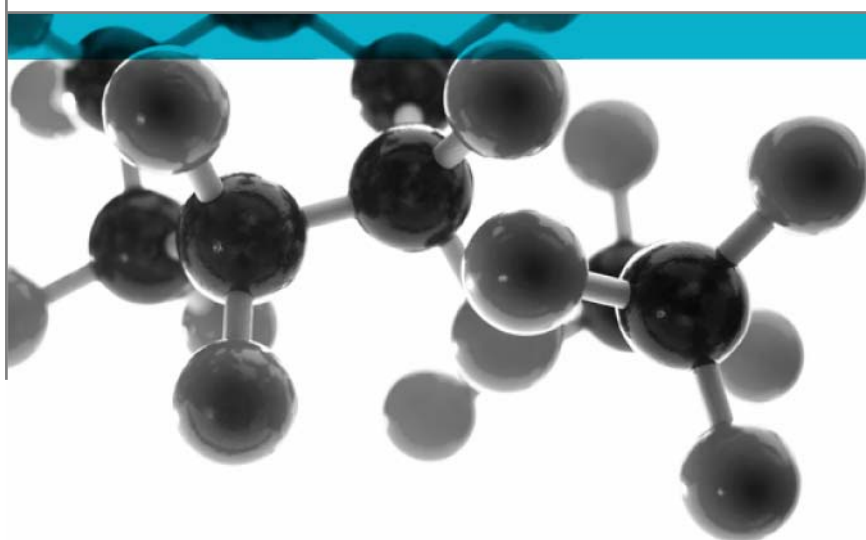


Exova Warringtonfire  
Holmesfield Road  
Warrington  
WA1 2DS  
United Kingdom

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: Parex USA Incorporated

Document Reference: 189829

Date: 15<sup>th</sup> April 2010

Issue No.: 2

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.

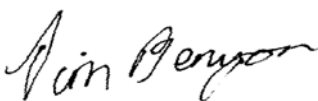
Generic Description	Product reference	Thickness or application rate	Weight per unit area or density
External Wall Insulation System	"Parex Standard System"	50mm	17.3kg/m <sup>2</sup> *
<b>Individual components used to manufacture composite:</b>			
Acrylic latex	"Parex DPR Finish"	2.5kg/m <sup>2</sup>	1.75g/cm <sup>3</sup>
Glass fibre fabric	"Standard Mesh"	0.47mm	160g/m <sup>2</sup>
Glass fibre fabric	"Heavy Mesh"	1.1mm	525g/m <sup>2</sup>
Portland cement-acrylic	"Parex Base Coat & Adhesive 121" / "Maite Monocomposant"	2 <sup>nd</sup> coat: 2.5 kg/m <sup>2</sup> 1 <sup>st</sup> coat: 4.5 kg/m <sup>2</sup>	1.45g/cm <sup>3</sup>
Moulded bead expanded polystyrene	"Aerobord"	35mm *	14kg/m <sup>3</sup>
Magnesium base render board	Unable to provide	9mm	1050kg/m <sup>3</sup>
*determined by Exova Warringtonfire			
Please see page 5 of this test report for the full description of the product tested			

**Test Sponsor** Parex USA Incorporated, 4125 E. LA Palma Ave, Anaheim, California, 92807, USA

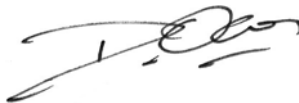
**Test Results:** **Class 1**

**Date of Test** 20<sup>th</sup> January 2010


## Signatories



Responsible Officer  
T. Benyon \*  
Technical Officer



Approved  
D. J. Owen \*  
Senior Technical Officer



Authorised  
C. Dean \*  
Operations Manager

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

Report Issued: 15<sup>th</sup> April 2010

This version of the report has been produced from a pdf format electronic file that has been provided by Exova Warringtonfire to the sponsor of the report and must only be reproduced in full. Extracts or abridgements of reports must not be published without permission of Exova Warringtonfire

<b>CONTENTS</b>	<b>PAGE NO.</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>2</b>
<b>SIGNATORIES.....</b>	<b>2</b>
<b>TEST DETAILS.....</b>	<b>4</b>
<b>DESCRIPTION OF TEST SPECIMENS.....</b>	<b>5</b>
<b>TEST RESULTS .....</b>	<b>8</b>
<b>APPENDIX 1 – TEST RESULTS .....</b>	<b>9</b>
<b>APPENDIX 2 – CLASSIFICATION CRITERIA .....</b>	<b>10</b>
<b>REVISION HISTORY .....</b>	<b>ERROR! BOOKMARK NOT DEFINED.</b>

## Test Details

<b>Purpose of test</b>	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.
<b>Scope of test</b>	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.
<b>Fire test study group/EGOLF</b>	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.
<b>Instruction to test</b>	The test was conducted on the 20 <sup>th</sup> January 2010 at the request of Parex USA Incorporated, the sponsor of the test.
<b>Provision of test specimens</b>	The specimens were supplied by the sponsor of the test. <b>Exova Warringtonfire</b> was not involved in any selection or sampling procedure.
<b>Conditioning of specimens</b>	<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 22<sup>nd</sup> December 2009.</p> <p>Prior to the tests, all of the specimens were conditioned to constant mass at a temperature of <math>23 \pm 2^{\circ}\text{C}</math> and a relative humidity of <math>50 \pm 5\%</math>. One specimen from the total sample submitted for test was selected for constant mass verification.</p>
<b>Form in which the specimens were tested</b>	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.
<b>Exposed face</b>	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		External Wall Insulation System	
Overall product reference		"Parex Standard System"	
Overall thickness		50mm (stated by sponsor) 51.6mm (determined by <b>Exova Warringtonfire</b> )	
Overall weight per unit area		17.3kg/m <sup>2</sup> (determined by <b>Exova Warringtonfire</b> )	
Product configuration		<ul style="list-style-type: none"> <li>• Final coating (Test face)</li> <li>• Second layer of "Parex Base Coat &amp; Adhesive 121" / "Maite Monocomposant" coating with embedded standard reinforcing scrim</li> <li>• First layer of "Parex Base Coat &amp; Adhesive 121" / "Maite Monocomposant" coating with embedded heavy reinforcing scrim</li> <li>• Polystyrene Insulation</li> <li>• "Parex Base Coat &amp; Adhesive 121" / "Maite Monocomposant"</li> <li>• Magnesium base board</li> </ul>	
Reinforced coating system	Final coating product (Test face)	Generic type	Acrylic latex
		Product reference	"Parex DPR Finish"
		Composition details	Mineral aggregate, acrylic latex binder, TiO <sub>2</sub> pigment
		Name of manufacturer	Parex USA Incorporated
		Colour	"White"
		Number of coats	1
		Application rate per coat	2.5kg/m <sup>2</sup>
		Application method	Trowel
		Specific gravity	1.75
		Flame retardant details	<b>See Note 1 below</b>
	Curing process	Air dry	
	Standard reinforcing Scrim	Generic type	Glass fibre fabric
		Product reference	"Standard Mesh"
		Name of manufacturer	Vertex, a.s.
		Colour	"White"
		thickness	0.47mm
		Weight per unit area	160g/m <sup>2</sup>
		Cell dimensions (length x width)	3.5mm x 3.5mm
Flame retardant details		<b>See Note 2 below</b>	

	Heavy reinforcing scrim	Generic type	Glass fibre fabric
		Product reference	"Heavy Mesh"
		Name of manufacturer	Vertex, a.s.
		Colour	"White"
		thickness	1.1mm
		Weight per unit area	525g/m <sup>2</sup>
		Cell dimensions (length x width)	5mm x 5mm
		Flame retardant details	<b>See Note 2 below</b>
	Coating product / adhesive	Generic type	Portland cement-acrylic
		Product reference	"Parex Base Coat & Adhesive 121" / "Maite Monocomposant"
		Name of manufacturer	Parex USA, Inc.
		Colour	"Gray"
		Number of coats	2
		Application rate per coat	2 <sup>nd</sup> coat: 2.5 kg/m <sup>2</sup> 1 <sup>st</sup> coat: 4.5 kg/m <sup>2</sup>
		Application method	Trowel
		Specific gravity	1.45 (Paste prior to addition of portland cement)
		Flame retardant details	<b>See Note 1 below</b>
		Curing process per coat	Air Dry
		Polystyrene Insulation	General description
Generic type	Moulded bead expanded polystyrene		
Trade name / product reference	"Aerobord"		
Name of manufacturer	Aerobord		
Colour	"White"		
Thickness	35mm (determined by <b>Exova Warringtonfire</b> )		
Density	14kg/m <sup>3</sup>		
Flame retardant details	<b>See Note 2 below</b>		
Substrate	General description	Magnesium base render board	
	Trade name / product reference	<b>See Note 2 below</b>	
	Composition details	CaCO <sub>3</sub> , MgO, MgCl <sub>2</sub> and glass and fibre mesh	
	Name of supplier	"Tradewood/Unico Render-Pro"	
	Thickness	9mm	
	Colour	"White"	
	Density	1050kg/m <sup>3</sup>	
	Amount of flame retardant	<b>See Note 1 below</b>	

Brief description of assembly process of complete product	<ol style="list-style-type: none"> <li>1) Adhere polystyrene insulation to magnesium base board using "Parex Base Coat &amp; Adhesive 121" / "Maite Monocomposant".</li> <li>2) Apply 1st coat of "Parex Base Coat &amp; Adhesive 121 " / "Maite Monocomposant", to polystyrene foam, embed heavy scrim.</li> <li>3) Apply 2<sup>nd</sup> coat of "Parex Base Coat &amp; Adhesive 121" / "Maite Monocomposant", to first coat, embed standard scrim.</li> <li>4) Apply "Parex DPR Finish"</li> </ol>
---	--

**Note 1: The sponsor of the test has confirmed that no flame retardant additives were utilised in the production of this component.**

**Note 2: The sponsor of the test was unable 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.

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)	70	70	<50	<50	80	<50
Distance (mm)			Time to travel to indicated distance (minutes : seconds)			
75			3:20		1:15	3:00
165						
190						
215						
240						
265						
290						
375						
455						
500						
525						
600						
675						
710						
750						
785						
825						
Time to reach maximum distance travelled	1:30	1:22	3:20	1:00	1:30	5:00
Maximum distance travelled in 10 minutes (mm)	70	70	75	<50	80	160

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 each specimen tested flaming ceased at 1 minute test duration. Re-ignition of specimens 1, 2, 3, 5 and 6 occurred at 1:30, 1:22, 2:49, 1:30 and 3:00 respectively.

## 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)
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 : 1	Issue Date: 14 <sup>th</sup> April 2010
Revised By: T. Benyon	Approved By: C. Dean
Reason for Revision: Inaccuracy in product description table.	

Issue No :	Issue Date:
Revised By:	Approved By:
Reason for Revision:	