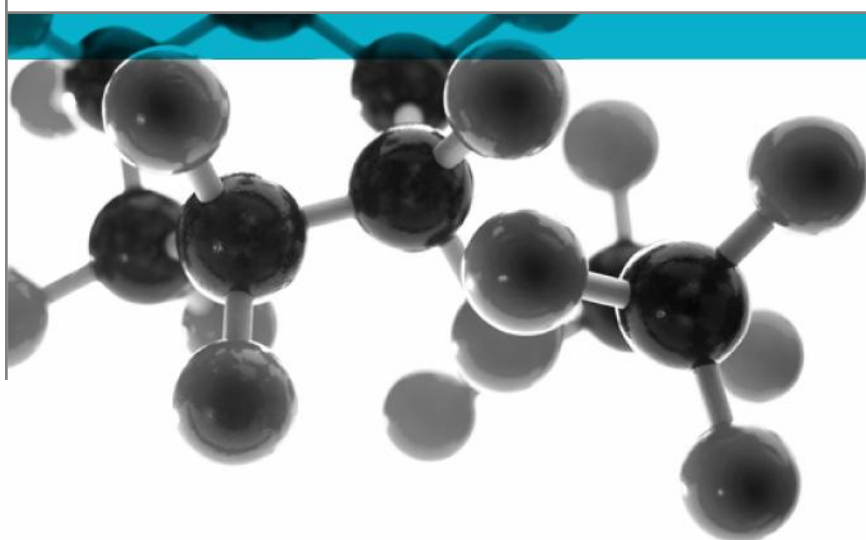


BS 476: Part 7: 1997



Method For Classification Of The Surface Spread Of Flame Of Products

A Report To: Global Innovation LLC

Document Reference: 340144

Date: 16th May 2014

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
Synthetic thatch shingles	"Endureed Premium Thatch Products"	15.8mm (5/8inches)	8.54kg/m ² (1.75Lb/ft ²)
Individual components used to manufacture composite:			
Straw	"Endureed PVC Reed"	Between 0.5mm and 1.8mm (Between 0.020 and 0.070inches)	Unable to provide
Steel binder	"Stainless Steel Binder"	0.64mm (0.025inches)	Unable to provide
Please see page 5 of this test report for the full description of the product tested			

Test Sponsor Global Innovation LLC, 496 SW Ring CT, Lake City, 32025, United States

Test Results: **Class 2**

Date of Test 30th April 2014

Signatories

	
Responsible Officer C. Meachin * Technical Officer	Authorised T. Mort * Senior Technical Officer

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

Report Issued: 16th May 2014

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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 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 30 th April 2014 at the request of Global Innovation LLC, 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 16 th April 2014 and were conditioned to constant mass at a temperature of $23 \pm 2^{\circ}\text{C}$ and a relative humidity of $50 \pm 10\%$ prior to testing.
Form in which the specimens were tested	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.
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		Synthetic thatch shingles
Product reference		"Endureed Premium Thatch Products"
Name of manufacturer		Global Innovation LLC
Thickness		15.8mm (5/8inches) (stated by sponsor) 10mm (determined by Exova Warringtonfire)
Weight per unit area		8.54kg/m ² (1.75Lb/ft ²) (stated by sponsor) 4.64kg/m ² (determined by Exova Warringtonfire)
Straw	Generic type	Polyvinyl choride (PVC)
	Product reference	"Endureed PVC Reed"
	Name of manufacturer	See Note 1 Below
	Overall thickness	Between 0.5mm and 1.8mm (Between 0.020 and 0.070inches)
	Weight per unit area	See Note 2 Below
	Colour reference	"Endureed Color Family"
	Flame retardant details	See Note 3 Below
Steel binder	Generic type	Stainless steel
	Product reference	"Stainless Steel Binder"
	Name of manufacturer	See Note 1 Below
	Thickness	0.64mm (0.025inches)
	Weight per unit area	See Note 2 Below
	Colour reference	"B2 Stainless Steel"
	Flame retardant details	See Note 3 Below
Brief description of manufacturing process		See Note 1 Below

Note 1: The sponsor was unwilling to provide this information.

Note 2: The sponsor was unable to provide this information.

Note 3: 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 2.
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. This report may only be reproduced in full. Extracts or abridgements shall not be published without permission of Exova Warringtonfire.

Appendix 1 – Test Results

SPECIMEN No.	1	2	3	4	5	6
Maximum distance travelled at 1.5 minutes (mm)	90	100	150	75	75	100
Distance (mm)	Time to travel to indicated distance (minutes : seconds)					
75	0:48	0:30	0:57	0:55	0:55	0:51
165	3:05	3:27	1:45	2:25	3:48	4:34
190	3:50	3:43	1:57	5:32	4:10	
215			2:07			
240						
265						
290						
375						
455						
500						
525						
600						
675						
710						
750						
785						
825						
Time to reach maximum distance travelled	3:50	3:43	2:07	5:32	4:10	4:34
Maximum distance travelled in 10 minutes (mm)	190	190	215	190	190	165

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:

Shortened specimens measuring 295mm in length were submitted for testing.

In the case of each specimen tested, the material began to soften and melt during the second minute of the test but the material remained on the reference line. It was considered that this behaviour did not affect the surface spread of flame characteristics of the product, therefore a suffix "Y" has not been added to the classification.

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 for one specimen (mm)
	Class 1	165	165 + 25	165 + 25
	Class 2	215	215 + 25	455 + 45
	Class 3	265	265 + 25	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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