test report

Title:

Fire resistance test in accordance with BS EN 1364-1: 1999 on an insulated glazed screen assembly

Report No:

147219

Prepared for:

Glaverbel S. A.

BU Industrial Products,
Parc Industriel-Zone C,
Rue Jules Bordet,
B-7180 Seneffe,
Belgium.

Date:

24th February 2006

Notified Body No:

0833

UKAS TESTING

warringtonfire global safety

TESTING

Summary

Objective

To determine the fire resistance of an asymmetrical, insulated glazed screen assembly when tested in accordance with BS EN 1364-1: 1999.

Sponsor

Glaverbel S. A. BU Industrial Products, Parc Industriel-Zone C, Rue Jules Bordet, B-7180 Seneffe, Belgium.

Summary of Tested Specimen

The assembly had overall dimensions of 2950 mm high by 2950 mm wide and comprised two separate Meranti hardwood timber frames jointed together vertically. One of the frames was subdivided with transoms and mullions such that five apertures were formed. The other frame was provided with a single transom to form two apertures. Each aperture was glazed with a pane of 12 mm thick Pyrobelite EW60/12 insulating glass. The glass panes were retained within the apertures via Meranti hardwood glazing beads fixed with steel screws at nominally 200 mm centres. Beads were used on one side only as the framing members were rebated to accept the panes.

A ceramic glazing tape was fitted between the frame and the surface of the panes to one face and between the beads and the surface of the glass on the other face. The junction between the glass and the timber framing and beads was capped with a bead of gun applied silicone sealant.

The two separate frames were jointed together vertically by means of a Meranti hardwood spline fitted into grooves in the adjoining edges of the frames and Meranti hardwood architrave section screw fixed on either face. The frames were installed such that the frame containing two panes was orientated with its timber beads towards the heating conditions of the test and the frame containing five panes faced in the opposite direction.

Test Results:

Integrity Performance	Sustained flaming	62 minutes
	Gap gauge	62 minutes
	Cotton Pad	58 minutes*
Insulation Performance		26 minutes

Radiation Performance	5 kW/m^2	10 kW/m^2	15 kW/m^2	20 kW/m^2	25 kW/m^2
	49 minutes	63 minutes$^{\#}$	63 minutes$^{\#}$	63 minutes$^{\#}$	63 minutes$^{\#}$

* Failure deemed to be caused by the spontaneous ignition of the cotton pad due to radiation through the glass and not due to hot gases or cracks, fissures within the assembly.

$^{\#}$ Not exceeded during the test.

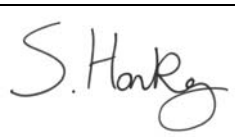
The test was discontinued after a period of 63 minutes.

Date of Test

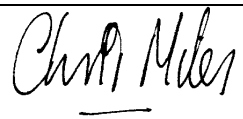
15th July 2005

Signatories

Responsible Officer
D. Forshaw*
Senior Technical Officer



Approved
S. Hankey*
Technical Consultant



C. W. Miles*
Head of Department

* For and on behalf of warringtonfire.

Report Issued

Date : 24th February 2006

CONTENTS **PAGE NO.**

Test Procedure

Introduction

The glazed screen is required to provide a fire separating function and was therefore tested in accordance with BS EN 1364-1: 1999 'Fire resistance tests for non-loadbearing elements - Part 1: Walls'. This test report should be read in conjunction with that Standard and with BS EN 1363-1: 1999, 'Fire resistance tests - Part 1: General requirements' and BS EN 1363-2: 1999, 'Fire resistance tests - Part 2: Alternative and additional procedures'.

The specimen was judged on its ability to comply with the performance criteria for integrity and insulation as required by BS EN 1364-1: 1999.

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 15th July 2005 at the request of Glaverbel S. A., the sponsor of the test.

Mr. M. De Boel and Ms. A. Marston, 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 specimen and information supplied by the sponsor of the test.

Installation

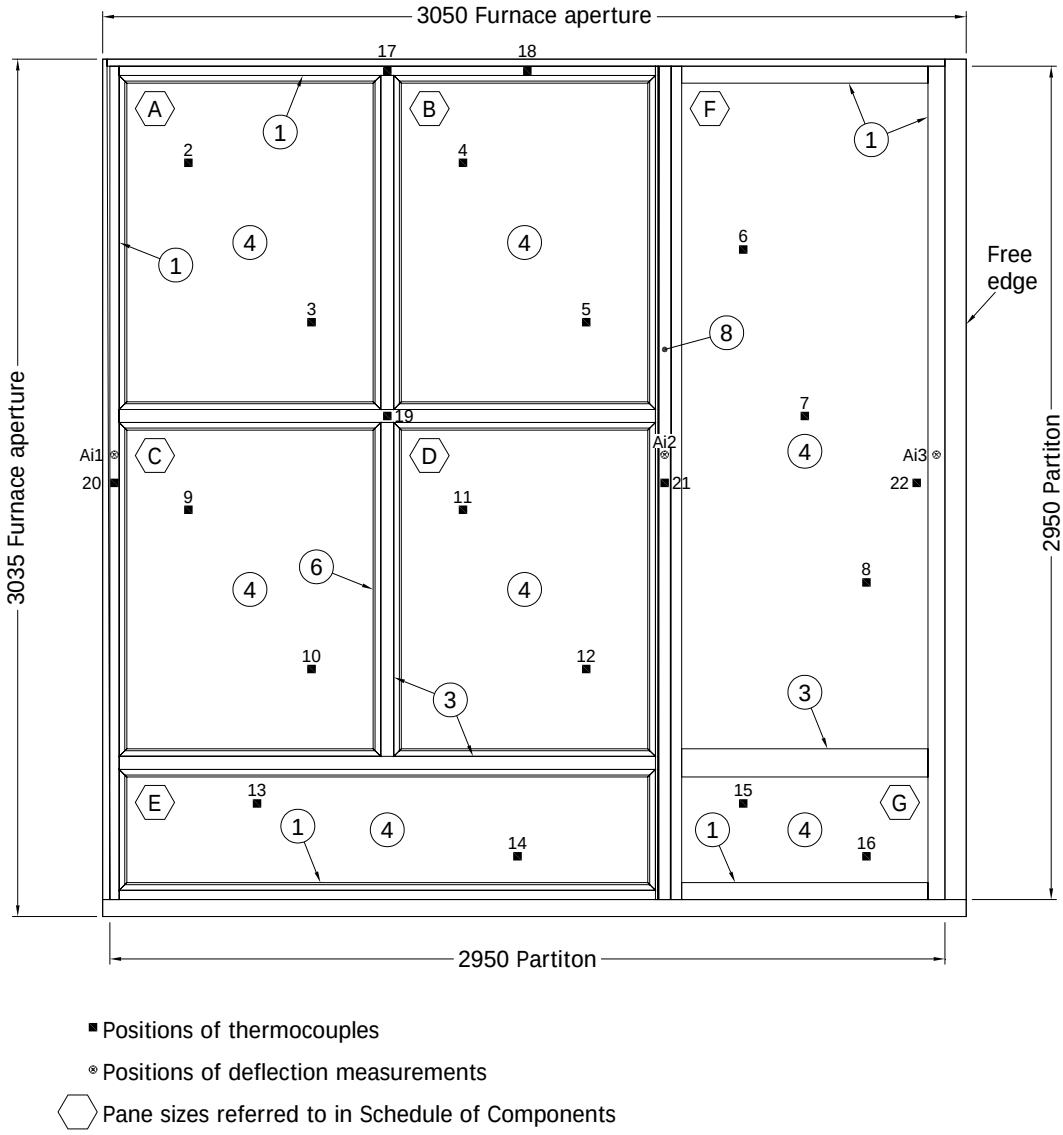
The assembly was installed into a refractory concrete lined steel restraint frame by representatives of the test sponsor on the 15th and 16th June 2005.

Sampling

warringtonfire was not involved in any selection or sampling procedures of the specimen or any of the components. However, the reference codes for each pane shown on page 12 enable complete traceability of the production of the glass.

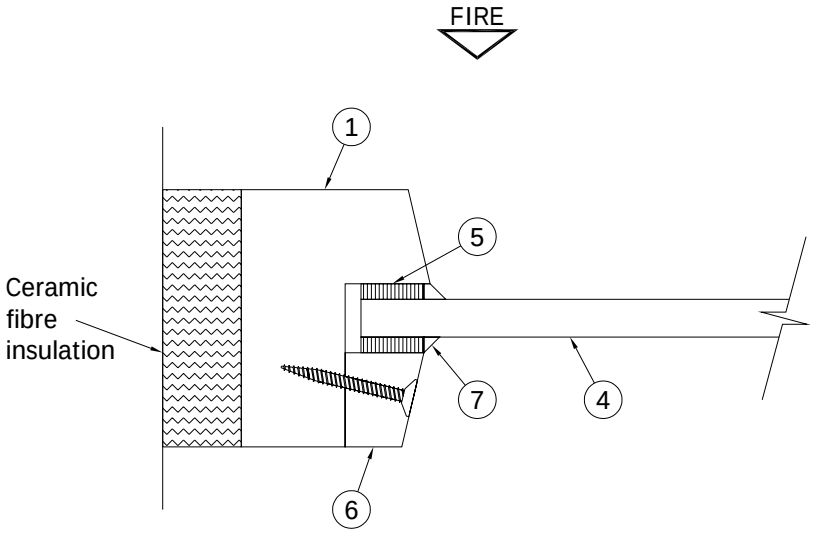
Test Specimen

Figure 1- General Elevation of Test Specimen

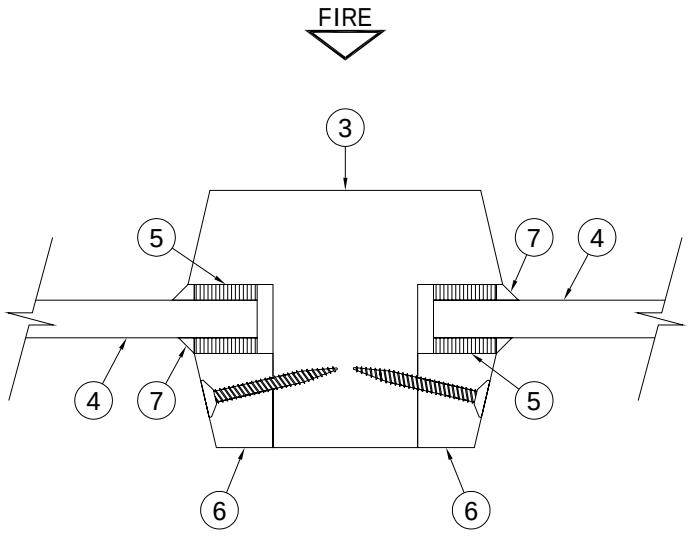


Do not scale. All dimensions are in mm

Figure 2 – Details of Assembly



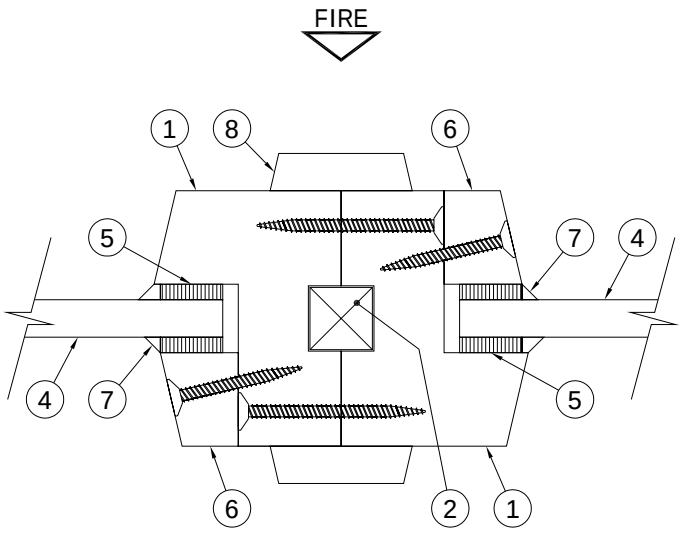
TYPICAL SECTION
THROUGH LEFT HAND
VERTICAL EDGE



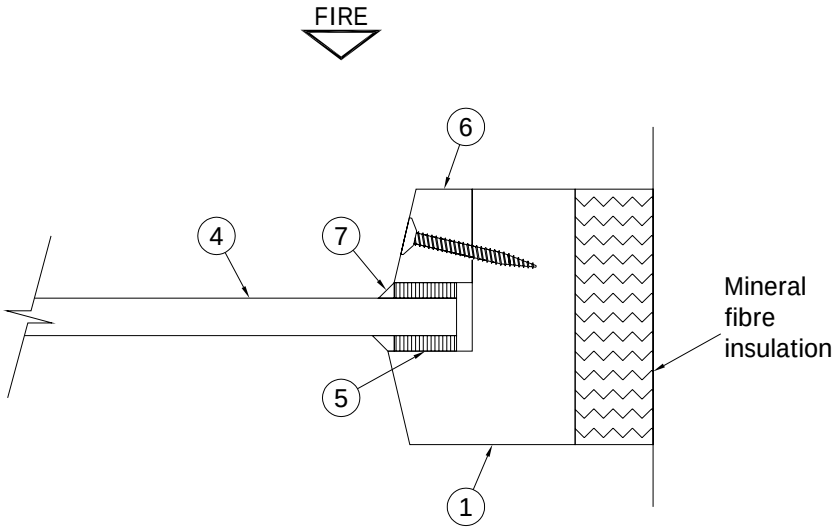
TYPICAL SECTION
THROUGH MULLION

Do not scale. All dimensions are in mm

Figure 3 – Details of Assembly



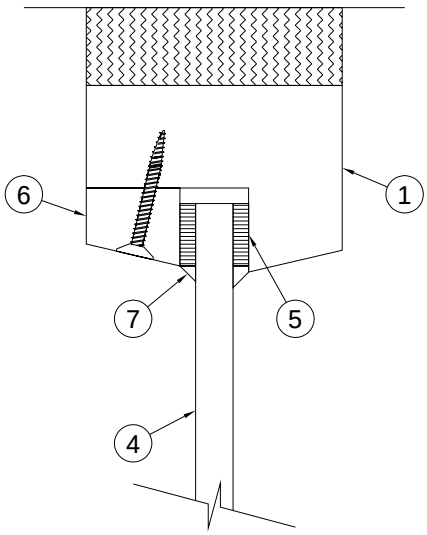
TYPICAL SECTION
THROUGH VERTICAL
FRAME JOINT



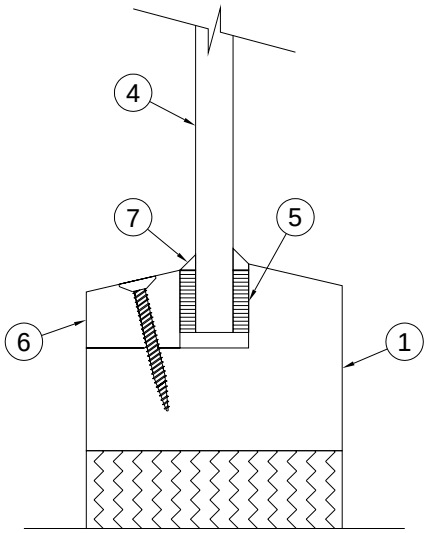
TYPICAL SECTION
THROUGH RIGHT HAND
VERTICAL EDGE

Do not scale. All dimensions are in mm

Figure 4 – Details of Assembly



TYPICAL SECTION
THROUGH HEAD

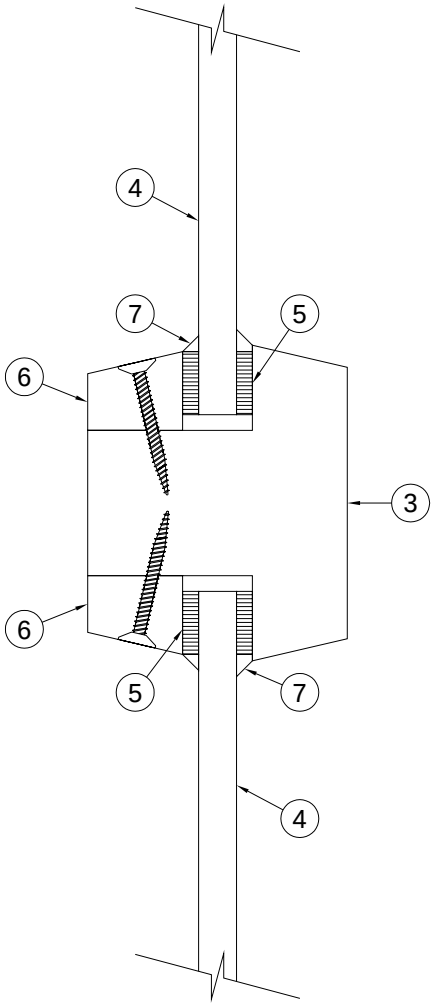


TYPICAL SECTION
THROUGH BASE

Do not scale. All dimensions are in mm

NB. No fire direction is indicated on this figure as the sections shown apply to both parts of the assembly where the fire direction was from either side.

Figure 5 – Details of Assembly



TYPICAL SECTION
THROUGH TRANSOM

Do not scale. All dimensions are in mm

NB. No fire direction is indicated on this figure as the section shown applies to both parts of the assembly where the fire direction was from either side.

Schedule of Components

(Refer to Figures 1 to 5)
(All values are nominal unless stated otherwise)
(All other details are as stated by the sponsor)

Item		Description
1. Perimeter Frame Section		
Material	:	Meranti, hardwood
Density	:	550 kg/m^3, nominal
Overall size	:	82 mm x 60 mm, with 52 mm x 27 mm deep rebate
Jambs to head jointing method	:	Butted and through screwed
Fixing method	:	Through screwed
Perimeter Fixings		
i. manufacturer	:	Hilti
ii. type	:	Sleeve anchors
iii. material	:	Steel
iv. reference	:	100 HT
v. overall size	:	112 mm long x 10 mm diameter
Butt Jointed Frames		
i. type	:	Countersunk head wood screws
ii. material	:	Steel
iii. overall size	:	60 mm long x 5 mm diameter
2. Vertical Joint Spline		
Material	:	Meranti, hardwood
Density	:	550 kg/m^3, nominal
Overall size	:	20 mm x 20 mm
Jointing method	:	Fitted into groove within the back faces of butting perimeter frame sections
3. Transom & Mullion Frame Section		
Material	:	Meranti, hardwood
Density	:	550 kg/m^3, nominal
Overall size	:	82 mm x 120 mm, with 2 off 52 mm x 27 mm deep rebates
Jointing method	:	Butted and through screwed

Item		Description
4. Glass		
Manufacturer	:	Glaverbel
Reference	:	Pyrobelite EW60/12
Thickness	:	12 mm
Overall sizes		
Glass panes		
i. pane A	:	913 mm wide x 1172 mm high
ii. pane B	:	913 mm wide x 1172 mm high
iii. pane C	:	913 mm wide x 1172 mm high
iv. pane D	:	915 mm wide x 1172 mm high
v. pane E	:	1886 mm wide x 418 mm high
vi. pane F	:	914 mm wide x 2400 mm high
vii. pane G	:	914 mm wide x 418 mm high
Glazing apertures		
i. pane A	:	923 mm wide x 1182 mm high
ii. pane B	:	923 mm wide x 1182 mm high
iii. pane C	:	923 mm wide x 1182 mm high
iv. pane D	:	923 mm wide x 1182 mm high
v. pane E	:	1896 mm wide x 428 mm high
vi. pane F	:	924 mm wide x 2410 mm high
vii. pane G	:	924 mm wide x 428 mm high
Reference codes		
i. pane A	:	BX04584-02-501
ii. pane B	:	BX04584-02-504
iii. pane C	:	BX04584-02-503
iv. pane D	:	BX04584-02-502
v. pane E	:	BX04584-03-501
vi. pane F	:	BX04584-01-501
vii. pane G	:	BX04584-04-501
Nominal edge clearance	:	5 mm
Setting blocks (base of glass)		
i. material	:	Promatect H
ii. thickness	:	5 mm
iii. overall size	:	70 mm long x 15 mm wide
5. Glass Edge Seal		
Manufacturer	:	Thermal Ceramics
Reference	:	X607 Superwool
Material	:	Ceramic fibre based glazing tape
Overall size	:	20 mm wide x 5 mm thick uncompressed
Fixing method	:	Self adhered to glazing beads, item 6

Item		Description
6. Glazing Beads		
Material	:	Meranti, hardwood
Density	:	550 kg/m^3, nominal
Overall size	:	30 mm wide x 25 mm high
Fixing method	:	Through screwed
Fixings		
i. type	:	Countersunk head wood screws
ii. material	:	Steel
iii. size	:	60 mm long x 4 mm diameter
iv. skew angle	:	Perpendicular to chamfered face of bead
v. fixing centres	:	200 mm nominal
7. Glass Edge Seal		
Manufacturer	:	Dow Corning
Reference	:	Firestop 700
Material	:	Silicone based sealant
Application method	:	Cartridge gunned
8. Frame Joint Architrave		
Material	:	Meranti, hardwood
Density	:	550 kg/m^3, nominal
Overall size	:	30 mm wide x 25 mm high
Fixing method	:	Through screwed
Fixings		
i. type	:	Countersunk head wood screws
ii. material	:	Steel
iii. size	:	35 mm long x 3.5 mm diameter

Instrumentation

General	The instrumentation was provided in accordance with the requirements of the Standard.
Furnace	The furnace was controlled so that its mean temperature complied with the requirements of BS EN 1363-1: 1999 Clause 5.1 using nine plate thermometers, distributed over a plane 100 mm from the surface of the test construction.
General	Thermocouples were provided to monitor the unexposed surface of the specimen. The output of all instrumentation was recorded at no less than one minute intervals as follows:
Thermocouples 2 to 16	At fifteen positions on the surface of the glazing, two positions each for Panes A, B, C, D, E, G and three positions for Pane F.
Thermocouples 17 to 21	At five positions on the surface of the framing. The locations and reference numbers of the various unexposed surface thermocouples are shown in Figure 1.
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.
Radiation	A water cooled heat flux radiometer was positioned 1 metre away from the specimen to measure its average radiation intensity.
Deflection	The horizontal deflection of the screen was measured at mid-height of both the perimeter edges and at the adjoining edges of the two frames.
Integrity Criteria	Cotton pads and gap gauges were available to evaluate the integrity of the specimen.
Furnace Pressure	The furnace atmospheric pressure was controlled so that it complied with the requirements of BS EN 1363-1: 1999, Clause 5.2.

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 21˚C at the start of the test with a maximum variation of + 2˚C during the test.
00	00	**The test commences.**
01	17	The inner face of the glass starts to crack and turn opaque to pane F.
02	10	The upper 5 panes (A, B, C, D & F) have now all turned opaque as the interlayer reacts.
04	15	Both lowest panes have started to turn opaque.
05	08	The exposed face of the frame ignites and issues flames.
05	30	The outer surfaces of most panes are cracked and there is some light smoke release from several of these cracks.
07	00	A circular area to the centre of pane A begins to push outwards ejecting shards of glass.
08	00	A small circular area approximately 50 mm has fallen away from the outer glass surface of pane D.
09	30	Glass shards are being ejected from several of the panes as the interlayer continues to react.
10	30	Large volumes of flame issue from the exposed face. The frame is cracked and beginning to reflect a dull orange colour.
12	00	General smoke release is increasing through the surface of the panes.
18	00	The surfaces of all panes are now undulated in appearance due to the cracking of the outer glass. Pane D in particular is dished inwards. Smoke release is increasing.
20	00	The majority of the timber cover strip to the joint between the two frames has charred and fallen away. All beading appears in place at this time.
26	00	Thermocouple No 7 records a temperature rise in excess of 180˚C. **Insulation failure is deemed to occur.**
27	00	All panes are now golden brown in colour. Smoke release continues to increase.
28	30	Mean temperature rise exceeds 140˚C.

Time		
mins	**secs**	
30	**00**	The assembly continues to satisfy the integrity and radiation criteria of the test.
32	**00**	Flames continue to issue from the surface of the screen. Still no visible bead detachment at this time.
34	**00**	All four of the equal sized panes (A, B, C & D) are now dished inwards.
41	**00**	The cotton pad is applied over one area to pane D where the outer glass has fallen away. The pad does not ignite or char.
43	**00**	An area of black discolouration is forming on the surface of pane C. The roving thermocouple reads a temperature of 365˚C at this position.
45	**30**	A cotton pad is applied over the area mentioned previously and is slightly charred on removal.
49	**00**	A cotton pad is applied over the area mentioned previously and is slightly charred on removal.
52	**00**	The frame is now heavily charred and is still no obvious bead detachment. There is an area devoid of reacted material coincident with the position on pane C.
56	**00**	Small areas of glowing are now visible within the cracks to pane F. A cotton pad is applied to pane C, no ignition.
58	**27**	A cotton pad is applied to pane C and ignites (radiation through glass). **Cotton pad integrity failure is deemed to occur.**
59	**30**	A cotton pad is applied to pane F, no ignition.
61	**00**	A cotton pad is applied to pane F, no ignition.
62	**00**	The head of pane F moves downwards out from the framing. **Gap gauge and sustained flaming integrity failures are deemed to occur.**
63	**00**	**The test is discontinued.**

Test Photographs

The Exposed Face Of The Test Construction Prior To Testing

The Unexposed Face Of The Test Construction Prior To Testing

The unexposed face of the test construction during the test

The unexposed face of the test construction during the test

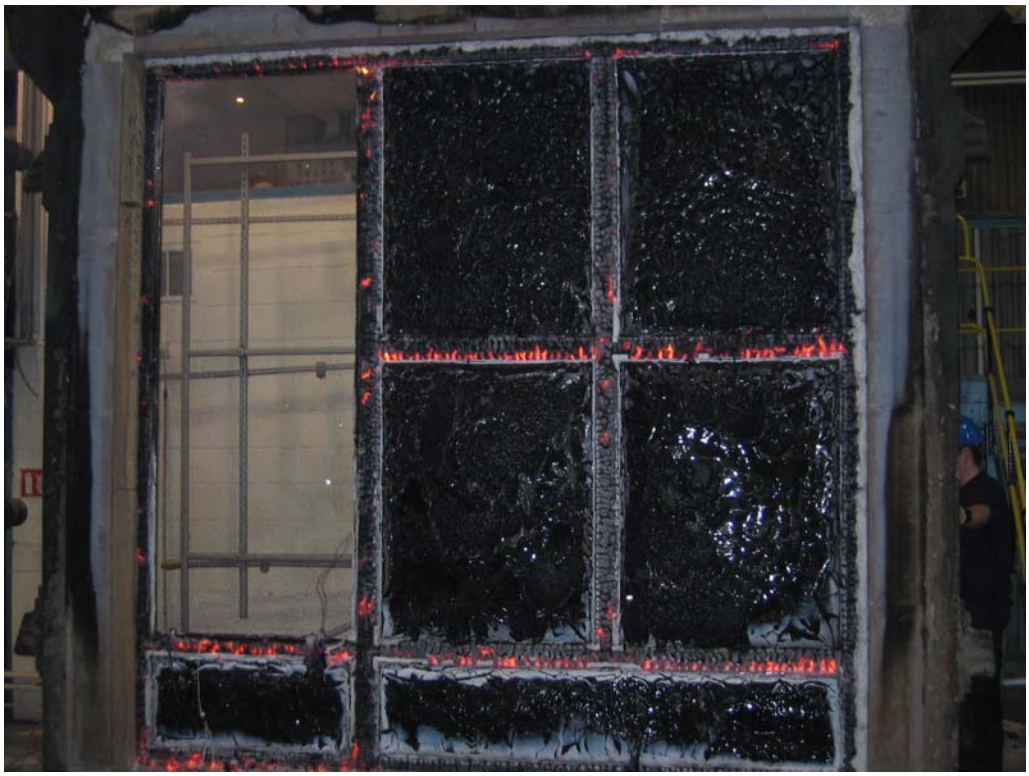
The unexposed face of the test construction during the test

The unexposed face of the test construction during the test

The unexposed face of the test construction during the test

Showing the sustained flaming integrity failure of the specimen after 62 minutes of testing

The exposed face of the test construction immediately after the test



Temperature, Radiation & Deflection 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	37
2	445	401
4	544	536
6	603	620
8	646	645
10	678	683
12	706	731
14	728	761
16	748	763
18	766	769
20	781	778
22	796	789
24	809	798
26	820	810
28	832	848
30	842	867
32	852	865
34	860	869
36	869	872
38	877	873
40	885	879
42	892	881
44	899	885
46	906	889
48	912	898
50	918	917
52	924	922
54	930	931
56	935	939
58	940	931
60	945	933
62	950	931
63	953	935

Individual Temperatures Recorded On The Unexposed Surface Of The Glazing

Time Mins	T/C Number 2 Deg. C	T/C Number 3 Deg. C	T/C Number 4 Deg. C	T/C Number 5 Deg. C	T/C Number 6 Deg. C	T/C Number 7 Deg. C	T/C Number 8 Deg. C	T/C Number 9 Deg. C
0	29	30	31	30	31	30	29	30
2	48	47	49	47	55	56	46	45
4	98	93	96	95	97	96	95	95
6	113	109	106	107	113	112	113	103
8	118	126	128	116	125	130	131	117
10	116	143	140	125	140	140	134	134
12	116	136	129	125	135	144	127	133
14	114	124	119	118	129	131	118	130
16	113	120	117	118	130	132	119	129
18	117	123	121	124	139	141	123	129
20	124	130	130	133	153	155	132	131
22	134	138	142	144	167	170	142	138
24	147	148	157	155	179	186	154	149
26	162	160	169	165	192	205	164	158
28	173	173	183	177	211	226	176	167
30	185	188	198	192	234	250	191	179
32	199	204	216	209	261	274	208	194
34	215	222	236	229	289	295	228	212
36	232	241	255	249	315	314	247	231
38	249	258	274	268	337	329	266	248
40	264	274	291	284	353	342	281	262
42	277	287	306	296	364	353	294	274
44	288	297	320	304	370	361	302	283
46	296	306	334	311	375	367	310	289
48	303	316	348	317	379	372	315	295
50	309	325	363	322	385	379	322	300
52	316	337	379	330	393	388	331	308
54	324	348	392	341	402	397	341	315
56	334	359	402	355	411	407	352	325
58	345	370	411	371	419	417	365	335
60	354	377	417	385	424	426	374	345
62	361	384	420	393	428	435	383	352
63	364	387	421	396	430	438	387	356

Individual And Mean Temperatures Recorded On The Unexposed Surface Of The Glazing

(Mean of T/C's 2 to 16)

Time Mins	T/C Number 10 Deg. C	T/C Number 11 Deg. C	T/C Number 12 Deg. C	T/C Number 13 Deg. C	T/C Number 14 Deg. C	T/C Number 15 Deg. C	T/C Number 16 Deg. C	Mean Temp Deg. C
0	30	30	30	30	29	26	25	29
2	41	44	42	36	33	31	30	43
4	83	87	95	68	53	61	52	84
6	105	109	106	103	90	100	83	105
8	119	116	117	111	106	107	105	118
10	127	118	134	118	111	110	114	127
12	131	123	148	122	110	113	126	128
14	132	116	132	126	114	118	124	123
16	126	116	125	126	118	119	122	122
18	125	118	127	124	116	118	115	124
20	130	128	135	121	114	114	108	129
22	137	140	145	121	114	111	100	136
24	146	152	156	124	118	112	95	145
26	156	166	169	131	123	114	95	155
28	170	182	182	139	130	120	95	167
30	182	200	194	147	140	126	98	180
32	194	221	211	161	152	135	104	196
34	211	243	230	172	162	145	109	213
36	228	265	246	184	174	155	115	230
38	245	286	261	201	181	163	121	246
40	261	303	272	220	189	172	128	260
42	274	317	282	237	200	181	135	272
44	287	329	290	256	211	192	140	282
46	300	339	297	273	222	203	146	291
48	308	347	302	286	233	214	152	299
50	318	355	308	300	243	226	162	308
52	325	364	313	312	253	238	170	317
54	335	375	320	327	262	250	175	327
56	343	385	326	341	273	262	183	337
58	350	395	334	354	284	274	192	348
60	359	404	340	367	295	285	199	357
62	369	411	345	380	304	294	204	364
63	372	414	346	382	308	297	206	367

Individual Temperatures Recorded On The Unexposed Surface Of The Assembly

Time Mins	T/C Number 17 Deg. C	T/C Number 18 Deg. C	T/C Number 19 Deg. C	T/C Number 20 Deg. C	T/C Number 21 Deg. C	T/C Number 22 Deg. C
0	23	23	23	22	22	29
2	24	24	24	23	22	47
4	25	26	25	23	23	93
6	27	28	26	24	24	107
8	29	31	27	25	24	120
10	30	33	28	25	25	128
12	32	36	28	26	25	130
14	34	37	29	26	25	121
16	35	38	30	27	26	117
18	36	41	31	28	26	120
20	37	43	31	28	27	128
22	39	44	32	29	27	137
24	42	46	32	30	27	148
26	44	48	34	30	28	159
28	47	50	36	32	28	173
30	50	53	37	33	28	187
32	53	56	39	34	29	204
34	56	58	40	36	29	222
36	58	61	43	37	30	242
38	60	65	44	39	31	260
40	63	68	45	40	32	276
42	65	71	46	41	34	289
44	67	74	48	42	34	300
46	70	77	50	44	36	309
48	71	79	51	45	38	317
50	73	82	53	46	39	327
52	75	85	53	47	39	338
54	76	86	55	49	40	349
56	78	88	56	51	41	362
58	79	90	58	52	42	372
60	81	92	59	53	43	381
62	82	95	60	54	45	386
63	83	96	60	54	46	390

Radiation Intensity

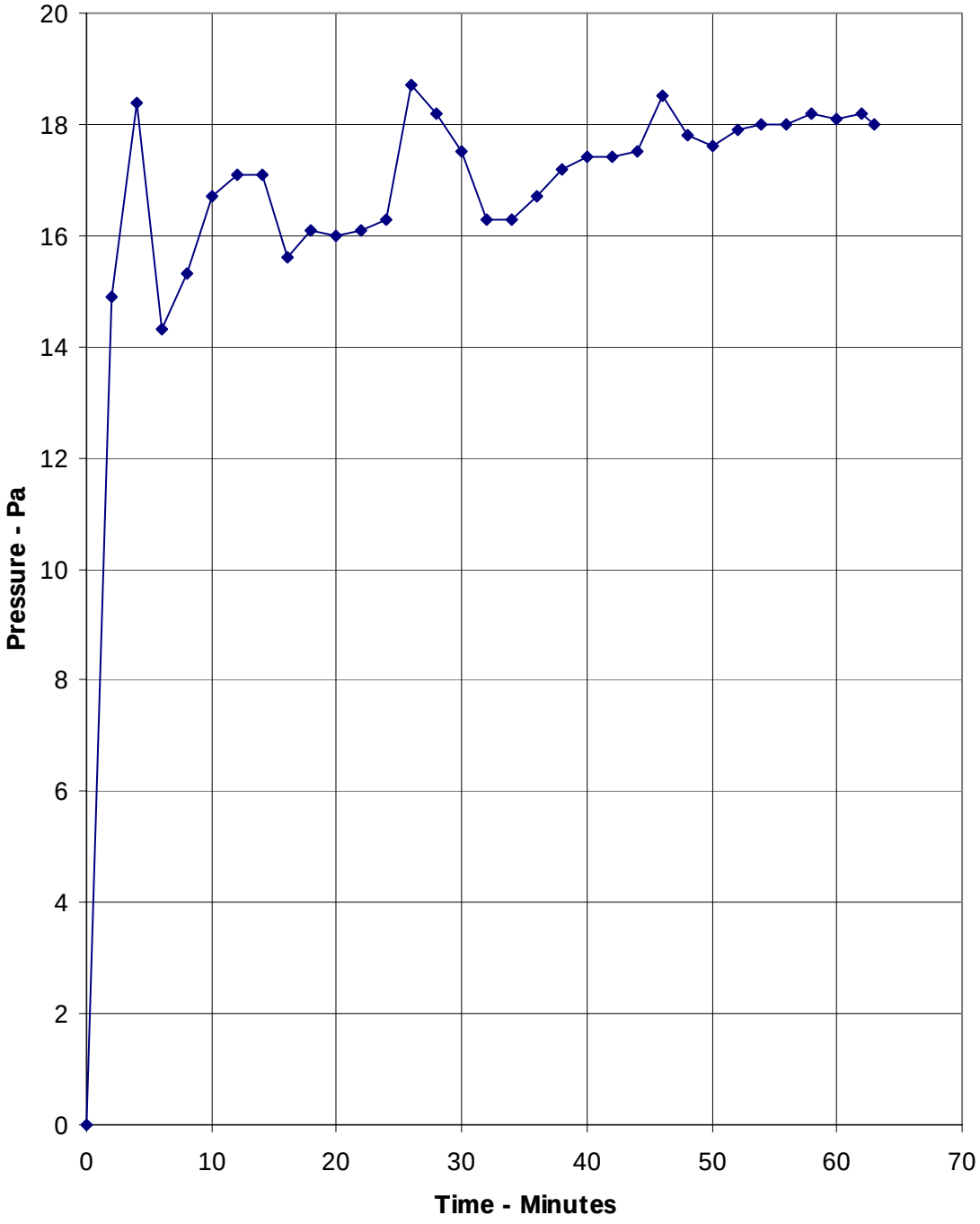
Time Mins	Radiation Intensity At 1 Metre kW/M^2
0	0.00
2	0.26
4	0.65
6	0.75
8	0.93
10	1.01
12	0.88
14	0.90
16	0.93
18	1.01
20	1.16
22	1.31
24	1.44
26	1.70
28	1.83
30	2.17
32	2.58
34	2.97
36	3.40
38	3.79
40	4.13
42	4.46
44	4.71
46	4.97
48	5.17
50	5.51
52	5.77
54	6.24
56	6.46
58	6.93
60	7.21
62	7.53
63	8.14

Recorded Horizontal Deflection Of The Frame

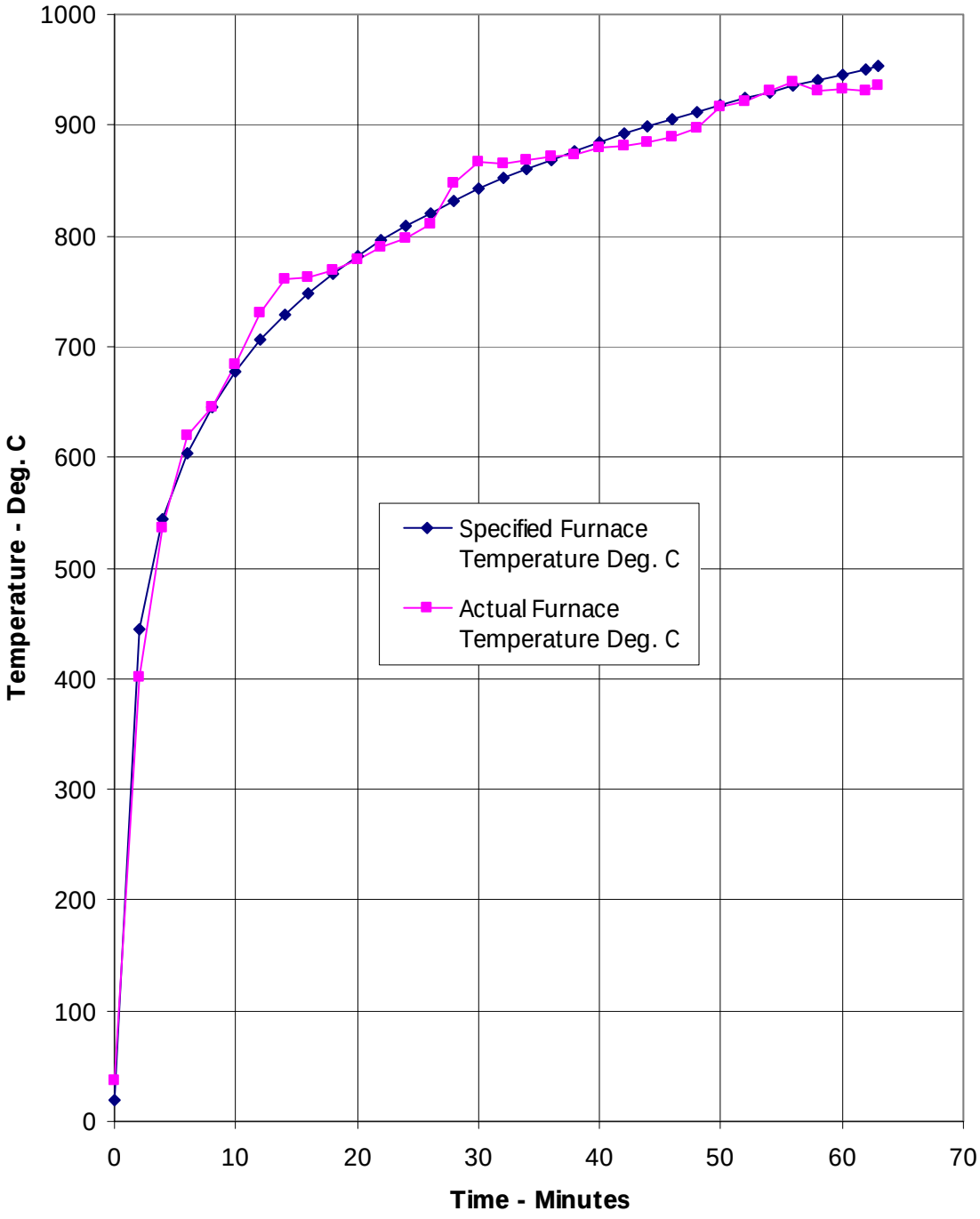
Time Mins	Deflection number Ai1 mm	Deflection number Ai2 mm	Deflection number Ai3 mm
0	0	0	0
2	1	2	0
4	1	1	0
6	1	1	0
8	1	0	0
10	1	0	0
12	1	0	0
14	1	-1	0
16	1	-1	0
18	1	-1	0
20	1	-1	0
22	1	-1	0
24	1	-1	0
26	1	-2	0
28	1	-2	0
30	1	-2	0
32	1	-3	0
34	1	-3	0
36	1	-4	0
38	1	-4	0
40	1	-5	0
42	2	-6	0
44	2	-6	0
46	2	-7	0
48	2	-7	0
50	2	-8	0
52	2	-9	0
54	2	-10	0
56	2	-12	0
58	2	-13	0
60	2	-14	0
62	2	-15	0
63	3	-15	0

Negative values indicate movement away from the furnace chamber.

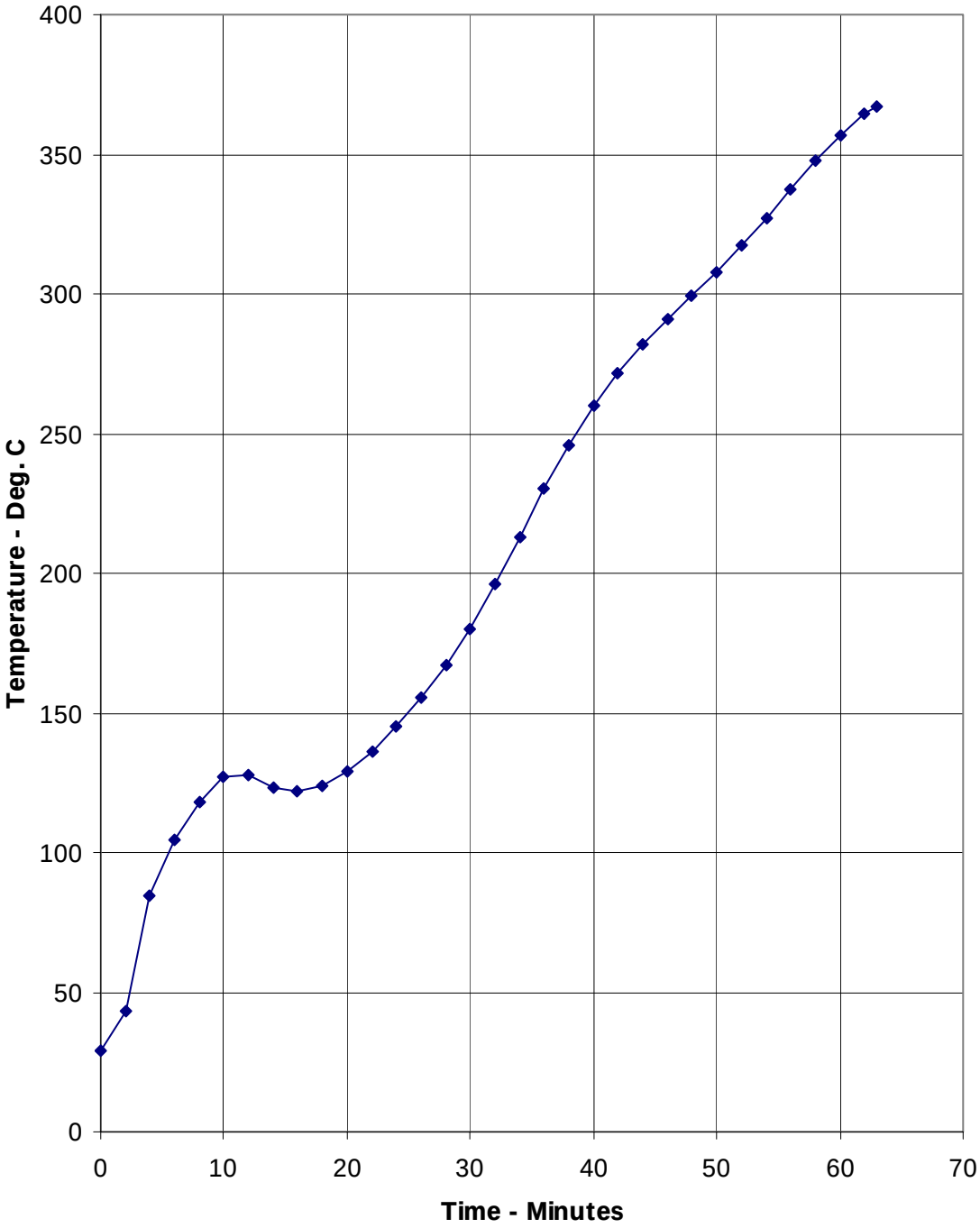
Graph Showing Recorded Furnace Pressure At 300 mm Below The Head Of The Specimen



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



Graph Showing Mean Temperatures Recorded On The Unexposed Surface Of The Glass



Performance Criteria and Test Results

Integrity Performance

It is required that the specimen retain its separating function, without either causing ignition of a cotton pad when applied, or permitting the penetration of a gap gauge as specified in BS EN 1634-1: 2000, or resulting in sustained flaming on the unexposed surface. These requirements were satisfied for the periods shown below:

Sustained flaming	62 minutes
Gap gauge	62 minutes
Cotton Pad	58 minutes*

Insulation Performance

The mean temperature rise of the unexposed surface shall not be greater than 140°C and 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: 1999. These requirements were satisfied for the periods shown below:

26 minutes

* Failure deemed to be caused by the spontaneous ignition of the cotton pad due to radiation through the glass and not due to hot gases or cracks, fissures within the assembly.

The test was discontinued after a period of 63 minutes.

Ongoing Implications

Limitations

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 procedure outlined in BS EN 1363-1: 1999, and where appropriate BS EN 1363-2:1999. 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: 1999, 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.

Review

The specification and interpretation of fire test methods are the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons it is recommended that the relevance of test reports over five years old should be considered by the user. The laboratory that issued the report will be able to offer, on behalf of the legal owner, a review of the procedures adopted for a particular test to ensure that they are consistent with current practices, and if required may endorse the test report.

Conclusions

Evaluation Against Objective

A single specimen of an asymmetrical, insulated glazed screen assembly has been subjected to a fire resistance test in accordance with BS EN 1364-1: 1999, 'Fire resistance tests for non-loadbearing elements - Part 1: Walls', BS EN 1363-1: 1999, 'General requirements' and BS EN 1363-2: 1999, 'Alternative and additional procedures'.

The specimen was judged on its ability to comply with the performance criteria for integrity and insulation, as required by with BS EN 1364-1: 1999, and achieved the results detailed below:

Integrity Performance

Sustained flaming	62 minutes
Gap gauge	62 minutes
Cotton Pad	58 minutes*

Insulation Performance

26 minutes

Radiation Performance

5 kW/m^2	10 kW/m^2	15 kW/m^2	20 kW/m^2	25 kW/m^2
49 minutes	63 minutes#	63 minutes#	63 minutes#	63 minutes#

* Failure deemed to be caused by the spontaneous ignition of the cotton pad due to radiation through the glass and not due to hot gases or cracks, fissures within the assembly.

Not exceeded during the test.

The test was discontinued after a period of 63 minutes.

Field of Direct Application

General

The results of this 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 that appropriate design code for its stiffness and stability. Other changes are not permitted.

- Decrease in the linear dimensions of panes.
- Change in the aspect ratio of panes provided that the largest dimension of the pane and its area are not increased.
- Decrease in the distance between mullions and/or transoms.
- Decrease in the distance between fixing centres.
- Increase in the dimensions of framing members.
- Changed in the angle of installation by up to 10° from the vertical.
- No extension of height is allowed above that tested.
- The result of a test of fire resistant glazing tested in one of the standard supporting constructions given in EN 1363-1, or the test frame, is applicable to any other supporting construction within the same type (high density rigid, low density rigid or flexible) that has a greater fire resistance.

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