| | | | | |
|---|---|---|---|---|
| **Prüfbericht-Nr.:** *Test Report No.*: | **89215785.01br** | **Auftrags-Nr.:** *Order No.*: | 43328 | Seite 1 von 14 *Page 1 of 14* |
| **Kunden-Referenz-Nr.:** *Client Reference No.*: | 4501064354 | **Auftragsdatum:** *Order date*: | 03.09.2019 | |
| **Auftraggeber:** *Client*: | Forbo-Novilon B.V., De Holwert 12, 7741 KC COEVORDEN, The Netherlands | | | |
| **Prüfgegenstand:** *Test item*: | Resilient floor covering | | | |
| **Bezeichnung / Typ-Nr.:** *Identification / Type No.*: | Enduro click 0.30 | | | |
| **Auftrags-Inhalt:** *Order content*: | Determination of burning behaviour | | | |
| **Prüfgrundlage:** *Test specification*: | EN 13501-1:2007+ A1:2009<br>Classification of burning behaviour<br>*Test methods: Ignitability of products subjected to direct impingement of flame (EN ISO 11925-2:2010/C1:2011) and determination of the burning behaviour using a radiant heat source (EN ISO 9239-1:2010)* | | | |

| | |
|---|---|
| **Wareneingangsdatum:** *Date of receipt*: | 04.09.2019 |
| **Prüfmuster-Nr.:** *Test sample No.*: | MT19-43328.01 |
| **Prüfzeitraum:** *Testing period*: | 04.09.2019 – 08.10.2019 |
| **Ort der Prüfung:** *Place of testing*: | Westervoortsedijk 73,<br>6827 AV Arnhem, Netherlands |
| **Prüflaboratorium:** *Testing laboratory*: | TÜV Rheinland Nederland B.V |
| **Prüfergebnis*:** *Test result**: | Siehe Sonstiges / See Other |

**geprüft von /** *tested by*:

| 09.10.2019 | M.A. van de Vlekkert | |
|---|---|---|
| **Datum** *Date* | **Name / Stellung** *Name / Position* | **Unterschrift** *Signature* |

**kontrolliert von /** *reviewed by*:

| 09.10.2019 | R. Boerboom | |
|---|---|---|
| **Datum** *Date* | **Name / Stellung** *Name / Position* | **Unterschrift** *Signature* |

**Sonstiges /** *Other*: Test result: See clause 4 on page 5.

**Zustand des Prüfgegenstandes bei Anlieferung:** *Condition of the test item at delivery*: Prüfmuster vollständig und unbeschädigt *Test item complete and undamaged*

| | | | | | |
|---|---|---|---|---|---|
| * Legende: | 1 = sehr gut | 2 = gut | 3 = befriedigend | 4 = ausreichend | 5 = mangelhaft |
| | P(ass) = entspricht o.g. Prüfgrundlage(n) | | F(ail) = entspricht nicht o.g. Prüfgrundlage(n) | N/A = nicht anwendbar | N/T = nicht getestet |
| *Legend:* | *1 = very good* | *2 = good* | *3 = satisfactory* | *4 = sufficient* | *5 = poor* |
| | *P(ass) = passed a.m. test specification(s)* | | *F(ail) = failed a.m. test specification(s)* | *N/A = not applicable* | *N/T = not tested* |

**Prüfbericht-Nr.: 89215785.01br**
*Test Report No.*:



## Liste der verwendeten Prüfmittel
## *List of used test equipment*

| **Prüfmittel**<br>*Test equipment* | **Prüfmittel-Nr. / ID-Nr.**<br>*Equipment No. / ID-No.* | **Nächste Kalibrierung**<br>*Next calibration* |
|---|---|---|
| Flooring Radiant Panel | A00929 | 11.12.2019 |
| Anemometer | A01989 | 26.09.2020 |
| Scales | A00769 | 14.09.2020 |
| Thickness gauge | A00904 | 10.01.2020 |
| Metal ruler 1 | A01759 | 12.12.2019 |
| Metal ruler 2 | A01558 | 13.01.2020 |
| Metal ruler 3 | A01567 | 21.01.2020 |
| Vertical ignitability test cabinet | A01576 | N/A |
| Stopwatch | A01699 | 11.12.2020 |
| Metal reference plate | A00813 | 12.12.2019 |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

## Produktbeschreibung
## *Product description*

| | | | |
|---|---|---|---|
| Product identity | Enduro click 0.30* | Total thickness (mm) | 4.00* |
| Product type | Heterogeneous PVC floor covering* | Top layer (mm) | 0.30* |

** applicants declaration*

Figure 1, Picture of the received sample (surface)

Figure 2, Picture of the received sample (back)

| Absatz<br>*Clause* | **EN 13501-1:2007+ A1:2009**<br>Anforderungen - Prüfungen / *Requirements - Tests* | Messergebnisse - Bemerkungen<br>*Measuring results - Remarks* | Bewertung<br>*Evaluation* |
|---|---|---|---|

| | | |
|---|---|---|
| **1** | **Construction data (indicative) of the product obtained by the testlaboratory after pre-conditioning**<br>*01-4.3-P.02-322-WI01* | |
| | Test condition | 23 ± 2ºC and 50 ± 4% relative humidity |
| | Pre conditioning, duration | ≥ 48 h & until constant mass is achieved |
| | Total thickness (mm) | 4.4 |
| | Total mass (g/m$^2$) | 6590 |
| | Density (kg/m$^3$) | 1494 |
| | *Note: the determined construction data are used for determination of constant mass, the used testmethod is not in accordance with the determination of construction data according the specification standard. Therefore the testresults should be handled as indicative.* | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **2** | **Ignitability of products subjected to direct impingement of flame**<br>*EN ISO 11925-2:2010/C1:2011* | | | | | | |
| | Date of testing | 30.09.2019 | | | | | |
| | Pre-conditioning, climate | 23 ± 2ºC and 50 ± 4% relative humidity | | | | | |
| | Pre-conditioning, duration | ≥ 48 h & until constant mass is achieved | | | | | |
| | Description of substrate | Fibre cement board, thickness 8 ± 2 mm, density 1800 ± 200 kg/m$^3$ conforming to EN 13238:2010 | | | | | |
| | Flame application | Surface | | | | | |
| | Flame application time (s) | 15 | | | | | |
| | Requirements according EN 13501-1:2007+A1:2009 | See clause 5 | | | | | |
| | **Test result(s)** | | | | | | |
| | Orientation | Length | | | Width | | |
| | Test sample | 1 | 2 | 3 | 1 | 2 | 3 |
| | Ignition of the sample | Yes | Yes | Yes | Yes | Yes | Yes |
| | Flame tip reached 150 mm above the application point | **No** | **No** | **No** | **No** | **No** | **No** |
| | Duration after application when the flame tip reached the 150 mm above the application point (s) | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** |
| | Extent of damaged area, length (mm) | 29 | 28 | 32 | 23 | 29 | 25 |
| | Extent of damaged area, width (mm) | 12 | 12 | 11 | 10 | 11 | 12 |
| | Material melts | Yes | Yes | Yes | Yes | Yes | Yes |
| | Shrinks away from flame without being ignited | No | No | No | No | No | No |
| | After glowing | No | No | No | No | No | No |
| | Flaming droplets/particles which caused ignition of filter paper | No | No | No | No | No | No |

| Absatz | **EN 13501-1:2007+ A1:2009** | Messergebnisse - Bemerkungen | Bewertung |
|---|---|---|---|
| *Clause* | Anforderungen - Prüfungen / *Requirements - Tests* | *Measuring results - Remarks* | *Evaluation* |

**3** **Determination of the burning behaviour using a radiant heat source**
*EN ISO 9239-1:2010*

| | | | | | | |
|---|---|---|---|---|---|---|
| Date of testing | 07.10.2019 & 08.10.2019 | | | | | |
| Pre-conditioning, climate | 23 ± 2ºC and 50 ± 4% relative humidity | | | | | |
| Pre-conditioning, duration | ≥ 48 h & until constant mass is achieved | | | | | |
| Description of substrate | Fibre cement board, thickness 8 ± 2 mm, density 1800 ± 200 kg/m$^3$ conforming to EN 13238:2010 | | | | | |
| Fixing method | None, samples are tested loose laid on the substrate | | | | | |
| Requirements according EN 13501-1:2007+ A1:2009 | See clause 5 | | | | | |
| **Test result(s)** | | | | | | |
| Test sample | | 1 | 2 | 3 | 4 | Mean |
| Orientation (Length: ↑ , Width: T ) | | ↑ | T | ↑ | ↑ | ↑ |
| Flame spread (cm) | | 16 | 14 | 15 | 13 | **15** |
| CHF / HF-30 (kW/m$^2$) | | 9.9 | 10.1 | 10.0 | 10.2 | **10.0** |
| Maximum light attenuation (%) | | 13.5 | 11.2 | 13.4 | 12.0 | **13.0** |
| Smoke production (%.min) | | 64 | 54 | 70 | 53 | **62** |

Observations:
Specimen 1, 2, 3 and 4: Flashing, transitory- or sustained flaming are observed.
Specimen 1, 2, 3 and 4: Extinguished naturally before the end of the test duration.

**4** **Classification of burning behaviour**
*EN 13501-1:2007+A1:2009*

| | |
|---|---|
| The product, **Enduro click 0.30** in relation to its reaction to fire behaviour is classified: | **$B_{fl}$** |
| The additional classification in relation to smoke production is: | **s1** |

## Reaction to fire classification : $B_{fl}$ – s1

Field of application
- As a floor covering in accordance with the nominal product parameters given on page 3.
- On end use substrates of classes A1 and A2-s1,d0 according to EN 13238:2010.

Statements
- This document does not represent type approval or certification of the product.
- 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 validity of this report will expire directly after alterations or modifications of the examined product (combination)(s) and/or the criteria.

| Absatz | **EN 13501-1:2007+ A1:2009** | Messergebnisse - Bemerkungen | Bewertung |
|---|---|---|---|
| *Clause* | Anforderungen - Prüfungen / *Requirements - Tests* | *Measuring results - Remarks* | *Evaluation* |

**5** **Potential classes of reaction to fire performance for floorings**
*EN 13501-1:2007+A1:2009*

| Class | Test method(s) | Classification criteria | Additional classifications |
|---|---|---|---|
| $A1_{fl}$ | EN ISO 1182 [a] and | $\Delta T \leq 30$ °C; and $\Delta m \leq 50$ %; and $t_f = 0$ (i.e. no sustained flaming) | - |
| | EN ISO 1716 | *PCS* ≤ 2.0 MJ/kg [a] and *PCS* ≤ 2.0 MJ/m² [b] and *PCS* ≤ 1.4 MJ/m² [c] and *PCS* ≤ 2.0 MJ/kg [d] | - |
| $A2_{fl}$ | EN ISO 1182 [a] or | $\Delta T \leq 50$ °C and $\Delta m \leq 50$ % and $t_f \leq 20$ s | - |
| | EN ISO 1716 and | *PCS* ≤ 3.0 MJ/kg [a] and *PCS* ≤ 4.0 MJ/m² [b] and *PCS* ≤ 4.0 MJ/m² [c] and *PCS* ≤ 3.0 MJ/kg [d] | - |
| | EN ISO 9239-1 [e] | CHF ≥ 8.0 kW/m² | Smoke production [g] |
| $B_{fl}$ | EN ISO 9239-1 [e] and | CHF ≥ 8.0 kW/m² | Smoke production [g] |
| | EN ISO 11925-2 [h]: Exposure = 15 s | Fs ≤ 150 mm within 20 s | - |
| $C_{fl}$ | EN ISO 9239-1 [e] and | CHF ≥ 4.5 kW/m² | Smoke production [g] |
| | EN ISO 11925-2 [h]: Exposure = 15 s | Fs ≤ 150 mm within 20 s | - |
| $D_{fl}$ | EN ISO 9239-1 [e] and | CHF ≥ 3.0 kW/m² | Smoke production [g] |
| | EN ISO 11925-2 [h]: Exposure = 15 s | Fs ≤ 150 mm within 20 s | - |
| $E_{fl}$ | EN ISO 11925-2 [h]: Exposure = 15 s | Fs ≤ 150 mm within 20 s | - |
| $F_{fl}$ | No performance determined | | |

[a] For homogeneous products and substantial components of non-homogeneous products.
[b] For any external non-substantial component of non-homogeneous products.
[c] For any internal non-substantial component of non-homogeneous products.
[d] For the product as a whole.
[e] Test duration = 30 min.
[f] Critical flux is defined as the radiant flux at which the flame extinguishes or the radiant flux after a test period of 30 min, whichever is the lower (i.e. the flux corresponding with the furthest extent of spread of flame).
[g] s1 = Smoke ≤ 750 % minutes;
s2 = not s1.
[h] Under conditions of surface flame attack and, if appropriate to the end use application of the product, edge flame attack.

| Absatz | **EN 13501-1:2007+ A1:2009** | Messergebnisse - Bemerkungen | Bewertung |
|---|---|---|---|
| *Clause* | Anforderungen - Prüfungen / *Requirements - Tests* | *Measuring results - Remarks* | *Evaluation* |

| 6 | **Flooring Radiant Panel Single Specimen Report** |
|---|---|

Report produced with the Fire Testing Technology FRPSoft software

page 1

## Flooring Radiant Panel Single Specimen Report

| | |
|---|---|
| Standard | : EN ISO 9239-1:2010 |
| Laboratory | : TÜV Rheinland Nederland B.V. |
| Sponsor | : Forbo Flooring 89215785 |
| Date of test | : Oct. 07 2019 |
| Specimen description | : Enduro Click 0.30 MT19-43328.01 |
| Test name | : #Prod 1 |
| File name | : D:\FRPFILES\19100009.CSV |
| Test number in series | : 4 |
| Flux calibration file name | : C:\FRPSOFT2.9A\CALIB\FLX19002.CSV |
| Thickness (mm) | : 4.4 |
| Density (kg/m³) | : 1494 |
| Test duration | : 12 minutes 09 seconds (729 s) |
| Substrate used? | : Yes |
| Substrate | : Calcium silicate |
| Fixing method | : none |
| Conditioned? | : Yes |
| Conditioning temp. (°C) | : 23 |
| Conditioning RH (%) | : 50 |

**Test Results**

| | |
|---|---|
| Time to ignition | : 2 minutes 05 seconds (125 s) |
| Time to flameout | : 12 minutes 05 seconds (725 s) |
| Extent of burning (mm) | : 160 |
| Critical flux at extinguishment (kW/m²) | : 9.90 |
| HF-10 (kW/m²) | : 10.12 |
| HF-20 (kW/m²) | : Not calculated (test duration < 20 minutes) |
| HF-30 (kW/m²) | : Not calculated (test duration < 30 minutes) |
| Flame spread at 10 minutes (mm) | : 140 |
| Flame spread at 20 minutes (mm) | : Not measured |
| Flame spread at 30 minutes (mm) | : Not measured |
| Peak light attenuation (%) | : 13.54 |
| Time to peak light attenuation | : 3 minutes 12 seconds (192 s) |
| Total integrated smoke (%.min) | : 64.4 |
| **Potential classification** | **: A2(fl)/B(fl)** |
| **Smoke production classification** | **: s1** |

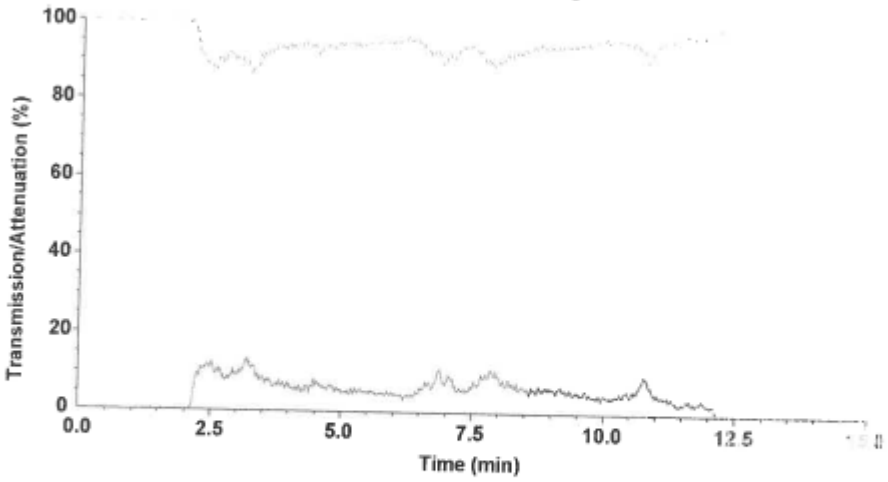
These results relate only to the behaviour of the specimens of the product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

| Absatz | **EN 13501-1:2007+ A1:2009** | Messergebnisse - Bemerkungen | Bewertung |
|---|---|---|---|
| *Clause* | Anforderungen - Prüfungen / *Requirements - Tests* | *Measuring results - Remarks* | *Evaluation* |

Report produced with the Fire Testing Technology FRPSoft software

page 2

## Smoke Graph




Test name : #Prod 1
File name : D:\FRPFILES\19100009.CSV

## Rake Results

| Position (mm) | Time (s) | Flux (kW/m²) | Qsb (MJ/m²) | Position (mm) | Time (s) | Flux (kW/m²) | Qsb (MJ/m²) |
|---|---|---|---|---|---|---|---|
| 60 | 311 | 11.1 | 3.455 | 510 | - | 2.6 | - |
| 110 | 482 | 10.4 | 5.037 | 560 | - | 3.0 | - |
| 160 | 675 | 9.9 | 6.685 | 610 | - | 2.5 | - |
| 210 | - | 9.2 | - | 660 | - | 2.1 | - |
| 260 | - | 8.2 | - | 710 | - | 1.8 | - |
| 310 | - | 7.3 | - | 760 | - | 1.6 | - |
| 360 | - | 6.1 | - | 810 | - | 1.4 | - |
| 410 | - | 5.1 | - | 860 | - | 1.2 | - |
| 460 | - | 4.2 | - | 910 | - | 1.0 | - |

**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.

| Absatz | **EN 13501-1:2007+ A1:2009** | Messergebnisse - Bemerkungen | Bewertung |
|---|---|---|---|
| *Clause* | Anforderungen - Prüfungen / *Requirements - Tests* | *Measuring results - Remarks* | *Evaluation* |

Report produced with the Fire Testing Technology FRPSoft software

page 1

# Flooring Radiant Panel Single Specimen Report

| | |
|---|---|
| Standard | : EN ISO 9239-1:2010 |
| Laboratory | : TÜV Rheinland Nederland B.V. |
| Sponsor | : Forbo Flooring 89215785 |
| Date of test | : Oct. 07 2019 |
| Specimen description | : Enduro Click 0.30 MT19-43328.01 |
| Test name | : #Cross 2 |
| File name | : D:\FRPFILES\19100010.CSV |
| Test number in series | : 4 |
| Flux calibration file name | : C:\FRPSOFT2.9A\CALIB\FLX19002.CSV |
| Thickness (mm) | : 4.4 |
| Density (kg/m³) | : 1494 |
| Test duration | : 12 minutes 32 seconds (752 s) |
| Substrate used? | : Yes |
| Substrate | : Calcium silicate |
| Fixing method | : none |
| Conditioned? | : Yes |
| Conditioning temp. (°C) | : 23 |
| Conditioning RH (%) | : 50 |

**Test Results**

| | |
|---|---|
| Time to ignition | : 2 minutes 04 seconds (124 s) |
| Time to flameout | : 12 minutes 28 seconds (748 s) |
| Extent of burning (mm) | : 140 |
| Critical flux at extinguishment (kW/m²) | : 10.12 |
| HF-10 (kW/m²) | : 10.45 |
| HF-20 (kW/m²) | : Not calculated (test duration < 20 minutes) |
| HF-30 (kW/m²) | : Not calculated (test duration < 30 minutes) |
| Flame spread at 10 minutes (mm) | : 110 |
| Flame spread at 20 minutes (mm) | : Not measured |
| Flame spread at 30 minutes (mm) | : Not measured |
| Peak light attenuation (%) | : 11.21 |
| Time to peak light attenuation | : 3 minutes 08 seconds (188 s) |
| Total integrated smoke (%.min) | : 53.75 |
| **Potential classification** | **: A2(fl)/B(fl)** |
| **Smoke production classification** | **: s1** |

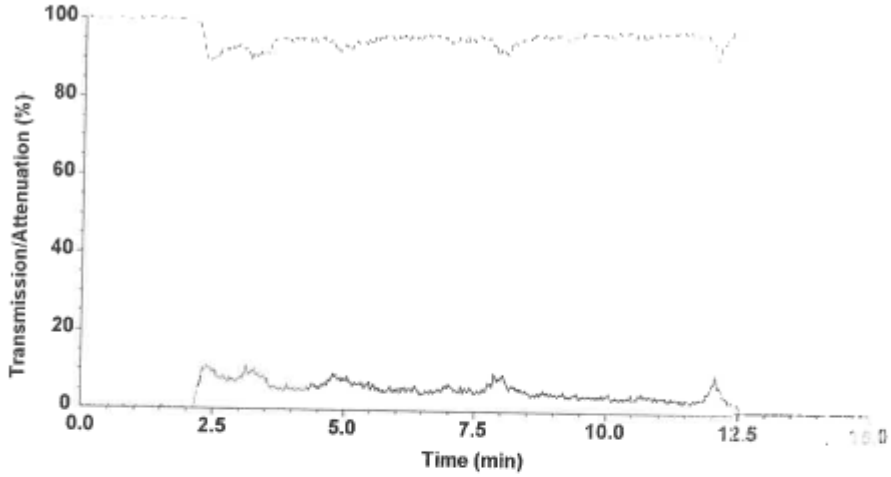
These results relate only to the behaviour of the specimens of the product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

| Absatz | **EN 13501-1:2007+ A1:2009** | Messergebnisse - Bemerkungen | Bewertung |
|---|---|---|---|
| *Clause* | Anforderungen - Prüfungen / *Requirements - Tests* | *Measuring results - Remarks* | *Evaluation* |

Report produced with the Fire Testing Technology FRPSoft software

page 2

## Smoke Graph




Test name : #Cross 2
File name : D:\FRPFILES\19100010.CSV

## Rake Results

| Position (mm) | Time (s) | Flux (kW/m²) | Qsb (MJ/m²) | Position (mm) | Time (s) | Flux (kW/m²) | Qsb (MJ/m²) |
|---|---|---|---|---|---|---|---|
| 60 | 340 | 11.1 | 3.777 | 510 | - | 3.6 | - |
| 110 | 579 | 10.4 | 6.051 | 560 | - | 3.0 | - |
| 160 | - | 9.9 | - | 610 | - | 2.5 | - |
| 210 | - | 9.2 | - | 660 | - | 2.1 | - |
| 260 | - | 8.2 | - | 710 | - | 1.8 | - |
| 310 | - | 7.3 | - | 760 | - | 1.6 | - |
| 360 | - | 6.1 | - | 810 | - | 1.4 | - |
| 410 | - | 5.1 | - | 860 | - | 1.2 | - |
| 460 | - | 4.2 | - | 910 | - | 1.0 | - |

**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.

| Absatz | **EN 13501-1:2007+ A1:2009** | Messergebnisse - Bemerkungen | Bewertung |
|---|---|---|---|
| *Clause* | Anforderungen - Prüfungen / *Requirements - Tests* | *Measuring results - Remarks* | *Evaluation* |

Report produced with the Fire Testing Technology FRPSoft software

page 1

# Flooring Radiant Panel Single Specimen Report

| | |
|---|---|
| Standard | : EN ISO 9239-1:2010 |
| Laboratory | : TÜV Rheinland Nederland B.V. |
| Sponsor | : Forbo Flooring 89215785 |
| Date of test | : Oct. 08 2019 |
| Specimen description | : Enduro Click 0.30 MT19-43328.01 |
| Test name | : #Prod 3 |
| File name | : D:\FRPFILES\19100018.CSV |
| Test number in series | : 4 |
| Flux calibration file name | : C:\FRPSOFT2.9A\CALIB\FLX19002.CSV |
| Thickness (mm) | : 4.4 |
| Density (kg/m³) | : 1494 |
| Test duration | : 12 minutes 04 seconds (724 s) |
| Substrate used? | : Yes |
| Substrate | : Calcium silicate |
| Fixing method | : none |
| 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 02 seconds (722 s) |
| Extent of burning (mm) | : 150 |
| Critical flux at extinguishment (kW/m²) | : 10.01 |
| HF-10 (kW/m²) | : 10.12 |
| HF-20 (kW/m²) | : Not calculated (test duration < 20 minutes) |
| HF-30 (kW/m²) | : Not calculated (test duration < 30 minutes) |
| Flame spread at 10 minutes (mm) | : 140 |
| Flame spread at 20 minutes (mm) | : Not measured |
| Flame spread at 30 minutes (mm) | : Not measured |
| Peak light attenuation (%) | : 13.43 |
| Time to peak light attenuation | : 5 minutes (300 s) |
| Total integrated smoke (%.min) | : 69.73 |
| **Potential classification** | **: A2(fl)/B(fl)** |
| **Smoke production classification** | **: s1** |

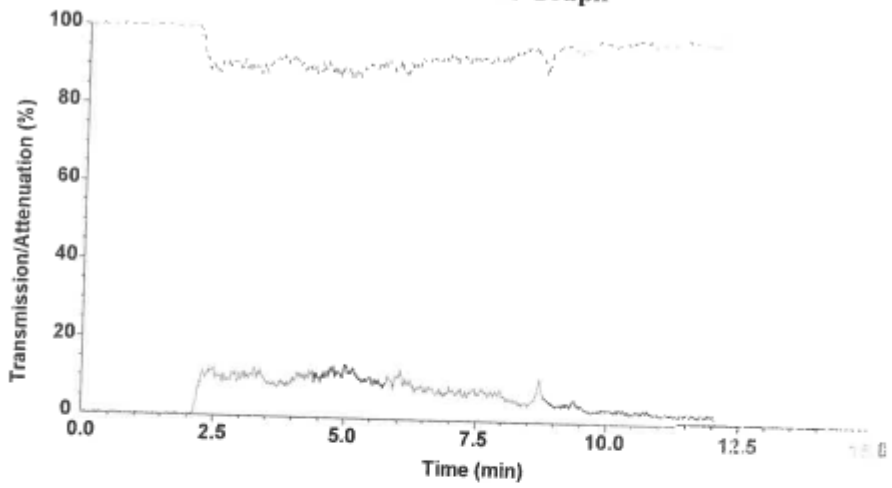
These results relate only to the behaviour of the specimens of the product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

| Absatz | **EN 13501-1:2007+ A1:2009** | Messergebnisse - Bemerkungen | Bewertung |
|---|---|---|---|
| *Clause* | Anforderungen - Prüfungen / *Requirements - Tests* | *Measuring results - Remarks* | *Evaluation* |

Report produced with the Fire Testing Technology FRPSoft software



## Smoke Graph




Test name : #Prod 3
File name : D:\FRPFILES\19100018.CSV

## Rake Results

| Position (mm) | Time (s) | Flux (kW/m²) | Qsb (MJ/m²) | Position (mm) | Time (s) | Flux (kW/m²) | Qsb (MJ/m²) |
|---|---|---|---|---|---|---|---|
| 60 | 279 | 11.1 | 3.099 | 510 | - | 3.6 | - |
| 110 | 454 | 10.4 | 4.744 | 560 | - | 3.0 | - |
| 160 | - | 9.9 | - | 610 | - | 2.5 | - |
| 210 | - | 9.2 | - | 660 | - | 2.1 | - |
| 260 | - | 8.2 | - | 710 | - | 1.8 | - |
| 310 | - | 7.3 | - | 760 | - | 1.6 | - |
| 360 | - | 6.1 | - | 810 | - | 1.4 | - |
| 410 | - | 5.1 | - | 860 | - | 1.2 | - |
| 460 | - | 4.2 | - | 910 | - | 1.0 | - |

**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.

| Absatz | **EN 13501-1:2007+ A1:2009** | Messergebnisse - Bemerkungen | Bewertung |
|---|---|---|---|
| *Clause* | Anforderungen - Prüfungen / *Requirements - Tests* | *Measuring results - Remarks* | *Evaluation* |

Report produced with the Fire Testing Technology FRPSoft software

page 1

# Flooring Radiant Panel Single Specimen Report

| | |
|---|---|
| Standard | : EN ISO 9239-1:2010 |
| Laboratory | : TÜV Rheinland Nederland B.V. |
| Sponsor | : Forbo Flooring 89215785 |
| Date of test | : Oct. 08 2019 |
| Specimen description | : Enduro Click 0.30 MT19-43328.01 |
| Test name | : #Prod 4 |
| File name | : D:\FRPFILES\19100019.CSV |
| Test number in series | : 4 |
| Flux calibration file name | : C:\FRPSOFT2.9A\CALIB\FLX19002.CSV |
| Thickness (mm) | : 4.4 |
| Density (kg/m³) | : 1494 |
| Test duration | : 12 minutes 06 seconds (726 s) |
| Substrate used? | : Yes |
| Substrate | : Calcium silicate |
| Fixing method | : none |
| Conditioned? | : Yes |
| Conditioning temp. (°C) | : 23 |
| Conditioning RH (%) | : 50 |

**Test Results**

| | |
|---|---|
| Time to ignition | : 2 minutes 04 seconds (124 s) |
| Time to flameout | : 12 minutes 04 seconds (724 s) |
| Extent of burning (mm) | : 130 |
| Critical flux at extinguishment (kW/m²) | : 10.23 |
| HF-10 (kW/m²) | : 10.23 |
| HF-20 (kW/m²) | : Not calculated (test duration < 20 minutes) |
| HF-30 (kW/m²) | : Not calculated (test duration < 30 minutes) |
| Flame spread at 10 minutes (mm) | : 130 |
| Flame spread at 20 minutes (mm) | : Not measured |
| Flame spread at 30 minutes (mm) | : Not measured |
| Peak light attenuation (%) | : 11.95 |
| Time to peak light attenuation | : 2 minutes 25 seconds (145 s) |
| Total integrated smoke (%.min) | : 52.85 |
| **Potential classification** | **: A2(fl)/B(fl)** |
| **Smoke production classification** | **: s1** |

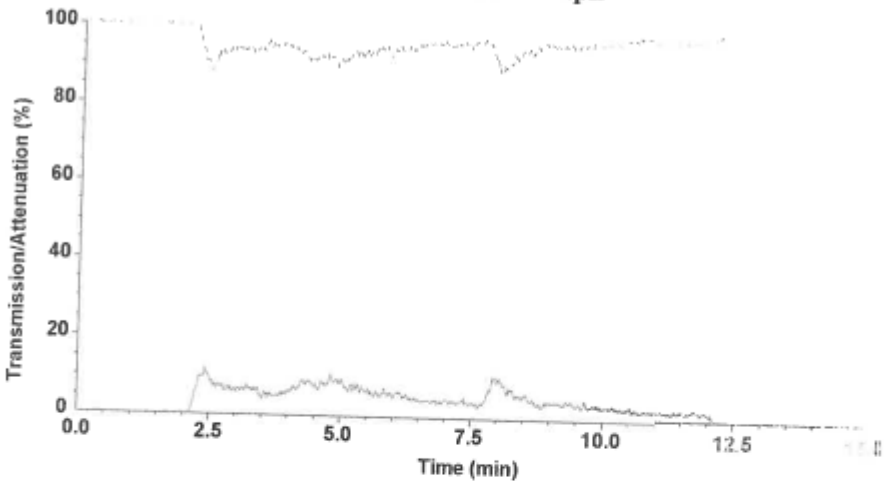
These results relate only to the behaviour of the specimens of the product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

| Absatz | **EN 13501-1:2007+ A1:2009** | Messergebnisse - Bemerkungen | Bewertung |
|---|---|---|---|
| *Clause* | Anforderungen - Prüfungen / *Requirements - Tests* | *Measuring results - Remarks* | *Evaluation* |

Report produced with the Fire Testing Technology FRPSoft software

page 2

## Smoke Graph




Test name : #Prod 4
File name : D:\FRPFILES\19100019.CSV

## Rake Results

| Position (mm) | Time (s) | Flux (kW/m²) | Qsb (MJ/m²) | Position (mm) | Time (s) | Flux (kW/m²) | Qsb (MJ/m²) |
|---|---|---|---|---|---|---|---|
| 60 | 366 | 11.1 | 4.066 | 510 | - | 3.6 | - |
| 110 | 509 | 10.4 | 5.319 | 560 | - | 3.0 | - |
| 160 | - | 9.9 | - | 610 | - | 2.5 | - |
| 210 | - | 9.2 | - | 660 | - | 2.1 | - |
| 260 | - | 8.2 | - | 710 | - | 1.8 | - |
| 310 | - | 7.3 | - | 760 | - | 1.6 | - |
| 360 | - | 6.1 | - | 810 | - | 1.4 | - |
| 410 | - | 5.1 | - | 860 | - | 1.2 | - |
| 460 | - | 4.2 | - | 910 | - | 1.0 | - |

**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.