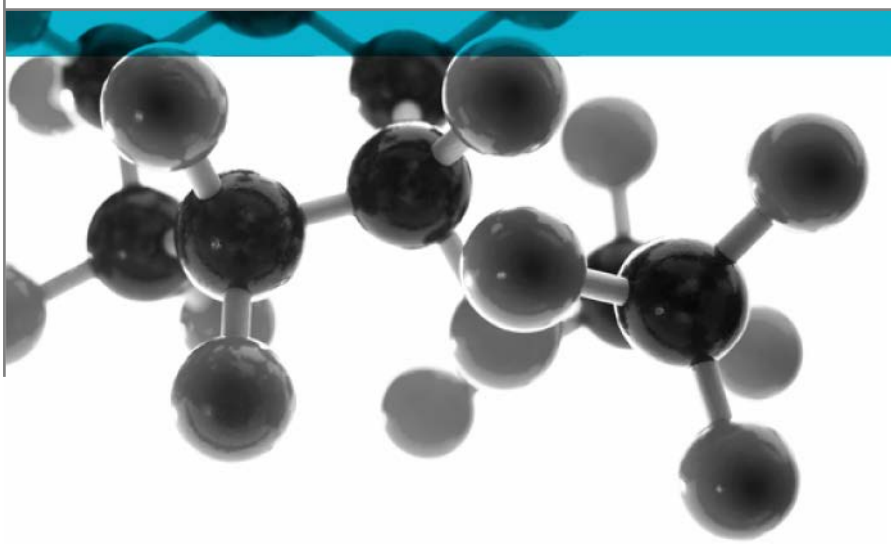
Exova Warringtonfire
Holmesfield Road
Warrington
WA1 2DS
United Kingdom

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

BS 476: Part 7: 1997



Method For Classification Of The Surface Spread Of Flame Of Products

A Report To: HL Plastics Ltd

Document Reference: 383365

Date: 16th May 2017

Issue No.: 1

Testing
Advising
Assuring

UKAS TESTING
0249

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
PVCu hollow Soffit Board	"LSB"	9mm	SG 1.45 / 2.88kg/m²
Please see page 5 of this test report for the full description of the product tested			

Test Sponsor HL Plastics Ltd, Flamstead House, Denby Hall Business Park, Denby, Derbyshire, DE5 8JX

Test Results: **Class 2Y**

An uncertainty of measurement estimation has been conducted in relation to the distance travelled by the flame front and the findings are as detailed on page 8.

Date of Test 12th May 2017

Signatories

Responsible Officer
C. Meachin *
Technical Officer

Authorised
S. Deeming *
Business Unit Head

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

Report Issued: 16th May 2017

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 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.
Scope of test	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.
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 12th May 2017 at the request of HL Plastics 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 were received on the 3rd May 2017 and were conditioned to constant mass at a temperature of 23 ± 2°C and a relative humidity of 50 ± 5% prior to testing.
Form in which the specimens were tested	Material - Single substance or uniformly dispersed mixture, e.g. metal, stone, timber, concrete, mineral fibre, polymers. Each specimen was tested in direct contact with a nominally 12mm thick non-combustible backing board.
Exposed face	The decorative 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.

Generic type	PVCu hollow Soffit Board
Product reference	"LSB"
Name of manufacturer	Liniar
Overall thickness	9mm (stated by sponsor) 8.72mm (determined by **Exova Warringtonfire**)
Density / weight per unit area	SG 1.45 / 2.88kg/m² (stated by sponsor) 2.45kg/m^2 (determined by **Exova Warringtonfire**)
Wall thickness	0.8mm
Rib dimensions	0.8mm
Colour reference	"White"
Flame retardant details	**See Note 1 below**
Brief description of manufacturing process	Extrusion

Note 1: 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 2Y.

An uncertainty of measurement estimation has been conducted in relation to the distance travelled by the flame front and the findings are as detailed on page 8.

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.

Appendix 1 – Test Results

SPECIMEN No.	1	2	3	4	5	6
Maximum distance travelled at 1.5 minutes (mm)	70	70	70	70	70	70
Distance (mm)	Time to travel to indicated distance (minutes : seconds)					
75	2:09	2:37		2:06		2:19
165	2:50	2:53		2:29		2:25
190				2:40		2:36
215						
240						
265						
290						
375						
455						
500						
525						
600						
675						
710						
750						
785						
825						
Time to reach maximum distance travelled	3:00	2:53	1:30	2:40	1:00	2:36
Maximum distance travelled in 10 minutes (mm)	180	165	70	190	70	190

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 specimens 1, 2, 4 and 6 all sustained flaming ceased after 1:00. Re-ignition occurred 1:54, 2:37, 1:50 and 1:47 respectively.

In the case of specimens 1, 3 and 4 flash flaming occurred across the face of the specimen during the second minute of the test at a maximum distance of 100mm.

In the case of each specimen tested the material began to soften and melt from the second minute of the test, progressively slumping away from the test position as the test continued, resulting in the entire specimen slumping from the test position at the end of the test. It was considered that this behaviour affected the surface spread of flame characteristics of the product, therefore a suffix “Y” has been added to the classification.

Uncertainty of measurement

Specimen No.	1	2	3	4	5	6
Maximum distance travelled at 1.5 minutes (mm)	±4	±4	±4	±4	±4	±4
Maximum distance travelled in 10 minutes (mm)	±11	±10	±4	±11	±4	±11

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

Appendix 2 – Classification Criteria

Classification of spread of flame

Classification	Spread of Flame at 1.5 min		Final Spread of Flame	
	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

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

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