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Testing. Advising. Assuring.

Title:

The fire resistance performance of two single-acting, single-leaf doorsets incorporating various items of hardware tested in accordance with BS EN 1634-1:2014

Report No: 352961/A

Prepared for:

BW Hardware.
Unit 1 Airton Road
Tallaght
Dublin 24
Ireland

Date: 27th November 2015

Notified Body No:

0833

0249

This test report is additional to that issued as WF Test Report No. 352961 and dated 27th November 2015. The original test report remains valid and is not replaced by this additional test report.

Summary

Objective	To determine the fire resistance performance of two single-acting, single-leaf doorsets incorporating various items of hardware tested in accordance with BS EN 1634-1: 2014.
Test Sponsor	**BW Hardware.** Unit 1 Airton Road, Tallaght, Dublin 24, Ireland
Summary of Tested Specimens	For the purpose of the test the doorsets were referenced **Doorset A** and **Doorset B**. **Doorset A** – Briefly had overall nominal dimensions 2080 mm high by 1006 mm wide incorporating a door leaf with overall dimensions 2040 mm high by 932 mm wide by 44 mm thick. The door leaf was of a solid graduated density chipboard construction, with 8 mm hardwood lippings to the vertical edges and was hung within a softwood frame on three BW Hardware steel hinges referenced 'BWS 10'. **Doorset B** - Briefly had overall nominal dimensions 2080 mm high by 1006 mm wide incorporating a door leaf with overall dimensions 2040 mm high by 932 mm wide by 54 mm thick. The door leaf was of a solid graduated density chipboard construction, with 8 mm hardwood lippings to the vertical edges and was hung within a softwood frame on three BW Hardware steel hinges referenced 'BWS 10'. Both doorsets were fitted with Synergy Hardware concealed door closers and sashlocks which were disengaged. The doorsets were installed so that they opened towards the heating conditions for the duration of the test.

Test Results:		**Doorset A**	**Doorset B**
Integrity performance	Sustained flaming	20 Minutes#	45 Minutes#
	Gap gauge	30 Minutes^	66 Minutes*
	Cotton Pad	19 Minutes#	45 Minutes#
Insulation performance		19 Minutes#	45 Minutes#

*The test duration
^Specimen blanked off
#Failure occurred at the head of the doorset around the closer position.

The test was discontinued after 66 minutes.

Date of Test **19th June 2015**

Signatories

Responsible Officer
D. Fitzsimmons*
Testing Officer

Approved
R. Anning
Senior Certification Engineer

Head of Department
S. Hankey*
Operations Manager

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

Report Issued

Date: 27th November 2015

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Test Procedure

Introduction

The doorsets are required to provide a fire separating function and were therefore tested in accordance with BS EN 1634-1: 2014 'Fire resistance tests for doors and shutter assemblies - Part 1: Fire doors and shutters'. This test report should be read in conjunction with that Standard and with BS EN 1363-1: 2012 'Fire resistance tests - Part 1: General requirements' and BS EN 1363-2: 1999, 'Fire resistance tests - Part 2: Alternative and additional procedures'.

The specimens were judged on their ability to comply with the performance criteria for integrity and insulation, as required by BS EN 1634-1: 2014.

The specific purpose of the test was to evaluate the effects of the inclusion of various items of building hardware into a previously tested doorset construction. Because of this, no direct field of application for the doorsets are included in this report.

Fire Test Study Group/EGOLF

Certain aspects of some fire test specifications are open to different interpretations. The Fire Test Study Group and 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.

Instruction To test

The test was conducted on the 19th June 2015 on behalf of **BW Hardware**, the sponsor of the test.

Test Specimen Construction

A comprehensive description of the test construction is given in the Schedule of Components. The description is based on a detailed survey of the specimens and information supplied by the sponsor of the test.

The doorsets' storage, installation, and test preparation took place in the test laboratory between the 17th June and 19th June 2015.

Installation

The doorsets incorporating the hardware were mounted within apertures provided within a high density rigid supporting construction. The doorsets were mounted such that they opened towards the heating conditions of the test.

Representatives of **Exova Warringtonfire** conducted the installation on the 18th June 2015.

Sampling

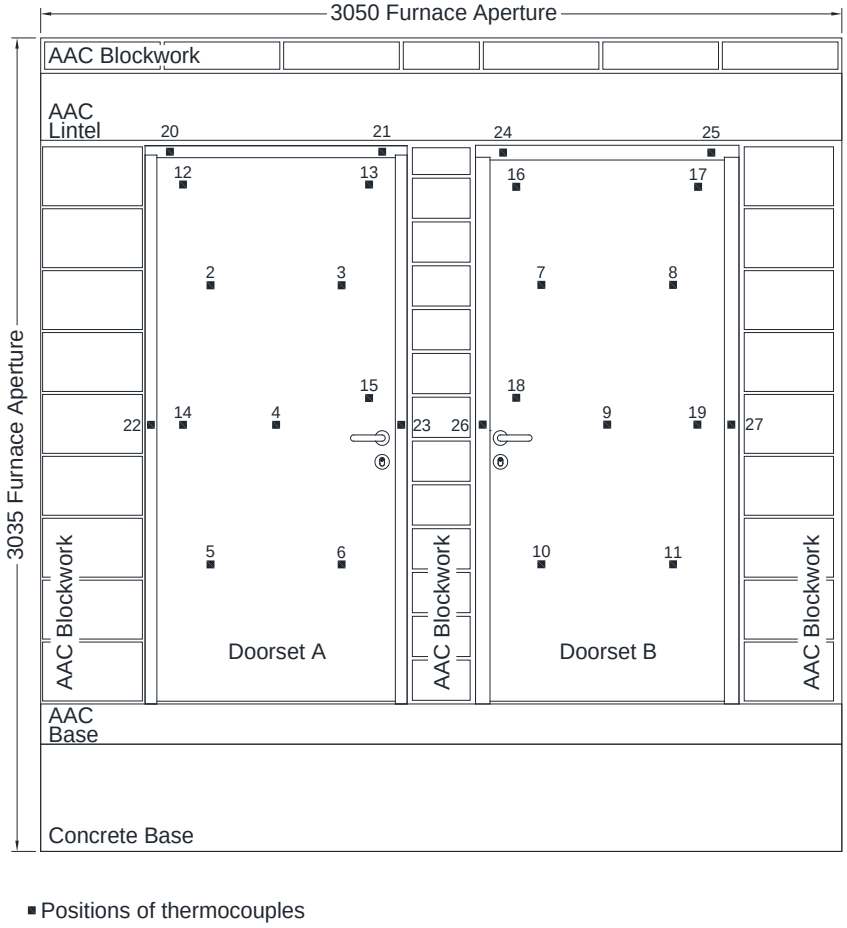
A representative of **Warrington Certification Limited** sample selected the closers, hinges, locksets and intumescent packs for both Doorsets on the 15th June 2015.

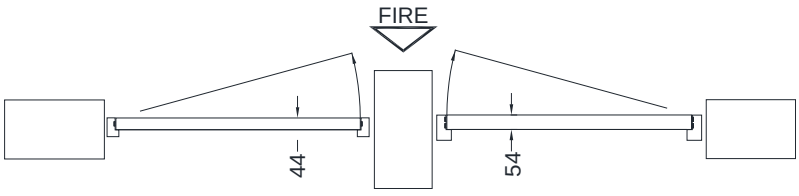
Conditioning

The specimens' storage, construction, and test preparation took place in the test laboratory over a total, combined time of 8 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°C to 24.5°C and 52.5% to 74.5% respectively.

Test Specimens

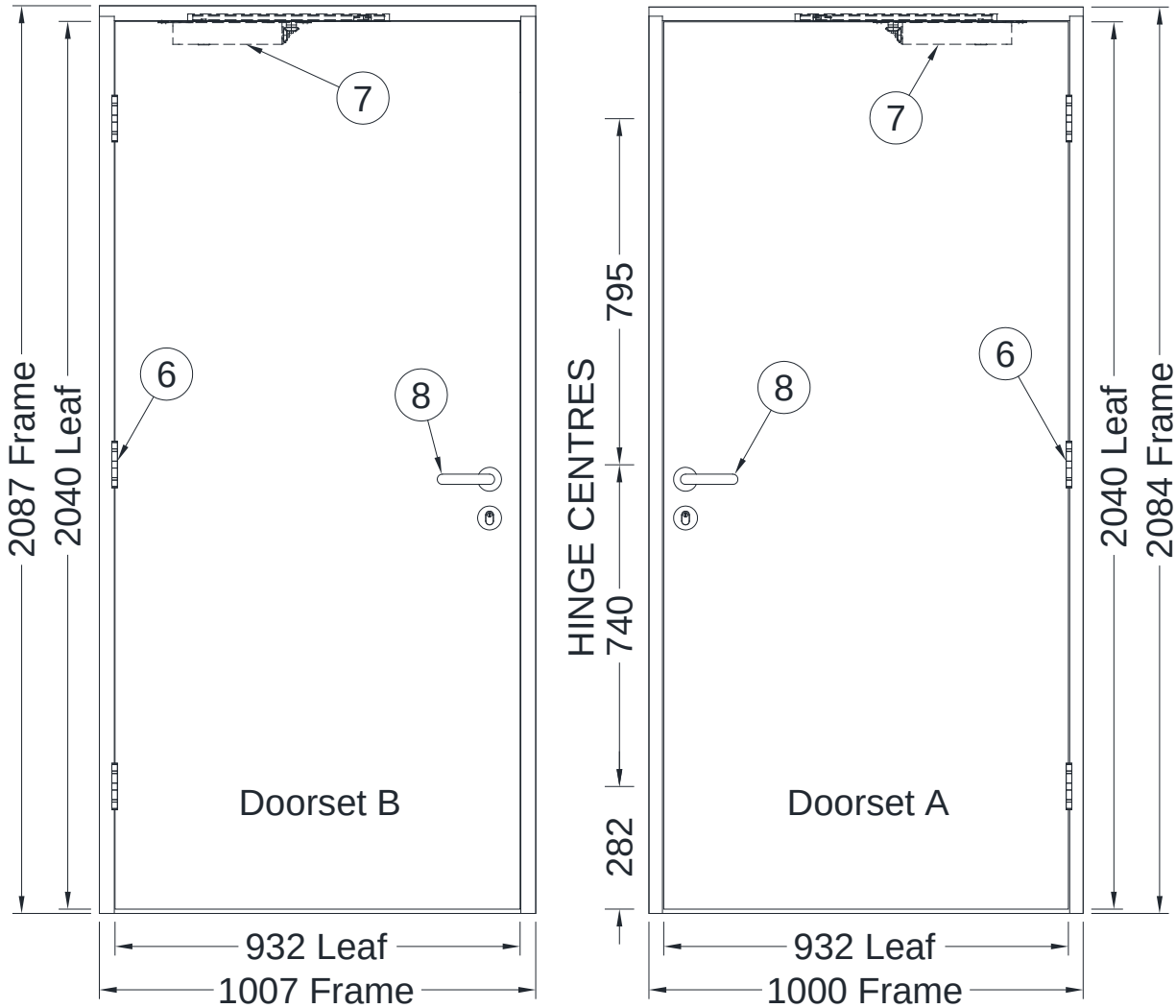
Figure 1- General Elevation of Test Construction





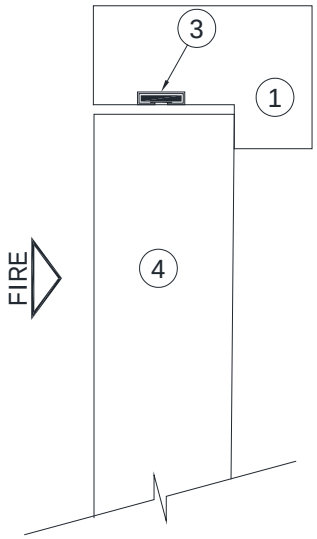
Do not scale. All dimensions are in mm

Figure 2 – General Elevation of the exposed face of the Test Construction

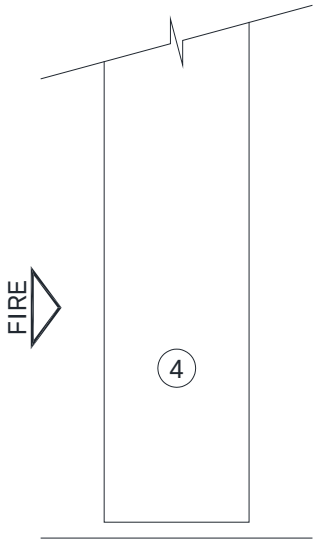


Do not scale. All dimensions are in mm

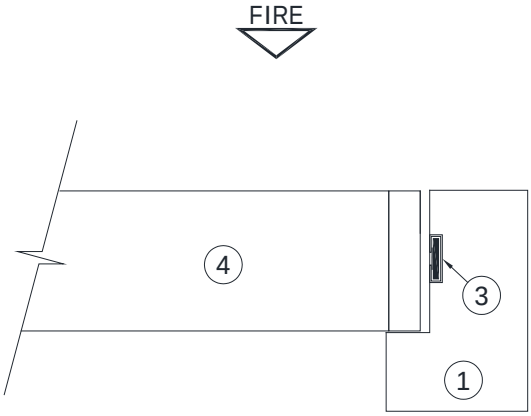
Figure 3 – Details of Door Leaf A



TYPICAL SECTION
THROUGH HEAD
OF DOOR LEAF



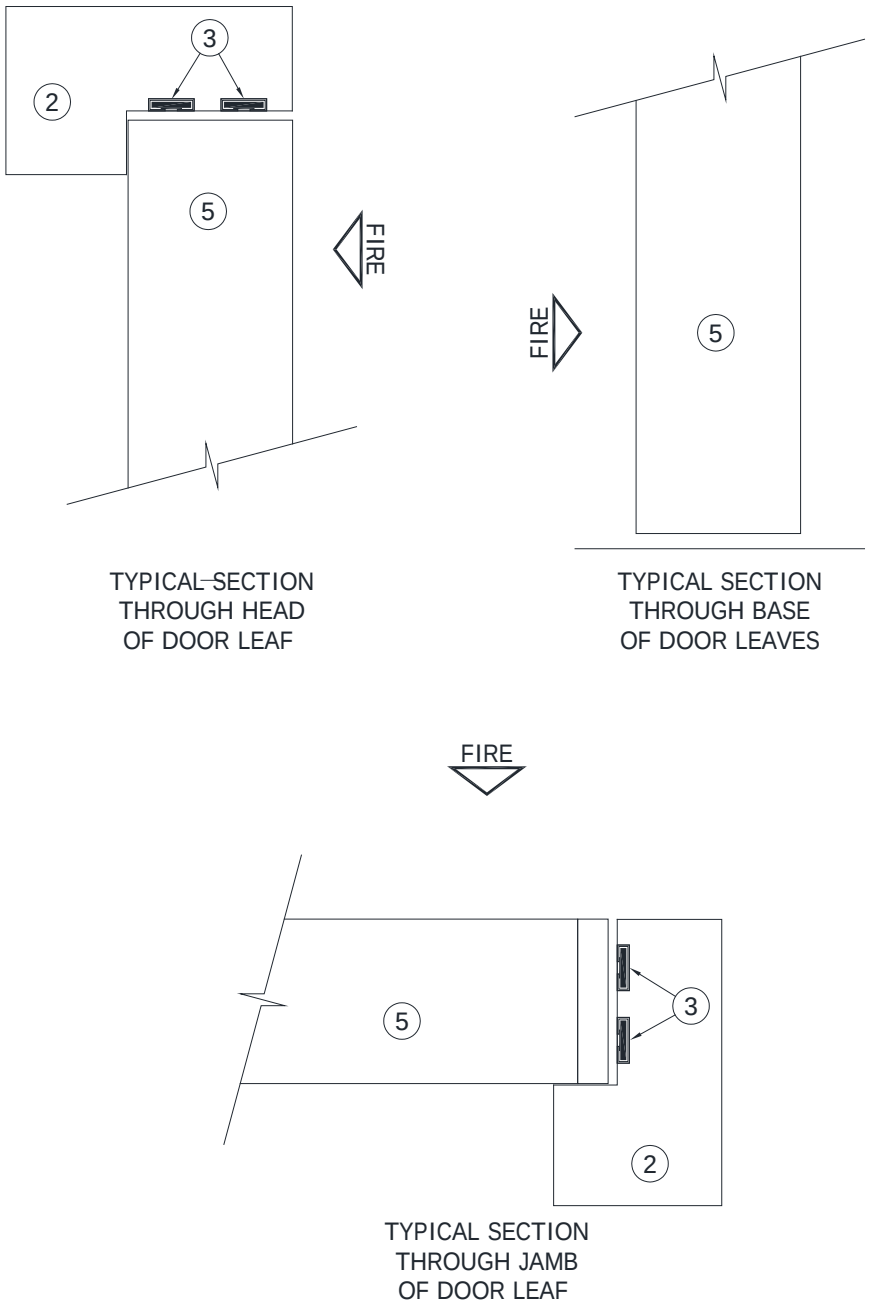
TYPICAL SECTION
THROUGH BASE
OF DOOR LEAVES



TYPICAL SECTION
THROUGH JAMB
OF DOOR LEAF

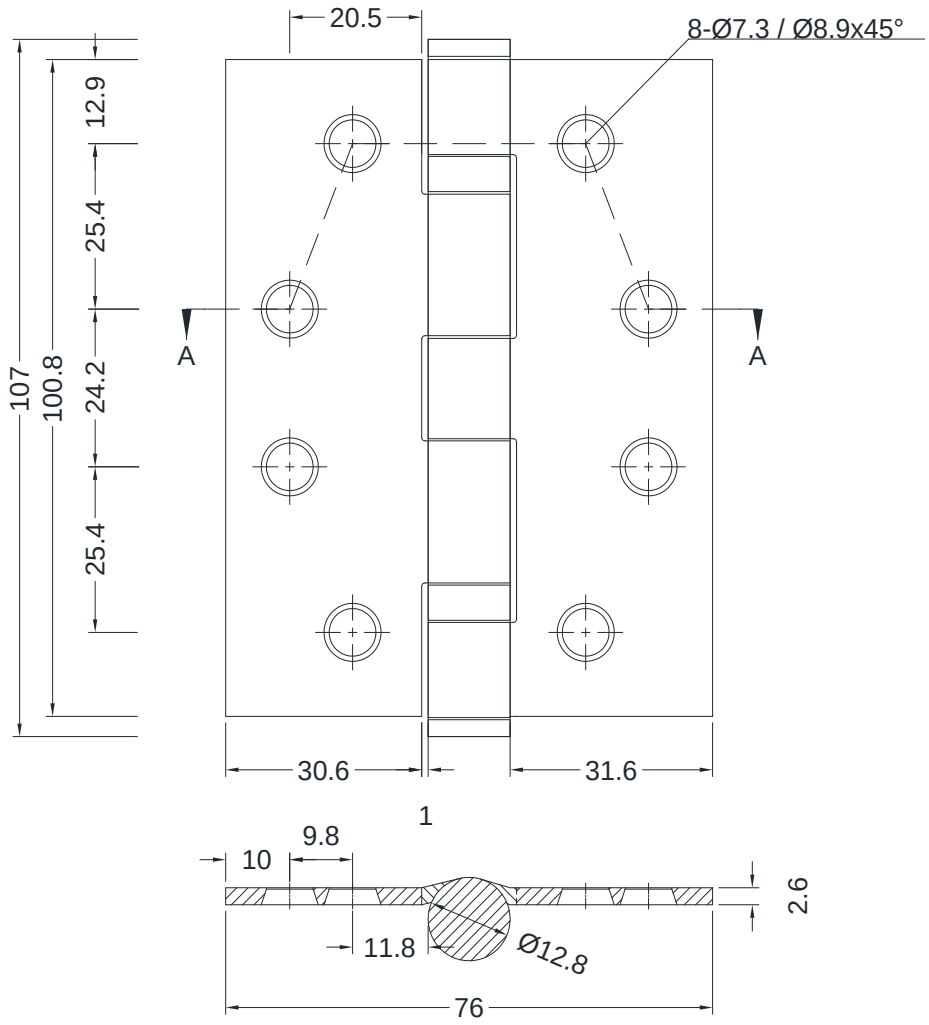
Do not scale. All dimensions are in mm

Figure 4 – Details of Door Leaf B



Do not scale. All dimensions are in mm

Figure 5 – Details of Hinges – Item '6'



SECTION A-A

Do not scale. All dimensions are in mm

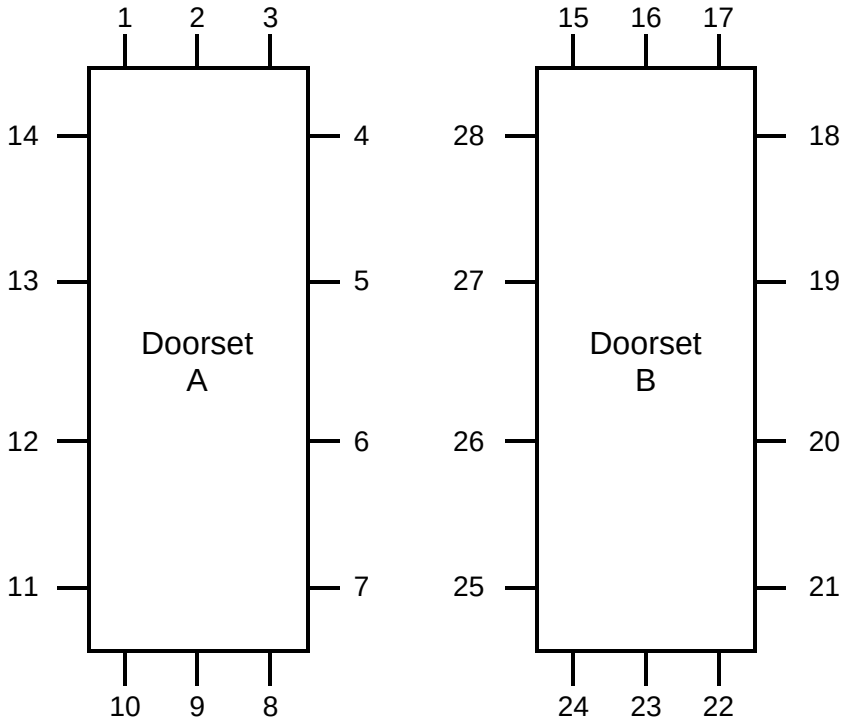
Schedule of Components

(Refer to Figures 1 to 7)
(All values are nominal unless stated otherwise)
(All other details are as stated by the sponsor)

Item		Description
1. Door Frame A		
Material	:	Pine, softwood
Density	:	510 ~ 550 kg/m3, nominal
Average moisture content	:	10.1%
Overall section size	:	69.8 mm x 44.1 mm, with 45 mm wide x 13.2 mm deep rebate
Jambs to head jointing method	:	Stub mortice & screwed, using 75 mm long x 4.6 mm diameter countersunk head wood screws
Fixing method	:	Through screwed and plugged
Fixings		
i. type	:	Countersunk head wood screws
ii. material	:	Steel screws with 2 off plastics plugs
iii. overall size	:	150 mm long by 5.8 mm diameter
2. Door Frame B		
Material	:	Sapele, hardwood
Density	:	620 ~ 660 kg/m^3, nominal
Average moisture content	:	7.5%
Overall section size	:	94.2 mm x 55.4 mm, with 54.2 mm wide x 21.2 mm deep rebate
Jambs to head jointing method	:	Stub mortice & screwed, using 75 mm long x 4.6 mm diameter countersunk head wood screws
Fixing method	:	Through screwed and plugged
Fixings		
i. type	:	Countersunk head wood screws
ii. material	:	Steel screws with 2 off plastics plugs
iii. overall size	:	150 mm long by 5.8 mm diameter
iv. centres	:	3 off equally spaced along the latched jamb and nominally 100 mm above and below each hinge position in the other
3. Intumescent Seal		
Manufacturer	:	Pyroplex Ltd
Reference	:	Rigid Box Seal, CF355
Material	:	Graphite intumescent strip within a polyvinyl chloride, PVC, carrier
Overall size	:	15 mm x 4 mm
Fixing method	:	Self adhered into groove within rebate of frame, strips were interrupted at furniture positions
4. Door Leaf A		
Manufacturer	:	Halspan
Reference	:	Prima
Overall thickness	:	45 mm
Construction		
i. core	:	Chipboard
ii. lippings	:	Sapele, hardwood 8 mm thick, to vertical edges only
iii. density		620 ~ 660 kg/m^3, nominal

Item		Description
5. Door Leaf B		
Manufacturer		Halspan
Reference	:	Prima
Overall thickness	:	54 mm
Construction		
i. core	:	Chipboard
ii. lippings	:	Sapele, hardwood 8 mm thick, to vertical edges only
iii. density		620 ~ 660 kg/m^3, nominal
6. Hinges		
Manufacturer	:	BW Hardware
Reference	:	BWS10
Primary material	:	Chromium Nickel plated Stainless Steel
Size		
i. knuckle	:	107 mm long by 12.8 mm diameter
ii. blades	:	100.8 mm long by 30.6 mm wide by 2.6 mm thick
iii. overall size	:	102 mm x 76mm x 2.6 mm
Fixings		
i. type	:	Countersunk head wood screws
ii. material	:	Steel
iii. sizes	:	29.3 mm long by 4.1 mm diameter
iv. number off per blade	:	4 off
Bedding material		
Manufacturer	:	Eclipse
Reference	:	14903 Intumescent Hinge Plates
Material	:	Graphite based intumescent
Thickness	:	100 mm x 31 mm x 0.8 mm
Fixing method	:	Bedded under hinge plate and screw fixed together with hinges
7. Concealed Door Closer		Details held confidentiality on file by the test laboratory
8. Lock		Details held confidentiality on file by the test laboratory

Doorset Clearance Gaps



Door Ref	Gap Dimension in mm at Positions													
A	1	2	3	4	5	6	7	8*	9*	10*	11	12	13	14
	2.9	3.3	2.9	1.5	1.8	2.3	1.4	4.9	4.3	3.4	2.6	2.2	2.9	2.7
B	15	16	17	18	19	20	21	22*	23*	24*	25	26	27	28
	2.6	3.1	2.4	2.6	2.5	2.6	1.7	4.9	4.7	5.0	2.3	1.8	2.6	2.6
A	Mean		2.4		Maximum			3.3		Minimum			1.5	
B	Mean		2.4		Maximum			3.1		Minimum			1.7	

Door Ref	Gap Between Face of Leaf and Doorstop in mm at Position													
A	1	2	3	4	5	6	7	8*	9*	10*	11	12	13	14
	1.8	0.9	0.9	0.3	0.7	0.7	0.3	n/a	n/a	n/a	1.9	1.6	1.5	1.5
B	15	16	17	18	19	20	21	22*	23*	24*	25	26	27	28
	2.5	2.0	1.8	0.5	0.4	0.7	0.2	n/a	n/a	n/a	0.8	2.6	1.9	3.2

* Dimension not included in calculations
# Dimension not measured

ALL DIMENSIONS ARE IN mm

Instrumentation

General	The instrumentation was provided in accordance with the requirements of the Standard.
Furnace	The furnace was controlled so that its mean temperature complied with the requirements of BS EN 1363-1: 2012 Clause 5.1 using six plate thermometers, distributed over a plane 100 mm from the surface of the test construction.
General	Thermocouples were provided to monitor the unexposed surface of the specimens and the output of all instrumentation was recorded at no less than one minute intervals as follows.
Thermocouples 2 to 6 (Doorset A) & Thermocouples 7 to 11(Doorset B)	At five positions on each doorset, one approximately at the centre and one at the approximate centre of each quarter section of the doorset.
Thermocouples 12 to 15 (Doorset A) & Thermocouples 16 to 19 (Doorset B)	At four positions on each door leaf, positioned at 100 mm in from the door leaf vertical edges, two at mid-height, and two at 100 mm below the top edge of the leaf.
Thermocouples 20 to 23 (Doorset A) & Thermocouples 24 to 27 (Doorset B)	At four positions on the unexposed face of each door frame, at two positions on the top horizontal frame member, one positioned approximately 50 mm from each vertical edge and one on each vertical member, positioned at mid height. The locations and reference numbers of the various unexposed surface thermocouples are shown in Figure 1.
Roving Thermocouple	A roving thermocouple was available to measure temperatures on the unexposed surface of the specimens at any position which might appear to be hotter than the temperatures indicated by the fixed thermocouples.
Integrity Criteria	Cotton pads and gap gauges were available to evaluate the integrity of the specimens.
Furnace Pressure	The furnace atmospheric pressure was controlled so that it complied with the requirements of BS EN 1363-1: 1999. Clause 5.2. The calculated pressure differential relative to the laboratory atmosphere at the top of each doorset was 14 (±4) Pa.

Test Observations

Time		All observations are from the unexposed face unless noted otherwise.
mins	**secs**	The ambient air temperature in the vicinity of the test construction was 14ºC at the start of the test with no variation during the test.
00	**00**	**The test commences.**
01	**52**	Steam/smoke release at the head of both doorsets.
03	**00**	Steam/smoke release along the vertical edge on both leaves.
05	**00**	When viewed from the exposed face, the inside face of both doorsets has now ignited.
07	**00**	Doorset A is now discolouring around the closer and top hinge.
11	**00**	Small flickers of flame as seen around the top corner of the hinge edge on doorset A.
15	**00**	Cotton wool pad over glowing in top corner of the hinge edge over the closer on Doorset A. Pad discoloured but didn't ignite.
20	**00**	**Small flames are seen at the head of door leaf A. Cotton wool pad is placed over the area, the pad ignites as flames continue to grow, Cotton wool pad integrity failure is deemed to have occurred.**
21	**00**	**The head of Doorset A blanked off to allow the test to continue.**
21	**30**	Both doorsets appear to have dropped and are resting along the threshold.
28	**00**	A small glowing can now be seen around the top hinge on Doorset A.
31	**00**	Cotton wool pad over glowing area around the top hinge on doorset A. Pad discoloured but didn't ignite.
33	**00**	**Doorset A is blanked off.**
38	**00**	A glowing is now seen a the head of Doorset B.
39	**00**	Cotton wool pad over the glowing area, pad discoloured but didn't ignite.
41	**00**	Steam/smoke release increases around the glowing area at the head of Doorset B around the closer, Cotton wool pad is placed over the area. Pad discoloured but didn't ignite.
45	**00**	**Cotton wool pad over the head at the concealed closer position of Doorset B, pad ignites as the head of the doorset around the ignites and forms a sustained flame.**
46	**00**	Area is blanked off to allow the test to continue.
65	**00**	**Sustained flames at the head next to the blanked off area.**

66 00 Test Discontinued

Test Photographs

The exposed faces of the Doorsets prior to testing

The unexposed faces of the Doorsets prior to testing

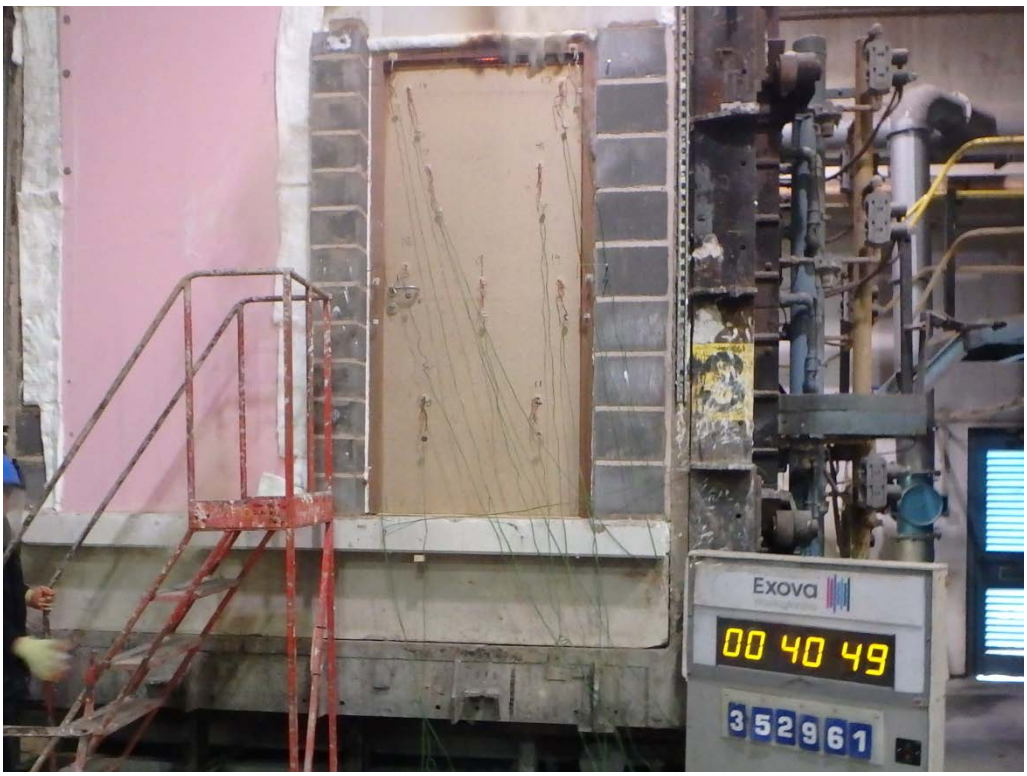
The unexposed face of the Doorsets after 10 minutes of testing

The unexposed face of the Doorsets after 20 minutes of testing

The unexposed face of the Doorsets after 30 minutes of testing

The unexposed face of the Doorsets after 23 minutes of testing

The unexposed face of Doorset B after 40 minutes of testing

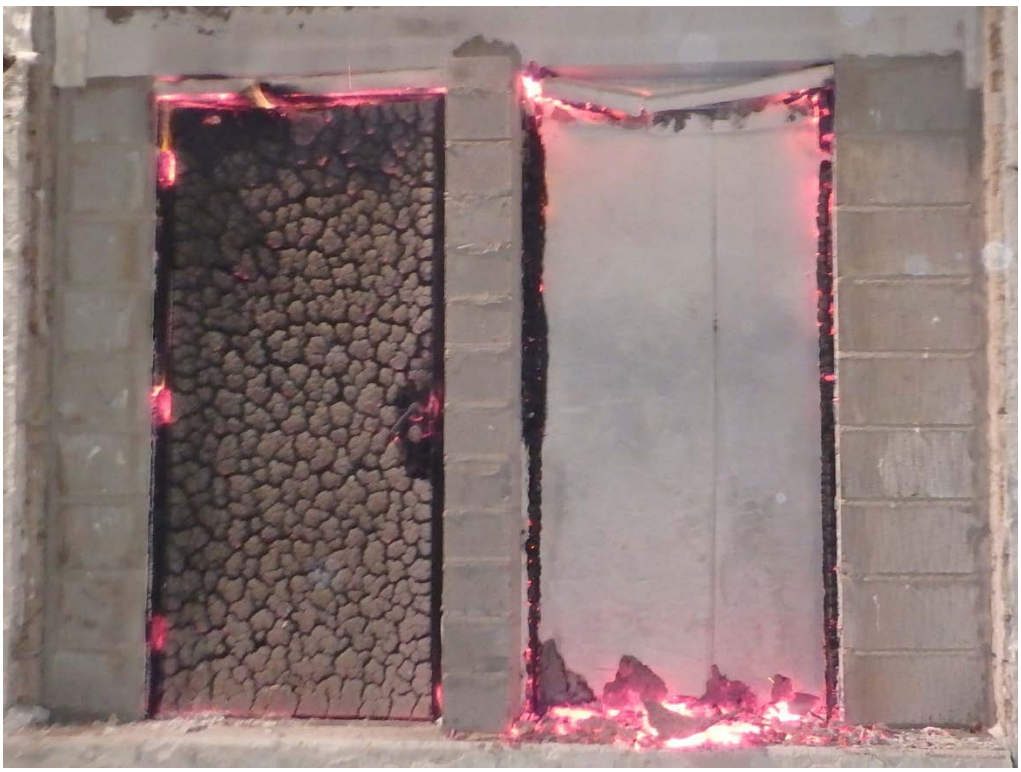


The unexposed face of Doorset B after 50 minutes of testing

The unexposed face of Doorset B after 60 minutes of testing

The unexposed face of Doorset B after 66 minutes of testing

The exposed face of the test construction immediately after the test



Temperature and Deflection Data

Mean furnace temperature, together with the temperature/time relationship specified in the Standard

Time Mins	Specified Furnace Temperature Deg. C	Actual Furnace Temperature Deg. C
0	20	25
2	445	445
4	544	505
6	603	594
8	646	638
10	678	695
12	706	705
14	728	730
16	748	752
18	766	764
20	781	786
22	796	791
24	809	814
26	820	822
28	832	829
30	842	833
32	852	844
34	860	870
36	869	878
38	877	880
40	885	888
42	892	897
44	899	902
46	906	909
48	912	917
50	918	920
52	924	933
54	930	944
56	935	948
58	940	952
60	945	945
62	950	948
64	955	955
66	960	954

Individual and mean temperatures recorded on the unexposed surface of Doorset A

Time Mins	T/C Number 2 Deg. C	T/C Number 3 Deg. C	T/C Number 4 Deg. C	T/C Number 5 Deg. C	T/C Number 6 Deg. C	Mean Temp Deg. C
0	17	17	17	17	17	17
1	17	17	17	17	17	17
2	17	17	17	17	17	17
3	17	17	17	17	17	17
4	17	17	17	17	17	17
5	17	17	18	18	18	18
6	17	17	17	18	18	17
7	17	17	18	18	18	18
8	17	17	18	17	18	17
9	17	17	18	18	18	18
10	18	18	18	18	18	18
11	19	19	19	19	19	19
12	20	20	20	19	20	20
13	21	21	21	20	21	21
14	22	22	22	21	22	22
15	23	23	23	22	24	23
16	25	25	24	23	25	24
17	26	26	26	24	26	26
18	27	27	27	26	28	27
19	29	29	29	27	29	29
20	31	31	30	28	31	30
21	32	32	32	30	32	32
22	34	34	33	31	34	33
23	36	36	35	33	35	35
24	37	38	37	34	37	37
25	39	39	39	36	38	38
26	40	41	40	38	40	40
27	42	43	42	39	42	42
28	44	45	44	41	43	43
29	45	47	46	43	45	45
30	47	48	48	45	46	47
31	49	50	50	46	48	49
32	51	52	52	48	50	51
33	53	54	54	50	51	52
34	55	56	55	52	53	54

Individual and mean temperatures recorded on the unexposed surface of Doorset B

Time Mins	T/C Number 7 Deg. C	T/C Number 8 Deg. C	T/C Number 9 Deg. C	T/C Number 10 Deg. C	T/C Number 11 Deg. C	Mean Temp Deg. C
0	17	19	18	18	18	18
2	17	18	18	18	18	18
4	17	19	18	18	18	18
6	17	19	19	19	19	19
8	17	19	19	19	19	19
10	17	19	19	19	19	19
12	18	19	19	19	19	19
14	18	20	19	19	19	19
16	20	21	20	20	20	20
18	21	22	21	21	21	21
20	23	24	23	22	23	23
22	25	26	24	24	24	25
24	26	28	26	25	26	26
26	28	30	28	27	28	28
28	31	32	30	29	30	30
30	33	34	32	31	32	32
32	35	36	34	33	34	34
34	38	39	36	36	36	37
36	40	41	39	38	39	39
38	43	43	42	41	41	42
40	46	46	44	43	44	45
42	48	48	47	46	47	47
44	51	51	50	48	49	50
46	54	54	54	51	52	53
48	56	56	57	53	55	55
50	59	59	60	57	58	59
52	61	61	63	59	61	61
54	63	64	66	62	64	64
56	66	66	69	65	67	67
58	68	69	71	68	69	69
60	70	68	74	70	72	71
62	72	66	76	73	74	72
64	74	69	78	75	77	75
66	76	72	80	77	79	77

Individual temperatures recorded on the unexposed surface of Doorset A
100 mm in from door leaf edge

Time Mins	T/C Number 12 Deg. C	T/C Number 13 Deg. C	T/C Number 14 Deg. C	T/C Number 15 Deg. C
0	19	19	19	14
1	20	19	19	15
2	20	19	19	14
3	24	19	19	14
4	27	19	19	15
5	35	20	20	15
6	31	20	20	15
7	37	20	20	15
8	36	20	20	15
9	38	21	20	16
10	35	21	20	17
11	35	23	21	18
12	35	25	22	21
13	36	27	23	23
14	38	30	24	26
15	40	32	25	28
16	43	35	26	30
17	45	37	27	33
18	47	39	29	34
19	49	41	30	36
20	51	43	31	38
21	53	45	33	40
22	55	47	34	42
23	57	49	36	44
24	62	51	37	45
25	70	53	38	47
26	76	55	40	48
27	82	58	42	49
28	87	61	43	51
29	91	65	45	52
30	96	69	47	53
31	100	73	49	55
32	108	77	50	56
33	109	82	52	57
34	111	87	54	58

Individual temperatures recorded on the unexposed surface of Doorset B
100 mm in from door leaf edge

Time Mins	T/C Number 16 Deg. C	T/C Number 17 Deg. C	T/C Number 18 Deg. C	T/C Number 19 Deg. C
0	14	15	15	15
2	15	15	15	15
4	15	16	15	15
6	16	19	15	15
8	16	18	15	15
10	16	17	15	15
12	17	18	16	15
14	19	20	17	16
16	22	24	19	16
18	26	27	22	17
20	29	31	25	18
22	33	35	28	19
24	36	38	31	21
26	39	41	34	22
28	42	43	37	24
30	44	46	40	26
32	47	48	43	29
34	49	51	45	31
36	51	53	47	34
38	53	55	49	36
40	54	57	51	39
42	56	58	53	42
44	58	60	55	45
46	60	62	57	48
48	61	65	58	51
50	62	67	60	54
52	64	71	62	57
54	66	72	64	60
56	67	74	67	63
58	69	76	69	66
60	70	64	72	68
62	72	64	74	70
64	74	64	77	72
66	78	72	79	75

Individual temperatures recorded on the unexposed surface of Door Frame A

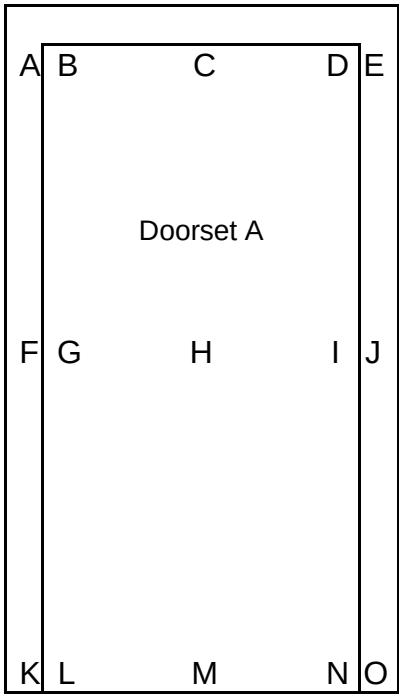
Time Mins	T/C Number 20 Deg. C	T/C Number 21 Deg. C	T/C Number 22 Deg. C	T/C Number 23 Deg. C
0	14	14	15	15
1	15	14	16	16
2	17	14	16	16
3	19	18	16	16
4	32	24	16	16
5	41	25	17	16
6	47	27	17	16
7	52	27	17	16
8	51	35	17	16
9	55	37	17	16
10	56	42	18	16
11	56	40	18	17
12	56	42	19	17
13	56	39	20	17
14	57	38	20	17
15	60	37	21	18
16	65	36	22	19
17	66	36	22	20
18	68	35	23	20
19	70	35	24	21
20	73	35	25	22
21	83	35	26	23
22	83	36	27	24
23	83	38	28	25
24	88	49	30	26
25	*	*	31	27
26	*	*	32	29
27	*	*	34	30
28	*	*	35	31
29	*	*	37	32
30	*	*	38	33
31	*	*	39	35
32	*	*	41	36
33	*	*	42	37
34	*	*	43	38

*Area blanked off

Individual temperatures recorded on the unexposed surface of Door Frame B

Time Mins	T/C Number 16 Deg. C	T/C Number 17 Deg. C	T/C Number 18 Deg. C	T/C Number 19 Deg. C
0	14	15	15	15
2	15	15	15	15
4	15	16	15	15
6	16	19	15	15
8	16	18	15	15
10	16	17	15	15
12	17	18	16	15
14	19	20	17	16
16	22	24	19	16
18	26	27	22	17
20	29	31	25	18
22	33	35	28	19
24	36	38	31	21
26	39	41	34	22
28	42	43	37	24
30	44	46	40	26
32	47	48	43	29
34	49	51	45	31
36	51	53	47	34
38	53	55	49	36
40	54	57	51	39
42	56	58	53	42
44	58	60	55	45
46	60	62	57	48
48	61	65	58	51
50	62	67	60	54
52	64	71	62	57
54	66	72	64	60
56	67	74	67	63
58	69	76	69	66
60	70	64	72	68
62	72	64	74	70
64	74	64	77	72
66	78	72	79	75

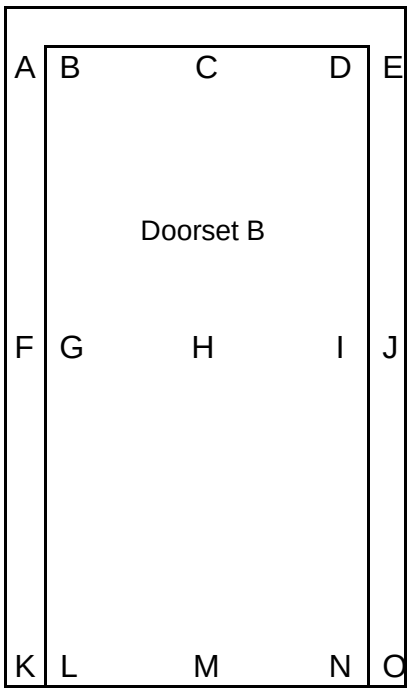
Horizontal deflections of the door leaves and door frames during the test



Doorset A															
Deflections – mm															
TIME mins	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	1	-12	0	0	1	11	-5	7	-2	1	17	9	7	3
10	2	1	-5	5	1	1	12	3	7	-2	3	8	14	10	4
15	3	1	-11	0	6	1	9	-9	-3	0	3	12	6	15	6
20	*	*	*	*	*	3	9	-10	-3	0	4	11	6	17	5
25	*	*	*	*	*	4	9	-13	-3	0	5	10	7	20	2
30	*	*	*	*	*	4	9	-13	-3	0	5	9	6	20	0

*Area blanked off
A positive value indicate a deflection towards the heating conditions of the test

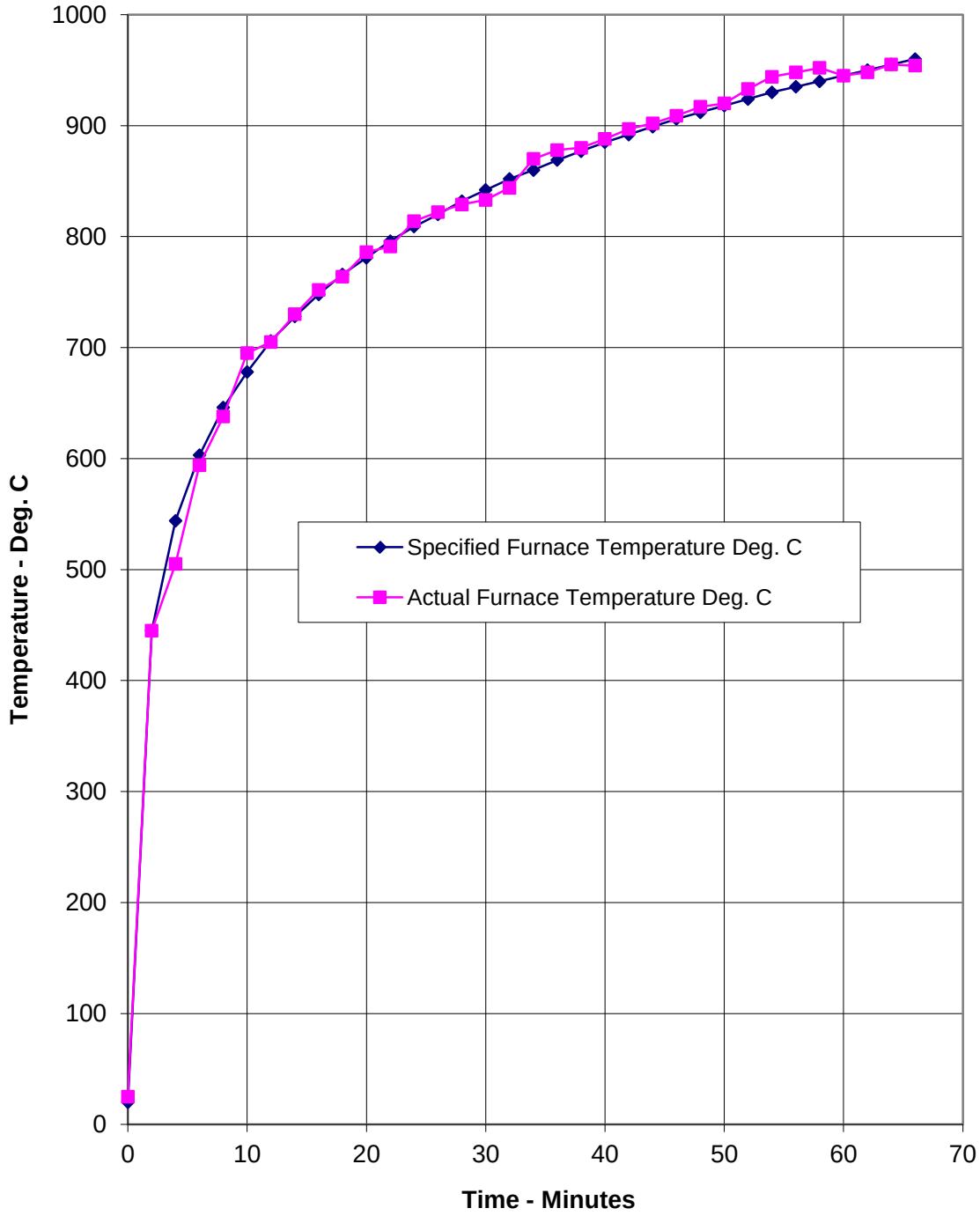
Horizontal deflections of the door leaves and door frames during the test (continued)



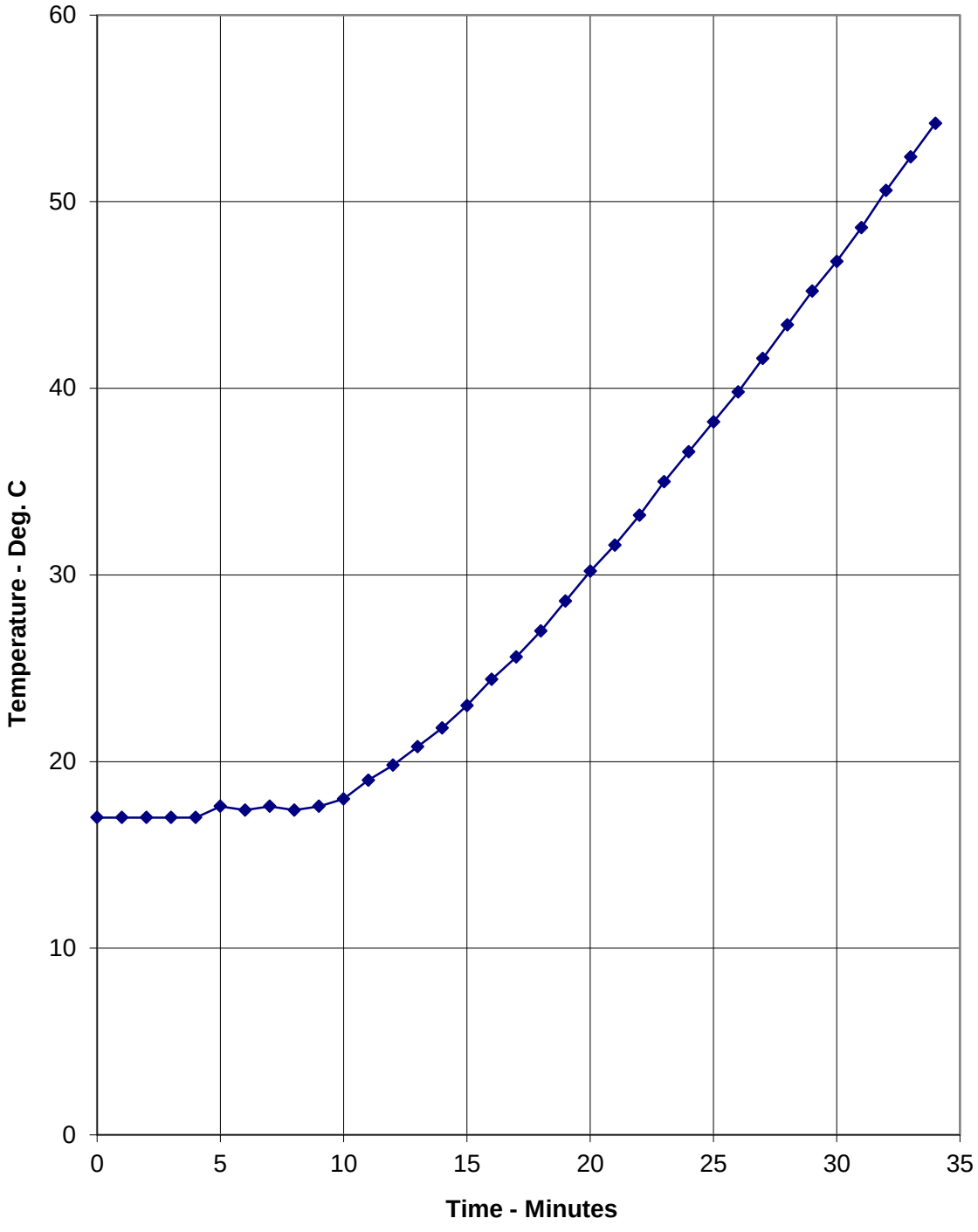
Doorset B															
Deflections – mm															
TIME mins	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	-9	0	1	2	3	4	0	-5	-1	-3	-3	3	-1	-5	-1
20	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#
30	-13	1	0	2	*	1	-2	-2	-1	0	-3	2	-8	5	0
40	-8	1	0	2	1	1	-2	-6	-1	-3	-1	3	-3	5	2
50	*	*	*	*	*	1	-2	-14	-4	-3	-3	5	-3	0	-3
60	*	*	*	*	*	-1	-1	-22	-4	-1	-1	10	-8	5	2

*Area blanked off
#unable to take reading due to blanking off area of Doorset A
A positive value indicate a deflection towards the heating conditions of the test

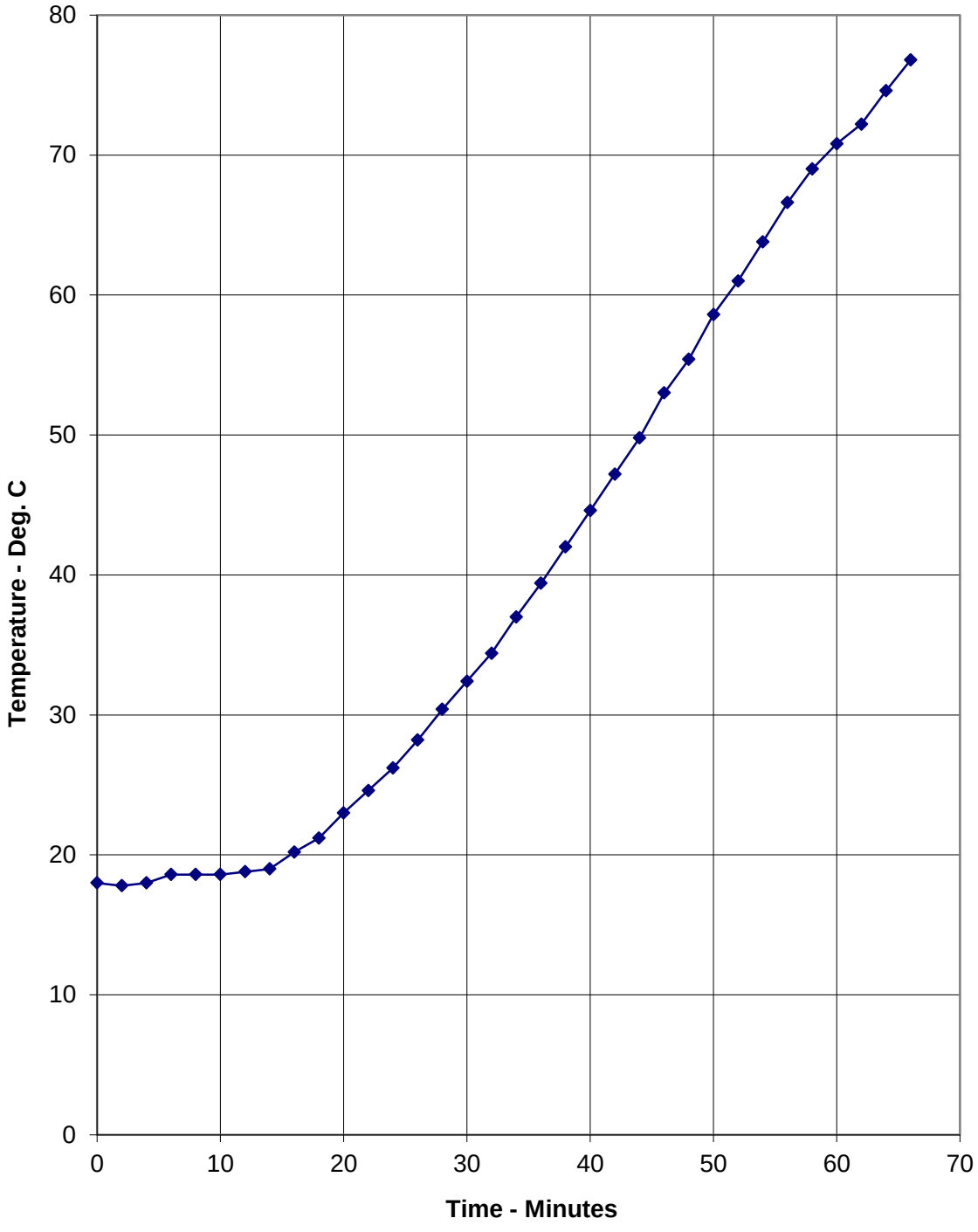
Graph showing mean furnace temperature, together with the temperature/time relationship specified in the Standard



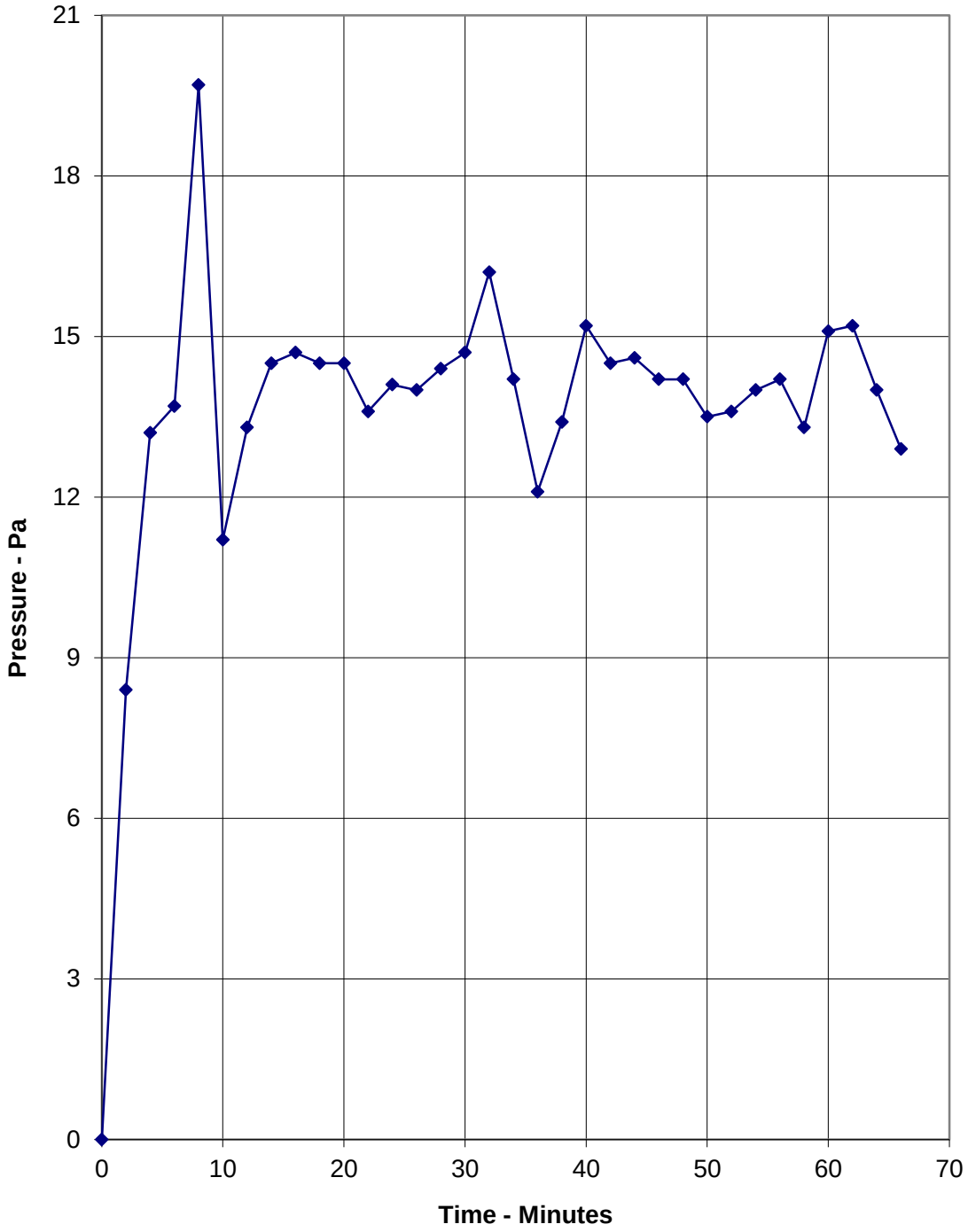
Graph showing mean temperatures recorded on the unexposed surface of Doorset A



Graph showing mean temperatures recorded on the unexposed surface of Doorset B



Graph showing recorded furnace pressure at the head of the Doorsets



Performance Criteria and Test Results

Integrity

It is required that the specimen retain its 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	20 minutes#	45 Minutes#
Gap gauge	30 minutes^	66 Minutes*
Cotton pad	19 minutes#	45 Minutes#

Insulation

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 (except on the door frame, where the maximum temperature rise shall not exceed 360°C). Insulation failure also occurs simultaneously with integrity failure as specified in BS EN 1634-1: 2014. **These requirements were satisfied for the periods shown below:**

19 minutes#	45 minutes#

*The test duration
^Specimen blanked off
#Failure occurred at the head of the doorset around the closer position.

The test was discontinued after 66 minutes.

Ongoing 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 outlined in BS EN 1363-1: 2012 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: 2012 provides guidance information on the application of fire resistance tests and the interpretation of test data.

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.

This test report is additional to that issued as WF Test Report No. 352961 and dated 27th November 2015. The original test report remains valid and is not replaced by this additional test report. The product referred to in the original report and this additional test report has not been re-tested, this report does not involve technical change or technical review of the original test report.

Conclusions

Evaluation against objective

Two single-acting, single-leaf doorsets incorporating various items of hardware have been subjected to a fire resistance test in accordance with BS EN 1634-1: 2014, Fire resistance tests for door and shutter assemblies, BS EN 1363-1: 2012 General requirements and BS EN 1363-2: 1999, Alternative and additional procedures.

The evaluation of the doorsets against the requirements of BS EN 1634-1: 2014 showed that each doorset satisfied the requirements for the following periods.

Test Results:		Doorset A	Doorset B
Integrity performance	Sustained flaming	20 Minutes#	45 Minutes#
	Gap gauge	30 Minutes^	66 Minutes*
	Cotton Pad	19 Minutes#	45 Minutes#
Insulation		19 Minutes#	45 Minutes#

*The test duration
^Specimen blanked off
#Failure occurred at the head of the doorset around the closer position.
The test was discontinued after 66 minutes.