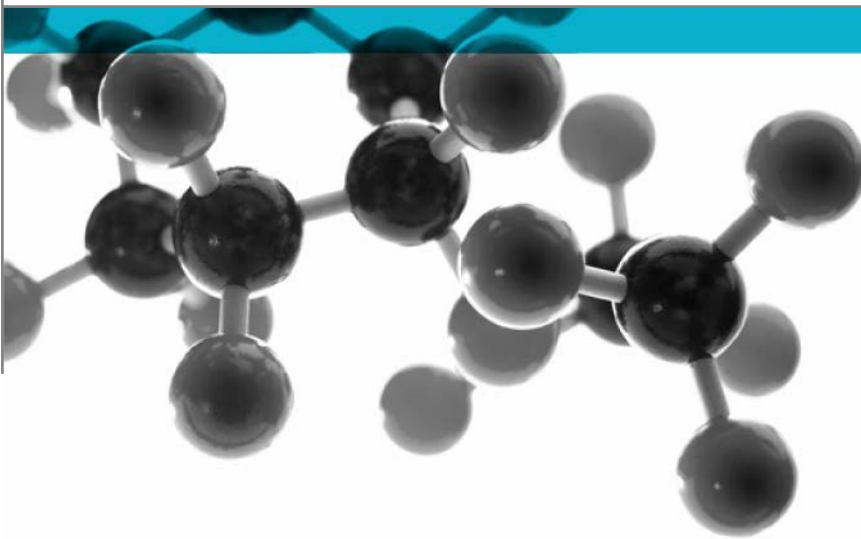


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BS 476: Part 6: 1989+A1:2009



Method Of Test For Fire Propagation For Products

A Report To: Thermaflex International Holding B.V.

Document Reference: 354660

Date: 28th July 2015

Issue No.: 1

Page 1

Testing
Advising
Assuring



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 foam material adhered to a steel substrate	"ThermaSmart Pro Sheet"	13mm	25 - 35kg/m ² *
Individual components used to manufacture composite:			
Foam (test face)	"ThermaSmart Pro Sheet"	13mm	25 - 35kg/m ³
Adhesive	"Thermafex Glue"	0.2mm	0.25kg/m ²
Substrate	"S235 Blank Steel"	3mm	7800kg/m ³
*Determined by Exova Warringtonfire			
Please see page 5 of this test report for the full description of the product tested			



Test Sponsor Thermafex International Holding B.V., Veerweg 1, 5145 NS Waalwijk, The Netherlands.

Test Results:

Fire propagation index, I	=	4.3
Sub index, i₁	=	2.8
Sub index, i₂	=	0.2
Sub index, i₃	=	1.3

Date of Test 24th July 2015

Signatories

	
Responsible Officer C. Meachin * Technical Officer	Authorised S. Deeming * Business Unit Head

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

Report Issued: 28th July 2015

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Test Details

Purpose of test	<p>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".</p> <p>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.</p>
Scope of test	<p>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.</p>
Fire test study group/EGOLF	<p>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.</p>
Instruction to test	<p>The test was conducted on the 24th July 2015 at the request of Thermaflex International Holding B.V., the sponsor of the test.</p>
Provision of test specimens	<p>The specimens were supplied by the sponsor of the test. Exova Warringtonfire was not involved in any selection or sampling procedure.</p>
Conditioning of specimens	<p>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 15th July 2015.</p> <p>Prior to the tests, all of the specimens were conditioned to constant mass at a temperature of $23 \pm 2^{\circ}\text{C}$ and a relative humidity of $50 \pm 5\%$. One specimen from the total sample submitted for test was selected for constant mass verification.</p>
Form in which the specimens were tested	<p>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.</p>
Exposed face	<p>The foam face of the specimens was exposed to the heating conditions of the test.</p>

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 foam material adhered to a steel substrate
Product reference		"ThermaSmart Pro Sheet"
Name of manufacturer		Thermafex Isolatie B.V.
Thickness		13mm (stated by sponsor) 15.1mm (determined by Exova Warringtonfire)
Weight per unit area		23.9kg/m ² (determined by Exova Warringtonfire)
Foam	Generic type	Polyolefine See Note 1 Below
	Product reference	"ThermaSmart Pro Sheet"
	Detailed description	Direct extruded polyethylene foam
	Name of manufacturer	Thermafex Isolatie B.V.
	Thickness	13mm
	Density	25 - 35kg/m ³
	Colour reference	"Anthracite"
	Trade name of flame retardant	"Thermabatch"
	Generic type of flame retardant	Halogen
Amount of flame retardant	10%	
Adhesive	Generic type	See Note 1 Below
	Product reference	"Thermafex Glue"
	Name of manufacturer	SABA
	Colour reference	"Green"
	Application thickness	0.2mm
	Application rate	0.25kg/m ²
	Application method	Trowel
	Flame retardant details	See Note 2 Below
Curing process	See Note 1 Below	
Substrate	Generic type	Steel
	Product reference	"S235 Blank Steel"
	Name of manufacturer	Wilwy
	Thickness	3mm
	Density	7800kg/m ³
	Colour reference	"Grey"
Flame retardant details	The component is inherently flame retardant	
Brief description of manufacturing process		See Note 1 Below

Note 1: The sponsor was unwilling to provide this or further 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	=	4.3
Sub index, i_1	=	2.8
Sub index, i_2	=	0.2
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.

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Table 1

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

Specimen No. : 1

Date : 24-Jul-15

Time mins t	Specimen Temperature Deg C Ts	Calibration Temperature Deg C Tc	Ts- Tc/10t	Sub Index Of Performance
0.50	18	12	1.20	2.68
1.00	24	18	0.60	
1.50	28	23	0.33	
2.00	32	27	0.25	
2.50	35	31	0.16	
3.00	40	36	0.13	
4.00	75	71	0.10	0.10
5.00	109	109	0.00	
6.00	135	137	0.00	
7.00	156	159	0.00	
8.00	170	174	0.00	
9.00	184	188	0.00	
10.00	199	199	0.00	0.10
12.00	268	215	0.44	1.50
14.00	296	223	0.52	
16.00	281	230	0.32	
18.00	262	236	0.14	
20.00	257	243	0.07	
Total Index of Performance S			=	

SubIndex s1 2.68

SubIndex s2 0.10

SubIndex s3 1.50

Index of Performance S 4.27

Table 2

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

Specimen No. : 2

Date : 24-Jul-15

Time mins t	Specimen Temperature Deg C Ts	Calibration Temperature Deg C Tc	Ts- Tc/10t	Sub Index Of Performance
0.50	19	13	1.20	
1.00	26	19	0.70	
1.50	30	25	0.33	
2.00	35	30	0.25	
2.50	38	33	0.20	
3.00	41	38	0.10	2.78
4.00	77	67	0.25	
5.00	109	105	0.08	
6.00	133	132	0.02	
7.00	150	151	0.00	
8.00	164	169	0.00	
9.00	176	182	0.00	
10.00	184	191	0.00	0.35
12.00	201	207	0.00	
14.00	284	218	0.47	
16.00	305	226	0.49	
18.00	275	235	0.22	
20.00	253	239	0.07	1.26
Total Index of Performance S			=	4.39

SubIndex s1 2.78

SubIndex s2 0.35

SubIndex s3 1.26

Index of Performance S 4.39

Table 3

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

Specimen No. : 3

Date : 24-Jul-15

Time mins t	Specimen Temperature Deg C Ts	Calibration Temperature Deg C Tc	Ts- Tc/10t	Sub Index Of Performance
0.50	18	12	1.20	
1.00	25	18	0.70	
1.50	30	23	0.47	
2.00	33	27	0.30	
2.50	37	31	0.24	
3.00	41	36	0.17	3.07
4.00	75	71	0.10	
5.00	102	109	0.00	
6.00	130	137	0.00	
7.00	151	159	0.00	
8.00	170	174	0.00	
9.00	184	188	0.00	
10.00	207	199	0.08	0.18
12.00	274	215	0.49	
14.00	273	223	0.36	
16.00	259	230	0.18	
18.00	249	236	0.07	
20.00	247	243	0.02	1.12
Total Index of Performance S			=	4.38

SubIndex s1 3.07

SubIndex s2 0.18

SubIndex s3 1.12

Index of Performance S 4.38

Revision History

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