Determination of external fire exposure to roofing product according to CEN TS 1187:2012, Test 2

Technoelast K-PS 170/5000
(Production date 03.08.2015, Lot number 2349)
Technoelast K-MS 170/3000 (EMM)
(Production date 26.07.2015, Lot number 2235)
non-combustible mineral wool substrate

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Requested by: TechnoNicol-Vyborg Ltd

VTT EXPERT SERVICES LTD

Requested by	TechnoNicol-Vyborg Ltd Pos. Kalinina, Vyborg Leningradskaya Region 188804, Russia
Order	5 August 2015 / Galina Grablina
Contact person	**VTT Expert Services Ltd** Expert Jyri Pekkanen Kivimiehentie 4, Espoo, P.O.Box 1001, FI-02044 VTT, Finland Tel. +358 20 722 5545, E-mail: jyri.pekkanen@vtt.fi
Task	**Determination of external fire exposure to roofing material**
Product	The customer gave following information about the product: Product: Technoelast K-PS 170/5000 + Technoelast K-MS 170/3000 (EMM) **Top layer:** Trade name: **Technoelast K-PS 170/5000** Other trade names: **Technoelast Overlap PF 5000 SBS slate, Technoelast PF 5000 SBS, Polyelast Extra K-PS 170/5000 slate, TECHNONICOL ENVIRO AIR K-PS 170/5000, TECHNONICOL ENVIRO FOREST K-PS 170/5000** Product description: reinforced bitumen sheet for roof waterproofing Materials: Polyester non-woven reinforcement which is coated both sides with polymer-bitumen. The upper side is covered with a coarse-grained mineral (slate), the lower side is covered with polyethylene film. Manufacturer: TechnoNicol-Vyborg Ltd **Under layer:** Trade name: **Technoelast K-MS 170/3000 (EMM)** Product description: reinforced bitumen sheet for roof waterproofing Materials: Polyester non-woven reinforcement which is coated both sides with polymer-bitumen. The upper and lower side is covered with sand. Manufacturer: TechnoNicol-Vyborg Ltd

Samples

Date of delivery: 10 August 2015

Technoelast K-PS 170/5000
Size: 7992 mm x 1005 mm
Weight per unit area: 4800 g/m^2
Thickness: about 3,5 mm
Production date and Lot number according to the customer: 03.08.2015, 2349

Technoelast K-MS 170/3000 (EMM)
Size: 9980 mm x 1003 mm
Weight per unit area: 2900 g/m^2
Thickness: about 2,3 mm
Production date and Lot number according to the customer: 26.07.2015, 2235

Size, weight and thickness of the sample were measured by VTT.
The sample of the product was chosen by the customer.

Specimens

Two test specimens were made with dimensions of 400 mm x 1000 mm with the following construction:

- Technoelast K-PS 170/5000, attached by welding to
- Technoelast K-MS 170/3000 (EMM), attached mechanically to
- non-combustible mineral wool from VTT
  (thickness 50 ± 10 mm and density 150 ± 20 kg/m^3)

One test specimen was made with dimensions of 400 mm x 1000 mm with the following construction:

- Technoelast K-PS 170/5000, attached by welding to
- Technoelast K-MS 170/3000 (EMM), attached mechanically to
- wood particle board from VTT
  (thickness 19 ± 2 mm and density 680 ± 50 kg/m^3)

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

Date of test

28 August 2015

Test method

CEN TS 1187:2012, *Test methods for external fire exposure to roofs - Test 2: Method with burning brands and wind.*

The tests has been carried out according to CEN TS 1187 (t2) and is assessed to fully comply with ENV 1187 (t2).

A description of the test method and the classification criteria of BROOF(t2) given in the classification standard EN 13501-5 + A1:2010 and concerning Test 2 are presented in Appendix 1.

Deviation

The testing was conducted according to "FACTORY PRODUCTION CONTROL DESCRIPTION for SINTEF Technical Approval Clause 3.3 (Proj.No 102004415-1, dated 29.06.2015). Only two tests were conducted with non-combustible mineral wool substrate (1 with 2 m/s, and 1 with 4 m/s wind speed), and one with wood particle board substrate (2 m/s wind speed).

According to CEN TS 1187:2012, *Test methods for external fire exposure to roofs - Test 2: Method with burning brands and wind.* Six tests shall be conducted with each substrate (3 with 2 m/s and 3 with 4 m/s wind speed)

Test results

The test results are given in Appendix 2.

Note

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.

VTT Expert Services Ltd is a notified body 0809 concerning the Construction Products Regulation (CPR).

Espoo, 3 September 2015

Tiia Ryynänen
Product Manager

Jyri Pekkanen
Expert

APPENDICES

Appendix 1, description of the method and classification criteria of B_{ROOF}(t2)
Appendix 2, test results

DISTRIBUTION

Customer	Original (2)
Archive	Original

DESCRIPTION OF THE METHOD

CEN TS 1187:2012 *Test methods for external fire exposure to roofs*
Test 2: *Method with burning brands and wind*

Test specimens

The size of test specimens are 400 mm x 1000 mm and number of specimens is six.

Test specimens are normally prepared by attaching the product to a standard substrate. The specimen may also be tested on a non-standard substrate, in which case the test results are valid for that substrate only.

The standard combustible substrates are:

wood particle board, density (680 ± 50) kg/m^3, thickness (19 ± 2) mm
expanded polystyrene (EPS) (not fire retardent treated), density (20 ± 5) kg/m^3, (50 ± 10) mm

The standard non-combustible substrates are:

fibre reinforced calcium silicate board, density (680 ± 50) kg/m^3, (10 ± 2) mm
mineral wool, density (150 ± 20) kg/m^3, thickness (50 ± 10) mm

The test specimens are conditioned prior the tests to constant mass in a room with a temperature of 23 ± 2 °C and relative humidity of 50 ± 5 % RH.

Test procedure

The test 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 test specimen with its centre 100 mm from the bottom edge of the specimen. Three tests are performed with air velocities along the specimen of 2 m/s and 4 m/s respectively.

During the tests the time at which the test specimen ignites, the time at which the flames die out, the time at which the glow dies out and the behaviour of the test specimen are observed and recorded.

The test is terminated by extinguishing of the fire on the specimen 15 min after the start of the test or when the flame front has reached the upper end of the specimen. After the test the test specimen is examined and the extent of damages done to both the roof covering and the substrate are measured.

CLASSIFICATION CRITERIA – $B_{ROOF}(t2)$

The classification criteria are given in the classification standard EN 13501-5 + A1:2010 "*Fire classification of construction products and building elements - Part 5: Classification using test data from external fire exposure to roof tests.*

Classification parameters of Test 2 are mean damaged length and maximum damaged length of the roof covering and the substrate. Classification criteria of $B_{ROOF}(t2)$ for both test series at 2 m/s and 4 m/s wind speed are

- mean length of damage in the roof covering and substrate ≤ 0,550 m
- maximum length of damage in the roof covering and the substrate ≤ 0,800 m

VALIDITY OF CLASSIFICATION

Depending on quality and density of the substrate used in tests the classification is valid for

- non-combustible substrates with density of at least 0,75 times the density of the substrate used in tests
- combustible and non-combustible substrate with density of at least 0,75 times the density of the substrate used in tests

5.5.2014

TEST RESULTS

Test method: CEN TS 1187:2012, Test 2

Product: Technoelast K-PS 170/5000 + Technoelast K-MS 170/3000 (EMM)

Test results with non-combustible mineral wool substrate

Wind velocity	**2 m/s**	**4 m/s**
Test No.	1	1
Covering ignited, min s	0:30	0:34
Flames extiquished, min s	10:20	3:39
Glowing ended, min s	11:14	5:49
Length of damage in membrane, mm*)	291	269
Length of damage in substrate, mm *)	154	0

*) Measured from the middle of the ignition source

Test results with wood particle board substrate

Wind velocity	**2 m/s**
Test No.	1
Covering ignited, min s	0:36
Flames extiquished, min s	7:36
Glowing ended, min s	8:55
Length of damage in membrane, mm*)	199
Length of damage in substrate, mm *)	22

*) Measured from the middle of the ignition source