

# PRÜFZEUGNIS (Test Certificate)

900 6806 021/PZ-9-396/E \*)

Auftraggeber:  
(Client) Akzo Nobel Hilden GmbH  
Düsseldorfer Straße 96-100  
40721 Hilden

Betreff:  
Subject Reaction to fire testing according to DIN 4102-1, "Baustoffklasse B1"

Prüfmaterial:  
(Test Material) Colourless 1-component / 2-component polyurethane varnish  
"Aqualit clear stair varnish A-ST260-xx<sup>1</sup>"  
on flame-retardant (DIN 4102-B1) particleboard – also veneered –  
as a flame-retardant building material ("Baustoffklasse DIN 4102-B1")

Datum:  
(Date) 15<sup>th</sup> of November 2021

Gültigkeitsdauer:  
(Period of Validity) until 30<sup>th</sup> of June 2025

Hinweis:  
(Notes) If the above-mentioned building material is not used as a building product according to MBO § 2, Para. 10, an „allgemeines bauaufsichtliches Prüfzeugnis (abP)“ is not required.  
This test certificate does not apply if the tested building material is used as a building product within the meaning of the building regulations of the federal states (MBO § 17, Para. 1).

This test certificate does not replace a possibly necessary certification according to German building regulations.

This test certificate can serve as a basis in the building supervisory procedure:

- in the case of regulated building products for the required certificates of conformity
- in the case of non-regulated building products, for the required proof of usability.

The explanations in DIN 4102-1, Annex D, in particular on third-party inspection, are to be particularly observed.

\*) This test certificate is the English version of our test certificate 900 6806 021/PZ-9-396 dated 23<sup>th</sup> of June 2021. In cases of doubt, the German version applies.

This test certificate comprises 6 pages of text and 3 annexes. The text pages and annexes bear our official seal. Reproduction and publication of the test certificate, both in full and in abridged form, as well as use for advertising purposes is only permitted with the written consent of MPA Universität Stuttgart. The test certificate is issued without prejudice to the rights of third parties, in particular private property rights. The place of jurisdiction and performance is Stuttgart.

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<sup>1</sup> The „xx“ as part of the product name is replaced by numbers representing the different grades of gloss of the varnish system

**1. Material description**

Colourless 1-component / 2-component polyurethane varnish "Aqualit A-ST260xx" in the gloss levels matt (A-ST260-10) and silk matt (A-ST260-20), applied on flame-retardant (DIN 4102-B1) particle boards - also with veneer.

The 2-component polyurethane varnish "A-ST260-xx" has to be used with the hardener "HWA6000".

Application rate (wet): varnish: 3 x 120 g/m<sup>2</sup>

Mixing ratio (by weight): varnish : hardener = 20 : 1

Type of application: Compressed air spraying

Field of application: Interior fittings

Trade name: „Aqualit A-ST260-xx“  
hardener „HWA6000“

Receipt of samples: a) 24<sup>th</sup> of October 2017 (receipt-No. 17/324)  
b) 27<sup>th</sup> of November 2018 (receipt-No. 18/375)  
c) 10<sup>th</sup> June 2020 (receipt-No. 20/136)

Quantity: a) 4 flame-retardant particle boards (DIN 4102-B1),  
coated with „A-ST260-10“  
b) 4 flame-retardant particle boards (DIN 4102-B1),  
coated with „A-ST260-20“  
c) 4 flame-retardant particle boards (DIN 4102-B1),  
coated with „A-ST260-10“

**2. Sample preparation**

Test specimen made of fire-retardant (DIN 4102-B1) particle boards, 1000 mm x 190 mm x 12 mm, were coated on one side with the paint system in the presence of an employee of the MPA Stuttgart at the company headquarters in Hilden. The carrier boards were provided by the MPA in each case.

For the B2 tests, 190 mm x 90 mm samples were cut from the coated particleboard test specimen.



### 3. Test procedure

The tests were carried out according to DIN 4102-1:1998 and DIN 4102-16:2015 in the fire shaft according to DIN 4102-15:1990 and the approval principles for the proof of the low flammability of building materials (version August 1994), published by the "Deutsches Institut für Bautechnik (DIBt)" in Berlin.

### 4. Test results

#### 4.1 Test according to DIN 4102, clause 6.2, "Baustoffklasse B2"

Material	a)				
Specimen-No.:	1	2	3	4	5
Max. flame height within 20 s	4	4	4	4	4
Burning Droplets	none	none	none	none	none

Material	b)				
Specimen-No.:	1	2	3	4	5
Max. flame height within 20 s	5	5	5	5	5
Burning Droplets	none	none	none	none	none

Material	c)				
Specimen-No.:	1	2	3	4	5
Max. flame height within 20 s	4	4	3	3	4
Burning Droplets	none	none	none	none	none





4.2. Test according to DIN 4102, clause 6.1 – “Baustoffklasse B1”

The fire shaft test (“Brandschacht”) A, B, C on the samples a), b), c) were carried out on free-hanging specimens without any substrates.

4.2.1. Results of fire shaft tests (“Brandschacht”) (part 1)

Line No.		Test Results of Specimen Assembly				
		A	B	C	D	E
1	<u>No. of fastening method</u> according to DIN 4102-15, table 1	7	7	7	7	7
2	<u>Max. flame height</u> above the lower edge of the sample	90-100	80-90	80-90	-	-
3	Time of appearance <sup>1)</sup>	1:45	1:25	1:20	-	-
4	<u>Occurrence of holes in the material</u> Time of appearance <sup>1)</sup>	-	-	-	-	-
5	<u>Observations of the reverse face of the specimen</u> Flames / Glowing					
6	Time of appearance <sup>1)</sup>	-	-	-	-	-
7	Discolouring					
8	Time of appearance <sup>1)</sup>	-	-	-	-	-
9	<u>Burning droplets</u> Beginning <sup>1)</sup>	-	-	-	-	-
10	Continued burning on sieve tray					
11	Sporadically dripping sample material	-	-	-	-	-
12	Steady dripping sample material	-	-	-	-	-
13	<u>Burning dripping sample parts</u> Beginning <sup>1)</sup>	-	-	-	-	-
14	Amount:					
15	Sporadically dripping sample material	-	-	-	-	-
16	Steady dripping sample material	-	-	-	-	-
17	Duration of continued burning on the sieve bottom (max.)	-	-	-	-	-
18	<u>Impairment of the burner flame due to dripping/falling material</u> Time of appearance <sup>1)</sup>	-	-	-	-	-
19	<u>Premature end of experiment</u> End of fire reaction on the specimen <sup>1)</sup>	-	-	-	-	-
20	Time of premature finishing the test, if done so <sup>1)</sup>	-	-	-	-	-

<sup>1)</sup> Elapsed time from the start of the test (t=0) shall be recorded



4.2.2 Results of fire shaft tests ("Brandschacht") (part 2)

Line No.		Test Results of Specimen Assembly				
		A	B	C	D	E
<u>Afterburning after the end of the test</u>						
17	Duration min:s	-	-	-	-	-
18	Number of specimen					
19	On front face of the specimen					
20	On reverse face of the specimen					
21	Flame height cm	-	-	-	-	-
<u>Afterglow after end of test</u>						
22	Duration min:s	-	-	-	-	-
23	Number of specimen					
24	Location of glowing					
25	Lower half of the specimen					
26	Upper half of the specimen					
27	Front face of the specimen					
28	Reverse face of the specimen					
<u>Smoke density</u>						
29	$\leq 400 \% \cdot \text{min}$	20	20	30	-	-
30	$\geq 400 \% \cdot \text{min}$	-	-	-	-	-
	(very strong smoke development)	-	-	-	-	-
31	Graph in annex No.	1	2	3	-	-
<u>Residual length</u>						
32	Single results of each specimen cm	24 25 25 24	24 25 24 28	26 26 25 24	-	-
33	Average of each specimen assembly cm	25 *)	25 *)	25 *)	-	-
34	Photo of the test assembly in annex No.	-	-	-	-	-
<u>Flue gas temperature</u>						
35	Maximum of the average value °C	139	137	129	-	-
36	Time of appearance <sup>1)</sup> min:s	4:26	4:28	4:41	-	-
37	Graph in annex No.	1	2	3	-	-
38	Notes:	Residual length of the non coated particle board: *) 24 cm				

<sup>1)</sup> Elapsed time from the start of the test (t=0) shall be recorded

5. Classification

All tested samples met the requirements for building materials according to DIN 4102-1, clause 6.1.2.2 and clause 6.2 for class B2.

Thus, the product as described in section 1 meets the requirements for building materials according to class B1 of DIN 4102-1:1998.

No sample parts fell off during the test according to DIN 4102-1:1998, clause 6.2.5 and according to DIN 4102-16:2015 neither burning nor glowing.

According to DIN 4102-16:2015, clause 9.3, the material is considered to be non-molten-dripping.



6. Notes

- 6.1 The containers of the 1-component / 2-component varnish must be labelled according to DIN 4102-1, clause 7 with the following marking:

DIN 4102 – B1, aufgebracht auf schwerentflammbaren (DIN 4102-B1) Holzspanplatten

- 6.2 The assessment in section 5 only applies to the 1-component / 2-component varnish described in section 1 and tested as in section 3, applied to flame-retardant (DIN 4101-B1) particleboard - also veneered.

Used in connection with other materials its fire performance is likely to be influenced this negatively, that the given classification in section 5 is no longer valid.

Fire performance in connection with other materials is to be tested and classified separately.

- 6.3 For outdoor use, DIN 4102-16 : 2015, clause 6.2 requires proof that the requirements for building materials of building material class B1 "schwerentflammbar" (flame-retardant) are met even after 2 and 5 years of outdoor weathering. This proof has not (yet) been provided.

- 6.4 The validity of the assessment in section 5 of this test certificate ends on 30<sup>th</sup> of June 2025  
The period of validity may be extended upon application.  
Verification testing is necessary for this purpose.

- 6.5 This test certificate does not replace an „allgemeines bauaufsichtliches Prüfzeugnis (abP)“ or an "allgemeine bauaufsichtliche Zulassung (abZ)" that may be required.

Abteilung Brandschutz / Fire Safety Department  
Referat Brandverhalten von Baustoffen / Section Reaction to Fire

Der Prüfenieur  
The Engineer in Charge



Dipl.-Ing. Ernst Willand

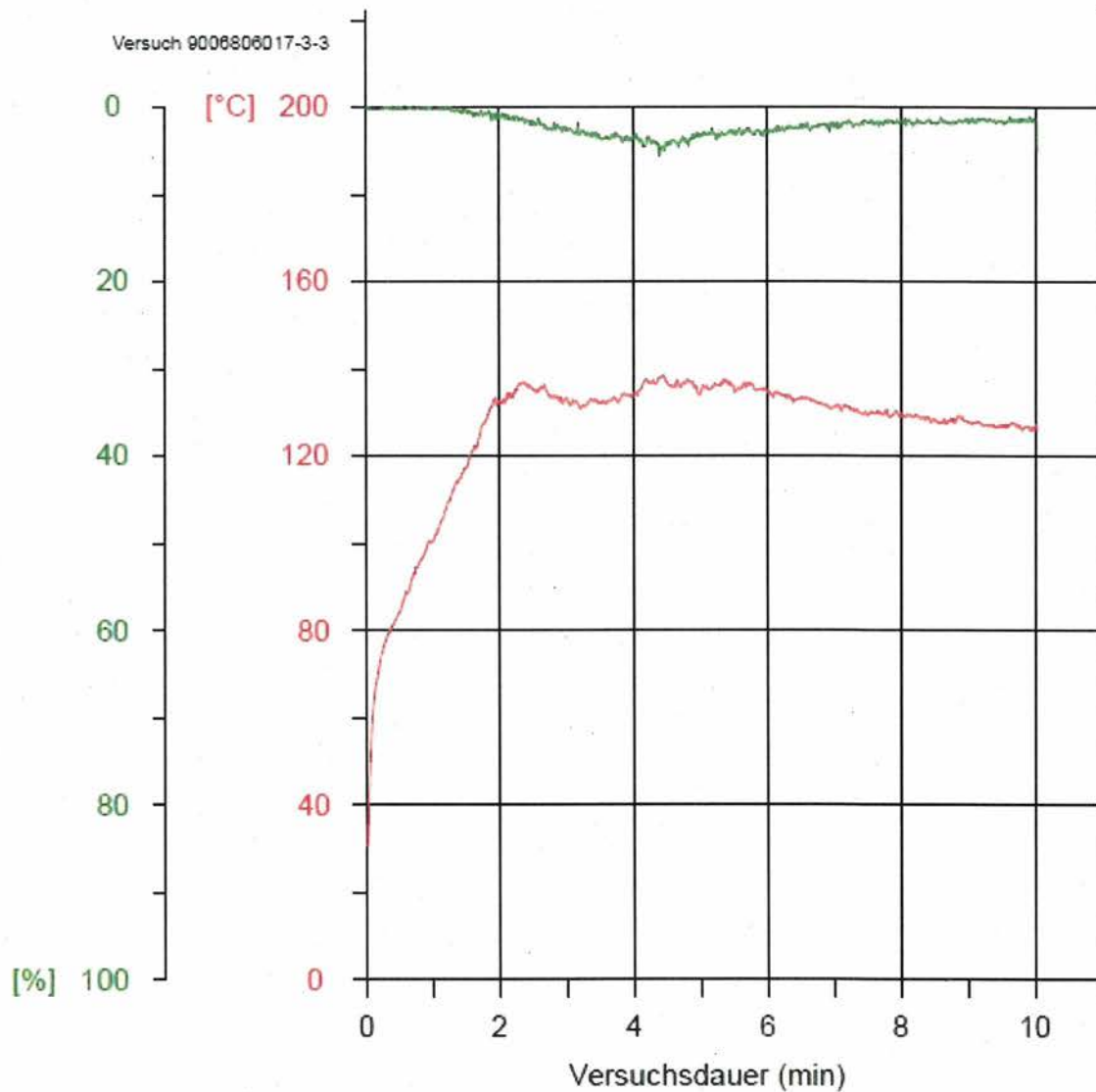


Die Leiterin der Prüfstelle  
Head of Notified Fire Testing Centre



Dipl.-Ing. Sabrina Heldele-Twietmeyer

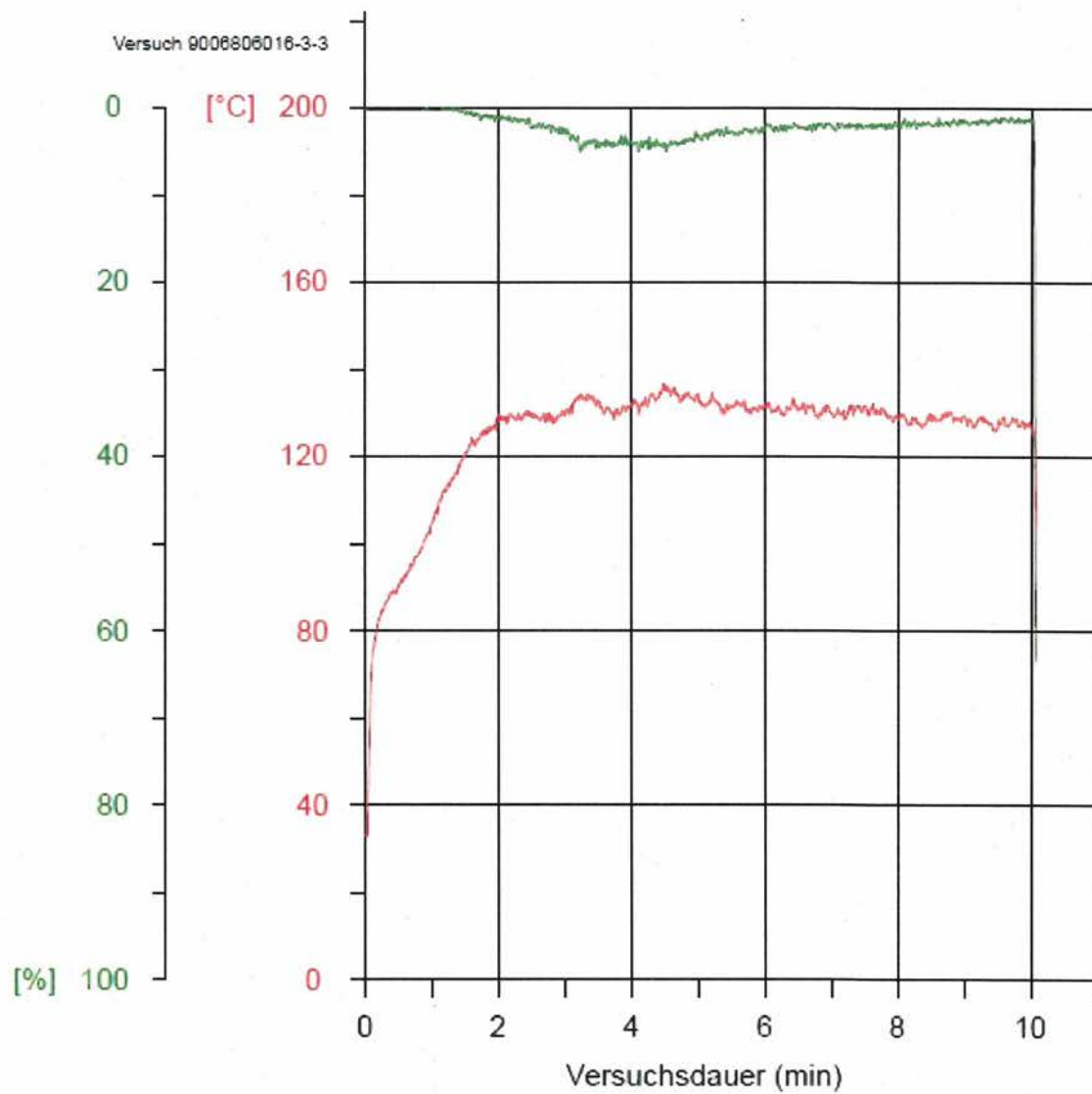




max. Rauchgastemp.	139 °C
erreicht nach	4:26 min:sec
max. Rauchdichte	6 %
Integralwert	20 %*min

Figure 1: Results of fire shaft test A ("Brandschachtversuch")  
(smoke density, flue gas temperature)



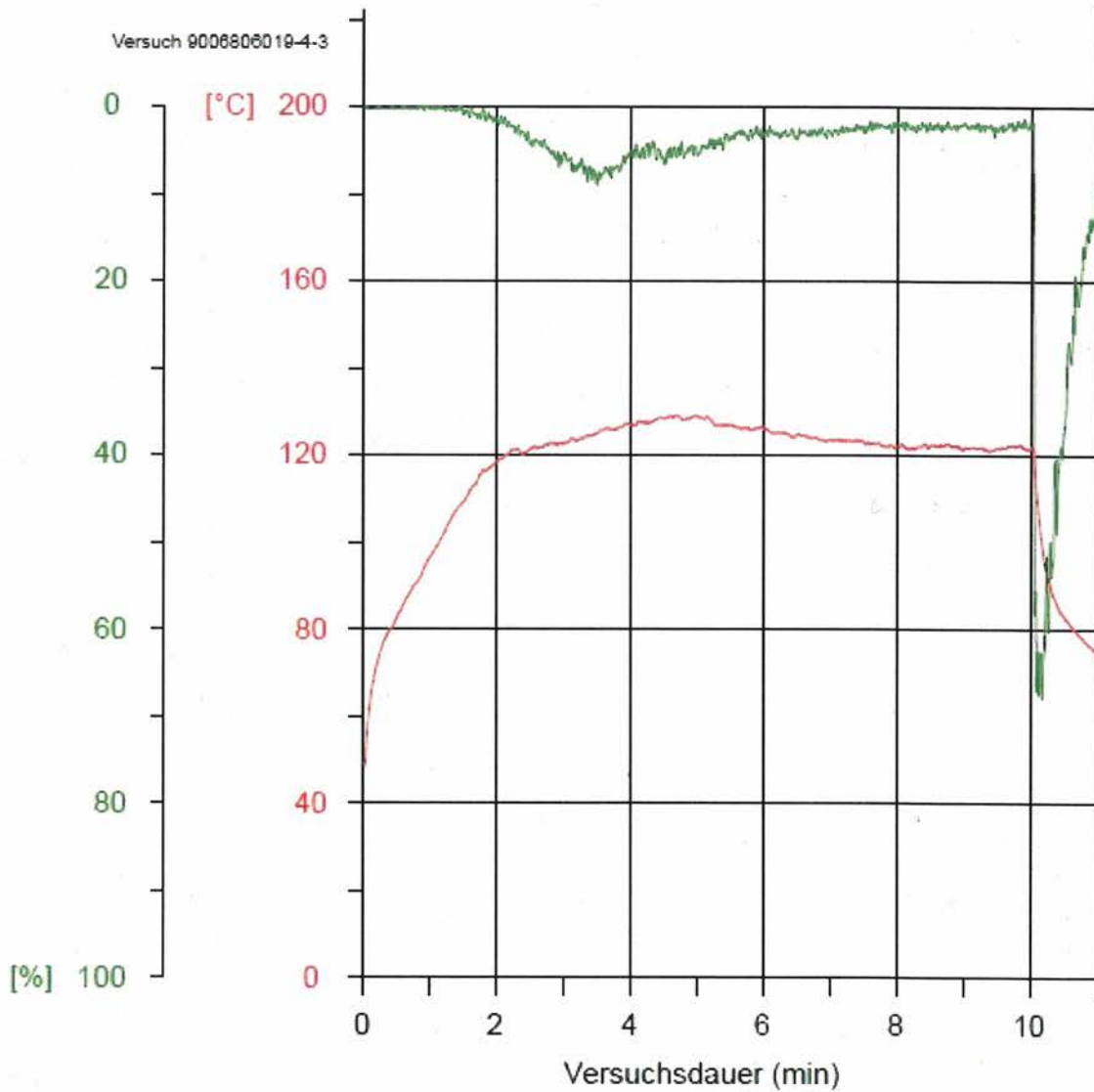


max. Rauchgastemp.	137 °C
erreicht nach	4:28 min:sec
max. Rauchdichte	5 %
Integralwert	20 %*min



Figure 2: Results of fire shaft test B ("Brandschachtversuch")  
(smoke density, flue gas temperature)





max. Rauchgastemp.	129 °C
erreicht nach	4:41 min:sec
max. Rauchdichte	9 %
Integralwert	30 %*min

Figure 3: Results of fire shaft test C ("Brandschachtversuch")  
(smoke density, flue gas temperature)

