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Our Ref: 2503856B/01/11
Your Ref:
Order No: P 11786 KRO

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Client: Gradus Carpets Ltd.
3 First Avenue
Poynton Industrial Estate
Poynton
Cheshire
SK12 1YJ

Job Title: **Fire Classification on One Sample of Carpet Tiles**

Material Received: 28 January 2011

Reference: **Stratus 11**
Description of Sample: Loop Pile
Bitumen Backed
Tufted Carpet
Measurements: 50cm x 50cm

Brief: BCTC were requested to carry out a Fire Classification Test according to BS EN ISO 13501-1 on the sample of carpet tiles supplied.

UKAS Accreditation: Our Laboratories are UKAS accredited. However, it should be noted that tests marked * are not UKAS accredited in this report. They are not included in the UKAS Accreditation Schedule for our laboratory, either due to the work not conforming fully to the standard (e.g. reduced number of specimens) or to it being outside the scope of our accreditation, or subcontracted.

Uncertainty: An estimation of uncertainty of measurement has not been taken into account when making a judgement to any pass/fail criteria.

Testing Atmosphere: Unless otherwise specified the sample has been conditioned and tested, where appropriate, in the standard atmosphere for conditioning and testing textiles (BS EN ISO 139:2005) of 65±4% r.h. and 20±2°C.





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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: 04/02/2011

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 45°. 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.



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 _s ≤ 150mm within 20 seconds
F _{FL}	None (No performance determined)

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

Results

	<u>Ignition</u> (Yes or No)	<u>Time of</u> <u>flaming if</u> <u>ignition</u> <u>occurs (s)</u>	<u>Tip of flame</u> <u>reaches 150mm</u> <u>Yes or</u> <u>No</u> <u>Time</u> <u>taken (s)</u>		<u>Flaming droplets</u> <u>Ignition of Filter</u> <u>paper (Yes or No)</u>	<u>Classification</u>
Warp 1	No	N/A	No	N/A	No	E _{FL}
Warp 2	No	N/A	No	N/A	No	E _{FL}
Warp 3	No	N/A	No	N/A	No	E _{FL}
Weft 1	No	N/A	No	N/A	No	E _{FL}
Weft 2	No	N/A	No	N/A	No	E _{FL}
Weft 3	No	N/A	No	N/A	No	E _{FL}



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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: 04/02/2011

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 $(1,800 \pm 200)$ Kg/m³ 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/m² to 1.0 kW/m² 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, whichever 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/m ²)
B _{fl}	8.0
C _{fl}	4.5
D _{fl}	3.0
	Smoke Production % x min
s1	≤ 750
s2	Not s1

When tested to BS EN ISO 11925-2:2002 the sample has to have a flame spread (Fs) of: $F_s \leq 150\text{mm}$ within 20 seconds (Class E_{fl}).

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)

<u>Specimen No.</u>	<u>Direction of specimen</u>	<u>Smoke Obscuration</u>		<u>Maximum Flame front (mm)</u>	<u>Critical Heat Flux (kW/m²)</u>	<u>Duration of Flaming (sec)</u>
		<u>Max %</u>	<u>% x min</u>			
1	Machine	58	212	224	8.5	767
2	Across	37	191	238	8.2	902
3	Across	52	225	250	8.0	1255
4	Across	45	183	250	8.0	1116
Mean of 3 specimens	Across	45	200	246	8.1	1091

<u>Distance Burnt (mm)</u>	<u>Time for each specimen to burn (s)</u>			
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
50	163	164	162	170
100	271	267	261	274
150	338	348	327	347
200	402	461	390	481
250	---	---	775	741

NB. The tests were carried out in accordance with the standard in relation to carpet tiles which means that the first cross joint was situated at 250mm from the zero point. It was commented on the test that the material shrunk back at this joint and that because of the gap produced the flame did not progress beyond the joint. This means that the results just fall into the B_{fl} classification, however had the flame propagated across the joint then the classification would have been lower.

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 stuck down onto a 6mm fibre cement board as defined in BS EN 13238:2001 using Balls F41 adhesive.



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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 EFL. 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 BFL-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 Bfl-s1.

The information contained on page no's 1/7 of this certificate is hereby certified to be a correct statement of the tests and investigations carried out by the British Carpet Technical Centre on the materials referred to.

Signed: [Signature] Date: 16 February 2011
R Ryan
Fire Technician

Reported By: [Signature] Date: 16 February 2011
P Doherty
Operational Head

