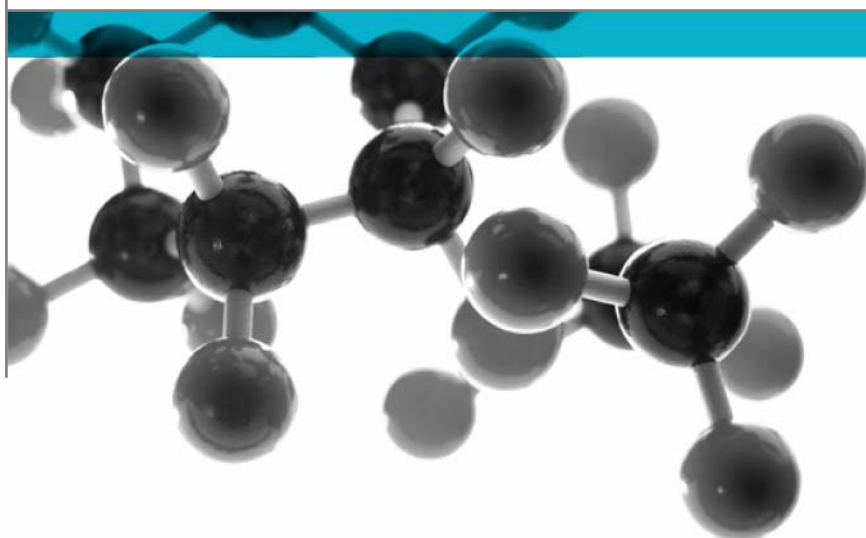


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# BS 476: Part 7: 1997



## Method For Classification Of The Surface Spread Of Flame Of Products

A Report To: Jotun Paints (Europe) Ltd

Document Reference: 195790

Date: 19<sup>th</sup> August 2010

Issue No.: 1

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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
Epoxy mastic and polyurethane topcoat protective system for external C3 environment applied to a steel substrate	"RT98 System M24 (Certificate XM92/077)"	6.76mm*	46.70kg/m <sup>2</sup> *
<b>Individual components used to manufacture composite:</b>			
Top coat (Test face)	"Hardtop XP"	50µm	1.29g/cm <sup>3</sup>
First coating product	"Jotamastic 87 Aluminium"	150µm	1.5g/cm <sup>3</sup>
Mild steel substrate	Unable to provide	6mm	23.6Kg/m <sup>2</sup>
<b>* Determined by Exova Warringtonfire</b>			
<b>Please see page 5 of this test report for the full description of the product tested</b>			


**Test Sponsor** Jotun Paints (Europe) Ltd, Stather Road, Flixborough, Scunthorpe, South Humberside, DN15 8RR

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

**Date of Test** 10<sup>th</sup> August 2010

## Signatories

	
Responsible Officer T. Benyon * Technical Officer	Approved T. Mort * Senior Technical Officer


Authorised C. Dean * Operations Manager

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

*Report Issued: 19<sup>th</sup> August 2010*

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## 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 10 <sup>th</sup> August 2010 at the request of Jotun Paints (Europe) Ltd, 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 27<sup>th</sup> July 2010.</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		Epoxy mastic and polyurethane topcoat protective system for external C3 environment applied to a steel substrate
Product reference of coating system		"RT98 System M24 (Certificate XM92/077)"
Overall thickness of composite		6.76mm (determined by <b>Exova Warringtonfire</b> )
Overall weight per unit area of composite		46.70kg/m <sup>2</sup> (determined by <b>Exova Warringtonfire</b> )
Overall coating system thickness		350µm
Final coating product (Test face)	Generic type	Polyurethane
	Product reference	"Hardtop XP"
	Name of manufacturer	Jotun Paints (Europe) Ltd
	Colour	"Jotun Standard 38"
	Number of coats	1
	Application rate per coat	12.6m <sup>2</sup> /l
	Application thickness	50µm (dry film thickness)
	Application method	Airless spray
	Specific gravity	1.29g/cm <sup>3</sup>
	Flame retardant details	<b>See note 1 below</b>
Curing process per coat	23°C with good ventilation, 24 hours between coats	
First coating product	Generic type	Epoxy Mastic
	Product reference	"Jotamastic 87 Aluminium"
	Name of manufacturer	Jotun Paints (Europe) Ltd
	Colour	"Aluminium"
	Number of coats	2
	Application rate per coat	5.1m <sup>2</sup> /l
	Application thickness per coat	150µm (dry film thickness)
	Application method	Airless spray
	Specific gravity	1.5g/cm <sup>3</sup>
	Flame retardant details	<b>See note 1 below</b>
Curing process per coat	23°C with good ventilation, 24 hours between coats	
Substrate	Product reference	<b>See note 2 below</b>
	Generic type	Mild Steel
	Name of manufacturer	Burtech Engineering
	Thickness	6mm
	Weight per unit area	23.6Kg/m <sup>2</sup>
	Flame retardant details	<b>See note 1 below</b>
Preparation details	Grit blasted Sa2½	
Brief description of manufacturing process of coatings		Binders, solvents, pigments, extenders and additives combined in high speed dissolvers, following standardised formulations and in keeping with QC/QA procedures

**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

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**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
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Maximum distance travelled in 10 minutes (mm)	<50	<50	<50	<50	<50	<50
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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.

## 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 :	Issue Date:
Revised By:	Approved By:
Reason for Revision:	

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