

Determination of external fire exposure to roofing material

Topp Tornado + SPU AL 40

Test method: ENV 1187:2002, Test 2



The test method (ENV 1187:2002, Test 2) referred to in this test report is accredited.

Requested by: Katepal Oy

Requested by Katepal Oy
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Order 17 April 2007 / Timo Rantanen

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Task **Determination of external fire exposure of a roofing product**

Product The customer gave following information about the product:

Name: Topp Tornado
Type of product: one-layer roofing membrane based on SBS-modified bitumen, reinforced with aluminium coated special polyester non woven
Manufacturer: Katepal Oy

Sample The roofing sample and substrate were chosen by the customer.
Date of delivery: 19 April 2007
Date of manufacturing of Topp Tornado: 11 April 2007

Size of sample: 400 mm x 1000 mm, 6 pcs
Weight per unit area: about 4850 g/m²
Thickness: about 3,7 mm

Weight and thickness of the sample were measured by VTT.

Specimens Six test specimens were made with dimensions of 400 mm x 1000 mm.
Construction of the specimens was as follows:

- Topp Tornado, attached mechanically
- SPU AL 40 polyurethane substrate (thickness 40 mm and density 33 kg/m³)
manufactured by SPU Systems Oy, P.O. Box 98, FI-38701 Kankaanpää,
Finland

The specimens were conditioned to constant mass at a temperature of 23 ± 2 °C and the relative humidity of 50 ± 5 %.

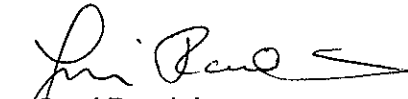
Tests method ENV 1187:2002, *Test methods for external fire exposure to roofs - Test 2: Method with burning brands and wind.*

The test results relate only to the sample tested.

Date of Test	27 April 2007
Test results	The test results are given in Appendix 2.
Note	According to the standard: "the results relate only to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use."

Espoo 4 May 2007


Tiia Ryyänen
Senior Research Scientist


Jussi Rautiainen
Building Engineer

Appendices	Appendix 1, description of the method and the requirements of the classification standart Appendix 2, test results, ENV 1187:2002, Test 2
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Distribution	Customer	Original (2)
	VTT / Register Office	Original

TEST METHOD FOR EXTERNAL FIRE EXPOSURE TO ROOFS

DESCRIPTION OF THE METHOD

ENV 1187:2002, *Test methods for external fire exposure to roofs. Test 2: Method with burning brands and wind.*

Specimens

400 mm x 1000 mm, 6 pcs.

Each specimen is fastened on a baseboard of silicate or mineral wool (non-combustible standard underlay), particle board or polystyrene baseboard (combustible standard underlay) or on another backing material if appropriate. The size of the base board is 400 mm x 1000 mm and thickness according to practice. The test specimens are conditioned prior to the tests to constant moisture in a room with a temperature of 23 ± 2 °C and relative humidity of 50 ± 5 % RH.

Test procedure

The specimen is mounted in the test apparatus at an angle of 30° to the horizontal plane. A burning wooden crib (100 mm x 100 mm, 40 g) is placed on the roofing with its centre 100 mm from the bottom edge of the specimen. An air flow of 2 m/s and 4 m/s is blown along the specimen surface.

During the tests the time of the ignition of the roofing, the time of the extinguishing of the flames and the time when the glowing ends are measured. If the sample is after a time of 15 min still burning, it shall be extinguished. After the test the damage of the roofing from the centre of the ignition source is measured and the possible damage of the underlay is examined.

CLASSIFICATION CRITERIA

The classification criteria for the roofing class $B_{\text{ROOF}}(t_2)$ are presented in the classification standard EN 13501-5:2005

The roofing is classified as class $B_{\text{ROOF}}(t_2)$, if it in six tests meets the following requirements:

- the damaged length both of the roofing and the underlay, calculated as separate mean values of the test performed with both air velocities, does not exceed 550 mm measured from the centre of the fire source,
- the damaged length of the roofing and the underlay does not exceed 800 mm in the tests.

Appendix 2

Test results
Method: ENV 1187:2002, Test 2

Construction:

- Topp Tornado, attached mechanically
- SPU AL 40 substrate, thickness 40 mm

Wind velocity	2 m/s				4 m/s			
Test no.	1	2	3	Mean	4	5	6	Mean
Covering ignited, min s	0:46	0:43	0:44	0:44	0:38	0:40	0:42	0:40
Flames extinguished, min s	9:21	8:27	8:46	8:51	5:52	6:17	5:13	5:47
Glowing ended, min s	12:46	10:47	10:35	11:23	6:37	8:49	7:36	7:41
Lenght of the damaged area in the roof covering, mm *)	432	431	428	431	425	400	413	413
Lenght of the damaged area in the substrate, mm *)	368	306	295	323	231	319	324	291
Criteria for $B_{ROOF}(t_2)$, for the roof covering and for the substrate, mm	≤800	≤800	≤800	≤550	≤800	≤800	≤800	≤550

*) Measured from the middle of the ignition source