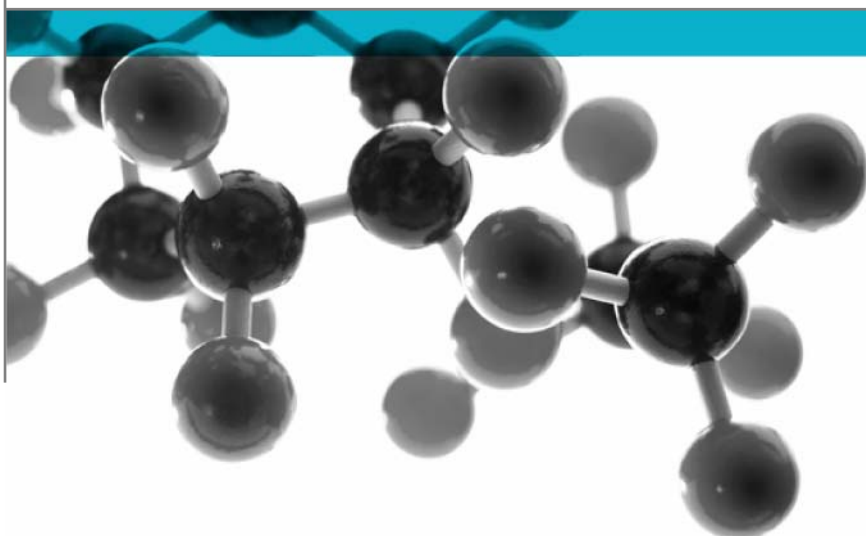


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Directive 95/28/EC Annex IV



Test To Determine The Horizontal Burning Rate Of Materials

A Report To: Allscope Projects Ltd

Document Reference: 304890

Date: 29th March 2011

Issue: 1

Page 1

Testing
Advising
Assuring



Executive Summary

Objective To determine the performance of the following product when tested in accordance with Directive 95/28/EC Annex IV.


Generic Description	Product reference	Thickness	Weight per unit area or density
Interior glass fibre reinforced plastic (GRP) panels for buses and coaches	"Drivers door and drivers partitions"	2.75-3.5mm	5.11kg/m ² *
Individual components used to manufacture composite:			
Gel-coat	"Firestop"	0.5mm	300g/m ²
Resin	"2779-P-2"	Not applicable	Not applicable
Glass reinforcement	"M92-300E & M79-450E"	Not applicable	1 x 300g/m ² 2 x 450g/m ²
* Determined by Exova Warringtonfire			
Please see page 5 of this test report for the full description of the product tested			

Test Sponsor Allscope Projects Ltd, Farrington Place, Burnley, BB11 5TY


Test Results: When tested in accordance with Directive 95/28/EC: Annex IV, the product submitted for test did not produce a horizontal burning rate of more than 100mm/minute and therefore, in accordance with Section 7.2.1 of the standard, the test results are deemed to be satisfactory.

Date of Test 1st March 2011

Signatories



Responsible Officer
C. Jacques *
Acting Testing Officer



Authorised
C. Dean *
Operations Manager

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

Report Issued: 29th March 2011

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Test Details

Purpose of test	<p>To determine the flammability of the material when it is tested in accordance with Directive 95 / 28 / EC Annex IV, a test to determine the horizontal burning rate of materials.</p> <p>The test was performed in accordance with the test procedure specified in Directive 95/28/EC Annex IV and this test report should be read in conjunction with that Standard.</p>
Fire test study group/EGOLF	<p>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 has 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.</p>
Instruction to test	<p>The test was conducted on the 1st March 2011 at the request of Allscope Projects Ltd, the sponsor of the test.</p>
Provision of test specimens	<p>The specimens were supplied by the sponsor of the test. Exova Warringtonfire was not involved in any selection or sampling procedure.</p>
Conditioning of specimens	<p>The specimens were received on the 23rd February 2011.</p> <p>Prior to the test the specimens were conditioned for at least 24 hours in an atmosphere having a temperature of $23 \pm 2^{\circ}\text{C}$ and a relative humidity of $50 \pm 5\%$.</p>
Test procedure	<p>Five specimens, each measuring 100 mm wide by 356 mm long, were tested with the Gel coated surface downwards to the test flame, in accordance with the test procedure specified in the Standard, the gas supplied to the bunsen burner being natural gas.</p>
Specimen orientation	<p>The specimens did not have a production direction.</p>

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		Interior glass fibre reinforced plastic (GRP) panels for buses and coaches	
Product reference		"Drivers door and drivers partitions"	
Name of manufacturer		AllScope Projects Limited	
Colour reference		"Grey" (determined by Exova Warringtonfire)	
Overall thickness		2.75-3.5mm (stated by sponsor) 3.83mm (determined by Exova Warringtonfire)	
Overall weight per unit area		4.9kg/m ² (stated by sponsor) 5.11kg/m ² (determined by Exova Warringtonfire)	
Moulded sheet	Gel-coat	Generic type	Unsaturated polyester
		Product reference	"Firestop 5000"
		Name of manufacturer	DSM
		Colour	"Grey"
		Application rate	300g/m ²
		Thickness	0.5mm
		Application method	Brush
		Trade name of flame retardant	The sponsor of the test was unable to provide this information
		Generic type of flame retardant	Aluminium hydroxide
		Amount of flame retardant	20-35%
	Resin	Generic type	Unsaturated polyester
		Product reference	"2779-P-2"
		Name of manufacturer	DSM
		Flame retardant details	The sponsor of the test was unable to provide this information
	Glass reinforcement	Type	Chopped strand glass mat (CSM)
		Product reference	"M92-300E & M79-450E"
		Number of layers	3
		Weight per unit area of each layer	1 x 300g/m ² 2 x 450g/m ²
		Name of manufacturer	PPG
	Resin to glass ratio (by weight)		2.5:1
Curing process (duration and temperature)		12 hours @ 20 °C	
Brief description of manufacturing process		Hand laminated	

Test Results

Results of test The burn rate was calculated using the formula:

$$B = 60 s/t$$

where B = Burning rate in mm per minutes
 s = Burnt distance in mm, and
 t = Time in seconds to burn distance s mm

Specimen No.	Time for flame to reach the first measuring point (seconds)	Time for flame to reach the final measuring point (seconds)	Burning time, <i>t</i> (seconds)	Distance burnt, <i>s</i> (mm)	Burning Rate (mm/min)
1	Not applicable	Not applicable	0	Not applicable	0
2	Not applicable	Not applicable	0	Not applicable	0
3	Not applicable	Not applicable	0	Not applicable	0
4	Not applicable	Not applicable	0	Not applicable	0
5	Not applicable	Not applicable	0	Not applicable	0
6	Not applicable	Not applicable	0	Not applicable	0

Conclusion

When tested in accordance with Directive 95/28/EC: Annex IV, the product submitted for test did not produce a horizontal burning rate of more than 100mm/minute and therefore, in accordance with Section 7.2.1 of the standard, the test results are deemed to be satisfactory.

Applicability of test results

The test results relate only to the behaviour of the specimens under the particular conditions of this test, they should not be used to infer the fire hazards of the material in other forms or under other fire conditions.

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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Revision History

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Reason for Revision:	

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