

Test report no. 163731

(English Version of test report no. 161945 - 29.07.2016)

1. issue dated 14.09.2016

Sponsor: Den Braven Benelux B.V.
Denariusstraat 11
4903 RC Oosterhout
The Netherlands

Order from: 02.08.2016 - Marc Lambermont

Order: Reaction to fire tests according to
DIN 4102-1: 1998-05, Baustoffklasse B1,
of the building product
„Zwaluw FP® Silicone Sealant (Q062A)“

Notes: In Germany this test report can be used only for a building
material, not for a building product.
For sale on the German market, other special papers according
to the German "Landesbauordnung" are needed in addition.
This test report can be used for these special papers.

This test report consists of 7 pages.
The test material has been consumed.

In case of any dispute the German version is decisive. The test report shall be published unabridged.
Any partial publishing requires written allowance by the testing institute. The test results refer only to
the tested material.

1 Test material**1.1 Product name:** Zwaluw FP® Silicone Sealant (Q062A)**1.2 Specification:** sealant based on silicones**1.3 Sampling and delivery**

sampling: by sponsor

delivery: 24.05.2016 by sponsor

number of samples: sample A: 22 cartridges dimension 310 ml

delivery: 26.05.2016 by FedEx

number of samples: sample B: 24 cartridges dimension 310 ml

delivery: 26.05.2016 by FedEx

number of samples: sample C: 24 cartridges dimension 310 ml

2 Tests**2.1 Determination of dimensions, density and color**

sample: A, B und C		
joint width	30	mm
joint depth	15	mm
sample: A		
density	1245	kg/m ³
color	white	--
sample: B		
density	1224	kg/m ³
color	grey	--
sample: C		
density	1236	kg/m ³
color	black	--

2.2 Fire tests**2.2.1 Review**

All fire tests were carried out according to DIN 4102-1: 1998-05.

The following table indicates method and number of tests.

tests	number of tests
Single-flame source test	18
Brandschacht-test	3

2.2.2 Brandschacht-test

For the Brandschacht-tests the products were mounted between steel angles and inlaid gypsum plasterboards. The joint width was 30 mm and the depth 15 mm.
12 thus prepared samples with vertical joints comprised 3 test-specimens for the Brandschacht.
The results of the Brandschacht-tests are compiled in the following table.

		test specimen		
		A	B	C
color		white	grey	black
date of test		25.07.2016	26.07.2016	26.07.2016
joint width / joint depth	mm	30 / 15		
maximum vertical flame spread time after beginning	cm min:s	50 03:25	50 03:45	50 02:25
melting and burning through time after beginning	min:s	--	--	--
flames on the reverse side of samples time after beginning	min:s	--	--	--
flaming droplets/particles time after beginning	min:s	--	--	--
residual length:				
single values	cm	62	58	58
	cm	59	56	57
	cm	62	58	61
	cm	57	55	55
mean value	cm	60	57	58
total mean value		58		
maximum smoke temperature time after beginning	° C min:s	110 09:37	109 09:59	109 09:47
subsequent fire	min:s	--	--	--
smoke intensity:				
maximum opacity of the smoke	%	7	6	7
integral value I	min·%	38	32	35

The development of smoke temperature is shown in figure 1, the appearance of samples after burning in figure 3 - 5.

The integral values

$$I = \int_{0 \text{ min}}^{10 \text{ min}} S \cdot dt$$

were calculated from the curves in figure 2.



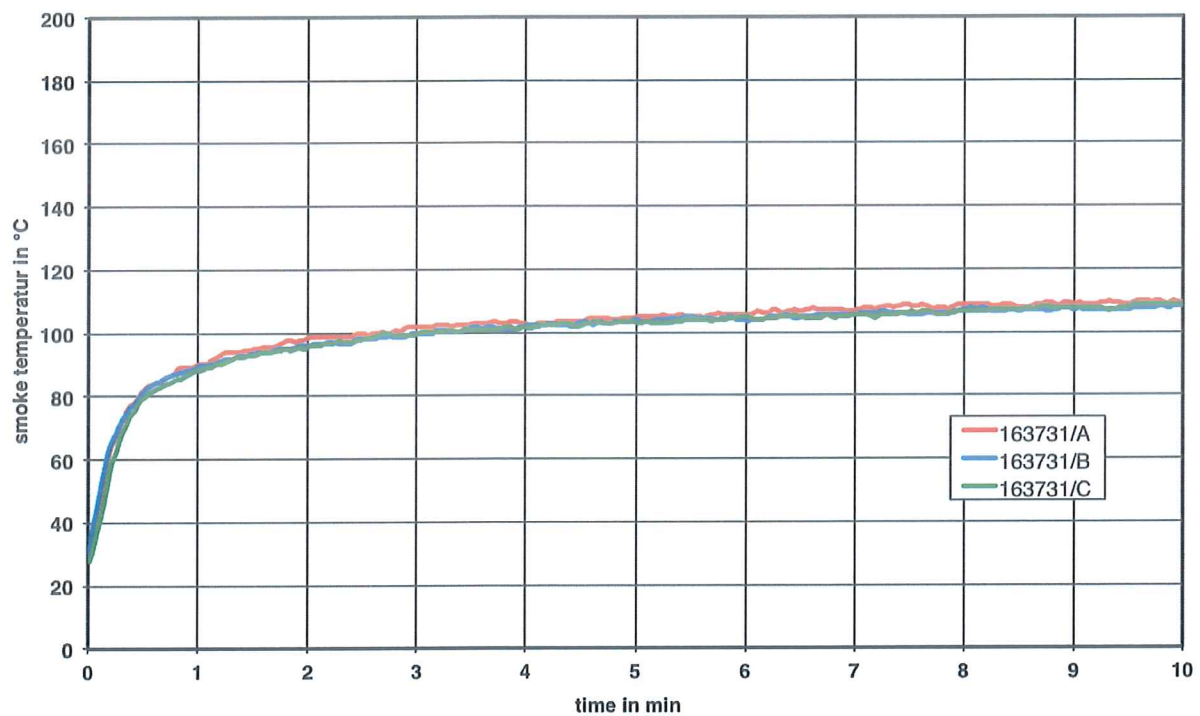


figure 1: development of smoke temperature

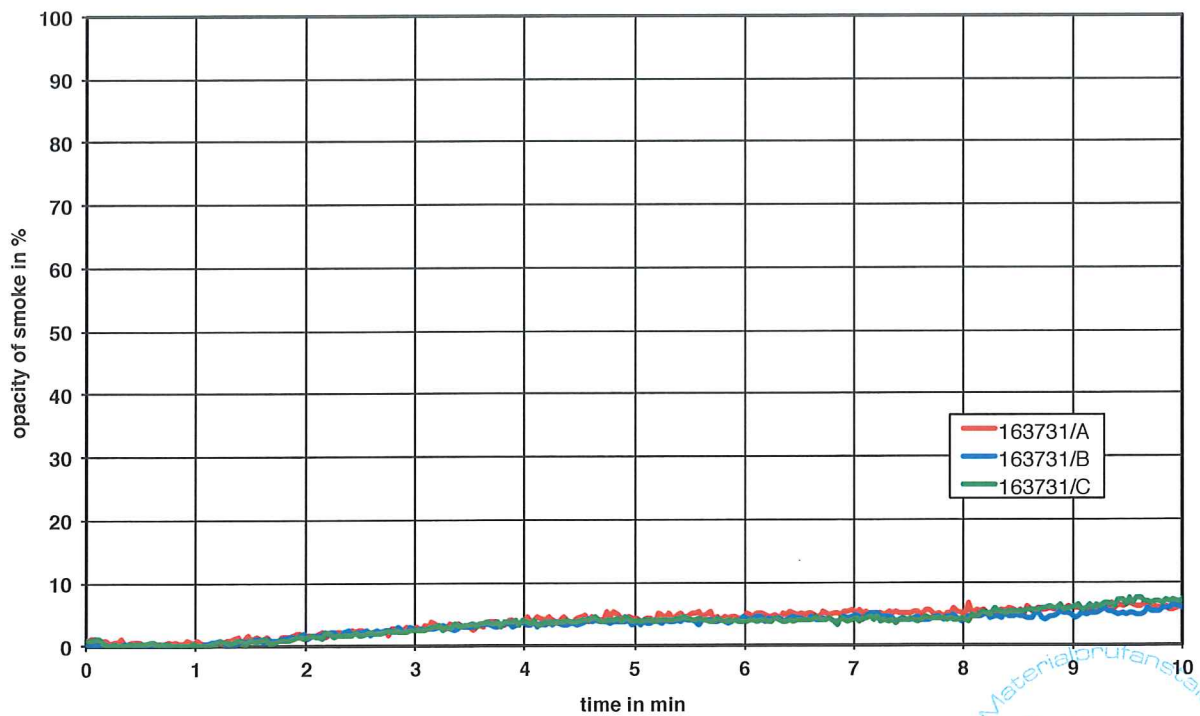


figure 2: development of opacity of smoke

163731 - A



figure 3: appearance of the specimen A
after 10-minutes burning

163731 - B



figure 4: appearance of the specimen B
after 10-minutes burning

163731 - C

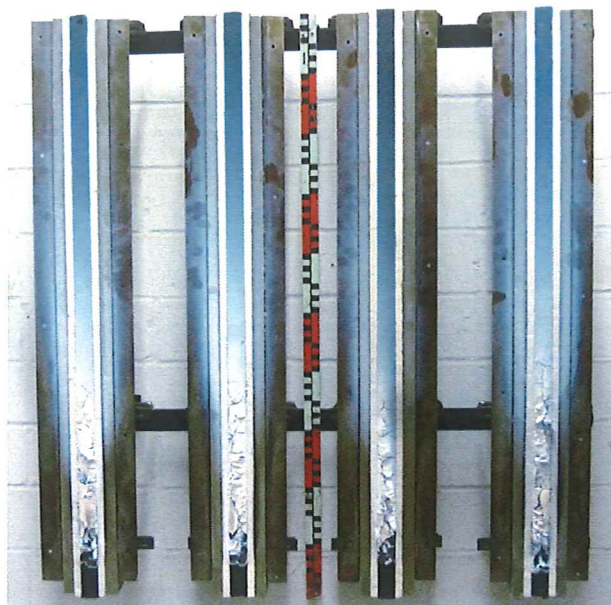


figure 5: appearance of the specimen C
after 10-minutes burning

2.2.3 Single-flame source test

For each sample 3 tests were carried out as edge flame attacks according to DIN 4102-1:1998-05 clause 6.2.5.2 (specimen no. 1 - 3) and as surface flame attacks according to DIN 4102-1:1998-05 clause 6.2.5.3. (specimen no. 4 -6).

date of tests: 25.07.2016

The results of the single-flame source test are compiled in the following 3 tables.

	sample: A					
	edge flame attack			surface flame attack		
specimen no.	1	2	3	4	5	6
ignition occurs after						

	sample: B					
	edge flame attack			surface flame attack		
specimen no.	1	2	3	4	5	6
ignition occurs after s	1,2	0,7	0,6	no ignition		
duration of flames s	38,7	43,1	46,4	-	-	-
max. vertical flame spread mm	30	30	20	-	-	-
smoke production	small			-		
flaming droplets/particles	no					

	sample: C					
	edge flame attack			surface flame attack		
specimen no.	1	2	3	4	5	6
ignition occurs after s	3,5	2,6	4,5	no ignition		
duration of flames s	23,1	12,9	21,0	-	-	-
max. vertical flame spread mm	20	20	20	-	-	-
smoke production	small			-		
flaming droplets/particles	no					

Requirement of Baustoffklasse DIN 4102 - B2:

There shall be no flame spread in excess of 150 mm vertically from the point of application on the test flame within 20 s from the time of the application.

3 Summary

The summary of test results are compiled in the following table.

name		Zwaluw FP [®] Silicone Sealant (Q062A)
density	kg/m ³	1224 - 1245
colors		white / grey / black
Brandschacht-test:		
joint width / joint depth	mm	30 / 15
maximum vertical flame spread	cm	50
residual length (average)	cm	58
maximum smoke temperature	°C	110
flaming droplets/particles		no
maximum opacity of smoke	%	7
maximum integral value	min·%	38
Single-flame source test:		
maximum flame spread	mm	30
flaming droplets/particles		no

4 Classification

The building product „Zwaluw FP[®] Silicone Sealant (Q062A)“, mounted between steel angles and inlaid gypsum plasterboards with a joint width of 30 mm and a depth of 15 mm, fulfils the requirements of DIN 4102-1 - B1 and is thus classified in relation to its reaction to fire behaviour.

During the tests there were no flaming droplets/particles according to DIN 4102-1:1998-05.

5 Notes

In Germany this test report can be used only for a building material, not for a building product.

For sale on the German market, other special papers according to the German "Landesbauordnung" are needed in addition.

This test report can be used for these special papers.

The validity of this test report expires on 31.07.2021.

Hanover, 14 September 2016

Head of fire laboratory



(ORR Dipl.-Ing. Restorff)



Technician



(T. Kuzenko)