

**BS EN ISO 9239-1:  
2002**

**Fire Tests For  
Determination Of The  
Burning Behaviour of  
Floorings**

**WF Report Number:**

**157857**

**Date:**

**7<sup>th</sup> December 2006**

**Test Sponsor:**

**Reeds Carpeting  
Contractors**



**Warringtonfire Test Report No. 157857**

**BS EN ISO 9239-1: 2002 – Reaction To  
Fire Tests For Floorings – Part 1:  
Determination Of The Burning Behaviour  
Using A Radiant Heat Source**

**Sponsored By**

**Reeds Carpeting Contractors  
183 Torrington Avenue  
Coventry  
CV4 9UQ**

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## Test Details

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<b>Purpose of test</b>	<p>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.</p> <p>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.</p>
<b>Scope of test</b>	<p>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.</p> <p>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.</p> <p>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.</p> <p>The test is intended for regulatory purposes, specification acceptance, design purposes, classification, or development and research.</p>
<b>Fire test study group/EGOLF</b>	<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>
<b>Instruction to test</b>	<p>The test was conducted on the 12<sup>th</sup> September 2006 at the request of Reeds Carpeting Contractors, the sponsor of the test.</p>
<b>Provision of test specimens</b>	<p>The specimens were supplied by the sponsor of the test. Warringtonfire was not involved in any selection or sampling procedure.</p>
<b>Conditioning of specimens</b>	<p>The specimens were received on the 1<sup>st</sup> September 2006.</p> <p>Prior to test the specimens were conditioned to constant mass at a temperature of <math>23 \pm 2^{\circ}\text{C}</math> and a relative humidity of <math>50 \pm 5\%</math>.</p>

<b>Number of specimens tested</b>	A total of four specimens were tested. Initial tests were carried out on one specimen in the production direction and one specimen in a direction perpendicular to that direction to establish the worse case condition. The results of these tests indicated that the worse case was with the specimens in the production direction and the formal test was then completed with the specimens in that direction. The results given in this report relate to the formal test only.
<b>Exposed face</b>	The decorative face of the specimens was exposed to the radiant heat of the test when the specimens were mounted in the test position.
<b>Substrate</b>	The specimens were tested with a 6mm thick fibre cement board substrate present.

## 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.

Product configuration		<ul style="list-style-type: none"> <li>• Carpet</li> <li>• Substrate</li> </ul>		
Carpet	General description		Carpet Floor covering	
	Product reference of carpet		"Evo-rib"	
	Name of manufacturer of carpet		B.I.G.	
	Overall thickness of carpet		4mm	
	Overall weight per unit area of carpet		400g/m <sup>2</sup>	
	Colour reference of carpet		Orange	
	Pattern reference of carpet		"Ribbed"	
	Pile	Product reference		"Evo-rib"
		Generic type		Needlepunched polypropylene
		Name of manufacturer		B.I.G.
		Pile height above the backing		3.9mm
		Weight per unit area		390g/m <sup>2</sup>
	Flame retardant details		<b>See Note 1</b>	
	Backing	Product reference		"Evo-rib"
		Generic type		SBR resin lacquer
		Name of manufacturer		B.I.G.
		Thickness		0.1mm
		Weight per unit area		10g/m <sup>2</sup>
Flame retardant details		<b>See Note 1</b>		
Substrate	Product reference		"NT D4 604"	
	Generic type		Fibre cement board	
	Name of supplier		Scheerders van de Kerkhove (SVK)	
	Thickness		6mm	
	Density		1800kg/m <sup>3</sup>	
Flame retardant details		The substrate is inherently flame retardant		
Brief description of manufacturing process utilised in the production of the carpet tile		Needlepunched polypropylene fibres backed with SBR Resin with ribbed construction.		

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

## Test Results

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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	=	9.67 cm
Average critical radiant flux	=	>10.8 kW/m <sup>2</sup>
Average smoke development	=	0.43 % min
Average maximum light attenuation	=	0.87 %

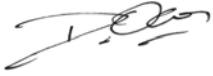
### Validity


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

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Responsible Officer D. J. Owen *


Approved I. Moore * Laboratory Supervisor


P.P. C Dean Authorised P. E. Lythgoe * Head of Department

\* For and on behalf of warringtonfire.

*Report Issued: 7<sup>th</sup> December 2006*

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**Table 1**

SPECIMEN NO.	1	2	3
DISTANCE (cm)	TIME TO TRAVEL TO INDICATED DISTANCE (minutes, seconds)		
5	10:10	3:27	
10	12:15	7:37	
15		9:46	
20			
25			
30			
35			
40			
45			
50			
55			
60			
65			
70			
75			
80			
85			
90			
95			
100			
Max. flame front distance (cm)	11.0	18.0	-
Critical radiant flux (kW/m <sup>2</sup> )	11.3	10.0	≥11.0
Smoke Development (%.min)	0.0	1.28	0.0
Max. light attenuation (%)	0.0	2.6	0.0

Specimen Number	1	2	3
Flame front distance at 10 min (cm)	-	15.0	-
Flame front distance at 20 min (cm)	-	-	-
Flame front distance at 30 min (cm)	-	-	-
Radiant flux at 10 minutes, Rf <sub>10</sub> (kW/m <sup>2</sup> )	-	10.6	-
Radiant flux at 20 minutes, Rf <sub>20</sub> (kW/m <sup>2</sup> )	-	-	-
Radiant flux at 30 minutes, Rf <sub>30</sub> (kW/m <sup>2</sup> )	-	-	-

### **Observations Of The Burning Characteristics Of The Specimens During The Testing Exposure**

In the case of specimen no.1 the product began to melt from 24 seconds. The specimen receded from the hot end of the specimen holder forming holes from approximately 30 seconds up to a distance of approximately 15 cm. Spontaneous ignition of the remaining specimen occurred at 10 minutes and 8 seconds.

In the case of specimen no.2, the product began to melt from approximately 24 seconds. The majority of the specimen receded from the hot end of the specimen holder forming holes from approximately 30 seconds up to a distance of approximately 15 cm. However, a small amount of material remained attached and was ignited by the pilot flames.

In the case of specimen no.3 the product began to melt from 20 seconds. The specimen receded from the hot end of the specimen holder forming holes from approximately 15 seconds up to a distance of approximately 10 cm. The specimen did not ignite.



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**BS EN ISO 11925-2:  
2002**

**Ignitability Of Building  
Products Subjected To  
Direct Impingement Of  
Flame**

**WF Report Number:**

**157858**

**Date:**

**7<sup>th</sup> December 2006**

**Test Sponsor:**

**Reeds Carpeting  
Contractors**



**0249**

**Warringtonfire Test Report No. 157858**

**BS EN ISO 11925-2: 2002**

**Reaction To Fire Tests - Ignitability Of  
Building Products Subjected To Direct  
Impingement Of Flame – Part 2: Single-  
flame Source Test**

**Sponsored By**

**Reeds Carpeting Contractors  
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## Test Details

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<b>Purpose of test</b>	<p>To determine the performance of specimens of a product when they are subjected to the conditions of the test specified in BS EN ISO 11925-2:2002 "Reaction to Fire tests - Ignitability Of Building Products Subjected to Direct Impingement of Flame – Part 2: Single Flame Source Test".</p> <p>The test was performed in accordance with the procedure specified in BS EN ISO 11925-2:2002 Reaction to Fire Tests - Ignitability of Building Products subjected to direct impingement of flame – Part 2: Single Flame Source Test, and this report should be read in conjunction with that BS EN ISO Standard.</p>
<b>Scope of test</b>	BS EN ISO 11925-2 specifies a method of test for determining the ignitability of building products by direct small flame impingement under zero impressed irradiance using specimens tested in a vertical orientation.
<b>Fire test study group/EGOLF</b>	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.
<b>Instruction to test</b>	The test was conducted on the 12 <sup>th</sup> September 2006 at the request of Reeds Carpeting Contractors, the sponsor of the test.
<b>Provision of test specimens</b>	The specimens were supplied by the sponsor of the test. Warringtonfire was not involved in any selection or sampling procedure.
<b>Conditioning of specimens</b>	<p>The specimens were received on the 1<sup>st</sup> September 2006.</p> <p>Prior to test the specimens were stored for 11 days in a standard atmosphere as defined in BS EN 13238:2001 Conditioning Procedures and General Rules for selection of substrates until constant mass was achieved.</p>
<b>Substrate</b>	The specimens were tested with a 6mm thick fibre cement board substrate present.
<b>Flame application time</b>	The flame was applied for 15 seconds.

## 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.

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	Backing	Product reference		"Evo-rib"
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Substrate	Product reference		"NT D4 604"	
	Generic type		Fibre cement board	
	Name of supplier		Scheerders van de Kerkhove (SVK)	
	Thickness		6mm	
	Density		1800kg/m <sup>3</sup>	
Flame retardant details		The substrate is inherently flame retardant		
Brief description of manufacturing process utilised in the production of the carpet tile		Needlepunched polypropylene fibres backed with SBR Resin with ribbed construction.		

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

## Test Results

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### Number of specimens tested

Six specimens were tested, each of which were subjected to surface exposure to flame with the decorative face exposed.

Six specimens were tested, each of which were subjected to edge exposure to flame with the decorative face exposed.

### Applicability of test results

The test results relate to the behaviour of the test specimens of a product under the particular conditions of the 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 test results for the individual specimens, together with observations made during the test and comments on any difficulties encountered during the test are given in Tables 1 and 2.

**On each set of six specimens which were tested, the flame tip did not reach a distance of 150mm before the end of the test.**


### 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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**Table 1****Test Flame Application Position - Surface Of Decorative Face**

Specimen No.	Ignition Yes/No	Time from start of test for flame tip to reach 150mm (seconds)	Extent of Flame Spread (mm)	Flaming Debris	Glowing	Extent of Damaged Area (mm)	
						Height	Width
1	Yes	Did Not Reach	70	None	None	80	34
2	Yes	Did Not Reach	60	None	None	77	25
3	Yes	Did Not Reach	70	None	None	87	33
4	Yes	Did Not Reach	70	None	None	77	33
5	Yes	Did Not Reach	60	None	None	70	25
6	Yes	Did Not Reach	80	None	None	90	35

**Table 2****Test Flame Application Position - Edge Of Decorative Face**

Specimen No.	Ignition Yes/No	Time from start of test for flame tip to reach 150mm (seconds)	Extent of Flame Spread (mm)	Flaming Debris	Glowing	Extent of Damaged Area (mm)	
						Height	Width
1	Yes	Did Not Reach	140	Yes	None	115	65
2	Yes	Did Not Reach	130	Yes	None	120	68
3	Yes	Did Not Reach	140	Yes	None	120	65
4	Yes	Did Not Reach	130	Yes	None	105	68
5	Yes	Did Not Reach	130	Yes	None	110	65
6	Yes	Did Not Reach	140	Yes	None	100	68



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