

PRÜFZEUGNIS (Test Certificate)

900 6806 023/PZ-311-var/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) Colorless one or two-component top coating "Aqualit 1K/2K A-T260..."
in various gloss levels with the hardener "HWA6000" on flame-retardant
(DIN 4102-B1) chipboard - also veneered - as a flame-retardant
building material (Baustoffklasse DIN 4102-B1)

Datum:
(Date) 28. June 2023

Gültigkeitsdauer:
(Period of Validity) until 30. June 2028

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 con-
struction product according to German building regulations (MBO § 17,
Abs. 1).
This test certificate is in no case a substitute for any required certifica-
tion 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 ap-
provals according to Bauregelliste:
- Übereinstimmungsnachweise (certificate of conformity)
- Verwendbarkeitsnachweise (allgemeines bauaufsichtliches Prüf-
zeugnis, 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 023/PZ-311-var dated 12. Mai 2023. In cases of doubt, the German version applies.*



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1. Material description

Colorless one -component top coat "Aqualit 1K A-T260..." and two-component top coat "Aqualit 2K A-T260..." in gloss levels silky gloss "...-40", silk matt "...-20", matt "...-10", and deep matt "...-05" applied to flame-retardant (DIN 4102-B1) chipboard - also veneered

Mixing ratio (by weight):	Top coating: Hardener 10 : 1	
Application rate (wet):	Top coating: 2 x 120 g/m ²	
Type of application:	Compressed air spraying	
Field of application:	Interior fitting	
Trade name:	„Aqualit 1K A-T260...“, „Aqualit 2K A-T260...“ (...-05, ...-10, ...-20, ...-40) „HWA6000“	
Receipt of samples:	a)	27. November 2018 (Receipt-No. 18/375)
	b)	04. December 2019 (Receipt-No. 19/376)
	c)	17. December 2020 (Receipt-No. 20/346)
	d)	02. February 2022 (Receipt-No. 22/15)
	e)	05. December 2022 (Receipt-No. 22/258)
Quantity:	a)	5 l „Aqualit A-T260-40“ 2,5 l „HWA6000“
	b)	5 l „Aqualit 2K A-T260-40“ 2,5 l „HWA6000“
	c)	5 l „Aqualit 2K A-T260-40“ 2,5 l „HWA6000“
	d)	5 l „Aqualit 2K A-T260-20“ 2,5 l „HWA6000“
	e)	5 l „Aqualit 2K A-T260-40“ 2,5 l „HWA6000“



2. Sample preparation

Samples of flame-retardant (DIN 4102-B1) chipboard, 1000 mm x 190 mm x 12 mm, were coated on one side with the varnish in the presence of an employee of the MPA University of Stuttgart in accordance with the manufacturer's instructions. The carrier boards were provided by the MPA.

For the B2 tests, 190 mm x 90 mm samples were cut from the coated chipboard samples.

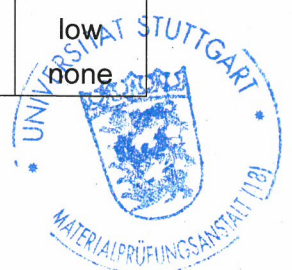
3. Test procedure

The tests had been performed according to standard DIN 4102-1: 1998, DIN 4102-16: 2015 and DIN 4102-16: 2021 using the Brandschacht according to DIN 4102-15: 1990 and the „Zulassungsgrundsätze für den Nachweis der Schwerentflammbarkeit von Baustoffen (Baustoffklasse DIN 4102-B1)“, issued by Deutsches Institut für Bautechnik, Berlin. The fire test had been conducted on free-hanging samples without substrate.

4. Test results

4.1 Tests according to DIN 4102-1 clause 6.2, Baustoffklasse B2

Probe	Test:	1	2	3	
a)	Max. flame height within 20 s:	cm	4	4	4
	reached after:	s	15	15	15
	Smoke development:		low	low	low
	Burning droplets:		none	none	none
b)	Max. flame height within 20 s:	cm	4	3	3
	reached after:	s	15	15	15
	Smoke development:		low	low	low
	Burning droplets:		none	none	none
c)	Max. flame height within 20 s:	cm	4	3	3
	reached after:	s	15	15	15
	Smoke development:		low	low	low
	Burning droplets:		none	none	none
d)	Max. flame height within 20 s:	cm	3	3	3
	reached after:	s	15	15	15
	Smoke development:		low	low	low
	Burning droplets:		none	none	none
e)	Max. flame height within 20 s:	cm	4	5	4
	reached after:	s	15	15	15
	Smoke development:		low	low	low
	Burning droplets:		none	none	none



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

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

4.2.1 Results of the fire shafts test („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	80-90	90-100	90-100	90	90-100
3	Time of appearance ¹⁾	1:30	2:10	1:40	2:30	2:30
4	<u>Occurrence of holes in the material</u> Time of appearance ¹⁾	-	-	-	-	-
5	<u>Observations of the reverse face of the specimen</u> Flames / Glowing Time of appearance ¹⁾	-	-	-	-	-
6	Discolouring Time of appearance ¹⁾	-	-	-	-	-
7	<u>Burning droplets</u> Beginning ¹⁾ Continued burning on sieve tray	-	-	-	-	-
8	Sporadically dripping sample material	-	-	-	-	-
9	Steady dripping sample material	-	-	-	-	-
10	<u>Burning dripping sample parts</u> Beginning ¹⁾ Amount:	-	-	-	-	-
11	Sporadically dripping sample material	-	-	-	-	-
12	Steady dripping sample material	-	-	-	-	-
13	Duration of continued burning on the sieve bottom (max.)	-	-	-	-	-
14	<u>Impairment of the burner flame due to dripping/falling material</u> Time of appearance ¹⁾	-	-	-	-	-
15	<u>Premature end of experiment</u> End of fire reaction	-	-	-	-	-
16	on the specimen ¹⁾ Time of premature finishing the test,	-	-	-	-	-

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



4.2.2 Results of the fire shaft tests (Brandschachtprüfung) (Teil 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					
	Location of glowing					
24	Lower half of the specimen					
25	Upper half of the specimen					
26	Front face of the specimen					
27	Reverse face of the specimen					
<u>Smoke density</u>						
28	$\leq 400 \% \cdot \text{min}$	34	24	10	12	11
29	$\geq 400 \% \cdot \text{min}$ (very strong smoke development)	-	-	-	-	-
30	Graph in annex No.	1	2	3	4	5
<u>Residual length</u>						
31	Single results of each specimen cm	24 / 25	19 / 21	20 / 21	18 / 19	16 / 17
		25 / 23	20 / 19	20 / 20	18 / 19	15 / 17
32	Average of each specimen assembly cm	24 *)	20 **)	20 ***)	19 ***)	16 ***)
33	Photo of the test assembly in annex No.	-	-	-	-	-
<u>Flue gas temperature</u>						
34	Maximum of the average value °C	148	148	154	148	144
35	Time of appearance ¹⁾ min/s	3:38	6:13	5:12	5:56	6:42
36	Graph in annex No.	1	2	3	4	5
37	Notes: Residual length of the non coated particle board: *) 24 cm **) 20 cm ***) 18 cm Appearance of the samples after the fire tests: Back side intact					



5. Classification

All 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 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 10.3, the material is considered to be non-molten-dripping.

6. Notes

- 6.1 The containers of the coating system 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 coating system 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 According to DIN 4102-16: 20121, clause 7.2 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 5-years' weathering-period, too. This proof is not (yet) given.

- 6.4 The validity of the assessment in section 5 of this test certificate ends on 28. June 2028.

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
Referat Brandverhalten von Baustoffen

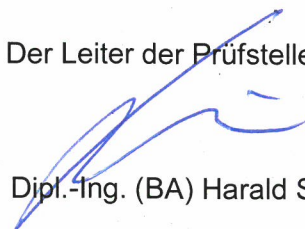
Der Prüfenieur



M.Sc. Sebastian B. Wachsmann



Der Leiter der Prüfstelle



Dipl.-Ing. (BA) Harald Schillo

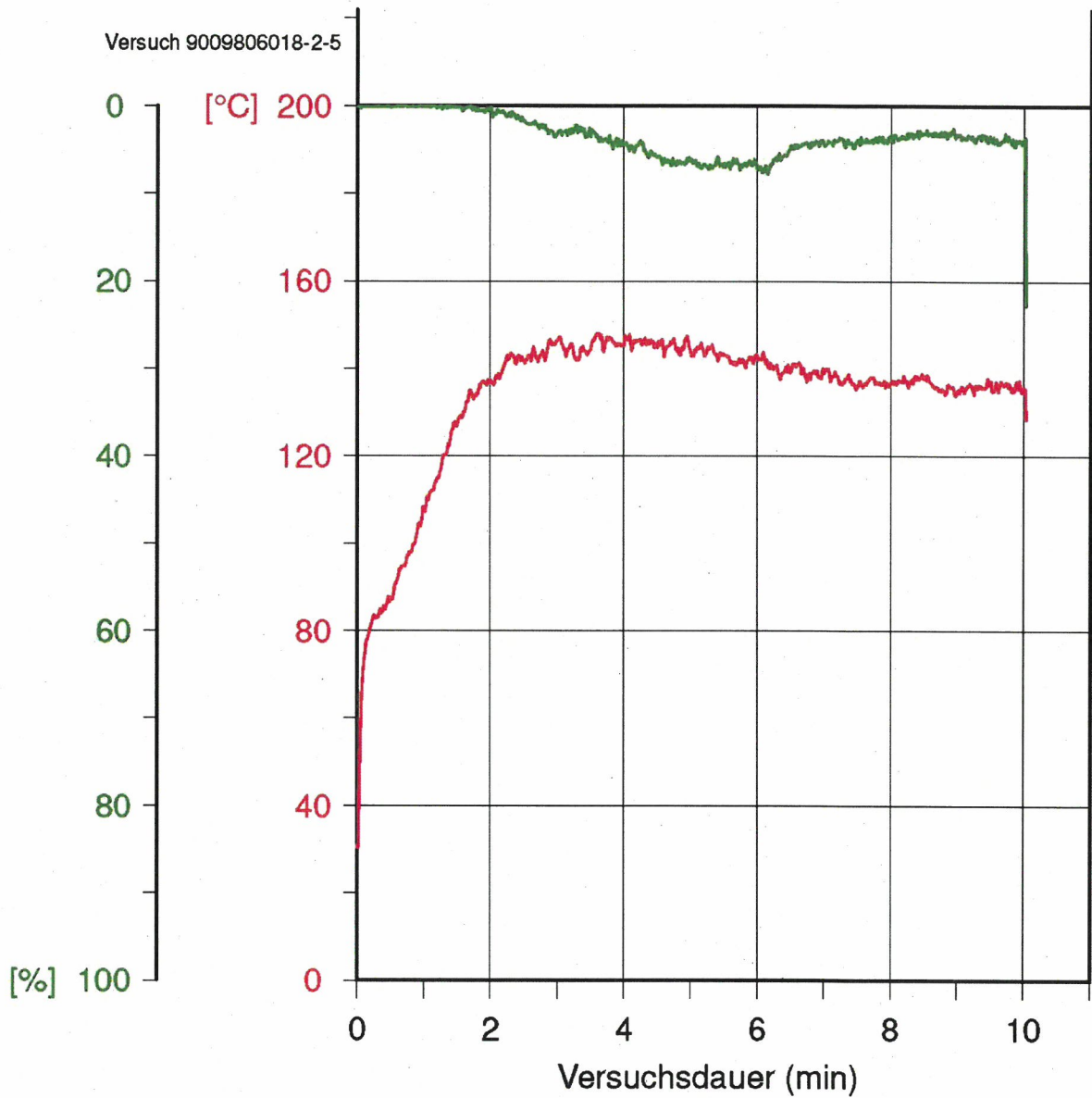


Abb. Verlauf des Brandschachtversuchs A311-18

max. Rauchgastemp.	148 °C
erreicht nach	3:38 min:sec
max. Rauchdichte	8 %
Integralwert	34 %*min



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

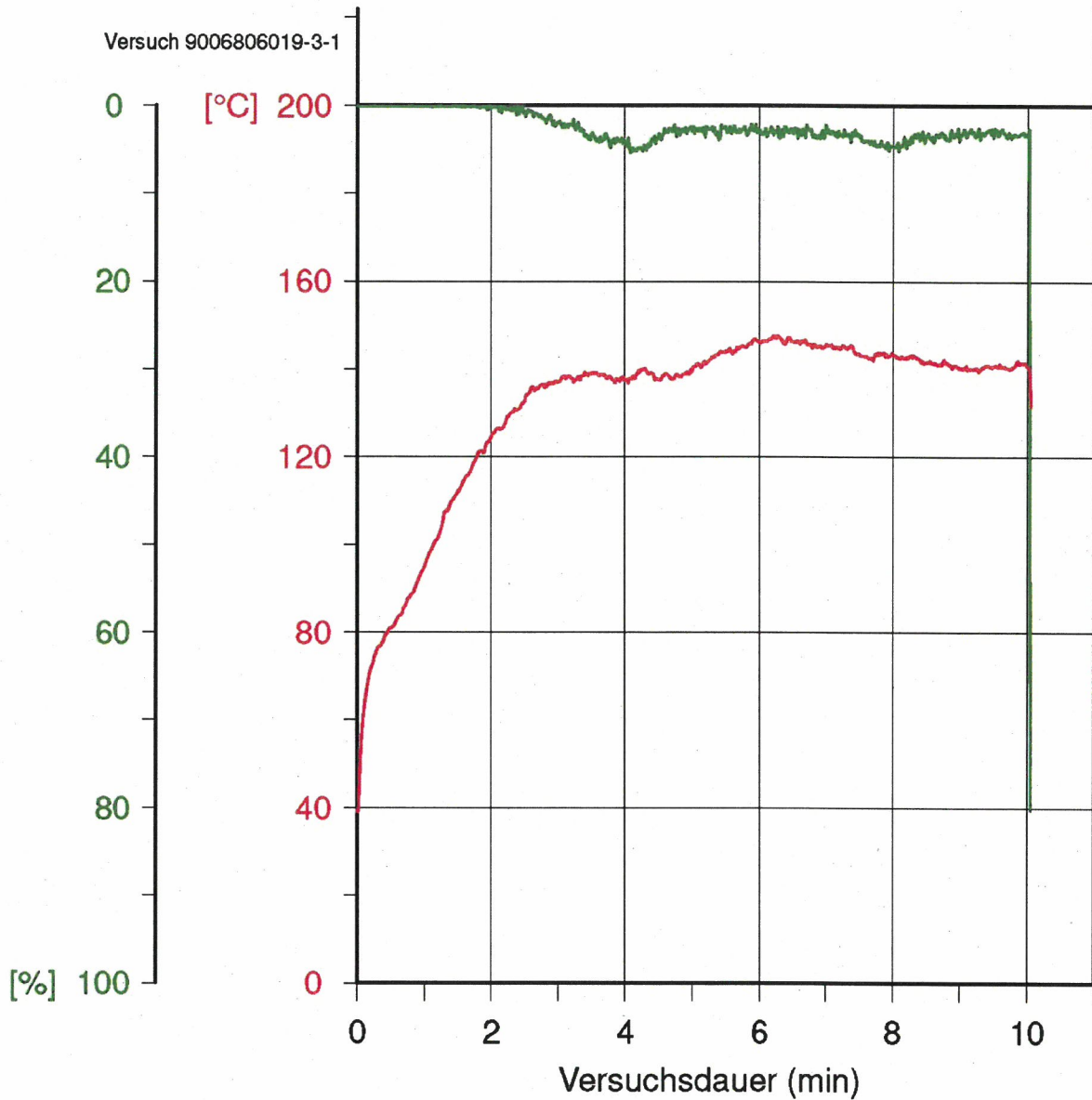


Abb. Verlauf des Brandschachtversuchs A311-19

max. Rauchgastemp.	148 °C
erreicht nach	6:13 min:sec
max. Rauchdichte	5 %
Integralwert	24 %*min



Figure 2: Results of fire shaft test A (“Brandschachtversuch”), (smoke density, flue gas temperature)

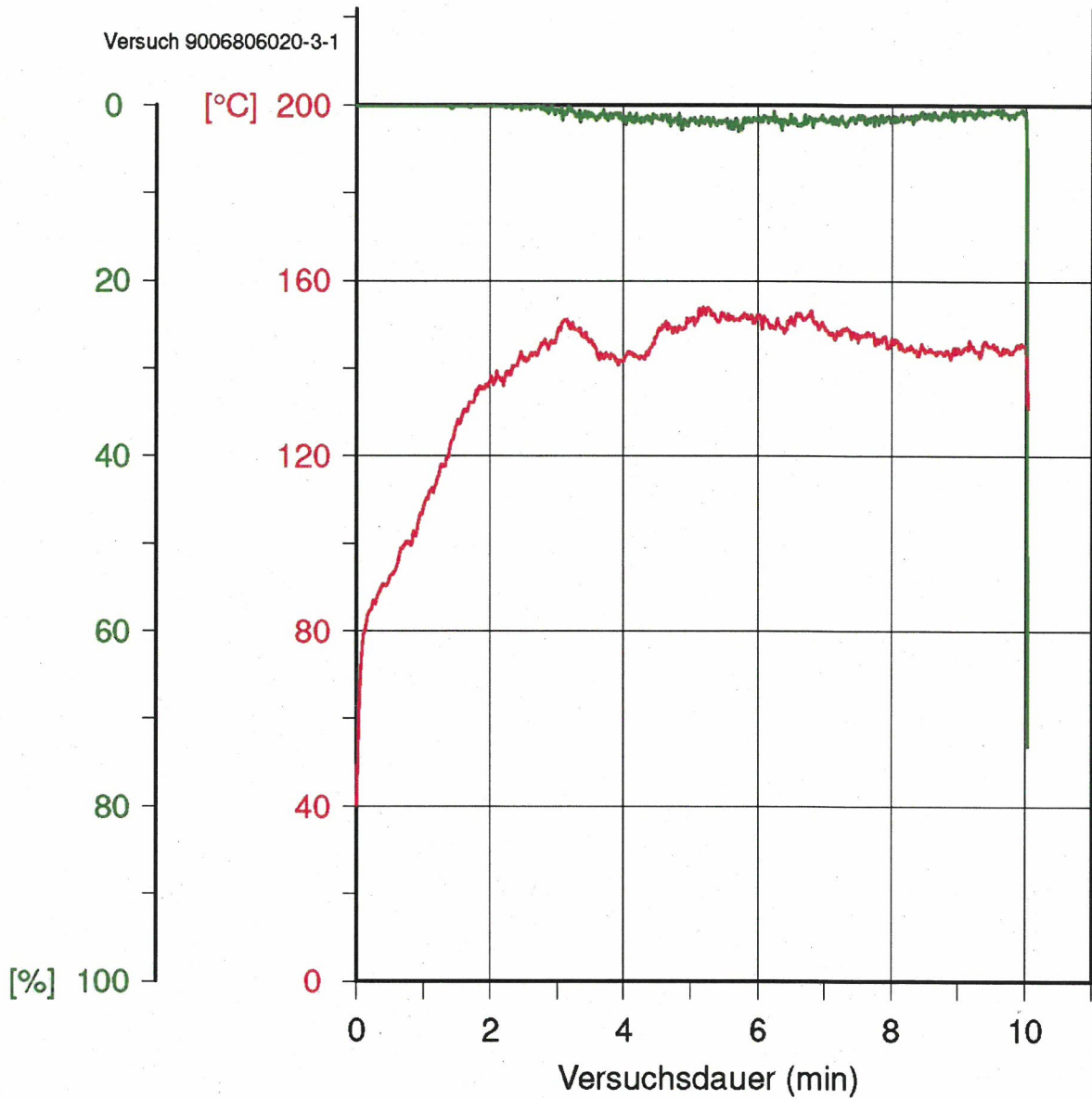


Abb. Verlauf des Brandschachtversuchs A311-20

max. Rauchgastemp.	154 °C
erreicht nach	5:12 min:sec
max. Rauchdichte	3 %
Integralwert	10 %*min



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

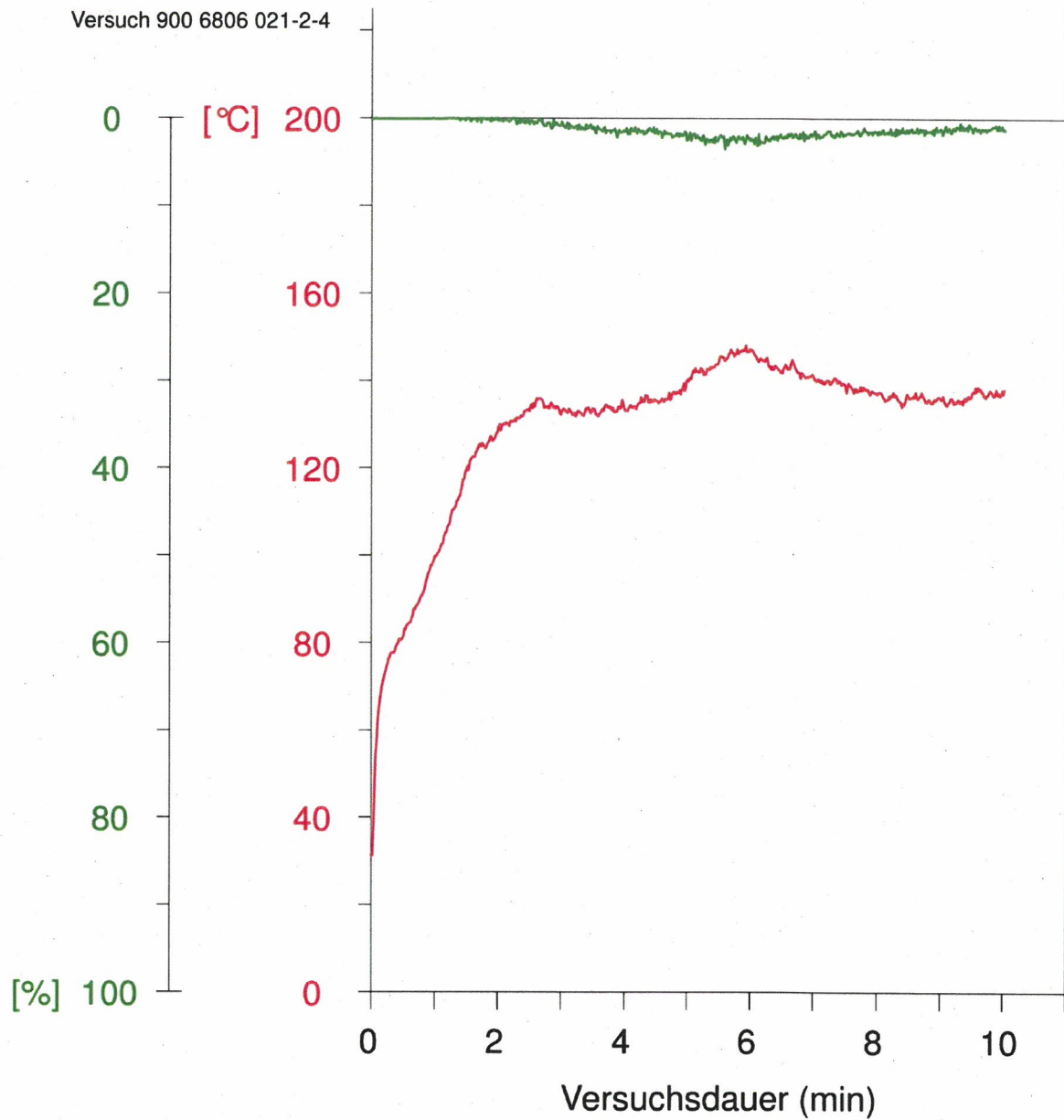


Abb. Verlauf des Brandschachtversuchs A311/21

max. Rauchgastemp.	148 °C
erreicht nach	5:56 min:sec
max. Rauchdichte	3 %
Integralwert	12 %*min



Figure 4: Results of fire shaft test A ("Brandschachtversuch"), (smoke density, flue gas temperature)

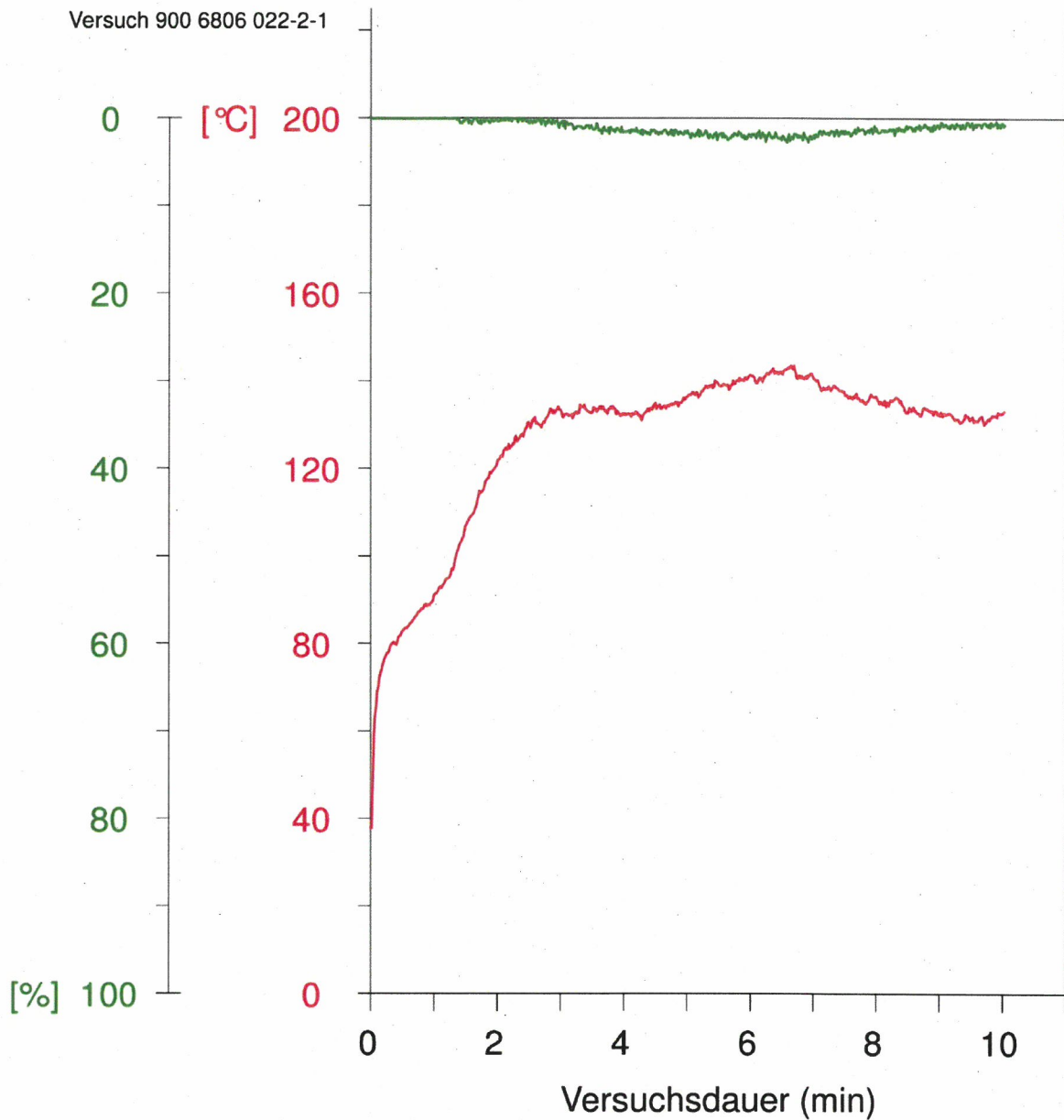


Abb. Verlauf des Brandschachtversuchs A311-22

max. Rauchgastemp. 144 °C

erreicht nach 6:42 min:sec

max. Rauchdichte 3 %

Integralwert 11 %*min



Figure 5: Results of fire shaft test A ("Brandschachtversuch"), (smoke density, flue gas temperature)