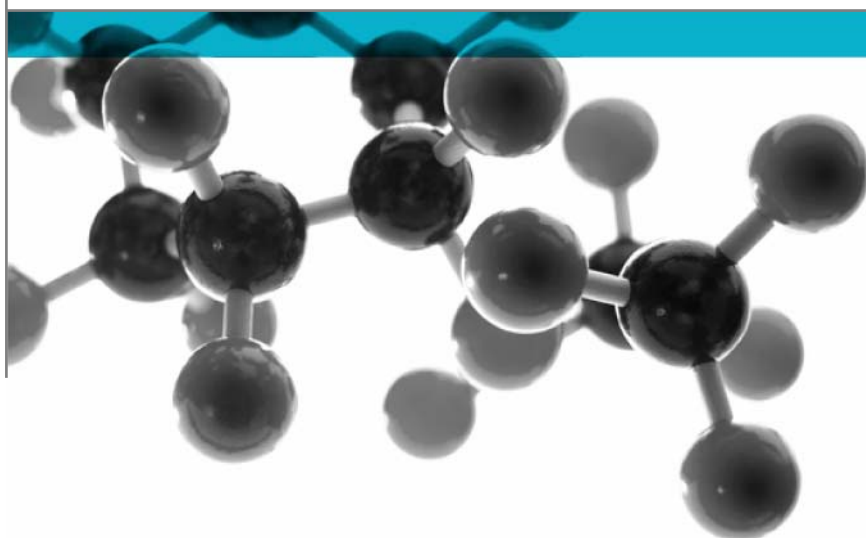


Exova Warringtonfire
Holmesfield Road
Warrington
WA1 2DS
United Kingdom

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: Jiangyin Litai Ornamental Material Co., Ltd

Document Reference: 192838

Date: 5th May 2010

Issue No.: 1

Page 1

Testing
Advising
Assuring



Executive Summary

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


Generic Description	Product reference	Thickness	Weight per unit area or specific gravity
Aluminium composite panel	"Haida (3XTAB1030438C02)"	4mm	6.8kg/m ²
Individual components used to manufacture composite:			
Polyvinylidene fluoride (PVDF) coating	"Fluorocarbon Coating"	Unwilling to provide	1.53
Aluminium panel	"3003H24"	0.5mm	2.73kg/m ²
Polyethylene core	"APCP"	3mm	1.35µm/m ²
Aluminium panel	"3003H24"	0.5mm	2.73kg/m ²
Polyester coating	"RB-2000"	Unwilling to provide	1.55
Please see page 5 of this test report for the full description of the product tested			

Test Sponsor Jiangyin Litai Ornamental Material Co., Ltd, No. 388, Qinfeng Road, Huashi Town, Jiangyin City, Jiangsu Province, P.R. China

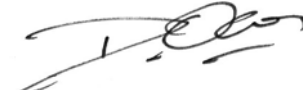
Test Results: **Class 1**

Date of Test 29th April 2010


Signatories



Responsible Officer
T. Mort *
Senior Technical Officer



Approved
D. J. Owen *
Senior Technical Officer



Authorised
C. Dean *
Operations Manager

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

Report Issued: 5th May 2010

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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 29 th April 2010 at the request of Nanjing Smart Technology Co., Ltd, a representative of the sponsor of the test.
Provision of test specimens	The specimens were supplied by Nanjing Smart Technology Co., Ltd, a representative of the sponsor of the test. Exova Warringtonfire was not involved in any selection or sampling procedure.
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 26th April 2010.</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	Composite - Combination of materials which are generally recognised in building constructions as discrete entities e.g. coated or laminated materials. Each specimen was tested in direct contact with a nominally 12mm thick non-combustible backing board.
Exposed face	The PVDF coated face of the specimens was exposed to the heating conditions of the test.

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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		Fire-proof aluminium composite panel product
Product reference of composite		Brand – “Haida” Type – “3XTAB1030438C02”
Overall thickness of composite		4mm (stated by the sponsor) 4.17mm (determined by Exova Warringtonfire)
Overall weight per unit area of composite		6.8 kg/ m ² (stated by sponsor) 6.83kg/m ² (determined by Exova Warringtonfire)
Product configuration		<ul style="list-style-type: none"> • Coating (pearl black) • Aluminium panel • Core • Aluminium panel • Coating (grey)
Coating (Black)	Generic type	Polyvinylidene fluoride (PVDF)
	Product reference	“Fluorocarbon Coating”
	Name of manufacturer	PPG Paint Tianjin Co., Ltd.
	Colour	“Pearl Black”
	Number of coats	Three
	Application rate per coat	See Note 1 below
	Application method	Rolling
	Specific gravity	1.53
	Flame retardant details	See Note 1 below
	Curing process per coat	Roll on the panel then dry then repeat three times
Aluminium panel	Product reference	“3003H24”
	Generic type	Aluminum panel
	Name of manufacturer	Southwest Aluminium (Group) Co., Ltd
	Thickness	0.5mm
	Weight per unit area	2.73 kg/ m ²
	Flame retardant details	The substrate is inherently flame retardant
Core	Product reference	“APCP”
	Generic type	Polyethylene (PE) (Fire prevention materials)
	Name of manufacturer	Shandong TianYe Plastination Ltd
	Thickness	3 mm
	Density / weight per unit area	1.35um/m ²
	Trade name of flame retardant	“MgO ₂ and AlO ₂ ”
	Generic type of flame retardant	MgO ₂ and AlO ₂
Amount of flame retardant	100%	
Aluminium panel	Product reference	“3003H24”
	Generic type	Aluminium panel
	Name of manufacturer	Southwest Aluminium (Group) Co., Ltd
	Thickness	0.5 mm
	Weight per unit area	2.73kg/m ²
	Flame retardant details	The substrate is inherently flame retardant

Coating (grey)	Generic type	"RB-2000"
	Product reference	Polyester
	Name of manufacture	Taizhou Taiyang Paints & Coatings Industry Co. Ltd
	Colour	"Grey"
	Number of coats	See Note 1 below
	Application rate per coat	See Note 1 below
	Application method	Rolling
	Specific gravity	1.55
	Flame retardant details	See Note 1 below
Curing process per coat	Roll the coating on the panel with the high temperature to cure	
Brief description of manufacturing process of coatings	The sponsor did not provide details relating to the manufacturing process of the composite	

Note 1. The sponsor of the test was unwilling to provide this information

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)	<50	<50	<50	<50	<50	<50
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)	<50	<50	<50	<50	<50	<50

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:

NONE

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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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