

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

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

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

Report

Project number : T11-33626
Report number : T11.33626.04br

Date
19-10-2011

Received:

A sample of floor covering, entrance mat, marked as: “**Coral Welcome FR**”;
TÜV sample reference: MT11-33626.02.

Project number
T11-33626

Report number
T11.33626.04br

Request:

Classification of burning behaviour according to EN 13501-1:2007; tested while the specimen is glued to the substrate with Eurocol 540.

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 Welcome FR
Tested glued.

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
Date
 19-10-2011

Project number
 T11-33626

Report number
 T11.33626.04br

Article
 Coral Welcome FR
 Tested glued.

Page
 2/11

 ➤ *Identification parameters EN 1307:2008*

Type of manufacture : tufted
 Type of pile : cut pile
 Type of use surface : patterned (stripes)
 Type of secondary backing : latex backing (synthetic)
 Pile Fibre : 100% PA*
 Total mass per unit area g/m² : 2726
 Effective pile mass, g/m² : 625
 Total thickness, mm : 7.6
 Thickness of the pile, mm : 4.4
 Pile density, g/cm³ : 0.14
 Gauge (G), inch : 9/64
 Stitches/10 cm : 29
 Number of tufts/m² : 81,200

* = manufacturer's declaration

 ➤ *Ignitability EN-ISO 11925-2:2010*

Conditioning time, climate : min. 3 days, 23 ± 2 °C and 50 ± 5 %
 Date of testing : 26-09-2011
 Description of substrate : 6 mm. Fibre cement board, 1800 kg/m³.
 Flame application : Surface.
 Application time : 15 seconds.

Direction:	In production			Across production		
Total burning time ¹ (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)	73	71	70	69	72	70
Extent of damaged area, width (mm)	15	15	15	14	14	15
Material melts (yes/no)	yes	yes	yes	yes	yes	yes
Shrinks away ² (yes/no)	no	no	no	no	no	no
Glowing ³ (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
19-10-2011

➤ *Radiant Panel test ISO 9239-1:2010*

Project number
T11-33626

Date of testing : 04-10-2011(1+2) and 17-10-2011 (3+4)
Conditioning time, climate : 5 days, 23 ± 2 °C and 50 ± 5 %
Description of substrate : Fibre cement board, 8±2 mm ,1800±200 kg/m³ conforming to EN 13238.

Report number
T11.33626.04br

Sampling procedure : by contractor.
Description of cleaning used : none.
Fixing method : fixed with Eurocol 540.

Article
Coral Welcome FR
Tested glued.

Page
3/11

Test specimen, orientation	Flame spread (cm)	CRF (kW/m ²)	Peak light attenuation (%)	Smoke production (%.min)
1, ⊥	5.0	≥10.9	0.8	3
2, ↑	5.0	≥10.9	0.8	4
3, ↑	6.0	≥10.9	1.5	6
4, ↑	5.0	≥10.9	0.9	4
Mean	5.3	≥10.9	1.1	5

Remarks: no flashing, transitory- or sustained flaming,
* specimen extinguished naturally

CONCLUSION

According to EN 13501:2007 the tested sample of the aforementioned quality **Coral Welcome FR fixed with Eurocol 540** meets the requirements of **Class B_{fl} - s1**.

Statement

The test results relate to the behaviour of the test specimens of the examined 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.

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: *b.a. R. Boerboom*
Mr. J. Brinks

All rights reserved.

No part of this report may be reproduced, provided to and/or examined by third parties, and/or published by print, photoprint, microfilm, in electronic form or any other means without the explicit previous written consent of TÜV Rheinland Nederland B.V.

In case this report was drafted within the context of an assignment to TÜV Rheinland Nederland B.V., the rights and obligations of contracting parties are subject to the General Terms & Conditions for Advisory, Research and Certification assignments to TÜV Rheinland Nederland B.V. and/or the relevant agreement concluded between the contracting parties. © 2010 TÜV Rheinland Nederland B.V.

APPENDIX I: Flooring Radiant Panel Single Specimen Report

Date
19-10-2011

Project number
T11-33626

Report produced with the Fire Testing Technology FRPSoft software

Page 1
Report number
T11.33626.04br

Flooring Radiant Panel Single Specimen Report

Article
Coral Welcome FR
Tested glued.

Page
4/11

Standard : EN ISO 9239-1:2002
Laboratory : TÜV Rheinland Nederland B.V.
Sponsor : Forbo Flooring Coral - Welcome FR - T11-33626 -
glued with Eurocol 540 @ 27-10-2011
Date of test : Oct. 04 2011
Specimen description : MT11-33626.02
Test name : Prod #1
File name : D:\FRPFILES\11100007.CSV
Test number in series : 4
Flux calibration file name : C:\FRPSOFT\CALIB\FLX11004.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 14 seconds (134 s)
Time to flameout : 12 minutes 15 seconds (735 s)
Extent of burning (mm) : 50
Critical flux at extinguishment (kW/m²) : >= 10.9
HF-10 (kW/m²) : >= 10.9
HF-20 (kW/m²) : >= 10.9
HF-30 (kW/m²) : >= 10.9
Flame spread at 10 minutes (mm) : 50
Flame spread at 20 minutes (mm) : -1
Flame spread at 30 minutes (mm) : -1
Peak light attenuation (%) : 0.78
Time to peak light attenuation : 8 minutes 15 seconds (495 s)
Total integrated smoke (%.min) : 3.02
Potential classification : A2(fl)/B(fl)
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

Date
19-10-2011

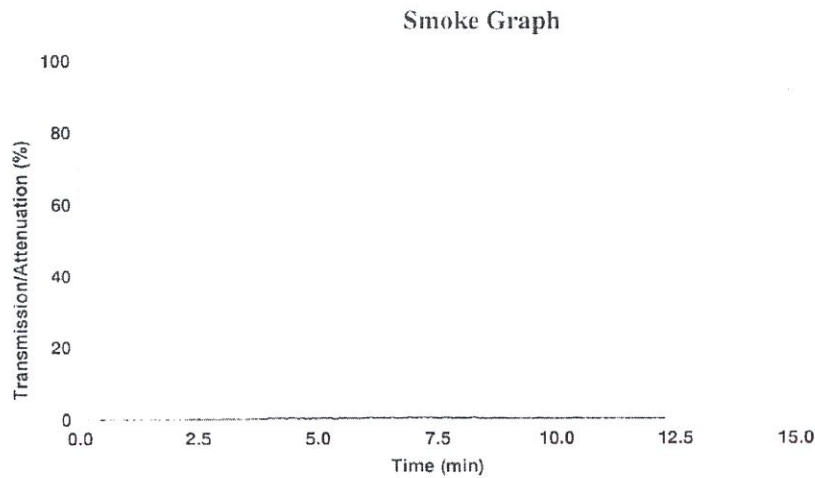
Project number
T11-33626

Report produced with the Fire Testing Technology FRPSoft software

page 1 **Report number**
T11.33626.04br

Article
Coral Welcome FR
Tested glued.

Page
5/11



Test name : Prod #1
File name : D:\FRPFILES\11100007.CSV

Rake Results

Position (mm)	Time (s)	Flux (kW/m ²)	Qsb (MJ/m ²)	Position (mm)	Time (s)	Flux (kW/m ²)	Qsb (MJ/m ²)
60	-	11.3	-	510	-	3.7	-
110	-	10.5	-	560	-	3.1	-
160	-	9.9	-	610	-	2.6	-
210	-	9.1	-	660	-	2.2	-
260	-	8.1	-	710	-	1.8	-
310	-	7.1	-	760	-	1.6	-
360	-	6.1	-	810	-	1.4	-
410	-	5.2	-	860	-	1.3	-
460	-	4.3	-	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.

APPENDIX I: Flooring Radiant Panel Single Specimen Report

Report produced with the Fire Testing Technology FRPSoft software

page 1

Date
19-10-2011

Project number
T11-33626

Report number
T11.33626.04br

Article
Coral Welcome FR
Tested glued.

Page
6/11

Flooring Radiant Panel Single Specimen Report

Standard : EN ISO 9239-1:2002
Laboratory : TÜV Rheinland Nederland B.V.
Sponsor : Forbo Flooring Coral - Welcome FR - T11-33626 -
glued with Eurocol 540 @ 27-10-2011
Date of test : Oct. 04 2011
Specimen description : MT11-33626.02
Test name : Across #1
File name : D:\FRPFILES\11100008.CSV
Test number in series : 4
Flux calibration file name : C:\FRPSOFT\CALIB\FLX11004.CSV
Thickness (mm) :
Density (kg/m³) :
Test duration : 12 minutes 42 seconds (762 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 36 seconds (756 s)
Extent of burning (mm) : 50
Critical flux at extinguishment (kW/m²) : >= 10,9
HF-10 (kW/m²) : >= 10,9
HF-20 (kW/m²) : >= 10,9
HF-30 (kW/m²) : >= 10,9
Flame spread at 10 minutes (mm) : 50
Flame spread at 20 minutes (mm) : -1
Flame spread at 30 minutes (mm) : -1
Peak light attenuation (%) : 0,79
Time to peak light attenuation : 8 minutes 03 seconds (483 s)
Total integrated smoke (%.min) : 4,36
Potential classification : **A2(f1)/B(f1)**
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

Date
19-10-2011

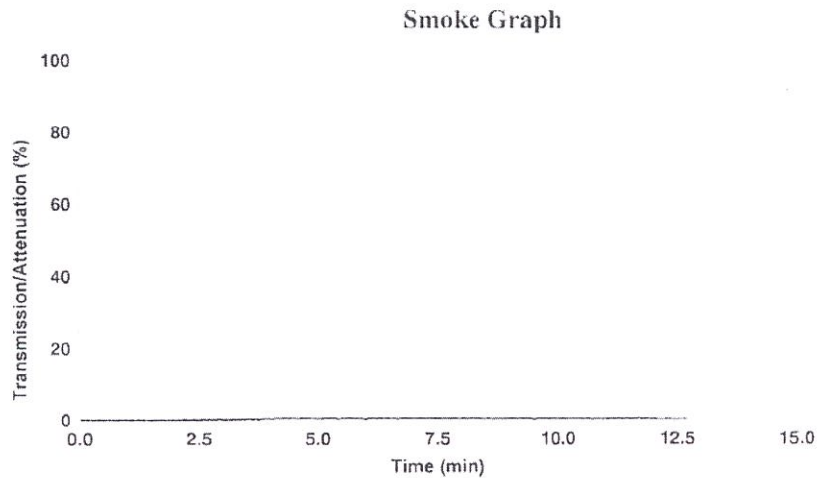
Project number
T11-33626

Report produced with the Fire Testing Technology FRPSoft software

Report number
T11.33626.04br

Article
Coral Welcome FR
Tested glued.

Page
7/11



Test name : Across #1
File name : D:\FRPFILES\11100008.CSV

Rake Results

Position (mm)	Time (s)	Flux (kW/m ²)	Qsb (MJ/m ²)	Position (mm)	Time (s)	Flux (kW/m ²)	Qsb (MJ/m ²)
60	-	11.3	-	510	-	3.7	-
110	-	10.5	-	560	-	3.1	-
160	-	9.9	-	610	-	2.6	-
210	-	9.1	-	660	-	2.2	-
260	-	8.1	-	710	-	1.8	-
310	-	7.1	-	760	-	1.6	-
360	-	6.1	-	810	-	1.4	-
410	-	5.2	-	860	-	1.3	-
460	-	4.3	-	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.

APPENDIX I: Flooring Radiant Panel Single Specimen Report

Date
19-10-2011

Project number
T11-33626

Report produced with the Fire Testing Technology FRPSoft software

page 1

Report number
T11.33626.04br

Flooring Radiant Panel Single Specimen Report

Article
Coral Welcome FR
Tested glued.

Standard : EN ISO 9239-1:2002
 Laboratory : TÜV Rheinland Nederland B.V.
 Sponsor : Forob Flooring Coral - Coral Welcome FR - T11-33626 -
 GLUED
 Date of test : Oct. 17 2011

Page
8/11

Specimen description : MT11.33626.02
 Test name : Across #2
 File name : D:\FRPFILES\11100015.CSV
 Test number in series : 4

Flux calibration file name : C:\FRPSOFT\CALIB\FLX11004.CSV

Thickness (mm) :
 Density (kg/m³) :

Test duration : 12 minutes 08 seconds (728 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 06 seconds (726 s)
 Extent of burning (mm) : 60
 Critical flux at extinguishment (kW/m²) : >= 10.9
 HF-10 (kW/m²) : >= 10.9
 HF-20 (kW/m²) : >= 10.9
 HF-30 (kW/m²) : >= 10.9
 Flame spread at 10 minutes (mm) : 60
 Flame spread at 20 minutes (mm) : -1
 Flame spread at 30 minutes (mm) : -1
 Peak light attenuation (%) : 1.47
 Time to peak light attenuation : 5 minutes 32 seconds (332 s)
 Total integrated smoke (%.min) : 6.29
Potential classification : A2(f)/B(f)
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

Date
19-10-2011

Project number
T11-33626

Report number
T11.33626.04br

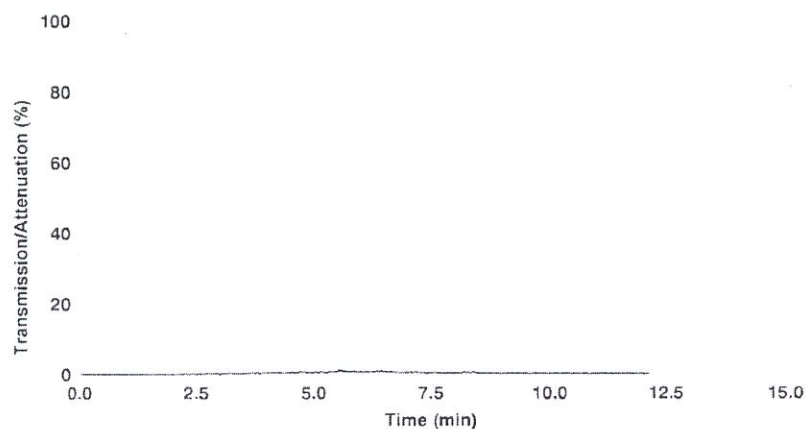
Article
Coral Welcome FR
Tested glued.

Page
9/11

Report produced with the Fire Testing Technology FRTSoft software

page 1

Smoke Graph



Test name : Across #2
File name : D:\FRPFILES\11100015.CSV

Rake Results

Position (mm)	Time (s)	Flux (kW/m ²)	Qsb (MJ/m ²)	Position (mm)	Time (s)	Flux (kW/m ²)	Qsb (MJ/m ²)
60	501	11.3	5.282	510	-	3.7	-
110	-	10.5	-	560	-	3.1	-
160	-	9.9	-	610	-	2.6	-
210	-	9.1	-	660	-	2.2	-
260	-	8.1	-	710	-	1.8	-
310	-	7.1	-	760	-	1.6	-
360	-	6.1	-	810	-	1.4	-
410	-	5.2	-	860	-	1.3	-
460	-	4.3	-	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.

APPENDIX I: Flooring Radiant Panel Single Specimen Report

Date
19-10-2011

Project number
T11-33626

Report number
T11.33626.04br

Article
Coral Welcome FR
Tested glued.

Page
10/11

Report produced with the Fire Testing Technology FRPSoft software

page 1

Flooring Radiant Panel Single Specimen Report

Standard : EN ISO 9239-1:2002
Laboratory : TÜV Rheinland Nederland B.V.
Sponsor : Forob Flooring Coral - Coral Welcome FR - T11-33626 -
GLUED
Date of test : Oct. 17 2011

Specimen description : MT11.33626.02
Test name : Across #3
File name : D:\FRPFILES\11100016.CSV
Test number in series : 4

Flux calibration file name : C:\FRPSOFT\CALIB\FLX11004.CSV

Thickness (mm) :
Density (kg/m³) :

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 01 seconds (121 s)
Time to flameout : 12 minutes 08 seconds (728 s)
Extent of burning (mm) : 50
Critical flux at extinguishment (kW/m²) : >= 10.9
HF-10 (kW/m²) : >= 10.9
HF-20 (kW/m²) : >= 10.9
HF-30 (kW/m²) : >= 10.9
Flame spread at 10 minutes (mm) : 50
Flame spread at 20 minutes (mm) : -1
Flame spread at 30 minutes (mm) : -1
Peak light attenuation (%) : 0.91
Time to peak light attenuation : 4 minutes 31 seconds (271 s)
Total integrated smoke (%.min) : 4.25

Potential classification : A2(fl)/B(fl)
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

Date
19-10-2011

Project number
T11-33626

Report number
T11.33626.04br

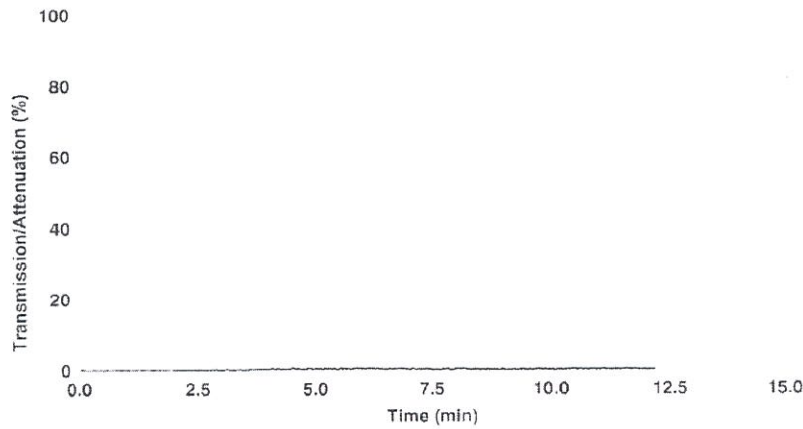
Article
Coral Welcome FR
Tested glued.

Page
11/11

Report produced with the Fire Testing Technology FRFSOft software

page 1

Smoke Graph



Test name : Across #3
File name : D:\FRPFILES\11100016.CSV

Rake Results

Position (mm)	Time (s)	Flux (kW/m ²)	Qsb (MJ/m ²)	Position (mm)	Time (s)	Flux (kW/m ²)	Qsb (MJ/m ²)
60	-	11.3	-	510	-	3.7	-
110	-	10.5	-	560	-	3.1	-
160	-	9.9	-	610	-	2.6	-
210	-	9.1	-	660	-	2.2	-
260	-	8.1	-	710	-	1.8	-
310	-	7.1	-	760	-	1.6	-
360	-	6.1	-	810	-	1.4	-
410	-	5.2	-	860	-	1.3	-
460	-	4.3	-	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.