SINTEF

SINTEF Certification

No. 20269

Technical Approval

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Provided listed on www.sintefcertification.no

SINTEF Building and Infrastructure confirms that

Elastoflex S6 AF Mineral One Layer System

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

Polyglass Spa
Via delle industrie, 34
IT-31047 Ponte di Piave (TV)
www.polyglass.com

2. Product description

Elastoflex S6 AF is a roofing membrane made of SBS-modified bitumen. The reinforcement is polyester and it is covered on the upper face by mineral granules

Measures and tolerances are shown in Table 1. Weight of reinforcement is ca. 200 g/m^2.

The membrane system is based on hot air or torched welded joints see Fig.1. The lower face has a thin plastic film, which melts off when the joints are welded. The membranes are delivered with a grey surface, but can also be supplied in other colors on request.

Table 1
Measures and tolerances of Elastoflex S6 AF

Property	Measure and tolerances	
Thickness	4.0 mm	± 5 %
Weight	4.5 kg/m^2	± 15 %
Width	1 m	± 1 %
Roll length	8 m	± 1 %

3. Fields of application

Elastoflex S6 AF is used as a single-layer waterproofing membrane on sloping and flat roofs. The system is specially designed for mechanically fastened single layer roofing.

Roofs must have adequate slope to drain water from rain and melted snow. SINTEF Building and Infrastructure recommends in general a minimum slope of 1:40 for all roofs.

4. Properties

Product properties

Product characteristics for fresh material are shown in Table 3.

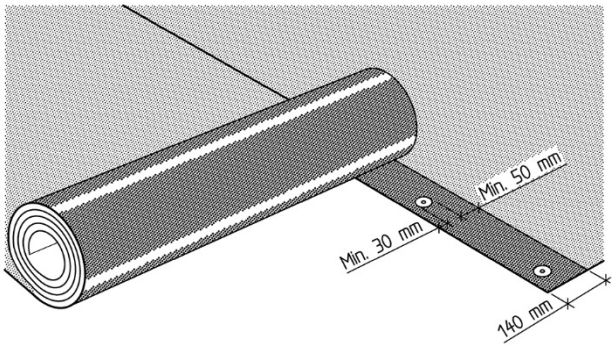

Fig. 1
Elastoflex S6 AF roofing membrane is mechanically fastened with 140 mm welded overlap joints. The products can be jointed both by open flame and hot air.

Safety in case of fire

Elastoflex S6 AF complies with Class B_{ROOF} (t2) in EN 13501-5 for underlays as shown in table 2. The testing is performed according to CEN TS 1187 test 2.

Table 2
Elastoflex S6 AF achieves reaction-to-fire classification class B_{ROOF} (t2) on the following substrates

Type of sub construction	Elastoflex S6 AF
EPS	No
Rockwool	Yes
Wooden sheeting	Yes
Concrete	Yes
Reroofing on old membrane on EPS	No
Reroofing on old membrane on stone wool	Yes
Reroofing on old membrane on wooden sheeting	Yes
Reroofing on old membrane on concrete substrate	Yes

Fastener capacity

The capacity for anchoring Elastoflex S6 AF with SFS Intec R45 plastic washer are shown in table 4. This capacity applies to the connection between the membrane and the fastener according to EN 16002.

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Table 3
Product characteristics for fresh material of Elastoflex S6 AF roofing membrane

Property		Test method EN	DoP [1]	Control limit [2]	SINTEF's recommended minimum performance[3]	Unit
Dimensional stability (L/T)		1107-1:1999	-	≤ 0.6	≤ ±0.6	%
Flexibility at low temperature	Top side out/ Underside out	1109-1:2013	≤ -20	≤ -20	≤ -15	°C
Flow resistance at elevated temperature		1110:2010	-	≥ 90	≥ 90	°C
Water tightness	10 kPa/24 h	1928:2000 (A)	Pass	Tight	Tight	-
Adhesion of granules		EN 12039 [4]		≤ 2,5	≤ 2,5	g
Resistance to tearing, nail shank (L/T)		12310-1:2000	≥ 150	≥ 150	≥ 150	N
Tensile strength (L/T)		12311-1:2000	≥ 800	≥ 800	≥ 600	N/50 mm
Elongation (L/T)		12311-1:2000	≥ 35	≥ 35	≥ 10	%
Average peel resistance of joints		12316-1:2000	≥ 100	≥ 100	≥ 50	N/50 mm
Shear resistance of joints		12317-1:2000	≥ 600	≥ 600	≥ 600	N/50 mm
Resistance to puncturing	Impact +23 °C	12691:2006 (A)	≥ 600	≥ 600	≥ 500	mm
	Impact -10 °C	12691:2001	-	≤ 20	≤ 30	mm diam
	Static load	12730:2001 (A)	≥ 20	≥ 20	≥ 20	kg
Watertightness after stretching at low temp, -10 °C		13897:2005	-	≥ 10/ Tight	≥ 10/ Tight	%

[1] Manufacturers Declaration of Performance, DoP
[2] Control limit shows the values the product has to satisfy during internal factory production control and audit testing
[3] SINTEF's recommended minimum performance in SINTEF Technical Approval for single layer bituminous waterproofing membrane
[4] Modified to mass loss of granules in gram
L = Longitudinal, T = Transversal, NPD = No Performance Declared

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".

Tabell 4
Design capacity in ultimate limit state for Elastoflex S6 AF

Fastener	Capacity N/stk
SFS Intec R45 plastic washer	850 [1]

[1] Tested according to EN 16002, and capacity calculated with safety factor for use in Norway, γ_m=1,3

The number of required fasteners is calculated according to SINTEF Building Research Design Sheets 544.206, or "TPF informs No. 5" published by the Roofing Manufacturers' Research Group.

Durability

The product has been tested for durability in a hot cabinet (70 °C) for 12 weeks with acceptable results. Properties tested on aged material according to test methods given in Table 3 are weight, tensile strength and elongation, flexibility at low temperatures, impact resistance and flow resistance at elevated temperatures.

5. Environmental aspects

Substances hazardous to health and environment

The product contains 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 water.

Waste treatment/recycling

The product shall be sorted as residual waste. 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 the product.

6. Special conditions for use and installation

Installation

The joints are torched or hot air welded, and shall be installed in accordance with the principles shown in SINTEF Building Research Design Sheets 544.203, 544.204 and 544.206 and "TPF informs No. 5".

Installation of fasteners

Mechanical fasteners shall be placed at welded overlaps with a minimum width of 140 mm. The fasteners must be positioned at a distance from the membrane edges that provides minimum 30 mm bonding on the inside and minimum 50 mm bonding on the outside of the fastener, see Fig. 2.

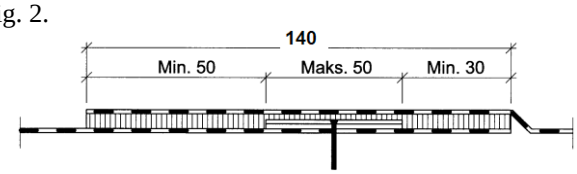

Fig. 2
Positions of mechanical fasteners in 140 mm welded overlap joints.

Fastening with ordinary steel washers in longitudinal overlaps may be used on firm underlays such as wood-based sheathing, concrete or existing bituminous roofing. Steel washers with recess or plastic washers with an integrated sleeve should be used on underlays with good compressive strength, minimum 80 kPa (class CS(10)80). Fasteners with good telescopic effect must be used when the membrane is installed on thermal insulation materials with lower compressive strength.

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 granules of the surface in bitumen before the joint is fully welded.

Underlay

Where a fire technical classification is required the membrane can only be installed on underlays as described in Chapter 5 under the heading *Safety in case of fire*.

Repairs

When repairing damages the membrane must be cleaned before welding.

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.

Storage

Elastoflex S6 AF must be stored upright on pallets.

7. Factory production control

The product is produced by Polyglass Spa, Via delle industrie, 34, Italy.
The holder of the approval is responible for the factory production control in order to ensure that the product is produced in accordance with the preconditions applying to this approval.

The manufacturing of the product is subject to continuous surveillance of the factory production control in accordance with the contract regarding SINTEF Technical Approval.

The manufacturer Polyglass Spa has a quality management system certified by Certiquality in Italy to be in accordance with ISO 9001, certificate No. 15961 and in accordance with ISO 14001, certificate No. 15889.

8. Basis for the approval

Product properties have been determined by type testing on fresh and aged material, documented in the following reports:

- Danak. Report PF13517b dated 05.03.2011 (fire).
- SINTEF Building and Infrastructure. Report 3D1047 dated 01.03.2012 (material properties).
- SINTEF Building and Infrastructure. Report 3D1047 dated 01.03.2012 (windload).
- SINTEF Building and Infrastructure. Report 3B040307 dated 10.05.2011 (leaching test)
- SP. Report P803338 dated 12.02.2009 (material properties)
- SINTEF Building and Infrastructure. Report 2018:00366 dated 2018-03-23 (resistance to impact)

9. Marking

The product is CE marked in accordance with EN 13707
The approval mark for SINTEF Technical Approval No. 20269 may also be used.

Approval mark

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 Byggforsk

Hans Boye Skogstad
Approval Manager