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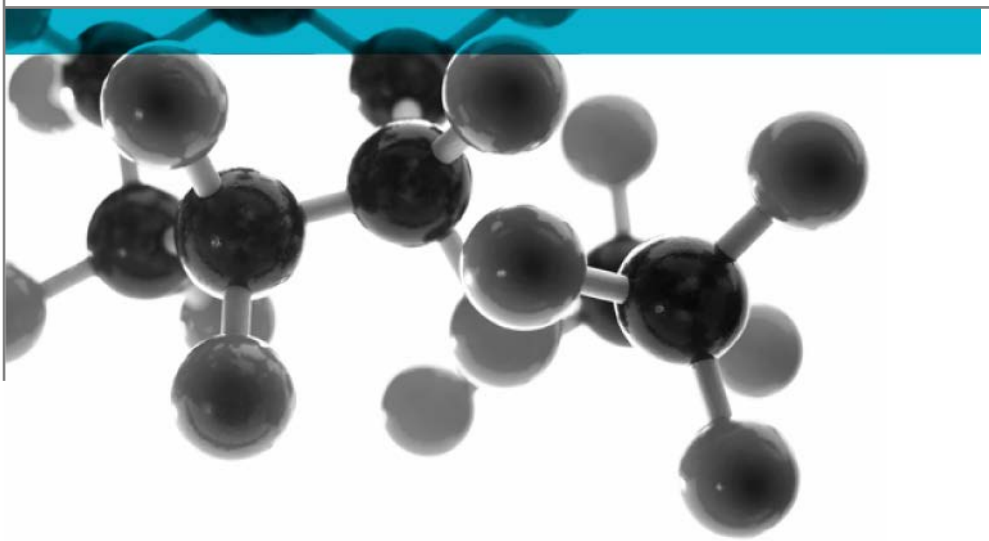
BS EN ISO 9239-1: 2010



Fire Tests For Determination Of The Burning Behaviour of Floorings
Part 1: Determination Of The Burning Behaviour Using A Radiant Heat Source

A Report To: Kernow Coatings Ltd.

Document Reference: 411217

Date: 18th April 2019

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0249

Executive Summary

Objective To determine the performance of the following product when tested in accordance with BS EN ISO 9239-1: 2010

Generic Description	Product reference	Thickness	Weight per unit area
Textured floor graphic polyester film adhered to a fibre cement board substrate	"170TFG" (self adhesive film)	315 ± 6micron	385 ± 8g/m²
Individual components used to manufacture composite:			
Film	Unable to provide	170micron	224g/m²
Adhesive	Unable to provide	Unable to provide	Unable to provide
Fibre cement board	"NT D4 604"	8mm	1800kg/m³
Please see page 6 of this test report for the full description of the product tested			

Test Sponsor Kernow Coatings Ltd., Penryn, Cornwall, TR10 9DQ

Test Results:

Average critical radiant flux	**=**	**≥11.0kW/m²**
Average smoke development	**=**	**4.05% min**

Date of Test 8th April 2019

Signatories

Responsible Officer C. Jacques * Senior Technical Officer	Authorised T. Mort * Senior Technical Officer

* For and on behalf of Warringtonfire.

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Test Details

Purpose of test

To determine the performance of specimens of a product when they are subjected to the conditions of the test procedure defined in the document BS EN ISO 9239-1:2010 - Reaction To Fire Tests For Floorings – Part 1: Determination Of The Burning Behaviour Using A Radiant Heat Source.

The test was performed in accordance with the procedure defined in BS EN ISO 9239-1:2010 and this report should be read in conjunction with that Standard.

Scope of test

BS EN ISO 9239-1:2010 describes a European test procedure for assessing the burning behaviour, spread of flame and smoke development of horizontally mounted floorcovering systems exposed to a radiant heat gradient in a test chamber, when ignited with a pilot flame.

The measurements provide a basis for estimating one aspect of fire exposure behaviour of floor covering systems. The imposed radiant flux simulates the thermal radiation levels likely to impinge on the floors of a building whose upper surfaces are heated by flames or hot gases or both, from a fire in an adjacent room or compartment.

This method is applicable to all types of floorcoverings such as textile carpet, cork, wood, rubber and plastic coverings as well as coatings. Results obtained by this method reflect the performance of the total floor covering system as tested. Modifications of the backing, bonding to a substrate, underlay, or other changes to the system may affect the test results.

The test is intended for regulatory purposes, specification acceptance, design purposes, classification, or development and research.

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 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.

Instruction to test

The test was conducted on the 8th April 2109, at the request of Kernow Coatings Ltd, the sponsor of the test.

Provision of test specimens

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

Conditioning of specimens

The specimens were received on the 28th February 2019.

Prior to test the specimens were conditioned to constant mass at a temperature of 23 ± 2°C and a relative humidity of 50 ± 5%.

Number of specimens tested	The specimens did not have a directional quality to them therefore a total of three specimens were tested.
Exposed face	The printed face of the specimens was exposed to the radiant heat of the test when the specimens were mounted in the test position.
Substrate	The specimens were tested with no additional substrate present.

Description of Test Specimens

The description of the system given below has been prepared from information provided by the sponsor of the test. This information has not been independently verified by Warringtonfire**.** All values quoted are nominal, unless tolerances are given.

General description		Textured floor graphic polyester film adhered to a fibre cement board substrate
Product reference		"170TFG"
Name of manufacturer		Kernow Coatings Ltd
Thickness of overall composite		315 ± 6micron (stated by sponsor) 0.33mm (determined by Warringtonfire)
Weight per unit area of overall composite		385 ± 8g/m² (stated by sponsor) 376.72g/m² (determined by Warringtonfire)
Film	Product reference	**See Note 1 Below**
	Generic type	Polyethylene terephthalate film with proprietary textured ink jet receptive coating
	Name of manufacturer	Kernow Coatings Ltd
	Thickness	170micron
	Weight per unit area	224g/m²
	Flame retardant details	**See Note 1 Below**
Adhesive	Product reference	**See Note 1 Below**
	Generic type	Removable adhesive
	Name of manufacturer	Kernow Coatings Ltd
	Application rate	**See Note 1 Below**
	Application method	**See Note 1 Below**
	Flame retardant details	**See Note 1 Below**
Substrate	Product reference	"NT D4 604"
	Generic type	Fibre cement board
	Name of manufacturer	Scheerders van de Kerkhove (SVK)
	Thickness	6mm
	Density	1800kg/m³
Brief description of manufacturing process		**See Note 1 Below**

Note 1: The sponsor was unable to provide this information.

The description of the specimens given above is therefore not as complete as would normally be the case for descriptions included in Warringtonfire test reports and the description may not fully comply with the requirements of the test standard. In all other respects however the tests were conducted fully in accordance with the requirements of the test standard and the test results are valid.

Test Results

The test results relate to the behaviour of the test specimens of a 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.

The distance between the flame front and the zero point at 10 minute intervals together with the observations recorded during the tests in respect of each specimen tested, are given in Table 1.

Average maximum flame front distance	=	≤5cm
Average critical radiant flux	=	≥11.0kW/m^2
Average smoke development	=	4.05% min

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

SPECIMEN NO.	1	2	3
DISTANCE (cm)	**TIME TO TRAVEL TO INDICATED DISTANCE** (seconds)		
5			
10			
15			
20			
25			
30			
35			
40			
45			
50			
55			
60			
65			
70			
75			
80			
85			
90			
95			
100			
Maximum flame front distance (cm)	≤5	≤5	≤5
Critical radiant flux (kW/m^2)	≥11.0	≥11.0	≥11.0
Smoke Development (%.min)	3.78	1.06	7.32

Specimen Number	1	2	3
Flame front distance at 10 min (cm)	≤5	≤5	≤5
Flame front distance at 20 min (cm)	-	-	-
Flame front distance at 30 min (cm)	-	-	-
Radiant flux at 10 minutes, Rf_{10} (kW/m^2)	≥11.0	≥11.0	≥11.0
Radiant flux at 20 minutes, Rf_{20} (kW/m^2)	-	-	-
Radiant flux at 30 minutes, Rf_{30} (kW/m^2)	-	-	-

Observations of the burning characteristics of the specimens during the testing exposure

None

Revision History

Issue No :	Re-issue Date :
Revised By:	Approved By:
Reason for Revision:	

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