

Return address P.O. box 337, 7500 AH Enschede, The Netherlands

Forbo Flooring Coral N.V.  
Att.: Mr. R. Koomen  
P.O. Box 17  
1560 AA  
KROMMENIE  
The Netherlands

TÜV Rheinland Nederland B.V.  
The Netherlands

Postal address:  
P.O. Box 337  
7500 AH Enschede

Parking and delivery:  
Josink Esweg 10  
7545 PN Enschede

[www.tuv.com/nl](http://www.tuv.com/nl)

T +31 88 888 7888  
F +31 88 888 7859

Jan.brinks@nl.tuv.com  
Ilse.pierik@nl.tuv.com

**Report**

Project number : 89202718  
Report number : 89202718.04br

**Date**  
December 07, 2012

**Received:**

A sample of floor covering, entrance mat, marked as: "Coral Grip HD";  
TÜV sample reference: MT12-36652.04.

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**Request:**

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

**Phone number client**  
+31 75 627 3273

**Fax number client**  
+31 75 627 3274

**Test method:**

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

**Article**  
Coral Grip HD

**Results:**

See page two up to and including three.

**Appendix**  
I : Flooring Radiant Panel Single  
Specimen Report – 8 pages

**Appendix:**

See page four up to and including eleven.

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.

## TEST RESULTS

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### ➤ Identification parameters EN 1307:2008

Type of manufacture : Non-woven  
Type of use surface : Scraping mat, structured  
Type of secondary backing : Vinyl backing (synthetic)\*  
Pile Fibre : 100% Vinyl\*  
Total mass per unit area g/m<sup>2</sup> : 7680  
Total thickness, mm : 15.1

\* = manufacturer's declaration

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

Conditioning time, climate : 8 days, 23 ± 2 °C and 50 ± 5 %  
Date of testing : 15 November 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
Flame tip reaches 150 mm (s)	no	no	no	no	no
Extent of damaged area, length (mm)	70	62	65	70	70
Extent of damaged area, width (mm)	16	18	18	18	20
Material melts (yes/no)	yes	yes	yes	yes	yes
Shrinks away <sup>2</sup> (yes/no)	no	no	no	no	no
Glowing <sup>3</sup> (sec)	no	no	no	no	no
Flaming debris (yes/no)	no	no	no	no	no
Ignition of filter paper (yes/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  
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### ➤ Radiant Panel test ISO 9239-1:2010

Date of testing : 15-11-2012(1+2) and 26-11-2011 (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 with Eurocol Eurostar 540 on  
06-11-2012 (1+2) and 16-11-2012 (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. ⊥	24.0	8.3	84.2	428
2. ↑	25.0	8.1	82.1	410
3. ↑	24.0	8.3	77.9	431
4. ↑	24.0	8.3	83.1	416
<b>Mean</b>	<b>24.3</b>	<b>8.2</b>	<b>81.0</b>	<b>419</b>

Remarks: Flashing observed, no transitory- or sustained flaming.  
All the four tested specimen extinguished naturally.

## CONCLUSION

According to EN 13501-1:2007 the tested sample of the aforementioned quality **Coral Grip HD** meets the requirements of **Class B<sub>fl</sub> - s1**.

### 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.

Author:  
Mrs. I. Pierik

Review:  
Mr. R. Boerboom

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**APPENDIX I: Flooring Radiant Panel Single Specimen Report****Date**  
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**Flooring Radiant Panel Single Specimen Report**

Standard : EN ISO 9239-1:2002  
Laboratory : TÜV Rheinland Nederland B.V.  
Sponsor : Forbo - 89202718 - Coral Grip HD EV - gleud Eurocol  
Eurostar S40  
Date of test : Nov. 15 2012

Specimen description : MT12-36652.04  
Test name : Prod #1  
File name : D:\FRPFILES\12110026.CSV  
Test number in series : 4

Flux calibration file name : CAFRPSOFT\CALIB\FLX12012.CSV

Thickness (mm) :  
Density (kg/m³) :

Test duration : 12 minutes 17 seconds (737 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 14 seconds (734 s)  
Extent of burning (mm) : 250  
Critical flux at extinguishment (kW/m²) : 8.09  
HF-10 (kW/m²) : 8.09  
HF-20 (kW/m²) : >= 10.9  
HF-30 (kW/m²) : >= 10.9  
Flame spread at 10 minutes (mm) : 250  
Flame spread at 20 minutes (mm) : -1  
Flame spread at 30 minutes (mm) : -1  
Peak light attenuation (%) : 82.14  
Time to peak light attenuation : 3 minutes 58 seconds (238 s)  
Total integrated smoke (%.min) : 409.86

**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.

## APPENDIX I: Flooring Radiant Panel Single Specimen Report

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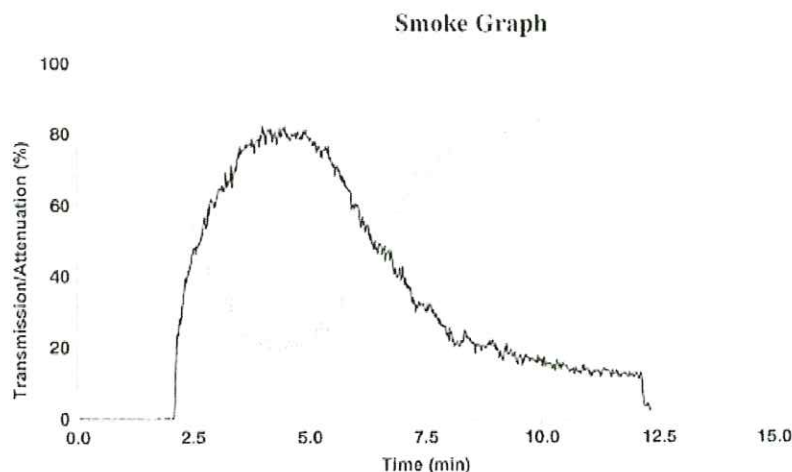
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Test name : Prod #1  
File name : D:\FRPFILES\12110026.CSV

### Rake Results

Position (mm)	Time (s)	Flux (kW/m²)	Qsh (MJ/m²)	Position (mm)	Time (s)	Flux (kW/m²)	Qsh (MJ/m²)
60	137	10.7	1.375	510	-	3.6	-
110	164	10.0	1.562	560	-	3.0	-
160	201	9.5	1.788	610	-	2.5	-
210	231	8.9	1.823	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 - 89202718 - Coral Grip HD EV - gleud Eurocol  
Eurostar 540  
Date of test : Nov. 15 2012

Specimen description : MT12-36652.04  
Test name : Across #1  
File name : D:\FRPFILES\12110027.CSV  
Test number in series : 4

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

Thickness (mm) :  
Density (kg/m³) :

Test duration : 13 minutes 08 seconds (788 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 : 13 minutes 06 seconds (786 s)  
Extent of burning (mm) : 240  
Critical flux at extinguishment (kW/m²) : 8.29  
HF-10 (kW/m²) : 8.29  
HF-20 (kW/m²) : >= 10.9  
HF-30 (kW/m²) : >= 10.9  
Flame spread at 10 minutes (mm) : 240  
Flame spread at 20 minutes (mm) : -1  
Flame spread at 30 minutes (mm) : -1  
Peak light attenuation (%) : 84.22  
Time to peak light attenuation : 3 minutes 59 seconds (239 s)  
Total integrated smoke (%.min) : 427.81  
**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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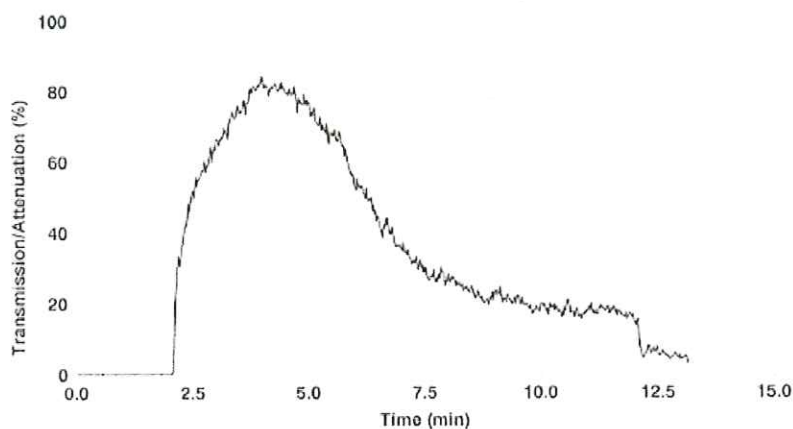
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### Smoke Graph



Test name : Across #1  
File name : D:\FRPFILES\12110027.CSV

### Rake Results

Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)	Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)
60	135	10.7	1.355	510	-	3.6	-
110	153	10.0	1.458	560	-	3.0	-
160	191	9.5	1.699	610	-	2.5	-
210	219	8.9	1.728	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 Grip HD EV - 89202718 - IPK  
 Date of test : Nov. 19 2012

Specimen description : MT12-36652.04  
 Test name : Prod #2  
 File name : D:\FRPFILES\12110035.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 01 seconds (121 s)  
 Time to flameout : 12 minutes 07 seconds (727 s)  
 Extent of burning (mm) : 240  
 Critical flux at extinguishment (kW/m<sup>2</sup>) : 8.29  
 HF-10 (kW/m<sup>2</sup>) : 8.29  
 HF-20 (kW/m<sup>2</sup>) : >= 10.9  
 HF-30 (kW/m<sup>2</sup>) : >= 10.9  
 Flame spread at 10 minutes (mm) : 240  
 Flame spread at 20 minutes (mm) : -1  
 Flame spread at 30 minutes (mm) : -1  
 Peak light attenuation (%) : 77.91  
 Time to peak light attenuation : 4 minutes 34 seconds (274 s)  
 Total integrated smoke (%.min) : 430.71  
**Potential classification** : A2(0)/B(0)  
**Smoke production classification** : s1

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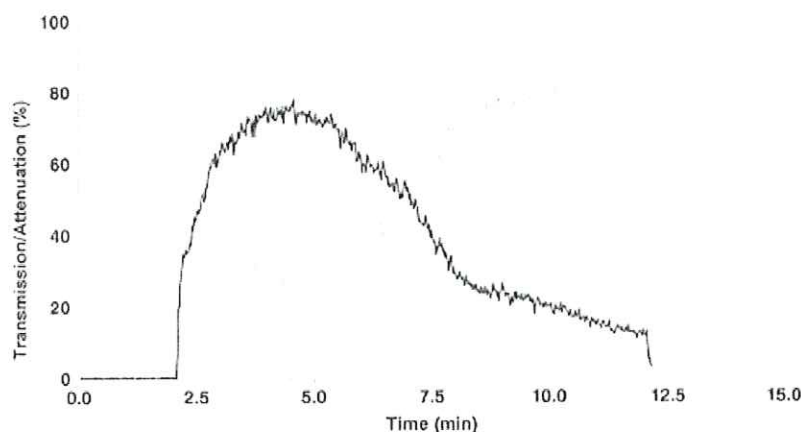
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### Smoke Graph



Test name : Prod #2  
File name : D:\FRPFILES\12110035.CSV

### Rake Results

Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)	Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)
60	132	10.7	1.325	510	-	3.6	-
110	148	10.0	1.410	560	-	3.0	-
160	172	9.5	1.530	610	-	2.5	-
210	219	8.9	1.728	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 Grip HD EV - 89202718 - IPK  
Date of test : Nov. 19 2012

Specimen description : MT12-36652.04  
Test name : Prod #3  
File name : D:\FRPFILES\12110036.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 28 seconds (748 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 06 seconds (126 s)  
Time to flameout : 12 minutes 26 seconds (746 s)  
Extent of burning (mm) : 240  
Critical flux at extinguishment (kW/m<sup>2</sup>) : 8.29  
HF-10 (kW/m<sup>2</sup>) : 8.29  
HF-20 (kW/m<sup>2</sup>) : >= 10.9  
HF-30 (kW/m<sup>2</sup>) : >= 10.9  
Flame spread at 10 minutes (mm) : 240  
Flame spread at 20 minutes (mm) : -1  
Flame spread at 30 minutes (mm) : -1  
Peak light attenuation (%) : 83.08  
Time to peak light attenuation : 4 minutes 17 seconds (257 s)  
Total integrated smoke (%.min) : 416.26  
**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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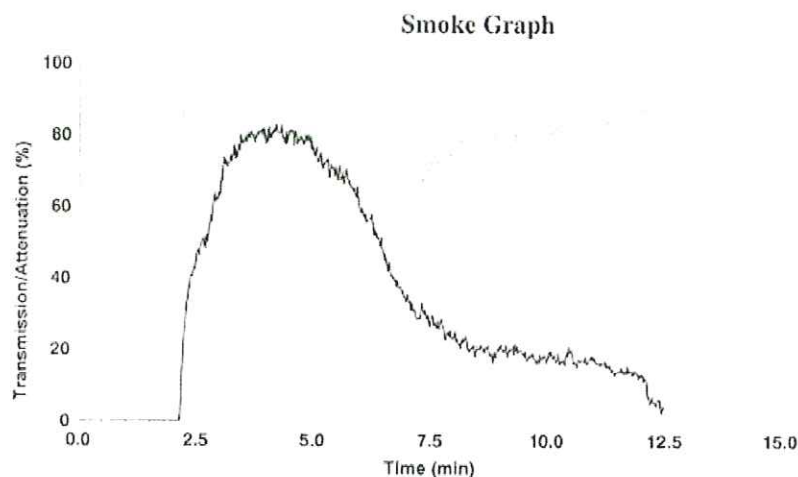
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Test name : Prod #3  
File name : D:\FRPFILES\12110036.CSV

### Rake Results

Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)	Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)
60	149	10.7	1.496	510	-	3.6	-
110	151	10.0	1.439	560	-	3.0	-
160	231	9.5	2.055	610	-	2.5	-
210	233	8.9	1.839	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.