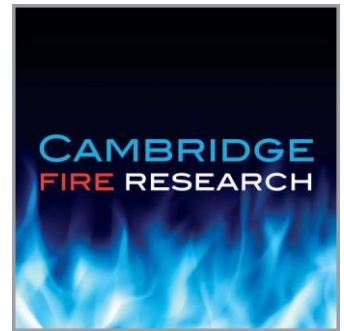


TEST REPORT NUMBER CFR2312191 Revision 1



FIRE RESISTANCE TEST IN ACCORDANCE WITH BS 476: PART 22: 1987

Sponsor:	Wood International Agency Ltd	Dixon International Group
Address:	Wood House 16 King Edward Road Brentwood Essex CM14 4HL	Brewery Road Pampisford Cambridgeshire CB22 3HG
Date of test:	19 th December 2023	

Results:	Left hand specimen:	Right hand specimen:
Test duration:	36 minutes ¹	36 minutes ¹
Integrity:	32 Minutes	35 Minutes
Insulation:		35 minutes
	¹ discontinued at the request of the sponsor	
	² no failure, the test having been discontinued	



Summary of test specimen (mm):

Two unlatched glazed single acting single leaf timber doorsets, tested opening towards the heating conditions of the test.

The left hand doorset tested as uninsulated, the right hand doorset tested as partially insulated.

Overall size (h x w x d):

Left hand specimen:

Frame: 2445 x 1110 x 71

Leaf: 2405 x 1045 x 44

Glazing pane: 2199** x 839** x 7**

Right hand specimen:

Frame: 2222 x 999 x 71

Leaf: 2183 x 934 x 44

Upper glazing pane: 1494** x 244** x 7**

Lower glazing pane: 294** x 244** x 7**

This report is only valid when presented in full.

Cambridge Fire Research Ltd Brewery Road Pampisford Cambridge CB22 3HG

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Registered in England No. 5602112 Registered Office Brewery Road, Pampisford, Cambridge, CB22 3HG



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Key to symbols used throughout report:

* Nominal value

** Declared value or detail, not verified by laboratory

*** Constructional details omitted at the request of the Sponsor. Full details are held on file by the laboratory

‡ Identified post-test from remains of specimen

EX – exposed face of the specimen, subject to the heating conditions of the test.

UX – unexposed face of the specimen, not subject to the heating conditions of the test.

All dimensions in mm unless stated otherwise.

Figures shown in Appendix 1 are not to scale.



1 PREPARATION FOR TESTING

1.1 Specimen conditioning

The specimens were received by Cambridge Fire Research on 11/12/2023.

For the final 7 days that the specimens were on site the temperature and relative humidity were measured and recorded within the range of 6°C to 16°C and 64% to 88% respectively.

1.2 Associated construction

Cambridge Fire Research installed an associated construction as instructed by the sponsor.

Constructed with steel strap using 72 x 25 x 0.5 steel U track, 70 x 34 x 0.5 steel C studs, with Rockwool RWA45 50mm insulation, density 45kg/m³, clad on the exposed and unexposed side with a single layer British Gypsum EN 520 Type F Fireline board 12.5mm, density 780kg/m³.

The aperture for the left hand specimen was 2460 mm high x 1125 mm wide.

The aperture for the right hand specimen was 2232 mm high x 1017 mm wide.

In accordance with Fire Test Study Group Resolution No. 51 continuity of the threshold was simulated by the installation of a solid non-combustible threshold extension by Cambridge Fire Research, such that the extension was flush with the threshold onto which the specimen was positioned.

1.3 Specimen construction

The specimens were received complete from the sponsor.

1.4 Specimen verification

Cambridge Fire Research carried out a detailed survey of the specimen(s) to verify the information provided by the sponsor. This included verifying the weight, densities, materials and dimensions of construction components wherever possible.

Details and drawings of the construction are shown in Appendix 1.

Photographs of details of the construction taken before the test are shown in Appendix 2.

1.5 Specimen installation and fixity

The sponsor installed the specimens into the associated construction, affixed as described in Appendix 1.

Each specimen was asymmetrical and installed such that it opened towards the heating conditions of the test at the request of the sponsor.

Each specimen was unlatched prior to the start of the test.

1.6 Specimen selection

Cambridge Fire Research was not involved in any selection or sampling procedures.

The sponsor provided the independent report shown in Appendix 5.

Appendix 2, photo 2.1.25 and 2.1.26 show corresponding identification.



2 PRE-TEST MEASUREMENTS AND SETTING

2.1 Closer force measurement

The door opening and closing forces for both leaves were measured in accordance with Fire Test Study Group Resolution No. 63 and the calculated moments are shown in the following tables.

Left-hand specimen

Direction	Closing force (N)	Closing moment (Nm)	Opening force (N)	Opening moment (Nm)
Opening towards heating conditions	28.0	21.0	37.1	27.8

Right-hand specimen

Direction	Closing force (N)	Closing moment (Nm)	Opening force (N)	Opening moment (Nm)
Opening towards heating conditions	31.8	23.9	58.3	43.7

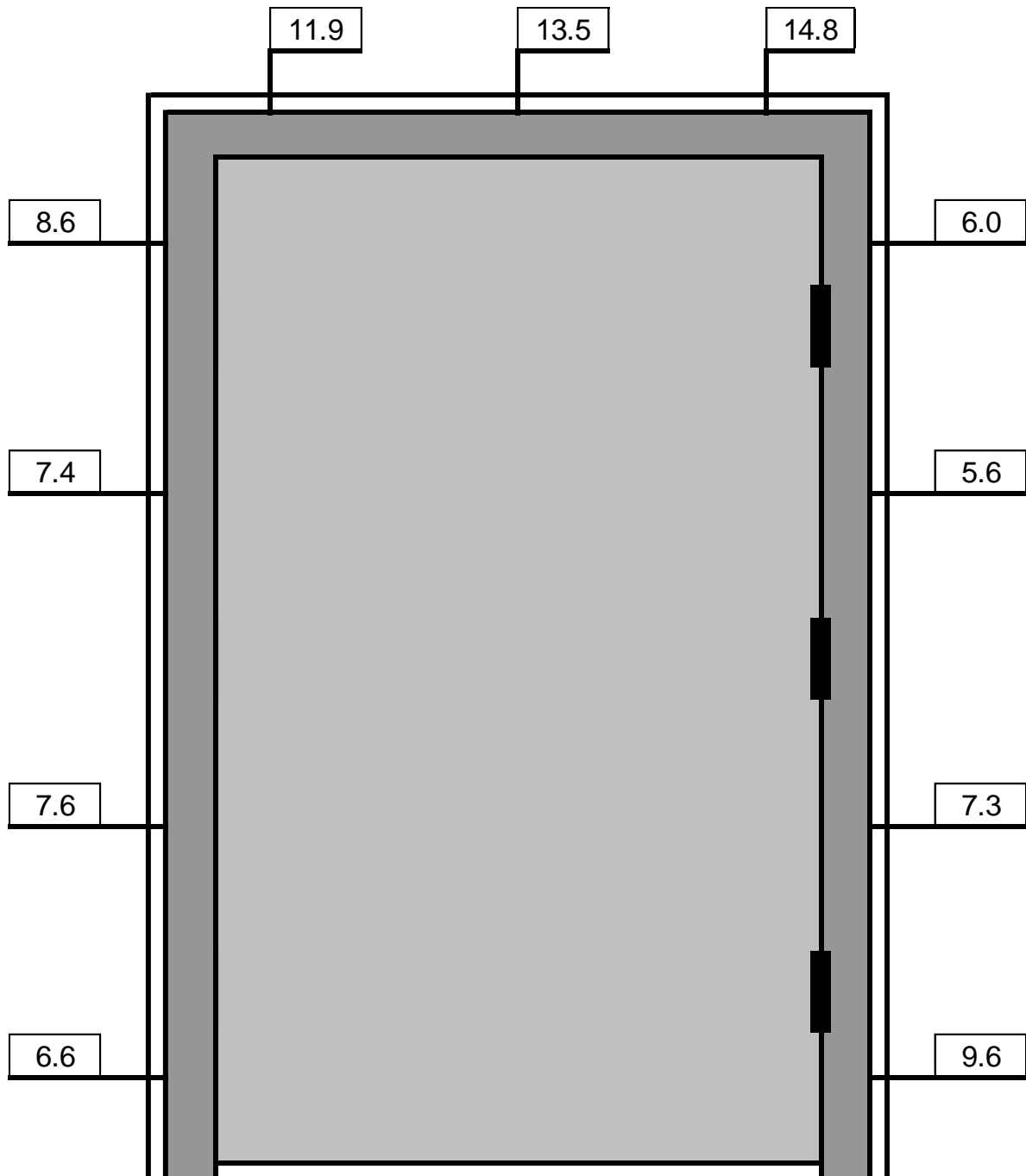


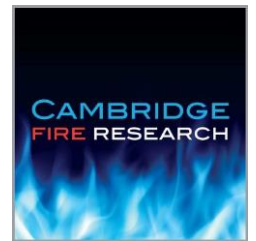
2.2 Gap measurements – Frame edge to associated construction aperture

The gap between the specimen frame and the associated construction was measured prior to the start of the test.

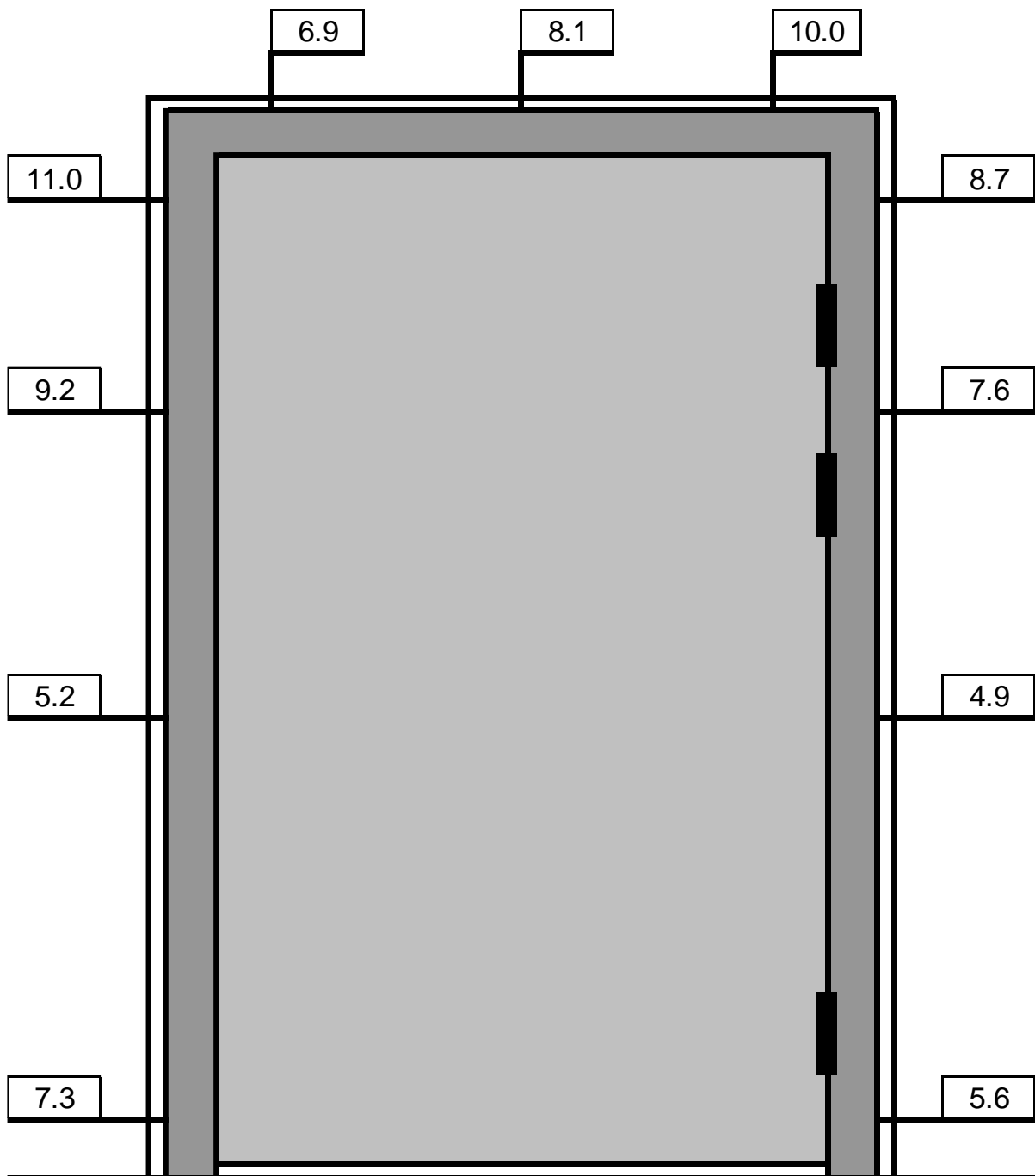
The position at which the measurements were made and the recorded gap at those positions are shown in the following figure(s).

Left-hand specimen viewed as measured from the exposed face.





Right-hand specimen viewed as measured from the exposed face.



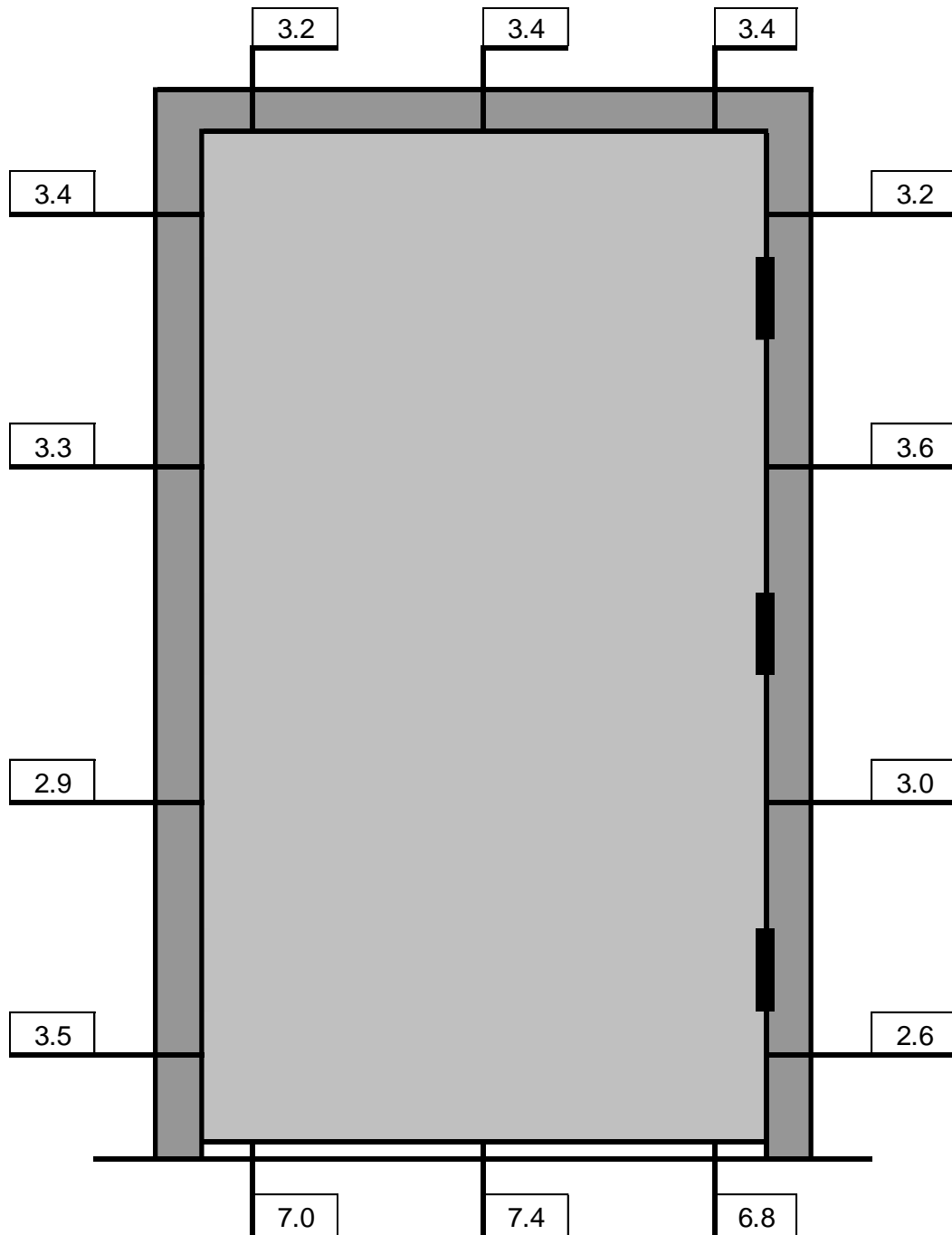


2.3 Gap measurements – Leaf edge to frame

The gaps between the leaf edges and the frame and between the base of the leaf and the threshold were measured prior to the start of the test.

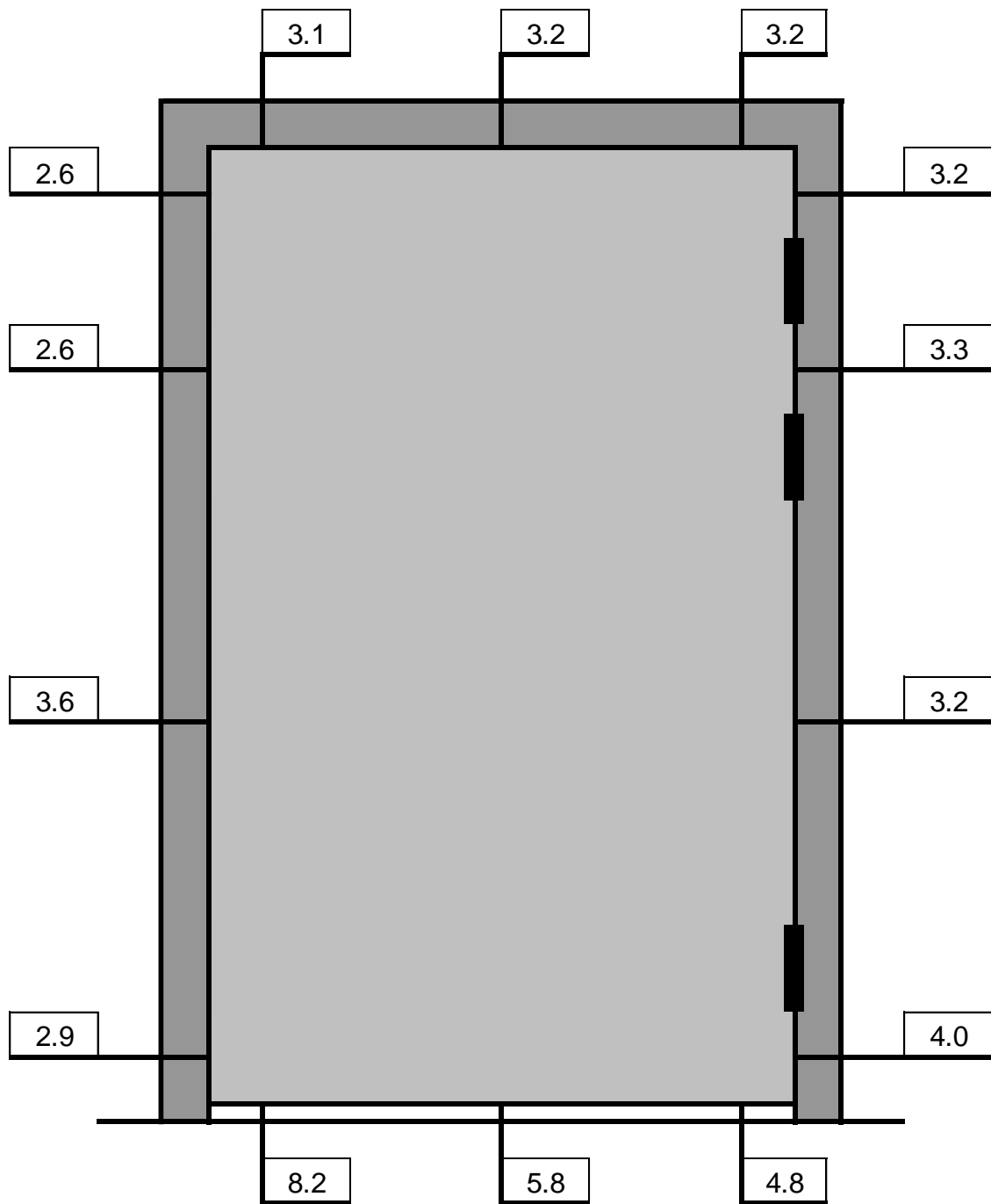
The position at which the measurements were made and the recorded gap at those positions are shown in the following figure(s).

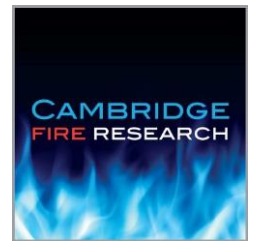
Left-hand specimen viewed as measured from the exposed face.





Right-hand specimen viewed as measured from the exposed face.



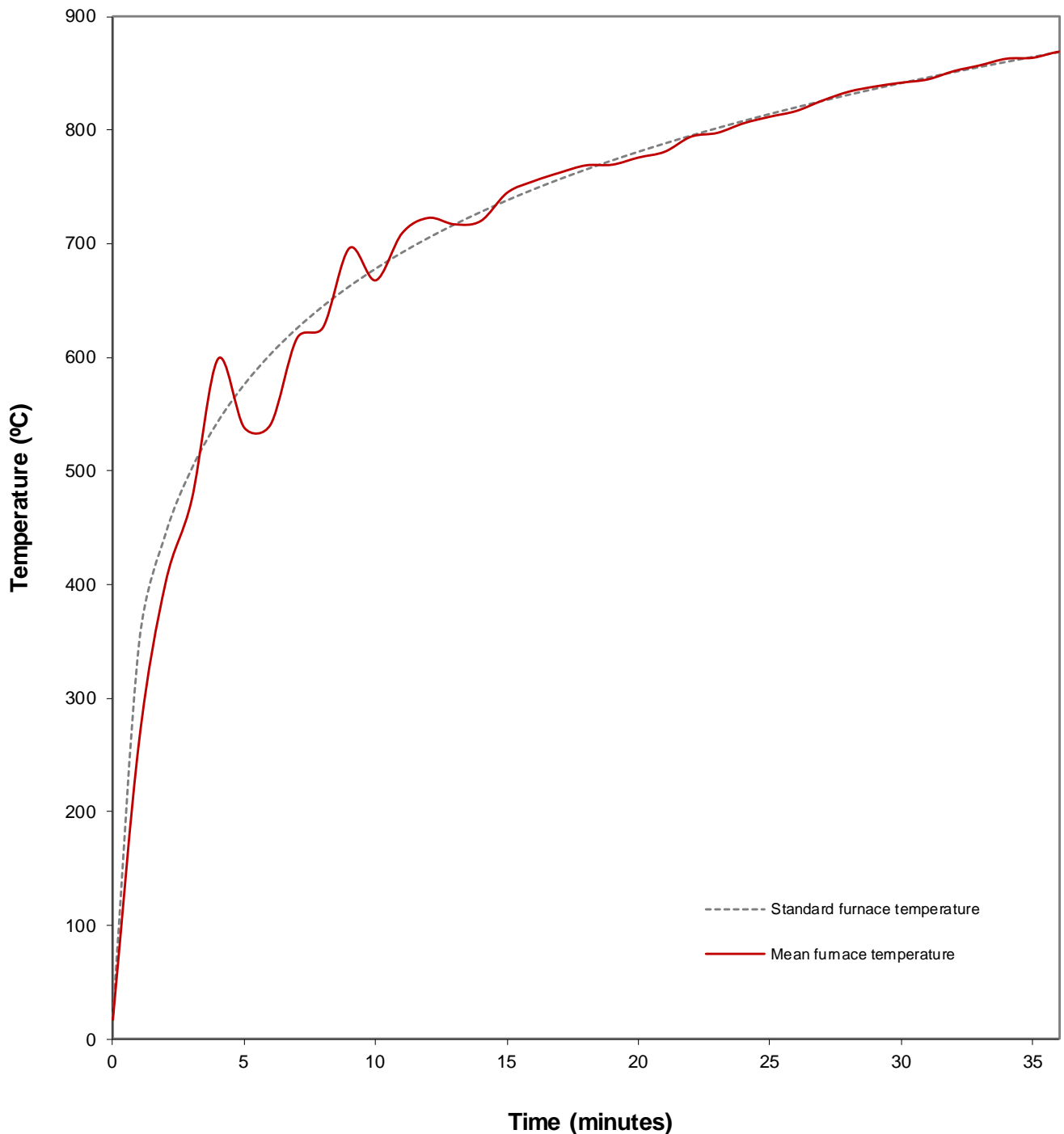


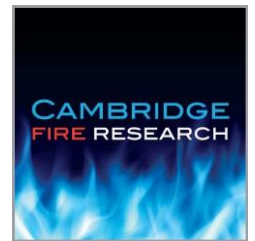
3 TEST CONDITIONS, INSTRUMENTATION AND MEASURING

3.1 Furnace temperature

Furnace temperature was controlled so as to follow the standard temperature/time curve defined in the test standard and within the tolerances permitted. The furnace mean temperature was calculated from the output recorded using nine furnace thermocouples of the design specified in the test standard.

The following graph shows the standard and mean furnace temperature/time data.

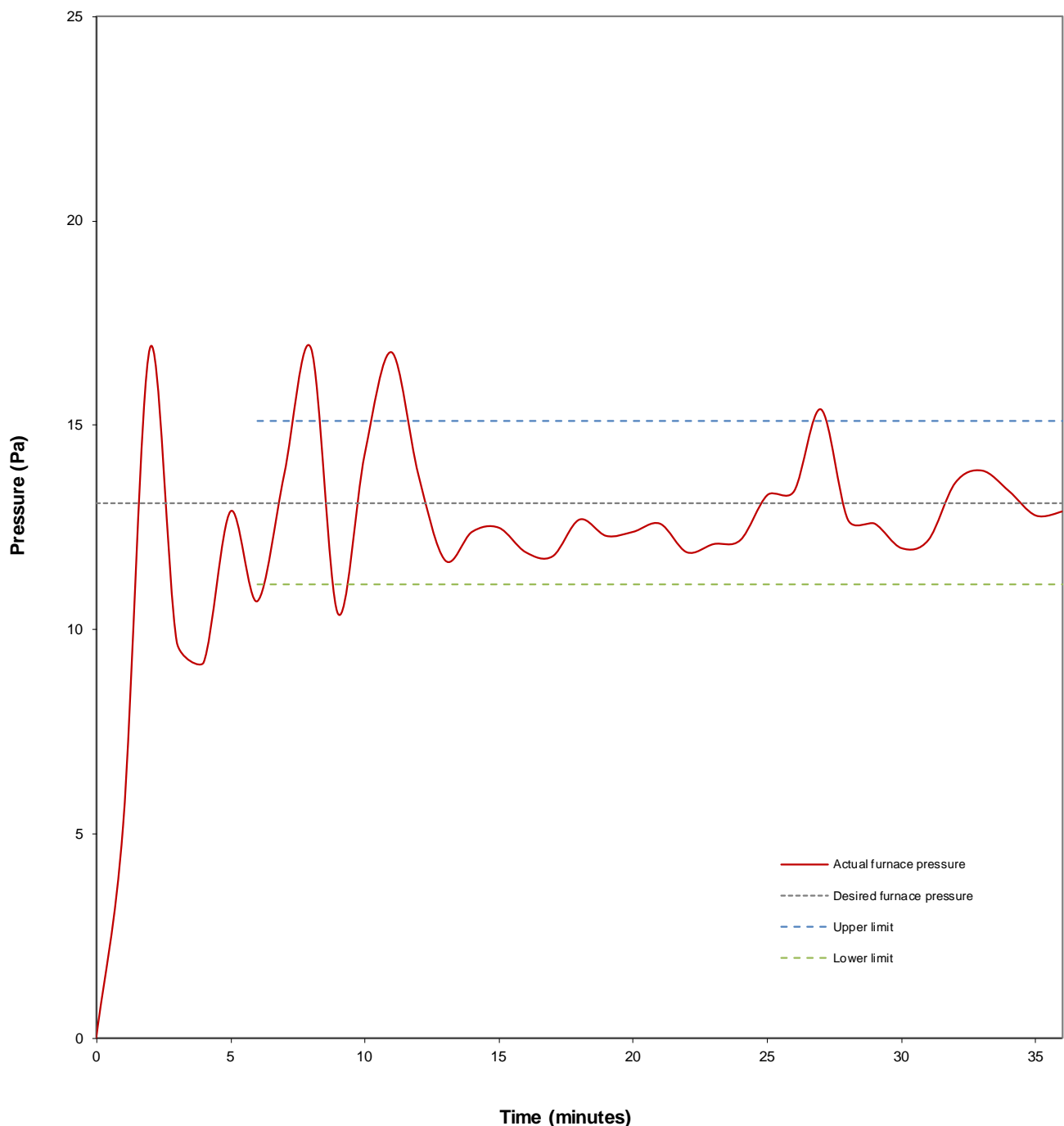




3.2 Furnace pressure

Furnace pressure was maintained for the duration of the test at a nominal + 13.1 Pa measured at the pressure sensing head. When a linear pressure gradient of 8.5 Pa/m is applied this equates to + 0 Pa at 1 m above the notional floor level. The furnace pressure was controlled within the tolerances permitted in the test standard except for 5 instantaneous occasions which were transient events.

The following graph shows the actual and desired furnace pressure/time data.



3.3 Ambient temperature

Ambient temperature at the start of the test was 15°C.

Ambient temperature ranged between 13°C and 17°C during the test.



3.4 Unexposed face specimen thermocouples

Surface temperature measuring thermocouples of the design specified in the test standard were affixed to the unexposed face of the specimen(s) to monitor the temperature rise as follows:

Left hand specimen

Leaf	Channels 16 to 20	(mean and maximum)
Frame	Channels 21 to 23	(maximum only)

Right hand specimen

Leaf	Channels 24 to 28	(mean and maximum)
Frame	Channels 29 to 31	(maximum only)
Glazing	Channels 32 to 34	(information only)

The positions of these thermocouples are shown in Appendix 3.

A roving thermocouple was available for measurement of any specific hotspots.

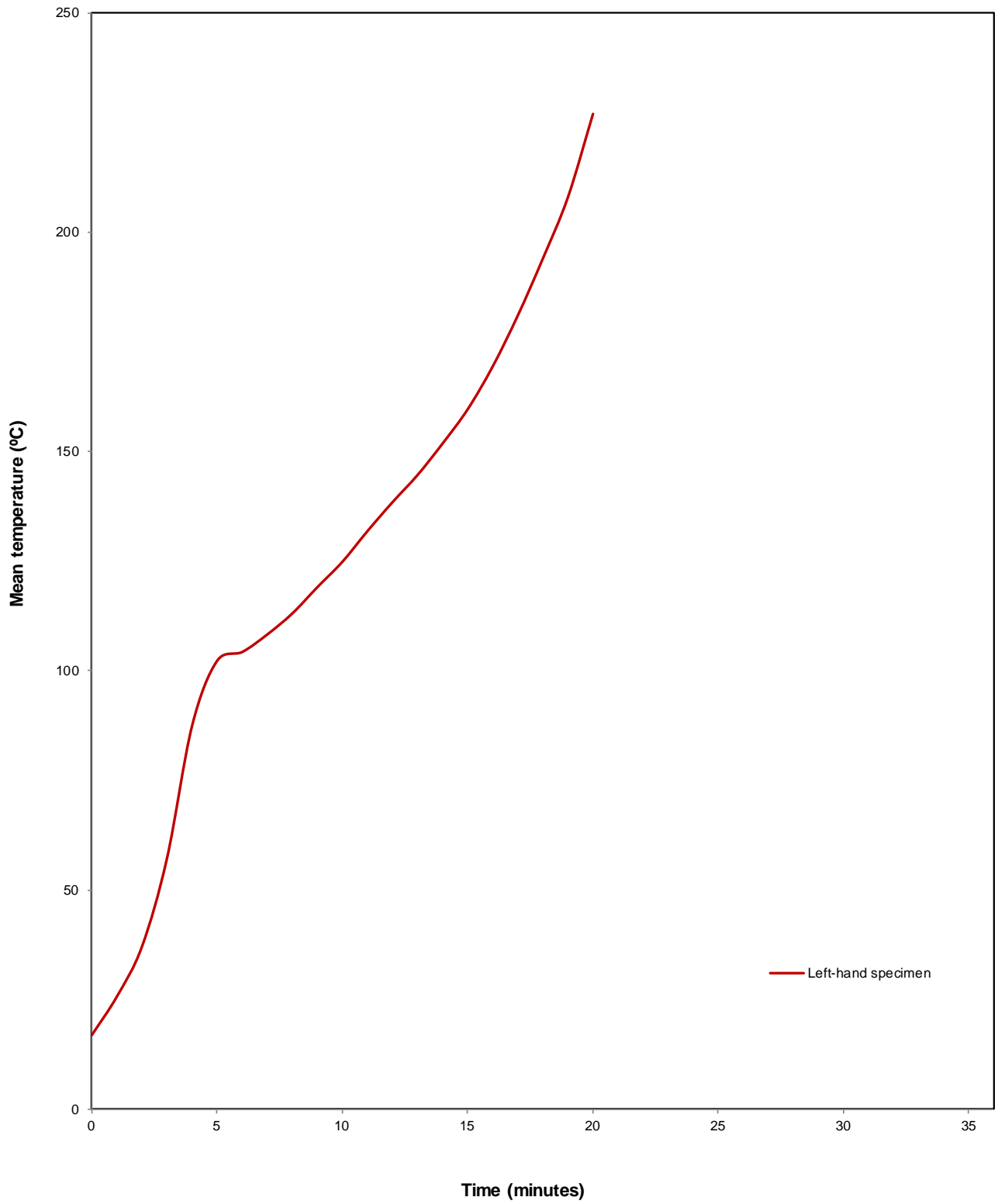
Any instances of the use of the roving thermocouple are noted in the observations in Section 4.

The recorded data of all individual fixed thermocouples is shown in Appendix 4.

The following time/temperature graphs show the mean temperatures.

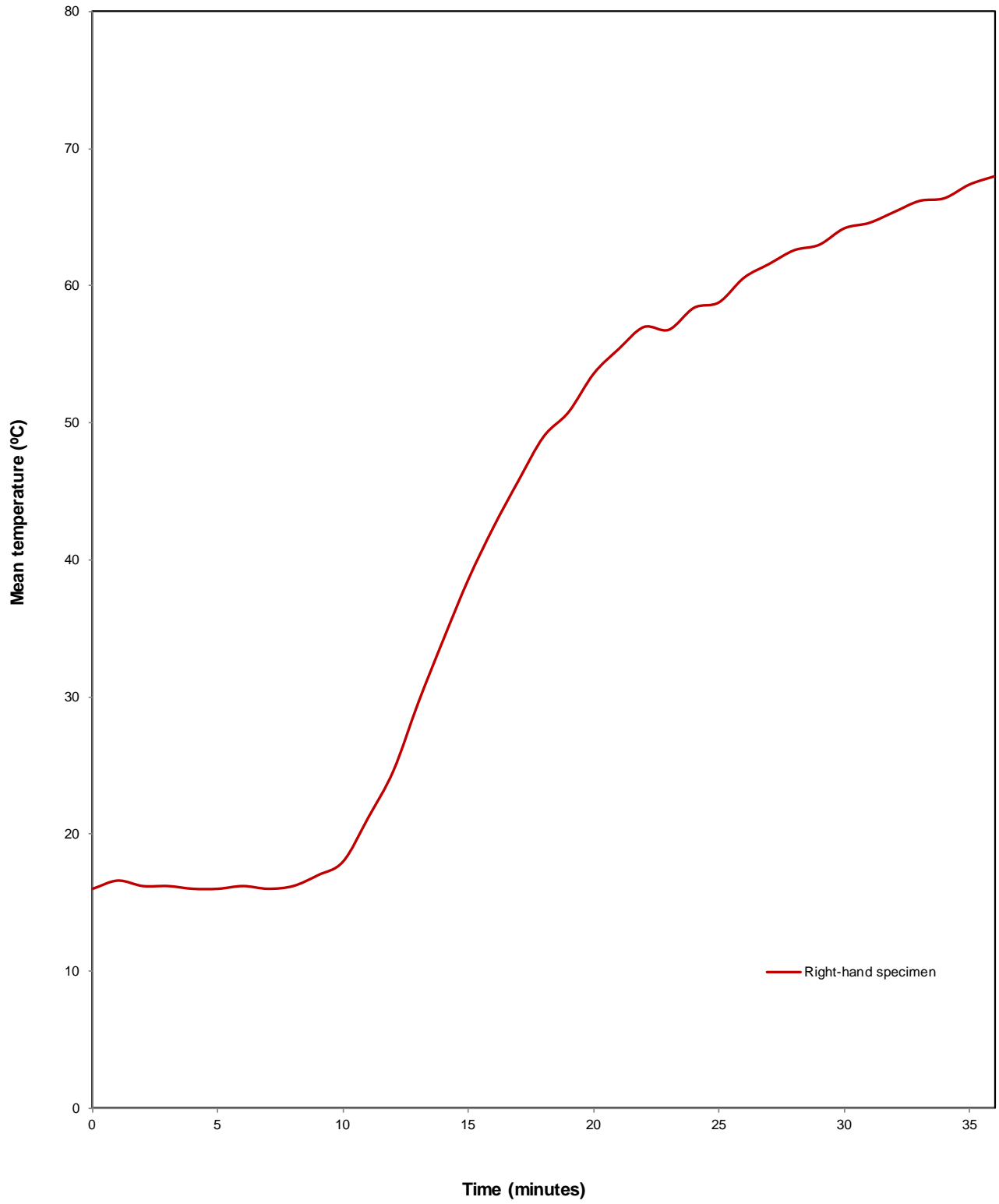


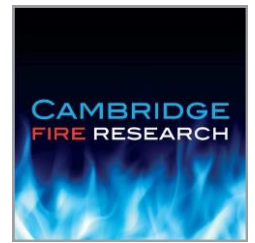
Left-hand specimen





Right-hand specimen

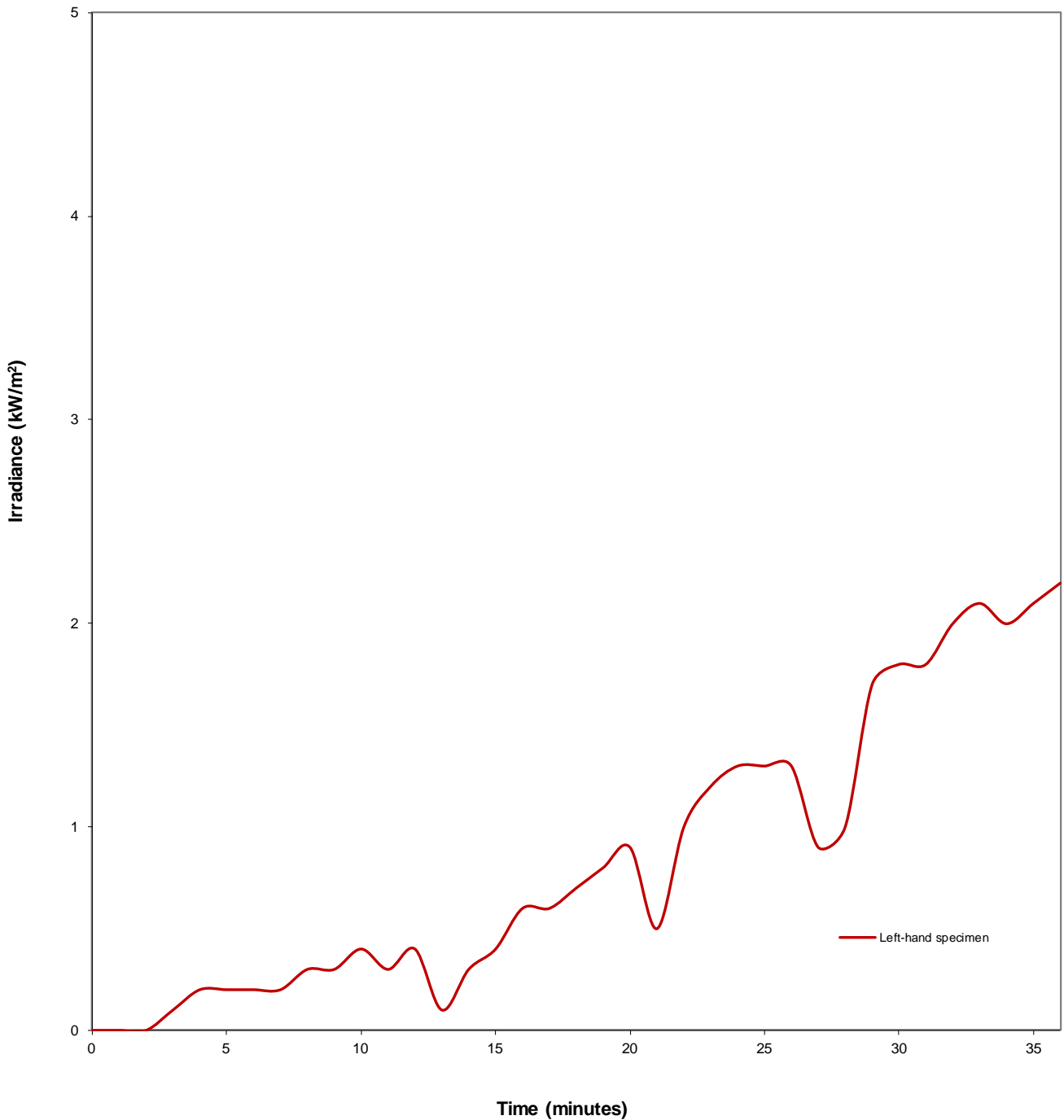




3.5 Irradiance

Irradiance from the unexposed face of each specimen was monitored during the test. A 180° field of view water cooled heat flux meter was positioned with its target 1 m from and parallel to the unexposed face of the specimen at the geometric centre. The following graphs shows the recorded irradiance/time data.

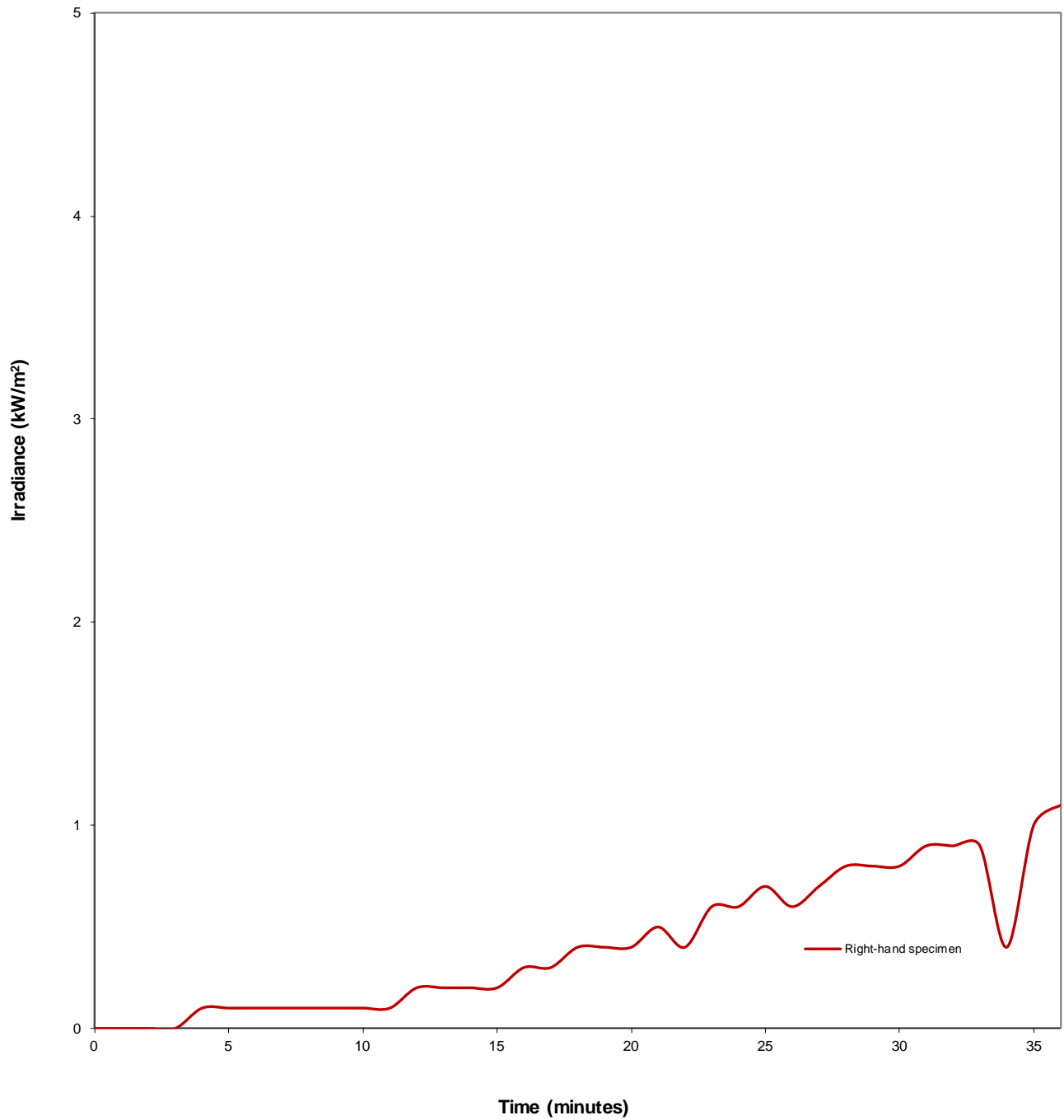
Left-hand specimen



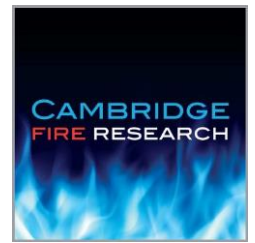
It should be noted that the recorded value of heat flux drops when the field of view is physically interrupted during the measurement of deflection.



Right-hand specimen



It should be noted that the recorded value of heat flux drops when the field of view is physically interrupted during the measurement of deflection.

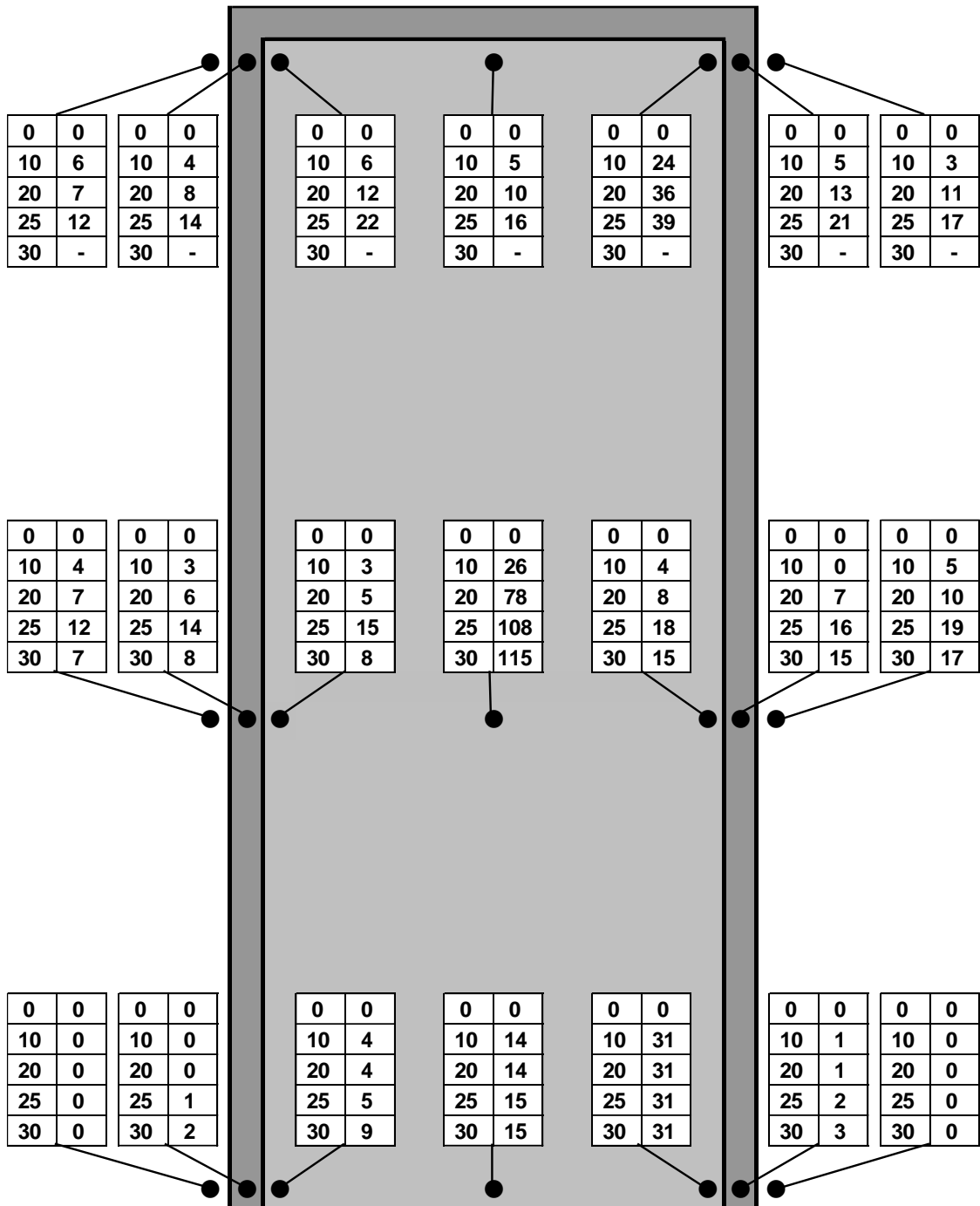


3.6 Deflection

Taut stainless steel wires anchored horizontally across the unexposed face of the restraint frame, such that any deflection experienced by the test construction could be measured, were positioned at mid-height and at 10 mm vertically from the head and base within the visible area of the leaf/leaves.

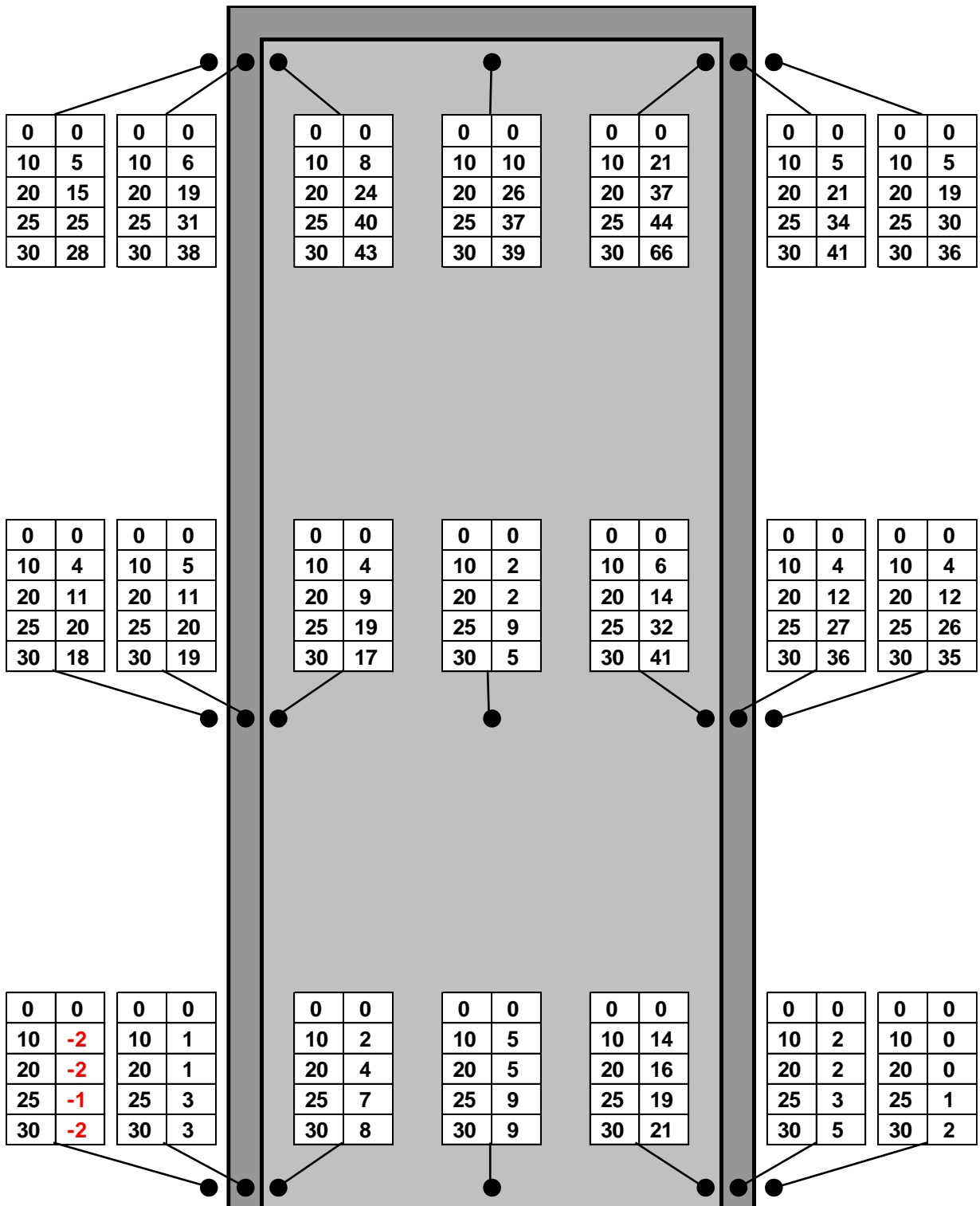
The following figure(s) shows these positions with the elapsed time (minutes) in the left-hand column and the recorded deflection (mm) in the right-hand column. Positive values indicate deflection towards the heating conditions of the test.

Left-hand specimen





Right-hand specimen





4 TEST OBSERVATIONS

Photographs taken during the test are shown in Appendix 2.

Left hand specimen

TEST OBSERVATIONS (E = Exposed face: U = Unexposed face)		
Time (min:sec)	Face	Observation
00:00		Start of the test.
02:45	U	Glazing cracked.
03:22	U	Glazing interlayer activated.
05:37	U	Smoke/steam issues across the head of the leaf, top glazing bead and both stiles, nominally 2000 above the base of the leaf to top of the leaf.
07:32	U	Smoke/steam issues through cracks in the glazing pane.
10:08	U	Smoke/steam issues at both stiles, nominally mid height and above and at the euro cylinder position.
11:27	E	All timber fissured.
23:36	E	Nominally 25% of glazing beads missing.
24:10	U	Glowing is apparent at the closing stile/head corner.
24:48	U	Glowing is apparent at the closing stile/threshold corner.
27:10	U	Glowing is apparent through cracks in the glazing pane.
27:12	U	Flash flaming occurs at the latch position.
29:07	U	Smoke/steam issues at the vertical glazing beads, nominally 1500 above the base of the leaf to top of the glazing beads.
30:54	U	Glowing is apparent at the top hinge position.
31:15	U	Flash flaming occurs at the middle hinge position.
32:47	U	Flaming commences at the top right hand corner of the glazing beading.
32:57	U	INTEGRITY FAILURE due to sustained flaming.
36:17		The test is terminated.



Right hand specimen

TEST OBSERVATIONS (E = Exposed face: U = Unexposed face)		
Time (min:sec)	Face	Observation
00:00		Start of the test.
02:26	U	Upper glazing pane cracked.
03:00	U	Upper glazing pane interlayer activated.
03:40	U	Lower glazing pane cracked.
03:52	U	Lower glazing pane interlayer cracked.
05:50	U	Smoke/steam issues through cracks in the glazing panes and across the head of the leaf.
07:07	U	Smoke/steam issues at the both stiles at mid height and above.
09:15	E	All timber fissured.
15:08	U	Smoke/steam issues at the upper glazing pane top bead.
17:25	E	Handle melted.
20:33	U	Leaf rests on the threshold.
21:05	U	Nominally 70% of upper glazing pane beads missing.
25:21	U	Smoke/steam issues at the closing stile adjacent to the latch position.
26:00	U	Nominally 20% of lower glazing pane beads missing.
29:27	U	Flash flaming occurs at the latch position.
34:09	U	A cotton pad is applied at the handleset position.
35:15	U	INTEGRITY FAILURE due to ignition of the cotton pad. INSULATION FAILURE automatically occurs due to integrity failure.
36:17		The test is terminated.



5 LIMITATIONS

1. The test results relate only to the specimen tested. Appendix A of BS476: Part 22 1987 provides guidance information on the application of fire resistance tests and the interpretation of test data. Application of the results to specimens of different dimensions, orientation or incorporating different components should be the subject of a design appraisal or further testing.
2. 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.
3. The results relate only to the behaviour of the specimen of the elements 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.
4. The results apply to the specimen(s) as received from the sponsor.
5. The results apply to the specimen(s) tested with orientation and symmetry as described in Section 1.5 of this report. The test results may not be appropriate to situations where the heating conditions are from the opposite direction.
6. Cambridge Fire Research is not responsible for the content of this report where information has been identified (using **) as supplied by the sponsor.

This report is the property of the test sponsors and may not be reproduced or passed to a third party without their prior agreement.

Report prepared by:

A handwritten signature in black ink, appearing to read "D Littlewood".

**D Littlewood
Test Engineer**

Report checked by:

A handwritten signature in black ink, appearing to read "Tom Smith".

**Tom Smith
Senior Test Engineer**

Revision 1 issued: 10th September 2024

Report originally issued: 5th September 2024

Please see Appendix 6 for Revision History



APPENDIX 1 SPECIMEN CONSTRUCTION

Appendix 1 Table 1 – Left hand specimen

Item	Component	Information
1L	<p>Frame Manufacturer: Reference: Description: Fixing to associated construction: Overall size (h x w x d): Cross section size (w x d): Density (kg/m³):</p>	<p>By Dezign Carpentry** Standard Plant-On-Stop Casing** A 3-sided rebated European Redwood** frame with planted stops, 10h rebated joints and a 5w chamfered edge on the unexposed face. Frame joints affixed using Ø5 x 70 steel countersunk screws, set at 34 centres vertically and 1No. horizontally at mid depth. Ø5 x 90 steel countersunk screws, set 140 below the head, 190 above the threshold and at 530 centres. 2445 x 1110 x 71 30 x 71 451**</p>
2L	<p>Stops Manufacturer: Reference: Description: Density (kg/m³): Section size (w x d):</p>	<p>By Dezign Carpentry** Standard Plant-On Stop** European Redwood** planted stops affixed to the head and jambs using 16swg# x 38# pneumatically fired steel pins, set 5 to 35 from head corners and at 210 to 260 centres. 522** 12 x 22</p>
3L	<p>Leaf Manufacturer: Reference: Description: Overall size (h x w x t): Weight (kg): Sub-components: Core: Manufacturer: Reference: Description: Density (kg/m³): Overall size (t): Lippings: Manufacturer: Reference: Description: Density (kg/m³): Overall size (t): Glazing aperture: Description:</p>	<p>By Dezign Carpentry** PAT 10** A particleboard core with Sapele** lippings and an aperture for glazing. 2405 x 1045 x 44 44.7 including ironmongery. Wood International Agency** Marksman 44** A particleboard core. Nominally 535** (Measured 558**) 44 By Dezign Carpentry** Standard Sapele Lipping** Sapele** lippings adhered to all edges of the core using Norbord Caberfix D4 PU adhesive**. Nominally 640** (Measured 631**) 7 1No. aperture for glazing set 100 below the head of the leaf and 100 from the closing stile.</p>



Item	Component	Information
3L cont.	Overall size (h x w):	2205± x 845±
4L	Glazing Manufacturer: Reference: Pane size (h x w x t): Sight size (h x w):	Fireglass North Pyrobelite 7 2199** x 839** x 7** 2176 x 816
5L	Glazing beads Manufacturer: Reference: Description: Density (kg/m ³): Overall size (h x w): Section size (w x d): Splay angle (°):	By Dezign Carpentry** CB1** Sapele** glazing beads affixed using 16swg± x 38± pneumatically fired steel pins, set 50 from internal corners and at 150 to 155 centres. Nominally 640** (Measured 616**) 2213 x 853 19** x 20± 15**
6L	Hinges Manufacturer: Reference: Description: Blade size (h x d x t): Knuckle size (Ø): Fixings to frame: Fixings to leaf:	Arrone AR8180-SSS** 3No. stainless steel butt hinges with bearings set 150, 1137 and 2124 from the top of the leaf to the top of the blade. 101 x 31 x 3 14 4No. Ø4.5 x 30 stainless steel countersunk screws. 4No. Ø4.5 x 30 stainless steel countersunk screws.
7L	Closer Manufacturer: Reference: Description: Body size (h x w x d): Track (h x w x d): Fixings to leaf: Fixings to frame:	Arrone AR7383-SE** A mainly cast alloy concealed closer with steel sub components and aluminium track, set 75 from the hanging stile. 44 x 337 x 33 15 x 440 x 23 6No. Ø4.8 x 25 steel countersunk screws. 2No. Ø4.8 x 25 steel countersunk screws.
8L	Latch/lock Manufacturer: Reference: Description: Overall size: Forend (h x d x t): Latch body (h x w x d): Strike (h x d x t):	Arrone AR812** A mainly steel latch with stainless steel forend, strike and polymeric dust box, set with the vertical centreline of the latch bolt 920 above the base of the leaf. Affixed using 2No. Ø4.7 x 25 steel countersunk screws. Strike affixed using 2No. Ø3.5 x 17 steel countersunk screws. 235 x 24 x 3 166 x 84 x 15 88 x 24 x 1.6



Item	Component	Information
9L	Euro cylinder Manufacturer: Reference: Description: Overall size:	Arrone AR-KD-5130BB-NP** A mainly brass keyed euro cylinder. 35/35
10L	Escutcheon Manufacturer: Reference: Description: Overall size: Body (Ø x d x t) Cover (Ø x d x t):	Hoppe UK** Arrone AR961/67** A steel escutcheon with a stainless steel cover affixed to both faces of the leaf using 2No. Ø4 x 20 stainless steel countersunk screws and 1No. M5 x 66 through machine screw into threaded post. 51 x 5 x 1.2 53 x 6 x 0.9
11L	Automatic door bottom Manufacturer: Reference: Description: Overall size (h x w x d): Rebate (h x d): Fixings to leaf:	Dixon International Group** Sealmaster Dropseal DRP2712E** A mainly aluminium automatic door bottom with elastomeric sub components and steel fixing plates, set within a rebate at the base of the leaf. 28 x 1035 x 12 29 x 17 2No. Ø4 x 40 steel countersunk screws.
12L	Intumescent – Frame Manufacturer: Reference: Description: Overall size (d x t):	Intumescent Seals Ltd Therm-A-Seal** A graphite based intumescent strip in a PVC holder with self-adhesive on one side, set in a rebate 15 from the unexposed face, fully interrupted at the hinges, strike and closer track. 15 x 4
13L	Intumescent – Hinges Manufacturer: Reference: Description: Overall size (t):	Intumescent Seals Ltd** Therm-A-Strip** An ammonium phosphate based intumescent pad with self-adhesive on one side, adhered beneath all blades. 1
14L	Intumescent – Closer Manufacturer: Reference: Description: Overall size (t): Track and across head: Beneath closer and in rebate:	Intumescent Seals Ltd** Therm-A-Flex** A graphite based intumescent pad with self adhesive on one side, encasing closer track, beneath the ends of the closer including the vertical edges of the rebate in the leaf and covering the top of the closer. 2 1



Item	Component	Information
15L	Intumescent – Latch Manufacturer: Reference: Description: Overall size (t):	Intumescent Seals Ltd** Therm-A-Strip** An ammonium phosphate based intumescent pad with self-adhesive on one side, encasing the latch body and beneath the forend. 1
16L	Intumescent – Strike Manufacturer: Reference: Description: Overall size (t):	Intumescent Seals Ltd** Therm-A-Strip** An ammonium phosphate based intumescent pad with self-adhesive on one side, set beneath the strike and encasing the dust box. 1
17L	Intumescent – Automatic door bottom Manufacturer: Reference: Description: Overall size (t):	Intumescent Seals Ltd** Therm-A-Strip** An ammonium phosphate based intumescent pad with self-adhesive on one side, encasing drop seal body. 1
18L	Intumescent – Glazing seal Manufacturer: Reference: Description: Overall size (w x d):	Sealmaster** Intumescent Foam Tape** An open cell foam** tape with self adhesive on one side, adhered at the interface of the glazing and beads. 10** x 5**
19L	Fire stopping detail Description:	Gaps between the frame and the associated construction were filled with Unifrax Insulfrax LTX blanket and capped with Firewise Intumescent & Acoustic Acrylic Sealant.



Appendix 1 Table 2 – Right hand specimen

Item	Component	Information
1R	<p>Frame Manufacturer: Reference: Description:</p> <p>Fixing to associated construction:</p> <p>Overall size (h x w x d): Cross section size (w x d): Density (kg/m³):</p>	<p>By Dezign Carpentry** Standard Plant-On-Stop Casing** A 3-sided rebated European Redwood** frame with planted stops, 10h rebated joints and a 5w chamfered edge on the unexposed face. Frame joints affixed using Ø5 x 70 steel countersunk screws, set at 41 centres vertically and 1No. horizontally at mid depth.</p> <p>Ø5 x 90 steel countersunk screws, set 140 below the head, 180 above the threshold and at 470 centres.</p> <p>2222 x 999 x 71 30 x 71 Nominally 510** (Measured 549**)</p>
2R	<p>Stops Manufacturer: Reference: Description:</p> <p>Density (kg/m³): Section size (w x d):</p>	<p>By Dezign Carpentry** Standard Plant-On Stop** European Redwood** planted stops affixed to the head and jambs using 16swg# x 38# pneumatically fired steel pins, set 5 to 35 from head corners and at 190 to 250 centres.</p> <p>Nominally 510** (Measured 549**) 12 x 22</p>
3R	<p>Leaf Manufacturer: Reference: Description:</p> <p>Overall size (h x w x t): Weight (kg): Sub-components: Core: Manufacturer: Reference: Description: Density (kg/m³): Overall size (t):</p> <p>Lippings: Manufacturer: Reference: Description:</p> <p>Density (kg/m³): Overall size (t): Glazing apertures: Description:</p> <p>Overall size (h x w):</p>	<p>By Dezign Carpentry** A01** A particleboard core with Edgeman** lippings and 2No. apertures for glazing. 2183 x 934 x 44 49.3 including ironmongery</p> <p>Wood International Agency** Marksman 44** A particleboard core. Nominally 535** (Measured 553** to 560**) 44</p> <p>Wood International Agency** L4E Edgeman Engineered Lipping** Engineered** lippings adhered to the vertical edges of the core using Nordbord Caberfix D4 PU adhesive**. 778** 6** with 3** x 3** chamfers</p> <p>2No. apertures for glazing set 199 and 582 above the base of the leaf and 100 from the closing stile.</p>



Item	Component	Information
3R cont.	Upper pane: Lower pane:	1501± x 249± 302± x 249±
4R	Glazing Manufacturer: Reference: Pane size (h x w x t): Upper pane: Lower pane: Sight size (h x w): Upper pane: Lower pane:	Fireglass North Pyrobelite 7 1494 x 244 x 7** 294 x 244 x 7** 1468 x 220 271 x 220
5R	Glazing beads Manufacturer: Reference: Description: Density (kg/m ³): Overall size (h x w): Upper pane: Lower pane: Section size (w x d): Splay angle (°):	By Dezign Carpentry** CA1** Sapele** glazing beads affixed using 16swg± x 38± pneumatically fired steel pins set 50 from internal corner and at 200 centres. Nominally 640** (Measured 746** to 809**) 1506 x 258 308 x 258 19.5** x 19** 35**
6R	Hinges Manufacturer: Reference: Description: Blade size (h x w x t): Knuckle size (Ø): Fixings to frame: Fixings to leaf:	Arrone AR8180-SSS** 3No. stainless steel butt hinges with bearings set 150, 350 and 1900 from the top of the leaf to the top of the blade. 101 x 31 x 3 14 4No. Ø4.5 x 30 stainless steel countersunk screws. 4No. Ø4.5 x 30 stainless steel countersunk screws.
7R	Closer Manufacturer: Reference: Description: Body size (h x w x d): Arm (h x w x d): Fixings to leaf: Fixings to frame:	Arrone AR1500-SE-SE A mainly cast alloy closer with steel sub components, set 19** below the head of the leaf and 113** from the closing stile. 68 x 255 x 56 22 x 417 x 6 4No. Ø5.5 x 32 steel raised countersunk screws. 2No. Ø5 x 25 steel pan head countersunk screws.



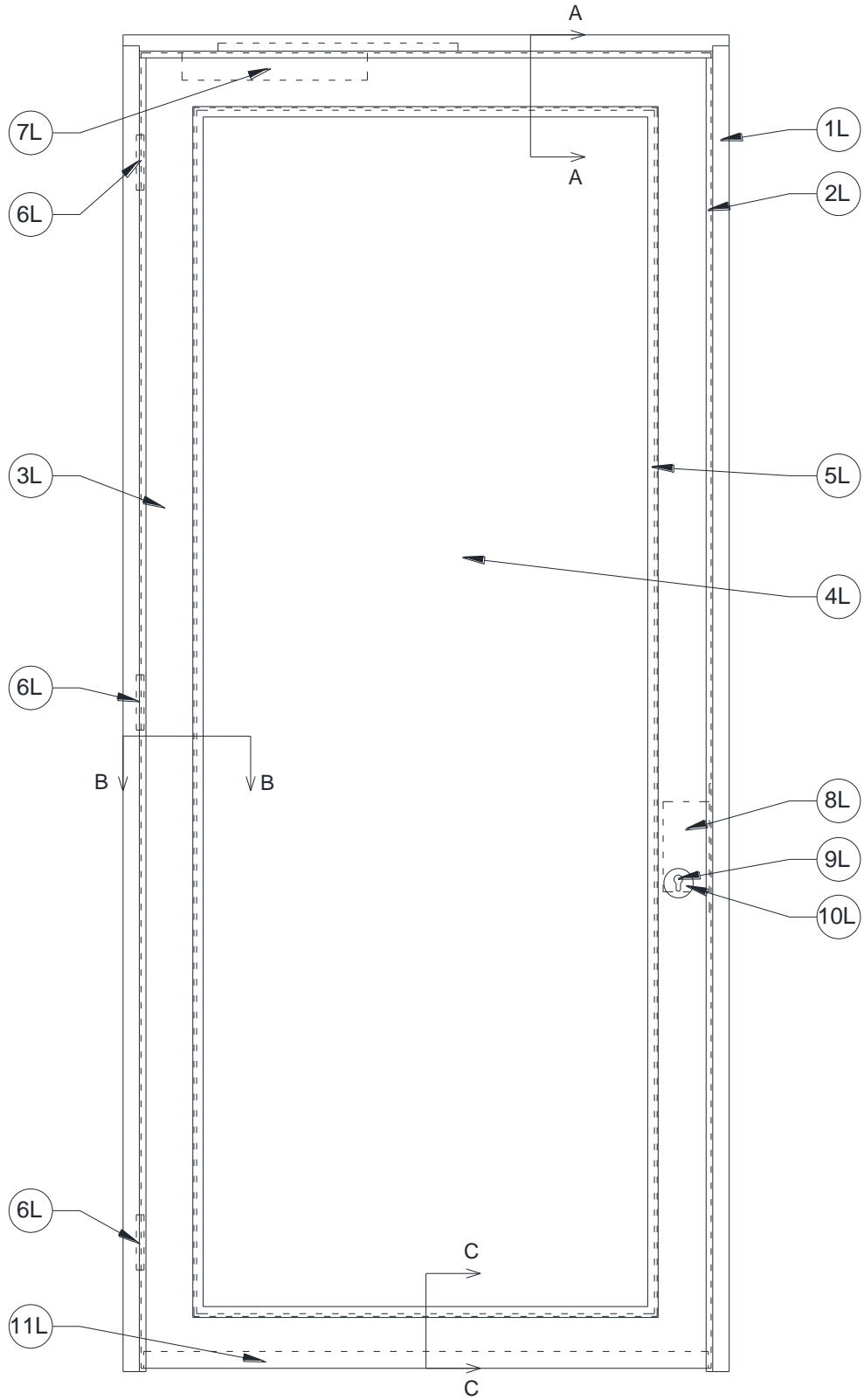
Item	Component	Information
8R	Latch/lock Manufacturer: Reference: Description: Overall size: Forend (h x d x t): Latch body (h x w x d): Strike (h x d x t):	Arrone AR810 Sashlock** A mainly steel latch with stainless steel forend, strike and polymeric dust boxes, set with the vertical centreline of the latch bolt 920 above the base of the leaf, affixed using 2No. Ø3.5 x 20 stainless steel countersunk screws. Strike affixed using 3No. Ø3.5 x 32 steel countersunk screws. 235 x 24 x 3 166 x 84 x 15 170 x 39 x 1.4 including a 127h x 15d tongue
9R	Handleset Manufacturer: Reference: Description: Overall size: Body (Ø x d x t): Handle (Ø x w): Cover (Ø x d x t):	Hoppe 1385/42K An aluminium lever handle with polymeric rose and aluminium cover. Affixed using 2No. Ø3 x 15 stainless steel countersunk screws per face and 2No. M4 x 35 steel machine screws into threaded posts. 50 x 5 x 2 24 x 142 52 x 9 x 1
10R	Euro cylinder Manufacturer: Reference: Description: Overall size:	Arrone AR-KD-5130-BB-NP** A nickel plated brass euro cylinder. 35/35
11R	Escutcheon Manufacturer: Reference: Description: Overall size: Body (Ø x d x t): Cover (Ø x d x t):	Hoppe UK** NB321/67-SSS** A steel escutcheon with a stainless steel cover affixed using 2No. Ø4 x 20 stainless steel countersunk screws. 51 x 5 x 1.2 53 x 6 x 0.9
12R	Automatic door bottom Manufacturer: Reference: Description: Overall size (h x w x d): Rebate (h x d): Fixings to the leaf:	Dixon International Group** Sealmaster Dropseal DRP2712E** A mainly aluminium automatic door bottom with elastomeric sub components and steel fixing plates, set within a rebate at the base of the leaf. 28 x 930 x 12 29 x 17 2No. Ø4 x 40 steel countersunk screws



Item	Component	Information
13R	Intumescent – Frame Manufacturer: Reference: Description: Overall size (w x d):	Intumescent Seals Ltd Therm-A-Seal** A graphite based intumescent strip in a PVC holder with self-adhesive on one side, set in a rebate 12 from the chamfered edge of the exposed face, fully interrupted at the hinges and strike. 15 x 4
14R	Intumescent – Hinges Manufacturer: Reference: Description: Overall size (t):	Intumescent Seals Ltd** Therm-A-Strip** An ammonium phosphate based intumescent pad with self-adhesive on one side, adhered beneath all blades. 1
15R	Intumescent – Latch Manufacturer: Reference: Description: Overall size (t):	Intumescent Seals Ltd** Therm-A-Strip** An ammonium phosphate based intumescent pad with self-adhesive on one side, encasing the latch body and beneath forend. 1
16R	Intumescent – Strike Manufacturer: Reference: Description: Overall size (t):	Intumescent Seals Ltd** Therm-A-Strip** An ammonium phosphate based intumescent pad with self-adhesive on one side, set beneath the strike and encasing dust boxes. 1
17R	Intumescent – Automatic door bottom Manufacturer: Reference: Description: Overall size (t):	Intumescent Seals Ltd** Therm-A-Strip** An ammonium phosphate based intumescent pad with self-adhesive on one side, encasing drop seal body. 1
18R	Intumescent – Glazing Seal Manufacturer: Reference: Description: Overall size (t):	Sealmaster** Intumescent Foam Tape** An open cell foam** intumescent with self-adhesive on one side, adhered at the interface of the glazing and beads. 10** x 5**
19R	Fire stopping detail Description:	Gaps between the frame and the associated construction were filled with Unifrax Insulfrax LTX blanket and capped with Firewise Intumescent & Acoustic Acrylic Sealant.

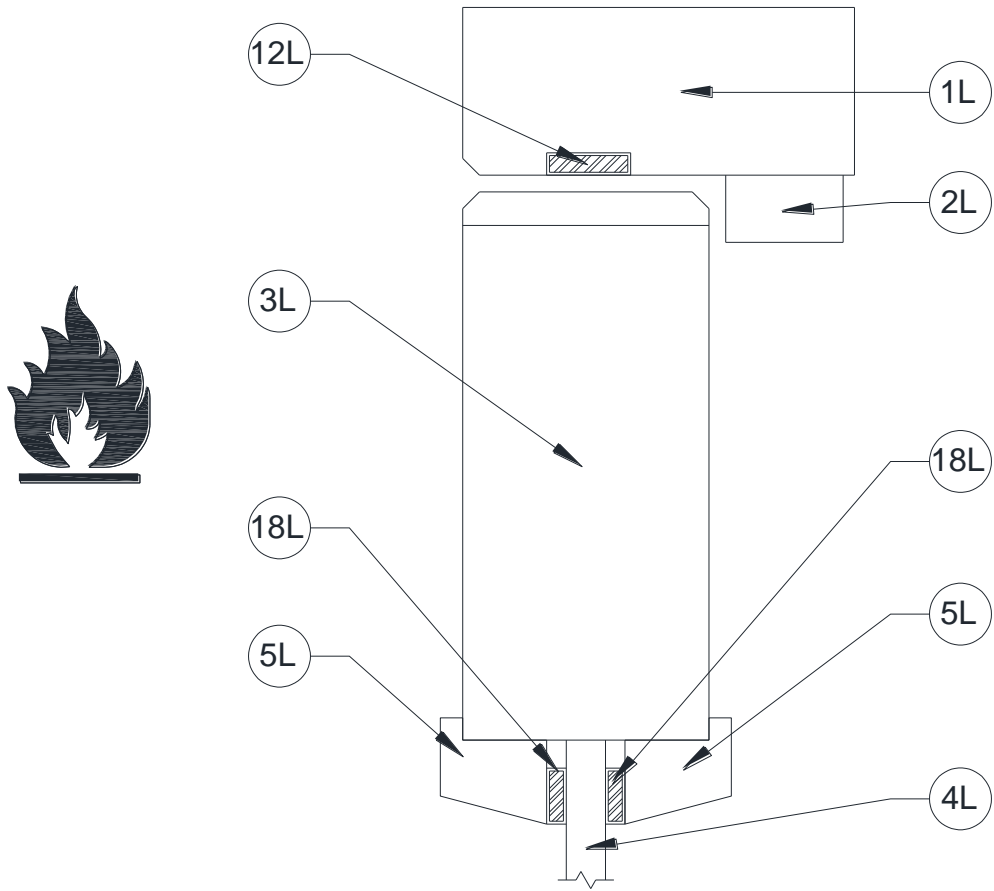


Appendix 1 Figure 1 – Left hand doorset elevation (unexposed face view) inc. hidden detail

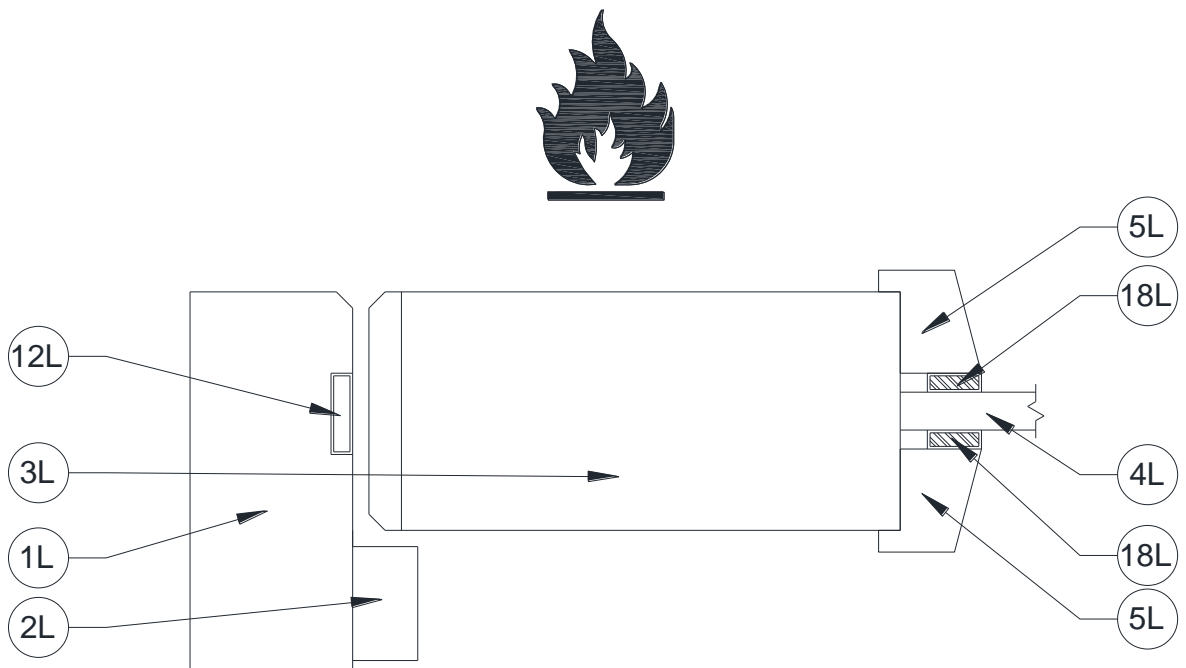




Appendix 1 Figure 2 – Section A – A

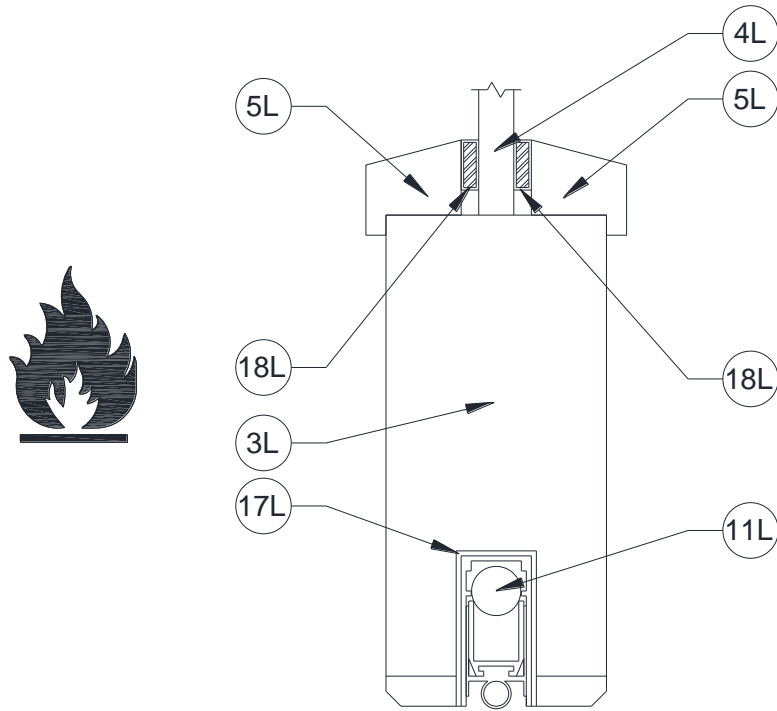


Appendix 1 Figure 3 – Section B – B



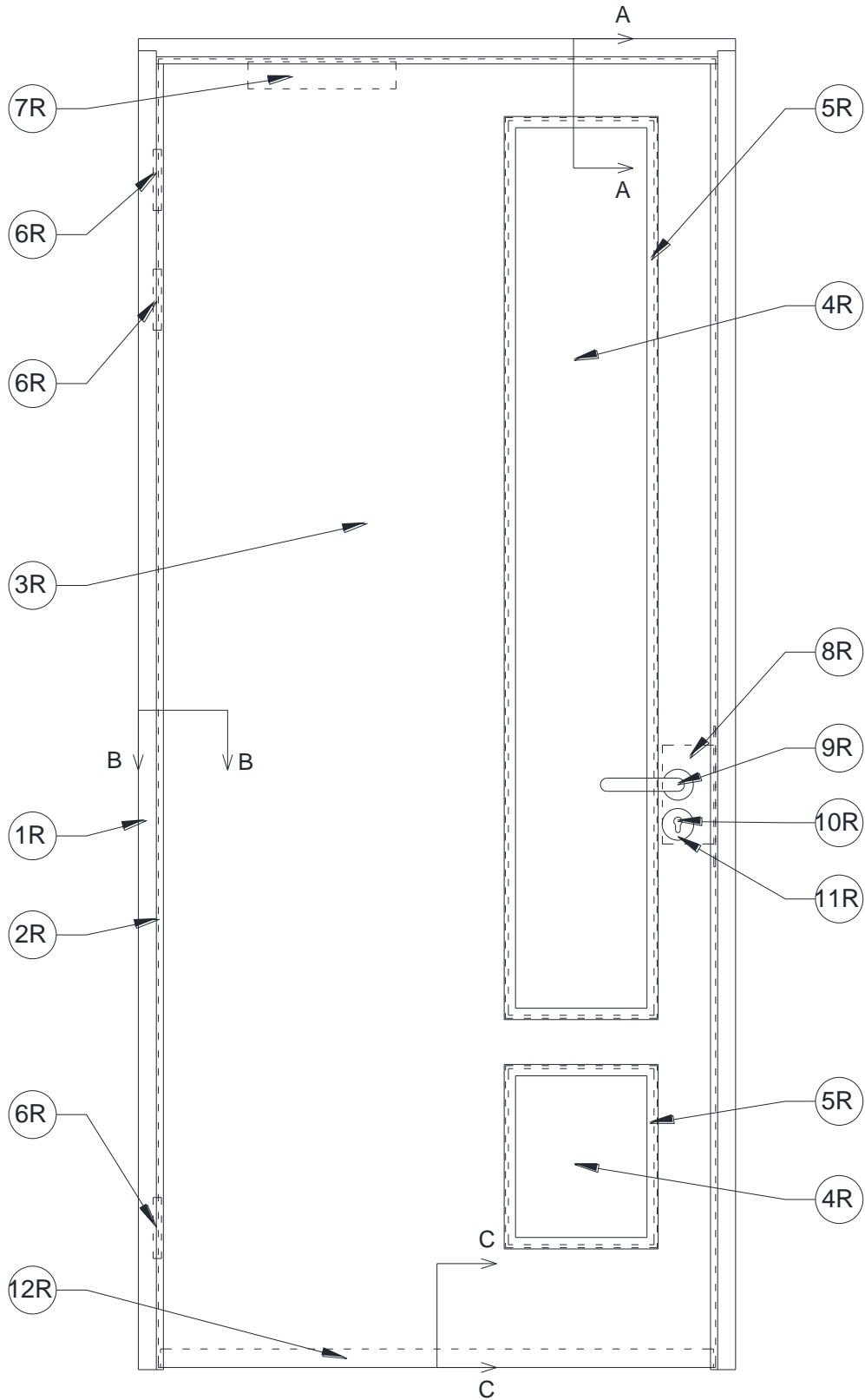


Appendix 1 Figure 4 – Section C – C



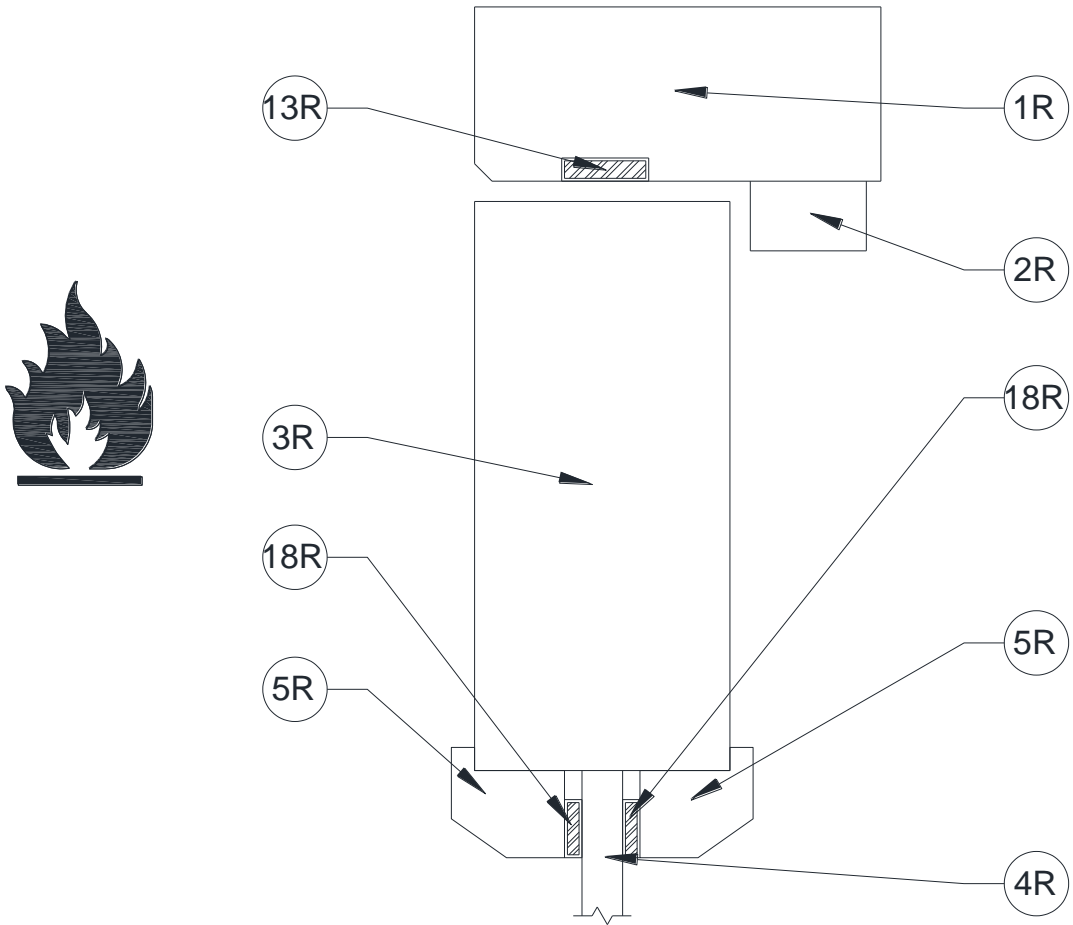


Appendix 1 Figure 5 – Right hand doorset elevation (unexposed face view) inc. hidden detail

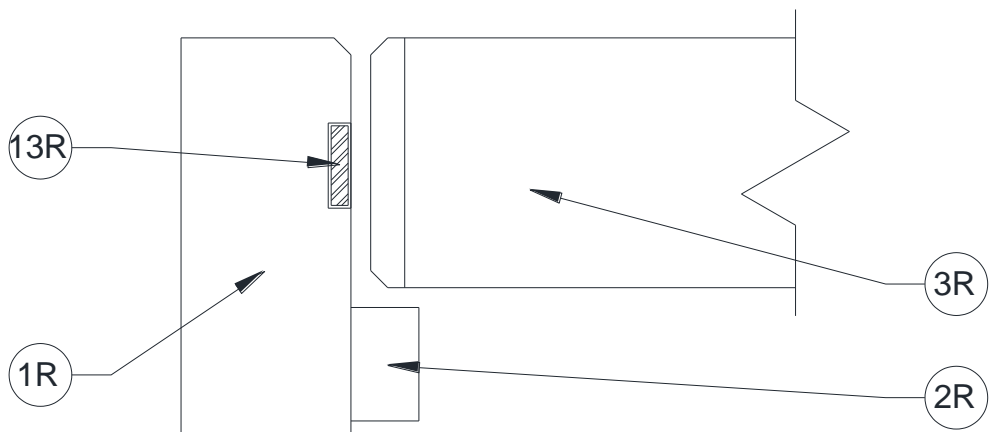




Appendix 1 Figure 6 – Section A – A

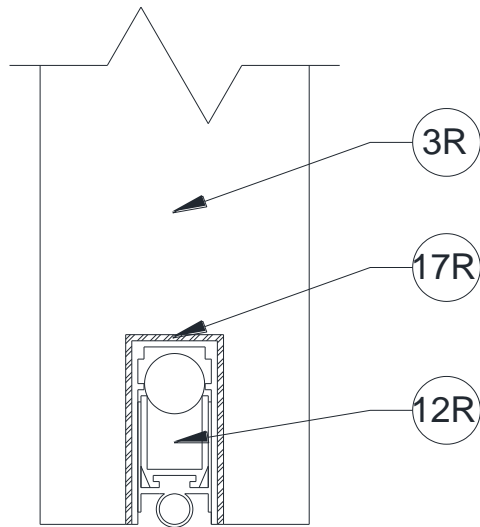


Appendix 1 Figure 7 – Section B – B





Appendix 1 Figure 8 – Section C - C





APPENDIX 2 PHOTOGRAPHS

Appendix 2.1 Pre-test photos

Photo 2.1.1 Left hand specimen



Photo 2.1.2 Left hand specimen

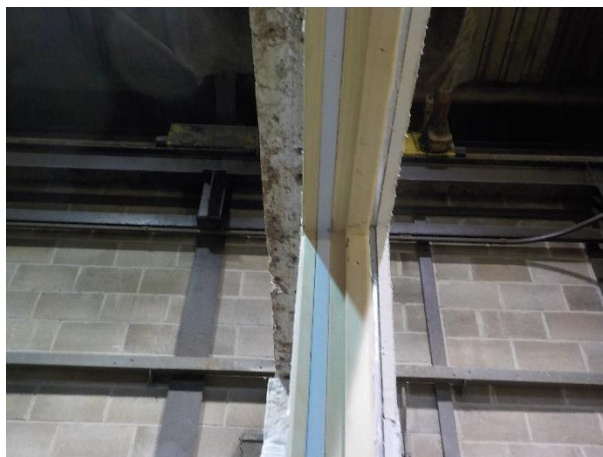


Photo 2.1.3 Left hand specimen

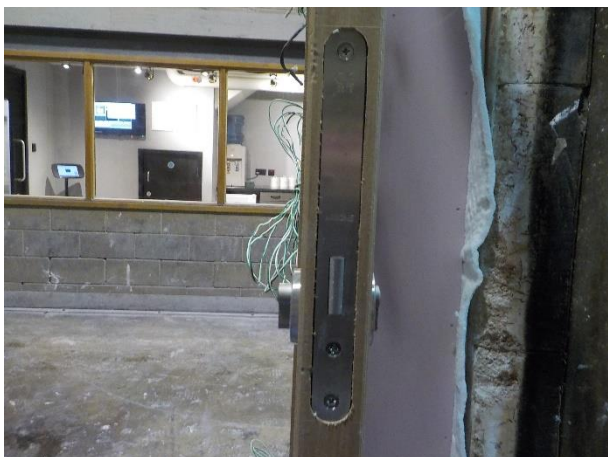


Photo 2.1.4 Left hand specimen

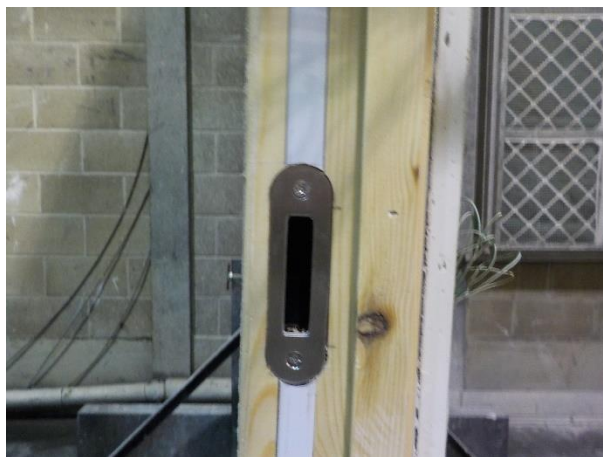


Photo 2.1.5 Left hand specimen



Photo 2.1.6 Left hand specimen

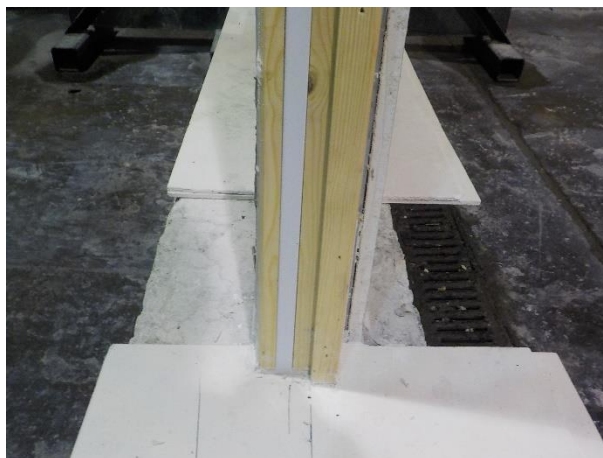




Photo 2.1.7 Left hand specimen



Photo 2.1.8 Left hand specimen



Photo 2.1.9 Left hand specimen



Photo 2.1.10 Left hand specimen



Photo 2.1.11 Left hand specimen



Photo 2.1.12 Left hand specimen





Photo 2.1.13 Right hand specimen



Photo 2.1.14 Right hand specimen



Photo 2.1.15 Right hand specimen



Photo 2.1.16 Right hand specimen

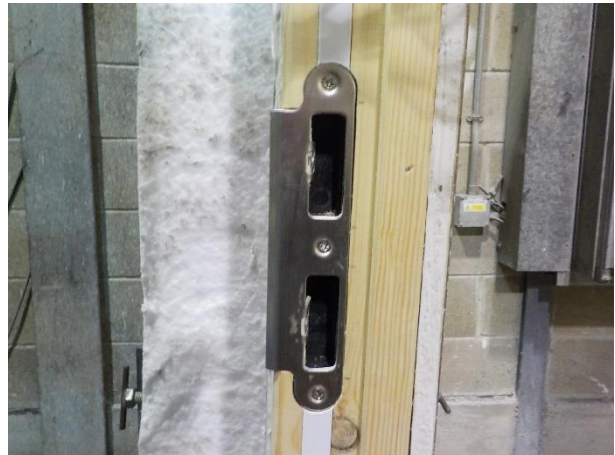


Photo 2.1.17 Right hand specimen



Photo 2.1.18 Right hand specimen





Photo 2.1.19 Right hand specimen



Photo 2.1.20 Right hand specimen



Photo 2.1.21 Right hand specimen



Photo 2.1.22 Right hand specimen



Photo 2.1.23 Right hand specimen



Photo 2.1.24 Right hand specimen





Photo 2.1.25 Left hand specimen

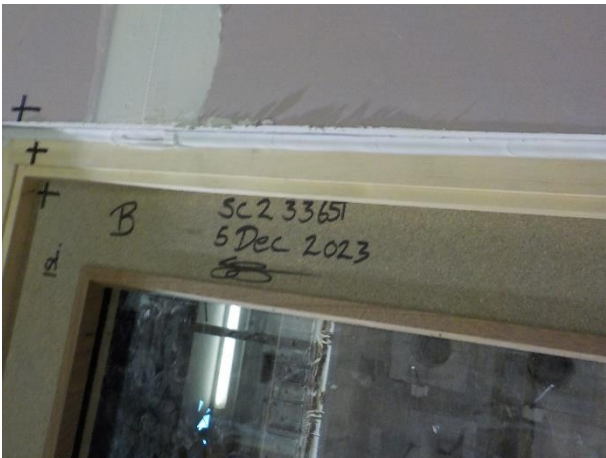


Photo 2.1.26 Right hand specimen

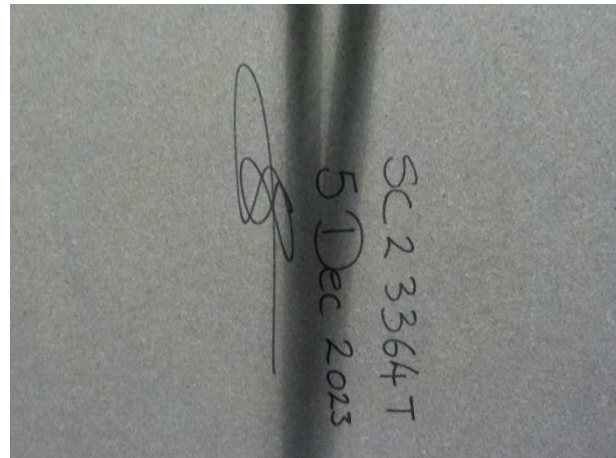




Photo 2.1.27





Appendix 2.2 During test photos

Photo 2.2.1



Photo 2.2.2





Photo 2.2.3



Photo 2.2.4





Photo 2.2.5





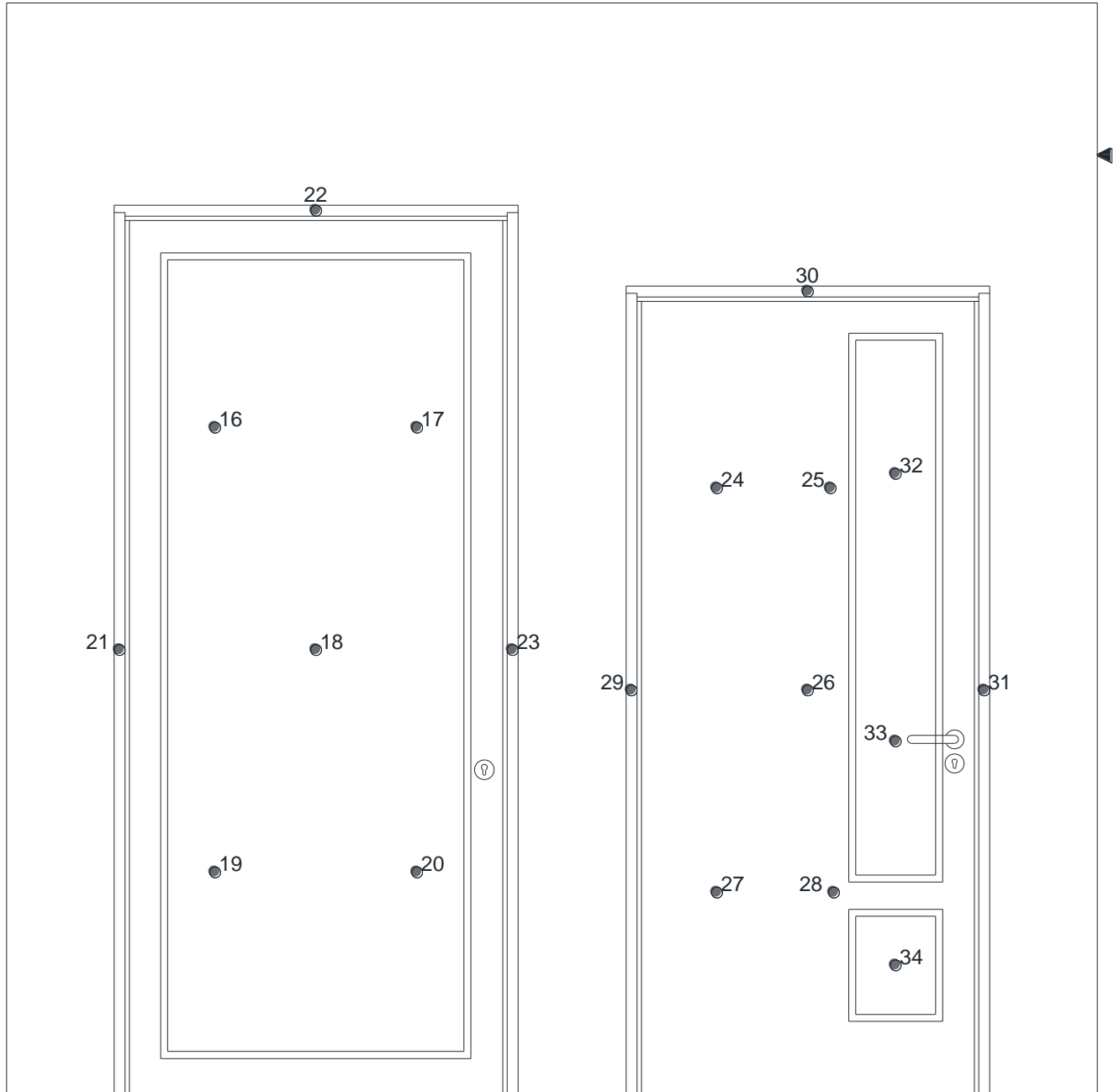
Appendix 2.3 Post-test photos

Photo 2.3.1





APPENDIX 3 POSITIONING OF INSTRUMENTATION



- Unexposed face specimen thermocouple
- ◀ Furnace pressure measurement position



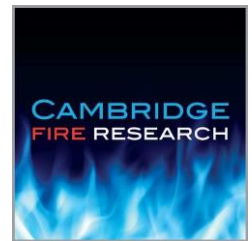
APPENDIX 4 RECORDED THERMOCOUPLE DATA

Time min	T/C 16 °C	T/C 17 °C	T/C 18 °C	T/C 19 °C	T/C 20 °C	T/C 21 °C	T/C 22 °C	T/C 23 °C	T/C 24 °C	T/C 25 °C	T/C 26 °C	T/C 27 °C	T/C 28 °C
0	17	17	17	17	16	16	16	16	16	16	16	16	16
1	27	27	25	25	24	15	16	16	18	17	16	16	16
2	41	40	36	35	33	16	17	16	17	16	16	16	16
3	63	63	55	52	53	16	18	16	17	16	16	16	16
4	92	98	86	79	82	16	19	16	16	16	16	16	16
5	101	109	100	102	99	16	33	16	16	16	16	16	16
6	103	114	100	106	98	16	34	17	17	16	16	16	16
7	107	122	102	110	100	16	35	17	16	16	16	16	16
8	113	130	104	115	103	16	36	17	16	17	16	16	16
9	120	138	107	123	107	17	37	18	17	18	17	17	16
10	127	144	111	131	111	17	38	19	18	20	17	17	18
11	135	150	117	140	117	18	40	19	20	25	19	20	22
12	143	156	124	147	122	18	41	20	22	29	22	23	27
13	151	163	132	147	130	20	43	21	26	35	26	28	33
14	160	173	140	150	136	21	44	22	29	40	31	33	38
15	169	183	147	155	144	22	45	23	33	44	35	38	43
16	180	197	157	162	151	23	46	24	36	48	39	42	47
17	193	214	168	170	160	25	48	25	39	51	42	46	51
18	208	230	181	181	170	27	49	27	42	54	46	49	54
19	225	250	195	192	178	28	51	27	44	56	48	51	55
20	255	265	399	198	190	30	54	29	47	59	51	53	58
21	x	x	x	x	x	32	56	30	49	60	53	55	60
22	x	x	x	x	x	33	59	31	51	62	55	56	61
23	x	x	x	x	x	34	61	32	51	62	55	56	60
24	x	x	x	x	x	35	64	33	53	64	57	57	61
25	x	x	x	x	x	37	67	34	54	65	58	58	59
26	x	x	x	x	x	39	70	36	56	66	60	59	62
27	x	x	x	x	x	41	74	37	58	66	61	60	63
28	x	x	x	x	x	42	76	38	59	68	62	61	63
29	x	x	x	x	x	43	78	39	60	68	62	62	63
30	x	x	x	x	x	45	81	41	61	69	63	63	65
31	x	x	x	x	x	46	84	42	62	69	64	63	65
32	x	x	x	x	x	48	87	44	63	70	65	64	65
33	x	x	x	x	x	49	101	44	64	71	65	65	66
34	x	x	x	x	x	50	114	46	64	71	66	65	66
35	x	x	x	x	x	52	86	46	65	72	67	66	67
36	x	x	x	x	x	53	72	46	66	72	68	67	67



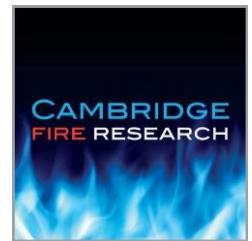
Time	T/C 29	T/C 30	T/C 31	T/C 32	T/C 33	T/C 34
min	°C	°C	°C	°C	°C	°C
0	16	16	16	17	14	16
1	16	17	16	28	5	24
2	16	17	16	45	x	32
3	16	17	16	73	x	51
4	16	17	16	106	x	76
5	16	17	16	115	x	104
6	16	20	16	126	x	116
7	16	28	17	133	106	119
8	17	36	17	138	108	126
9	17	42	20	143	107	136
10	17	41	21	148	106	145
11	18	49	22	153	110	148
12	18	47	21	159	116	153
13	20	45	22	169	123	160
14	20	42	22	180	127	168
15	22	41	23	192	131	178
16	23	40	24	207	136	192
17	24	40	25	222	143	207
18	26	40	26	234	153	221
19	27	40	27	248	158	231
20	29	41	28	266	165	247
21	31	42	29	277	171	252
22	33	42	31	285	177	223
23	34	42	33	302	192	242
24	37	44	35	320	205	257
25	38	45	36	326	208	288
26	40	47	39	341	215	302
27	41	48	42	352	221	303
28	43	50	43	361	223	326
29	44	51	45	370	225	337
30	46	53	46	379	228	351
31	47	54	47	386	231	359
32	48	56	48	393	237	368
33	49	57	49	397	241	376
34	49	59	50	400	248	379
35	50	60	51	402	249	384
36	51	62	52	404	251	388

x Thermocouple malfunction



APPENDIX 5 INDEPENDENT REPORT

<p>Proud to be part of </p>		SAMPLING VISIT REPORT		Company Name	Wood International Agency Ltd
				Establishment No.	E003760
				BM TRADA Approved Body ID: 1224	
Company Head Office Address	Wood International Agency Ltd Woods House 16 King Edward Road Brentwood Essex CM5 0RQ		Contact Name	Neil Harrison	
			Telephone	+44 (0) 1277 232991	
			Email Address	doors@woodia.co.uk	
Location where sampling was conducted if different from Head Office Address			Visit Date	BMT Representative	
By Deziign Carpentry, Unit 11B ERW Las, Colomendy Ind Est, Denbigh LL16 5TA			12/03/2024	Michael Chorlton	
Requirement		Evidence / Comments			
Opening Meeting (names of those present)		Mr Neil Harrison / Mr Shaun Harrison			
Contract Reference		SC23364T			
Technical Specification document / FoA reference Photographs to be taken of all critical areas highlighted in the Technical Specification		Technical Drawing: WIAD-MMN44-ITT-344-A01-P1 Technical Specification: WIAD-MMN44-ITT-344-A01 Marked up technical specification made by the sampler and must be read in conjunction with this sampling report.			
Description of product(s) sampled		Single leaf glazed doorset incorporating WIAL Marksman 44 core, Lipped on 2 long edges and hung in a timber frame on 3No. Butt hinges. Operated by surface mounted overhead closer and secured with DIN latch operated by handle and Eurocylinder.			
Product identification / reference numbers / codes		N/A			
Batch number(s)		N/A			
Date of manufacture		In stages between 05/12/2023 and 11/12/2023 with final review 12/03/2024			
Quantity of stock and size of sample(s) taken		1No. Doorset			
Traceability of material records ie Purchase Orders and delivery notes		<p>Items with traceability: Door cores under BM TRADA Sampling SC23282B. Hinges. Lipping adhesives. Glazing. Hardware intumescent protection. Door closer. Escutcheon. Eurocylinder. Frame construction and jointing. Bead and frame species, density and dimension check. Lipping density check. Hardware intumescent protection. Drop seal. Glazing intumescent seals.</p> <p>Please send Sampling Pack to High Wycombe Laboratory FOA Connor Payne.</p> <p>Items with limited or no traceability: Fire stopping and sealing details and materials. Stop and fixings. DIN Latch and Keep. Handleset. Traceability for edgeman lippings.</p>			
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		<input checked="" type="checkbox"/> Glazing assembly (where applicable) <input checked="" type="checkbox"/> Hardware prep and fitting (where applicable)		<input checked="" type="checkbox"/> Finished doorset with markings <input checked="" type="checkbox"/> Sampling pack discussion	
Details of any further FPC processes witnessed during the visit.		By Deziign do not have a formalised FPC in place. All manufacture made against the technical specification utilising traditional joinery tools and methods. Dimensional checks made throughout manufacture.			
Determine the essential characteristics of the product and confirm the details of in-process checks conducted on the sample to ensure conformity.		Door core selection, trimming and lipping application. Hardware selection, preparation, intumescent protection and fixings. Glazing selection, preparation, intumescent protection and bead fixings.			
State any items from the Technical Specification / FoA that were not witnessed and require further lab sampling		<input type="checkbox"/> Side screen / overpanel <input checked="" type="checkbox"/> Door closer		<input checked="" type="checkbox"/> Handles <input type="checkbox"/> Frame re-assembly <input checked="" type="checkbox"/> Other (see tech spec marked with 'not seen')	
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		Refer to marked up technical specification. Areas in Green = verified during sampling Areas in Blue = Additional sampler notes Areas in Yellow = Areas without verification or additional evidence may be required. Areas in yellow with Asterisk * = Will be reported "As stated by customer"			
Closing Meeting (names of those present)		No formalised closing meeting possible. Marked up TST and draft sampling report sent for approval and signing.			
Declaration		I declare that the product/s witnessed during this sampling visit are representative of normal production.			
Company Representative Name (Print)			Company Representative Position		
Neil Harrison			Director		
BM TRADA Representative Signature			Company Representative Signature		
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.					



 Proud to be part of		SAMPLING VISIT REPORT		Company Name	Wood International Agency Ltd
				Establishment No.	E003760
BM TRADA Approved Body ID: 1224					
Company Head Office Address	Wood International Agency Ltd Woods House 16 King Edward Road Brentwood Essex CM5 0RQ			Contact Name	Neil Harrison
				Telephone	+44 (0) 1277 232991
				Email Address	doors@woodia.co.uk
Location where sampling was conducted if different from Head Office Address				Visit Date	BMT Representative
By Dezign Carpentry, Unit 11B ERW Las, Colomendy Ind Est, Denbigh LL16 5TA				04/09/2024	Michael Chorlton
Requirement		Evidence / Comments			
Opening Meeting (names of those present)		Mr Neil Harrison / Mr Shaun Harrison			
Contract Reference		SC23365T			
Technical Specification document / FoA reference Photographs to be taken of all critical areas highlighted in the Technical Specification		Technical Drawing: WIAD-MMN44-ITT-664-A15-P1 Rev A Technical Specification: WIAD-MMN44-ITT-664-A15 Marked up technical specification made by the sampler and must be read in conjunction with this sampling report.			
Description of product(s) sampled		Single leaf pattern 10 glazed doorset incorporating WIAL Marksman 44 core, Lipped on 4 edges and hung in a timber frame on 3No. Butt hinges. Operated by concealed overhead closer and secured with DIN deadlock operated by Eurocylinder.			
Product identification / reference numbers / codes		N/A			
Batch number(s)		N/A			
Date of manufacture		In stages between 05/12/2023 and 10/12/2023 with final review 04/09/2024			
Quantity of stock and size of sample(s) taken		1No. Doorset			
Traceability of material records ie Purchase Orders and delivery notes		Items with traceability: Door cores under BM TRADA Sampling SC23282B. Hinges. Lipping adhesives. Glazing. Hardware intumescent protection. Door closer. Escutcheon. Eurocylinder. Lipping. Bead and frame species, density and dimension check. Closer intumescent. Glazing intumescent seals. Drop seal. Hardware intumescent protection. DIN deadlock and Keep Please send Sampling Pack to High Wycombe Laboratory FOA Connor Payne. Items with limited or no traceability: Frame to supporting construction fixings. Fire stopping and sealing details and materials. Stop fixings.			
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		<input checked="" type="checkbox"/> Glazing assembly (where applicable)		<input checked="" type="checkbox"/> Finished doorset with markings	
		<input checked="" type="checkbox"/> Hardware prep and fitting (where applicable)		<input checked="" type="checkbox"/> Sampling pack discussion	
Details of any further FPC processes witnessed during the visit.		By Dezign do not have a formalised FPC in place. All manufacture made against the technical specification utilising traditional joinery tools and methods. Dimensional checks made throughout manufacture.			
Determine the essential characteristics of the product and confirm the details of in-process checks conducted on the sample to ensure conformity.		Door core selection, trimming and lipping application. Hardware selection, preparation, intumescent protection and fixings. Glazing selection, preparation, intumescent protection and bead fixings.			
State any items from the Technical Specification / FoA that were not witnessed and require further lab sampling		<input type="checkbox"/> Side screen / overpanel	<input type="checkbox"/> Handles	<input checked="" type="checkbox"/> Other (see tech spec marked with 'not seen')	
		<input type="checkbox"/> Door closer	<input type="checkbox"/> Frame re-assembly		
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		Refer to marked up technical specification. Areas in Green = verified during sampling Areas in Blue = Additional sampler notes Areas in Yellow = Areas without verification or additional evidence may be required. Areas in yellow with Asterisk = Will be reported "As stated by customer"			
Closing Meeting (names of those present)		No formalised closing meeting possible. Marked up TST and draft sampling report sent for approval and signing.			
Declaration		I declare that the product/s witnessed during this sampling visit are representative of normal production.			
Company Representative Name (Print)			Company Representative Position		
Neil Harrison			Director		
BM TRADA Representative Signature			Company Representative Signature		
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.					



APPENDIX 6 REVISION HISTORY

Revision	Identification of changed information and reasons	Prepared by	Checked by
0	Original issue	D Littlewood	Tom Smith
1	Sampling report amended with updated version at the request of the sponsor.	Tom Smith	S Plummer