Test Report

The fire resistance performance of two timber, single acting single door assemblies when tested in accordance with BS EN 1634-1:2014+A1:2018.

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Change History

Issue Date	Revision	Created by	Authorised by	Description of Change
20/11/2026	B	JW	TS	3. Test Specimen Drawings (Pages 14 - 20) - Figures 1, 2, 3, 4, 5, 7 replaced with new drawings 4. Technical Schedule (Pages 22 – 41) - Sections 1, 2, 3, 6, 9, 10, 12, 14, 15, 16, 18, 20, 21, 22, 23, 24, 25, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38 and 39 updated
16/08/2026	A	AC	RG	Initial issue

Signatories

	
Prepared by **Adam Campbell*** Technical Officer	Authorised by **Robert Grant*** Senior Technical Officer

*For and on behalf of United Kingdom Testing and Certification.

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1 Executive Summary

1.1 Specimen Summary

The Specimen had overall nominal dimensions of 2560 mm wide by 2770 mm high, incorporating two doors, a sidelight and two fanlights.

Leaf A had overall frame dimensions of 888 mm wide by 2333 mm high. Leaf A Incorporated a door leaf of overall size 822 mm wide by 2282 mm. The door leaf was formed from a lamel core, and had plywood facings, 8 mm thick hardwood lippings to all four edges. The door leaf was hung in a softwood frame on three steel hinges and incorporated two vision panels of overall bead size 280 mm wide by 874 mm high each.

Leaf B had overall frame dimensions of 1111 mm wide by 2333 mm high. The specimen incorporated a door leaf of overall size 1045 mm wide by 2282 mm. The door leaf was formed from a lamel core, and had plywood facings, 8 mm thick hardwood lippings to all four edges. The door leaf was hung in a softwood frame each on three steel hinges and incorporated two vision panels of overall bead size 855 mm wide by 358 mm high each.

The specimen also Incorporated a sidelight with overall frame size 561 mm wide by 2333 mm high, between leaf A and leaf B, and two fanlights with overall frame size 888 mm wide by 437 mm high above leaf A and 1672 mm wide by 437 mm high above leaf B.

1.2 Specimen Verification

United Kingdom Testing and Certification carried out a comprehensive survey to verify the information provided by the Test Sponsor. This included verifying the materials, dimensions, and manufacturing methodologies of the test specimens, wherever possible. Refer to page 22 for full details of this survey.

1.3 Specimen Installation and Fixity

Doorset A was installed into the test construction by The Test Sponsor. The specimen was installed such that the door leaf opened towards the heating conditions at the request of the Test Sponsor. The specimen was latched but unbolted prior to the commencement of the test at the request of the Test Sponsor.

Doorset B was installed into the test construction by The Test Sponsor. The specimen was installed such that the door leaf opened away from the heating conditions at the request of the Test Sponsor. The specimen was latched but unbolted prior to the commencement of the test at the request of the test sponsor.

1.4 Specimen Conditioning

The specimen's storage, construction, and test preparation took place in the test laboratory over a total, combined time of three days. Throughout this period, both the temperature and the humidity of the laboratory were measured and recorded as being within a range of from 13.7 °C to 15.0 °C and 71.9 % to 85.7 % respectively.

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1.5 Instruction to Test

The test was conducted on 17 September 2025 at the request of the Test Sponsor. The test was witnessed by Neil Harrison, a representative of the Test Sponsor.

1.6 Sampling

United Kingdom Testing and Certification was not involved in the sampling or selection of the tested specimen or any of the components. A representative of **BM Trada** sample selected the following components of the tested specimen:

Component	Sampling date	Sampling report reference
Doorsets (including fanlights and sidelight)	10/09/2025	SC25220T
Door Blanks	07/11/2023	SC23262B
Hinges	15/04/2024	AO-106117

Refer to test sponsor for the copies of the sampling reports.

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1.7 Summary of Expression of Results

Summary of results per the criterion specified in BS EN 1634-1:2014+A1:2018 § 11 for each specimen is presented in the table below. A detailed breakdown of the results for each specimen is contained within Section 8 on Page 58.

1.7.1 Specimen:

Integrity		Insulation		Radiation
		I_1	I_2	
Sustained Flaming	52 minutes	N/A	36 minutes	52 minutes**
Gap Gauge	52 minutes**			
Cotton Pad	51 minutes			

1.7.2 By Doorset:

Summary requested by the test sponsor to show results of each door that was on the specimen, this is only for information purposes only.

Doorset ID	Integrity		Insulation		Radiation
			I_1	I_2	
A	Sustained Flaming	52 minutes	N/A	46 minutes	52 minutes**
	Gap Gauge	52 minutes			
	Cotton Pad	51 minutes			
B	Sustained Flaming	54 minutes*	N/A	36 minutes	54 minutes*
	Gap Gauge	54 minutes*			
	Cotton Pad	54 minutes*			

*The test was discontinued after a period of 54 minutes.

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**Area of Specimen blanked over at 52 minutes.

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2 Pre-test Examination

2.1 Operability Test

Door A was opened from fully closed to at least 90° and back again 25 times prior to the commencement of the test in accordance with BS EN 16034:2014 § A.2.2.

Door B was opened from fully closed to at least 90° and back again 25 times prior to the commencement of the test in accordance with BS EN 16034:2014 § A.2.2.

2.2 Self-Closing Test

Specimen A was opened to 30° ± 2°, held for 20 ± 2 seconds and released without shock and allowed to close at a maximum mean average speed of 300 mm/s to ensure that a closed position was achieved in accordance with BS EN 16034:2014 § A.4.1.

Specimen B was opened to 30° ± 2°, held for 20 ± 2 seconds and released without shock and allowed to close at a maximum mean average speed of 300 mm/s to ensure that a closed position was achieved in accordance with BS EN 16034:2014 § A.4.1.

2.3 Closing Force Measurement

The door closing forces were measured and recorded three times. The results are presented below:

Measurement	Maximum Recorded Force (N)	Distance from Pivot to Measurement Location (m)	Moment (Nm)
Closing Force Door A	34.4	0.85	29.24
Opening Force Door A	77.8	0.85	66.13
Closing Force Door B	20.2	0.85	17.17
Opening Force Door B	50.8	0.85	43.18

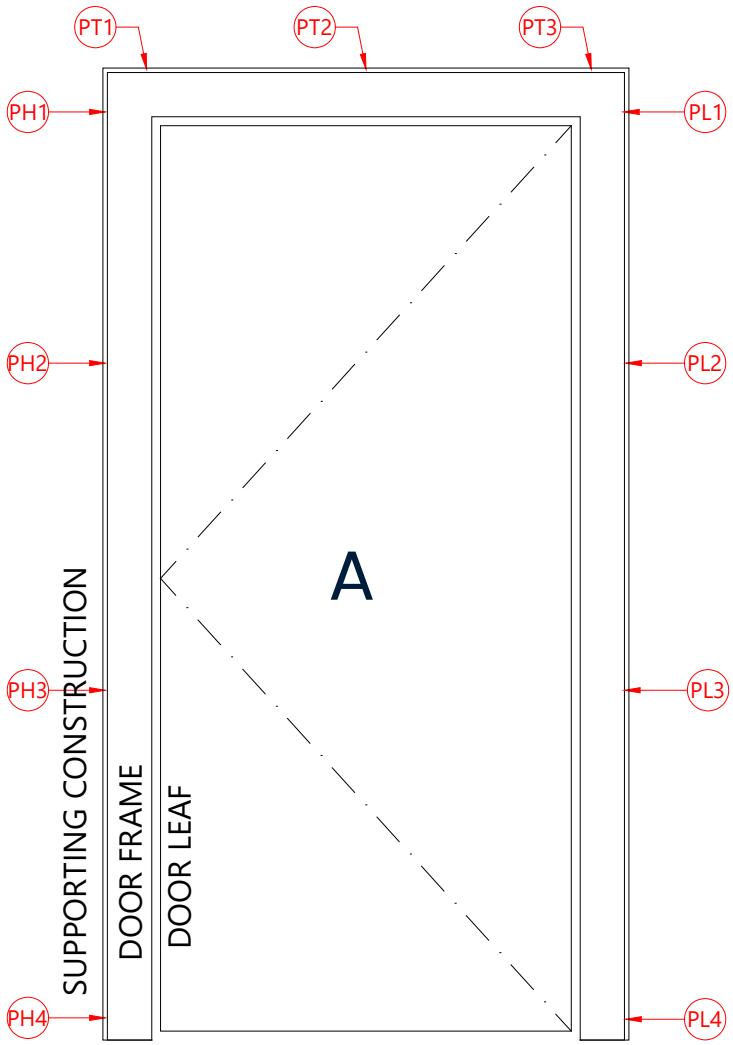
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2.4 Gap Measurements

All measurements are in millimeters (mm) unless stated otherwise, include structural opening perimeter gaps.

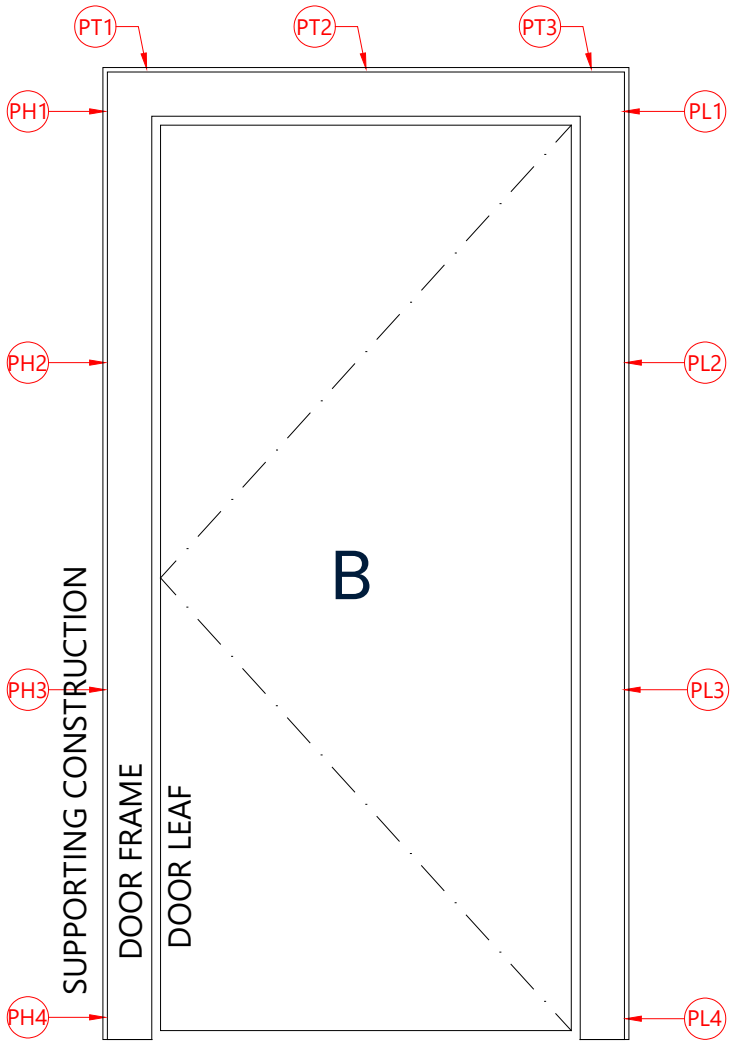
2.4.1 Structural Perimeter gaps

The gaps between the perimeter of the frame and the supporting construction were measured prior to the commencement of the test. This was measured from the annotated locations in the figure below. The measurements were taken from the Primary face.



Perimeter Gaps							
PH1	11.4		PL1	N/A		PT1	18.9
PH2	18.2		PL2	N/A		PT2	23.5
PH3	21.0		PL3	N/A		PT3	N/A
PH4	28.3		PL4	N/A			

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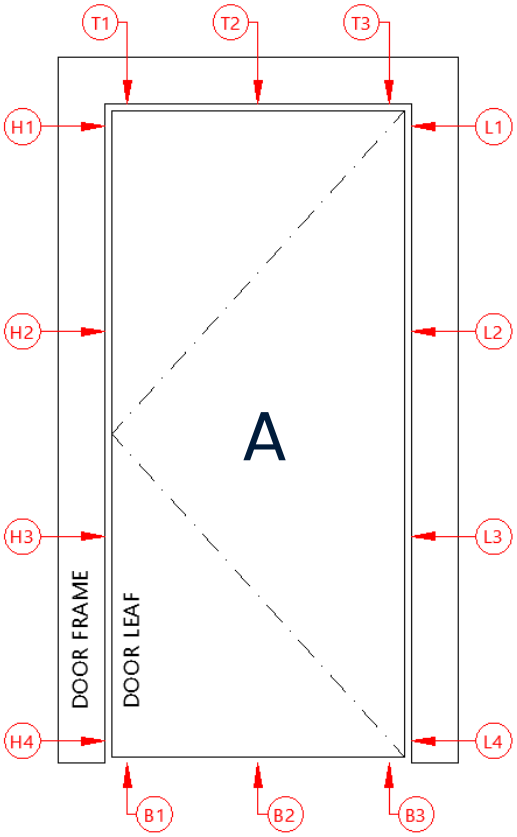


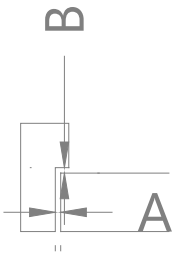
Perimeter Gaps							
PH1	N/A		PL1	27.74		PT1	N/A
PH2	N/A		PL2	25		PT2	24.81
PH3	N/A		PL3	21.63		PT3	26.6
PH4	N/A		PL4	8.01			

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2.4.2 Doorset Perimeter gaps

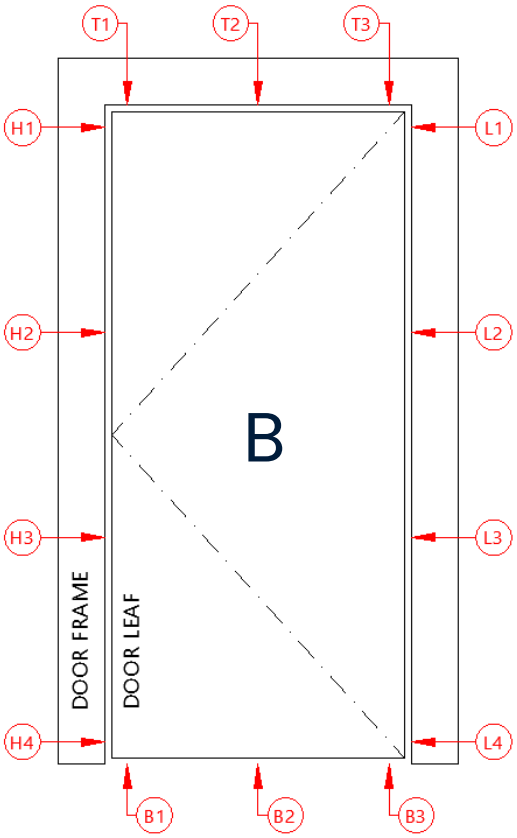
The gaps between the perimeter of the door leaf and the frame were measured prior to the commencement of the test.

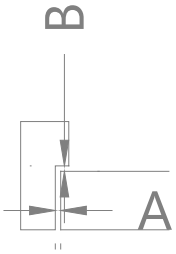




Hanging Stile	A	B	Closing Stile	A	B
H1	3.0	4.6	L1	2.8	6.4
H2	2.6	4.6	L2	2.6	5.1
H3	2.4	5.1	L3	2.3	4.8
H4	3.2	5.1	L4	1.9	3.7
Mean	2.8		Mean	2.4	
Max	3.2		Max	2.8	
Min	2.4		Min	1.9	
Max Permitted	5.0		Max Permitted	4.6	
Top Edge	**A**	**B**	**Bottom Edge**	**A**	
T1	4.2	3.7	B1	9.4	
T2	7.9	4.1	B2	9.3	
T3	3.2	6.4	B3	9.3	
Mean	5.1		Mean	9.3	
Max	7.9		Max	9.4	
Min	3.2		Min	9.3	
Max Permitted	8.5		Max Permitted	11.4	

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Hanging Stile	A	B	Closing Stile	A	B
H1	3.6	5.6	L1	3.7	4.7
H2	2.3	5.3	L2	4.0	4.3
H3	2.5	5.6	L3	3.0	4.7
H4	2.5	5.6	L4	2.6	4.3
Mean	2.7		Mean	3.3	
Max	3.6		Max	4.0	
Min	2.3		Min	2.6	
Max Permitted	5.2		Max Permitted	5.7	
Top Edge	**A**	**B**	**Bottom Edge**	**A**	
T1	3.6	7.0	B1	2.1	
T2	3.4	7.1	B2	2.4	
T3	4.0	5.5	B3	2.3	
Mean	3.7		Mean	2.3	
Max	4.0		Max	2.4	
Min	3.4		Min	2.1	
Max Permitted	5.9		Max Permitted	4.3	

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3 Test Specimen Drawings

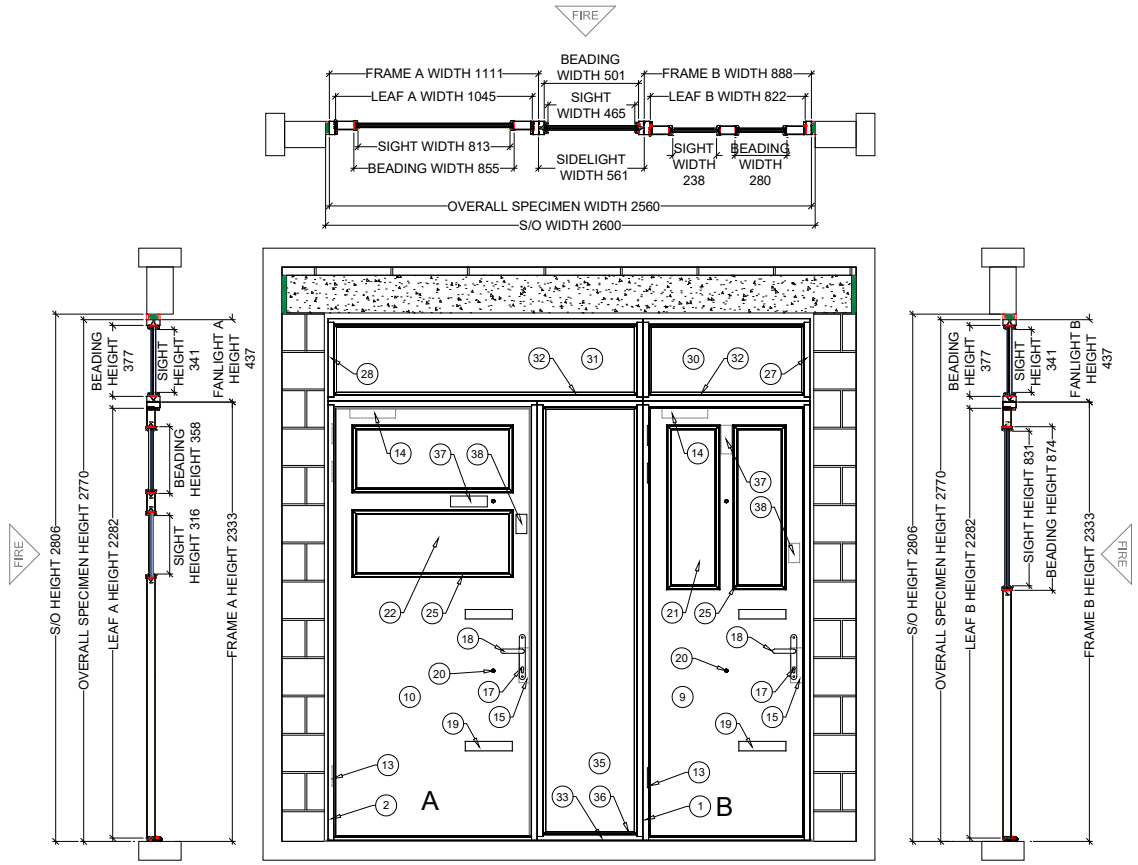


Figure 1 - General arrangement of test construction viewed from the unexposed surface (Leaf sections)

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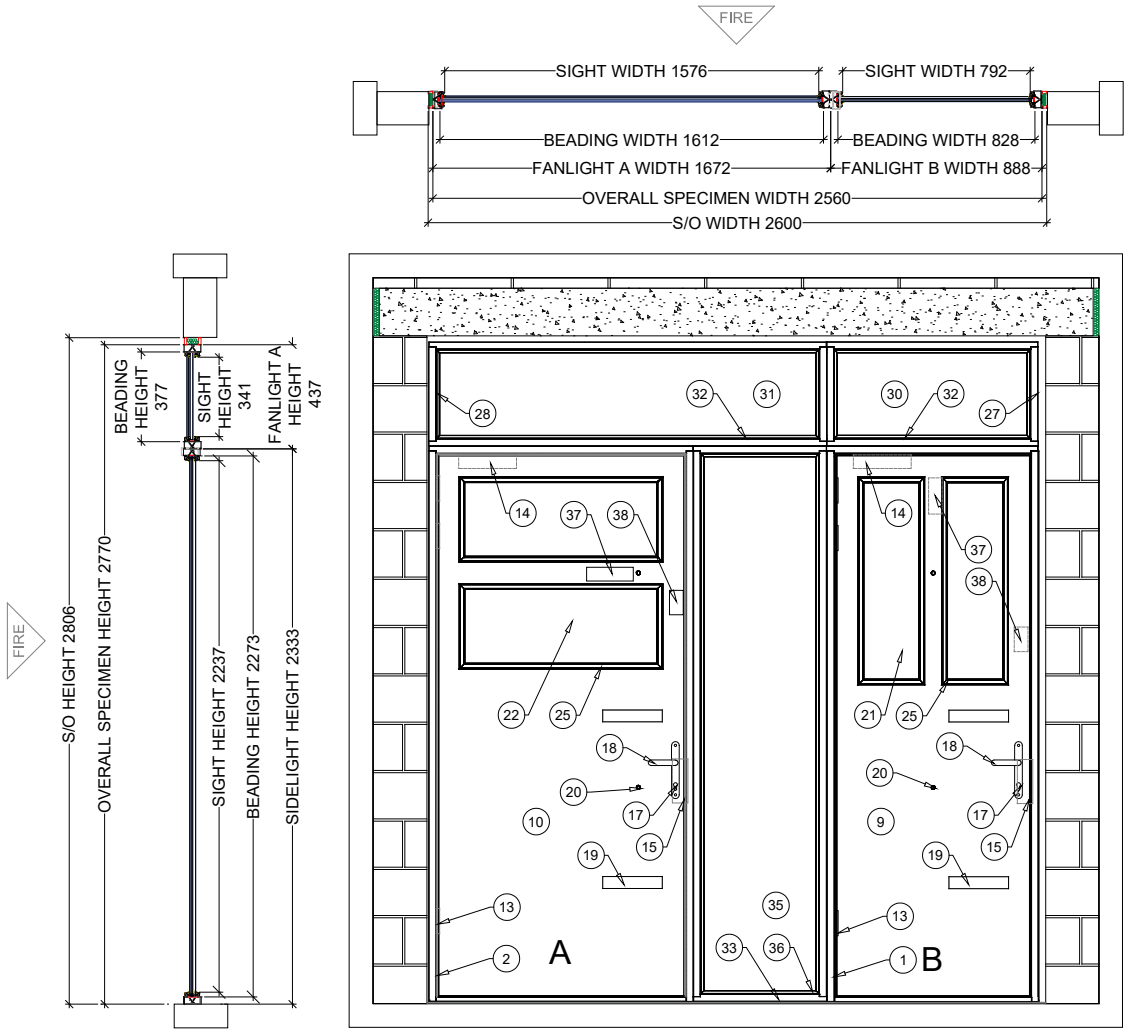


Figure 2 - General arrangement of test construction viewed from the unexposed surface (Sidelight & Fanlight sections)

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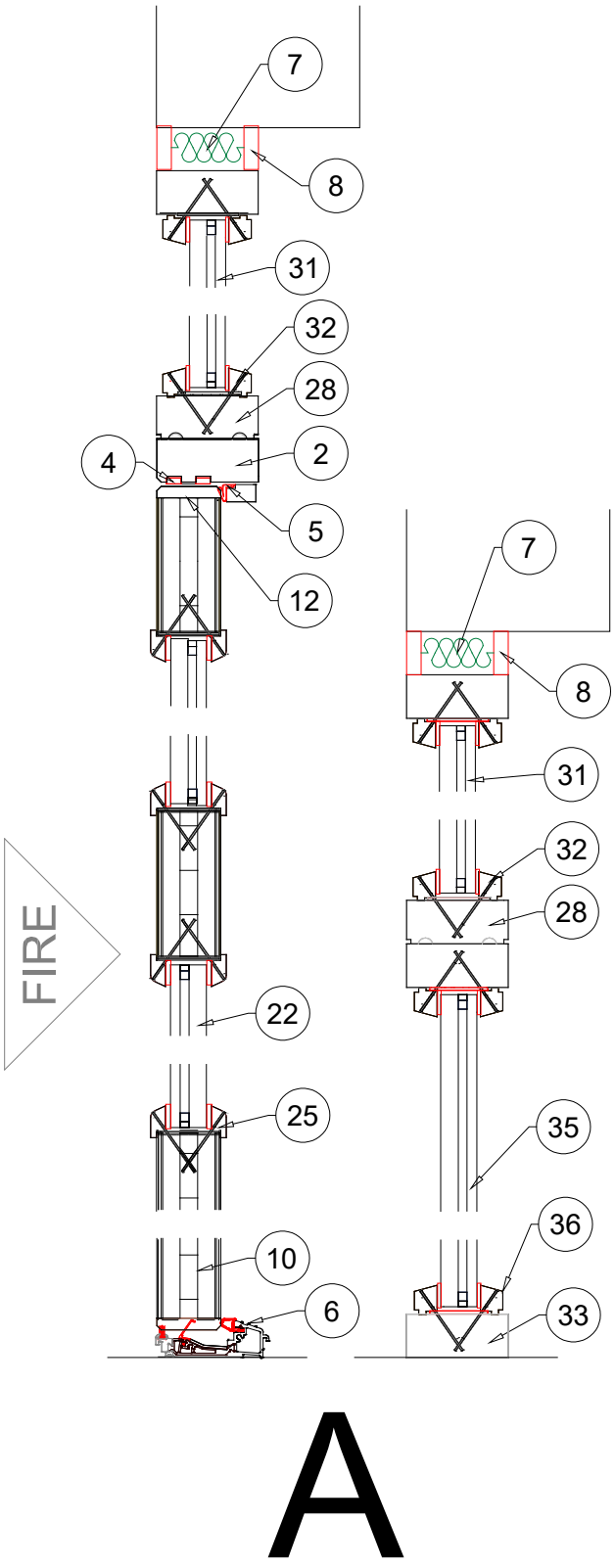


Figure 3 - Typical vertical section through Leaf A

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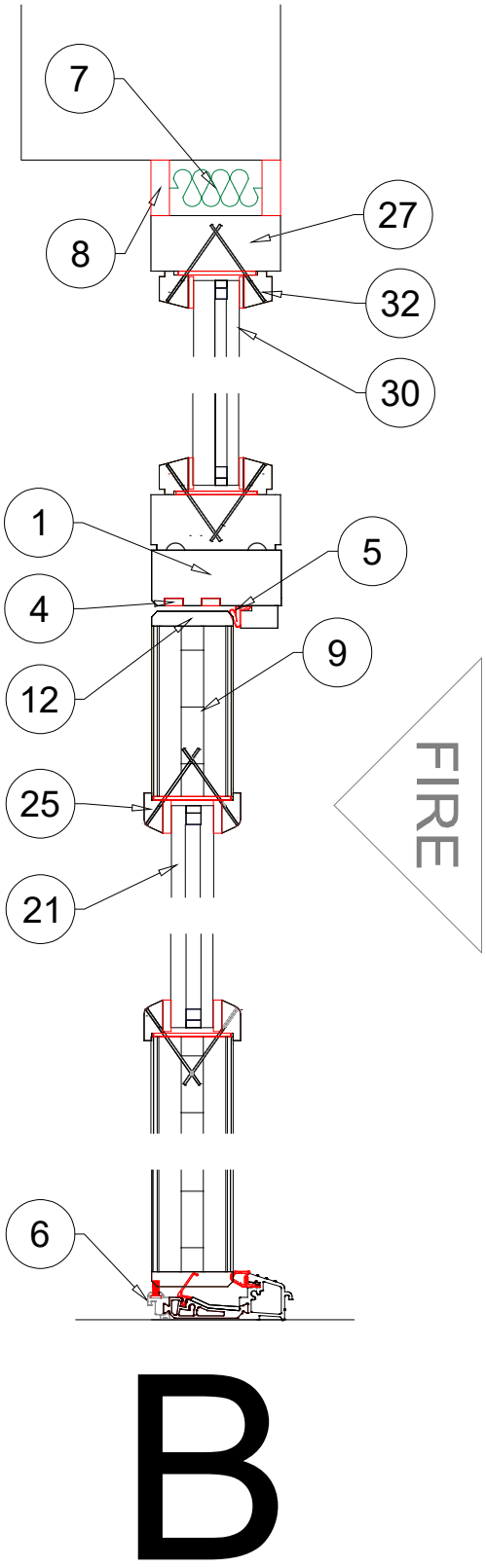


Figure 4 - Typical vertical section through Leaf B

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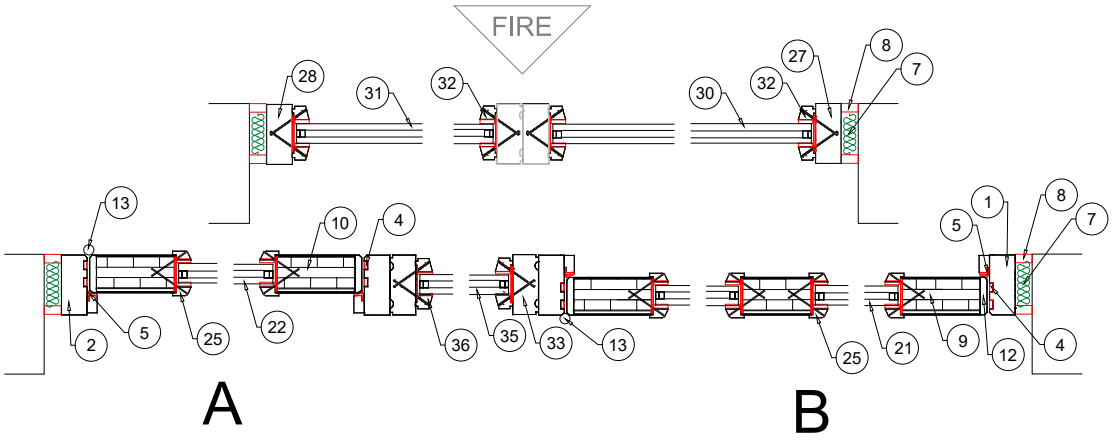


Figure 5 - Typical horizontal section through the specimen

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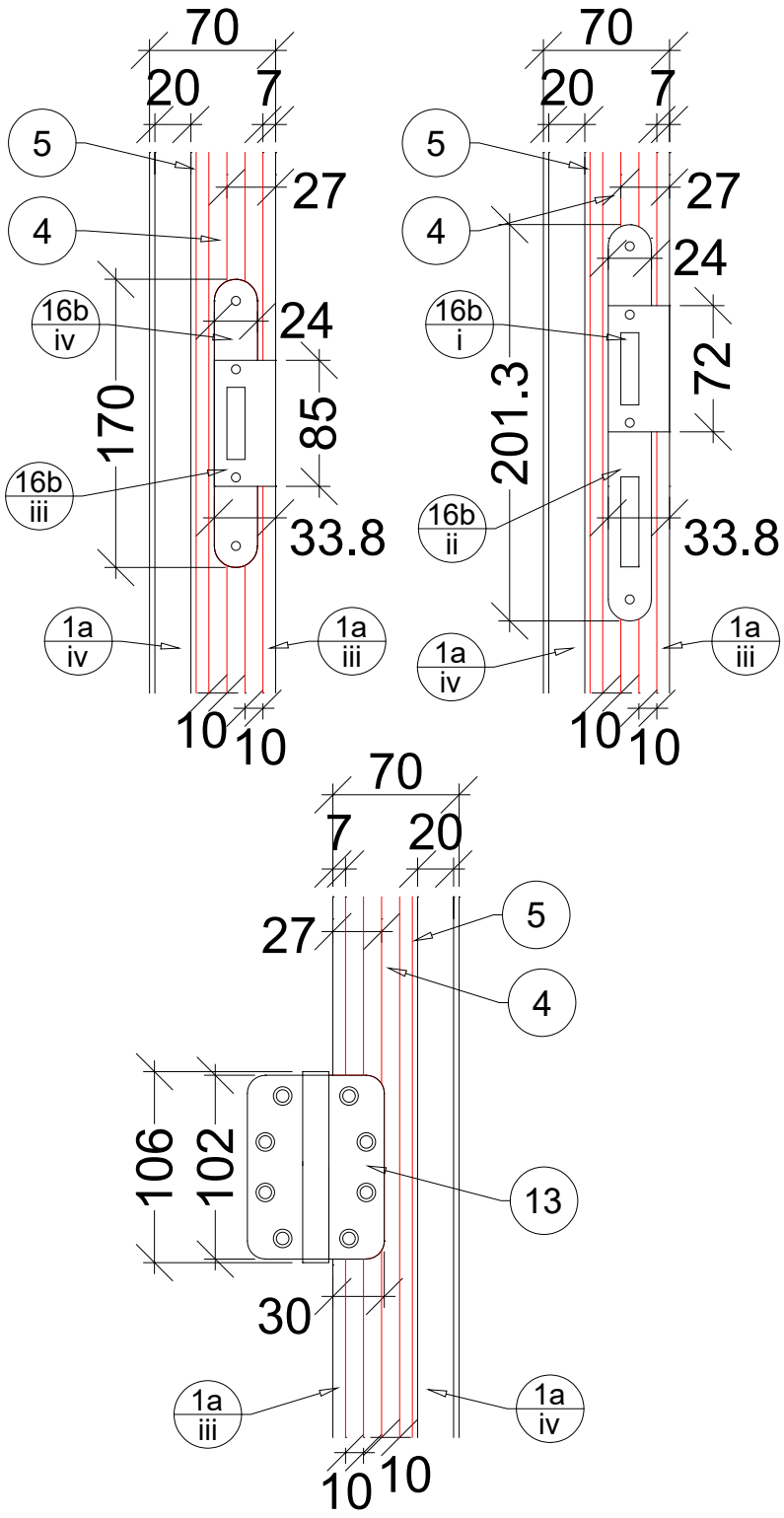


Figure 6 - Hardware intumescent interruptions

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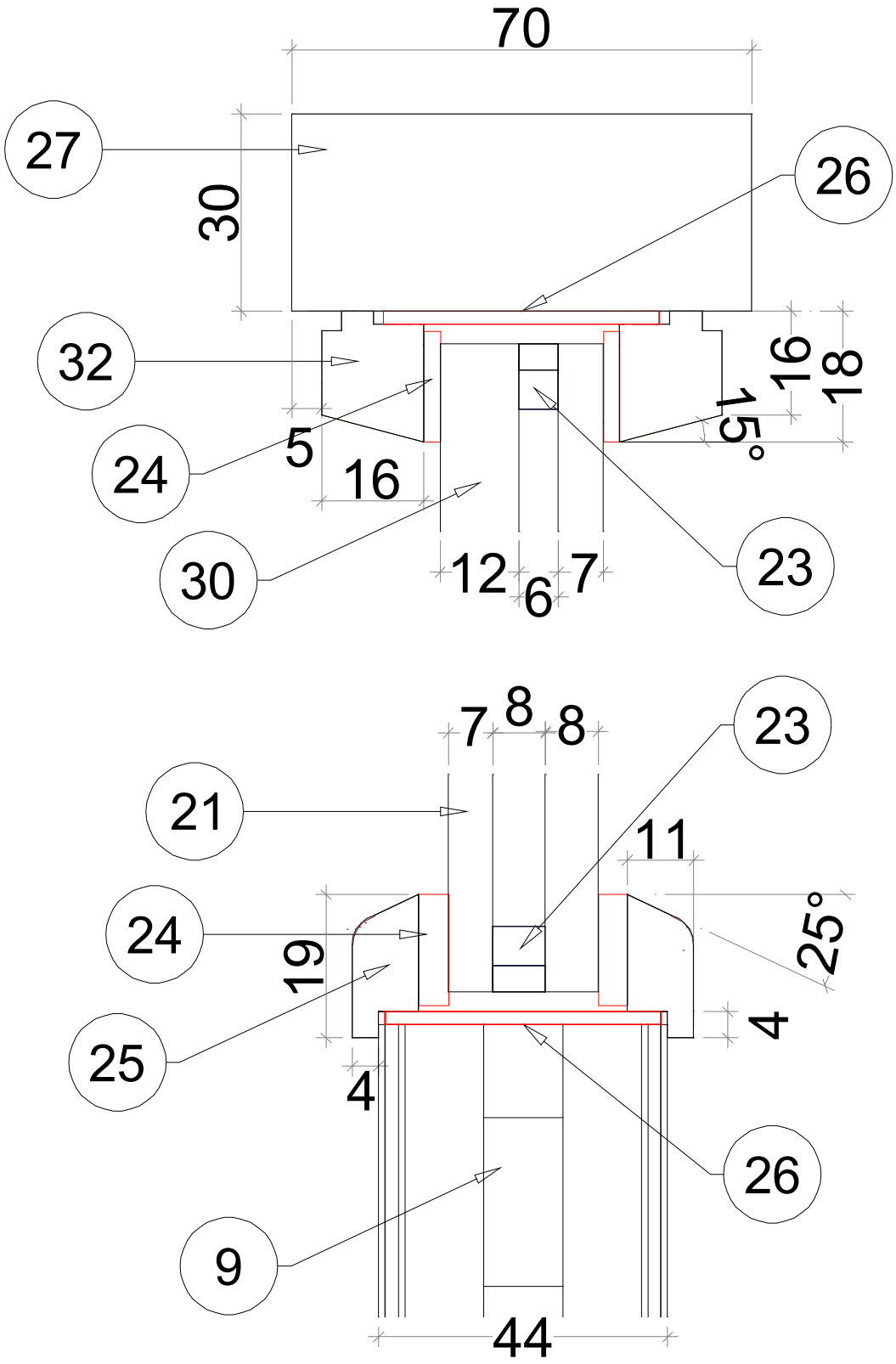


Figure 7 - Glazing detail

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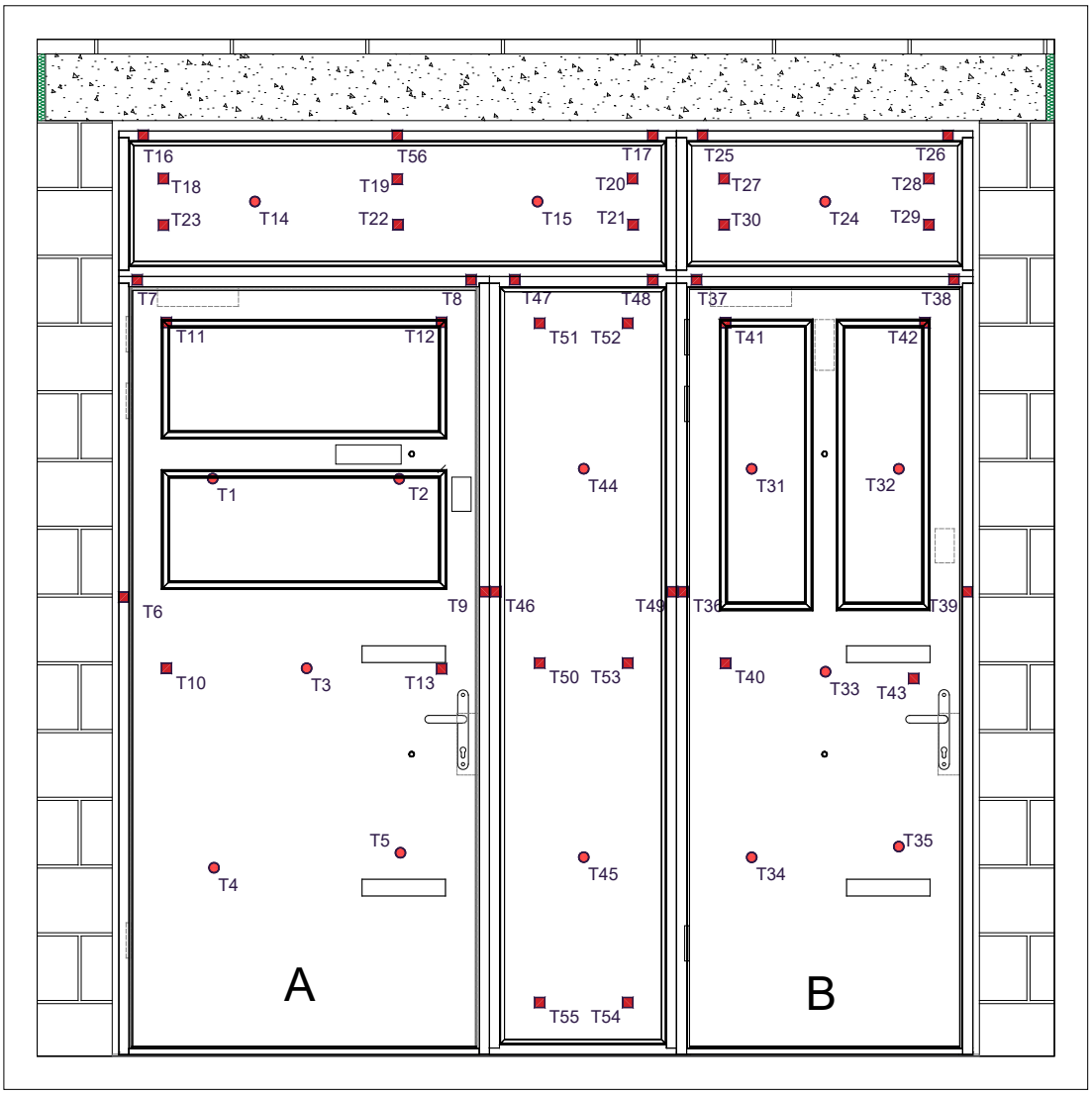


Figure 8 - Layout of instrumentation viewed from the unexposed surface of the test construction

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4 Technical Schedule

4.1 Specimen A & B

1. **Frame (Leaf B)**	
Manufacturer	By Dezign Carpentry [1]
Supplier	Wood International Agency Limited [1]
Reference	Framebreak PI 450 [1]
Material	Engineered Softwood head and jambs [1]
Density	450 kg/m^3 [1]
Moisture content	12 % [2]
Orientation to heating conditions	Opening towards
a. Dimensions	
i. Overall Frame	2333 mm high x 888 mm wide x 70 mm deep
ii. Frame (Head)	70 mm wide x 30 mm thick
iii. Frame (Jambs)	70 mm wide x 30 mm thick
iv. Stop	20 mm wide x 12 mm deep
Jamb to Head jointing method, fixing detail and location	Nominally 10 mm x 30 mm half lap joint, hand spread with Würth D4 PVA, secured with 2 No. Ø 5 mm x 70 mm long Würth Wüpofast 2.0 Woodscrew Fixings [1]
Stop to Frame jointing method, fixing detail and location	1.6 g x 38 mm long stainless steel pins at maximum 100 mm from corners, maximum 300 mm centres [1]
2. **Frame (Leaf A)**	
Manufacturer	By Dezign Carpentry [1]
Supplier	Wood International Agency Limited [1]
Reference	Framebreak PI 450 [1]
Material	Engineered Softwood head and jambs [1]
Density	450 kg/m^3 [1]
Moisture content	12 % [2]
Orientation to heating conditions	Opening away

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a. Dimensions	
i. Overall Frame	2333 mm high x 1111 mm wide x 70 mm deep
ii. Frame (Head)	70 mm wide x 30 mm thick
iii. Frame (Jambs)	70 mm wide x 30 mm thick
iv. Stop	20 mm wide x 12 mm deep
Jamb to Head jointing method, fixing detail and location	Nominally 10 mm x 30 mm half lap joint, hand spread with Würth D4 PVA, secured with 2 No. Ø 5 mm x 70 mm long Würth Wüpofast 2.0 Woodscrew Fixings [1]
Stop to Frame jointing method, fixing detail and location	1.6 g x 38 mm long stainless steel pins at maximum 100 mm from corners, maximum 300 mm centres [1]
3. Frame Fixing Method to Supporting Construction	
Manufacturer	Würth [1]
Reference	AMO III Schrauben [1]
Type & material	Countersunk concrete screws – blue zinc passivated steel [1]
Overall size	Ø 7.5 mm x 102 mm long [1]
Location relative to frame reveal	Staggered 12.5 mm in from frame reveal
Frequency	150 mm from top corner of jamb, 150 mm from bottom corner of jamb and at no more than 600 mm centres
Does the fixing penetrate intumescent seal within frame reveal	No
Packing Material	Plastic [1]
Packing Material Dimension	28 mm wide x 100 mm (cut down to 70 mm – flush with frame faces) x various thicknesses, stacked as necessary [1]
Packing Material Location	Behind all screw fixings, stacked as necessary [1]
4. Intumescent to Frame Reveal	
a. Quantity	
i. Leaf A	2 No.
ii. Leaf B	2 No.
Manufacturer	Sealed Tight Solutions Limited [1]
Reference	STS 104FO [1]

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Material	PVC Encased Graphite [1]
Overall section size	10 mm wide x 4 mm thick
Application method	Self-adhesive
Location (relative to the opening face of the door leaf)	7 mm, 27 mm
5. Smoke Seal to Frame Reveal	
a. Quantity	
i. Leaf A	1 No.
ii. Leaf B	1 No.
Manufacturer	Quanex [1]
Reference	Aquamac 21 (QL 3009 – AQ 21) [1]
Material	Polyethylene film covered polyurethane [1]
Overall section size	10.9 mm wide x 13.3 mm deep [1]
Application method	Fiction fitted into kerf groove [1]
Location	Fitted to frame stop
6. Threshold	
Manufacturer	Stormguard [1]
Reference	FD30/60 Proline AM3-70 Thermal Hybrid with detachable front ramp [1]
Material	Aluminium and plastic [1]
Overall section size	25 mm high x 72 mm wide with 15 mm high x 49 mm wide detachable ramp [1]
Fixing method, location and fixing details	Screw fixed to floor/base
a. Seal 1 within threshold profile	
i. Type	Bubble seal [1]
ii. Manufacturer	Stormguard [1]
iii. Overall size	15 mm high x 8.4 mm wide [1]

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iv. Fixing method	Locator in seal profile press fits into channel within aluminium extrusion [1]
b. Seal 2 within threshold profile	
i. Type	Brush pile [1]
ii. Manufacturer	Stormguard [1]
iii. Overall size	5.4 mm high x 9.2 mm wide [1]
iv. Fixing method	Locator slide fits into channel within aluminium extrusion [1]
c. Seal 3 within threshold profile	
i. Type	Swipe fin [1]
ii. Manufacturer	Stormguard [1]
iii. Overall size	9.9 mm high x 18 mm wide [1]
iv. Fixing method	Locator in seal profile press fits into channel within aluminium extrusion [1]
d. Seal 4 within threshold profile	
i. Type	Intumescent [1]
ii. Manufacturer	Sealed Tight Solutions Limited [1]
iii. Overall size	27 mm wide x 2 mm thick [1]
iv. Fixing method	Self-adhered into drainage trough on top of polymeric thermal break [1]
7. Frame to Supporting Construction Fire Stopping Detail	
Manufacturer	Knauf
Reference	Rocksilk® RS45
Material	Rock Mineral Wool
Density	45 kg/m^3 (± 10 kg/m^3) [2]
Overall dimension	8.01 – 28.32 mm wide x 55 mm deep
Application method	Tight fit around frame perimeter, between specimen and supporting construction

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8. Sealant to Fire Stopping Detail	
Manufacturer	Sealed Tight Solutions Limited
Reference	ST88
Material	Intumescent mastic sealant
Overall section size	8.01 – 28.32 mm wide x 10 mm deep
Application method	Cartridge gunned
Location	Capping mineral wool, on both faces of supporting construction, around specimen
9. Door Leaf (Leaf B)	
Manufacturer	Wood International Agency Limited [1]
Reference	Soloman 44 [1]
Quantity of leaves on door set	1 No.
Glazing location relative to the head and closing edge	100 mm from the head of the leaf and 99 mm and 450 mm from the closing edge of the leaf [1]
Dimensions	2282 mm high x 822 mm wide x 44 mm thick [1]
Door Undercut (Top of cill / bottom of frame)	2.10 – 2.41 mm
10. Door Leaf (Leaf A)	
Manufacturer	Wood International Agency Limited [1]
Reference	Soloman 44 [1]
Quantity of leaves on door set	1 No.
Glazing location relative to the head and closing edge	100 mm and 531 mm from the head of the leaf and 99 mm from the closing edge of the leaf [1]
Dimensions	2282 mm high x 1045 mm wide x 44 mm thick [1]
Door Undercut (Top of cill / bottom of frame)	1.77 – 3.46 mm
11. Core Element	
Manufacturer	Wood International Agency Limited [1]
Reference	Soloman 44 [1]

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Material	Ply-faced solid timber core blank [1]
Density	408 - 433 kg/m^3 [1]
12. Lippings / Edge Banding	
Manufacturer	By Dezign carpentry [1]
Reference	Standard square lipping [1]
Material	Sapele [1]
Density	640 kg/m^3 [1]
Moisture content	12 % [2]
Overall section size	8 mm thick x 44 mm deep
Fixing method	Adhered to blank edges [1]
Location	All 4 edges of door leaf
a. Adhesives	
i. Manufacturer	Würth [1]
ii. Type	Polyurethane [1]
iii. Reference	Rapid MCPU Adhesive [1]
iv. Curing method	Moisture [1]
v. Application method	Hand spread and cramped [1]
13. Hinges	
Supplier	Hoppe UK [1]
Reference	Arrone AR8182-SSS [1]
a. Quantity	
i. Leaf A	3 No.
ii. Leaf B	3 No.
Primary material	Stainless steel [1]
Type	Ball bearing butt hinge [1]
b. Dimensions	

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i. Knuckle	Ø 14 mm x 106 mm high
ii. Blades	102 mm high x 30 mm wide x 3 mm thick
c. Fixings	
i. Type	Countersunk woodscrews [1]
ii. Material	Stainless steel [1]
iii. Size	Ø 4.5 mm x 31 mm long [1]
iv. Number of fixings per blade	4
Position of each hinge relative to the head of the leaf	150 mm, 350 mm and 1968 mm from top of door leaf
Details of intumescent protection	1 mm STS Graphite pad [1]
Interruptions to Intumescent within the frame reveal	Fully interrupts one seal, partially interrupts second seal
14. Door Closer	
Manufacturer	Rutland [1]
Reference	ITS.11204 [1]
a. Material	
i. Body	Aluminium [1]
ii. Closer arm	Steel [1]
Configuration	Concealed closer
b. Overall size	
i. Body	243 mm long x 57 mm wide x 32 mm deep
ii. Connector Bar	365 mm long x 20 mm wide x 5 mm deep
iii. Slide Rail	460 mm long x 19 mm wide x 31 mm thick
c. Fixing method	
i. Body	8 No. Ø 4.5 mm x 15 mm woodscrews to each flange on closer body [1]
ii. Slide Rail	4 No. Ø 4.5 mm x 15 mm woodscrews to slide channel [1]

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d. Details of Intumescent Protection	
i. Body	Closer protected with 1 No. 32 mm wide x 1 mm thick x 458 mm long STS graphite intumescent strip on top of closer body lining entire channel, with cut outs where access to adjustment screws are positioned [1]
ii. Slide Rail	1 No. 67 mm wide x 1 mm thick x 496 mm long STS graphite intumescent strip lining the 21 mm wide x 20 mm deep x 462 mm long mortice for slide rail [1]
15. Lockset	
Manufacturer	Rutland [1]
Reference	RMP3.1720.45 [1]
a. Material	
i. Lockcase	Steel [1]
ii. Forend plate	Brushed Stainless Steel [1]
iii. Latch bolt	Brushed Stainless Steel [1]
iv. Lock bolt	Brushed Stainless Steel [1]
v. Top and bottom lock case	Steel [1]
vi. Top and bottom lock bolts	Steel [1]
b. Dimensions	
i. Central Lockcase	185.5 mm high x 15 mm wide x 61.5 mm (65 mm deep including forend plate) [1]
ii. Forend Plate	1720 mm high x 20 mm wide x 3 mm thick [1]
iii. Latch Bolt	30 mm high x 9 mm wide x 11 mm projection [1]
iv. Lock Bolt	30 mm high x 6 mm wide x 15 mm single projection [1]
v. Top and Bottom Lock Case	114 mm high x 20 mm wide x 41 mm deep (44 mm deep including forend plate) [1]
vi. Top and Bottom Lock Bolts	47 mm high x 8 mm wide x 23 mm projection [1]
Fixing method	10 No. Ø 3.5 mm x 25 mm long countersunk woodscrews [1]

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Operation of latch bolt	Engaged
Operation of lock bolt	Disengaged
Operation of Top and bottom lock bolts	Engaged
c. Details of intumescent protection	
i. Central Lockcase	Encased with 1 mm thick STS graphite intumescent strip, cut outs around moving parts [1]
ii. Top and bottom lock case	Encased with 1 mm thick STS graphite intumescent strip, cut outs around moving parts [1]
iii. Forend plate	1 mm thick STS graphite intumescent strip adhered to ends of forend. A 10 mm wide x 1 mm thick STS graphite intumescent strip adhered to groove in door behind espag drive bar, in between each lock case [1]
Location of centre of the spindle relative to the bottom of the leaf	Centre of the spindle measures 1000 mm from the bottom of the leaf
16. Keeper	
Manufacturer	Rutland [1]
a. Reference	
i. Centre Keep	RMP3.KCR.SS [1]
ii. Top and Bottom Keep	RMP3.KTBR.SS [1]
b. Material	
i. Centre Strike Plate	Aluminium [1]
ii. Centre Keep	Aluminium [1]
iii. Top and Bottom Strike Plate	Aluminium [1]
iv. Top and Bottom Keep	Aluminium [1]
c. Dimensions	
i. Centre Strike Plate	72 mm high x 35 mm wide x 7.3 mm thick (part of Keep Plate) [1]

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ii. Centre Strike Keep	201.3 mm high x 24 mm wide x 5 mm thick [1]
iii. Top and Bottom Strike Plate	85 mm high x 33.8 mm wide x 6.5 mm thick (part of Top and Bottom Keep Plate) [1]
iv. Top and Bottom Strike Keep	170 mm high x 24 mm wide x 5 mm thick [1]
d. Fixing Method	
i. Centre Strike Plate / Keep	3 No. Ø 4.0 mm x 40 mm long countersunk woodscrews [1]
ii. Top and Bottom Strike Plate / Keep	4 No. Ø 4.0 mm x 40 mm long countersunk woodscrews (2 No. per keep) [1] 4 No. M5 x 8 mm long machine screws to secure adjustable strike plate (2 No. per keep) [1]
e. Details of Intumescent Protection	
i. Centre Strike Plate / Keep	Mortice lined with 1 mm thick STS graphite intumescent strip [1]
ii. Top and Bottom Strike Plate / Keep	Mortice lined with 1 mm thick STS graphite intumescent strip [1]
f. Interruptions to intumescent within frame reveal	
i. Centre Strike Plate / Keep	Partially interrupts
ii. Top and Bottom Strike Plate / Keep	Partially interrupts
17. Cylinder with Thumb Turn	
Manufacturer	Avocet [1]
Reference	ATK - DC7AS3535PCQT [1]
Material	Chromed brass [1]
Overall size	Ø 17 mm x 32 mm high x 70 mm long (plus Thumb turn)

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18. **Lever Handles**	
Manufacturer	Rutland [1]
Reference	RH.RLB [1]
Material	Zinc Alloy [1]
Dimensions	240 mm high x 32 mm wide x 23 mm thick x 130 mm long
Fixing method, fixing material, sizes, quantity and location	2 No. steel M5 x 60 mm long bolt through fixings [1]
19. Letter Plate	
Manufacturer	Rutland [1]
Reference	RLP [1]
a. Quantity	
i. Leaf A	2 No.
ii. Leaf B	2 No.
b. Material	
i. Body	ABS [1]
ii. Face plate	Aluminium [1]
iii. Security cowl	Aluminium [1]
c. Dimensions	
i. Body	69 mm high x 289 mm wide x 44 mm thick [1]
ii. Cut out	80 mm high x 299 mm wide [1]
iii. Footprint	90 mm high x 311 mm wide x 15 mm thick [1]
iv. Security cowl	85 mm high x 289 mm wide x 5 mm thick x 14 mm projection [1]
d. Fixing method	
i. Interior and Exterior Plates	Clamp fixed together using 2 No. through door screw fix M6 x 50 mm long [1]
ii. Security Cowls	2 No. pinscrews [1]
Location	1042 and 1750 mm from head of door leaf x 110 mm from leading edge of door leaf

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Details of intumescent protection	Rutland IP.RLP - Graphite intumescent kit for RLP letterplate: 40 mm w x 4 mm to top, 6 mm to bottom and sides [1]
20. Door Viewer	
Manufacturer	Rutland [1]
Reference	RH.DV [1]
a. Quantity	
i. Leaf A	2 No.
ii. Leaf B	2 No.
Material	Brass
b. Dimensions	
i. Body	Ø 14 mm
ii. Footprint	Ø 22.5 mm to unexposed face, Ø 22 mm to exposed face
iii. Cut out	Ø 17 mm
Fixing method	Self-screwed
c. Location	
i. Leaf A	500 mm, 1400 mm from head of leaf, 200 mm from leading edge of leaf
ii. Leaf B	500 mm, 1400 mm from head of leaf, central to width of leaf
Details of intumescent protection	1 mm thick STS graphite intumescent strip wrapped around body [1]
21. Door Glazing Unit (Leaf B)	
Manufacturer / Supplier	Fire Glass UK
Reference (Declaration of Performance)	Pyrobelite 12:6 mm warm edge, Argon Filled 6:8 Low E Clear Lam
Quantity	2 No.
Dimensions	855 mm high x 262 mm wide x 25.1 mm thick
Aperture location relative to the head and closing edge of the leaf	100 mm from the head of the leaf and 99 mm from the closing edge of the leaf
Aperture size (prior to any lining)	865 mm high x 272 mm wide

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Sight size	831 mm high x 238 mm wide [1]
Expansion allowance	3 mm all around [1]
Presence of Timber aperture lining	No [1]
22. Door Glazing Unit (Leaf A)	
Manufacturer / Supplier	Fire Glass UK
Reference (Declaration of Performance)	Pyrobelite 12:6 mm warm edge, Argon Filled 6:8 Low E Clear Lam
Quantity	2 No.
Dimensions	340 mm high x 837 mm wide x 25.1 mm thick
Aperture location relative to the head and closing edge of the leaf	100 mm from the head of the leaf and 99 mm from the closing edge of the leaf
Aperture size (prior to any lining)	350 mm high x 847 mm wide
Sight size	316 mm high x 813 mm wide [1]
Expansion allowance	3 mm all around [1]
Presence of Timber aperture lining	No [1]
23. Glass Spacer	
Manufacturer	Thermoseal [1]
Reference	5.5 mm Thermobar [1]
Material	Rigid high-performance engineering plastic with a gas diffusion barrier [1]
Overall size	5.5 mm thick [1]
Fixing method	PIB Butyl Tape [1]
a. Presence of Adhesives to seal unit	
i. Location	Around unit perimeter [1]
ii. Manufacturer	Bostik [1]
iii. Type	Thermoplastic Hot-Melt Butyl [1]
iv. Reference	Bostik 5000 [1]
v. Curing method	Cooling [1]

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vi. Application method	Gun applied [1]
24. Glazing Seal	
Manufacturer	Dixon International Group Limited [1]
Reference	Sealmaster Intumescent Foam Glazing Tape [1]
Material	Open cell intumescent foam [1]
Overall size	15 mm wide x 5 mm thick (compressed to approximately 3 mm thickness) [1]
Fixing method	Adhered to bead upstand [1]
Location	In between beading and glass, adhered to glazing bead upstand [1]
25. Door Beading (Leaf A & B)	
Manufacturer	By Dezign Carpentry [1]
Reference	Standard Bolection Bead [1]
Material	Sapele [1]
Density	640 kg/m^3 [1]
Moisture content	12 % [2]
a. Dimensions	
i. Leaf A	354 mm high x 851 mm wide x 11 mm deep [1]
ii. Leaf B	860 mm high x 276 mm wide x 11 mm deep [1]
Cross Section Size	11 mm wide x 19 mm high including a 4 mm high x 4 mm wide bolection [1]
Fixing method, fixing material and sizes	Ø 3.5 mm x 50 mm long ZPYP steel woodscrews [1]
Fixing distances from corners, centres and angle relative to the face of the glass	50 mm from corners, maximum 150 mm centres and at 35 ° ± 5° to the face of the glass [1]
26. Glazing Intumescent Liner	
Manufacturer	Intumescent Seals Limited [1]
Supplier	Dixon International Group Limited [1]

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Reference	Therm-A-Sol [1]
Material	Sodium silicate [1]
Overall size	44 mm wide x 2 mm thick [1]
Fixing method	Self-adhesive
27. Fanlight Frame (Leaf B)	
Manufacturer	By Dezign Carpentry [1]
Supplier	Wood International Agency Limited [1]
Reference	FL2 [1]
Material	Flamebreak PI 450 [1]
Density	450 kg/m^3 [1]
Moisture content	12 % [2]
Overall size	437 mm high x 888 mm wide x 70 mm deep [1]
Fixing Method	Screw fixed into door frame [1]
a. Fixings	
i. Manufacturer	Würth [1]
ii. Reference	Wüpofast [1]
iii. Type & Material	Steel woodscrews [1]
iv. Dimensions	Ø 5 mm x 50 mm long [1]
v. Frequency	150 mm from edges and 300 mm centres [1]
Details of fire stopping between frame members	2 No. 10 mm wide x 5 mm deep semi-circular grooves within outer frame members, 8 mm in from each face, filled with bead of STS intumescent mastic sealant within formed channel [1]
28. Fanlight Frame (Leaf A)	
Manufacturer	By Dezign Carpentry [1]
Supplier	Wood International Agency Limited [1]
Reference	FL2 [1]
Material	Flamebreak PI 450 [1]

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Density	450 kg/m^3 [1]
Moisture content	12 % [2]
Overall size	437 mm high x 1672 mm wide x 70 mm deep [1]
Fixing Method	Screw fixed into door frame [1]
a. Fixings	
i. Manufacturer	Würth [1]
ii. Reference	Wüpofast [1]
iii. Type & Material	Steel woodscrews [1]
iv. Dimensions	Ø 5 mm x 50 mm long [1]
v. Frequency	150 mm from edges and 300 mm centres [1]
Details of fire stopping between frame members	2 No. 10 mm wide x 5 mm deep semi-circular grooves within outer frame members, 8 mm in from each face, filled with bead of STS intumescent mastic sealant within formed channel [1]

29. **Fanlight Frame Fixing Method to Supporting Construction**	
Manufacturer	Würth [1]
Reference	AMO III Schrauben [1]
Type & material	Countersunk concrete screws – blue zinc passivated steel [1]
Material	Steel [1]
Overall size	Ø 7.5 mm x 102 mm long [1]
Fixing Location	Through glazing channel/under glazing bead [1]
Frequency	No more than 600 mm centres [1]
Packing Material	Plastic [1]
Packing Material Dimension	28 mm wide x 100 mm (cut down to 70 mm) x various thicknesses [1]
Packing Material Location	Behind all screw fixings, stacked as necessary [1]

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30. **Fanlight Glazing Unit (Leaf B)**	
Manufacturer / Supplier	Fire Glass UK [1]
Reference (Declaration of Performance)	Pyrobelite 12:6 mm warm edge, Argon filled: 6.8 Low E Clear Lam
Overall size	367 mm high x 818 mm wide x 25.1 mm thick [1]
Aperture size	377 mm high x 828 mm wide [1]
Sight size	341 mm high x 792 mm wide [1]
Expansion allowance	3 mm [1]
31. Fanlight Glazing Unit (Leaf A)	
Manufacturer / Supplier	Fire Glass UK [1]
Reference (Declaration of Performance)	Pyrobelite 12:6 mm warm edge, Argon filled: 6.8 Low E Clear Lam
Overall size	367 mm high x 1602 mm wide x 25.1 mm thick [1]
Aperture size	377 mm high x 1612 mm wide
Sight size	341 mm high x 1576 mm wide [1]
Expansion allowance	3 mm [1]
32. Fanlight Beading (Leaf A & B)	
Manufacturer	By Dezign Carpentry [1]
Reference	Standard Bolection Bead [1]
Material	Sapele [1]
Density	640 kg/m^3 [1]
Moisture content	12 % [2]
a. Dimensions	
i. Leaf A	377 mm high x 1612 mm wide x 16 mm thick
ii. Leaf B	377 mm high x 828 mm wide x 16 mm thick
Cross Section Size	16 mm wide x 18 mm high [1]
Fixing method, fixing material and sizes	Ø 3.5 mm x 50 mm long steel woodscrews [1]

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Fixing distances from corners, centres and angle relative to the face of the glass	50 mm from corners, 150 mm centres and at 35 ° ± 5° to the face of the glass [1]
33. Sidelight Frame (Leaf A)	
Manufacturer	By Dezign Carpentry [1]
Supplier	Wood International Agency Limited [1]
Reference	FL2 [1]
Material	Flamebreak PI 450 [1]
Density	450 kg/m^3 [1]
Moisture content	12 % [2]
Overall size	2333 mm high x 561 mm wide x 70 mm deep
Fixing Method	Screw fixed into door frame [1]
a. Fixings	
i. Manufacturer	Würth [1]
ii. Reference	Wüpofast [1]
iii. Type & Material	Steel woodscrews [1]
iv. Dimensions	Ø 5 mm x 50 mm long [1]
v. Frequency	150 mm from edges and 300 mm centres [1]
34. Sidelight Frame Fixing Method to Supporting Construction	
Manufacturer	Würth [1]
Reference	AMO III Schrauben [1]
Type & material	Countersunk concrete screws – blue zinc passivated steel [1]
Material	Steel [1]
Overall size	Ø 7.5 mm x 102 mm long [1]
Fixing Location	Within glazing channel/under beads staggered [1]
Frequency	No more than 600 mm centres [1]
Packing Material	Plastic [1]

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Packing Material Dimension	28 mm wide x 100 mm (cut down to 70 mm) x various thicknesses [1]
Packing Material Location	Behind all screw fixings, stacked as necessary [1]
35. Sidelight Glazing Unit (Leaf A)	
Manufacturer / Supplier	Fire Glass UK [1]
Reference (Declaration of Performance)	Pyrobelite 12:6 mm warm edge, Argon filled: 6.8 Low E Clear Lam
Overall size	2263 mm high x 491 mm wide x 25.1 mm thick [1]
Aperture size	2273 mm high x 501 mm wide
Sight size	2237 mm high x 465 mm wide [1]
Expansion allowance	3 mm [1]
36. Sidelight Beading (Leaf A)	
Manufacturer	By Dezign Carpentry [1]
Reference	Standard Bolection Bead [1]
Material	Sapele [1]
Density	640 kg/m^3 [1]
Moisture content	12 % [2]
Dimensions	2273 mm high x 501 mm wide x 16 mm thick
Cross Section Size	16 mm wide x 20 mm high
Fixing method, fixing material and sizes	Ø 3.5 mm x 50 mm long steel woodscrews [1]
Fixing distances from corners, centres and angle relative to the face of the glass	50 mm from corners, maximum 150 mm centres and at 35 ° ± 5° to the face of the glass [1]
37. Numerals	
Manufacturer	Rutland [1]
Reference	RH.DNSF [1]
a. Quantity	
i. Leaf A	3 No.

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ii. Leaf B	3 No.
Material	Zinc Alloy [1]
Overall size	77 mm high x 41 mm wide x 0.3 mm thick [1]
b. Location	
i. Leaf A	Between 250 and 400 mm from lock stile edge, centrally in rail between apertures [1]
ii. Leaf B	Between 85 mm and 315 mm from top of leaf, in between vision panels [1]
Fixing method	2 No. Ø 2.8 mm x 10 mm long countersunk woodscrews [1]
Details of intumescent protection	None
Presence of Adhesives	None
38. Door Knocker	
Manufacturer	Rutland [1]
Reference	RH.DK [1]
a. Quantity	
i. Leaf A	1 No.
ii. Leaf B	1 No.
Material	Nickel Plated Mild Steel [1]
Dimensions	164 mm high x 76 mm wide x 13 mm thick [1]
Fixing Method	Ø 3.5 mm x 18 mm long countersunk woodscrews [1]
Location	710 mm from top of leaf to centre of knocker, centrally in lock stile [1]
39. Security Chain	
Manufacturer	Rutland [1]
Reference	RH.SC [1]
a. Quantity	
i. Leaf A	1 No.
ii. Leaf B	1 No.

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b. Material	
i. Face plate to leaf	Nickel Plated Mild Steel [1]
ii. Face plate to frame	Nickel Plated Mild Steel [1]
iii. Chain	Nickel Plated Mild Steel [1]
c. Overall size	
i. Face plate to leaf	39 mm high x 41 mm wide x 3 mm thick [1]
ii. Face plate to frame	61 mm high x 14 mm wide x 3 mm thick [1]
Location	1640 mm from bottom of leaf on lock stile [1]
Fixing method	2 No. Ø 4 mm x 32 mm long countersunk woodscrews to frame 4 No. Ø 4 mm x 32 mm long countersunk woodscrews to leaf [1]
Details of intumescent protection	None [1]

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4.2 Supporting Construction

40. Blockwork	
Supplier	United Kingdom Testing and Certification
a. Wall Supporting Structure (Low density)	As per BS EN 1363-1:2020 § 7.2.2.2
i. Type & Material	140 mm aerated concrete block 3.6N
ii. Overall Size	440 mm long x 215 mm high x 140 mm deep
iii. Density	650 kg/m^3 [2]
b. Lintel	
i. Type & Material	Supply Lytag material & Cast heat resistant lintel
ii. Overall Size	3000 mm long x 215 mm high x 140 mm deep
iii. Density	1650 – 1800 kg/m^3 [2]
Mortar	As per BS EN 1363-1: 2020 § 7.2.2.3
41. Board for Simulated Floor Level	
Manufacturer	British Gypsum
Reference	Glasroc F MultiBoard 6 mm
Density	833 kg/m^3 [2]
Dimensions	6 mm thick x 3000 mm long x 640 mm wide
Fixing(s)	Compression fitted between restraint frame and specimen.

All dimensions are in millimetres (mm) unless otherwise stated.

1. Information provided by the Test Sponsor. Not verified by United Kingdom Testing and Certification.

2. Nominal value.

3. Information is commercial in confidence. Full details are retained on file by United Kingdom Testing and Certification.

4. The sponsor was unable to provide the information required to adequately describe the specimen. It should be noted that not all of the information required by the Standard has been included and the report does not therefore comply with the requirements of the Standard.

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5 Specimen Photographs



Figure 9 – Items 2, 4

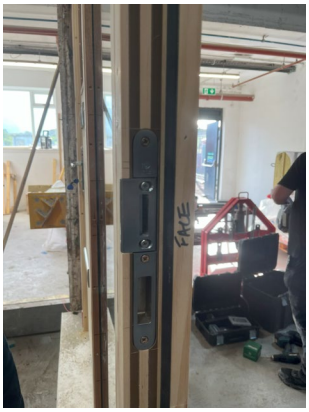


Figure 10 – Items 2, 4, 16 b i

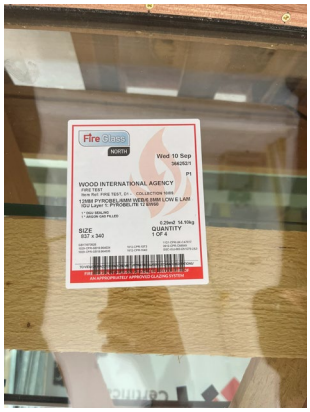


Figure 11 - Item 22



Figure 12 – Items 28, 33



Figure 13 - Item 19



Figure 14 - Items 1, 27



Figure 15- Item 6



Figure 16 – Items 27, 28



Figure 17 - Item 8

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6 Test Procedure

6.1 Ambient Temperature

The ambient air temperature in the vicinity of the test construction was 15.9 °C at the start of the test with a maximum variation of ± 2.2 °C during the test.

6.2 Heating Conditions

The specimens were subject to heating conditions in accordance with BS EN 1363-1:2020 § 5.1. This was monitored and controlled for the duration of the test using type K thermocouples which were distributed across a vertical plane 100 ± 50 mm from the exposed surface of the test construction. The resulting Time-Temperature distribution is presented in Figure 32.

6.3 Pressure Conditions

The specimens were subject to a pressure regime in accordance with BS EN 1363-1:2020 § 5.2. The calculated pressure differential relative to the laboratory atmospheric pressure at a height of 365, 1612 and 2850 mm from the furnace floor level was -1.1, 9.4 and 20.0 Pa respectively which equates to 0 Pa at a height of 500 mm from the furnace floor level. The furnace was maintained at these pressures within ± 5 Pa five minutes after the commencement of the test and ± 3 Pa ten minutes after the commencement of the test and for the remainder of the test duration. The pressure deviated from the specified conditions on no instances throughout the duration of the test. The Time-Pressure distribution is presented in Figure 33.

6.4 Unexposed Surface Temperature

A roving thermocouple was available for the evaluation of the maximum temperature rise of the unexposed surface of the specimens for the duration of the test. Any measurements using the roving thermocouple are presented on page 48.

Disc thermocouples were affixed to the unexposed surface of the specimens in accordance with BS EN 1634-1:2014+A1:2018 § 9.1.2 to measure and monitor the maximum and the mean temperature rise of the unexposed surface of the specimens for the duration of the test. A summary of the measurements is presented in Figure 34 and Figure 35 and the locations of these thermocouples is illustrated in Figure 8.

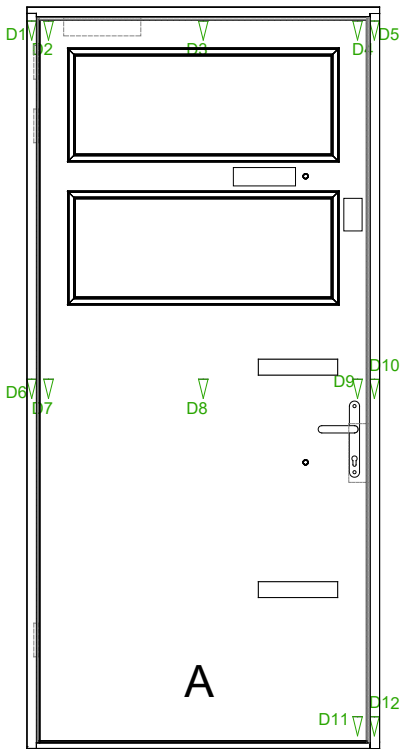
6.5 Radiation

The Radiant Heat of the specimens was measured using 180° field of view, water cooled heat flux meters that were positioned at the geometric center of each specimen at a distance of 1000 mm from the unexposed surface. Measurements were recorded for the duration of the test and a summary of the recorded measurements is presented in Figure 36.

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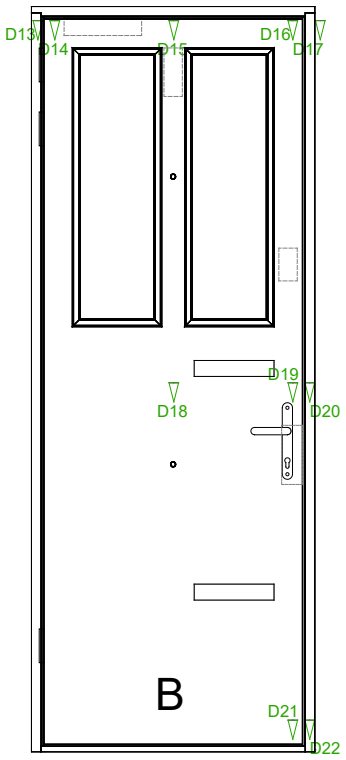
6.6 Deflection

All measurements are in millimeters (mm) unless stated otherwise. Positive values indicate movement towards the heating conditions.



Time (mins)	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12
0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	-1	-5	-4	-1	0	0	3	0	0	-1	0
20	2	1	4	-2	-1	0	0	2	0	0	0	0
25	-2	0	0	-3	-5	-1	0	-1	0	-1	-3	-2
30	1	0	7	-8	-7	0	0	-2	-6	-4	-2	-1
35	1	0	-5	-11	-12	0	0	-7	-6	-9	-3	3
40	1	0	-6	6	-5	15	-2	-16	-22	-17	-3	-2
45	0	-1	-13	-30	-18	-1	-3	-26	-42	-25	-3	-2
50	2	0	-13	-63	-33	-1	-6	-37	-62	-39	-2	-4

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Time (mins)	D13	D14	D15	D16	D17	D18	D19	D20	D21	D22	D23	D24
0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	-17	5	2	4	2	-8	-1	1	-2	0	-17
20	-2	-1	8	8	1	0	0	0	0	-2	-2	-1
25	-4	-6	3	4	5	-1	1	3	-3	-2	-4	-6
30	-8	-10	1	4	0	-4	2	2	-5	-2	-8	-10
35	-8	-10	-1	4	4	-9	2	2	-6	-1	-8	-10
40	-19	-18	-5	3	-1	-18	3	3	-6	-1	-19	-18
45	-23	-20	-8	4	-4	-28	0	5	-5	1	-23	-20
50	-28	-25	-13	0	-5	-39	-3	3	-5	-1	-28	-25

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6.7 Observations

Doorset	HH	MM	SS	E[1]	U[2]	Observation
	00	**00**	**00**			**The test commences.**
A + B	00	00	30		X	Steam/smoke releases from the lockset area and letterplates.
A + B	00	01	00		X	Glass intumesces on the top vision panel of A, the fanlight of A, the shared sidelight and the vision panel on the leading edge.
A + B	00	01	40		X	Steam/smoke releases from the frame joints of the specimen.
A	00	08	00		X	Heavy discolouration above top letter plate within specimen A.
A + B	00	09	00		X	Remaining vision panels on door leaves of A and B along with fanlight above B starting to intumesce.
A	00	17	00		X	Top letterplate pushing out from leaf, intumescent reacting and filling cavity.
A + B	00	26	00		X	Letterplates melted away, intumescent visible behind.
A + B	00	38	30	X		Beading still in place on leaves, starting to fall away from fanlights.
B	00	40	30	X		Closer has melted away.
A	00	42	30		X	Steam/smoke and discolouration at hanging edge/head in proximity to the closer location.
A	00	46	56		X	Glow above the top letterplate.
A	00	48	15		X	Cotton pad test applied above the top letterplate, cotton pad is moderately discoloured.
B	00	50	34		X	Cotton pad test is applied to the frame joint between doorset B and overpanel B approximately mid-width, the cotton pad is heavily discoloured.
A	**00**	**51**	**58**		**X**	**Cotton pad test applied above the top letterplate, cotton pad ignites. Cotton pad integrity failure is deemed to have occurred.**

[1] Viewed from exposed surface of the test construction.
[2] Viewed from unexposed surface of the test construction.

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Doorset	HH	MM	SS	E[3]	U[4]	Observation
A	**00**	**52**	**12**		**X**	**A flame emits and sustains from the top letterplate for a duration greater than 10 seconds this flame spreads up onto the seal of the lower vision panel which also sustains a flame for longer than 10 seconds. Sustained flame failure is deemed to have occurred.**
A	**00**	**52**	**45**		**X**	**Mastic is applied to the letterplate and vision panel, gap gauge criteria can no longer formally be evaluated.**
A	00	54	00		X	Flames flicker from the mid height of the leading edge up to the head.
	00	**54**	**03**			**The test is discontinued at the request of the Test Sponsor.**

[3] Viewed from exposed surface of the test construction.
[4] Viewed from unexposed surface of the test construction.

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6.8 Test Images



Figure 18 – The exposed surface of the test construction prior to commencement of the test



Figure 19 - The unexposed surface of the test construction after a test duration of 2 minutes

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Figure 20 - The unexposed surface of the test construction after a test duration of 10 minutes



Figure 21 - The unexposed surface of the test construction after a test duration of 20 minutes

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Figure 22 - The unexposed surface of the test construction after a test duration of 25 minutes



Figure 23 - The unexposed surface of the test construction after a test duration of 30 minutes

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Figure 24 - The unexposed surface of the test construction after a test duration of 35 minutes



Figure 25 - The unexposed surface of the test construction after a test duration of 40 minutes

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Figure 26 - The unexposed surface of the test construction after a test duration of 45 minutes

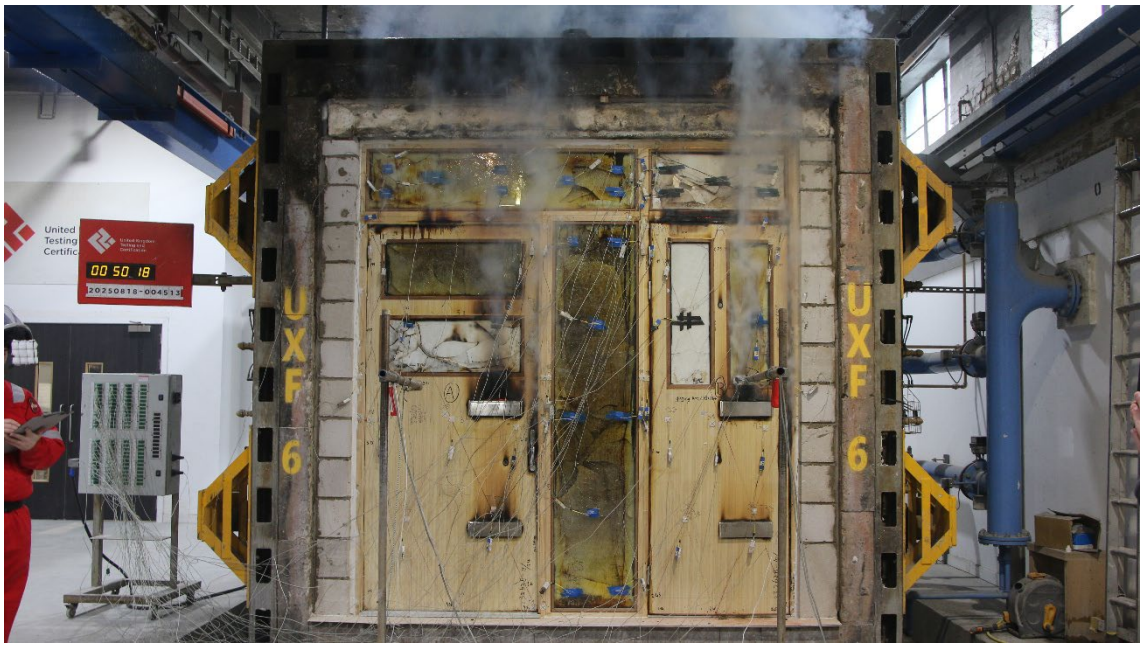


Figure 27 - The unexposed surface of the test construction after a test duration of 50 minutes

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Figure 28 - The unexposed surface of the test construction after a test duration of 52 minutes

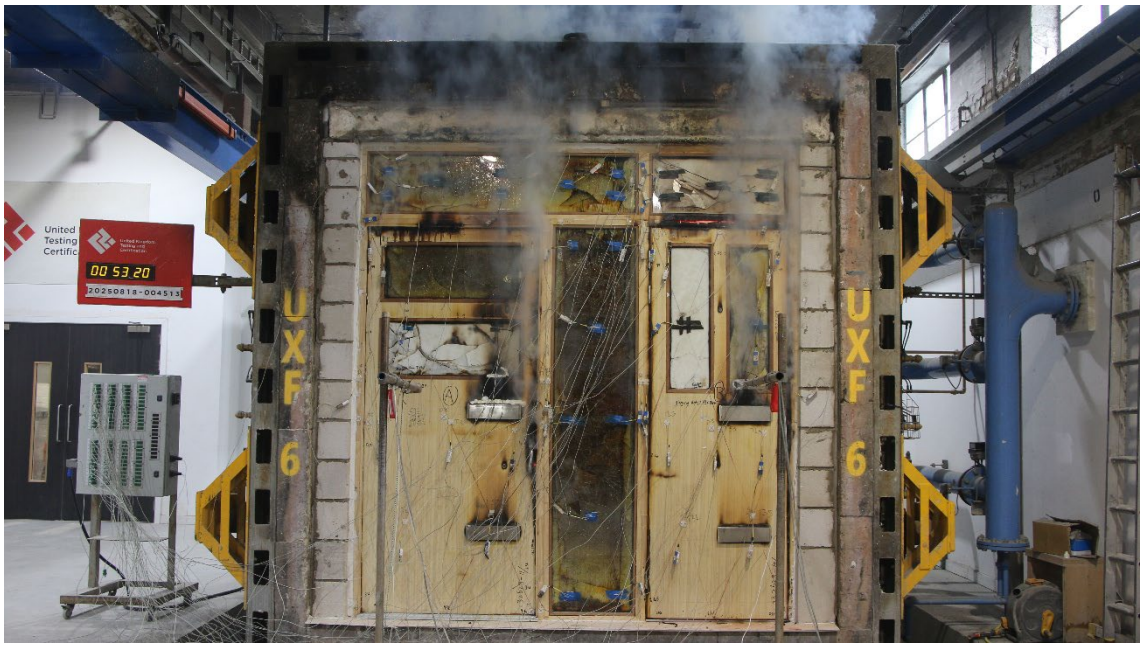


Figure 29 - The unexposed surface of the test construction after a test duration of 53 minutes

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Figure 30 - The unexposed surface of the test construction after a test duration of 54 minutes



Figure 31 - The exposed surface of the test construction after the test was discontinued

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7 On-going Implications

7.1 Limitations

This report details the method of construction, the test conditions and the results obtained when the specific element of construction described herein was tested following the procedure outlined in BS EN 1363-1, and where appropriate BS EN 1363-2. Any significant deviation with respect to size, 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 and should be the subject to design appraisal by a competent individual.

Guidance on the field of direct application can be found in BS EN 1634-1:2014+A1:2018 § 13 and can be applied following the identification of classification(s).

7.2 Accuracy of Results

Due to 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.

No statement of conformity with the testing specifications is made or implied in this report. However, measurement results are reviewed, where applicable, to establish where measurement results exceed the control parameters established in the relevant resistance to fire test standard.

7.3 European Group of Organisations for Fire Testing (EGOLF)

Certain aspects of some fire test specifications are open to different interpretations. EGOLF have identified several such areas and have agreed resolutions which define common agreement of interpretations between fire test laboratories which are members of the Group. The following resolutions have been followed when conducting this test:

1. EGOLF AGREEMENT 034-2018 – Use of cotton pad in fire resistance tests.
2. EGOLF AGREEMENT 036-2018 – Discontinuity-different interpretations.
3. EGOLF Recommendation 013-2017 – Content of statements of ‘Field of direct application’ in test reports.

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8 Detailed Expression of Results

8.1 The Specimen

The Specimen satisfied the performance criterion specified in BS EN 1634-1:2014+A1:2018 § 11 for the following intervals:

Performances		Criteria	Time (completed minute)	Failure Criteria Exceeded
Integrity		Ignition of a cotton pad	51minutes	
		Sustained flaming	52 minutes	
		Cracks or openings in excess of given dimensions	52 minutes	Area Blanked over
Insulation – Specimen	Normal procedure:	Average temperature, increase of Δ140°C	50 minutes	
		Maximum temperature on leaf/leaves, increase of Δ 180 °C	46 minutes	@ TC 50
		Maximum temperature on the frame adjacent to leaf/leaves, increase of Δ 360 °C	52 minutes	Due to integrity failure
		Maximum temperature on the frame not adjacent to leaf/leaves, increase of Δ 180 °C	52 minutes	Due to integrity failure
Radiation	Specimen	Maximum or average radiation value > 5 kw/m^2	52 minutes	Area Blanked off
		Maximum or average radiation value > 10 kw/m^2	52 minutes	Area Blanked off
		Maximum or average radiation value > 15 kw/m^2	52 minutes	Area Blanked off
		Maximum or average radiation value > 20 kw/m^2	52 minutes	Area Blanked off
		Maximum or average radiation value > 25 kw/m^2	52 minutes	Area Blanked off

*The test was discontinued after a period of 54 minutes.

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8.2 Doorset A

Doorset A satisfied the performance criterion specified in BS EN 1634-1:2014+A1:2018 § 11 for the following intervals, this is for client information purposes only.

Performances		Criteria	Time (completed minute)	Failure Criteria Exceeded
Integrity		Ignition of a cotton pad	51 minutes	
		Sustained flaming	52 minutes	
		Cracks or openings in excess of given dimensions	52 minutes	Area Blanked off
Insulation – Specimen	Normal procedure:	Average temperature, increase of Δ140°C	50 minutes	
		Maximum temperature on leaf/leaves, increase of Δ 180 °C	46 minutes	@ TC 50
		Maximum temperature on the frame adjacent to leaf/leaves, increase of Δ 360 °C	52 minutes	Due to integrity failure
		Maximum temperature on the frame not adjacent to leaf/leaves, increase of Δ 180 °C	52 minutes	Due to integrity failure
Radiation	Specimen	Maximum or average radiation value > 5 kw/m^2	52 minutes	Area Blanked off
		Maximum or average radiation value > 10 kw/m^2	52 minutes	Area Blanked off
		Maximum or average radiation value > 15 kw/m^2	52 minutes	Area Blanked off
		Maximum or average radiation value > 20 kw/m^2	52 minutes	Area Blanked off
		Maximum or average radiation value > 25 kw/m^2	52 minutes	Area Blanked off

*The test was discontinued after a period of 52 minutes.

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8.3 Doorset B

Doorset B satisfied the performance criterion specified in BS EN 1634-1:2014+A1:2018 § 11 for the following intervals, this is for client information purposes only.

Performances		Criteria	Time (completed minute)	Failure Criteria Exceeded
Integrity		Ignition of a cotton pad	54 minutes*	No Failure
		Sustained flaming	54 minutes*	No Failure
		Cracks or openings in excess of given dimensions	54 minutes*	No Failure
Insulation – Specimen	Normal procedure:	Average temperature, increase of Δ140°C	53 minutes	
		Maximum temperature on leaf/leaves, increase of Δ 180 °C	36 minutes	@ TC31
		Maximum temperature on the frame adjacent to leaf/leaves, increase of Δ 360 °C	54 minutes*	No Failure
		Maximum temperature on the frame not adjacent to leaf/leaves, increase of Δ 180 °C	54 minutes*	No Failure
Radiation	Specimen	Maximum or average radiation value > 5 kw/m^2	54 minutes*	No Failure
		Maximum or average radiation value > 10 kw/m^2	54 minutes*	No Failure
		Maximum or average radiation value > 15 kw/m^2	54 minutes*	No Failure
		Maximum or average radiation value > 20 kw/m^2	54 minutes*	No Failure
		Maximum or average radiation value > 25 kw/m^2	54 minutes*	No Failure

*The test was discontinued after a period of 54 minutes.

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9 Figures

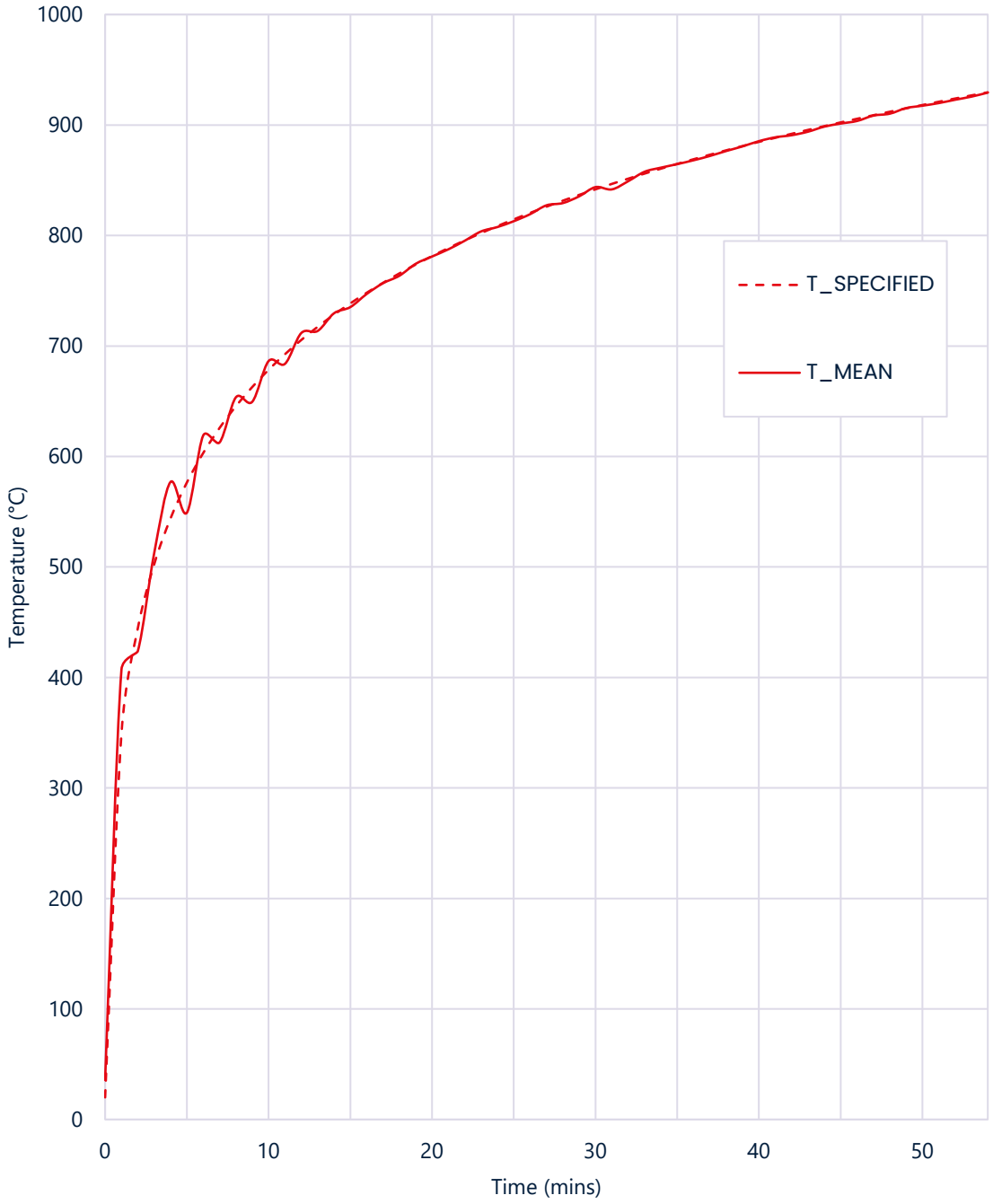


Figure 32 – Graph presenting the Time-Temperature distribution of the furnace

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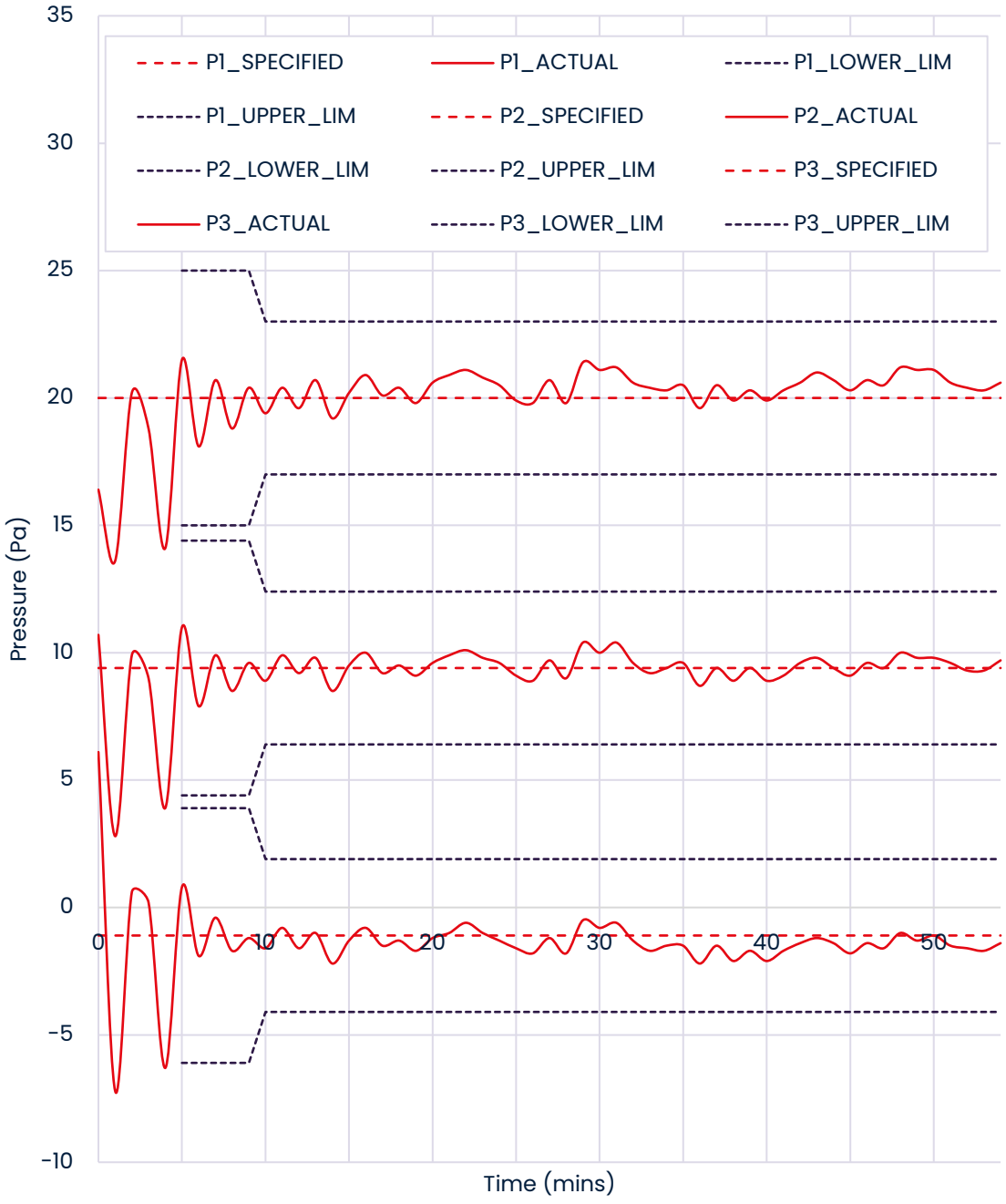


Figure 33 – Graph presenting the Time-Pressure distribution of the furnace

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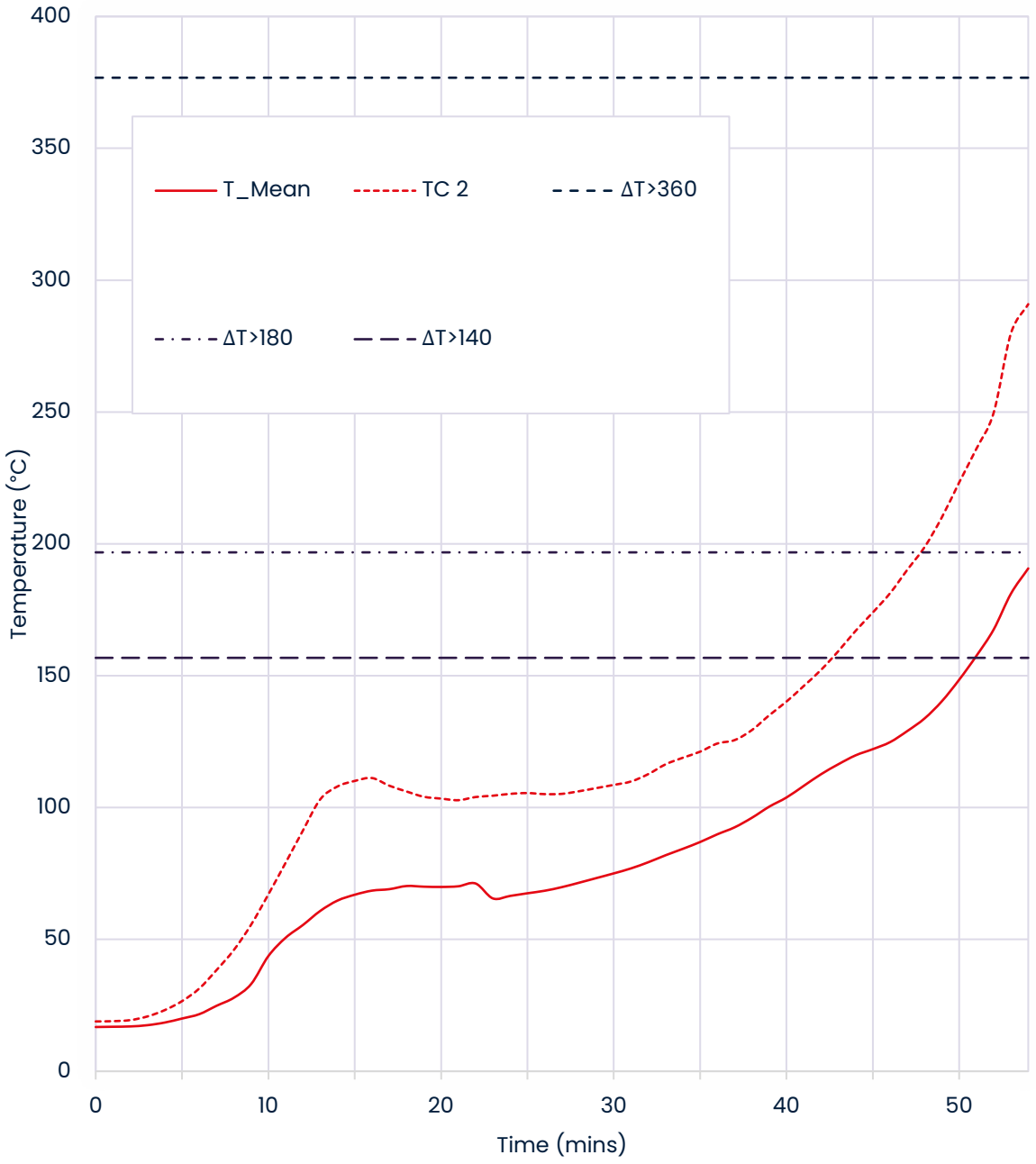


Figure 34 - Graph presenting the Time-Temperature distribution of the unexposed surface of Doorset A

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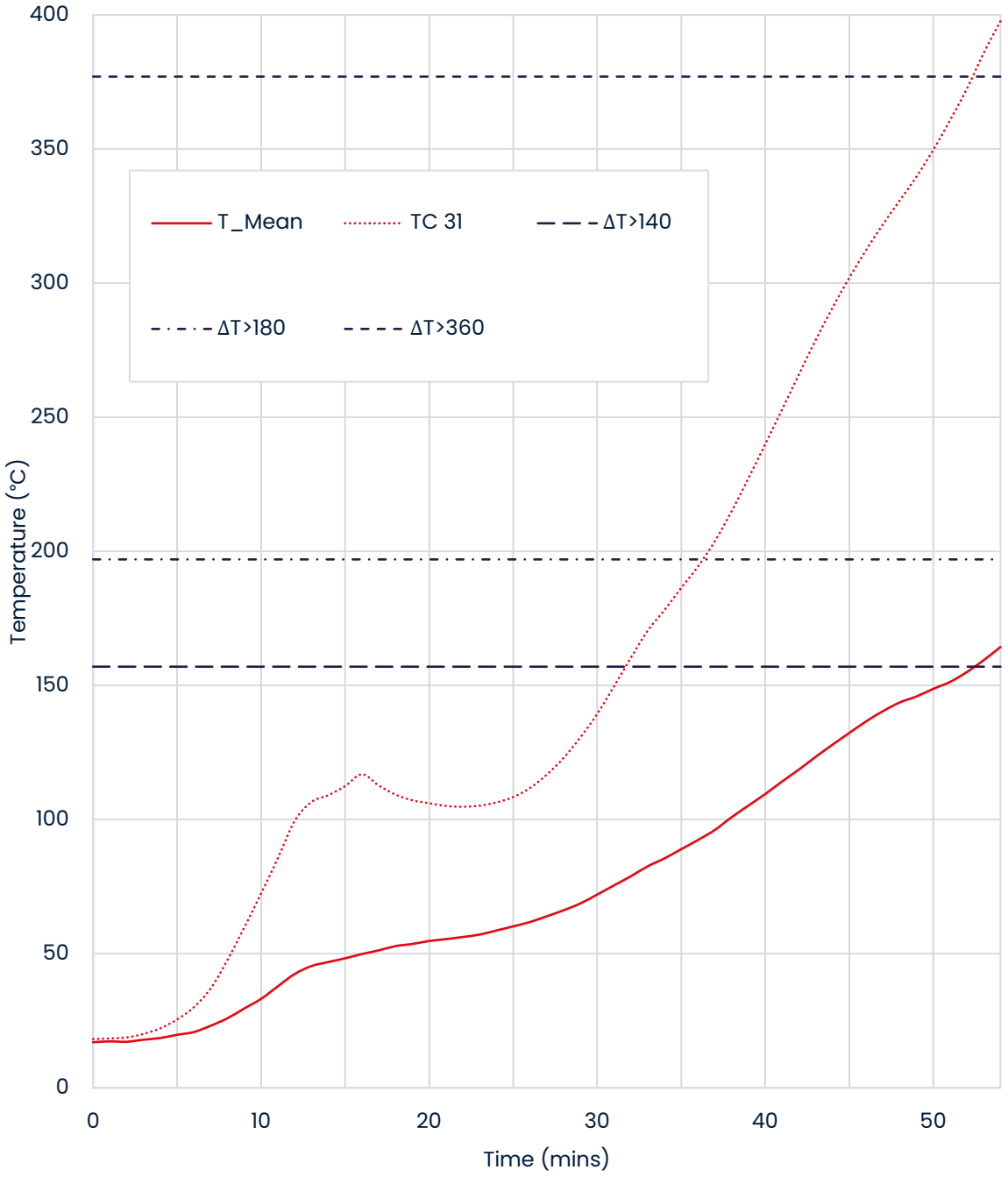


Figure 35 - Graph presenting the Time-Temperature distribution of the unexposed surface of Doorset B

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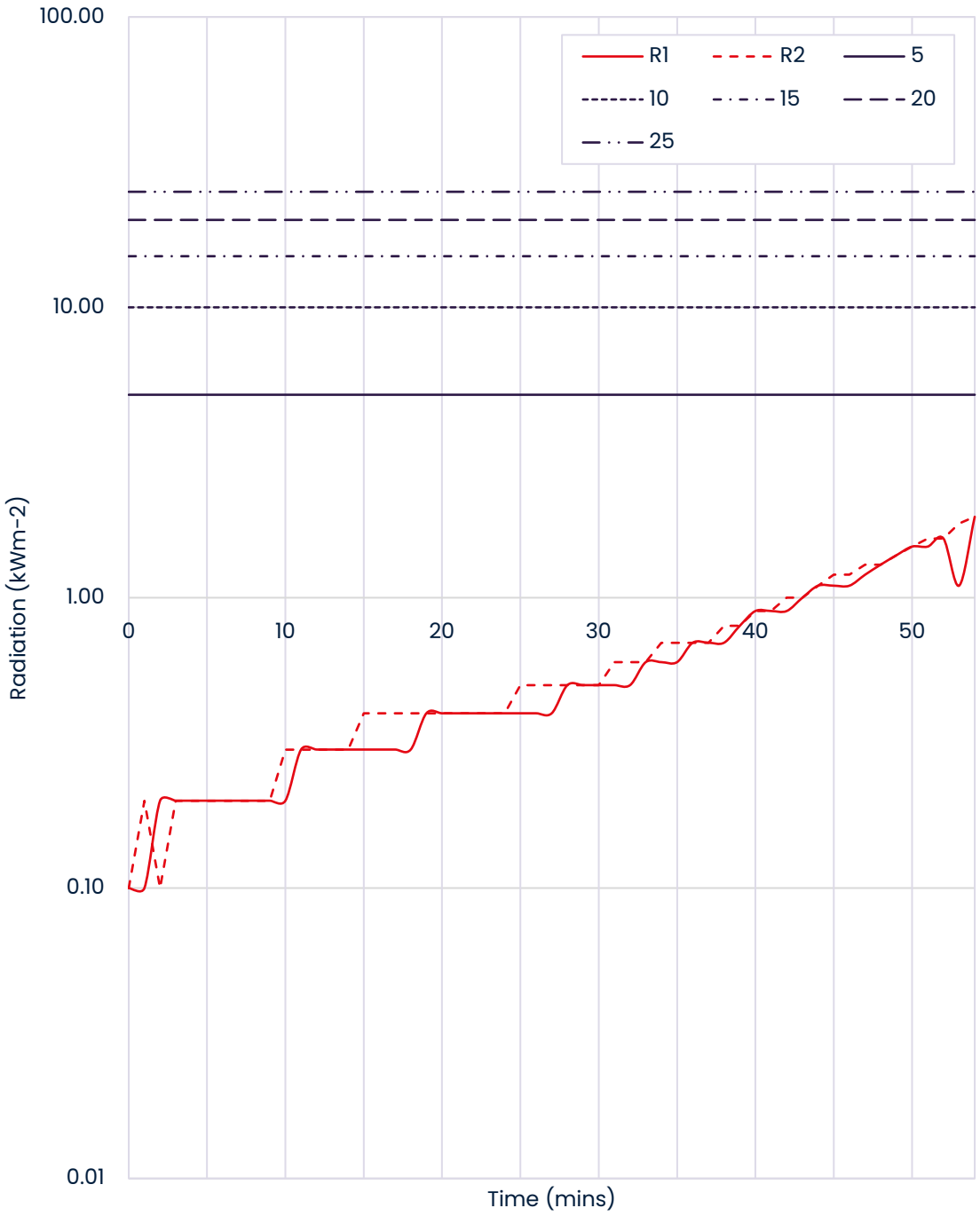


Figure 36 - Graph presenting Time-Radiation distribution of the unexposed surface of the specimens

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10 Tables

Table 1 – The temperatures recorded by the disc thermocouples used evaluate the mean and maximum temperature rise of the unexposed surface of Doorset A under the normal procedure. Values are in Degrees Celsius (°C) unless otherwise stated.

Time (mins)	TC1	TC2	TC3	TC4	TC5
0	18.7	18.9	12.4	17.2	16.7
3	20.0	20.8	12.4	17.2	17.0
6	27.1	31.4	12.3	17.2	20.3
9	46.9	55.6	11.8	17.6	33.5
12	78.3	91.3	10.8	18.8	33.5
15	105.9	110.1	8.7	21.4	30.4
18	112.9	106.1	6.0	26.0	36.0
21	105.7	102.8	2.7	31.7	40.4
24	103.8	105.2	40.6	38.7	44.2
27	103.8	105.2	43.3	47.3	49.6
30	105.2	108.6	46.4	56.7	58.3
33	109.6	116.4	50.0	64.7	68.9
36	119.7	124.3	55.8	71.4	78.2
39	136.8	135.0	63.9	79.1	86.9
42	158.7	152.2	71.6	87.2	93.5
45	174.5	174.0	71.9	92.3	98.1
48	194.8	198.8	76.3	96.3	102.9
51	232.8	236.1	111.1	98.0	109.8
54	280.3	290.9	161.6	101.2	119.4

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Table 2 – The temperatures recorded by the disc thermocouples used to evaluate the maximum temperature rise of the frame/ transom members adjacent to the door leaf of Doorset A under the normal procedure. Values are in Degrees Celsius (°C) unless otherwise stated.

Time (mins)	TC6	TC7	TC8	TC9
0	16.2	17.8	17.2	17.4
3	16.2	18.2	17.5	17.4
6	16.3	18.1	19.6	17.7
9	16.4	18.4	21.3	18.5
12	17.0	20.3	22.7	18.4
15	18.3	22.1	29.4	19.9
18	21.5	22.7	39.6	22.0
21	25.2	23.5	38.9	25.1
24	29.2	24.4	37.5	28.3
27	32.9	24.8	35.6	31.7
30	36.6	25.5	37.6	34.6
33	40.0	25.9	39.9	37.2
36	42.9	25.6	43.6	40.7
39	45.3	26.2	47.4	44.6
42	47.3	26.1	52.2	51.5
45	50.1	26.5	57.6	61.4
48	55.2	25.1	63.5	68.8
51	60.5	23.1	71.6	76.7
54	68.2	29.5	100.5	82.8

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Table 3 – The temperatures recorded by the disc thermocouples used to evaluate the maximum temperature rise of the door leaf of Doorset A under the normal procedure. Values are in Degrees Celsius (°C) unless otherwise stated.

Time (mins)	TC10	TC11	TC12	TC13
0	17.5	18.2	18.6	17.5
3	17.5	23.4	20.4	19.2
6	17.6	34.3	43.6	26.7
9	17.9	40.4	52.4	22.5
12	19.1	46.1	50.0	21.8
15	21.4	50.9	51.4	23.5
18	25.3	57.3	55.9	26.2
21	29.8	64.4	60.9	30.0
24	34.9	66.2	68.4	36.4
27	43.6	67.7	72.3	44.6
30	60.1	67.6	73.4	54.3
33	74.9	69.7	75.2	62.9
36	82.2	71.9	78.5	73.1
39	83.1	75.3	83.1	85.5
42	86.2	79.6	88.2	92.9
45	91.9	85.0	93.9	94.5
48	90.4	89.9	96.4	95.2
51	90.1	95.8	103.9	96.0
54	91.2	106.8	118.4	100.9

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Table 4 – The temperatures recorded by the disc thermocouples used evaluate the mean and maximum temperature rise of the unexposed surface of Doorset B under the normal procedure. Values are in Degrees Celsius (°C) unless otherwise stated.

Time (mins)	TC31	TC32	TC33	TC34	TC35
0	18.2	17.6	18.2	14.6	16.5
3	20.1	18.5	20.1	14.5	16.5
6	30.1	23.3	20.3	13.7	16.6
9	59.9	32.6	21.7	14.5	19.3
12	99.6	48.4	25.1	14.1	25.1
15	112.5	58.3	27.3	14.6	28.8
18	109.3	77.6	31.3	14.5	31.5
21	105.1	84.2	36.6	14.8	36.5
24	106.4	85.6	43.5	15.7	42.1
27	116.8	87.1	51.3	14.8	49.8
30	139.4	91.1	59.2	14.6	56.0
33	170.4	98.6	67.1	14.9	61.9
36	194.4	110.9	75.3	14.5	67.0
39	227.3	127.4	84.1	14.7	72.7
42	265.9	143.9	90.2	14.2	79.1
45	302.0	162.0	95.1	14.6	87.8
48	330.8	179.4	96.9	14.4	96.9
51	360.8	183.4	98.3	14.7	99.5
54	397.7	201.6	102.5	16.7	103.3

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Table 5 – The temperatures recorded by the disc thermocouples used to evaluate the maximum temperature rise of the frame/ transom members adjacent to the door leaf of Doorset B under the normal procedure. Values are in Degrees Celsius (°C) unless otherwise stated.

Time (mins)	TC36	TC37	TC38	TC39
0	17.5	17.6	17.1	13.6
3	17.6	19.2	21.4	14.1
6	17.6	42.9	54.4	13.9
9	30.9	52.4	51.8	14.2
12	33.1	53.9	66.4	14.4
15	31.4	52.5	52.6	14.7
18	32.5	54.4	44.5	17.1
21	34.8	56.3	42.6	15.3
24	43.1	58.8	43.3	15.8
27	52.8	61.6	45.5	17.0
30	66.9	65.9	49.3	16.9
33	77.8	71.3	54.7	17.1
36	83.2	77.1	60.7	17.4
39	82.7	82.4	68.7	18.9
42	84.3	86.3	77.5	19.3
45	84.0	89.9	84.2	19.6
48	85.3	94.4	89.2	21.2
51	89.1	99.5	93.4	21.7
54	94.2	117.3	95.2	22.4

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Table 6 – The temperatures recorded by the disc thermocouples used to evaluate the maximum temperature rise of the door leaf of Doorset B under the normal procedure. Values are in Degrees Celsius (°C) unless otherwise stated.

Time (mins)	TC40	TC41	TC42	TC43
0	17.6	18.8	18.5	17.7
3	17.6	30.9	26.0	17.7
6	17.5	43.4	40.3	17.9
9	19.2	49.0	52.4	18.6
12	18.5	51.1	52.6	20.3
15	19.8	54.0	58.9	22.9
18	21.6	57.8	62.6	26.3
21	22.7	60.1	64.6	30.5
24	24.4	63.1	67.2	36.1
27	27.3	67.3	69.5	43.3
30	35.5	71.5	73.4	57.9
33	37.8	76.7	83.4	74.3
36	39.0	83.4	83.5	84.3
39	42.5	89.6	85.5	90.0
42	46.2	96.9	88.6	90.9
45	45.1	110.1	93.0	90.9
48	39.3	127.0	98.7	*
51	35.3	145.1	108.0	93.5
54	38.0	162.4	119.1	93.9

*Thermocouple malfunction.

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Table 7 – The temperatures recorded by the disc thermocouples used to evaluate the maximum temperature rise of the frame/ transom members adjacent to Glazed elements incorporated into the Specimen under the normal procedure. Values are in Degrees Celsius (°C) unless otherwise stated.

Time (mins)	TC16	TC17	TC25	TC26	TC46	TC47	TC48	TC49	TC56
0	16.7	17.8	17.8	17.2	17.2	17.5	17.1	17.7	17.0
3	16.8	17.9	18.1	17.9	17.2	17.6	17.1	17.8	17.1
6	17.2	21.8	27.4	24.0	17.4	18.7	17.8	17.9	18.6
9	18.6	24.4	29.3	30.3	18.0	21.8	19.9	19.4	20.3
12	21.4	24.4	31.5	32.8	18.1	26.7	22.9	20.6	21.8
15	25.0	26.2	35.8	34.3	19.1	32.2	27.4	20.7	24.6
18	29.2	30.5	42.9	38.6	20.7	36.9	32.1	22.9	28.7
21	34.3	40.2	50.5	44.4	23.7	40.8	36.6	25.5	34.4
24	39.6	50.3	51.3	50.1	26.7	43.8	41.1	29.3	40.1
27	45.1	57.5	54.7	55.1	30.1	46.8	45.1	34.3	45.8
30	50.6	61.9	57.8	58.9	33.1	50.2	48.7	39.3	51.2
33	56.5	65.3	59.8	62.4	36.7	54.2	52.6	44.2	55.8
36	61.2	68.0	62.3	66.4	41.5	59.2	57.6	50.1	61.0
39	65.8	70.2	64.9	69.8	47.5	66.1	64.5	57.2	67.3
42	69.0	72.3	69.9	72.8	56.0	73.9	73.2	63.9	73.7
45	71.6	74.6	77.5	75.7	67.9	79.5	80.9	69.9	78.9
48	73.6	76.9	84.0	78.7	76.5	83.5	86.2	75.0	82.1
51	75.9	79.4	92.2	81.9	83.0	87.9	90.7	78.8	84.8
54	78.7	82.4	101.3	84.2	85.9	90.9	96.0	81.8	90.5

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Table 8 – The temperatures recorded by the disc thermocouples used evaluate the mean and maximum temperature rise of the Glazed elements incorporated into the Specimen under the normal procedure. Values are in Degrees Celsius (°C) unless otherwise stated.

Time (mins)	TC14	TC15	TC24	TC44	TC45
0	17.8	18.0	17.6	18.6	17.3
3	18.6	18.8	20.5	19.6	18.1
6	23.1	23.1	28.6	24.0	20.9
9	33.4	44.6	43.5	30.3	25.2
12	41.7	66.3	72.8	38.1	30.4
15	48.0	80.0	107.2	57.3	38.7
18	76.5	85.3	109.8	74.1	45.3
21	79.0	86.8	99.1	82.6	55.0
24	80.3	87.5	95.6	85.2	59.1
27	81.7	88.5	93.4	87.3	61.1
30	85.5	90.4	97.3	92.7	64.8
33	91.9	93.8	107.7	102.2	71.6
36	101.2	100.4	127.5	114.7	107.1
39	112.7	111.9	153.1	131.1	122.6
42	131.3	126.9	171.3	152.7	142.6
45	154.9	142.3	196.5	167.0	157.1
48	173.8	158.2	223.2	186.1	196.0
51	194.2	179.5	253.4	209.5	212.9
54	218.1	195.1	281.7	232.3	233.9

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Table 9 – Table presenting the temperatures recorded by the disc thermocouples used to evaluate the maximum temperature rise of the Glazed elements incorporated into the Specimen under the normal procedure. Values are in Degrees Celsius (°C) unless otherwise stated.

Time (mins)	TC18	TC19	TC20	TC21	TC22	TC23	TC27	TC28
0	18.2	18.5	18.4	18.0	17.8	17.6	18.6	18.2
3	19.1	19.8	19.3	19.0	19.0	18.5	20.1	19.4
6	24.1	25.5	23.7	23.6	26.7	23.5	30.5	26.2
9	45.7	33.0	30.9	29.9	37.6	41.7	48.3	40.9
12	60.6	44.7	66.9	37.7	44.2	60.3	80.7	66.6
15	79.7	73.9	84.4	46.4	51.9	72.6	110.6	99.2
18	87.1	87.4	87.7	81.2	76.1	83.0	115.0	117.8
21	88.5	89.3	88.5	87.2	85.4	85.2	116.6	113.6
24	89.1	90.2	89.4	87.8	87.3	86.2	116.2	107.7
27	89.5	92.8	90.1	88.8	88.8	87.1	119.9	108.7
30	91.2	98.3	92.3	89.5	92.7	89.5	132.7	118.5
33	96.5	108.0	97.9	91.1	100.7	94.9	152.6	140.6
36	103.9	122.6	105.5	94.4	112.8	102.3	175.0	165.9
39	115.9	138.9	114.8	101.9	123.8	113.9	199.4	185.2
42	131.2	156.2	127.3	115.1	139.3	127.4	231.0	204.6
45	152.3	178.4	143.8	132.4	155.0	147.0	264.3	236.9
48	174.2	194.2	161.9	150.6	174.7	167.2	296.5	270.1
51	190.1	209.5	183.3	170.6	190.3	184.3	326.5	299.9
54	209.8	230.8	199.7	194.5	211.3	200.5	355.8	324.5

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Table 10 – Table presenting the temperatures recorded by the disc thermocouples used to evaluate the maximum temperature rise of the Glazed elements incorporated into the Specimen under the normal procedure. Values are in Degrees Celsius (°C) unless otherwise stated.

Time (mins)	T29	TC30	TC50	TC51	TC52	TC53	TC54	TC55
0	17.9	18.0	18.6	21.2	18.1	18.3	17.0	17.2
3	19.3	19.4	20.1	22.4	18.7	19.4	17.6	17.9
6	26.8	31.7	28.3	26.8	22.2	24.2	21.0	21.7
9	42.0	47.8	50.3	44.8	27.8	35.5	26.4	28.1
12	66.8	78.8	67.9	65.7	40.8	50.7	34.1	38.5
15	98.2	106.5	73.9	76.5	60.0	61.2	41.8	47.5
18	108.2	113.4	78.1	80.9	70.9	73.0	49.8	54.4
21	110.3	108.6	84.2	80.7	74.8	80.9	56.6	58.5
24	102.6	106.8	87.1	80.7	76.8	83.8	76.0	78.5
27	103.0	107.0	91.0	81.7	79.2	85.9	82.9	86.1
30	104.3	112.9	99.1	87.7	84.2	90.4	84.0	88.3
33	111.0	127.3	113.0	100.7	93.1	98.8	84.8	92.1
36	124.8	150.2	128.9	113.2	105.4	113.2	88.8	100.3
39	142.8	175.7	147.4	128.1	119.2	131.1	95.6	115.3
42	163.5	197.1	169.4	145.5	137.9	153.0	107.1	133.0
45	182.7	230.6	189.9	162.9	159.0	174.8	122.3	156.8
48	205.4	267.0	209.5	158.4	171.7	197.2	138.1	178.0
51	230.5	298.5	231.2	172.2	190.5	216.4	153.8	199.5
54	253.5	319.4	258.9	176.7	207.7	236.5	174.3	218.4

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