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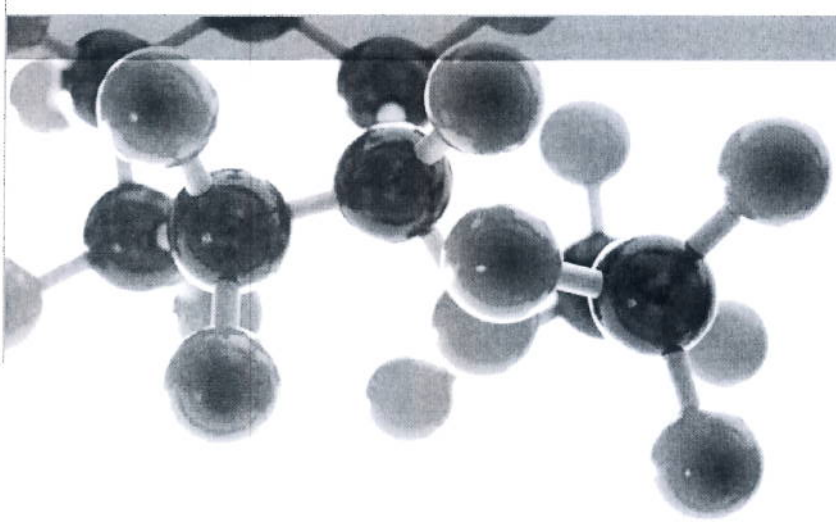
BS 476: Part 7: 1997



Method For Classification Of The Surface Spread Of Flame Of Products

A Report To: Sherwin-Williams Italy S.r.l.

Document Reference: 366273

Date: 27th May 2016

Issue No.: 1

Testing
Advising
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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 / application rate	Weight per unit area / density / specific gravity
Clear high gloss solvent based fire-retardant coating system applied to a medium density fibre board (MDF) substrate	"Clear"	19.88mm *	13.08kg/m^2 *
Individual components used to manufacture composite:			
Final coating product (test face)	416-0002/99 Topcoat hardened with 100% 812-89 W/W with 5% thinner 927-02 W/W"	120g/m^2	0.99kg/l
Second coating product	136-0001/2 Basecoat With 50% 86V-80 W/W with 2% 830-36 W/W With 2% PZ4363 W/W"	2 x 250g/m^2	0.99kg/l
First coating product	251-0065/2 Primer Hardened With 100% 812-07 W/W With 50% Thinner 922-42 W/W"	100g/m^2	0.92kg/l
MDF	Unwilling to provide	Unwilling to provide	800-1200kg/m^3
***Determined by Exova Warringtonfire**			
Please see pages 5 & 6 of this test report for the full description of the product tested			

Test Sponsor Sherwin-Williams Italy S.r.l., Via del Fiffo 12, 40065 Pianoro (BO), Italy.

Test Results: **Class 1**

Date of Test 26th May 2016

Signatories

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

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

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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 26th May 2016 at the request of Sherwin-Williams Italy S.r.l., 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 20th May 2016 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	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 coated 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		Clear high gloss solvent based fire-retardant coating system applied to a MDF substrate
Product reference		"Clear"
Name of manufacturer		Sherwin Williams Italy
Thickness		19.88mm (determined by **Exova Warringtonfire**)
Weight per unit area		13.08kg/m^2 (determined by **Exova Warringtonfire**)
Top coat (Test face)	Generic type	Solvent-based
	Product reference	416-0002/99 Topcoat hardened with 100% 812-89 W/W with 5% thinner 927-02 W/W"
	Name of manufacturer	Sherwin Williams
	Colour reference	"Clear"
	Number of coats	One
	Application rate per coat	120g/m^2
	Density	0.99kg/l
	Application method	Spray
	Trade name of flame retardant	**See Note 1 below**
	Generic type of flame retardant	Chloroparraffines, ammonium polyphosphates
	Amount of flame retardant	**See Note 1 below**
	Curing process per coat	Room temperature
Second coats	Generic type	Solvent-based
	Product reference	136-0001/2 Basecoat With 50% 86V-80 W/W with 2% 830-36 W/W With 2% PZ4363 W/W"
	Name of manufacturer	Sherwin Williams
	Colour reference	"Clear"
	Number of coats	Two
	Application rate per coat	250g/m^2
	Density	0.99kg/l
	Application method	Spray
	Trade name of flame retardant	**See Note 1 below**
	Generic type of flame retardant	Chloroparraffines, ammonium polyphosphates
	Amount of flame retardant	**See Note 1 below**
	Curing process per coat	Room temperature

Continued on next page

First coat	Generic type	Solvent-based
	Product reference	"TU0565/00 - 251-0065/2 – TL4556 Primer Hardened With 100% TH0765/00 - 812-07 – TV4107 W/W With 50% Thinner DT1150/00 - 922-42 - TT4224 W/W"
	Name of manufacturer	Sherwin Williams
	Colour reference	"Clear"
	Number of coats	One
	Application rate per coat	100g/m²
	Density	0.92kg/l
	Application method	Spray
	Trade name of flame retardant	**See Note 1 below**
	Generic type of flame retardant	Chloroparraffines, ammonium polyphosphates
	Amount of flame retardant	**See Note 1 below**
	Curing process per coat	Room temperature
MDF	Generic type	Medium density fibreboard (MDF)
	Product reference	**See Note 1 below**
	Thickness	**See Note 1 below**
	Density	800 - 1200kg/m³
	Name of supplier	**See Note 1 below**
	Flame retardant details	**See Note 2 below**
	Cycle details	**See Note 1 below**
Brief description of manufacturing process		**See Note 1 below**

Note 1: The sponsor was unwilling to provide this 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.

Appendix 1 – Test Results

SPECIMEN No.	1	2	3	4	5	6
Maximum distance travelled at 1.5 minutes (mm)	75	60	60	60	60	60
Distance (mm)	Time to travel to indicated distance (minutes : seconds)					
75	0:39	--:--	--:--	3:14	--:--	3:27
165						
190						
215						
240						
265						
290						
375						
455						
500						
525						
600						
675						
710						
750						
785						
825						
Time to reach maximum distance travelled	0:39	3:04	4:10	3:14	5:01	10:00
Maximum distance travelled in 10 minutes (mm)	75	85	150	75	110	150

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 2, 3, 4, 5 and 6 transitory flaming occurred across the face of each specimen during the first minute of each test extending up to a maximum distance of 265mm.

In the case of specimens 1, 3, 4, 5 and 6, re-ignition occurred above the reference line at 2:48, 2:41, 3:01, 2:57 and 3:02 extending up to a maximum distance of 290mm, 75mm, 290mm, 215mm and 265mm respectively.

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:	