

Report Number: **BTC 22891F**

A FIRE RESISTANCE TEST ON A 63 MM DEEP TIMBER STUD PARTITION CLAD EACH SIDE WITH A SINGLE LAYER OF 15 MM THICK GYPROC FIRELINE 15MM, CONDUCTED IN ACCORDANCE WITH BS EN 1364-1: 2015.

Test Date: 1st September 2023

Report Issue Date: 4th September 2023

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Customer: **British Gypsum**
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Customer: **British Gypsum**

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FOREWORD

This test report details a fire resistance test conducted on a timber stud partition clad on each face with a single layer of 15 mm thick Gyproc FireLine 15mm.

The test sponsor was British Gypsum.

The test specimen was installed by PVR Joinery. The construction of the specimen took place between the 29th and 30th August 2023. The Building Test Centre played no role in the design or selection of materials comprising the test specimen. This information is provided by the sponsor.

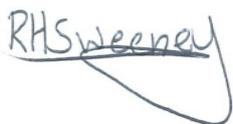
The test was witnessed by Mrs Francesca Browne of Saint-Gobain Interior Solutions and was conducted on the 1st September 2023.

This report details the method of construction, the test conditions and the results obtained when the specific element of construction described herein was tested following the procedures outlined in EN 1363-1, and where appropriate EN 1363-2. Any significant deviation with respect to size, constructional details, loads, stresses, edge of end conditions other than those allowed under the field of direct application in EN 1364-1 is not covered by this report.

“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.” (BS EN 1363-1: 2020, section 12.1)

REPORT AUTHORISATION

Report Author



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BSc. (Hons.)
Scientist

Authorised by



Paul Miller
BSc. (Hons.)
Fire Test Manager

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TEST CONSTRUCTION

Description of Construction

The specimen was constructed in a refractory concrete lined steel restraint test frame with an opening of 3000 mm (high) x 3000 mm (wide).

63 mm x 38 mm timber head and sole plates were fixed to the head and base of the test aperture at 600 mm centres using 100 mm long fire-resistant fixings.

63 mm x 38 mm timber studs were positioned at 600 mm centres between the head and sole plates and skew fixed using 65 mm long British Gypsum Drywall Screws 65mm. The right-hand stud viewed from the unexposed face was not fixed to the perimeter of the test frame and the gap between the stud and the frame lining was filled with a 25 mm thick rock mineral fibre gasket.

At the left-hand edge, a 63 mm x 38 mm timber stud was used to fix the partition to the test frame using 100 mm long fire-resistant fixings at 600 mm centres.

63 mm x 38 mm timber stud noggings were positioned between the studs at 2400 mm from the base of the specimen and skew fixed using 65 mm long British Gypsum Drywall Screws 65mm.

Thermocouples were added to the timber studs at mid height on the web, hot and cold flanges of the central two studs.

Both the unexposed face and the exposed face of the specimen were clad with a single layer of 15 mm thick Gyproc Fireline 15mm. The boards were fixed with 40 mm British Gypsum Drywall Screws 40mm at 300 mm centres around the perimeter and within the field of the boards.

All vertical joints were staggered between layers, with a full board at the free end of the exposed face.

A horizontal joint was positioned at 2400 mm from the base on the outer layer boards on both faces of the specimen.

All external board joints were taped and filled using Gyproc Paper Joint Tape and Gyproc Joint Filler as appropriate. All screw heads were spotted using Gyproc Joint Filler.

Test Construction Drawings

Horizontal Cross Section

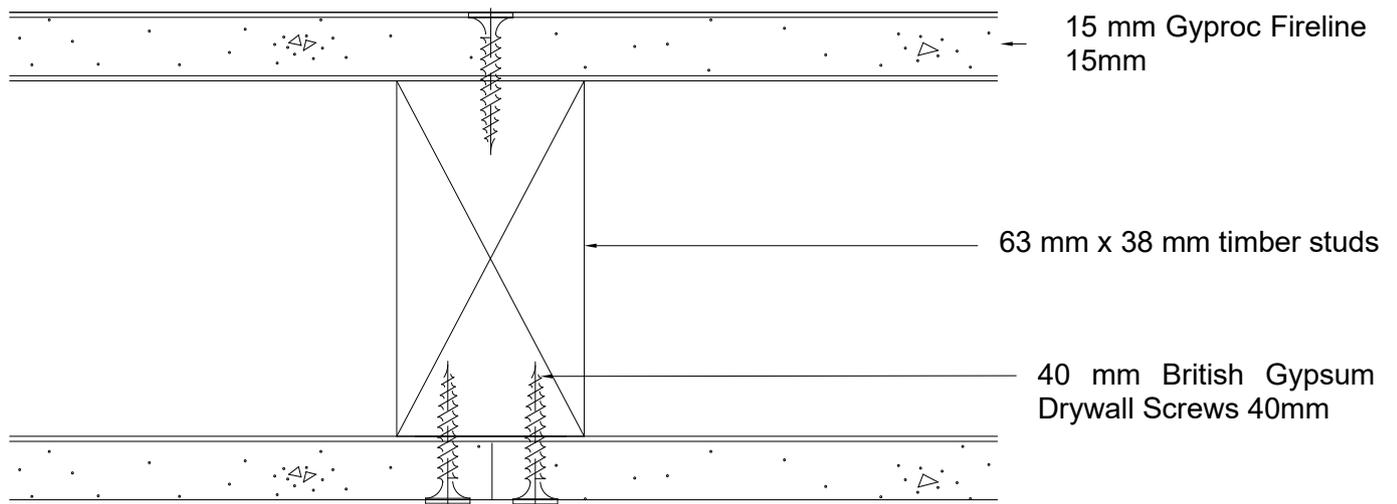


Figure 1 – Horizontal cross section.

Exposed Face Elevation

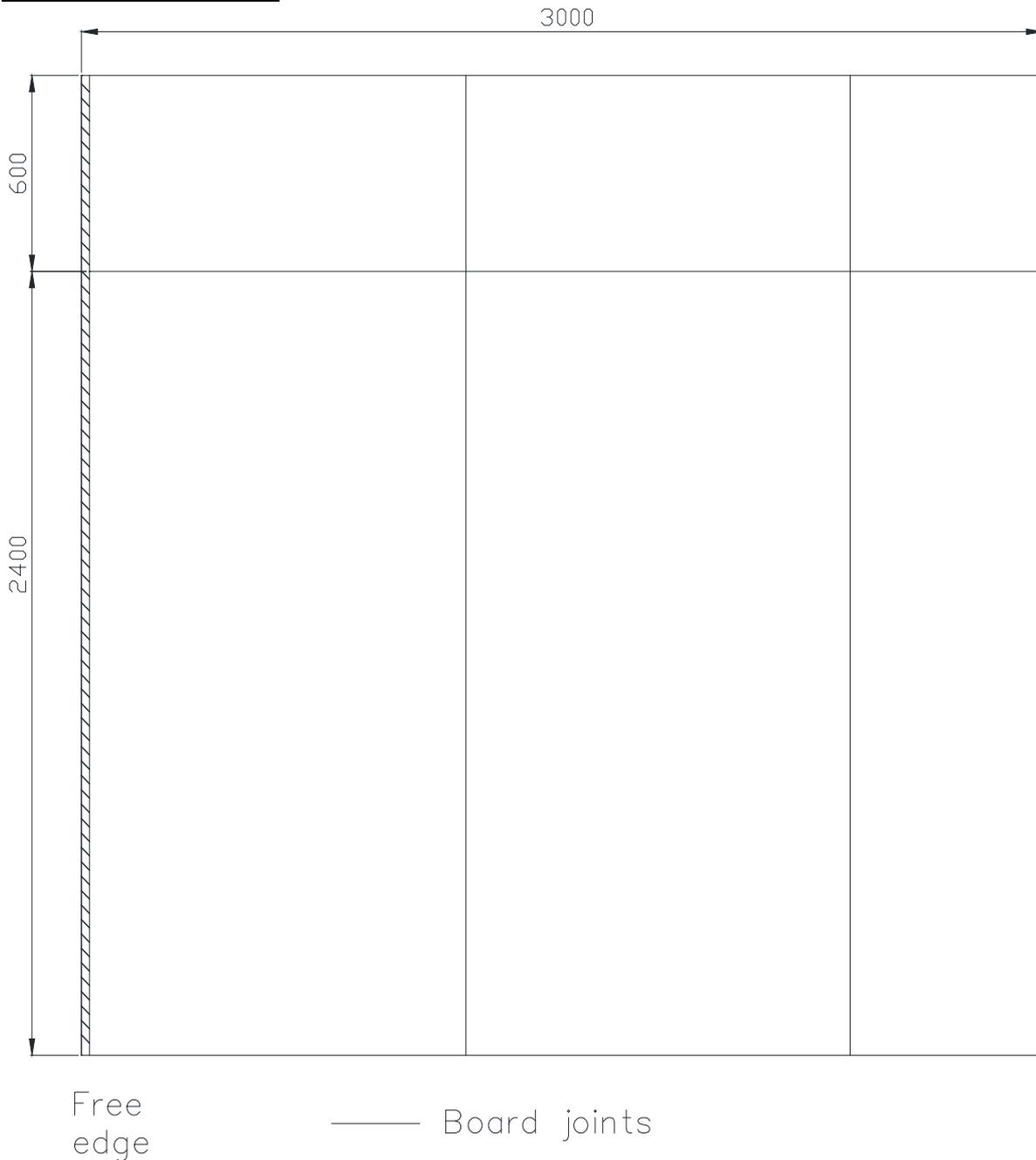


Figure 2 – Exposed face elevation.

Unexposed Face Elevation

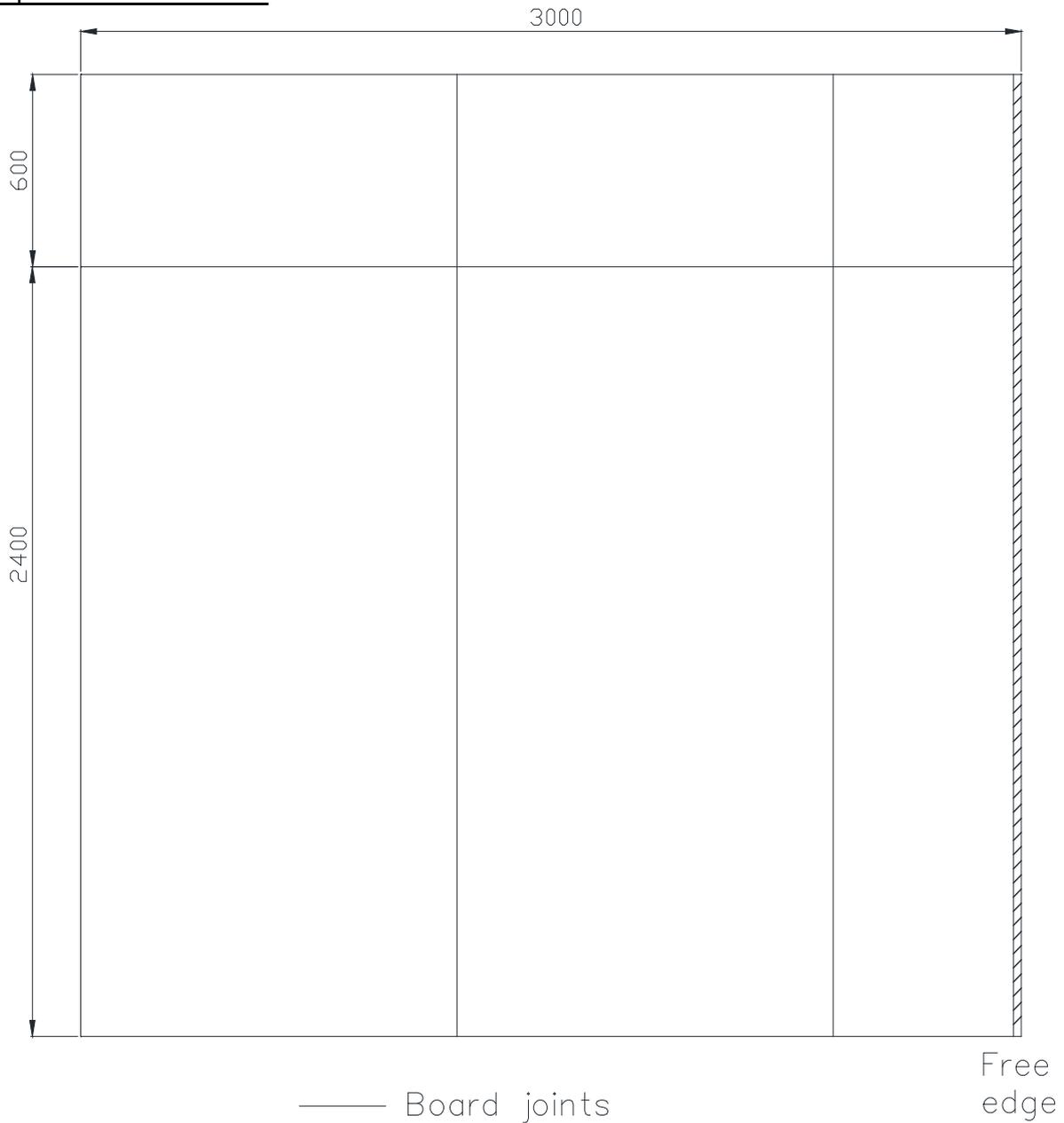


Figure 3 – Unexposed face elevation.

TEST MATERIALS

Plasterboard

- i) Nominally, 2400 mm (long) x 1200 mm (wide) x 15 mm (thick), Gyproc FireLine 15mm (TE), manufactured and supplied by British Gypsum, ex Sherburn.

Measured mass per unit area:	12.8 kg/m ²
Measured thickness:	15.4 mm
Board identification numbers:	31 182 23 01:35 31 182 23 01:36 31 182 23 01:36
Measured moisture content:	0.46 %

The surface density and board thickness were calculated using the actual weight and size of a selection of boards used in the test specimen. The moisture content of plasterboard was determined using samples dried to constant weight in an oven at 50 °C.

Material dimensions were supplied by British Gypsum.

Timber Components

- ii) Nominally, 3000 mm (long) x 38 mm (wide) x 63 mm (deep), C16 grade softwood channels, studs and noggings, supplied by The Building Test Centre.

Measured dimensions:	3003 mm (long) 38.1 mm (wide) 63.4 mm (deep)
Measured mass per metre:	0.97 kg/m
Measured density:	401.4 kg/m ³
Measured moisture content:	14.22 %

The mass and dimensions of the timber components were calculated using the actual weight and size of a selection of components used in the test specimen. The moisture content was determined using samples dried to constant weight in an oven at 102 °C.

Fasteners

- iii) 40 mm British Gypsum Drywall Screws 40mm, supplied by The Building Test Centre.
iv) 65 mm British Gypsum Drywall Screws 65mm, supplied by The Building Test Centre.
v) 100 mm Hilti HUS-HR Concrete Screw Anchor fire resistant fixings, supplied by The Building Test Centre.

Miscellaneous Components

- vi) Gyproc Paper Joint Tape, supplied by The Building Test Centre.
- vii) Gyproc Joint Filler, supplied by The Building Test Centre.
- viii) Rock mineral fibre gasket, supplied by The Building Test Centre.

Where measurements could not be taken and were provided by the customer or the manufacturer e.g. from material labelling, or where mass and dimension measurements were provided by the customer or the manufacturer e.g. customer has completed material dimension forms the results only apply to the sample as received.

All data and materials supplied by the customer or manufacturer are clearly identified.

Material information was sampled and recorded according to procedure AP070 vs. 1.2.

TEST PROCEDURE

The test was conducted fully in accordance with BS EN 1364-1: 2015. The specimen was subjected to fire from one side, as specified in BS EN 1364-1: 2015.

As the test specimen is considered to be symmetrical one test is adequate to cover the fire resistance performance in both directions.

The test procedure used was EN 1364-1 Issue 3.

The ambient temperature at the commencement of the test was 17 °C.

The furnace pressure was set to control at -1.1 ± 2 Pa positive with respect to atmosphere, at a point 750 mm from the base of the specimen equating to 18 ± 2 Pa at the top of the specimen. Furnace pressure data is shown in **Figure 5**.

The test conditions did not meet the full requirements of BS EN 1363-1: 2020 as the test frame stiffness did not fully comply.

The specimen and associated construction were not conditioned in accordance with clause 8 of BS EN 1363-1: 2020.

TEST RESULTS

The requirement of the standard was satisfied for the following periods:

Integrity	Sustained Flaming	83 minutes.
	6 mm Gap Gauge	84 minutes, no failure.
	25 mm Gap Gauge	84 minutes, no failure.
	Cotton Pad	83 minutes.
Insulation		72 minutes.
Test Terminated		84 minutes, at the request of the sponsor.

LIMITATIONS

The scope of the Field of Direct Application of the results and construction details in this test report is explained in BS EN 1364-1: 2015, section 13.

TEST DATA

Observations

All observations refer to the exposed face unless stated.

Observers: Unexposed face: Rebecca Sweeney
Exposed face: Christian Slee

Time		Observations
Hours	Minutes	
0	00	Test started.
0	10	Jointing material was flaking away. Face papers had charred.
0	20	Left-hand vertical joint had opened up to approximately 2-3 mm. Right-hand vertical joint had opened up to approximately 2-3 mm. Horizontal joint had opened up to approximately 2-3 mm.
0	30	Left-hand vertical joint had opened up to approximately 8-10 mm. Right-hand vertical joint had opened up to approximately 6-8 mm. Horizontal joint had opened up to approximately 6-8 mm. Flaming coming from all joints. Cracks had formed around screw heads. <i>Unexposed face</i> No visible change.
0	40	Left-hand vertical joint had opened up to approximately 14-16 mm. Right-hand vertical joint had opened up to approximately 12-14 mm. Horizontal joint had opened up to approximately 10-12 mm. <i>Unexposed face</i> Crackling noises could be heard coming from the specimen.
0	50	No visible change.
1	00	No visible change. <i>Unexposed face</i> No visible change.

Time		Observations
Hours	Minutes	
1	07	<i>Unexposed face</i> The bonding at the head of the specimen was coming away approximately 150 mm long from the free edge.
1	08	<i>Unexposed face</i> Bonding at the head had cracked full width.
1	10	Left-hand vertical joint had opened up to approximately 16-18 mm. The upper centre board had shifted down – an approximately 6-8 mm gap had appeared along the top of the upper centre board, and the horizontal joint between the upper and lower centre board had closed up completely.
1	12	<i>Unexposed face</i> INSULATION FAILURE. The mean temperature rise of the standard five thermocouples exceeded 140 °C. The temperature rise of thermocouple no.3 positioned at the centre of the specimen exceeded 180 °C. Horizontal joint had discoloured on the left-hand side of the left-hand board approximately 1300 mm long. Left-hand side of the lower centre board had discoloured approximately 900 mm – 2100 mm height.
1	16	<i>Unexposed face</i> The horizontal joint had discoloured approximately 600 mm from the free edge approximately 1200 mm long. The right-hand side of the lower centre board had discoloured. Left-hand vertical joint had discoloured from approximately 1500 mm - 2400 mm height.
1	18	<i>Unexposed face</i> Right-hand side of the lower centre board had discoloured up to full height. Right-hand side of the lower left-hand board had discoloured up to full height.
1	20	Approximately 50 % of the boards had fallen into the furnace. <i>Unexposed face</i> Cotton pad attempt on the centre of the centre board approximately 1800 mm height – no failure.

Time		Observations
Hours	Minutes	
1	21	<i>Unexposed face</i> The free edge flamed approximately 1200 mm – 2200 mm height. Lower right-hand board had charred up to full height. Right-hand side of the lower centre board had charred up to full height.
1	22	<i>Unexposed face</i> Left-hand side upper centre board had discoloured up to full height. Left-hand side of the upper right-hand board had discoloured.
1	23	<i>Unexposed face</i> INTEGRITY FAILURE. The cotton pad ignited (flamed) when placed on the head approximately 1500 mm from the free edge. FURTHER INTEGRITY FAILURE. Sustained flaming, at the head of the specimen approximately 100 mm – 1500 mm from the free edge. Water had been sprayed on the free edge due to flaming.
1	24	TEST TERMINATED at the request of the sponsor.

Furnace Temperature Graph

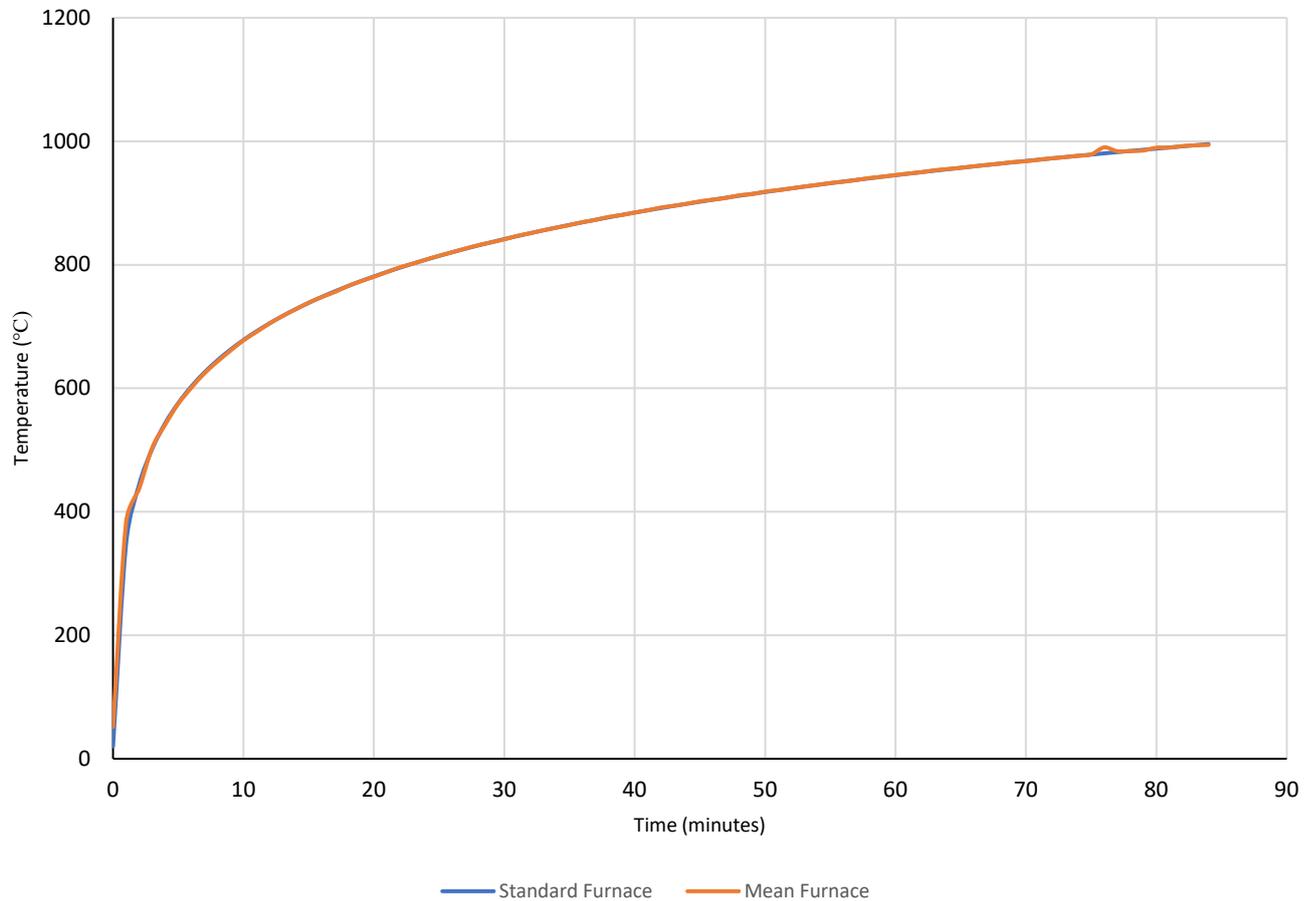


Figure 4 – Furnace temperature graph.

Furnace Pressure Graph

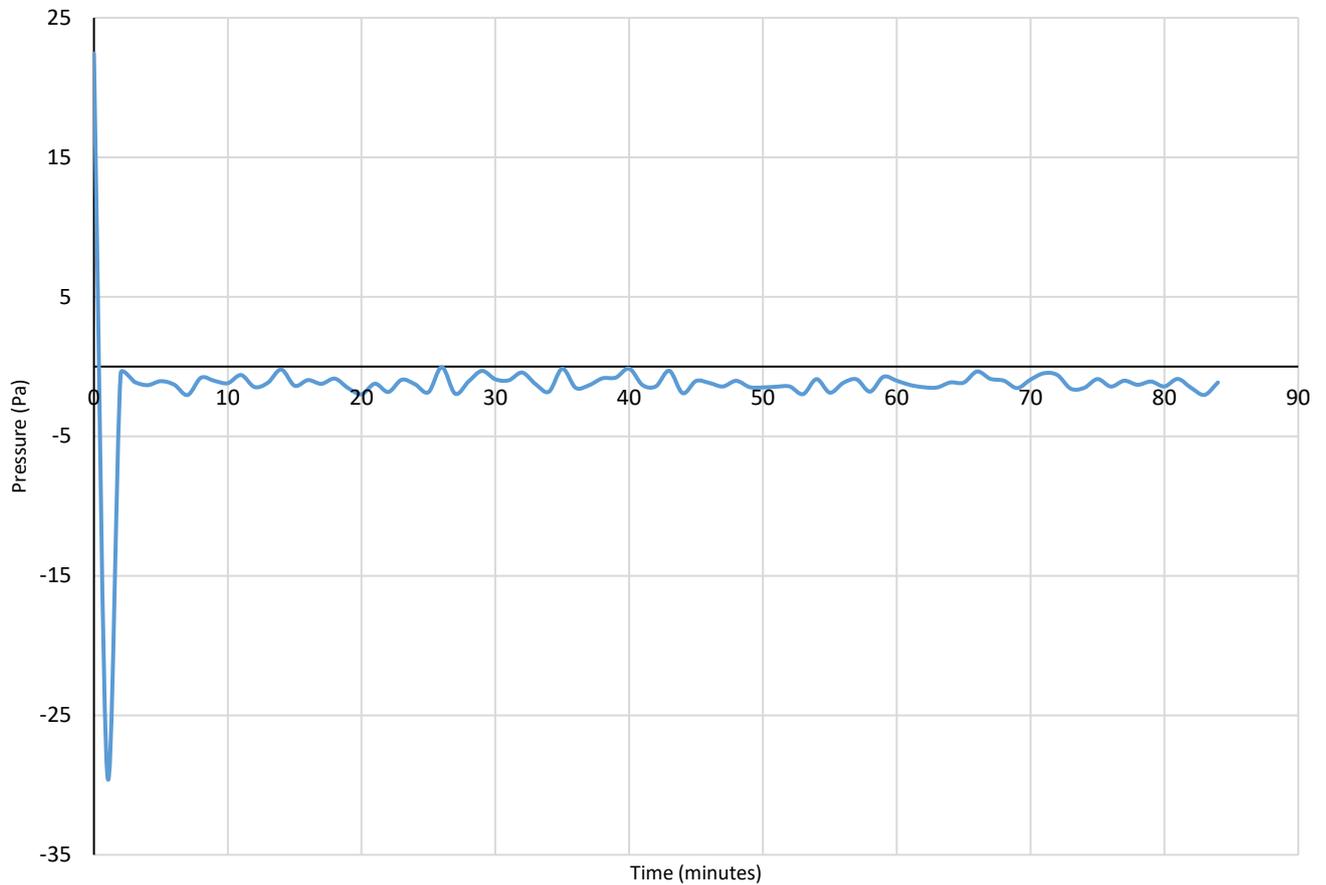


Figure 5 – Furnace pressure graph.

Unexposed Face Temperature Graph

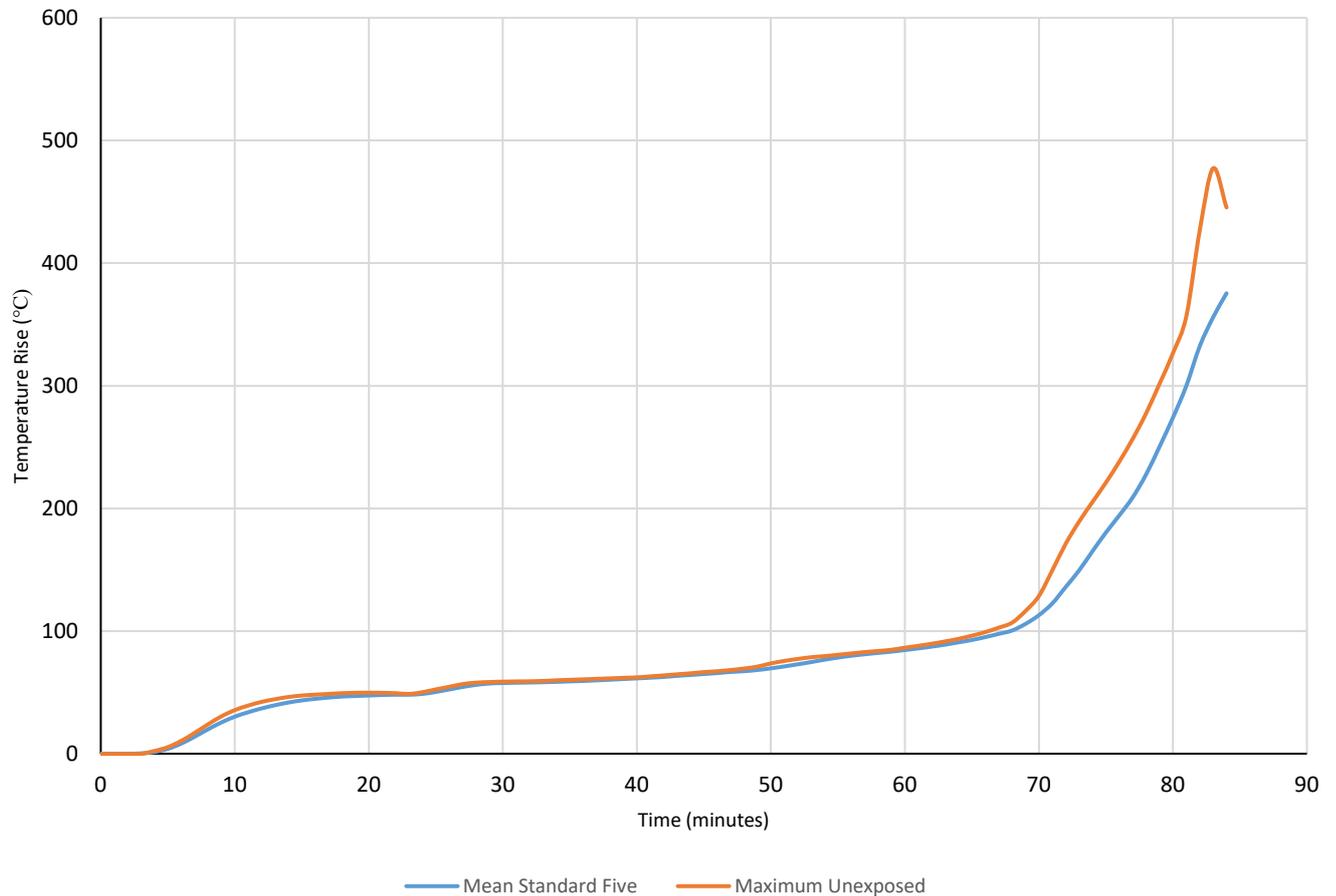


Figure 6 – Unexposed face temperature graph.

Unexposed Face Thermocouple Layout

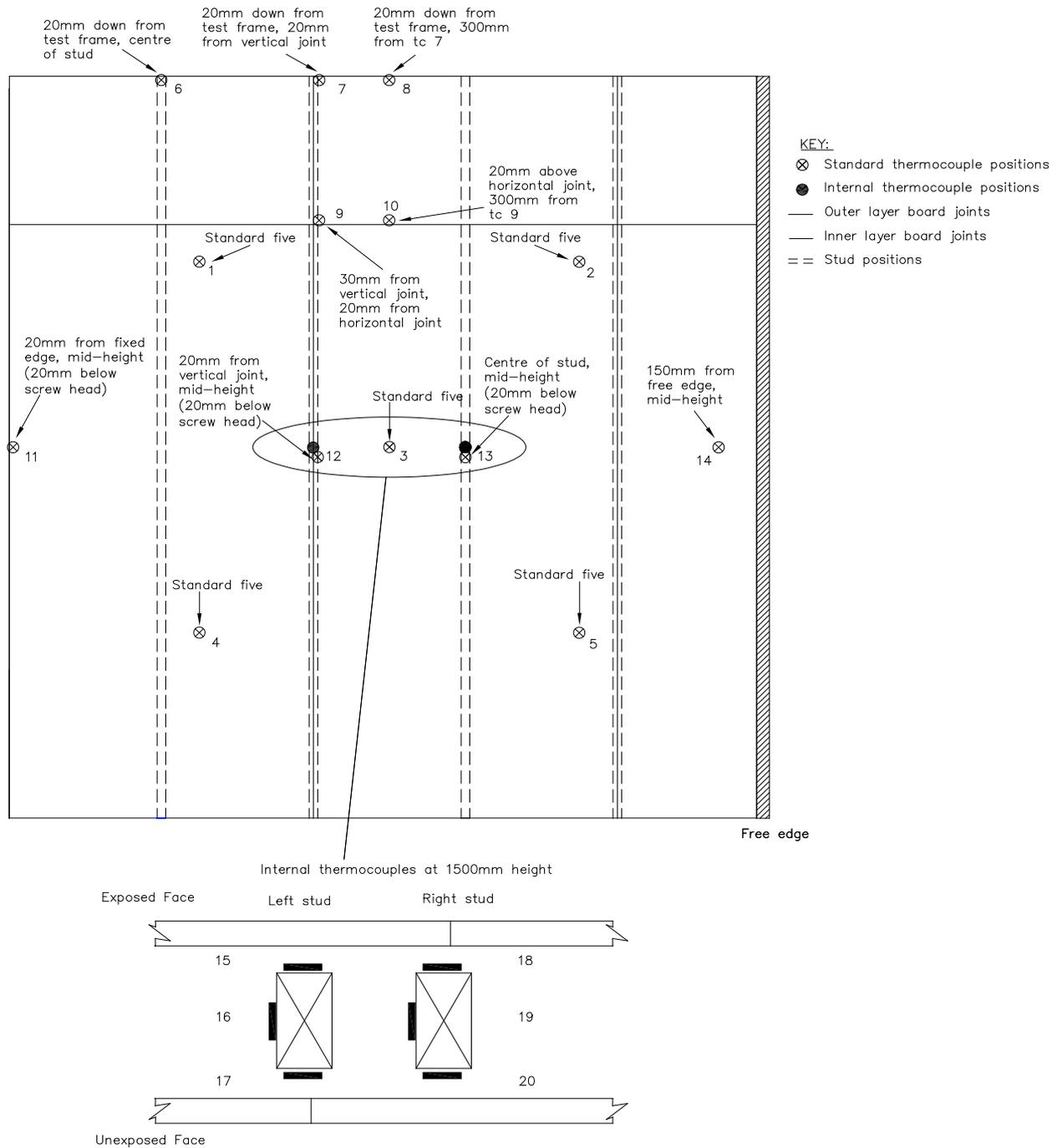


Figure 7 – Unexposed face thermocouple layout.

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Unexposed Face Standard Five Temperature Data

Time (minutes)	Temperature Rise (°C)					Mean Standard Five
	Thermocouple No. 1	Thermocouple No. 2	Thermocouple No. 3	Thermocouple No. 4	Thermocouple No. 5	
0	1	1	0	-1	0	0
1	1	1	0	-1	0	0
2	1	1	0	-1	0	0
3	1	1	0	-1	0	0
4	2	2	1	0	1	1
5	5	5	4	2	4	4
6	10	10	8	6	8	8
7	16	17	14	10	13	14
8	23	24	19	15	18	20
9	29	30	25	20	23	25
10	34	36	30	25	27	30
11	38	39	34	28	30	34
12	41	42	38	31	33	37
13	43	44	40	34	36	40
14	45	46	42	37	38	42
15	46	47	44	39	40	43
16	48	48	45	41	41	45
17	49	49	46	43	42	46
18	49	49	47	44	44	47
19	49	50	47	45	44	47
20	49	50	47	46	45	47
21	49	50	48	47	45	48
22	49	49	48	48	46	48
23	49	49	49	48	46	48
24	48	49	50	49	47	49
25	49	50	52	51	49	50
26	51	52	55	54	51	52
27	53	54	57	56	53	54
28	55	56	58	57	55	56
29	57	58	58	58	55	57
30	58	58	59	58	56	58
31	58	58	59	58	56	58
32	58	59	59	59	56	58
33	58	59	59	59	56	58
34	58	59	60	59	57	59
35	58	60	60	60	57	59
36	59	60	61	60	58	59
37	59	60	61	60	58	60
38	60	61	61	61	59	60

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Time (minutes)	Temperature Rise (°C)					Mean Standard Five
	Thermocouple No. 1	Thermocouple No. 2	Thermocouple No. 3	Thermocouple No. 4	Thermocouple No. 5	
39	60	61	62	61	60	61
40	61	62	62	61	61	61
41	61	62	63	62	61	62
42	61	63	64	63	62	63
43	62	64	65	64	63	63
44	63	64	66	65	63	64
45	64	65	67	66	63	65
46	65	66	67	67	64	66
47	65	66	68	68	65	67
48	66	67	69	69	65	67
49	67	68	69	71	67	68
50	68	69	70	74	68	70
51	69	69	71	76	71	71
52	71	71	72	77	74	73
53	73	73	74	79	75	75
54	75	76	77	80	76	77
55	77	78	79	81	77	78
56	78	80	81	82	79	80
57	80	81	82	83	80	81
58	81	82	84	84	81	82
59	82	84	85	85	82	83
60	83	85	86	86	83	85
61	84	86	88	87	85	86
62	85	87	90	88	86	87
63	86	89	92	90	88	89
64	88	91	94	92	90	91
65	89	92	96	94	92	93
66	91	94	99	96	95	95
67	93	96	103	99	98	98
68	95	98	107	102	100	100
69	97	102	116	105	108	106
70	101	105	129	109	121	113
71	104	111	149	118	130	122
72	110	123	171	129	146	136
73	120	136	189	139	163	149
74	131	157	205	158	175	165
75	147	176	221	173	185	180
76	166	191	238	185	192	194
77	181	209	257	195	202	209
78	195	238	278	204	224	228
79	208	274	302	212	257	250

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Time (minutes)	Temperature Rise (°C)					
	Thermocouple No. 1	Thermocouple No. 2	Thermocouple No. 3	Thermocouple No. 4	Thermocouple No. 5	Mean Standard Five
80	218	311	327	218	296	274
81	229	351	357	225	338	300
82	249	400	392	231	389	332
83	282	432	414	244	408	356
84	323	445	424	271	413	375

Figures highlighted in red indicate the minute in which the temperature rise exceeded 180 °C and the mean temperature rise exceeded 140 °C.

See **Figure 7** for the location of the thermocouples.

Additional Unexposed Face Temperature Data

Time (minutes)	Temperature Rise (°C)				
	Thermocouple No. 6	Thermocouple No. 7	Thermocouple No. 8	Thermocouple No. 9	Thermocouple No. 10
0	-2	-2	-2	-1	-1
1	-2	-2	-2	-1	-1
2	-2	-2	-2	0	-1
3	-2	-2	-2	0	-1
4	-2	-1	-1	1	-1
5	-1	0	-1	1	0
6	0	3	0	2	1
7	1	8	2	3	3
8	2	13	4	5	5
9	4	18	6	7	7
10	6	23	9	10	10
11	9	27	11	13	13
12	11	30	13	15	16
13	13	33	15	18	19
14	15	35	16	20	21
15	17	36	18	22	23
16	19	37	20	24	25
17	21	37	21	26	27
18	23	37	22	28	29
19	24	37	23	29	31
20	25	36	25	30	32
21	26	37	26	31	34
22	26	36	27	33	35
23	27	36	28	34	36
24	27	36	28	35	37
25	28	36	29	36	39
26	28	36	30	37	40
27	29	36	30	38	41
28	29	36	31	38	42
29	29	36	32	39	43
30	29	37	33	40	44
31	30	37	35	40	45
32	30	38	36	41	47
33	31	39	37	43	48
34	32	40	38	44	50
35	32	40	39	45	51
36	33	41	40	47	52
37	34	41	41	48	52
38	34	41	42	49	53

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Time (minutes)	Temperature Rise (°C)				
	Thermocouple No. 6	Thermocouple No. 7	Thermocouple No. 8	Thermocouple No. 9	Thermocouple No. 10
39	35	41	43	50	53
40	36	42	43	51	53
41	36	41	44	52	54
42	36	41	44	52	55
43	37	41	45	53	55
44	38	41	46	53	56
45	38	42	47	57	56
46	39	42	47	55	57
47	39	42	48	56	57
48	40	42	49	56	58
49	41	43	50	57	58
50	42	44	51	57	59
51	43	44	51	58	59
52	43	45	52	58	60
53	44	45	53	58	60
54	45	46	54	59	61
55	45	47	55	59	61
56	46	48	56	60	62
57	46	50	57	60	63
58	47	51	58	61	63
59	47	52	59	61	64
60	47	54	60	61	65
61	48	55	61	62	65
62	48	56	61	62	66
63	48	57	62	63	66
64	49	57	62	63	67
65	49	58	62	64	67
66	49	58	63	65	68
67	50	58	63	66	69
68	50	58	63	66	71
69	51	58	64	67	73
70	52	57	65	69	75
71	53	57	66	70	77
72	54	56	67	73	79
73	55	56	68	75	82
74	55	57	70	77	85
75	56	57	71	79	88
76	57	58	73	81	91
77	58	60	76	83	94
78	59	61	80	85	96
79	60	62	85	87	98

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Time (minutes)	Temperature Rise (°C)				
	Thermocouple No. 6	Thermocouple No. 7	Thermocouple No. 8	Thermocouple No. 9	Thermocouple No. 10
80	61	65	92	89	100
81	63	68	99	92	102
82	65	70	108	95	105
83	68	72	120	101	110
84	70	74	135	108	119

See **Figure 7** for the location of the thermocouples.

Additional Unexposed Face Temperature Data

Time (minutes)	Temperature Rise (°C)			
	Thermocouple No. 11	Thermocouple No. 12	Thermocouple No. 13	Thermocouple No. 14
0	-1	-1	-1	0
1	-1	-1	-1	0
2	-1	-1	-1	0
3	-1	0	-1	0
4	-1	0	-1	1
5	0	2	0	3
6	3	5	0	6
7	7	9	2	10
8	11	13	4	15
9	14	17	6	20
10	17	21	8	25
11	19	25	11	28
12	20	28	13	31
13	21	31	16	34
14	22	34	18	36
15	23	36	20	38
16	24	38	22	40
17	25	39	24	41
18	26	40	26	42
19	27	41	27	43
20	28	42	28	43
21	29	43	29	44
22	30	43	30	44
23	31	44	31	45
24	32	44	32	45
25	33	44	33	45
26	33	45	34	46
27	34	47	35	48
28	34	49	37	50
29	35	51	38	52
30	36	52	40	53
31	37	53	42	54
32	38	53	44	54
33	40	54	46	54
34	41	55	47	54
35	43	56	48	54
36	44	56	49	55
37	45	57	50	55
38	45	57	51	55

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Time (minutes)	Temperature Rise (°C)			
	Thermocouple No. 11	Thermocouple No. 12	Thermocouple No. 13	Thermocouple No. 14
39	46	57	52	55
40	47	58	52	55
41	47	58	53	56
42	48	59	54	57
43	48	59	55	57
44	48	60	55	58
45	49	60	56	59
46	49	61	56	60
47	49	61	57	62
48	50	62	57	63
49	50	62	57	65
50	51	63	57	67
51	51	63	58	69
52	52	64	58	70
53	52	64	58	72
54	53	65	58	73
55	53	66	58	74
56	54	67	59	74
57	55	67	59	75
58	55	68	59	76
59	56	70	60	76
60	56	73	60	77
61	57	76	61	78
62	58	78	61	79
63	58	80	62	80
64	59	81	62	82
65	60	83	62	83
66	60	84	63	84
67	61	86	63	86
68	62	87	64	88
69	63	89	65	90
70	63	91	65	92
71	64	93	66	96
72	66	95	67	101
73	67	99	68	107
74	68	104	70	116
75	70	112	72	126
76	72	126	75	143
77	73	145	79	165
78	75	166	81	199
79	76	189	84	243

Customer: **British Gypsum**

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The Building Test Centre

Fire Acoustics Structures

The Building Test Centre
East Leake
Loughborough
Leics. LE12 6NP
Tel: (0115) 945 1947
Email: btc.testing@saint-gobain.com

Time (minutes)	Temperature Rise (°C)			
	Thermocouple No. 11	Thermocouple No. 12	Thermocouple No. 13	Thermocouple No. 14
80	78	211	87	294
81	80	234	91	346
82	83	261	96	427
83	85	291	103	477
84	88	324	113	369

See **Figure 7** for the location of the thermocouples.

Internal Temperature Data at 1500 mm Height

Time (minutes)	Actual Temperature (°C)					
	Left stud			Right stud		
	Hot Flange Thermocouple No. 15	Web Thermocouple No. 16	Cold Flange Thermocouple No. 17	Hot Flange Thermocouple No. 18	Web Thermocouple No. 19	Cold Flange Thermocouple No. 20
0	29	24	21	29	26	21
1	32	25	21	31	26	21
2	54	33	21	52	37	21
3	77	51	22	80	56	21
4	90	66	22	95	73	22
5	95	76	23	98	80	23
6	97	83	24	98	85	26
7	96	86	27	98	89	31
8	97	87	29	98	89	36
9	98	88	32	99	90	40
10	99	89	35	99	92	43
11	100	90	39	100	93	47
12	102	91	42	102	94	50
13	105	91	45	103	94	51
14	106	92	48	105	95	52
15	109	93	51	108	95	54
16	112	93	54	112	96	56
17	114	93	57	118	97	58
18	117	94	59	124	97	60
19	121	94	61	134	98	61
20	127	95	63	154	100	62
21	134	96	65	184	107	64
22	154	98	66	215	124	65
23	188	111	68	246	147	66
24	220	135	69	272	170	67
25	251	160	70	295	194	69
26	281	181	71	315	215	72
27	311	198	73	331	230	78
28	336	212	75	347	241	81
29	359	227	77	372	252	82
30	378	242	79	407	263	80
31	396	254	81	445	272	86
32	408	267	84	486	281	88
33	418	277	86	523	291	88
34	434	286	88	562	301	89
35	453	294	90	593	310	90
36	475	305	91	623	320	91

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Time (minutes)	Actual Temperature (°C)					
	Left stud			Right stud		
	Hot Flange Thermocouple No. 15	Web Thermocouple No. 16	Cold Flange Thermocouple No. 17	Hot Flange Thermocouple No. 18	Web Thermocouple No. 19	Cold Flange Thermocouple No. 20
37	495	313	92	654	332	91
38	516	322	93	671	341	92
39	533	331	94	692	352	93
40	546	342	94	695	363	95
41	558	352	95	698	372	97
42	568	361	96	696	382	98
43	578	371	97	689	392	99
44	587	380	98	695	404	100
45	596	390	99	687	415	100
46	601	402	100	694	427	101
47	608	413	101	707	439	102
48	615	424	103	709	450	104
49	619	434	104	722	463	105
50	624	445	106	718	473	107
51	628	456	109	733	483	109
52	631	466	111	729	491	111
53	634	476	113	764	504	113
54	637	486	115	785	515	115
55	639	496	117	789	525	118
56	643	504	120	782	531	120
57	648	513	122	808	542	123
58	654	523	125	800	550	126
59	661	531	127	816	561	129
60	668	540	130	837	571	132
61	675	550	132	836	577	135
62	682	558	135	873	585	138
63	691	571	137	891	596	141
64	698	580	140	895	605	143
65	705	590	142	905	616	146
66	712	603	145	916	635	150
67	719	615	149	887	646	154
68	726	628	153	870	668	160
69	733	644	158	822	690	168
70	741	654	164	801	708	180
71	747	669	171	-	702	195
72	754	704	180	-	-	213
73	762	734	195	-	-	236
74	772	766	234	-	-	265
75	781	785	412	-	-	312

Customer: **British Gypsum**

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Time (minutes)	Actual Temperature (°C)					
	Left stud			Right stud		
	Hot Flange Thermocouple No. 15	Web Thermocouple No. 16	Cold Flange Thermocouple No. 17	Hot Flange Thermocouple No. 18	Web Thermocouple No. 19	Cold Flange Thermocouple No. 20
76	-	-	610	-	-	885
77	-	-	729	-	-	-
78	-	-	776	-	-	-
79	-	-	789	-	-	-
80	-	-	850	-	-	-
81	-	-	892	-	-	-
82	-	-	955	-	-	-
83	-	-	965	-	-	-
84	-	-	-	-	-	-

- Thermocouple broken due to equipment failure.

See **Figure 7** for the location of the thermocouples.

Specimen Lateral Deflection

Time (minutes)	Deflection (mm)
	Centre
0	0.0
2	2.8
3	2.8
4	3.0
5	2.8
6	2.4
7	1.7
8	1.2
9	0.7
10	0.6
11	0.4
12	0.3
13	0.0
14	-0.1
15	-0.3
16	-0.6
17	-0.8
18	-1.1
19	-1.2
20	-1.4
21	-1.9
22	-2.3
23	-2.7
24	-3.5
25	-4.3
26	-5.4
27	-6.0
28	-7.9
29	-9.6
30	-10.8
31	-11.8
32	-13.4
33	-14.3
34	-15.2
35	-16.1
36	-17.3
37	-18.2
38	-18.8
39	-19.7

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Time (minutes)	Deflection (mm)
	Centre
40	-20.2
41	-21.0
42	-22.1
43	-22.8
44	-23.8
45	-25.4
46	-25.7
47	-26.8
48	-27.9
49	-28.9
50	-30.1
51	-30.7
52	-31.5
53	-32.1
54	-32.8
55	-33.6
56	-34.2
57	-34.4
58	-34.7
59	-34.5
60	-34.8
61	-34.1
62	-33.5
63	-32.8
64	-31.9
65	-31.2
66	-30.7
67	-30.2
68	-27.3
69	-23.9
70	-21.8
71	-20.7
72	-20.4
73	-19.7
74	-18.9
75	-20.3
76	-20.7
77	-22.1
78	-22.8

The deflection was recorded at the approximate centre of the specimen. Positive readings indicate deflection into the furnace.

The transducer detached after 78 minutes.

Customer: **British Gypsum**

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PHOTOGRAPHS

Exposed Face Prior to Test



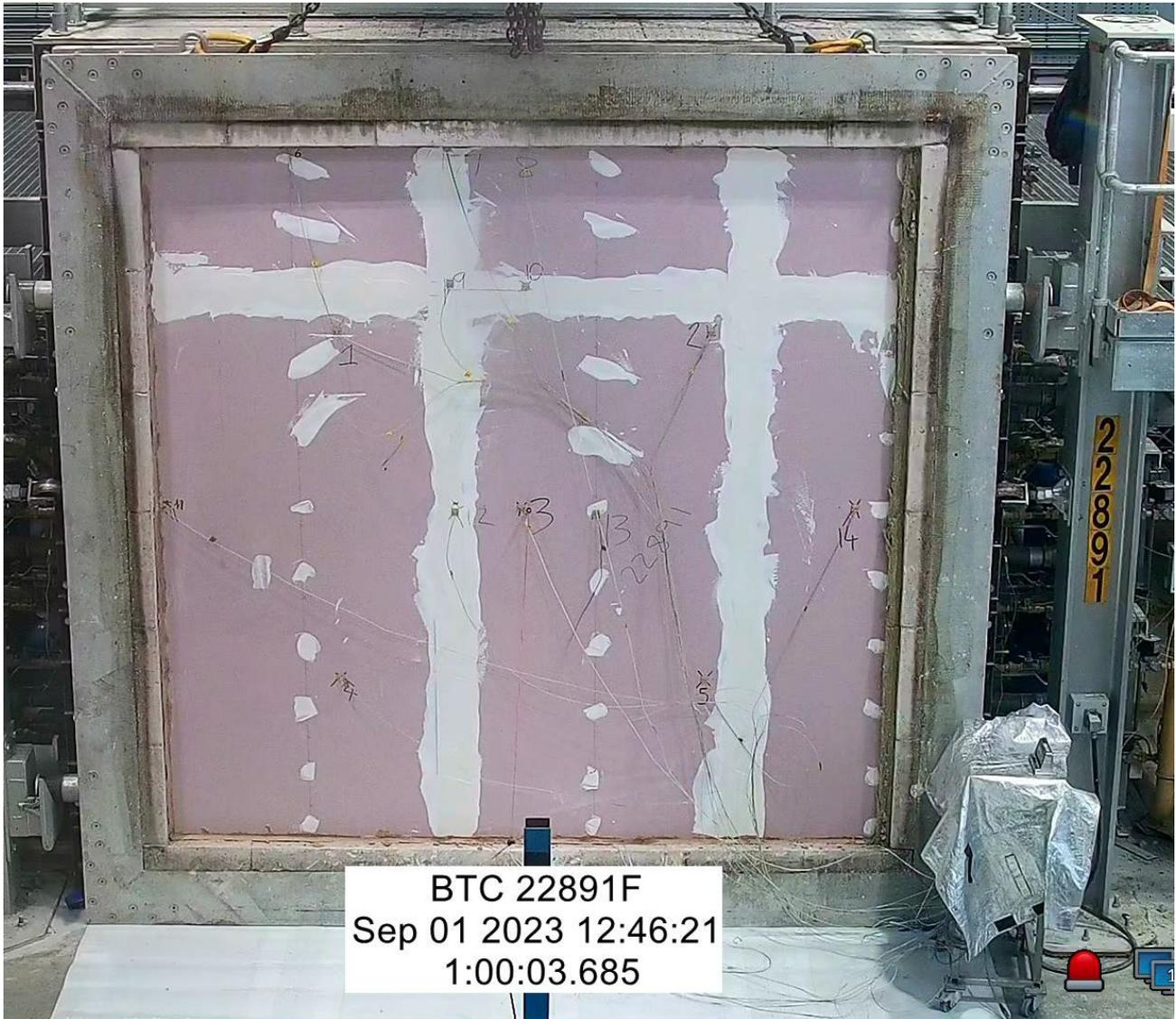
Unexposed Face Prior to Test



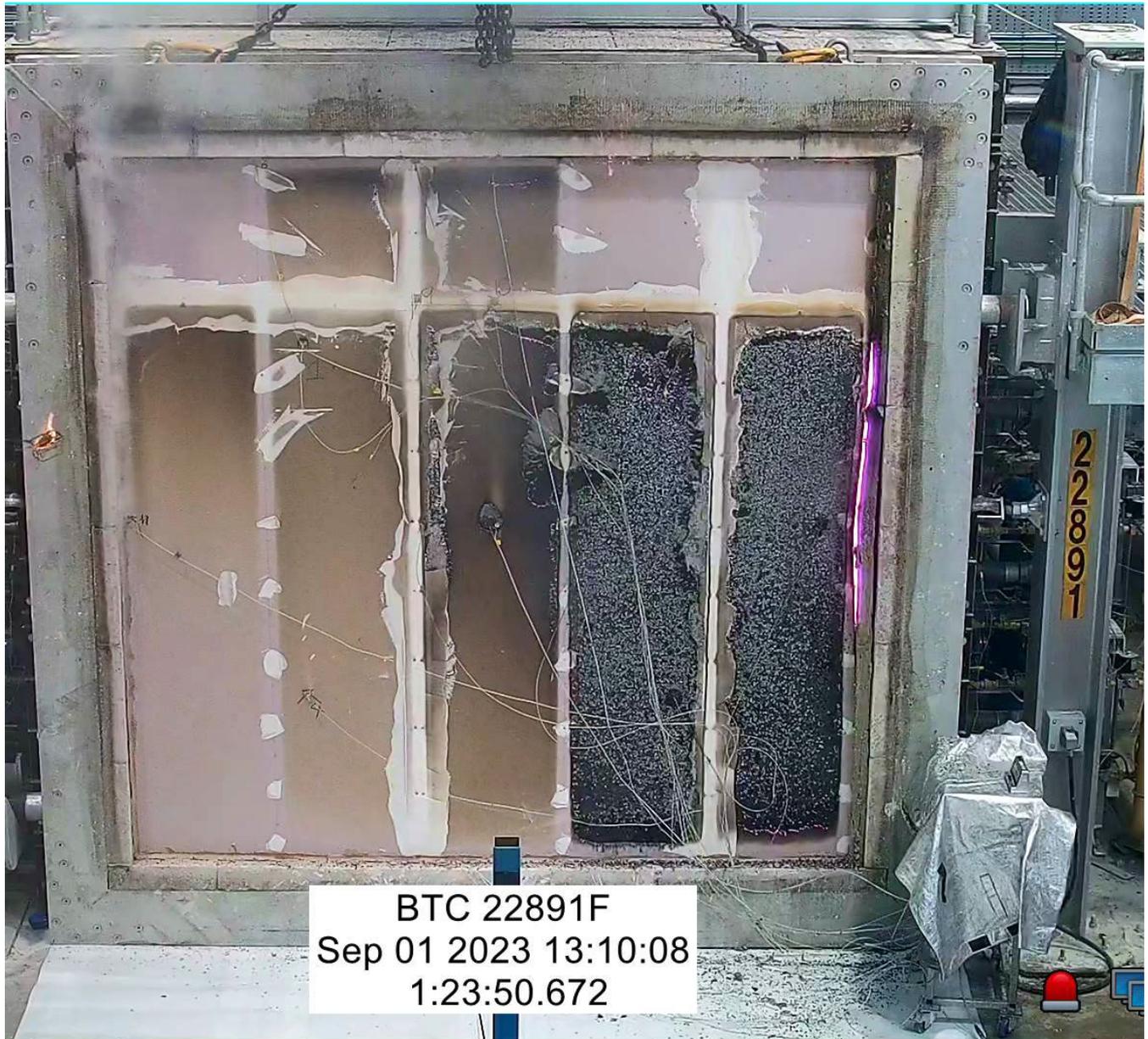
Unexposed Face at 30 Minutes



Unexposed Face at 1 Hour



Unexposed Face at 1 Hour, 24 Minutes, at Test Termination



FIELD OF DIRECT APPLICATION

General

The results of the fire test are directly applicable to similar constructions where one or more of the changes listed below are made and the construction continues to comply with the appropriate design code for its stiffness and stability.

- i) Decrease in height.
- ii) Increase in the thickness of the wall.
- iii) Increase thickness of component materials.
- iv) Decrease in the linear dimensions of the boards but not thickness.
- v) Decrease stud spacing.
- vi) Decrease in fixing centres.
- vii) Increase in the number of horizontal joints, of the type tested, when tested with one joint not more than (500 ± 150) mm from the top edge.

Extension of Width

For test specimens tested without a supporting construction, the width of an identical construction may be increased as the specimen was tested at nominally 3000 mm wide with one vertical edge without restraint.

Extension of Height

The height of the construction may be increased by 1000 mm under the following conditions:

30 minutes	60 minutes
≤ 100 mm	≤ 100 mm