

Title:

Fire Resistance Test
Utilising The General
Principles Of BS 476:
Part 20: 1987 On Two
Wall Mounted And Four
Floor Mounted Cavity
Barrier Specimen.

WF Report No:

397797/R Issue 3



Prepared for:

**Timloc Building
Products**

Timloc House
Ozone park
Howden
DN14 7SD

Date Of The Test:

16th April 2018



0249

**This report Supersedes
report referenced
397797 Issued 19th
October 2018 and
report referenced
397797 Issue 2, Issued
2nd March 2022.**

Summary

Objective To evaluate the ability of six specimens of proprietary cavity closer to provide a fire stop within the cavity between wall and floor constructions. The test utilised the general principles for fire resistance testing given in BS 476: Part 20: 1987. `Methods for determination of the fire resistance of elements of construction (general principles).

Sponsor **Timloc Building Products**
Timloc House
Ozone park
Howden
DN14 7SD

Summary of the Tested Specimens For the purpose of the test the specimens were referenced Specimens A to. Specimens A and B were situated within the wall construction and Specimens C to F were situated within the floor construction.

The section of wall had overall dimensions of 1500 mm high by 1500 mm wide by 150 mm thick and was made up of aerated blockwork arranged to provide two linear gaps of varying widths which were all 1000 mm in length.

The section of floor had overall dimensions of 2240 mm long by 1730 mm wide by 150 mm thick and was made up of autoclaved aerated concrete lintels arranged to provide four linear gaps of varying widths which were all 1000 mm in length. Apertures for Specimens C and F were lined at the top of lintels with 60 mm thick masonry bricks.

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

Specimen	Substrate	Wall specimen seal details
A	Concrete to Concrete	300 mm wide linear gap, sealed on the unexposed face with a friction fitted flush type barrier comprising 25 mm thick stone wool insulation referenced 'RS140' with a single PVC carrier profile to each longer edge and complete with 12.5 mm thick 'Gyproc Wallboard' board installed with 270 mm overlap over the barrier on unexposed face and window frame profile installed with 30 mm overlap over the barrier on unexposed face.
B	Concrete to Concrete	300 mm wide linear gap, sealed on the exposed face with a friction fitted flush type barrier comprising 25 mm thick stone wool insulation referenced 'RS140' with a single PVC carrier profile to each longer edge and complete with 12.5 mm thick 'Gyproc Wallboard' board installed with 270 mm overlap over the barrier on exposed face and window frame profile installed with 30 mm overlap over the barrier on exposed face.

Summary of
 the Tested
 Specimens -
 continued

Specimen	Substrate	Wall specimen seal details
C	Concrete to Concrete	100 mm wide linear gap, sealed on the exposed face with a friction fitted check/reveal type barrier comprising 25 mm thick stone wool insulation referenced 'RS140' with a single PVC carrier profile to one edge and complete with 12.5 mm thick 'Gyproc Wallboard' board installed with 70 mm overlap over the barrier on exposed face.
D	Concrete to Concrete	100 mm wide linear gap, sealed on the unexposed face with a friction fitted check/reveal type barrier comprising 25 mm thick stone wool insulation referenced 'RS140' with a single PVC carrier profile to one edge and complete with 12.5 mm thick 'Gyproc Wallboard' board installed with 70 mm overlap over the barrier on unexposed face.
E	Concrete to Concrete	300 mm wide linear gap, sealed on the exposed face with a friction fitted check/reveal type barrier comprising 25 mm thick stone wool insulation referenced 'RS140' with a single PVC carrier profile to one edge and complete with 12.5 mm thick 'Gyproc Wallboard' board installed with 270 mm overlap over the barrier on exposed face.
F	Concrete to Concrete	100 mm wide linear gap, sealed on the unexposed face with a friction fitted check/reveal type barrier comprising 25 mm thick stone wool insulation referenced 'RS140' with a single PVC carrier profile to one edge and complete with 12.5 mm thick 'Gyproc Wallboard' board installed with 270 mm overlap over the barrier on unexposed face.

If the performance of the specimens was assessed against the integrity and insulation (maximum temperature rise only) performance criteria of BS 476: Part 20: 1987. The results obtained could be expressed as follows:

Test Results	Specimen A	Specimen B	Specimen C	Specimen D	Specimen E	Specimen F
Integrity	65 minutes*	61 minutes	58 minutes	48 minutes	41 minutes	53 minutes
Insulation	62 minutes	45 minutes	31 minutes	35 minutes	40 minutes	44 minutes

*The test was discontinued after a period of 65 minutes.

Date of Test 16th April 2018

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Signatories



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

Report Issued

Date: 22nd April 2022

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Revision History

Issue No : 2	Re-issue Date: 2nd March 2022
Revised By: J Whalley	Approved By: D Whittle
Reason for Revision: Insulation manufacturer changed to Knauf, item 5 page 14. Issue 1 was issued on 19th October 2018.	
Issue No : 3	Re-issue Date: 22nd April 2022
Revised By: D. Whittle	Approved By: J. Whalley
Reason for Revision: Correction to spelling of supersedes on front page and page 33.	

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Test Procedure

Introduction

The Building Regulations 1991, Requirement B3 (4) requires that a building shall be designed and constructed so that the unseen spread of fire and smoke within concealed spaces in its structure and fabric is inhibited. Such sealing is often affected by what are termed 'cavity barriers' or 'cavity closers'.

The scope of British Standard 476: Part 20: 1987 does not specifically include for the testing of cavity closers. However, the Regulations require that large cavity barriers should be tested to BS 476 as either vertical or horizontal separating elements, whichever is appropriate to their use. Similar test requirements apply to small cavity barriers, which are not of the type specified within the Regulations, but the Department of the Environment has been sympathetic to the testing of these constructions at a reduced size or in a construction simulating their use in practice.

The specimens were judged on their ability to comply with the performance criteria for integrity and insulation, as required by BS 476: Part 20: 1987.

There is not, as yet, any specified British Standard fire test method for evaluating cavity barriers/closers that are designed to act as an effective barrier to the penetration of fire and to reinstate the necessary fire resistance performance of the separating element. However, the fire resistance of walls and floors is determined by tests utilising the general principles given in BS 476: Part 20: 1987 and it would appear appropriate to use the principles of that Standard to evaluate the performance of cavity barriers/closers. Some additional guidelines were adopted from BS EN 1366-4: 2006 where appropriate. This report should be read in conjunction with the above mentioned documents.

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 April 2018 at the request of **Timloc Building Products**, the sponsor of the test.

Test Specimen Constructions

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

Installation

The wall and floor constructions were supplied by **Warringtonfire**. The cavity barriers were provided by the test sponsor and installed by representatives of **Warringtonfire** on the 12th April 2018

Sampling

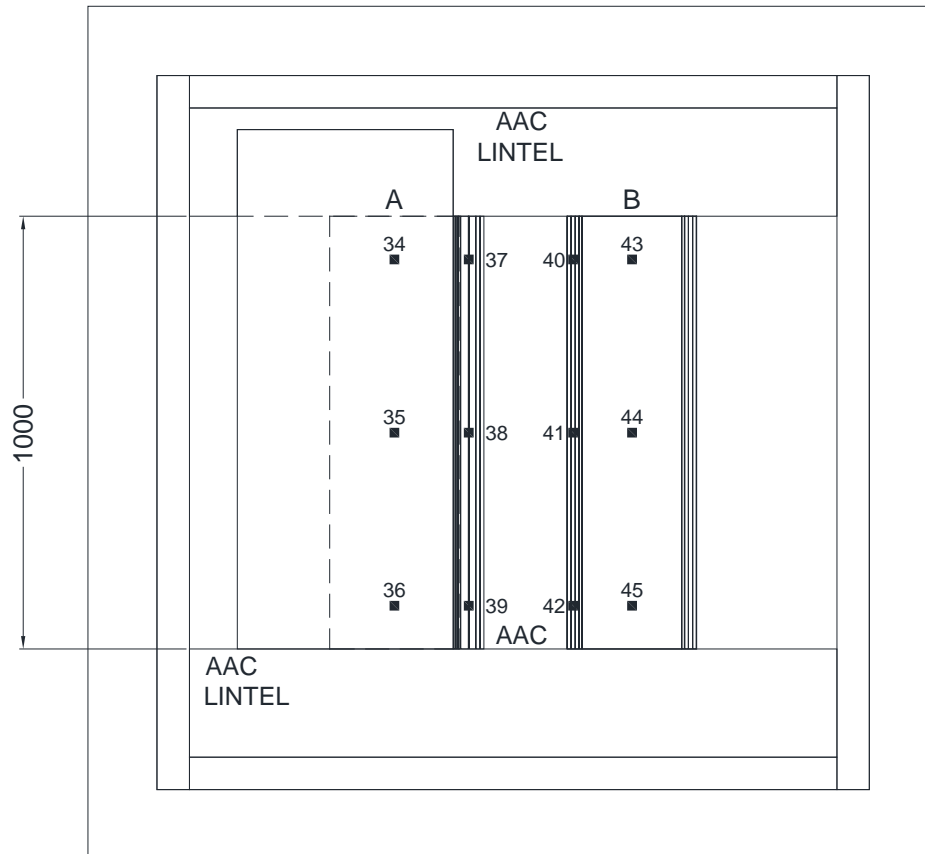
Warringtonfire was not involved in any sampling or selection procedure of the sealing system components.

Conditioning

The specimens' storage, construction, and test preparation took place in the test laboratory over a total, combined time of 4 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 12°C to 21.5°C and 47% to 71.5% respectively.

Test Construction

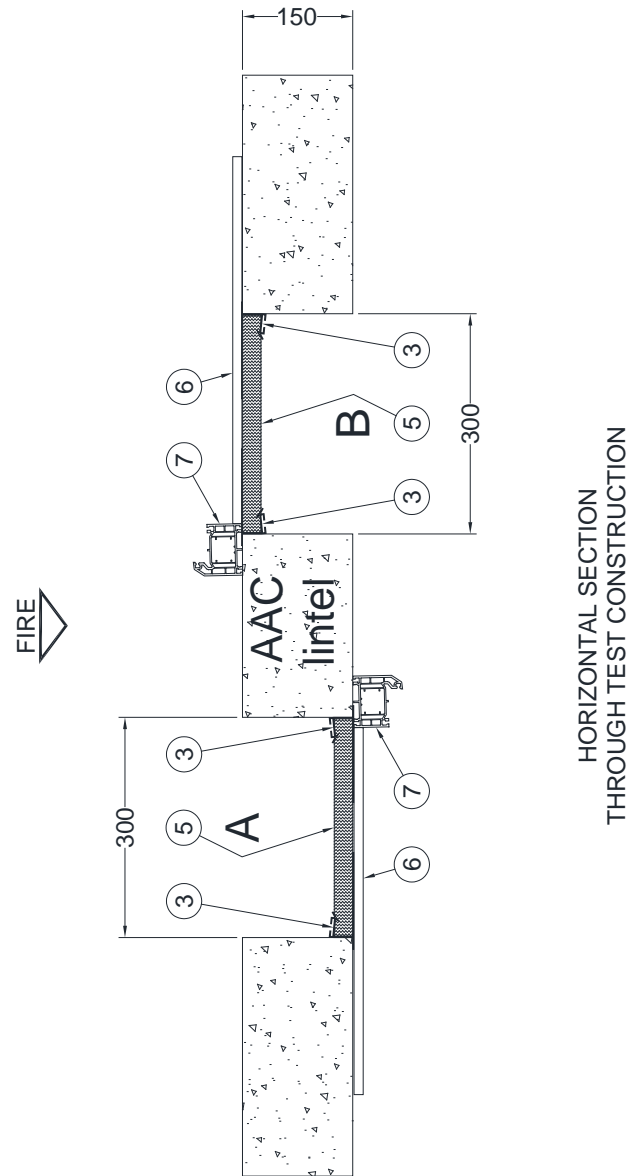
Figure 1- General Elevation of Wall Test Construction



- Positions of thermocouples
- AAC = Autoclaved aerated concrete

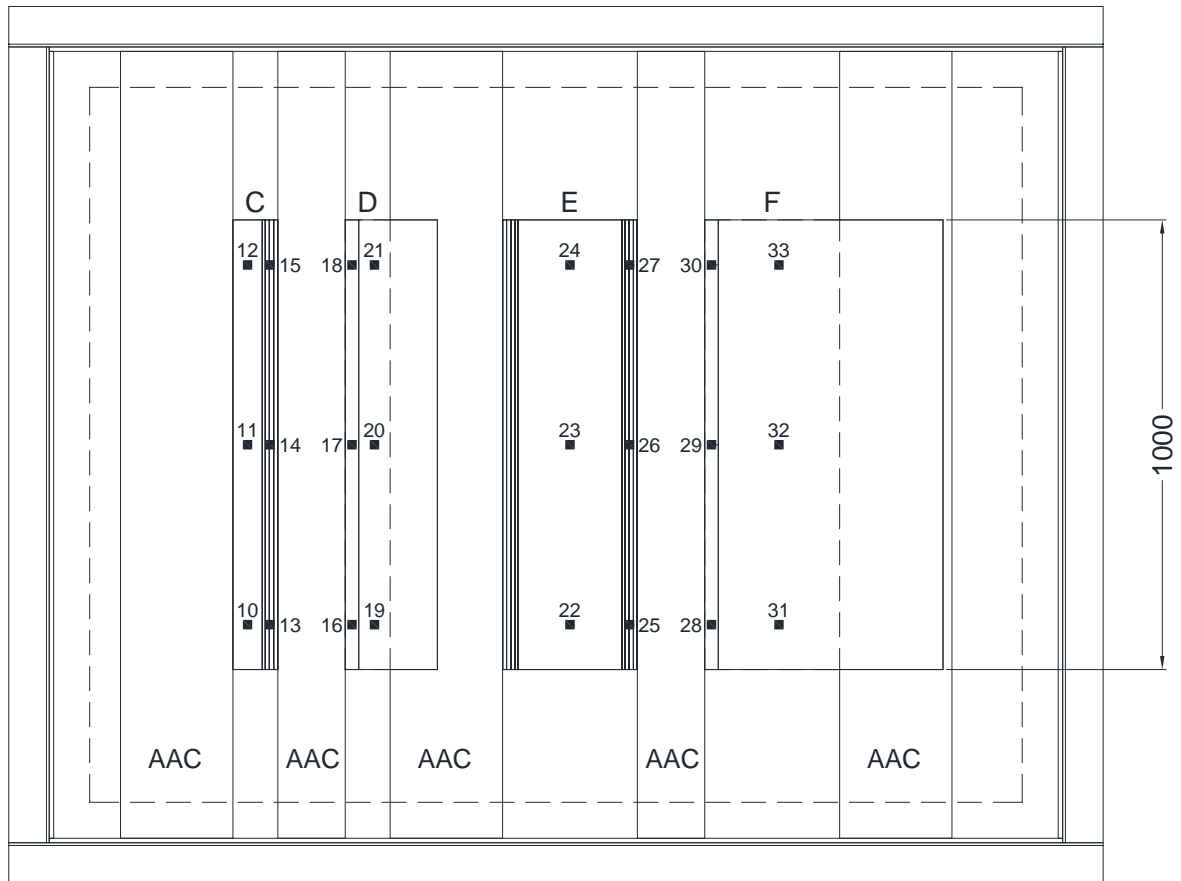
Do not scale. All dimensions are in mm

Figure 2 – Horizontal Section Through Wall Test Construction



Do not scale. All dimensions are in mm

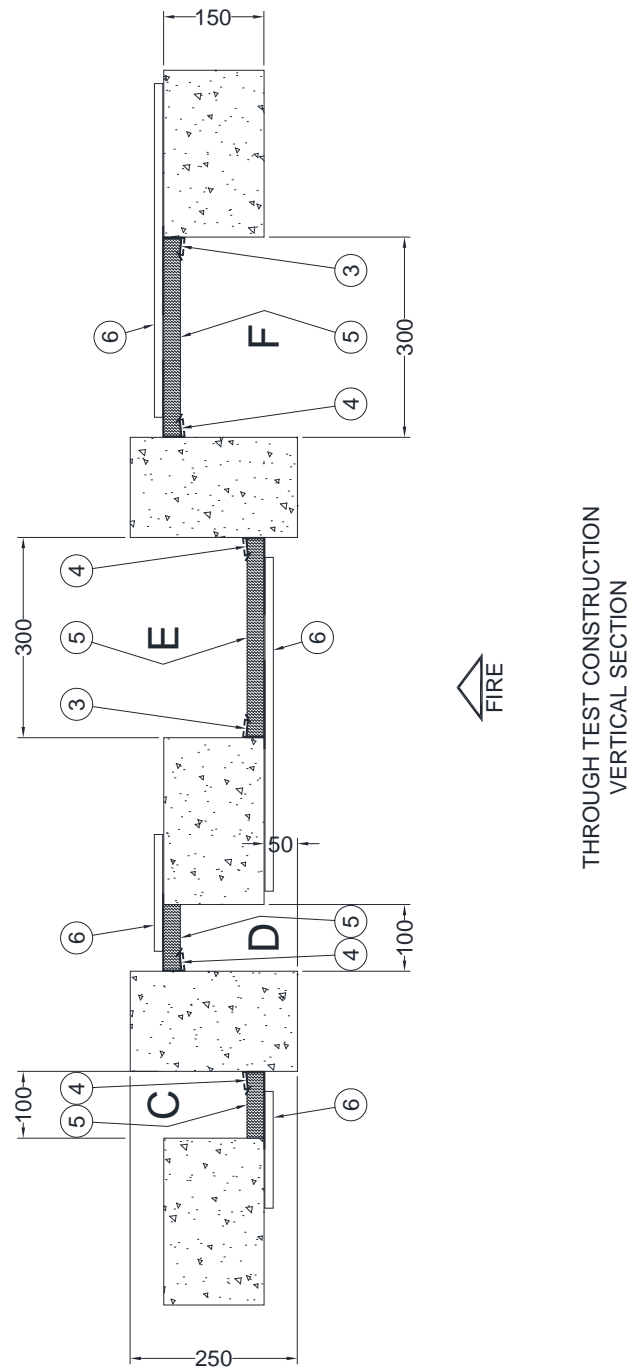
Figure 3 – General Elevation of Floor Test Construction



- Positions of thermocouples
- AAC = Autoclaved aerated concrete

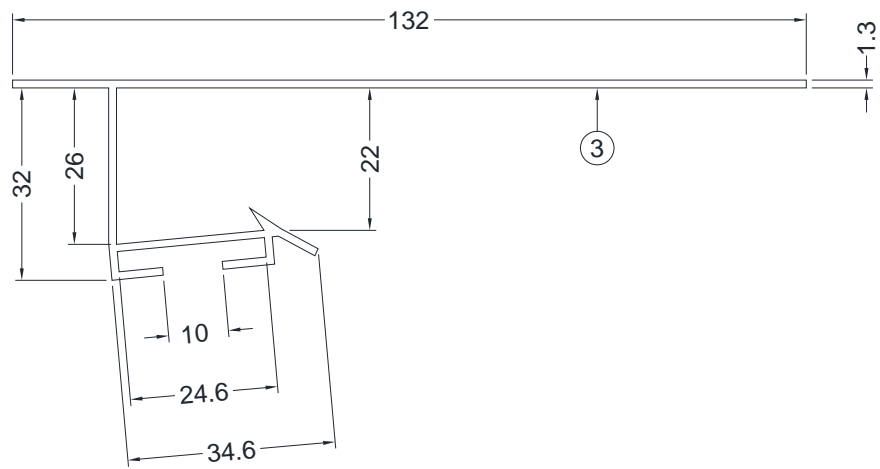
Do not scale. All dimensions are in mm

Figure 4 – Vertical Section Through Floor Test Construction

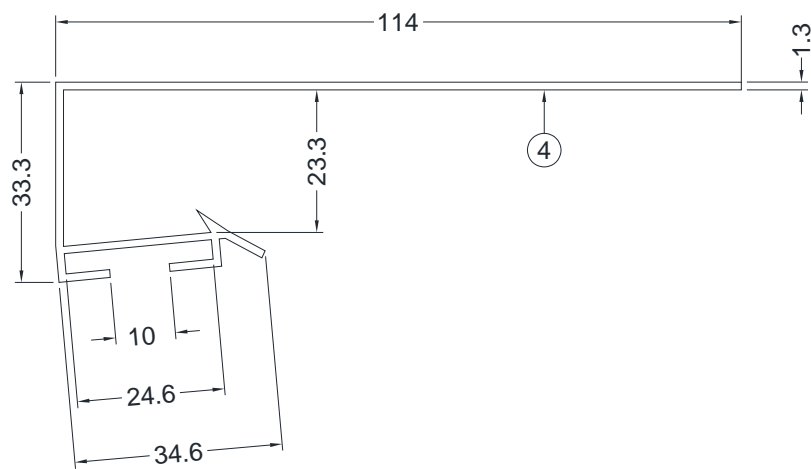


Do not scale. All dimensions are in mm

Figure 5 – Details of Specimen Carriers



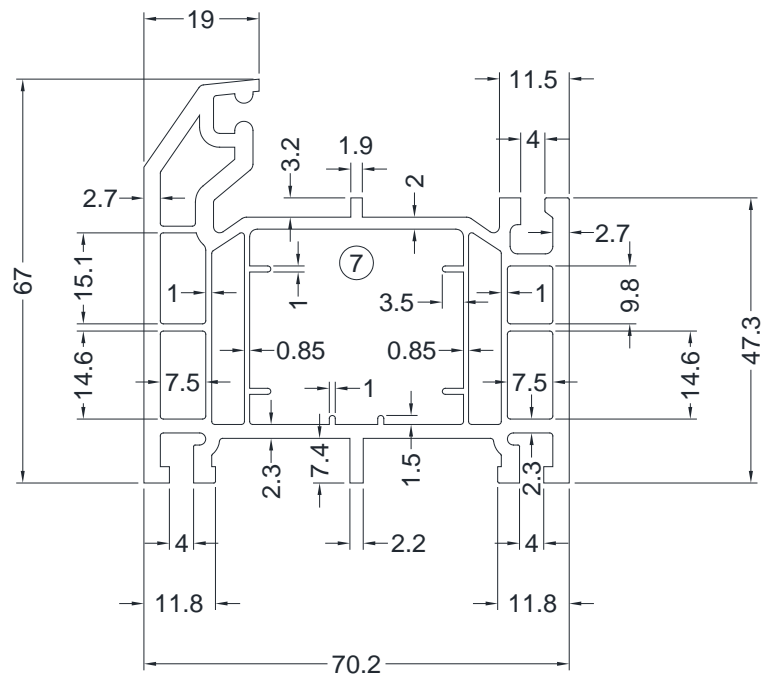
TYPICAL SECTION
THROUGH CARRIER PROFILE



TYPICAL SECTION
THROUGH CARRIER PROFILE

Do not scale. All dimensions are in mm

Figure 6 – Details of Window Frame Section



TYPICAL SECTION
THROUGH WINDOW FRAME PROFILE

Do not scale. All dimensions are in mm

Schedule of Components

(Refer to Figures 1 to 6)
(All values are nominal unless stated otherwise)
(All other details are as stated by the sponsor)

<u>Item</u>	<u>Description</u>
1. Masonry wall	
Material	: Autoclaved aerated concrete blocks and concrete slab lintels and central pillar as described in item 2
Density	: 760 kg/m ³
Thickness	: 150 mm
Aperture size	: 100 mm wide
2. Floor slab	
Material	: Autoclaved aerated steel reinforced concrete slabs with brickwork ledge
Density of concrete	: 670 kg/m ³
Thickness of concrete	: 150 mm
Aperture size	: 110 mm wide
3. Carrier Profile	
Manufacturer	: Timloc Building Products Ltd
Reference	: 3313
Material	: Extruded polyvinyl chloride (PVC)
Thickness	: 1.3 mm
Overall sizes	: See Figure 5
Fixing	: With 4 off 67 mm long x 3.4 mm diameter clout nails at 300 mm nominal centres
4. Carrier Profile	
Manufacturer	: Timloc Building Products Ltd
Reference	: 3313CR
Material	: Extruded polyvinyl chloride (PVC)
Thickness	: 1.3 mm
Overall sizes	: See Figure 5
5. Insulation	
Manufacturer	: Knauf
Reference	: RS140
Material	: Mineral fibre insulation encapsulated within a polythene sleeve
Density	: 140 kg/m ³
Thickness'	
i. insulation	: 25 mm
ii. polythene sleeve	: 0.06 mm
Widths	
i. specimen A	: 297 mm
ii. specimen B	: 297 mm
iii. specimen C	: 297 mm
iv. specimen D	: 297 mm
v. specimen E	: 98 mm
vi. specimen F	: 98 mm

Item

Description

5. Insulation (Continued)

Fixing methods

- i. specimen A : Friction fitted into the plastics profiles, items 3 & 4
- ii. specimen B : Friction fitted into the plastics profiles, items 3 & 4
- iii. specimen C : Friction fitted into the plastics profiles, items 3 & 4
- iv. specimen D : Friction fitted into the plastics profiles, items 3 & 4
- v. specimen E : Friction fitted into the plastics profile, items 3
- vi. specimen F : Friction fitted into the plastics profile, items 3

6. Plasterboards

Manufacturer

: British Gypsum

Reference

: Gyproc Wallboard

Material

: Type A gypsum core with paper facings

Thickness

: 12.5 mm

Overall sizes

- i. specimen A : 1200 mm long x 500 mm wide
 - ii. specimen B : 1200 mm long x 500 mm wide
 - iii. specimen C : 1000 mm long x 175 mm wide
 - iv. specimen D : 1000 mm long x 175 mm wide
 - v. specimen E : 1000 mm long x 500 mm wide
 - vi. specimen F : 1000 mm long x 500 mm wide
- Fixing : With 4 off 67 mm long x 3.4 mm diameter clout nails to the wall and floor constructions

7. Window Frame Profile

Manufacturer

: Kömmerling

Reference

: Ovolo 070

Material

: Extruded polyvinyl chloride (PVC)

Thickness

: 2.3 mm

Overall sizes

: See Figure 6

Instrumentation

General	The instrumentation and measuring equipment provided was in accordance with BS 476: Part 20: 1987.
Furnace	The furnace was controlled so that its mean temperature complied with the requirements of BS 476: Part 20: 1987, Clause 3.1, using four mineral insulated thermocouples positioned such that they were 100 mm from the surface of the wall construction, and three mineral insulated thermocouples positioned such that they were 100 mm from the surface of the floor construction .
Thermocouple Allocation	<p>Thermocouples were provided to monitor the unexposed surface of the specimens and the output of all instrumentation was recorded at no less than one minute intervals as follows:</p> <p>The locations and reference numbers of the various unexposed surface thermocouples are shown in Figures 1 and 3.</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.
Furnace Pressure	<p>After the first five minutes of testing the furnace atmospheric pressure was controlled so that it complied with the requirements of BS 476: Part 20: 1987, Clause 3.2.2. The furnace atmospheric pressure 100 mm below the soffit of the floor construction was calculated to be 18 (± 2) Pa. The pressure at mid height of the wall construction was approximately 15 (± 2) Pa.</p> <p>During the test due to the failures of Specimens, pressure below the requirements was recorded. Once Specimens were blanked off, pressure remained within the above requirements.</p>

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 20°C at the start of the test with a maximum variation of +13°C during the test.
00	00	The test commences.
05	31	Smoke release through head of Specimen B and all floor Specimens.
10	00	No significant visible change.
13	30	Foil wrap starts to deteriorate at the head of Specimen B.
15	00	Viewed from exposed face: Window profile to Specimen B burnt off.
17	27	Plastic profiles at the side of the barrier in Specimen B soften at the head.
20	00	Foil face in Specimen E deteriorates in multiple locations.
31	13	Plastic profile to left hand side of Specimen B peeled off.
36	45	Specimen E starts vibrating.
40	15	Small glowing occurs at the end of Specimen E.
41	10	Specimen E detaches. Sustained flaming occurs. Integrity failure is deemed to occur.
42	06	Specimen E blanked off to allow test to continue.
46	41	Glowing occurs at perimeter edges of Specimen B. Right hand side plastic profile melts at the 1/3 down from the head.
47	38	Cotton wool pad applied over the glowing area in Specimen B. Cotton wool pad discolours but fails to ignite.
48	41	Sustained flaming to Specimen D. Integrity failure is deemed to occur.
49	30	Specimen D blanked off to allow test to continue.
52	53	Glowing occurs at the end of Specimen C and approximately mid-height of Specimen F.
53	27	Sustained flaming and Gap Gauge failure to Specimen F as Specimen F collapses. Integrity failure is deemed to occur.

Time

mins secs

55	25	Specimen F blanked off to allow test to continue.
55	43	Black discolouration to plaster board adjacent to window profile in Specimen A.
58	32	Sustained flaming to Specimen C. Integrity failure is deemed to occur.
59	15	Specimen C blanked off to allow test to continue.
60	00	Glowing debris detaching from Specimen B.
61	10	Glowing behind frame profile in Specimen A.
61	44	Cotton wool pad applied to Specimen B as it pushed out from the opening. Cotton wool pad ignites. Integrity failure is deemed to occur.
64	07	Cotton wool pad applied to Specimen A. Cotton wool pad discolours but fails to ignite.
65	25	Cotton wool pad applied to Specimen A. Cotton wool pad discolours but fails to ignite.
65	30	Test discontinued.

Test Photographs

The unexposed face of the wall assembly after a test duration of 10 minutes



The unexposed face of the floor assembly after a test duration of 10 minutes



The unexposed face of the wall assembly after a test duration of 31 minutes



The unexposed face of the floor assembly after a test duration of 31 minutes



Specimen E falls away after a test duration of 41 minutes



Integrity failure of Specimen D after a test duration of 48 minutes



Integrity failure of Specimen F after a test duration of 53 minutes



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



The unexposed face of the wall assembly after a test duration of 66 minutes



Temperature and Pressure Data

Mean Furnace Temperature, Together With The Temperature/Time Relationship Specified In The Standard

Time Mins	Specified Furnace Temperature Deg. C	Actual Furnace Temperature Deg. C
0	20	21
2	445	429
4	544	550
6	603	564
8	645	633
10	678	675
12	705	699
14	728	720
16	748	742
18	766	759
20	781	778
22	796	787
24	809	805
26	820	817
28	832	829
30	842	839
32	851	849
34	860	858
36	869	864
38	877	872
40	885	882
42	892	892
44	899	900
46	906	898
48	912	907
50	918	914
52	924	925
54	930	932
56	935	933
58	940	933
60	945	944
62	950	954
64	955	964
65	957	964

Individual Temperatures Recorded On The Unexposed Surface Of Specimen A

Time Mins	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
0	17	16	15	16	15	16
2	17	16	16	16	15	16
4	17	16	16	16	15	16
6	19	17	16	16	15	16
8	23	22	22	17	17	21
10	28	27	27	19	20	27
12	35	33	32	20	22	29
14	44	41	38	22	23	30
16	56	51	45	23	25	31
18	68	59	53	25	26	31
20	78	68	56	26	27	31
22	81	73	65	28	28	31
24	82	75	72	29	29	32
26	84	76	75	30	29	31
28	85	78	76	31	30	31
30	86	79	78	32	31	31
32	87	81	79	34	33	31
34	87	82	80	35	34	31
36	88	83	81	37	36	31
38	87	85	82	39	37	32
40	88	86	83	40	38	32
42	90	88	84	42	39	32
44	91	90	83	44	41	35
46	94	92	86	46	43	35
48	96	94	87	47	45	36
50	98	95	88	49	46	36
52	103	96	90	51	48	36
54	108	99	92	54	50	36
56	115	102	93	57	52	37
58	125	108	96	62	54	36
60	141	120	100	68	58	40
62	188	153	103	103	67	43
63	213	172	106	115	75	43
64	234	196	111	145	84	43
65	253	216	116	173	94	44

Individual Temperatures Recorded On The Unexposed Surface Of Specimen B

Time Mins	T/C Number 40 Deg. C	T/C Number 41 Deg. C	T/C Number 42 Deg. C	T/C Number 43 Deg. C	T/C Number 44 Deg. C	T/C Number 45 Deg. C
0	15	14	14	16	15	15
2	15	15	14	16	16	16
4	15	15	14	16	16	16
6	16	15	14	19	16	16
8	25	18	16	40	31	20
10	38	28	26	62	69	38
12	50	39	40	70	69	70
14	61	50	49	68	62	72
16	74	64	56	64	60	71
18	91	80	61	61	68	66
20	101	96	65	64	78	59
22	98	101	70	80	88	55
24	98	103	77	102	105	61
26	71	102	87	113	139	70
28	51	82	99	122	176	76
30	40	62	101	122	187	79
32	34	49	102	121	182	84
34	31	41	103	121	175	101
36	29	37	108	122	177	118
38	28	35	125	123	178	154
40	28	33	147	124	177	175
42	25	32	167	122	174	180
44	30	34	182	123	170	178
45	31	34	188	126	172	181
46	30	34	195	130	174	182
48	29	34	208	141	176	182
50	28	33	224	150	174	179
52	27	32	241	163	175	176
54	24	31	258	175	176	173
56	25	32	276	185	179	169
58	23	31	292	190	181	169
60	28	34	310	182	184	169
62	29	35	319	182	195	172
64	28	35	324	176	206	176
65	28	35	326	173	211	176

Individual Temperatures Recorded On The Unexposed Surface Of Specimen C

Time	T/C	T/C	T/C	T/C	T/C	T/C
Mins	Number	Number	Number	Number	Number	Number
	10	11	12	13	14	15
	Deg. C	Deg. C	Deg. C	Deg. C	Deg. C	Deg. C
0	17	18	17	17	17	17
2	17	18	17	17	17	17
4	18	20	19	24	19	18
6	26	66	41	41	30	26
8	56	77	67	63	42	39
10	74	80	79	72	50	50
12	80	83	84	72	57	57
14	85	85	85	77	64	64
16	88	89	87	80	70	68
18	85	92	87	82	77	74
20	89	95	91	85	85	81
22	91	98	95	87	93	87
24	96	111	97	91	103	96
26	102	126	102	99	104	100
28	107	159	118	103	109	102
30	118	183	156	110	118	103
31	134	194	189	116	126	104
32	162	198	223	126	136	104
34	222	200	274	147	158	112
36	266	200	275	167	175	132
38	303	204	247	182	186	152
40	328	207	225	192	195	167
42	376	211	213	210	198	180
44	461	228	*	245	210	208
46	386	221	197	243	203	213
48	389	223	218	255	209	261
50	399	230	*	264	221	321
52	404	233	*	273	236	400
54	399	236	*	284	242	461
56	423	240	*	293	240	574
58	477	247	*	308	238	
60	#	#	#	#	#	#

*Thermocouple Malfunction

#Specimen Blanked Off

Individual Temperatures Recorded On The Unexposed Surface Of Specimen D

Time Mins	T/C Number 16 Deg. C	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
0	18	18	18	19	19	19
2	18	19	19	19	19	18
4	20	21	21	19	19	18
6	26	27	26	19	19	18
8	34	38	36	19	19	19
10	45	50	47	20	19	19
12	53	59	57	20	19	19
14	75	74	87	21	20	19
16	69	77	82	22	20	20
18	74	89	91	23	21	20
20	84	111	103	24	21	21
22	92	99	104	27	22	22
24	99	104	109	29	23	25
26	103	108	117	32	24	27
28	104	119	127	35	26	31
30	112	135	140	39	29	36
32	122	156	156	43	31	40
34	132	184	171	47	33	44
35	137	198	178	48	34	46
36	143	211	183	50	35	47
38	152	218	188	53	37	49
40	163	213	191	55	39	51
42	175	222	200	62	53	57
44	209	310	245	102	146	81
46	217	297	256	87	141	63
48	237	309	298	90	164	63
50	#	#	#	#	#	#

#Specimen Blanked Off

Individual Temperatures Recorded On The Unexposed Surface Of Specimen E

Time Mins	T/C Number 22 Deg. C	T/C Number 23 Deg. C	T/C Number 24 Deg. C	T/C Number 25 Deg. C	T/C Number 26 Deg. C	T/C Number 27 Deg. C
0	19	19	19	17	18	18
2	19	19	19	18	18	18
4	19	20	19	18	19	19
6	58	72	37	24	28	25
8	76	81	72	38	36	34
10	78	76	78	46	43	42
12	75	73	77	51	48	49
14	74	71	72	56	54	58
16	71	69	75	61	59	66
18	67	72	76	70	67	77
20	75	80	86	78	75	88
22	81	90	92	90	83	96
24	89	82	95	103	91	102
26	103	82	103	106	99	105
28	106	100	109	110	105	108
30	118	115	127	116	109	112
32	140	131	150	127	116	119
34	147	131	165	141	124	131
36	153	129	174	154	138	145
38	157	119	179	165	148	154
40	159	116	184	177	157	158
41	168	132	185	278	165	160
42	#	#	#	#	#	#

#Specimen Malfunction

Individual Temperatures Recorded On The Unexposed Surface Of Specimen F

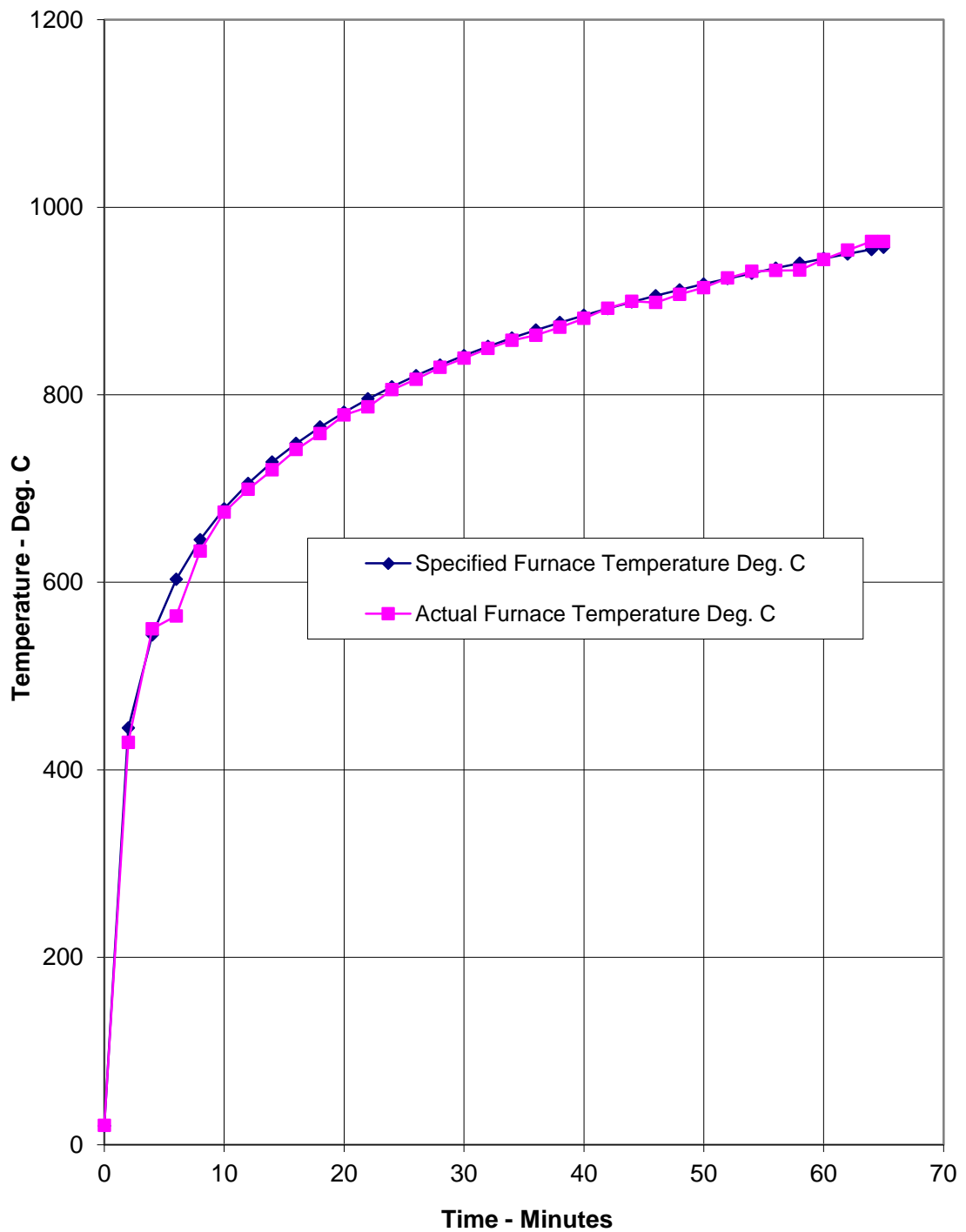
Time Mins	T/C Number 28 Deg. C	T/C Number 29 Deg. C	T/C Number 30 Deg. C	T/C Number 31 Deg. C	T/C Number 32 Deg. C	T/C Number 33 Deg. C
0	18	19	18	20	20	20
2	18	19	18	20	20	20
4	20	20	19	20	20	20
6	24	24	23	22	22	22
8	30	29	28	25	25	25
10	38	36	34	29	29	28
12	46	44	42	34	34	32
14	55	52	50	40	40	37
16	62	58	57	46	48	43
18	70	64	63	55	57	50
20	77	70	69	65	66	57
22	84	76	75	74	77	65
24	90	83	81	78	84	76
26	96	92	88	80	86	81
28	103	99	93	82	87	82
30	104	103	103	83	88	83
32	106	104	103	84	89	84
34	111	104	103	85	90	85
36	117	104	104	86	91	86
38	124	106	106	87	91	86
40	130	109	111	88	89	87
42	138	114	119	93	94	92
44	169	161	151	113	168	114
45	167	241	137	101	189	107
46	178	321	145	112	216	116
48	305	437	171	174	237	125
50	385	506	193	208	237	150
52	484	498	222	202	*	218
54	445	655	278	*	*	213
55	#	#	#	#	#	#

*Thermocouple Malfunction
 #Specimen Blanked Off

Recorded Furnace Pressure 400 mm Below The Floor Soffit

Time Mins	Recorded Pressure Pascals
0	0
2	0
4	5
6	9
8	19
10	19
12	18
14	19
16	19
18	18
20	18
22	18
24	18
26	18
28	18
30	18
32	18
34	18
36	18
38	18
40	18
42	0
44	26
46	18
48	18
50	18
52	18
54	16
56	16
58	16
60	26
62	18
64	18
65	18

Graph Showing Mean Furnace Temperature, Together With The Temperature/Time Relationship Specified In The Standard



Performance Criteria and Test Results

Integrity

It is required that there is no collapse of the specimens, no sustained flaming on the unexposed surface and no loss of impermeability. These requirements were satisfied for the periods given in the table below:

Specimen A	Specimen B	Specimen C	Specimen D	Specimen E	Specimen F
65 minutes*	61 minutes	58 minutes	48 minutes	41 minutes	53 minutes

Insulation

The mean and maximum temperature rise allowable on the unexposed face of the specimen by BS 476: Part 20: 1987 are 140°C and 180°C respectively, however, due to the reduced size of the specimens, only the maximum temperature rise criterion was utilised. This requirement was satisfied for the periods given in the table below:

Specimen A	Specimen B	Specimen C	Specimen D	Specimen E	Specimen F
62 minutes	45 minutes	31 minutes	35 minutes	40 minutes	44 minutes

*The test was discontinued after a period of 65 minutes.

Ongoing Implications

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, orientations and supporting construction vary from those tested.

This report Supersedes report referenced 397797 Issued 19th October 2018 and report referenced 397797 Issue 2, Issued 2nd March 2022.

Review

This report covers a test which was conducted to a procedure which is not the subject of any British Standard specification, but the test utilised the general principles of fire resistance testing given in BS 476: Part 20: 1987. Since fire tests are the subject of a continuing Standardisation process, and because existing standards are the subject of review and possible amendment and new interpretations, it is recommended that the report be referred back to the test laboratory after a period of two years to ensure that the methodology adopted and the results obtained remain valid in the light of the situation prevailing at that time.

Conclusions

Evaluation against objective

A fire test which utilised the heating conditions and performance criteria specified in BS 476: Part 20: 1987, has been conducted to evaluate the ability of six specimens of proprietary cavity closer system to provide a fire stop within the cavity between the leaves of an external wall and floor construction.

If the performance of each specimen was assessed against the performance requirements for integrity and insulation (maximum temperature rise) specified in BS 476: Part 20: 1987, the results obtained could be expressed as follows:

Test Results	Specimen A	Specimen B	Specimen C	Specimen D	Specimen E	Specimen F
Integrity	65 minutes*	61 minutes	58 minutes	48 minutes	41 minutes	53 minutes
Insulation	62 minutes	45 minutes	31 minutes	35 minutes	40 minutes	44 minutes

*The test was discontinued after a period of 65 minutes.