



Confidential Report

Our Ref: 25/11243A/06/22





Wira House, West Park Ring Road, Leeds, LS16 6QL, UK.
Telephone: +44 (0) 113 259 1999
Email: onestopshop@bttg.co.uk
Website: www.bttg.co.uk

Date: 24 June 2022

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Client: Forbo Flooring (UK) Limited

Unit 241, Dawson Place
Walton Summit Centre
Bamber Bridge
Preston
Lancashire
PR5 8AL

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

Clients Order Ref: 4501235747

Date of Receipt: 17 June 2022

Description of Sample: One sample of carpet tiles, referenced; Infused.

Work Requested: We were asked to make the following test(s):

BS EN 13501-1

- * subcontracted test, UKAS accredited
- ** subcontracted test, EN ISO/IEC 17025 accredited
- *** not UKAS accredited



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Note: This report relates only to the items tested.

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Client: **Forbo Flooring (UK) Limited**

FIRE TESTS ACCORDING TO BS EN ISO 11925-2:2020
Reaction to fire tests for building products – Part 2:
Ignitability when subjected to direct impingement of flame

Date of Test: 23/06/2022

Conditioning

Test specimens and filter paper conditioned as described in BS EN 13238:2010.

Procedure

The sample was tested in accordance with BS EN ISO 11925-2:2020.

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.



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Client: **Forbo Flooring (UK) Limited**

Classification Criteria

The samples were classified according to BS EN 13501-1:2018 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}	Fails Class E _{FL}

Flaming droplets / particles classification	
Classification	Criteria
No classification	Pass
d2	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	Yes	No	N/A	No	No
	2	Yes	No	N/A	No	No
	3	Yes	No	N/A	No	No
Across Machine Direction	1	Yes	No	N/A	No	No
	2	Yes	No	N/A	No	No
	3	Yes	No	N/A	No	No

Note

The specimens of floor covering were tested adhered to a 6mm fibre cement board, as defined in BS EN 13238:2010 using Styccobond F41 tacikfier.

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/m³ representing the standard substrate of Class A1fl or A2fl.

Note

Test BS EN ISO 11925-2:2020 is accredited under our flexible scope policy.





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Client: **Forbo Flooring (UK) Limited**

FIRE TESTS ACCORDING TO BS EN ISO 9239-1:2010

Reaction to fire tests for Floorings - Part 1: Determination of the burning behaviour using a radiant heat source (ISO 9239-1:2010)

Date of Test: 23/06/2022

Conditioning

The specimens were conditioned in accordance with BS EN 13238:2010. 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 9239-1:2010. 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 13501-1:2018 - 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)
Bfl	8.0
Cfl	4.5
Dfl	3.0
	Smoke Production % x min
s1	≤ 750
s2	Not s1

When tested to BS EN ISO 11925-2:2020 the sample has to have a flame spread (Fs) of: $F_s \leq 150\text{mm}$ 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		Maximum Flame front (mm)	Critical Heat Flux (kW/m ²)	Duration of Flaming (sec)
		Max %	% x min			
1	Machine	18	58	250	7.9	1800
2	Across	22	50	250	7.9	1800
3	Across	19	58	250	7.9	1500
4	Across	20	100	250	7.9	1560
Mean of 3 specimens	Across	20	69	250	7.9	1620

Distance Burnt (mm)	Time for each specimen to burn (s)			
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
50	140	180	200	190
100	300	320	290	300
150	420	460	480	480
200	760	730	660	680
250	1500	1680	1200	1490

Observations

The tests were carried out in accordance with the standard in relation to carpet tiles which means that the first cross join was situated at 250mm from the zero point. It was commented on the test that the material shrunk back at this join and that because of the gap produced the flame did not progress beyond the join. This means that the results just fall into the **B_{f1}** classification, however had the flame propagated across the join 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 tacked to a 6mm fibre cement board, as defined in BS EN 13238:2010 using Styccobond F41 tacikfier.



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Comment

The results meet the requirements of a probable Class B_{fl}-s1, but a definite Class C_{fl}-s1, as specified in BS EN 13501-1:2018.

Where required to make a judgement to any pass/fail criteria an estimation of uncertainty of measurement has been taken into account. Under our Policy we have used a non-binary decision rule.

See our decision rules Policy (<http://www.bttg.co.uk/decision-rules-policy>) for further information.

Reported by:.....*23 March*..... B Marsden (Mrs), Senior laboratory Technician

Countersigned by:.....*[Signature]*..... P Doherty Manager

Enquiries concerning this report should be addressed to Customer Services.





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Uncertainty Budget - Annex

The uncertainty budget for BS EN 13501-1:2018 was determined as follows:-

BS EN ISO 11925-2:2020

±2 seconds for time recorded removal of flame and terminate test

Overall (BS EN ISO 9239-1:2010)

The uncertainty varies, therefore:

- | | | |
|----|-----------------------------------|------|
| a) | At position between 0 – 450mm | +7% |
| b) | At position between 450mm -1000mm | +8% |
| | Smoke Obscuration - | ±15% |



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