BTTG

BCTC

CARPET TECHNICAL CENTRE

Confidential Report

Our Ref: 25/07011K/01/16

Notified Body
for PPE Directive,
Construction Products
Regulation & Marine
Equipment Directive
I.D. No. 0338 & 0339

British Carpet Technical Centre
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10 February 2016

Our Ref: 25/07011K/01/16
Your Ref:

Forbo Flooring UK Ltd
High Holborn Road
Ripley
Derbyshire
Derby
DE5 3NT

Job Title:	**Fire Test on One Sample of Carpet Tiles**
Clients Order Ref:	4500815766
Date of Receipt:	14 January 2016
Reference:	**Outline**
Description of Sample:	Loop Pile Bitumen Backed Tufted Carpet Tiles
Measurements:	50cm x 50cm
Work Requested:	BCTC were requested to carry out a fire test on the sample of carpet tiles supplied to BS EN 13501-1.

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FIRE TESTS ACCORDING TO BS EN ISO 11925-2:2002
Reaction to fire tests for building products – Part 2:
Ignitability when subjected to direct impingement of flame

Date of Test: 02/02/2016

Conditioning

Test specimens and filter paper conditioned as described in BS EN 13238:2001.

Procedure

The sample was tested in accordance with BS EN ISO 11925-2:2002.

Three specimens from each direction were tested in accordance with the above standard. Specified filter paper was placed beneath the specimen holder and replaced between tests.

The specimens were mounted vertically in the specimen holder so that one end and both sides were enclosed with the exposed end 30mm from the end of the frame. The burner was inclined at an angle of 45º. The flame height was set at 20 mm with the flame impinging on the specimen for 15 seconds on the centre line, 40 mm above the bottom edge.

A marker was placed 150 mm above the upper end of the burner and the time recorded when the flame tip reached the marker, if applicable. The following parameters were also recorded:-

1. If ignition occurs
2. Presence of flaming debris, if applicable
3. Ignition of the filter paper, if applicable

Duration of test

For a flame application time of 15 seconds, the total test duration is 20 seconds after application of the flame.

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Classification Criteria

The samples were classified according to BS EN 13501-1:2002 Fire classification of Construction Products and Building Elements: Part 1 – Classification using Test Data from Reaction to Fire Tests, Table 1 – Classes of reaction to fire performance for construction products excluding floorings.

Flaming Classification	
Classification	Criteria (mean values)
E_{FL} F_{FL}	Fs ≤ 150mm within 20 seconds None (No performance determined)

Flaming droplets / particles classification	
Classification	Criteria
No classification d2	Pass Fail (Ignition of paper)

Results

Specimen		Ignition (Yes or No)	Tip of flame reaches 150mm		Flaming droplets	
			Yes or No	Time taken (s)	Yes or No	Ignition of Filter paper (Yes or No)
Machine Direction	1	No	No	N/A	No	No
	2	No	No	N/A	No	No
	3	No	No	N/A	No	No
Across Machine Direction	1	No	No	N/A	No	No
	2	No	No	N/A	No	No
	3	Yes	No	N/A	No	No

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FIRE TESTS ACCORDING TO BS EN ISO 9239-1:2002
Reaction to fire tests for Floorings - Part 1: Determination of the burning behaviour using a radiant heat source (ISO 9239-1:2002)

Date of Test: 02/02/2016

Conditioning

The specimens were conditioned in accordance with BS EN 13238:2001. The substrate used was a fibre cement board (ISO 390) with a thickness of (6±1)mm and a density of (1,800±200) Kg/m^3 representing the standard substrate of Class A1fl or A2fl.

Procedure

The test was carried out in accordance with BS EN ISO 9239-1. The sponsor sampled and cut the specimens to the dimensions stated.

Specimens were individually placed in the combustion chamber and allowed to preheat for two minutes under a radiant panel, which gives an imposed radiant flux ranging from approximately 11.0 kW/m^2 to 1.0 kW/m^2 along the specimen.

The pilot flame used was the line burner as described and was applied to the surface of the specimen for 10 minutes and then removed.

The flame front was measured at the end of the test or at 30 minutes if applicable.

Test termination was considered to be when the flame front self extinguished or at 30 minutes, which ever is the sooner.

The heat flux from the panel incident on the specimen when self extinguished or at 30 minutes (critical heat flux CHF or HF-30) was calculated from a prior calibration.

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Classification Criteria

The samples were classified according to BS EN 13501-1:2002: Fire classification of Construction Products and Building Elements: Part 1: Classification using Test Data from Reaction to Fire Tests.

For floorings, including their surface coverings the classes are:

Classification	Classification Criteria (mean values) (kW/m2)
Bfl Cfl Dfl	8.0 4.5 3.0
	Smoke Production % x min
s1 s2	≤ 750 Not s1

When tested to BS EN ISO 11925-2:2002 the sample has to have a flame spread (Fs) of: Fs ≤ 150mm within 20 seconds (Class Efl).

Results

The test results relate to the behaviour of the test specimens of a material under the particular conditions of test; they are not intended to be the sole criterion for assessing the full potential fire hazard of the materials in use.

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Results (Continued)

Specimen No.	Direction of specimen	Smoke Obscuration Max %	Smoke Obscuration % x min	Maximum Flame front (mm)	Critical Heat Flux (kW/m^2)	Duration of Flaming (sec)
1	Machine	25	110	250	8.0	755
2	Across	21	88	250	8.0	839
3	Machine	28	104	245	8.1	813
4	Machine	25	112	250	8.0	787
Mean of 3 specimens	Machine	26	109	248	8.0	785

Distance Burnt (mm)	Time for each specimen to burn (s) 1	2	3	4
50	167	163	174	171
100	211	222	204	204
150	277	276	236	250
200	321	354	308	286
250	597	474	---	654
300	---	---	---	---

Note

One specimen was initially tested in each direction and whichever direction gave the worst result a further two specimens were tested. Only the results of the 3 specimens in the same direction were used to calculate the mean results.

The specimens of floor covering were tested loose laid onto a 6mm fibre cement board as defined in BS EN 13238:2001.

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Comments

In our opinion, based on the tests carried out on the sample supplied;

a) the results of the BS EN ISO 11925-2:2002 test indicate the sample meets the requirements of a Class E_{FL}. It should be noted that this is only class that can be achieved when tested to this method alone.

b) the results of the BS EN ISO 9239-1:2002 test indicate the sample meets the requirements of a Class B_{FL}-s1 when tested to this method alone.

Conclusion

In our opinion, the results indicate that the sample when classified to BS EN 13501-1:2002 meets an overall classification of: **Class B_{fl}-s1**.

Uncertainty of measurement has not been taken into account when presenting the test result. The relevant uncertainty value is included as an annex which forms an integral part of the report.

Reported by:…… A Shute, Fire Technician

Countersigned by:…….. P Doherty, Operational Head

Enquiries concerning this report should be addressed to Customer Services.

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Uncertainty Budget - Annex

The uncertainty budget for BS EN 13501-1:2002 was determined as follows:-

Overall (BS EN ISO 9239-2)

The uncertainty varies, therefore:

At position between a **Euroclass B to C ± 15%**
At position between a **Euroclass C to D ± 15.5%**
At position between a **Euroclass D to E ± 17.5%**