

SINTEF Building and Infrastructure confirms that

## Technoelast K-YS 5500 single sheet bituminous membrane

meets the provisions regarding product documentation given in Norwegian building regulations, with properties, fields of application and conditions as stated in this document

### 1. Holder of the approval

TechnoNICOL – Vyborg Ltd.  
 Ruberoidnaya St. 7  
 18804 Leningradskaya Region Vyborg  
 Russian Federation  
[www.tn-europe.com](http://www.tn-europe.com)

### 2. Manufacturer

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### 3. Product description

Technoelast K-YS 5500 is a single sheet bituminous roofing membrane made of SBS modified bitumen, reinforced with a layer of composite polyester. Membranes are based on a welded overlapping system, see fig.1. At the upperface are slate-granules added. The lowerface is protected by a thin plastic-foil which melts by welding overlapping. Joints can be torched or hot air welded. Technoelast K-YS 5500 can be delivered with different coloured slates. Measures and tolerances are given in table 1.

Table 1

 Measures and tolerances for Technoelast K-YS 5500<sup>1)</sup>

Property	K-YS 5500	Tolerance
Thickness	4,3 mm	± 0,2 mm
Weight	5,5 kg/m <sup>2</sup>	± 0,25 kg/m <sup>2</sup>
Roll width	1 m	+5 / -0 mm
Roll length	8,0 m	+40 / -0 mm
Weight of reinforcement	ca. 250 g/m <sup>2</sup>	-

<sup>1)</sup> Measured according to EN 1848-1 og 1849-1

### 4. Fields of application

Technoelast K-YS 5500 is used as single layer membrane for covering sloped and flat roofs. The system is designed specially for use as mechanically fixed single roofing

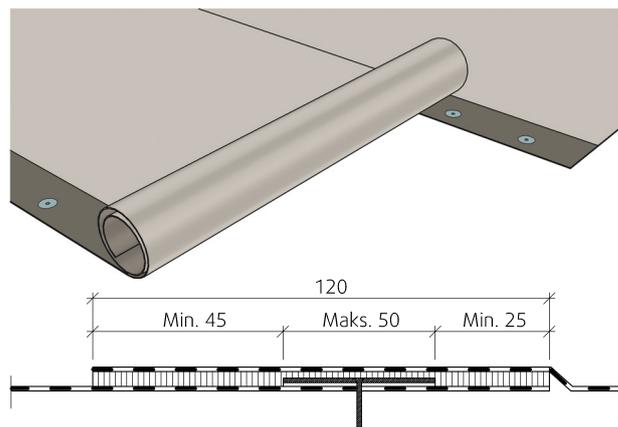


Fig. 1

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

membranes. See fig. 1. Technoelast K-YS 5500 can be used for new roofing or under rehabilitation.

The slope of the roof must be sufficient to allow rain and melting water to drain away. SINTEF Building and Infrastructure recommends a slope of at least 1:40 for all roofs.

In general Technoelast K-YS 5500 flexible roofing membranes can be used for accessible and non accessible roofs, green roofs, terrace roofs and parking roofs with floating floor and culverters.

### 5. Properties

#### Product-properties:

Product-properties for fresh material are shown in table 2.

#### Properties related to fire

Technoelast K-YS 5500 fulfills the requirements of class BROOF (t2) according to EN 13501-5 for all uncombustible underlays. The products have been tested in accordance with CEN/TC 1187-2.

#### Durability

Technoelast K-YS 5500 was tested for durability belonging to technical approvals in other countries both for

Table 2  
Product-properties for fresh material of Technoelast K-YS 5500 single layer bituminous membranes

Property	Test method	Control limit <sup>1)</sup>	Unit
Dimensional stability	EN 1107 -1 :1999	$\leq \pm 0,3$	%
Flexibility at low temperature upper face: lower face:	EN 1109 -1 :1999	$\leq - 20$ $\leq - 20$	°C
Flow resistance at elevated temperature	EN 1110 :1999	$\geq 90$	°C
Water tightness 10kPa / 24t:	EN 1928 :2000 (A)	Tight	-
Adhesion of granules <sup>2)</sup>	EN 12039 :2000	$\leq 2,5$	g
Resistance to tearing, nail shank L: T:	EN 12310 -1 :2000	$\geq 225$ $\geq 225$	N
Tensile strenght L: T:	EN 12311 -1 :2000	$\geq 800$ $\geq 600$	N/50 mm
Elongation L: T:	EN 12311 -1 :2000	$\geq 30$ $\geq 30$	%
Average peel resistance of joints	EN 12316 -1 :2000	$\geq 50$	N/50mm
Shear resistance of joints	EN 12317 -1 :2000	$\geq 800$	N/50mm
Resistance to puncturing Impact +23 °C: Impact -10 °C: Statisk last:	EN 12691 :2006 (A) EN 12691 :2001 EN 12730 :2001 (A)	$\geq 1250$ $\leq 30$ $\geq 20$	mm mm diam Kg
Vanntetthet etter forlengelse ved lav temperatur (10% ved -10°C)	EN 13897 :2005	Tight	-

<sup>1)</sup> The declared values are control limits both for internal control at the producer and for supervising control. If nothing else is mentioned, the control limits concern both direction of the product where relevant.

<sup>2)</sup> Modified to loss of granules in gram.

typeapproval and for diverse control tests. Product was tested 12 and 24 weeks in heatchamber at (70 °C) and was assessed as satisfactory. Properties which are tested on aged material, according to the standards mentioned in table 2, are tensile strength together with elongation, flexibility at low temperature and watertightness after stretching at low temperature.

#### Calculation of fasteners

The capacity for anchoring the membrane with SFS intec BS-4,8xL roofing screw and SFS ISO-TAK R45xL plastic-washer with integrated sleeve is 690 N per fastener. This capacity applies to the connection between the membrane and the fastener according to EN 16002. For weak underlays the connection between the underlay and the fastener might limit the capacity. This must be considered. The lowest value for membrane/underlay must always be used.

Calculation of fastener spacing is carried out according to SINTEF Building Research Design Sheet no. 544.206 and "TPF Informs No. 5".

## 6. 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.

## 7. Special conditions for use and installation

### Fasteners

Fastening with ordinary steel washers and skreus in longitudinal overlaps may be used on firm underlays such as woodbased sheathing or concrete.

On underlays of thermal insulation with a compression strength of at least 80 kPa/m<sup>2</sup> (level CS (10) 80 according to EN 13162/13163), steel washers with deep collars or telescopic plastic washers should be used.

Fasteners with good telescopic effect must be used when the membrane is installed on thermal insulation materials with lower compressive strength. The tightening of the fasteners must be specially checked.

### Installation

The joints of Technoelast K-YS 5500 can be torched or hot air welded, and shall be installed in accordance with the principles shown in SINTEF Building Design Sheets 544.203, 544.204 and 544.206 and in "TPF informs No. 5".

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.

### Underlay

When a fire classification is required the underlay must be in accordance with the provisions stated in section 5 "Properties related to fire".

For re-roofing on old roofing that contains softeners as for example PVC a separate migration barrier of approximately 150 g/m<sup>2</sup> polyester felt has to be used.

### Traffic on the roof and maintenance

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. Before repairing the roofing membrane, the surfaces have to be cleaned before welding starts.

### Storage

Technoelast K-YS 5500 must be stored in an upright position.

## 8. Factory production control

Technoelast K-YS 5500 is subject to supervisory factory production and product control according to contract between SINTEF Building and Infrastructure and TechnoNICOL concerning Technical Approval TechnoNICOL has a quality management system what is certified of ACERT Bureau, St. Petersburg, Russian Federation according to ISO 9001, certificate no: Q-08.00.05d.

## 9. Basis for the approval

Produktproperties have been determined by initial type

testings on fresh and aged material, audit testings under annual control, documented in following reports:

- SP Sverige, Report F616096, dated 2006-09-18, Wind uplift test according ETAG 006.
- VTT Finland, Report VTT-S-09477-06, dated 2006-10-17, Additional tests of K-YS 5500 for CE-marking
- VTT Finland, Report VTT-S-00819-09, dated 2009-02-05, Quality control test 2008
- VTT Finland, Report VTT-S-08291-09, dated 2009-11-11, Quality control test 2009
- VTT Finland, Report VTT-S-09715-10, dated 2010-12-02, Quality control test 2010
- VTT Finland, Report VTT-S-09156-11, dated 2011-12-20, Quality control test 2011
- VTT Finland, Report VTT-S-8218-12, dated 2012-12-10, Determination of external fire exposure
- VTT Finland, Report VTT-S-8217-12, dated 2012-12-10, Determination of external fire exposure
- VTT Finland, Report VTT-S-08676-12, dated 2012-12-19, Quality control test 2012
- VTT Finland, Report VTT-S-3287-13, dated 2013-05-10, Determination of external fire exposure
- SINTEF, Report 102004415-4, dated 2013-08-07, Leachingtest for chemical substances
- SINTEF, Report 102004415-4, dated 2013-10-9, Wind-uplift-test according EN 16002

## 10. Marking

Materialwrapping shall be marked with product description and production date.

The approval mark for SINTEF Technical Approval No. 20377 may also be used.



Approval mark

## 11. 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

## 12. Technical management

Project manager for this approval is Holger Halstedt, SINTEF Building and Infrastructure, dep. Materials and Structures, Trondheim

for SINTEF Byggforsk

Hans Boye Skogstad  
Godkjenningsleder