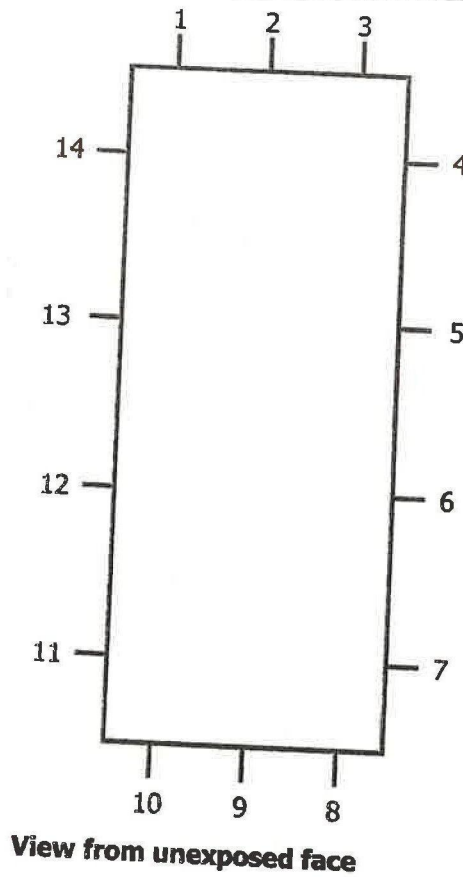




## Doorset Clearance Gaps



Gap Dimension in mm at Position													
1	2	3	4	5	6	7	8*	9*	10*	11	12	13	14
2.9	2.7	2.7	2.8	2.8	4.4	3.8	3.5	3.8	3.8	7.0	5.9	6.6	4.5
Mean		4.0		Maximum			7.0		Minimum			2.7	

\* Dimension not included in calculations

DO NOT SCALE  
ALL DIMENSIONS ARE IN mm

## Instrumentation

<b>General</b>	The instrumentation was provided in accordance with the requirements of the Standard.
<b>Furnace</b>	The furnace was controlled so that its mean temperature complied with the requirements of BS 476: Part 20: 1987, Clause 3.1. using six mineral insulated thermocouples distributed over a plane 100 mm from the surface of the test construction.
<b>Thermocouple Allocation</b>	Thermocouples were provided to monitor the unexposed surface of the specimen and the output of all instrumentation was recorded at no less than one minute intervals as follows:
<b>Thermocouples 2 to 6 Doorset A</b>	At five positions on the doorset, one approximately at the centre and one at approximately the centre of each quarter section of the doorset.
<b>Thermocouples 12 to 14 Doorset A</b>	At three positions at the approximate centre of each frame member.
	The locations and reference numbers of the various unexposed surface thermocouples are shown in Figure 1.
<b>Roving Thermocouple</b>	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.
<b>Integrity Criteria</b>	Cotton pads and gap gauges were available to evaluate the impermeability of the specimen to hot gases.
<b>Furnace Pressure</b>	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 476: Part 20: 1987, Clause 3.2.2. The calculated pressure differential relative to the laboratory atmosphere at the top of the doorsets was 8.7 ( $\pm 2$ ) Pa.

## 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 8°C at the start of the test with no variation during the test.
00	00	<b>The test commences.</b>
02	00	Slight smoke release is evident from coincident with the top hinge position.
06	00	The exposed face ignites creating large flames within the furnace chamber. The exposed face of the doorset begins to char turning black in appearance with large cracks forming over its entire area.
08	50	The smoke release increases in volume spreading to the top left hand corner of the leading edge.
09	20	A loud bang is heard from the specimen sequentially releasing a large plume of smoke.
11	00	The smoke release continues to increase from the head of the specimen.
11	30	Moisture droplets form at the head of the door leaf, in turn, descending over the door leaf.
16	30	An area of distortion is evident at the bottom right hand corner of the door leaf.
22	00	Large plumes of smoke issue from the top hinge position. The area turns black in appearance.
24	00	The entire surface of the door leaf begins to visibly distort particularly along its hinged edge towards the furnace chamber.
25	50	A small area of glowing is evident coincident with the top hinge position.
27	40	A cotton wool pad is applied to the area mentioned at 25 minutes but fails to ignite.
28	50	A cotton wool pad is applied to the area mentioned at 25 minutes and 50 seconds but fails to ignite.
30	00	The doorset continues to satisfy the criteria of the test.
31	40	A cotton wool pad is applied to the area mentioned at 25 minutes and 50 seconds but fails to ignite.
32	00	The area of glowing coincident with the top hinge continues to increase in size.
35	00	Sustained flames issue from the extreme top left corner of the doorset. <b>Integrity failure is deemed to have occurred.</b>

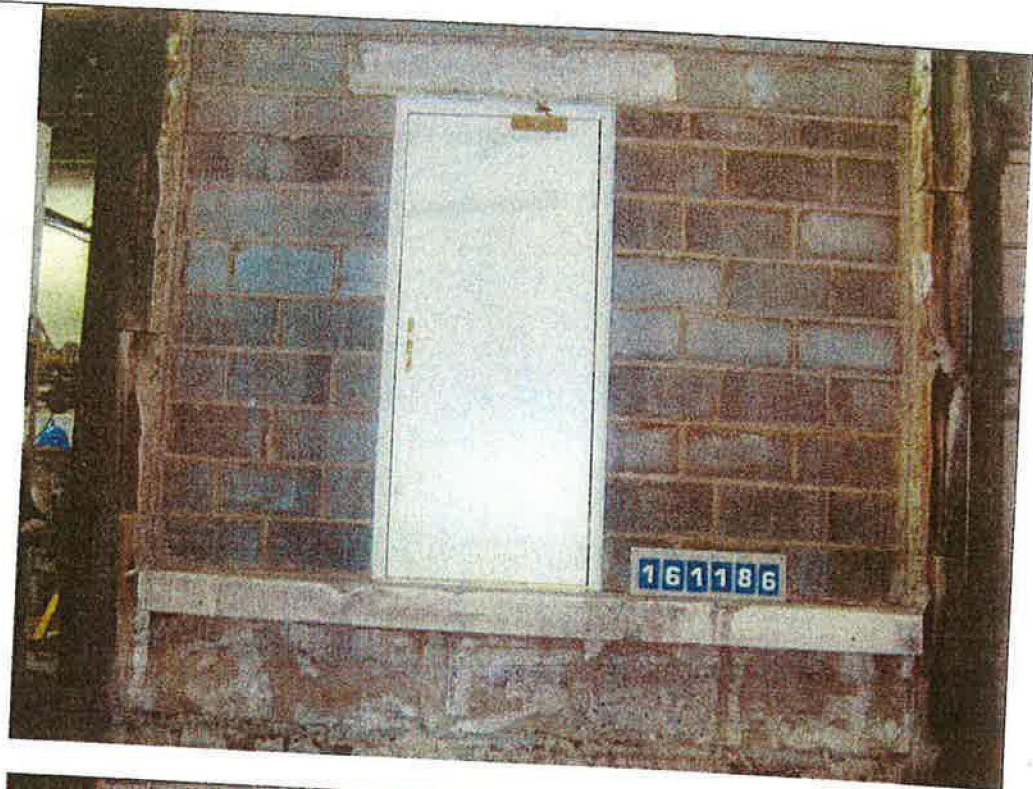
Time

mins secs

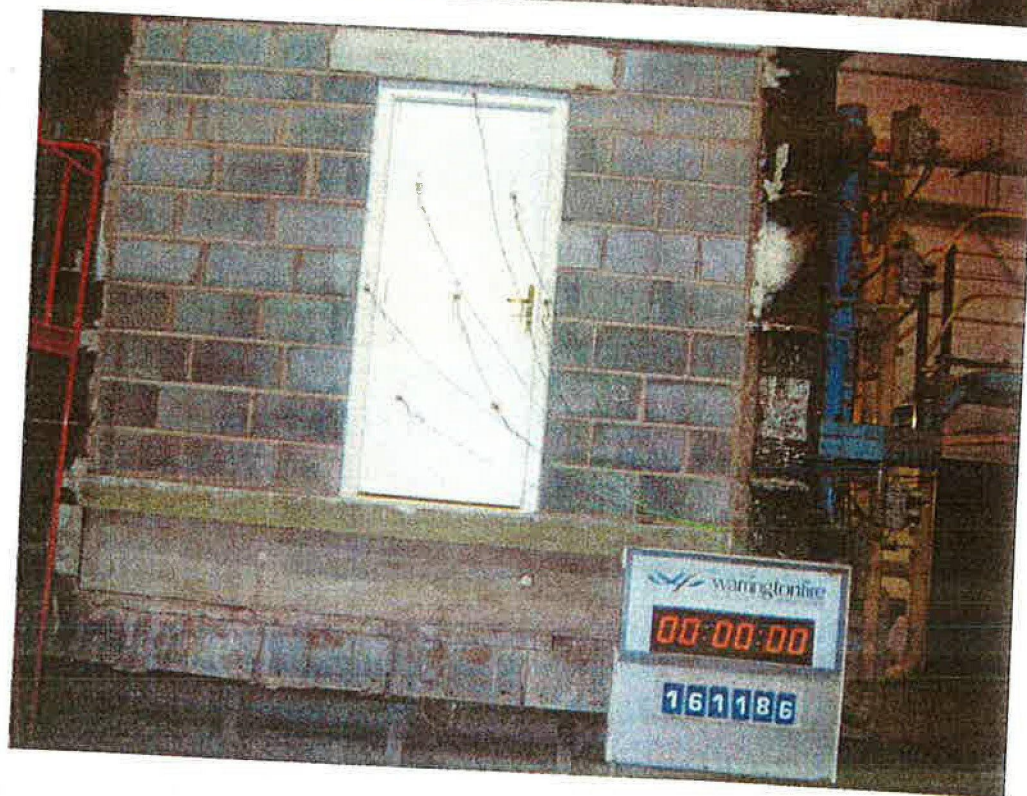
- |    |    |   |
|----|----|---|
| 36 | 00 | Sustained flames issue from the central hinge position.                         |
| 37 | 54 | Sustained flames issue from the head of the door leaf.                          |
| 38 | 00 | <b>The test is discontinued at the request of the sponsor's representative.</b> |

## Test Photographs

The exposed  
face of the  
doorset prior to  
testing



The unexposed  
face of the  
doorset prior to  
testing



The unexposed  
face of the  
doorset after 15  
minutes of  
testing



The unexposed  
face of the  
doorset during  
testing



The unexposed  
face of  
Doorset B after  
25 minutes of  
testing



The unexposed  
face of the  
doorsets after  
30 minutes of  
testing



The unexposed  
face of the  
Doorset after  
37 minutes of  
testing



The exposed  
face of the  
doorset  
immediately  
after testing



## Temperature and 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	17
2	445	458
4	544	536
6	603	645
8	646	653
10	678	665
12	706	732
14	728	738
16	748	746
18	766	776
20	781	752
22	796	804
24	809	823
26	820	819
28	832	828
30	842	837
32	852	841
34	860	883
36	869	866
38	877	882

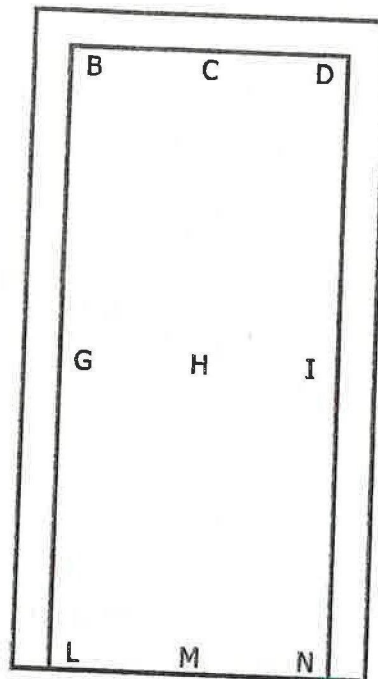
**Individual And Mean Temperatures Recorded On The Unexposed Surface Of The Doorset**

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	Mean Temp Deg. C
0	12	13	13	12	13	13
2	12	13	13	12	13	13
4	12	13	13	12	13	13
6	12	13	13	12	13	13
8	13	13	13	13	13	13
10	13	15	13	20	14	15
12	14	18	14	33	16	19
14	17	21	15	36	19	22
16	19	25	16	37	21	24
18	22	29	18	37	24	26
20	26	33	21	38	26	29
22	30	36	24	40	29	32
24	34	39	28	42	32	35
26	39	42	32	45	35	39
28	44	44	36	48	39	42
30	53	48	42	51	45	48
32	63	53	47	56	50	54
34	70	60	52	61	55	60
36	74	65	56	66	61	64
38	78	69	62	70	67	69

**Individual Temperatures Recorded On The Frame of The Doorset**

Time Mins	T/C Number 7 Deg. C	T/C Number 8 Deg. C	T/C Number 9 Deg. C
0	13	13	14
2	13	13	14
4	13	13	14
6	13	14	14
8	13	14	14
10	14	16	15
12	19	18	17
14	30	21	21
16	39	26	26
18	47	32	33
20	54	38	39
22	60	44	44
24	67	49	49
26	72	55	54
28	77	61	60
30	84	68	67
32	93	77	74
34	101	86	81
36	108	94	88
38	122	101	95

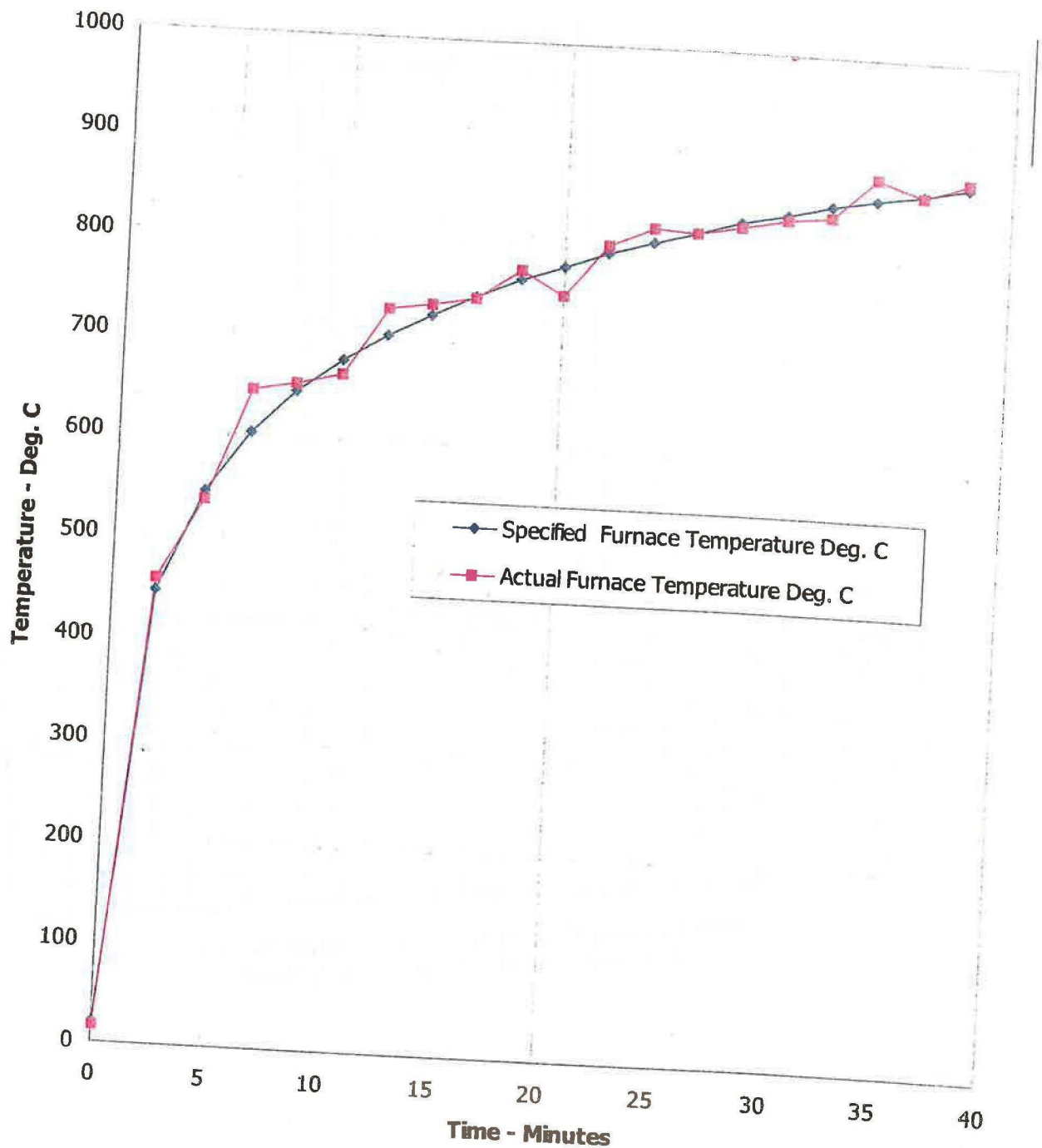
# Deflection Of The Door Leaves During The Test



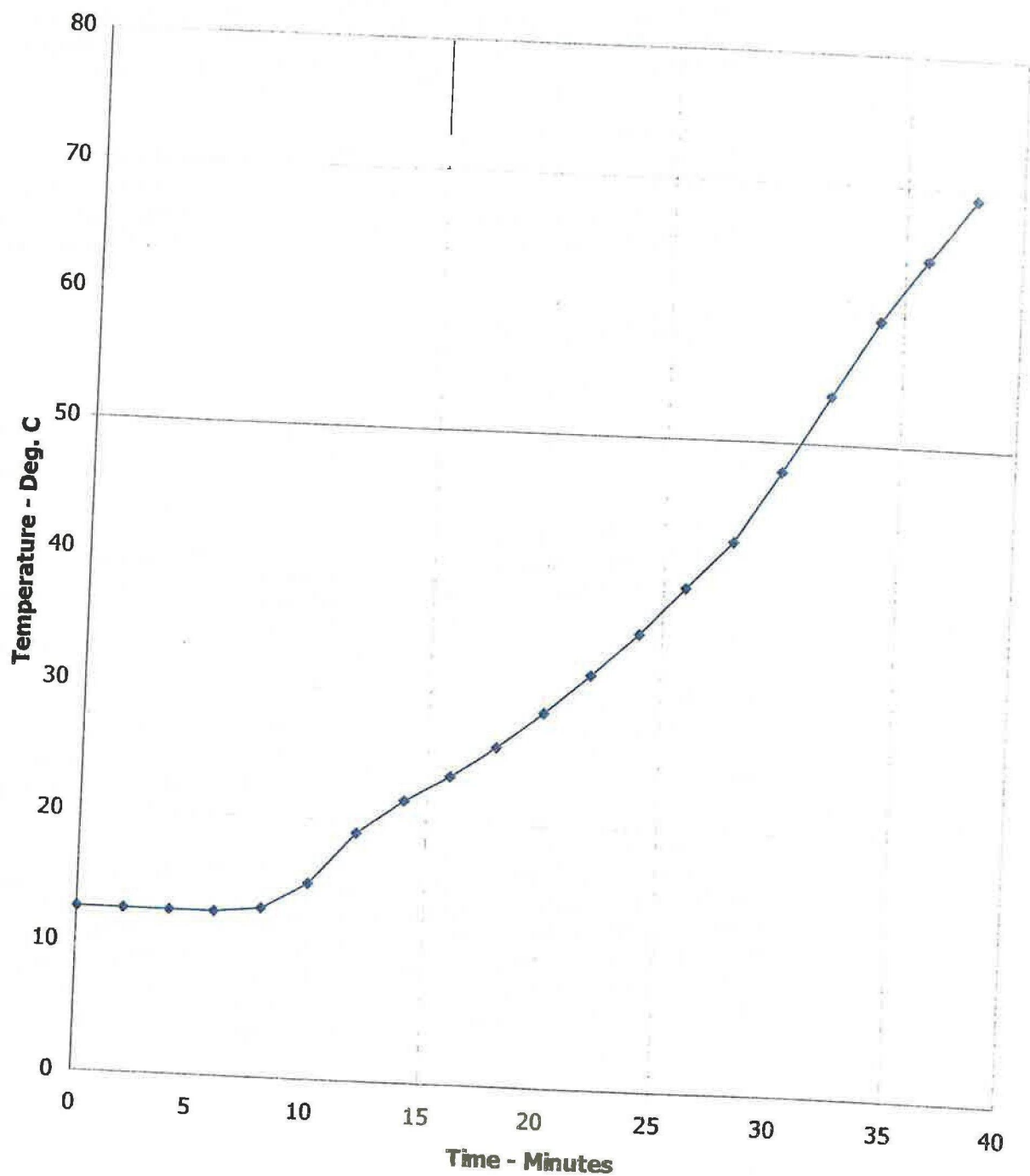
TIME mins	Deflections - mm													
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	-	2	0	0	-	-	2	1	1	-	-	0	3	3
10	-	1	3	3	-	-	2	1	1	-	-	3	1	3
15	-	5	4	5	-	-	2	3	4	-	-	3	4	3
20	-	6	7	5	-	-	4	5	6	-	-	7	6	3
25	-	2	0	5	-	-	5	6	6	-	-	8	6	6

Positive values indicate movement towards the furnace  
\* Measurements discontinued due to unsafe conditions

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 Doorset



## Performance Criteria and Test Results

### Integrity

It is required that there is no collapse of the specimen, no sustained flaming on the unexposed surface and no loss of impermeability. These requirements were satisfied for a period of 35 minutes. Failure at this time was due to sustained flaming on the unexposed surface of the doorset.

### 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. Insulation failure also occurs simultaneously with integrity failure. These requirements were satisfied for a period of 35 minutes after which time integrity failure occurred.

## Ongoing Implications

### Limitations

The results relate only to the behaviour of the specimen 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 test results relate only to the specimen tested. Appendix A of BS 476: Part 20: 1987 provides guidance information on the application of fire resistance tests and the interpretation of test data. Application of the result to doorsets of different dimensions or supported other than by a masonry wall or incorporating different components should be the subject of a design appraisal.

The tested assembly was asymmetrical and was tested such that the door leaf opened towards the heating conditions of the test. The test results may not be appropriate to situations where the door leaf opens away from the heating conditions.

### 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 specimen of a fully insulated, single-acting, single-leaf doorset, mounted within a masonry wall has been subjected to a fire resistance test in accordance with BS 476: Part 22: 1987, Clause 6.

The evaluation of the doorset against the requirements of BS 476: Part 22: 1987, Clause 6 showed that it satisfied the requirements the periods stated below:

### Test Results:

---

<b>Integrity</b>	35 minutes
<b>Insulation</b>	35 minutes

---

The test was discontinued after a period of 38 minutes.



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**official issue**

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Order number: <b>310387</b>	Document number: <b>FTCR/96/0089</b>
Client: <b>Manse Window Design Ltd Halfpenny Lane Knaresborough N. Yorkshire HG5 0PR</b>	

**TEST  
REPORT**

**FIRE TESTING OF A FOUR PANELLED SOLID  
MANSE MASTERDOR AND A PARTIALLY  
GLAZED SOLID MANSE MASTERDOR  
TEST DATE: 23 AUGUST 1996**

Issue	Issued by	Date	Approved by	Date
<b>A</b> (Original)	D Johnson	5/11/96	M R Gardner	5/11/96



FIRE TESTING OF A FOUR PANELED SOLID  
MANSE MASTERDOOR AND A PARTIALLY  
GLEAZED SOLID MANSE MASTERDOOR  
TEST DATE 23 AUGUST 1996

Document No.  
FICR 96-0089

Issue A

Page 1 of 1

### Revision Sheet

Pages Affected	Section	Date	Revision Summary	Revised By
NON-				

## SUMMARY

A fire test was carried out on a four panelled solid Manse Masterdoor and a partially glazed solid Manse Masterdoor at the Faverdale Technology site, Newton, Auckland, on 21 August 1996.

The door sets were tested for integrity and insulation according to BS 476 Part 8.

The four panelled Manse Masterdoor satisfied the criteria for integrity and stability for 60 minutes when a cotton pad failure was found at the top of the door. The partially glazed solid Manse Masterdoor satisfied the criteria for integrity and stability for 30 minutes when sustained flaming was observed at the bottom of the door. Both doors satisfied the criteria for insulation for 30 minutes when the test was terminated.

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 fire report.

APPENDIX 1	Sample details
APPENDIX 2	Thermocouple positions
APPENDIX 3	Graph of mean furnace temperature against time Pure curve accuracy check data Mean door temperatures against time
APPENDIX 4	Complete data printouts of thermocouple readings
APPENDIX 8	Photographic record

1	INTRODUCTION
2	SAMPLE DETAILS
3	TEST EQUIPMENT
4	INSTALLATION
5	PASS 1 AIR CRITERIA
6	TEST PROCEDURE
7	TEST RESULTS
8	OBSERVATIONS

# CONTENTS

TEST DATE 25 AUGUST 1996 MANSI MASTERDOR AND A PARTIAL Y 61 A/1 D SOI 10 MANSI MASTERDOR		Page 1 of 1
Document No. 1-1772-96-0089		

## 1. INTRODUCTION

The test was performed to determine the fire resistance performance of a 42mm thick four panelled solid Mansel Masterdor and a 42mm thick partially glazed solid Mansel Masterdor, in accordance with the conditions specified in BS 476: Part 2: 1987.

The doorsets were mounted in a 78mm door frame, set in a double skin brick wall which formed the front of the test furnace.

FIBRE TESTING OF A FOUR PANELLED SPLIT MANSE, MASTHROK AND A PARTIAL OF AZED SPLIT MANSE, MASTHROK TEST DATE 23 AUGUST 1996	Drawing No. FIBRE 96/00089	Issue No. Page 5 of 7
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## 2. SAMPLE DETAILS

### Door Blade

The blade shall be constructed from 4mm solidly pressed board (solidly pressed with hardwood veneer and rated at 30 minute fire resistance) tested to British Standard BS 476: Part 7, 1987. The overall size of the board, before trimming to finished size, shall be either 2057 x 838 x 44mm or 2135 x 815 x 44mm, depending upon the finished dimensions required. The blade construction shall be high quality laminated manufactured in 5 ply construction with solid and stable laminates of some core. Finished veneer shall be Gibson.

The blade shall be lipped on all edges using hardwood interleaf and profiled timber, tongued into the core of the blade.

The finished size of the blade shall be determined by the required overall size of the frame and shall allow for the necessary tolerance between the door edges and the frame elements.

Frame beads and glazing beads shall be matched to the profile design with detail drawings and fixed within the thickness of the laminated using PVAKB waterproof adhesive.

### Aluminium Frame and Threshold

Extruded aluminium alloy 6063 condition T6, T6 or T6 or T6, condition 1H, 11 or T6, complying with British Standard BS 1474.

### Timber Facings

Profiled and moulded timber facings in hardwood shall be matched to the details shown on the drawing in order to achieve the necessary design criteria specified for the cover facing. The back of the element shall be provided with integral fixing rebates to locate with the aluminium frame. Timber shall be free from knots, wane, edges, shakes, splits and other defects and shall be scribed and jointed to conform with the detailed drawing.

### PVC Facings

Profiled PVC elements shall consist substantially from white or near white polyvinyl chloride, only those additives and pigments needed to the manufacture of the compound may be used.

The material shall conform to the following British Standards.

BS 2782 Part 1 Method 120B:1983

BS 2782 Part 3 Method 335A:1983 (at a rate of 500mm)

BS 2782 Part 2 Method 359:1984

Profiles shall not contain reworked material.

#### Locks

Security door lock, supplied by Winkhaus (UK) Limited, 2270 Kettering Parkway, Kettering, Northants NN15 6NP. Reference number STV 1 G 20/0 88 92 8 M<sup>2</sup>. Having 2 nickel plated solid brass, heavy duty, security hooks (one each at the top and bottom edge of the closing stile) operated by lever action and enclosed within the steel dust housing when not in the locked position. Latch and dead bolt manufactured in nickel steel, the latch having a sprung action and both being lever operated.

The lock cover plate shall be 20mm wide and rebated into the leading edge of the door to finish flush with the profiled lippping as detailed. The cover plate must be in yellow galvanised sheet.

The lock housing shall be in accordance with DIN 18251 and shall incorporate provision for an 8mm square spindle to levers. The lock back set shall be 55mm from the striking plate of the door leading edge.

The lock shall be secured to the edge lippping of the door using 4 x 40mm screws to the holes provided within the cover plate.

#### Keeps

Where the Winkhaus high security lock is used the keeps shall be Winkhaus adjustable steel recessed keeps rebated into the aluminium frame and fixed with 2.9 x 25 yellow steel screws.

#### Cylinder

Where the Winkhaus high security lock is used the cylinder shall be a Winkhaus double cylinder, type AZ01 manufactured in brass, overall length 100mm with equal 35/35 barrel lengths.

#### Hinges

Hinges shall be purpose made in accordance with the detail drawing and steel butt hinges, electro plated.

FIRE TESTING OF A FOUR PANELLED SOLID  
MANSE MASTERDOOR AND A PARTIALLY  
GLAZED SOLID MANSE MASTERDOOR  
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cranked with fixed hinge pin. The hinge shall be fixed to the door using 40mm long screws and to the frame using 30 x 25mm screws in the holes provided.

#### Lever

Lever shall be manufactured in one of the following:

- i) Cast aluminum lever set with back plate incorporating scratchproof anodised or powder-coated finish with spring levers. Fixing bolts shall pass through the door with the heads located in the inside (escaper) face of the door.
- ii) Cast solid brass lever set with brass back plate incorporating scratchproof polished finish.

#### Door Closer

Where fitted the closer shall be a Bertan 2000 or similar fixed to the head of the door as specified by the manufacturer. The equipment shall conform to the requirements for a self-closing fire door.

#### Glazing

Where specified glazing shall be in accordance with requirements for 30 minute fire doors with regard to the overall size of the glass panel.

Glazing shall be 6mm Georgian wired cast safety glass or 6mm clear non-wire polished plate safety glass set on 5mm hardwood setting block to the bottom edge of the piece and with intumescent glazing tape and compound to both sides adjacent to hardwood glazing beads, screw fixed to the laminboard core of the blade using 38mm steel pins.

#### Decorative Finish

Base coat to the decorative finish shall be solvent borne basecoat stain applied by brush to all faces and edges of the door.

Finish coat shall be joinery finish spray quality water borne decorative finish applied as a 2 coat finish.

#### Intumescent Fittings

The following intumescent fittings shall be obtained from Firestop Products and installed under the supervision of I S Supplies.

ii) Items fitted into the door blade

4 No hinge pads 200mm x 30mm x 0.8mm. 1 No positioned between each hinge plate and the door tipping.

8 No intumescent plugs 38mm x 6mm diameter. 2 No positioned to each hinge within the door stile, to the risk face of the door.

1 No lock protection pad 225mm x 150mm x 0.8mm cut and wrapped around lock case. 1991mm to centre of spindle from floor level.

1 No 12 intumescent letter box fitted into a 65mm x 50mm

1 No door knocker bedded in intumescent compound fitted 1400mm above floor level.

iii) Items fitted into the door frame

The perimeter of the frame shall be fitted with a fire proof sponge bedded into the rear channel of the aluminium frame and approximately 35mm x 8mm in section.

A 25mm x 3mm intumescent seal shall be fitted to the door stile of the aluminium frame and shall pass behind the hinge back plate in a continuous length.

A 10mm x 4mm plastic housed fire and cold smoke seal, type IS 1a S<sub>1</sub> shall be fitted to the inner architrave as indicated on the drawing.

A nylon pile carpet threshold shall be fitted within the aluminium threshold.

The frame shall be bedded into the opening using an acrylic intumescent mastic between the architrave and the wall on the risk side of the door set.

iii) Where the door incorporates a glazed panel

The glass shall be protected to both sides using 15mm x 12mm intumescent seal fitted to the rear (glass side) of both hardwood glazing beads.

### 3. TEST EQUIPMENT

The furnace was the 3 metres square panel furnace manufactured by Faverdale Construction Company Ltd and situated at the Faverdale Technology Centre site, Newton Aycliffe.

The furnace consists essentially of a furnace brick lined chamber measuring approximately 3m x 3m x 1m deep internally, the front face of which is formed by the test panel secured in a mounting frame. Heating of the furnace was achieved by 14 natural gas air burners controlled by computer. Flue damper control is also computer controlled.

#### 4. INSTRUMENTATION

Nine thermocouples, 3.5mm diameter metal sheathed, type K, protrude through the rear of the furnace, supported by ceramic tube insulators, and were arranged such that they were evenly distributed over the exposed face of the test sample and within the hot furnace, 100  $\pm$  10mm from its face at the start of the test.

An electronic micromanometer was used to measure furnace overpressure. The results were noted manually.

List of equipment used:

Orion data logger	0077 I AX
Dinatron digital thermometer	0036 I AX
Stopwatches	0037, 0006 I AX
Micromanometer	0014 I AX

FIRST TESTING OF A FOUR PANELLED SOLID MANSE MASTERDOR AND A PARTIALLY GLAZED SOLID MANSE MASTERDOR TEST DATE 25 AUGUST 1996	
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### 3. PASS/FAIL CRITERIA

- The pass/fail criteria defined in BS 476, Part 24, Section 4.2.2 and 4.2.3 will apply.
- 3.1 Any gaps, holes or fissures that opened up in the samples during the test would be assessed for failure of integrity using rain and 20mm sand applied under cotton pad.
  - 3.2 The mean unexposed face of the doors would not increase by more than 100°C above its initial value.
  - 3.3 Any individual thermocouple reading or averaging probe reading on the unexposed face would not increase by more than 180°C above the initial mean temperature.

## 6. TEST PROCEDURE

Before the test, satisfactory operation of the doorsets was checked and the gaps between the doors and frames could not be recorded due to the presence of sealing brushes.

After the thermocouples were checked for correct functioning, the furnace was ignited and controlled by the software of the resident computer, such that the mean furnace temperature followed the BS 476: Part 20 cellulose fibre temperature curve and the pressure in the furnace at a height of 2 metres above the floor level, maintained at  $8.5 \pm 2 \text{ Pa}$ .

FIRE TESTING OF A FOUR PANELLED MASTROR		Document No	FIGR 99 0020
GLAZED SOLID MASTROR		Figure A	Page 14 of 2
TEST DATE: 23 AUGUST 1996			

# TEST RESULTS

1.1 The test was conducted on 23 August 1996 as was witnessed by

- Mr A Morris
- Mr B Hudson
- Mr T McCarty
- Mr J Wilson
- Mr R Stephenson
- Mr D Brotherton
- Mr C Blacklock
- Mr S. Supphus
- Mrse Winows

2.2 Observations were made during the test on the general behaviour of the doors and these are given in Section 8.

2.3 Furnace pressure readings are given in Section 8.

2.4 The four panelled Marse Masteror satisfied the criteria for integrity and stability for 34 minutes when a cotton pad failure was found at the top of the door. The partially glazed solid Marse Masteror satisfied the criteria for integrity and stability for 36 minutes, when sustained flaming was observed at the bottom of the door. Both doors satisfied the criteria for insulation for 36 minutes, when the test was terminated.

2.5 Complete data printouts are given in Appendix 4.

2.6 A graph of mean furnace temperature against time compared to the BS 476 Part 20, cellulose curves, together with fire curve analysis data are given in Appendix 5.

2.7 A graph of mean door temperatures against time are given in Appendix 6.

2.8 A photographic record is contained in Appendix 7.

## 8. OBSERVATIONS

Test Duration (mins)	Comments
1:30	Glass starting to crack
1:00	Smoke from both letter boxes
6:00	No visible change
7:00	Puffs of smoke from letter boxes
10:00	Door A bowed slightly into furnace at top approximately 4mm. Smoke escaping. Furnace pressure 8 Pa
12:00	Smoke escaping from top of Door A letter boxes and key holes Furnace pressure 7.5 Pa
15:00	Heavy smoke from tops letter boxes and key holes. Door A top bow approximately 8mm. Door A bottom bow approximately 5mm. Furnace pressure 7 Pa
18:00	Door A top bow approximately 15mm. Door A bottom bow approximately 15mm. Still smoking. Brown stain at top.
21:00	Door A viewing spy glass lens fallen off. Intermittent flaming from hole and from bottom of both doors. Door A top bow approximately 18mm. Door A bottom bow approximately 18mm. Furnace pressure 8.8 Pa
24:00	Flaming at door bottom more frequent. Door A top bow and bottom bow approximately 20mm. Furnace pressure 9 Pa

50.00

Door A top and bottom bow  
approximately 20mm Heavy smoke

53.00

Gap at top of Door A approximately  
30mm

54.00

Cotton pad failure on Door A at top

56.00

Door B sustained flaming at bottom of  
door.

TIRE TESTING OF A FOUR PANELED SOLID  
MANSE MASTERDOR AND A PARTIALLY  
SOLID SOLID MANSE MASTERDOR  
TEST DATE 23 AUGUST 1996

Document No.

TTCR 96 0089

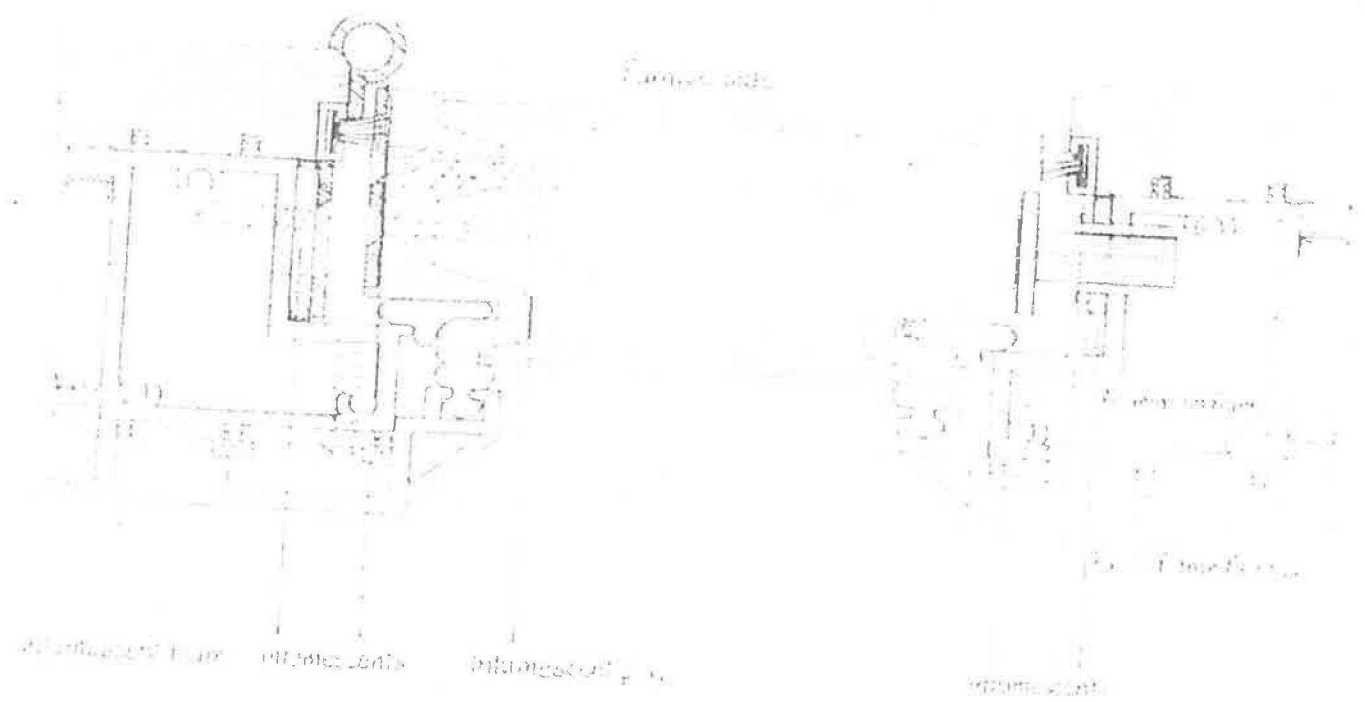
Issue A

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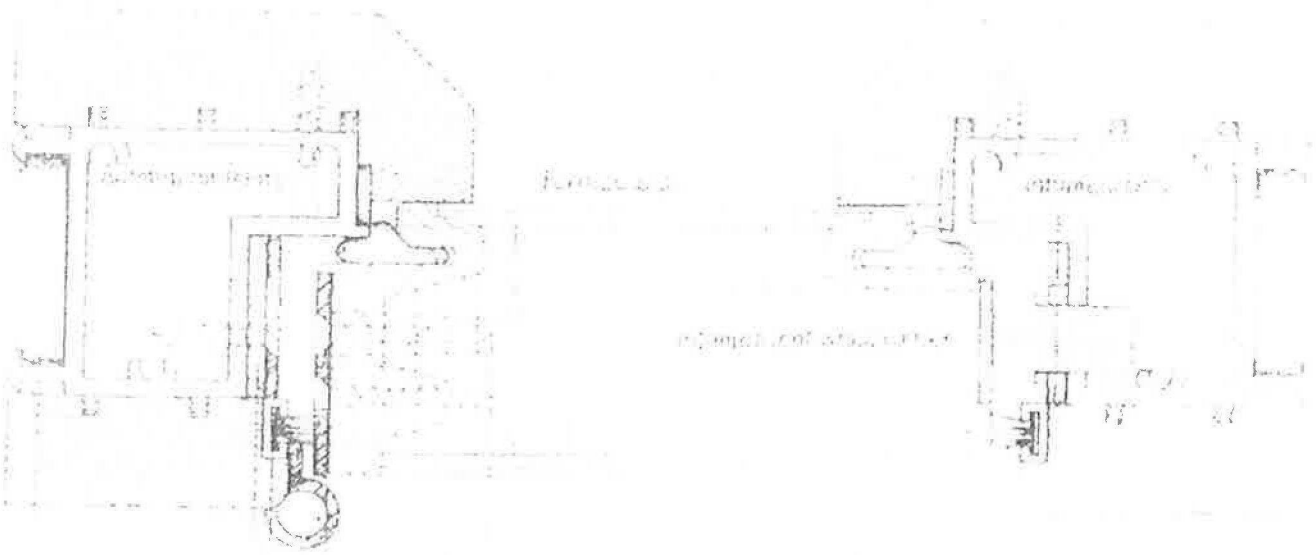
## APPENDIX I

Sample Details  
Sample Dimensions

# DOOR ref.A solid panel



## DOOR ref.B glass opening



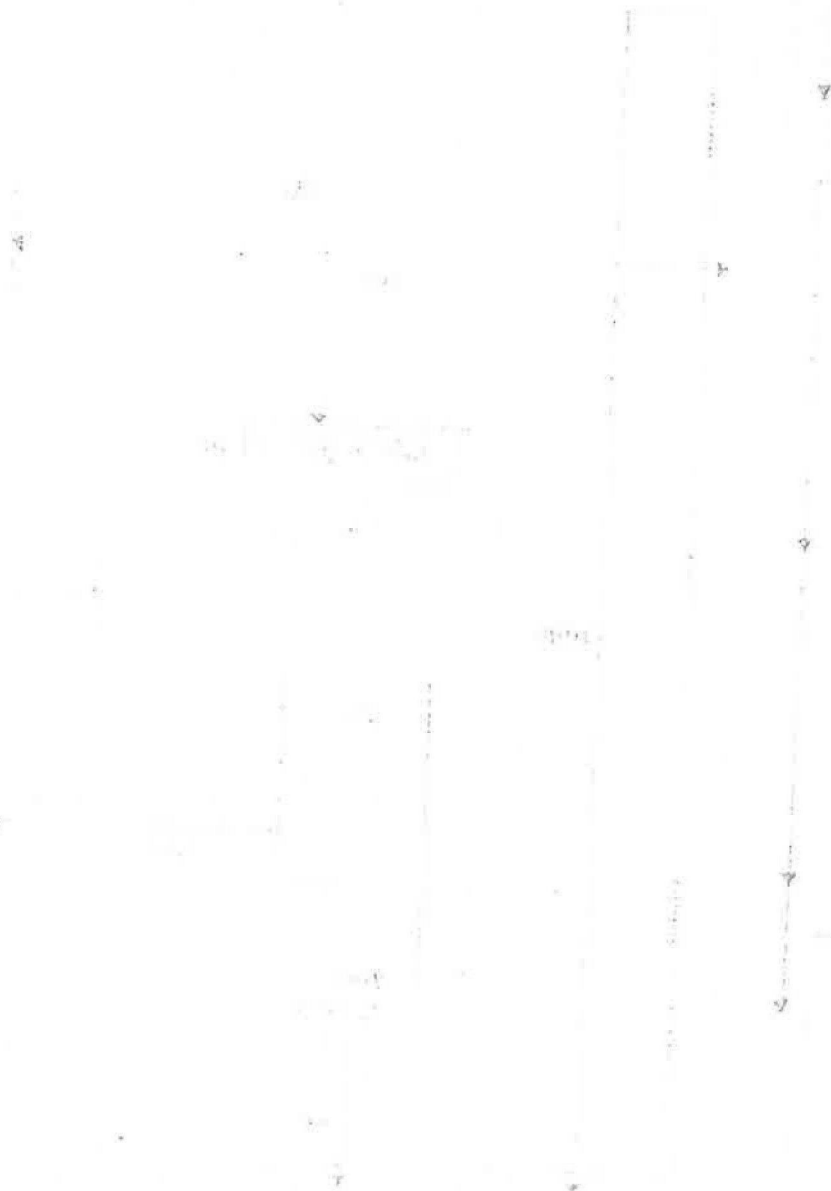
All dimensions in mm.

Good thing  
Fame thing  
Fame thing

DELLA, M. J. and M. J. M. (1990)

FIRE TESTING OF A FOUR PANELLED SOLID MANSE MASTERDOR AND A PARTIALLY GLAZED SOLID MANSE MASTERDOR TEST DATE 23 AUGUST 1996	
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Revised: 10/10/96  
 Original: 10/10/96  
 Author: [illegible]  
 Reviewer: [illegible]  
 Approved: [illegible]  
 Date: 10/10/96



<p>TESTING OF A FOUR PANELED SOLID              STATE MASTERBOARD AND A PARTIAL              OF A/D SOLID STATE MASTERBOARD              DATE: 23 AUGUST 1996</p>	<p>Document No.              E-11 R 96 0089</p>	<p>Issue A              Date: 10/10/96</p>
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FIRE TESTING OF A FOUR PANELLED SOLID  
MANSE MASTERDOR AND A PARTIALLY  
GLAZED SOLID MANSE MASTERDOR  
TEST DATE 23 AUGUST 1996

Document No.

FFR 96-0189

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## APPENDIX 2

### Thermocouple Positions

FIRE TESTING OF A FOUR PANELLED SOLID  
MANSE MASTERDOR AND A PARTIALLY  
GLAZED SOLID MANSE MASTERDOR.  
TEST DATE: 28 AUGUST 1996

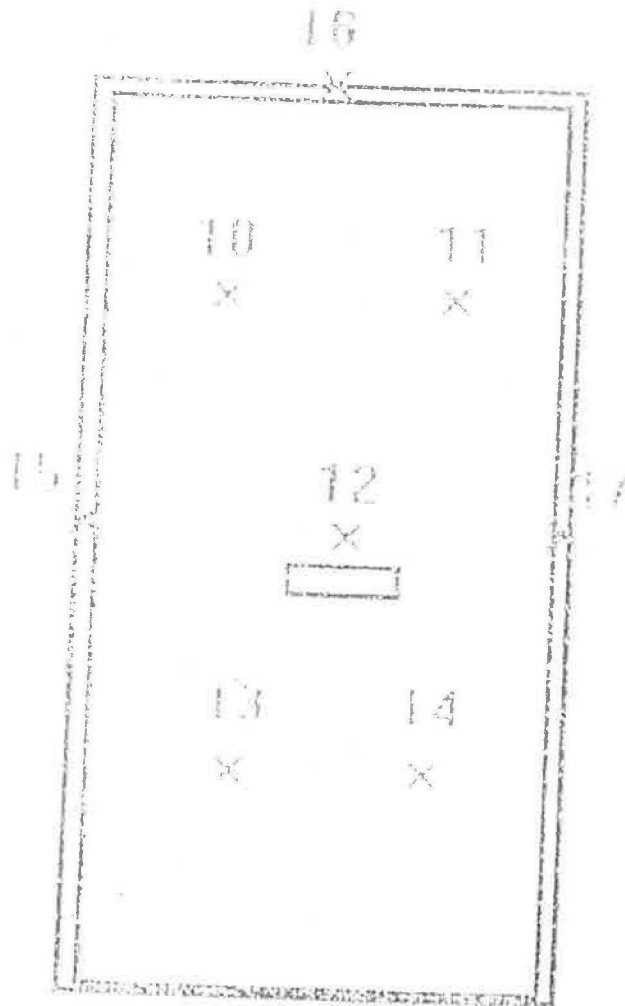
Document No:

FTCR-96-0039

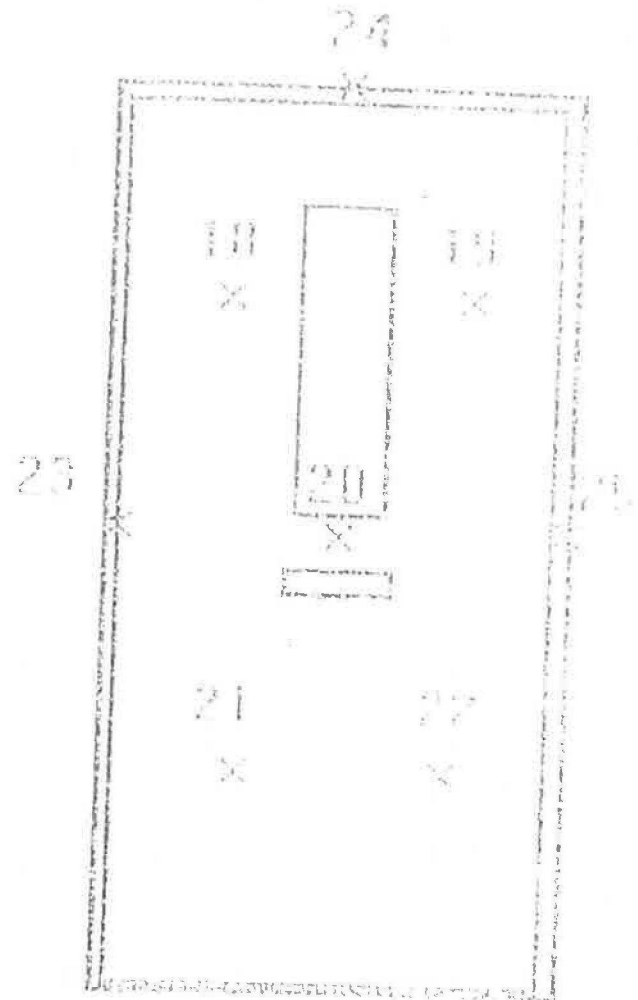
Issue A

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FIRE TESTING OF A FOUR PANELLED SOLID MANSE MASTERDOR AND A PARTIALLY GLAZED SOLID MANSE MASTERDOR.		Document No F74 B 96 00396	
TEST DATE 23 AUGUST 1996		Issue A	Page 36 of 4



DOOR A



DOOR B

### APPENDIX 3

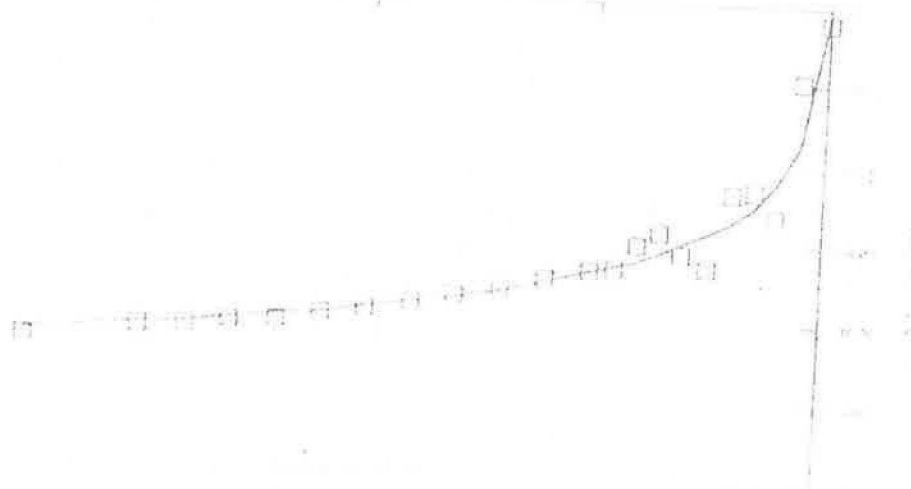
Graph of Mean Furnace Temperature against Time  
Fire Curve Accuracy Check Data  
Mean Door Temperatures against Time

FIRST TESTING OF A FOUR PANELLED SOLID	
MANSE MASTERDOR AND A PARTIAL Y	
TEST DATE: 23 AUGUST 1990	
Document No.	Page 23 of 47
Page A	Page 23 of 47

Source: Sub-Regional Information

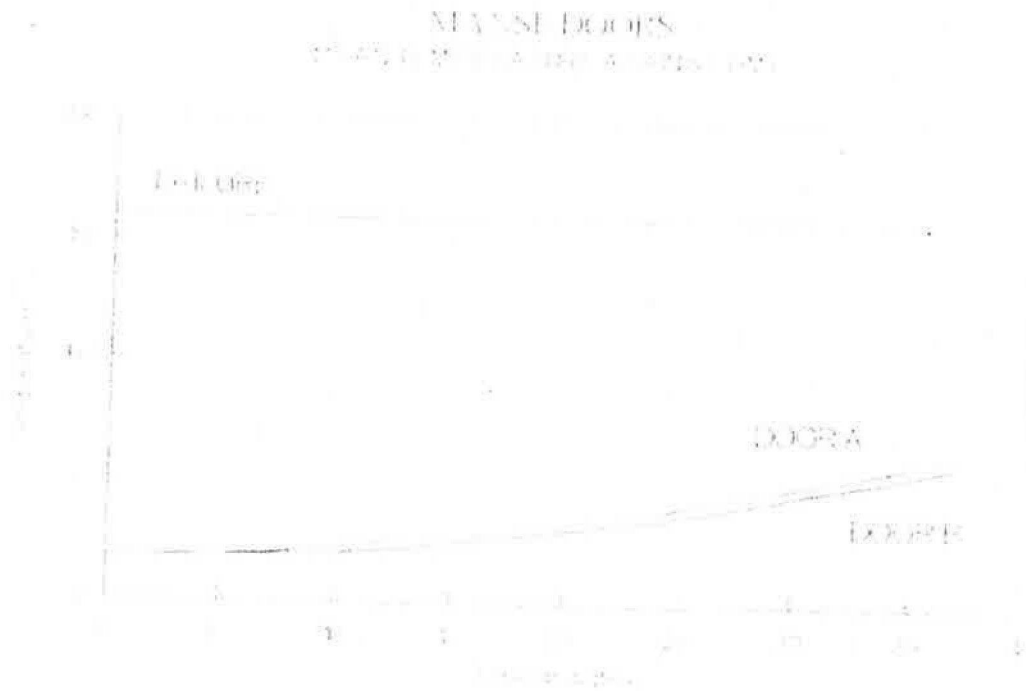
TEST DATA			
Time	Temp	Temp	Time
0	39	20	22923
1	180	210	18730
2	529	415	
3	466	502	
4	473	544	
5	631	576	
6	628	603	
7	575	626	
8	609	645	
9	667	603	
10	676	678	5346
12	694	705	
14	720	728	
16	741	748	
18	765	766	
20	787	781	
22	801	796	
24	817	809	
26	826	820	
28	838	832	
30	847	842	
35	884	865	

BS 476 Pt 200198A



BS 1367 No. 1-8-1 (1990)

TEST DATE 23 AUGUST 1990 AT AZED SOLID MANSE MASTERDOR MANSE MASTERDOR AND A PARTIALLY FULL TESTING OF A FOUR PANELLER SOLID	
Document No 1-TCR 90 0059	Issue A Page No. 17



#### APPENDIX 4

##### Complete Data Printouts of Thermocouple Readings

Channel No.	Location
1 - 9	Furnace thermocouples
10 - 14	Door A thermocouples
15 - 17	Door A frame thermocouples
18 - 22	Door B thermocouples
23 - 25	Door B frame thermocouples
26	Ambient



FIRE TESTING OF A FOUR PANELLED SOLID  
MANSE MASTERDOR AND A PARTIALLY  
GLAZED SOLID MANSE MASTERDOR.  
TEST DATE 23 AUGUST 1996

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Form A.

Page 30 of 4

FIRE TESTING OF A FOUR PANELLED SOLID  
MANSI MASTERDOR AND A PARTIALLY  
GLAZED SOLID MANSI MASTERDOR.  
TEST DATE: 23 AUGUST 1996

Document No.

FCR 96 0089

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PART TESTING OF A FOUR PANTILLED SOI HD MANSE MASTERDOR AND A PARTIALLY GI AZIJD SOI HD MANSE MASTERDOR TEST DATE 23 AUGUST 1996		Document No F1173096-0089	Issue A Page 32 of 42
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FIRE TESTING OF A FOUR PANELLED SOLID  
MANSE MASTERDOR AND A PARTIALLY  
GLAZED SOLID MANSE MASTERDOR.  
TEST DATE 28 AUGUST 1996

Document No.  
FECR 01.0089

Issue A

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FIRE TESTING OF A FOUR PANELLIED SOLID  
MANSE MASTERDOR AND A PARTIALLY  
GLAZED SOLID MANSE MASTERDOR.  
TEST DATE: 23 AUGUST 1996

Document No  
FTR 96-0089

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FIRE TESTING OF A FOUR PANELLED SOLID  
MANSE MASTERDOR AND A PARTIALLY  
GLAZED SOLID MANSE MASTERDOR  
TEST DATE 23 AUGUST 1996

Document No  
FIC R 96/0059

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FIRE TESTING OF A FOUR PANELED SOLID MANSE MASTERDOR AND A PARTIALLY GLAZED SOLID MANSE MASTERDOR TEST DATE 23 AUGUST 1996		Document No. FICR 96 0084
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FIRE TESTING OF A FOUR PANELLED SOLID  
MANSI MASTERDOR AND A PARTIALLY  
GLAZED SOLID MANSI MASTERDOR  
TEST DATE 23 AUGUST 1996

Document No

ETCR/96/0186

Issue A

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FIRE TESTING OF A FOUR PANELLED SOLID MANSE MASTERDOR AND A PARTIALLY GLAZED SOLID MANSE MASTERDOR TEST DATE 23 AUGUST 1996	
Document No. 1 TT/18/96/1084	Issue A Page 30 of 1

# TEST RECORD

FAVERDALE TECHNOLOGY

ADDRESS: 51-535

CENTRE LTD

DATE: 11/04/96

TEST SPECIFICATION: BS14716:1996

TEST NAME: 1st Stage Test

TEST NO: 18818

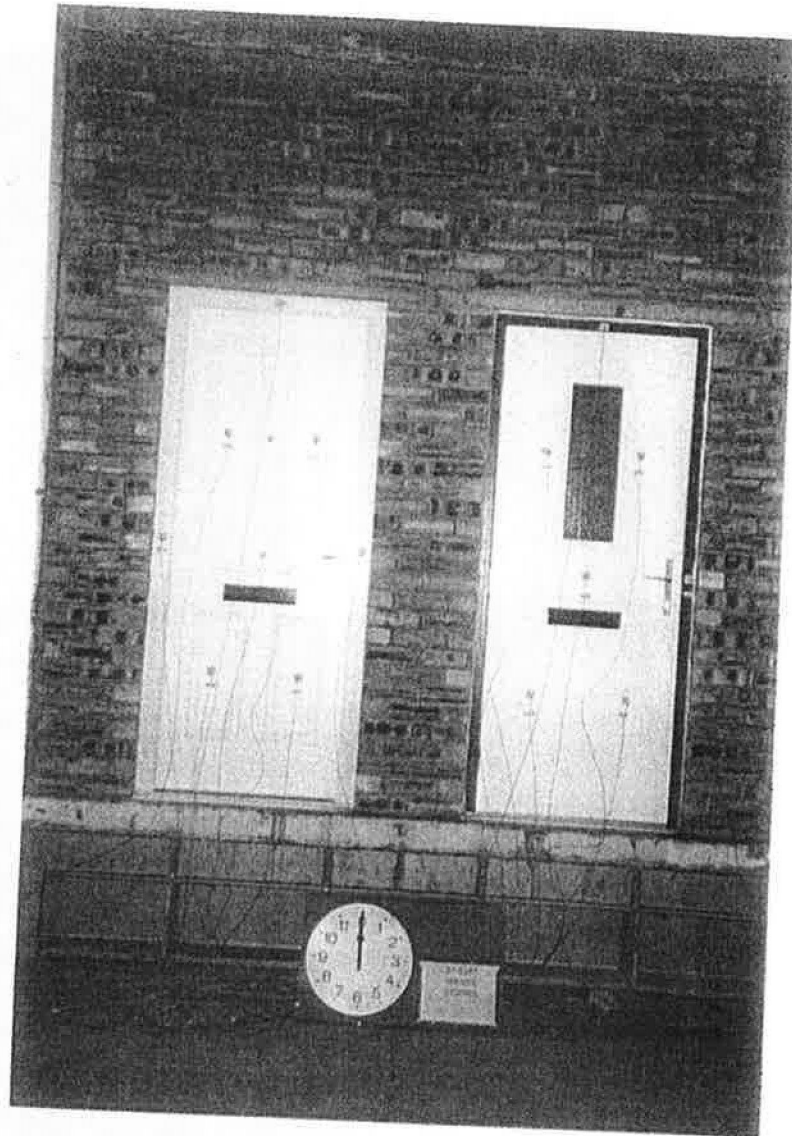
PART TESTING OF A FOUR PANEL LTD SOLID	
MANSE MASTERDOR AND A PARTIAL Y	
OF AZED SOLID MANSE MASTERDOR	
TEST DATE: 23 AUGUST 1996	
Document No.	Issue A
1771096 (0080)	Page 41 of 17

FIRE TESTING OF A FOUR PANELLLED SOLID MANSE MASTERDOR AND A PARTIALLY GLAZED SOLID MANSE MASTERDOR TEST DATE 23 AUGUST 1996		Document No. FICR-96-0089
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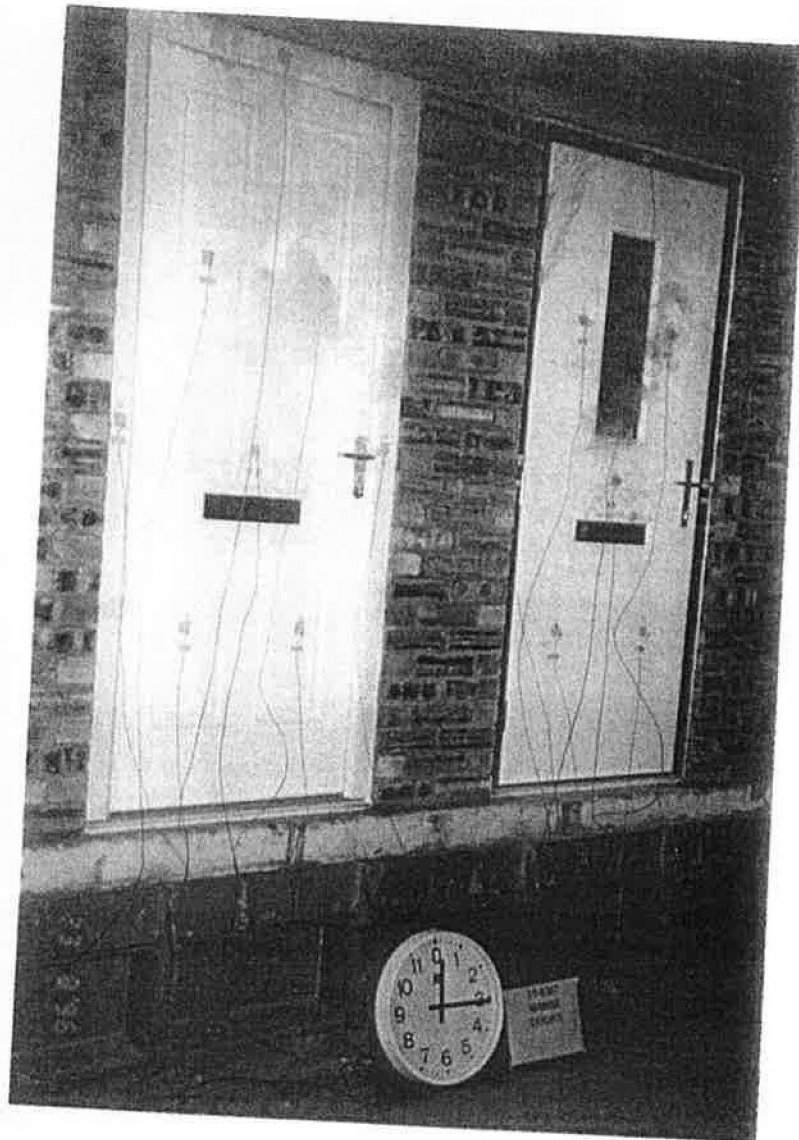
## APPENDIX 5

### Photographic Record

- Frame 1 Unexposed side pre test
- Frame 2 Unexposed side after 15 minutes
- Frame 3 Unexposed side after 30 minutes
- Frame 4 Unexposed side after 34 minutes
- Frame 5 Unexposed side after 36 minutes



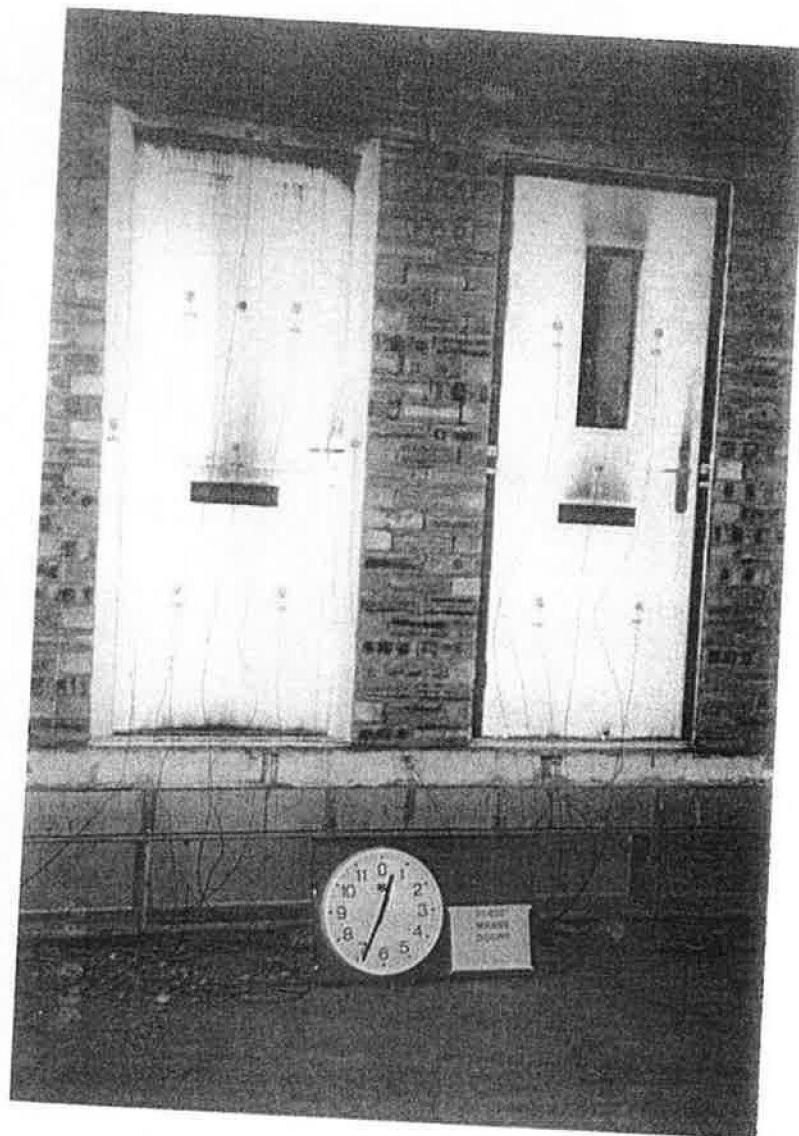
Frame 1 Unexposed side pre test



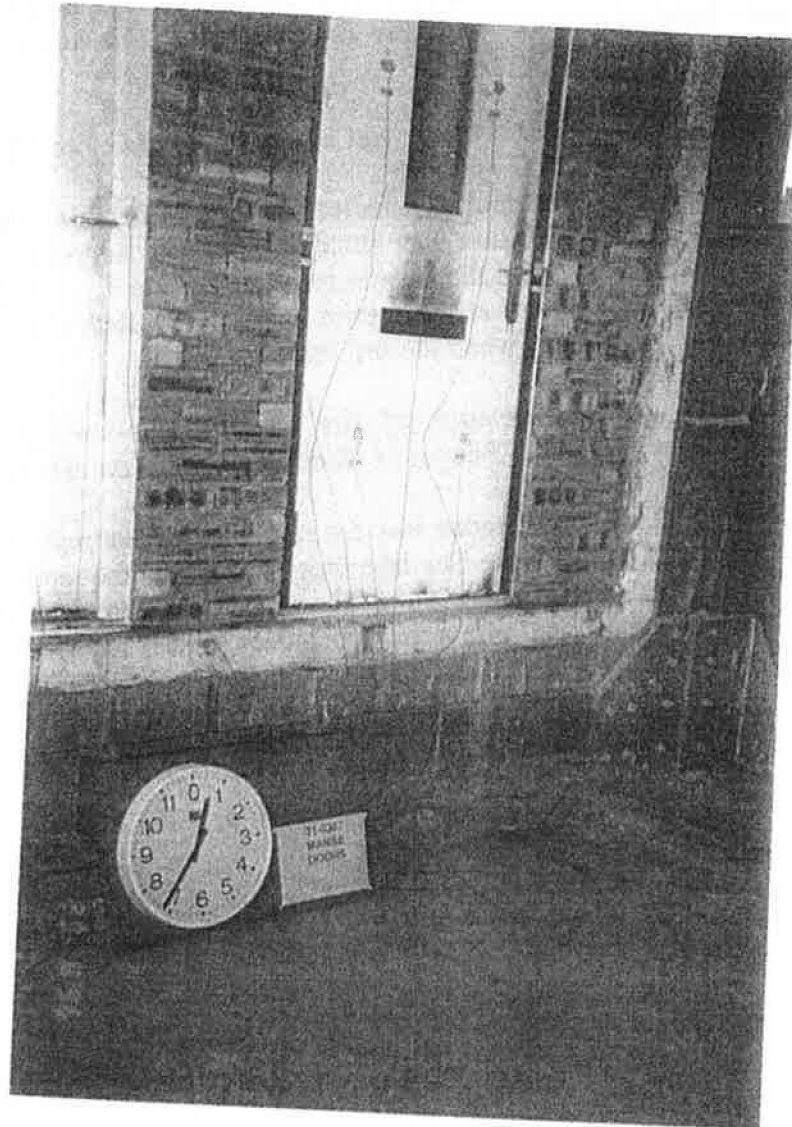
Frame 2 Unexposed side - after 15 minutes



Frame 3 Unexposed side - after 30 minutes



Frame 4 Unexposed side - after 34 minutes



Frame 5 Unexposed side after 36 minutes

<b>FIRE TESTING OF A FOUR PANELLED SOLID MANSE MASTERDOR AND A PARTIALLY GLAZED SOLID MANSE MASTERDOR. TEST DATE 23 AUGUST 1996</b>	Document No. FTCR/96/0089	
	Issue A	Page 3 of 47

## SUMMARY

A fire test was carried out on a four panelled solid Manse Masterdor and a partially glazed solid Manse Masterdor at the Faverdale Technology site, Newton Aycliffe, on 23 August 1996.

The door sets were tested for integrity and insulation according to BS 476 Part 22.

The four panelled Manse Masterdor satisfied the criteria for integrity and stability for 34 minutes when a cotton pad failure was found at the top of the door. The partially glazed solid Manse Masterdor satisfied the criteria for integrity and stability for 36 minutes, when sustained flaming was observed at the bottom of the door. Both doors satisfied the criteria for insulation for 36 minutes, when the test was terminated.

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.

**Faverdale  
Technology  
Centre Ltd**

Faverdale Centre, Faverdale Industrial Estate  
Darlington, Co Durham DL3 0QL  
England

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Order number: 310488	Document number: ASR/310488/97006
Client: Manse Group Hambleton Grove Knaresborough HG5 0DB	

**ASSESSMENT  
REPORT**

**ASSESSMENT ON THE FIRE RESISTANCE OF  
MANSE MASTERDOR DOORSETS - VARIOUS.**

Issue	Issued by	Date	Approved by	Date
A (Original)	A MATHER <i>A. Mather</i>	6/6/97	D P AYLING <i>D.P. Ayling</i>	6/6/97

**THIS ASSESSMENT IS ONLY VALID IF ACCOMPANIED BY THE APPLICANT  
DECLARATION DULY SIGNED**

#### 4. CONCLUSION

It is our opinion that the door types MF7P, MF2X, MFDX, MF1X, MF11P, MF12P, MF13P, MF17P, MF19P, MF29P AND MF31P proposed by the Manse Group and reviewed in this document would if fire tested in accordance with BS 476 Part 20 and 22 (or Part 8) would achieve the fire performance stated below.

Door Type MF7P Integrity:	4 panelled solid Manse Masterdor. 30 minutes
Door Type MF2X Integrity:	Partially glazed solid Manse Masterdor. 30 minutes
Door Type MFDX Integrity:	Partially glazed solid Manse Masterdor. 30 minutes
Door Type MF1X Integrity:	Partially glazed solid Manse Masterdor. 30 minutes
Door Type MF11P Integrity:	Partially glazed solid Manse Masterdor. 30 minutes
Door Type MF12P Integrity:	Partially glazed solid Manse Masterdor. 30 minutes
Door Type MF13P Integrity:	Partially glazed solid Manse Masterdor. 30 minutes
Door Type MF17P Integrity:	Partially glazed solid Manse Masterdor. 30 minutes
Door Type MF19P Integrity:	Partially glazed solid Manse Masterdor. 30 minutes
Door Type MF21P Integrity:	Partially glazed solid Manse Masterdor. 30 minutes
Door Type MF29P Integrity:	Partially glazed solid Manse Masterdor. 30 minutes
Door Type MF31P Integrity:	Partially glazed solid Manse Masterdor. 30 minutes

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Order number	Document number
310520	ASR/310520/97008
Client	
Manse Group Halfpenny Lane Knaresborough W Yorkshire HG5 0PR	

## ASSESSMENT REPORT

ASSESSMENT ON THE FIRE RESISTANCE OF MANSE MASTERDOR DOORSET  
MF31P 'UPGRADE' INCORPORATING AN ALUMINIUM SUB-FRAME.

Issue	Issued by	Date	Approved by	Date
A (Original)	A. Mather	6/10/97	D. P. Ayling	6/10/97
	J. Hubber			



4. CONCLUSION

It is our opinion that the door type MF3 1P 'upgrade' incorporating an Aluminium sub-frame proposed by the Manse Group and reviewed in this document would if fire tested in accordance with BS 476 Part 20 and 22 (or Part 8) would achieve the fire performance stated below.

Door Type MF3 1P 'upgrade'  
Integrity: 30 minutes

Partially glazed solid Manse Masterdor.