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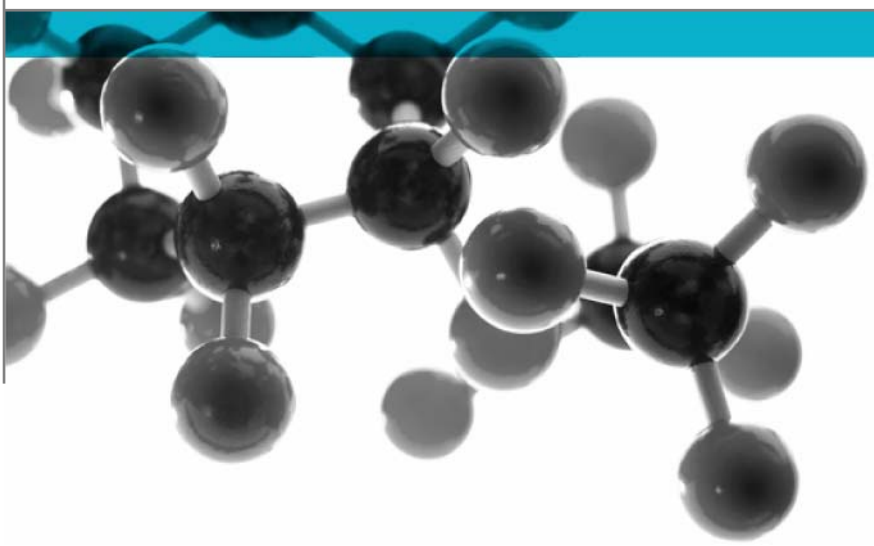
BS EN ISO 9239-1: 2002



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

Date: 4th February 2010

Issue No.: 1

A Report To: R-Tek Manufacturing Ltd.
Unit 1
Hamiltownsbawn Industrial Estate
Armagh
Co. Armagh
BT60 1HW

Document Reference: WF 189858

Testing
Advising
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Executive Summary

Objective To determine the performance of the following material when tested in accordance with BS EN ISO 9239-1: 2002

Generic Description	Product reference	Thickness	Weight per unit area or density
Interlocking PVC floor tile tested loose laid over a fibre cement based substrate	Not applicable	Not stated	Not stated
Individual components used to manufacture composite:			
PVC floor tile for industrial use	"R-Tile Interlocking PVC Floor Tile"	5mm	10kg/m^2 SG: 1.45
Fibre cement board substrate	"NT D4 604"	6mm	1800kg/m^3
Please see page 5 of this test report for the full description of the product tested			

Test Sponsor R-Tek Manufacturing Ltd., Unit 1, Hamiltownsbawn Industrial Estate, Armagh, Co. Armagh, BT60 1HW

Test Results:

Average critical radiant flux	**=**	**10.8kW/m^2**
Average smoke development	**=**	**356.75% min**

Date of Test 28th & 29th January 2010

Signatories

Responsible Officer
S. Deeming *
Senior Technical Officer

Approved
D. J. Owen *
Senior Technical Officer

Authorised
C. Dean *
Operations Manager

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

Report Issued: 4th February 2010

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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 9239-1:2002 - 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 9239-1:2002 and this report should be read in conjunction with that Standard.

Scope of test

BS EN ISO 9239-1:2002 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 28th & 29th January 2010 at the request of R-Tek Manufacturing Ltd., the sponsor of the test.

Provision of test specimens

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

Conditioning of specimens

The specimens were received on the 8th January 2010.

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	A total of three specimens were tested.
Exposed face	The decorative 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 loose laid over a nominally 6mm thick fibre cement based substrate.

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		Interlocking PVC floor tile which was tested loose laid over a nominally 6mm thick fibre cement based substrate
Floor Covering	Product reference	"R-Tile Interlocking PVC Floor Tile"
	Generic type	PVC floor tile for industrial use
	Name of manufacturer	R-Tek Manufacturing Ltd.
	Weight per unit area	10kg/m^2 (stated by sponsor) 7.06kg/m^2 (determined by **Exova Warringtonfire**)
	Density	1.45 (specific gravity – stated by sponsor) 1.29g/cm^3 (determined by **Exova Warringtonfire**)
	Thickness	5mm (stated by sponsor) 5.48mm (determined by **Exova Warringtonfire**)
	Colour	"Blue" (observed by **Exova Warringtonfire**)
	Flame retardant details	The sponsor of the test has confirmed that no flame retardant additives were utilised in the production of the product / component
Substrate	Trade name	"NT D4 604"
	Generic type	Fibre cement board
	Supplier	Scheerders van de Kerkhove (SVK)
	Thickness	6mm
	Density	1800kg/m³
Brief description of manufacturing process of the floor covering		Injection moulded

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.

In accordance with the procedure defined in BS EN ISO 9239-1:2002, the following results were obtained:

Average maximum flame front distance	=	14cm
Average critical radiant flux	=	10.8kW/m^2
Average smoke development	=	356.75% min
Average maximum light attenuation	=	53.50%

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** (minutes : seconds)		
5	2:44	2:45	2:46
10	4:10	4:10	4:10
15			5:41
20			
25			
30			
35			
40			
45			
50			
55			
60			
65			
70			
75			
80			
85			
90			
95			
100			
Maximum flame front distance (cm)	14	13	15
Critical radiant flux (kW/m^2)	10.9	10.9	10.5
Smoke Development (%.min)	397.29	305.77	367.18
Maximum light attenuation (%)	56.17	57.77	46.56

Specimen Number	1	2	3
Flame front distance at 10 min (cm)	2	5	9
Flame front distance at 20 min (cm)	5	2	2
Flame front distance at 30 min (cm)	-	-	-
Radiant flux at 10 minutes, Rf_{10} (kW/m^2)	≥11.2	≥11.2	≥11.2
Radiant flux at 20 minutes, Rf_{20} (kW/m^2)	≥11.2	≥11.2	≥11.2
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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