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MPA STUTTGART
Otto-Graf-Institut
Materialprüfungsanstalt Universität Stuttgart

PRÜFZEUGNIS (Test Certificate)

900 6806 016/PZ-6/E *)

Auftraggeber: (Client)	Akzo Nobel Hilden GmbH Düsseldorfer Straße 96-100 40721 Hilden
Betreff: Subject	Reaction to fire testing according to DIN 4102, Baustoffklasse B1
Prüfmaterial: (Test Material)	Colourless one-/two-component polyurethane varnish "Aqualit A-ST260-xx" applied on not easily flammable (schwerentflammbar - DIN 4102-B1) particle board - also veneered - as a not easily flammable (schwerentflammbar) building material (Baustoffklasse DIN 4102-B1)
Datum: (Date)	20. May 2016
Gültigkeitsdauer: (Period of Validity)	Until 31st May 2021
Hinweis: (Notes)	The tested building-material not being used as a construction product according to German building regulations MBO § 2, Abs. 10, no „allgemeines bauaufsichtliches Prüfzeugnis" is required. This test certificate is not valid, if the tested product is utilised as construction product according to German building regulations (MBO § 17, Abs. 3). This test certificate is in no case a substitute for any required certification according to German building regulations. In cases where approvals are required by German building regulations and authorities, this test certificate may be utilised for issuing these approvals according to Bauregelliste: - Übereinstimmungsnachweise (certificate of conformity) - Verwendbarkeitsnachweise (allgemeines bauaufsichtliches Prüfzeugnis, allgemeine bauaufsichtliche Zulassung) The notes in annex D of DIN 4102-1 with reference to third-party-control are to be considered in particular.

**) This test certificate is the English version of our test certificate 900 6806 016/PZ-6 dated 20. May 2016. In cases of doubt, the German version is valid.*

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1. Material description

Colourless one-/two-component polyurethane varnish "Aqualit A-ST260-xx" in two degrees of gloss, „matt" (A-ST260-10) and "silk matt" (A-ST260-20), applied on schwerentflammbar (DIN 4102-B1) particle board - also veneered -

Varnish must be used with the hardener "HWA6000".

Application rate (wet):	varnish 3 x approx. 120 g/m²
Mixing ratio (by weight):	varnish : hardener = 20 : 1
Field of application:	Interior fittings
Trade name:	„Aqualit A-ST260-xx"
Receipt of samples:	a) and b) 14th April 2015 (receipt-No. 15/103) c) 2nd October 2015 (receipt-No. 15/322)
Quantity:	varnished particle boards (a and b), 1000 mm x 190 mm, each:

a) 4 x „Aqualit A-ST260-20"
b) 4 x „Aqualit A-ST260-10"

c) 5l „Aqualit A-T260-10"
0,5l „HWA6000"

2. Sample preparation

Test specimen made of schwerentflammbar (DIN 4102-B1) particle boards, 1000 mm x 190 mm x 12 mm, were prepared in the company headquarter in Hilden in order of the testing body (a and b) or in the presence of a representative of the MPA (c).

The boards had been provided by the MPA.

3. Test procedure

The tests had been performed according to standard DIN 4102, part 1(May 1998 edition) and part 16. (May 1998 edition and September 2015 edition) using the Brandschacht according to DIN 4102, part 15, (May 1990 edition) and the „Zulassungsgrundsätze für den Nachweis der Schwerentflammbarkeit von Baustoffen (Baustoffklasse DIN 4102-B1), issued by Deutsches Institut für Bautechnik, Berlin".

Test specimen for the B2-test, 190 mm x 90 mm, were cut out from the B1- test specimen.

4. Test results

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

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

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

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

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

4.2.1. Results of Brandschacht tests (part 1)

	Line No.		Test Results Specimen Assembly		
			A	B	C
1	No. of fastening method according to DIN 4102, table 1		7	7	7
2	Max. flame height	cm	90-100	90-100	80-90
3	Time of appearance [1]	min : s	1:25	1:50	1:20
4	Occurrence of holes in the material Time of appearance [1]	min : s	--	--	--
5	Observations of the reverse face of the specimen Flames / Glowing Time of appearance [1]	min : s	--	--	--
6	Discolouring Time of appearance [1]	min : s	--	--	--
7	Burning droplets Time of appearance [1]	min:s	--	--	--
	Amount				
8	Single drops				
9	Continuously dripping				
10	Separation of burning debris Time of appearance [1]	min : s	--	--	--
	Amount				
11	Single pieces				
12	Continuously falling pieces				
13	Burning material on the screening surface Duration (max.)	min : s	--	--	--
14	Reduction of burner flames by falling droplets or debris Time of occurrence [1]	min : s	--	--	--
15	End of test (premature) End of fire reaction on the specimen [1]	min : s	--	--	--
16	Time of premature finishing the test, if done so [1]	min : s	--	--	--

[1] Elapsed time from the start of the test (t=0) shall be recorded

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4.2.2. Results of Brandschacht tests (part 2)

	Line No.		Test Results Specimen Assembly A	B	C
	Afterflame				
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	--	--	--
	Afterglow				
22	Duration	min : s	--	--	--
23	Number of specimen				
	Location of glowing				-
24	Lowe half on the specimen				
25	Upper half of the specimen				
26	Front face of the specimen				
27	Reverse face of the specimen				
			-	-	-
	Smoke density (area below the curve)				
28	≤ 400 % · min		32	38	14
29	≥ 400 % · min (very strong smoke development)		--	--	--
30	Graph in annex No.		1	2	3
	Residual length				
31	Single results of each specimen	cm	22/24/22/23	24/24/23/23	24/25/24/24
32	Average of each specimen assembly	cm	23 *)	24 *)	24 *)
33	Photo of the test assembly in annex No.		-	-	-
	Flue gas temperature				
34	Maximum of the average value	°C	151	148	141
35	Time of appearance [1]	min : s	2:11	4:02	5:39
36	Graph in annex No.		1	2	3
37	Notes:		Residual length of the non varnished particle board: *) 25 cm		

Appearance of specimen after test: rear side undamaged

5. Classification

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

Thus, the material as described in clause 1 and 2 meets the requirements for building materials according to class B1 of DIN 4102, part 1 (May 1998 edition).

6. Notes

6.1 The varnish system must be labeled according to DIN 4102, part 1, clause 7 as follows:

DIN 4102 - B1, applied on schwerentflammbar (DIN 4102-B1) particle board

6.2 Classification in clause 5 is valid solely for the material as described in clause 1.

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

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

6.3 Classification in this certificate is partly based on tests according to a test standard revised in the meantime.
Classification in this certificate is not changed with new edition of the test standard DIN 4102-16 : 2015.

6.4 According to DIN 4102-16, clause 6.2 for building materials that are intended to be used in outside conditions, it must be proven that the requirements for Baustoffklasse B1 ("schwerentflammbar") are met after a 2- and 5years' weathering-period, too.
This proof is not (yet) given.

6.5 Classification in clause 5 of this test certificate expires to be valid by 31st May 2021. Validity may be extended on request. For extension additional tests may be necessary.

6.6 This test certificate is in no case a substitute for
„allgemeines bauaufsichtliches Prüfzeugnis“ or
„allgemeine bauaufsichtliche Zulassung.

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

The Engineer in Charge

Dr. Sebastian Dantz

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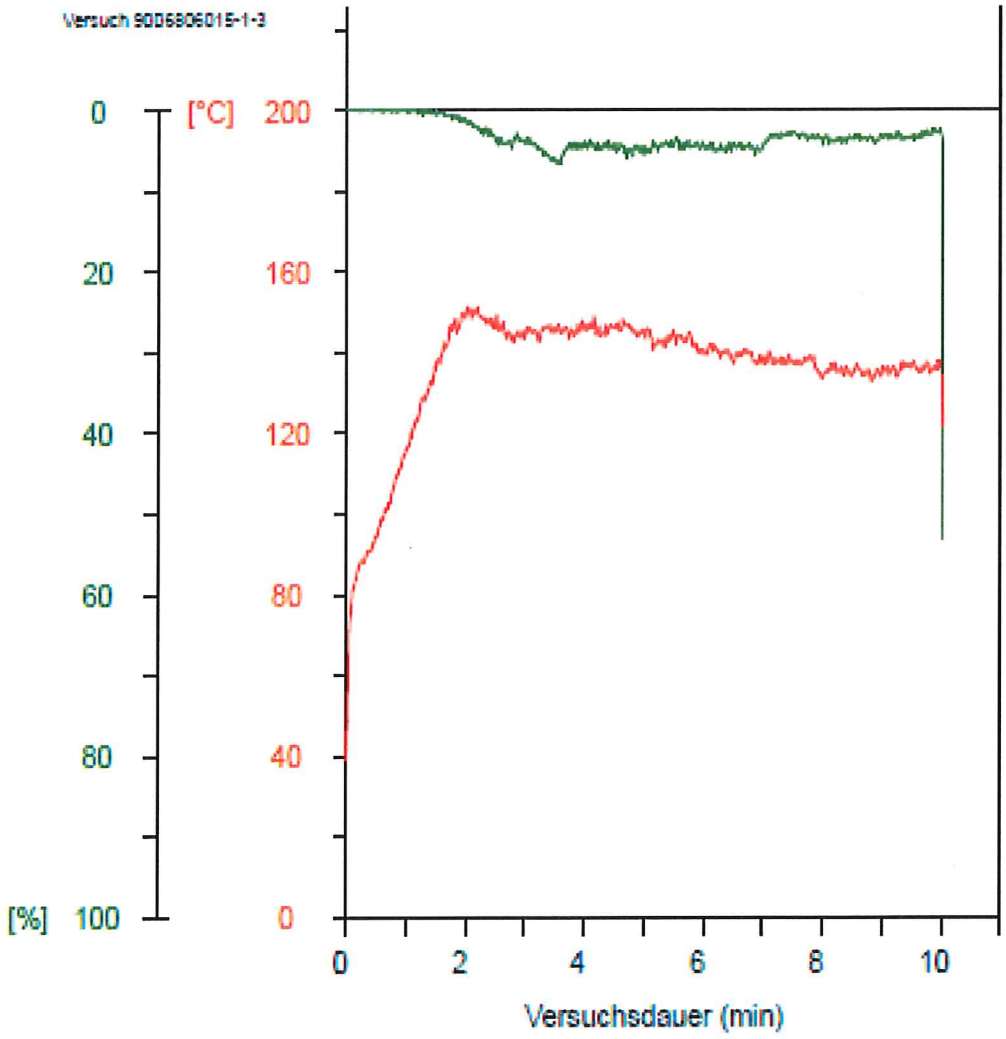
Head of Notified Fire Testing Department

Dr. Stefan Lehner, Ltd. Akad. Direktor



max. Rauchgastemp.	151 °C
erreicht nach	2:11 min:sec
max. Rauchdichte	7 %
Integralwert	32 %*min

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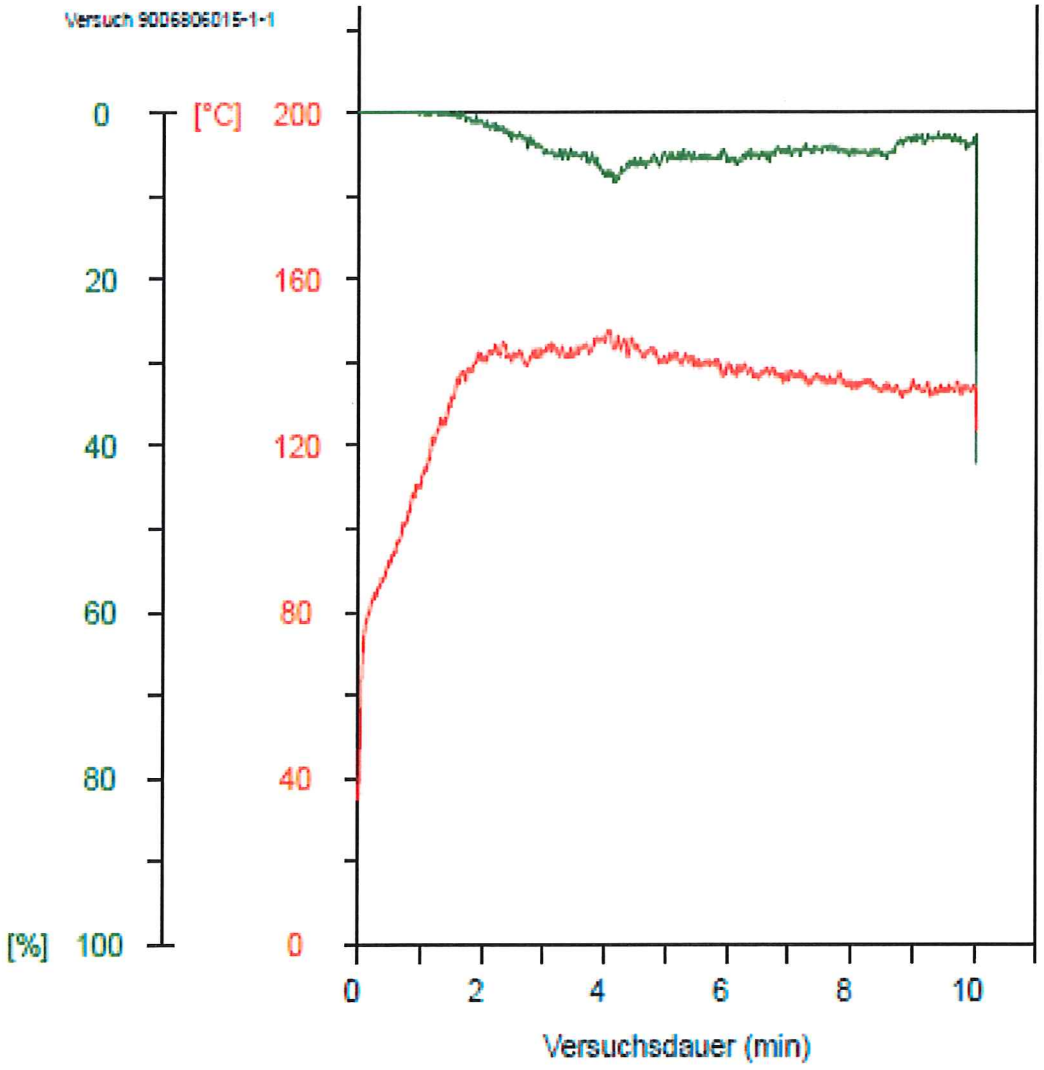
Figure 1: Results of Brandschacht test A



max. Rauchgastemp.	148 °C
erreicht nach	4:02 min:sec
max. Rauchdichte	8 %
Integralwert	38 %*min

Figure 2: Results of Brandschacht test B

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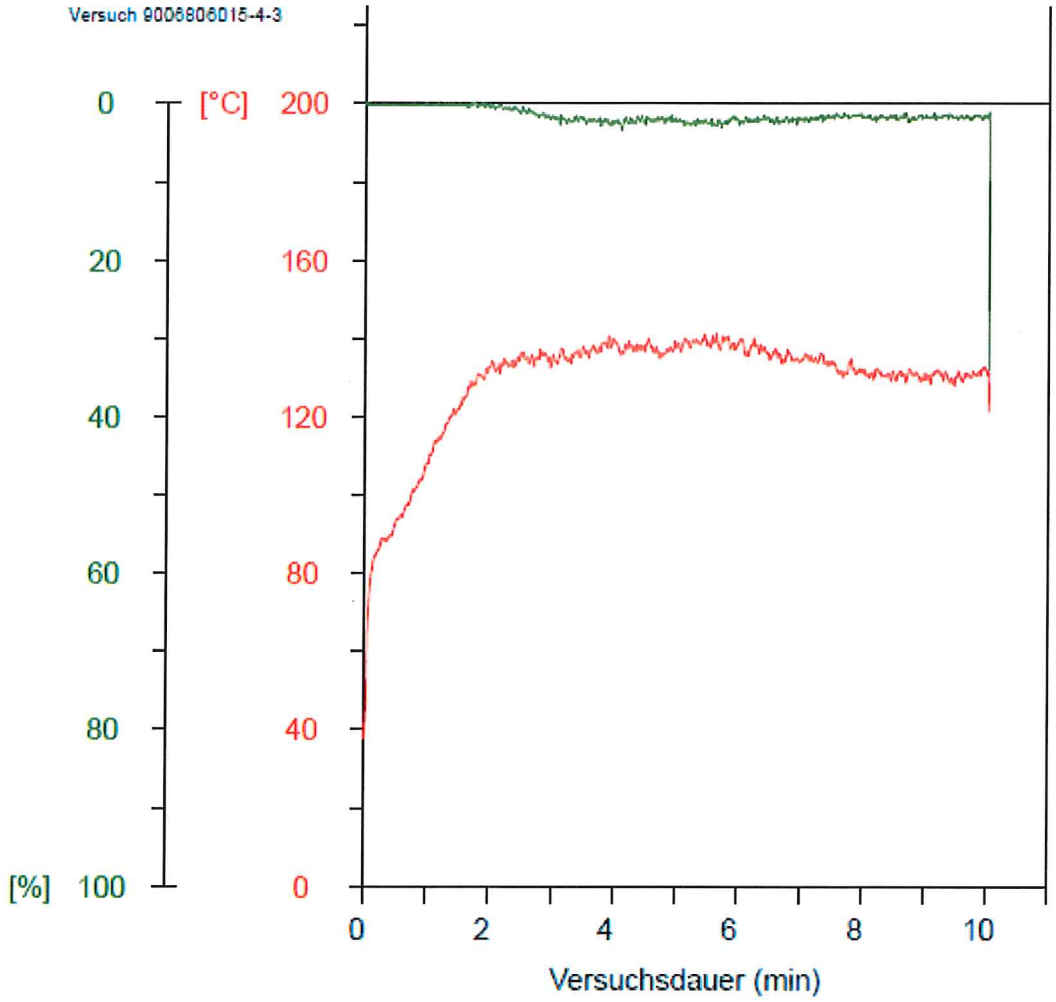

max. Rauchgastemp.	141 °C
erreicht nach	5:39 min:sec
max. Rauchdichte	3 %
Integralwert	14 %*min

Figure 3: Results of Brandschacht test C

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