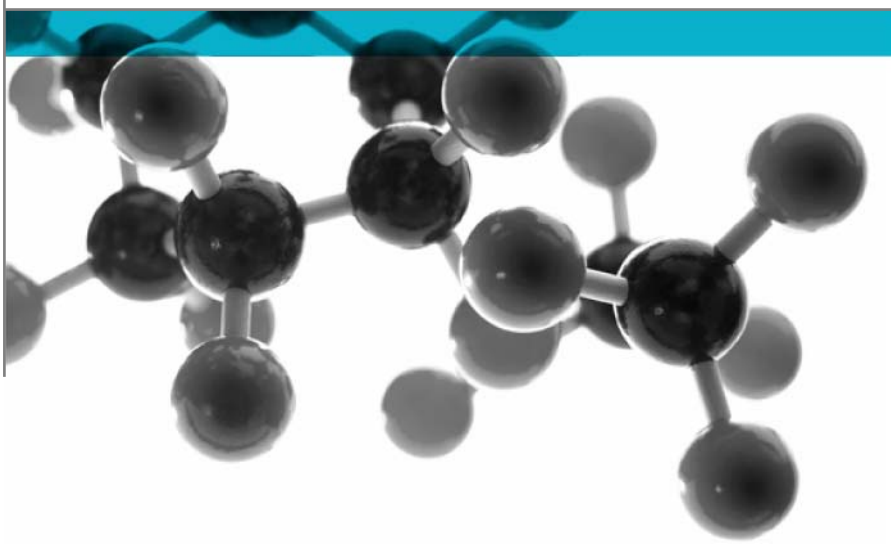
Exova Warringtonfire
Holmesfield Road
Warrington
WA1 2DS
United Kingdom

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: Teksan Jenerator Elektrik San.ve Tic. A.S.

Document Reference: 310739

Date: 12th September 2011

Issue No.: 2

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	Weight per unit area or density
Flame retardant grade polyurethane foam	"Acoustic Foam"	20mm	100kg/m^3
Please see page 5 of this test report for the full description of the product tested			

Test Sponsor Teksan Jenerator Elektrik San ve Tic. A.S., Yenidogan Mah, Edebali Cad, No:12 PK:34791 Sancaktepe, Istanbul, Turkey

Test Results:

Fire propagation index, I = 6.8

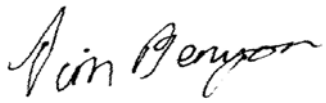
Sub index, i_1 = 2.5

Sub index, i_2 = 3.0

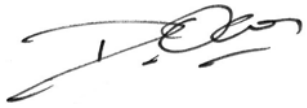
Sub index, i_3 = 1.3

Date of Test 2nd September 2011

Signatories



Responsible Officer
T. Benyon *
Technical Officer



Authorised
D. J. Owen *
Senior Technical Officer

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

Report Issued: 12th September 2011

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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 2nd September 2011 at the request of Teksan Jenerator Elektrik San ve Tic. A.S., 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 19th August 2011.

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

Material - Single substance or uniformly dispersed mixture, e.g. metal, stone, timber, concrete, mineral fibre, polymers.

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	Flame retardant grade polyurethane foam
Product reference	"Acoustic Foam"
Composition details	Flexible polyurethane foam, inorganic Hydroxide, binder, pigment & surfactane
Name of manufacturer	Teksan Jenerator Elektrik San. ve Tic. A.S.
Density	100kg/m^3 (stated by sponsor) 141kg/m^3 (determined by **Exova Warringtonfire**)
Thickness	20mm (stated by sponsor) 18.6mm (determined by **Exova Warringtonfire**)
Colour	"Black"
Flame retardant details	**See Note 1 below**
Brief description of manufacturing process	Flame retardant (Aluminium hydroxide) is infiltrated to polyurethane foam

Note 1: The sponsor of the test has provided this information but at the specific request of the sponsor, these details have been omitted from the report and are instead held on the confidential file relating to this investigation.

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	**= 6.8**
Sub index, i_1	**= 2.5**
Sub index, i_2	**= 3.0**
Sub index, i_3	**= 1.3**

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 - BS 476:PART 6:1989+A1:2009

Specimen No. : 1 **Date : 2-Sep-11**

Time mins t	Specimen Temperature Deg C Ts	Calibration Temperature Deg C Tc	Ts-Tc/10t	Sub Index Of Performance
0.50	**16**	**13**	**0.60**	
1.00	**24**	**19**	**0.50**	
1.50	**30**	**24**	**0.40**	
2.00	**35**	**28**	**0.35**	
2.50	**39**	**32**	**0.28**	
3.00	**43**	**36**	**0.23**	**2.36**
4.00	**79**	**66**	**0.33**	
5.00	**127**	**103**	**0.48**	
6.00	**163**	**133**	**0.50**	
7.00	**189**	**156**	**0.47**	
8.00	**206**	**172**	**0.43**	
9.00	**222**	**184**	**0.42**	
10.00	**234**	**196**	**0.38**	**3.00**
12.00	**252**	**213**	**0.33**	
14.00	**302**	**222**	**0.57**	
16.00	**283**	**232**	**0.32**	
18.00	**273**	**237**	**0.20**	
20.00	**267**	**244**	**0.12**	**1.53**
Total Index of Performance S			**=**	**6.90**

SubIndex s1 **2.36**

SubIndex s2 **3.00**

SubIndex s3 **1.53**

Index of Performance S **6.90**

Table 2

Laboratory Record Sheet

FIRE PROPAGATION TEST - BS 476:PART 6:1989+A1:2009

Specimen No. : 2 **Date : 2-Sep-11**

Time mins t	Specimen Temperature Deg C Ts	Calibration Temperature Deg C Tc	Ts-Tc/10t	Sub Index Of Performance
0.50	17	13	0.80	
1.00	24	20	0.40	
1.50	31	25	0.40	
2.00	35	29	0.30	
2.50	40	33	0.28	
3.00	44	36	0.27	2.45
4.00	80	66	0.35	
5.00	124	103	0.42	
6.00	160	132	0.47	
7.00	185	153	0.46	
8.00	204	172	0.40	
9.00	216	185	0.34	
10.00	229	196	0.33	2.77
12.00	251	209	0.35	
14.00	262	219	0.31	
16.00	278	228	0.31	
18.00	267	236	0.17	
20.00	264	241	0.12	1.26
Total Index of Performance S			**=**	**6.47**

SubIndex s1 **2.45**

SubIndex s2 **2.77**

SubIndex s3 **1.26**

Index of Performance S **6.47**

Table 3

Laboratory Record Sheet

FIRE PROPAGATION TEST - BS 476:PART 6:1989+A1:2009

Specimen No. : 3 **Date : 2-Sep-11**

Time mins t	Specimen Temperature Deg C Ts	Calibration Temperature Deg C Tc	Ts-Tc/10t	Sub Index Of Performance
0.50	17	13	0.80	
1.00	24	19	0.50	
1.50	30	24	0.40	
2.00	36	28	0.40	
2.50	39	32	0.28	
3.00	44	36	0.27	2.65
4.00	80	66	0.35	
5.00	136	103	0.66	
6.00	167	133	0.57	
7.00	188	156	0.46	
8.00	204	172	0.40	
9.00	220	184	0.40	
10.00	228	196	0.32	3.15
12.00	245	213	0.27	
14.00	261	222	0.28	
16.00	271	232	0.24	
18.00	276	237	0.22	
20.00	287	244	0.22	1.22
Total Index of Performance S			**=**	**7.02**

SubIndex s1 **2.65**

SubIndex s2 **3.15**

SubIndex s3 **1.22**

Index of Performance S **7.02**

Revision History

Issue No : 2	Re-issue Date: 14th September 2011
Revised By: T. Benyon	Approved By: D. J. Owen
Reason for Revision: This document replaces issue 1 (**dated 12th September 2011**) of the same number which has been withdrawn. The sponsor of the test has requested that the flame retardant details in the issue 1 report be removed and kept confidential as detailed in this issue 2 report.	

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