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**Report**

Project number: T11-32397  
Report number: T11.32397.03br

**Received:**

Three different resilient PVC floor covering marked as:  
1. mFLOR 25-05 PU BLUE; TÜV reference: MT11-32397.03,  
2. mFLOR 20-03 PU BLUE; TÜV reference: MT11-32397.04, and  
3. mFLOR 18-03 PU BLUE; TÜV reference: MT11-32397.05.

**Client:**

Contractor, manufacturer : EnDesign Limited  
Product name/family : Product Family 1, see appendix I, page seven.

**Request:**

Classification of burning behaviour according to EN 13501:2007 and addition to Product Family 1.

Reaction to fire test, according to:

- EN ISO 11925 Reaction to fire tests for building products, Part 2: Ignitability when subjected to direct impingement of flame (ISO 11925-2:2002).
- EN ISO 9239 Reaction to fire tests for floor coverings, Part 1: Determination of the burning behaviour using a radiant heat source (ISO 9239-1:2002).

**Results:**

On pages two up to and including six.

**Appendix:**

On page seven.

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**Article**  
Product Family 1

**Appendix**  
1- PRODUCT FAMILY 1,  
description of samples and  
results

TRN applies General Terms & Conditions  
which are filed at the office of the Clerk for  
civil affairs at the Court in Zutphen (the  
Netherlands) under number 35/2010, dated  
November 17th 2010.

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 Product Family 01

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## TEST RESULTS

### Description of sample

Product description based on the information received from the customer:

Product ID : **mFLOR 25-05 PU BLUE\***  
 TÜV reference : MT11-32397.03  
 Pattern no. : KL 56072\*  
 Batch no. : 10.12.21\*  
 Dimensions : Strips/Tiles, 18.42x121.92x2.5mm\*  
 Package : 3.37 m<sup>2</sup>\*  
 Wear layer : 0.57 mm  
 Total mass per unit area : 4220 g/m<sup>2</sup>  
 Material : PVC, heterogeneous\*  
 Finish : PU finish\*  
 Surface layer : Transparent  
 Surface structure : Wood structure, embossed

\* manufacturer's declaration

### Ignitability EN-ISO 11925-2:2010

Conditioning time, climate : 3 days, 23 ± 2 °C and 50 ± 5 %R.H.  
 Date of testing : 14-06-2011  
 Description of substrate : 6 mm. Fibre cement board, 1800 kg/m<sup>3</sup>.  
 Flame application : Surface.  
 Application time : 15 seconds.

Direction:	In production					Across production				
Total burning time <sup>1</sup> (15 s)	15	15	15	15	15	15	15	15	15	15
Flame tip reaches 150 mm (s)	no	no	no	no	no	no	no	no	no	no
Extent of damaged area, length (mm)	55	40	35	40	40	55	50	55	55	55
Extent of damaged area, width (mm)	10	10	10	8	10	12	10	11	11	11
Material melts (yes/no)	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Shrinks away <sup>2</sup> (yes/no)	no	no	no	no	no	no	no	no	no	no
Glowing <sup>3</sup> (sec)	no	no	no	no	no	no	no	no	no	no
Flaming debris (yes/no)	no	no	no	no	no	no	no	no	no	no
Ignition of filter paper (yes/no)	no	no	no	no	no	no	no	no	no	no

1 Inclusive a flame application time of 15 or 30 seconds with surface or edge impingement

2 Shrinks away from flame without being ignited

3 The time at which it occurs and its duration

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**TEST RESULTS – continuation**

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**Description of sample**

Product description based on the information received from the customer:

Product ID : **mFLOR 20-03 PU BLUE\***  
 TÜV reference : MT11-32397.04  
 Pattern no. : KL 62079\*  
 Batch no. : 10.09.07\*  
 Dimensions : Strips/Tiles, 91.44x 15.254x 2.0mm\*  
 Package : 3.34 m<sup>2</sup>\*  
 Wear layer : 0.38 mm  
 Total mass per unit area : 3440 g/m<sup>2</sup>  
 Material : PVC, heterogeneous\*  
 Finish : PU finish\*  
 Surface layer : Transparent  
 Surface structure : Wood structure, embossed

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\* manufacturer's declaration

**Ignitability EN-ISO 11925-2:2010**

Conditioning time, climate : 3 days, 23 ± 2 °C and 50 ± 5 %R.H.  
 Date of testing : 14-06-2011  
 Description of substrate : 6 mm. Fibre cement board, 1800 kg/m<sup>3</sup>.  
 Flame application : Surface.  
 Application time : 15 seconds.

Direction:	In production					Across production				
Total burning time <sup>1</sup> (15 s)	15	15	15	15	15	15	15	15	15	15
Flame tip reaches 150 mm (s)	no	no	no	no	no	no	no	no	no	no
Extent of damaged area, length (mm)	40	40	45	45	45	40	40	40	40	35
Extent of damaged area, width (mm)	7	7	6	7	7	8	7	8	8	7
Material melts (yes/no)	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Shrinks away <sup>2</sup> (yes/no)	no	no	no	no	no	no	no	no	no	no
Glowing <sup>3</sup> (sec)	no	no	no	no	no	no	no	no	no	no
Flaming debris (yes/no)	no	no	no	no	no	no	no	no	no	no
Ignition of filter paper (yes/no)	no	no	no	no	no	no	no	no	no	no

1 Inclusive a flame application time of 15 or 30 seconds with surface or edge impingement

2 Shrinks away from flame without being ignited

3 The time at which it occurs and its duration

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**Description of sample**

Product description based on the information received from the customer:

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Product ID : **mFLOR 18-03 PU BLUE\***  
 TÜV reference : MT11-32397.05  
 Name : mFlor 18-03 PU BLUE\*  
 Batch no. : 11.04.24\*  
 Dimensions : Strips/Tiles, 121,92 x 22,86 x 1,8mm\*  
 Package : 3,34 m<sup>2</sup>\*  
 Wear layer : 0.34 mm  
 Total mass per unit area : 3430 g/m<sup>2</sup>  
 Material : PVC, heterogeneous\*  
 Finish : PU finish\*  
 Surface layer : Transparent  
 Surface structure : Wood structure, embossed

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\* manufacturer's declaration

**Ignitability EN-ISO 11925-2:2010**

Conditioning time, climate : 3 days, 23 ± 2 °C and 50 ± 5 %R.H.  
 Date of testing : 14-06-2011  
 Description of substrate : 6 mm. Fibre cement board, 1800 kg/m<sup>3</sup>.  
 Flame application : Surface.  
 Application time : 15 seconds.

Direction:	In production					Across production				
	15	15	15	15	15	15	15	15	15	15
Total burning time <sup>1</sup> (15 s)	15	15	15	15	15	15	15	15	15	15
Flame tip reaches 150 mm (s)	no	no	no	no	no	no	no	no	no	no
Extent of damaged area, length (mm)	35	40	40	35	40	30	35	30	35	30
Extent of damaged area, width (mm)	8	8	9	9	8	10	10	8	8	8
Material melts (yes/no)	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Shrinks away <sup>2</sup> (yes/no)	no	no	no	no	no	no	no	no	no	no
Glowing <sup>3</sup> (sec)	no	no	no	no	no	no	no	no	no	no
Flaming debris (yes/no)	no	no	no	no	no	no	no	no	no	no
Ignition of filter paper (yes/no)	no	no	no	no	no	no	no	no	no	no

1 Inclusive a flame application time of 15 or 30 seconds with surface or edge impingement

2 Shrinks away from flame without being ignited

3 The time at which it occurs and its duration

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**Radiant Panel test EN ISO 9239-1:2010**
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Conditioning time, climate : 11 days, 23 ± 2°C and 50 ± 5% R.H.  
 Date of testing : 06-06-2011  
 Description of substrate : Fibre cement board, 6±1 mm, 1800±200 kg/m<sup>3</sup>  
 conforming to EN 13238.  
 Sampling procedure : by contractor.  
 Description of cleaning used : none.  
 Fixing method : loose laid.

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Test specimen, orientation	TÜV sample reference	Flame spread (cm)	CRF (kW/m <sup>2</sup> )	peak light attenuation (%)	Smoke production (%.min)	Indicative classification <sup>1</sup>
1* ⊥	MT11-32397.05	6.0	10.7	19.7	19	B <sub>fl-s1</sub>
2* ↑	MT11-32397.05	6.0	10.7	19.8	17	B <sub>fl-s1</sub>
3* ↑	MT11-32397.03	8.0	10.5	16.3	31	B <sub>fl-s1</sub>
4* ↑	MT11-32397.04	9.0	10.3	24.6	56	B <sub>fl-s1</sub>

Remarks: flashing observed, no transitory- or sustained flaming,  
 \* specimen extinguished naturally  
 1 the recorded CRF-value would imply this classification could be achieved, according to EN 13501:2007. It is only based on one sample.

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## TEST RESULTS - continuation

### CONCLUSION:

According to EN 13501:2007 the tested samples of the aforementioned samples meets the requirements of **Class B<sub>fl</sub>-s1**.

#### Classification criteria Family of Products 1:

Class B<sub>fl</sub>-s1:

- Critical flux (CRF)  $\geq 8.00 \text{ kW.m}^2$ .
- Smoke production, Smoke  $\leq 750 \text{ \% . Min}^{-1}$ .

According to these criteria all of the aforementioned samples meet the requirements of Product Family 1.

#### Statements:

The test results only relate to the behaviour of the test specimens of the examined product under the particular conditions of the test in laboratory conditions; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use. The method might not be suitable if the product is exposed to much larger flames or heat radiant sources.

The validity of this report will expire five years after its issue or directly after alterations or modifications of the examined product (combination)(s) and/or the criteria. This report shall not be reproduced, except in full, without the written approval of the testing laboratory.

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**APPENDIX I: PRODUCT FAMILY 1, brief description of samples and results**

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Quality	Total mass	Total thickness
	g/m <sup>2</sup>	mm
mFLOR 25-05 PU BLUE	4220	2.60
mFLOR 20-03 PU BLUE	3440	2.02
mFLOR 18-03 PU BLUE	3430	1.82

Table 1: A list of qualities of Product Family 1 that have been tested according to EN 9239-1:2010.

Quality	Test specimen, orientation	CRF (kW/m <sup>2</sup> )	Smoke production (%.min)	Date of testing	Indicative classification <sup>1</sup>
mFLOR 18-03 PU BLUE	width	10.7	19	06-06-2011	B <sub>g</sub> -s1
mFLOR 18-03 PU BLUE	longitude	10.7	17	06-06-2011	B <sub>g</sub> -s1
mFLOR 20-03 PU BLUE	longitude	10.5	31	06-06-2011	B <sub>g</sub> -s1
mFLOR 25-05 PU BLUE	longitude	10.3	56	06-06-2011	B <sub>g</sub> -s1

Table 2: The radiant panel test results (EN-ISO 9239-:20101) from the qualities of the Product Family 1.