

Title:

The Fire Resistance Performance Of Six Specimen Of Penetration Sealing System Tested Utilising the Generally Principles From BS EN 1366-3: 2009 And One Specimen Of Linear Gap Sealing System Tested Utilising The General Principles From BS EN 1366-4: 2006 +A1: 2010

Report No:

412725 Issue 2



Prepared for:

Everbuild
Site 41
Knowsthorpe Way
Leeds
Yorkshire
UK
LS9 0SW

Date:

15th July 2019

Summary

Objective

To evaluate the ability of six specimens of penetration sealing system and a linear gap seal, to reinstate the integrity and insulation performance of a drywall construction when tested utilising the generally principles from BS EN 1366-3: 2009 and BS EN 1366-4: 2006 +A1: 2010.

Test Sponsor

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Summary of the Tested Specimens

In reference to a previous test report the specimens were referenced S, H, K, I, M, L and R.

Briefly, the drywall partition had overall dimensions of 1500 mm high by 1450 mm wide by 105 mm thick and was made up of 52 mm galvanised mild steel 'U' head and base track with 50 mm galvanised mild steel 'C' stud. Each face was lined with 2 layers of 12.5 mm Fireline plasterboard, leaving a 25mm gap at the head and the cavity was filled with 50 mm ProRox SL 930 insulation. The drywall partition was installed with a linear joint at the head referenced Specimen S, which had over dimensions of 1450 mm long by 25 mm wide and 105 mm thick. The specimen incorporated 25 mm depth of Everbuild Fire Sealant 300 to each face flush with the face of the partition and backed by the 52 mm galvanised mild steel 'U' head track. The drywall partition incorporated six apertures, details of which are in the table below:

Specimen	Aperture Size	Seal Details	Service
H	125 mm x 125 mm	25 mm depth of Everbuild Fire Sealant 300 to each face flush with the face of the partition and backed with ProRox SL 930 insulation	N/A
K			1 - B Cable 3 - A1 Cables 3 - A2 Cables 3 - A3 Cables
I			1 - C1 Cable 1 - C2 Cable 1 - C3 Cable 1 - E Cable
M			Ø 100 mm bundle of F Cables 2 - PVC conduits Ø 16 mm 2 - Copper conduits Ø 16 mm
L			1 - G1 Cable 1 - G2 Cable
R	Ø 90 mm		1 - Ø 42 mm Copper Pipe (1.3 mm wall thickness)

Full details of the Specimens can be found in the Schedule of Components.

Test Results

Specimen	Integrity (minutes)			Insulation (minutes)
	Cotton Pad	Sustained flaming	Gap Gauge	
S	132*	132*	N/A	132*
H	132*	132*	132*	132*
K	132*	132*	132*	82
I	132*	132*	132*	57
M	81	81	84#	22
L	132*	132*	132*	24
R	82	82	85#	11

* The test duration. The test was discontinued after a period of 132 minutes.

Specimen blanked off to allow the test to continue.

If the specimens were to be assessed against the integrity and insulation performance requirements specified in BS EN 1366-3: 2009 and BS EN 1366-4: 2006 +A1: 2010, the results could be expressed as above.

Date of Test

17th May 2019

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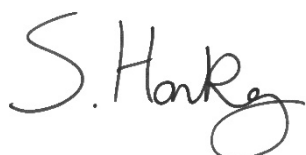
Signatories



Responsible Officer
D. Whittle*
Technical Officer



Approved
W. Drazkiewicz*
Technical Manager



Head of Department
S. Hankey*
Business Unit Head

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

Report Issued

Date: 15th July 2019

Issue 2 – Corrections to the reference of item 5 in the schedule of components – **amended by W. Drazkiewicz on 29th July 2019.**

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Test Procedure

Introduction

Penetration sealing systems are required to maintain the fire resistance of a separating element at the position at which it has been penetrated by a service. The specimens were therefore tested in accordance with BS EN 1366-3: 2009. 'Fire resistance tests for service installations - Part 3: Penetration seals' This test report should be read in conjunction with those Standards and with BS EN 1363-1: 1999, Fire resistance tests - Part 1: General requirements'

The test was conducted utilising the generally principles from BS EN 1366-3: 2009 and BS EN 1366-4: 2006 +A1: 2010.

The specimens were evaluated against the performance criteria for integrity and insulation, as required by BS EN 1366-3: 2009 and BS EN 1366-4: 2006 +A1: 2010.

Fire Test Study Group/EGOLF

Certain aspects of some fire test specifications are open to different interpretations. The Fire Test Study Group and EGOLF have 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.

Instruction To Test

The test was conducted on the 16th May 2019 at the request of **Everbuild**, the sponsor of the test.

Mr. A. Scanlon and Mr. A. Dimmer representatives of the test sponsor witnessed the test.

Test Specimen Construction

A comprehensive description of the test construction is given in the Schedule of Components. The description is based on a detailed survey of the specimens and information supplied by the sponsor of the test.

Installation

The drywall partition was constructed between the 2nd April 2019 and 4th April 2019 by representatives of **Warringtonfire**.

The fire stopping seals were installed by representatives of the test sponsor on the 8th April 2019.

Sampling

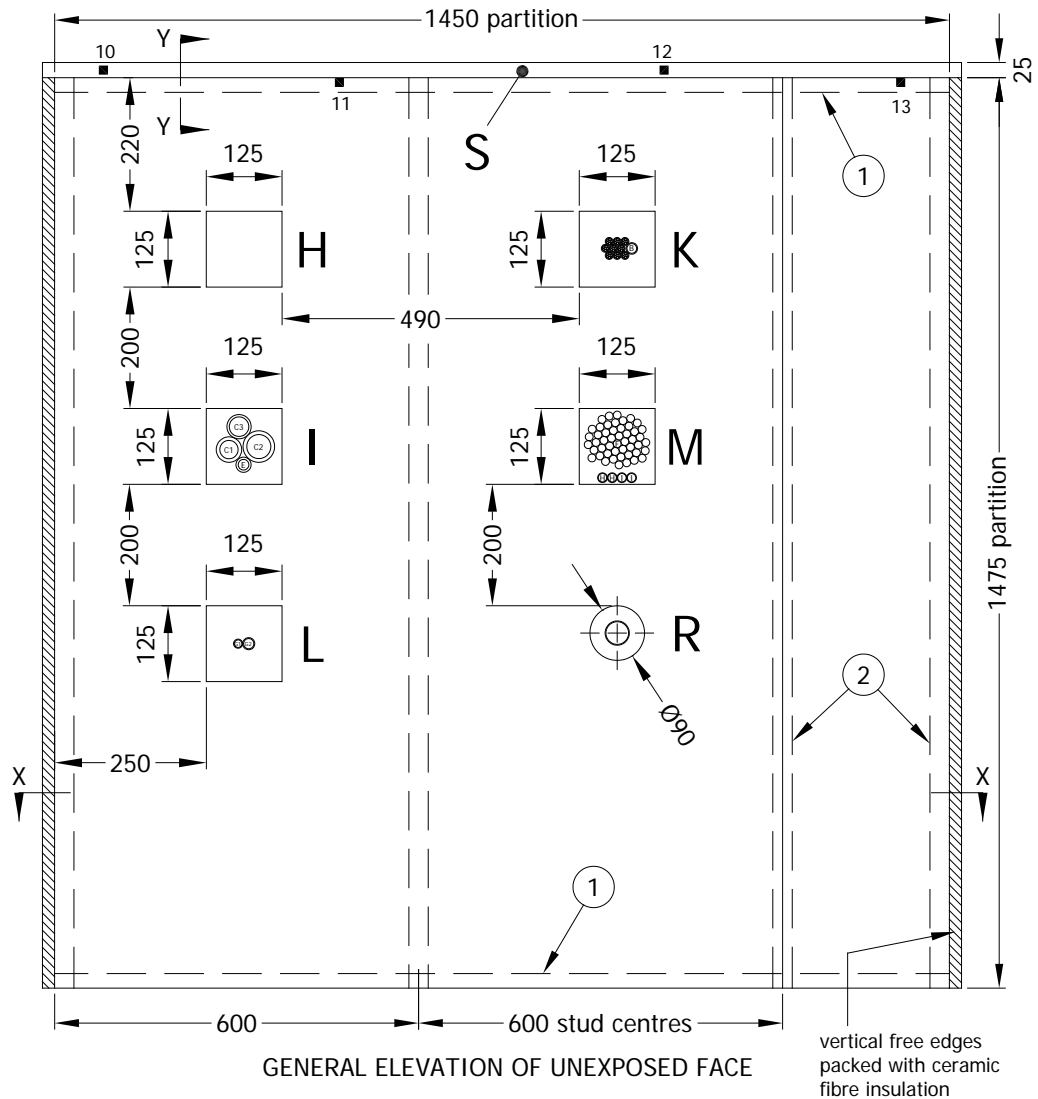
A representative of **Warringtonfire** witnessed manufacturing of Everbuild 'Fire Sealant 300' and selected samples for testing. Sampling conducted on 19/03/2019, sampling report reference: 411548.

Conditioning

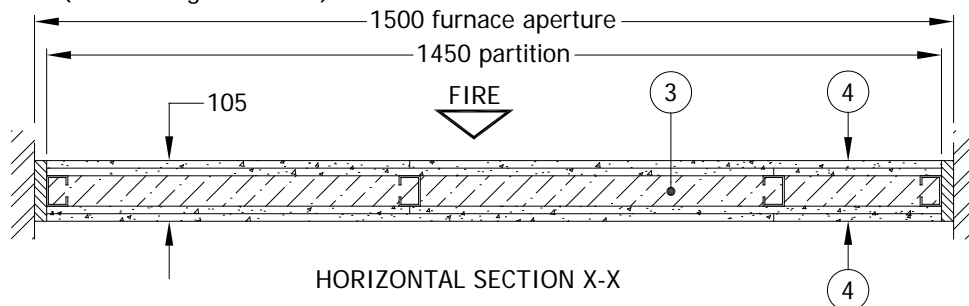
The specimens' storage, construction, and test preparation took place in the test laboratory over a total, combined time of 46 days. Throughout this period of time both the temperature and the humidity of the laboratory were measured and recorded as being within a range of from 10°C to 27.5°C and 30% to 68% respectively.

Test Specimen

Figure 1- General elevation of test specimens viewed from unexposed face

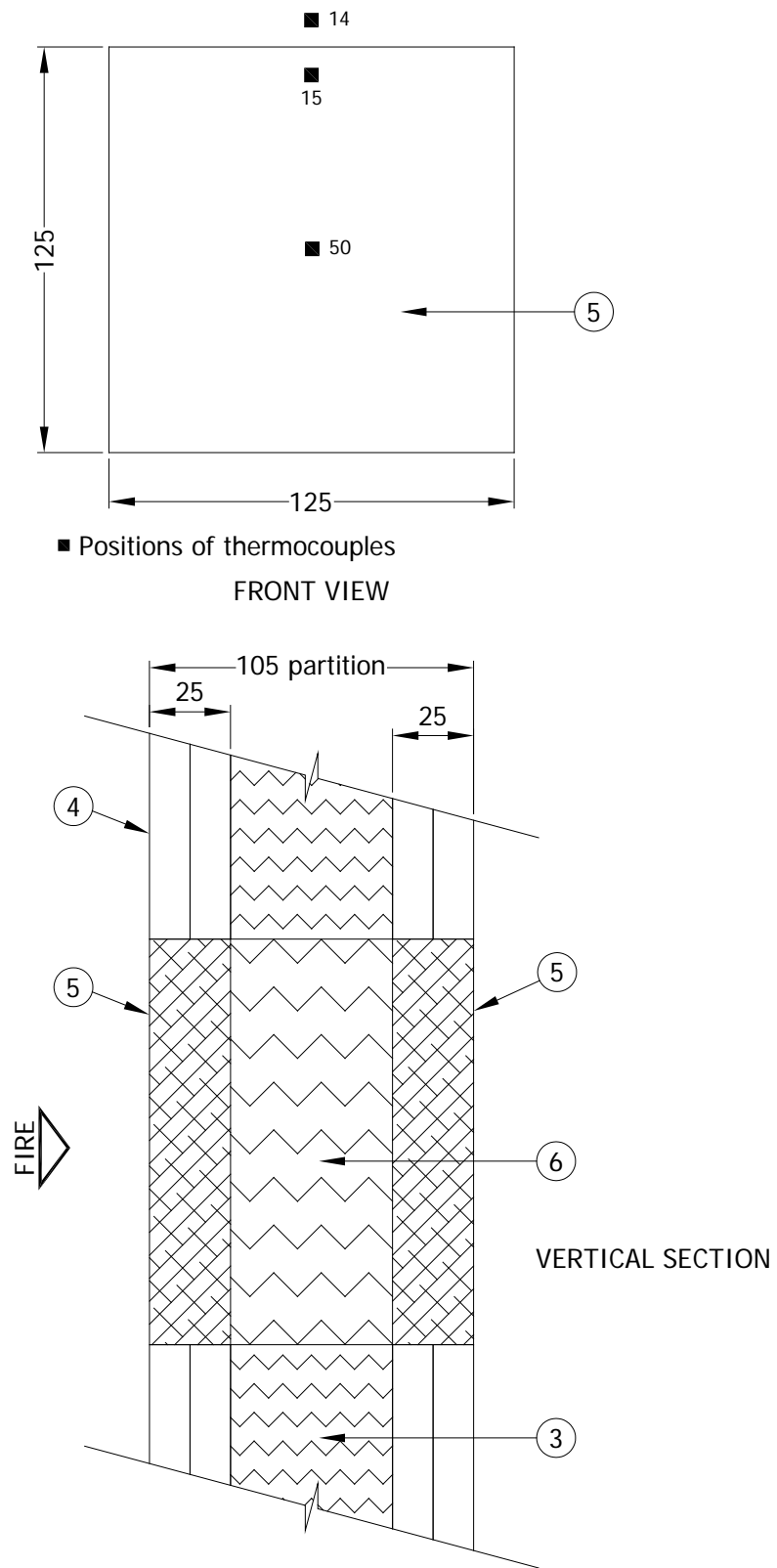


- Positions of thermocouples for specimen 'S' (see also Figures 2 to 8)



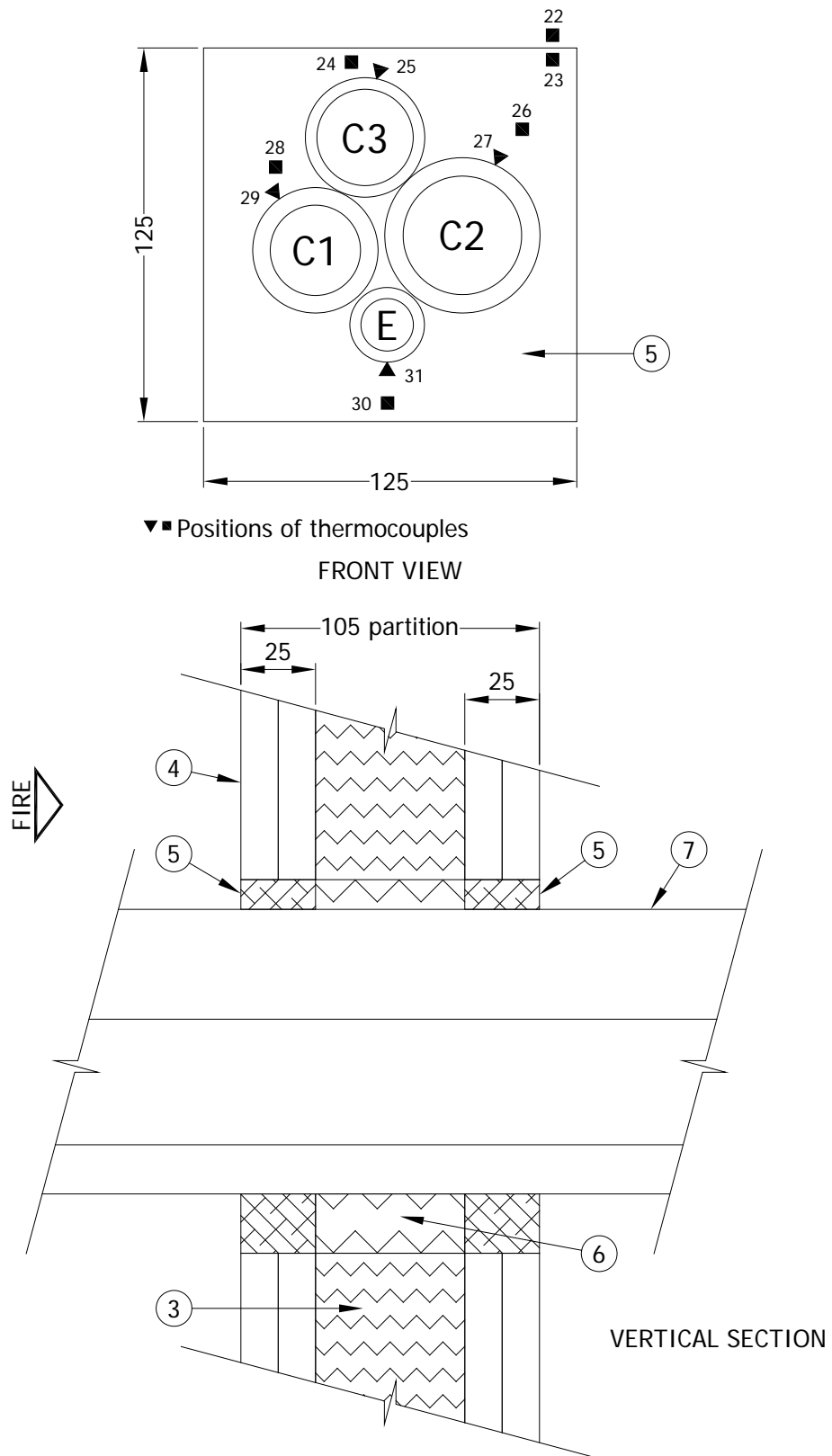
Do not scale. All dimensions are in mm

Figure 2 – Typical details of specimen 'H'



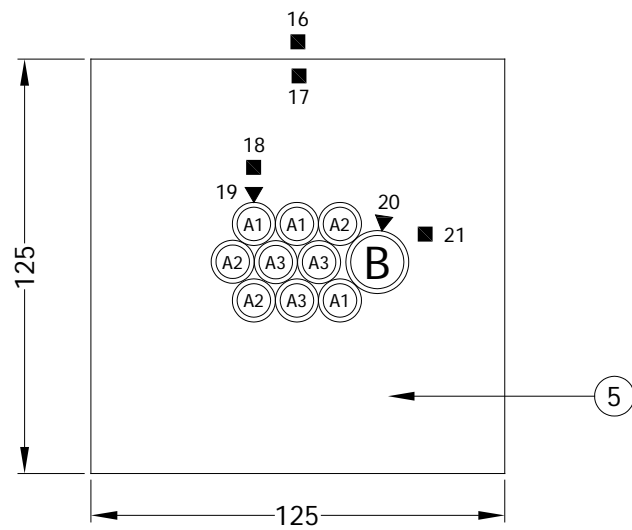
Do not scale. All dimensions are in mm

Figure 3 – Typical details of specimen 'I'



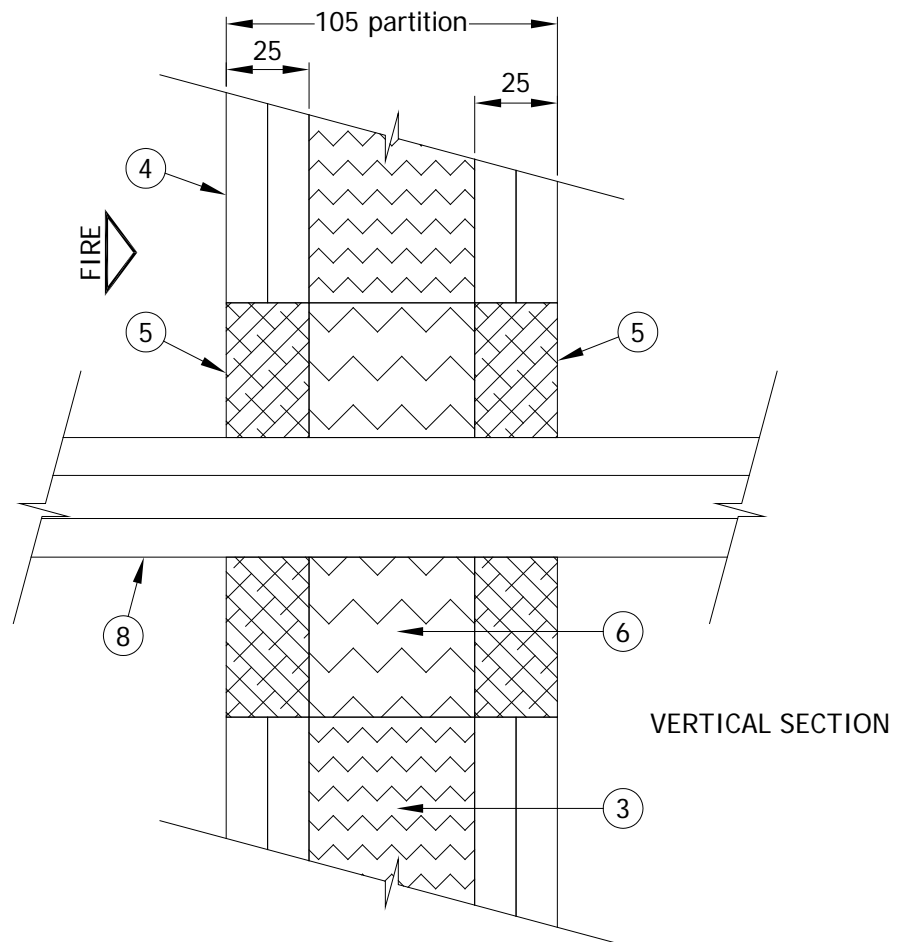
Do not scale. All dimensions are in mm

Figure 4 – Typical details of specimen 'K'



▼ ■ Positions of thermocouples

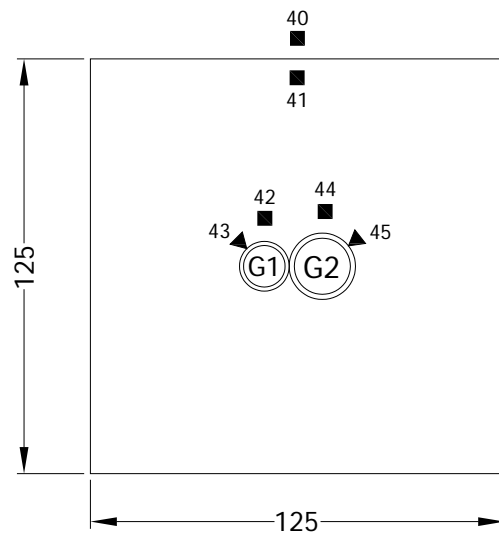
FRONT VIEW



VERTICAL SECTION

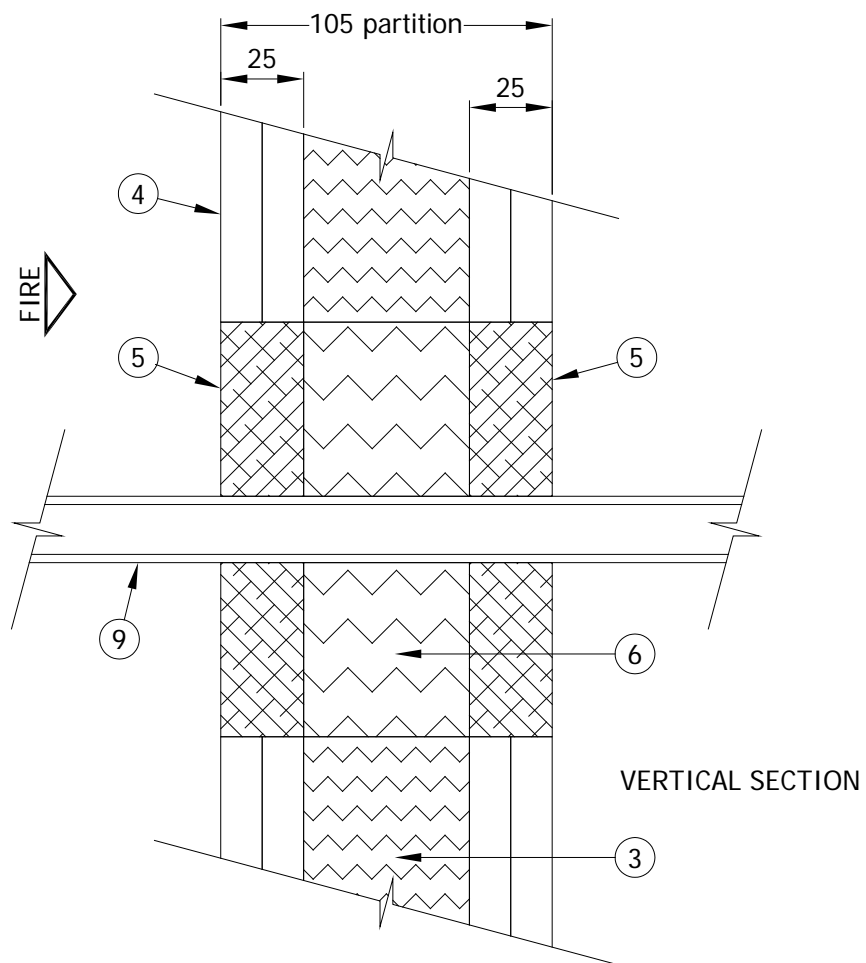
Do not scale. All dimensions are in mm

Figure 5 – Typical details of specimen 'L'



▼ ■ Positions of thermocouples

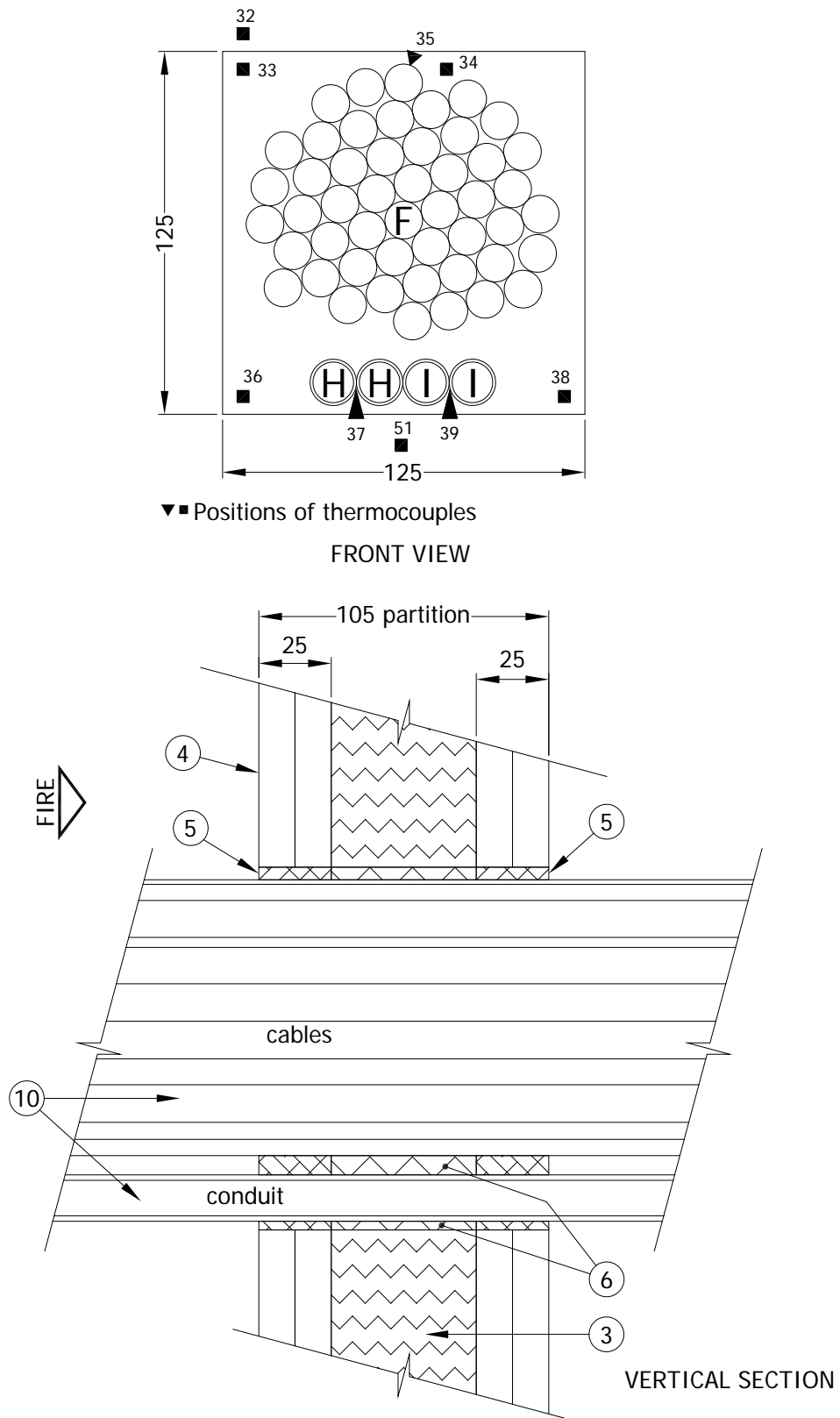
FRONT VIEW



VERTICAL SECTION

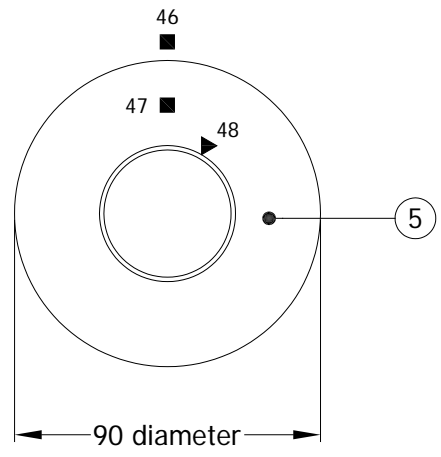
Do not scale. All dimensions are in mm

Figure 6 – Typical details of specimen 'M'

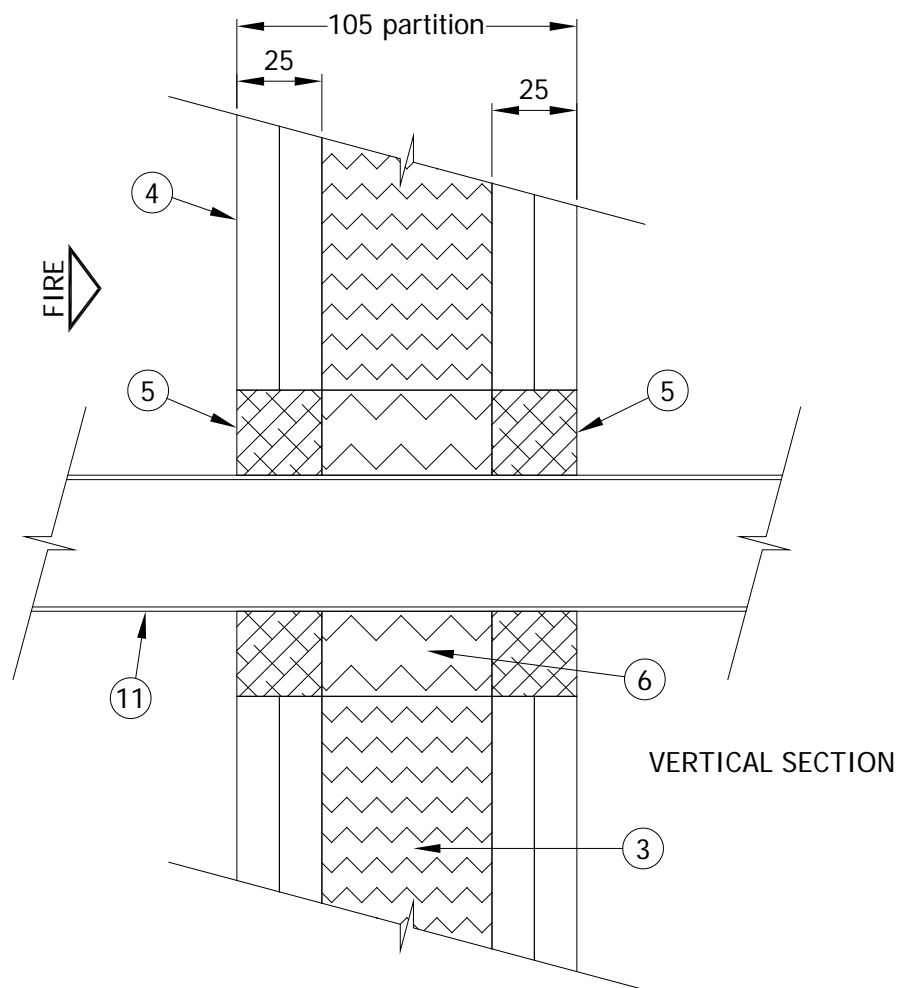


Do not scale. All dimensions are in mm

Figure 7 – Typical details of specimen 'R'

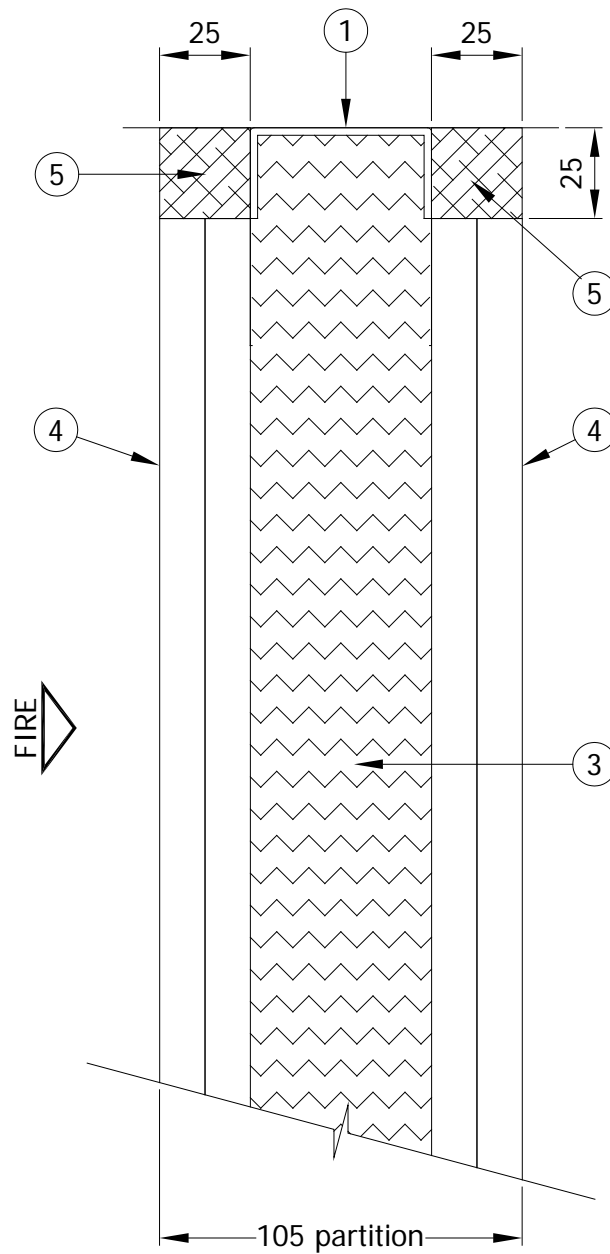


▼ ■ Positions of thermocouples
FRONT VIEW



Do not scale. All dimensions are in mm

Figure 8 – Typical details of specimen 'S'



VERTICAL SECTION THROUGH
LINEAR GAP SEAL SPECIMEN 'S'

Do not scale. All dimensions are in mm

Schedule of Components

(Refer to Figures 1 to 8)
(All values are nominal unless stated otherwise)
(All other details are as stated by the sponsor)

<u>Item</u>	<u>Description</u>
1. Head and base track	
Reference	: Tradeline PT52 standard track
Material	: Galvanised mild steel formed 'U' channel
Overall section size	: 52 mm wide x 24 mm deep
Thickness	: 0.5 mm
Fixing method	: Fixed to concrete lining of furnace aperture using masonry fixings.
2. Vertical studs	
Reference	: Tradeline TPS50 50mm studs
Material	: Galvanised mild steel formed 'C' section channel
Overall section size	: 50 mm wide x 32 mm deep with 6 mm returns
Thickness	: 0.5 mm
Fixing method	: Friction fit and screw fixed within head and base tracks at 600 mm centres. End studs were not fixed to the concrete lining, but were kept as free edges.
3. Partition insulation	
Manufacturer	: Rockwool
Reference	: ProRox SL 930 UK
Material	: Non-woven stone wool based insulation
Thickness	: 50 mm
Density	: 60 kg/m ³ (stated manufacturers density)
Fixing method	: Fitted in all voids between the framework members (items 1 & 2) and further retained by the cladding boards (item 4).
4. Cladding boards	
Material	: Fireline plasterboard
Thickness	: 2 no. layers, each 12.5 mm thick at both faces of the partition framework.
Fixing method	: Fixed to all the framework members (items 1 & 2) using drywall screws, 25 mm long screws (1 st layer) and 38 mm long (2 nd layer). All screws at 300 mm centres. The vertical joints of each layer were staggered with respect to those of the adjacent layer.
5. Sealant	
Manufacturer	: Everbuild
Reference	: Fire Sealant 300
Material	: Intumescent and Acoustic Acrylic Sealant
Depth	: 25 mm, at each face of the partition
Aperture size	
i. all specimens except 'R' & 'S'	: 125 mm wide x 125 mm high
ii. specimen 'R'	: 90 mm diameter
iii. specimen 'S' (linear gap)	: 1500 mm long x 25 mm wide
Application method	: Cartridge gunned

<u>Item</u>	<u>Description</u>
6. Backing to Sealant	
Manufacturer	: Rockwool
Reference	: ProRox SL 930 UK
Material	: Rock fibre insulation
Density	: 60 kg/m ³ (stated)
Fixing method	: Friction fit
Details of service penetrations (items 7 to 11)	
7. Electric cables (specimen 'I')	: One C1, one C2 and one C3 (each 4 x 95 mm ²) and one E (1 x 185 mm ²) cable.
8. Electric cables (specimen 'K')	: One B (1 x 95 mm ²), three A1, three A2 and three A3 (each 5 x 1.5 mm ²) cables.
9. Electric cables (specimen 'L')	: One G1 (1 x 95 mm ²) and one G2 (1 x 185 mm ²) cable
10. Electric cables/conduits (specimen 'M')	: 100 mm diameter bundle of F (20 x 2 x 0.6 mm ²) telecom cables, two I plastic (PVC) conduits 16 mm diameter and two H copper conduits 16 mm diameter.
11. Pipe (specimen 'R')	
Material	: Copper
Overall size	: 42 mm outside diameter x 1.3 mm thick wall

Instrumentation

General	The instrumentation was provided in accordance with the requirements of BS EN 1366-3: 2009.
Furnace	The furnace was controlled so that its mean temperature complied with the requirements of BS EN 1363-1: 1999 Clause 5.1 using four plate thermometers, distributed over a plane 100 mm from the surface of the test construction.
Thermocouple Allocation	<p>Thermocouples were provided to monitor the unexposed surface temperatures of the specimens. The output of all instrumentation was recorded at no less than one minute intervals.</p> <p>The locations and reference numbers of the various unexposed surface thermocouples are shown in Figures 1 to 7.</p>
Roving Thermocouple	A roving thermocouple was available to measure temperatures on the unexposed surface of the specimens at any position, which might appear to be hotter than the temperatures indicated by the fixed thermocouples.
Integrity Criteria	Cotton pads and gap gauges were available to evaluate the integrity of the specimens. The use of the gap gauge was not permitted for Specimen 1, in accordance with BS EN 1366-4: 2006 +A1: 2010.
Furnace Pressure	The furnace atmospheric pressure was controlled so that it complied with the requirements of BS EN 1366-3: 2009, Clause 5.2. The pressure differential relative to the laboratory atmosphere at the base of the specimen was a minimum of 10 (± 2) Pa, and a minimum pressure of 20 Pa was maintained at the top of the uppermost specimen.

Test Observations

Time		All observations are from the unexposed face unless noted otherwise.
mins	secs	The ambient air temperature in the vicinity of the test construction was 22°C at the start of the test with a maximum variation of $\pm 3^\circ\text{C}$ during the test.
00	00	The test commences.
01	15	Smoke release from the point of penetration of the cables passing through Specimens K and M.
01	50	Smoke release from Specimen I.
09	00	Smoke release continues from Specimen I.
14	30	A brown liquid is dripping from the point of penetration of the services of Specimen I.
20	00	Thermocouple 31 has detached due to the moisture release.
21	00	Smoke release from Specimen L at small gap in the head of the seal.
28	00	Bubbling in the seal of Specimen M and moisture release around the cables.
29	30	The joint in the board has opened approximately 20mm on the exposed face.
30	00	Bubbling in the surface of the mastic seals of Specimen K, I and R.
34	00	Roving thermocouple used at the position of thermocouple 31, thermocouple reads 61°C.
35	00	Smoke release from Specimen L and R.
35	30	Discolouring to the mastic seal around the service of Specimen R.
37	30	Discolouring to the seal around the G1 cable in Specimen L.
38	00	Cable sheathing of services in Specimen L have started to soften and melt.
39	30	Discolouring around the copper conduits in Specimen M.
40	00	Sheathing of the E and C1 cables in Specimen I have started to soften and melt.
43	00	No significant visible change to Specimens S and H.
44	20	Smoke release from the point of penetration of Specimen K and softening of the cable sheathing.
50	00	Roving thermocouple used at the position of thermocouple 31, thermocouple reads 50°C.
55	00	Bubbling has increased on the surface of Specimens L, K, M and R.

Time		
mins	secs	
56	20	Discolouring around Specimen R has darkened.
67	00	Sheathing on Specimen L has melted away leaving the internal core of the cable visible.
68	30	Cable sheathing of the F bunch has started to soften.
72	00	Smoke release and discolouring has increased on Specimen I.
76	00	Significant smoke release from the underside of Specimen M.
77	00	Further melting of the sheathing of Specimen I.
79	00	Debris has started to detach from Specimens I and M.
80	00	Glowing at the point of penetration of Specimen M.
81	50	Sustained flaming on Specimen M, integrity failure is deemed to occur.
82	30	Melted sheathing has dripped down from Specimen M to Specimen R causing sustained flaming, integrity failure is deemed to have occurred.
84	30	Specimen M blanked off to allow the test to continue.
85	00	Specimen R blanked off to allow the test to continue.
89	30	Small gaps at the base of the seal of Specimen I.
91	30	Small gaps in the left edge of the seal of Specimen L.
98	30	Small tears in the seal of Specimen I around the thermocouples.
101	00	Tears in the seal of Specimen K.
104	00	The boards have started to detach at the head and joints of the exposed face.
110	00	Tears in the seal of Specimen K.
110	30	Specimen S has expanded beyond the supporting drywall approximately 5mm.
114	00	The drywall has deflected towards the heating conditions.
115	00	Specimens K, I and L continue to bubble under the surface of the seal.
118	00	No significant visible change to Specimen H.
123	00	The core of the C1 cable in Specimen I is starting to glow a dull orange.

125 **00** The sheathing of the C1 cable of Specimen I continues to soften and melt the full length of the cable.

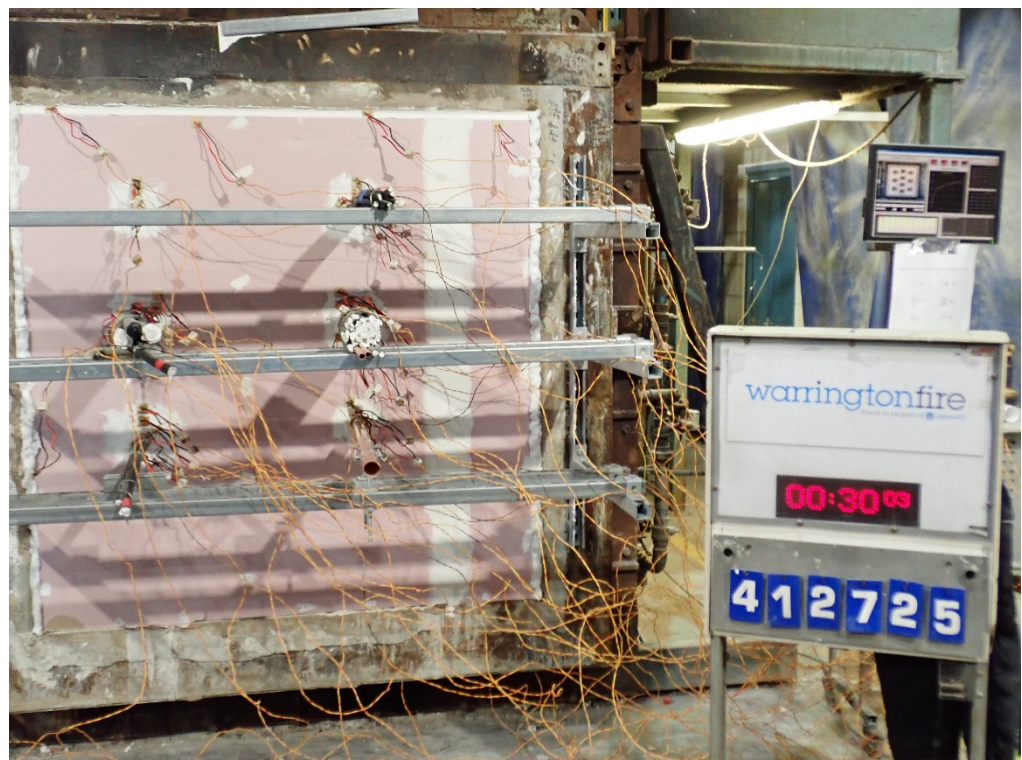
132 **00** **Test discontinued at the request of the client.**

Test Photographs

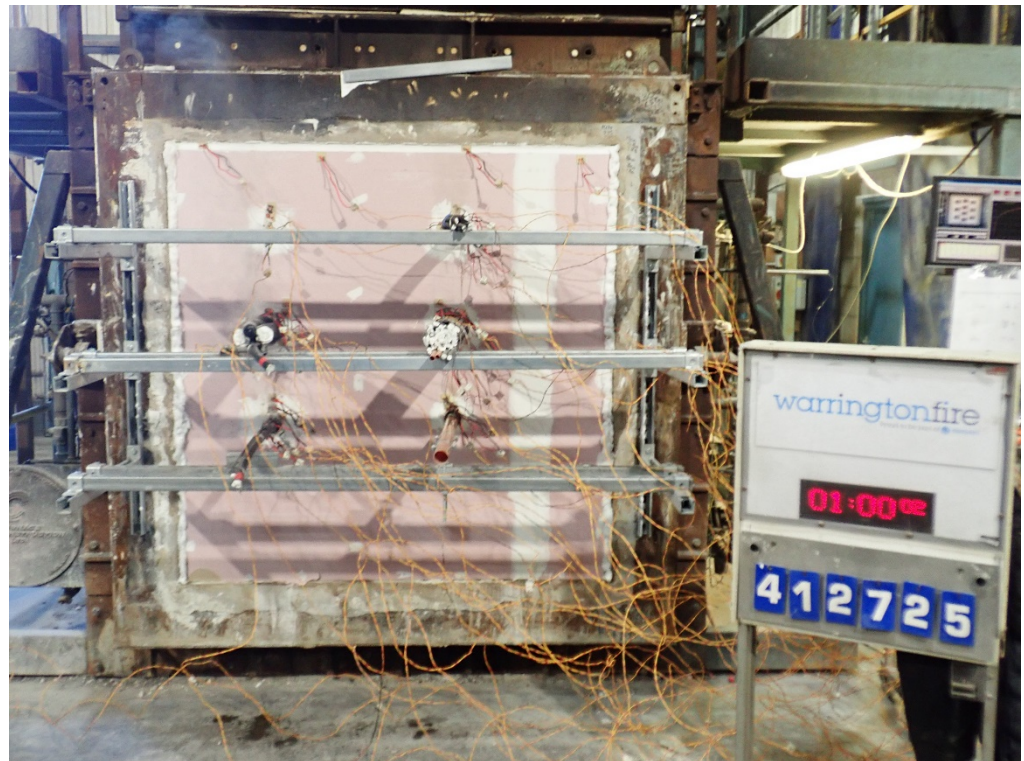
The exposed face of the wall construction prior to the start of the test



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



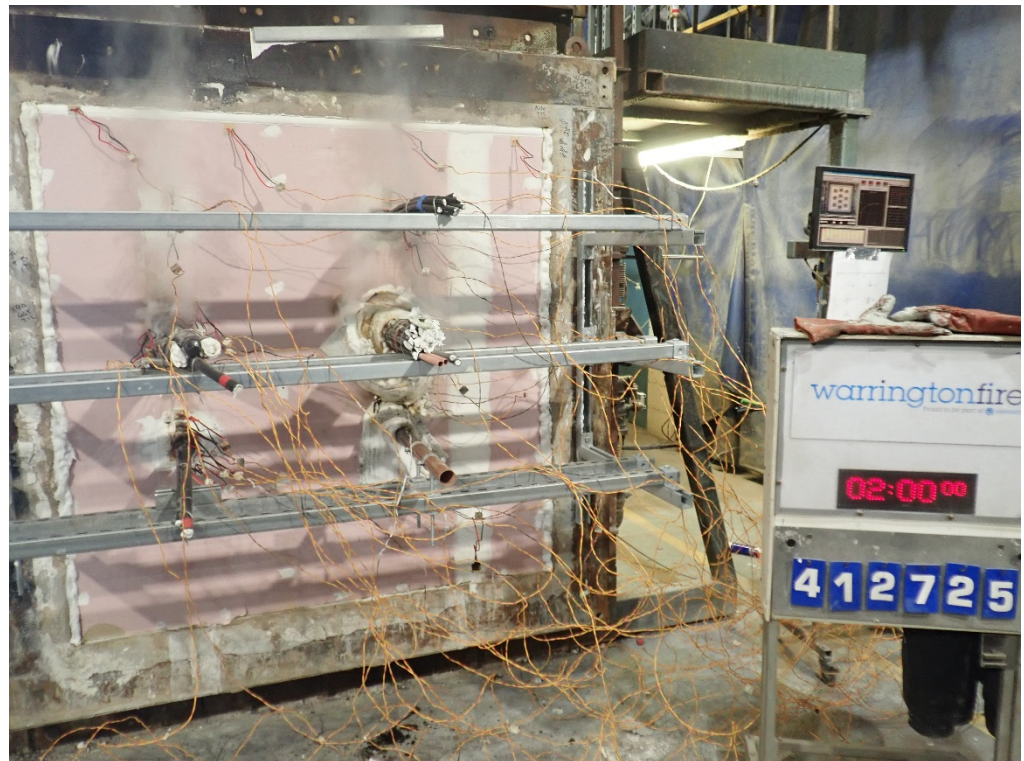
The unexposed face of the wall construction after a test duration of 60 minutes



The unexposed face of the wall construction after a test duration of 90 minutes



The unexposed face of the wall construction after a test duration of 120 minutes



The unexposed face of the wall construction after a test duration of 132 minutes



The exposed face
of the wall
construction
immediately after
a the test



Temperature Data

Mean furnace temperature, together with the temperature/time relationship specified in BS EN 1363-1:2012

Time Mins	Specified Furnace Temperature Deg. C	Actual Furnace Temperature Deg. C
0	20	25
4	544	595
8	645	652
12	705	685
16	748	749
20	781	778
24	809	807
28	832	833
32	851	853
36	869	871
40	885	888
44	899	901
48	912	915
52	924	927
56	935	940
60	945	952
64	955	960
68	964	971
72	973	978
76	981	986
80	988	991
84	996	989
88	1003	993
92	1009	1003
96	1016	1009
100	1022	1015
104	1028	1029
108	1033	1029
112	1039	1033
116	1044	1037
120	1049	1042
124	1054	1045
128	1059	1052
132	1063	1057

Individual temperatures recorded on the unexposed surface and adjacent to Specimen S

Time Mins	T/C	T/C	T/C	T/C
	Number	Number	Number	Number
	10 Deg. C	11 Deg. C	12 Deg. C	13 Deg. C
0	21	21	21	21
4	21	21	21	21
8	21	21	21	21
12	22	21	22	21
16	25	22	23	22
20	32	24	25	24
24	38	28	28	26
28	43	33	31	29
32	46	37	35	33
36	49	42	39	37
40	53	46	44	41
44	56	50	48	45
48	60	53	52	49
52	63	55	56	52
56	65	56	60	53
60	67	56	63	53
64	67	56	67	53
68	69	56	72	53
72	71	57	75	54
76	73	58	78	55
80	75	60	81	57
84	78	63	83	59
88	81	65	86	61
92	82	66	87	63
96	84	68	88	64
100	85	69	90	66
104	86	70	91	67
108	86	71	89	68
112	86	71	88	69
116	86	72	88	71
120	87	72	89	74
124	87	72	90	75
128	87	73	90	76
132	87	73	91	76

Individual temperatures recorded on the unexposed surface and adjacent to Specimen H

Time Mins	T/C Number 14 Deg. C	T/C Number 15 Deg. C	T/C Number 50 Deg. C
0	20	20	19
4	20	20	19
8	21	20	20
12	22	22	20
16	29	31	22
20	40	41	28
24	48	49	35
28	53	54	41
32	56	58	46
36	58	60	49
40	59	61	52
44	61	63	54
48	62	64	57
52	62	65	59
56	61	65	60
60	60	65	61
64	58	64	61
68	58	64	62
72	58	64	62
76	58	63	62
80	60	64	62
84	60	63	62
88	62	64	62
92	64	66	63
96	65	66	63
100	68	68	65
104	69	69	66
108	69	70	66
112	69	71	68
116	69	72	68
120	71	74	70
124	72	76	71
128	74	79	73
132	75	81	75

Individual temperatures recorded on the unexposed surface and adjacent to Specimen K

Time Mins	T/C	T/C	T/C	T/C	T/C	T/C
	Number	Number	Number	Number	Number	Number
	16 Deg. C	17 Deg. C	18 Deg. C	19 Deg. C	20 Deg. C	21 Deg. C
0	20	20	20	21	20	20
4	21	20	21	29	20	26
8	21	21	24	47	23	46
12	22	23	27	57	28	72
16	24	25	32	66	35	102
20	26	28	39	47	43	126
24	30	33	46	47	53	140
28	36	41	54	51	63	150
32	43	49	61	52	72	163
36	49	56	68	58	78	164
40	53	61	73	59	83	158
44	58	66	77	58	89	154
48	62	71	80	42	92	160
52	64	75	82	39	95	160
56	65	79	85	39	95	161
60	66	80	87	39	96	164
64	65	81	88	38	96	173
68	67	83	89	38	98	183
72	68	85	91	42	99	190
76	68	88	93	45	100	192
80	70	90	93	52	99	196
82	69	90	95	67	99	197
83	71	90	97	81	101	201
84	71	91	96	58	99	205
88	76	93	97	49	99	217
92	75	93	97	49	97	219
96	76	95	98	49	99	227
100	78	95	99	51	100	243
104	78	96	100	48	97	273
108	78	96	101	46	98	297
112	78	96	103	48	99	305
116	79	96	104	49	100	310
120	81	97	106	52	107	317
124	83	98	108	53	113	321
128	85	98	111	61	125	326
132	86	98	114	58	126	323

Individual temperatures recorded on the unexposed surface and adjacent to Specimen I

Time	T/C	T/C	T/C	T/C	T/C	T/C	T/C	T/C	T/C	T/C
Mins	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number
	22	23	24	25	26	27	28	29	30	31
	Deg. C	Deg. C	Deg. C	Deg. C	Deg. C	Deg. C	Deg. C	Deg. C	Deg. C	Deg. C
0	20	20	20	20	20	20	20	20	20	20
4	20	20	20	23	20	23	20	22	20	23
8	21	21	23	36	22	29	22	31	21	39
12	22	27	30	54	28	38	29	46	24	48
16	29	41	46	73	42	50	42	62	30	39
20	39	52	60	88	55	62	55	80	41	*
24	47	58	71	109	66	75	65	98	54	*
28	52	62	81	130	75	89	74	115	66	*
32	56	66	90	153	83	106	82	130	77	*
36	60	70	96	171	90	123	89	136	84	*
40	64	74	101	180	94	141	94	136	87	*
44	68	78	104	180	99	157	97	139	88	*
48	69	81	109	186	103	167	101	142	88	*
52	69	82	112	192	107	168	104	145	89	*
56	68	82	115	197	110	167	108	150	89	*
57	68	82	117	200	111	162	109	152	90	*
58	67	82	118	203	112	149	110	155	90	*
60	67	82	120	210	115	145	112	158	90	*
64	65	82	127	217	118	141	117	164	91	*
68	67	84	134	231	125	159	124	165	94	*
72	67	84	141	243	129	162	141	174	95	*
76	68	85	146	250	134	166	153	179	99	*
80	69	87	154	258	140	175	173	185	105	*
84	70	87	155	266	143	164	171	189	104	*
88	72	89	167	274	151	174	194	227	107	*
92	74	90	183	290	159	184	208	216	122	*
96	76	92	196	320	163	185	216	208	129	*
100	78	94	209	373	171	195	223	202	136	*
104	78	96	219	394	178	197	229	191	140	*
108	78	97	223	384	184	199	234	200	143	*
112	78	98	227	399	188	203	240	205	146	*
116	79	100	234	402	195	211	245	199	149	*
120	80	102	243	423	202	218	250	192	153	*
124	81	103	252	433	210	225	256	196	156	*
128	82	105	263	476	218	241	264	220	162	*
132	83	108	275	450	227	246	268	210	165	*

* Thermocouple Malfunction

Individual temperatures recorded on the unexposed surface and adjacent to Specimen M

Time Mins	T/C Number 32 Deg. C	T/C Number 33 Deg. C	T/C Number 34 Deg. C	T/C Number 35 Deg. C	T/C Number 36 Deg. C	T/C Number 37 Deg. C	T/C Number 38 Deg. C	T/C Number 39 Deg. C	T/C Number 51 Deg. C
0	20	20	20	21	20	20	20	20	19
3	20	20	22	34	23	44	21	27	19
6	21	22	26	42	35	83	23	34	20
9	23	27	34	76	50	114	27	38	23
12	32	39	48	42	61	132	35	44	28
15	44	52	62	42	70	148	42	48	34
18	54	62	71	44	76	169	50	54	40
21	61	70	79	48	76	190	57	56	46
22	62	72	81	51	75	195	59	56	48
23	62	73	83	54	75	201	62	57	52
24	64	75	85	55	75	206	64	56	51
27	68	79	89	61	79	221	70	59	52
30	75	84	93	65	84	230	75	61	55
33	75	86	97	78	89	242	79	66	59
36	73	89	99	86	94	251	83	71	62
39	73	93	101	93	95	257	85	71	64
42	71	91	103	105	100	267	88	76	68
45	73	92	106	109	101	275	90	82	71
48	73	93	108	114	104	284	92	80	74
51	74	95	112	117	105	290	92	79	76
54	74	96	115	118	106	297	93	78	78
57	73	97	118	126	109	305	95	82	80
60	74	99	122	126	112	313	96	88	82
63	74	100	125	132	116	321	96	94	84
66	74	101	129	134	120	330	97	98	85
69	74	102	132	144	125	338	99	101	88
72	77	104	137	145	130	345	100	104	90
75	79	105	141	147	133	354	100	113	93
78	80	107	146	155	139	359	102	130	100
81	81	110	149	174	144	377	103	177	103
83	91	127	162	184	293	507	117	471	128
84	#	#	#	#	#	#	#	#	#
132	#	#	#	#	#	#	#	#	#

Specimen blanked Off

Individual temperatures recorded on the unexposed surface and adjacent to Specimen L

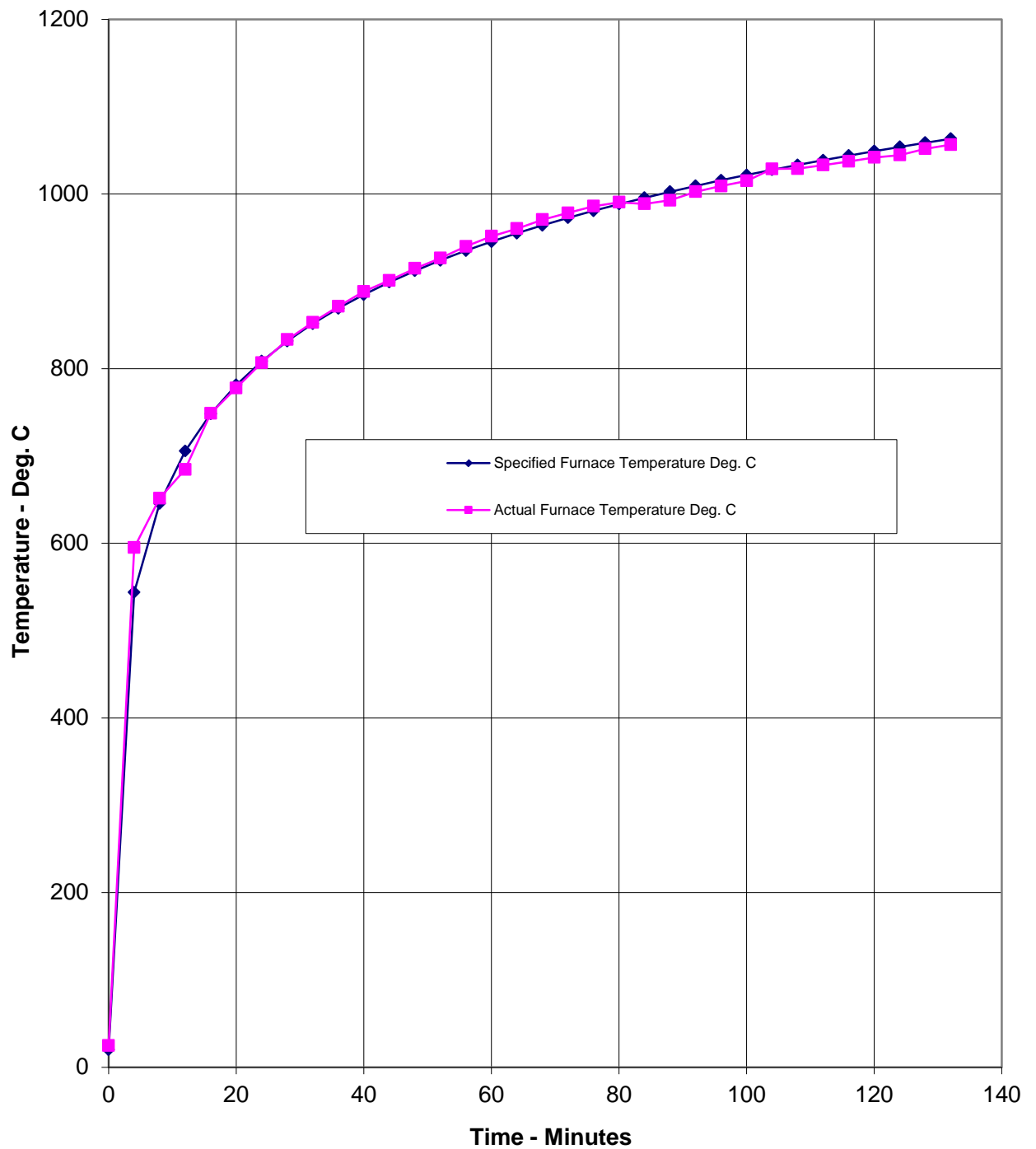
Time Mins	T/C	T/C	T/C	T/C	T/C	T/C
	Number	Number	Number	Number	Number	Number
	40 Deg. C	41 Deg. C	42 Deg. C	43 Deg. C	44 Deg. C	45 Deg. C
0	20	20	20	21	20	20
4	20	20	20	39	20	32
8	23	24	22	78	23	66
12	37	38	27	114	29	107
16	51	49	34	131	40	137
20	50	51	44	160	51	156
24	52	54	54	194	61	195
25	52	54	56	202	63	196
28	55	58	62	212	70	193
32	59	64	69	206	77	197
36	62	71	75	215	82	207
40	64	75	81	223	86	214
44	67	80	85	230	90	225
48	68	84	88	234	94	235
52	66	87	90	242	96	245
56	64	89	92	258	97	259
60	64	92	95	264	99	277
64	63	93	97	276	100	294
68	65	94	98	276	105	310
72	69	95	100	286	108	318
76	72	96	100	289	111	325
80	75	96	99	291	115	323
84	68	96	99	305	112	353
88	67	97	101	307	119	347
92	76	98	104	300	124	332
96	78	99	104	300	124	332
100	79	99	105	300	129	331
104	80	99	105	301	130	335
108	79	100	106	307	128	340
112	80	100	108	308	130	344
116	81	101	109	310	133	347
120	83	102	110	311	137	348
124	84	103	112	313	140	353
128	85	104	115	316	145	355
132	86	105	116	318	148	366

Individual temperatures recorded on the unexposed surface and adjacent to Specimen R

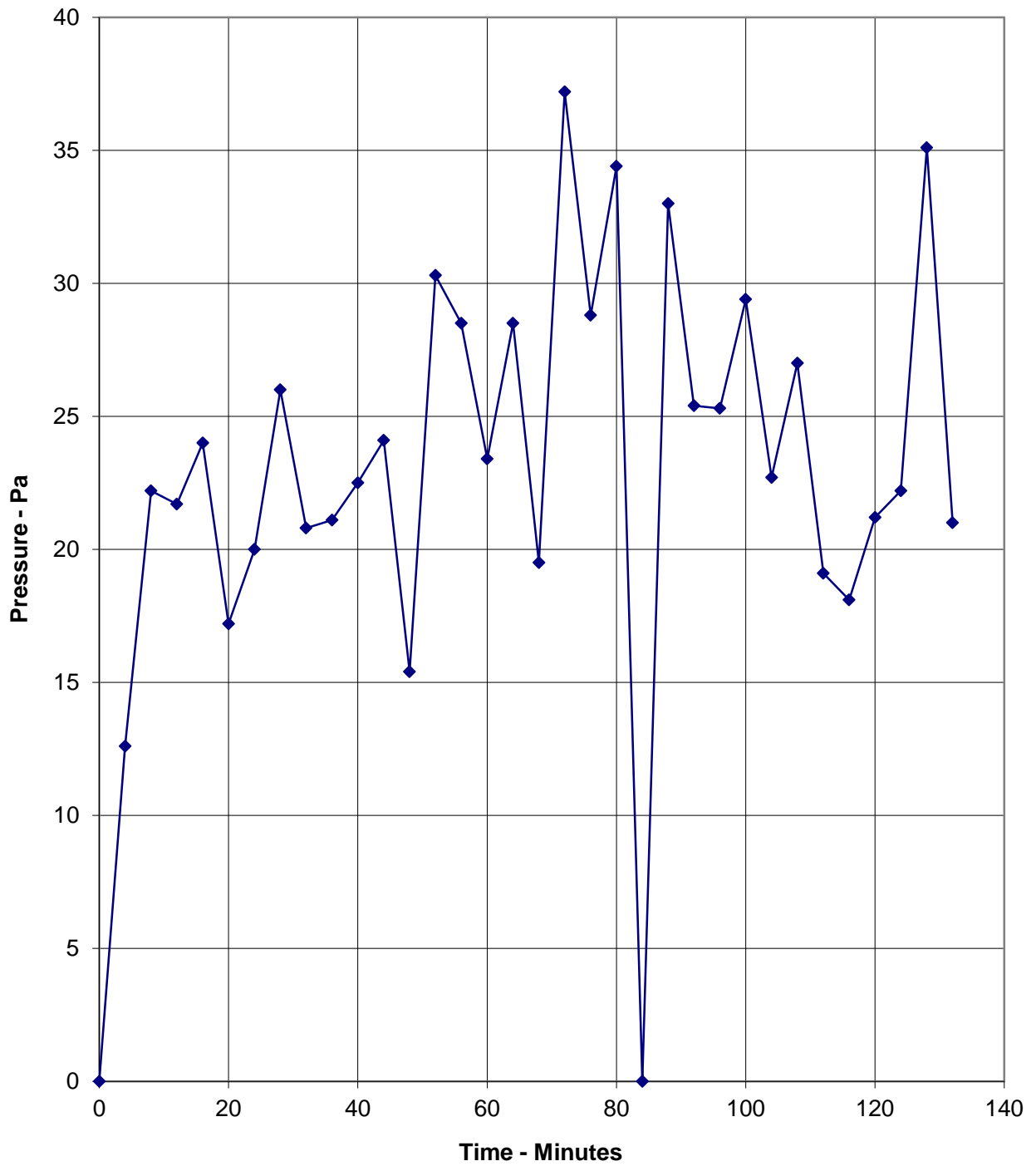
Time Mins	T/C Number 46 Deg. C	T/C Number 47 Deg. C	T/C Number 48 Deg. C
0	20	20	20
3	21	23	54
6	22	40	130
9	25	59	173
11	28	71	197
12	29	75	205
15	34	88	225
18	42	97	246
21	48	105	262
24	54	111	278
27	58	116	293
30	67	124	303
33	70	129	315
36	75	134	322
39	79	139	327
42	78	143	339
45	81	148	347
48	80	152	356
51	82	155	360
54	81	159	366
57	80	162	373
60	83	166	380
63	80	170	385
66	80	173	390
69	80	178	396
72	86	184	400
75	88	188	402
78	91	190	405
81	92	194	407
84	201	324	435
85	#	#	#
132	#	#	#

Specimen Blanked Off

Graph showing mean furnace temperature, together with the temperature/time relationship specified in BS EN 1363-1: 2012



Graph showing pressure reading 250 mm above the head of the construction



Performance Criteria and Test Results

Integrity Performance

It is required that the specimens retain their separating function, without either permitting the penetration of a gap gauge in the prescribed manner, causing ignition of a cotton pad when applied as specified in BS EN 1363-1:2012, or resulting in sustained flaming on the unexposed surface.

These requirements were satisfied for the periods shown below:

Test Results

Specimen	Integrity (minutes)		
	Cotton Pad	Sustained flaming	Gap Gauge
S	132*	132*	N/A
H	132*	132*	132*
K	132*	132*	132*
I	132*	132*	132*
M	81	81	84#
L	132*	132*	132*
R	82	82	85#

*The test duration. The test was discontinued after 132 minutes.

Specimen blanked off

Insulation Performance

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 1363-1:2012.

These requirements were satisfied for the periods shown below:

Test Results

Specimen	Insulation (minutes)
S	132*
H	132*
K	82
I	57
M	22
L	24
R	11

*The test duration. The test was discontinued after 132 minutes.

If the specimens were to be assessed against the integrity and insulation performance requirements specified in BS EN 1366-3: 2009 and BS EN 1366-4: 2006 +A1: 2010, the results could be expressed as above.

Ongoing Implications

Limitations

This report details the method of construction, the test conditions and the results obtained when the specific elements of construction described herein was tested following the procedure outlined in BS EN 1366-3: 2009. 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 the relevant test method is not covered by this report. Annex A of BS EN 1363-1: 2012, provides guidance information on the application of fire resistance tests and the interpretation of test data.

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.

Conclusions

Evaluation against objective

Six specimens of wall mounted penetration sealing systems and a linear gap seal have been subjected to an ad-hoc fire resistance test utilising the generally principles from BS EN 1366-3: 2009 and BS EN 1366-4: 2006 +A1: 2010.

If the specimens were to be assessed against the integrity and insulation performance requirements specified in BS EN 1366-3: 2009 and BS EN 1366-4: 2006 +A1: 2010, the results could be expressed as below.

Test Results:

Specimen	Integrity (minutes)			Insulation (minutes)
	Cotton Pad	Sustained flaming	Gap Gauge	
S	132*	132*	N/A	132*
H	132*	132*	132*	132*
K	132*	132*	132*	82
I	132*	132*	132*	57
M	81	81	84#	22
L	132*	132*	132*	24
R	82	82	85#	11

* The test was discontinued after a period of 132 minutes.

Specimen blanked off.

Sample Report



Sample Report

This report provides a record of the information relating to samples taken by Warringtonfire Testing and Certification Limited trading, or its agent, for certification of the products detailed below.

Job No.	FM411548
Manufacturer	Everbuild (Sika Group)
Manufacturing site	41 Cross Green Ind. Est. Knowsthorpe Road Leeds LS9 0SW.
Place of sampling	As Above
Traceability information	Date/time of production: 19/03/2019 Production unit/line: Main factory Batch number: Shift: Day
Product Number/ Description	Fire Sealant 300 Intumescent
Marking of the product by the manufacturer e.g. label, batch number and date of manufacture	80 20 Va Emulsion Polymer Wq 409 Batch 409430919/400260 Fire Sealant 300 batch 999921219/40251
Marking of the samples by Warringtonfire Testing and Certification Limited	Job No: WF FM411548 Date: 19/03/2019 Signature or initials: Signature + 1121
Stock/batch quantity from which samples selected and sample quantity	Witnessed the manufacture of batch 999921219/40251 Fire sealant 300 for testing, selected 6 boxes of 12 cartridges out of 210 boxes
Results of tests and/or inspections during manufacture	Reviewed polymer mixing sheet tests all passed Witnessed Fire Sealant mixing, tests and packaging
Essential Characteristics to be tested ie. Test reference	BS EN 1366-4:2006
Samples to be dispatched by manufacturer to *** within *** weeks/month(s)	8 th May 2019
Date of sampling	19/03/2019
Warringtonfire Testing and Certification Limited notified body number	1121

Warringtonfire Testing and Certification Limited
Registered Office: 10 Lower Grosvenor Place, London, United Kingdom, SW1W 0EN.
Company Registration No.11371436

Doc. Ref. EWC-QU-FT-90 (Issue 3 – 29/11/2018)



<p>Signed: </p> <p>(for and on behalf of Manufacturer)</p>	<p>Signed: </p> <p>(for and on behalf of Warringtonfire Testing and Certification Limited)</p>
<p>Print:</p> <p>Simon Austin</p>	<p>Print:</p> <p>Andy Cape</p>
<p>Date:</p> <p>19th March 2019</p>	<p>Date:</p> <p>19th March 2019</p>