

test report

Bodycote

BS 476: Part 3: 2004

**External Fire Exposure Roof
Test**

WF Report Number:

155535

Date:

21st August 2006

Test Sponsor:

Filon Products Limited



0249

Warringtonfire Test Report No 155535

**BS 476: Part 3: 2004
External Fire Exposure Roof Test**

Sponsored By

**Filon Products Limited
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Commercial in confidence



CONTENTS	PAGE NO.
TEST DETAILS.....	4
DESCRIPTION OF TEST SPECIMENS	5
TEST RESULTS	6
SIGNATORIES	7
 Table 1	8



Test Details

Purpose of test	<p>To determine the performance of specimens of a roof construction when they are subjected to the conditions of the test specified in BS 476: Part 3: 2004, "British Standard Specification for Fire Tests on Building Materials and Structures - External Fire Exposure Roof Tests".</p>
Scope of test	<p>The test was performed in accordance with the test procedures specified in BS 476: Part 3: 2004 and this report should be read in conjunction with that British Standard.</p> <p>The tests are designed to enable measurement of:</p> <ul style="list-style-type: none">a) capacity of a representative section of a roof to resist penetration by fire when the external surface is exposed to radiation and flame; andb) distance of the spread of flame on the outer surface of the roof covering under certain conditions. <p>Roofs are graded according to the angle at which they are tested, the time for which they resist penetration by fire and the distance of superficial spread of flame on their external surface.</p>
Fire test study group	<p>The test specimens are tested at an angle of 45° to the horizontal (sloping position) unless the roof construction is used at an angle of less than 10° to the horizontal, in which case the specimens are tested horizontally (flat position).</p> <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 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.</p>
Instruction to test	<p>The test was conducted on the 3rd July 2006 at the request of Filon Products Limited, the sponsor of the test.</p>
Provision of test specimens	<p>The specimens were supplied by the sponsor of the test. Warringtonfire was not involved in any selection or sampling procedure.</p>
Conditioning of specimens	<p>The specimens were received on the 12th June 2006. Prior to testing the specimens were conditioned to equilibrium in an atmosphere having a temperature of 23 ±2°C and a relative humidity of 45 to 55%.</p>
Orientation of specimens	<p>The specimens were tested in the sloping position.</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		A flame retardant grade, profiled glass reinforced polyester resin laminate, faced on one (test) face with a UV resistant film	
Product reference		"Filon Grade G104"	
Name of manufacturer		Filon Products Limited	
Colour reference		"Natural Translucent"	
Overall thickness		1.0mm	
Overall weight per unit area		1.83kg/m ²	
Profile reference		See Note 1 Below	
UV resistant film (test face)	Trade name	See Note 1 Below	
	Generic type	UV resistant polyester	
	Name of manufacturer	See Note 1 Below	
	Thickness	20 microns	
	Colour	"Transparent"	
	Flame retardant details	See Note 2 Below	
	Application method	Applied during manufacturing process	
Glass reinforced polyester resin	Resin	Trade name	See Note 1 Below
		Generic type	Polyester resin
		Name of manufacturer	See Note 1 Below
		Flame retardant details	See Note 1 Below
	Glass reinforcement	Trade name	See Note 1 Below
		Type	Chopped glass roving fibres
		Number of layers	One
		Weight per unit area	610 g/m ²
		Configuration of glass reinforcement	Random
		Name of manufacturer	See Note 1 Below
	Resin to glass ratio (by weight)		2 parts resin – 1 part glass
	Percentage glass reinforcement (by weight)		33% typical
	Post curing process details		'Filon' process
	Brief description of manufacturing process		See Note 1 Below

Note 1 – 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 held on the confidential file relating to this investigation

Note 2- The sponsor of the test has confirmed that no flame retardant additives were utilised in the production of the product/component.

Test Results

Results of test

The test results relate only to the behaviour of the test specimens of the construction under the particular conditions of test, they are not intended to be the sole criterion for assessing the potential fire hazard of the construction in use.

The test results relate only to the specimens of the roof construction which were tested. Small differences in the composition or thickness of the construction may significantly affect the results of the test and may therefore invalidate the test results. Care should be taken to ensure that any construction which is supplied or used is fully represented by the specimens which were tested.

The results of the tests on each of the specimens are given in Table 1.

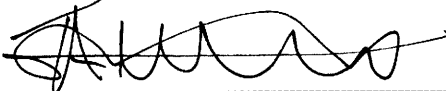
In Accordance With The Designations Defined In BS 476: Part 3: 2004 The Test Specimens Are In Category "EXT.S.AA".

Validity

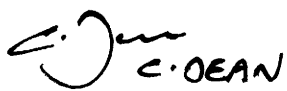
The specification and interpretation of fire test methods are the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons it is recommended that the relevance of test reports over five years old should be considered by the user. The laboratory 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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Signatories


Responsible Officer
A Myler*

PP


Approved
I Moore *
Laboratory Supervisor


Head of Department
P E Lythgoe *

* For and on behalf of warringtonfire.

Report Issued: 21st August 2006

Table 1

PRELIMINARY IGNITION TEST WITH BURNING BRANDS (STAGE 1)	Specimen No:		
		1	
Room Temperature at Start of Test (°C)	25		
Time to Fire Penetration (if applicable) (min:sec)	N/A		
Duration of Flaming after Withdrawal of the Test Flame (if applicable) (min:sec)	N/A		
Maximum Flame Spread Distance (if applicable) (mm)	N/A		

SPREAD OF FLAME TEST WITH BURNING BRANDS AND SUPPLEMENTARY RADIANT HEAT (STAGE 2)	Specimen No:		
	2	3	4
Room Temperature at Start of Test (°C)	29	30	29
Duration of Flaming after Withdrawal of the Test Flame (if applicable) (min:sec)	N/A	N/A	N/A
Maximum Flame Spread Distance (if applicable) (mm)	N/A	N/A	N/A
Other observations:			
In the case of each specimen tested flame spread did not occur.			

PENETRATION TEST WITH BURNING BRANDS, WIND AND SUPPLEMENTARY RADIANT HEAT (STAGE 3)	Specimen No:		
	5	6	7
Room Temperature at Start of Test (°C)	28	29	29
Time to Fire Penetration (if applicable) (min:sec)	N/A	N/A	N/A
Other observations:			
In the case of each specimen tested fire penetration did not occur.			

Classification Of Specimens

The following is reproduced from Clause 4 of BS 476: Part 3: 2004.

4 Classification

4.1 *Roof system*

Roof systems shall be designated by the letters EXT.F or EXT.S to indicate whether the test results apply to a flat (horizontal) or an inclined roof system, respectively

4.2 Fire Resistance of roof system

4.2.1 *Coding system*

Roof systems subject to conditions of external fire shall be classified according to both the time of penetration and the distance of spread of flame along their external surface.

Each category designation shall consist of two letters, e.g. AA, AC, BB, these being determined as specified in 4.22 and 4.23

4.2.2 *Fire penetration (first letter)*

- A. Those specimens that have not been penetrated within one hour
- B. Those specimens that are penetrated in not less than 30 min.
- C. Those specimens that are penetrated in less than 30 min.
- D. Those specimens that are penetrated in the preliminary flame test

4.2.3 *Spread of flame (second letter)*

- A. Those specimens on which there is no spread of flame
- B. Those specimens on which there is not more than 533mm spread of flame
- C. Those specimens on which there is more than 533mm spread of flame
- D. Those specimens that continue to burn for five minutes after withdrawal of the test flame or spread more than 381mm across the region of burning in the preliminary test.

4.2.4 *Suffix "X"*

Attention shall be drawn to dripping from the underside of the specimen, any mechanical failure, and any development of holes, by adding a suffix "X" to the designation to denote that one or more of these took place during the test.

EXAMPLE 1 EXT.F.AA is a flat roofing system with one hour fire penetration resistance on which there was no spread of flame.

EXAMPLE 2 EXT.S.CCX is an inclined roofing system with less than 30 min fire penetration resistance, on which the spread of flame exceeded 533mm and further deterioration took place.