MFPA Leipzig GmbH

Testing, Inspection and Certification Authority for
Construction Products and Construction Types

Leipzig Institute for Materials Research and Testing
Business Division III - Structural Fire Protection
Dipl.-Ing. Michael Juknat

Work Group 3.1 - Fire Behaviour of Building Products

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Test Certificate No. PZ 3.1/19-247-1

23 June 2020
No. Copy 1

This is a translation of the German test certificate PZ 3.1/19-247-1

Client:	Uzin Utz AG Dieselstraße 3 89079 Ulm Germany
Order:	Test to verify the building material class DIN 4102-A2 according to DIN 4102-1:1998-05
Subject matter:	glass fibre reinforcement fleece "UZIN RR 201"
Date of order:	29 January 2020
Samples received on:	31 January 2020 (DZ3.1/20-021)
Sampling:	By client
Identification:	None
Date of testing:	25. February 2020 (test in the Brandschacht) and 8. April 2020 (caloric value test)
Person in charge:	Sören Laschke, M.Sc.

This document consists of 6 pages and 3 appendices.

In case of doubt the German version shall apply.

In German construction supervision procedures, this lest report serves as a basis for the prescribed certificate of usability and does not replace the general appraisal verification certificate.

1 Material description

According to the client the building product to be tested is a white glass fibre reinforcement fleece and is called "UZIN RR 201". The building product consists of glass fibres and is embedded in levelling compounds for reinforcement purposes.

According to the client, this building product is not subjected to any harmonised European product standard.

Additional information on the building product was not provided to the testing laboratory.

2 Material parameters

Parameters according to the client:

- Thickness of the product 0.45 mm
- Mass per unit area of the product: 132 g/m²

The following parameters were determined by MFPA Leipzig:

- Thickness of the product approx. 0.3 mm
- Mass per unit area of the product: approx. 132 g/m²

3 Conditioning

The specimens for the Brandschacht tests were stored prior to the test in accordance with DIN 4102-16, Section 6.1.

The specimens for the caloric value test were conditioned in accordance with DIN 4102-1, section 6.2.3.2.

4 Caloric value test according to DIN 4102-1, Section 5.2.2.3

4.1 Sample production

The samples for the determination of the caloric value were taken at the fire test centre of MFPA Leipzig from the material provided by the client and prepared for the test in accordance with DIN 4102 1.

4.2 Test execution

The tests were carried out at the fire test centre of MFPA Leipzig GmbH, MFPA Allee 1, 04509 Laue near Delitzsch in accordance with DIN 4102 1:1998 05.

The caloric value tests were carried out on the above-mentioned building product in accordance with DIN 4102-1, Section 5.2.2.3. The water equivalent of the calorimeter used was 8.066 kJ/K.

4.3 Test results

The results of the caloric value tests are summarised in Table 1.

Table 1: Caloric value test according to DIN 4102 1, section 5.2.2.3.

Information according to DIN 4102-1 sections 5.2.2.3 and 5.2.2.4.		**UZIN RR 201**	-	-
Mass per unit area	[kg/m²]	0.132	-	-
Single values of the caloric value H_o	[kWs/kg]	2,346	-	-
		2,321	-	-
		2,411	-	-
mean value of the caloric value H_o	**[kWs/kg]**	**2,359.3**	-	-
calculated amount of heat to be released	**[kWs/m²]**	**311.4**	-	-

\- *Not applicable.*

According to DIN 4102-1, Section 5.2.2.4, the heat development test can be omitted, because the determined caloric value is less than 16,800 kWs/m².

4.4 Deviations

There were no deviations from the test procedure according to DIN 4102-1:1998-05.

5 Test in the Brandschacht in accordance with DIN 4102-1, Section 6.1.3

5.1 Sample production

The sample material delivered by the client was cut to the required dimensions of 1000 mm x 190 mm x sample thickness by employees of the fire testing laboratory.

The samples were produced without a substrate.

5.2 Test execution

The tests were performed in the fire testing laboratory of MFPA Leipzig GmbH, MFPA-Allee 1, 04509 Laue near Delitzsch in accordance with DIN 4102-1:1998-05, DIN 4102-15:1990-05 and DIN 4102-16:2015-09.

The building product described above was tested in a freely suspended sample arrangement.

5.3 Test results

The test results are summarized in the following table 2.

Table 2: Test in the Brandschacht according to DIN 4102-1, section 6.1.3 with glass fibre reinforcement fleece: "UZIN RR 201".

Sample A: samples from longitudinal direction,
Sample B: samples from transversal direction;

Line no.			Measured values for sample			
			A	B	-	-
1	No. of sample arrangement acc. to DIN 4102-15 table 1		1	1	-	-
2	Maximum flame height above lower edge of sample	cm	50	50	-	-
3	Time*)	min:s	0:05	0:02	-	-
4	Melting/burning through Time*)	min:s	0:44	0:17	-	-
5	Observations at the back of the sample Flaming/smouldering Time*)	min:s	./.	./.	-	-
6	Discolourations Time*)	min:s	./.	./.	-	-
7	Flaming droplets Start*)	min:s	./.	./.	-	-
8	Extent: individual droplets from the sample material		-	-	-	-
9	continuous droplets from the sample material		-	-	-	-
10	Flaming sample particles Start*)	min:s	./.	./.	-	-
11	Extent: falling of individual flaming sample particles		-	-	-	-
12	continuous falling of flaming sample particles		-	-	-	-
13	Duration of continued burning on the sieve bottom (max.)	min:s	./.	./.	-	-
14	Impairment of the burner flame due to flaming droplets/particles Time*)	min:s	./.	./.	-	-
15	Premature end of test End of burning of the samples*)	min:s	./.	./.	-	-
16	Time of test discontinuation, if applicable*)	min:s	./.	./.	-	-

*) *Time expired since the test started,*
./. *No occurrence of the event,*
- *Not applicable.*

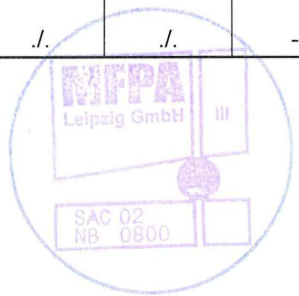


Table 2 continued.

Line no.			Measured values for sample			
			A	B	-	-
	Afterflame after end of test					
17	Duration	min:s	./.	./.	-	-
18	Number of samples		-	-	-	-
19	Front of sample		-	-	-	-
20	Back of sample		-	-	-	-
21	Flame length	cm	-	-	-	-
	Afterglow after end of test					
22	Duration	min:s	./.	./.	-	-
23	Number of samples		-	-	-	-
	Place of occurrence:					
24	Bottom half of sample		-	-	-	-
25	Top half of sample		-	-	-	-
26	Front of sample		-	-	-	-
27	Back of sample		-	-	-	-
	Smoke density					
28	max. 400% min	%min	1.93	1.17	-	-
29	> 400% min (very strong smoke development)	%min	./.	./.	-	-
30	Diagram in Enclosure no.		2	2	-	-
	Residual lengths					
			73; 75	66; 71	- -	- -
31	Individual values	cm	58; 55	42; 57	- -	- -
32	Mean value	cm	65	59	-	-
33	Photo of the sample in Enclosure no.		1	1	-	-
	Flue gas temperature					
34	Maximum of the mean value	°C	107	107	-	-
35	Time*)	min:s	9:34	6:20	-	-
36	Diagram in Enclosure no.		2	2	-	-
37	Remarks: - Due to the residual length > 55 cm, further tests could be dispensed with in accordance with DIN 4102 16 Section 5.2a).					

**)* *Time expired since the test started,*
./. *No occurrence of the event,*
- *Not applicable.*

5.4 Deviations

There were no deviations from the test procedure according to DIN 4102-1:1998-05, DIN 4102-15:1990-05 and DIN 4102-16:2015-09.

6 Assessment

6.1 Requirements for building material class A2 according to DIN 4102-1, Section 5.2.2.5

The glass fibre reinforcement fleece with the designation "UZIN RR 201" with a sample thickness of approx. 0.3 mm and a mass per unit area of approx. 132 g/m² passed:

- the tests in the Brandschacht in a freely suspended sample arrangement in accordance with DIN 4102-1, Section 6.1.2.2.
- the calorific value test according to DIN 4102 1, section 5.2.2.3,
- the smoke development test in accordance with DIN 4102-1, Annex A and B (see Enclosure 3).

The tested building product can thus be classified in the building material class DIN 4102-A2 under the following conditions:

- The building product must be arranged at a distance of > 40 mm from the same or other flat materials.
- When used as a flame-retardant building product, the material must not be exposed to the weather outdoor for more than 2 years.
- The building product must be flame-retardant according to the data deposited at the MFPA Leipzig.

7 Notes

This test certificate, together with the test report PB Hoch 200499 of 31 March 2020, serves for the overall assessment of the construction product examined.

In German construction supervision procedures, this test report serves as a basis for the prescribed certificate of usability

The test report does not replace a general appraisal verification certificate of usability that may be required according to German construction supervision procedures. It only serves as a basis for the issue of a general appraisal verification certificate.

This test certificate is not a certificate of usability approved by the building authorities.

The validity of this test certificate ends on 30. May 2025.

The results of the tests exclusively relate to the items tested. This document does not replace a certificate of conformity or suitability according to national and European building codes.

Leipzig, 23 June 2020

Dipl.-Ing. M. Juknat	N. Neumann, M.Sc.	S. Laschke, M.Sc.
Head of Business Division	*Head of Testing Laboratory*	*Testing Engineer*

Enclosure 1: Photo of the damage to the Brandschacht samples.

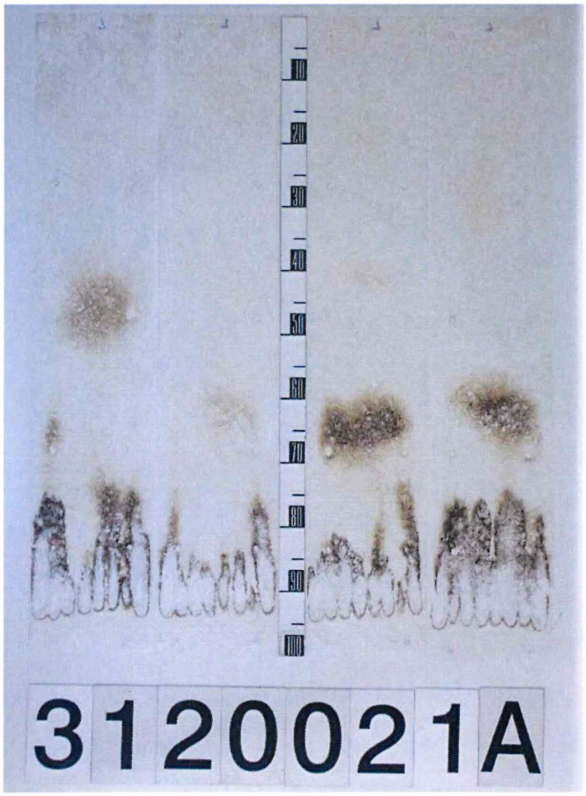


Photo 1:Damage to the Brandschacht samples:
Sample A: „UZIN RR 201“

Sample thickness: approx: 0.3 mm,
Mass per unit area: approx 132 g/m²,
Samples from longitudinal direction,
Freely suspended sample arrangement

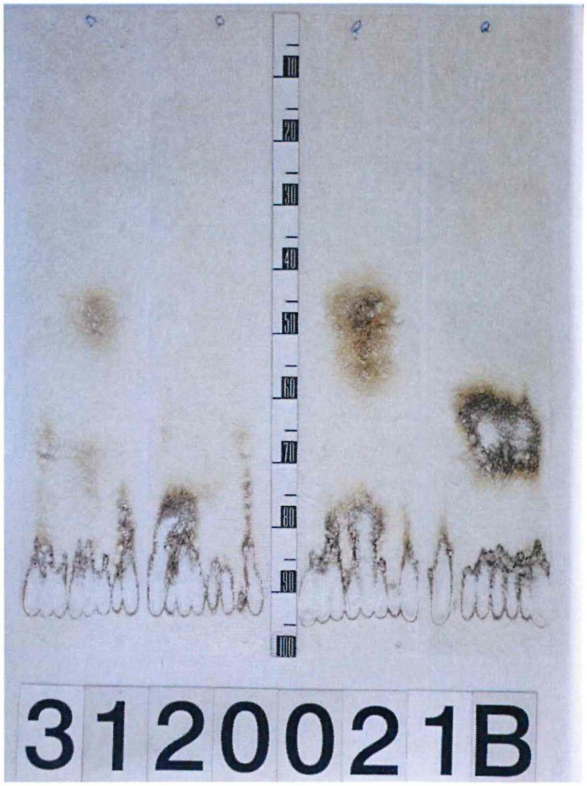


Photo 2:Damage to the Brandschacht samples:
Sample B: „UZIN RR 201“

Sample thickness: approx 0.3 mm,
Mass per unit area approx: 132 g/m²,
Samples from transversal direction,
Freely suspended sample arrangement

MFPA Leipzig GmbH
SAC 02
NB 0800

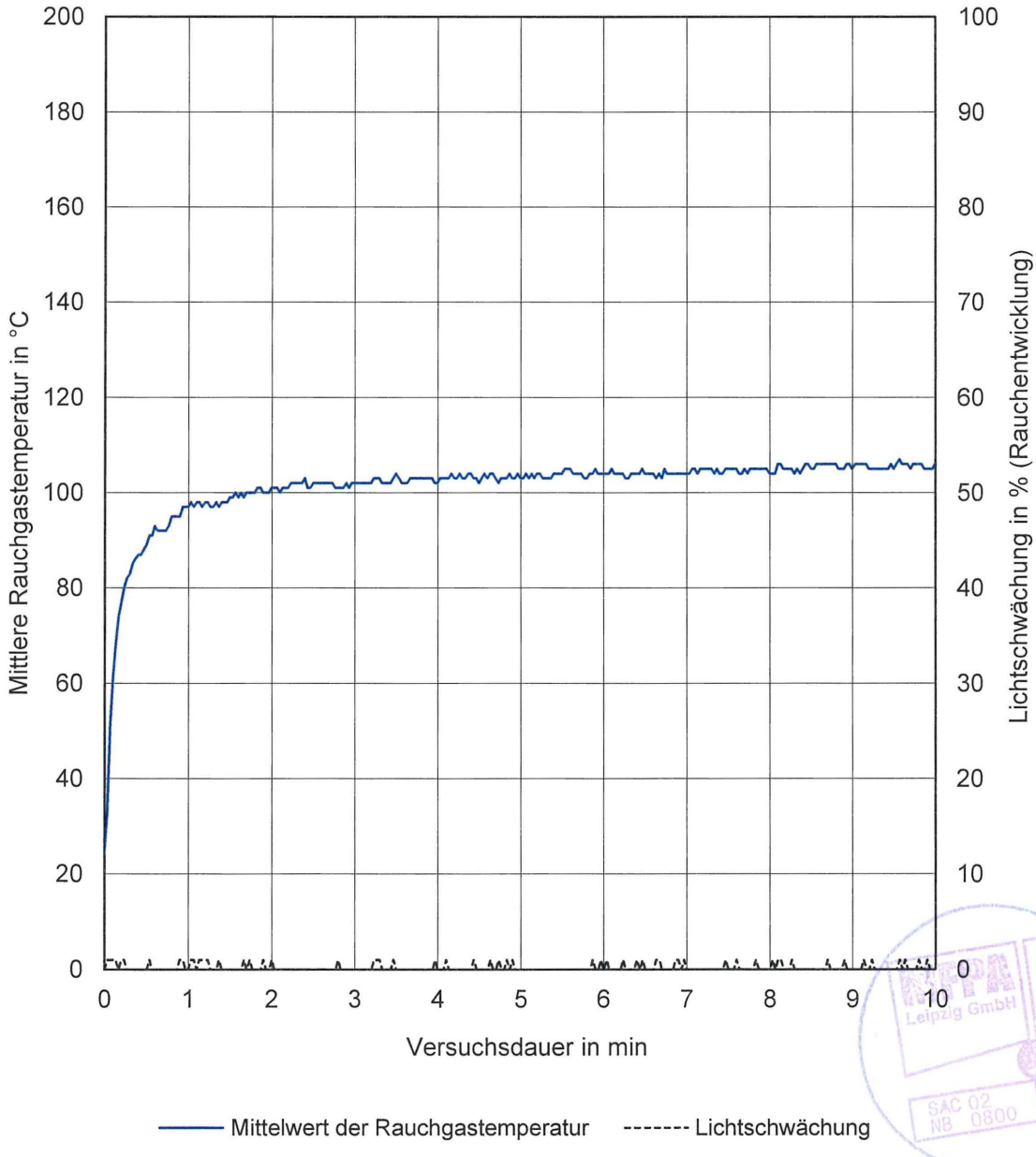
Enclosure 2: Diagrams and characteristic values of the tests in the Brandschacht in accordance with DIN 4102-1

Flue gas temperatures and smoke development
Brandschacht-test on 25.02.2020

Sample A: glass fibre reinforcement fleece „UZIN RR 201“
Sample thickness: approx.: 0.3 mm, Mass per unit area: approx.: 132 g/m²
Freely suspended sample arrangement, samples from longitudinal direction

Test aborted after: ./.

Maximum of the average flue gas temperature: 107°C at 9:34 min:s
Area integral of smoke density: 2 %min

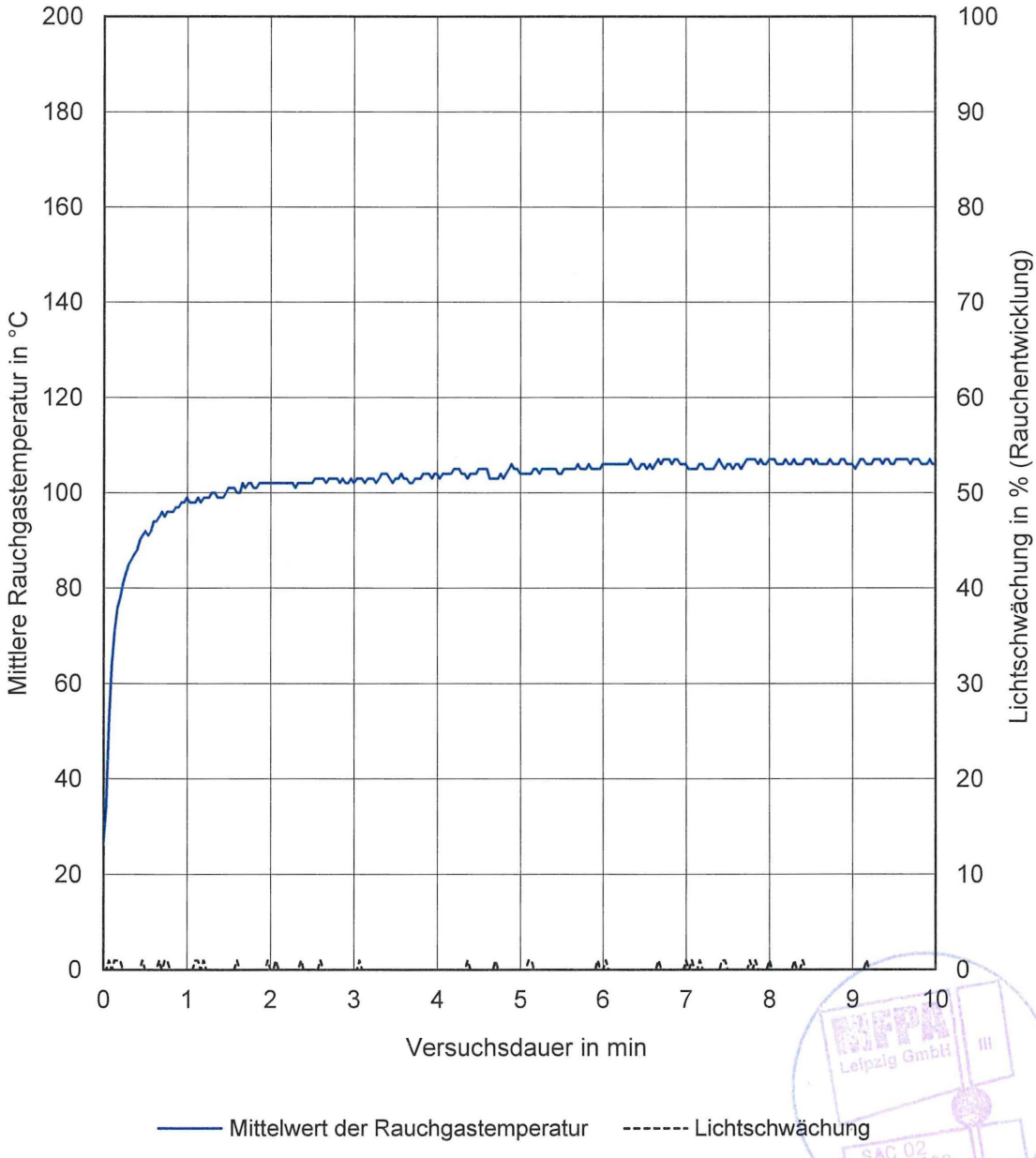


Flue gas temperatures and smoke development
Brandschacht-test on 25.02.2020

Sample B: glass fibre reinforcement fleece „UZIN RR 201“
Sample thickness: approx.: 0.3 mm, Mass per unit area: approx.: 132 g/m²
Freely suspended sample arrangement, samples from transversal direction

Test aborted after: ./.

Maximum of the average flue gas temperature: 107°C at 6:20 min:s
Area integral of smoke density: 1 %min



Enclosure 3: Test report on smoke development according to DIN 4102 part 1, appendix A and B:
PB High-200499 of 31 May 2020

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Hoch
Fladungen

Prüfinstitut für das Brandverhalten von Bauprodukten, Dipl.-Ing. (FH) Andreas Hoch
Bauaufsichtlich anerkannte Prüf-, Überwachungs- und Zertifizierungsstelle

PRÜFBERICHT

über Rauchentwicklungsprüfungen nach DIN 4102, Teil 1, Anhang A und B

PB-Hoch-200499

Auftraggeber	**MFPA Leipzig GmbH** Bereich III Baulicher Brandschutz Hans-Weigel-Str. 2 b D – 04319 Leipzig
Auftragsnummer	Ü-3.1-20-1070
Hersteller	**Uzin Utz AG** Dieselstraße 3 D – 89079 Ulm
Art des Prüfmaterials	Glasfaserarmierungsvlies für Spachtelmassen
Bezeichnung des Prüfmaterials	**„Uzin RR 201“**
Probenahme	Die Proben wurden von der MFPA Leipzig zur Verfügung gestellt.
Inhalt des Antrags	Prüfung der Rauchdichte nach DIN 4102-1, Anhang A und Anhang B
Geltungsdauer des Prüfberichtes	**31. Mai 2022**

Der Prüfbericht umfasst 2 Seiten und 2 Anlagen.

Hinweis: Falls der o.g. Baustoff nicht als Bauprodukt gemäß MBO § 2, Abs. 9, Ziffer1, verwendet wird, ist ein allgemeines bauaufsichtliches Prüfzeugnis nicht erforderlich.
Dieser Prüfbericht gilt nicht, wenn der geprüfte Baustoff als Bauprodukt im Sinne der Landesbauordnungen verwendet wird (MBO § 17, Abs. 3).

Dieser Prüfbericht ersetzt nicht einen gegebenenfalls notwendigen baurechtlichen / bauaufsichtlichen Verwendbarkeitsnachweis nach Landesbauordnung. Dieser ist zu führen durch:

- eine allgemeine bauaufsichtliche Zulassung oder durch
- ein allgemeines bauaufsichtliches Prüfzeugnis oder durch
- eine Zustimmung im Einzelfall

Im bauaufsichtlichen Verfahren kann dieser Prüfbericht als Grundlage dienen

- bei geregelten Bauprodukten für die vorgeschriebenen Übereinstimmungsnachweise
- bei nicht geregelten Bauprodukten für die erforderlichen Verwendbarkeitsnachweise.

1. Beschreibung des Versuchsmaterials im Anlieferungszustand:

   PN 31273 **„Uzin RR 201“**
   Glasfaserarmierungsvlies für Spachtelmassen, hellgelb
   Von der Prüfstelle ermittelte Kennwerte:
   Dicke ≈ 0,39 mm
   Flächengewicht ≈ 119 g/m²

   Weitere Angaben zur Zusammensetzung des geprüften Baustoffes liegen der Prüfstelle nicht vor.

2. Herstellung und Vorbehandlung der Proben: durch die MFPA Leipzig
3. Versuchsdurchführung: Gemäß DIN 4102 Teil 1, Anhang A und B
4. Prüfdatum: KW 21 und 22 in 2020
5. Versuchsergebnisse: siehe Anlagen 1 und 2
   - Tabelle 1: Prüfung zur Bestimmung der Rauchentwicklung von Baustoffen - Zersetzung unter Verschwelungsbedingungen (DIN 4102 Anhang A)
   - Tabelle 2: Prüfung zur Bestimmung der Rauchentwicklung von Baustoffen - Verbrennung bei Flammenbeanspruchung (DIN 4102 Anhang B)
6. Erläuterungen:

   Die Prüfungen zur Bestimmung der Rauchentwicklung von Baustoffen - Zersetzung unter Verschwelungsbedingungen (DIN 4102 Anhang A) – wurden bestanden.

   Die Prüfungen zur Bestimmung der Rauchentwicklung von Baustoffen - Zersetzung unter Flammenbeanspruchung (DIN 4102 Anhang B) – wurden bestanden.

Fladungen, den 27.05.2020

Sachbearbeiterin:

(Silke Biendara)

Leiter der Prüfstelle:

(Dipl.-Ing.(FH) Andreas Hoch)

Tabelle 1: Prüfung zur Bestimmung der Rauchentwicklung von Baustoffen - Zersetzung unter Verschwelungsbedingungen (DIN 4102 Anhang A)

Herstellung und Vorbehandlung der Proben:
Aus dem Material wurden Streifen in 5 mm Breite und 270 mm Länge herausgeschnitten und 5-lagig geprüft. Die Proben wurden im Normklima gelagert, die Massenkonstanz wurde erreicht.

Versuchs-temperatur	Mittlere Rauchdichte in %			
	Versuch 1	Versuch 2	Versuch 3	Mittelwert
250 °C	1,4	—	—	**1,4**
300 °C	8,6	6,2	—	**7,4**
350 °C	3,1	---	---	**3,1**
400 °C	1,0	---	---	**1,0**
450 °C	0,3	---	---	**0,3**
550 °C	0,2	—	—	**0,2**
600 °C	—	—	—	—

Bemerkungen und Erläuterungen zur Versuchsdurchführung: Aufgrund der sehr niedrigen Ergebnisse wurden keine weiteren Prüfungen durchgeführt.

Zusammenfassung der Versuchsergebnisse:

Maximaler Mittelwert der Lichtschwächung: 7,4 %

bei einer Vergleichskörpertemperatur von: 300 °C

Messdaten:

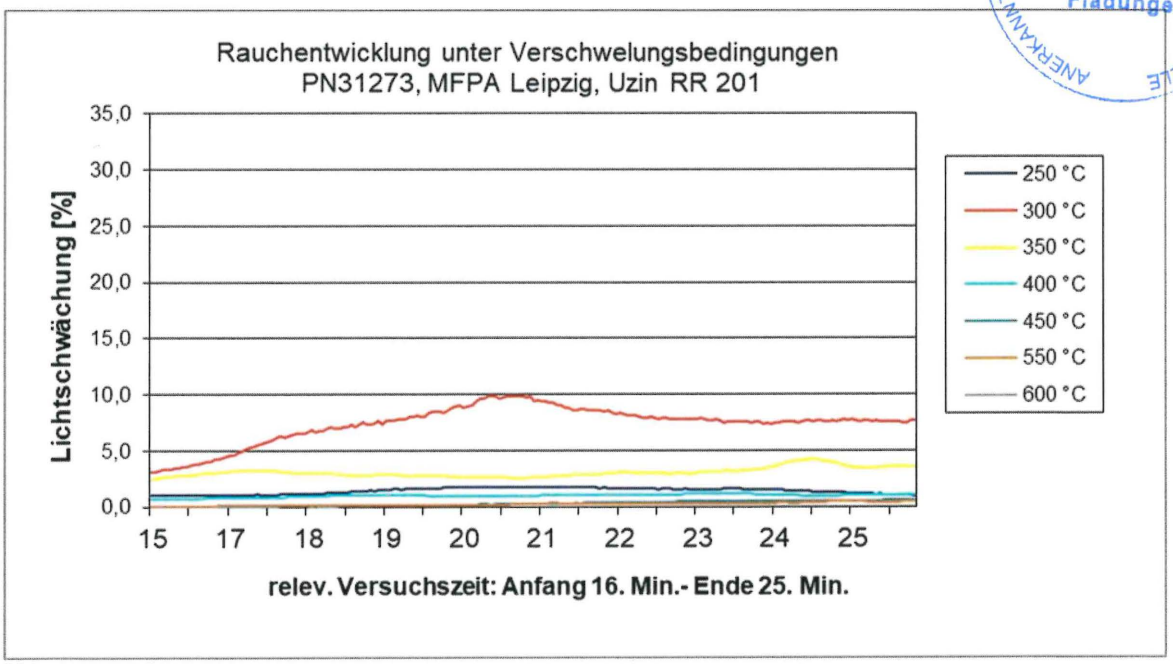

Tabelle 2: **Prüfung zur Bestimmung der Rauchentwicklung von Baustoffen - Verbrennung bei Flammenbeanspruchung (DIN 4102 Anhang B)**

Herstellung und Vorbehandlung der Proben:
Aus dem Material wurden Proben mit den Maßen 30 mm x 30 mm herausgeschnitten.
Die Proben wurden im Normklima gelagert, die Massenkonstanz wurde erreicht.

Zeit [min : sek]	0:12	0:24	0:36	0:48	1:00	1:12	1:24	1:36	1:48	2:00
Mittl. Rauchdichte [%]	0,3	0,2	0,2	0,1	0,1	0,1	0,1	0,1	0,0	0,0
Zeit [min : sek]	2:12	2:24	2:36	2:48	3:00	3:12	3:24	3:36	3:48	4:00
Mittl. Rauchdichte [%]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0

Mittlere Restlichtabsorption nach Versuchsende: 0,0 %

Bemerkungen und Erläuterungen zur Versuchsdurchführung: keine

Zusammenfassung der Versuchsergebnisse:

Maximale Rauchdichte	**0,3 %**
Zeitpunkt des Auftretens	**0:12 min**

Messdaten: