

**Title:**

The Fire Resistance Performance Of 3 Specimens of Floor Mounted and 1 Specimen of Wall Mounted Cavity Barrier Systems, When Tested In Accordance With EN 1366-4:2021

**Date Of Test:**

22 July 2024

**Issue 1**

19 December 2024

**WF Report No:**

545649/R



**Prepared for:**

**Timloc Building Products**

Timloc House  
Ozone Park  
Howden  
East Riding of Yorkshire  
DN14 7SD



0249

# Test Specimens

## Summary of Tested Specimens

For the purpose of the test the floor specimens were referenced A to C and the wall specimen was referenced F. Two additional Specimens were not the subject of this test report at the request of the test sponsor.

The section of floor had overall nominal dimensions of 2250 mm long by 1750 mm wide by 600 mm thick and was made up of autoclaved aerated concrete lintels arranged to provide three cavities of varying widths and depths which were all 1200 mm in length.

The section of wall had overall dimensions of 1800 mm high by 1800 mm wide by 250 mm thick and was made up of autoclaved aerated concrete lintels arranged to provide three cavities of varying widths and depths which were all 1200 mm in length.

Specific details of each of the seals are given in the tables below:

## Specimens

Specimen	Substrate	Seal Details
A	15mm Orientated Strand board to 15mm Orientated Strand board	Sealed with a 'TFRSTOP 50' stone mineral wool barrier of dimensions 1200mm x 75mm x 150mm. Compression fitted into the aperture 250mm from the exposed face with 25mm compression across the width.
B		Sealed with a 'TFRSTOP 100' stone mineral wool barrier of dimensions 1200mm x 125mm x 150mm. Compression fitted into the aperture 250mm from the exposed face with 25mm compression across the width.
C		Sealed with a 'TFRSTOP 150' stone mineral wool barrier of dimensions 1200mm x 185mm x 150mm (comprising two layers of insulation 120mm and 65mm thick). Compression fitted into the aperture 250mm from the exposed face with 25mm compression across the width.
F		Sealed with a 'TFRSTOP 150' stone mineral wool barrier of dimensions 1200mm x 185mm x 150mm (comprising two layers of insulation 120mm and 65mm thick). Compression fitted into the aperture 250mm from the exposed face with 25mm compression across the width.

Detailed drawings of the test specimen(s) and a comprehensive description of the test construction based on a detailed survey of the specimen(s) and information supplied by the sponsor of the test are included in the Test Specimen and Schedule of Components sections of this report.

# Performance Criteria and Test Results

<b>Integrity</b>	It is required that the specimen retains its separating function, without either causing ignition of a cotton pad when applied as specified in BS EN 1366-4: 2021 or resulting in sustained flaming on the unexposed surface.																								
<b>Insulation</b>	The requirements of the standard are that the maximum temperature rise shall not be greater than 180°C. Insulation failure also occurs simultaneously with integrity failure as specified in BS EN 1366-4: 2021.																								
<b>Test Results</b>	<table border="1"><thead><tr><th rowspan="2">Specimen</th><th colspan="2">Integrity (minutes)</th><th rowspan="2">Insulation (minutes)</th></tr><tr><th>Cotton Pad</th><th>Sustained flaming</th></tr></thead><tbody><tr><td>A</td><td>66*</td><td>66*</td><td>66*</td></tr><tr><td>B</td><td>66*</td><td>66*</td><td>66*</td></tr><tr><td>C</td><td>66*</td><td>66*</td><td>66*</td></tr><tr><td>F</td><td>66*</td><td>66*</td><td>66*</td></tr></tbody></table> <p>*Test was discontinued after a period of 66 minutes.</p>			Specimen	Integrity (minutes)		Insulation (minutes)	Cotton Pad	Sustained flaming	A	66*	66*	66*	B	66*	66*	66*	C	66*	66*	66*	F	66*	66*	66*
Specimen	Integrity (minutes)		Insulation (minutes)																						
	Cotton Pad	Sustained flaming																							
A	66*	66*	66*																						
B	66*	66*	66*																						
C	66*	66*	66*																						
F	66*	66*	66*																						

**Date of Test** 22 July 2024

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# Signatories

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Responsible Officer  
**Muhammad Ali Rana\***  
Technical Officer



Approved  
**G. Edmonds\***  
Senior Technical Officer

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

Report Issued

**Date:** 19 December 2024

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# Revision History

Issue No:	Re-issue Date:
Revised By:	Approved By:
Reason for Revision:	

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# Test Conditions

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<b>Standard</b>	<p>BS EN 1366-4: 2021 Fire resistance tests for service installations – Part 4: Linear joint seals.</p> <p>Clause 6.2 of BS EN 1366-4: 2021 specifies a typical length to width for a linear joint seal is 10:1. The length to width may be &lt; 10:1 in case the heated length of the linear joint is <math>\geq 2600</math> mm. This requirement was not satisfied for Specimens C and F due to the reduced length of Specimens; therefore, the test was conducted generally in accordance with the standard. Test results obtained are only valid to the Specimens as tested.</p> <p>The test was not conducted under the requirements of Warringtonfire's UKAS scope of accreditation.</p>
<b>Sampling</b>	<p><b>Warringtonfire</b> was not involved in the sampling or selection of the tested specimen or any of the components.</p> <p>The results obtained during the test only apply to the test samples as received and tested by <b>Warringtonfire</b>.</p>
<b>Installation</b>	<p>The aerated concrete floor and wall were constructed by representative of <b>Warringtonfire</b> between the 8 and 12 July 2024. The gap sealing systems were supplied by a representative of Timloc Building Products and installed by a third-party fire stopping installer on the 21 of July 2024.</p>
<b>Conditioning</b>	<p>The specimen's storage, construction, and test preparation took place in the test laboratory over a total, combined time of 15 days. Throughout this period of time both the temperature and the humidity of the laboratory were measured and recorded as being within a range of from 17°C to 36°C and 31% to 73% respectively.</p>
<b>Instruction to Test</b>	<p>The test was conducted on the 22 July 2024 at the request of Timloc Building Products, the test sponsor.</p> <p>No representative of the client witnessed the test.</p>
<b>Ambient Temperature</b>	<p>The ambient air temperature in the vicinity of the test construction was 23°C at the start of the test with a maximum variation of +2°C during the test.</p>
<b>Furnace</b>	<p>The furnace was controlled so that its mean temperature complied with the requirements of BS EN 1366-4: 2021 Clause 5.1 using four plate thermometers, distributed over a plane 100 mm from the surface of the vertical test construction and four plate thermometers, distributed over a plane 100 mm from the surface of the horizontal test construction.</p>
<b>Thermocouples</b>	<p>Thermocouples were provided to monitor the unexposed surface of the specimens. The output of all instrumentation was recorded at no less than one-minute intervals. The locations and reference numbers of the various unexposed surface thermocouples are shown in Figures 1 and 3.</p>

**Furnace Pressure**

The requirements of BS EN 1363-1: 2020, clause 5.2 could not be satisfied due to simultaneous testing of wall and floor specimens. The floor specimens were tested under more onerous conditions, at position 100 mm below the underside of the floor assembly the differential pressure was calculated to be 26 ( $\pm$  5) Pa between 5 and 10 minutes and 26 ( $\pm$  3) Pa respectively thereafter. The wall specimens satisfied the requirements of BS EN 1363-1: 2020, clause 5.2. The calculated pressure differential relative to the laboratory atmosphere at mid height of the lowest mounted wall specimens was 15 ( $\pm$  5).

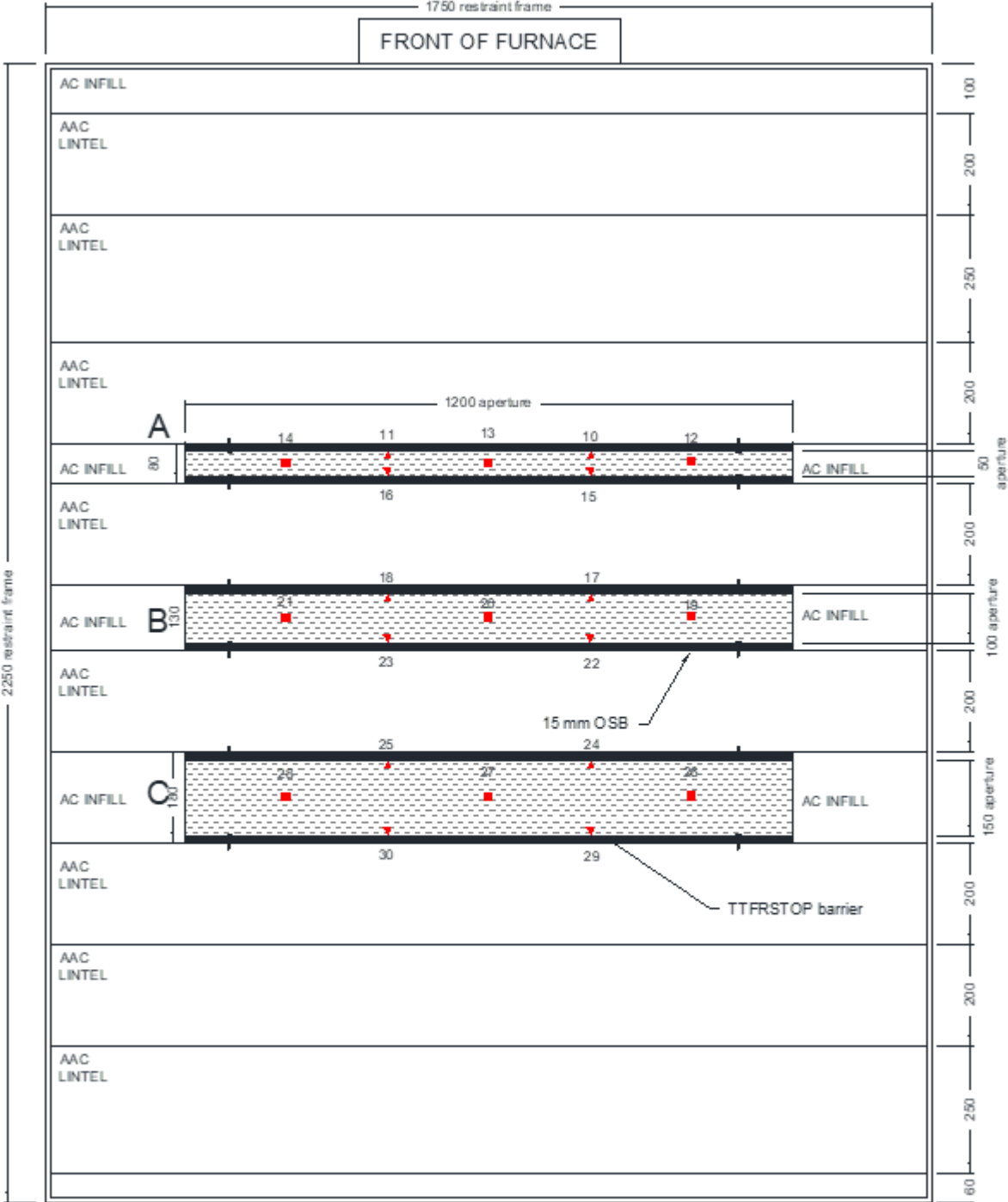
Should the conditions of furnace temperature, furnace pressure or ambient temperature which are achieved during the test represent a more severe exposure to the test specimen, the test is still to be considered valid.



# Test Construction

## Test Construction

**Figure 1: General elevation of unexposed face showing thermocouple positions**

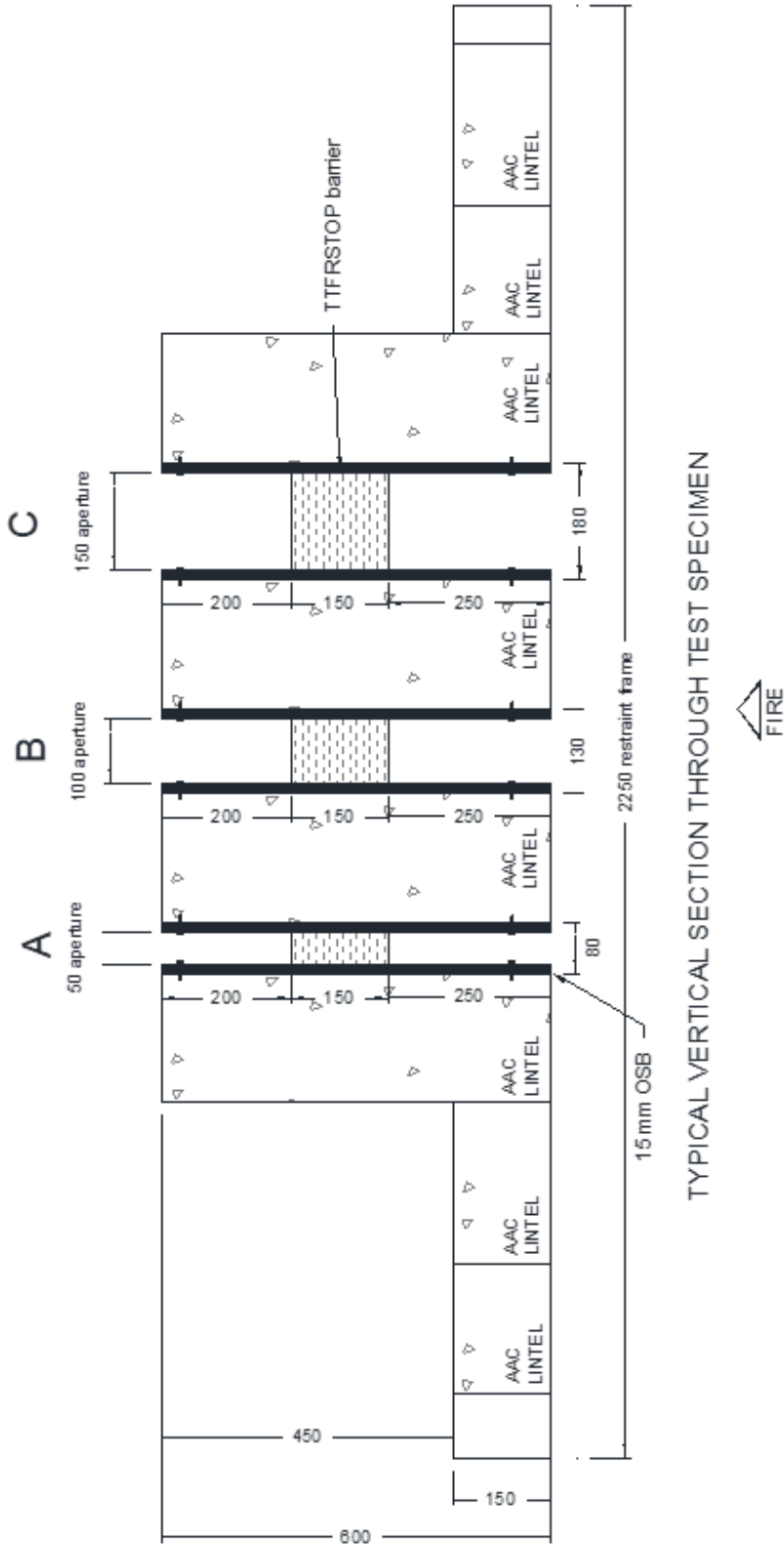


■ ▼ Positions of thermocouples

GENERAL PLAN OF UNEXPOSED FACE SHOWING THERMOCOUPLE POSITIONS

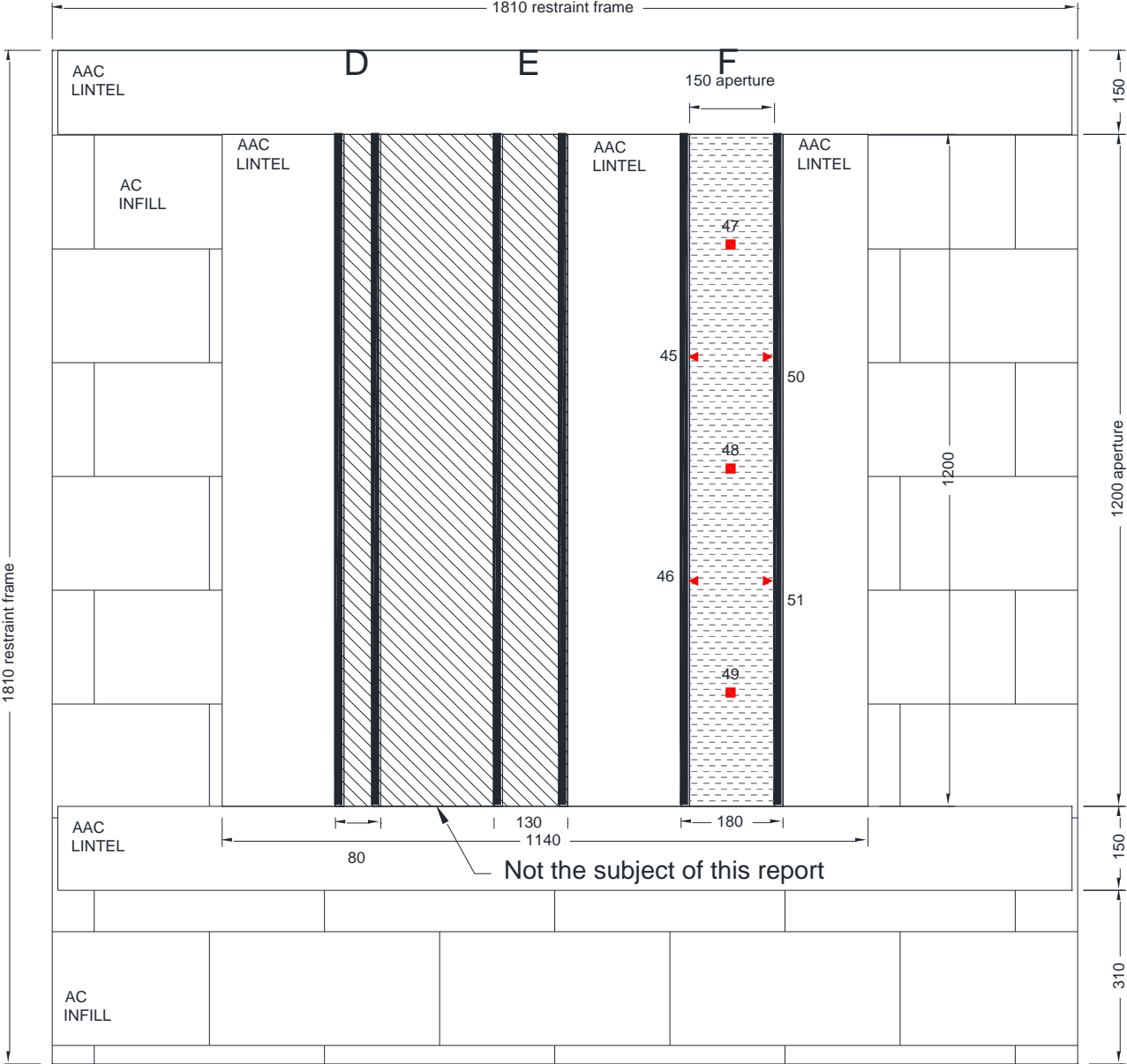
**Do not scale. All dimensions are in mm**

**Figure 2: Typical vertical section through test specimen**



**Do not scale. All dimensions are in mm**

**Figure 3: General elevation of unexposed face showing thermocouple positions**

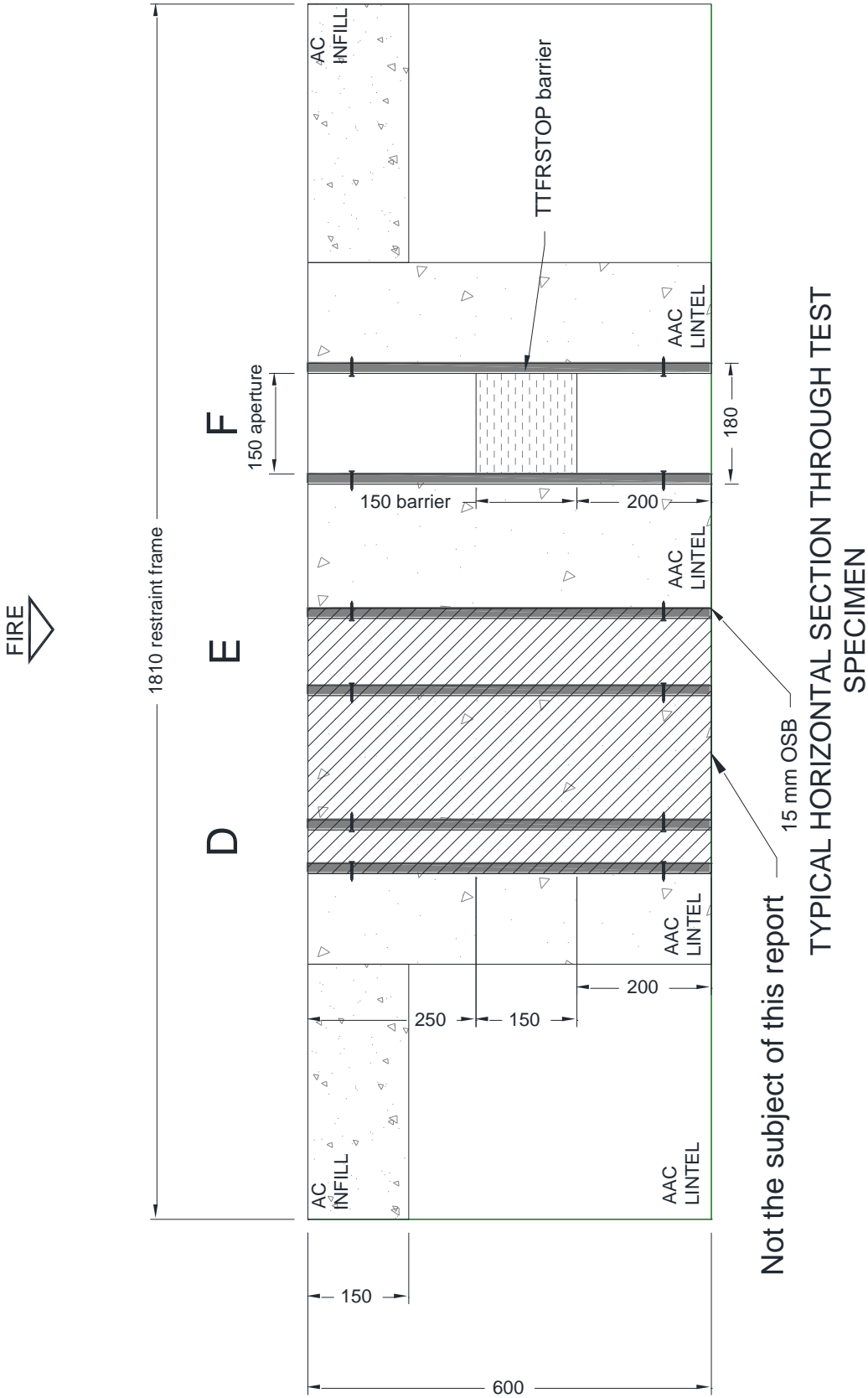


■ ▼ Positions of thermocouples

GENERAL ELEVATION OF UNEXPOSED FACE SHOWING THERMOCOUPLE POSITIONS

**Do not scale. All dimensions are in mm**

**Figure 4: Typical horizontal section through test specimen**



Do not scale. All dimensions are in mm

# Schedule of Components

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The schedule of components describes the test specimen and lists the components used in the construction of the test specimen. These were provided by the test sponsor and surveyed by Warringtonfire.

All measurements were verified by Warringtonfire unless stated otherwise in the schedule of components. All components marked with an "\*" have not been verified by Warringtonfire.

<u>Item</u>	<u>Description</u>
<b>Floor test</b>	
<b>1. Specimen A</b>	
<b>Details of aperture</b>	: 1200 mm long x 50 mm wide x 600 mm deep
<b>Details of barrier</b>	
Manufacturer	: Timloc
Reference	: TTFRSTOP 50
Material	: Stone mineral wool enclosed within a red polyethylene bag.
Overall size	: 1200 mm long x 75 mm wide x 150 mm deep
Density	: 40 kg/m <sup>3</sup> (stated)
Fixing method	: Compression fitted within the aperture with a 25 mm compression across the width. The barrier was pushed into the aperture 250 mm from the exposed face.
<b>2. Specimen B</b>	
<b>Details of aperture</b>	: 1200 mm long x 100 mm wide x 600 mm deep
<b>Details of barrier</b>	
Manufacturer	: Timloc
Reference	: TTFRSTOP 100
Material	: Stone mineral wool enclosed within a red polyethylene bag.
Overall size	: 1200 mm long x 125 mm wide x 150 mm deep
Density	: 40 kg/m <sup>3</sup> (stated)
Fixing method	: Compression fitted within the aperture with a 25 mm compression across the width. The barrier was pushed into the aperture 250 mm from the exposed face.
<b>3. Specimen C</b>	
<b>Details of aperture</b>	: 1200 mm long x 150 mm wide x 600 mm deep
<b>Details of barrier</b>	
Manufacturer	: Timloc
Reference	: TTFRSTOP 150
Material	: Two layers of stone mineral wool 120 mm and 65 mm thickness stacked and enclosed within a red polythene bag.
Overall size	: 1200 mm long x 185 mm wide x 150 mm deep
Density	: 40 kg/m <sup>3</sup> (stated)
Fixing method	: Compression fitted within the aperture with a 35 mm compression across the width. The barrier was pushed into the aperture 250 mm from the exposed face.

<u>Item</u>	<u>Description</u>
<b>6. Specimen F</b>	
<b>Details of aperture</b>	: 1200 mm long x 150 mm wide x 600 mm deep
<b>Details of barrier</b>	
Manufacturer	: Timloc
Reference	: TTFRSTOP 150
Material	: Two layers of stone mineral wool 120 mm and 65 mm thickness stacked and enclosed within a red polyethylene bag.
Overall size	: 1200 mm long x 185 mm wide x 150 mm deep
Density	: 40 kg/m <sup>3</sup> (stated)
Fixing method	: Compression fitted within the aperture with a 35 mm compression across the width. The barrier was pushed into the aperture 250 mm from the exposed face.
<b>Supporting construction (comprising items 7-10)</b>	
<b>7. OSB</b>	
Manufacturer	: Kingfisher
Material	: Oriented Strand Board comprised of compressed wood strands.
Overall size	: 1200 mm long x 600 mm wide
Thickness	: 15 mm
Fixing method	: Through fixed to both faces of the concrete lintels with screws.
Fixings (screws)	
i. type	: Zinc plated screws
ii. size	: 50 mm long x 3.0 mm diameter
iii. centres	: 500 mm
<hr/>	
<b>8. Concrete wall lintels (supplied by Warringtonfire)</b>	
Material	: Autoclaved aerated concrete lintels
Density	: 670 kg/m <sup>3</sup>
Overall size	: 1800/1200 mm long x 600 mm deep x 150/200 mm wide
<b>9. Concrete floor lintels (supplied by Warringtonfire)</b>	
Material	: Autoclaved aerated concrete lintels
Density	: 670 kg/m <sup>3</sup>
Overall size	: 1680 mm long x 150/600 mm deep x 200/250 mm wide
<b>10. Masonry infill (supplied by WarringtonFire)</b>	
Material	: Aerated concrete blockwork
Density	: 760 kg/m <sup>3</sup>

# Test Observations

Time		All observations are from the unexposed face unless noted otherwise.
mins	secs	
00	00	<b>The Test Commences.</b>
02	10	Smoke release from the OSB along all three of the floor Specimens.
03	50	Smoke release from the wall along the OSB for Specimen F.
07	40	Lots of smoke release from the head of Specimen F and along the OSB/barrier interface.
15	50	Darkening at the head on F on both sides of the aperture on the OSB board.
18	20	Persistent smoke release from Specimens A, B, C along the OSB/barrier interface.
21	40	Glowing visible at the head of Specimen F, TC 48 has detached.
27	04	Cotton pad on Specimen F, discoloured but no ignition.
30	50	TC 48 is reattached to the barrier.
32	10	Darkening visible on the OSB on Specimens A, B, C.
33	10	Increased darkening of the OSB is visible on Specimen F, in particular at the top ¼ near the head. Continual smoke release throughout.
43	30	Area of glowing has increased at the head of Specimen F.
51	00	RTC reads TC 47 = 150.1 °C
54	09	Cotton pad used at the head of Specimen F, slight discolouration but no ignition.
60	10	Slight glowing visible on Specimens B and C at the edge of the barrier.
65	50	OK RTC reading on the barrier 1/6 from the head of Specimen F
66	00	<b>The Test is Discontinued at the sponsors request</b>

# Test Photographs

The exposed face of the wall assembly prior to testing

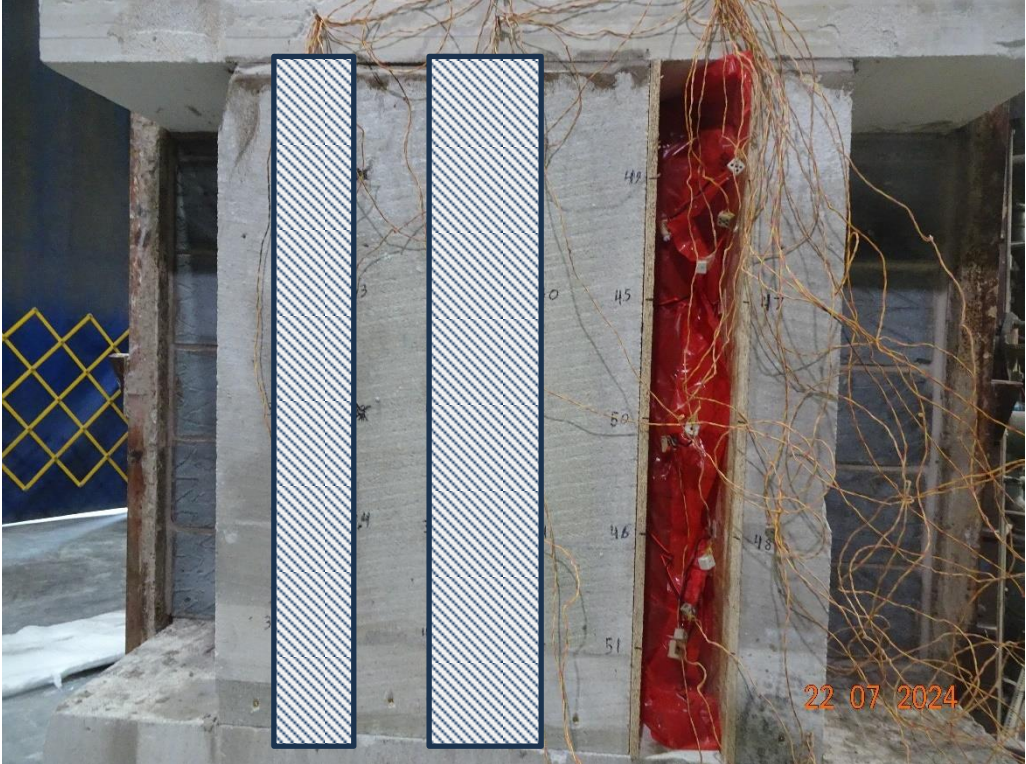


The exposed face of the floor assembly prior to testing

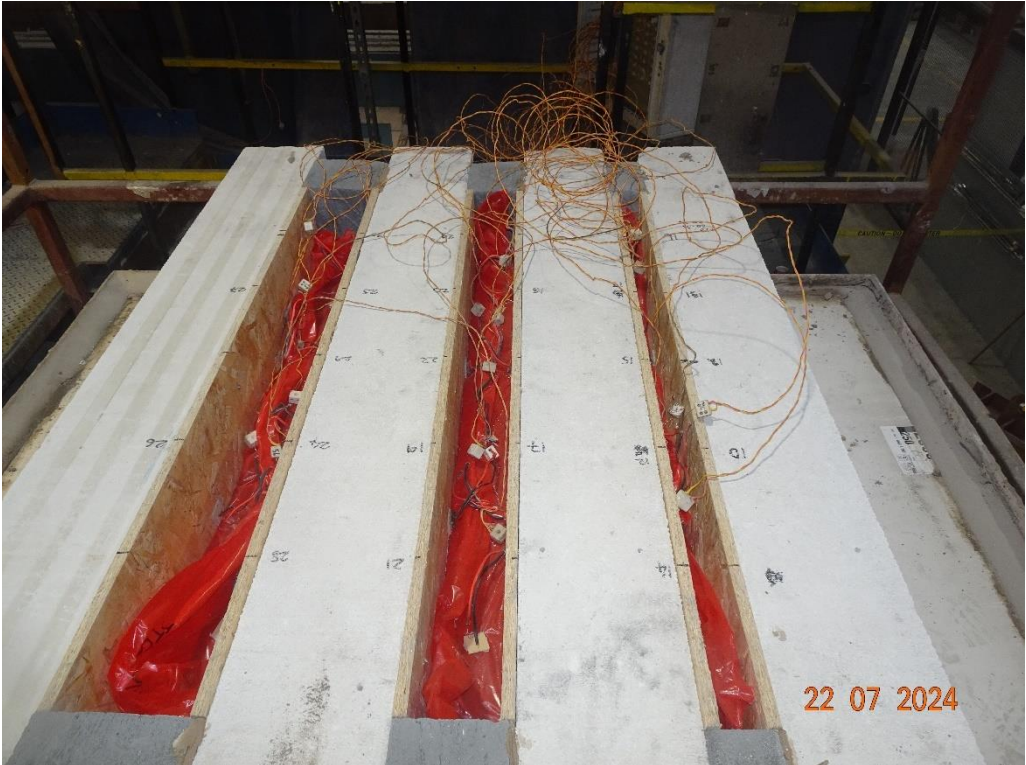




The unexposed face of the wall assembly prior to the start of the test



The unexposed face of the floor assembly prior to the start of the test



The unexposed face of the wall assembly after a test duration of 30 minutes



The unexposed face of the floor assembly after a test duration of 30 minutes



The exposed face of the wall assembly after a test duration of 60 minutes.



The exposed face of the floor assembly after a test duration of 60 minutes.



## Temperature and Pressure Data

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

Time Minutes	Specified Furnace Temperature Deg. C	Actual Furnace Temperature Deg. C
0	20	20
2	445	266
4	544	543
6	603	693
8	645	692
10	678	695
12	705	705
14	728	718
16	748	747
18	766	767
20	781	780
22	796	795
24	809	807
26	820	823
28	831	826
30	842	838
32	851	849
34	860	860
36	869	871
38	877	878
40	885	890
42	892	907
44	899	908
46	906	914
48	912	921
50	918	928
52	924	931
54	930	936
56	935	941
58	940	947
60	945	940
62	950	957
64	955	943
66	960	949

**Individual temperatures recorded on the unexposed surface of Specimen A and adjacent to Specimen A**

Time Minutes	T/C Number 10 Deg. C	T/C Number 11 Deg. C	T/C Number 12 Deg. C	T/C Number 13 Deg. C	T/C Number 14 Deg. C	T/C Number 15 Deg. C	T/C Number 16 Deg. C
0	22	23	23	23	22	22	22
2	22	23	23	22	22	22	23
4	23	23	23	23	36	35	27
6	25	26	25	25	47	49	36
8	26	28	27	27	53	58	42
10	28	30	28	29	59	63	48
12	30	32	30	31	64	68	52
14	32	33	32	32	68	71	54
16	34	36	34	34	69	74	59
18	36	38	36	36	71	75	62
20	37	39	37	37	71	75	65
22	38	41	38	39	71	76	67
24	38	43	39	41	73	77	68
26	40	45	40	43	74	78	70
28	40	46	41	44	75	79	71
30	41	47	43	45	76	78	71
32	42	47	46	46	77	79	73
34	42	48	48	47	78	80	75
36	43	48	51	48	78	80	76
38	43	49	53	49	79	80	77
40	44	49	55	50	79	80	77
42	46	50	58	52	79	80	77
44	47	51	59	53	79	80	77
46	49	53	61	55	79	80	76
48	51	55	62	57	79	80	75
50	54	57	63	58	79	80	76
52	55	59	64	59	79	80	76
54	58	61	66	60	78	80	76
56	60	63	67	62	78	79	76
58	61	66	67	63	77	79	76
60	63	67	68	64	78	80	76
62	64	68	69	65	78	81	76
64	65	68	70	67	78	81	76
66	67	69	71	67	78	81	76

**Individual temperatures recorded on the unexposed surface of Specimen B and adjacent to Specimen B**

Time Minutes	T/C Number 17 Deg. C	T/C Number 18 Deg. C	T/C Number 19 Deg. C	T/C Number 20 Deg. C	T/C Number 21 Deg. C	T/C Number 22 Deg. C	T/C Number 23 Deg. C
0	23	23	24	23	23	23	23
2	23	23	24	23	23	23	23
4	23	23	24	23	25	24	24
6	24	24	26	23	33	30	27
8	25	25	30	24	41	39	35
10	26	26	34	25	45	46	42
12	27	28	38	27	48	52	49
14	28	29	42	28	50	55	53
16	29	31	44	30	53	55	56
18	30	33	46	31	55	54	59
20	31	34	47	32	57	56	61
22	32	35	49	34	59	59	63
24	33	36	51	36	61	59	65
26	33	37	52	39	63	61	67
28	34	39	52	44	65	63	69
30	36	40	52	48	66	65	72
32	37	41	53	52	67	67	74
34	38	43	54	54	68	68	75
36	40	44	56	56	70	69	76
38	42	45	56	57	73	70	77
40	44	47	56	58	75	70	77
42	47	48	57	58	76	71	77
44	50	49	57	59	77	72	78
46	52	51	58	60	77	73	79
48	55	53	57	61	78	73	79
50	57	54	56	63	78	73	79
52	59	55	55	64	79	74	79
54	61	57	54	66	79	74	79
56	63	57	53	67	79	74	78
58	64	59	53	67	80	74	81
60	65	60	53	69	85	74	80
62	66	61	51	70	90	75	80
64	67	63	50	75	97	76	81
66	69	65	50	75	107	76	80

**Individual temperatures recorded on the unexposed surface of Specimen C and adjacent to Specimen C**

Time Minutes	T/C Number 24 Deg. C	T/C Number 25 Deg. C	T/C Number 26 Deg. C	T/C Number 27 Deg. C	T/C Number 28 Deg. C	T/C Number 29 Deg. C	T/C Number 30 Deg. C
0	24	24	23	23	24	24	24
2	24	24	23	24	25	24	24
4	24	24	23	24	25	24	24
6	24	24	24	24	27	25	25
8	25	25	24	24	28	26	26
10	26	26	25	24	31	29	29
12	31	27	26	26	39	37	40
14	36	30	29	27	47	46	49
16	38	35	32	30	50	49	52
18	39	39	34	31	52	50	54
20	40	43	36	33	54	52	53
22	43	46	38	35	56	53	54
24	45	49	40	36	57	55	55
26	45	52	42	38	59	57	57
28	50	55	44	40	61	59	59
30	55	58	47	42	63	52	60
32	60	61	49	43	64	47	62
34	56	64	51	45	65	44	64
36	57	67	53	47	66	44	66
38	57	69	56	49	67	44	67
40	60	70	59	51	68	45	68
42	58	71	63	54	69	46	69
44	59	71	66	57	70	47	70
46	67	71	68	60	71	48	72
48	63	71	71	65	73	49	74
50	68	71	74	70	73	49	75
52	66	70	76	76	74	49	75
54	68	68	77	80	75	49	75
56	67	67	79	82	77	50	75
58	68	66	81	84	78	52	76
60	66	65	83	86	78	52	76
62	71	65	84	87	80	54	76
64	69	65	84	87	79	54	76
66	71	65	85	87	80	53	76

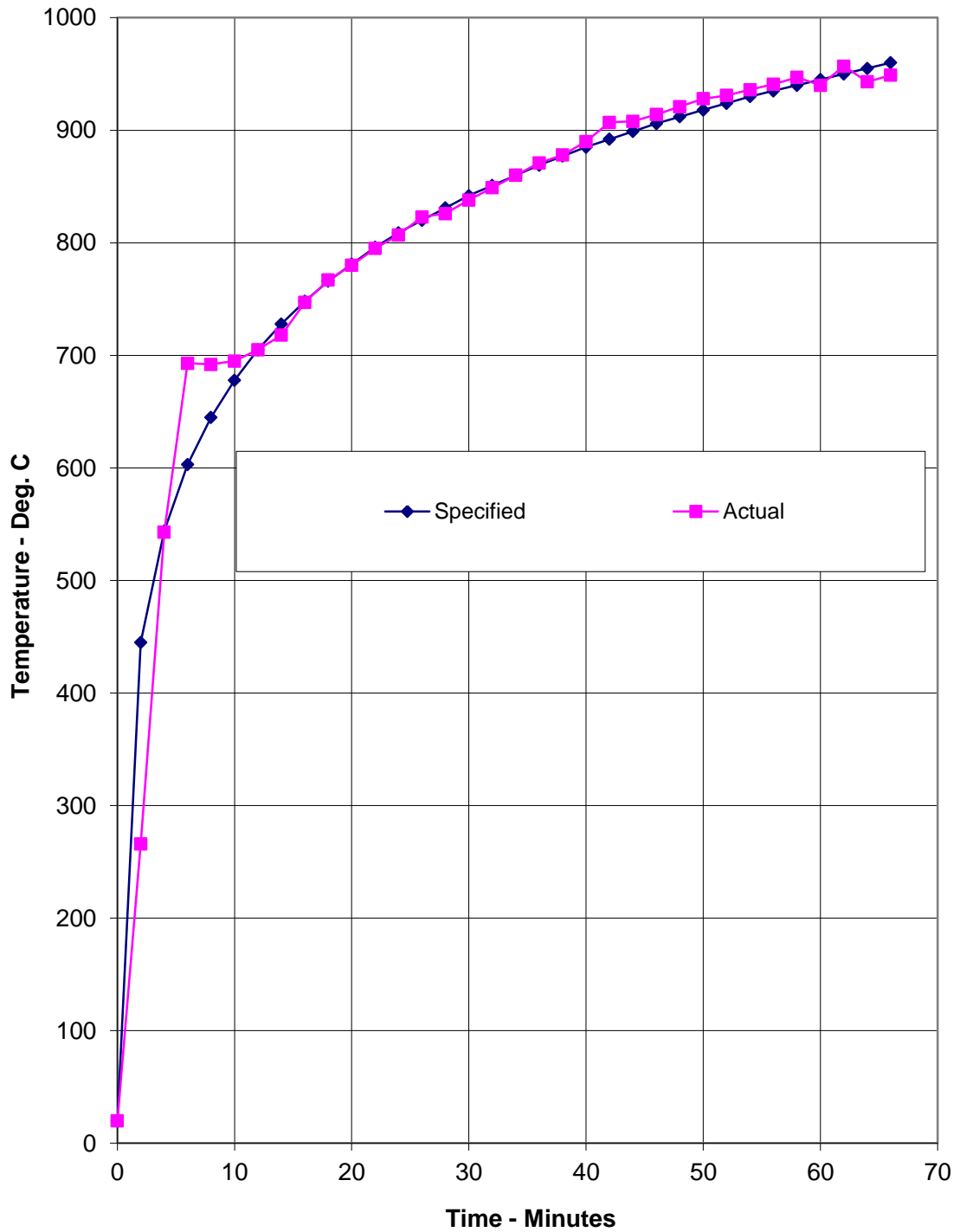
**Individual temperatures recorded on the unexposed surface of Specimen F and adjacent to Specimen F**

Time Minutes	T/C Number 45 Deg. C	T/C Number 46 Deg. C	T/C Number 47 Deg. C	T/C Number 48 Deg. C	T/C Number 49 Deg. C	T/C Number 50 Deg. C	T/C Number 51 Deg. C
0	23	24	23	23	24	23	24
2	23	24	23	23	30	23	24
4	24	24	23	23	31	24	24
6	27	27	27	25	50	38	27
8	32	32	32	26	56	47	31
10	36	35	35	27	62	51	33
12	39	38	38	28	65	53	34
14	42	40	40	29	67	56	35
16	44	41	42	30	69	58	36
18	47	43	44	31	70	61	37
20	49	45	45	32	73	63	38
22	51	46	47	*	74	64	39
24	53	48	48	*	76	64	40
26	54	49	50	*	81	65	41
28	56	50	51	*	50	62	37
30	57	51	52	*	58	62	34
32	57	51	52	36	69	58	31
34	58	52	52	36	71	56	32
36	59	53	53	37	71	56	33
38	61	53	53	37	72	54	32
40	64	53	54	38	73	55	33
42	67	54	56	39	74	55	34
44	70	54	58	39	76	55	33
46	74	55	61	39	77	55	34
48	77	57	63	40	78	55	33
50	80	60	66	41	78	55	34
52	83	64	69	42	77	55	34
54	85	68	71	45	77	55	34
56	87	72	73	48	78	55	35
58	87	75	74	51	79	54	35
60	89	78	77	54	79	56	35
62	92	80	79	57	80	56	35
64	94	81	82	59	76	56	34
66	96	83	83	62	74	58	36

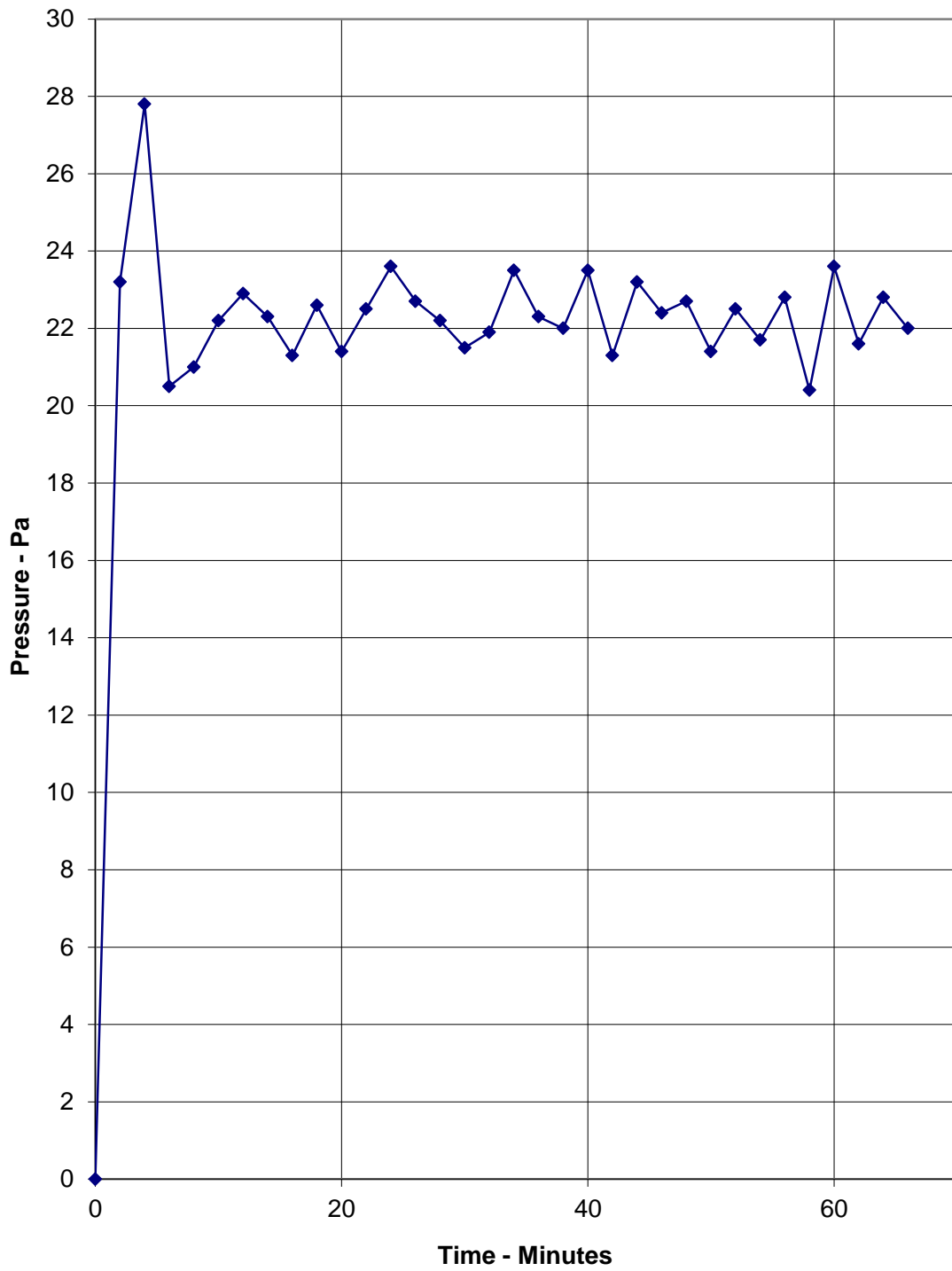
\*Thermocouple malfunction



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



Graph showing recorded furnace pressure 100 mm above the head of the wall specimens



## On-going Implications

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### Limitations

The results relate only to the behaviour of the specimens 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.

The results may not be applicable to situations where the joint widths, sealant depths, orientations, supporting construction and backing material vary from those tested.

Because of the nature of fire resistance testing and the consequent difficulty in quantifying the uncertainty of measurement of fire resistance, it is not possible to provide a stated degree of accuracy of the result.

### EGOLF

Certain aspects of some fire test specifications are open to different interpretations. EGOLF has identified a number of such areas and have agreed Resolutions which define common agreement of interpretations between fire test laboratories which are members of the Groups. Where such Resolutions are applicable to this test they have been followed

***Note: The field of direct application may only be defined following the identification of classification(s). The field of direct and, where applicable, extended application will be included in the classification report.***