

Flame Retardants for Textiles

Description of test methods and their application

French – Standards

- NF – G 07–113; 1978
- NF – P 92–503; 1985
- NF – P 92–504; 1995
- NF – P 92–505; 1985
- NF – P 92–507; 1985

Flame Retardants for Textiles

Description of test methods and their application

NF- G 07-113; 1978 (NF - G 07-184)

1. Scope:

Methods for assessing the burning behaviour of textiles Classification of damaged area

2. Preparation of specimens:

3 specimens each of 300 mm x 150 mm

3. Test procedure:

Vertical test: a folded PES/CO fabric strip is fixed in the middle of the lower edge of the specimen and ignited with a match (duration of flaming 25–30 sec). If the specimen does not start to burn, an additional glass thread is fixed above the ignition source as well as at a distance of 20 mm each on both sides. Fabrics for workwear and protective clothing are tested the same way.

4. Apparatus:

acc. to NF- E 81 - 061

5. Assessment:

– Measurement of the damaged area 15 min after the end of the test. Remarkable effects regarding afterglow time, melt drip, formation of fume and deformation of the specimen are to be noted.

–Classification of damaged area:

Class A: up to 10 cm²

Class B: 10 –40 cm²

Class C: 40 – 100 cm² edge must not be reached

Class D: 100 – 200 cm² or below 100 cm² if the edge has been reached

Class E: above 200 cm²

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Description of test methods and their application

NF P 92 – 503; 1985

1. Scope:

Burning behaviour of building material Test of building material up to 5 mm thick by means of an electric burner.

2. Preparation of specimens:

5 specimens each of 600 mm x 160 mm in warp and weft direction (both sides when coated)

3. Test procedure:

45° test; permanent heat application during 5 min by means of an electric burner and additional direct ignition at the spot directly exposed to the electric burner by means of a gas flame of 30 mm length, twice a minute, each time 5 sec.

4. Apparatus:

5. Assessment: (for more details see NFP 92-507)

NF P 92 – 503

Equipment	Evaluation	Classification			
electr. burner	flame remanence	£ 5 sec.	£ 5 sec.	‡ 5 sec.	> 5 sec.
	damaged length	< 35 cm	35 £ x £ 60	< 35 cm	35 £ x £ 60
NFP 92 – 503	damaged width	£ 9 cm	£ 9 cm	£ 9 cm	£ 9 cm
	no sparks	M 1	M 2	M 2	M 3
	non flammable sparks	M 1	M 2	M 2	M 3
	flammable sparks	M 2	M 3	M 3	M 4
Equipment	Evaluation	Classification			
electr. burner	flame remanence	£ 5 sec.	£ 5 sec.	‡ 5 sec.	> 5 sec.
	damaged length	< 35 cm	35 £ x £ 60	< 35 cm	35 £ x £ 60
NFP 92 – 503	damaged width	£ 9 cm	£ 9 cm	£ 9 cm	£ 9 cm
	no sparks	M 1	M 2	M 2	M 3
	non flammable sparks	M 1	M 2	M 2	M 3
	flammable sparks	M 2	M 3	M 3	M 4

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Description of test methods and their application

NF P 92 – 504; 1995

1. Scope:

Burning behaviour of building material

2. Preparation of specimens:

3 specimens each of 460 mm x 230 mm in warp and weft direction

3. Test procedure:

- sample holder: reversed U-shaped frame
- Vertical test: the burner is fixed in a 45° angle of fixation to the specimen; the flame should be in contact for 5 sec with the surface which is 40 mm above the lower edge (only for materials with a thickness < 5 mm)
- when the top of the flame and its edges do not longer touch the specimen, the burner is moved sideways in order to maintain the contact with the fabric
- after 5 sec the burner is again moved to its vertical position
- 3 sec after the extinction of the specimen the burner is fixed at the position where the flame extinguished. This procedure is carried out max. 10 times for each specimen. 30 tests have to be carried out in total

4. Apparatus:

NF P 92 – 504 burner acc. to 50051 with propane gas

5. Assessment: (for more details see NFP 92-507)

Equipment	Evaluation	Classification		
flame spread	flame remanence	none	£ 5 sec.	‡ 5 sec.
NFP 92 – 504	no sparks	M 1	M 2	M 3
	non flammable sparks	M 1	M 2	M 3
	flammable sparks	--	M 3	M 4
Equipment	Evaluation	Classification		
flame spread	flame remanence	none	£ 5 sec.	‡ 5 sec.
NFP 92 – 504	no sparks	M 1	M 2	M 3
	non flammable sparks	M 1	M 2	M 3
	flammable sparks	--	M 3	M 4

Flame Retardants for Textiles

Description of test methods and their application

NF P 92 – 505; 1985

1. Scope:

Burning behaviour of building material Test with a quartz heater – additional test for meltable material

2. Preparation of specimens:

3 specimens each of 70 mm x 70 mm or 2 g

3. Test procedure:

Lying on a mesh, the specimen to be tested is put under an electric quartz heater at a distance of 30 mm. Below the test specimen, at a distance of 300 mm, there is a vessel filled with cellulosic wadding.

Observe whether the molten droplets ignite the cellulosic wadding.

4. Apparatus:

NF P 92 – 505

5. Assessment: (for more details see NFP 92–507)

Equipment	Evaluation	Classification
apparatus for fusible materials	without flammability of the cotton wool	the tests are continued during flame spread (NFP 92 – 504)
NFP 92 – 505	flammability of the cotton wool	the test are not continued classification: M 4
Equipment	Evaluation	Classification
apparatus for fusible materials	without flammability of the cotton wool	the tests are continued during flame spread (NFP 92 – 504)
NFP 92 – 505	flammability of the cotton wool	the test are not continued classification: M 4

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Description of test methods and their application

NF P 92 – 507; 1985

M – classification of materials with a thickness of < 5mm

Equipment	Evaluation	Classification			
electr. burner NFP 92 – 503	flame remanence	£ 5 sec.	£ 5 sec.	‡ 5 sec.	> 5 sec.
	damaged length	< 35 cm	35 £ x £ 60	< 35 cm	35 £ x £ 60
	damaged width	£ 9 cm	£ 9 cm	£ 9 cm	£ 9 cm
	no sparks	M 1	M 2	M 2	M 3
	non flammable sparks	M 1	M 2	M 2	M 3
	flammable sparks	M 2	M 3	M 3	M 4
flame spread NFP 92 – 504	flame remanence	none	£ 5 sec.	‡ 5 sec.	
	no sparks	M 1	M 2	M 3	
	non flammable sparks	M 1	M 2	M 3	
	flammable sparks	--	M 3	M 4	
apparatus for fusible materials NFP 92 – 505	without flammability of the cotton wool	the tests are continued during flame spread (NFP 92 – 504)			
	flammability of the cotton wool	the tests are not continued classification: M 4			
Equipment	Evaluation	Classification			
electr. burner NFP 92 – 503	flame remanence	£ 5 sec.	£ 5 sec.	‡ 5 sec.	> 5 sec.
	damaged length	< 35 cm	35 £ x £ 60	< 35 cm	35 £ x £ 60
	damaged width	£ 9 cm	£ 9 cm	£ 9 cm	£ 9 cm
	no sparks	M 1	M 2	M 2	M 3
	non flammable sparks	M 1	M 2	M 2	M 3
	flammable sparks	M 2	M 3	M 3	M 4
flame spread NFP 92 – 504	flame remanence	none	£ 5 sec.	‡ 5 sec.	
	no sparks	M 1	M 2	M 3	
	non flammable sparks	M 1	M 2	M 3	
	flammable sparks	--	M 3	M 4	
apparatus for fusible materials NFP 92 – 505	without flammability of the cotton wool	the tests are continued during flame spread (NFP 92 – 504)			
	flammability of the cotton wool	the tests are not continued classification: M 4			