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The Netherlands

## **Report**

Project number : 89202643  
Report number : 89202643.03br

### **Received:**

A sample of floor covering, entrance mat, marked as: “**Coral Duo EV**”;  
TÜV sample reference: MT12-36545.03.

### **Request:**

Classification of burning behaviour according to EN 13501-1:2007.

### **Test method:**

Identification parameters : EN 1307.  
Ignitability (direct impingement of flame) : EN ISO 11925-2.  
Reaction to fire (radiant panel) : EN ISO 9239-1.

### **Results:**

See page two up to and including three.

### **Appendix:**

See page four up to and including eleven.

### **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.

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### **Date**

14 December, 2012

**Project number**  
89202643

**Report number**  
89202643.03br

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### **Article**

Coral Duo EV

### **Appendix**

I : Flooring Radiant Panel Single  
Specimen Report – 8 pages

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**TEST RESULTS**
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 ➤ *Identification parameters EN 1307:2008*

Type of manufacture	: Tufted
Type of pile	: Cut pile
Type of use surface	: Patterned
Type of secondary backing	: Vinyl backing (synthetic)*
Pile Fibre	: 100% PA*
Total mass per unit area g/m <sup>2</sup>	: 3145
Effective pile mass, g/m <sup>2</sup>	: 508
Total thickness, mm	: 8.9
Thickness of the pile, mm	: 5.4
Pile density, g/cm <sup>3</sup>	: 0.095
Gauge (G), inch	: 3/16
Stitches/10 cm	: 25.0
Number of tufts/m <sup>2</sup>	: 31,470

\* = manufacturer's declaration

 ➤ *Ignitability EN-ISO 11925-2:2010*

Conditioning time, climate	: 6 days, 23 ± 2 °C and 50 ± 5 %
Date of testing	: 29-10-2012
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
Flame tip reaches 150 mm (s)	no	no	no	no	no	no
Extent of damaged area, length (mm)	94	90	93	97	103	88
Extent of damaged area, width (mm)	15	15	14	16	13	16
Material melts (yes/no)	yes	yes	yes	yes	yes	yes
Shrinks away <sup>2</sup> (yes/no)	no	no	no	no	no	no
Glowing <sup>3</sup> (sec)	no	no	no	no	no	no
Flaming debris (yes/no)	no	no	no	no	no	no
Ignition of filter paper (yes/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

**TEST RESULTS – follow-up**
**Date**  
 14 December, 2012

 ➤ *Radiant Panel test ISO 9239-1:2010*
**Project number**  
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Date of testing : 29-10-2012 (1+2) and 05-11-2012 (3+4)  
 Conditioning time, climate : 4 days, 23 ± 2 °C and 50 ± 5 %  
 Description of substrate : Fibre cement board, 8±2 mm ,1800±200 kg/m<sup>3</sup>  
 conforming to EN 13238.  
 Sampling procedure : By contractor.  
 Description of cleaning used : None.  
 Fixing method : Fixed, glued down with Eurocol Eurostar 540 on  
 23-10-2012 (1+2) and 30-10-2012 (3+4).

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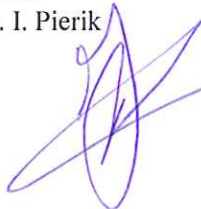
Test specimen, orientation	Flame spread (cm)	CRF (kW/m <sup>2</sup> )	Peak light attenuation (%)	Smoke production (%.min)
1, ↑	10.0	10.2	20.0	79
2, ⊥	13.0	9.8	34.0	146
3, ⊥	9.0	10.3	20.5	72
4, ⊥	9.0	10.3	15.1	61
<b>Mean</b>	<b>10.3</b>	<b>10.1</b>	<b>23.2</b>	<b>93</b>

Remarks: No flashing, transitory- or sustained flaming observed.  
 All specimen extinguished naturally.

**CONCLUSION**

According to EN 13501-1:2007 the tested sample of the aforementioned quality **Coral Duo EV**, glued down with Eurocol Eurostar 540, meets the requirements of **Class B<sub>fl</sub> - s1**.

**Author:**  
 Mrs. I. Pierik


**Review:**  
 Mr. R. Boerboom


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## APPENDIX I: Flooring Radiant Panel Single Specimen Report

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### Flooring Radiant Panel Single Specimen Report

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Standard : EN ISO 9239-1:2002  
Laboratory : TÜV Rheinland Nederland B.V.  
Sponsor : Forbo - Coral Duo EV - glued Eurocol 540  
Date of test : Oct. 29 2012

Specimen description : MT12-36545.03  
Test name : Prod #1  
File name : D:\FRPFILES\12100038.CSV  
Test number in series : 4

Flux calibration file name : C:\FRPSOFT\CALIB\FLX12012.CSV

Thickness (mm) :  
Density (kg/m<sup>3</sup>) :

Test duration : 12 minutes 09 seconds (729 s)  
Substrate used? : Yes  
Substrate : Calcium silicate  
Fixing method : adhesive  
Conditioned? : Yes  
Conditioning temp. (°C) : 23  
Conditioning RH (%) : 50

#### Test Results

Time to ignition : 2 minutes 02 seconds (122 s)  
Time to flameout : 12 minutes 04 seconds (724 s)  
Extent of burning (mm) : 100  
Critical flux at extinguishment (kW/m<sup>2</sup>) : >= 10,9  
HF-10 (kW/m<sup>2</sup>) : 10,16  
HF-20 (kW/m<sup>2</sup>) : >= 10,9  
HF-30 (kW/m<sup>2</sup>) : >= 10,9  
Flame spread at 10 minutes (mm) : 100  
Flame spread at 20 minutes (mm) : -1  
Flame spread at 30 minutes (mm) : -1  
Peak light attenuation (%) : 19,96  
Time to peak light attenuation : 6 minutes 44 seconds (404 s)  
Total integrated smoke (%.min) : 79,37  
**Potential classification** : A2(0)/B(0)  
**Smoke production classification** : s1

These results relate only to the behaviour of the specimens of the 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.

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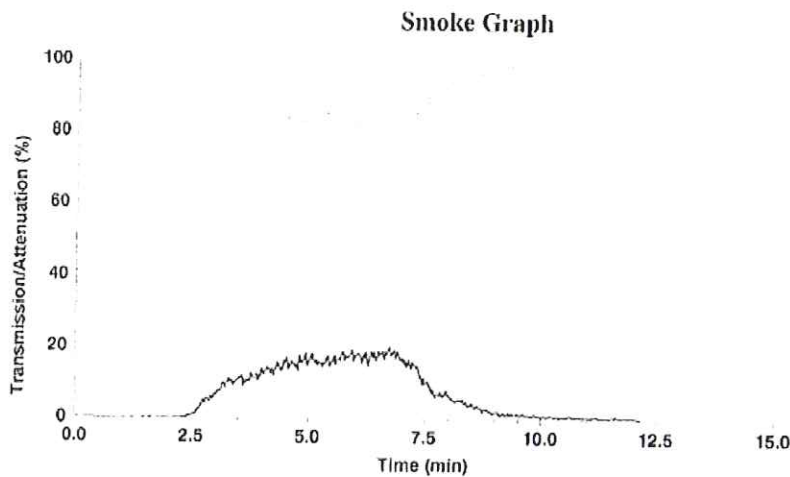
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Test name : Prod #1  
File name : D:\FRPFILES\12100038.CSV

### Rake Results

Position (mm)	Time (s)	Flux (kW/m <sup>2</sup> )	Qsb (MJ/m <sup>2</sup> )	Position (mm)	Time (s)	Flux (kW/m <sup>2</sup> )	Qsb (MJ/m <sup>2</sup> )
60	322	10.7	3.232	510	-	3.6	-
110	-	10.0	-	560	-	3.0	-
160	-	9.5	-	610	-	2.5	-
210	-	8.9	-	660	-	2.1	-
260	-	7.9	-	710	-	1.8	-
310	-	6.9	-	760	-	1.6	-
360	-	6.0	-	810	-	1.4	-
410	-	5.1	-	860	-	1.3	-
460	-	4.2	-	910	-	1.2	-

### Comments

Specimen extinguished naturally.

These results relate only to the behaviour of the specimens of the 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.

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### Flooring Radiant Panel Single Specimen Report

Standard : EN ISO 9239-1:2002  
Laboratory : TÜV Rheinland Nederland B.V.  
Sponsor : Forbo - Coral Duo EV - glued Eurocol 540  
Date of test : Oct. 29 2012

Specimen description : MT12-36545.03  
Test name : Across #1  
File name : D:\FRPFILES\12100039.CSV  
Test number in series : 4

Flux calibration file name : C:\FRPSOFT\CALIB\FLX12012.CSV

Thickness (mm) :  
Density (kg/m<sup>3</sup>) :

Test duration : 13 minutes 13 seconds (793 s)  
Substrate used? : Yes  
Substrate : Calcium silicate  
Fixing method : adhesive  
Conditioned? : Yes  
Conditioning temp. (°C) : 23  
Conditioning RH (%) : 50

#### Test Results

Time to ignition : 2 minutes 02 seconds (122 s)  
Time to flameout : 13 minutes 11 seconds (791 s)  
Extent of burning (mm) : 130  
Critical flux at extinguishment (kW/m<sup>2</sup>) : 9.83  
HF-10 (kW/m<sup>2</sup>) : 9.83  
HF-20 (kW/m<sup>2</sup>) : >= 10.9  
HF-30 (kW/m<sup>2</sup>) : >= 10.9  
Flame spread at 10 minutes (mm) : 130  
Flame spread at 20 minutes (mm) : -1  
Flame spread at 30 minutes (mm) : -1  
Peak light attenuation (%) : 33.96  
Time to peak light attenuation : 6 minutes 02 seconds (362 s)  
Total integrated smoke (%.min) : 146.47  
Potential classification : A2(II)/B(II)  
Smoke production classification : s1

These results relate only to the behaviour of the specimens of the 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.

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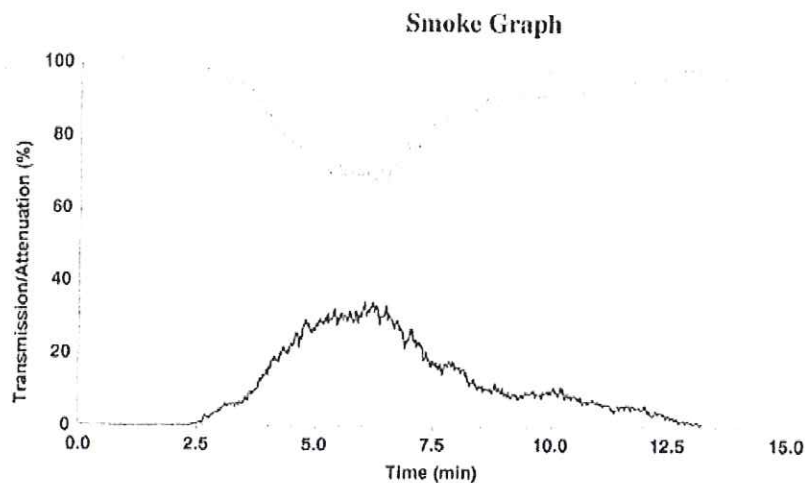
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Test name : Across #1  
File name : D:\FRPFILES\12100039.CSV

### Rake Results

Position (mm)	Time (s)	Flux (kW/m <sup>2</sup> )	Qsb (MJ/m <sup>2</sup> )	Position (mm)	Time (s)	Flux (kW/m <sup>2</sup> )	Qsb (MJ/m <sup>2</sup> )
60	301	10.7	3.021	510	-	3.6	-
110	412	10.0	3.925	560	-	3.0	-
160	-	9.5	-	610	-	2.5	-
210	-	8.9	-	660	-	2.1	-
260	-	7.9	-	710	-	1.8	-
310	-	6.9	-	760	-	1.6	-
360	-	6.0	-	810	-	1.4	-
410	-	5.1	-	860	-	1.3	-
460	-	4.2	-	910	-	1.2	-

### Comments

Specimen extinguished naturally.

These results relate only to the behaviour of the specimens of the 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.

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Standard : EN ISO 9239-1:2002  
 Laboratory : TÜV Rheinland Nederland B.V.  
 Sponsor : Forbo - 89202643 - Coral DUO EV - glued Eurocol 540 - IPK  
 Date of test : Nov. 05 2012

Specimen description : MT12-36545.03  
 Test name : Across #2  
 File name : D:\FRPFILES\12110003.CSV  
 Test number in series : 4

Flux calibration file name : C:\FRPSOFT\CALIB\FLX12012.CSV

Thickness (mm) :  
 Density (kg/m<sup>3</sup>) :

Test duration : 12 minutes 10 seconds (730 s)  
 Substrate used? : Yes  
 Substrate : Calcium silicate  
 Fixing method : adhesive  
 Conditioned? : Yes  
 Conditioning temp. (°C) : 23  
 Conditioning RH (%) : 50

#### Test Results

Time to ignition : 2 minutes 03 seconds (123 s)  
 Time to flameout : 12 minutes 07 seconds (727 s)  
 Extent of burning (mm) : 90  
 Critical flux at extinguishment (kW/m<sup>2</sup>) : >= 10.9  
 HF-10 (kW/m<sup>2</sup>) : 10.29  
 HF-20 (kW/m<sup>2</sup>) : >= 10.9  
 HF-30 (kW/m<sup>2</sup>) : >= 10.9  
 Flame spread at 10 minutes (mm) : 90  
 Flame spread at 20 minutes (mm) : -1  
 Flame spread at 30 minutes (mm) : -1  
 Peak light attenuation (%) : 20.46  
 Time to peak light attenuation : 5 minutes 46 seconds (346 s)  
 Total integrated smoke (%.min) : 71.5  
**Potential classification : A2(l)/B(l)**  
**Smoke production classification : s1**

These results relate only to the behaviour of the specimens of the 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.



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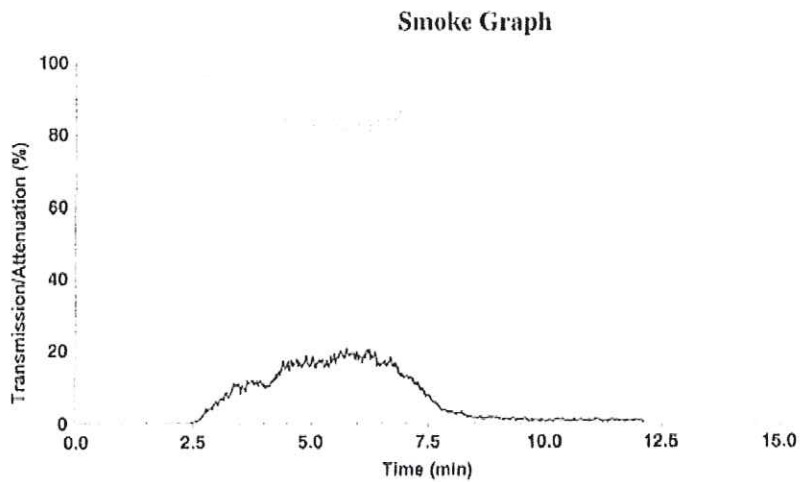
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Test name : Across #2  
File name : D:\FRPFILES\12110003.CSV

### Rake Results

Position (mm)	Time (s)	Flux (kW/m <sup>2</sup> )	Qsb (MJ/m <sup>2</sup> )	Position (mm)	Time (s)	Flux (kW/m <sup>2</sup> )	Qsb (MJ/m <sup>2</sup> )
60	278	10.7	2.791	510	-	3.6	-
110	-	10.0	-	560	-	3.0	-
160	-	9.5	-	610	-	2.5	-
210	-	8.9	-	660	-	2.1	-
260	-	7.9	-	710	-	1.8	-
310	-	6.9	-	760	-	1.6	-
360	-	6.0	-	810	-	1.4	-
410	-	5.1	-	860	-	1.3	-
460	-	4.2	-	910	-	1.2	-

### Comments

Specimen extinguished naturally.

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Laboratory : TÜV Rheinland Nederland B.V.  
Sponsor : Forbo - 89202643 - Coral DUO EV - glued Eurcol 540 - IPK  
Date of test : Nov. 05 2012

Specimen description : MT12-36545.03  
Test name : Across #3  
File name : D:\FRPFILES\12110004.CSV  
Test number in series : 4

Flux calibration file name : C:\FRPSOFT\CALIB\FLX12012.CSV

Thickness (mm) :  
Density (kg/m<sup>3</sup>) :

Test duration : 12 minutes 06 seconds (726 s)  
Substrate used? : Yes  
Substrate : Calcium silicate  
Fixing method : adhesive  
Conditioned? : Yes  
Conditioning temp. (°C) : 23  
Conditioning RH (%) : 50

#### Test Results

Time to ignition : 2 minutes 01 seconds (121 s)  
Time to flameout : 12 minutes 03 seconds (723 s)  
Extent of burning (mm) : 90  
Critical flux at extinguishment (kW/m<sup>2</sup>) : >= 10.9  
HF-10 (kW/m<sup>2</sup>) : 10.29  
HF-20 (kW/m<sup>2</sup>) : >= 10.9  
HF-30 (kW/m<sup>2</sup>) : >= 10.9  
Flame spread at 10 minutes (mm) : 90  
Flame spread at 20 minutes (mm) : -1  
Flame spread at 30 minutes (mm) : -1  
Peak light attenuation (%) : 15.07  
Time to peak light attenuation : 4 minutes 37 seconds (277 s)  
Total integrated smoke (%.min) : 60.88  
**Potential classification** : A2(0)/B(0)  
**Smoke production classification** : s1

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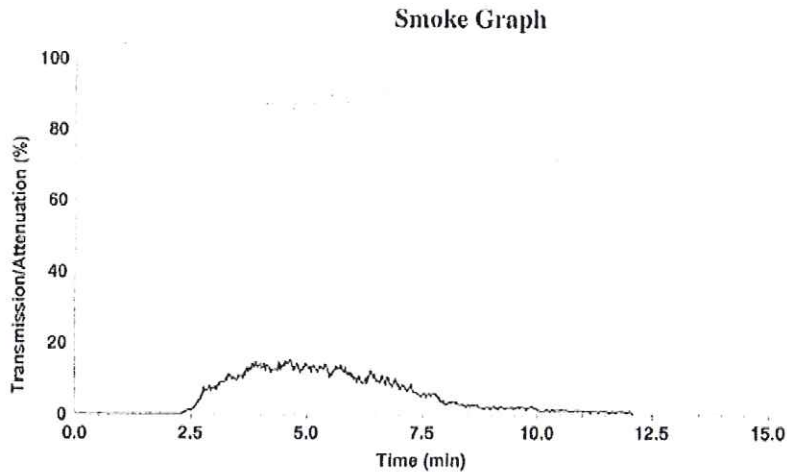
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Test name : Across #3  
File name : D:\FRPFILES\12110004.CSV

### Rake Results

Position (mm)	Time (s)	Flux (kW/m <sup>2</sup> )	Qsb (MJ/m <sup>2</sup> )	Position (mm)	Time (s)	Flux (kW/m <sup>2</sup> )	Qsb (MJ/m <sup>2</sup> )
60	336	10.7	3.373	510	-	3.6	-
110	-	10.0	-	560	-	3.0	-
160	-	9.5	-	610	-	2.5	-
210	-	8.9	-	660	-	2.1	-
260	-	7.9	-	710	-	1.8	-
310	-	6.9	-	760	-	1.6	-
360	-	6.0	-	810	-	1.4	-
410	-	5.1	-	860	-	1.3	-
460	-	4.2	-	910	-	1.2	-

### Comments

Specimen extinguished naturally.

These results relate only to the behaviour of the specimens of the 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.