MPA BAU HANNOVER

Test report no. 113020

1. edition - 04.10.2011

Sponsor:	Novatech n.v. Industrielaan 5 B 2250 Olen BELGIEN
Order from:	16.08.2011 - Vicky Engelen
Order:	Reaction to fire tests according to DIN 4102-1: 1998-05, fire class B1, of gun-PUR-foam „PUR7 Plus“
Notes:	In German 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.

Editor T. Kuzenko
Direct dial +49 511 762 3107
E-Mail t.kuzenko@mpa-bau.de

Nienburger Straße 3
30167 Hannover

Telefon +49 511 762 8708
Telefax +49 511 762 4001

1. Test material

1.1 Sampling and delivery

sampling:	by sponsor
delivery:	on 17.08.2011 by TNT
number of samples:	10 cans gun-PUR-foam
dimensions:	750 ml

1.2 Informations about the samples

name:	„PUR7 Plus“
raw materials:	polyurethane, flame retardent
configuration:	1-component-gun-PUR-foam
color:	light green
density:	about 19 kg/m^3

1.3 Mounting

For the Brandschacht-test, PUR foam was expanded between steel angles. Any protruding foam was cut away after hardening. The joint width was 40 mm and the depth 70 mm.
4 thus prepared samples with vertical joints comprised a test specimen for the Brandschacht.

2. Fire tests

2.1 Review

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

character and location of tests

tests	amount of tests	lab
Single-flame source test	5	MPA BAU HANNOVER
Brandschacht-test	3	

2.2 Single-flame source test

The specimens for the fire tests were produced in the fire laboratory according to the ABM-Recommendation, dated 05.05.2004. The tests were carried out as edge flame attacks according to DIN 4102-1: 1998-05 clause 6.2.5.2.

flame application time: 15 s
observation time: 20 s
number of tests: 5

position of flame application		edge				
specimen no.		1	2	3	4	5
ignition occurs after	s	0,2	0,4	0,3	0,3	0,2
duration of flames	s	15,1	15,0	9,6	15,0	12,9
max. vertical flame spread	mm	120	110	110	120	110
smoke production		high				
flaming droplets/particles		no ignition of the filter paper				

Requirement of class B2: max. vertical flame spread < 150 mm

2.3 Brandschacht-test

The Results of the Brandschacht-test are compiled in the next table. The development of smoke temperature is shown in fig. 1, the appearance of samples after burning in fig. 3 - 5. The integral value

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

was calculated from the curve in fig. 2

results of the Brandschacht-tests

test		A	B	C
max. vertical flame spread time after beginning	cm min:s	70 00:43	70 00:33	70 00:47
melting and burning through time after beginning	min:s	—	—	—
flames on the reverse side of samples time after beginning	min:s	—	—	—
flaming droplets/particles		—	—	—
residual length				
single values	cm cm cm cm	32 37 34 32	32 38 31 33	34 37 32 33
mean value	cm	34	34	34
max. smoke temperature time after beginning	°C min:s	117 09:59	114 09:45	116 09:51
subsequent fire	min:s	—	—	—
smoke intensity max. opacity of the smoke integral value I	 % min·%	 50 60	 51 53	 41 24

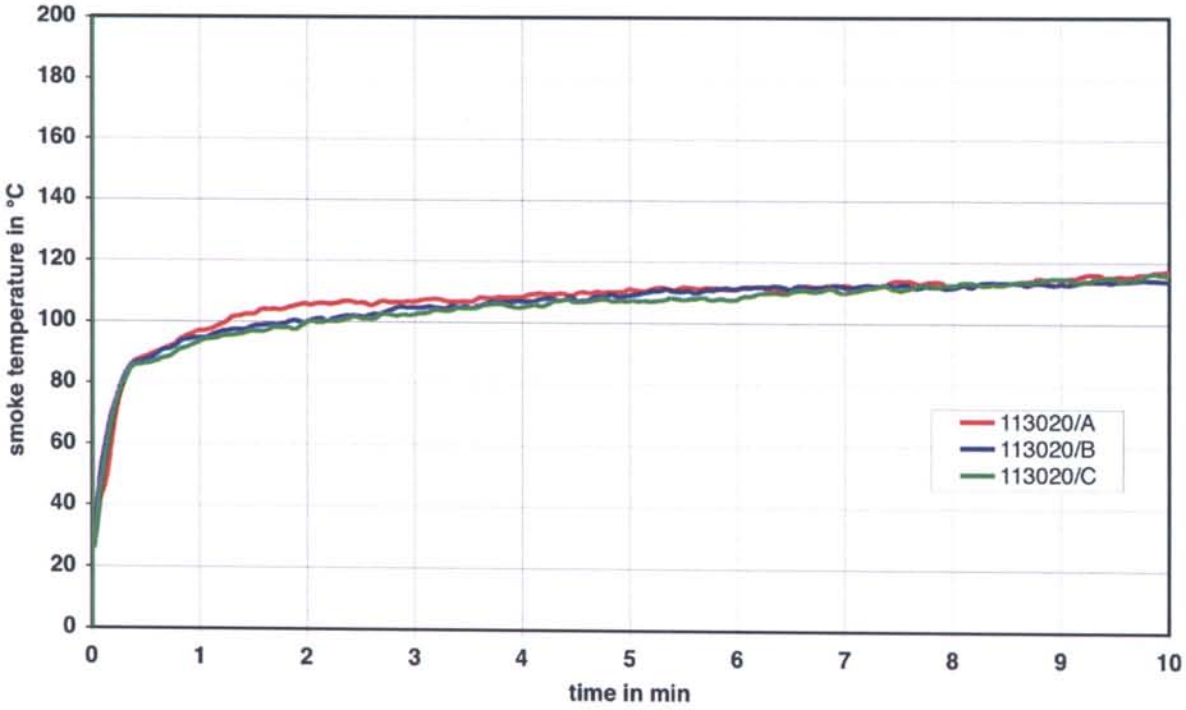

fig 1: smoke temperature

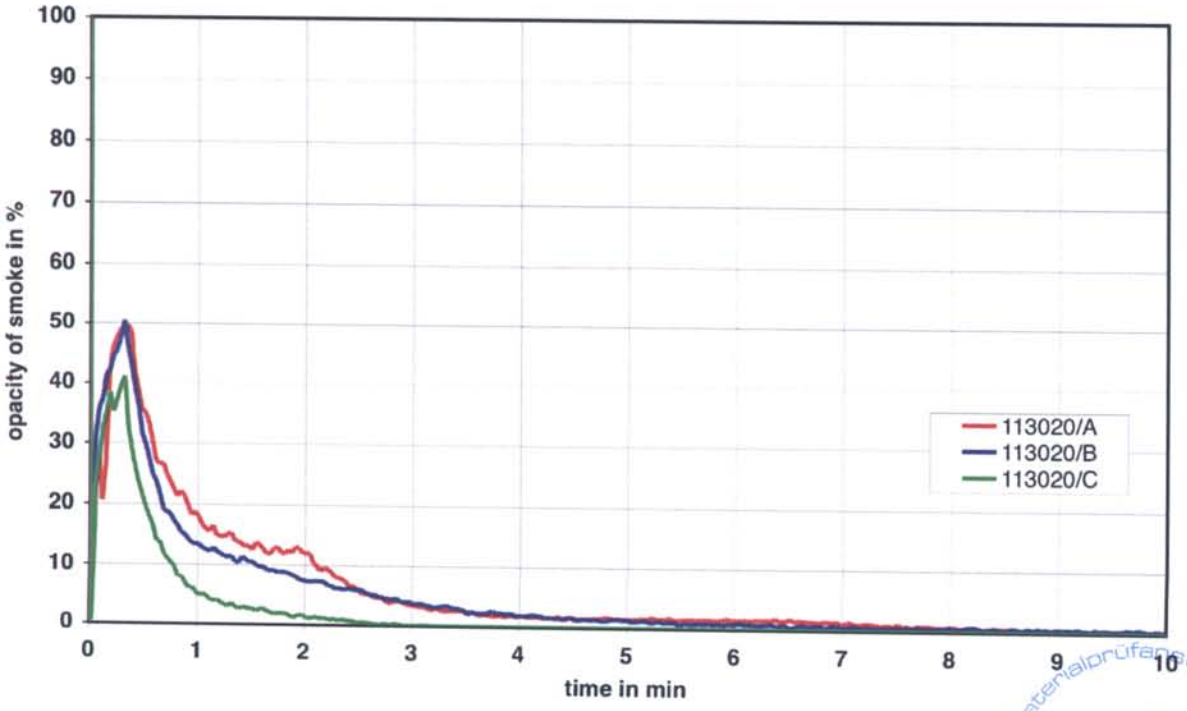

fig 2: opacity of smoke

fig. 3: Appearance of specimen A after 10-minutes burning

fig. 4: Appearance of specimen B after 10-minutes burning

fig. 5: Appearance of specimen C after 10-minutes burning

3. Summary

summary of test results

name		gun-PUR-foam „PUR7 Plus“
density	kg/m³	19
Brandschacht-test		
joint width	mm	40
joint depth	mm	70
max. vertical flame spread	cm	70
residual length	cm	34
max. smoke temperature	°C	117
flaming droplets/particles		—
max. opacity of smoke	%	51
max. integral value	min·%	60
single-flame source test		
max. flame spread	mm	120
flaming droplets/particles		—

4. Classification

The gun-PUR-foam „PUR7 Plus“ with a density of 19 kg/m³, between steel angles with a joint width of 40 mm and depth of 70 mm, fulfils the requirements of DIN 4102-1 - B1 and is thus classified in relation to its reaction to fire.

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

5. Restrictions

This test report is valid until 31.10.2016.

Hanover, 4. October 2011

Head of fire laboratory

(ORR Dipl.-Ing. Restorff)

Materialprüfanstalt für das Bauwesen Hannover MPA BAU HANNOVER

Technician

(T. Kuzenko)