One of the test specimens was chosen randomly by RED to be submitted to the fire resistance test, while the other was used for the verification of construction.

8. Pre-test measurements

8.1 Pre-cycling

Operability test of 25 manual cycles was completed on the doorset in accordance with BS EN 1634-1: 2008, Section 8.2. Specimen self-closing of doorset, in accordance with BS EN 1634-1: 2008, Section 8.2 was completed prior to test.

8.2 Door perimeter gaps

The manufacturer did not declare a working range so the doorset was installed to open and close freely, maintaining gaps, where possible, to a range of 0.5 – 4.0 mm. The gaps between the edge of the door leaf/leaves and frame(s) were measured prior to test. The measurements (in mm) are given in Figure 4.

8.3 Retention forces

Measured in accordance with BS EN 1634-1: 2008 Section 10.1.3.

	Device	Opening Force (Nm)
Right door leaf	Closer	21.0 @ handle position

9. Test Procedures

The test was conducted in accordance with the procedures specified in BS EN 1634-1: 2008. The ambient temperature of the test area during the test was measured. After the first 5 minutes of the test, the furnace pressure was maintained at 0 ± 3 Pa relative to atmosphere, at 500 mm from the notional floor level. The furnace was monitored by nine (9) thermocouples so that the mean furnace temperature complied with the requirements of Clause 4.5.1.1 of BS EN 1363-1: 1999.

The temperature of the unexposed face was monitored by means of thirty-two (32) thermocouples fixed to the unexposed surface (see Figure 2 for the locations and reference numbers of the thermocouples). Five of them (S1 – S5) were fixed on the door leaves for mean and maximum temperatures of the unexposed surface of door leaves. Thermocouples S6 – S26 were fixed on the door leaves and door frame for maximum temperature of the unexposed surface of doorset. Thermocouples S27 – S32 were fixed on the glazed panels for mean and maximum temperature of the unexposed surface of glazed panels. The mean and maximum temperatures were recorded.

The cotton pads and gap gauges were used, if considered appropriate, to determine compliance with the integrity criterion of the standard. The occurrence of sustained flaming on the unexposed surface was monitored to determine compliance with this criterion. The lateral deflection of the specimen was measured by a steel rule and recorded. The radiation of the specimen was measured and recorded.

10. Test Data and Information

The ambient temperature of the test area during the test was 27 °C.

The furnace was controlled so that the mean furnace temperature complied with the requirements of Clause 4.5.1.1 of BS EN 1363-1: 1999. The temperatures recorded are shown graphically in Figure 5.

The mean and maximum temperatures of the unexposed surface of the doorset excluding the glazed panels are shown graphically in Figure 6.

The mean and maximum temperatures of the unexposed surface of the glazed panels are shown graphically in Figure 7.

The furnace pressure is shown graphically in Figure 8.

The radiation is shown graphically in Figure 9.

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

The deflection obtained is summarized in Table 1.

The mean furnace temperature obtained is summarized in Table 2.

The temperature rise of specimen obtained is summarized in Tables 3 & 4.

The test was discontinued after a heating period of 71 minutes.

11. Results

When tested in accordance with BS EN 1634-1: 2008, the requirements of the standard were satisfied for the following periods:

Integrity:	Cotton Pad	71 Minutes (No failure)
	Gap Gauge	71 Minutes (No failure)
	Sustained Flaming	71 Minutes (No failure)
Insulation (I₁ excluding glazed panels):		69 Minutes
Insulation (glazed panels):		71 Minutes

Insulation - It is required that the mean temperature rise of the unexposed surface shall not be greater than 140 °C and that maximum temperature rise shall not be greater than 180 °C. Insulation failure also occurs simultaneously with integrity failure.

Doorset (I₁) excluding glazed panels:

The 140 °C rise of the mean temperature of the unexposed surface of specimen did not reach during the test. The 180 °C rise of the maximum temperature of the unexposed surface of specimen reached and measured by thermocouple S13 after a heating period of 69 minutes. The maximum temperature rise was 188 °C measured by thermocouple S13 after a heating period of 71 minutes.

Glazed Panels:

The 140 °C rise of the mean temperature of the unexposed surface of glazed panels did not reach during the test. The 180 °C rise of the maximum temperature of the unexposed surface of specimen did not reach during the test. The maximum temperature rise was 73 °C measured by thermocouple S32 after a heating period of 71 minutes.

Integrity - It is required that there is no collapse for the specimen, no sustained flaming on the unexposed surface and no loss of impermeability.

The specimen met the integrity requirements after a heating period of 71 minutes.

12. 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, edges or end conditions other than those allowed under the field of 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.

FOR REFERENCE ONLY

Appendix A - Photos and Test Records



Photo 1: The unexposed face of the specimen before the test.

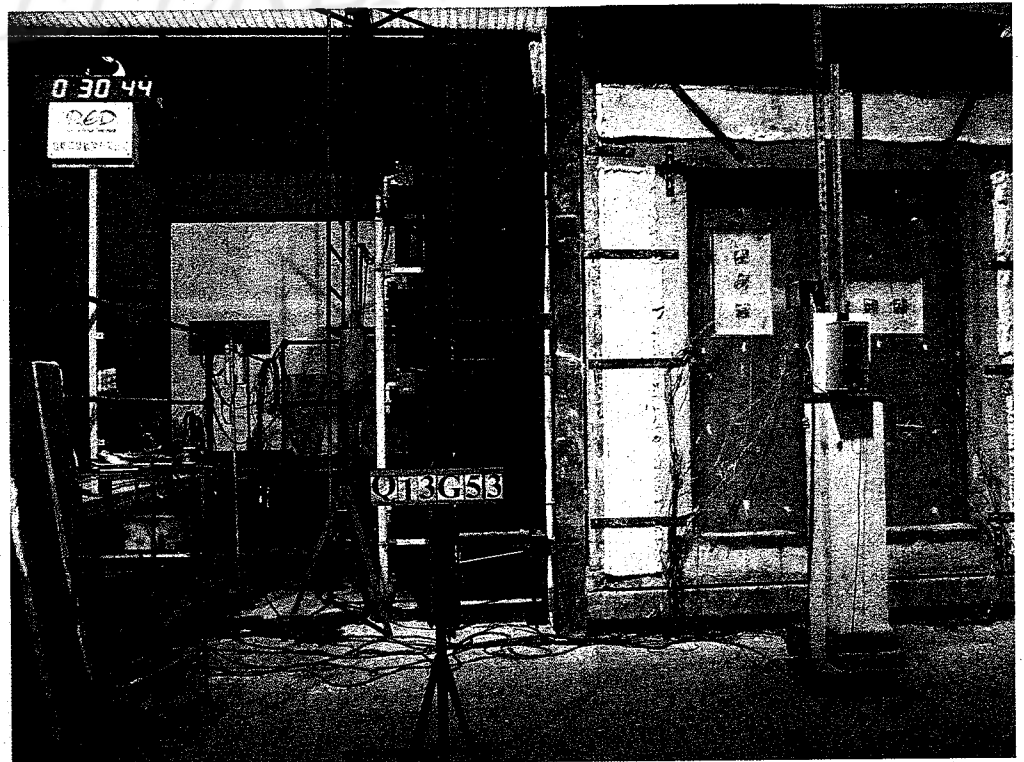


Photo 2: The unexposed face of the specimen after a heating period of 30 minutes.



Photo 3: The unexposed face of the specimen after a heating period of 60 minutes.

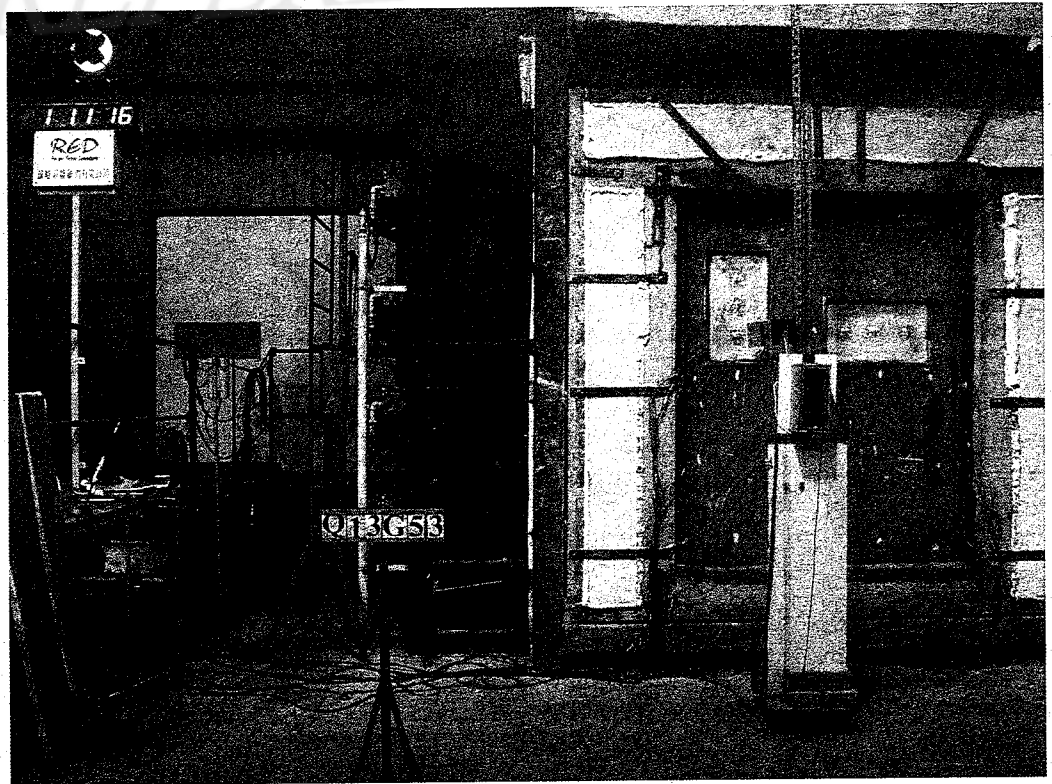


Photo 4: The unexposed face of the specimen after the test.



Photo 5: The exposed surface of specimen after the test.

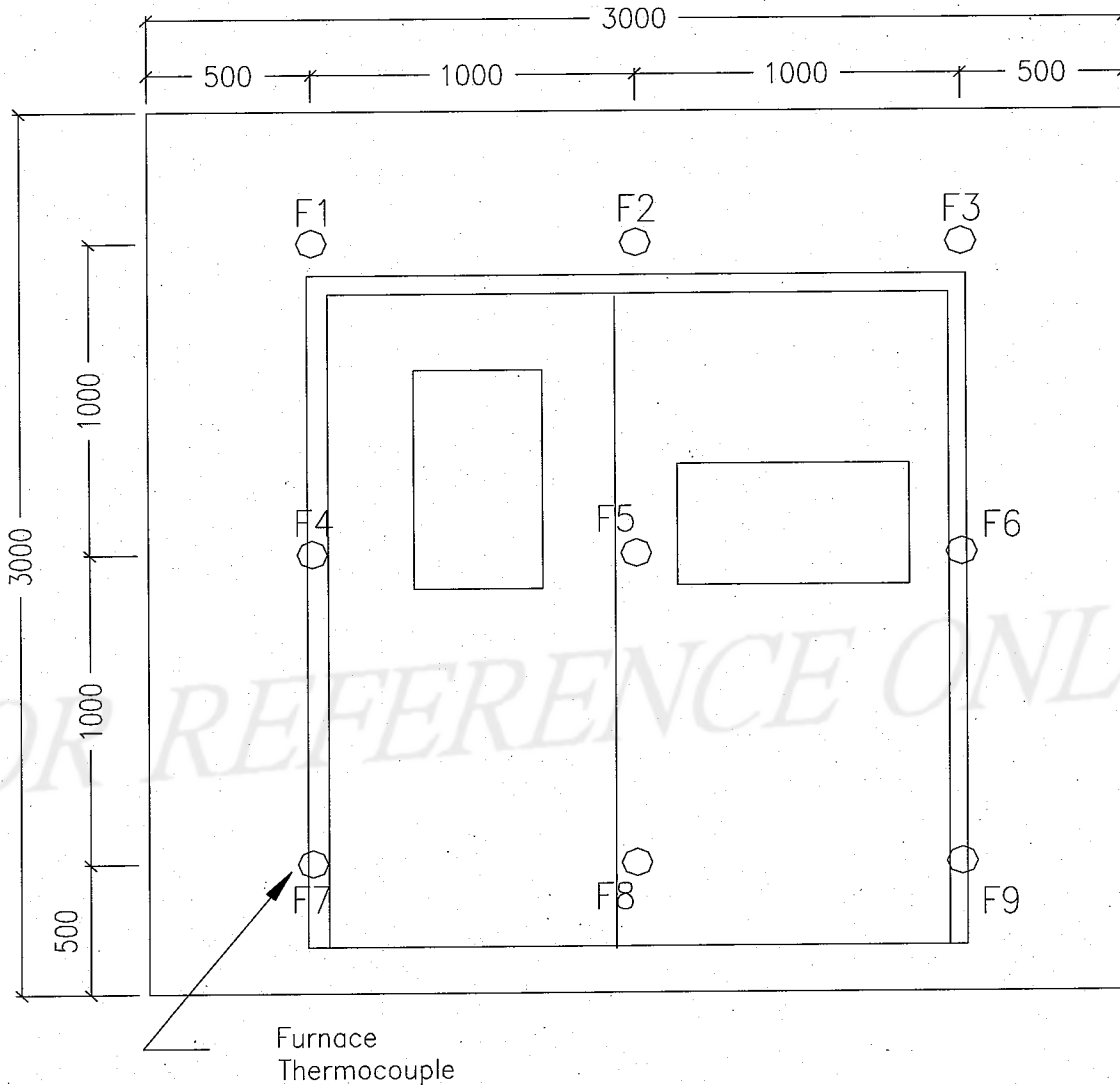


Figure 1 – Locations and reference numbers of furnace thermocouples.
(This figure is not to scale and all dimensions measured in millimetre.)

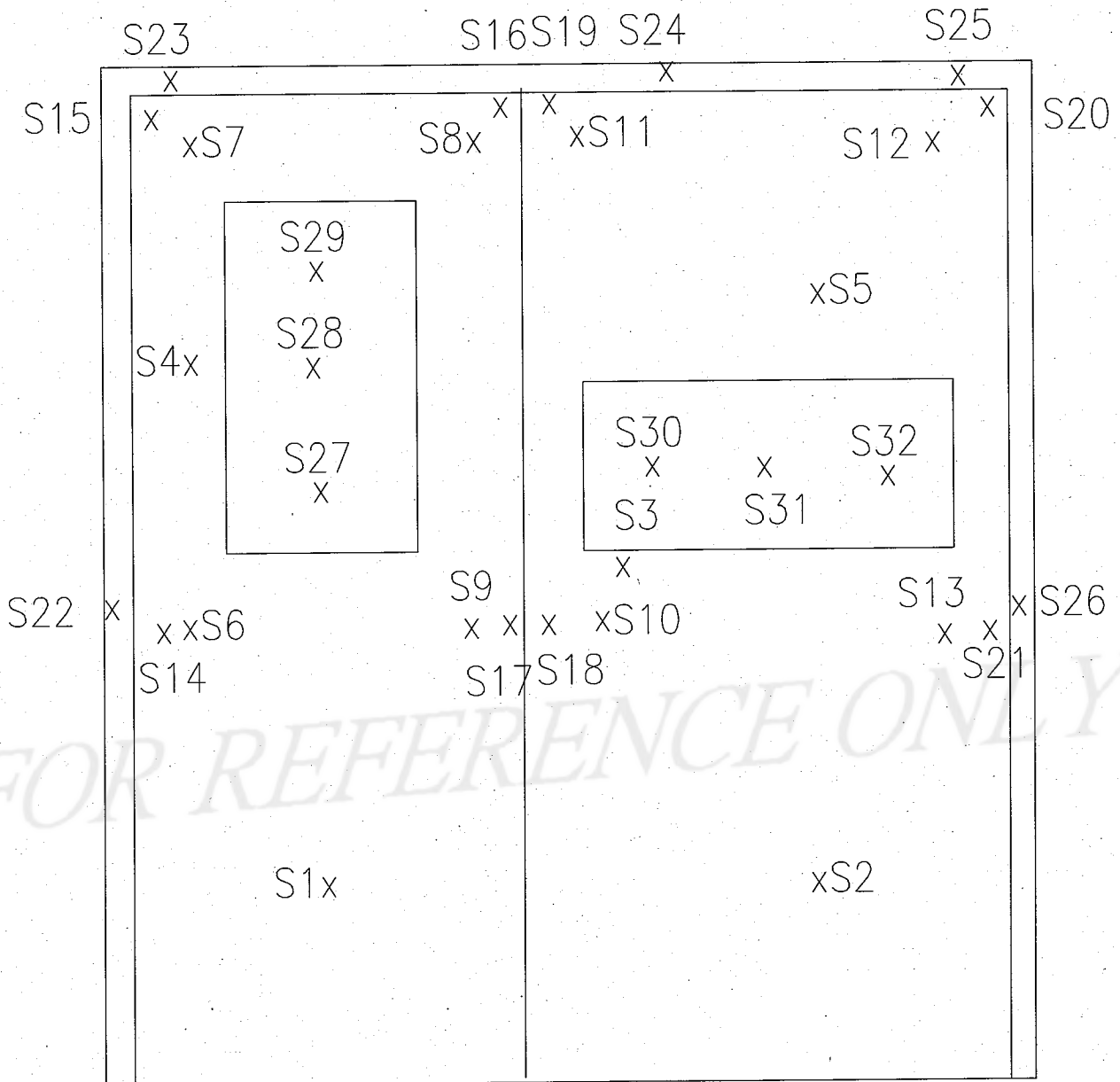


Figure 2 – Locations and reference numbers of thermocouples to monitor the temperature of unexposed surface of the specimen.
(This figure is not to scale.)

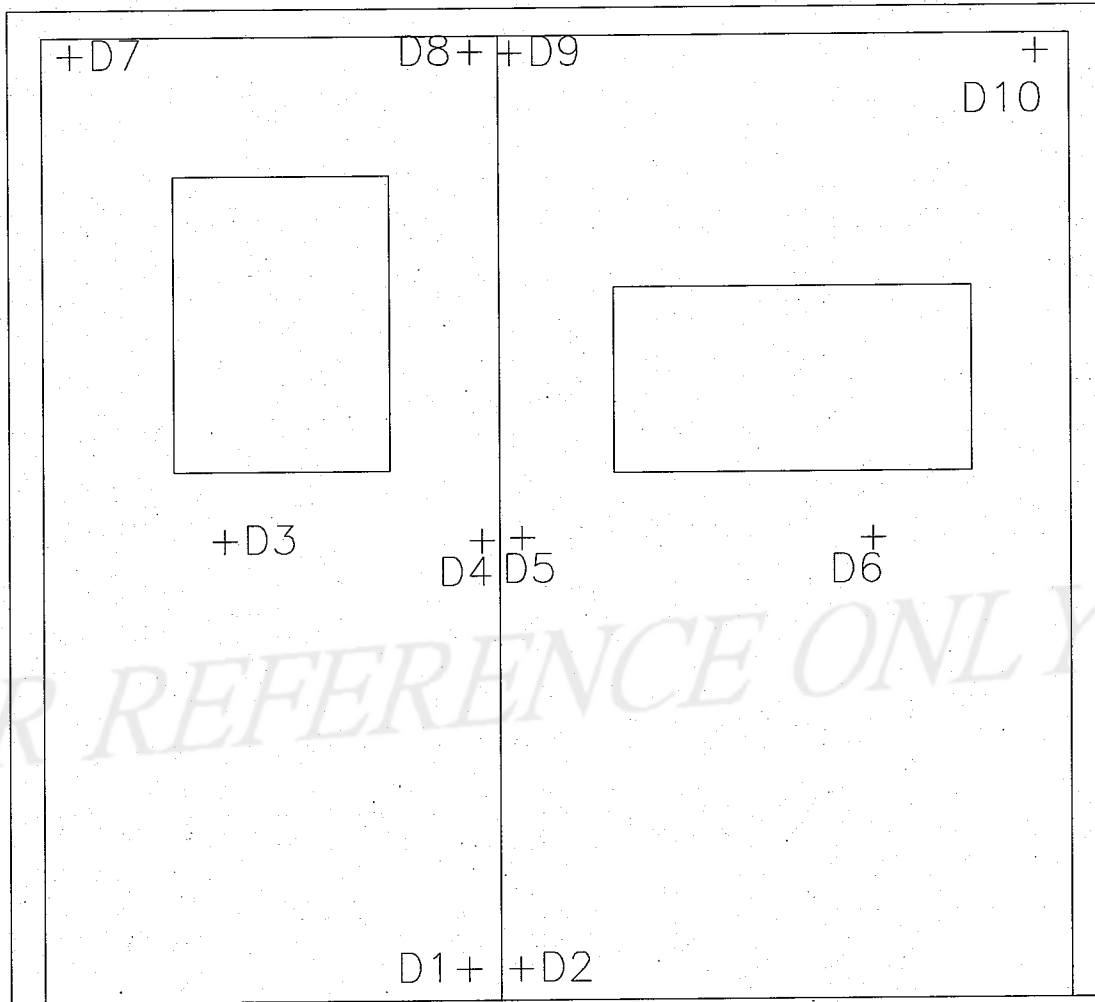


Figure 3 – Locations and reference numbers of displacement measurement.
(This figure is not to scale.)

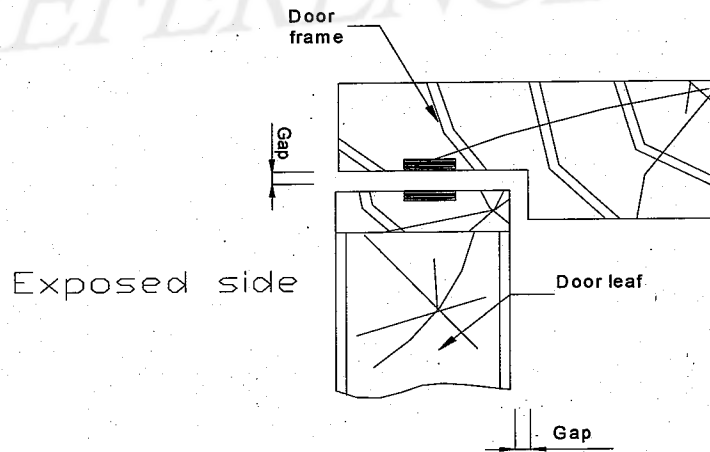
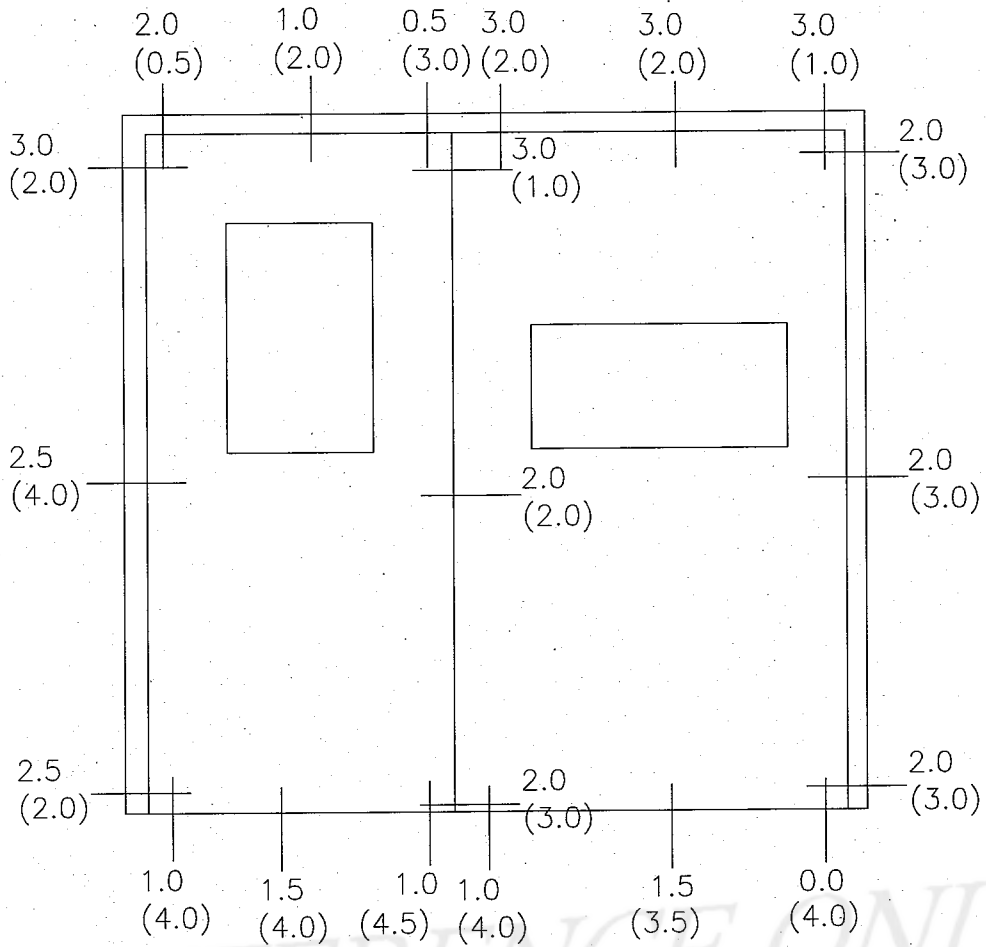


Figure 4 – Door gaps in mm, measured from unexposed face.
(Measurements from exposed face are in brackets)
(This figure is not to scale.)

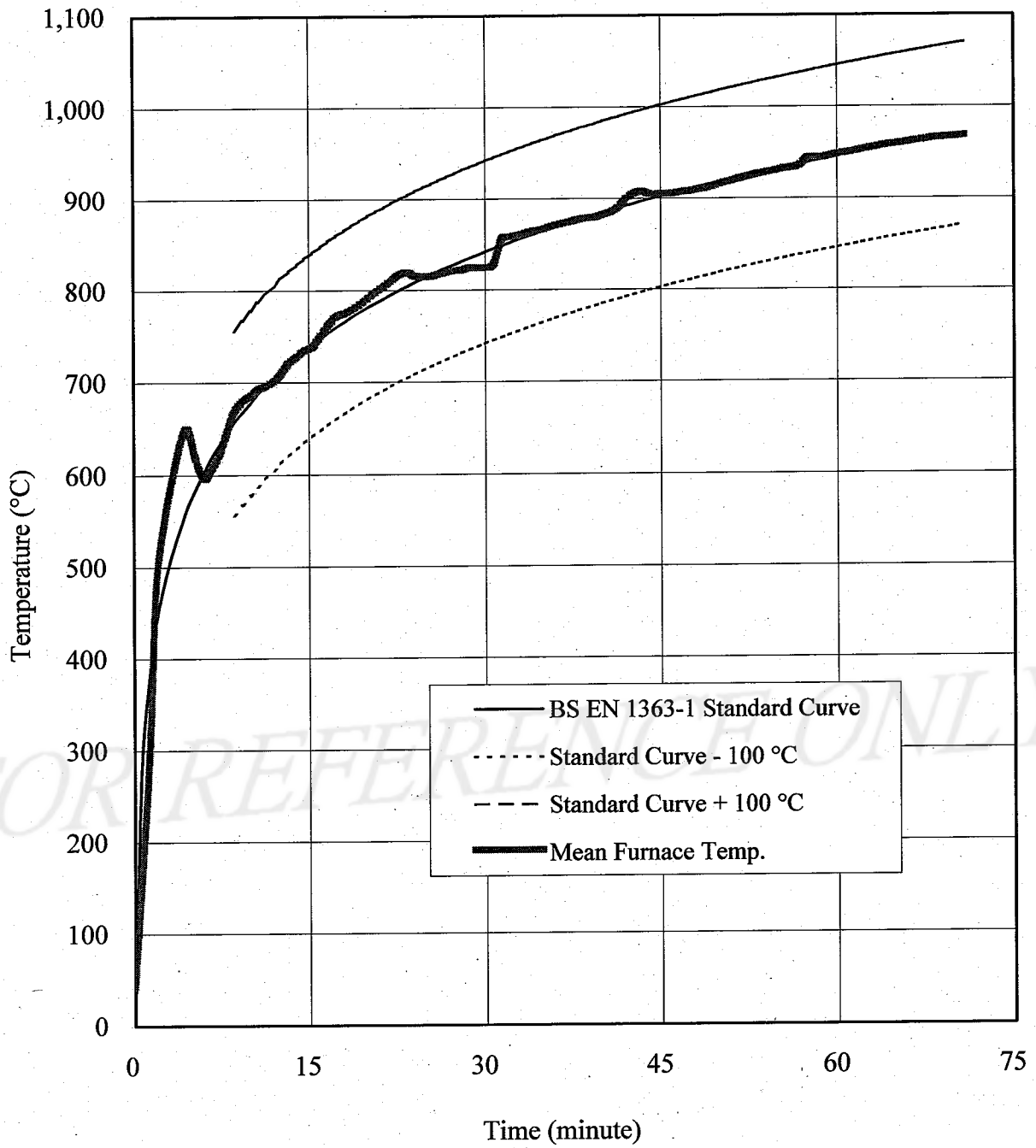


Figure 5 – Mean furnace temperature.

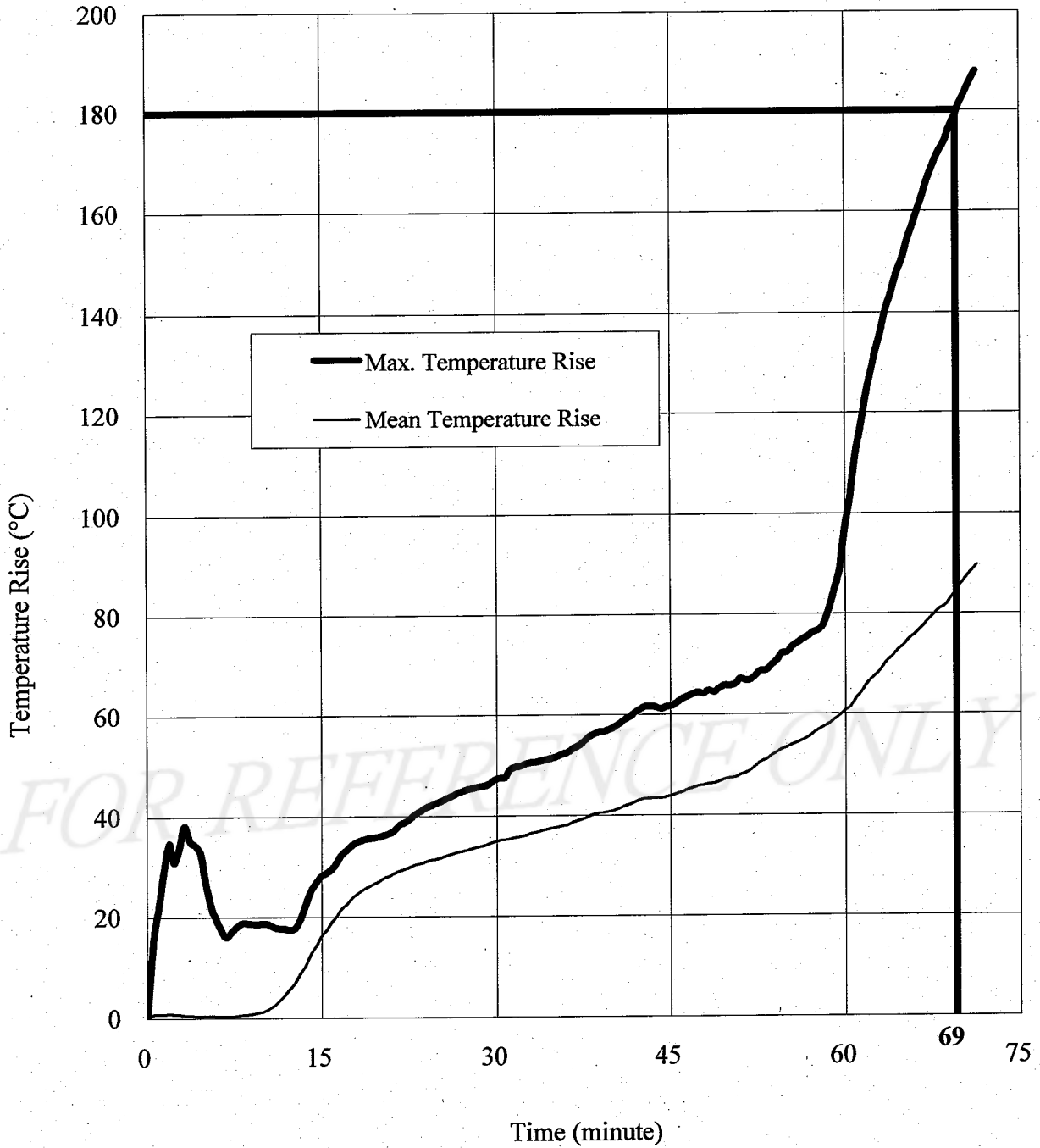


Figure 6 – Temperature rises of unexposed surface of doorset excluding the glazed panels.

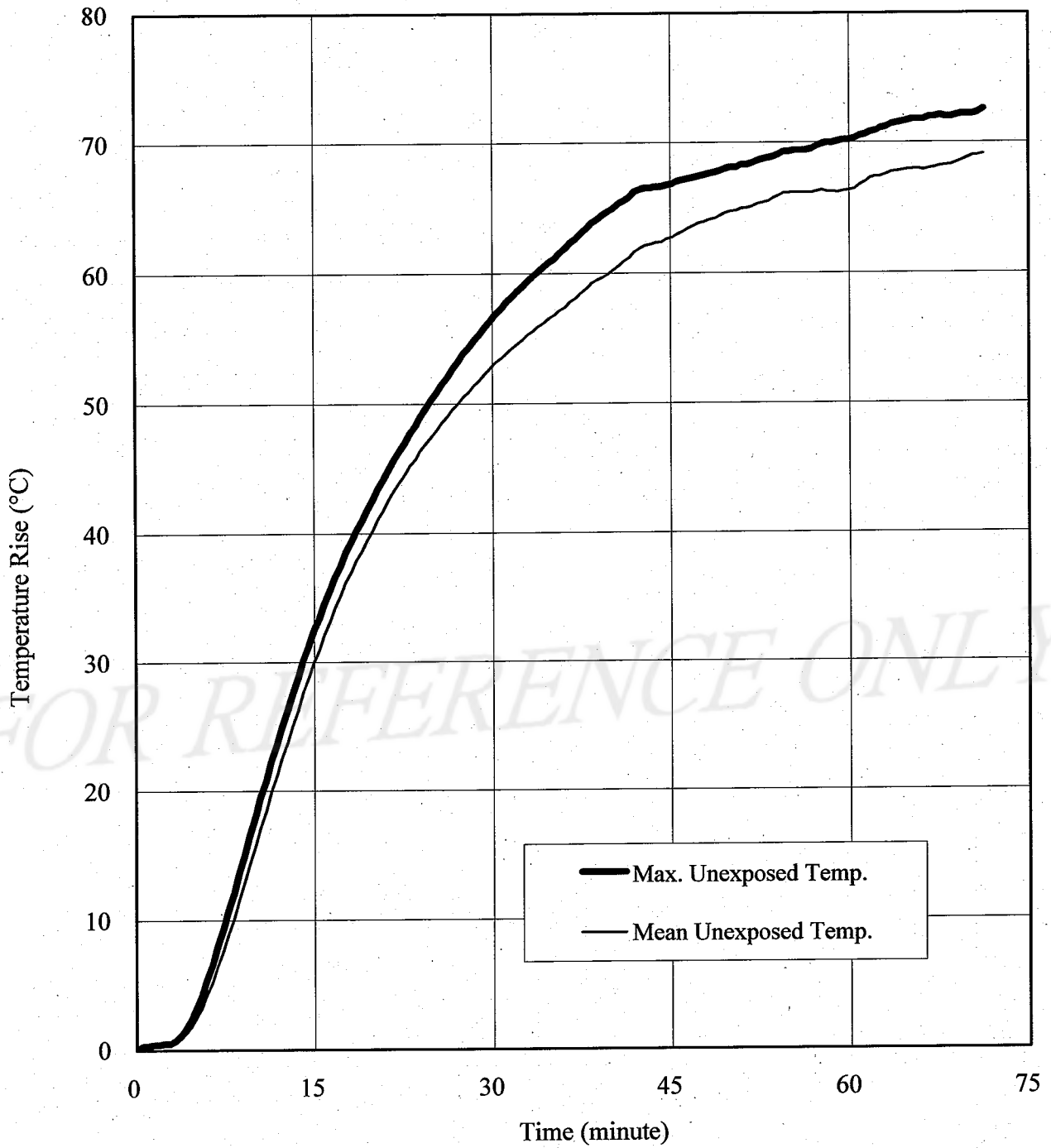


Figure 7 – Temperature rises of unexposed surface of the glazed panels.

After the first 5 minutes of the test, the furnace pressure was maintained at 0 ± 3 Pa relative to atmosphere, at 500 mm from the notional floor level.

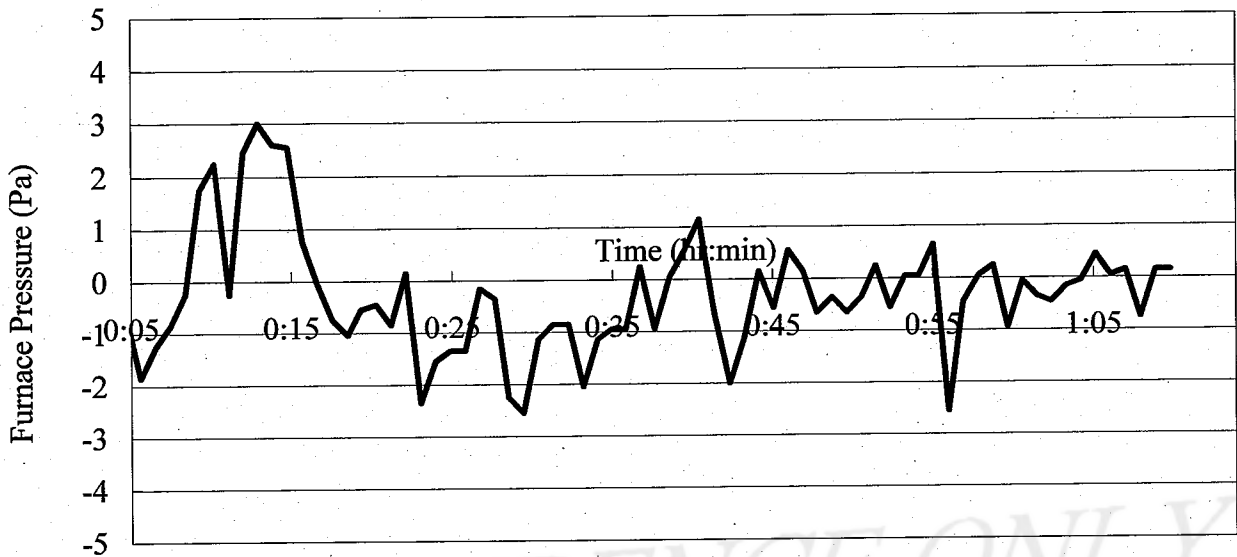


Figure 8 – Furnace pressure.

A radiometer placed at 1,000 mm away from the unexposed surface of specimen to measure the radiation of unexposed surface of the specimen.

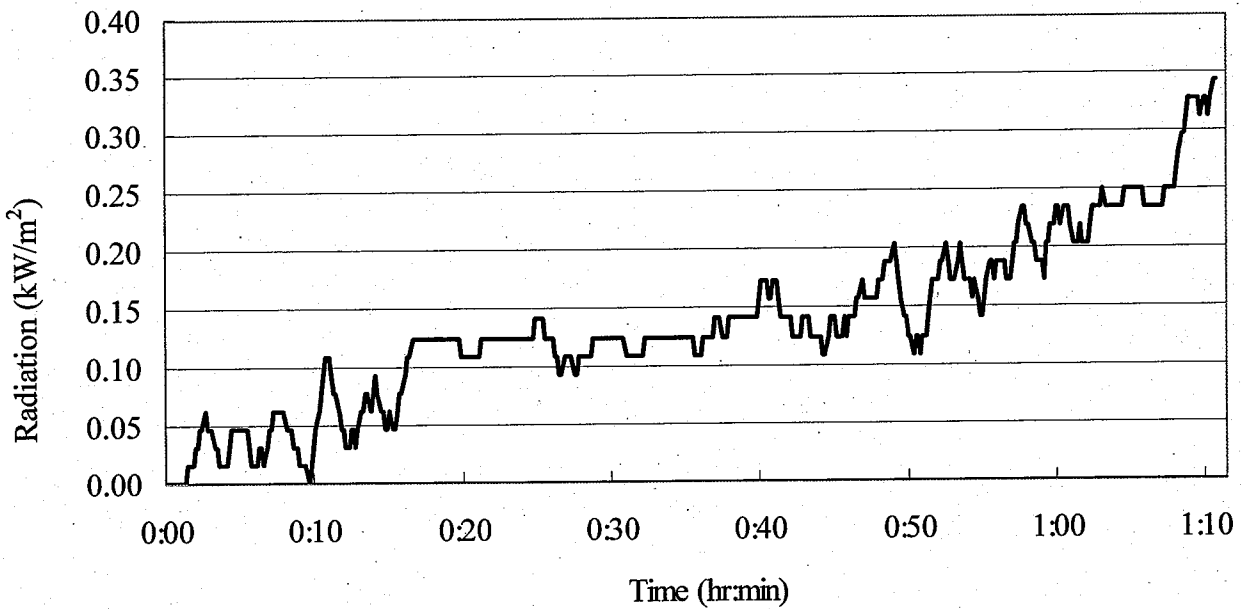


Figure 9 – Radiation.

Appendix B – Observation

Time (min.sec)	Exposed (E) or Unexposed (U)	Observation
00.00	-	Test started.
00.22	U	Smoke started releasing from the perimeter of specimen.
00.38	U	Cracks developed on right glazed panel.
00.55	U	Cracks developed on left glazed panel.
01.11	U	Smoke release increased.
02.52	U	Glazed panels turned white.
10.00	U	No significant change was observed from the specimen.
13.59	U	Water mark was observed at top edges of door leaves.
21.30	U	Visible deformation was observed from the door leaves.
25.19	U	The top edge of door leaves turned dark.
30.00	U	The specimen satisfied the integrity and insulation requirements performance.
30.24	U	Cotton pad test applied at top of meeting edge of door leaves and the test passed.
41.12	U	Further visible deformation was observed from the door leaves.
53.00	U	Cracks developed on a glass layer on unexposed side of right glazed panel.
58.15	U	Cotton pad test applied at centre portion of meeting edge of door leaves and the test passed.
59.01	U	Cotton pad test applied at top of meeting edge of door leaves and the test passed.
59.42	U	Cotton pad test applied at bottom right corner of left glazed panel and the test passed.
60.00	U	The specimen satisfied the integrity and insulation requirements performance.
60.25	U	Cotton pad test applied at top meeting edge of door leaves and the test passed.
62.45	U	Roving thermocouple applied at brown spot at right vertical edge of right door leaf and 105 °C was measured.

(to be continued)

Observation (Con't)

Time (min.sec)	Exposed (E) or Unexposed (U)	Observation
64.40	U	Roving thermocouple applied at brown spot at right vertical edge of right door leaf and 119 °C was measured.
67.56	U	Roving thermocouple applied at brown spot at right vertical edge of right door leaf and 160 °C was measured.
69.00	U	Cotton pad test applied at top meeting edge of door leaves and the test passed.
70.17	U	Smoke release increased from the specimen.
71.16	-	Test terminated as requested by test sponsor.

Appendix C - Data Recorded During the Test

Table 1 - Lateral deflection of the specimen during the test, as viewed from the unexposed face.

Location	Time (minutes)					
	0	10	20	30	45	60
D1	0	4	3	4	3	-
D2	0	-1	1	1	2	-
D3	0	5	7	13	21	29
D4	0	4	1	-4	-15	-17
D5	0	15	10	8	-5	-7
D6	0	10	8	9	19	35
D7	0	1	4	6	4	-
D8	0	2	3	5	3	-
D9	0	-1	1	2	4	-
D10	0	4	6	11	15	-

Positive deflection indicates movement towards the furnace (see also Figure 3 for the locations). The maximum deflection of the specimen occurred at location D6 was 35 mm moving towards the furnace after a heating period of 60 minutes.

Table 2 – Mean Furnace Temperature

Time (minute)	BS EN 1634-1: 2008 Standard Temp. Curve (°C)	Actual Mean Furnace Temp. (°C)
0	27	42
5	583	618
10	685	686
15	746	739
20	788	792
25	822	815
30	849	825
35	872	866
40	892	882
45	909	905
50	925	916
55	939	930
60	952	948
65	964	959
70	975	967
71	978	968

Notes: Locations of furnace thermocouples are shown in Figure 1.

The test was terminated as requested by test sponsor after a heating period of 71 minutes.

Table 3 - Time and related temperature rise measured by thermocouples S1 – S16.

Time (min)	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	2	0	1	2	1	0	0	4	0	0	27	15	5
10	1	1	1	4	1	1	3	2	0	2	4	1	1	9	19	6
15	17	18	16	16	14	15	17	13	6	28	23	16	25	7	19	12
20	27	29	23	33	24	35	32	29	24	31	32	32	36	9	24	21
25	32	32	25	42	27	43	40	37	31	32	34	38	37	13	29	29
30	37	35	29	46	30	47	46	41	36	35	37	42	42	20	35	40
35	40	36	33	48	32	48	49	43	43	40	42	43	46	27	39	48
40	42	38	40	49	36	50	50	45	52	44	47	44	50	36	46	54
45	44	41	46	49	39	50	51	46	53	48	49	45	55	42	49	55
50	47	45	51	50	43	53	52	51	53	51	52	47	62	47	52	57
55	52	49	63	57	47	56	56	53	56	54	53	49	68	52	54	60
60	53	50	92	59	50	56	58	54	57	64	54	51	96	54	55	62
65	61	57	131	61	59	63	61	56	62	67	56	53	151	57	58	66
70	69	67	157	67	69	66	66	60	64	83	58	59	181	60	61	73
71	75	68	163	68	74	67	66	62	64	91	59	62	188	60	62	76

Notes: Locations of thermocouples S1 – S16 are shown in Figure 2.

The test was terminated as requested by test sponsor after a heating period of 71 minutes.

Table 4 - Time and related temperature rise measured by thermocouples S17 – S32.

Time (min)	S17	S18	S19	S20	S21	S22	S23	S24	S25	S26	S27	S28	S29	S30	S31	S32
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	12	8	0	0	3	8	1	0	3	3	3	2	1	2
10	2	1	12	9	1	0	5	15	2	0	17	18	18	14	11	16
15	8	6	25	14	3	0	5	16	2	0	32	32	32	28	24	31
20	20	11	34	23	6	1	5	14	3	0	42	43	42	39	34	42
25	29	17	41	25	10	1	6	11	3	1	49	50	49	46	40	50
30	36	23	48	31	16	2	9	11	4	1	55	55	55	52	45	57
35	42	29	52	35	23	2	12	10	12	2	59	59	59	56	47	61
40	47	42	58	40	30	3	24	10	26	3	62	63	62	60	51	65
45	50	49	62	45	38	4	42	11	29	5	64	65	65	63	54	67
50	54	55	66	51	54	5	56	13	32	8	66	66	67	65	57	68
55	55	58	72	57	56	7	59	15	32	12	67	67	68	65	60	69
60	55	58	79	61	61	9	44	16	31	15	68	67	69	63	60	70
65	59	68	122	70	65	11	44	20	31	18	70	69	71	64	63	72
70	65	67	173	80	73	13	44	23	32	19	71	70	72	64	64	72
71	65	66	182	82	75	14	44	23	33	20	71	70	72	64	65	73

Notes: Locations of thermocouples S17 – S32 are shown in Figure 2.

The test was terminated as requested by test sponsor after a heating period of 71 minutes.

Appendix D - Information From Test Sponsor

(The information provided by test sponsor, which is not verified by RED or unless specified.)

Item	Description
1 Door Frame	
Door frame material	: Hardwood.
Door frame density	: 500 – 550 kg/m ³ .
Sub frame material	: Hardwood.
Sub frame density	: 500 – 550 kg/m ³ .
Sub frame sizes	: 18 mm x 102 mm thick.*
Overall sizes	: 2,014 mm wide x 2,270 mm high.*
Section sizes	: 50 mm x 102 mm thick.*
Rebate	: 20 mm x 48 mm*
Jambs to head jointing method	: Screws fixing.
Frame to concrete lining fixing method	: Screws fixing.
Gap insulation between door frame and concrete lining	: Cement sand grouting.#
2 Architrave	
Material	: Hardwood.
Density (kg/m ³)	: 500 – 550 kg/m ³ .
Overall sizes	: 47 mm x 12 mm thick.*
Fixing method	: Nailing.#
3 Door Leaves	
Door leaves sizes	: Left door leaf: 750 mm wide x 2,240 mm high * : Right door leaf: 1,040 mm wide x 2,240 mm high.*
Thickness	: 54 mm.*
Meeting edge rebate	: 12 mm wide x 11 mm thick unequal rebate.*
Core Material	: vermiculite board and perlite fireproof board.*
Core Density (kg/m ³)	: 450 – 500 kg/m ³ .
Core Thickness	: 43 mm.
Fixing method	: Glued and screws fixing.

Notes: * Verified on site by RED.

As shown on the test construction.

Appendix D - Information from Test Sponsor (Con't)

(The information provided by test sponsor, which is not verified by RED or unless specified.)

Item	Description
4 Door Leaf Stiles / Rails	
Material	: Hardwood sandwiched by 6 mm perlite fireproof board on both sides.*.
Density (kg/m ³)	: 500 – 550 kg/m ³ .
Sizes of hardwood stiles and rail	: 31 mm thick x 75 mm wide.
Fixing method	: Screws fixing.
5 Door Leaf Facing	
Material	: Plywood.
Density (kg/m ³)	: 500 – 550 kg/m ³ .
Overall thickness	: 5 mm.
Fixing method	: Glued.
6 Glazing Bead	
Material	: Hardwood.
Density (kg/m ³)	: 550 kg/m ³ .
Section sizes	: 17 mm x 25 mm.
Fixing method	: Glued and nailed.
7 Glazed Panels	
Brand	: Master.#
Thickness	: 25 mm.
Aperture sizes	: Left glazed panel: 420 mm wide x 720 mm high. Right glazed panel: 720 mm wide x 420 mm high.
Vision sizes	: Left glazed panel: 390 mm wide x 690 mm high.* Right glazed panel: 690 mm wide x 390 mm high.*

* and # refer to page 25

Appendix D - Information from Test Sponsor (Con't)

(The information provided by test sponsor, which is not verified by RED or unless specified.)

Item	Description
8a	Fire Seal - Left and right vertical edge of left and right door leaf respectively Brand : Acton Fire. Model : 3004FS. Overall sizes : 30 mm wide x 4 mm thick.*
8b	Smoke Seal- Each jamb and head of door frame Brand : STARART. Model : A1. Overall sizes : 12 mm wide x 4 mm thick.*
8c	Fire Seal - Top edges of door leaves Brand : Acton Fire Model : 3004FS Overall sizes : 30 mm wide x 4 mm thick.*
8d	Fire and Smoke Seal - Meeting edge of right door leaf Brand : Acton Fire. Model : 1004AS. Overall sizes : 10 mm wide x 4 mm thick.*
8e	Fire Seal – Meeting edge of left door leaf Brand : Acton Fire. Model : 3004FS. Overall sizes : 1 no. of 30 mm wide x 4 mm thick.*
8f	Drop Seal – Bottom edge of door leaves Brand : STARART. Model : A2. Overall sizes : 15 mm x 20 mm.
8g	Fire Seal – Glazing Bead Brand : Acton Fire. Model : Pytotape. Overall sizes : 15 mm wide x 3 mm thick.

* and # refer to page 25

Appendix D - Information from Test Sponsor (Con't)

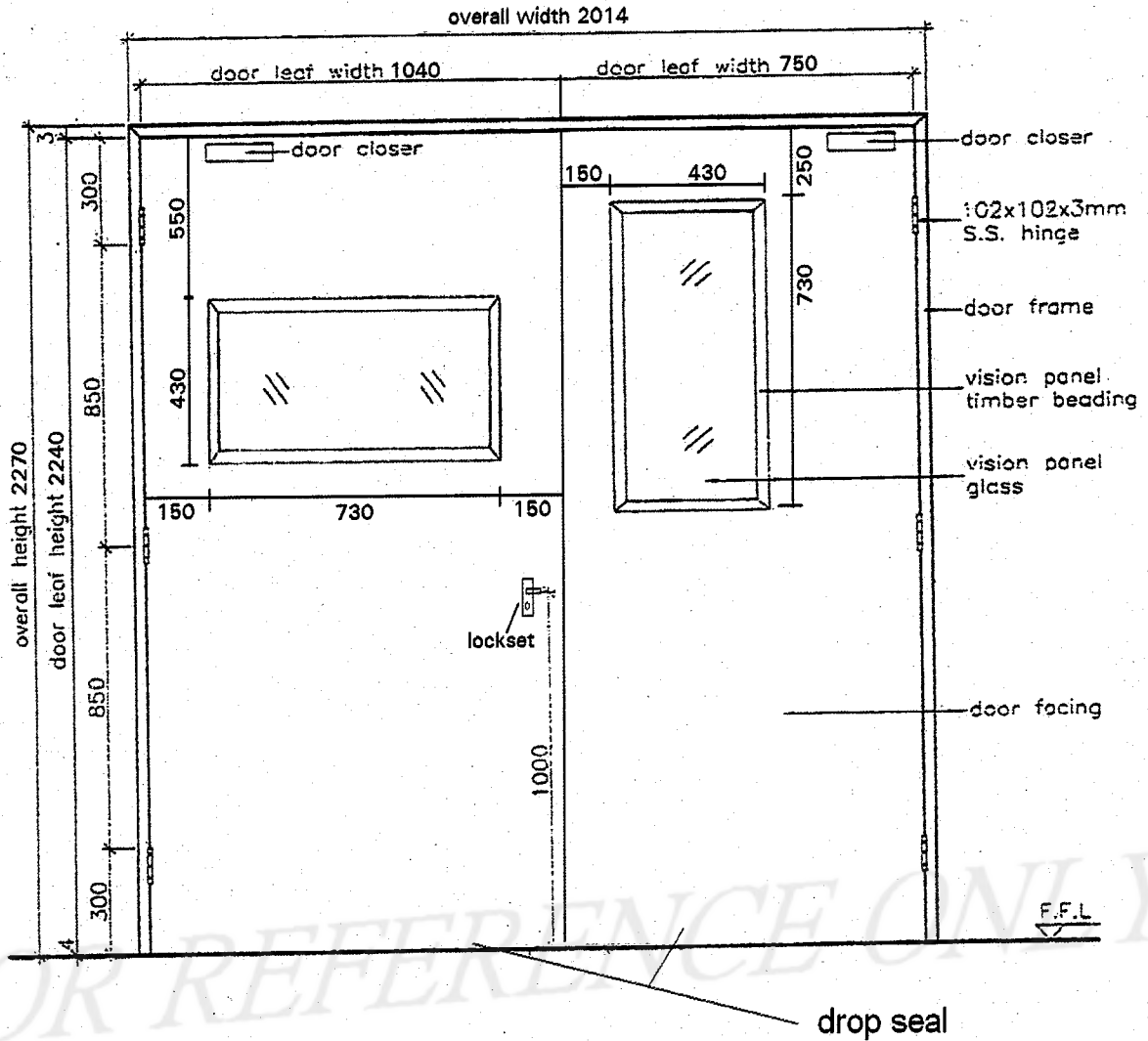
(The information provided by test sponsor, which is not verified by RED or unless specified.)

Item	Description
9	Butt Hinge Brand : FOX'S.# Material : Stainless steel. Overall sizes : 102 mm x 102 mm x 3 mm thick. Number used for each door leaf : 3.* Fixing method : Screws fixing and backed with intumescent pad.
10	Overhead Door Closer Brand : POSSE.# Fixing method : Screws fixing. Applied location : Surface mounted at the exposed side of left door leaf and unexposed side of right door leaf.#
11	Lockset Brand : ROYAL WAND.# Model : SZ0433. Sizes : 70 mm wide x 15 mm thick x 150 mm high. Status during the test : Unlocked and unlatched.#
12	Intumescent Sealant Brand : Acton Fire. Applied locations : Glazing bead.
13	Intumescent Pad Brand : Acton Fire. Model : Bating MV. Thickness : 1 mm. Applied location : Backed on hinges.

* and # refer to page 25

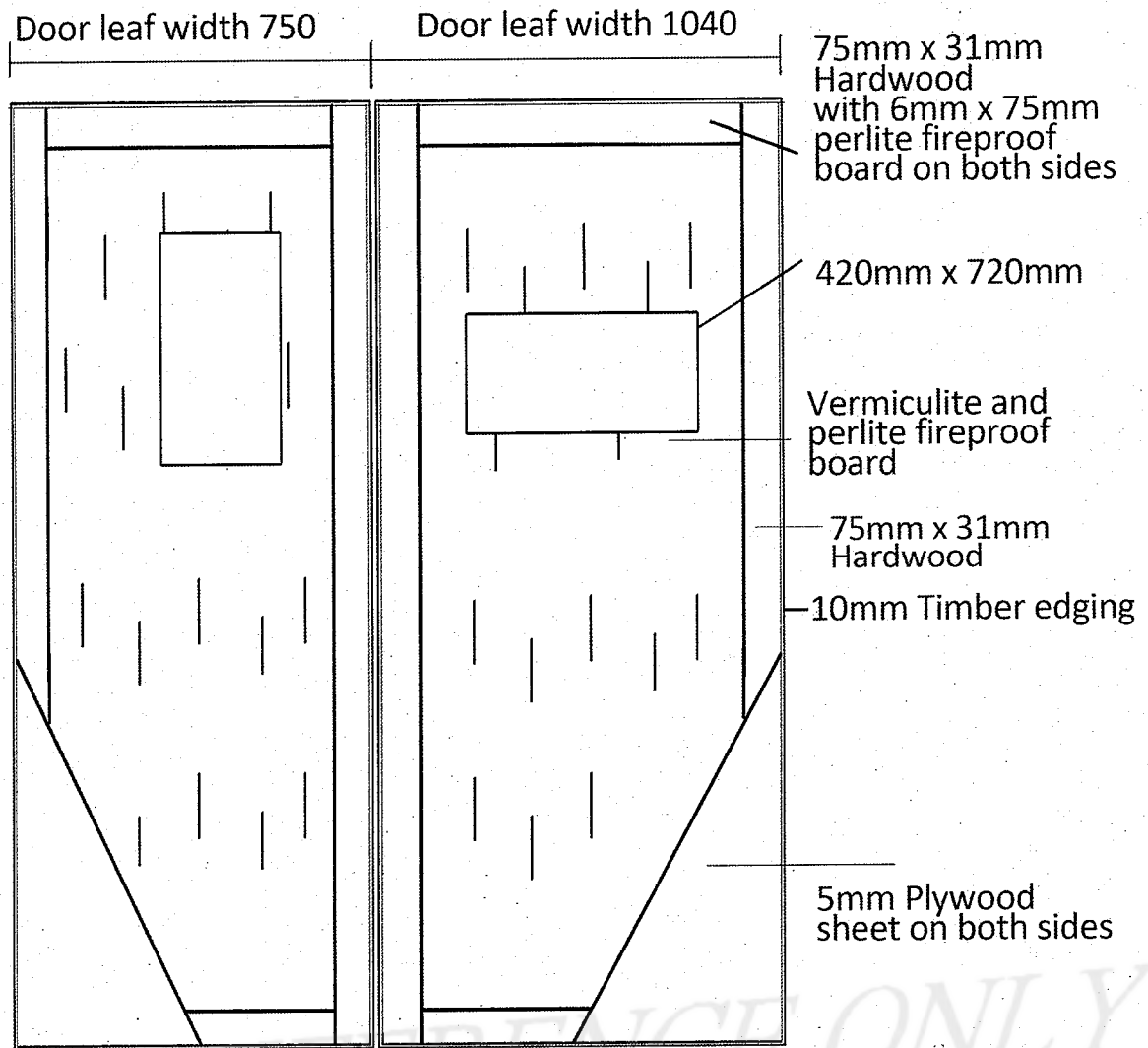
Drawings From Test Sponsor

(The drawings provided by test sponsor, which is not verified by RED, except those specified and described in 'Appendix D - Information from Test Sponsor'.)

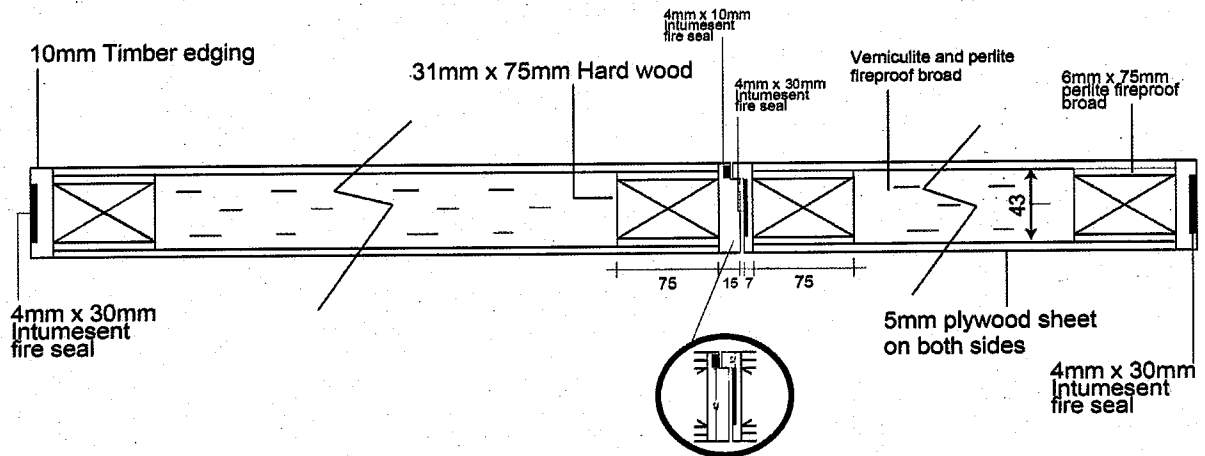


Pull Side Elevation

Door Leaf Construction

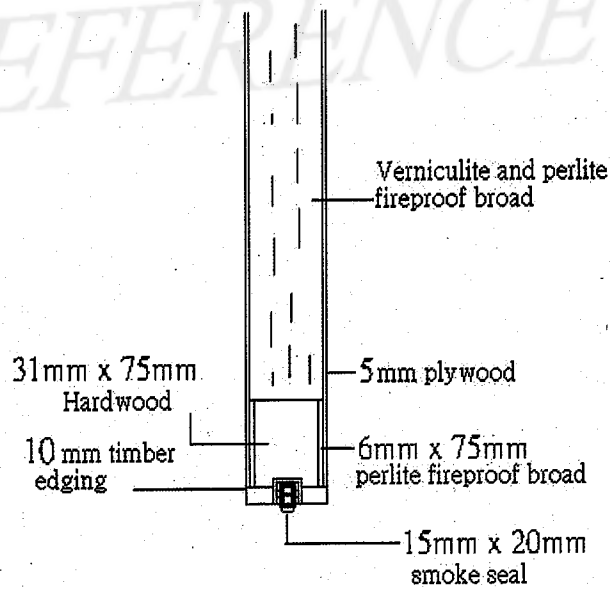


FOR REFERENCE ONLY



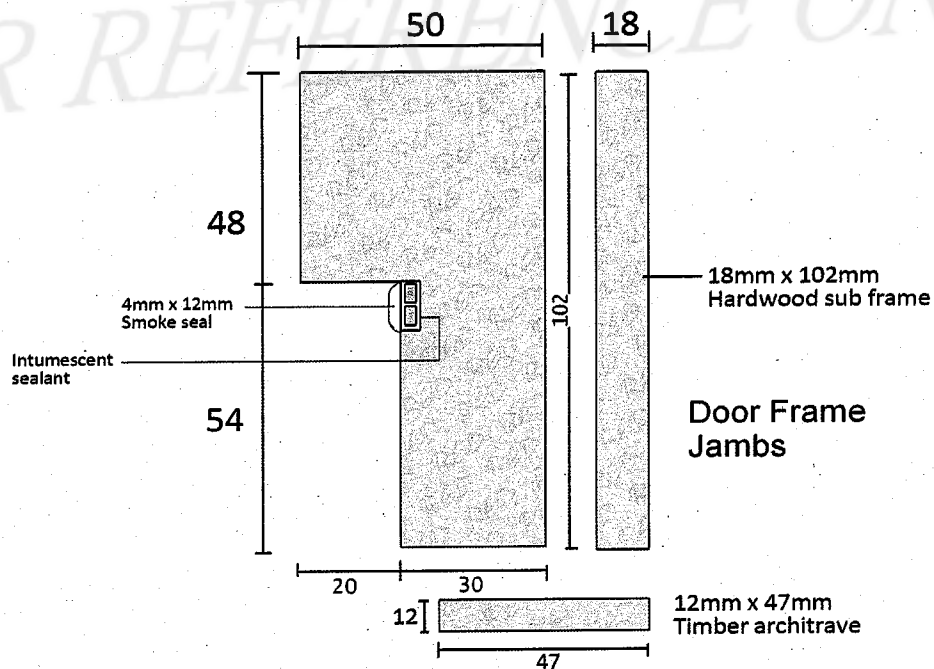
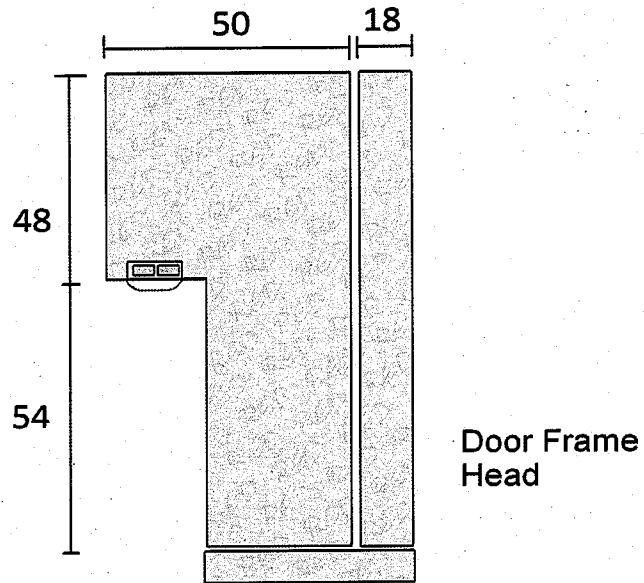
Meeting Stile

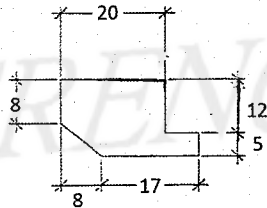
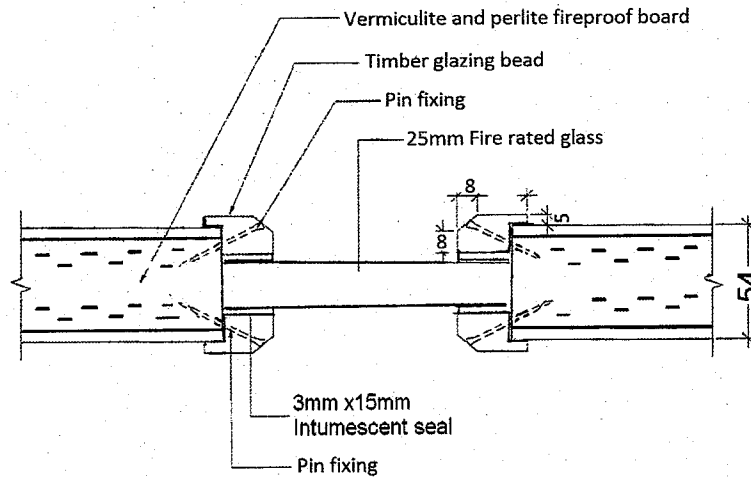
Smoke seal



FOR REFERENCE ONLY

Door Frame Details





Detail of Vision Panel

- End of report -