

Title:

The Fire Resistance
Performance of Two,
Single-Acting, Single-Leaf
Access Panels, When
Tested in Accordance with
BS EN 1634-
1:2014+A1:2018

Date Of Test:

19/05/2021

Issue 2

15/08/2023

WF Report No:

WF 503796



Prepared for:

Panel Technologies Ltd

49-61 Jodrell Street
Nuneaton
Warwickshire
CV11 5EG

This report is a revision to that issued as 503796 and dated 09/07/2021. The details of the test report 503796 Issue 2 are held on file by Warringtonfire. The original report and any previous revisions are replaced by this revised report 503796 Issue 2.



Test Specimens

Summary of Tested Specimens

Two latched, single leaf single-acting, steel-access panels, A is installed so that it opens towards the heating conditions of the test, B is hung so that it opens away from the heating conditions of the test.

The access panels were installed with a 200 mm upstand into a steel stud supporting construction comprised of 50 mm studs, 2 No. layers of 12.5 mm plasterboard, high density insulation and softwood timber inserts measuring 45 mm wide x 28 mm thick were fitted within the C stud and track sections around the perimeter of the doorsets, vertical inserts were fitted to the full height of the partition.

Both access panels had overall nominal dimensions of 2450 mm high by 950 mm wide, incorporating a leaf with overall dimensions of 2395 mm high x 895 mm wide x 44 mm thick. All 4 leaf edges were fitted with a Norseal FS1000 intumescent strip sealing to the frame rebate.

The leaves were hung on a spring pin hinge and within a 1.5 mm thick Zintec steel frame. Both access panels were fitted with a locked L12A C.R.A International lockset.

Detailed drawings of the test specimen(s) and a comprehensive description of the test construction based on a detailed survey of the specimen(s) and information supplied by the sponsor of the test are included in the Test Specimen and Schedule of Components sections of this report.

Performance Criteria and Test Results

Panel A

Integrity	132 (one hundred and thirty two) minutes*
Insulation	Performance not assessed
Radiation – time to 15kW/m ²	**

* No failure of this test criteria was observed at termination of the test at 132 minutes

**Due to a malfunction, no radiometer data is available for A

Panel B

Integrity	132 (one hundred and thirty two) minutes*
Insulation	Performance not assessed
Radiation – time to 15kW/m ²	132 (one hundred and thirty two) minutes*

* No failure of this test criteria was observed at termination of the test at 132 minutes

Date of Test 19/05/2021

This report may only be reproduced in full. Extracts or abridgements of reports shall not be published without permission of Warringtonfire. All work and services carried out by Warringtonfire Testing and Certification Limited are subject to, and conducted in accordance with, the Standard Terms and Conditions of Warringtonfire Testing and Certification Limited, which are available at <https://www.element.com/terms/terms-and-conditions> or upon request.

Signatories



Report Prepared by:
Christopher Berger*
Technical Officer



Report Authorised by:
Courtney Clifford
Lead Technical Officer*

* For and on behalf of **Warringtonfire**.

Report Issued:

Date: 15/08/2023

This copy has been produced from a .pdf format electronic file that has been provided by **Warringtonfire** to the sponsor of the report and must only be reproduced in full. Extracts or abridgements of reports must not be published without permission of **Warringtonfire**. The pdf copy supplied is the sole authentic version of this document. All pdf versions of this report bear authentic signatures of the responsible **Warringtonfire** staff.

Revision History

Issue No : 2	Re-issue Date: 15/08/2023
Revised By: Christopher Berger	Approved By:
Reason for Revision: Amended drawings to show timber inserts within the supporting construction on pages 11 and 13. Supporting construction details added to the test conditions section on page 2.	

Issue No :	Re-issue Date:
Revised By:	Approved By:
Reason for Revision:	

CONTENTS	PAGE NO.
TEST SPECIMENS.....	2
PERFORMANCE CRITERIA AND TEST RESULTS	3
SIGNATORIES	4
REVISION HISTORY	5
TEST CONDITIONS	7
TEST SPECIMEN DRAWINGS.....	8
SCHEDULE OF COMPONENTS	14
PHOTOGRAPHS OF COMPONENTS.....	17
TEST OBSERVATIONS	19
TEST PHOTOGRAPHS.....	20
TEMPERATURE DATA.....	25
ON-GOING IMPLICATIONS.....	30
FIELD OF DIRECT APPLICATION.....	30

Test Conditions

Standard	BS EN 1634-1:2014+A1:2018 Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware - Part 1: Fire resistance test for door and shutter assemblies and openable windows.
Sampling	Warringtonfire was not involved in factory sampling of the products and materials used for the test specimen described in this report, and as such the results of this test apply to the sample as received.
Supporting Construction	A 50 mm steel stud supporting construction was built containing 2No. apertures. 2No. 12.5 mm layers of plasterboard were applied to each face. The wall contained high density insulation. The 2No. apertures were built with a 200 mm upstand above the notional floor level and were lined with 2No. 15 mm layers of plasterboard and timber inserts within the C stud and track sections around the perimeter of the doorsets, vertical inserts were fitted to the full height of the partition. The timber inserts were softwood which measured 45 mm wide and 28 mm thick.
Installation	The panels were received during the month of May 2021 and installed within the pre-prepared apertures such that Leaf A opened towards the heating conditions of the test and Leaf B opened away from the heating conditions of the test. Representatives of Panel Technologies brought both panels to site on 18/05/2021 and installed both.
Conditioning	The specimens were brought to site by the client, Warringtonfire did not store the panels on site.
Ambient Temperature	The ambient air temperature in the vicinity of the test construction was 15°C at the start of the test with a maximum variation of +5°C during the test.
Furnace	The furnace was controlled so that its mean temperature complied with the requirements of BS EN 1363-1: 2012 Clause 5.1 using nine plate thermometers, distributed over a plane 100±50mm from the surface of the test construction.
Thermocouples	At the client's request, no thermocouples were provided to monitor the unexposed surface of the specimen.
Radiation	Water-cooled foil heat-flux meters were used to record the heat radiation from the access panels. The heat flux meters were positioned at mid-height at a distance of 1 metre from the centre of the access panels.
Furnace Pressure	After the first 5 minutes of the test, the furnace pressure was maintained at 0 ± 5 Pa and after 10 minutes was maintained at 0 ± 3 Pa with respect to atmosphere, at a point 0.5m from the notional floor level.

Test Specimen Drawings

Figure 1 – General Elevation of the Test Construction, Radiometer Locations and Opening Direction

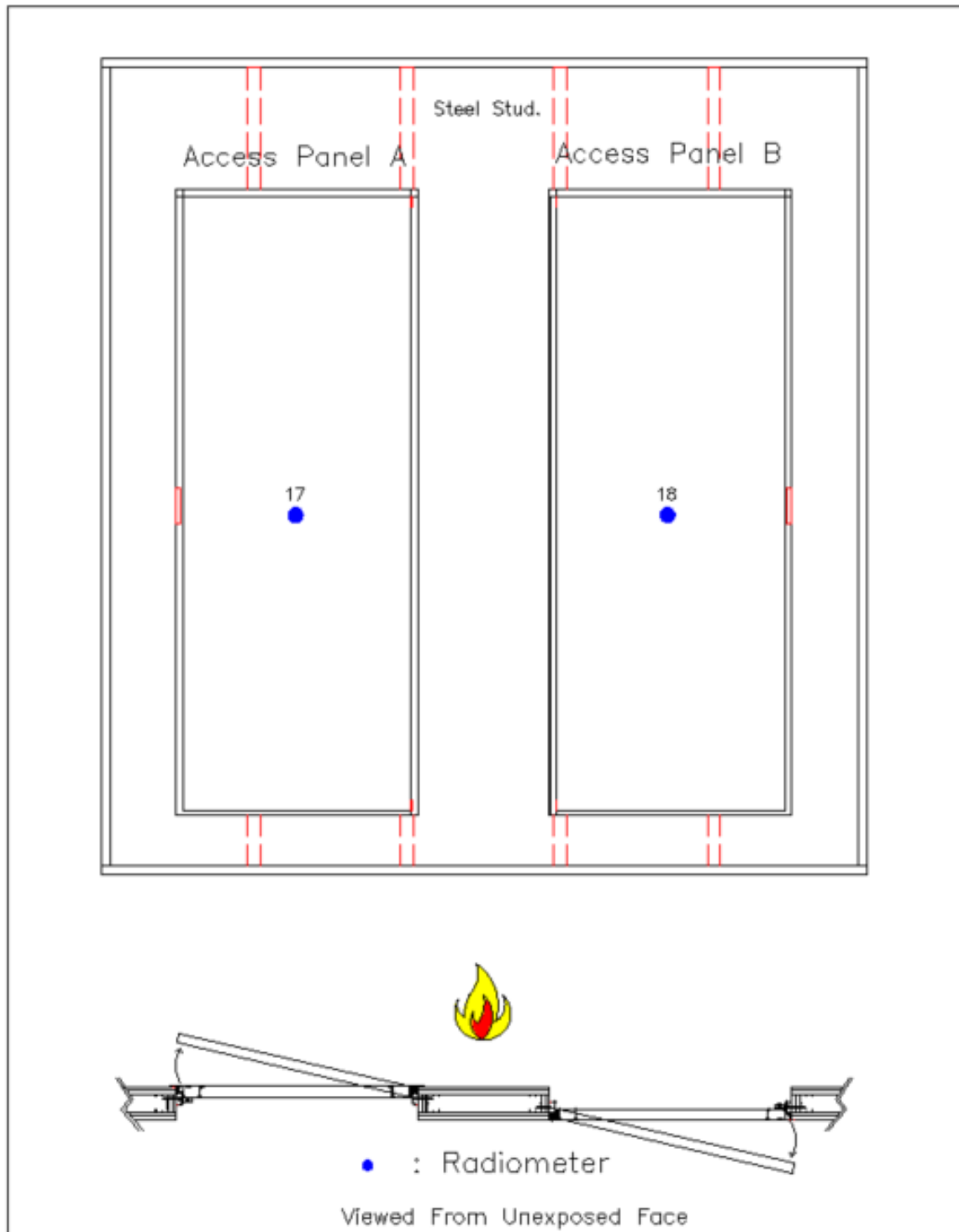
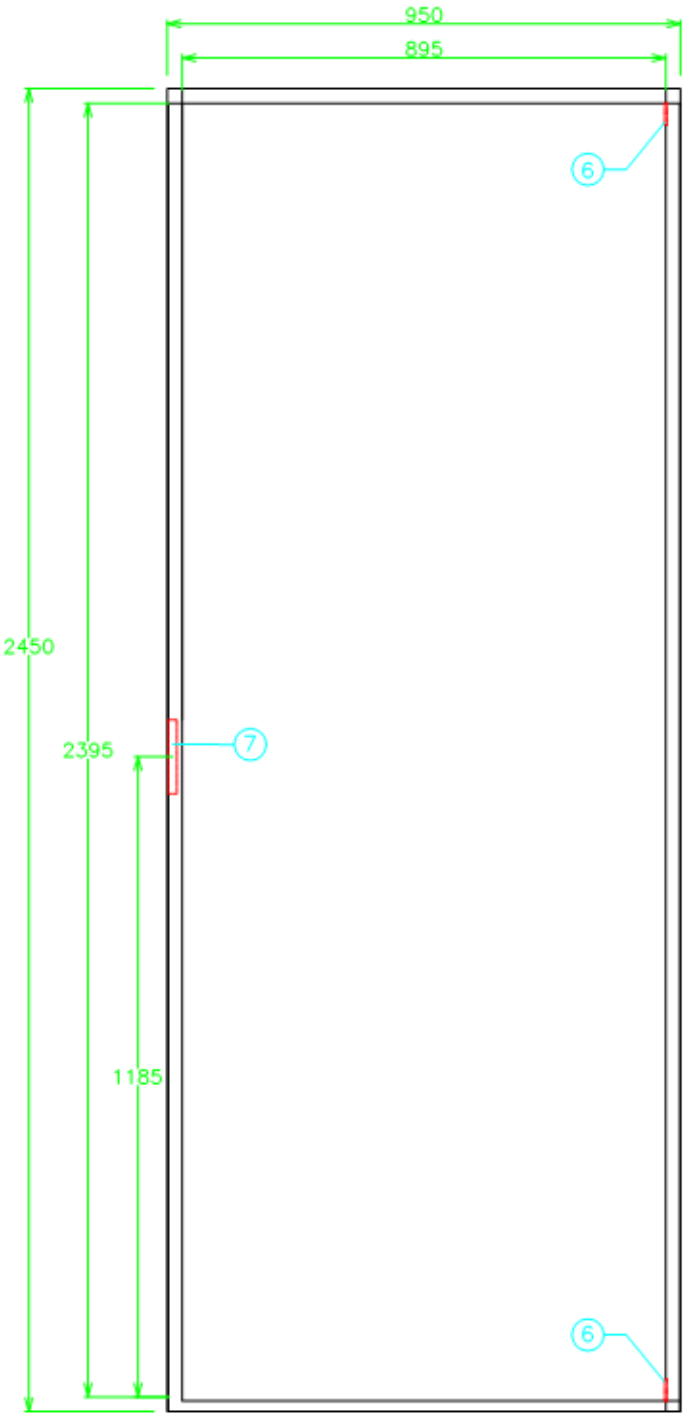
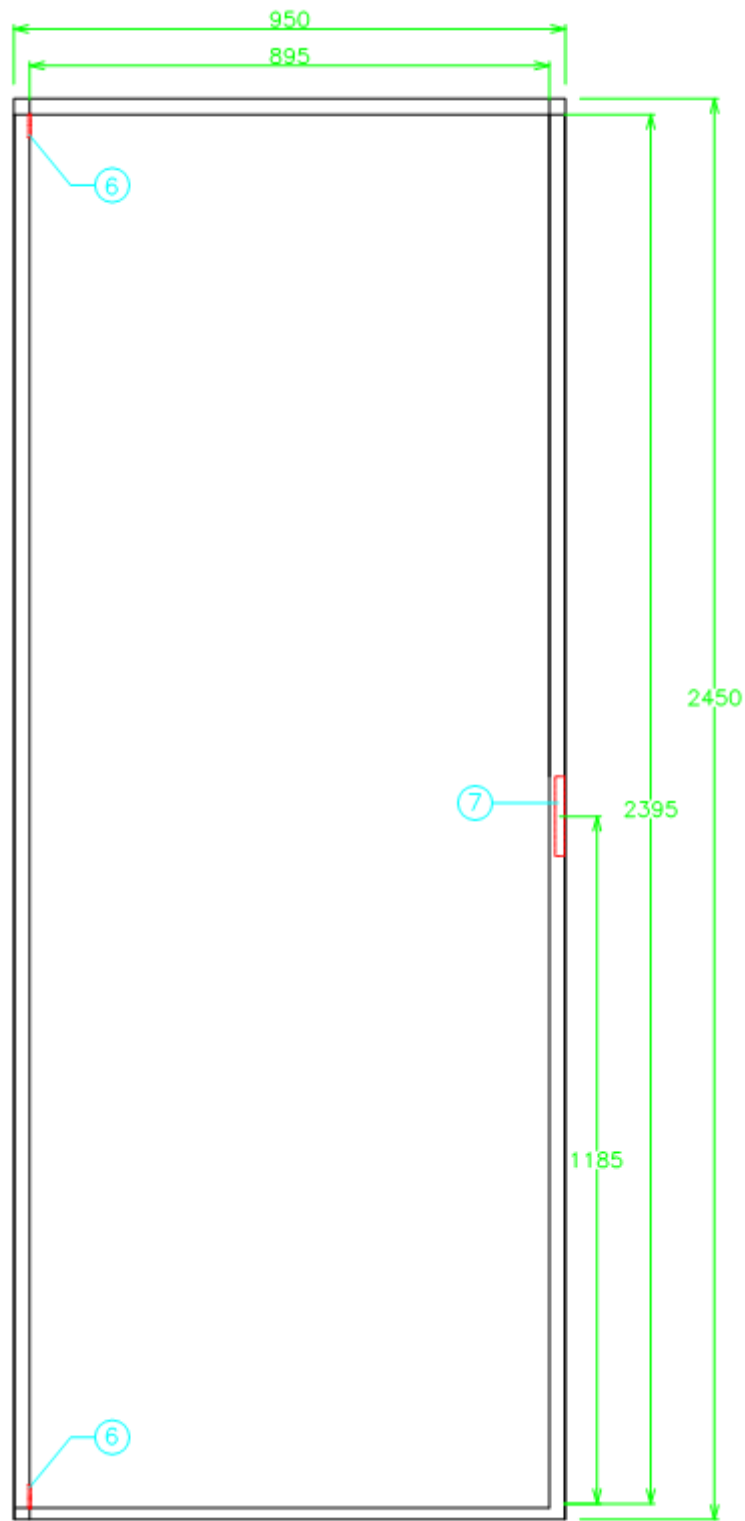


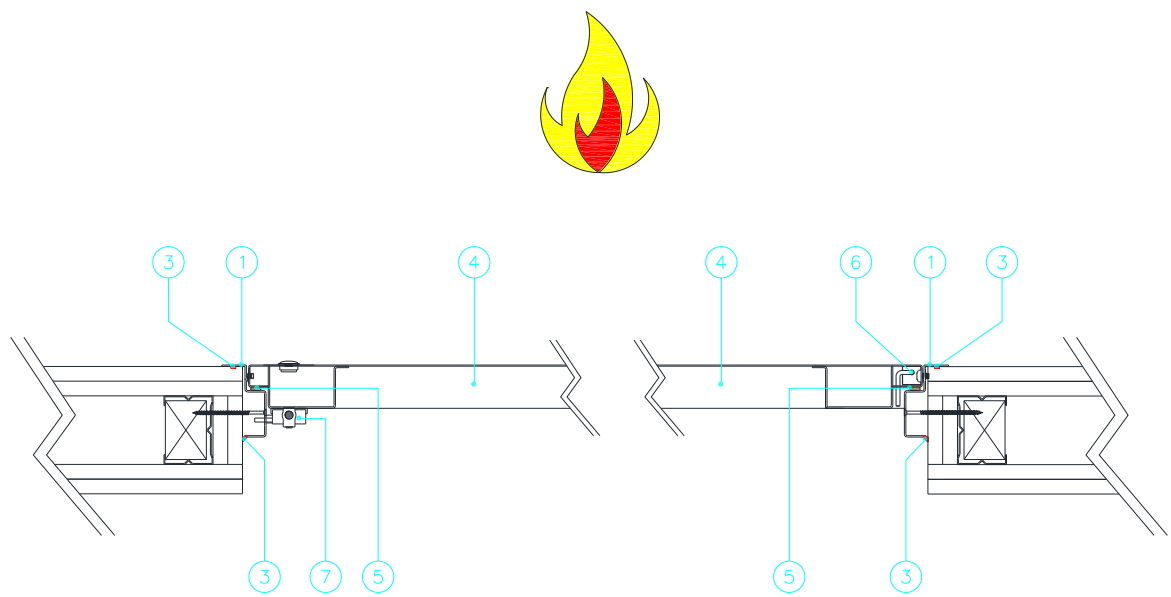
Figure 2 – General Elevation of the Test Construction
Access Panel A



Access Panel B



**Figure 3 – Details of Panel Frame, Jamb and Leaf
Access Panel A**



Access Panel B

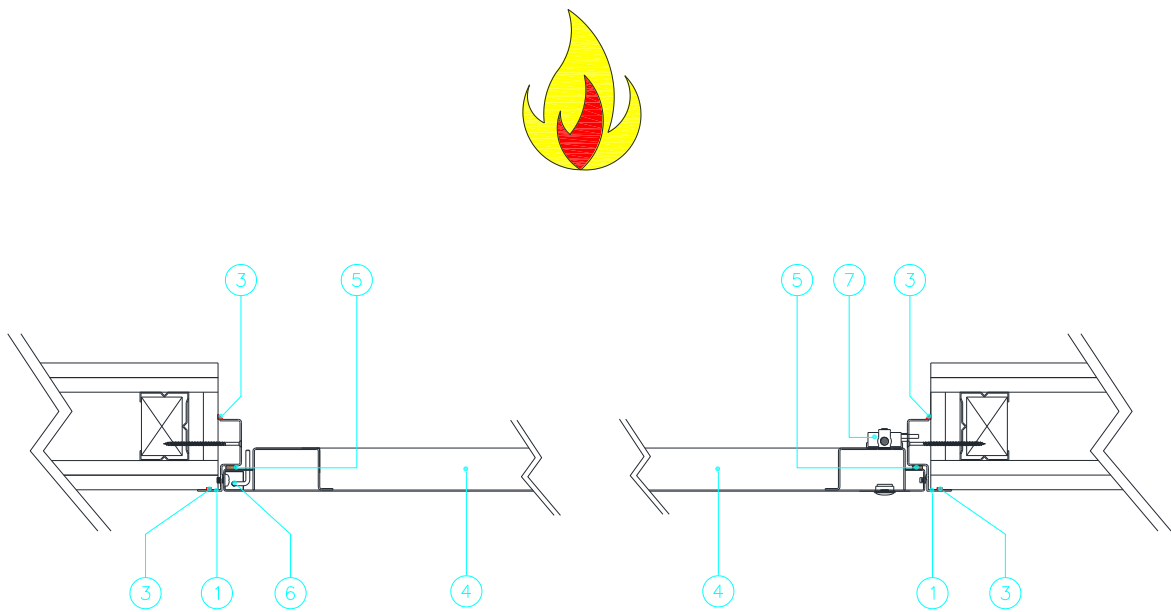
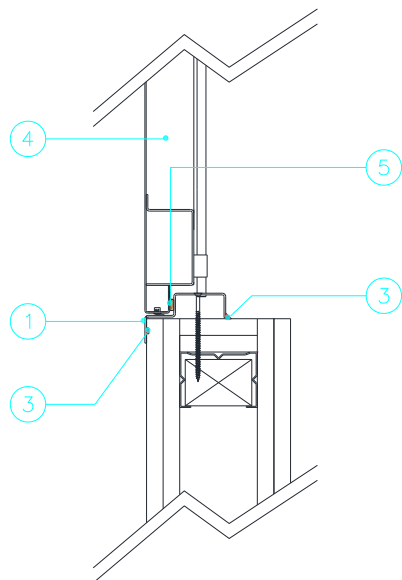
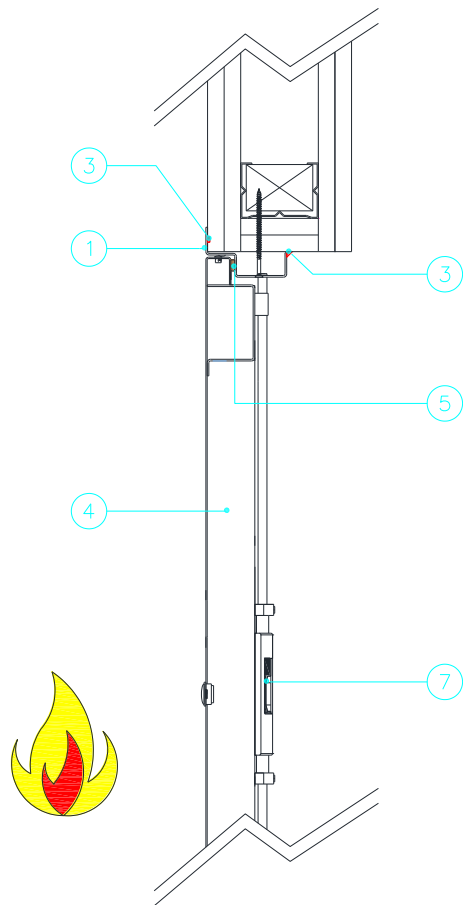
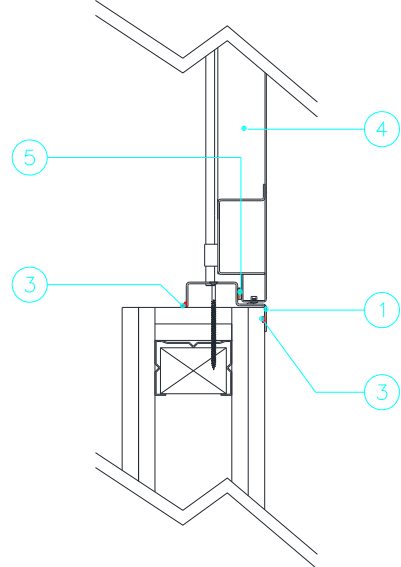
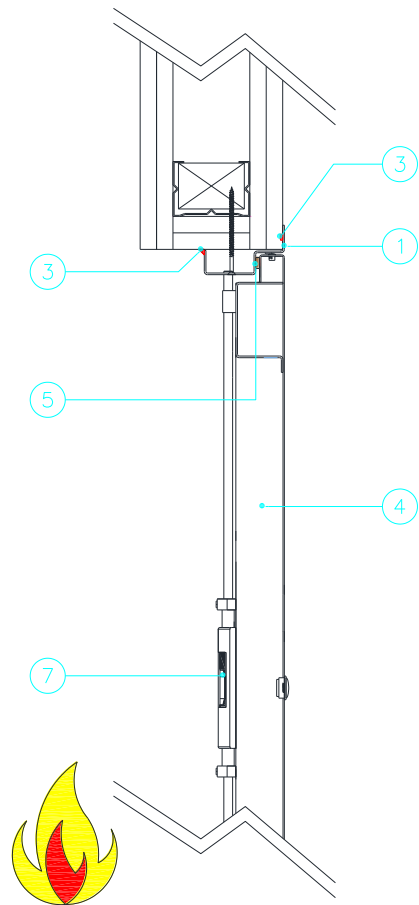


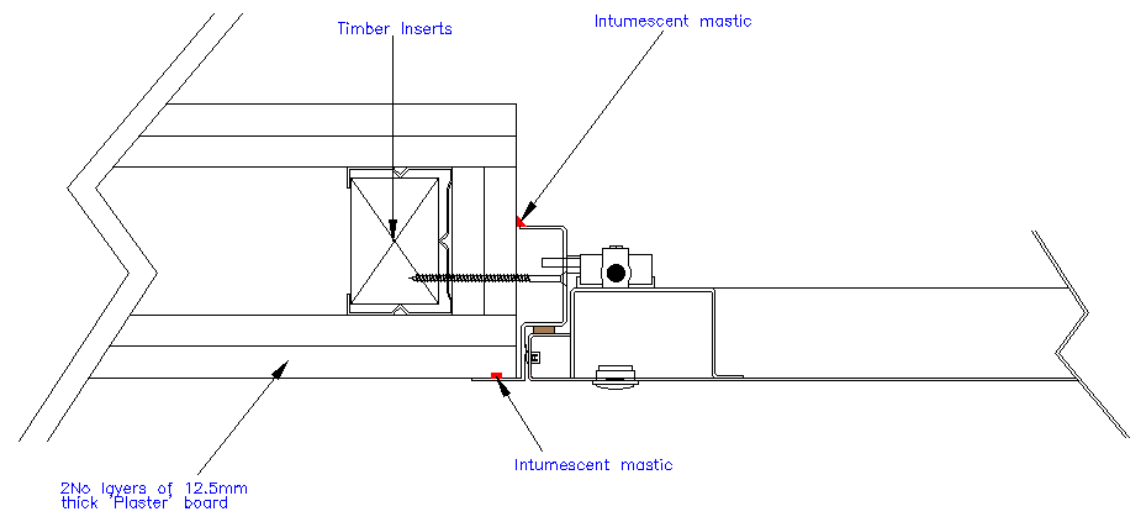
Figure 4 – Details of Panel Leaf and Upstand
Access Panel A



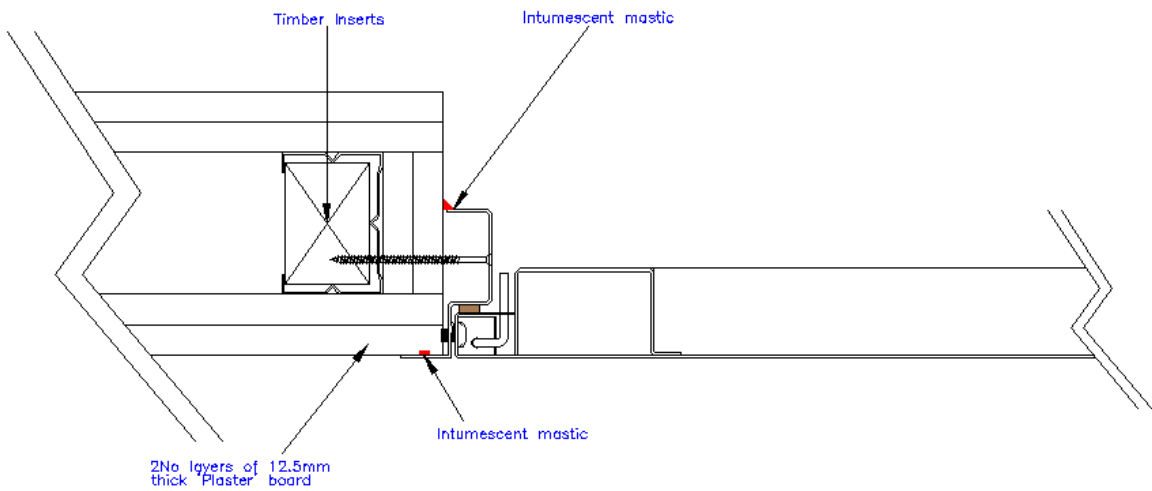
Access Panel B



**Figure 5 – Details of Supporting Construction to Frame, Fire Stopping
Access Panel A**



Access Panel B



Schedule of Components

(Refer to Figures 1 to 5)

All values are nominal unless stated otherwise

* Information supplied by client not verified by laboratory

Panel Frame (Both Panels)

1. Panel frame	
Manufacturer	Steelco*
Reference	Zintec Steel*
Material	Zintec Steel*
Overall size	2450x950x75mm
Frame (Head)	44mm wide x 75mm deep x 1.5mm thick with 20mm wide x 26mm deep rebate
Frame (Jambs)	44mm wide x 75mm deep x 1.5mm thick with 20mm wide x 26mm deep rebate
Stop - integral	20mm wide x 49mm deep
Jamb to Head jointing method, fixing detail and location	Welded
Stop to Frame jointing method, fixing detail and location	Welded

2. Frame Fixing Method to Supporting Construction	
Manufacturer	Goldscrow (Screwfix)*
Reference	18579*
Type & material	Carbon Steel*
Overall size	6mm diameter x 120mm long*
Spacing	8No. per jamb located nominally at 120mm from top corner of jamb, 30mm from bottom corner of jamb and at no more than 300mm centres. 4No. at the head and 4No at the bottom of the frame
Does the fixing penetrate intumescent seal within frame reveal	No
Packing Material	Steel*
Packing Material Dimension	50x25x0.9mm*
Packing Material Location	Where required to ensure frame is square*

3. Sealant to fire stopping detail	
Manufacturer	Mann McGowan
Reference	Pyromas A
Material	Intumescent mastic
Overall section size	5-10mm wide x 10mm deep
Application method	Cartridge gun
Location	Sealing the frame to the supporting construction on both faces

Panel Leaf

4. Panel framework	
Manufacturer	Steelco*
Reference	Zintec Steel*
Material	Zintec Steel*
Location	4 no. flanged box sections butt jointed and welded at the corners to form the panel framework
Overall size	43mm deep x 68mm wide x 1.5mm thick overall featuring a 15mm wide x 1.5mm thick flange*

4A. Panel facing	
Manufacturer	Steelco*
Reference	Zintec Steel*
Material	1.2mm thick Zintec sheet folded to form a 25mm wide x 22mm high flange around the perimeter*
Overall size	1.2mm thick*

5. Intumescent in Leaf Edge	
Quantity	Perimeter Of Door
Manufacturer	Norseal*
Reference	FS1000*
Material	Self-Adhesive Foam*
Overall section size	10mm wide x 4.5mm thick
Application method	Self-Adhesive by hand*
Location (relative to the opening face of the door leaf)	Rear of Door leaf sealing to the frame rebate

Hardware

6. Hinge	
Supplier	Bagshaw Engineering*
Reference	HINGE-RF-R51*
Quantity	2*
Primary material	Steel*
Type	Spring Pin Hinge*
Size	19.1mm x 19.1mm x 40mm, 8mm Pin
Fixings	
i. type	Welded in place
Position of each hinge relative to the head of the leaf	Corner of door leaf
Details of intumescent protection	None

7. Lockset	
Manufacturer	C.R.A International*
Reference	L12A*
Material	Bright Zinc Plated Mild Steel*
Overall sizes	137mm x 34mm x 16mm
Central Lockcase	110mm high x 34mm wide x 16mm deep
Location of centre of the lock relative to the bottom of the leaf	1185mm

Photographs of Components

Lockset



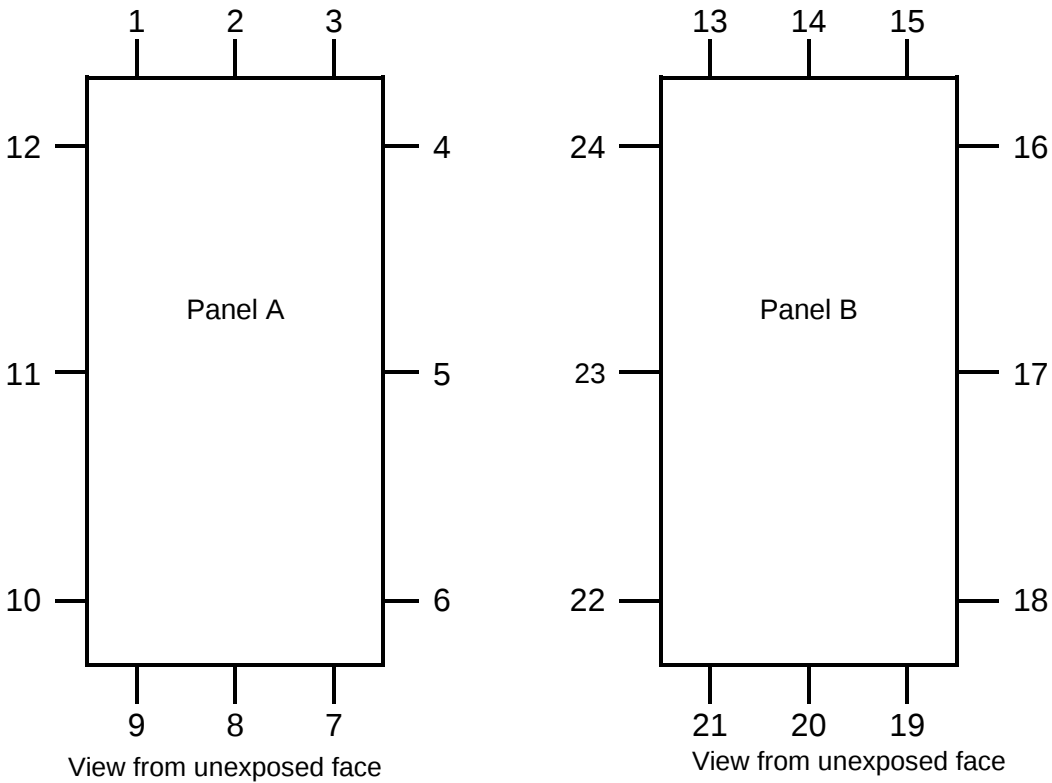
Keep (Top and bottom)



Centre keep



Panel clearance gaps



Panel Ref	Leaf to Frame Gap Dimension in mm at Positions											
A	1	2	3	4	5	6	7*	8*	9*	10	11	12
	2.7	2.5	2.7	2.9	2.9	2.8	1.6	1.9	1.9	1.9	1.5	1.5
B	13	14	15	16	17	18	19*	20*	21*	22	23	24
	2.3	1.8	1.6	1.2	2.8	2.3	2.3	1.3	1.8	2.8	2.9	3.3
A		Mean		2.2		Maximum		2.9		Minimum		1.5
B		Mean		2.2		Maximum		3.3		Minimum		1.2

* Dimension not included in calculations at the bottom

DO NOT SCALE
ALL DIMENSIONS ARE IN mm

Test Observations

Time (minutes) All observations are from the unexposed face unless noted otherwise.

00:00	The test has started.
00:57	Panel B, there is smoke issuing at the top closing corner.
01:58	Panel A, there is smoke issuing at the closing edge, approximately halfway down.
06:59	Panel A and B, there is discolouration at the centre of the panel.
08:17	Panel B, there is an increase in smoke issuing at the top closing corner.
08:50	Panel A, there is smoke issuing at the head.
11:08	Panel A, there is smoke issuing at the top closing corner and the head.
12:37	Panel A and B, there is an increase in discolouration.
15:31	Panel A, there is smoke issuing at the bottom perimeter gaps.
15:31	Panel B, there is smoke issuing at the hanging edge.
18:34	Panel A and B, there is an increase in discolouration.
18:34	Panel B, there is smoke issuing at the bottom hinge position.
20:02	Panel B, the frame is visibly distorting from the wall.
22:22	Panel A, there is an increase in discolouration around the inner frame.
31:02	Panel A and B, there is a decrease in smoke issuing at all positions.
37:07	Panel A and B, the centre of the panels are glowing.
45:02	Panel A, there is smoke issuing at the bottom hinge position
60:00	Panel A and B, there is no visible change.
75:00	Panel A and B, there is no visible change.
77:00	Panels A and B have heavily distorted and warped.
94:31	Panel A, the inner frame is separating.
100:00	Panel A and B, there is no visible change.
132:00	Test terminated.

Test Photographs

The
unexposed
face of the
panels
prior to
testing



The
unexposed
face of the
panels
after a test
duration of
15 minutes



The unexposed face of the panels after a test duration of 30 minutes



The unexposed face of the panels after a test duration of 45 minutes



The unexposed face of the panels after a test duration of 60 minutes



The unexposed face of the panels after a test duration of 75 minutes



The unexposed face of the panels after a test duration of 90 minutes



The unexposed face of the panels after a test duration of 105 minutes



The unexposed face of the panels after a test duration of 120 minutes



The exposed face of the panels after a test duration of 120 minutes



Temperature Data

Mean furnace temperature, together with the temperature/time relationship specified in BS EN 1363-1: 2012

Time	Mean Furnace	ISO834
min	°C	°C
0	20	20
1	353	349
2	435	445
3	496	502
4	555	544
5	579	576
6	591	603
7	602	626
8	626	645
9	653	663
10	676	678
11	691	693
12	700	705
13	708	717
14	722	728
15	731	739
16	742	748
17	749	757
18	760	766
19	770	774
20	777	781
21	782	789
22	791	796
23	796	802
24	801	809
25	808	815
26	813	820
27	820	826
28	824	831
29	831	837
30	836	842
31	843	847
32	846	851
33	850	856
34	852	860
35	857	865
36	864	869
37	869	873
38	873	877
39	875	881
40	878	885
41	881	888

Time	Mean Furnace	ISO834
min	°C	°C
42	884	892
43	890	896
44	893	899
45	897	902
46	899	906
47	901	909
48	904	912
49	909	915
50	911	918
51	914	921
52	917	924
53	917	927
54	923	930
55	926	932
56	931	935
57	933	938
58	935	940
59	937	943
60	939	945
61	940	948
62	941	950
63	945	953
64	948	955
65	950	957
66	952	960
67	956	962
68	959	964
69	962	966
70	963	968
71	966	971
72	968	973
73	969	975
74	971	977
75	972	979
76	974	981
77	975	983
78	977	985
79	978	986
80	979	988
81	980	990
82	984	992
83	986	994

Time	Mean Furnace	ISO834
min	°C	°C
84	989	996
85	990	997
86	990	999
87	992	1001
88	995	1003
89	996	1004
90	997	1006
91	1000	1008
92	1000	1009
93	1001	1011
94	1005	1012
95	1006	1014
96	1009	1016
97	1011	1017
98	1011	1019
99	1012	1020
100	1012	1022
101	1013	1023
102	1015	1025
103	1020	1026
104	1023	1028
105	1025	1029
106	1026	1030
107	1026	1032
108	1027	1033

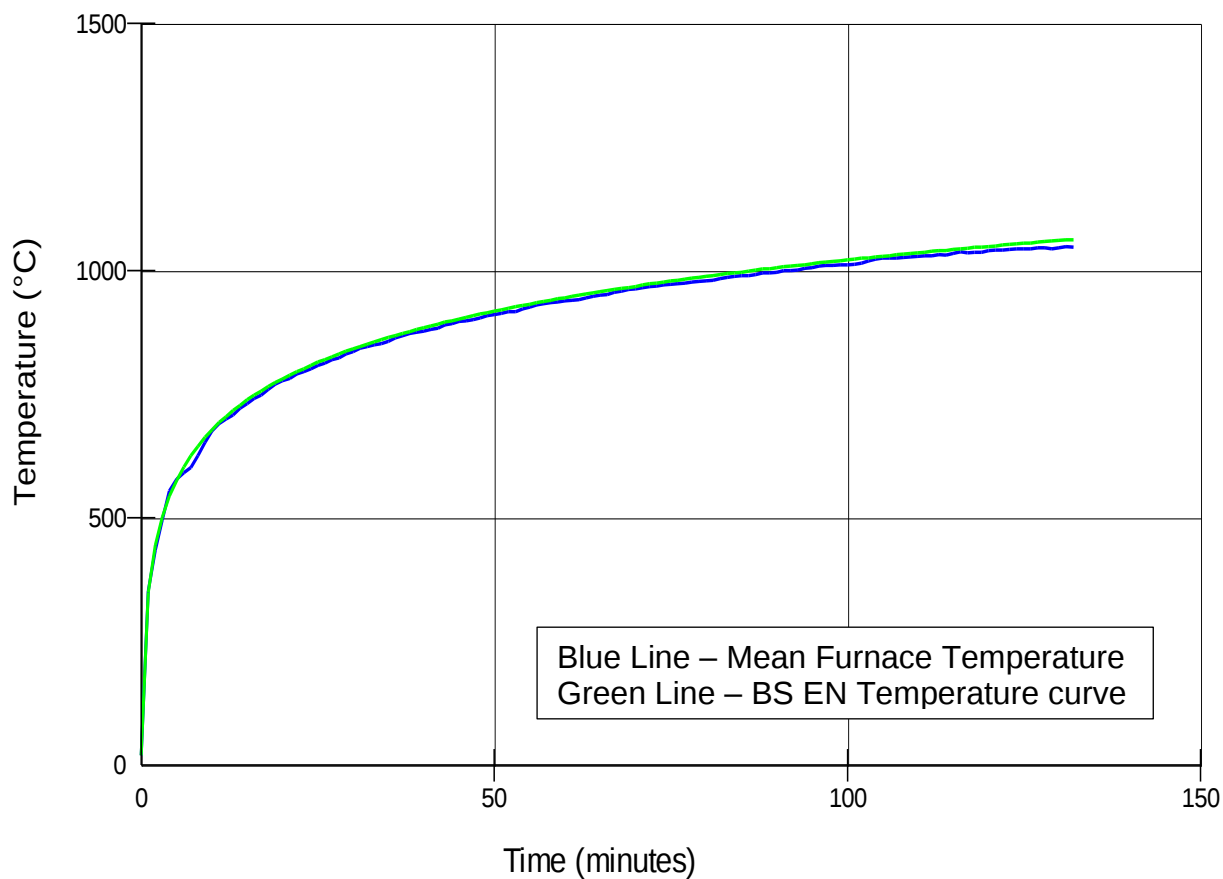
Time	Mean Furnace	ISO834
min	°C	°C
109	1028	1035
110	1029	1036
111	1030	1037
112	1030	1039
113	1032	1040
114	1031	1041
115	1035	1043
116	1038	1044
117	1036	1045
118	1037	1047
119	1037	1048
120	1040	1049
121	1042	1050
122	1042	1052
123	1043	1053
124	1044	1054
125	1044	1055
126	1044	1056
127	1046	1058
128	1046	1059
129	1044	1060
130	1046	1061
131	1049	1062
132	1048	1063

Recorded Radiation Intensity from Panel B

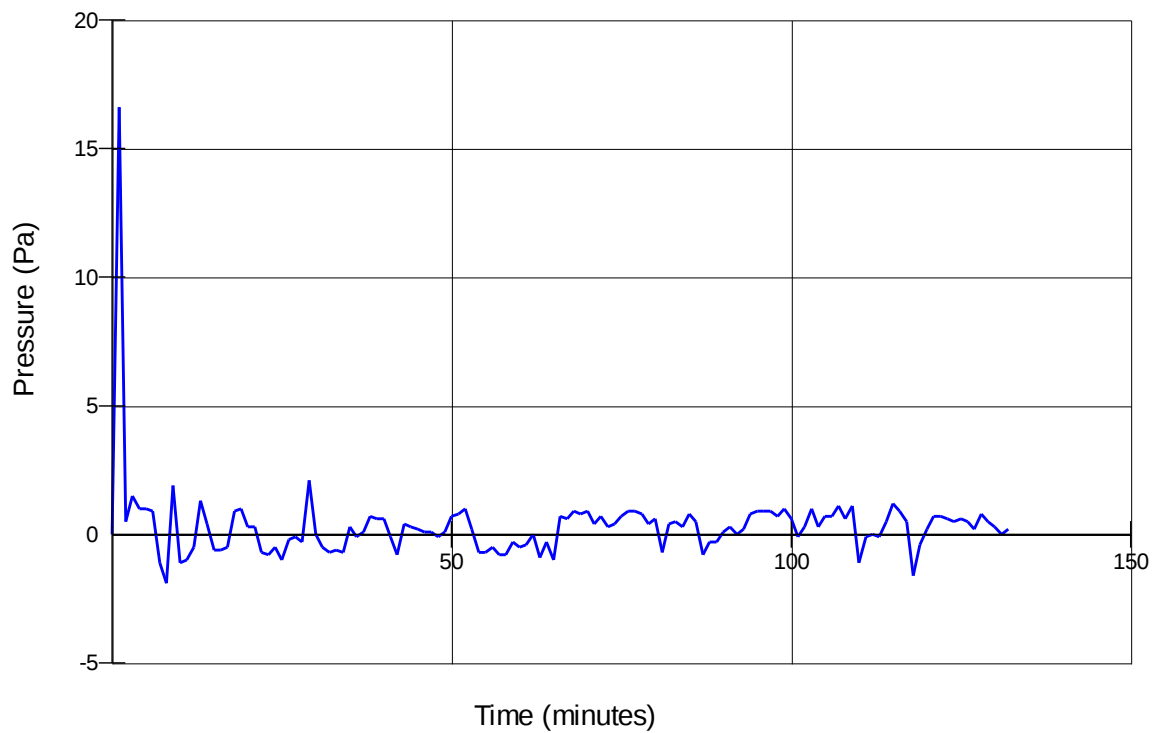
Time	Chan 18	Time	Chan 18	Time	Chan 18
min	kW/m ²	min	kW/m ²	min	kW/m ²
0	0.2	45	9.1	90	10.2
1	0.2	46	9.5	91	10.3
2	0.2	47	9.4	92	10.1
3	0.2	48	9.6	93	10.3
4	0.2	49	9.1	94	10.7
5	0.2	50	9.7	95	10.5
6	0.2	51	9.7	96	10.8
7	0.2	52	9.7	97	10.9
8	0.3	53	9.6	98	10.8
9	0.3	54	9.9	99	10.8
10	0.4	55	9.9	100	10.7
11	0.5	56	9.0	101	11.0
12	1.2	57	8.7	102	10.9
13	3.2	58	8.9	103	11.3
14	3.7	59	9.0	104	11.7
15	3.8	60	9.2	105	11.7
16	3.9	61	9.2	106	11.9
17	4.1	62	9.1	107	11.7
18	4.6	63	9.1	108	11.8
19	4.7	64	9.4	109	11.9
20	5.2	65	9.1	110	12.1
21	5.1	66	9.3	111	12.0
22	5.1	67	9.1	112	12.2
23	5.7	68	9.4	113	12.0
24	5.9	69	9.3	114	12.2
25	6.2	70	9.3	115	12.3
26	6.4	71	9.3	116	12.6
27	6.4	72	9.2	117	12.7
28	6.6	73	9.4	118	12.5
29	6.7	74	9.3	119	12.7
30	7.2	75	9.5	120	13.0
31	7.6	76	9.5	121	12.9
32	7.8	77	9.5	122	12.9
33	7.9	78	9.6	123	13.0
34	7.9	79	9.7	124	13.1
35	3.0	80	9.6	125	13.0
36	7.9	81	9.4	126	13.1
37	7.9	82	9.6	127	13.0
38	8.0	83	9.6	128	13.5
39	8.0	84	9.7	129	13.4
40	8.3	85	9.6	130	13.3
41	8.2	86	9.9	131	13.2
42	8.6	87	9.9	132	13.2
43	8.8	88	9.9		
44	8.9	89	9.9		

Note: Radiometer A (Channel 17) has been discounted due to malfunction.

Graph showing mean furnace temperature, together with the temperature/time relationship specified in BS EN 1363-1: 2012



Graph showing recorded furnace pressure at 0.5m from the notional floor level



On-going Implications

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 outline in BS EN 1634-1, 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. Annex A of BS EN 1363-1, provides guidance information on the application of fire resistance tests and the interpretation of test data.

The results only relate to the behaviour 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. The results of this test were obtained using the leaf to frame gaps recorded within this report. The fire resistance performance of doors of this design may change if substantially different gaps are employed.

The specification and interpretation of fire test methods are the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons it is recommended that the relevance of test reports over 5 years old should be considered by the user. Warringtonfire will be able to offer, on behalf of the legal owner, a review of the procedures adopted for a particular test to ensure that they are consistent with current practices, and if required may endorse the test 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.

EGOLF Certain aspects of some fire test specifications are open to different interpretations. EGOLF have identified a number of such areas and have agreed Resolutions which define common agreement of interpretations between fire test laboratories which are members of the Groups. Where such Resolutions are applicable to this test they have been followed.

Field of Direct Application

BS EN 1363-1:2012, Fire resistance tests - Part 1: General requirements, states within Section 12.1, Clause v) that "The field of direct application of the results for the specimen being evaluated, either in the form of the full text from the appropriate standard, or only those clauses which are relevant for the specimen tested" shall be included within the test report. The full text of the field of direct application for the results of the specimen being evaluated herein, can be found within the appropriate test standard, which is referenced on the front cover of this report.