

SINTEF Technical Approval

TG 20377

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Provided listed on
www.sintefcertification.no

SINTEF confirms that

Technoelast K-YS 5500 single layer bituminous roofing membrane

has been found to be fit for use in Norway and to meet the provisions regarding product documentation given in the regulation relating to the marketing of products for construction works (DOK) and regulations on technical requirements for building works (TEK), with the properties, fields of application and conditions for use as stated in this document



1. Holder of the approval

LLC "Technoflex"
Prizheleznodorozhnaya, 5
390042 Ryazan
Russia
<https://en.technicol.eu/>

2. Product description

Technoelast K-YS 5500 is a single layer bituminous roofing membrane made of SBS modified bitumen, reinforced with a layer of composite polyester. The membrane is based on a welded overlapping system, see Fig.1. The upper face is covered with slate-granules. The lower face is protected by a thin plastic-foil which melts during welding. Joints can be torched or hot air welded. Technoelast K-YS 5500 can be delivered with different coloured slates; grey, red and white among others. Measures and tolerances are given in table 1.

Table 1

Measures and tolerances for Technoelast K-YS 5500 according to EN 1848-1 and EN 1849-1

Property	Measure	Unit	Tolerance
Thickness	4.3	mm	± 0.2 mm
Area weight	5.5	kg/m ²	± 0.25 kg/m ²
Width	1	m	+5 / -0 mm
Length of roll	8.0	m	+40 / -0 mm
Weight of glass fibre core	ca. 250	g/m ²	-

3. Fields of application

Technoelast K-YS 5500 is used as single layer membrane for covering sloped and flat roofs. The system is designed especially for use as a mechanically fixed roofing membrane, see Fig. 1. Technoelast K-YS 5500 can be used for new roofing or for rehabilitation.

Technoelast K-YS 5500 can also be used for loosely applied, ballasted, accessible and non-accessible roofs, terrace roofs and parking roofs with floating floor and culverts.

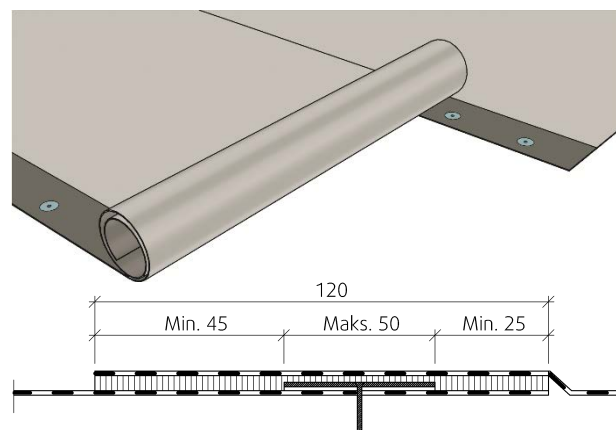


Fig. 1
Technoelast K-YS 5500 mechanically fixed in a 120 mm welded side-overlapp

4. Properties

Product properties

Product characteristics for fresh material are shown in table 2.

Properties related to fire

Technoelast K-YS 5500 fulfills the requirements of class B_{ROOF(t2)} according to EN 13501-5 regarding external fire performance on substrates shown in table 3. Testing is performed according to CEN/TS 1187, test 2.

Durability

The product has shown satisfying properties after artificial ageing.

SINTEF is the Norwegian member of European Organisation for Technical Assessment, EOTA, and European Union of Agrément, UEAtc

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Table 2

Product characteristics for fresh material of Technoelast K-YS 5500 single layer bituminous membranes

Property	Test method EN	DoP ¹⁾	Control limit ²⁾	SINTEFs recommended minimum performance ³⁾	Unit
Dimension stability	1107-1	-	$\leq \pm 0.6$	$\leq \pm 0.6$	%
Flexibility at low temperature, upper / lower face out	1109-1	$\leq - 25$	$\leq - 25$	$\leq - 15$	°C
Flow resistance at elevated temperature	1110	≥ 100	≥ 100	≥ 90	°C
Water tightness 10kPa / 24t	1928 (A)	Tight	Tight	Tight	-
Adhesion of granules ⁴⁾	12039	-	≤ 2.5	≤ 2.5	g ⁴⁾
Resistance to tearing, nail shank L / T	12310-1	300 ± 60	≥ 240	≥ 150	N
Tensile strength L T	12311-1	900 ± 100 700 ± 100	≥ 800 ≥ 600	≥ 600 ≥ 600	N/50 mm
Elongation at max. load L / T	12311-1	50 ± 25	≥ 25	≥ 10	%
Average peel resistance of joints Sidelap / Endlap	12316-1	≥ 60	≥ 60	≥ 50	N/50mm
Shear resistance of joints Sidelap / Endlap	12317-1	≥ 600	≥ 600	≥ 600	N/50mm
Resistance to puncture Impact at +23 °C Impact at -10 °C Static load	12691 (A) 12691:2001 12730 (A)	≥ 1000 - ≥ 20	≥ 1000 ≤ 30 ≥ 20	≥ 500 ≤ 30 ≥ 20	mm mm diam. kg
Water tightness after elongation at low temperature (10% elongation at -10 °C)	13897	-	Tight	Tight	-

¹⁾ The manufacturers Declaration of performance, DoP²⁾ Control limit shows values, product has to satisfy during internal factory production control and audit testing.³⁾ SINTEFs recommended minimum performance in SINTEF Technical Approval for single layer bituminous waterproofing membrane⁴⁾ Modified to give the result of weight loss of granules in gram.

L = Longitudinal T = Transversal

Table 3

Technoelast K-YS 5500 achieves reaction-to-fire classification class B_{ROOF(t2)} on following substrates

Type of substrate	Technoelast K-YS 5500
EPS*	No
Rock wool	Yes
Wooden sheeting	Yes
Concrete	Yes
Reroofing on old membrane on EPS*	Yes
Reroofing on old membrane on rock wool	Yes
Reroofing on old membrane on wooden sheeting	Yes
Reroofing on old membrane on concrete	Yes

* In case of roofing on lightweight combustible insulation (eg EPS, XPS or PIR): See clause 6 *Special conditions for use and installation*, section *Substrate*, regarding requirements for replacement of combustible insulation to non-combustible around passages and against adjacent structures.

Fastening capacity

The design capacity for the mechanical fastening of Technoelast K-YS 5500 with approved fastening systems are shown in table 4. The capacity applies to the connection between the membrane and the fasteners according to EN 16002.

Table 4

Design capacity at ultimate limit state for the mechanical attachment of Technoelast K-YS 5500

Fastening system	Design capacity N/fastener
SFS Iso-tak R45 with BS-4,8xL	690 ¹⁾

¹⁾ Measured according to method EN 16002 with the safety factor used in Norway $\gamma_m=1.3$

For weak substrates the connection between the substrate and the fastener might limit the capacity. This must be considered, and only the lowest capacity for membrane or substrates must always be used.

Calculation of fasteners' spacing is carried out according to SINTEF Building Research Design Guide no. 544.206 *Mekanisk feste av asfalt takbelegg og takfolie på flate tak* and "TPF informerer nr. 5" published by Takprodusentenes Forskningsgruppe (TPF), see www.tpf-info.org.

5. Environmental aspects

Substances hazardous to health and environment

Technoelast K-YS 5500 is containing no hazardous substances with priority in quantities that pose any increased risk for human health and environment. Chemicals with priority include CMR, PBT or vPvB substances.

Effect on soil, surface water and ground water

The leaching properties of the product are evaluated to have no negative effects on soil or ground water.

Waste treatment/recycling

Technoelast K-YS 5500 shall be sorted as residual waste on the building/demolition site. The product shall be delivered to an authorized waste treatment plant for energy recovery.

Environmental declaration

No environmental declaration (EPD) has been worked out for Technoelast K-YS 5500.

6. Special conditions for use and installation

Installation

The joints of Technoelast K-YS 5500 can be torched or hot air welded. The roofing membrane shall generally be installed in accordance with the vendor's installation manual and the principles shown in SINTEF Building Research Design Guide no. 544.203 *Asfalttakbelegg. Egenskaper og tekking*, 544.204 *Tekking med asfalttakbelegg eller takfolie. Detaljløsninger* and 544.206 *Mekanisk feste av asfalttakbelegg og takfolie på flate tak*, plus TPF informerer nr. 5 published by Takprodusentenes Forskningsgruppe, see www.tpf-info.org.

Mechanical fasteners shall be placed at welded overlaps with a minimum width of 120 mm. The fasteners must be positioned at a distance from the membrane edges that provides minimum 25 mm bonding on the inside and minimum 45 mm bonding on the outside of the fastener, see Fig. 1.

Transverse joints must have a 150 mm overlap. The underlying corner is fastened, and the overlying corner is cut at an angle. A good result is achieved by 'drowning' the surfaces in bitumen before the joint is fully welded.

Fasteners

Normal steel washers may be used in longitudinal overlapping joints on firm substrates such as wood-based roof sheathing or concrete.

On substrates of thermal insulation with compressive strength ≥ 80 kN/m² (level CS(10)80 according to EN 13162/13163) steel washers with deep collars or plastic washers should be used.

Washers with integrated sleeves and good telescopic function must be used for installation on thermal insulation with lower compression strength, and the tightening of the fasteners must particularly be checked.

Substrate

When a fire classification is required the substrate must be in accordance with the provisions stated in clause 4 regarding Properties related to fire.

Substrates of combustible insulation as EPS, XPS or PIR must be covered or divided, and also replaced with non-combustible insulation around bushings and adjacent constructions according to regulations in "Veiledning om tekniske krav til byggverk" § 11-9 and further description in "TPF informerer nr. 6" *Branntekniske konstruksjoner for tak* published by Takprodusentenes Forskningsgruppe.

For re-roofing on old roofing that contains softeners as for example PVC a separate migration barrier of approximately 150 g/m² polyester felt has to be used.

Traffic on the roof

Special precautionary measures should be taken to protect the roofing membrane if the roof is expected to have more traffic than is necessary for inspection and maintenance purposes only.

Cleaning and maintenance

Before starting any welding, as a part of repair work, the roofing membrane must be cleaned locally, in accordance with the manufacturer's guidelines.

Storage

Technoelast K-YS 5500 must be stored upright on pallets.

7. Factory production control

Technoelast K-YS 5500 is produced by LLC "Technoflex", Ruberoidnaya St., 7, Leningradskaya region, Vyborg, 18804, Russia (<https://en.technonicol.eu/>).

The holder of the approval is responsible for the factory production control in order to ensure that Technoelast K-YS 5500 is produced in accordance with the preconditions applying to this approval.

The manufacturing of Technoelast K-YS 5500 is subject to continuous surveillance of the factory production control in accordance with the contract regarding SINTEF Technical Approval.

LLC "Technoflex" has a quality management system certified by ACERT Bureau, St. Petersburg, Russian Federation according to ISO 9001, certificate no: Q-08.00.05d.

8. Basis for the approval

The evaluation of Technoelast K-YS 5500 is based on reports owned by the holder of the approval.

The evaluation of design and technical solutions are based on recommendations given in SINTEF Building Research Design Guides.

9. Marking

The wrapping shall be marked with the name of the producer, product description and production date.

Technoelast K-YS 5500 is CE marked in accordance with EN 13707.

The approval mark for SINTEF Technical Approval TG 20377 may also be used.

10. Liability

The holder/manufacturer has sole product responsibility according to existing law. Claims resulting from the use of the product cannot be brought against SINTEF beyond the provisions of Norwegian Standard NS 8402.

for SINTEF

Hans Boye Skogstad
Approval Manager