

Title:

The Fire Resistance
Performance Of Two
Single-Leaf Steel Doorset,
When Tested In
Accordance With BS EN
1634-1:2014 + A1:2018

Date Of Test:

15 July 2022

Issue 3

10 April 2024

WF Report No:

514070/R



Prepared for:

Panel Technologies Limited

49-61 Jodrell Street,
Nuneaton,
Warwickshire,
CV11 5EG



0249

**This document replaces
Issue 2, dated 01
February 2023.**

Test Specimens

Summary of Tested Specimens

For the purposes of the test the doorsets were referenced as A and B.

Doorset A had overall nominal dimensions of 1946 mm high by 696 mm wide, incorporating a single door leaf with overall dimensions of 1900 mm high by 650 mm wide by 28 mm thick. The door leaf was formed from 1.5mm thick Zintec steel with two 12.5 mm thick 'Siniat Gtech dB' plasterboard inserts laid inside the door leaf and fixed with screws. The door leaf was hung into a Zintec steel frame which incorporated 20mm thick 'RW3' Semi Rigid Slab insulation. The door leaf was hung onto fast fit spring pin hinges welded onto the frame such that the leaves opened away from the heating conditions of the test. The door leaf incorporated a 3-point locking system which was latched for the duration of the test.

Doorset B had overall nominal dimensions of 2450 mm high by 950 mm wide high, incorporating a single door leaf with overall dimensions of 900 mm wide by 2400 mm high by 64 mm thick. The door leaf was formed from 1.5 mm thick Zintec steel with a 12.5 mm 'Siniat Gtech dB' plasterboard insert laid inside the door leaf and fixed with screws. The door leaf was hung into a Zintec steel frame which incorporated 20mm thick 'RW3' Semi Rigid Slab insulation. The door leaf was hung onto electroplated spring pin hinges welded into the door leaf such that the leaves opened away from the heating conditions of the test. The door leaf incorporated a 3-point locking system which was latched for the duration of the test.

The supporting construction was a standard 120 minute EN flexible partition comprising a 70 mm deep C stud, 70 mm thick SL960 Rockwool insulation and two layers of 15 mm thick Fireline installed to each face of the partition. Doorset A had an overall aperture size of 1907 mm high by 657 mm wide by 130 mm thick while Doorset B had an aperture size of 2407 mm high by 907 mm wide by 130 mm thick.

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.

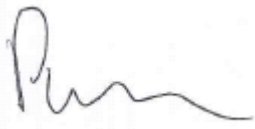
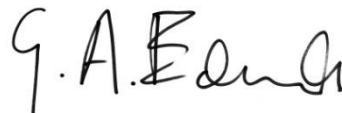
Performance Criteria and Test Results

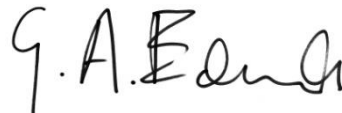
Integrity	It is required that the specimens retain their separating function, without either causing ignition of a cotton pad when applied, or permitting the penetration of a gap gauge as specified in BS EN 1634-1: 2014, or resulting in sustained flaming on the unexposed surface. These requirements were satisfied for the periods shown below:				
	Doorset A		Doorset B		
Sustained flaming	183 minutes*		183 minutes*		
Gap gauge	183 minutes	No failure*	183 minutes	No failure*	
Cotton pad	91 minutes		116 minutes		
Insulation (I ₂)	The mean temperature rise of the unexposed surface shall not be greater than 140°C and that the maximum temperature rise shall not be greater than 180°C with the exception that the limit for temperature rise for any frame member or transom member adjacent to the leaf/leaves of the doorset or openable window shall be 360°C. Insulation failure also occurs simultaneously with integrity failure as specified in BS EN 1634-1: 2014. These requirements were satisfied for the period shown below:				
Specimen	16 minutes	Exceeded maximum temperature criteria TC18	24 minutes	Exceeded maximum temperature criteria TC12	
Insulation (I ₁)	The test specimen shall be evaluated against the maximum temperature rise criterion specified in EN 1363-1: 2020 (180°C).				
	3 minutes		12 minutes		
Radiation	BS EN 1363-2: 1999 requires that the time for the measured radiation to exceed 5, 10, 15, 20 and 25 kW/m2 is reported.				
Radiation Performance	5 kW/m ²	10 kW/m ²	15 kW/m ²	20 kW/m ²	25 kW/m ²
Doorset A	118 minutes	183 minutes*	183 minutes*	183 minutes*	183 minutes*
Doorset B	179 minutes	183 minutes*	183 minutes*	183 minutes*	183 minutes*
*Test was discontinued after a period of 183 minutes.					

Date of Test 15 July 2022

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.

Quality Management

Issue No: 1	Issue Date: 17 November 2022
Responsible Officer: P. White*	Approved By: G. Edmonds*
	

Issue No: 2	Re-issue Date: 01 February 2023
Responsible Officer: S. Whittle*	Approved By: G. Edmonds *
	

Reason for Revision: Reason for Revision:

Amendments on pages 13 and 14 Figures 5 and 6 regarding the frame insulation.

Amendments on page 15 Item 1 to the fixing details on the second layer of plasterboard.

Amendments on page 16 Item 4 Insulation corrected

Added detail on page 17 Item 5.3 for the board clamp detail

Amendments on page 17 Item 5.4 on the hinge detail

Added detail on page 17 Item 5.5 for the locking bar size

Added detail on page 17 Item 5.6 for the locking bar

Added detail on page 18 Item 6 for the frame architrave

Amendments on page 19 Item 6.4 for the reference of the lock and the type of lock

Added detail on page 19 Item 6.5 for the locking bar detail

Issue No: 3	Re-issue Date: 10 April 2024
Responsible Officer: S. Whittle*	Approved By: G. Edmonds *
	

Reason for Revision: Error on page 18 Door Panel B – frame seal FS1000 was incorrectly stated at 15x4.5mm. This has been changed to 10x4.5mm.

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.

CONTENTS

PAGE NO.

TEST SPECIMENS 2

PERFORMANCE CRITERIA AND TEST RESULTS..... 3

QUALITY MANAGEMENT 4

TEST CONDITIONS..... 6

TEST CONSTRUCTION 8

SCHEDULE OF COMPONENTS..... 14

DOORSET CLEARANCE GAPS..... 19

TEST OBSERVATIONS 20

TEST PHOTOGRAPHS 21

TEMPERATURE AND DEFLECTION DATA..... 25

ON-GOING IMPLICATIONS..... 43

FIELD OF DIRECT APPLICATION 44

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 the sampling or selection of the tested specimen or any of the components. The results obtained during the test only apply to the test samples as received and tested by Warringtonfire.
Installation	The doorsets were received on the 14th July 2022 and mounted within apertures in a standard EN flexible partition such that the leaves opened away from the heating conditions of the test. Representatives of Warringtonfire conducted the installation on the 14th July 2022.
Conditioning	The specimens' storage, construction, and test preparation took place in the test laboratory over a total, combined time of 5 days. Throughout this period of time both the temperature and the humidity of the laboratory were measured and recorded as being within a range of from 18.5°C to 30.5°C and 36% to 67% respectively.
Instruction to Test	The test was conducted on the 15 July 2022 at the request of Panel Technologies Limited, the test sponsor.

Pre-Test Conditioning

Prior to testing, the doorsets was subjected to appropriate mechanical pre-test conditioning in accordance with the below requirements:

Test	Relevant Clause	Description	Comments
Operability	A.2.2 of EN 16034	25 cycles	25 cycles completed
Self closing	A.2.2 and A.4 of EN 16034	1 cycle	1 cycle completed
Final setting	10.1.4 of EN 1634-1: 2018	1 cycle	1 cycle completed

Ambient Temperature

The ambient air temperature in the vicinity of the test construction was 18°C at the start of the test with a maximum variation of +6°C during the test.

Furnace

The furnace was controlled so that its mean temperature complied with the requirements of BS EN 1363-1: 2020 Clause 5.1 using nine plate thermometers, distributed over a plane 100 mm from the surface of the test construction.

Thermocouples

Thermocouples were provided to monitor the unexposed surface of the specimen. The output of all instrumentation was recorded at no less than one minute intervals. The locations and reference numbers of the various unexposed surface thermocouples are shown in Figure 1.

Radiation

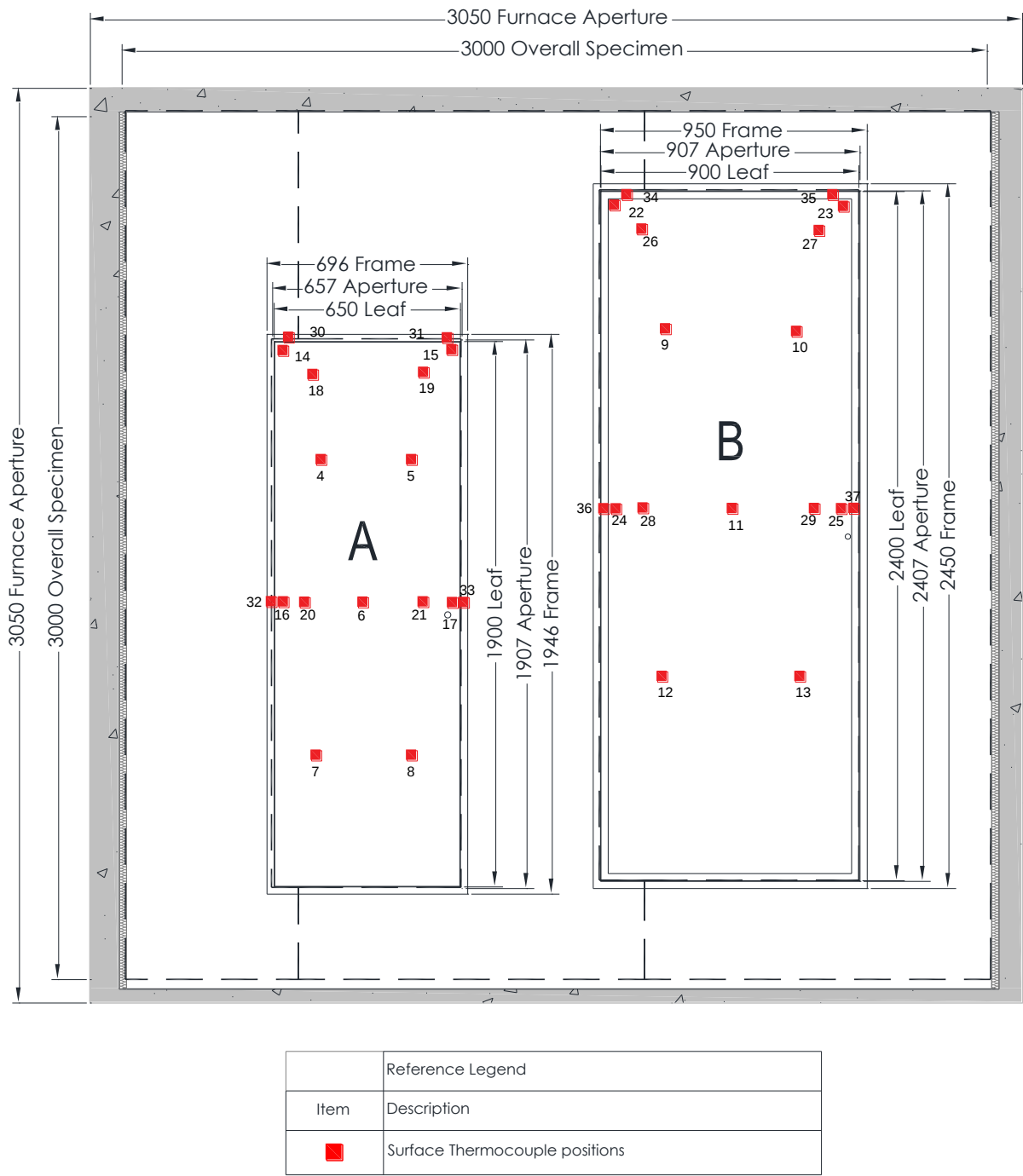
Water-cooled foil heat-flux meters were used to record the heat radiation from the doorsets. The heat flux meters were positioned at a distance of 1 metre from the centre of the doorsets.

Furnace Pressure

After the first five minutes of testing and for the remainder of the test, the furnace atmospheric pressure was controlled so that it complied with the requirements of BS EN 1363-1: 2020, clause 5.2.1 The calculated pressure differential relative to the laboratory atmosphere at the top of the specimen A was 12.3 and for specimen B was 16.6 (± 5) Pa between 5 and 10 minutes and 12.3 and 16.6 (± 3) Pa thereafter.

Test Construction

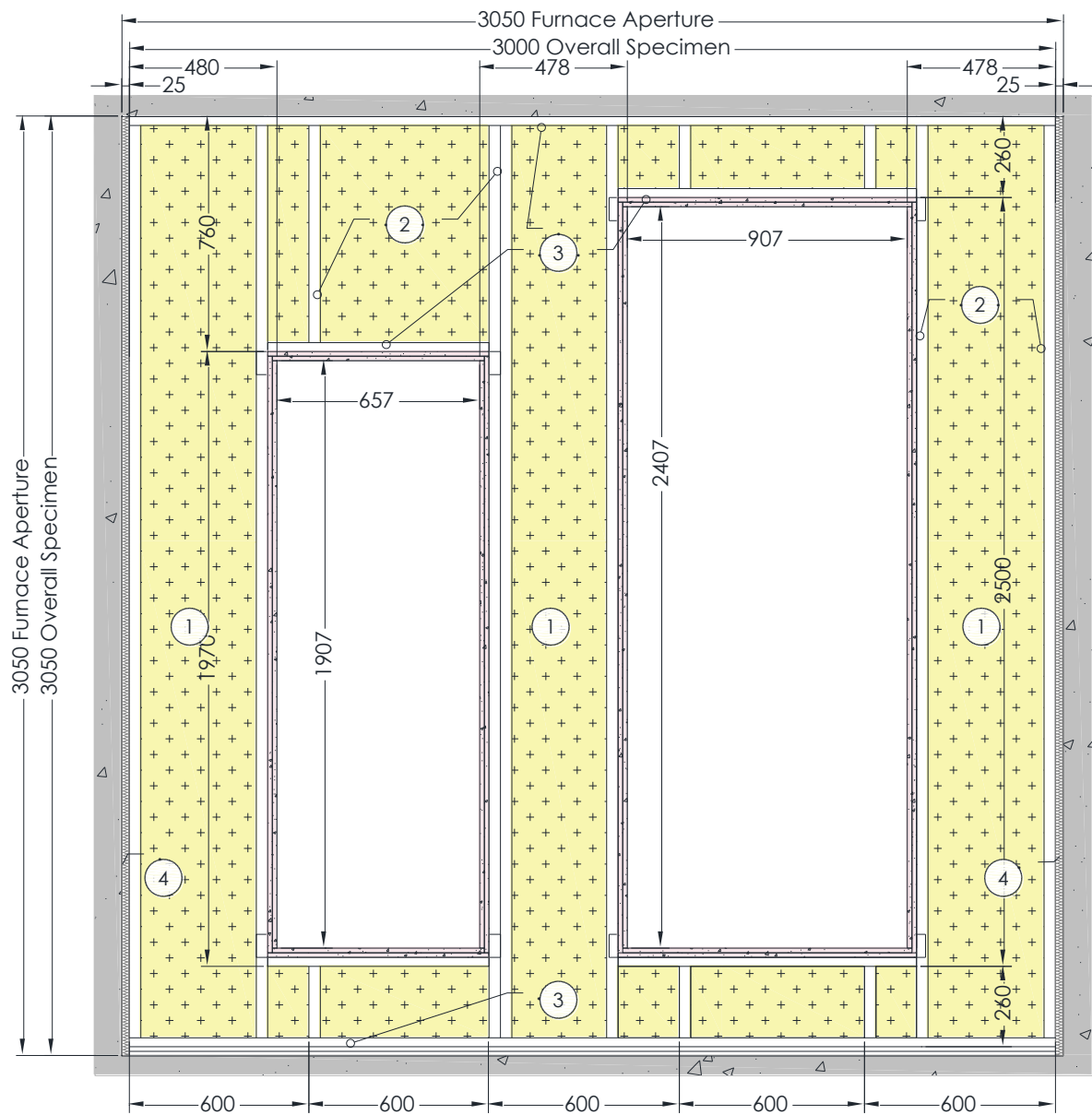
Figure 1- General Elevation Thermocouple Positions - Unexposed face



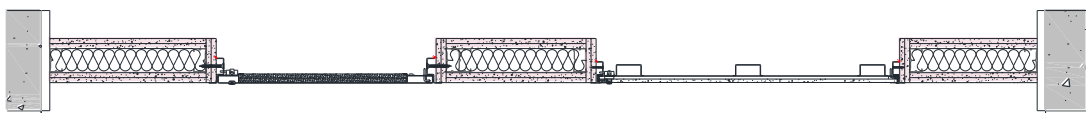
GENERAL ELEVATION OF THERMOCOUPLE POSITIONS
UNEXPOSED FACE

Do not scale. All dimensions are in mm

Figure 2 – General Elevation/Horizontal Section through Partition Framework – Unexposed



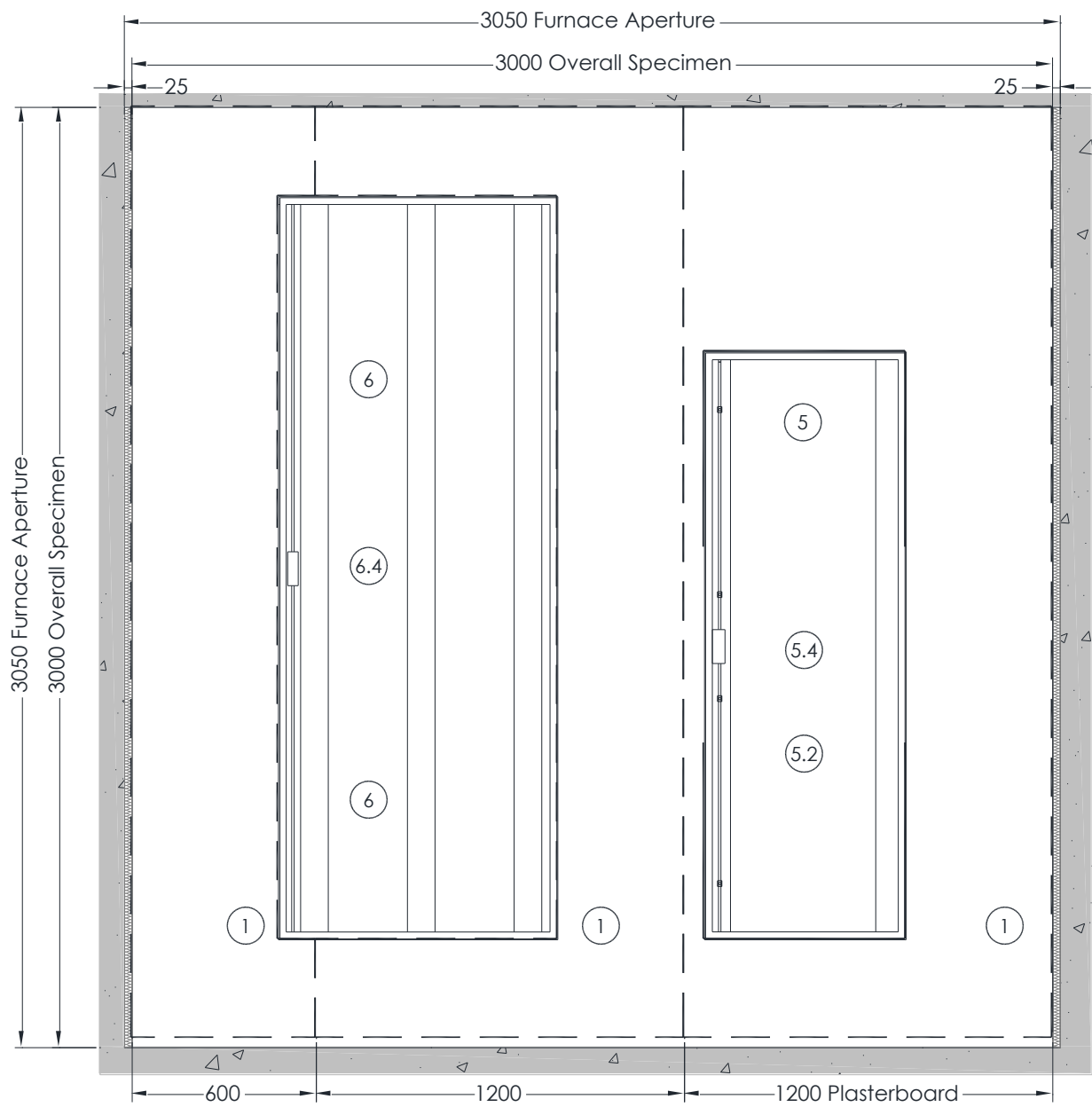
GENERAL HORIZONTAL SECTION THROUGH
PARTITION FRAMEWORK - UNEXPOSED



TYPICAL HORIZONTAL SECTION THROUGH
PARTITION FRAMEWORK

Do not scale. All dimensions are in mm

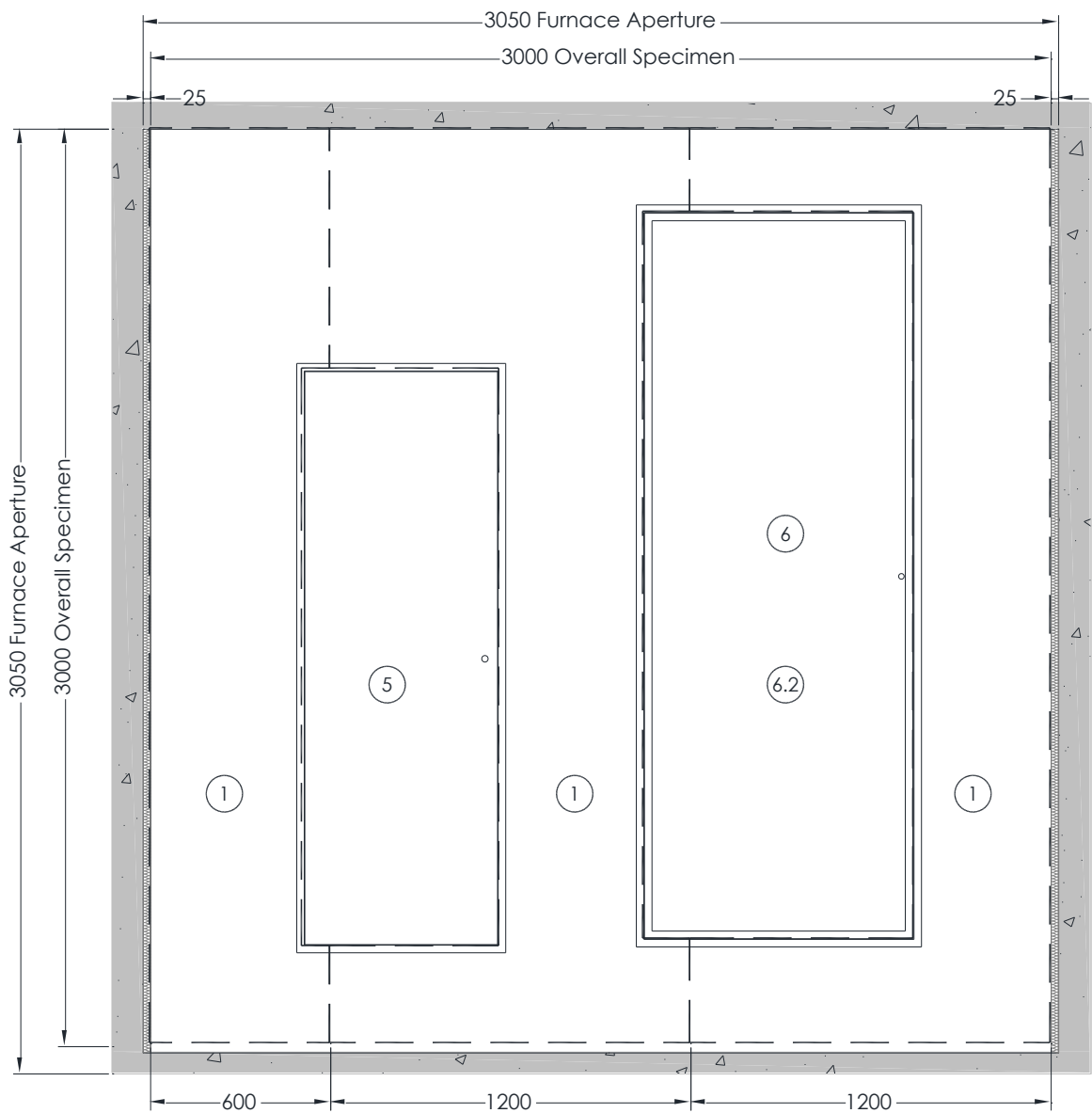
Figure 3 – General Elevation of Test Construction – Exposed Face



GENERAL ELEVATION OF TEST CONSTRUCTION
EXPOSED FACE

Do not scale. All dimensions are in mm

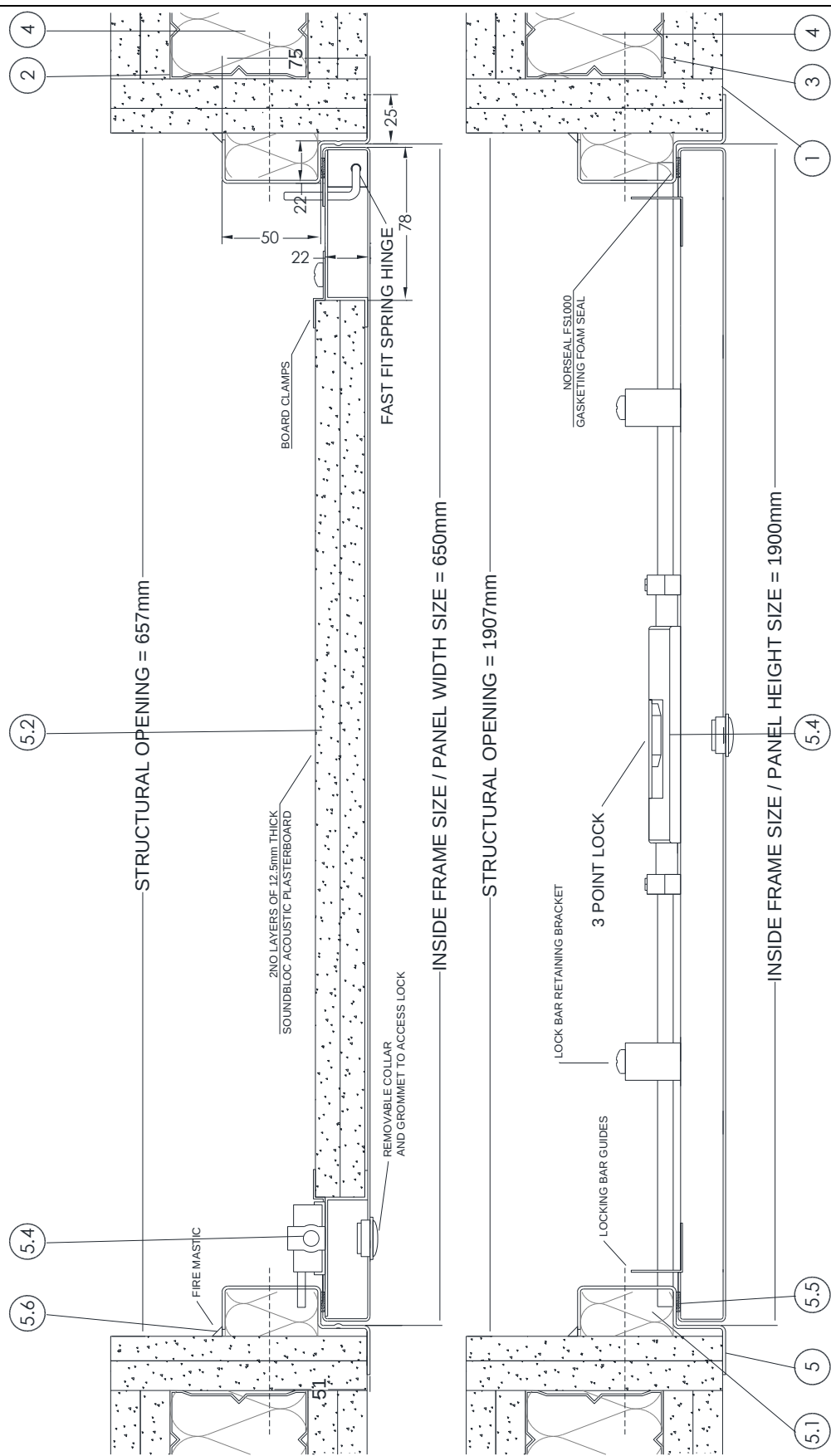
Figure 4 - General Elevation of Test Construction – Unexposed Face



GENERAL ELEVATION OF TEST CONSTRUCTION
UNEXPOSED FACE

Do not scale. All dimensions are in mm

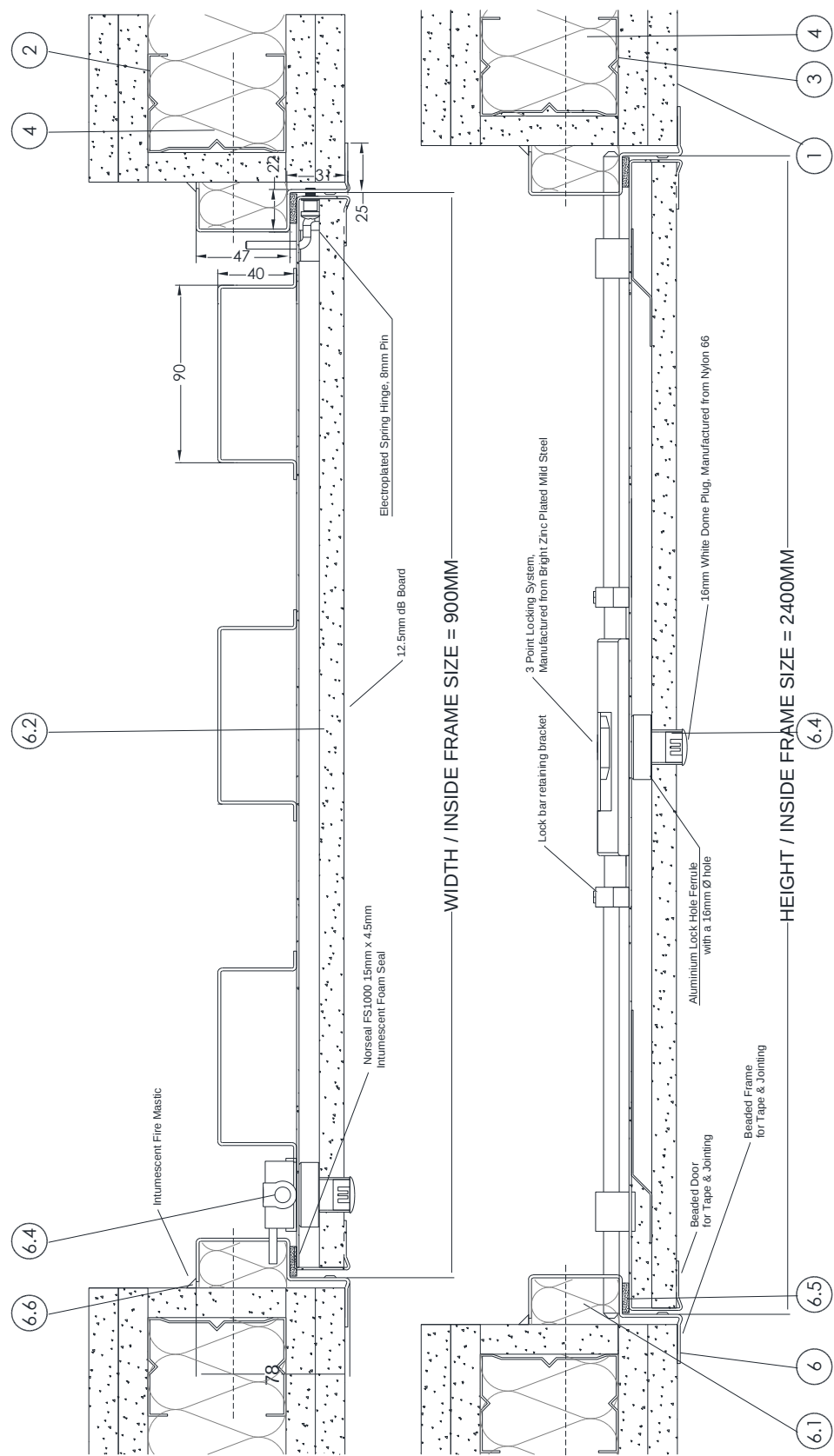
Figure 5 – Detail of Door A



Sections of Door A

Do not scale. All dimensions are in mm

Figure 6 – Detail of door B



Sections of Door B

Do not scale. All dimensions are in mm

Schedule of Components

(Refer to Figures 1 to 6)

(All values are nominal unless stated otherwise)

(All other details are as stated by the sponsor)

<u>Item</u>	<u>Description</u>
1. Plasterboard	
Manufacturer	: British Gypsum
Reference	: Gyproc FireLine
Material	: Gypsum plasterboard with glass fibre and additional additives
Thickness	: 30 mm (two layers of 15 mm)
Density	: 846 kg/m ³ (measured)
Fixing method	: Through fixed to internal framework with screws. Board joints were taped and filled. Additionally, the aperture was lined with two layers of board.
Fixings	
i. manufacturer	: 4Trade
ii. reference	: Drywall screws
iii. type	: Bright zinc plated
iv. size	: 25mm long x 3.5 mm diameter
v. centres	: 300 mm (edge), 300 mm (field)
Fixings (Layer 2)	
i. manufacturer	: Reisser
ii. reference	: Drywall screws
iii. type	: Coarse thread black phosphate
iv. size	: 42 mm long x 3.2 mm diameter
v. centres	: 300 mm (edge), 300 mm (field)
Tape	
i. manufacturer	: Siniat GTEC
ii. reference	: Plasterboard jointing and repair tape
Filler	
i. manufacturer	: Siniat
ii. reference	: Deco joint cement
2. Studs	
Manufacturer	: Knauf
Reference	: Knauf 'C' Stud – Material No. 243917
Material	: Stainless steel
Size	: 70mm (0.7mm gauge)
Fixing Method	: Screwed to the channels. Studs were spaced out at 600 mm centres
Fixings	: Knauf wafer head screw / Knauf 25mm performance plus screw @ 600 Centres

Item**Description****3. Knauf 'U' Channel**

Manufacturer	:	Knauf
Reference	:	Knauf 'U' Channel – Material No. 243996
Material	:	Stainless steel
Size	:	72mm (0.55 Gauge) – Length 3000mm
Section size	:	72 mm wide x 29 mm deep
Fixing method	:	Through fixed to restraint frame via plasterboard packer with screws and washers. Additionally, sections of track were screwed to the studs to frame the aperture with a single screw per joint.
Fixings (head and base)		
i. manufacturer	:	Wickes
ii. reference	:	Multi-purpose Screws
iii. type	:	Zinc and yellow played, pozi counter sunk screws
iv. size	:	120 mm long x 6 mm diameter
v. centres	:	600 mm
Fixings (framework)		
i. type	:	Rifled shank wood screw
ii. size	:	100 mm long x 5 mm diameter

4. Insulation

Manufacturer	:	Rockwool
Reference	:	Prorox SL 960 UK
Material	:	Fibre Wool
Thickness	:	75 mm (uncompressed)
Density	:	100 kg/m ³ (stated)
Fixing method	:	Cut to size and laid between studs.

5. Door A

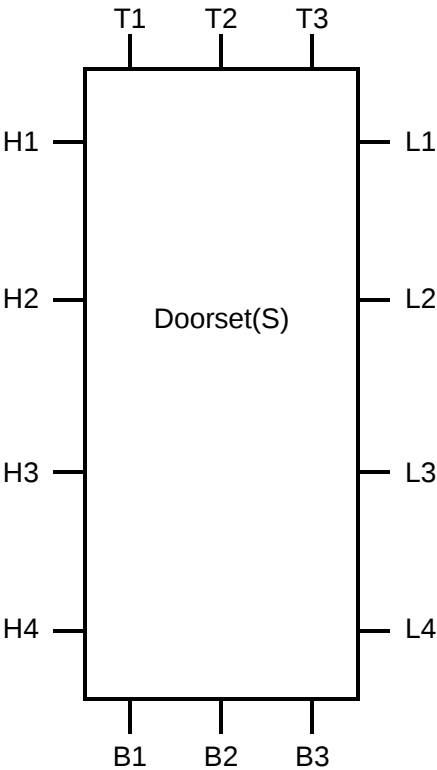
Details of aperture	:	1907 mm long x 657 mm wide
Details of door A		
Manufacturer	:	Panel Technologies
Reference	:	57-090-MD-PF-3WL-33DB
Material		
i. frame	:	Zintec steel
ii. door	:	Zintec steel & 2 plasterboard insert
Overall size		
i. frame	:	1946 mm long x 696 mm wide x 75 mm deep
ii. door	:	1900 mm long x 650 mm wide x 28 mm deep
Thickness		
i. frame	:	1.5 mm
ii. door	:	1.5 mm
Fixing method	:	Frame through fixed to vertical faces of lined aperture with screws. The inside of the frame was lined a layer of insulation around the perimeter.

<u>Item</u>	<u>Description</u>
5.1. Details of frame insulation	
i. type	: 30mm Thick Rockwool RW3 Semi Rigid Slabs
ii. thickness	: 30mm uncompressed
iii. density	: 60kg/m ³ (stated)
iv. fixing method	: Cut to 20mm to fit inside the door frame and fixed with acoustic intumescent sealant
5. Door A (Continued)	
5.2. Details of plasterboard insert	
i. type	: Siniat Gtech dB board
ii. thickness	: 2 x 12.5 mm
iii. density	: 846 kg/m ³ (Measured)
iv. fixing method	: Laid inside the door panels board clamps extending internally on both edges and fixed with screws via door framing panel
5.3. Details of board clamps	
i. material	: Zintec Steel
ii. size	: 18.5 mm x 28 mm
iii. thickness	: 0.9 mm
5.4. Details of hinge	
i. type	: Fast fit spring pin hinge
ii. overall size	: 8 mm pin diameter
iii. fixing method	: Welded inside the door leaf then spring loaded pins located into the frame, top and bottom
iv. quantity	: 2
5.5. Details of lock	
i. type	: 3 Point Locking System (bright zinc plated mild steel, with 18 mm stroke) – 18732LH
ii. central lock body size	: 111 mm long x 34 mm wide x 17mm deep
iii. locking bar size	: 8mm diameter
iv. fixing method	: Fixed on top of the lock bar retaining bracket on to the leaf
5.6. Details of locking bar	
i. Material	: 304 grade stainless steel
ii. Size	: 8 mm diameter
iii. Fixing Method	: Fitted in a lock bar retaining bracket
5.7. Details of door seal	
i. reference	: Norseal FS1000
ii. type	: Gasketing foam seal
iii. overall size	: 10 mm x 4.5 mm
iv. fixing method	: Self-adhered to the edge of the door panel
5.8. Details of frame seal	
i. type	: Rockwool Firepro
ii. Material	: Intumescent Fire Mastic
ii. application method	: Applied to the door framing panel for then it to be applied into the aperture of the plasterboard
5.9. Fixings (Door A to aperture)	
i. type	: Multipurpose Screws
ii. size	: 5mm x 100mm
iii. centres	: 300 centres

<u>Item</u>	<u>Description</u>
6. Door B	
Details of aperture	: 2407 mm high x 907 mm wide
Details of door B	
Manufacturer	: Panel Technologies
Reference	: 53-FR120-PD-BF-3WL-DB
Material	
i. frame	: Zintec steel
ii. leaf	: Zintec steel & plasterboard insert
Overall size	
i. frame	: 2450 mm long x 950 mm wide x 78 mm deep
ii. leaf	: 2400 mm long x 900 mm wide x 64 mm deep
6. Door B (Continued)	
Thickness	
i. frame	: 1.5 mm
ii. leaf	: 1.5 mm
Fixing method	: Frame through fixed to vertical faces of lined aperture with screws. The inside of the frame was lined with a bead of sealant and a layer of insulation around the perimeter.
Perforated frame integral architrave	
i. Material	: Zintec Steel
ii. thickness	: 0.9 mm
iii. size	: 25 mm
6.1 Details of frame insulation	
i. type	: 30mm Thick Rockwool RW3 Semi Rigid Slabs
ii. thickness	: 30mm uncompressed
iii. density	: 60kg/m ³ (stated)
iv. fixing method	: Cut to 20mm to fit inside the door frame and fixed with acoustic intumescent sealant
6.2 Details of plasterboard insert	
i. type	: Siniat Gtech dB board
ii. thickness	: 12.5 mm
iii. density	: 846 kg/m ³ (Measured)
iv. fixing method	: Laid inside the door panel and fixed with screws via door framing panel
6.3 Details of hinge	
i. type	: Electroplated spring pin hinge
ii. overall size	: 19 mm long x 19 mm wide x 40 mm deep with 8 mm diameter pin
iii. fixing method	: Welded inside the door leaf then spring loaded pins located into the frame, top and bottom
iv. quantity	: 2

<u>Item</u>	<u>Description</u>
6.4 Details of lock	
i. reference	: 3 Point Locking System (bright zinc plated mild steel, with 18 mm stroke) – 18732LH
ii. type	: Fitted with aluminium lock hole ferrule with a Ø16 mm hole. Manufactured from Nylon 66
iii. overall size	: 111 mm long x 34 mm wide x 17mm deep
iii. fixing method	: Bolted on with M5 x 25 mm hexagon head steel bolts.
6.5 Details of locking bar	
i. Material	304 grade stainless steel
ii. Size	8 mm diameter
iii. Fixing Method	Fitted in a lock bar retaining bracket
6.5 Details of door seal	
i. reference	: Norseal FS1000
ii. type	: Intumescent foam seal
iii. overall size	: 10 mm x 4.5 mm
iv. fixing method	: Self-adhered to the edge of the door panel
6.6 Details of frame seal	
i. type	: Rockwool Firepro
ii. Material	: Intumescent Fire Mastic
ii. application method	: Applied to the door framing panel for then it to be applied into the aperture of the plasterboard
6.7 Fixings (Door B to aperture)	
i. type	: Multipurpose Screws
ii. size	: 5mm x 100mm
iii. centres	: 300 centres

Doorset clearance gaps



Doorset A (mm)						Doorset B (mm)					
Hinge Side	Primary	Leaf to Stop	Leading Edge	Primary	Leaf to Stop	Hinge Side	Primary	Leaf to Stop	Leading Edge	Primary	Leaf to Stop
H1	2.3	0.8	L1	2.5	0.5	H1	2.7	0.9	L1	2.9	0.4
H2	2.5	0.9	L2	2.5	0.4	H2	2.5	0.7	L2	2.5	0.4
H3	2.3	0.8	L3	2.6	0.5	H3	2.5	0.7	L3	2.5	0.3
H4	2.4	0.8	L4	2.6	0.5	H4	2.7	0.6	L4	2.6	0.4
Mean	2.4		Mean	2.6		Mean	2.6		Mean	2.6	
Max	2.5		Max	2.6		Max	2.7		Max	2.9	
Min	2.3		Min	2.5		Min	2.5		Min	2.5	
Max Permitted	4.4		Max Permitted	4.6		Max Permitted	4.7		Max Permitted	4.8	
Top edge	Primary	Leaf to stop	Threshold	Primary		Top edge	Primary	Leaf to stop	Threshold	Primary	
T1	2.4	0.6	B1	2.5		T1	2.5	0.9	B1	2.5	
T2	2.5	0.8	B2	2.6		T2	2.5	0.9	B2	2.4	
T3	2.7	0.7	B3	2.6		T3	2.4	0.8	B3	2.4	
Mean	2.5		Mean	2.6		Mean	2.5		Mean	2.4	
Max	2.7		Max	2.6		Max	2.5		Max	2.5	
Min	2.4		Min	2.5		Min	2.4		Min	2.4	
Max Permitted	4.6		Max Permitted	4.6		Max Permitted	4.5		Max Permitted	4.5	

Test Observations

Time		All observations are from the unexposed face unless noted otherwise.
mins	secs	
00	00	The test commences.
03	30	Smoke release and discolouration above both of the the door leaves.
10	42	Brown discolouration up the vertical edges of both panels.
16	00	Partition is brown around the vertical and head of both panels.
26	00	Panel B face of the leaf (plasterboard) is discolouring brown all over.
29	00	First layer of board on unexposed face is peeling.
32	00	Top left corner of Doorset B plasterboard has cracked and fallen away. Cotton pad applied, no failure.
55	00	Right side top edge of panel B has a crack and is glowing through it. Cotton pad applied, no failure.
60	00	Cotton pad applied top left panel A, no failure.
65	00	Cotton pad applied top left panel A, no failure.
79	00	Cotton pad applied to the top left corner of panel B, no failure.
81	00	Top right corner of panel A is deflecting away from heating conditions.
91	00	Cotton pad applied top right corner of panel A. Cotton pad ignites meaning cotton pad failure is deemed to have occurred.
101	20	Cotton pad applied top left panel B. Black discolouration, no ignition.
116	00	Cotton pad applied to top left corner of Doorset B. Cotton pad ignited meaning cotton pad integrity failure is deemed to have occurred.
118	00	Plasterboard has fallen off Panel A on the exposed face.
172	00	Joints on partition starting to crack and discolour brown.
183	00	Test stopped at sponsors request.

Test Photographs

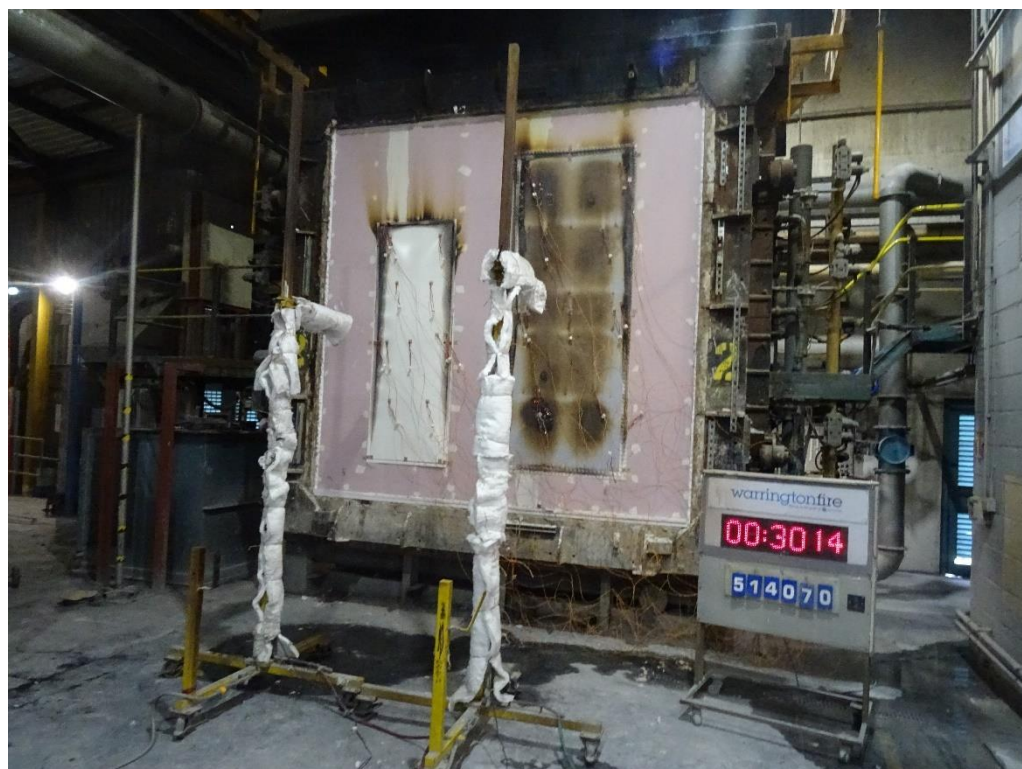
The exposed face of the doorsets prior to the start of the test



The unexposed face of the doorsets prior to the start of the test



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



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



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



The unexposed face of the doorsets after a test duration of 180 minutes



The exposed face
of the doorsets
shortly after the
test



Temperature and Deflection Data

Mean furnace temperature, together with the temperature/time relationship specified in BS EN 1363-1: 2020

Time Mins	Specified Furnace Temperature Deg. C	Actual Furnace Temperature Deg. C
0	20	31
5	576	572
10	678	676
15	739	738
20	781	789
25	815	817
30	842	850
35	865	868
40	885	887
45	902	903
50	918	920
55	932	933
60	945	945
65	957	957
70	968	970
75	979	981
80	988	990
85	998	1002
90	1006	1012
95	1014	1016
100	1022	1022
105	1029	1027
110	1036	1035
115	1043	1045
120	1049	1042
125	1055	1063
130	1061	1062
135	1067	1070
140	1072	1073
145	1077	1076
150	1082	1078
155	1087	1091
160	1092	1096
165	1097	1097
170	1101	1098
175	1106	1103
180	1110	1112
183	1112	1115

Individual And Mean Temperatures Recorded On The Unexposed Surface Of Doorset A

Time Mins	T/C Number 4 Deg. C	T/C Number 5 Deg. C	T/C Number 6 Deg. C	T/C Number 7 Deg. C	T/C Number 8 Deg. C	Mean Temp Deg. C
0	22	22	23	23	22	22
5	53	50	49	35	32	44
10	89	77	77	79	75	79
15	95	85	84	86	80	86
20	99	102	87	89	84	92
25	105	114	89	94	91	99
30	113	126	88	98	94	104
35	129	145	102	104	96	115
40	188	201	123	113	110	147
41	208	218	131	116	114	157
45	266	277	183	148	145	204
50	293	299	230	205	195	244
55	337	321	261	253	236	282
60	354	333	288	285	269	306
65	369	335	293	306	284	317
70	383	339	282	315	288	321
75	392	340	279	324	290	325
80	396	346	278	326	292	328
85	424	395	314	379	338	370
90	447	411	332	422	381	399
95	408	442	337	445	416	410
100	406	465	341	456	427	419
105	465	569	367	460	440	460
110	481	597	384	471	446	476
115	489	593	400	480	460	484
120	168	*	144	607	508	357
125	*	*	*	*	*	*
130	*	*	*	*	*	*
135	*	*	*	*	*	*
140	*	*	*	*	*	*
145	*	*	*	*	*	*
150	*	*	*	*	*	*
155	*	*	*	*	*	*
160	*	*	*	*	*	*
165	*	*	*	*	*	*
170	*	*	*	*	*	*
175	*	*	*	*	*	*
180	*	*	*	*	*	*
183	*	*	*	*	*	*

*Thermocouple detached from specimen

Individual And Mean Temperatures Recorded On The Unexposed Surface Of Doorset B

Time Mins	T/C Number 9 Deg. C	T/C Number 10 Deg. C	T/C Number 11 Deg. C	T/C Number 12 Deg. C	T/C Number 13 Deg. C	Mean Temp Deg. C
0	22	22	22	22	22	22
5	48	45	31	45	40	42
10	93	93	88	92	92	92
15	97	98	95	97	98	97
20	112	112	107	115	113	112
24	147	134	129	172	139	144
25	180	153	142	215	161	170
30	357	339	317	373	339	345
35	330	384	396	387	375	374
40	308	332	326	*	319	321
45	316	331	319	*	310	319
50	313	317	324	*	312	317
55	312	322	333	*	314	320
60	318	328	329	*	322	324
65	321	333	336	*	326	329
70	321	342	*	*	331	331
75	328	350	*	*	61	246
80	342	356	*	*	*	349
85	344	358	*	*	*	351
90	*	361	*	*	*	*
95	*	364	*	*	*	*
100	*	*	*	*	*	*
105	*	*	*	*	*	*
110	*	*	*	*	*	*
115	*	*	*	*	*	*
120	*	*	*	*	*	*
125	*	*	*	*	*	*
130	*	*	*	*	*	*
135	*	*	*	*	*	*
140	*	*	*	*	*	*
145	*	*	*	*	*	*
150	*	*	*	*	*	*
155	*	*	*	*	*	*
160	*	*	*	*	*	*
165	*	*	*	*	*	*
170	*	*	*	*	*	*
175	*	*	*	*	*	*
180	*	*	*	*	*	*
183	*	*	*	*	*	*

*Thermocouple detached from specimen

Individual Temperatures Recorded On The Leaf Of Doorset A 100 mm Away From The Edges

Time Mins	T/C Number 18 Deg. C	T/C Number 19 Deg. C	T/C Number 20 Deg. C	T/C Number 21 Deg. C
0	24	24	24	24
5	108	74	42	49
10	164	145	91	89
15	196	190	114	104
16	201	197	118	107
17	206	202	122	110
20	223	222	136	123
25	244	261	155	141
30	294	306	177	160
35	358	359	204	186
40	375	380	231	212
45	378	387	286	*
50	391	393	326	*
55	418	414	334	*
60	436	434	343	*
65	453	458	377	*
70	431	480	386	*
75	427	500	383	*
80	431	520	380	*
85	488	541	424	*
90	515	573	421	*
95	576	601	416	*
100	604	645	417	*
105	643	707	432	*
110	595	716	445	*
115	*	731	456	*
120	*	715	*	*
125	*	732	*	*
130	*	749	*	*
135	*	758	*	*
140	*	765	*	*
145	*	769	*	*
150	*	772	*	*
155	*	786	*	*
160	*	791	*	*
165	*	795	*	*
170	*	799	*	*
175	*	803	*	*
180	*	815	*	*
183	*	821	*	*

*Thermocouple detached from specimen

Individual Temperatures Recorded On The Leaf Of Doorset A 25 mm Away From The Edges

Time Mins	T/C Number 14 Deg. C	T/C Number 15 Deg. C	T/C Number 16 Deg. C	T/C Number 17 Deg. C
0	24	23	23	23
3	174	86	53	42
4	212	112	74	57
5	221	131	94	74
10	278	*	178	148
15	330	*	224	200
20	370	*	256	240
25	386	*	300	248
30	408	*	358	284
35	438	*	376	324
40	449	*	387	349
45	451	*	415	369
50	464	*	*	390
55	484	*	*	393
60	501	*	*	407
65	516	*	*	427
70	532	*	*	441
75	540	*	*	446
80	545	*	*	450
85	547	*	*	456
90	556	*	*	*
95	562	*	*	*
100	565	*	*	*
105	565	*	*	*
110	569	*	*	*
115	572	*	*	*
120	570	*	*	*
125	575	*	*	*
130	581	*	*	*
135	586	*	*	*
140	592	*	*	*
145	591	*	*	*
150	591	*	*	*
155	596	*	*	*
160	600	*	*	*
165	601	*	*	*
170	603	*	*	*
175	605	*	*	*
180	610	*	*	*
183	614	*	*	*

*Thermocouple detached from specimen

Individual Temperatures Recorded On The Leaf Of Doorset B 100 mm Away From The Edges

Time Mins	T/C Number 26 Deg. C	T/C Number 27 Deg. C	T/C Number 28 Deg. C	T/C Number 29 Deg. C
0	19	19	19	23
5	45	38	30	32
10	87	85	87	89
15	98	92	93	96
20	112	102	104	101
25	146	116	129	123
26	179	120	144	132
27	222	131	182	143
30	329	226	315	247
35	420	421	427	404
40	*	*	*	333
45	*	*	*	314
50	*	*	*	315
55	*	*	*	328
60	*	*	*	341
65	*	*	*	338
70	*	*	*	350
75	*	*	*	360
80	*	*	*	368
85	*	*	*	370
90	*	*	*	373
95	*	*	*	375
100	*	*	*	*
105	*	*	*	*
110	*	*	*	*
115	*	*	*	*
120	*	*	*	*
125	*	*	*	*
130	*	*	*	*
135	*	*	*	*
140	*	*	*	*
145	*	*	*	*
150	*	*	*	*
155	*	*	*	*
160	*	*	*	*
165	*	*	*	*
170	*	*	*	*
175	*	*	*	*
180	*	*	*	*
183	*	*	*	*

*Thermocouple detached from specimen

Individual Temperatures Recorded On The Leaf Of Doorset B 25 mm Away From The Edges

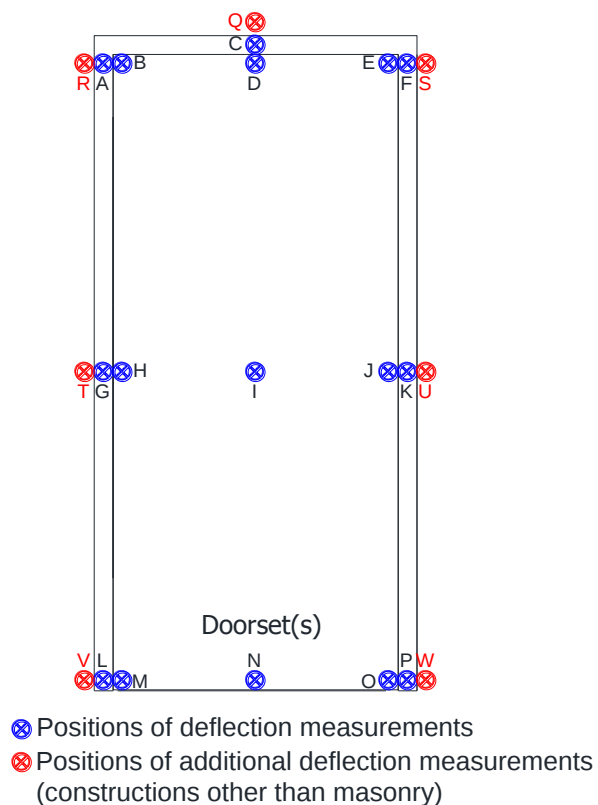
Time Mins	T/C Number 22 Deg. C	T/C Number 23 Deg. C	T/C Number 24 Deg. C	T/C Number 25 Deg. C
0	19	19	18	19
5	79	36	30	31
10	129	90	85	86
15	180	123	93	99
16	196	129	94	102
17	213	131	97	107
20	306	139	104	112
25	409	167	119	124
30	424	356	290	261
35	*	433	418	406
40	*	*	*	334
45	*	*	*	310
50	*	*	*	319
55	*	*	*	341
60	*	*	*	340
65	*	*	*	349
70	*	*	*	355
75	*	*	*	364
80	*	*	*	369
85	*	*	*	366
90	*	*	*	366
95	*	*	*	366
100	*	*	*	362
105	*	*	*	364
110	*	*	*	*
115	*	*	*	*
120	*	*	*	*
125	*	*	*	*
130	*	*	*	*
135	*	*	*	*
140	*	*	*	*
145	*	*	*	*
150	*	*	*	*
155	*	*	*	*
160	*	*	*	*
165	*	*	*	*
170	*	*	*	*
175	*	*	*	*
180	*	*	*	*
183	*	*	*	*

Individual Temperatures Recorded On The Unexposed Surface Of Door Frame A

Time Mins	T/C Number 30 Deg. C	T/C Number 31 Deg. C	T/C Number 32 Deg. C	T/C Number 33 Deg. C
0	25	25	25	24
5	124	148	104	84
10	198	*	184	146
11	209	*	197	156
15	244	*	235	196
20	278	*	275	242
25	303	*	313	273
30	326	*	349	304
35	353	*	374	329
40	364	*	388	350
45	372	*	398	367
50	382	*	407	383
55	397	*	403	388
60	411	*	410	390
65	424	*	418	398
70	435	*	427	412
75	442	*	436	419
80	447	*	439	425
85	452	*	441	435
90	460	*	448	436
95	467	*	445	434
100	471	*	441	433
105	473	*	443	433
110	477	*	443	431
115	477	*	446	432
120	484	*	461	*
125	489	*	*	*
130	494	*	*	*
135	497	*	*	*
140	502	*	*	*
145	503	*	*	*
150	504	*	*	*
155	509	*	*	*
160	514	*	*	*
165	518	*	*	*
170	521	*	*	*
175	524	*	*	*
180	527	*	*	*
183	531	*	*	*

Individual Temperatures Recorded On The Unexposed Surface Of Door Frame B

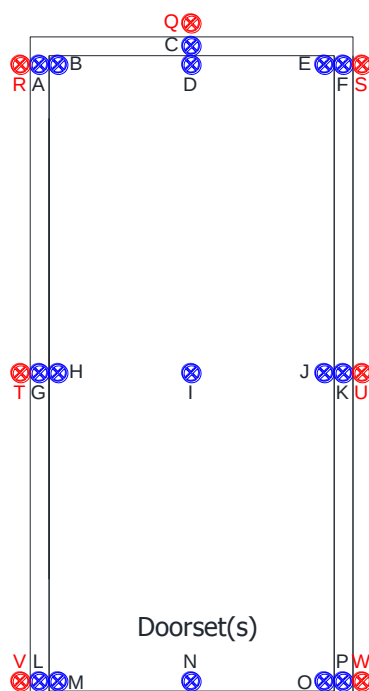
Time Mins	T/C Number 34 Deg. C	T/C Number 35 Deg. C	T/C Number 36 Deg. C	T/C Number 37 Deg. C
0	26	26	23	23
5	23	118	85	73
10	23	172	169	136
12	*	190	194	159
13	*	197	203	169
15	*	211	222	188
20	*	237	*	232
25	*	302	*	*
30	*	400	*	*
35	*	360	*	*
40	*	*	*	*
45	*	*	*	*
50	*	*	*	*
55	*	*	*	*
60	*	*	*	*
65	*	*	*	*
70	*	*	*	*
75	*	*	*	*
80	*	*	*	*
85	*	*	*	*
90	*	*	*	*
95	*	*	*	*
100	*	*	*	*
105	*	*	*	*
110	*	*	*	*
115	*	*	*	*
120	*	*	*	*
125	*	*	*	*
130	*	*	*	*
135	*	*	*	*
140	*	*	*	*
145	*	*	*	*
150	*	*	*	*
155	*	*	*	*
160	*	*	*	*
165	*	*	*	*
170	*	*	*	*
175	*	*	*	*
180	*	*	*	*
183	*	*	*	*

Horizontal Deflections Of The Doorset A

Doorset reference:																
Deflections – mm																
Time-mins	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	-1	-6	4	6	-10	1	20	25	5	24	18	-2	1	-3	-12	-12
20	-3	-7	3	1	-18	2	17	25	-2	27	16	1	-1	0	-18	-20
30	-6	-12	2	-2	-27	-2	18	25	0	27	15	-3	-5	4	-22	-23
40	16	-12	0	-2	-29	-5	16	21	-14	26	28	-5	-6	-6	-23	-20
50	-8	-13	-1	-2	-28	-5	11	21	-15	29	27	-9	-6	-6	-22	-32
60	-7	-3	9	11	-17	5	16	29	3	29	29	0	11	-5	-6	-15
70	-6	4	21	22	-1	21	21	37	25	28	25	1	3	-2	-6	-10
80	11	9	31	37	8	27	28	40	54	27	28	-1	2	4	-6	-5
90	19	15	36	37	21	43	29	43	41	30	29	3	4	5	-4	0
100	14	11	33	36	23	46	30	41	26	31	58	4	6	7	-1	-2
110	12	11	31	33	22	44	28	41	37	32	57	2	5	6	-6	7
120	13	11	33	33	17	36	29	41	28	32	58	5	4	6	-3	-1
130	12	11	33	30	19	36	27	40	29	32	57	2	5	3	-3	-5
140	5	3	24	27	9	33	29	39	27	33	63	6	4	1	-3	-8
150	4	3	23	26	6	35	28	39	27	31	53	9	4	0	-6	-4
160	9	4	23	25	6	30	25	41	25	32	31	2	3	4	-5	-7
170	3	0	20	25	4	27	23	38	27	32	36	2	5	1	-6	-7
180	10	1	21	26	5	29	22	42	27	32	33	1	0	2	-9	-6

Positive values indicate movement towards the furnace

Horizontal Deflections Of The Doorset A

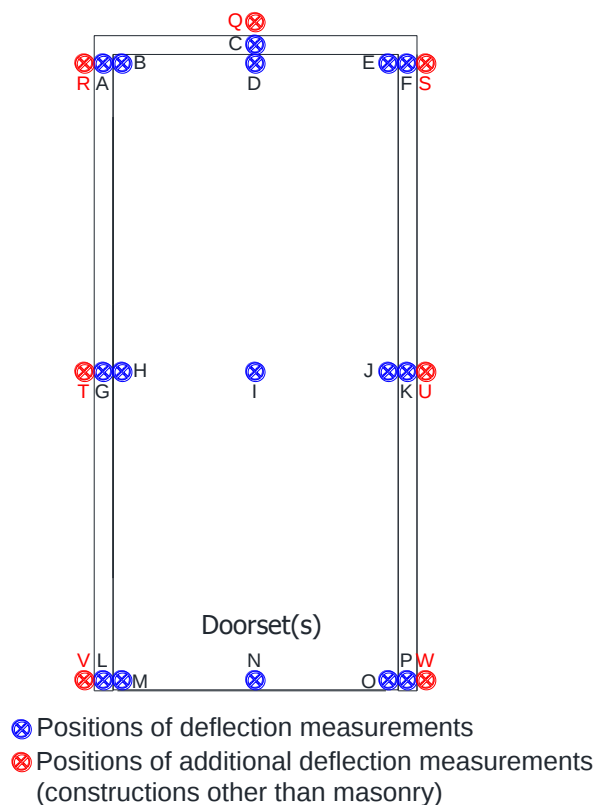


⊗ Positions of deflection measurements

⊗ Positions of additional deflection measurements
(constructions other than masonry)

Doorset reference:							
Deflections – mm							
Time-mins	Q	R	S	T	U	V	W
0	0	0	0	0	0	0	0
10	-3	-5	0	11	18	3	4
20	10	4	13	14	12	2	3
30	3	3	-1	8	8	1	0
40	3	6	2	9	9	0	-1
50	11	-7	8	1	11	-2	1
60	20	7	12	16	27	-1	4
70	23	3	24	20	44	6	10
80	25	18	33	21	43	5	17
90	36	18	46	24	57	9	14
100	33	19	50	21	63	8	8
110	34	18	45	45	59	7	16
120	32	17	50	44	59	6	10
130	32	19	50	45	58	9	10
140	22	18	40	18	59	17	12
150	13	19	36	22	60	14	17
160	25	13	32	20	56	2	13
170	21	19	31	17	59	3	13
180	22	14	29	18	56	0	10

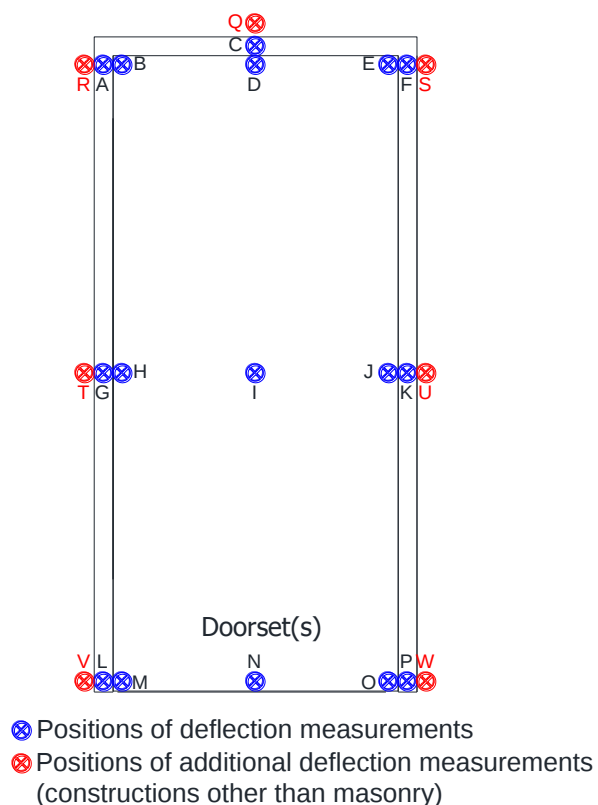
Positive values indicate movement towards the furnace

Horizontal Deflections Of The Doorset B

Doorset reference:																
Deflections – mm																
Time-mins	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	-4	9	15	15	-5	-7	18	23	38	24	16	0	5	14	-1	-4
20	-8	9	7	7	-10	-5	20	25	31	12	-16	-3	3	-5	-2	-17
30	-11	-2	-1	-1	-7	-5	17	12	33	19	8	-4	2	6	-2	-4
40	-7	-11	19	19	12	0	9	9	16	8	9	-5	0	5	-1	1
50	-11	-16	6	0	-6	-11	19	13	21	-2	11	2	-5	9	1	0
60	-8	-8	2	2	4	-7	26	30	23	5	10	-2	0	11	-4	7
70	1	-7	13	13	4	8	29	72	43	28	14	23	15	12	2	5
80	5	8	41	13	17	4	61	28	51	11	28	6	15	43	5	10
90	17	20	41	23	22	15	64	29	54	38	35	14	18	24	9	4
100	21	21	41	24	20	16	96	35	69	25	25	22	20	22	8	9
110	19	19	30	26	19	15	64	81	64	27	33	17	20	22	-13	10
120	21	18	39	24	19	16	65	73	67	27	32	18	16	22	4	9
130	16	25	42	24	18	15	66	79	67	25	34	17	15	22	4	10
140	5	11	14	14	6	6	69	78	70	45	28	-2	15	24	4	8
150	9	11	13	33	4	13	65	81	61	47	34	28	20	18	7	8
160	11	12	37	31	20	11	69	75	66	43	50	10	11	20	6	10
170	11	8	36	22	12	5	72	73	63	39	48	8	14	20	1	10
180	8	10	37	28	16	9	71	71	65	40	47	10	13	19	4	10

Positive values indicate movement towards the furnace

Horizontal Deflections Of The Doorset B



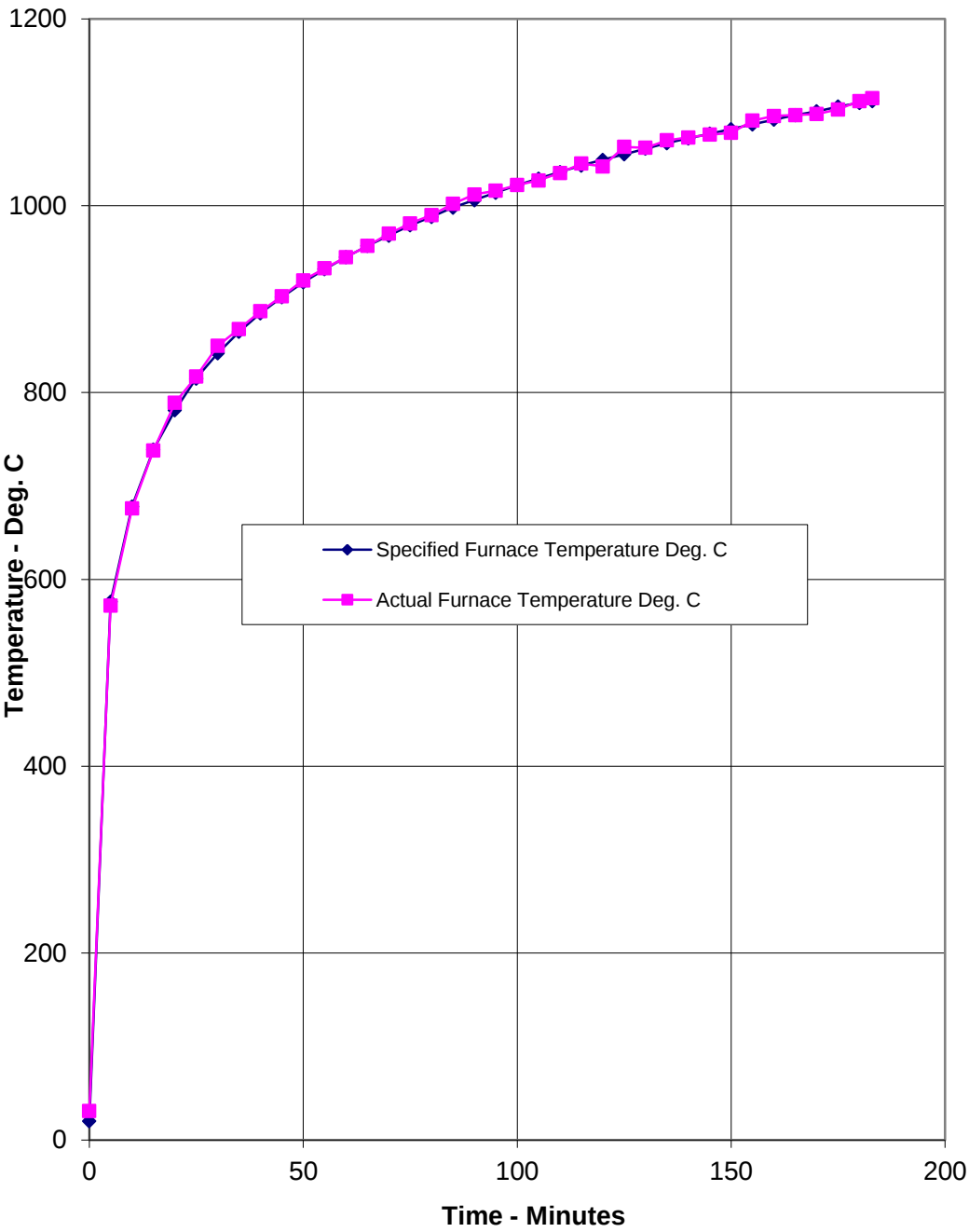
Doorset reference:							
Deflections – mm							
Time-mins	Q	R	S	T	U	V	W
0	0	0	0	0	0	0	0
10	5	-1	-2	17	80	2	4
20	5	1	-12	8	80	1	3
30	3	-1	6	5	73	0	2
40	8	3	-1	4	72	5	2
50	3	-6	-8	5	72	1	7
60	6	-2	9	17	79	1	1
70	7	11	14	39	89	10	19
80	13	17	9	51	88	14	13
90	11	8	3	64	88	27	18
100	17	27	8	66	98	21	21
110	16	23	9	64	102	21	12
120	11	22	6	65	97	20	11
130	16	24	7	64	97	15	11
140	16	15	8	65	102	13	19
150	18	10	15	61	116	17	23
160	10	16	11	65	107	13	12
170	11	14	13	59	103	9	11
180	10	12	10	94	106	15	14

Positive values indicate movement towards the furnace

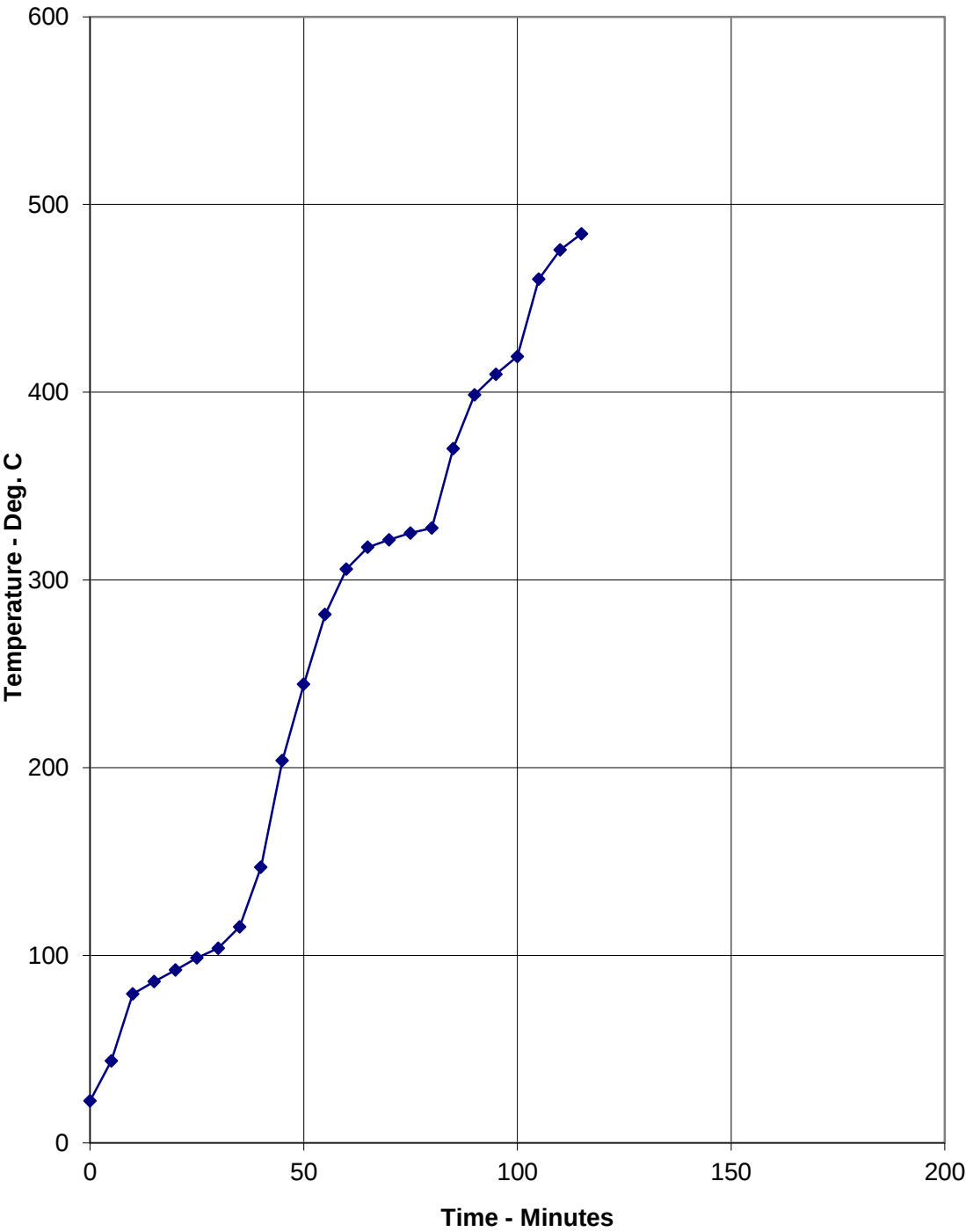
Recorded Radiation Intensity From The Doorsets

Time Mins	Radiation Intensity A kW/m ²	Time Mins	Radiation Intensity B kW/m ²
0	0.000	0	0.000
5	0.367	5	0.000
10	0.603	10	0.584
15	0.839	15	0.195
20	0.786	20	0.250
25	0.996	25	1.197
30	1.337	30	1.725
35	1.442	35	1.670
40	1.547	40	1.976
45	1.730	45	1.976
50	1.704	50	1.391
55	1.862	55	1.864
60	2.229	60	1.920
65	2.412	65	2.198
70	2.465	70	2.170
75	1.757	75	1.920
80	1.993	80	2.087
85	2.255	85	2.421
90	2.360	90	2.365
95	2.491	95	2.421
100	2.465	100	2.504
105	2.465	105	2.504
110	2.570	110	2.671
115	2.701	115	2.671
118	3.068	118	2.782
119	5.297	119	3.478
120	6.215	120	3.617
125	7.317	125	3.895
130	7.448	130	4.035
135	7.920	135	4.090
140	8.077	140	4.341
145	8.182	145	4.174
150	8.287	150	4.201
155	8.628	155	4.341
160	8.471	160	4.591
165	8.654	165	4.647
170	8.864	170	4.702
175	8.995	175	4.841
179	9.389	179	4.953
180	9.415	180	5.036
183	9.546	183	5.231

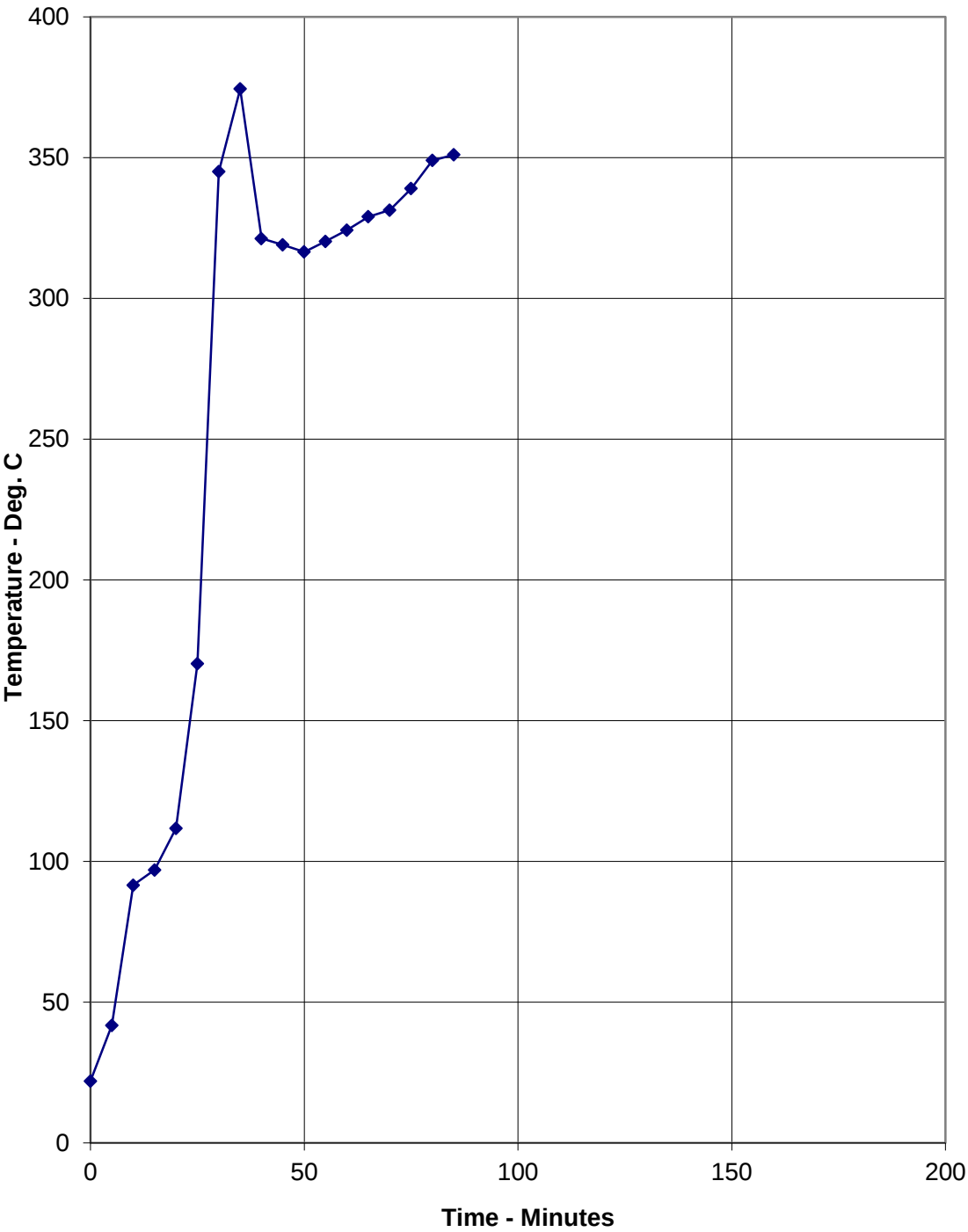
Graph showing mean furnace temperature, together with the temperature/time relationship specified in BS EN 1363-1: 2020



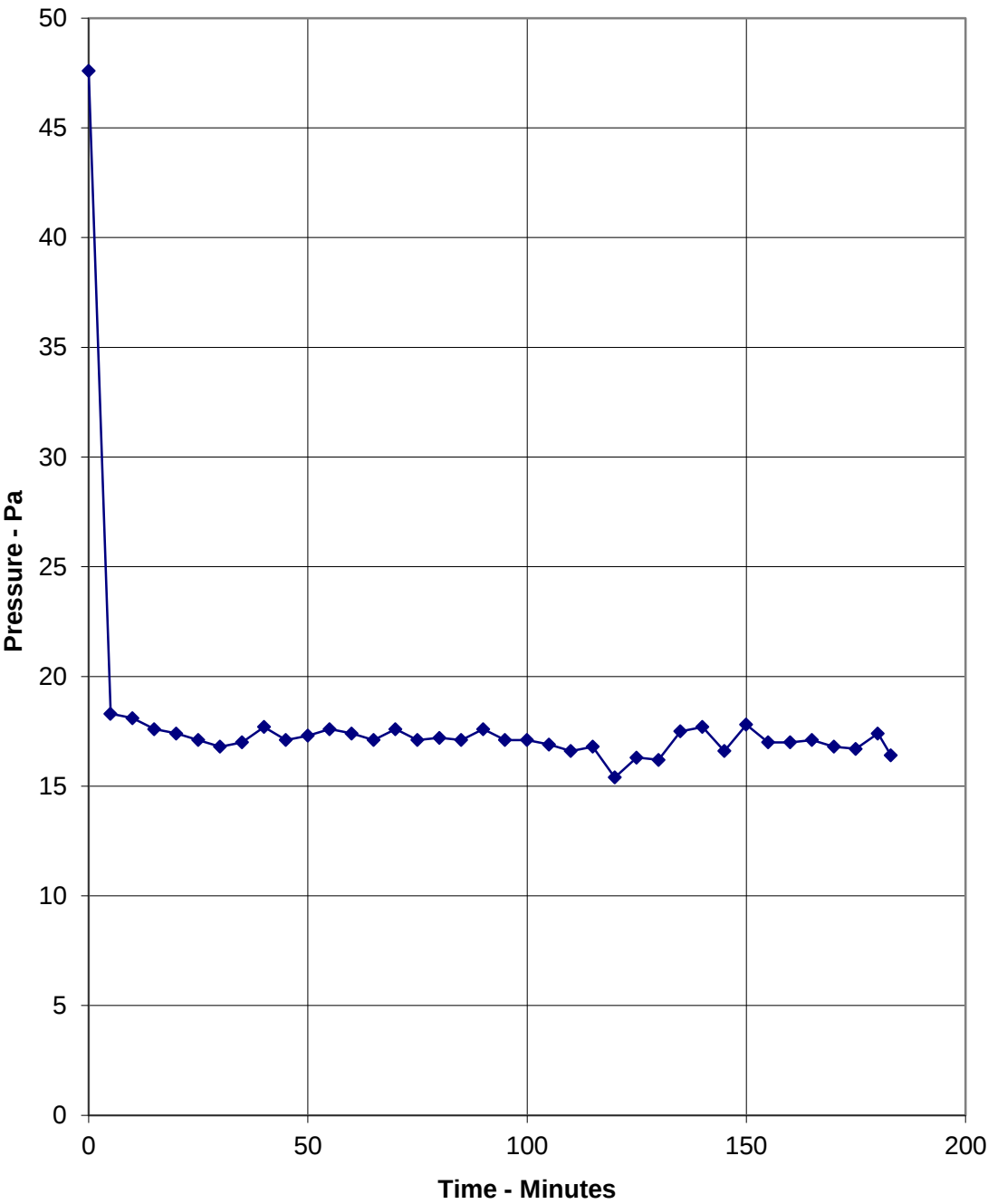
Graph Showing Mean Temperatures Recorded On The Unexposed Surface Of Doorset A



Graph Showing Mean Temperatures Recorded On The Unexposed Surface Of Doorset B



Graph showing recorded furnace pressure at the head of the Doorsets



On-going Implications

Limitations

This report details the method of construction, the test conditions and the results obtained when the specific elements of construction described herein were tested following the procedure outlined in BS EN 1363-1: 2020, and where appropriate BS EN 1363-2: 1999. 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. Annex A of BS EN 1363-1: 2020, provides guidance information on the application of fire resistance tests and the interpretation of test data.

This document replaces Issue 2, (dated 01 February 2023).

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

General

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

Materials And Constructions, General

Unless otherwise stated in the following text, the materials and construction of the doorset or openable window shall be the same as that tested. The number of leaves and the mode of operation (e.g. sliding, single action or double action) shall not be changed.

Specific Restrictions On Materials And Construction (Metal Constructions)

The dimensions of metal wrap around frames may be increased to accommodate increased supporting construction thickness. The thickness of the metal may also be increased by up to 25 %.

The type of metal shall not be changed from that tested.

The number of stiffening elements for uninsulated doors and the number and type of fixings of such members within the panel fabrication may be increased proportionally with the increase in size but shall not be reduced.

Decorative Finishes (Paint)

Where the paint finish is not expected to contribute to the fire resistance of the door, alternative paints are acceptable and may be added to door leaves or frames for which unfinished test specimens were tested. Where the paint finish contributes to the fire resistance of the door (e.g. intumescent paints) then no change shall be permitted.

Fixings

The number of fixings per unit length used to attach doorsets to supporting constructions may be increased, but shall not be decreased and the distance between fixings may be reduced but shall not be increased.

Building Hardware

The number of hinges and dog bolts may be increased but shall not be decreased.

NOTE 1 The number of movement restrictors such as locks and latches is not covered by direct application.

Where a doorset has been tested with a door closing device fitted, but with the retention force released in accordance with 10.1.4, the doorset may be provided either with or without that closing device, i.e. where self closing characteristics are not required.

NOTE 2 Interchange of building hardware is not covered by the field of direct application.

Permissible Size Variations

Doorsets of sizes different from those of tested specimens are permitted within certain limitations, but the variations are dependent on product type and the length of time that the performance criteria are fulfilled.

The increase and decrease of dimensions permitted by the field of direct application are applicable to the overall size and to each door leaf, each side panel and each over panel independently.

In accordance with 13.2.2.3, the dimensions (width and height) of any glass pane cannot be increased.

Test periods

The amount of variation of size permitted is dependent on whether the classification time was just reached (Category 'A') or whether an extended time (Category 'B') in accordance with the values shown in Table 1 were fulfilled before the test was concluded.

For category 'B':

Table 1 — Category B overrun requirements

Classification time (min)	All performance criteria fulfilled for at least minutes
15	18
20	24
30	36
45	52
60	68
90	100
120	132
180	196
240	260

**Size variation
related to product
type**

The rules to cover increase or decrease of size without additional considerations are applicable only to six main product groups:

General

- a) hinged and pivoted doorsets and openable windows;
- b) horizontally sliding and vertically sliding doorsets including sectional doorsets;
- c) steel single skin folding shutters doorsets (uninsulated);
- d) other sliding and folding doorsets (insulated);
- e) rolling shutter doorsets;
- f) openable fabric curtains.

No increases in size are permitted for doorsets which are required to satisfy radiation control levels unless the insulation criteria are also satisfied. This is because any increase in size will increase the radiation received at a fixed distance away from the door. There are calculation methods which can be used to determine acceptable size increases for such doors; however, these are beyond the scope of direct application. Doors that satisfy both the radiation control levels and insulation criteria may have their sizes increased as outlined in Annex B. This is accepted because the increase in radiation resulting from a size increase allowed under this section, for an insulated door, will be such that it will still satisfy the required radiation control levels. Size decreases are permitted for both doors which satisfy radiation control levels and those which satisfy insulation criteria and radiation control levels.

Permissible variations for each product group are detailed in Annex B which also contains some examples relating to hinged/pivoted doorsets.

Size increases for doorsets which do not fall into one of the six groups given above are the subject of extended application.

**Hinged and
pivoted doorsets
and openable
windows**

For Category 'A' tests with no overrun of classification period, no increase is allowed. Unlimited reductions from the tested specimen are permitted with the exception of insulated metal doors where the size reduction is limited.

For Category 'B' tests (with specified overrun of classification period) all smaller sizes are permitted and increases in height and width are permitted as stated in Annex B.

Other changes

For smaller doorset sizes the relative positioning of movement restrictors (e.g. hinges and latches) shall remain the same as tested or any change to the distances between them will be limited to the same percentage reduction as the decrease of test specimen size.

For larger doorset sizes the following shall also apply:

- a) the height of the latch above floor level shall be equal to or greater than the tested height, and such increase in height shall be at least proportional to the increase in door height;
- b) the distance of the top hinge from the top of door leaf shall be equal to or less than that tested;
- c) the distance of the bottom hinge from bottom of door leaf shall be equal to or less than that tested;
- d) where three hinges or distortion preventers are used, the distance between the bottom of the door leaf and centre restraint shall be equal to or greater than that tested.

Gaps

The maximum size of the primary gaps identified in 7.3 is restricted to the following sizes in practice:

$$x = (a + b)/2 + 2 \text{ mm}$$

where

x is the maximum permitted gap size;

a is the maximum measured gap size;

b is the mean measured gap size.

The minimum size of the primary gaps may be reduced.

The permitted gap size may be different for different parts of the door or window.

Asymmetrical assemblies

EN 1363-1 states that for separating elements required to be fire resisting from both sides, two test specimens shall be tested (one from each direction) unless the element is fully symmetrical, i.e. the construction of the doorset is identical on both sides of the centre line when viewed in plan (from above). However, in some cases it is possible to develop rules whereby the fire resistance of an asymmetrical door assembly tested in one direction can apply when the fire exposure is from the other direction. The possibility to develop such rules increases if the consideration is limited to certain types of door assembly and on the criteria being applicable (e.g. integrity only doors). The following rules represent the minimum level of common agreement which shall be followed. The rationale behind the rules is given in Annex C.

Specific Rules

The rules governing the applicability of tests carried out in one direction to other directions are given in Table 2 and are based on the following premises:

— that each of the door leaves are themselves of symmetrical construction with the exception of the edges (e.g. lock/leading edge and hinge edge or double rebated doors);

— that any restraining/supporting elements of building hardware has been included in a test to EN 1634-1 when exposed in both directions so that they will retain their function when exposed to the heat of the test;

— that there is no change in the number of leaves or the mode of operation (e.g. sliding, swinging, single action or double action);

— that side, over and transom panels are excluded from Table 2 unless they are fully symmetrical.

Table 2 lists the type of door assembly for which rules can be generated and gives the direction in which it should be tested to cover the opposite direction. The separate columns for the integrity and insulation criteria reflect the different ability to make rules for integrity only doors as opposed to those which satisfy both criteria. A 'Yes' means that it is possible to identify the direction of test which covers the opposite direction. A 'No' indicates that it is not possible to identify the direction which will cover the opposite direction.

Table 2 — Type of doorset and direction to be tested to cover the opposite direction

Type of doorset	Direction to be tested to cover opposite direction	Integrity	Insulation	Radiation
Hinged or pivoted, timber leaf, timber frame	Opening into the furnace	yes	yes	yes
Hinged or pivoted, timber leaf, metal frame (no transom)	Opening into the furnace	yes	no	yes
Hinged, metal leaf, metal frame (not pivoted)	Opening away from Furnace	yes	no	yes
Rolling shutter	Barrel and supporting components fixed on the face of the supporting wall on the fire side	yes	no	no
Sliding/folding	Sliding/folding supporting components fixed on the face of the supporting wall on the fire side	yes	no	no
Operable fabric curtains	Not possible to define a scenario			
^a This only applies to doors without insulation in the core and with a movement restrictor at approximately mid-height on the hinge side				

Supporting Constructions

The fire resistance of a door assembly tested in one form of standard supporting construction may or may not apply when it is mounted in other types of construction. Generally, the rigid and flexible types are not interchangeable and rules governing the direct application within each group are given in 13.5.2 to 13.5.4. However, in some cases it is possible for the result of a test on a particular type of door assembly tested in one form of standard supporting construction to be applicable to that door assembly when mounted in a different type of standard supporting construction. Specific rules governing the situation for hinged and pivoted door assemblies are given in 13.5.4. The rationale behind the rules is given in Annex C.

Flexible standard supporting constructions

The fire resistance of a door tested in one of the flexible standard supporting constructions specified in EN 1363-1 can be applied to a door mounted in the same manner in a wall or partition which is of the board covered type with studs made from metal or timber. The fire resistance of the door is only applicable to a door mounted in a partition with a fire resistance equal to or greater than the partition in which it was tested.

Specific rules for hinged or pivoted doorsets

- a) For timber door leaves hung in timber frames, the result of a test in a rigid standard supporting construction is applicable to that door assembly mounted in a flexible construction.
- b) For timber door leaves hung in timber frames, the result of a test in a flexible standard supporting construction is applicable to that door assembly mounted in a rigid construction.
- c) For timber door leaves hung in metal frames, the result of a test in a flexible standard supporting construction is applicable to that door assembly mounted in a rigid construction but not vice versa.
- d) For insulated metal door leaves hung in metal frames, there is no applicability of results in rigid standard supporting construction to flexible constructions or vice versa; to cover rigid and flexible types, tests shall be undertaken in each type of standard supporting construction.
- e) For uninsulated metal doors, the result of a test in a rigid standard supporting construction is applicable to that door assembly mounted in a flexible construction, but not vice versa.

The rules above assume that the fixing methods used in each type of supporting construction are appropriate to that construction. Thus for example in a), the test on the timber door leaf in a timber frame will have been carried out with appropriate fixings for timber frames in rigid constructions. The result is applicable to a timber door leaf in a timber frame mounted into a flexible construction with appropriate fixings for timber frames in flexible constructions.