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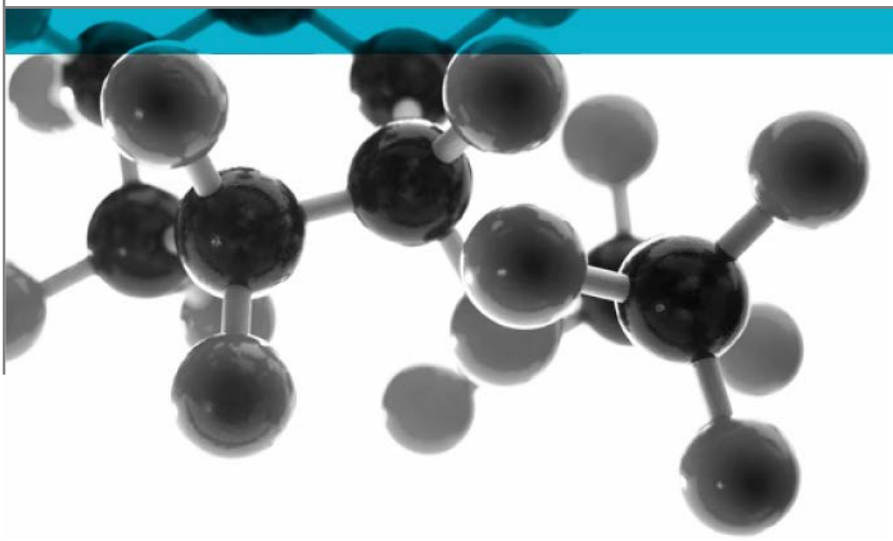
BS 476 Part 3: 2004



External Fire Exposure Roof Test

A Report To: Wickes Building Supplies Ltd

Document Reference: 386949

Date: 3rd October 2017

Issue No.: 1

Testing
Advising
Assuring

UKAS TESTING
0249

Executive Summary

Objective To determine the fire performance of the following product when tested in accordance with BS 476: Part 3: 2004

Generic Description	Product references	Thickness	Weight per unit area or density
Bituminous shingle tile strips fixed to a plywood substrate	"Wickes Bituminous Shingle Tile Strip"	25mm*	21.01kg/m^2*
Individual components used to manufacture composite:			
Basalt ceramicised granules	"Ceramicised Granules"	1.0 mm ± 30%	1250 -1400 g/m^2
Bitumen	Not stated	2.7 mm ± 3%	1120 - 1300 g/m^2
Glass fibre	"Glass Fibre Mat"	Not stated	100-125g/m^2
Heat sensitive adhesive strip	"Bitumen Adhesive Tape"	1.2mm ± 10%	Not stated
Silica sand	"Silicon"	0.4mm ± 10%	Not stated
Plywood	"Guararapes/Sudati"	18mm	7.63kg/m^2
*Determined by **Exova Warringtonfire**			
Please see page 5 and 6 of this test report for the full description of the product tested			

Test Sponsor Wickes Buildings Supplies Ltd, Vision House, 19 Colonial Way, Watford, WD24 4JL

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

Date of Test: 29th June 2015

This test report is additional to that issued as 353292 dated the 14th July 2015 and has been issued at the request of the sponsor. The original test report remains valid and is not replaced by this additional test report. The product referred to in the original report and this additional test report has not been re-tested since the original test and neither has a technical review of the original test report resulting in any technical changes been carried out.

The original product reference of the product has been removed and the reference "Wickes Bituminous Shingle Tile Strip" has been inserted and the original sponsor name and address details have been removed and those of "Wickes Building Supplies Ltd" have been inserted. The sponsor of the test has stated that the material described in this additional report is identical to the material which was tested. Both the original and the alternative trade names of the product and the original and alternative sponsor details have been documented and the documentation is maintained in the confidential file covering this investigation.

Signatories

	
Responsible Officer K. Hughes * Technical Officer	Authorised S. Deeming* Business Unit Head

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

Report Issued: 3rd October 2017

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Test Details

Purpose of test

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".

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.

Scope of test

The tests are designed to enable measurement of:

a) capacity of a representative section of a roof to resist penetration by fire when the external surface is exposed to radiation and flame; and
b) distance of the spread of flame on the outer surface of the roof covering under certain conditions.

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.

The test specimens are tested at an angle of 45^{o} to the horizontal (sloping position) unless the roof construction is used at an angle of less than 10^{o} to the horizontal, in which case the specimens are tested horizontally (flat position).

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 29th June 2015 at the request of the original sponsor of the test.

Provision of test specimens

The specimens were supplied by the original sponsor of the test. **Exova Warringtonfire** was not involved in any selection or sampling procedure.

Conditioning of specimens

The specimens were received on the 10th June 2015. 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%.

Orientation of specimens

The specimens were tested in the sloping position.

Description of Test Specimens

The description of the specimens given below has been prepared from information provided by the original sponsor of the test. All values quoted are nominal, unless tolerances are given.

General description		Bituminous shingle tile strips fixed to a plywood substrate
Product references of overall composite		"Wickes Bituminous Shingle Tile Strip"
Name of manufacturer of overall composite		Confidential
Thickness of overall composite		25mm (determined by **Exova Warringtonfire**)
Weight per unit area of overall composite		21.01kg/m^2 (determined by **Exova Warringtonfire**)
Thickness of bitumen tile		3.4mm ± 10%
Weight per unit area of bitumen tile		Between 9.47 and 10.7kg/m^2
Basalt + ceramicised granules	Generic type	Basalt
	Product reference	"Ceramicised Granules"
	Name of manufacturer	Tegola Canadese SA
	Thickness	1.0 mm ± 30% Note: The granules are compressed into the bitumen base during manufacturing process in compliance to EN544
	Weight per unit area	Between 1250 g/m^2 and 1400 g/m^2
	Colour reference	High temperature process vitrifies colour pigments to granules which are blended on site to provide shingle colour in manufacture.
	Flame retardant details	**See Note 1 below**
Bitumen	Generic type	Blown bitumen
	Product reference	**See Note 2 below**
	Name of manufacturer	**See Note 2 below**
	Thickness	2.7 mm ± 3%
	Weight per unit area	Between 1120 g/m^2 and 1300 g/m^2
	Colour reference	"Black"
	Flame retardant details	**See Note 1 below**
Glass fibre mat	Generic type	Glass fibre
	Product reference	"Glass Fibre Mat"
	Name of manufacturer	**See Note 2 below**
	Thickness	**See Note 3 below**
	Weight per unit area	Between 100 and 125g/m^2
	Colour reference	"White"
	Flame retardant details	**See Note 1 below**

Continued on next page

Heat sensitive adhesive strip	Generic type	Heat sensitive bitumen strip bonded to topside of shingle at works. This bonds the tile tab of the overlapping course with application of heat on site.
	Product reference	"Bitumen Adhesive Tape"
	Name of manufacturer	**See Note 2 below**
	Thickness	1.2mm ± 10%
	Weight per unit area	**See Note 3 below**
	Flame retardant details	**See Note 1 below**
Silica sand	Generic type	Blended silica sand
	Product reference	"Silicon"
	Name of manufacturer	**See Note 2 below**
	Thickness	0.4mm ± 10%
	Weight per unit area	**See Note 3 below**
	Colour reference	"Natural"
	Flame retardant details	**See Note 1 below**
Fixing details (Bitumen tiles to plywood)		Clout nails
Plywood	Generic type	Exterior plywood
	Product reference	"Guararapes/Sudati"
	Timber species	**See Note 3 below**
	Thickness	18 mm
	Weight per unit area	7.63 kg/m^2
	No. of ply's	**See Note 3 below**
	Name of manufacturer / supplier	**See Note 2 below**
	Flame retardant details	**See Note 1 below**
Brief description of manufacturing process		**See Note 2 below**

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

Note 2: The original sponsor was unwilling to provide this information.

Note 3: The original sponsor was unable to provide this information.

Test Results

Results

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.

Table 1

PRELIMINARY IGNITION TEST WITH BURNING BRANDS (STAGE 1)	Specimen No:
	1
Room temperature at start of test (°C)	26
Time to fire penetration (if applicable) (min:sec)	Did not penetrate
Duration of flaming after withdrawal of the test flame (if applicable) (min:sec)	0:42
Maximum flame spread distance (if applicable) (mm)	None

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)	22	27	27
Duration of flaming after withdrawal of the test flame (if applicable) (min:sec)	Nil	Nil	Nil
Maximum flame spread distance (if applicable) (mm)	Nil	Nil	Nil
Additional observations: In the case of all three specimens ignition occurred in the first minute of the test			

PENETRATION TEST WITH BURNING BRANDS, WIND AND SUPPLEMENTARY RADIANT HEAT (STAGE 3)	Specimen No:		
	5	6	7
Room temperature at start of test (°C)	27	28	28
Time to fire penetration (if applicable) (min:sec)	Did not penetrate	Did not penetrate	Did not penetrate
Additional observations: In the case of all three specimens ignition occurred in the first minute of the test			

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 the spread of flame is less than or equal to 533mm, with averaged results rounded up or down to the whole number, as normally practised
C. Those specimens on which the spread of flame is greater than 533mm, with averaged results rounded up or down to the whole number, as normally practised
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.

Revision History

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

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