

**Fire Resistance Test in Accordance  
with BS EN 1634-1: 2000, on a Horizontal  
Sliding, Accordion Type Doorset  
within a Partition**

Test Sponsor

**Won-Door Corporation**

**W***arrington*  
**FIRE**  
*research*  
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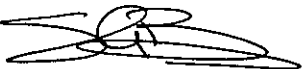



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with BS EN 1634-1: 2000, on a Horizontal  
Sliding, Accordion Type Doorset  
within a Partition**

Test Sponsor

**Won-Door Corporation**  
1865 South 3490 West  
Salt Lake City  
UT 84104  
USA

**Issue 2: Amendments to witnesses of test**

Report	Name	Signature*
Responsible Officer	S. Baker	
Approved	D Hankinson	

\* For and on behalf of Warrington Fire Research Centre

**Report Issued** : 6<sup>th</sup> November 2001

**Fire Resistance Test in Accordance  
with BS EN 1634-1: 2000, on a Horizontal  
Sliding, Accordion Type Doorset  
within a Partition**

**Summary**

A horizontal sliding, accordion type doorset has been subjected to a test in accordance with BS EN 1634-1: 2000, to determine its fire resistance performance.

The doorset had overall exposed dimensions of 2694 mm high by 2381 mm wide. The associated construction comprised two timber stud, plasterboard clad, side pockets.

The specimen satisfied the performance criteria specified in BS EN 1634-1: 2000, Clause 11, for fire doors and shutters, for the following periods:

<b>Integrity</b>	Cotton Pad	50 minutes
	Sustained Flaming	18 minutes*
<b>Insulation</b>	Gap Gauge	121 minutes
		4 minutes

The test was discontinued after a period of 121 minutes.

\* An addendum to this report concludes that if the test specimen had been constructed incorporating a storage pocket of 838 mm minimum width, as recommended by the manufacturer, then the sustained flaming which occurred after a period of 18 minutes would have been contained within the pocket and the sustained flaming criteria would have been satisfied for a period of 60 minutes.

**Date of Test** : 28<sup>th</sup> June 2001.

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## 1 **Purpose of the Test**

- 1.1 To evaluate the fire resistance performance of a horizontal sliding, accordion type doorset, when tested in accordance with BS EN 1634-1: 2000.

## 2 **Introduction**

- 2.1 The doorset is required to provide a fire separating function and was therefore tested in accordance with BS EN 1634-1: 2000 'Fire resistance tests for doors and shutter assemblies - Part 1: Fire doors and shutters'. 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'.
- 2.2 The specimen was judged on their ability to comply with the performance criteria for integrity and insulation, as required by BS EN 1634-1:2000.
- 2.3 Certain aspects of some fire test specifications are open to different interpretations. The Fire Test Study Group has identified a number of such areas and has agreed Resolutions which define common agreement of interpretations between fire test laboratories which are members of the Group. Where such Resolutions are applicable to this test they have been followed.
- 2.4 The test was conducted on the 28<sup>th</sup> June 2001, at the request of Won-Door Corporation, the sponsor of the test.
- 2.5 The test was witnessed by P Coppin, B. Hopkinson, P Siddall, J Siddall, T Dixon, A Rennard, C Nicholson, M Boome, G Jones and D Webster representatives of Beehive Folding Partitions and Mr C Goodman, Mr T Welch and Mrs M Welch representatives of the test sponsor.

## 3 **Test Specimen Construction**

- 3.1 A comprehensive description of the test construction is given in Annex A. The description is based on a detailed survey of the specimen and information supplied by the sponsor of the test.
- 3.2 The doorset was provided by the test sponsor on the 25<sup>th</sup> June 2001. Warrington Fire Research Centre was not involved in any selection or sampling procedures of the doorset.
- 3.3 The specimen was installed into a timber stud partition wall construction to form the test construction. Installation of the partition was conducted by representatives of Warrington Fire Research Centre on the 22<sup>nd</sup> June 2001. Installation of the door construction was conducted by representatives of the test sponsor and Beehive Folding partitions on the 25<sup>th</sup> and 26<sup>th</sup> June 2001.

## 4 **Instrumentation and Measuring Equipment**

- 4.1 The instrumentation was provided in accordance with the requirements of the Standard.
- 4.2 Plate thermometers, distributed over a plane 100 mm from the surface of the test construction, were provided to monitor the temperature of the furnace atmosphere.

- 4.3 Pressure sensors were provided within the furnace to monitor the furnace atmospheric pressure.
- 4.4 Thermocouples were provided to monitor the temperature of the unexposed face of the specimen as follows:
- 4.4.1 At five positions, one approximately at the centre and one at approximately the centre of each quarter section of the door leaf. (Thermocouples 2 to 6).
  - 4.4.2 At five positions on the door leaf, two 100 mm in from each vertical edge of the door leaf at mid-height and three 100 mm below the top edge of the leaf. (Thermocouples 7 to 11).
  - 4.4.3 The locations and reference numbers of the various unexposed surface thermocouples are shown in Figure 1 of Annex A.
- 4.5 Photographs of the specimen taken before, during and after the test are included in Annex D.
- 4.6 A roving thermocouple was available to measure temperatures on the unexposed surface of the specimen at any position, which might appear to be hotter than the temperatures indicated by the fixed thermocouples.
- 4.7 Cotton pads and gap gauges were available to evaluate the specimen against the performance criteria of the test.

## 5 **Test Procedure**

- 5.1 The test was conducted in accordance with the procedures specified in BS EN 1634-1: 2000.
- 5.2 The furnace was controlled so that its mean temperature complied with the requirements of BS EN 1363-1: 1999, Clause 5.1.
- 5.3 After the first five minutes of testing and for the remainder of the test, the furnace atmospheric pressure was controlled so that it complied with the requirements of BS EN 1363-1: 1999. The calculated pressure differential relative to the laboratory atmosphere at the top of the specimens was 17 ( $\pm 3$ ) Pa.
- 5.4 Throughout the test the temperatures indicated by the thermocouples provided to monitor the furnace and the specimen were continuously monitored and were recorded at one minute intervals.
- 5.5 The plate thermometers referred to in 4.2 were used to determine the mean furnace temperature.

- 5.6 The thermocouples referred to in 4.4.1 were used to determine the mean temperature of the unexposed surface of the specimens and compliance with the mean unexposed face temperature rise criterion of the Standard.
- 5.7 The thermocouples referred to in 4.4.1 to 4.4.2 were used to determine compliance with the maximum unexposed face temperature rise criterion of the Standard. The roving thermocouple was also used, if considered appropriate, to determine compliance with this criterion.
- 5.8 The cotton pads and gap gauges were used, if considered appropriate, to determine compliance with the integrity criterion of the Standard. The occurrence of any sustained flaming on the unexposed surface was also monitored to determine compliance with this criterion.

## 6 Test Data and Information

- 6.1 The following data, which was recorded during the test, is given in Annex B:
- 6.1.1 Mean furnace temperature, together with the temperature/time relationship specified in the Standard.
- 6.1.2 The mean and individual temperatures recorded by the thermocouples fixed to the unexposed surface of the specimen.
- 6.1.3 The deflections of the door leaf at specified positions.
- 6.1.4 The furnace pressure during the test.
- 6.2 A summary of the observations made on the general behaviour of the specimen during the test is given in Annex C.
- 6.3 The ambient air temperature in the vicinity of the test construction was 19°C at the start of the test with a maximum variation of +4°C during the test.
- 6.4 The test was discontinued after a period of 121 minutes.

## 7 Evaluation Against the Performance Criteria

- 7.1 The performance of the specimens were judged against the following criteria of BS EN 1363-1: 1999:
- 7.1.1 **Integrity** - It is required that there is no sustained flaming on the unexposed surface, no ignition of a cotton pad when applied to the specimen and no penetration of gaps in excess of the specified dimensions, through the specimen. These requirements were satisfied for the following periods:

<b>Integrity</b>	Cotton Pad	50 minutes
	Sustained Flaming	18 minutes*
	Gap Gauge	121 minutes

7.1.2 **Insulation** - It is required that 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 except on the door frame, where the maximum temperature rise shall not exceed 360°C. Insulation failure also occurs simultaneously with integrity failure. These requirements were satisfied for a period of 4 minutes.

## 8 **Conclusions**

8.1 A specimen of a horizontal sliding accordion type doorset mounted within a timber frame partition has been subjected to a fire resistance test in accordance with BS EN 1634-1: 2000.

8.2 The specimens satisfied the performance requirements specified in the Standard for the periods stated below:

<b>Integrity</b>	Cotton Pad	50 minutes
	Sustained Flaming	18 minutes*
	Gap Gauge	121 minutes
<b>Insulation</b>		4 minutes

The test was discontinued after a period of 121 minutes.

\* An addendum to this report concludes that if the test specimen had been constructed incorporating a storage pocket of 838 mm minimum width, as recommended by the manufacturer, then the sustained flaming which occurred after a period of 18 minutes would have been contained within the pocket and the sustained flaming criteria would have been satisfied for a period of 60 minutes.

## 9 **Limitations**

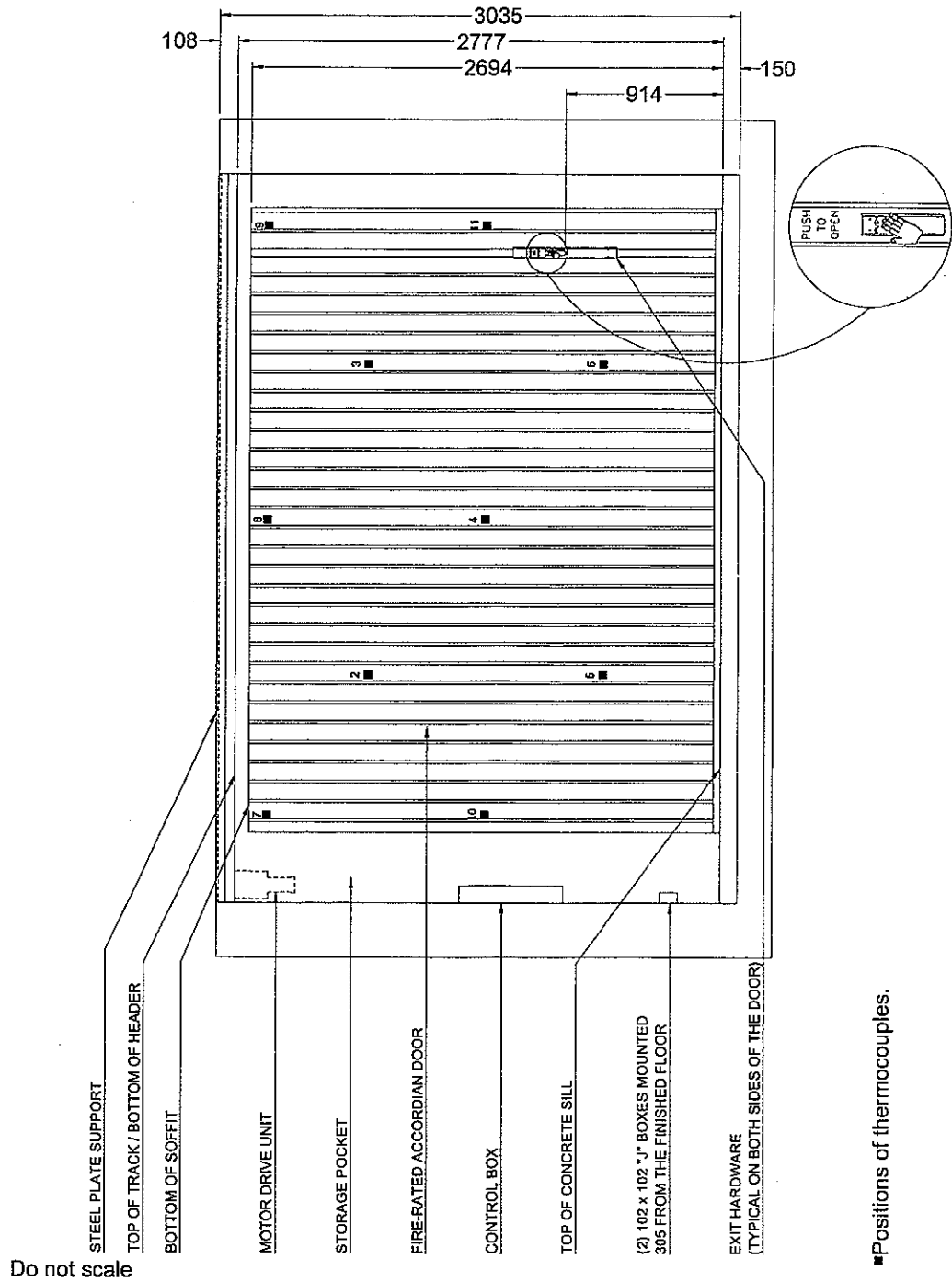
9.1 This report details the method of construction, the test conditions and the results obtained when the specific element of construction described herein was tested following the procedure outlined in BS EN 1363-1: 1999, and where appropriate BS EN 1363-2:1999. Any significant deviation with respect 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.

9.2 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.

10 **Review**

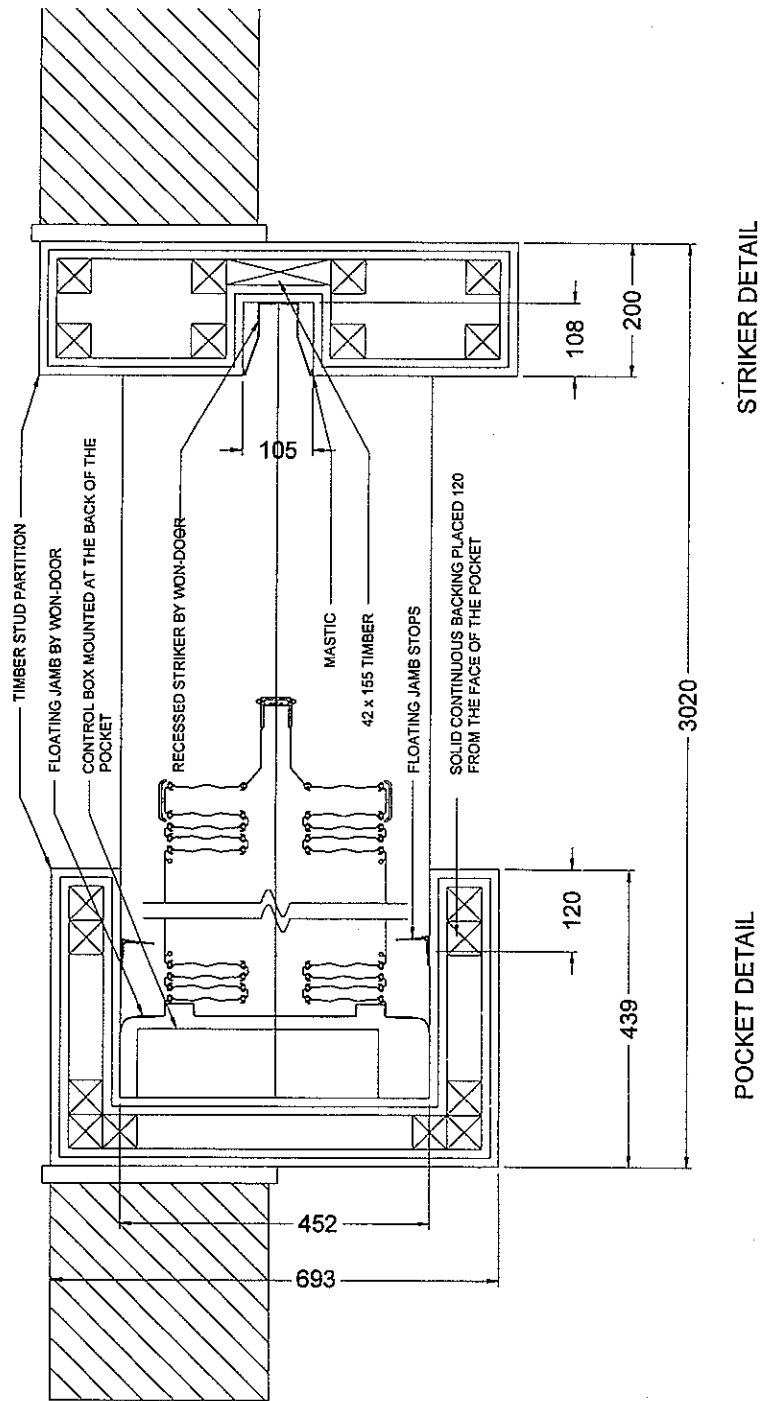
- 10.1 The specification and interpretation of fire test methods are the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons it is recommended that the relevance of test reports over five years old should be considered by the user. The laboratory 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.

6<sup>th</sup> November 2001



All dimensions are in mm.

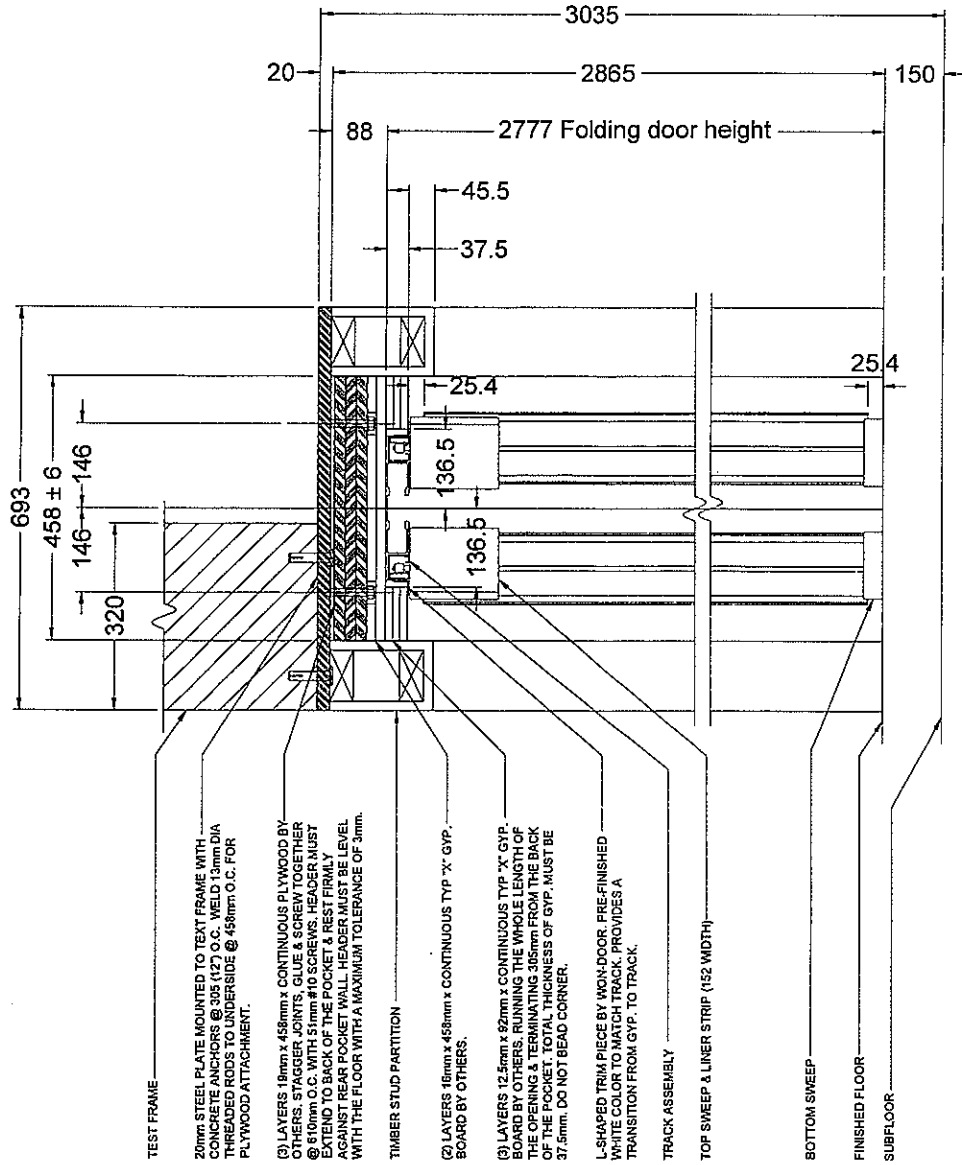
FIGURE 1



Do not scale

All dimensions are in mm.

FIGURE 2

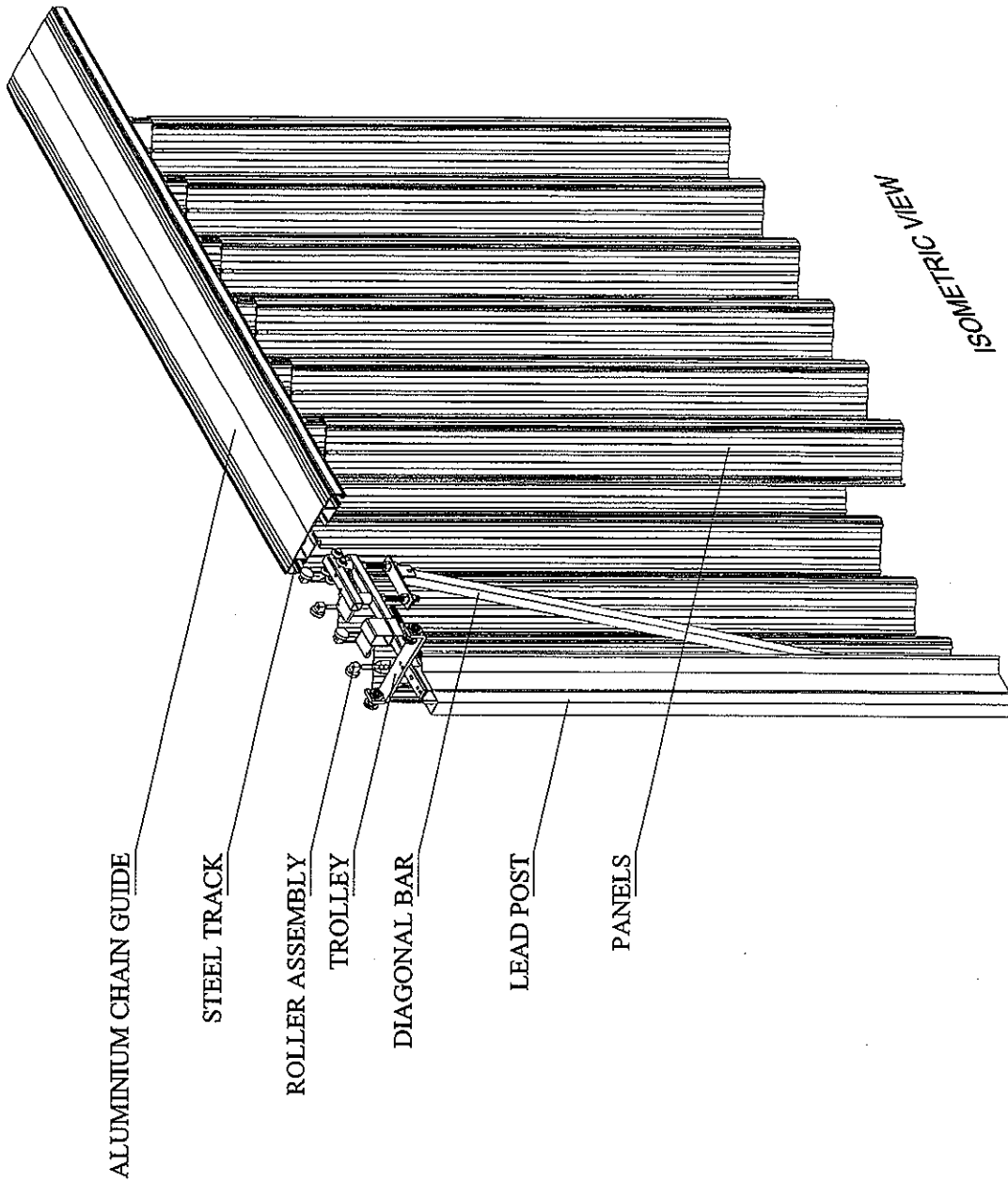


VERTICAL SECTION

Do not scale

All dimensions are in mm.

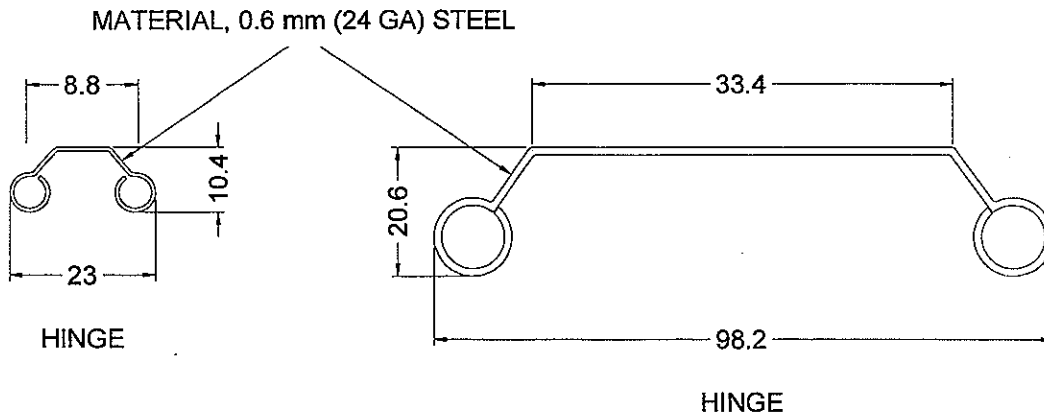
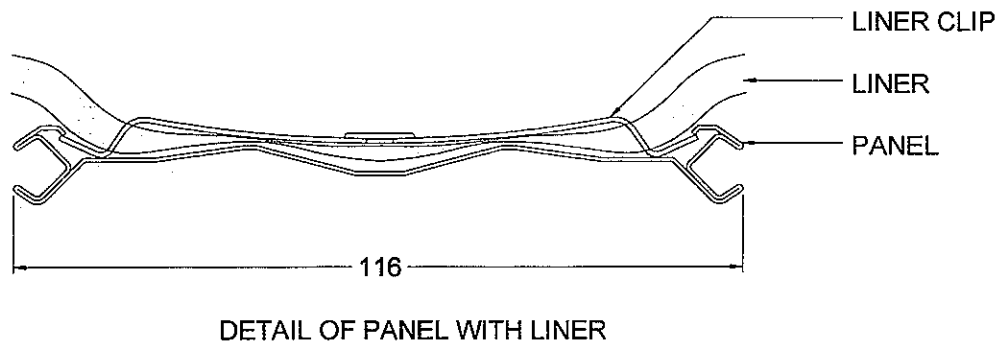
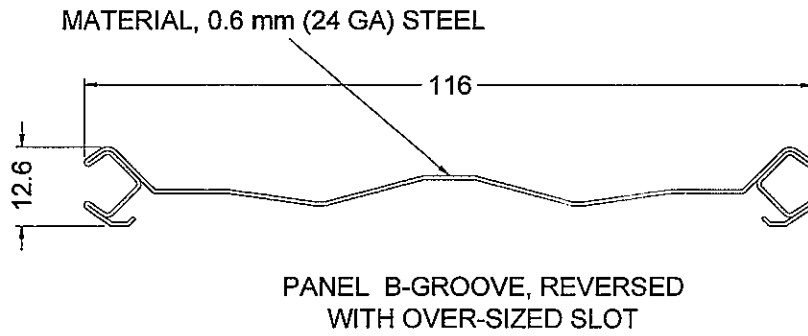
FIGURE 3



Do not scale

All dimensions are in mm.

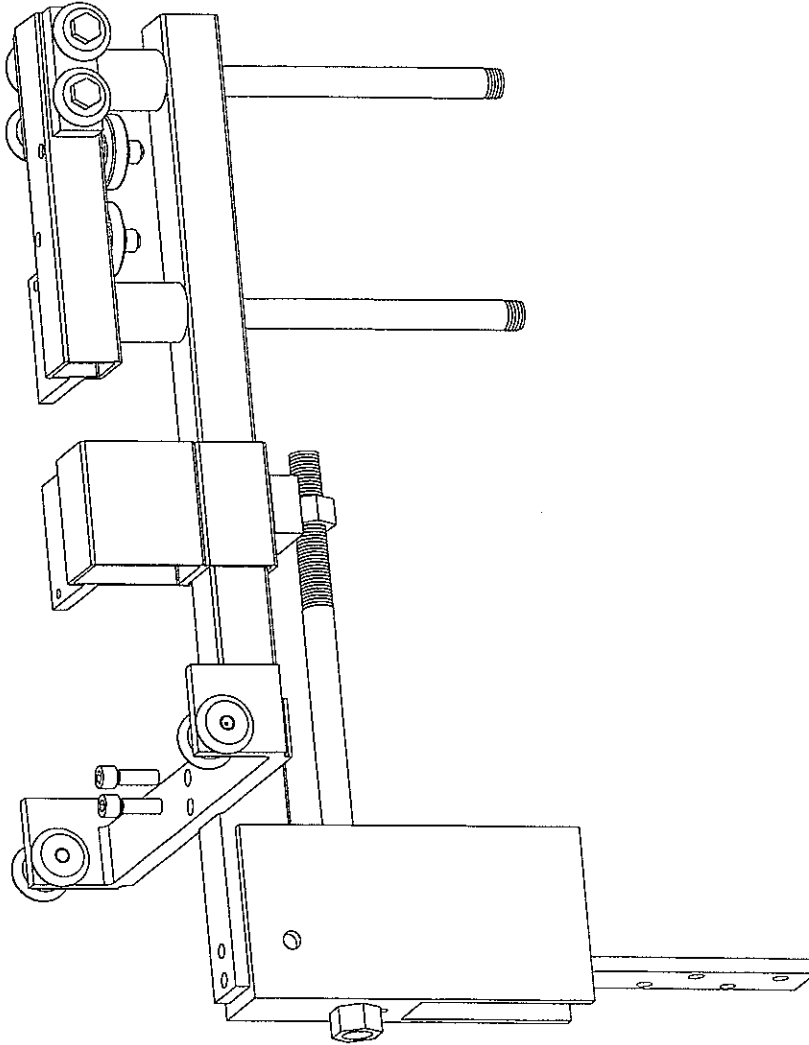
FIGURE 4



Do not scale

All dimensions are in mm.

FIGURE 5



DETAIL OF T-05 OUTRIGGER  
TROLLEY ASSEMBLY

Do not scale

All dimensions are in mm.

FIGURE 6

**Annex B****Table 1**

Specified and Actual Furnace Temperatures.

Time Minutes	Specified Furnace Temperature Deg.C.	Actual Furnace Temperature Deg.C.
0	20	39
4	544	527
8	645	619
12	705	707
16	748	754
20	781	784
24	809	802
28	832	835
32	851	849
36	869	866
40	885	886
44	899	895
48	912	909
52	924	921
56	935	932
60	945	942
64	955	951
68	964	963
72	973	970
76	981	977
80	988	986
84	996	994
88	1003	1001
92	1009	1009
96	1016	1013
100	1022	1022
104	1028	1028
108	1033	1033
112	1039	1038
116	1044	1042
120	1049	1049
121	1050	1050

**Annex B (Continued)****Table 2**

Individual and Mean Unexposed Surface Temperatures Recorded on the Doorset

Time Minutes	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.	Mean Temperature Deg.C
0	25	25	26	25	25	25
4	154	163	142	120	120	140
8	300	305	287	249	266	281
12	419	416	400	353	374	392
16	477	481	474	432	473	467
20	484	483	477	473	481	480
24	479	486	469	475	478	477
28	485	495	477	473	487	483
32	498	501	481	477	491	490
36	509	508	488	486	501	498
40	523	517	495	498	509	508
44	543	531	511	513	522	524
48	557	546	525	526	534	538
52	569	560	536	539	545	550
56	581	572	547	553	558	562
60	588	583	557	561	568	571
64	596	591	566	570	579	580
68	606	601	574	579	589	590
72	614	609	581	587	598	598
76	623	617	588	596	606	606
80	630	624	594	603	614	613
84	639	633	601	612	621	621
88	646	639	608	621	623	627
92	650	640	611	626	623	630
96	663	645	616	638	626	638
100	679	656	629	653	634	650
104	682	662	633	663	639	656
108	685	669	642	672	648	663
112	690	674	649	679	653	669
116	688	675	650	686	658	671
120	692	681	659	692	667	678
121	695	682	659	693	668	679

**Annex B (Continued)****Table 3**

Individual Temperatures Recorded on the Unexposed Surface of the Doorset

Time Minutes	T/C Number 7 Deg.C.	T/C Number 8 Deg.C.	T/C Number 9 Deg.C.	T/C Number 10 Deg.C.	T/C Number 11 Deg.C.
0	28	28	28	25	26
4	192	115	132	119	133
8	382	241	263	252	270
12	465	358	356	360	385
16	505	406	386	422	459
20	538	407	381	455	480
24	542	412	401	463	480
28	549	413	423	471	490
32	547	411	431	476	495
36	558	422	441	485	504
40	613	442	450	491	514
44	627	461	476	506	527
48	645	459	499	522	541
52	652	458	514	542	550
56	658	461	518	555	562
60	657	462	523	556	572
64	659	464	535	561	583
68	668	479	549	569	592
72	675	485	575	579	600
76	682	482	594	588	609
80	690	486	599	597	618
84	697	490	607	605	627
88	713	492	617	612	633
92	720	497	626	619	636
96	757	503	635	652	640
100	1400	518	663	715	649
104	1400	528	687	736	652
108	1400	534	697	742	663
112	1400	551	704	751	668
116	1400	559	718	759	668
120	1400	564	725	762	673
121	1400	566	727	762	676

**Annex B (Continued)**

**Table 4**

Recorded Radiation Intensity

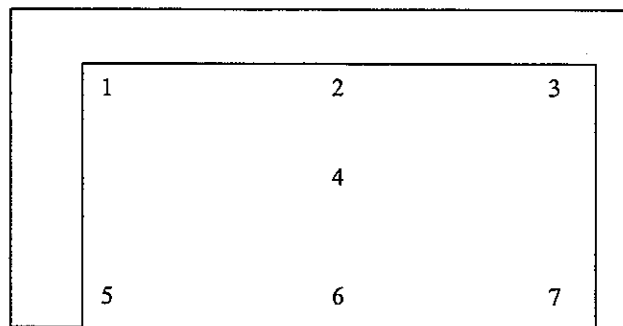
Time Minutes	Radiation Intensity KW/M <sup>2</sup> At 1 Metre
0	-0.056
4	0.194
8	0.361
12	0.861
16	1.333
20	1.667
24	1.639
28	1.694
32	1.806
36	1.861
40	2
44	2.306
48	2.389
52	2.556
56	2.889
60	2.944
64	2.944
68	3.139
72	3.333
76	3.389
80	3.528
84	3.806
88	3.778
92	3.917
96	4.222
100	4.583
104	4.833
108	4.806
112	5.028
116	5.056
120	5.361
121	5.472

**Annex B (Continued)**

**Table 5**

Deflections of Specimen During the Test

Time Minutes	Deflection Number 1 Mm	Deflection Number 2 Mm	Deflection Number 3 Mm	Deflection Number 4 Mm	Deflection Number 5 Mm	Deflection Number 6 Mm	Deflection Number 7 Mm
0	0.05	-1.1	-0.7	-13.35	-6.7	26.15	-7.1
4	-0.05	-4.15	-1.75	-22	-22.65	43.2	-25.85
8	0	-5	-2.1	-22.95	-22.75	50	-30.7
12	-0.1	-5.1	-1.85	-25.55	-22.9	62.15	-35
16	-0.15	-6.5	-2.35	-29.8	-23	64.9	-35.65
20	-0.15	-7.2	-3.15	-32.85	-23.05	65	-36.05
24	-0.15	-7.25	-3.4	-33.1	-23.2	65	-37.05
28	-0.15	-7.25	-3.4	-32.6	-27.9	65	-37.05
32	-0.15	-7.25	-3.55	-31.9	-21.95	64.95	-36.7
36	-0.1	-7.45	-3.9	-32.15	-23.35	64.95	-36.85
40	-0.1	-7.7	-4.35	-32.65	-22.8	64.95	-37
44	-0.05	-8.15	-4.7	-33.35	-21.85	65	-37.2
48	0.05	-8.3	-5.15	-34.1	-21.85	65	-37.45
52	0.15	-8.65	-5.6	-34.55	-21.8	65	-37.75
56	0.35	-8.75	-6.1	-34.8	-21.7	65	-38
60	0.4	-8.75	-6.15	-35.05	-21.7	65	-38.3
64	0.55	-8.75	-6.8	-35.4	-21.6	65	-38.75
68	0.75	-9.2	-7.3	-35.9	-21.65	65	-39.15
72	0.95	-9.25	-7.7	-36.2	-21.55	65	-39.35
76	1.4	-9.3	-8	-36.65	-21.3	65	-39.7
80	1.65	-9.3	-8.5	-36.85	-21.35	65	-39.8
84	1.9	-9.4	-8.95	-37	-21.25	65	-40.1
88	2.3	-9.4	-9.45	-37.05	-21.2	65	-40.3
92	2.35	-9.7	-9.85	-37.2	-21.2	65	-40.45
96	2.85	-9.7	-10.55	-37.55	-21.15	65	-40.75
100	3.65	-9.8	-11.4	-37.85	-21.3	65	-41.05
104	4.9	-10.25	-12.05	-38.05	-21.65	65	-41.35
108	5.65	-10.25	-12.25	-38	-21.6	65	-41.55
112	6.25	-10.35	-12.85	-38	-21.6	65	-41.65
116	7	-11.3	-14.2	-38.35	-21.55	65	-41.95
120	7.5	-11.4	-14.8	-38.45	-21.45	65	-42
121	7.65	-11.4	-14.9	-38.45	-21.55	65	-42



**Annex B (Continued)**

**Table 8**

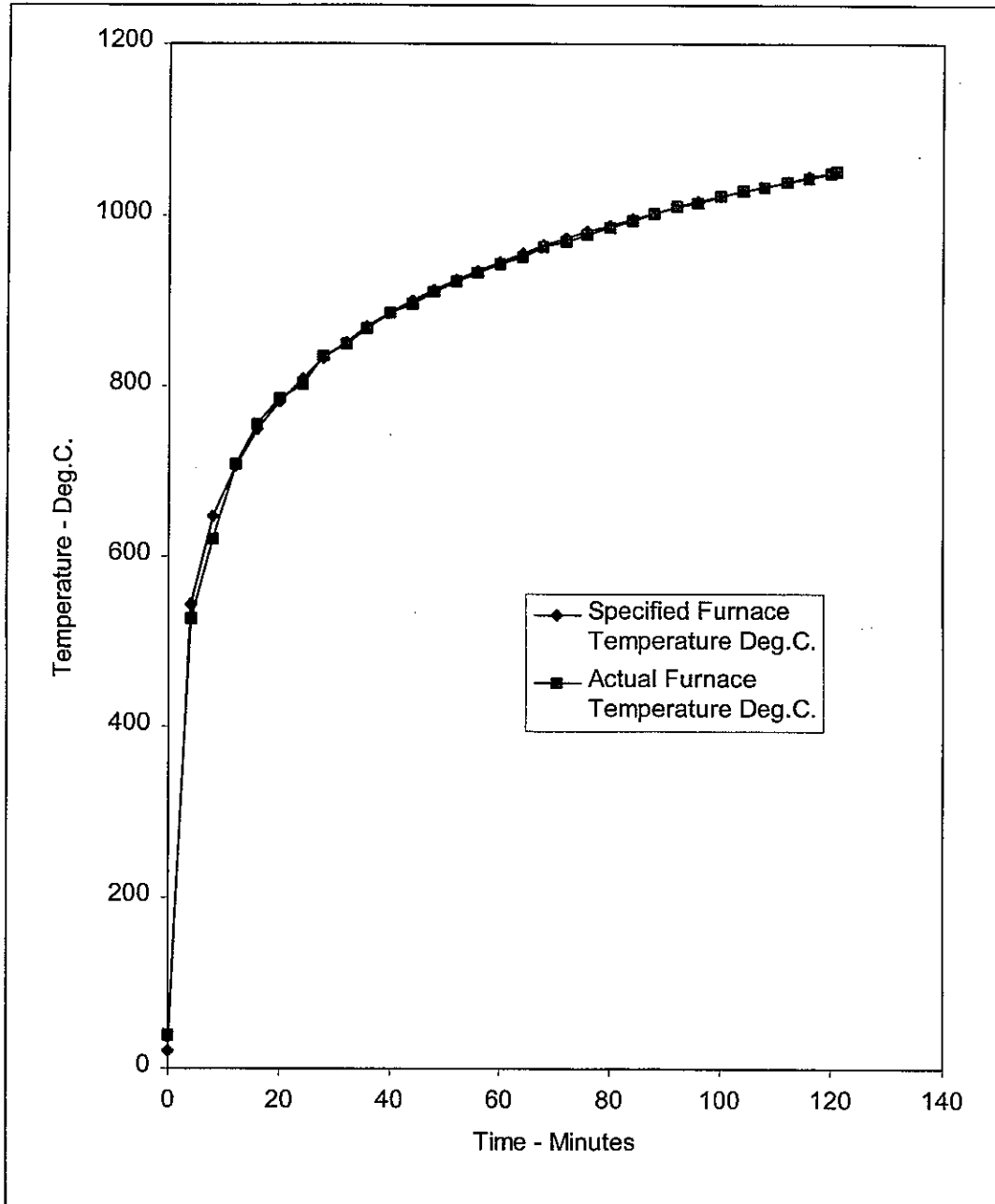
Pressure Recorded at the Top of the Doorset

Time Minutes	Recorded Pressure Pa
0	5
4	18.3
8	18.3
12	16.9
16	17.8
20	18.6
24	18.4
28	17.6
32	17.5
36	17.6
40	17.4
44	17.5
48	17.6
52	18.2
56	17.5
60	17.4
64	17.6
68	18
72	17.2
76	17.7
80	17.8
84	17.4
88	17.3
92	17.4
96	17.5
100	17.7
104	18.1
108	17.9
112	17.4
116	17.6
120	17.6
121	17.6

**Annex B (Continued)**

**Graph 1**

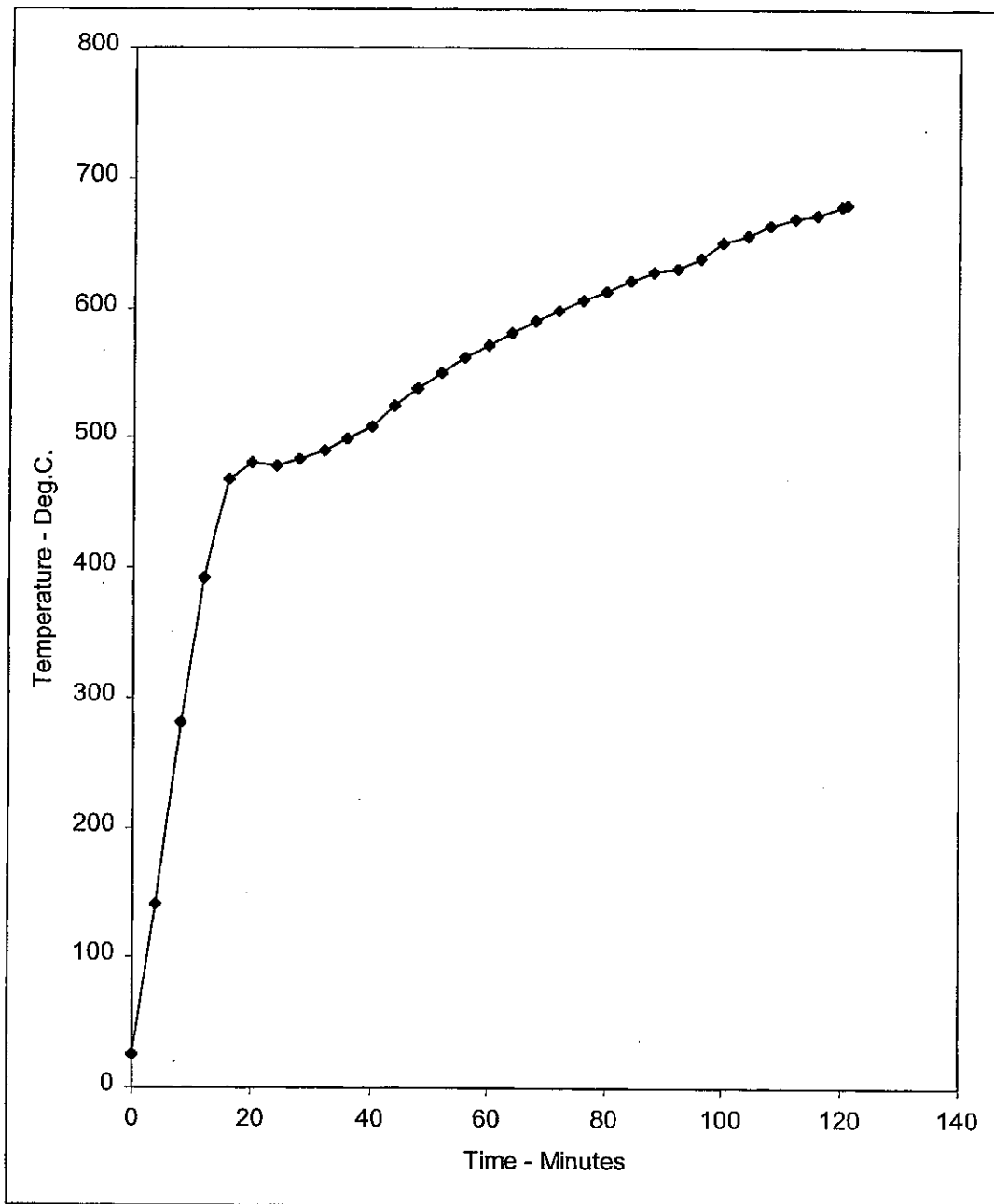
Specified and Actual Furnace Temperatures



Annex B (Continued)

Graph 2

Mean Unexposed Surface Temperature Recorded on Doorset



Annex C

**Observations Made By The Responsible Officer**

**U – Unexposed surface**

**E – Exposed surface**

Time			
Mins	Secs		
00	00		<b>The test commences.</b>
01	05	U	Considerable smoke release is evident from the head of the doorset.
01	50	U	Smoke release continues from the head of the doorset with a slight release from the sides.
03	30	U	Smoke release continues in large volumes from the head of the doorset.
05	00	U	Slight smoke release from the bottom right corner of the doorset.
06	30	U	Slight melting of the plastic at the head of the door.
07	30	U	Discolouration of the partition at the head is evident.
09	30	U	Smoke release from the entire face of the doorset, the doorset has also discoloured slightly at the top.
12	30	U	The underside of the partition at the top of the specimen is now dark brown in colour.
13	30	E	The specimen is radiating a dull orange colour.
14	20	U	Intermittent flames issue at the top of the specimen.
16	00	U	A cotton wool pad is applied to the top of the door fails to ignite.
16	30	U	Discolouration of the door continues darker brown in colour, with vertical lines of black.
17	40	U	Intermittent flames issued from the side of pocket.
18	30	U	Sustained flaming from the side pocket of the door. <b>Integrity failure is deemed to occur.</b> Flames are lipping around the edge of the door and large pocket at $\frac{3}{4}$ height coincident with electrical panel and battery. The flames issue approximately 150 mm – 200 mm past the opening of the pocket..
22	30	U	A cotton wool pad is applied at $\frac{3}{4}$ height but fails to ignite.

**Annex B (Continued)**

Time			
Mins	Secs		
23	30	U	Discolourations of the green push handle, which is now black in colour.
24	00	E	The doorset continues to radiate orange.
25	00	U	Intermittent flames are evident from the pocket adjacent to the motor.
27	30	U	The doorset has blistered slightly with dark patches appearing on the unexposed surface.
30	00	U	No further significant change.
32	00	U	A cotton wool pad is applied to the door adjacent to thermocouple No. 3 but fails to ignite.
39	30	U	A cotton wool pad is applied again adjacent to thermocouple No. 3 but fails to ignite.
40	00	U	The doorset has now dropped.
46	00	U	A cotton wool pad is applied adjacent to thermocouple No. 3 but fails to ignite.
48	30	U	A roving thermocouple is applied to the bottom of the doorset at the insulated and uninsulated area. The temperature of the insulated area is 115°C and the uninsulated area is 335°C.
50	00	U	A cotton wool pad is applied adjacent to thermocouple 3 and ignites. Integrity failure of the cotton pad test is deemed to occur.
50	30	U	Sustained flaming from the pocket to the left hand side of the door is evident. Smoke release increases, flaming to the wires and inner pocket is also evident. Flames are barely issuing past the pocket.
52	40	U	An increase in flames from the pocket is still evident. Discolouration of the plasterboard increases.
55	30	U	The doorset is now a white/yellow colour. Discolouration of the partition above the doorset to the left hand side is also evident.

Annex B (Continued)

Time			
Mins	Secs		
60	00	U	No further significant change.
71	10	U	Sustained flaming of the doorset at the bottom right hand corner occurs.
75	30	U	Flaming stops from the bottom corner.
77	30	U	The top left corner of the doorset is radiating orange, also along the head of the doorset.
90	00	E	The exposed face of the partition at the head of the door has burnt through to the timber studding.
95	00	U	The doorset at the top left corner is radiating red, spreading down the doorset.
96	00	U	Flaming is evident to plasterboard pocket. Flames issue around the door on the left hand side of the door.
97	15	U	Smoke release is evident from the unexposed face of the plasterboard pocket.
100	00	U	There is a continued deterioration of the plasterboard partition. Smoke release from the left hand pocket has increased. There is very little of the exposed face of the pocket left.
105	00	U	Flaming inside the left hand pocket continues. The unexposed face of the doorset adjacent to this side continues to glow red.
110	00	U	Sustained flames issue from the top left hand corner approximately 300-350 mm past the pocket opening
120	00	U	Smoke continues to be released from the partition, the doorset has become a dark red colour down the left hand side of the doorset.
121	00		<b>The test is discontinued.</b>

**Annex D**

**Photographs**

- Plate 1 - The exposed face of the specimen before the test
- Plate 2 - The unexposed face of the specimen before the test.
- Plate 3 - The unexposed face of the specimen during the test.
- Plate 4 - The unexposed face of the specimen during the test.
- Plate 5 - The unexposed face of the specimen during the test.
- Plate 6 - The unexposed face of the specimen during the test.
- Plate 7 - The unexposed face of the specimen during the test.
- Plate 8 - The unexposed face of the specimen during the test.
- Plate 9 - The exposed face of the specimen after the test.

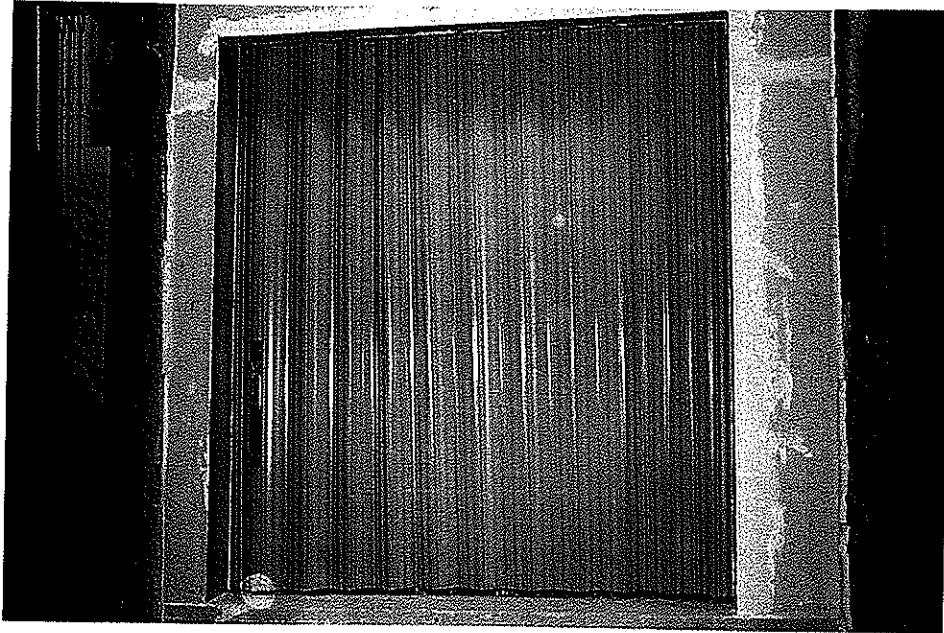


Plate 1

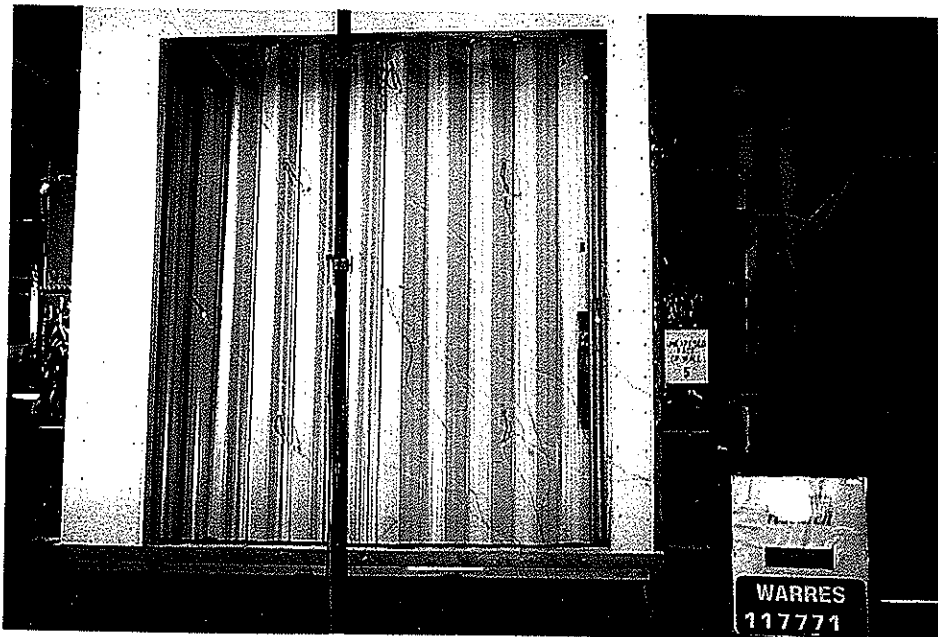


Plate 2



Plate 3



Plate 4

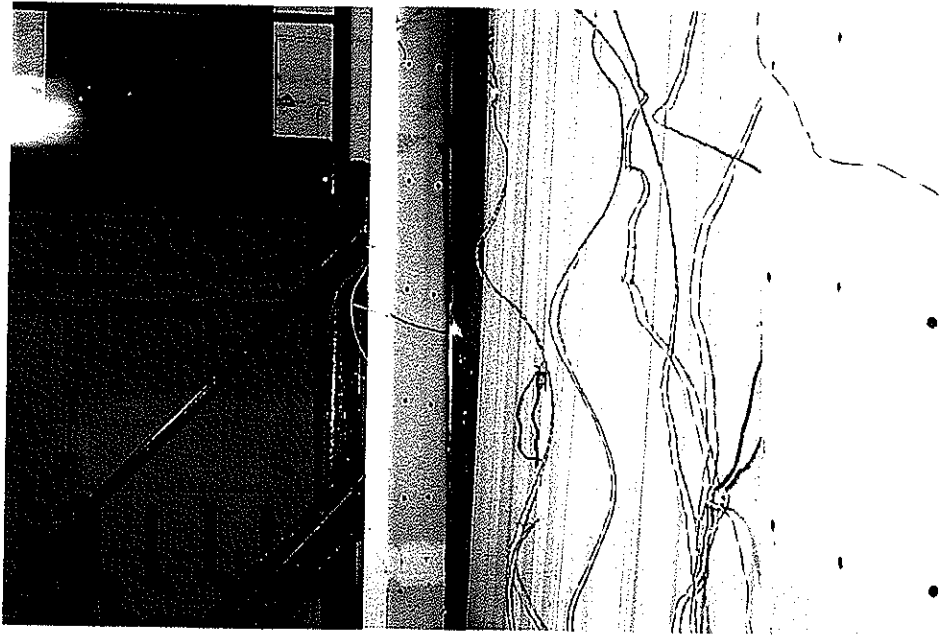


Plate 5

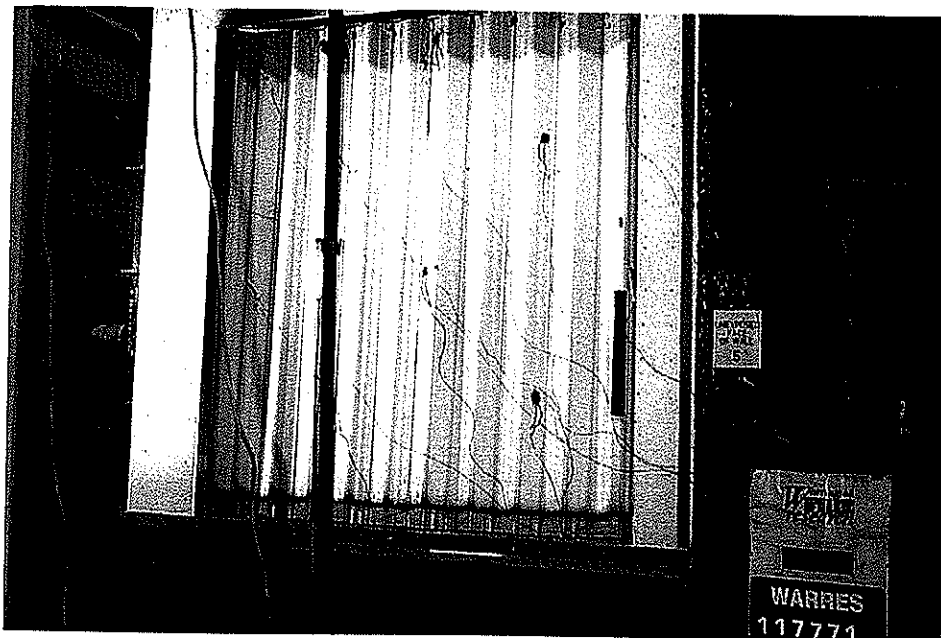


Plate 6



Plate 7

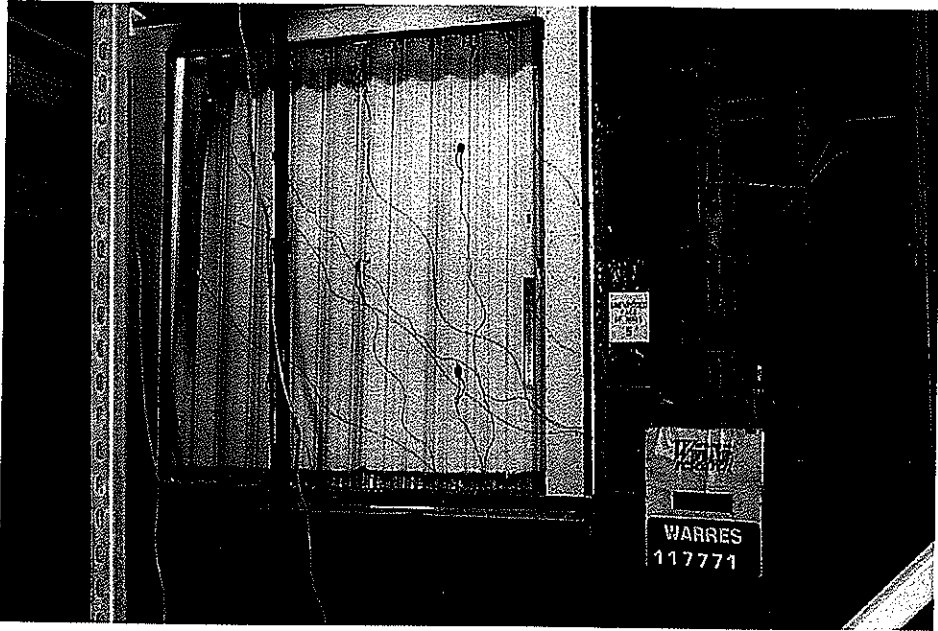


Plate 8

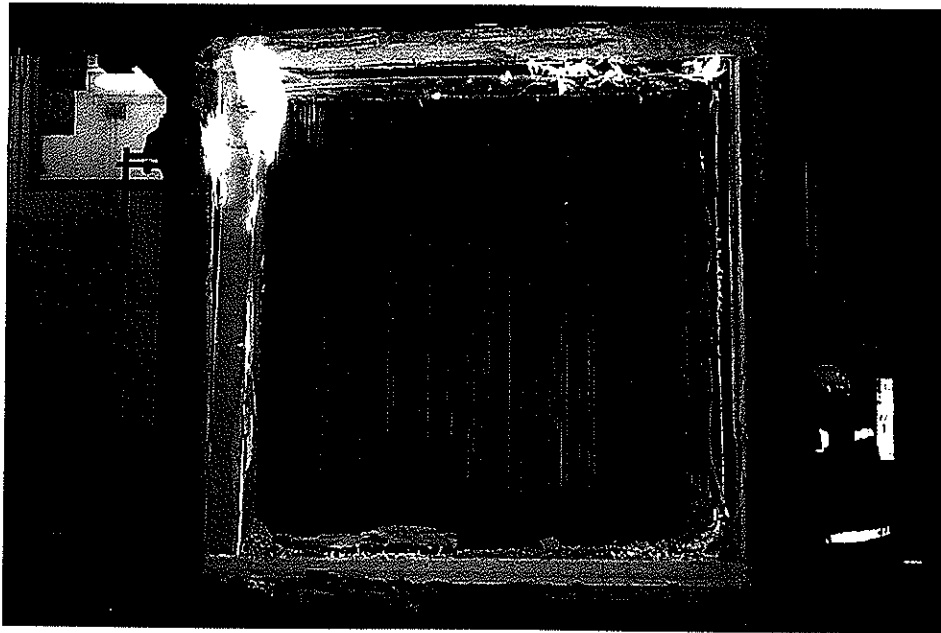


Plate 9

**Addendum**

**Test Sponsor:**        **Won-Door Corporation,**  
1865 South 3490 West  
Salt Lake City  
UT 84104  
USA

**Test Date:**            28<sup>th</sup> June 2001

**1        Introduction**

1.1        The above test referenced WARRES No. 117771 was conducted in accordance with BS EN 1634-1: 2000, on a specimen of an uninsulated, folding doorset.

1.2        The test result obtained was as follows:

<b>Integrity</b>	Cotton Pad	50 minutes
	Sustained Flaming	18 minutes
	Gap Gauge	121 minutes
<b>Insulation</b>		4 minutes

1.3        Initial integrity failure of the specimen after a period of 18 minutes was due to sustained flaming from within the pocket provided for the storage of the folding doorset when in its open position. No other mode of gap gauge or sustained flaming integrity failure was recorded during the required integrity period of 60 minutes. Ignition of the cotton pad occurred after a period of 50 minutes owing to radiated heat from the uninsulated assembly.

**2        Discussion**

2.1        Under the aforementioned reference, the folding doorset was tested at the maximum dimensions which could feasibly be incorporated within the specimen restraint frame. The associated construction comprised a timber stud, plasterboard clad partition, which also formed a pocket for the storage of the folding doorset when in its open position.

2.2        In practice, the width of this storage pocket is determined by the overall width of the doorset when in its fully folded position, this being proportional to the width of the opening provided for the doorset.

2.3        Owing to the restricted width of the test specimen restraint frame, it was necessary, for the purposes of the test, to utilise a smaller width of pocket to that which would normally be constructed in practice. For this reason, although the curtain was fully operational for the purposes of the test, the doorset could not be fully opened due to the restricted dimensions of the storage pocket.

2.4        The tested width of pocket was 339 mm, compared to the minimum pocket width of 838 mm which would normally be specified by the manufacturer for a doorset of the tested dimensions.

**Addendum (Continued)**

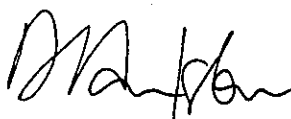
- 2.5 Initial integrity failure of the specimen, after a period of 18 minutes, was attributed to sustained flaming from within the pocket due to ignition of the doorset control panel and battery. Observations taken by the Testing Officer during the test indicate that the flames extended beyond the extremities of the storage pocket by a maximum distance of approximately 200 mm.
- 2.6 It is therefore considered that had the test specimen been constructed incorporating a storage pocket having a width commensurate of that which is recommended by the manufacturer, which is almost 500 mm in excess of that tested, the flaming from the control panel and battery would have been contained within the storage pocket and would not have protruded to the unexposed surface of the assembly. This assumes that the control panel and battery will be mounted at the end of the pocket furthest away from the doorset, in a similar manner to the tested assembly
- 2.7 Since no other mode of sustained flaming integrity failure occurred during the required period of 60 minutes, it is considered that the sustained flaming criteria of the Standard would have been satisfied for a period of 60 minutes, had an 838 mm wide pocket been incorporated.

**3 Conclusions**

- 3.2 The expected performance of the doorset, when incorporating the modification detailed above and tested in accordance with BS EN 1634-1: 2000, would be:

Integrity	Cotton Pad	50 minutes
	Sustained Flaming	60 minutes
Insulation	Gap Gauge	121 minutes
		4 minutes

Addendum by :



**D. Hankinson**  
Technical Officer  
Fire Resistance Department  
Warrington Fire Research Centre

Approved by :



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