

for the proof of fire behaviour according to DIN 4102-1



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PÜZ-Stelle (LBO): BRA09

| | |
|-------------------------------|--|
| Reference | FLT 3545915 (Translation of the German test report - no guarantee for translation of technical terms) |
| Sponsor | Convertec Veredelungstechnologie GmbH Heideweg 2-4 D – 77880 Sasbach |
| Order | 2015-06-24 Arrived 2015-06-26 |
| Description of samples | On one side coated fleeces to be used as wall-covering, named “ ART FLEECE 210 W FR “ and “ ART FLEECE 210 S FR “ (for details see page 2) |
| Delivered | 2015-06-26 |
| Content of request | Proof of flammability to classify building materials to class B1 “schwerentflammbar” according to DIN 4102-1 |
| Assessment | The examined materials, bonded to solid mineral substrates or to gypsum plaster board, meet the requirements of class B1 for “schwerentflammbare” (not easily flammable) building materials according to DIN 4102-1. (for details see page 5) |
| Validity of report | 2020-06-30 |
| Sampling | The samples were sent to the laboratory by the sponsor |

Remark: If the above-mentioned building material is not used as product according to MBO § 2, Abs. 9, Ziffer 1, there is no need for a general building supervisory test report.

This test report is not valid if the examined building material is used as product in the meaning of state building prescriptions (MBO § 17, Abs. 3).

This test report does not replace an eventually necessary proof of applicability concerning building supervisory or building laws in the meaning of state building prescriptions. This has to be verified by:

- "allgemeine bauaufsichtliche Zulassung" (general building inspectorate approval) or by
- "allgemeines bauaufsichtliches Prüfzeugnis (general building inspectorate certificate) or by
- "Zustimmung im Einzelfall (exceptional approval).

This test report can serve as a basis for building supervisory procedures for:

- regulated building products for the pre scribed proofs of conformity
- non-regulated building products for the needed proofs of applicability.

This test report comprises 5 pages and 3 enclosures.

Approved testing, inspection and certification body

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TEST REPORT

1 Description of test material in condition as delivered

1.1 Test material (according to the sponsor):

The delivered materials are fleeces made of fibre pulp and synthetic fibres, with a printable coating on one side. The fleece named "ART FLEECE 210 S FR" was coated with a water-repellent Inkjet-coating, the variant named "ART FLEECE 210 W FR" was coated with a brightened Inkjet-coating. The fleeces are intended to be used as wall-papers inside of buildings.

1.2 Description of the delivered material

For the tests the laboratory received fleeces, one side coated, each with dimensions app. 2 x 5 m length and 1,067 m width, the materials were labelled with:

| Name: | Batch | Prod.-Date | "Ausr." |
|-----------------------------|-----------|------------|---------|
| Art Fleece 210 FR - Wasser | 1 40506.3 | 06.05.2014 | 2/101 |
| Art Fleece 210 FR - Solvent | 150107.3 | 28.01.2015 | 14/20 |

Colour: white fleeces with white coating on one side, no printing.

Characteristic values: see table 1; Photos: see enclosures;

Other specifications are not known by the laboratory, samples are stored.

2 Preparation of samples

For the fire shaft ("Brandschacht") tests from materials provided 2 specimen each were prepared. 4 samples each with dimensions 1000 mm x 190 mm for the test specimen A and C were cut in longitudinal direction, samples for the test specimen B and D were cut in transverse direction of the materials. The coated fleeces have been glued onto gypsum plaster boards (GKB, class DIN 4102-A2), using standard wallpaper glue based on methylcellulose (application quantity of $160 \pm 10 \text{ g/m}^2$). For the small burner tests (Brennkasten) samples have been prepared for edge flame exposure (dimensions 190 mm x 90 mm) and surface flame exposure (dimensions 230 mm x 90 mm) in longitudinal and transversal direction of the materials by using the same procedure.

Afterwards all samples were kept in a climate chamber acc. DIN 50014-23/50-2 until they reached constant weight.

3 Arrangement of samples

The tests in the fire shaft ("Brandschacht") have been performed acc. DIN 4102-1 and -16 (building materials class B1). The small burner ("Brennkasten") tests have been performed acc. DIN 4102-1, chapter 6.2.5 (building materials class B2).

No backing was used additionally behind the material compound.

Examination period: July 2015.

4 Results

- section 4.1 Material characteristics
- section 4.2.1 Test results class B2 (Brennkasten), see enclosure 3
- section 4.2.2 Test results class B1 (Brandschacht)

4.1 Material characteristics

Table 1

| Type name: | Manufacturer's data | | Measured values | | |
|-----------------------|---|-------------------|---|------------------------------|-------|
| | Mass per unit area [g/m ²] | Thickness [μm] | Mass per unit area [g/m ²] | Thickness (m.v.) [mm] s | |
| "ART FLEECE 210 W FR" | 210 ± 20 | 280 ± 30 | 208 | 0,34 | 0,004 |
| "ART FLEECE 210 S FR" | 220 ± 20 | 280 ± 30 | 225 | 0,34 | 0,005 |

m.v. mean value

s standard deviation

./ not received/not measured



4.2 Results of the fire behaviour

4.2.1 Test results class B2 (Brennkasten)

All building materials class B1 must also meet the requirements of materials class B2 (low flammable). The material, tested in "Brennkasten" acc. DIN 50 050 meets the requirements class B2. (Results see enclosure 3)

4.2.2 Test results class B1 (Brandschacht)

Table 3

| Test results (part 1) | | | | | | |
|-----------------------|--|--------------------------|-----|-----|-----|--------------|
| line no. | | Measured Values Specimen | | | | requirements |
| | | A | B | C | D | |
| 1 | <u>Number of specimen arrangement</u> acc. DIN 4102 -15 Table 1 | 7 | 7 | 7 | 7 | |
| 2 | <u>Maximal flame height</u> above bottom edge cm | 50 | 50 | 70 | 70 | *) |
| 3 | Time ¹⁾ min | 2 | 2 | 2 | 2 | |
| 4 | <u>Burning / melting through</u> Time ¹⁾min | - | - | - | - | |
| 5 | <u>Back side of the specimens:</u> <u>Flames / glowing</u> Time ¹⁾ min:s | ./. | ./. | ./. | ./. | |
| 6 | <u>Discolouring</u> Time ¹⁾ min:s | ./. | ./. | ./. | ./. | |
| 7 | <u>Falling of burning droplets</u> Begin ¹⁾ min:s | No | No | No | No | |
| 8 | Extend: Sporadic falling of burning droplets | | | | | |
| 9 | Continuous falling of burning droplets | | | | | |
| 10 | <u>Falling of burning parts</u> Begin ¹⁾ min | No | No | No | No | |
| 11 | Extend: Sporadic falling of burning parts | | | | | |
| 12 | Continuous falling of burning parts | | | | | |
| 13 | <u>Afterflame time at the bottom of the sieve (max.)</u> . min:s | ./. | ./. | ./. | ./. | |
| 14 | <u>Impairment of the burner flames by dropping or falling Material</u> Time ¹⁾ min:s | | | | | |
| 15 | <u>Premature end of test</u> Final occurrence of burning at the specimen ¹⁾min | No | No | No | No | |
| 16 | Time of eventually end of test ¹⁾ min:s | 10 | 10 | 10 | 10 | |

¹⁾ Indication of time: from the beginning of testing procedure

- Not tested

./. Not occurred

*) No cause for complaint



| Test results (part 2) | | | | | | |
|-----------------------|--|--------------------------|-----------|-----------|-----------|--------------|
| line no. | | Measured Values Specimen | | | | requirements |
| | | A | B | C | D | |
| 17 | <u>Afterflame after end of test</u> | No | No | No | No | |
| 18 | Timemin:s | | | | | |
| 19 | Number of specimen | | | | | |
| 20 | Front side of specimen | | | | | |
| 21 | Back side of specimen | | | | | |
| 21 | Flame lengthcm | | | | | |
| 22 | <u>Afterglow after end of test</u> | Yes | Yes | Yes | Yes | |
| 23 | Timemin:s | 1:17 | 2:32 | 2:11 | 1:09 | |
| 23 | Number of specimen | 4 | 4 | 4 | 4 | |
| 24 | <u>Place of appearance:</u> | | | | | |
| 24 | Lower half of specimen | Yes | Yes | Yes | Yes | |
| 25 | Upper half of specimen | Yes | Yes | Yes | Yes | |
| 26 | Front side of specimen | Yes | Yes | Yes | Yes | |
| 27 | Rear side of specimen | No | No | No | No | |
| 28 | <u>Smoke density</u> | | | | | |
| 28 | ≤ 400 % min | 2,3 | 1,6 | 2,3 | 4,0 | |
| 29 | ≥ 400 % min (very strong smoke density) | ./. | ./. | ./. | ./. | |
| 30 | Diagram fig. no. | 1 | 3 | 5 | 7 | |
| 31 | <u>Residual length</u> | | | | | |
| | Individual valuecm | 46 | 49 | 48 | 49 | > 0 |
| | | 48 | 49 | 46 | 48 | |
| | | 49 | 48 | 46 | 49 | |
| | | 49 | 49 | 46 | 48 | |
| 32 | Average valuecm | 48 | 48 | 46 | 48 | ≥ 15 |
| 33 | Photo of test specimen fig. no. | 2 | 4 | 6 | 8 | |
| 34 | <u>Flue gas temperature</u> | | | | | |
| 34 | Maximum of average value...°C | 112 | 108 | 117 | 122 | ≤ 200 |
| 35 | Time ¹⁾min:s | 1:50 | 10:00 | 1:16 | 1:46 | |
| 36 | Diagram fig. no. | 1 | 3 | 5 | 7 | |
| 37 | <u>Remarks:</u> line 32: There were no additional tests proceeded, because of the residual length of more then 45 cm. (diagrams and photos see appendix 1-2) | | | | | |

1) indication of time: from the beginning of testing procedure
 - not tested
 ./ not occurred
 *) no cause for complaint
 VN test-number



| Specimen | Test-No. | Variant | Sample orientation |
|----------|------------|-----------------------|--------------------|
| A | 545915-001 | "ART FLEECE 210 W FR" | longitudinal |
| B | 545915-002 | | transversal |
| C | 545915-003 | "ART FLEECE 210 S FR" | longitudinal |
| D | 545915-004 | | transversal |

5 Assessment

According to the test results in section 4.2 the material, described in section 1 and 4.1, fulfils the requirements of a building material class B1 according to DIN 4102-1, if the material is used on solid mineral substrates or non-perforated gypsum plaster boards using a standard wallpaper glue, based on methylcellulose with a wet application quantity of app. 160 g/m².

The requirements of building materials class B2 are also fulfilled, no falling of burning parts or droplets occurred during these tests.

This test report is not valid

- for the exposure to outdoor climate conditions
- with printed surface.

This test report is not valid, if the material described in section 1 is used freely suspended.

6 Special remarks

This report is only valid for the material as described under paragraph 1. In combination with other materials or with additional coatings or surfaces etc. the burning behaviour may differ.

This test report is not valid, as soon as the product is used as a building product in the sense of the "Landesbauordnungen" (state building requirements, MBO § 17, par. 3).

This test report is no substitute for a General Building Inspectorate Certificate. This test report is granted without prejudice to the rights of third parties, or particular private proprietary rights.

This test report can serve as a basis for building supervisory procedures for:

- regulated building products for the pre scribed proofs of conformity
- non-regulated building products for the needed proofs of applicability.

The explanations given in DIN 4102-1 app. D, especially concerning an external production control has to be considered.

This test report is valid until 2020-06-30, provided that the test methods, the classification rules and the technology do not change during this period.

Borkheide, 29th of July 2015



Head of the test laboratory
(Dipl.-Ing. Uwe Kühnast)



In charge for testing
(Dipl.-Ing. Manfred Sailer)

This translation was issued on 29th of July 2015, in a case of doubt the German version is valid solely.

Test specimen A

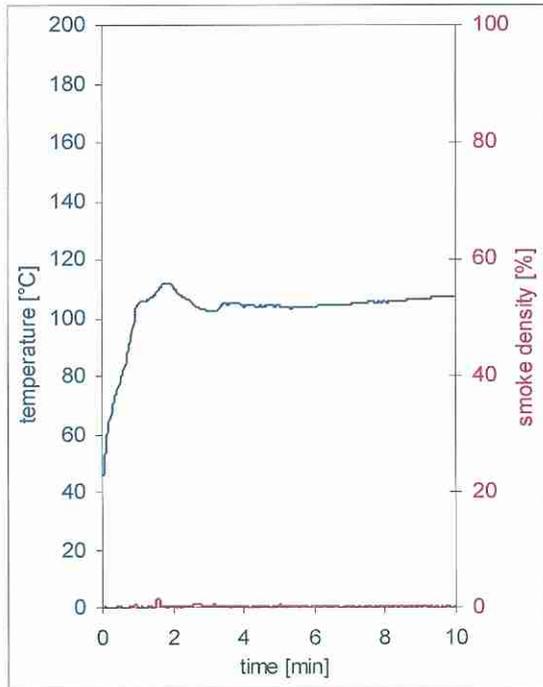


fig. 1
Graphs of the flue gas temperature and the smoke density

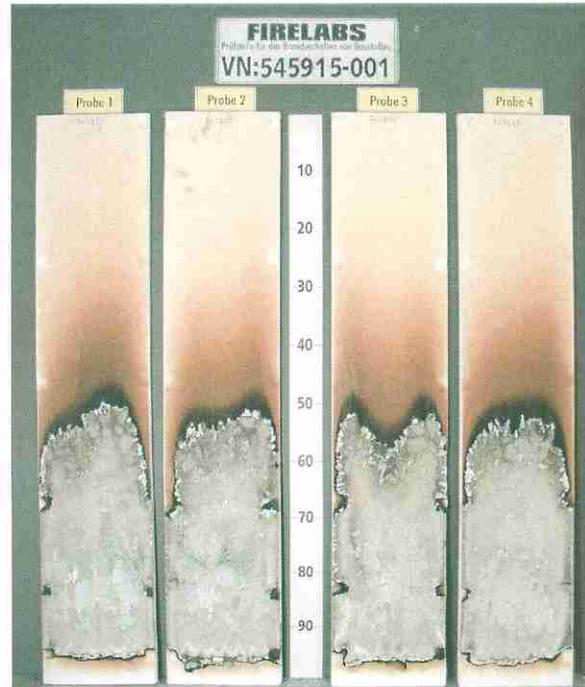


fig. 2
Photo of test specimen after the test

Test specimen B

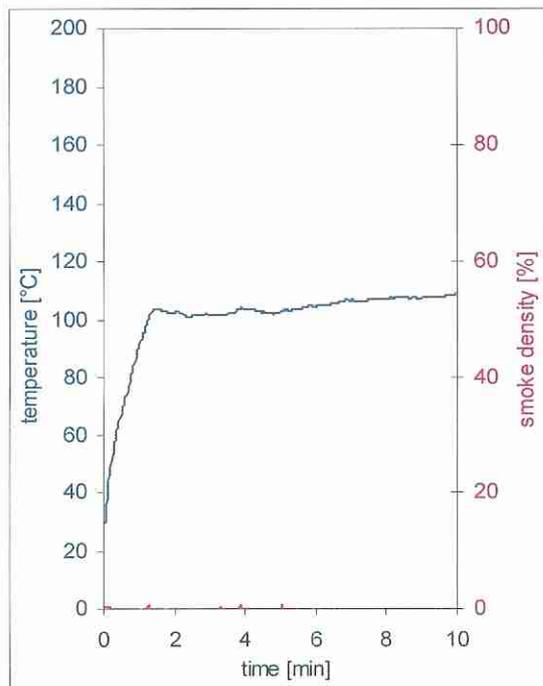


fig. 3
Graphs of the flue gas temperature and the smoke density

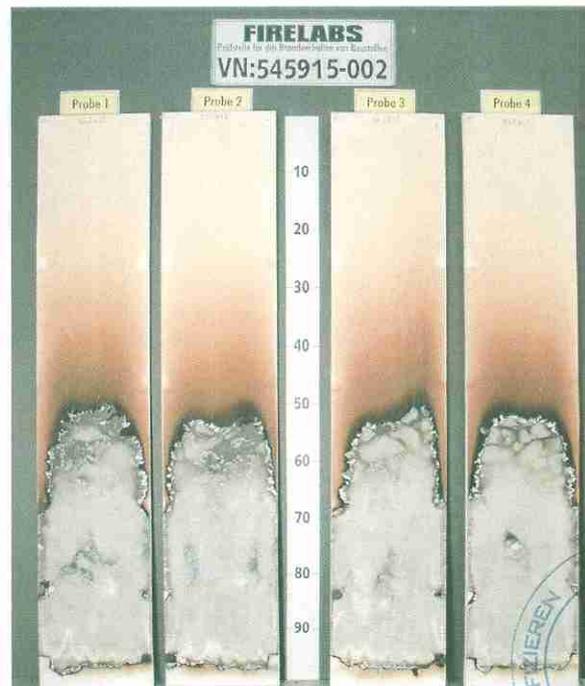


fig. 4
Photo of test specimen after the test



Test specimen C

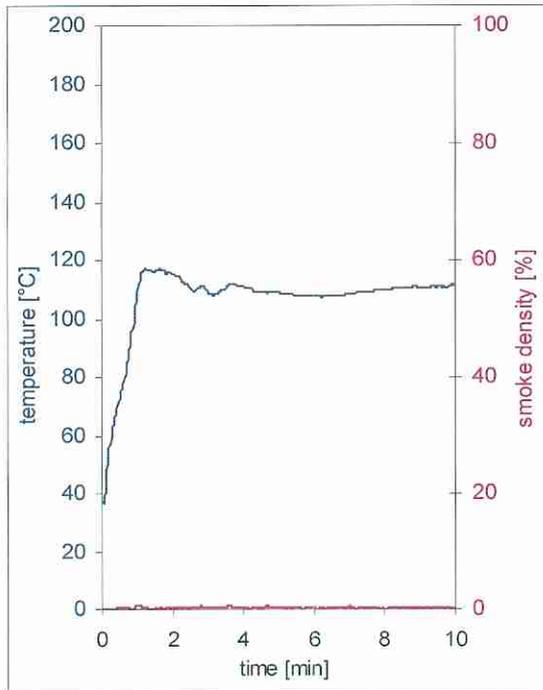


fig. 5
Graphs of the flue gas temperature and the smoke density

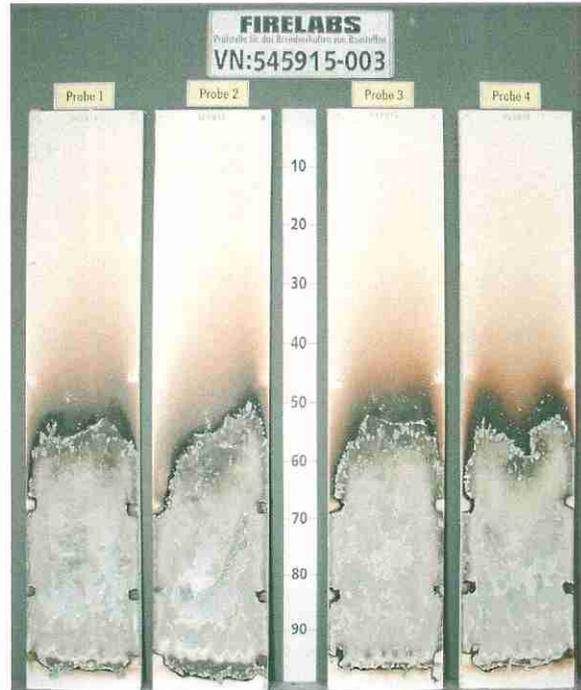


fig. 6
Photo of test specimen after the test

Test specimen D

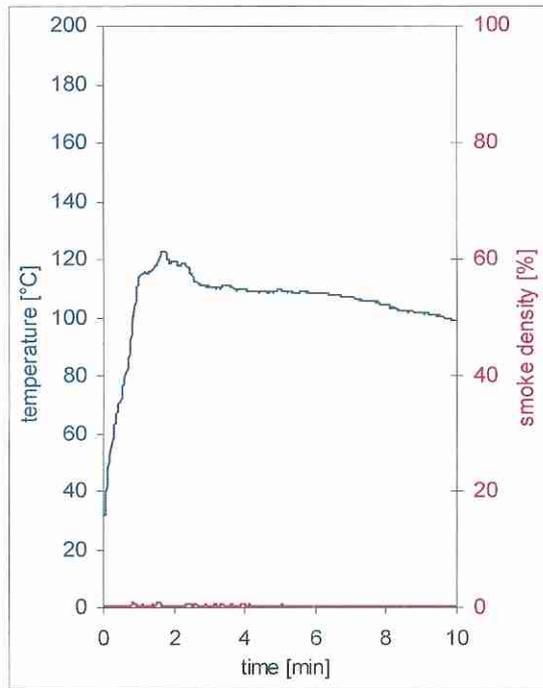


fig. 7
Graphs of the flue gas temperature and the smoke density

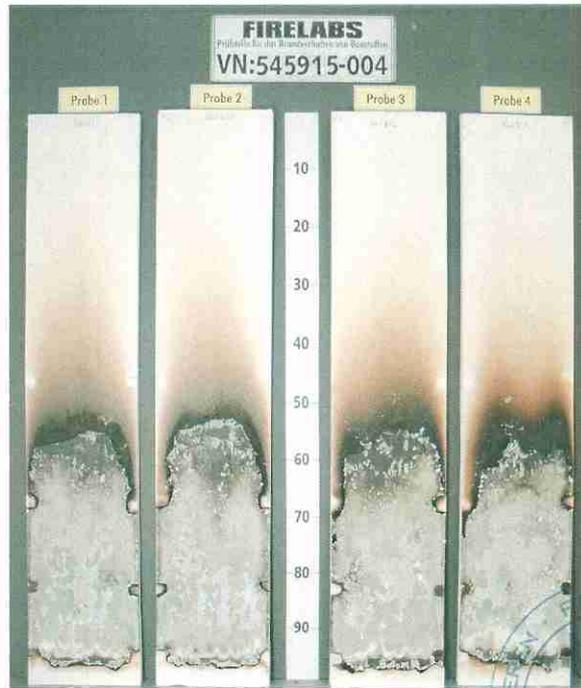


fig. 8
Photo of test specimen after the test



Test results class B2 (Brennkasten)

Table 2.1

| "ART FLEECE 210 W FR" | Längsrichtung ^{*)} | | | | | | Querrichtung ^{*)} | | | | | | Dim. | Anforderungen |
|--|-----------------------------|-----|-----|-----|-----|-----|----------------------------|-----|-----|-----|-----|-----|------|---------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 | | |
| Sample-No. | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 | - | - |
| Ignition of the sample | 2 | 2 | 2 | 2 | 2 | ./. | 2 | 2 | 2 | 2 | 2 | ./. | s | - |
| Maximum flame height | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | cm | - |
| Time of the maximum | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | | |
| Flame tip has reached the 150 mm mark | ./. | ./. | ./. | ./. | ./. | ./. | ./. | ./. | ./. | ./. | ./. | ./. | s | ≥ 20 |
| Flame has extinguished | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | s | |
| Ignition of filter paper | ./. | ./. | ./. | ./. | ./. | ./. | ./. | ./. | ./. | ./. | ./. | ./. | s | 1) |
| Smoke density (visual) | sehr gering | | | | | | sehr gering | | | | | | - | ./. |
| Afterburning time | ./. | ./. | ./. | ./. | ./. | ./. | ./. | ./. | ./. | ./. | ./. | ./. | s | - |
| View of the samples after the test: - Discolouring at area of flame impingement | | | | | | | | | | | | | | |

Table 2.2

| "ART FLEECE 210 S FR" | Längsrichtung ^{*)} | | | | | | Querrichtung ^{*)} | | | | | | Dim. | Anforderungen |
|--|-----------------------------|-----|-----|-----|-----|-----|----------------------------|-----|-----|-----|-----|-----|------|---------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 | | |
| Sample-No. | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 | - | - |
| Ignition of the sample | 2 | 2 | 2 | 2 | 2 | ./. | 2 | 2 | 2 | 2 | 2 | ./. | s | - |
| Maximum flame height | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | cm | - |
| Time of the maximum | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | | |
| Flame tip has reached the 150 mm mark | ./. | ./. | ./. | ./. | ./. | ./. | ./. | ./. | ./. | ./. | ./. | ./. | s | ≥ 20 |
| Flame has extinguished | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | s | |
| Ignition of filter paper | ./. | ./. | ./. | ./. | ./. | ./. | ./. | ./. | ./. | ./. | ./. | ./. | s | 1) |
| Smoke density (visual) | sehr gering | | | | | | sehr gering | | | | | | - | ./. |
| Afterburning time | ./. | ./. | ./. | ./. | ./. | ./. | ./. | ./. | ./. | ./. | ./. | ./. | s | - |
| View of the samples after the test: - Discolouring at area of flame impingement | | | | | | | | | | | | | | |

Samples 1-5: edge flame exposure

Samples 6: surface flame exposure

1) No ignition within 20 seconds

./. Not occurred

dim. Dimension

Indication of time: from the beginning of testing procedure

Indication of measurements: from reference line of the flame

