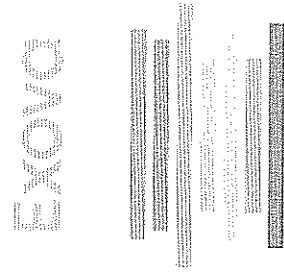
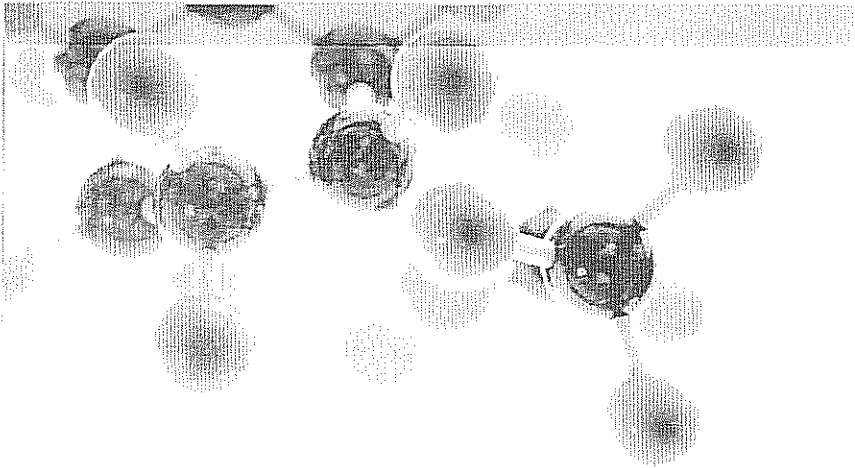


Exova Warringtonfire  
Holmesfield Road  
Warrington  
WA1 2DS  
United Kingdom

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: Newmor

Document Reference: 312395

Date: 9<sup>th</sup> November 2011

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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.

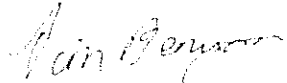

Generic Description	Product reference	Thickness	Weight per unit area or density
A wall covering adhered to plywood	"Newmor Vinyl Wallcovering"	3 ± 0.2mm	2.1kg/m <sup>2</sup>
<b>Individual components used to manufacture composite:</b>			
Wall covering	"Newmor Vinyl Wallcovering"	0.5mm	260-300g/m <sup>2</sup>
Adhesive	"Dorus FD/1105"	Not applicable	120g/m <sup>2</sup>
Plywood	Unable to provide	2.7 ± 0.2mm	Unable to provide
<b>Please see page 5 of this test report for the full description of the product tested</b>			

**Test Sponsor** Newmor, Madoc Works, Henfaes Lane, Welshpool, Montgomeryshire, SY21 7BE

**Test Results:** **Class 2**

**Date of Test** 18<sup>th</sup> & 26<sup>th</sup> October 2011

## Signatories

	
Responsible Officer T. Benyon * Technical Officer	Authorised S Deeming * Senior Technical Officer

\* For and on behalf of Exova Warringtonfire.

Report Issued: 9<sup>th</sup> November 2011

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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 18 <sup>th</sup> & 26 <sup>th</sup> October 2011 at the request of Newmor, the sponsor of the test.
Provision of test specimens	The specimens were supplied by the sponsor of the test. <b>Exova Warringtonfire</b> was not involved in any selection or sampling procedure.
Conditioning of specimens	The specimens were received on the 14 <sup>th</sup> October 2011 and were conditioned to constant mass at a temperature of $23 \pm 2^{\circ}\text{C}$ and a relative humidity of $50 \pm 5\%$ 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	The decorative wall covering 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 of composite		A wall covering adhered to plywood		
Weight per unit area of composite		2.1kg/m <sup>2</sup> (stated by sponsor) 2.07kg/m <sup>2</sup> (determined by Exova Warringtonfire)		
Thickness of composite		3 ± 0.2mm (stated by sponsor) 3.44mm (determined by Exova Warringtonfire)		
Wall Covering	Thickness of wall covering	0.5mm		
	Weight per unit area of wall covering	260-300g/m <sup>2</sup>		
	Name of manufacturer of wall covering	Newmor		
	Product reference of wall covering	"Newmor Vinyl Wallcovering"		
	Decorative covering	Product reference	"Newmor Vinyl Wallcovering"	
		Generic type	Vinyl	
		Thickness	See Note 1 below	
		Weight per unit area / density	See Note 1 below	
		Name of manufacturer	Newmor	
		Colour	"118"	
	Paper backing	Flame retardant details	See Note 2 below	
		Product reference	See Note 3 below	
		Generic type	Paper	
		Thickness	See Note 1 below	
		Weight per unit area / density	See Note 1 below	
		Name of manufacturer	See Note 3 below	
	Adhesive	Flame retardant details	See Note 2 below	
		Product reference	"Dorus FD/1105"	
Generic type		Polyvinyl acetate		
Name of manufacturer		See Note 1 below		
Application rate		120g/m <sup>2</sup>		
Application method		Roller		
Substrate	Flame retardant details	See Note 2 below		
	Generic description	Far Eastern plywood		
	Trade name	See Note 4 below		
	Timber species	See Note 4 below		
	Thickness	2.7 ± 0.2mm		
	Density	See Note 4 below		
	No. of Ply's	3		
	Trade name of adhesive used to bond the wood together	See Note 4 below		
	Flame retardant details	See Note 2 below		
	Net chemical retention	See Note 4 below		
Cycle details	See Note 4 below			

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Brief description of manufacturing process	See Note 4 below
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**Note 1:** The sponsor of the test 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 this component.

**Note 3:** The sponsor of the test has provided this information but at the specific request of the sponsor, these details have been omitted from the report and are instead held on the confidential file relating to this investigation.

**Note 4:** The sponsor of the test was unable to provide this information.

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## 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.

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## Appendix 1 – Test Results

SPECIMEN No.	1	2	3	4	5	6
Maximum distance travelled at 1.5 minutes (mm)	140	130	140	130	120	120
Distance (mm)	Time to travel to indicated distance (minutes : seconds)					
75	0:21	0:25	0:20	0:20	0:25	0:21
165	1:49	2:20	1:48	2:06	2:11	2:02
190	2:07	2:25	2:31	2:20	2:23	2:05
215	2:23	2:30	2:35	3:28	2:25	2:08
240	2:54	3:06	2:40	3:33	2:39	2:12
265	5:36	3:32	2:47	3:37	5:02	2:21
290	5:49	3:48	3:03		5:06	2:57
375						
455						
500						
525						
600						
675						
710						
750						
785						
825						
Time to reach maximum distance travelled	7:13	3:48	3:10	3:37	6:02	4:30
Maximum distance travelled in 10 minutes (mm)	340	290	300	265	330	340

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.

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