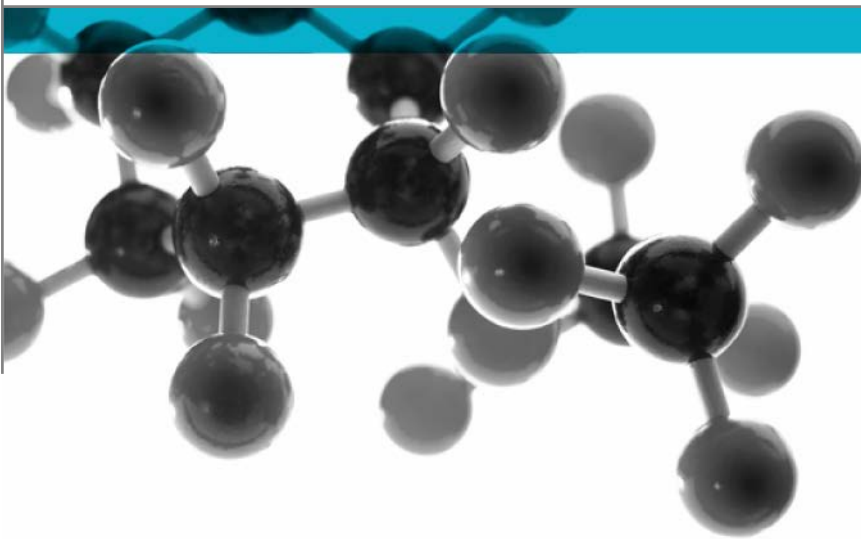


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# BS 476: Part 7: 1997



## Method For Classification Of The Surface Spread Of Flame Of Products

A Report To: Thermaflex International Holding B.V.

Document Reference: 354663

Date: 28<sup>th</sup> July 2015

Issue No.: 1

Page 1

Testing  
Advising  
Assuring



## Executive Summary

**Objective** To determine the surface spread of flame classification of the following product when tested in accordance with BS 476: Part 7: 1997.


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

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

**Test Results:** **Class 1**


**Date of Test** 22<sup>nd</sup> July 2015

## Signatories



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Responsible Officer  
 C. Meachin \*  
 Technical Officer



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Authorised  
 S. Deeming \*  
 Business Unit Head

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

Report Issued: 28<sup>th</sup> July 2015

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<b>CONTENTS</b>	<b>PAGE NO.</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>2</b>
<b>SIGNATORIES.....</b>	<b>2</b>
<b>TEST DETAILS.....</b>	<b>4</b>
<b>DESCRIPTION OF TEST SPECIMENS.....</b>	<b>5</b>
<b>TEST RESULTS .....</b>	<b>6</b>
<b>APPENDIX 1 – TEST RESULTS.....</b>	<b>7</b>
<b>APPENDIX 2 – CLASSIFICATION CRITERIA .....</b>	<b>8</b>
<b>REVISION HISTORY .....</b>	<b>9</b>

## Test Details

<b>Purpose of test</b>	To determine the performance of a product when it is subjected to the conditions of the test specified in BS 476: Part 7: 1997, "Fire tests on building materials and structures, method for classification of the surface spread of flame of products". This test was therefore performed in accordance with the procedure specified in BS 476: Part 7: 1997 and this report should be read in conjunction with that British Standard.
<b>Scope of test</b>	BS 476: Part 7: 1997 specifies a method of test for measuring the lateral spread of flame along the surface of a specimen of a product orientated in the vertical position, and a classification system based on the rate and extent of flame spread. It provides data suitable for comparing the performances of essentially flat materials, composites, or assemblies, which are used primarily as the exposed surfaces of walls or ceilings.
<b>Fire test study group/EGOLF</b>	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.
<b>Instruction to test</b>	The test was conducted on the 22 <sup>nd</sup> July 2015 at the request of Thermaflex International Holding B.V., the sponsor of the test.
<b>Provision of test specimens</b>	The specimens were supplied by the sponsor of the test. <b>Exova Warringtonfire</b> was not involved in any selection or sampling procedure.
<b>Conditioning of specimens</b>	<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 15<sup>th</sup> July 2015.</p> <p>Prior to the tests, all of the specimens were conditioned to constant mass at a temperature of <math>23 \pm 2^{\circ}\text{C}</math> and a relative humidity of <math>50 \pm 5\%</math>. One specimen from the total sample submitted for test was selected for constant mass verification.</p>
<b>Form in which the specimens were tested</b>	Assembly - Fabrication of materials and/or composites that can contain air gaps. Each specimen was placed over 25mm thick by 20mm wide calcium silicate based spacers positioned around its perimeter and mounted onto a backing board so that a 25mm enclosed air gap was provided between the unexposed face of the specimen and the backing board.
<b>Exposed face</b>	The foam face 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 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 <b>Exova Warringtonfire</b> )
Weight per unit area		23.9kg/m <sup>2</sup> (determined by <b>Exova Warringtonfire</b> )
Foam	Generic type	Polyolefine <b>See Note 1 Below</b>
	Product reference	"ThermaSmart Pro Sheet"
	Detailed description	Direct extruded polyethylene foam
	Name of manufacturer	Thermafex Isolatie B.V.
	Thickness	13mm
	Density	25 - 35kg/m <sup>3</sup>
	Colour reference	"Anthracite"
	Trade name of flame retardant	"Thermabatch"
	Generic type of flame retardant	Halogen
Amount of flame retardant	10%	
Adhesive	Generic type	<b>See Note 1 Below</b>
	Product reference	"Thermafex Glue"
	Name of manufacturer	SABA
	Colour reference	"Green"
	Application thickness	0.2mm
	Application rate	0.25kg/m <sup>2</sup>
	Application method	Trowel
	Flame retardant details	<b>See Note 2 Below</b>
Curing process	<b>See Note 1 Below</b>	
Substrate	Generic type	Steel
	Product reference	"S235 Blank Steel"
	Name of manufacturer	Wilwy
	Thickness	3mm
	Density	7800kg/m <sup>3</sup>
	Colour reference	"Grey"
Flame retardant details	The component is inherently flame retardant	
Brief description of manufacturing process		<b>See Note 1 Below</b>

**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 and observations** The test results for the individual specimens, together with observations made during the test and comments on any difficulties encountered during the test are given in Appendix 1.

**Classification** **In accordance with the class definitions given in BS 476: Part 7: 1997; the specimens tested are classified as Class 1.**

**Criteria for classification** If the prefix 'D' or suffix 'R' or 'Y' is included in the classification, this indicates that the results should be treated with caution. An explanation of the reason for the prefix and suffixes is given in Appendix 2, together with the classification limits specified in the Standard.

**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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## Appendix 1 – Test Results

SPECIMEN No.	1	2	3	4	5	6
Maximum distance travelled at 1.5 minutes (mm)	60	60	60	60	60	60
Distance (mm)	Time to travel to indicated distance (minutes : seconds)					
75						
165						
190						
215						
240						
265						
290						
375						
455						
500						
525						
600						
675						
710						
750						
785						
825						
Time to reach maximum distance travelled	1:00	1:00	1:00	1:00	1:00	1:00
Maximum distance travelled in 10 minutes (mm)	60	60	60	60	60	60

Note: Six specimens are usually tested. If the test on any specimen is deemed to be invalid, as defined in the Standard, it is permissible for up to a maximum of nine specimens to be tested in order to obtain the six valid test results.

### Observations made during test and comments on any difficulties encountered during the test:

In the case of all specimens tested all sustained flaming ceased after 1:00.

In the case of specimens 1, 3, 5 and 6, flash flaming occurred across the face of each specimen during the first 30 seconds of the test extending up to a maximum distance of 100mm

## Appendix 2 – Classification criteria

Classification of spread of flame	Spread of Flame at 1.5 min		Final Spread of Flame		
	Classification	Limit (mm)	Limit for one specimen (mm)	Limit (mm)	Limit for one specimen (mm)
	Class 1	165	165 + 25	165	165 + 25
	Class 2	215	215 + 25	455	455 + 45
	Class 3	265	265 + 25	710	710 + 75
	Class 4	Exceeding the limits for class 3			

### Explanation of prefix and suffixes which may be added to the classification

1. A suffix R is added to the classification if more than six specimens are required in order to obtain six valid test results (e.g. class 2R).
2. A prefix D is added to the classification of any product which does not comply with the surface characteristics specified in the Standard and has therefore been tested in a modified form (e.g. class D3).
3. A suffix Y is added to the classification if any softening and/or other behaviour that may affect the flame spread occurs (e.g. class 3Y).

For example, a classification of D3RY could be achieved indicating (a) a modified surface has been used; (b) a class 3 result has been obtained; (c) additional specimens have been used to obtain 6 valid results and; (d) softening and/or other behaviour has occurred which is considered to have affected the test result.



## Revision History

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Revised By:	Approved By:
Reason for Revision:	

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