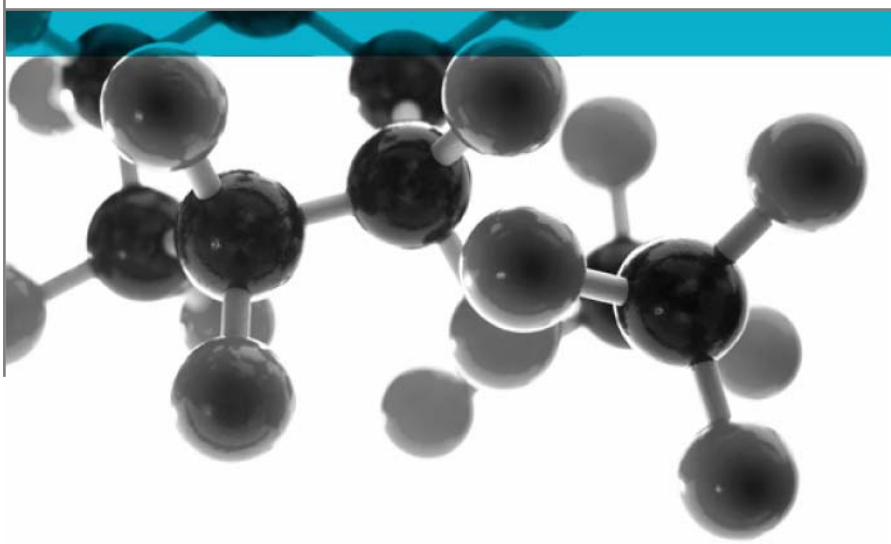
Exova Warringtonfire
Holmesfield Road
Warrington
WA1 2DS
United Kingdom

T : +44 (0 1925 655116
F : +44 (0) 1925 655419
E : warrington@exova.com
W: www.exova.com

BS 476: Part 6: 1989+A1:2009



Method Of Test For
Fire Propagation For Products

A Report To: G.L.V. International (1995) Ltd

Document Reference: 326052

Date: 21st March 2013

Issue No.: 1

Testing
Advising
Assuring

UKAS TESTING
0249

Executive Summary

Objective To determine the performance of the following product when tested in accordance with BS 476: Part 6: 1989+A1: 2009.

Generic Description	Product reference	Thickness / application rate	Weight per unit area or density
Coated reinforced polyvinyl chloride (PVC)	"PVC Coated glass fibre fabric"	250-300 micron	250-300g/m^2
Individual components used to manufacture composite:			
Coating product	"PVC"	70 micron	Unable to provide
Scrim	"e-glass fiberglass fabric 5430"	170 micron	150g/m^2
Adhesive	Unable to provide	6g/m^2	Not stated
Please see page 5 of this test report for the full description of the product tested			

Test Sponsor G.L.V. International (1995) Ltd, Maalot Industrial Area, 24952, Israel.

Test Results:

Fire propagation index, I = 4.9

Sub index, i_1 = 3.9

Sub index, i_2 = 1.0

Sub index, i_3 = 0.0

Date of Test 20th & 21st February 2013

Signatories

Responsible Officer C. Meachin * Acting Testing Officer	Authorised M. Dale * Deputy Operations Manager

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

Report Issued: 21st March 2013

This version of the report has been produced from a .pdf format electronic file that has been provided by Exova Warringtonfire 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 Extracts or abridgements of reports must not be published without permission of **Exova Warringtonfire**.

CONTENTS PAGE NO.

Test Details

Purpose of test

To determine the performance of a product when it is subjected to the conditions of the test specified in BS 476: Part 6: 1989+A1: 2009, "Fire tests on building materials and structures, method for fire propagation for products".

The test was performed in accordance with the procedure specified in BS 476: Part 6: 1989+A1: 2009, and this report should be read in conjunction with that British Standard.

Scope of test

BS 476: Part 6: 1989+A1: 2009 specifies a method of test, the result being expressed as a fire propagation index, that provides a comparative measure of the contribution to the growth of fire made by an essentially flat material, composite or assembly. It is primarily intended for the assessment of the performance of internal wall and ceiling linings.

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 20th & 21st February 2013 at the request of G.L.V. International (1995) Ltd, the sponsor of the test.

Provision of test specimens

The specimens were supplied by the sponsor of the test. **Exova Warringtonfire** was not involved in any selection or sampling procedure.

Conditioning of specimens

The specimens for testing to BS 476: Part 6: 1989+A1: 2009 together with the specimens for testing to BS 476: Part 7: 1997 were received on the 24th January 2013.

Prior to the tests, all of the specimens were conditioned to constant mass at a temperature of 23 ± 2°C and a relative humidity of 50 ± 5%. One specimen from the total sample submitted for test was selected for constant mass verification.

Form in which the specimens were tested

Assembly - Fabrication of materials and/or composites that can contain air gaps. An air space was provided at the back of the product by testing over spacers of non-combustible insulation board 20 mm wide and 12.5mm thick.

Exposed face

One of two identical faces of the specimens was exposed to the heating conditions of the test.

Description of Test Specimens

The description of the specimens given below has been prepared from information provided by the sponsor of the test. All values quoted are nominal, unless tolerances are given.

General description		Coated reinforced PVC
Product reference of composite		"PVC Coated glass fibre fabric"
Name of manufacturer of composite		**See Note 1 below**
Thickness of composite		250-300 micron (stated by sponsor) 0.18mm (determined by **Exova Warringtonfire**)
Weight per unit area of composite		250-300g/m^2 (stated by sponsor) 372g/m^2 (determined by **Exova Warringtonfire**)
Coating product (both faces)	Generic type	PVC
	Product reference	"PVC"
	Name of manufacturer	**See Note 1 below**
	Colour reference	"Grey"
	Number of coats	1
	Application rate / thickness per coat	70 micron
	Density / specific gravity	**See Note 1 below**
	Application method	Poured coating
	Trade name of flame retardant	"Sb2O3 B1 grade"
	Generic type of flame retardant	**See Note 1 below**
	Amount of flame retardant	20%
	Curing process per coat	**See Note 1 below**
Scrim	Generic type	Fibreglass fabric
	Product reference	"e-glass fiberglass fabric 5430"
	Name of manufacturer	**See Note 1 below**
	Colour reference	"White"
	Thickness	170 micron
	Weight per unit area	150g/m^2
	Type of weave / cell dimensions	**See Note 1 below**
	Flame retardant details	**See Note 2 below**
Adhesive	Generic type	Solvent based
	Product reference	**See Note 1 below**
	Name of manufacturer	Adestic Israel
	Colour reference	"Clear"
	Application rate / thickness	6g/m^2
	Application method	Contact coater wheel
	Flame retardant details	**See Note 2 below**
	Curing process	**See Note 1 below**
Brief description of manufacturing process		**See Note 1 below**

Note 1 - The sponsor was unable to provide this information.

Note 2 - The sponsor of the test has confirmed that no flame retardant additives were utilised in the production of the component.

Test Results

Results

A total of three specimens were tested. The laboratory record sheet relating to each of the test specimens is appended to this report (refer to Tables 1, 2 and 3).

Throughout the test on each specimen careful observation was made of the product's behaviour within the apparatus and special note was taken of any of the phenomena listed in clause 9.2 of the Standard. None of the listed phenomena was observed and the test results on all three specimens tested were valid.

The following test results were obtained for the product.

Fire propagation index, I	**=**	**4.9**
Sub index, i_1	**=**	**3.9**
Sub index, i_2	**=**	**1.0**
Sub index, i_3	**=**	**0.0**

NOTE: If a suffix 'R' is included in the above fire propagation index, I, then this indicates that the results should be treated with caution.

Applicability of test result

The test results relate only to the behaviour of the test specimens of the product under the particular conditions of test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

The test results relate only to the specimens of the product in the form in which they were tested. Small differences in the composition or thickness of the product may significantly affect the performance during the test and may therefore invalidate the test results. Care should be taken to ensure that any product which is supplied or used is fully represented by the specimens which were tested.

Validity

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.

Table 1

Laboratory Record Sheet

FIRE PROPAGATION TEST - BS476:PART 6:1989+A1:2009

Specimen No. : 1 **Date : 20-Feb-13**

Time mins t	Specimen Temperature Deg C Ts	Calibration Temperature Deg C Tc	Ts-Tc/10t	Sub Index Of Performance
0.50	21	12	1.80	
1.00	26	18	0.80	
1.50	31	23	0.53	
2.00	35	28	0.35	
2.50	40	31	0.36	
3.00	44	35	0.30	4.14
4.00	83	69	0.35	
5.00	122	107	0.30	
6.00	147	135	0.20	
7.00	169	158	0.16	
8.00	183	177	0.08	
9.00	196	191	0.06	
10.00	205	200	0.05	1.19
12.00	219	216	0.03	
14.00	227	227	0.00	
16.00	235	235	0.00	
18.00	240	242	0.00	
20.00	244	246	0.00	0.03
Total Index of Performance S			**=**	**5.36**

SubIndex s1 **4.14**

SubIndex s2 **1.19**

SubIndex s3 **0.03**

Index of Performance S **5.36**

Table 2

Laboratory Record Sheet

FIRE PROPAGATION TEST - BS476:PART 6:1989+A1:2009

Specimen No. : 2 **Date : 21-Feb-13**

Time mins t	Specimen Temperature Deg C Ts	Calibration Temperature Deg C Tc	Ts-Tc/10t	Sub Index Of Performance
0.50	20	12	1.60	
1.00	26	18	0.80	
1.50	30	23	0.47	
2.00	34	28	0.30	
2.50	38	31	0.28	
3.00	43	35	0.27	3.71
4.00	81	69	0.30	
5.00	119	107	0.24	
6.00	144	135	0.15	
7.00	165	158	0.10	
8.00	181	177	0.05	
9.00	191	191	0.00	
10.00	202	200	0.02	0.86
12.00	214	216	0.00	
14.00	224	227	0.00	
16.00	228	235	0.00	
18.00	236	242	0.00	
20.00	240	246	0.00	0.00
Total Index of Performance S			**=**	**4.57**

SubIndex s1 **3.71**

SubIndex s2 **0.86**

SubIndex s3 **0.00**

Index of Performance S **4.57**

Table 3

Laboratory Record Sheet

FIRE PROPAGATION TEST - BS476:PART 6:1989+A1:2009

Specimen No. : 3 **Date : 21-Feb-13**

Time mins t	Specimen Temperature Deg C Ts	Calibration Temperature Deg C Tc	Ts-Tc/10t	Sub Index Of Performance
0.50	20	12	1.60	
1.00	26	18	0.80	
1.50	31	23	0.53	
2.00	35	28	0.35	
2.50	39	31	0.32	
3.00	43	35	0.27	3.87
4.00	81	69	0.30	
5.00	118	107	0.22	
6.00	146	135	0.18	
7.00	167	158	0.13	
8.00	178	177	0.01	
9.00	190	191	0.00	
10.00	198	200	0.00	0.84
12.00	211	216	0.00	
14.00	221	227	0.00	
16.00	228	235	0.00	
18.00	234	242	0.00	
20.00	237	246	0.00	0.00
Total Index of Performance S			=	4.71

SubIndex s1 **3.87**

SubIndex s2 **0.84**

SubIndex s3 **0.00**

Index of Performance S **4.71**

Revision History

Issue No :	Re-issue Date:
Revised By:	Approved By:
Reason for Revision:	

Issue No :	Re-issue Date:
Revised By:	Approved By:
Reason for Revision:	