

Report Number BTC 18421F

A FIRE RESISTANCE TEST ON A GYPWALL METAL STUD PARTITION WITH 70mm STUD FRAMEWORK CLAD EACH SIDE WITH A SINGLE LAYER OF 15mm GYPROC SOUNDBLOC F EX KIRKBY THORE AND 3 X 25mm ISOVER APR IN THE CAVITY, CONDUCTED IN ACCORDANCE WITH BS EN 1364-1: 1999.

Test Date: 19th August 2013

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

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1. FOREWORD

This test report details a fire resistance test conducted on a metal stud partition clad on each face with a single layer of Gyproc SoundBloc F. The test sponsor was British Gypsum.

The test specimen was installed by Alltone Limited. The construction of the specimen took place on the 16th August 2013. The Building Test Centre played no role in the design or selection of materials comprising the test specimen.

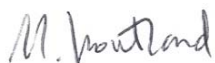
The test was conducted on the 19th August 2013.

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 or 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 1363-1:2012 (page 30).

2. REPORT AUTHORISATION

Report Author



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3. TEST REPORT AMENDMENTS

Page	Amendments	Date

4. TEST CONSTRUCTION

4.1 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).

Gypframe 72FEC50 Standard Folded Edge Floor & Ceiling were fixed to the head and base of the test aperture at 600mm centres using 60mm fire resistant fixings.

Gypframe 70AS50 'C' Studs were positioned at 600mm centres between the channels. 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 25mm thick rock mineral fibre gasket.

At the left-hand edge a Gypframe 70AS50 'C' Stud was used to fix the partition to the test frame, using 60mm fire resistance fixings at 600mm centres.

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

Three layers of 25mm Isover APR were positioned in the cavity.

Both the unexposed face and the exposed face of the specimen were clad with a single layer of British Gypsum 15mm Gyproc SoundBloc F. The boards were fixed with 25mm Gyproc British Gypsum Drywall Screws at 300mm 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 2400mm from the base, on both faces of the specimen. A Gypframe GFS1 fixing strap was used behind the horizontal board joint.

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.

4.2 Test Construction Drawings

4.2.1 Horizontal Cross Section

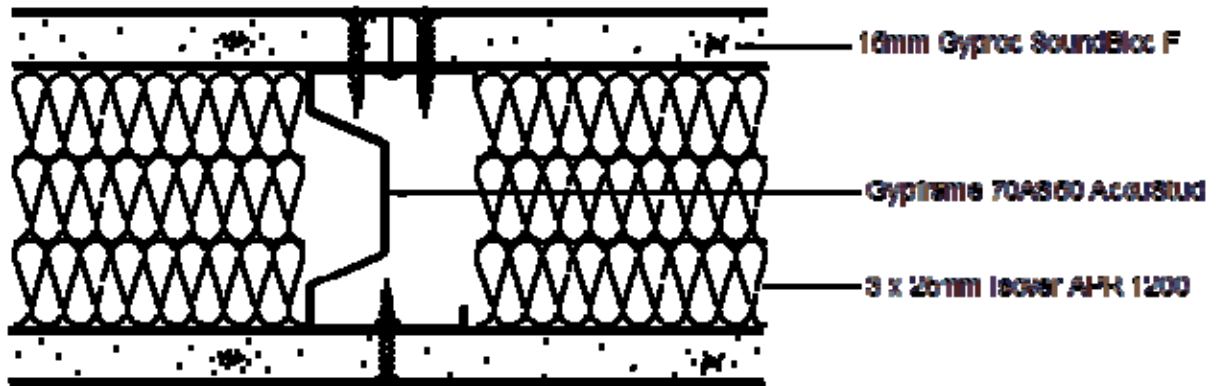


Figure 1 - Horizontal Cross Section

4.2.2 Exposed Face Elevation

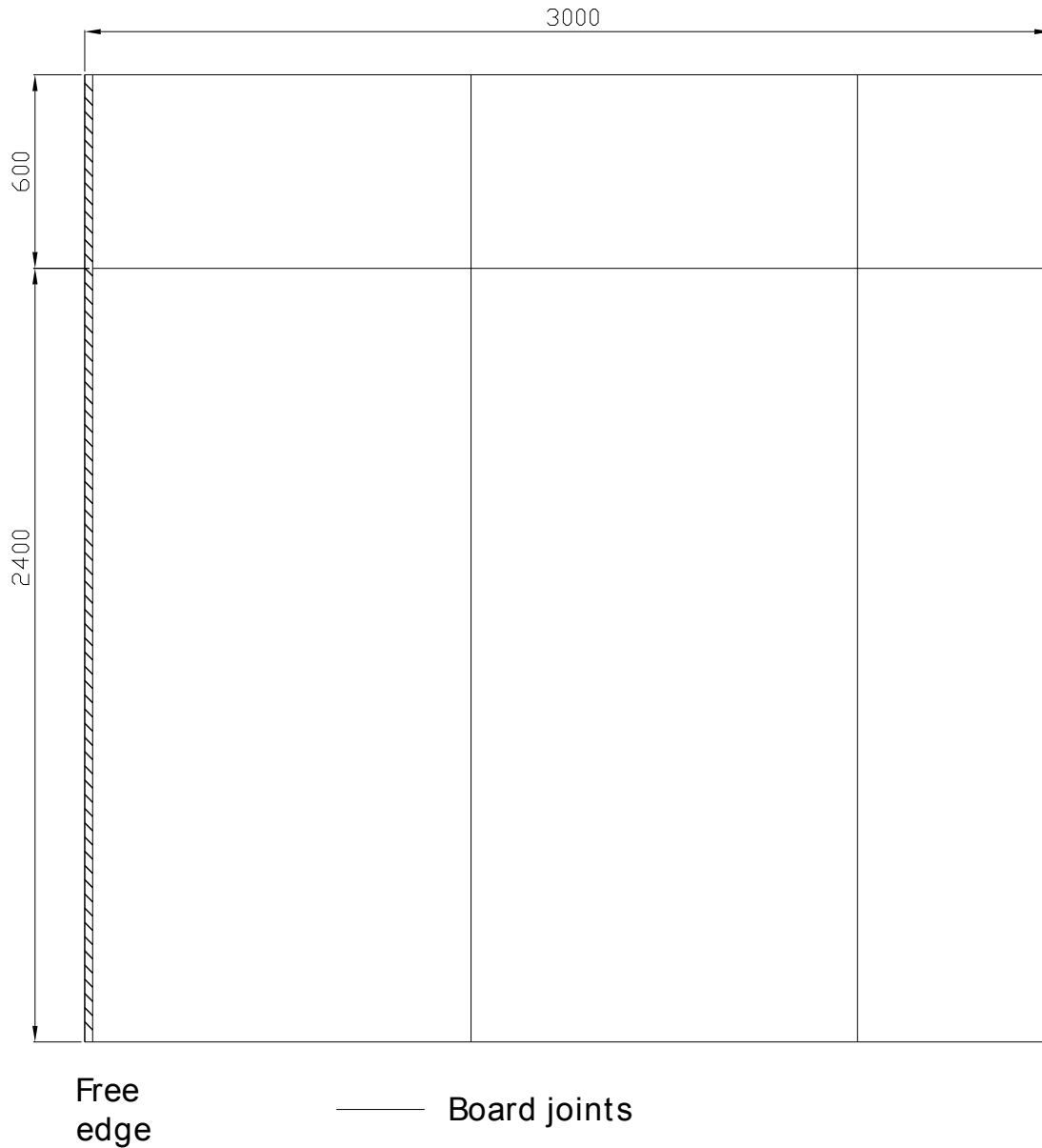


Figure 2 - Exposed Face Elevation

4.2.3 Unexposed Face Elevation

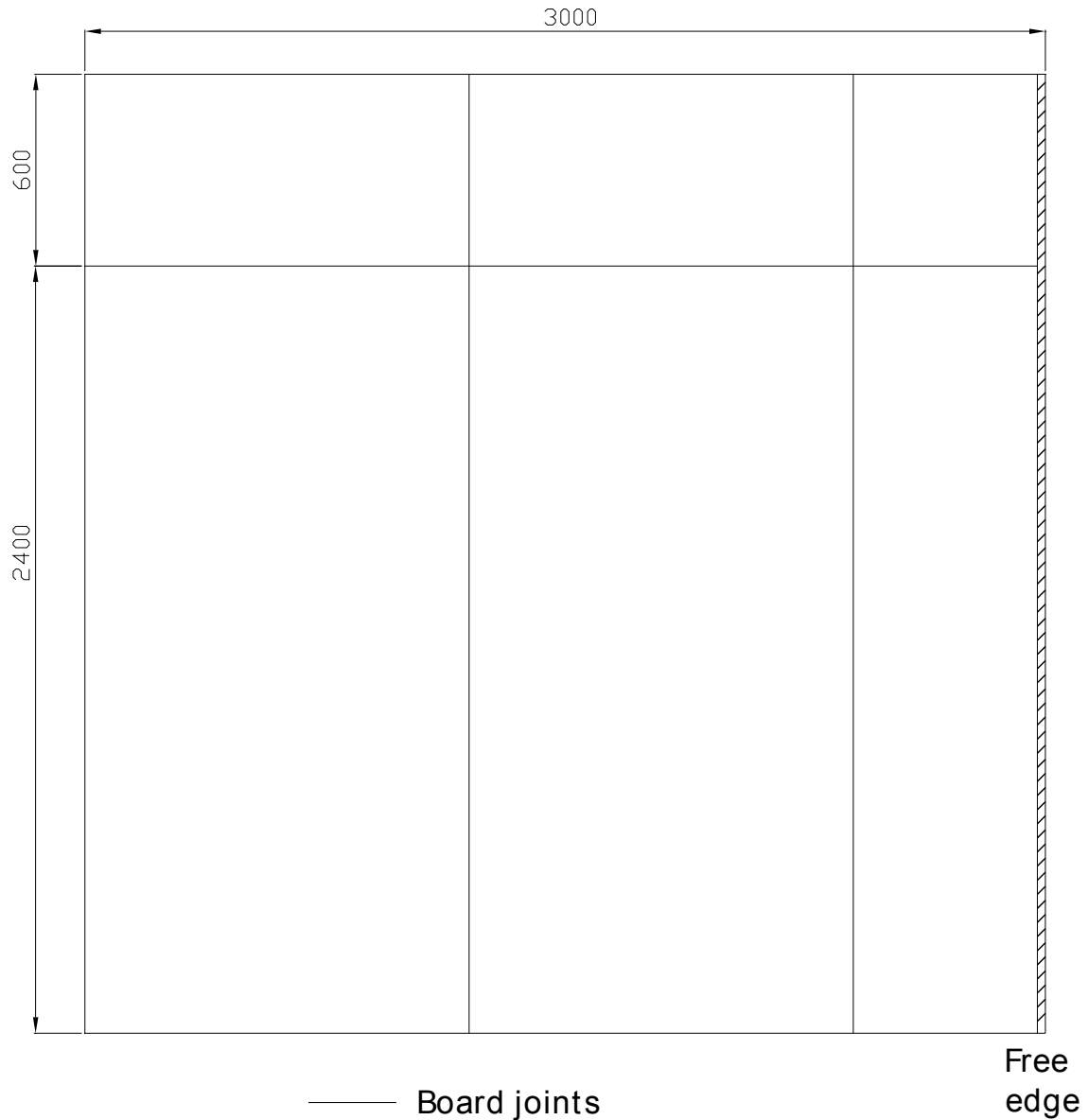


Figure 3 - Unexposed Face Elevation

The descriptions of individual components making up the test specimen were provided by the customer and were checked for accuracy wherever possible.

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5. TEST MATERIALS

5.1 Gyproc SoundBloc F

- i) Nominally, 2400mm (long) x 1200mm (wide) x 15mm (thick), Gyproc SoundBloc F, manufactured and supplied by British Gypsum, ex Kirkby Thore.

Measured weight per unit area:	13.4 kg/m ²
Measured thickness:	15.3 mm
Board identification numbers:	26 207 13 11:41 26 207 13 11:41 26 207 13 11:41
Measured moisture content:	Less than 1%

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.

5.2 Metal Components

- ii) Gypframe 72FEC50 Standard Folded Edge Floor & Ceiling Channels.
iii) Gypframe 70AS50 'C' Studs.
iv) Gypframe GFS1 Fixing Strap.

All metal components were supplied by British Gypsum.

5.3 Fasteners

- v) 25mm Gyproc Drywall British Gypsum Screws, supplied by British Gypsum.
vi) 60mm fire resistant fixings, supplied by the Building Test Centre.

5.4 Miscellaneous Components

- vii) Gyproc Paper Joint Tape, supplied by British Gypsum.
viii) Gyproc Joint Filler, supplied by British Gypsum.
ix) Rock mineral fibre gasket, supplied by the Building Test Centre.

Where measurements could not be taken then weight and dimensions were provided by the customer or the manufacturer e.g. from material labelling. Material information was recorded according to procedure MAT/1.

6. TEST PROCEDURE

The test was conducted fully in accordance with BS EN 1364-1: 1999. The specimen was subjected to fire from one side, as specified in BS EN 1364-1: 1999.

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 19°C.

The furnace pressure was set to control at 18 ± 2 Pa positive with respect to atmosphere, 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: 2012 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: 2012.

7. TEST RESULTS

The requirements of the standard were satisfied for the following periods:

Integrity	Sustained flaming	90 minutes, no failure (the test having been discontinued at the request of the sponsor)
	6mm gap gauge	90 minutes, no failure (the test having been discontinued at the request of the sponsor)
	25mm gap gauge	90 minutes, no failure (the test having been discontinued at the request of the sponsor)
	Cotton Pad	90 minutes, no failure (the test having been discontinued at the request of the sponsor)
Insulation		70 minutes

The test was terminated at 90 minutes at the request of the sponsor.

8. LIMITATIONS

The scope of the Field of Direct Application of the results and construction detailed in this test report is explained in BS EN 1364-1: 1999, section 13.

9. TEST DATA

9.1 Observations

Observers: Unexposed face Mark Shortland
 Exposed face Paul Adams

Time		Observations
hours	mins	
		<i>All observations refer to the exposed face unless otherwise stated.</i>
0	0	Test started.
0	10	All boards had charred. Jointing material was flaking away.
0	20	Left-hand vertical joint had opened to approximately 2-4mm. Right-hand vertical joint had opened to approximately 2-4mm. Horizontal joint had opened to approximately 2mm.
0	30	Left-hand vertical joint had opened to approximately 3-6mm. Right-hand vertical joint had opened to approximately 3-6mm. Horizontal joint had opened to approximately 2-4mm. <i>Unexposed face</i> No visible change.
0	40	Left-hand vertical joint had opened to approximately 5-10mm. Right-hand vertical joint had opened to approximately 5-10mm. Horizontal joint had opened to approximately 4-8mm. Boards were pulling away from screw heads.
0	50	No visible change.
1	00	Left-hand vertical joint had opened to approximately 30mm. Right-hand vertical joint had opened to approximately 30mm. Horizontal joint had opened to approximately 20mm. <i>Unexposed face</i> Free edge heavily deflected into furnace (almost beyond the Rockwool packing on the free edge).

Time		Observations
hours	mins	
		<i>All observations refer to the exposed face unless otherwise stated.</i>
1	10	<p>Left-hand vertical joint had opened to approximately 60mm. Right-hand vertical joint had opened to approximately 50mm. Horizontal joint had opened to approximately 40mm. Stud was exposed on left-hand vertical joint.</p> <p><i>Unexposed face</i> INSULATION FAILURE. The temperature rise of thermocouple no.32, positioned at mid-height in the centre of the centre board, exceeded 180°C.</p>
1	11	<p><i>Unexposed face</i> Centre board had discoloured from approximately 600-1800mm height in the centre, just to the right of the central fixings. Screw heads had discoloured full height of the specimen at the centre of the centre boards. Screw heads had discoloured across the full width on the horizontal joint.</p>
1	15	<p><i>Unexposed face</i> All screw heads had discoloured.</p>
1	20	<p>Left-hand vertical joint had opened to approximately 70mm. Right-hand vertical joint had opened to approximately 70mm. Horizontal joint had opened to approximately 50mm. Cracks were appearing on all boards.</p> <p><i>Unexposed face</i> Right-hand side of the lower centre board had discoloured from approximately 300-2100mm height. Right-hand vertical joint had discoloured from approximately 600-1500mm height. Centre of lower left-hand board had discoloured from approximately 900-2400mm height.</p>
1	23	<p><i>Unexposed face</i> INSULATION FAILURE. The mean temperature rise of the standard five thermocouples exceeded 140°C. Upper centre board had discoloured in the centre from approximately 2400-2700mm height. Glow visible on the right-hand vertical joint from approximately 600-1500mm height (crack open approximately 1mm).</p>

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Time		Observations
hours	mins	
		<i>All observations refer to the exposed face unless otherwise stated.</i>
1	27	<i>Unexposed face</i> Glow visible on the horizontal joint at mid-span above centre of lower centre board (crack open approximately 1mm).
1	29	<i>Unexposed face</i> Cotton pad attempt at centre of specimen, on the horizontal joint at 2400mm height – no failure.
1	30	TEST TERMINATED at the request of the sponsor.

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9.2 Furnace Temperature Graph

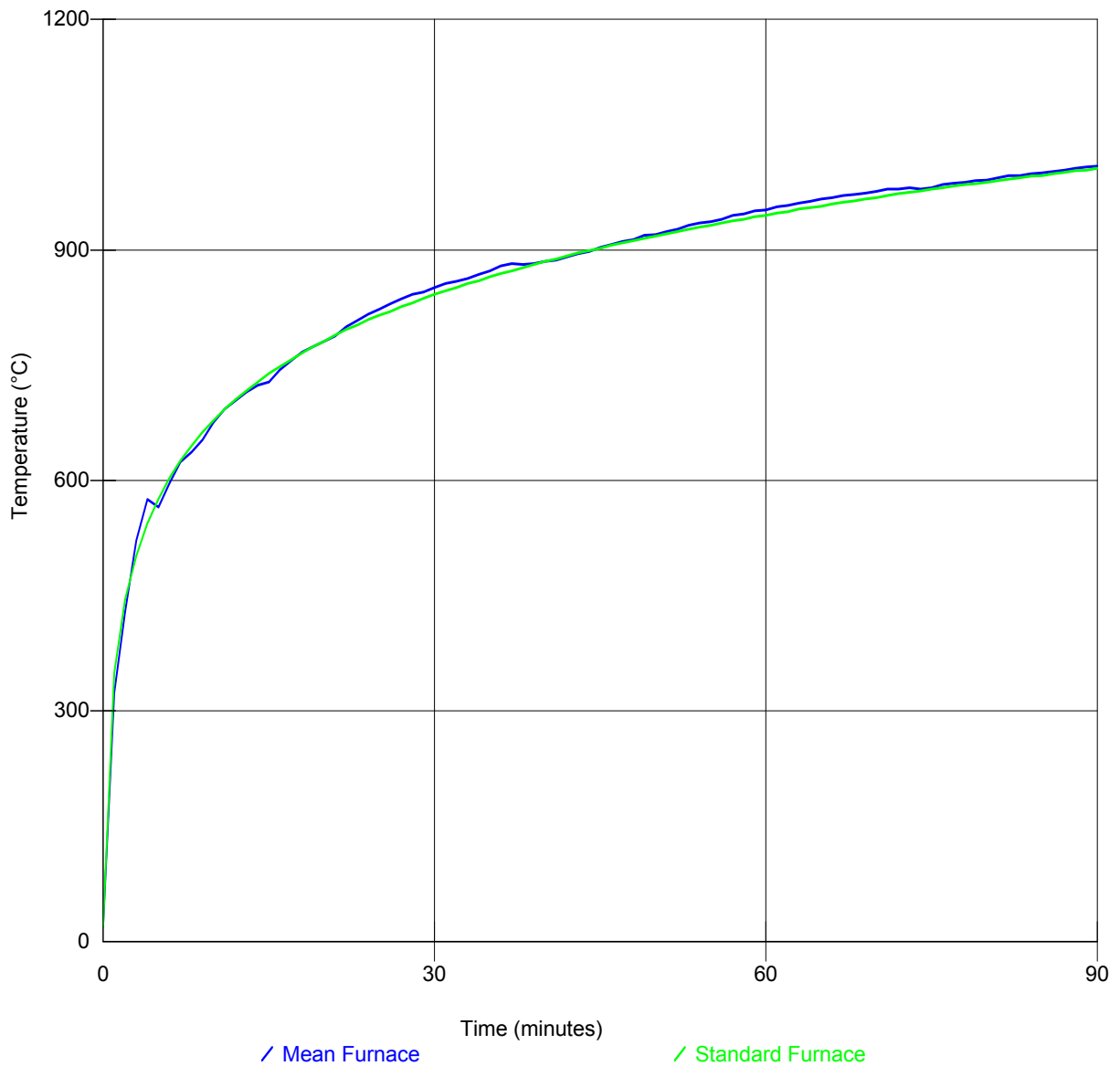


Figure 4 - Furnace temperature graph

9.3 Furnace Pressure Graph

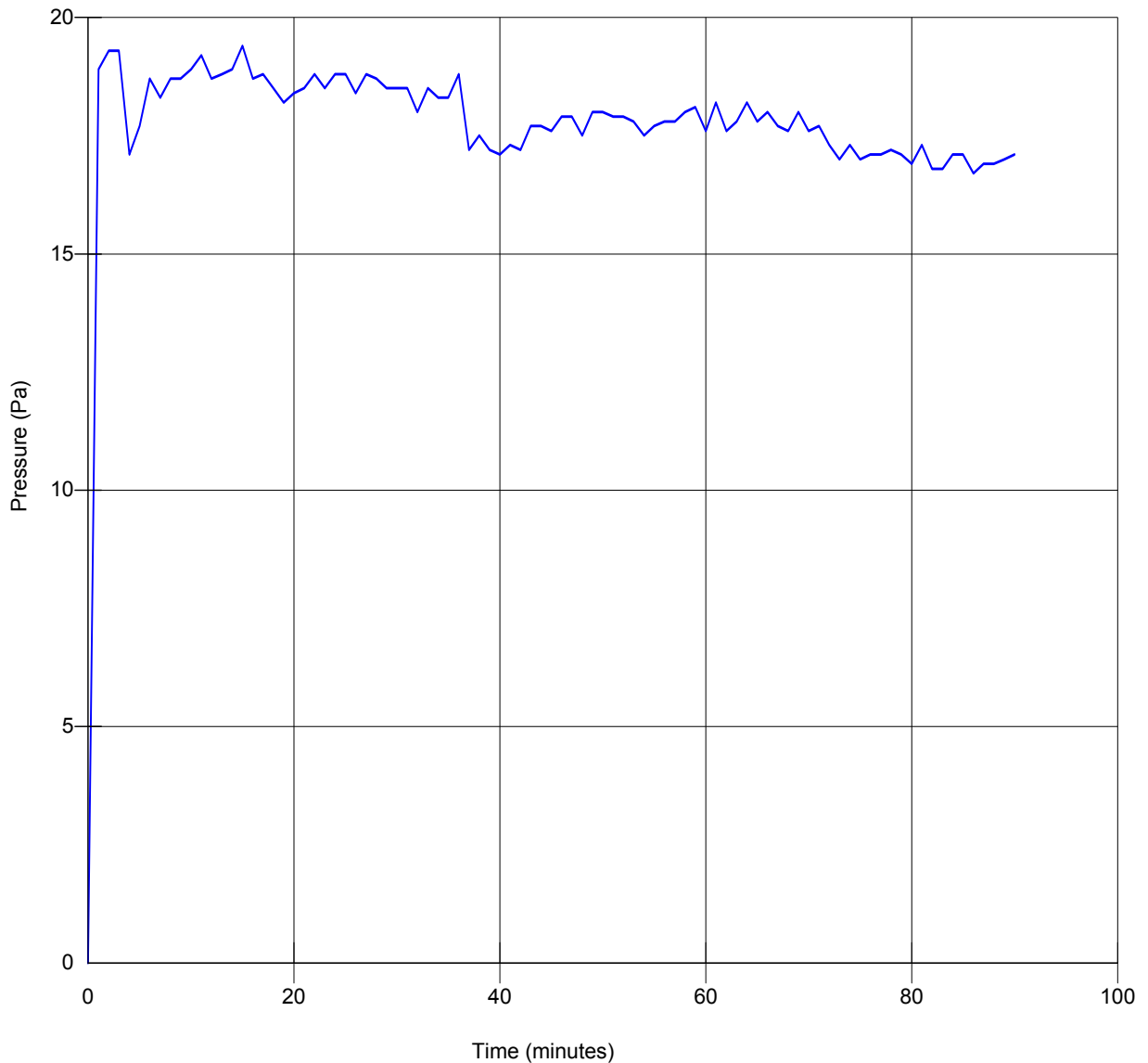


Figure 5 - Furnace pressure graph

The furnace pressure was set to control at 18 ± 2 Pa positive with respect to atmosphere, at the top of the specimen.

9.4 Unexposed Face Temperature Graph

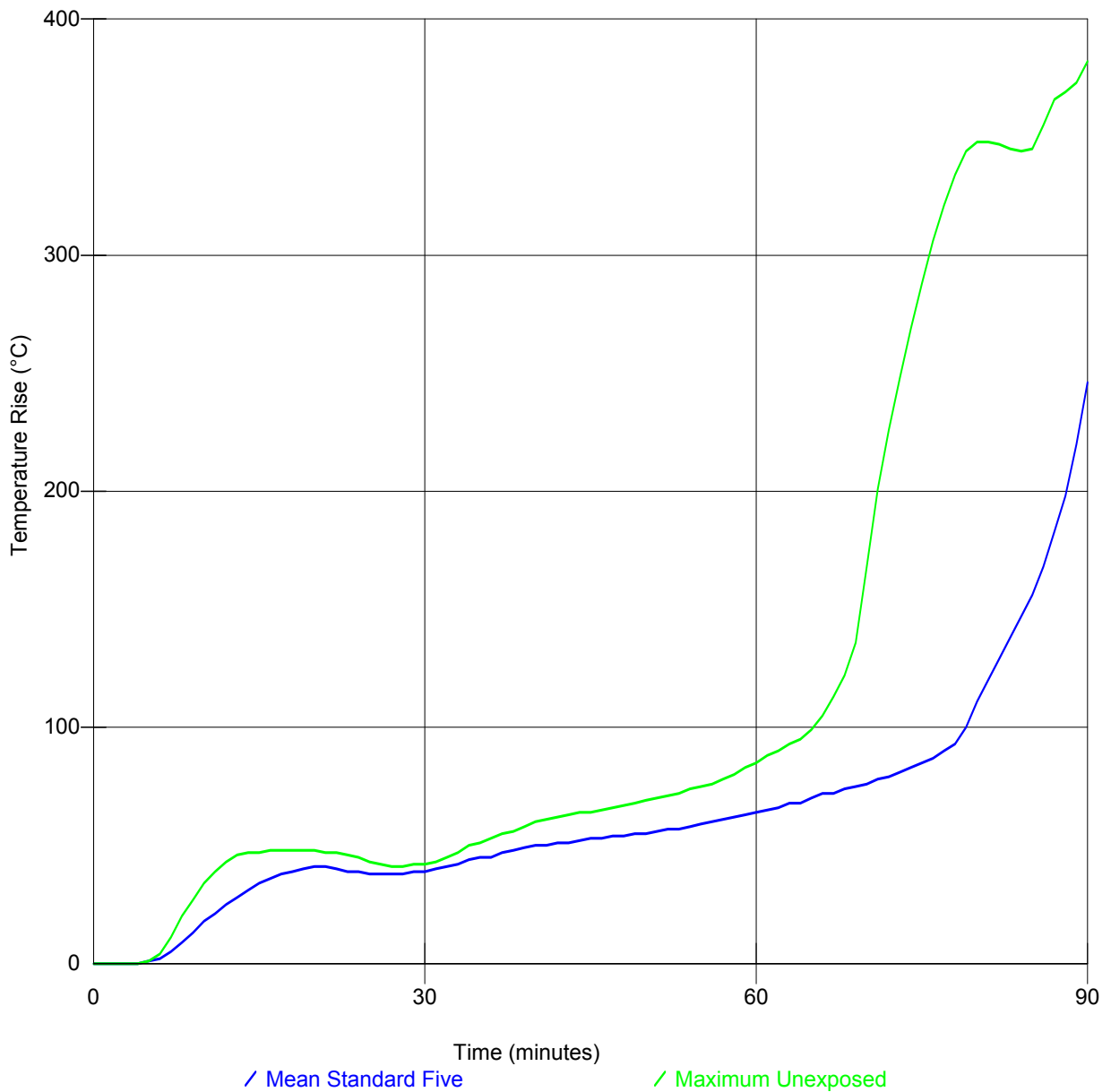


Figure 6 - Unexposed face temperature graph

9.5 Unexposed Face Thermocouple Layout

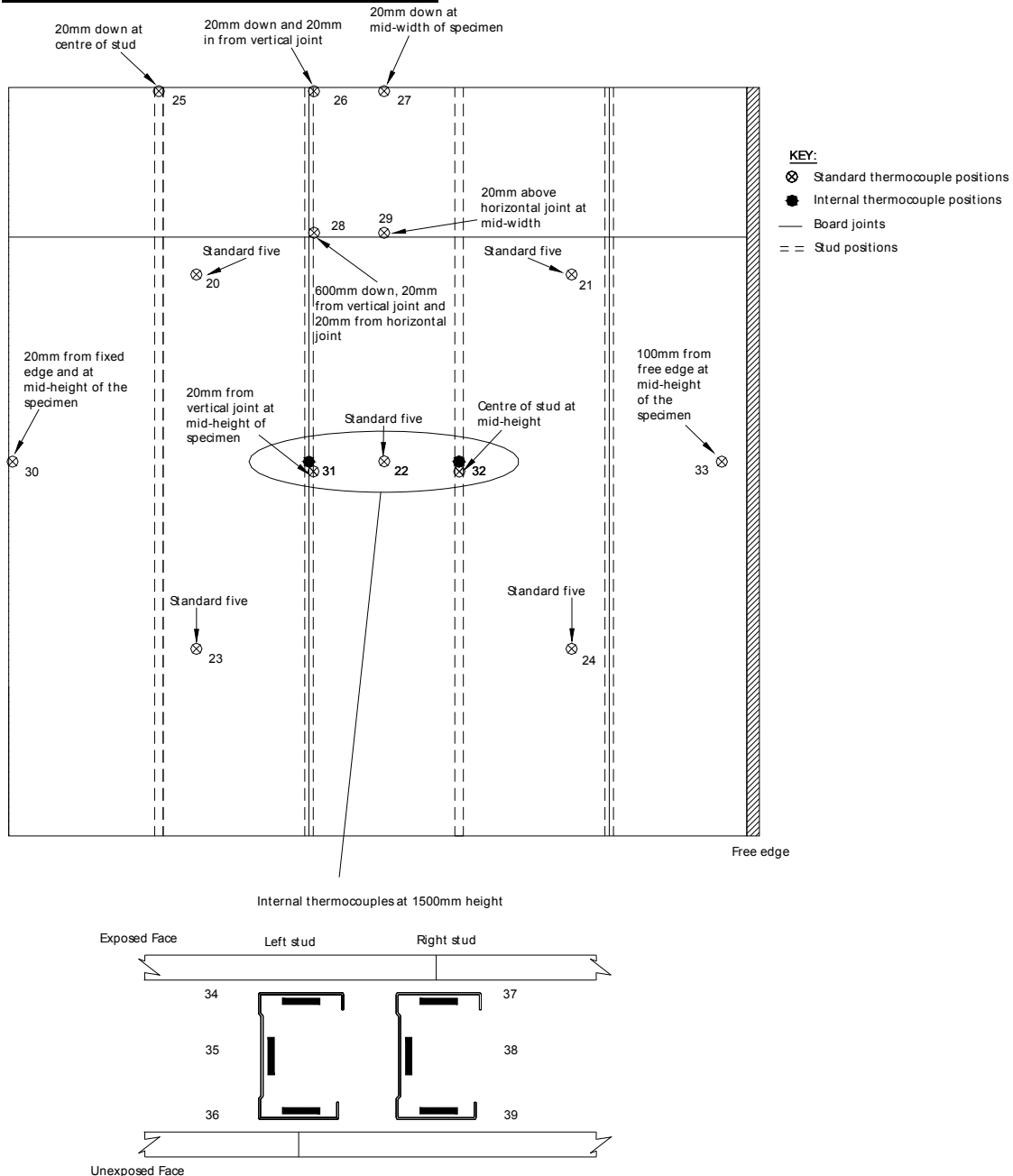


Figure 7 - Unexposed face thermocouple layout

9.6 Unexposed Face Standard Five Temperature Data

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

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Time (mins)	Temperature Rise (°C)					Mean Standard 5
	Thermocouple No. 20	Thermocouple No. 21	Thermocouple No. 22	Thermocouple No. 23	Thermocouple No. 24	
39	51	44	51	51	46	49
40	52	45	52	52	47	50
41	52	46	52	52	47	50
42	53	47	53	53	48	51
43	53	48	54	53	49	51
44	54	48	54	54	49	52
45	54	49	55	55	50	53
46	55	49	55	55	50	53
47	55	50	56	56	51	54
48	55	50	57	57	51	54
49	55	51	58	57	52	55
50	56	51	58	57	52	55
51	56	51	59	58	54	56
52	57	52	60	59	55	57
53	58	52	61	60	56	57
54	59	53	62	60	57	58
55	60	54	63	61	57	59
56	61	55	64	62	58	60
57	63	56	65	63	59	61
58	64	57	65	64	60	62
59	65	59	66	65	61	63
60	67	60	67	66	62	64
61	68	60	68	67	63	65
62	69	62	70	67	63	66
63	70	63	71	69	65	68
64	71	64	72	69	66	68
65	72	65	73	71	69	70
66	73	67	74	72	72	72
67	74	68	74	73	73	72
68	75	69	75	74	75	74
69	76	70	76	75	77	75
70	77	71	77	76	79	76
71	78	72	78	78	82	78
72	79	73	78	79	86	79
73	80	74	80	80	91	81
74	82	75	81	81	94	83
75	84	77	82	82	98	85
76	86	79	83	83	104	87
77	87	80	84	84	115	90
78	89	82	86	86	123	93
79	92	85	87	88	149	100

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Time (mins)	Temperature Rise (°C)					
	Thermocouple No. 20	Thermocouple No. 21	Thermocouple No. 22	Thermocouple No. 23	Thermocouple No. 24	Mean Standard 5
80	95	87	88	90	193	111
81	100	91	89	93	229	120
82	105	94	92	97	258	129
83	111	97	94	102	286	138
84	115	101	97	110	310	147
85	123	107	102	115	334	156
86	143	116	109	119	355	168
87	173	123	120	135	366	183
88	199	136	125	161	369	198
89	219	173	146	191	373	220
90	237	212	185	216	382	246

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

See figure 7 for the location of the thermocouples.



9.7 Additional Unexposed Face Temperature Data

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

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Time (mins)	Temperature Rise (°C)				
	Thermocouple No. 25	Thermocouple No. 26	Thermocouple No. 27	Thermocouple No. 28	Thermocouple No. 29
39	44	45	42	47	39
40	45	46	43	48	41
41	47	47	43	50	43
42	48	48	44	51	45
43	50	49	45	52	46
44	51	50	45	53	48
45	52	50	46	54	50
46	53	51	46	55	51
47	54	51	46	56	53
48	55	52	47	58	54
49	55	52	47	58	55
50	56	52	47	59	56
51	57	53	47	60	57
52	58	54	48	61	58
53	59	54	48	61	58
54	59	55	49	62	59
55	60	56	49	63	60
56	60	57	50	63	61
57	61	57	52	65	62
58	61	58	53	66	63
59	62	59	54	67	64
60	62	60	55	68	65
61	63	60	56	70	66
62	63	61	57	71	67
63	64	61	57	73	68
64	65	61	58	74	69
65	66	62	59	75	69
66	67	63	60	77	70
67	68	63	60	78	71
68	68	64	61	79	72
69	69	65	61	80	74
70	70	67	62	82	75
71	70	68	62	83	77
72	71	70	63	85	79
73	71	71	64	87	82
74	72	72	65	89	84
75	72	73	66	92	86
76	72	74	67	95	89
77	73	74	69	99	92
78	73	75	71	102	95
79	74	76	72	105	98

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Time (mins)	Temperature Rise (°C)				
	Thermocouple No. 25	Thermocouple No. 26	Thermocouple No. 27	Thermocouple No. 28	Thermocouple No. 29
80	74	77	74	108	101
81	75	78	75	113	105
82	76	79	75	124	114
83	76	79	77	142	128
84	77	80	78	162	153
85	78	81	79	186	181
86	78	82	80	207	209
87	79	83	82	227	235
88	80	85	84	246	263
89	82	87	88	263	300
90	83	89	90	276	340

See figure 7 for the location of the thermocouples.

9.8 Additional Unexposed Face Temperature Data

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

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Time (mins)	Temperature Rise (°C)			
	Thermocouple No. 30	Thermocouple No. 31	Thermocouple No. 32	Thermocouple No. 33
39	40	53	58	44
40	41	54	60	45
41	41	56	61	46
42	42	57	62	47
43	42	59	63	47
44	43	60	64	49
45	43	60	64	50
46	43	61	65	51
47	43	62	66	52
48	44	62	67	53
49	44	63	68	54
50	44	63	69	55
51	44	64	70	56
52	45	65	71	57
53	46	66	72	59
54	46	67	74	60
55	47	68	75	61
56	47	69	76	62
57	48	71	78	64
58	49	72	80	65
59	49	74	83	67
60	50	75	85	69
61	50	76	88	72
62	50	77	90	75
63	51	78	93	78
64	52	80	95	82
65	52	81	99	85
66	53	83	105	87
67	54	85	113	88
68	54	88	122	90
69	55	90	136	92
70	56	93	168	93
71	56	96	201	95
72	57	100	226	96
73	57	104	248	98
74	58	109	269	100
75	58	113	288	102
76	59	118	306	105
77	59	126	321	109
78	60	139	334	114
79	60	150	344	121

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Time (mins)	Temperature Rise (°C)			
	Thermocouple No. 30	Thermocouple No. 31	Thermocouple No. 32	Thermocouple No. 33
80	60	165	348	127
81	61	180	348	142
82	61	192	347	163
83	62	206	345	190
84	62	218	344	215
85	62	231	345	239
86	63	242	346	263
87	64	254	347	287
88	65	267	347	310
89	66	282	346	329
90	67	299	344	347

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

See figure 7 for the location of the thermocouples.

9.9 Internal Temperature Data at 1500mm Height

Time (mins)	Actual Temperature (°C)					
	Left stud			Right stud		
	Hot Flange Thermocouple No. 34	Web Thermocouple No. 35	Cold Flange Thermocouple No. 36	Hot Flange Thermocouple No. 37	Web Thermocouple No. 38	Cold Flange Thermocouple No. 39
0	22	21	21	22	21	21
1	22	21	21	22	21	21
2	30	22	21	28	22	21
3	59	28	21	44	25	21
4	91	53	28	85	36	25
5	99	77	44	98	58	35
6	100	84	57	99	73	49
7	101	87	65	99	80	59
8	101	89	71	100	84	66
9	100	89	74	99	85	70
10	100	90	76	100	87	73
11	102	91	78	102	88	75
12	104	92	79	109	89	76
13	108	92	80	117	89	78
14	111	93	81	125	90	78
15	116	93	82	135	91	78
16	121	93	82	150	94	79
17	128	94	82	167	97	79
18	136	95	83	188	101	80
19	148	96	83	213	108	81
20	172	100	82	239	116	82
21	208	106	80	268	128	83
22	244	119	80	302	142	84
23	277	138	82	342	159	88
24	310	163	84	382	177	92
25	342	188	87	420	199	94
26	370	213	90	452	221	96
27	393	236	93	496	243	101
28	413	256	96	536	266	102
29	433	274	99	566	292	108
30	451	292	103	589	318	115
31	469	309	113	609	342	122
32	485	327	124	629	365	129
33	500	344	136	645	386	137
34	514	360	151	659	405	147
35	528	375	168	678	423	159
36	540	390	184	693	440	183

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Time (mins)	Actual Temperature (°C)					
	Left stud			Right stud		
	Hot Flange Thermocouple No. 34	Web Thermocouple No. 35	Cold Flange Thermocouple No. 36	Hot Flange Thermocouple No. 37	Web Thermocouple No. 38	Cold Flange Thermocouple No. 39
37	552	406	199	705	459	235
38	564	421	214	714	478	267
39	575	436	229	722	497	289
40	587	453	247	731	516	308
41	599	472	268	739	537	326
42	612	493	297	746	559	349
43	625	517	333	750	579	377
44	638	544	379	753	599	408
45	650	574	431	754	616	444
46	661	603	482	752	632	478
47	673	629	532	749	644	510
48	684	654	583	743	653	539
49	693	675	629	735	660	566
50	700	690	663	737	670	596
51	704	700	685	728	683	626
52	705	703	695	719	692	650
53	705	705	700	713	697	669
54	710	707	704	710	703	688
55	717	711	708	709	709	701
56	722	719	712	711	713	710
57	718	721	720	719	718	717
58	713	716	717	715	716	716
59	712	712	713	712	712	712
60	713	709	711	710	708	710
61	709	705	709	707	705	707
62	707	703	707	705	703	705
63	707	703	706	703	703	704
64	706	705	705	703	703	705
65	705	708	706	703	704	708
66	707	710	709	706	705	711
67	710	714	713	711	708	715
68	715	721	719	716	714	721
69	724	732	730	726	725	733
70	734	741	742	736	733	745
71	746	754	760	748	746	762
72	743	750	753	744	741	757
73	745	753	755	749	739	761
74	752	766	757	759	739	770
75	755	766	770	754	742	779

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Time (mins)	Actual Temperature (°C)					
	Left stud			Right stud		
	Hot Flange Thermocouple No. 34	Web Thermocouple No. 35	Cold Flange Thermocouple No. 36	Hot Flange Thermocouple No. 37	Web Thermocouple No. 38	Cold Flange Thermocouple No. 39
76	752	761	779	758	723	800
77	768	788	796	771	755	812
78	780	801	811	775	777	822
79	778	794	804	771	772	818
80	783	802	814	778	782	828
81	794	820	839	790	797	841
82	795	822	838	794	798	843
83	815	843	847	810	822	857
84	836	857	831	826	837	865
85	864	884	860	859	878	893
86	878	854	873	892	888	871
87	892	863	874	916	857	899
88	908	866	887	944	862	942
89	929	903	941	930	888	1074
90	937	899	997	910	907	1130

See figure 7 for the location of the thermocouples.

9.10 Specimen Lateral Deflection

Time (mins)	Deflection (mm)	
	Centre	Free Edge
0	0	0
1	2	0
2	2	0
3	5	0
4	10	0
5	11	0
6	11	0
7	10	1
8	10	1
9	10	1
10	9	1
11	10	1
12	10	1
13	11	1
14	12	1
15	13	1
16	15	1
17	16	1
18	19	1
19	22	1
20	26	2
21	31	4
22	36	7
23	42	11
24	49	17
25	55	23
26	60	30
27	65	36
28	70	42
29	74	46
30	77	50
31	81	54
32	83	57
33	86	60
34	88	63
35	90	66
36	93	69
37	95	73

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Time (mins)	Deflection (mm)	
	Centre	Free Edge
38	97	77
39	99	83
40	102	89
41	104	94
42	106	101
43	108	106
44	110	111
45	112	113
46	114	116
47	115	118
48	116	121
49	117	123
50	118	125
51	119	128
52	120	130
53	121	132
54	123	134
55	124	136
56	125	138
57	126	140
58	127	142
59	128	144
60	129	147
61	130	148
62	131	151
63	132	153
64	133	154
65	133	156
66	134	157
67	134	159
68	135	160
69	135	161
70	135	162
71	135	162
72	135	163
73	135	164
74	135	166
75	135	167
76	135	169
77	134	170

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Time (mins)	Deflection (mm)	
	Centre	Free Edge
78	134	172
79	134	173
80	133	175
81	133	177
82	133	178
83	132	180
84	131	181
85	130	184
86	129	186
87	130	187
88	133	189
89	135	191
90	137	193

The deflection was recorded at the approximate centre of the specimen and at mid-height at the free edge. Positive readings indicate deflection into the furnace.

10. PHOTOGRAPHS

10.1 Exposed face prior to test



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10.2 Unexposed face prior to test



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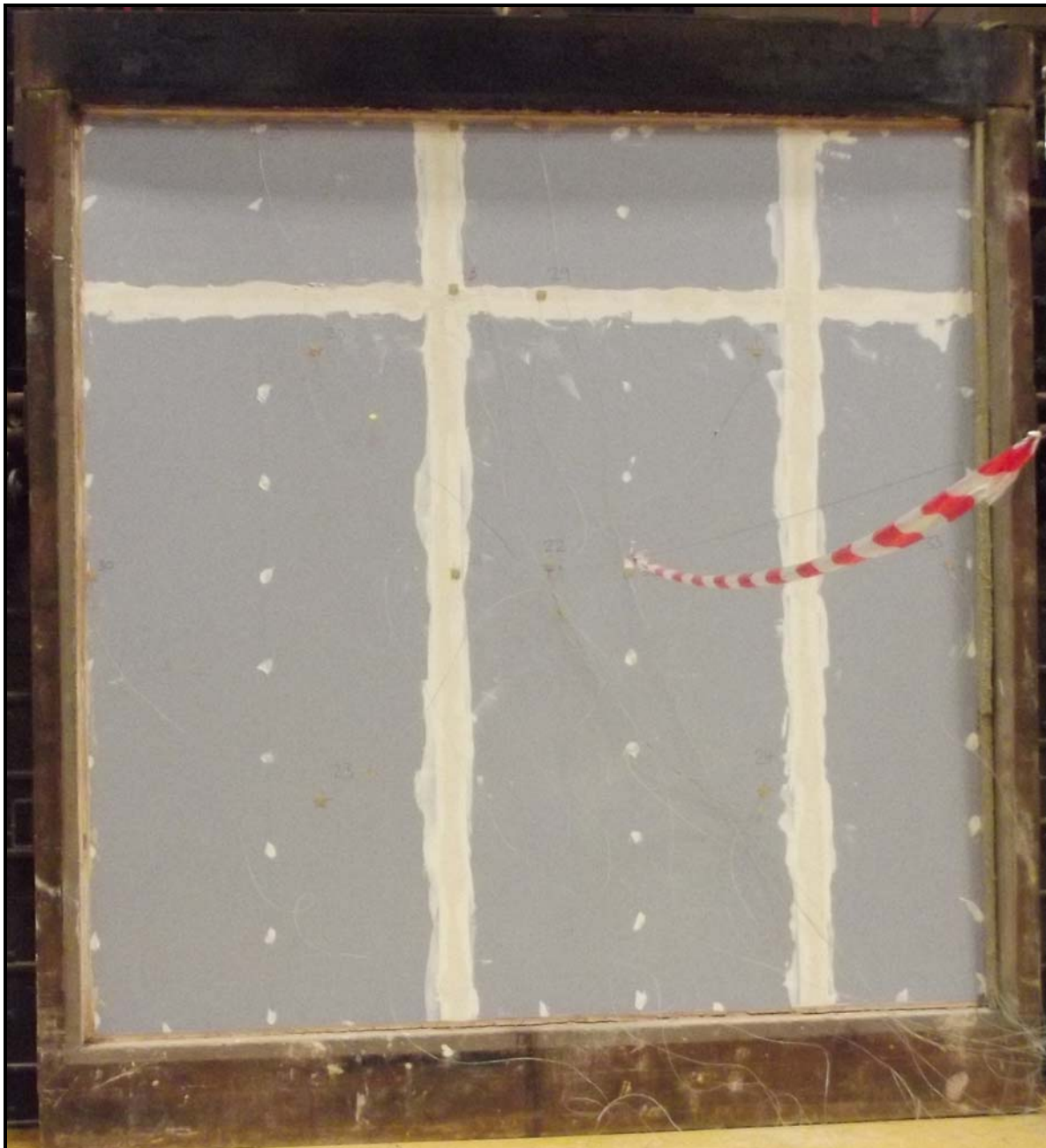
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10.3 Unexposed face at 30 minutes



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10.4 Unexposed face at 1 hour



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10.5 Unexposed face at 1 hour, 20 minutes



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10.6 Unexposed face at 1 hour, 25 minutes



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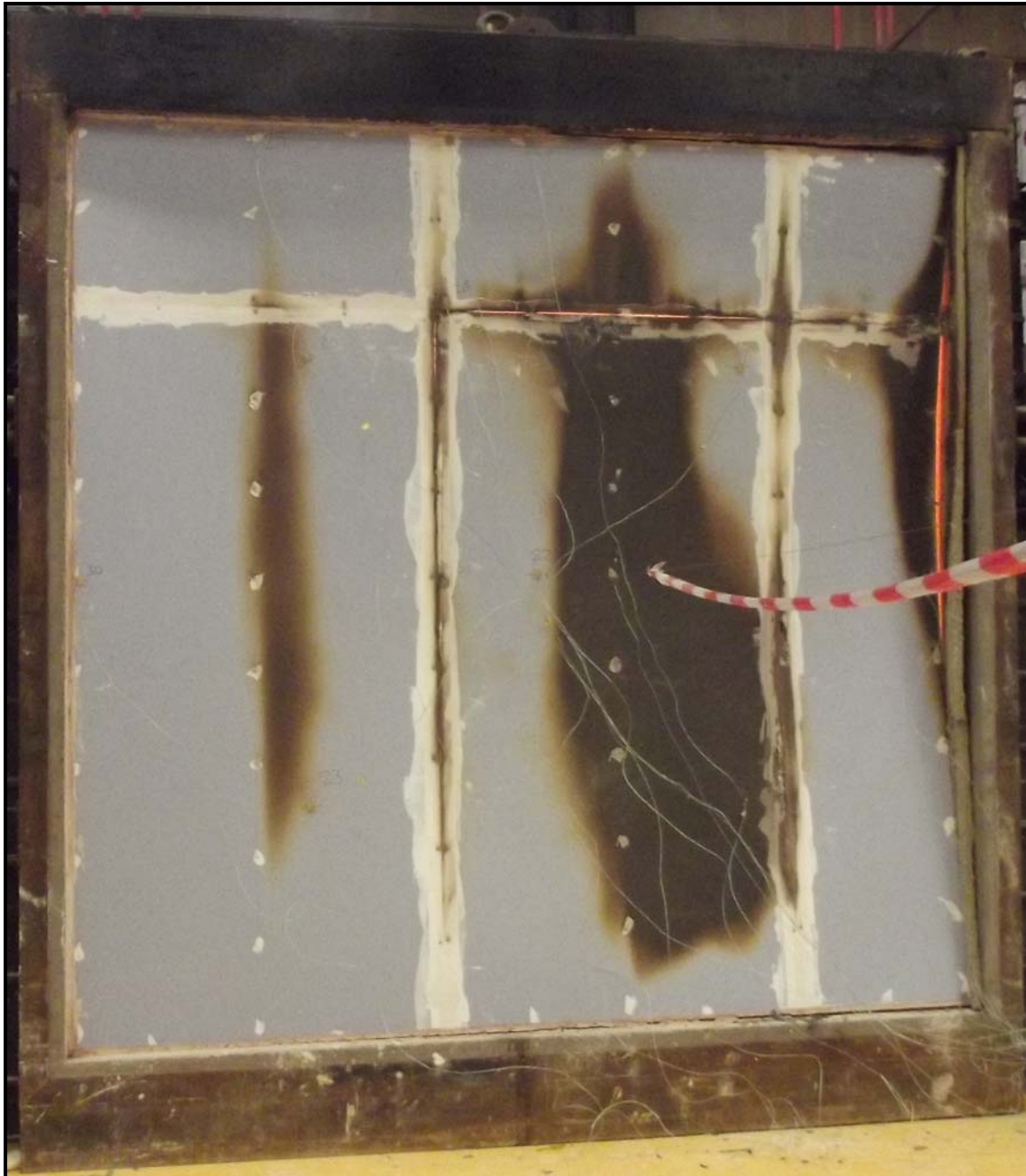
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10.7 Unexposed face at test termination at 1 hour, 30 minutes



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11. FIELD OF DIRECT APPLICATION

11.1 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 from 3000mm.
- (ii) Increase in the thickness of the wall (minimum thickness 102mm).
- (iii) Increase thickness of component materials (minimum Gypframe stud depth 70mm, minimum Gypframe 'C' stud gauge 0.50mm).
- (iv) Decrease in the linear dimensions of the boards but not thickness ($\leq 2400\text{mm}$ (long) $\times \leq 1200\text{mm}$ (wide) Gyproc SoundBloc F).
- (v) Decrease stud spacing from 600mm.
- (vi) Decrease in fixing centres from 300mm.
- (vii) Horizontal and vertical joints, of the type tested.

11.2 Extension of width

The width of an identical construction may be increased as the specimen was tested at nominally 3000mm wide with one vertical edge without restraint.

11.3 Extension of height

The height of constructions tested at a minimum of 3000mm, maybe increased to 4000mm at the following fire resistance periods as the lateral deflection was below 100mm.

30 minutes
$\leq 100\text{mm}$, $\therefore 4000\text{mm}$