REPORT NUMBER CFR1608251

CAMBRIDGE FIRERESEARCH

FIRE RESISTANCE TEST IN ACCORDANCE WITH BS EN 1634-1:2014

Sponsor:	Exitex Limited
Address:	Mountpleasant Dundalk County Louth Ireland
Date of test:	25th August 2016

Results:

Test duration:	62 minutes (discontinued at the request of the sponsor)
Integrity:	
Cotton pad:	62 minutes no failure, the test having been discontinued
Gap gauge:	62 minutes no failure, the test having been discontinued
Sustained flaming:	57 minutes
Insulation:	57 minutes

Summary of test specimen:

Single acting timber based double leaf doorset, tested unlatched and the right hand leaf bolted.

Left hand leaf :
Leaf size (mm): 2101 high x 1000 wide x 54 thick

Right hand leaf :
Leaf size (mm): 2100 high x 1000 wide x 54 thick

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1 PREPARATION FOR TESTING

1.1 Specimen conditioning

The specimen components were at Cambridge Fire Research and during the 2 days before the test they were stored, surveyed and prepared for testing. For this duration the temperature and relative humidity were measured and recorded within the range of 22 to 29°C and 50 to 76% respectively.

1.2 Supporting construction

Cambridge Fire Research installed a standard flexible wall supporting construction in accordance with EN1363-1:2012 (intended fire resistance EI60, Group B). This provided an aperture of 2160 mm high x 2120 mm wide to accommodate the specimen.

Both vertical edges of the supporting construction had a free edge. In accordance with the test standard, continuity of the floor was simulated by the installation of a solid non-combustible floor extension by Cambridge Fire Research, such that the extension was flush with the threshold onto which the frame was positioned.

1.3 Specimen construction

The specimen was constructed by the sponsor.

1.4 Specimen verification

Cambridge Fire Research carried out a detailed survey of the specimens to verify the information provided by the sponsor. This included verifying the weight, densities, materials and dimensions of construction components wherever possible.

Details and drawings of the construction are shown in Appendix 1.

Photographs of details of the construction taken before the test are shown in Appendix 2.

1.5 Specimen installation and fixity

The sponsor installed the specimen into the supporting construction. The specimen was asymmetrical and fitted such that the leaves opened towards the heating conditions of the test. The right hand leaf was unlatched and the left hand leaf was bolted prior to the start of the test.

The specimen was affixed to the supporting construction as described in Appendix 1.

1.6 Specimen selection

Cambridge Fire Research was not involved in any selection or sampling procedures for the tested specimen.

2 PRE-TEST MEASUREMENTS AND SETTING

2.1 Mechanical pre-test conditioning

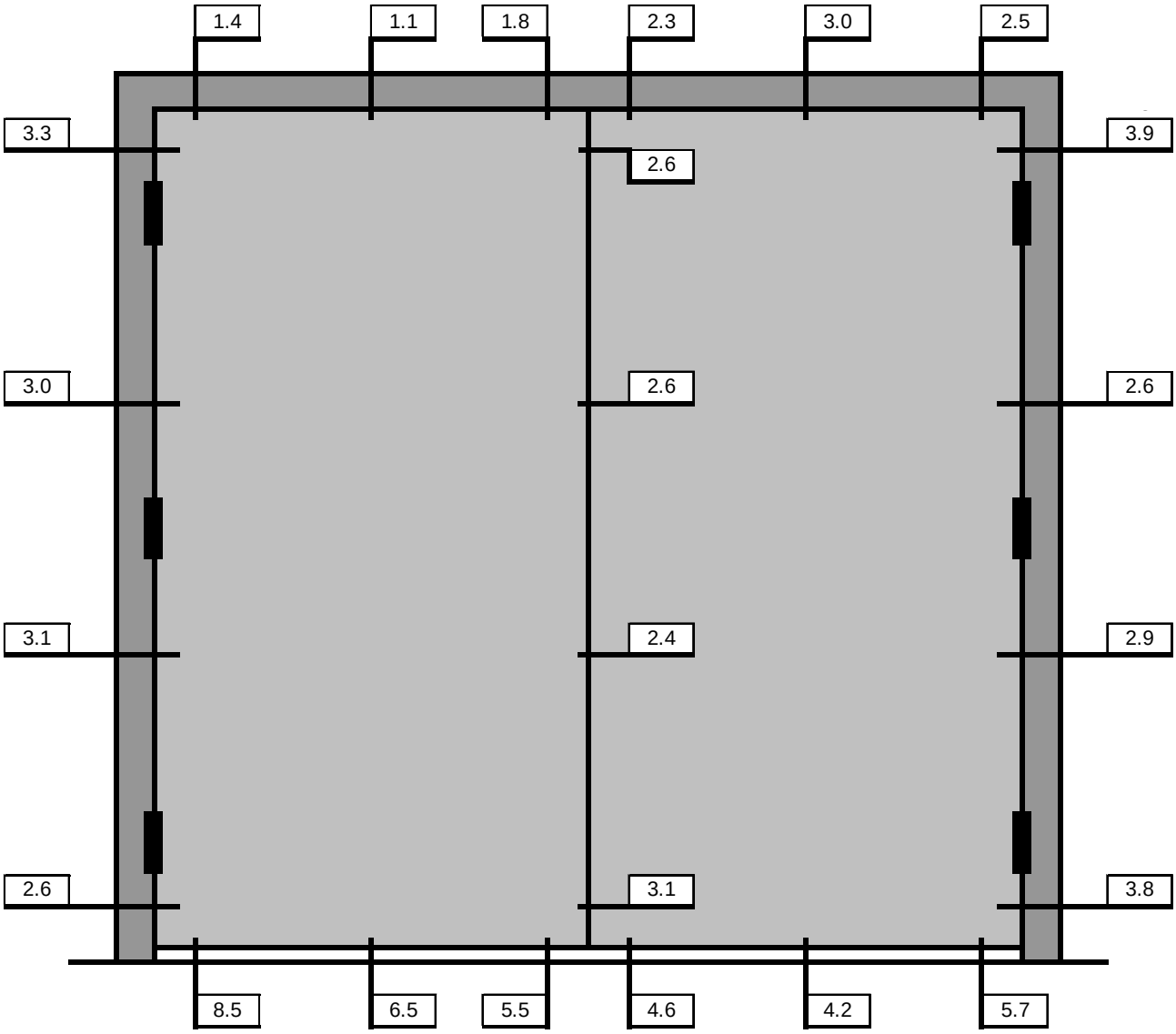
Mechanical pre-test conditioning was carried out in accordance with BS EN 14600:2005. This included fully opening each leaf for 25 cycles to check operability and checking that the closing speed was within the required parameters. It was also verified that the leaf would fully close from 10° open.

2.2 Gap measurements

Leaf edge to frame gap

The primary gaps between the leaf edges and the frame, between the meeting stiles and between the base of the leaf and the floor were measured on the exposed face prior to the start of the test.

The following figures show the position at which the measurements were made and the recorded gap (mm) at those positions.

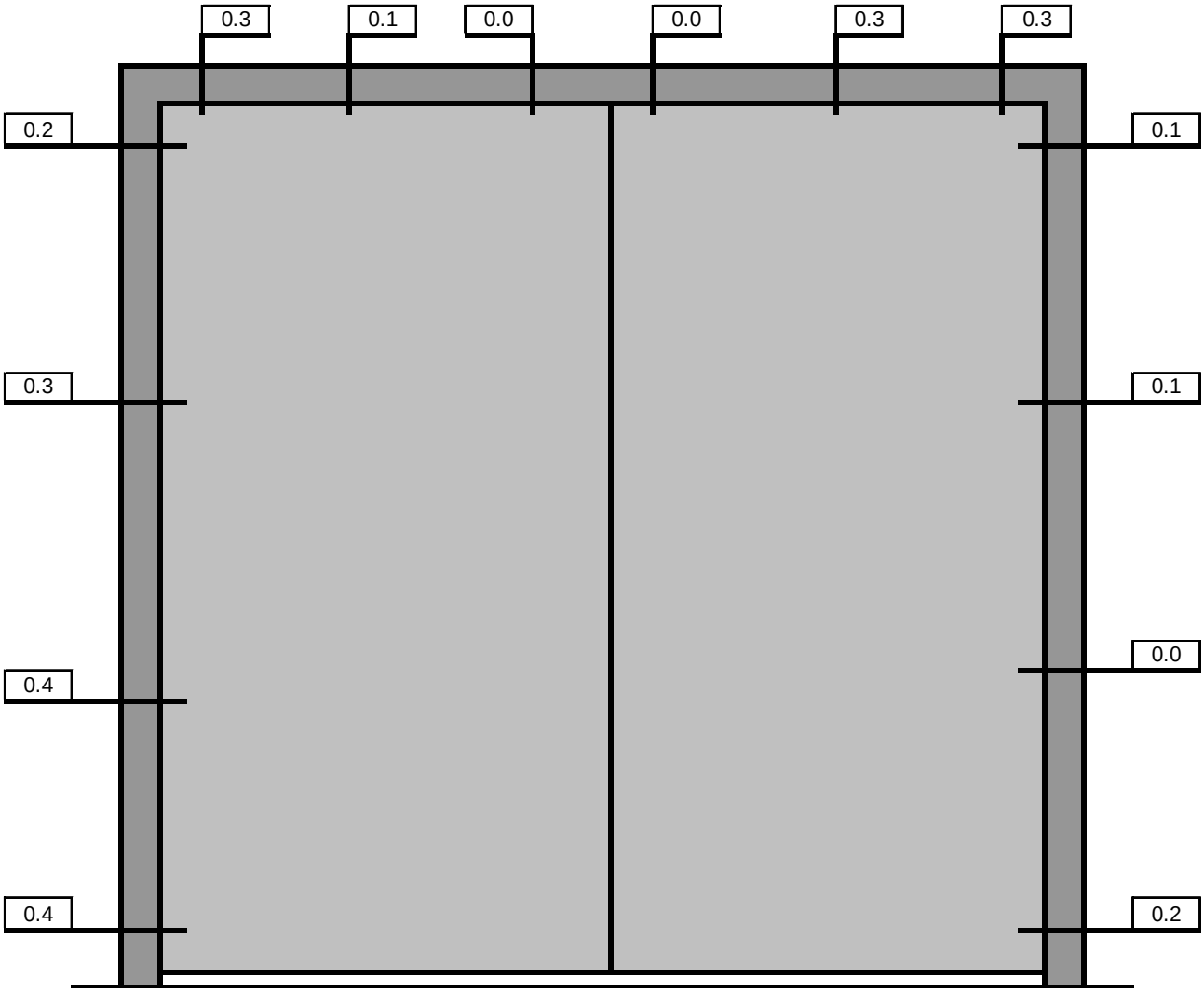


Maximum gaps in practice
The maximum permitted gaps in practice are (EN 1634-1:2014 sect 13.3.3.2.5):

Primary gap region	Gap width (mm)
Head	4.5
Jambs	5.5
Threshold	9
Meeting stiles	5

Leaf face to stop gap
The gap between the face of the leaves and the stop of the frame was also measured on the unexposed face prior to the start of the test.

The following figures show the position at which the measurements were made and the recorded gap (mm) at those positions.



2.3 Retention force measurement

The retention force was measured in accordance with the test standard. The measured force to open the left hand leaf with the force gauge operating against the direction of closing was 37.9 N. The measured force to open the right hand leaf with the force gauge operating against the direction of closing was 44.1 N. The handle position for both leaves was taken as 945mm from the centreline of the hinge

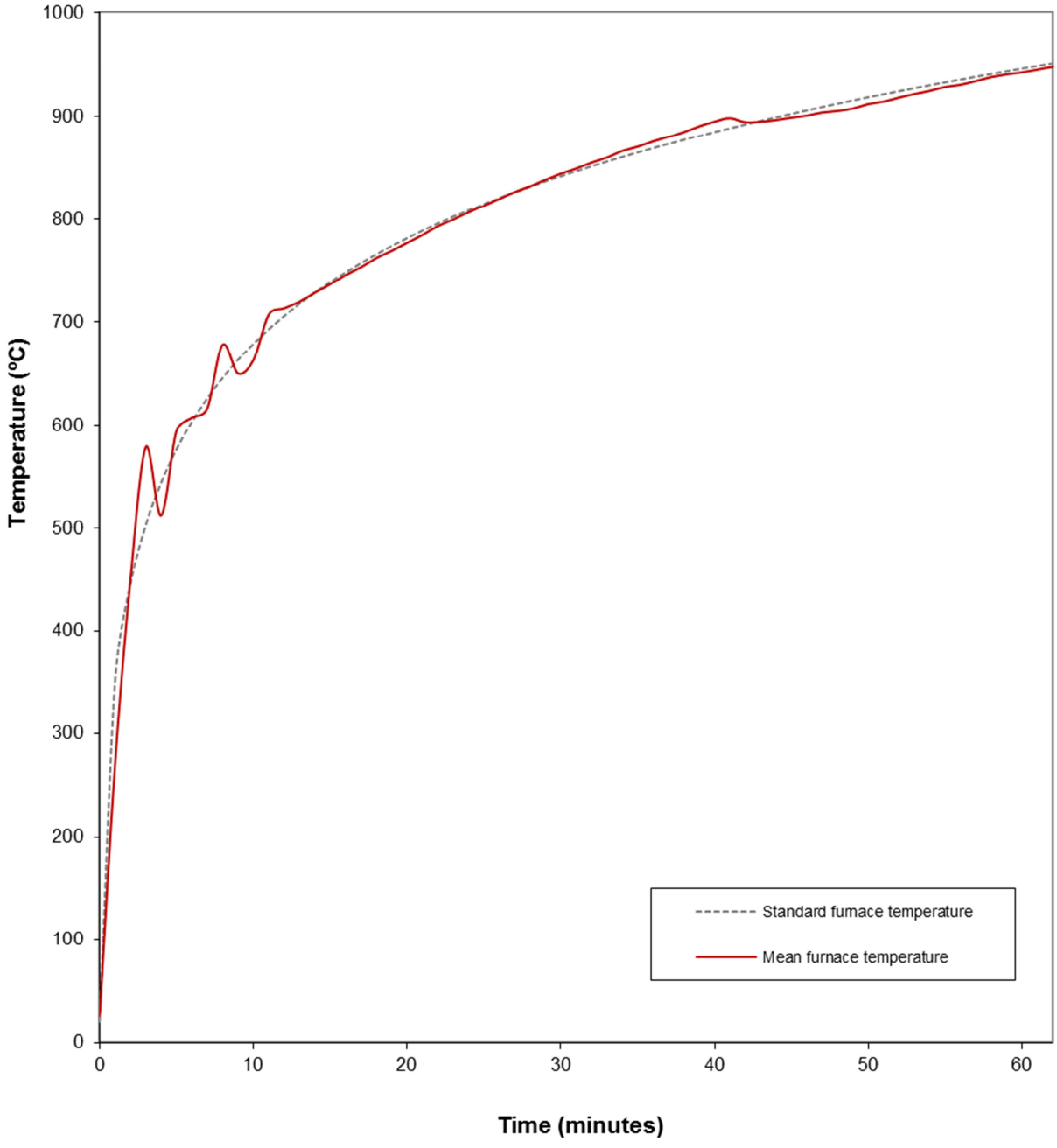
2.4 Final setting

Prior to the start of the fire test, the doorsets were subjected to a final closing involving opening the leaves to a distance of approximately 300 mm and allowing them to close by the closing devices.

3 TEST CONDITIONS, INSTRUMENTATION AND MEASURING

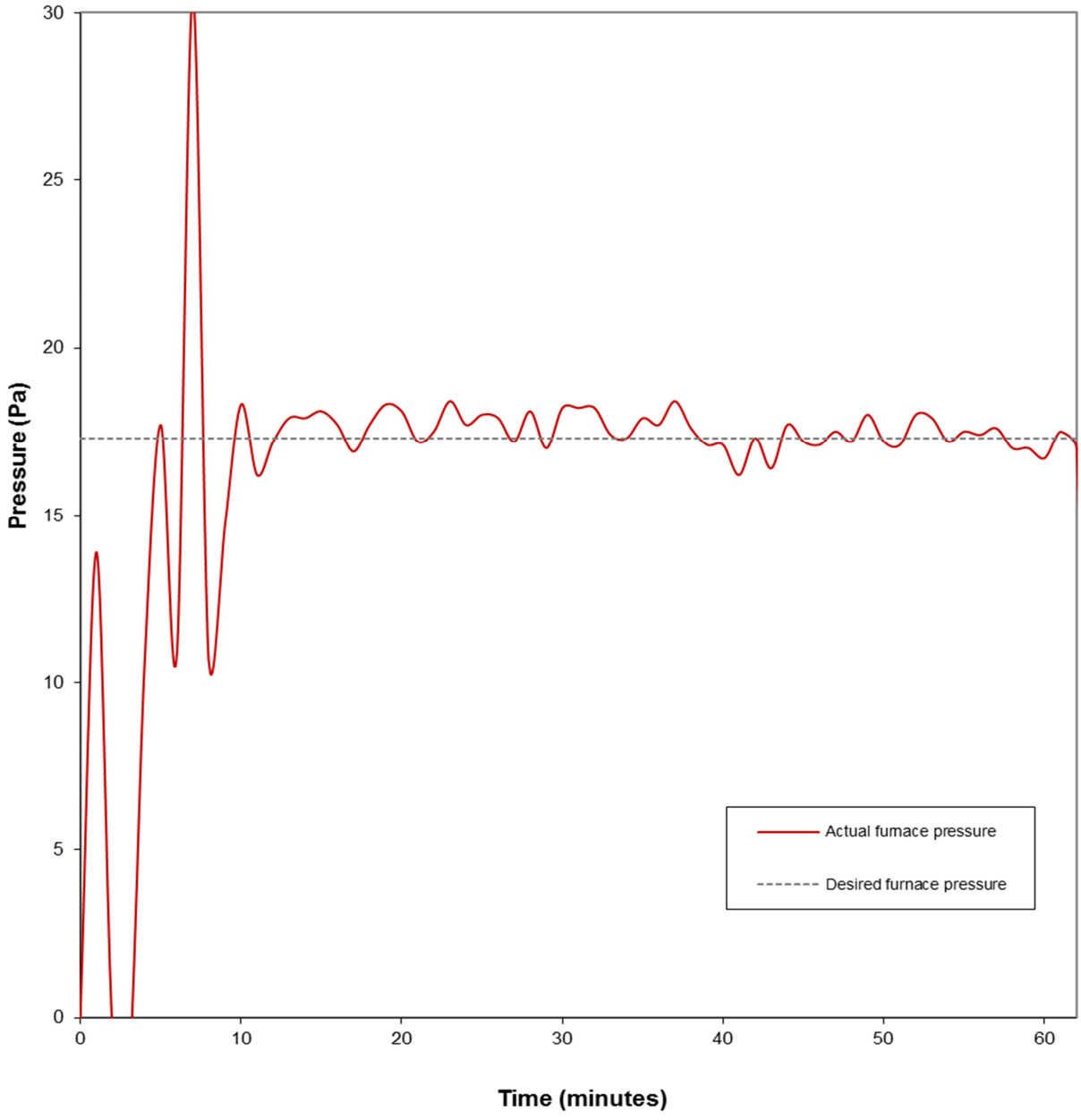
3.1 Furnace temperature

Furnace temperature was controlled so as to follow the standard temperature/time curve defined in the test standard and within the tolerances permitted. The furnace mean temperature was calculated from the output recorded using nine furnace thermocouples of the design specified in the test standard. The following graph shows the standard and mean furnace temperature/time data.



3.2 Furnace pressure

Furnace pressure was maintained for the duration of the test at a nominal + 17.3 Pa measured at the pressure sensing head. When a linear pressure gradient of 8.5 Pa/m is applied this equates to + 0 Pa at 0.5 m above the notional floor level. The furnace pressure was controlled within the tolerances permitted in the test standard except for 3 occasions which were regarded as instantaneous events. The following graph shows the actual and desired furnace pressure/time data.



3.3 Ambient temperature

Ambient temperature at the start of the test was 23°C.
Ambient temperature ranged between 23°C and 25°C during the test.

3.4 Unexposed face specimen thermocouples

Surface temperature measuring thermocouples of the design specified in the test standard were affixed to the unexposed face of the specimens to monitor the temperature rise as follows:

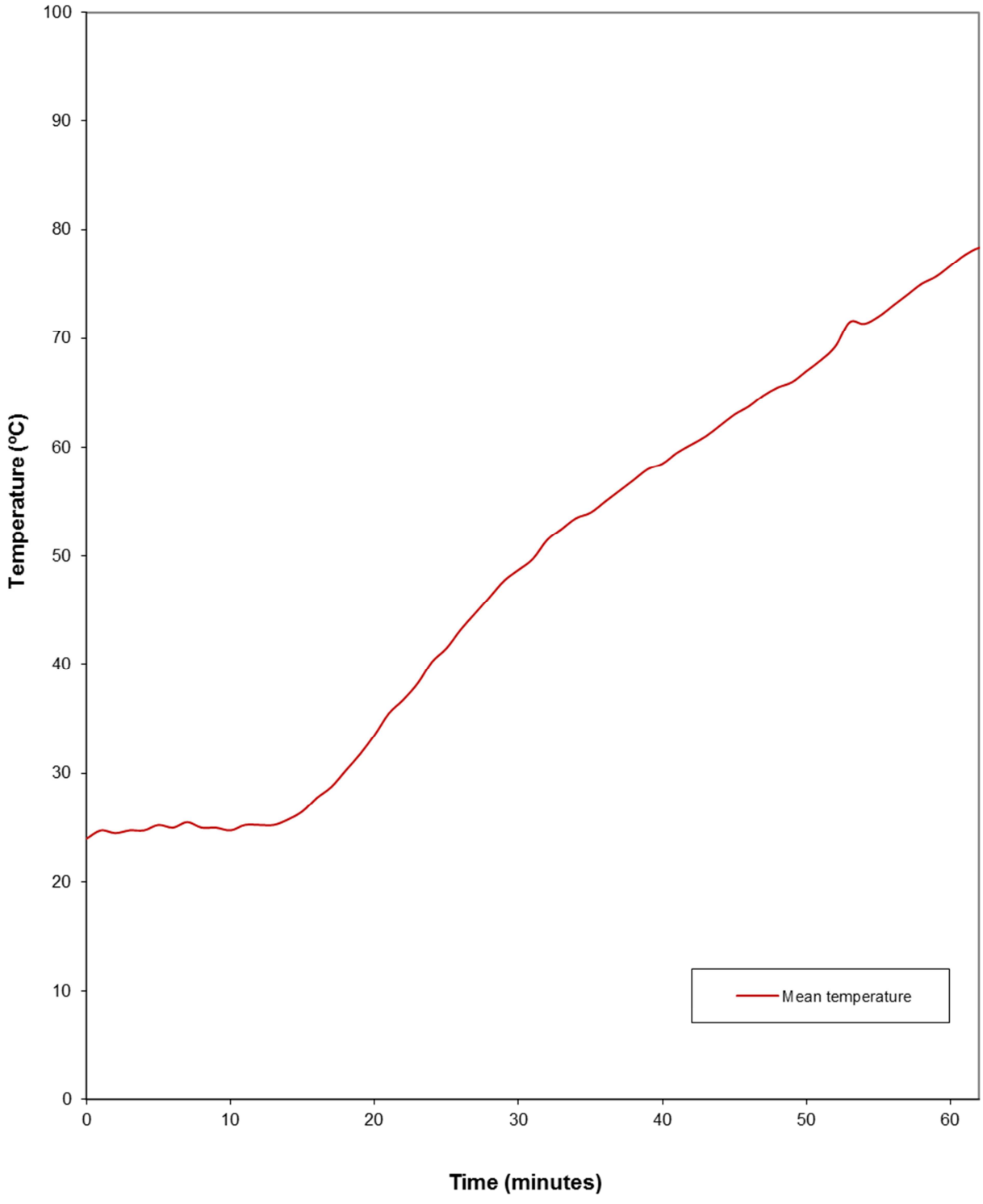
Doorset:		
Leaves	Channels 16 to 20	(mean and maximum)
Leaves	Channels 26 to 32	(maximum only)
Frame	Channels 21 to 25	(maximum only)

The positions of these thermocouples are shown in Appendix 3.

A roving thermocouple was available for measurement of any specific hotspots. Any instances of the use of the roving thermocouple are noted in the observations in Section 4.

The recorded data of all individual thermocouples is shown in the tables in Appendix 4.

The following time/temperature graph shows the mean discrete areas' temperatures.



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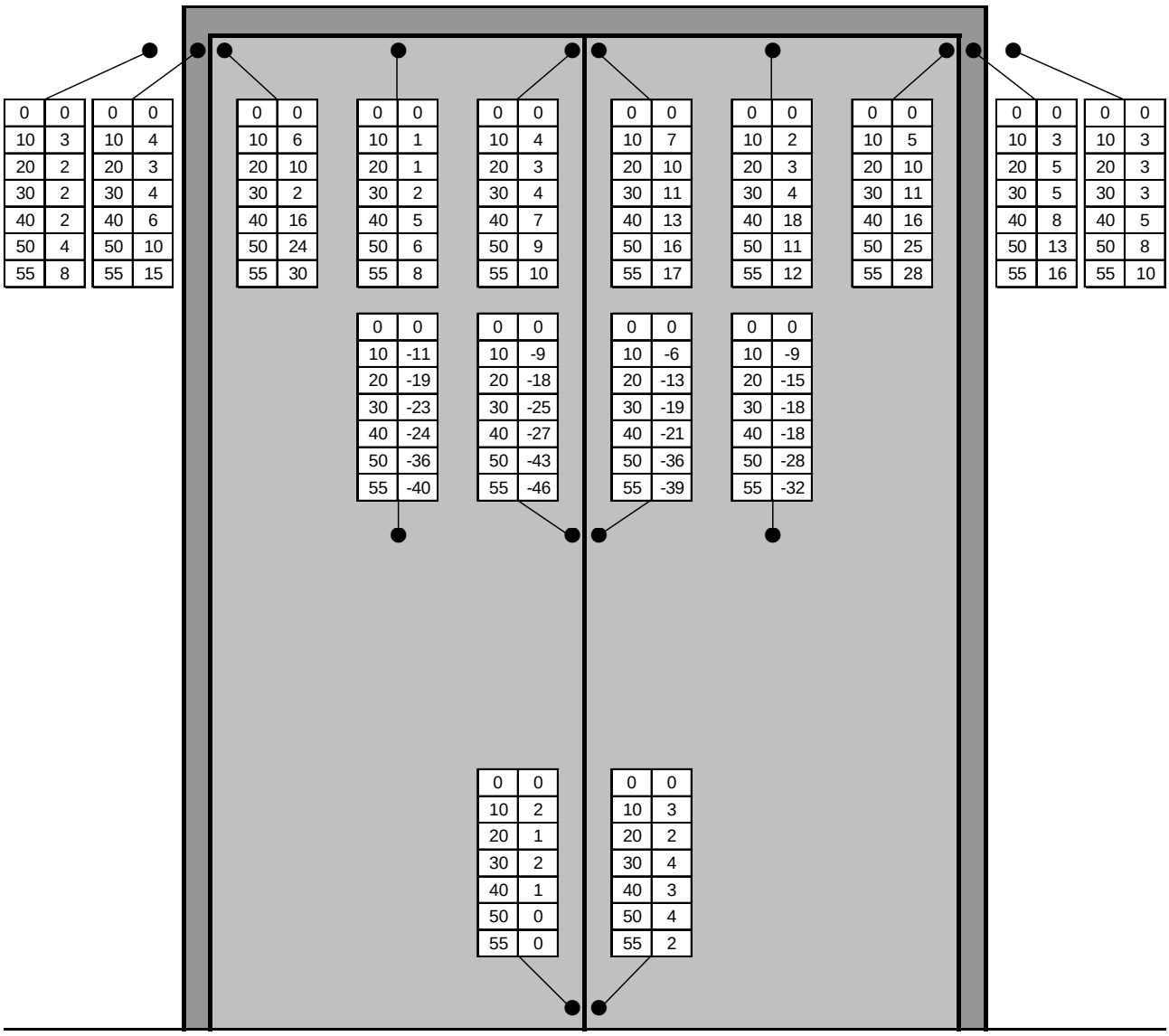
3.5 Deflection

Taut stainless steel wires were anchored horizontally across the unexposed face of the specimens such that any deflection experienced by the test construction could be measured. One wire was positioned 10 mm vertically below the head of the leaves, the second at mid-height and the third 10 mm vertically above the floor. The following figures show these positions with the elapsed time (minutes) in the left hand column and the recorded deflection (mm) in the right hand column. Positive values indicate deflection towards the heating conditions of the test**.**



4 TEST OBSERVATIONS

Photographs taken during the test are shown in Appendix 2.

TEST OBSERVATIONS (E = Exposed face: U = Unexposed face)		
Time	Face	Observation
(min:sec)		
00:00		Start of the test.
02:50	U	Exposed intumescent seal expanding at head of meeting stiles.
05:40	U	Meeting stiles sealed from top to latch.
08:30	U	Exposed intumescent seal expanded over full height of meeting stiles.
12:00	U	Meeting stiles gap tightened at head and increased at the bottom.
13:00	E	All timber fissured.
18:00	E	Hinge intumescent activating.
27:15	U	Unexposed meeting stile intumescent seal is expanding at the latch position.
31:00	E	Closers detached.
34:00	U	Meeting stiles gap closed at head and open nominally 6mm at bottom. The unexposed intumescent seal at the meeting stiles is expanding over most of the height.
38:00	E	Leaf edge intumescent is expanding.
40:00	U	Left hand leaf rests on threshold.
41:00	U	Meeting stiles intumescent is extruding from gap.
46:00	U	Right hand leaf rests on threshold at meeting stiles.
48:00	U	Expanding intumescent is visible at top hinge position.
49:50	U	Segments of extruded intumescent at meeting stiles is detaching.
50:50	U	Glow at top right hand corner.
52:10	U	Glow at top left hand corner.
55:35	U	Glow at bottom right hand hinge position between core and lipping.
56:31	U	A cotton pad is applied at the bottom right hand hinge position, no failure
57:26	U	Flaming commences at meeting stiles at gap between core and lipping.
57:36	U	**INTEGRITY FAILURE** due to sustained flaming. **INSULATION FAILURE** due to integrity failure.
59:00	U	Flashes at bottom hinge position due to erosion adjacent to hinge. Glow at top right hand hinge position.
60:20	U	Flaming commences at head of leaves.
60:30	U	**Further integrity failure** due to sustained flaming.
62:19		The test is terminated.

5 LIMITATIONS

1. 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 EN 1363-1, and where appropriate EN 1363-2. Any significant deviation with respect to size, constructional details, loads, stresses, edge or end conditions other than those allowed under the field of direct application in the relevant test method is not covered by this report.

2. 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.

3. The results relate only to the behaviour of the specimen of the element of construction under the particular conditions of test. They are not intended to be the sole criteria for assessing the potential fire performance of the element in use, nor do they reflect the actual behaviour in fires.

4. The specimen was asymmetrical and was tested such that the door leaves opened towards the heating conditions of the test. The test results may not be appropriate to situations where the heating conditions are from the other side.

Report prepared by:

E Southern

Report checked by:

E Wilson

Report issued: **30th September 2016**

APPENDIX 1 SPECIMEN CONSTRUCTION

The item numbers listed in Appendix 1 Table 1 and shown in the figures in Appendix 1 refer to the components of the specimen construction. Any photo numbers refer to those in Appendix 2.

Please note that unless otherwise indicated the following applies:

a) All dimensions and materials of construction were verified by the laboratory.
b) Figures are not to scale.
c) All dimensions are given in mm.

Appendix 1 Table 1

Item	Component	Information
1	**Door frame**	
	Supplier:	Exitex Limited.
	Description:	A 3 sided sapele** frame with 12 wide integral stops butt jointed at the top corners affixed with 2 No. No.10 x 3" countersunk woodscrews set at 50 centres and PVA adhesive.
	Fixing to supporting construction:	4 No. No.10 x 4" countersunk woodscrews set at 120 down, 150 up and 2 no. equispaced at the jambs. At the head 1No. No.10 x 4" countersunk woodscrew set central to the head. All at 38 from the exposed face
	Overall size (h x w x d x t):	2140 x 2073 x 102 x 44
	Cross section size (h x d):	44 x 102
	Density (kg/m^3):	640**
2	**Left Hand Leaf**	
	Supplier:	Falcon Panel Products Ltd**.
	Description:	Timber based particleboard core with lipping on the vertical edges.
	Overall size (h x w x t):	2101 x 1000 x 54
	Weight (kg):	70.6
	Sub-components:	
	Core:	
	Type:	Strebord**
	Overall size (h x w x t):	2101 x 980 x 54
	Density (kg/m^3):	645**
	Lipping:	
	Description:	Sapele** lipping adhered to vertical edges of the leaf using Acrobond 3050** PU adhesive.
	Overall size (w x t):	54 x 10
	Density (kg/m^3):	640**

Item	Component	Information
3	**Right Hand Leaf**	
	Supplier:	Falcon Panel Products Ltd**.
	Description:	Timber based particleboard core with lipping on the vertical edges.
	Overall size (h x w x t):	2100 x 1000 x 54
	Weight (kg):	70.5
	Sub-components:	
	Core:	
	Type:	Strebord**
	Overall size (h x w x t):	2100 x 980 x 54
	Density (kg/m^3):	645
	Lipping:	
	Description:	Sapele** lipping adhered to vertical edges of the leaf using Acrobond 3050** adhesive.
	Overall size (w x t):	54 x 10
	Density (kg/m^3):	640**
4	**Hinges**	
	Manufacturer:	Arrone
	Reference:	AR8187-SSS butt hinge with bearings.
	Material:	Stainless steel.
	Number:	3
	Location:	Set at 152, 962 and 1772 from the top of the leaf to the top of the blade.
	Blade size (h x w x t):	102 x 30 x 3
	Knuckle size (Ø):	14
	Fixings to frame (Ø x l):	4 No Ø5 x 30 countersunk stainless steel wood screws per blade.
	Fixings to door (Ø x l):	4 No Ø5 x 30 countersunk stainless steel wood screws per blade.
5	**Closer**	
	Manufacturer:	Geze GmbH.
	Reference:	TS2000NV BC.
	Description:	A scissor arm closer with stainless steel arms and cover and aluminium body incorporating steel components fitted to the exposed face of both leaves positioned in accordance with the manufacturer's instructions using 2No. Ø4.7 x 23 long steel pan head screws to the frame and 4No. Ø4 x 70 long steel countersunk screws to the leaf.
	Body size (l x h x d):	226 x 58 x 50
6	**Latch**	
	Manufacturer:	Arrone.
	Part number:	AR8019-76-SC.
	Description:	A mainly steel cylinder mortice latch with stainless steel forend cover and strike fitted central to the leaf thickness such that the centreline of the spindle is 1000 above the base of the right hand leaf, affixed

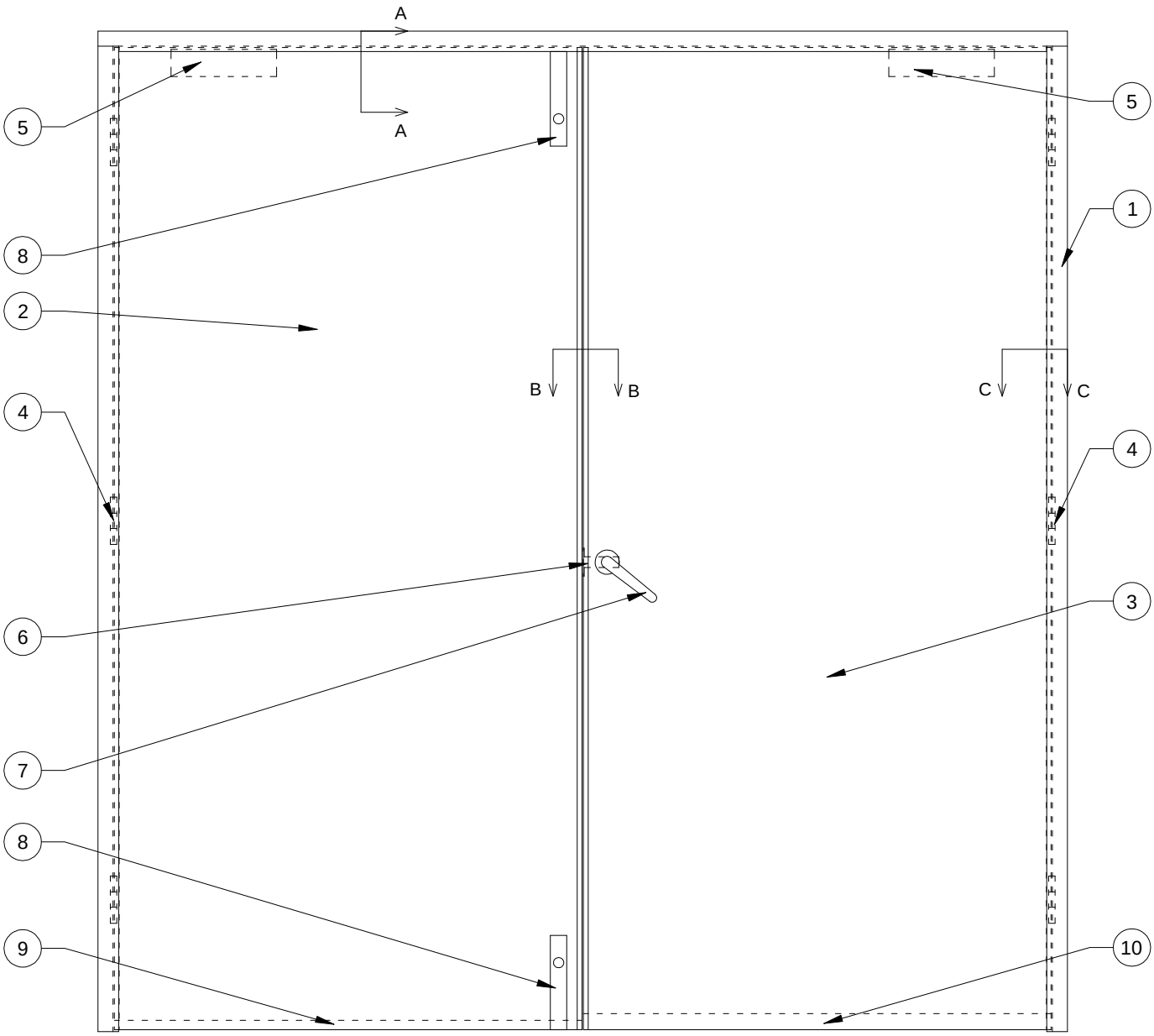
Item	Component	Information
6 cont		using 2 No. Ø4 x 25 long steel countersunk screws at the forend and strike.
	Overall size:	
	Body (h x d x w):	23 x 15 x 74
	Forend (h x d x t):	60 x 25 x 1.9
	Forend cover (h x d x t):	60 x 25 x 1.0
	Strike (h x d x t):	65 x 41 x 1.3 including a 31 x 16 tongue.
7	**Handleset**	
	Manufacturer:	Hoppe (UK) Ltd.
	Reference:	Paris 138S/42K
	Description:	Aluminium lever handle and rose cover with plastic rose. Affixed to leaf with 4No. countersunk steel screws.
	Overall Size:	
	Handle (Ø x l):	19 to 25 x 145
	Rose (Ø x d):	49.8 x 7
	Rose cover (Ø x d x t):	52 x 8.8 x 1.0
8	**Surface bolts**	
	Manufacturer:	Carlisle Brass Ltd.
	Reference:	AQ83-PB.
	Description:	2 No. brass slide bolts face fixed to the unexposed side of left hand leaf, using 4No. raised countersunk screws, set 55 from the meeting stile to the centre of the bolt.
	Overall Size (h x w x d):	202 x 35 x 12
9	**Automatic Door Bottom left hand leaf**	
	Supplier:	Exitex Limited.
	Reference:	Concealex A8100
	Description:	Aluminium body with brass and steel components and a polymeric seal affixed using 1No. Ø3.4 x 20 long countersunk woodscrew set 150 from the hanging edge and 190 from the meeting stile.
	Size (h x d x l):	20 x 12.3 x 1000
10	**Automatic Door Bottom right hand leaf**	
	Supplier:	Exitex Limited
	Reference:	Concealex A8100 Superior
	Description:	Aluminium body with brass and steel components and a polymeric seal and 2No. stainless steel end caps. End caps fitted to hanging stile and meeting stile screw fixed to the stiles.
	Size (h x d x l)	35 x 14 x 998
	End cap (h x w x t)	60 x 22 x 1.2
11	**Intumescent – frame**	
	Manufacturer:	Exitex Limited
	Reference:	FO154**

Item	Component	Information
11 cont	Description: Location: Overall Size:	Two strips of graphite-based intumescent in a PVC casing with self-adhesive tape on one side. The strip nearest the exposed face is fully interrupted at the hinges and the other is uninterrupted. Set 6.3 and 30.3 from the exposed face of the head and jambs. 15 x 4
12	**Intumescent – leaf meeting stiles** Manufacturer: Reference: Description: Location: Overall Size:	 Exitex Limited FO154** Two strips of graphite-based intumescent in a PVC casing with self-adhesive tape on one side fitted to the right hand leaf. The strip nearest the exposed face is fully interrupted at the strike and the other is 50% interrupted. Set 7 from each face of the left hand leaf. 15 x 4
13	**Intumescent – hinge** Supplier: Reference: Description: Overall size (t):	 Exitex Limited. Interdens** A phosphate based intumescent fitted beneath each blade. 1
14	**Intumescent – latch** Supplier: Reference: Description: Overall size (t):	 Exitex Limited. Interdens** A phosphate based intumescent applied to the faces of latch body. 1
15	**Intumescent – strike and forend** Supplier: Reference: Description: Thickness (t):	 Exitex Limited. Interdens** A phosphate based intumescent applied to the rear face of the forend, forend cover and strike. 1
16	**Intumescent – door closer** Supplier: Reference: Description: Thickness (t):	 Exitex Limited. Exi-Fire A graphite based intumescent applied to the rear face of the closer body. 1
17	**Fire stopping installation detail** Description:	 Craylon Limited Blue 60**

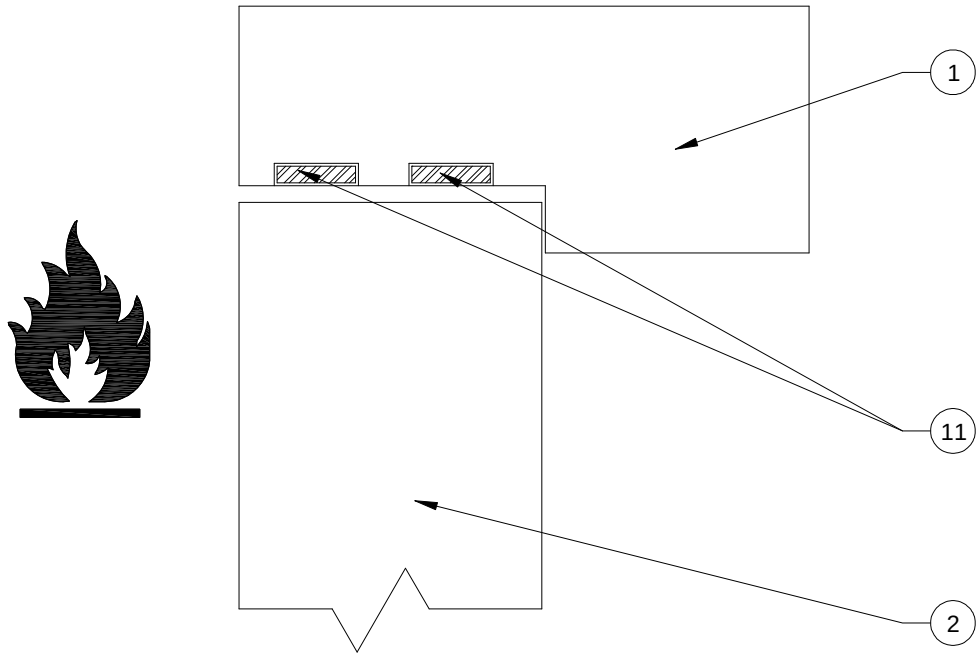
Item	Component	Information
17 cont	Gap width (t):	The gaps between the frame and the associated construction were filled with Craylon Blue 60 Expanding foam in conjunction withCraylon Blue 60 fire rated packers.. 24* at jambs, 20* at head

Key:
* Nominal value
** Sponsor declared value or detail, not verified by laboratory

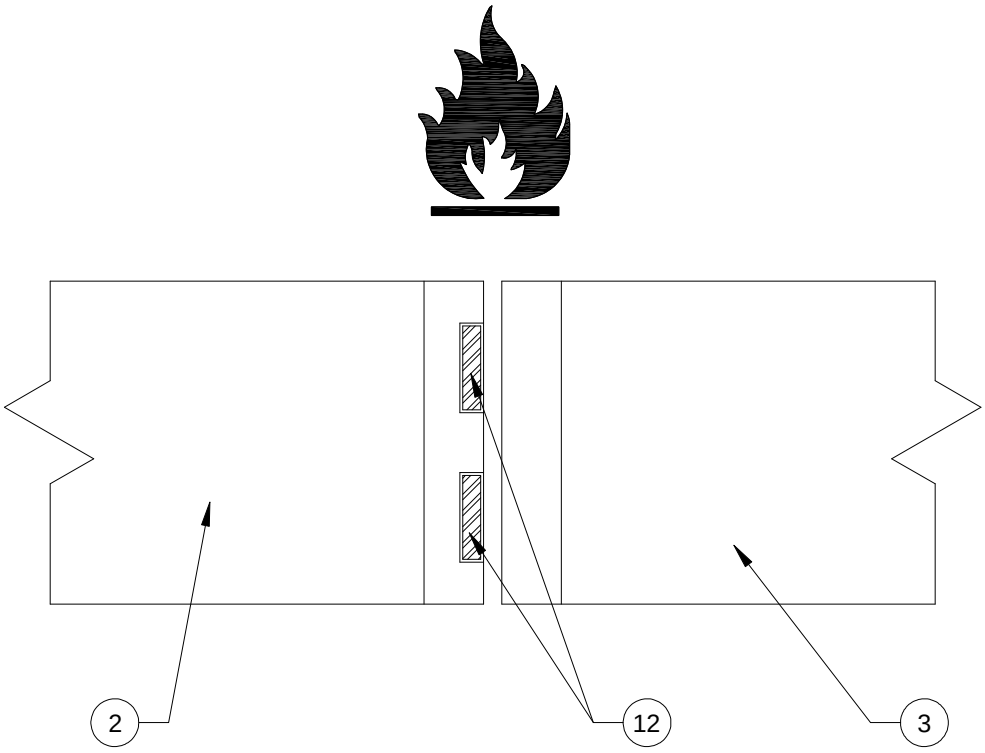
Appendix 1 Figure 1 – Doorset elevation – unexposed face including hidden detail



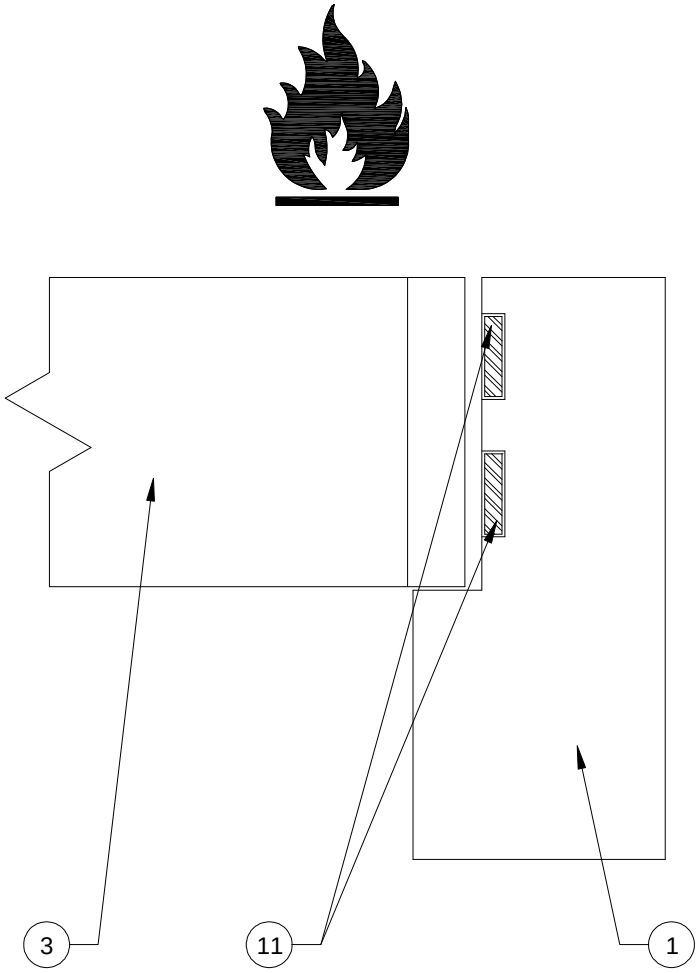
Appendix 1 Figure 2 – Section A – A



Appendix 1 Figure 3 – Section B – B



Appendix 1 Figure 4 – Section C – C



APPENDIX 2 PHOTOGRAPHS

Appendix 2.1 Pre-test photos

Photo 2.1.1 - Left hand leaf

Photo 2.1.2 - Left hand leaf

Photo 2.1.3 - Left hand leaf

Photo 2.1.4 - Left hand leaf

Photo 2.1.5 - Left hand leaf

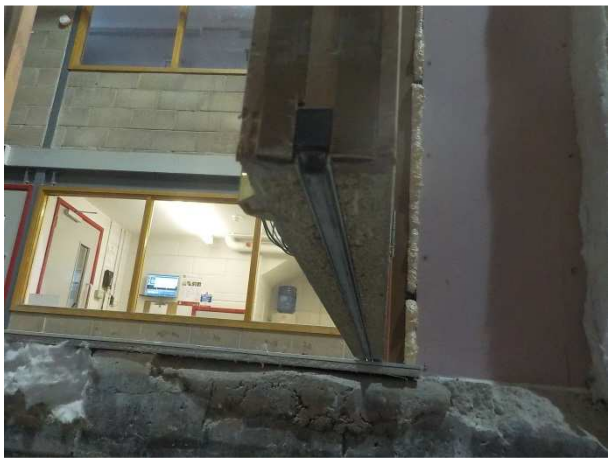


Photo 2.1.6

Photo 2.1.7 - right hand leaf

Photo 2.1.8 - right hand leaf

Photo 2.1.9 - right hand leaf

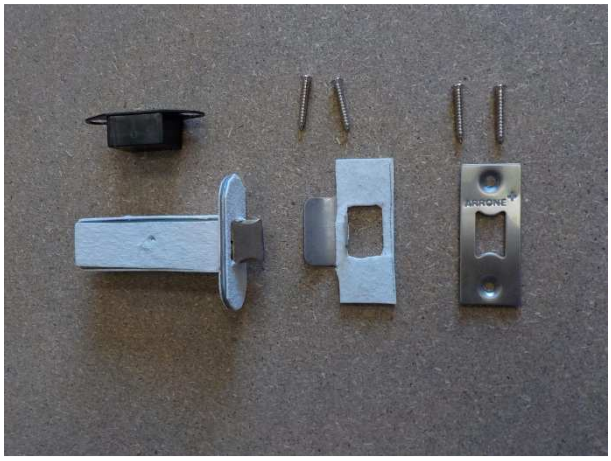


Photo 2.1.10 - right hand leaf

Photo 2.1.11 - right hand leaf

Photo 2.1.12 - right hand leaf

Photo 2.1.13

Appendix 2.2 During test photos

Photo 2.2.1

Photo 2.2.2

Photo 2.2.3

Photo 2.2.4 – After 58 minutes

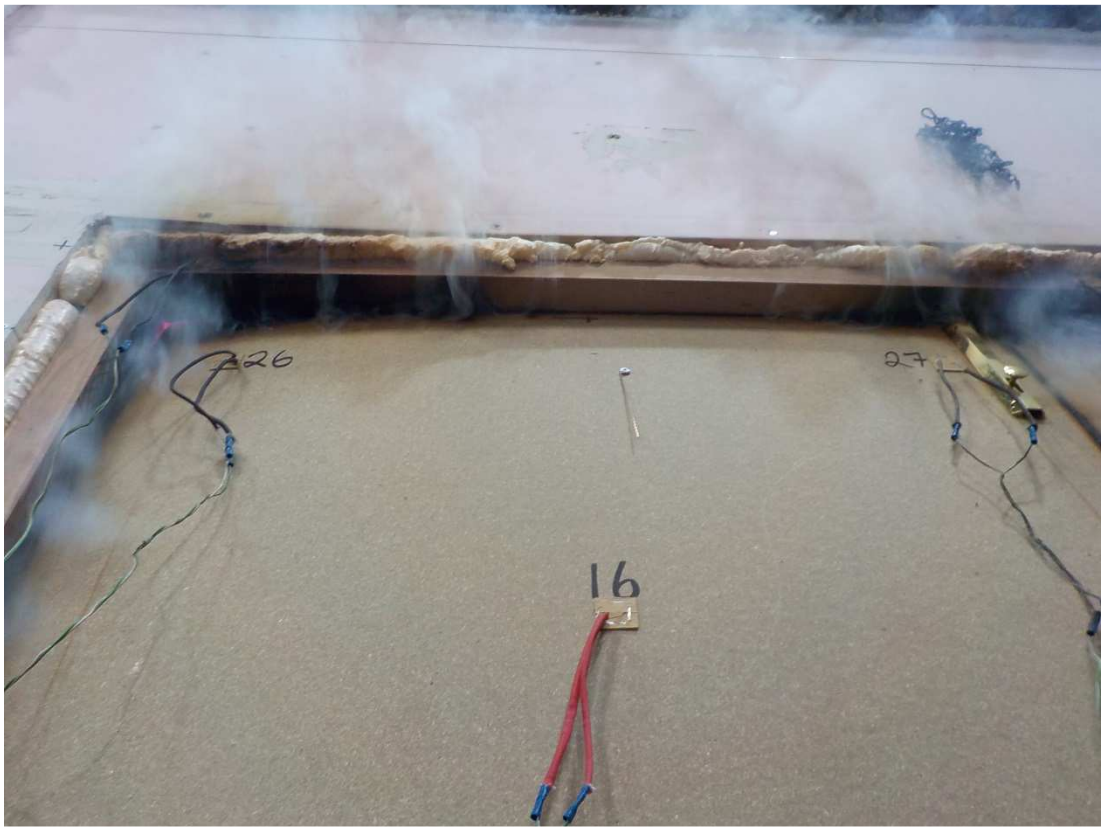


Photo 2.2.5 - After 58 minutes

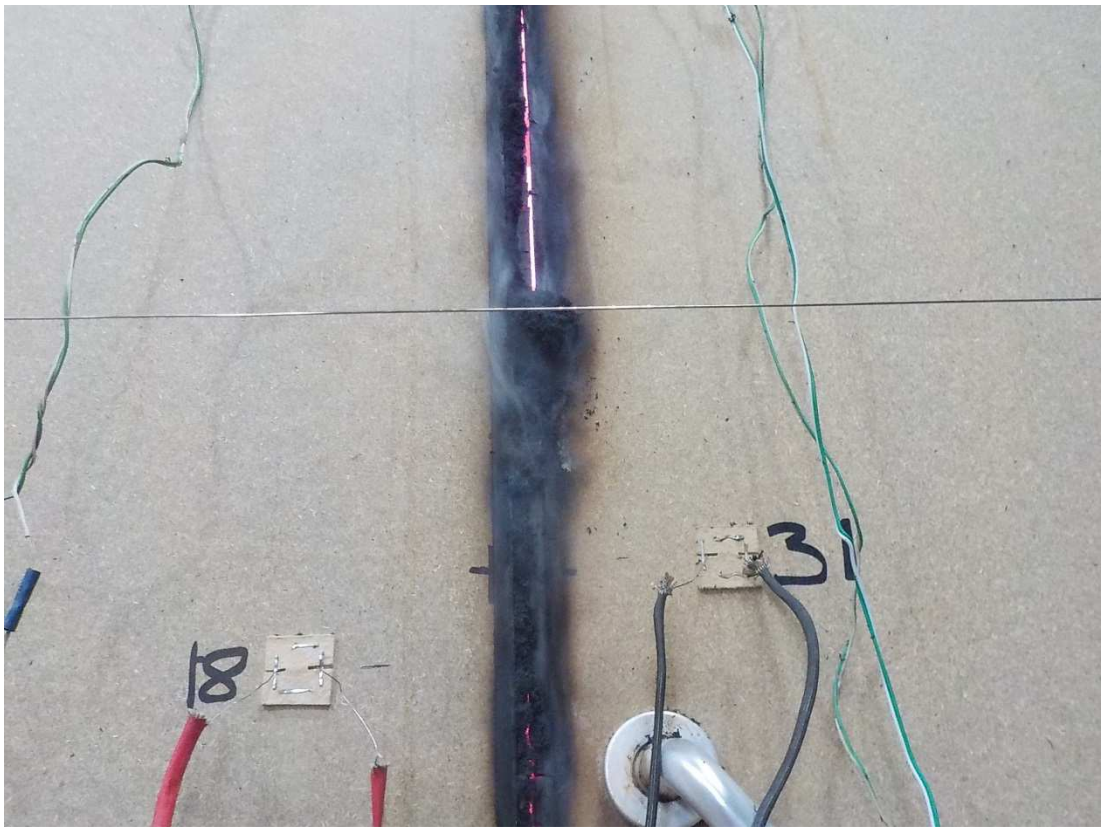


Photo 2.2.6 - After 58 minutes

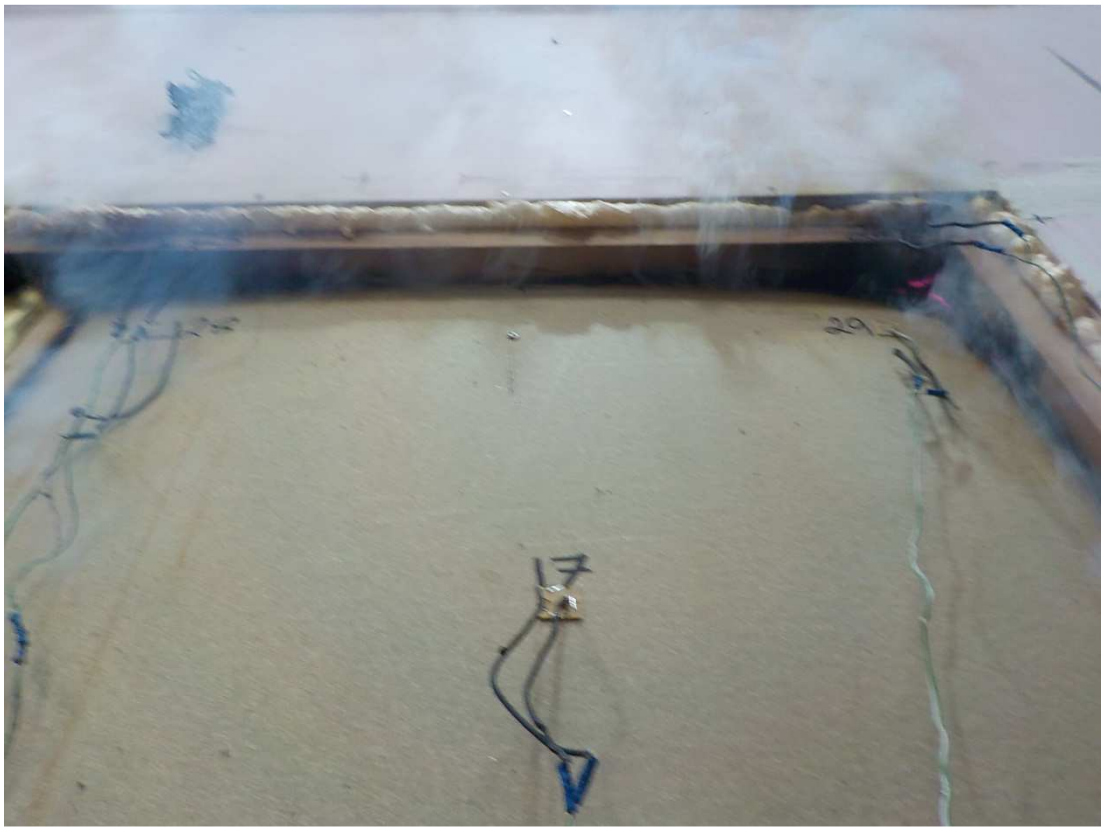


Photo 2.2.7 – after 58 minutes

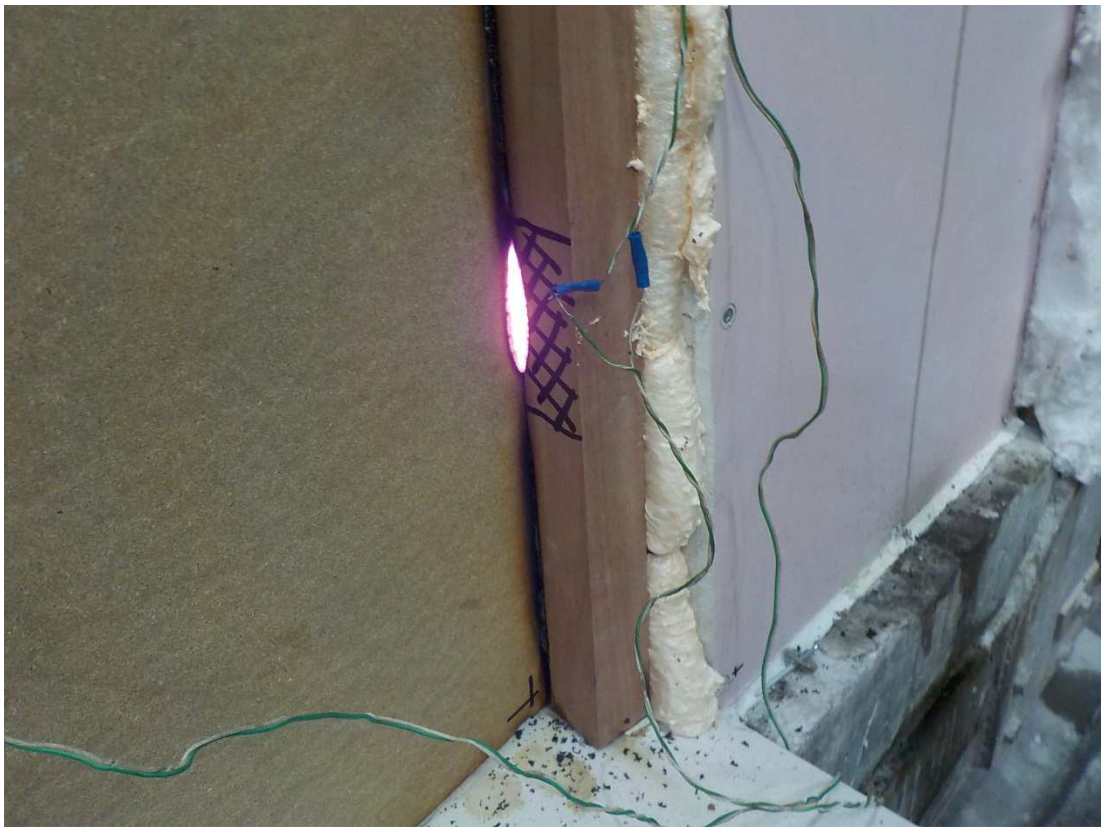
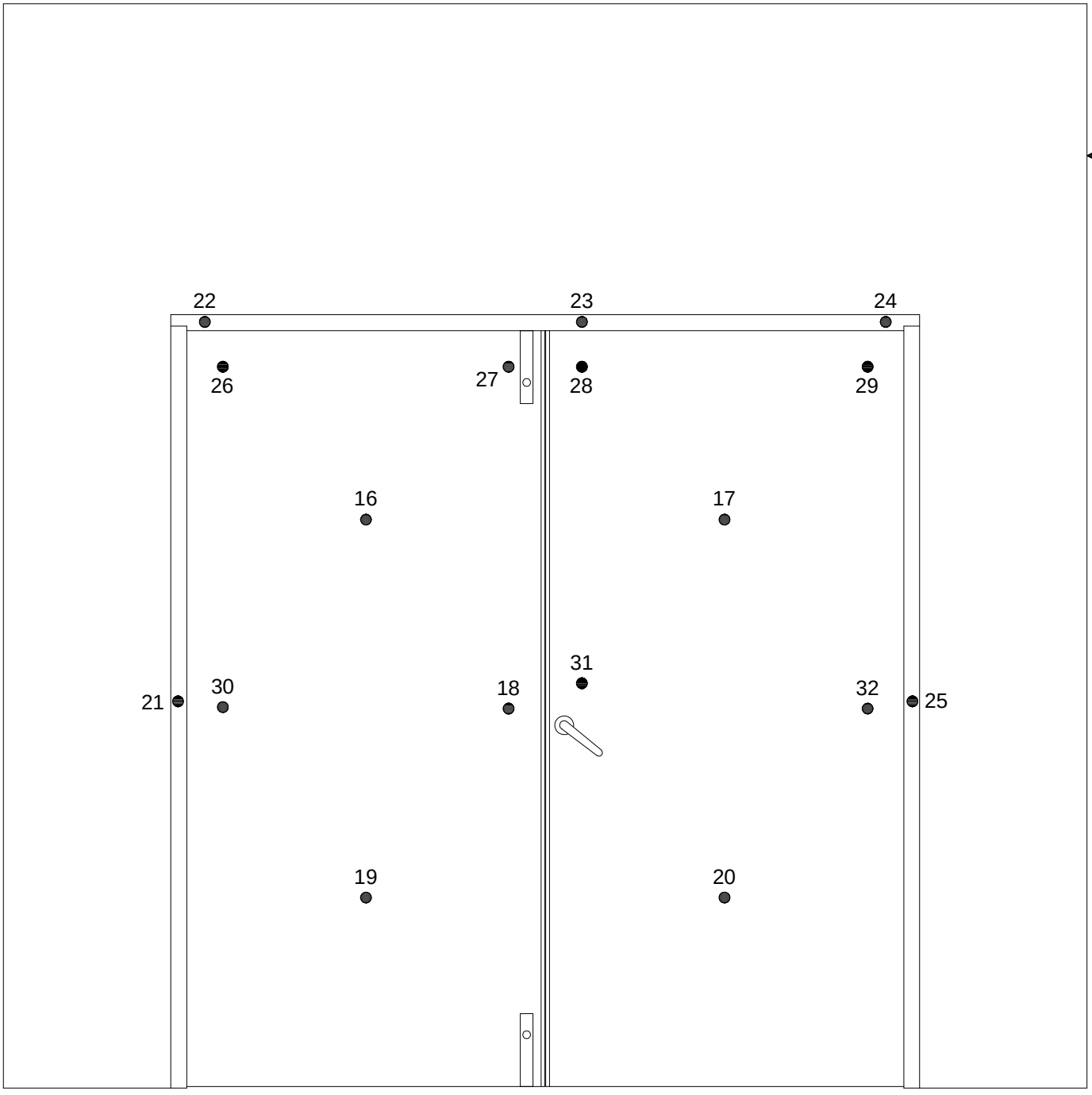


Photo 2.2.8

Appendix 2.3 Post test photos

Photo 2.3.1

APPENDIX 3 POSITIONING OF INSTRUMENTATION



● Unexposed face specimen thermocouple
◀ Furnace pressure measurement position

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APPENDIX 4 RECORDED THERMOCOUPLE DATA

Time	Chan 16	Chan 17	Chan 18	Chan 19	Chan 20	Chan 21	Chan 22	Chan 23
min	°C	°C	°C	°C	°C	°C	°C	°C
0	24	24	24	24	24	24	24	24
1	26	25	24	24	24	24	26	29
2	25	25	24	24	24	24	26	27
3	25	25	24	25	24	24	25	27
4	25	25	24	25	24	24	26	29
5	25	26	24	25	25	24	30	34
6	25	25	24	25	25	24	29	32
7	25	26	24	26	25	24	32	32
8	25	25	24	25	25	24	34	32
9	25	25	24	25	25	24	38	33
10	25	25	24	25	24	24	38	34
11	25	26	24	25	25	24	39	38
12	25	26	24	25	25	24	45	44
13	25	26	24	25	25	24	47	47
14	26	27	24	25	25	24	53	50
15	27	27	24	26	26	24	53	51
16	28	29	24	27	27	25	48	52
17	29	30	24	28	28	25	44	52
18	31	32	24	29	29	24	40	50
19	32	33	24	31	31	25	38	49
20	34	35	24	32	33	25	38	49
21	36	37	24	34	35	25	37	47
22	37	39	24	35	36	25	36	46
23	39	40	24	36	38	25	35	45
24	41	42	24	38	40	26	35	45
25	42	44	24	39	41	25	35	44
26	44	45	24	41	43	26	35	42
27	46	47	24	42	44	26	35	40
28	47	48	24	44	46	26	35	38
29	49	50	24	45	47	27	35	36
30	50	51	24	46	48	27	35	36
31	51	52	24	47	49	27	35	*
32	53	53	24	49	51	27	35	*
33	54	54	24	50	52	27	35	*
34	55	55	24	51	53	27	35	*
35	56	55	24	52	53	27	35	*
36	57	56	24	53	54	27	35	*
37	58	57	24	54	55	27	36	*
38	59	58	24	55	56	27	36	*
39	60	59	24	56	57	27	37	*
40	60	59	24	57	58	28	37	*
41	61	60	24	58	59	28	38	*
42	62	61	24	59	59	28	39	*
43	63	61	24	60	60	29	40	*
44	64	62	24	61	61	29	41	*
45	65	63	24	62	62	29	37	*

Time	Chan 16	Chan 17	Chan 18	Chan 19	Chan 20	Chan 21	Chan 22	Chan 23
min	°C	°C	°C	°C	°C	°C	°C	°C
46	66	64	24	63	62	30	58	*
47	67	65	25	64	63	30	*	*
48	68	65	24	65	64	30	*	*
49	68	66	24	66	64	30	*	*
50	69	67	25	67	65	31	*	*
51	70	68	24	68	66	31	*	*
52	71	69	25	69	68	31	*	*
53	71	70	25	70	75	32	*	*
54	72	71	25	71	87	32	*	*
55	73	71	25	72	70	32	*	*
56	74	72	25	73	*	32	*	*
57	75	73	25	74	*	33	*	*
58	76	74	25	75	*	33	*	*
59	77	74	24	76	*	33	*	*
60	78	75	25	77	*	34	*	*
61	79	76	25	78	*	34	*	*
62	79	77	25	79	*	35	*	*

CAMBRIDGE FIRERESEARCH

Time	Chan 24	Chan 25	Chan 26	Chan 27	Chan 28	Chan 29	Chan 30	Chan 31	Chan 32
min	°C	°C	°C	°C	°C	°C	°C	°C	°C
0	24	24	24	24	24	24	24	24	24
1	27	24	27	27	28	27	28	28	24
2	26	24	26	26	26	26	26	26	24
3	26	24	26	25	26	26	26	25	24
4	26	24	27	26	27	26	26	26	25
5	32	25	31	26	28	27	25	30	25
6	30	25	28	26	27	27	25	28	25
7	35	25	28	26	27	26	25	30	25
8	41	25	27	25	26	26	25	29	24
9	47	25	27	26	26	26	25	29	25
10	49	24	26	25	26	26	25	31	25
11	51	25	27	26	26	26	25	33	25
12	55	25	27	26	27	26	25	34	25
13	56	25	27	26	27	27	25	36	25
14	58	25	28	27	28	27	26	37	25
15	60	24	30	28	30	28	26	36	26
16	59	25	32	30	32	29	28	39	26
17	56	25	35	32	34	31	29	43	27
18	53	25	38	34	37	33	31	44	28
19	52	25	40	36	39	35	32	45	29
20	48	25	43	38	42	38	34	46	30
21	44	25	46	41	44	40	36	47	32
22	42	25	48	42	46	42	38	48	33
23	41	25	50	45	48	45	40	49	35
24	39	26	52	47	50	47	41	50	36
25	39	25	54	48	51	48	43	50	38
26	38	26	55	50	53	50	45	51	39
27	39	26	56	52	55	52	46	52	41
28	38	26	58	53	56	54	47	54	42
29	37	27	59	55	57	55	49	55	44
30	38	27	59	56	58	56	50	56	45
31	25	27	60	57	59	58	51	57	46
32	71	27	61	58	60	59	52	58	48
33	47	27	62	59	61	60	53	59	49
34	95	28	63	60	61	61	55	60	50
35	*	28	63	61	62	62	55	61	51
36	*	28	64	62	63	63	56	62	52
37	*	29	64	62	63	64	57	63	53
38	*	29	65	63	64	64	58	63	54
39	*	29	65	64	64	65	58	64	55
40	*	30	66	65	65	66	59	65	57
41	*	30	66	66	66	67	60	65	58
42	*	31	67	66	66	67	61	66	59
43	*	31	67	67	66	68	61	66	60
44	*	31	68	68	67	69	62	67	61
45	*	32	68	68	68	70	63	68	62

Time	Chan 24	Chan 25	Chan 26	Chan 27	Chan 28	Chan 29	Chan 30	Chan 31	Chan 32
min	°C	°C	°C	°C	°C	°C	°C	°C	°C
46	*	32	69	69	68	70	64	69	63
47	*	33	69	70	69	71	65	69	64
48	*	33	70	70	70	72	65	70	65
49	*	33	70	71	71	72	66	70	66
50	*	34	71	72	72	74	67	71	67
51	*	34	72	73	73	74	68	72	67
52	*	35	73	73	74	75	69	73	68
53	*	36	74	74	75	76	70	73	69
54	*	36	74	75	76	78	71	74	70
55	*	37	75	75	76	78	71	75	71
56	*	37	76	76	77	80	72	75	72
57	*	38	77	77	78	81	73	76	73
58	*	39	79	80	84	84	74	76	74
59	*	39	81	79	82	86	75	75	75
60	*	40	85	80	84	90	76	63	76
61	*	40	81	81	85	86	77	57	77
62	*	41	77	82	86	77	78	56	78

* Thermocouple malfunction