United Kingdom Testing and Certification

Test Report

The fire resistance performance of an uninsulated, timber, single acting double door assembly when tested in accordance with BS 476-22: 1987 § 8

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Prepared For	Exitex UK Sales Ltd St Johns Chamber Love Street Chester CH1 1QN

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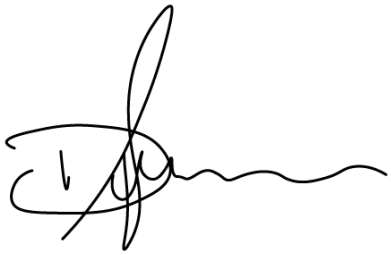
Change History

Issue Date	Revision	Created by	Authorised by	Description of Change
25/09/2023	A	RG	DF	Initial Issue

Signatories

	
Prepared by **Robert Grant*** Technical Surveyor	Authorised by **Daniel Fitzsimmons*** Head of Testing

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

Table of Contents

1 Executive Summary

1.1 Specimen Summary

The specimen had overall nominal dimensions of 1922 mm wide by 2079 mm high, incorporating a pair of door leaves with overall dimensions of 926 mm wide by 2040 mm high by 44 mm thick per leaf. The door leaf was formed from a tri-laminated core of Albisia Falcata & Ochroma with a 2 mm plywood facing on both faces. It incorporated 8 mm lippings vertically and horizontally, as well as a top rail. The leaf was hung in a hardwood frame on three steel hinges, such that it opened into the heating conditions of the test. The doorset was unlatched for the duration of the test.

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 13 for full details of this survey.

1.3 Specimen Installation and Fixity

The specimen was installed into the test construction by United Kingdom Testing and Certification. The specimen was installed such that the door leaf opened towards the heating conditions at the request of the Test Sponsor. The specimen was unlatched and unbolted prior to the commencement of the test at the request of the test sponsor.

1.4 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 Warringtonfire Testing and Certification Limited, trading as BM TRADA sample selected the following components of the tested specimen:

Component	Sampling date	Sampling report reference
Pacific Rim Wood Flame break 430 (44mm) double door	25/08/2023	SCT23207

Refer to page 42 for the copies of the sampling reports.

1.5 Expression of Results

The performance criterion specified in BS 476-20: 1987 § 10 was satisfied for the following intervals:

Integrity[1]	36 minutes	No failure*
Insulation[2]	13 minutes	Exceeded maximum temperature rise criteria @ TC30

*The test was discontinued after a period of 36 minutes.

[1] The time(s) in completed minutes for which the test specimen(s) continues to maintain its separating function without: a) causing ignition to the cotton pad applied in accordance with BS 476-20:1987 § 10.3.2; b) permitting the penetration of a gap gauge as specified in BS 476-20: 1987 § 10.3.2; c) resulting in sustained flaming

[2] The time(s) in completed minutes for which the test specimen(s) continues to maintain its separating function without developing temperatures on its unexposed surface which: a) increase the average temperature above the initial average temperature by more than 140 °C; b) increase at any location (including the roving thermocouple) above the initial average temperature by more than 180°C.

2 Pre-test Examination

2.1 Closing Force Measurement

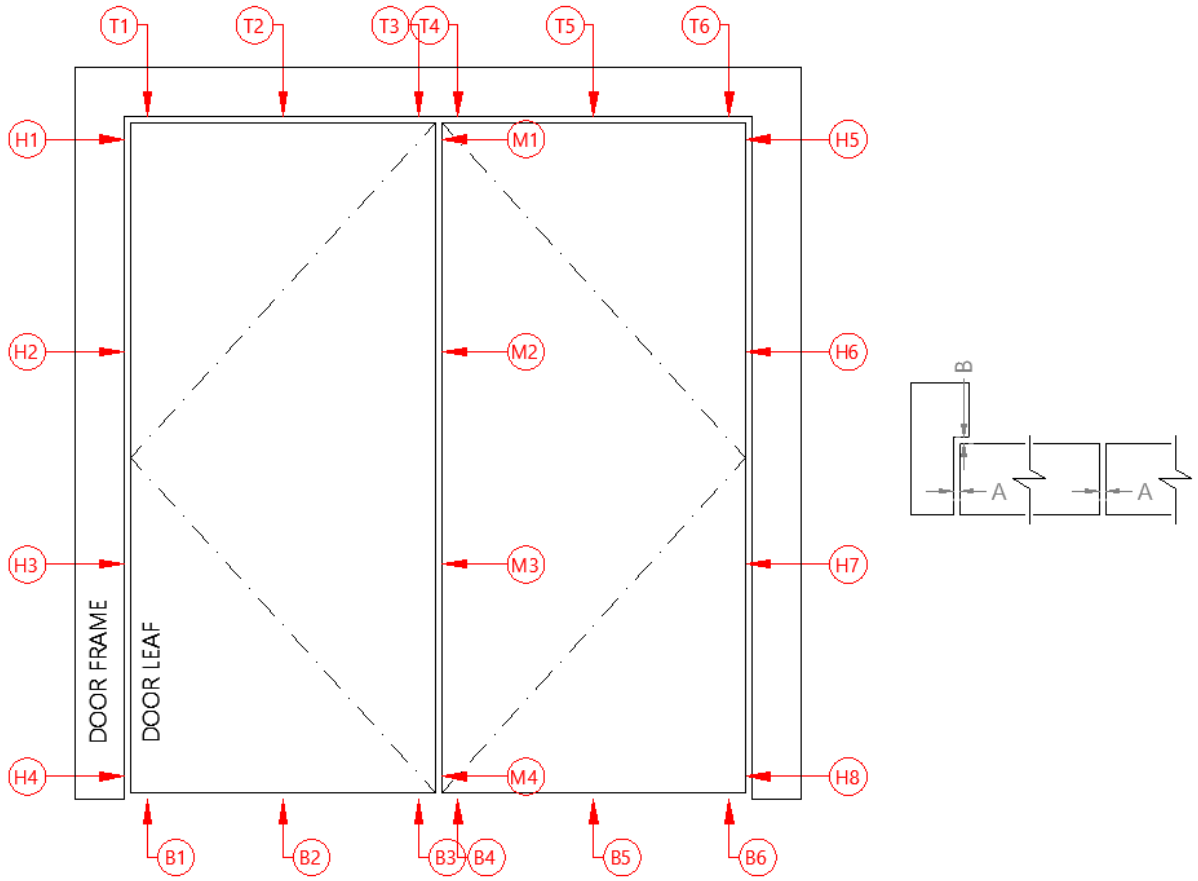
The door closing forces were measured and recorded three times. The results are presented below:

Measurement	Maximum Recorded Force (N)	Distance from Pivot to Measurement Location (m)	Moment (Nm)
Closing Force Specimen A	34.6	0.800	27.68
Opening Force Specimen A	69.2	0.800	55.36
Closing Force Specimen B	31.8	0.800	25.44
Opening Force Specimen B	60.2	0.800	48.16

2.2 Specimen Conditioning

The specimen's storage, construction, and test preparation took place in the test laboratory over a total, combined time of four days. Throughout this period, both the temperature and the humidity of the laboratory were measured and recorded as being within a range of from 16.4 °C to 17.9 °C and 72.9 % to 75.5 % respectively.

2.3 Gap Measurements



	A	B			A			A	B
H1	3.7	0.1		M1	2.3		H5	3.4	0.2
H2	2.5	0.1		M2	2.2		H6	2.8	0.1
H3	2.6	0.2		M3	2.2		H7	2.8	0.1
H4	3.8	0.2		M4	2.2		H8	3.0	0.1
Mean	**3.2**			**Mean**	**2.2**		**Mean**	**3.0**	
Max	**3.8**			**Max**	**2.3**		**Max**	**3.4**	
Min	**2.5**			**Min**	**2.2**		**Min**	**2.8**	
	A	B		A	B		A		A
T1	2.8	0.1	T4	2.6	0.3	B1	4.7	B4	2.2
T2	2.9	0.2	T5	2.8	0.1	B2	2.3	B5	4.1
T3	3.5	0.2	T6	3.0	0.2	B3	1.7	B6	5.5
Mean	**3.1**		**Mean**	**2.8**		**Mean**	**2.9**	**Mean**	**4.0**
Max	**3.5**		**Max**	**3.0**		**Max**	**4.7**	**Max**	**5.5**
Min	**2.8**		**Min**	**2.6**		**Min**	**1.7**	**Min**	**2.2**

3 Test Specimen Drawings

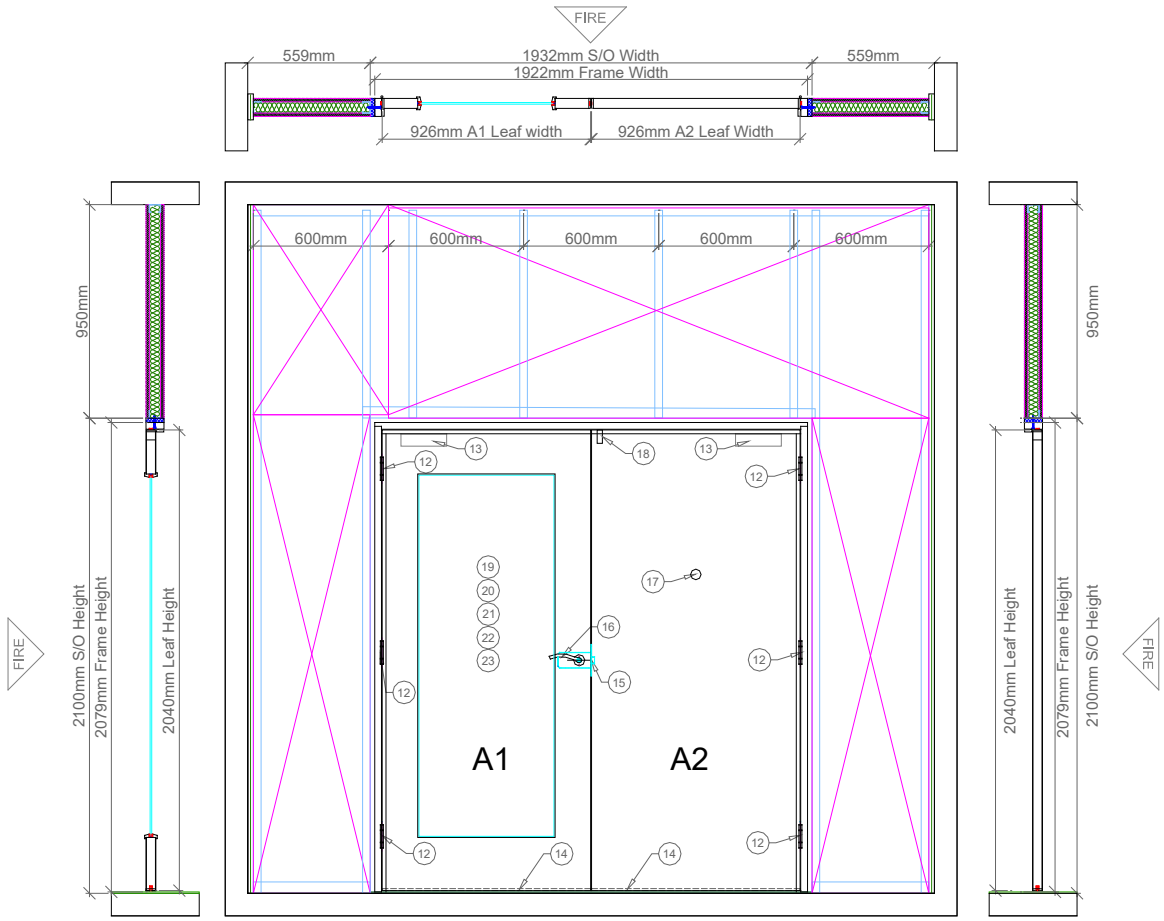


Figure 1 - General arrangement of test construction viewed from the unexposed surface

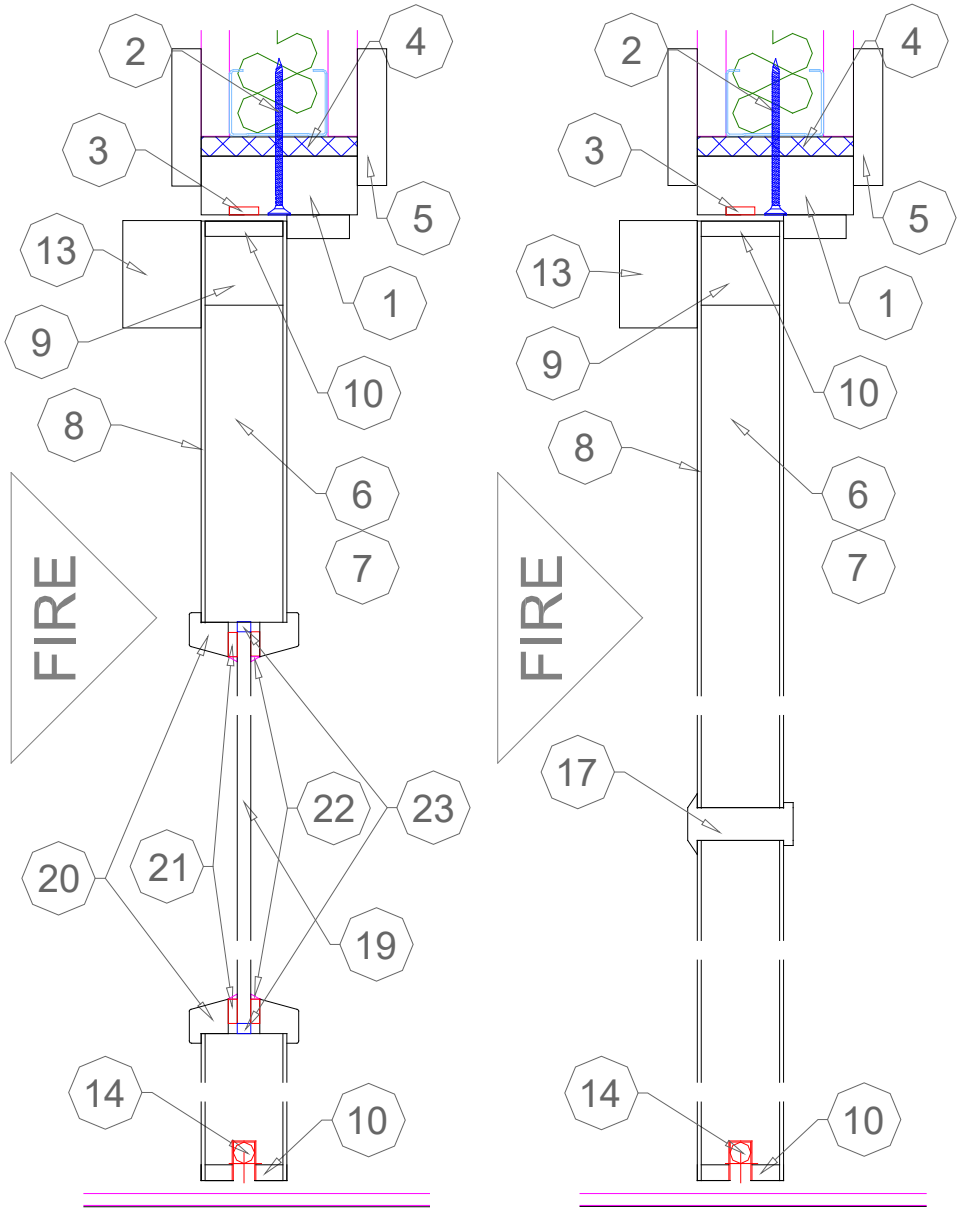


Figure 2 - Typical vertical section through the specimens

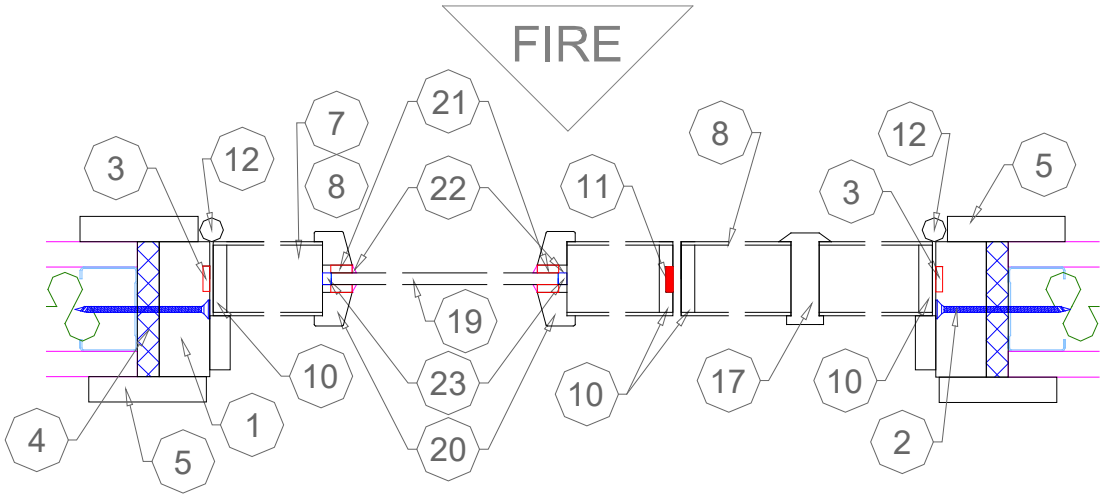


Figure 3 - Typical horizontal section through the specimens

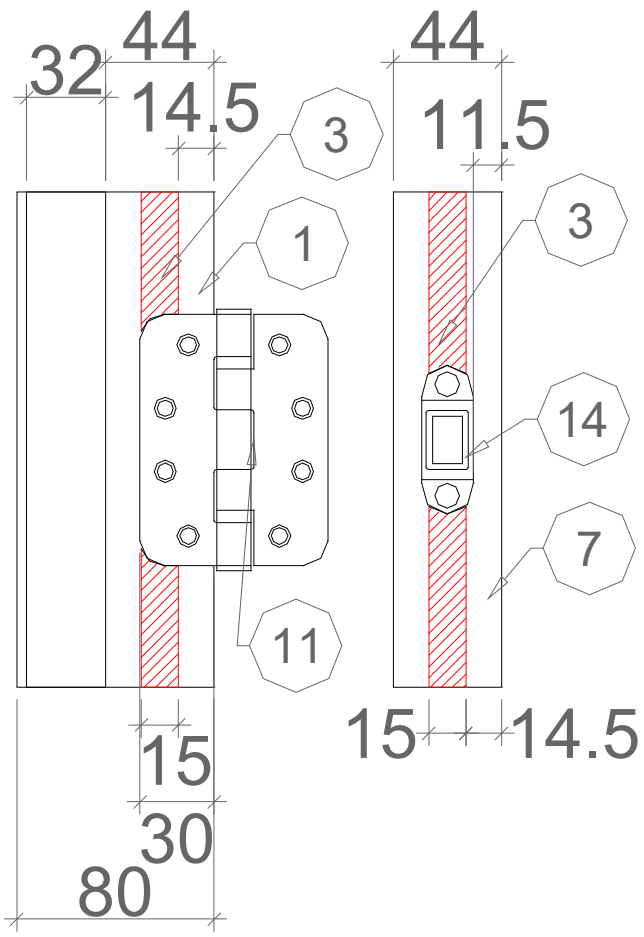


Figure 4 - Hardware intumescent interruptions

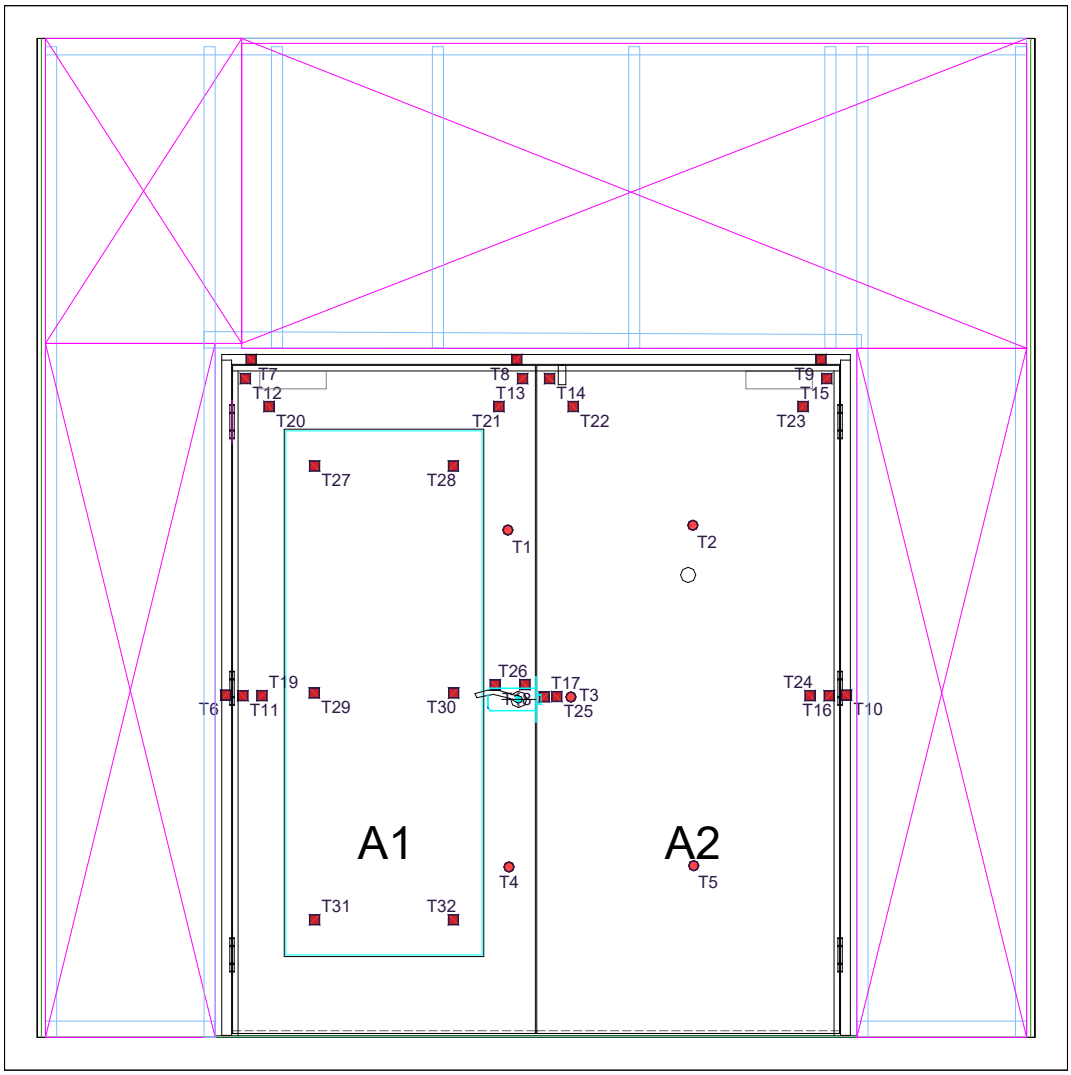


Figure 5 - Layout of instrumentation viewed from the unexposed surface of the test construction

4 Technical Schedule

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

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

** Nominal value.

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

4.1 Specimen

1. Frame	
Manufacturer	DorSuite Ltd
Reference	MDF Frames
Material	MDF Head and MDF Jambs
Density	750 kg/m^3 *
Moisture content	8.8 % - 9.5 % (Laboratory Measured Value)
Orientation to heating conditions	Opening towards
a. Overall size	1922 mm wide x 2079 mm high x 80 mm deep
i. Frame (Head)	80 mm wide x 30 mm thick
ii. Frame (Jambs)	80 mm wide x 30 mm thick
iii. Loose Stop	32 mm wide x 12 mm deep
Jamb to Head jointing method, fixing detail and location	Housed butt joint with PVA & 2 No. Ø 0.5 mm x 60 mm long wood screws. *
Stop to Frame jointing method, fixing detail and location	Pinned with 1.8 mm gauge x 38 mm long steel pins @ 300 mm centres.
b. Adhesive(s)	N/A *
2. Frame Fixing Method to Supporting Construction	
Manufacturer	Spax
Reference	4Cut
Type & material	Passivated Steel
Overall size	Ø 5 mm x 80 mm long
Spacing	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	Sapele Hardwood Wedges
Packing Material Dimension	100 mm long x 30 mm Wide x 1 – 25 mm thick.
Packing Material Location	At each fixing location up frame
3. Intumescent to frame reveal	
Quantity	1
Manufacturer	EXITEX *
Reference	1.31.0330.2100.35 Exitex LT intumescent strip *
Material	Graphite
Overall section size	15 mm wide x 4 mm thick
Application method	Adhesive strip to back
Location (relative to the opening face of the door leaf)	14.5 mm from opening face
Adhesive(s)	N/A
4. Frame to supporting construction fire stopping detail	
Manufacturer	Blue 60
Reference	Blue60 fire rated foam
Material	Foam
Overall dimension	7-12 mm wide x 75 mm deep
Application method	Foam applicator Gun, Left to Cure then cut back before architraves applied. No mastic or sealants applied on top.
Batch ID	0976 (12.05.22)
5. Architrave	
Manufacturer	DorSuite Ltd
Reference	MDF Architraves
Material	MDF
Overall section size	70 mm wide x 15 mm thick
Location	Each side of frame
Application method, fixings and fixing frequency required	Pinned with 1.8 mm gauge x 50 mm long steel pins @ 300 mm centres.

6. Door Leaf	
Manufacturer	Pacific Rim Wood *
Reference	Flamebreak 430 *
Quantity of leaves on doorset	2
Glazing location relative to the head and closing edge	200 mm from the head of the leaf and 160 mm from the closing edge of the leaf
Overall leaf size supplied for testing	926 mm wide x 2400 mm high x 44 mm thick
Door Undercut (Top of cill / bottom of frame)	6 mm
7. Core element	
Manufacturer	Pacific Rim Wood *
Reference	Flamebreak 430 *
Material	Tri-laminated Albisia Falcata / Ochroma *
Density	210 (average) kg/m^3 *
Overall thickness	36 mm thick *
Application method	N/A *
8. Sub Faces	
Manufacturer	Pacific Rim Wood *
Reference	Flamebreak 430 *
Material	Hardwood Plywood *
Density	200 (average) kg/m^3 *
Overall thickness	2 mm thick
Application method	N/A
9. Top Rail	
Manufacturer	Pacific Rim Wood *
Reference	Flamebreak 430 *
Material	Softwood *
Density	400 kg/m^3 *
Moisture Content	8.1% - 9.3% (Laboratory Measured Value)
Overall Size	36 mm x 35 mm x 926 mm

Fixing Method	N/A
Location	Top of the Door
10. Lippings / Edge banding	
Manufacturer	DorSuite Ltd
Reference	LIP-0000
Material	Sapele
Density	640 kg/m^3 *
Moisture content	11.8 % - 12.5 % (Laboratory Measured Value)
Overall size	8 mm deep x 44 mm wide
Fixing method	Edge bander
Location	All edges of the door leaf
a. Adhesives	
i. Manufacturer	Henkel
ii. Type	PUR
iii. Reference	Technomelt PUR 270/7G
iv. Curing method	Moisture Cured
v. Application method	Roller applied
b. Presence of Mechanical Fixings	
i. Type, size, Material, location and Frequency	No
11. Intumescent on meeting stiles	
Quantity	1
Manufacturer	EXITEX
Reference	1.31.0330.2100.35 Exitex LT intumescent strip
Material	Graphite
Overall section size	15 mm wide x 4 mm thick
Application method	Adhesive strip to back
Location (relative to the opening face of the door leaf)	14.5 mm from opening face

a. Presence of Adhesives	N/A
12. Hinges	
Supplier	DorSuite Ltd
Reference	PP20070102
Quantity	3 per door
Primary material	Stainless Steel
Type	Grade 13 concealed hinges
a. Size	
i. Knuckle	Ø 14.5 mm x 102 mm high
ii. Blades	102 mm high x 31 mm wide x 3 mm thick
b. Fixings	
i. Type	Countersunk Screws
ii. Material	Stainless Steel
iii. Size	Ø 4.7 mm x 31 mm long
iv. Number off per blade	4
Position of each hinge relative to the head of the leaf	Top: 120mm Middle: 934mm Bottom: 1748
Details of intumescent protection	EXI-Fire intumescent 1mm Graphite
Interruptions to Intumescent within the frame reveal	Partly interrupted
13. Door Closer	
Supplier	DorSuite Ltd
Reference	BR5004040307
a. Material	
i. Body	Mild Steel
ii. Closer arm	Mild Steel
iii. Cover	Stainless Steel
Configuration	Figure 1

b. Overall size	
i. Body	67 mm high x 220 mm wide x 44 mm deep
ii. Cover	68 mm high x 225 mm wide x 45 mm deep
Fixing method	4No. Ø 4.8 mm x 50 mm on body and 2No. Ø 4.8 mm x 50 mm on bracket into frame
14. Drop Down Seal	
Manufacturer	EXITEX
Reference	Concealed A8100 1.50.0001.1026.31
a. Material	
i. Body	Aluminium
ii. Seal	N/A
iii. Face plate	Aluminium
b. Overall size	
i. Body	20 mm high x 12 mm wide x 1.5 mm thick
Fixing method, type and locations	Screw to bottom of door with screws supplied Through pre-drilled holes
Location within leaf	Central in bottom of door
Maximum operating drop	14 mm
15. Tubular Latch	
Manufacturer	DorSuite Ltd
Reference	AA36010245 Tubular latch
a. Material	
i. Lockcase	Steel and Alloys
ii. Forend plate	Steel and Alloys
iii. Latch bolt	Steel and Alloys
iv. keeper	Steel and Alloys
b. Overall sizes	
i. Central Lockcase	57 mm high x 20 mm wide x 3 mm thick
ii. Forend plate	12 mm high x 18 mm wide

iii. Latch bolt	76 mm high x 23 mm wide
iv. Keeper	65 mm high x 25 mm wide 1 mm thick
Fixing method	2 No. Ø 3.5 x 25 mm screws
Operation of latch bolt	Disengaged
Intumescent	EXI-Fire intumescent 1mm Graphite
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. Lever handles	
Manufacturer	DorSuite Ltd
Reference	PP11030407 19mm DIA RTD Lever on rose
Material	Stainless Steel
Overall size	128.5 mm length x 52 mm wide x 19 mm thick x 66 mm projection
Fixing method, fixing material, sizes, quantity and location	4 No. Ø 3.5 x 25 mm screws and 2No. through bolts with male/female connection
Details of intumescent protection	N/a
17. Door viewer	
Supplier	DorSuite Ltd
Reference	PP60192010
Material	Stainless steel
a. Overall size	
i. Body	Ø 14 mm
ii. Footprint	Ø 26 mm to unexposed face, Ø 17 mm to exposed face
iii. Cut out	Ø 16 mm
Fixing method	Screwed threaded connection tightened until secured
Location	1400 mm from bottom of the leaf and 452 mm from door edge
Details of intumescent protection	1mm EXI-Fire intumescent
18. Flush bolt	
Manufacturer	Blooma
Reference	Flat Bolt 102 mm brass

a. Material	
i. body	Brass
ii. Bolt	Brass
iii. Strike plate	N/A
b. Overall size	
i. body	95 mm long x 25 mm wide x 10 mm deep
ii. Bolt	10.5 mm wide x 3 mm thick x 111 mm long x 20 mm projection
iii. Strike plate	N/A
iv. Cut out	5 mm long x 11 mm wide x 20 mm deep
Fixing method	4 No. Ø 3.5 x 25 mm screws in body
Operation of Bolt	Engaged
Intumescent protection	None
Location	60 mm in from meeting edge of door A2 at the top
19. Glass	
Manufacturer / Supplier	Pyrobelite
Reference (Declaration of Performance)	Pyrobelite 7
Unit overall size	1600 mm high x 600 mm wide
Sight size	1575 mm high x 575 mm wide
Aperture location relative to the head and closing edge of the leaf	200 mm from the head of the leaf and 200 mm from the closing edge of the leaf
Aperture size (prior to any lining)	1610 x 610 mm
Expansion allowance	5 mm
20. Beading	
Manufacturer	DorSuite Ltd
Reference	Redwood beading
Material	Redwood
Density	520 kg/m^3
Moisture content	8.9% - 9.8% (Laboratory Measured Value)
Overall size	1620 mm wide x 620 mm high

Cross Section Size	22.5 mm wide x 22.5 mm high
Fixing method, fixing material and sizes	50 mm from corners, MAX 150 mm centres and at 25 – 30 ° to the face of the glass *
21. Glazing intumescent	
Manufacturer	EXITEX
Reference	EXI-Glaze 30
Material	Closed Cell foam tape
Overall size	10x5mm
Fixing method	Adhesive strip to back
22. Sealant applied to glass on the internal face of the leaf	
Manufacturer	EXITEX
Reference	Fire Rated Intumescent Acoustic Acrylic Sealant
Material	Acrylic
Overall size	Perimeter of glass x depth of expansion allowance
Application method	Cartridge gun
23. Setting blocks (Glazing)	
Manufacturer	DorSuite Ltd
Reference	Hardwood spacer
Material	Hardwood
Density	620 kg/m^3
Overall size	5 mm
Location	Bottom of the glass
Fixing method, fixing material, sizes, quantity and location	Tight fit
a. Presence of Adhesives to seal unit	No
24. Door Pin ID Tag	
Manufacturer	Door Data Systems
Reference	Data ID Tag
Material	Computer chip with dual plastic coating

Overall size	Ø 6 mm x 37.5 mm long
Location	A1 Hinge edge – 1300 mm from bottom of door and centred
Fixing method	Friction fitted into door edge.

4.2 Supporting Construction

25. Studs	
Supplier/ Manufacturer	United Kingdom Testing and Certification
a. Type & Material	Rolled steel C-Stud
i. Dimensions	50 mm deep x 34 mm wide x 3000 mm long x 0.5 mm thick
ii. Stud centres	400-625 mm
iii. Fixing(s)	Friction fitted to the head/ floor track
Timber Inserts to Studs	No
26. Head/ Floor Track	
Supplier/ Manufacturer	United Kingdom Testing and Certification
Type & Material	Rolled steel U-Track
Dimensions	52 mm deep x 25 mm wide x 3000 mm long x 0.5 mm thick
Centres	600 mm Centres 20 mm Space between testing frame and wall frame for insulation.
Fixing(s)	Ø 7.5 x 50 mm long self-tapping screws staggered at max 600 mm centres
27. Lining(s)	
Supplier/ Manufacturer	United Kingdom Testing and Certification
Type & Material	Paper faced, gypsum plasterboard type F
Density	760 Kg/m^3
Layer Quantity	1
Dimensions	12.5 mm thick x 1200 mm wide x 2400 mm high
Fixings	Plasterboard Screw Fixings Ø 5 mm x 25 mm
Joints Filled & Taped With	No nonsense

28. Wall Insulation	
Supplier	United Kingdom Testing and Certification
Type & Material	Mineral Wool
Density	33 Kg/m^3
Installation Method	Compression Fitted
Thickness	50 mm
Locations	Centrally Located in the wall
Additional Wall Construction Requests	N/a
29. Free Edge Gasket	
Manufacturer	Morgan Advanced Materials
Reference	Superwool
Density	128 Kg/m^3
Dimensions	25 mm thick x 3025 mm long x 100 mm wide
Fixing(s)	Compression fitted between the supporting construction & restraint frame
30. Board for Simulated Floor Level	
Manufacturer	British Gypsum
Reference	Glasroc F MultiBoard 6mm
Density	833 Kg/m^3
Dimensions	6 mm thick x Opening width + 400 mm long x Wall Depth + 500 mm wide
Fixing(s)	Compression fitted between restraint frame and specimen.

5 Specimen Photographs

Figure 6 - Item 3 & 12

Figure 7 - Item 4

Figure 8 - Item 1 & 3

Figure 9 - Item 15

Figure 10 - Item 11 & 15

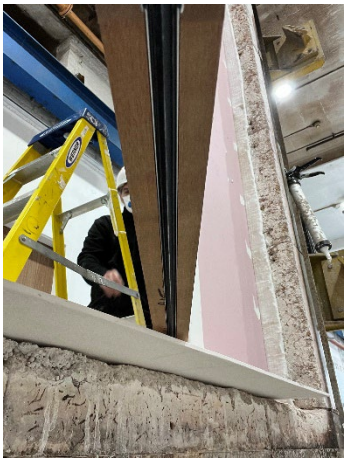


Figure 11 - Item 14

Figure 12- Item 20

Figure 13 - Item 19

Figure 14 - Item 12

6 Test Procedure

6.1 Heating Conditions

The specimen was subject to heating conditions in accordance with BS 476-20:1987 § 3.1. This was monitored and controlled for the duration of the test using type K thermocouples which were distributed across a vertical plane 100 ± 10 mm from the exposed surface of the test construction. The resulting Time-Temperature distribution is presented in Figure 25.

6.2 Pressure Conditions

The specimen wase subject to a pressure regime in accordance with BS 476-20: 1987 § 3.2. 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 -5.4, 5.2 and 15.7 Pa respectively which equates to 0 Pa at a height of 1000 mm from the furnace floor level. The furnace was maintained at these pressures within ± 2 Pa five 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 26.

6.3 Unexposed Surface Temperature

A roving thermocouple was available for the evaluation of the maximum temperature rise criteria in accordance with BS 476-20: 1987 § 10.4. Any measurements using the roving thermocouple are presented on page 27.

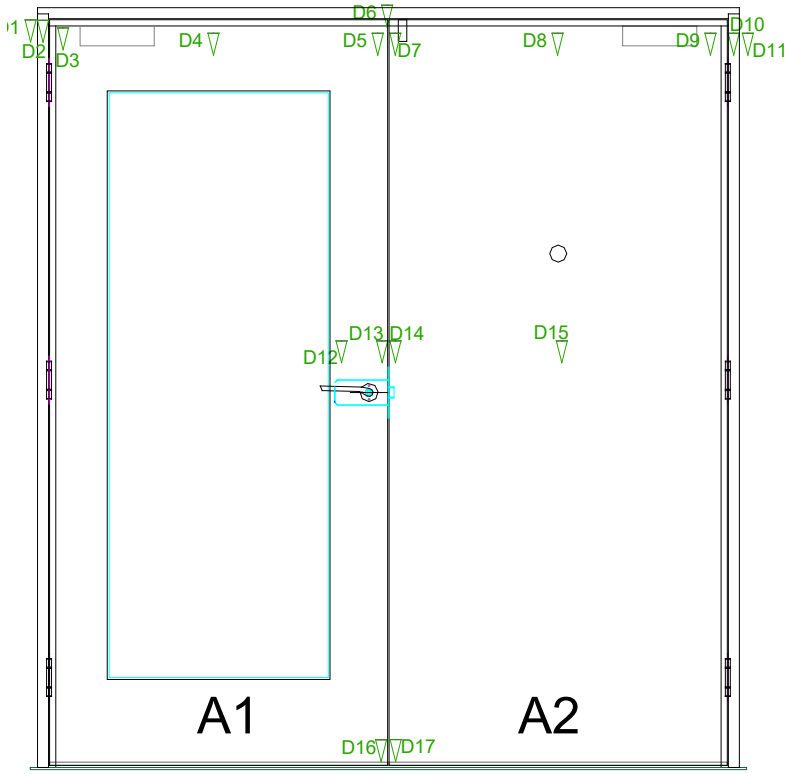
Disc thermocouples were affixed to the unexposed surface of the specimen in accordance with BS 476-22:1987 to measure and monitor the maximum and the mean temperature rise of the unexposed face of the specimen for the duration of the test. A summary of the measurements is presented in Figure 27 and the locations of these thermocouples is illustrated in Figure 5.

6.4 Radiation

The Radiant Heat of the specimens was measured using a 180º field of view, water cooled heat flux meter that was 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 28.

6.5 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	D13	D14	D15	D16	D17
0	0	0	0	0	0	**	0	0	0	0	0	0	0	0	0	0	0
10	2	5	-4	1	-6	**	-1	1	0	2	-1	-7	-8	-10	-7	0	-5
20	4	3	2	3	-1	**	5	0	5	4	1	3	6	-12	1	3	-4
25	12	11	15	17	18	**	25	18	24	24	16	19	24	27	16	5	0
30	27	29	33	36	44	**	51	42	47	44	41	20	14	32	24	6	-1
35	47	53	58	70	87	**	*	*	*	*	*	*	*	*	*	*	*

* Test was discontinued at 36 minutes

** Faulty deflection measurement

7 Observations

HH	MM	SS	E[3]	U[4]	Observation
00	**00**	**00**			**The test commences.**
00	02	00		X	Cracked sections appearing glass on A1 and turning opaque.
00	03	15		X	Steam/smoke release from head of Meeting edge and mid-point.
00	04	51		X	Steam/smoke release from head at hinge side A1+A2.
00	05	00		X	Glass on A1 is fully opaque.
00	06	10		X	Steam/smoke release from midpoint hinge edges to bottom.
00	07	50		X	Discoloration on glass and further cracking. Steam/smoke from the bottom leading edge of A2.
00	08	51		X	Moisture release from the head of A2 at Leading edge.
00	11	06		X	Moisture release from A1 hanging ¾ at head all along.
00	15	00		X	Eye viewer glass fallen; moisture release & discoloured at this location.
00	17	18		X	Steam/smoke release over cracks on glass.
00	19	11	X		Charring on the door all over beading breaking up, hardware in place.
00	24	00	X		Architraves have fallen off.
00	30	00		X	Steam/smoke continue at corners and discoloured above head.
00	32	00		X	Intermediate flaming at meeting edge.
00	35	15		X	Cotton pad test applied at meeting edge ¾ up and pad ignited, this is disregarded as the specimen was tested under clause 8.
00	**36**	**35**			**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.

8 Test Images

Figure 15 – The exposed surface of the test construction prior to commencement of the test

Figure 16 - The unexposed surface of the test construction prior to the commencement of the test

Figure 17 - The unexposed surface of the test construction after a test duration of 10 minutes

Figure 18 - The unexposed surface of the test construction after a test duration of 20 minutes

Figure 19 - The unexposed surface of the test construction after a test duration of 25 minutes

Figure 20 - The unexposed surface of the test construction after a test duration of 30 minutes

Figure 21 - The unexposed surface of the test construction after a test duration of 35 minutes

Figure 22 - The unexposed surface of the test construction after a test duration of 36 minutes

Figure 23 - The unexposed surface of the test construction after a test duration of 36 minutes

Figure 24 - The exposed surface of the test construction after the test was discontinued

9 On-going Implications

9.1 Limitations

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

BS 476-20: 1987 § Appendix A provides guidance information on the application of fire resistance tests and the interpretation of results. Application of the results to products of different specification, including but not limited to differences in dimension; installation methodologies; supporting construction and components should be subject to design appraisal by a competent individual.

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

9.2 Accuracy of Results

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.

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.

9.3 Fire Test Study Group (FTSG)

Where areas of the test specification are ambiguous or open to interpretation the Fire Test Study Group (FTSG) Resolutions have been followed (where appropriate). These Resolutions provide the basis of common agreements between the fire test laboratories which are members of this Group.

10 Figures

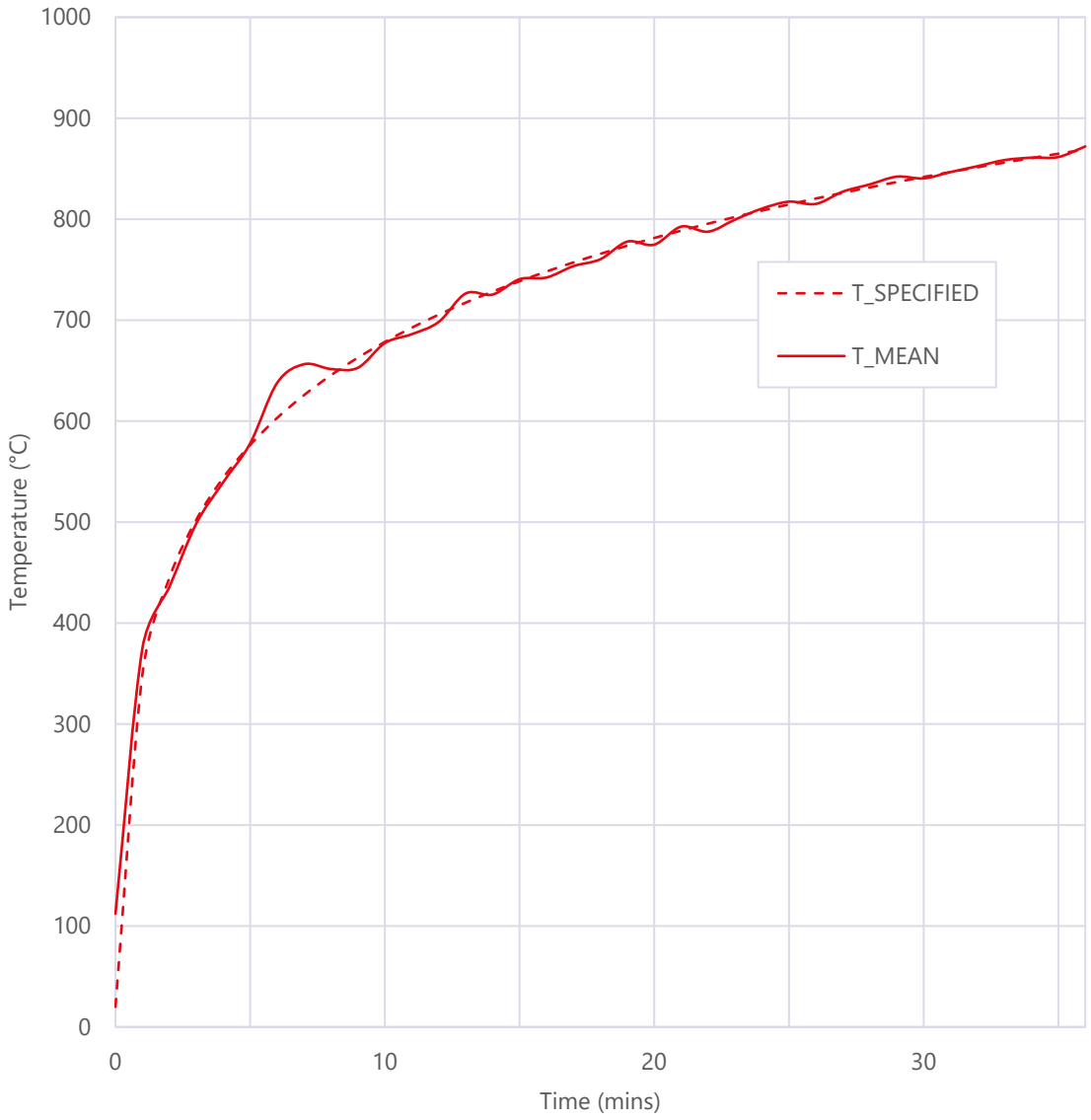


Figure 25 – Graph presenting the Time-Temperature distribution of the furnace

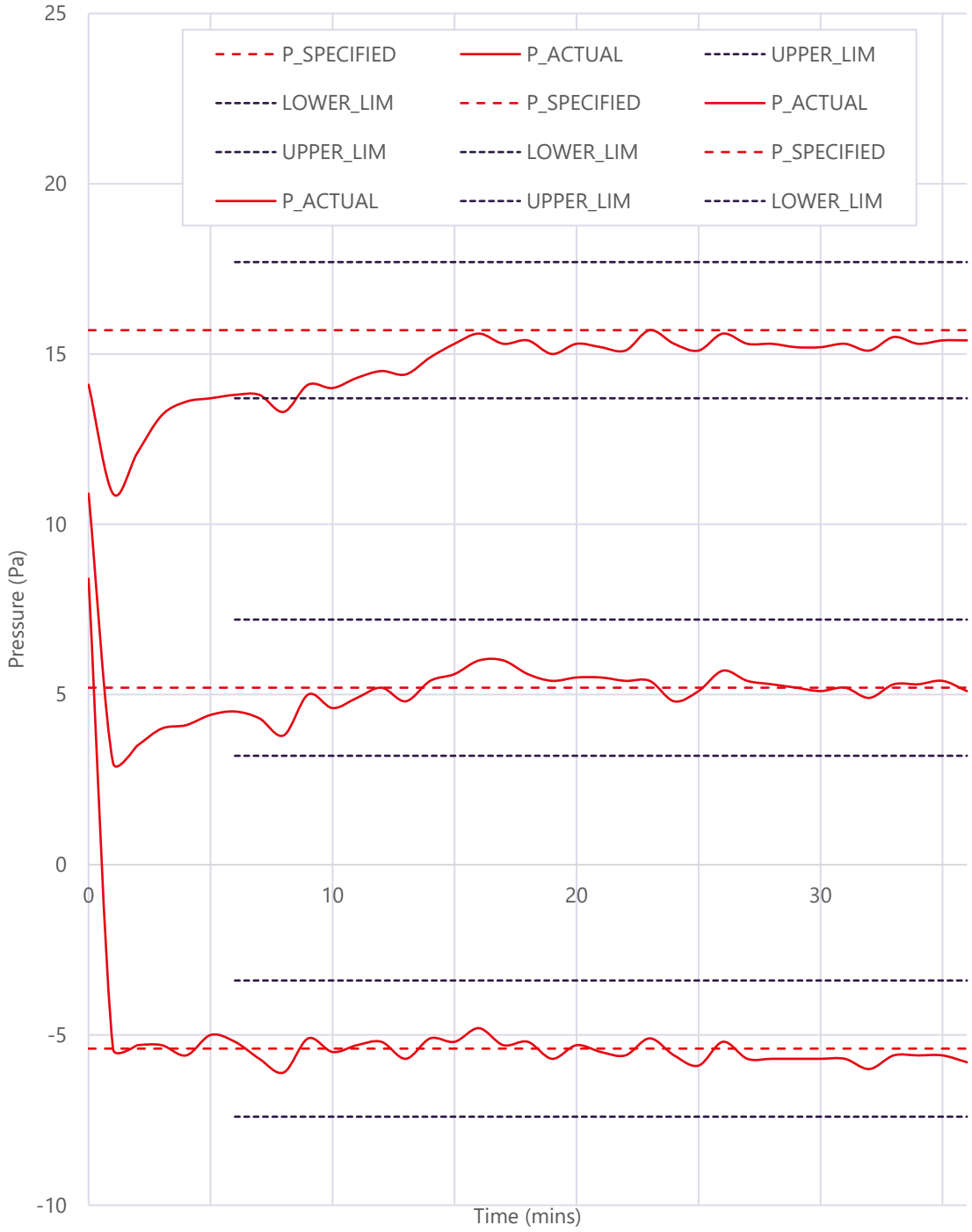


Figure 26 – Graph presenting the Time-Pressure distribution of the furnace

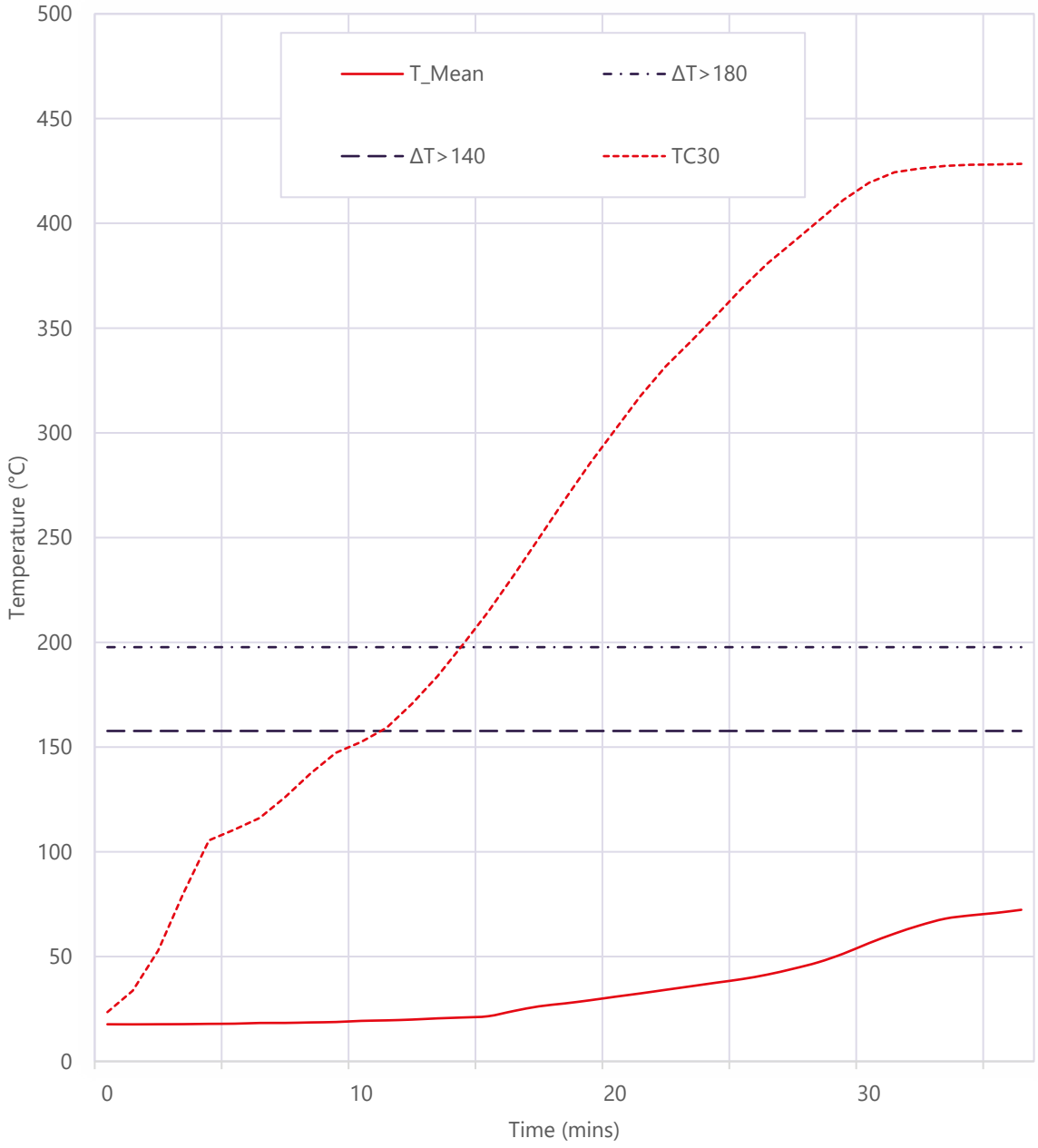


Figure 27 - Graph presenting the Time-Temperature distribution of the unexposed surface of The Specimen

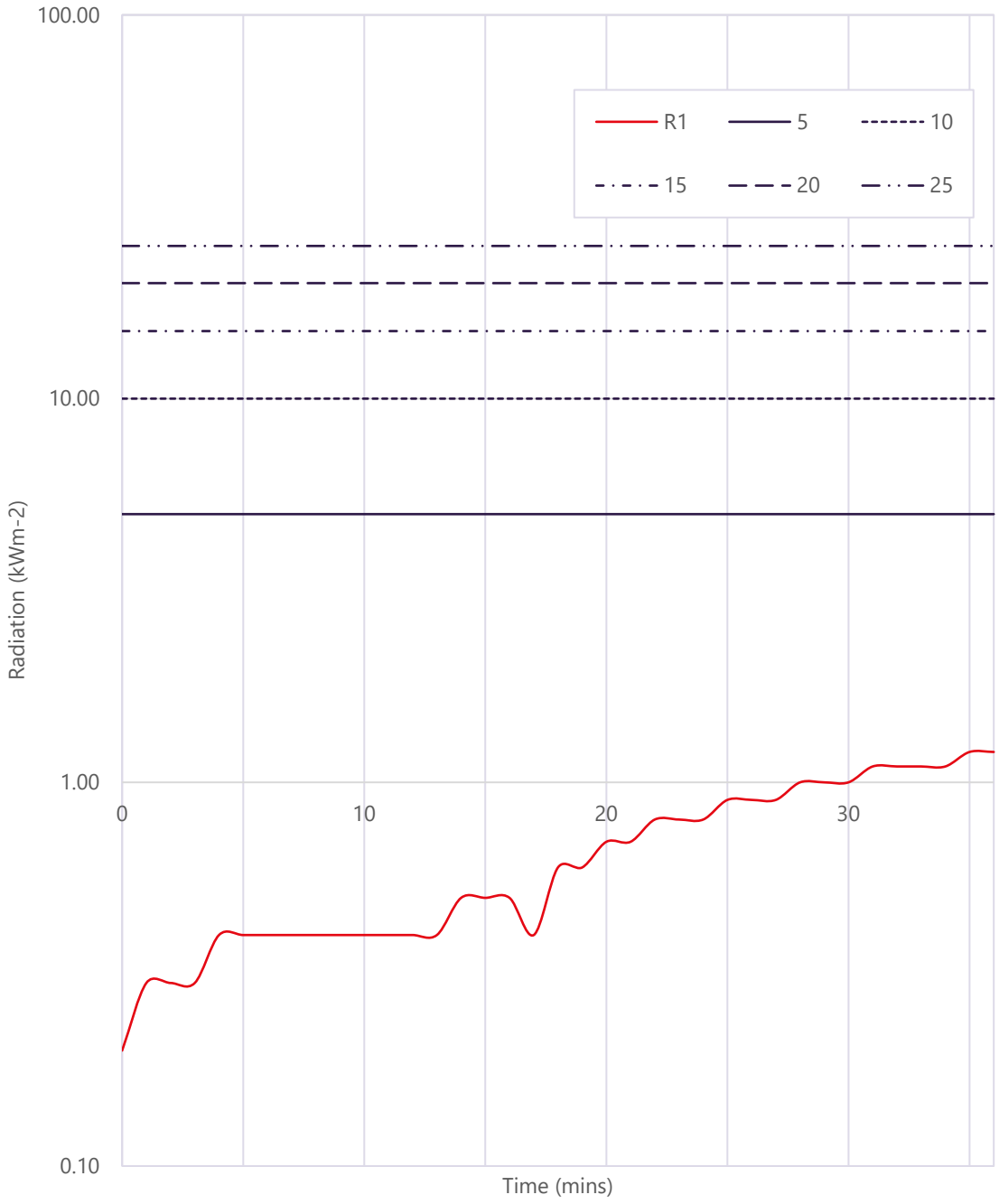


Figure 28 - Graph presenting Time-Radiation distribution of the unexposed surface of The Specimen

11 Tables

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

Time (mins)	TC1	TC2	TC3	TC4	TC5
0	18.5	18.4	15.3	18.2	18.1
2	18.7	18.4	15.2	18.2	18.1
4	19.3	18.6	15.1	18.4	18.1
6	20.7	19.5	14.6	18.6	18.2
8	21.2	20.9	13.5	18.9	18.4
10	22.0	21.3	15.2	19.4	18.7
12	22.6	22.3	15.2	20.0	19.6
14	24.5	23.9	14.3	21.3	20.7
16	26.3	26.2	22.2	23.1	22.3
18	29.6	30.0	28.8	25.6	24.1
20	33.6	33.7	32.4	28.3	26.2
22	36.7	36.9	36.4	31.7	29.1
24	39.2	40.2	40.5	35.5	32.5
26	41.7	44.5	44.5	40.2	36.2
28	44.5	50.9	53.3	47.2	40.5
30	47.7	61.7	64.3	55.0	53.4
32	52.5	69.9	72.2	63.8	66.1
34	59.0	72.4	74.5	69.6	72.9
36	64.8	73.9	75.2	73.8	74.0

*Thermocouple malfunction.

Table 2 – The temperatures recorded by the disc thermocouples used to evaluate the maximum temperature rise of The Specimen. Values are in Degrees Celsius (°C) unless otherwise stated.

Time	TC6	TC7	TC8	TC9	TC10	TC11	TC12	TC13	TC14	TC15
0	17.3	17.6	17.7	18.1	17.6	18.4	18.3	18.4	19.6	18.2
2	17.3	18.4	18.0	18.6	17.6	18.4	18.4	19.4	27.6	18.2
4	17.4	21.9	19.0	19.6	17.7	18.5	19.0	33.7	37.7	18.3
6	17.7	25.5	20.6	19.8	17.7	18.8	24.2	34.4	46.8	19.0
8	17.8	28.0	21.5	19.7	17.7	19.2	42.5	33.0	46.4	21.2
10	17.8	29.7	22.4	20.2	17.8	19.4	46.2	32.0	42.5	28.6
12	18.1	31.7	23.2	19.9	17.9	20.4	47.7	33.0	40.8	33.4
14	18.5	33.5	24.5	19.7	18.0	21.7	47.8	34.7	41.0	37.3
16	19.1	35.7	25.5	20.0	18.5	24.4	54.0	37.1	43.1	39.3
18	19.4	38.3	27.1	20.4	18.7	27.6	65.2	40.1	45.7	40.6
20	19.9	41.6	29.3	20.9	19.0	31.2	71.8	44.3	49.3	44.2
22	21.0	45.4	30.8	21.8	19.3	34.9	75.2	47.9	51.9	49.1
24	21.6	48.3	32.4	22.9	19.9	38.4	77.1	50.9	54.2	52.0
26	22.4	51.7	33.8	24.0	20.6	42.2	77.3	54.4	57.3	56.2
28	23.1	54.1	35.3	25.4	21.1	47.5	79.1	58.4	66.8	61.1
30	23.3	56.8	36.8	26.9	21.8	54.9	79.7	63.9	74.5	67.5
32	24.1	60.4	37.8	28.2	22.5	62.8	79.5	72.3	79.1	76.0
34	24.9	62.4	40.0	30.7	23.6	70.5	84.3	75.3	83.0	81.2
36	26.2	66.1	42.3	33.4	24.5	77.2	91.9	84.5	87.6	93.2

Table 3 – The temperatures recorded by the disc thermocouples used to evaluate the maximum temperature rise of The Specimen. Values are in Degrees Celsius (°C) unless otherwise stated.

Time	TC16	TC17	TC18	TC19	TC20	TC21	TC22	TC23	TC24	TC25	TC26
0	17.9	18.6	18.2	18.2	18.2	18.4	18.3	18.2	14.7	18.9	18.6
2	17.9	19.1	18.4	18.2	18.2	18.6	22.3	18.2	14.7	18.8	18.8
4	18.0	20.0	18.8	18.4	18.4	19.1	24.6	18.2	14.6	19.0	19.0
6	18.0	22.7	22.7	19.0	19.1	20.3	23.4	18.3	14.6	19.9	19.8
8	18.2	29.9	24.4	19.8	19.8	21.0	22.7	18.5	14.3	21.8	20.6
10	18.8	33.9	27.5	19.6	20.1	21.6	22.3	19.0	14.0	21.2	21.7
12	20.0	35.7	30.7	20.6	21.3	22.4	22.4	19.7	13.3	21.8	23.0
14	21.7	37.1	34.8	21.5	22.4	24.4	23.5	20.9	12.2	23.2	25.5
16	24.4	39.5	39.2	23.7	24.4	26.1	24.9	22.3	10.6	25.4	29.5
18	28.0	43.0	44.3	25.6	27.2	28.8	27.3	24.2	8.4	28.1	34.3
20	33.4	46.0	49.3	28.0	30.6	32.7	30.4	26.7	5.6	31.3	38.4
22	39.9	50.3	54.2	30.6	34.4	36.2	33.9	29.8	2.2	35.0	42.1
24	45.1	55.2	58.7	34.1	38.4	39.4	37.4	33.5	-1.4	39.2	46.0
26	49.3	61.6	62.5	38.0	41.8	42.5	40.5	37.0	25.1	48.6	49.7
28	53.9	69.1	67.2	42.6	44.8	46.3	43.9	41.0	30.4	65.0	54.7
30	60.5	77.3	72.0	49.4	49.0	50.9	50.2	45.6	37.0	75.5	61.1
32	65.9	83.5	76.4	57.6	54.5	55.7	58.0	51.0	43.5	79.3	68.2
34	71.3	89.9	82.0	64.7	59.0	62.0	64.7	58.7	48.9	79.6	75.6
36	75.6	95.1	88.2	71.7	64.3	69.5	68.7	67.6	51.8	77.2	82.8

Table 4 – The temperatures recorded by the disc thermocouples used evaluate the temperature rise of the glass incorporated into The Specimen. Values are in Degrees Celsius (°C) unless otherwise stated.

Time (mins)	TC27	TC28	TC29	TC30	TC31	TC32
0	24.6	24.4	23.7	23.5	*	21.3
2	57.5	55.5	55.2	52.9	*	31.1
4	119.4	109.5	109.2	105.5	*	62.7
6	126.4	120.8	115.6	116.2	*	93.3
8	137.0	135.0	130.6	137.4	*	93.5
10	153.5	147.9	147.9	152.5	*	104.4
12	165.8	157.8	161.1	170.7	*	115.4
13	173.4	165.9	171.3	183.8		120.1
14	183.5	175.2	184.6	**198.9**	*	126.2
15	197.0	186.0	199.2	214.6		133.8
16	211.5	198.6	214.0	231.8	*	143.1
18	241.0	226.0	247.8	267.8	*	165.4
20	272.8	256.7	281.0	301.5	*	195.0
22	303.6	287.1	310.4	331.8	*	231.1
24	330.2	314.9	334.1	356.3	*	265.2
26	354.6	341.0	356.4	380.8	*	296.0
28	375.6	364.2	379.6	401.1	*	320.1
30	392.4	383.7	404.4	419.4	*	340.8
32	401.4	396.7	421.4	426.2	*	356.9
34	406.7	403.5	432.1	428.0	*	371.1
36	412.0	407.9	436.4	428.4	*	378.7

*Thermocouple malfunction.

Appendix A Sample Report

bmtrada Proud to be part of element	SAMPLING VISIT REPORT	Company Name	Exitex UK Sales LTD
		Establishment No.	05C/21255 (E002626)
		BM TRADA Notified Body ID: 1224	

Company Head Office Address	Exitex UK Sales LTD St Johns Chambers Love St Chester CH1 1QN	Contact Name	Des Gray
		Telephone	
		Email Address	Des.Gray@exitex.com

Location where sampling was conducted if different from Head Office Address	Visit Date	BMT Representative
Dorsuite Ltd, 17 Law Place, Nerston Industrial Estate, East Kilbride, Glasgow G74 4QL	25/08/2023	Chris Blount

Requirement	Evidence / Comments	
Opening Meeting (names of those present)	Alan Little (Dorsuite) / Chris Blount (BM TRADA)	
Contract Reference	SCT23207	
Technical Specification document / FoA reference Photographs to be taken of all critical areas highlighted in the Technical Specification	Exitex - TST - Flamebreak 430 - SCT23207 Changes updated to - Exitex - TST - Flamebreak 430 - SCT23207 - Verified by CGB 25/08/2023	
Description of product(s) sampled	Pacific Rim Wood Flamebreak 430 (44mm) double door lipped with 8mm sapele lippings, hung in an MDF frame on 4 no hinges per leaf. Leaf 1 glazed with Pyrobelite 7mm glazing with redwood glazing beads and fitted with tubular latch, lever handle and drop down seal. Leaf 2 fitted with door viewer, latch keep, door closer and drop down seal,	
Product identification / reference numbers / codes	SCT23207 (Dorsuite Job 16897)	
Batch number(s)	N/A	
Date of manufacture	24/08/2023 to 25/08/2023	
Quantity of stock and size of sample(s) taken	1no. double doorset (Frame 1922mm x 2079mm) (Leaf 1 & 2 926mm x 2040mm)	
Traceability of material records ie Purchase Orders and delivery notes	PO 72707 - Flamebreak 430 (44mm) core – Falcon 17/10/2022 PO 80436 – 7mm Pyrobelite – Fireglass Scotland 14/07/2023 D/N S-472115 – hardware & Intumescents – Exitex 27/07/2023 PO 71494 – Hinges - Zoo Architectural Hardware 06/09/2022 PO 80508 – Tubular Latch - Zoo Architectural Hardware 25/07/2023 Warrington Fire Sampling Report FM517025 – LT 15x4 Intumescent strips – 25/08/2022 All Purchase orders held on file at BM TRADA	
Example of sampler's markings applied to the product(s) (contract reference, signature of client, date of manufacture)		
Confirmation of minimum mandatory video/live checks undertaken	✓ Glazing assembly (where applicable)	✓ Finished doorset with markings
	✓ Hardware prep and fitting (where applicable)	✓ Sampling pack discussion
Details of any further FPC processes witnessed during the visit.	none	
Determine the essential characteristics of the product and confirm the details of in-process checks conducted on the sample to ensure conformity.	Pacific Rim Wood Flamebreak 430 (44mm) double door leaves lipped with 8mm sapele lippings, hung in an MDF frame (80mm x 30mm with a 32mm x 12mm planted stop) on 3 no hinges per leaf (with EXI-Fire 1mm Graphite Intumescent pads) 1no.15mmx4mm Exitex LT Instumescent strip to frame rebate and meeting style of Leaf 1. Leaf 1 glazed with Pyrobelite 7mm glazing (1600mm x 600mm) with redwood glazing beads with Exi-glaze 30 glazing system with Exitex Intumescent mastic and fitted with tubular latch (disengaged) (with EXI-Fire 1mm Graphite Intumescent to body & forend), lever handle & drop down seal. Leaf 2 fitted with door viewer (with EXI-Fire 1mm Graphite Intumescent wrap), latch keep (with EXI-Fire 1mm Graphite Intumescent) & drop down seal, Face fix door closer parts verified and signed – to be fitted on installation. Door leafs to be removed from frame for transportation and re-hung at test lab.	
State any items from the Technical Specification / FoA that were not witnessed and require further lab sampling	☐ Side screen / overpanel	☐ Handles	✓ Other (see tech spec marked with 'not seen')
	✓ Door closer	✓ Door re-hanging	
Confirm any clauses within the Technical Specification that were found to be different on the sampled product/s. ***Non-conformances may be raised for pre-cert and audit test sampling***	Exitex - TST - Flamebreak 430 - SCT23207 original spec updated to Exitex - TST - Flamebreak 430 - SCT23207 - Verified by CGB 25/08/2023 sections; 1, 3, 7, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22 & 24	
Closing Meeting (names of those present)	Alan Little (Dorsuite) / Chris Blount (BM TRADA)	

Declaration	I declare that the product/s witnessed during this sampling visit are representative of normal production.	
Company Representative Name (Print)		Company Representative Position
EXITEX LTD: Desmond Gray DORSUITE: Alan Little		EXITEX LTD: Sales Director DORSUITE: Factory Operations Manager
BM TRADA Representative Signature		Company Representative Signature
		EXITEX LTD: Desmond Gray DORSUITE: Alan Little

This sampling report remains the property of BM TRADA. BM TRADA shall keep confidential all information relating to the sampling process and your organisation and shall not disclose such information to any third party except as required by law or by BM TRADA's Accreditation Bodies. This sampling report will be shared with others within Warringtonfire Testing and Certification Ltd.

Stocking Lane, Hughenden Valley, High Wycombe, Buckinghamshire, HP14 4ND. Tel: 01494 569700

Exitex Ltd (Dorsuite) - SCT23207 (Flamebreak 44) SAM - CGB 250823 Page 1 of 1