

CONF 20

WFRC TEST REPORT NO. 140151

**Fire Resistance Test In Accordance
With BS EN 1364-1: 1999 On
An Insulated Glazed Screen
Assembly**

Summary

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

Sponsor Vetrotech Saint-Gobain (Int) AG, CH-3000, Bern 22, Stauffacherstrasse 128 Switzerland.

Summary of Tested Specimen The assembly had overall dimensions of 3000 mm high by 3000 mm wide and comprised a mild steel box section framework clad on either face with sections of 15 mm thick "Promatect H" board, and mild steel flat plates. The frame incorporated a full height mullion with transom members either side such that four apertures were formed. Each aperture was glazed with a single pane of 29 mm thick "Contraflam 60/N2" glass. The largest pane had nominal overall dimensions of 1800 mm wide by 2600 mm high. The glass panes were retained within the frame by the cladding sections on either face.

The assembly was fixed into an aperture within a refractory concrete lined, steel restraint frame such that that the upper, lower and one vertical edge were fixed. The remaining vertical edge was left unfixed, as required by the Standard.

Test Results:

Integrity Performance	Sustained flaming	96 minutes
	Gap gauge	97 minutes*
	Cotton Pad	96 minutes

Insulation	93 minutes
-------------------	------------

*The test was discontinued after a period of 97 minutes.

Date of Test 21st June 2004

This report may only be reproduced in full. Extracts or abridgements of reports shall not be published without permission of Warrington Fire Research Centre.

Signatories

Responsible Officer D. Forshaw* Senior Technical Officer

Approved S. Hankey* Technical Consultant

C. W. Miles* Head of Department

* For and on behalf of Warrington Fire Research Centre.

Report Issued Date : 8 th July 2004

This is Copy No. 1 of Fire Resistance Test Report referenced WARRES No. 140151.

This copy has been produced from a .pdf format electronic file that has been provided by Warrington Fire Research Centre to the sponsor of the report and must only be reproduced in full. Extracts or abridgements of reports must not be published without permission of Warrington Fire Research Centre. The original signed paper version of this report, which also includes a silvered logo, is the sole authentic version. Only original paper versions of this report bear authentic signatures of the responsible Warrington Fire Research Centre staff.

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 21st June 2004 at the request of Vetrotech Saint-Gobain (Int) AG, the sponsor of the test.

Mr. K. Wildenhain, a representative of the test sponsor witnessed the test.

Test Specimen Construction

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

Installation

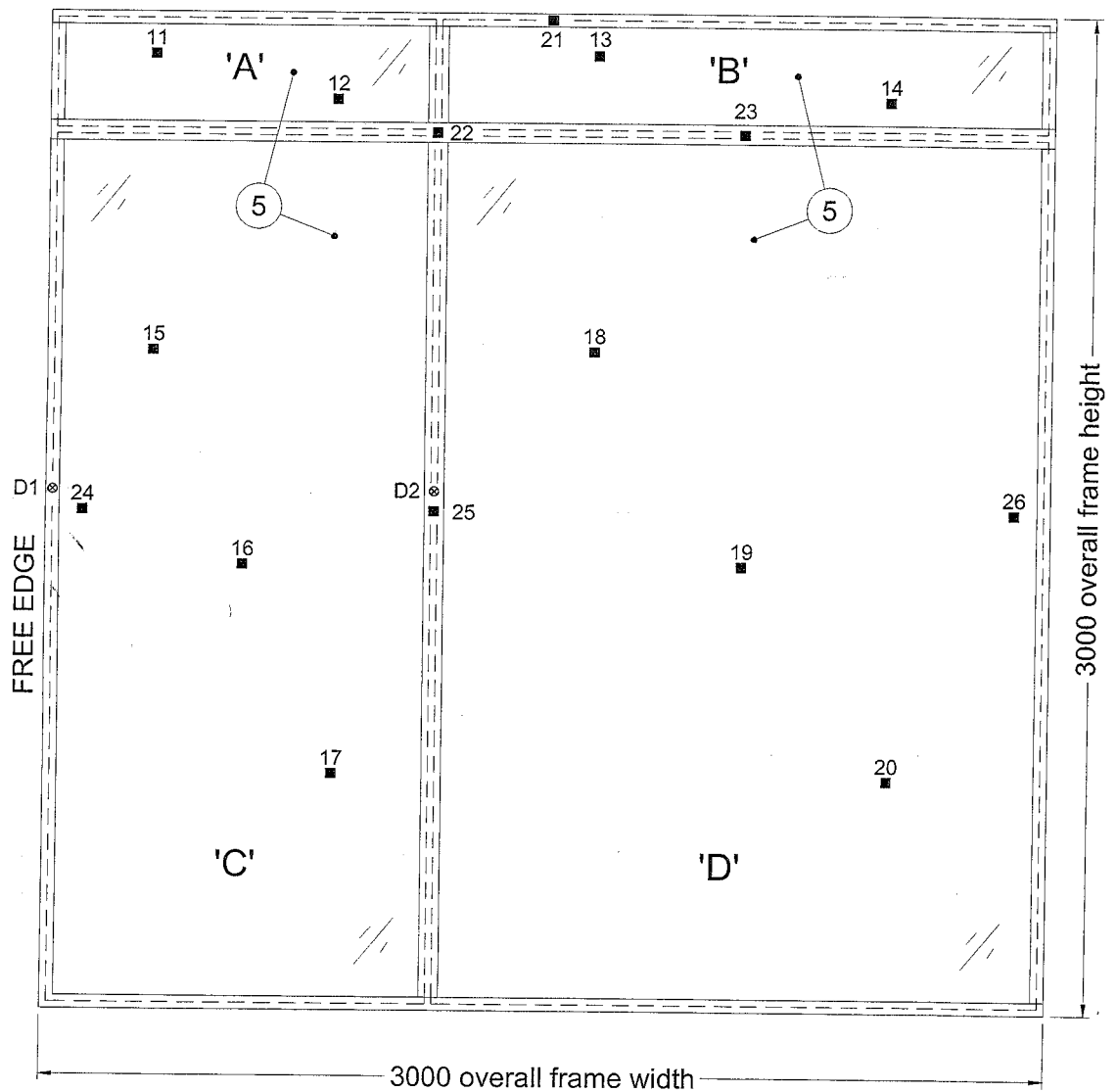
The screen was installed into a refractory concrete lined steel restraint frame by representatives of Vetrotech Saint-Gobain (Int) AG on the 17th and 18th June 2004.

Sampling

Warrington Fire Research Centre was not involved in any selection or sampling procedures of the specimen or any of the components.

Test Specimen

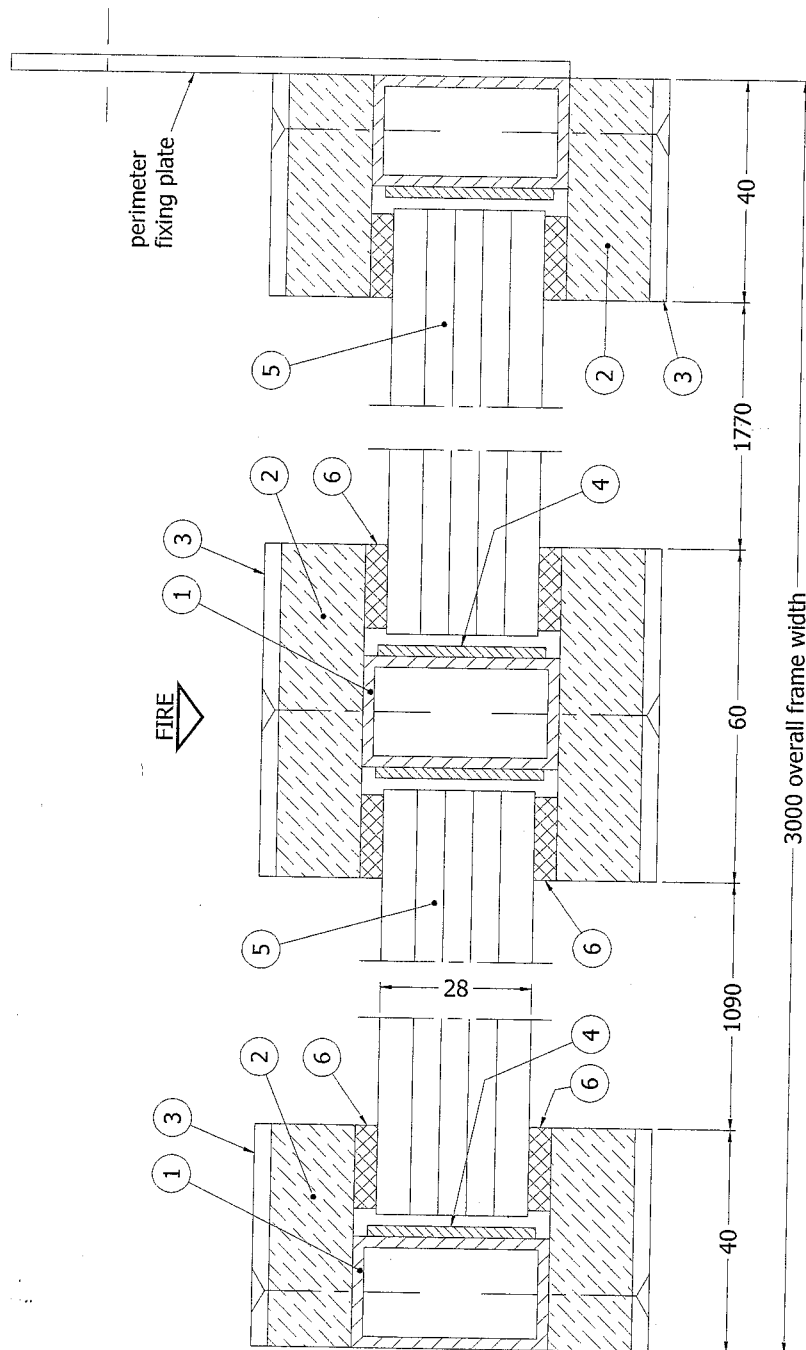
Figure 1- General Elevation of Test Specimen and Unexposed Face Thermocouples



- Positions of thermocouples
- ⊙ Positions of deflection measurements (D1 & D2)

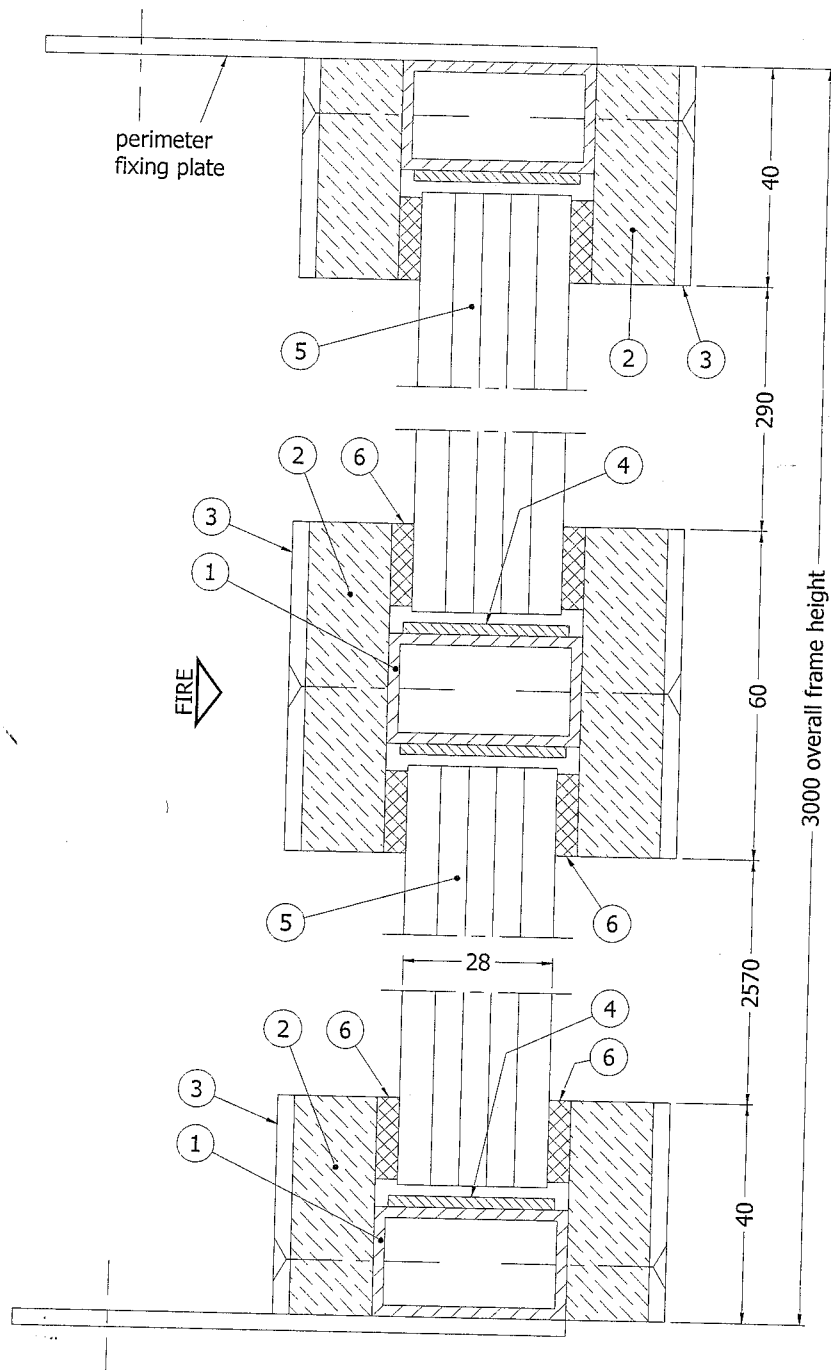
Do not scale. All dimensions are in mm

Figure 2 – Typical Horizontal Section



Do not scale. All dimensions are in mm

Figure 3 – Typical Vertical Section



Do not scale. All dimensions are in mm

Schedule of Components

(Refer to Figures 1 to 3)
(All values are nominal unless stated otherwise)
(All other details are as stated by the sponsor)

<u>Item</u>	<u>Description</u>
1. Perimeter Frame, Mullion and Transom	
Material	: Rectangular hollow section mild steel tubes
Thickness	: 2 mm
Overall section size	: 35 mm x 20 mm
Corner joints	: Welded and dressed flush
Fixing method to concrete lining of furnace aperture.	: Anchor bolts via fixing plates. The free edge and the other perimeter gaps between the concrete and the perimeter frame were packed with mineral fibre insulation.
Details of anchors	
i. manufacturer	: Hilti
ii. type	: HT10/92 with M10 steel washer
iii. quantity	: 1 no. anchor per fixing plate
Details of fixing plate	
i. material	: Mild steel plate
ii. thickness	: 3 mm
iii. size	: 30 mm wide x 100 mm long with a 12 mm wide x 20 mm long slotted hole.
iv. quantity	: 5 no. at 675 mm centres along head, base and one vertical edge of perimeter frame.
Fixing method	: Welded to back face of perimeter frame
2. Frame Cover	
Material	: Promatect H
Thickness	: 15 mm
Width	
i. to perimeter frame	: 40 mm
ii. to mullion and transom	: 60 mm

<u>Item</u>	<u>Description</u>
3. Frame Cover Plates	
Material	: Mild steel
Thickness	: 3 mm
Width	
i. to perimeter frame	: 40 mm
ii. to mullion and transom	: 60 mm
Fixing method	: Screw fixed at 300 mm centres
Details of screw fixings	
i. type	: Countersunk head machine screws
ii. material	: Finish BZP
iii. size	: M6 x 30 mm long
4. Frame Lining	
Manufacturer	: Gluske
Reference	: Flexpan 200
Material	: Intumescent seal
Thickness	: 2 mm
Width	: 30 mm
Fixing method	: Self adhesive fixed to the inside faces of each glazing aperture.
5. Glass	
Manufacturer	: Vetrotech Saint Gobain
Reference	: Contraflam 60/N2
Overall thickness	: 29 mm
Details of each Layer	: 6 mm Tempered glass 5.5 mm Interlayer 6 mm Tempered glass 5.5 mm Interlayer 6 mm Tempered glass
Glass pane sizes (width & height)	:
i. Pane A	: 1120 mm x 320 mm
ii. Pane B	: 1800 mm x 320 mm
iii. Pane C	: 1120 mm x 2600 mm
iv. Pane D	: 1800 mm x 2600 mm
Nominal edge clearance	: 5 mm
Setting blocks	
i. material	: Promatect H
ii. thickness	: 5 mm
iii. length	: 80 mm
iv. quantity	: 2 no. per pane

Item

Description

6. Glass Edge Seal

Manufacturer : Gluske
Material : Ceramic fibre tape
Thickness : 4 mm
Width : 15 mm
Fixing method : Self adhesive fixed to item 2 at both sides of the glass.
The seal at the fire side face was capped with a bead of intumescent sealant.

Details of intumescent sealant

i. manufacturer : Dow Corning
ii. reference : Firestop 700
iii. material : Silicone (colour : black)