

SINTEF Technical Approval

TG 20269

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 Provided listed on
www.sintefcertification.no

SINTEF 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 S.p.A.
 Via Giorgio Squinzi, 2
 IT-31047 Ponte di Piave (TV)
 Italy

www.polyglass.com

2. Product description

Elastoflex S6 AF Mineral is a roofing membrane made of SBS-modified bitumen. The reinforcement is polyester and it is covered on the upper face by mineral granules. 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 colours on request. Measures and tolerances are shown in table 1.

Table 1
 Measures and tolerances for Elastoflex S6 AF Mineral according to EN 1848-1 and EN 1849-1

Property	Measure	Unit	Tolerance
Thickness	ca. 4.0	mm	-
Area weight	4.5	kg/m ²	± 15 %
Width	1	m	± 1 %
Length of roll	8	m	± 1 %
Weight of reinforcement	ca. 200	g/m ²	-

3. Fields of application

Elastoflex S6 AF Mineral is used as a single-layer waterproofing membrane on sloping and flat roofs. The system is specially designed for mechanically fastened single layer roofing, see fig.1.

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

4. Properties

Product properties

Product properties for fresh material are shown in table 2.

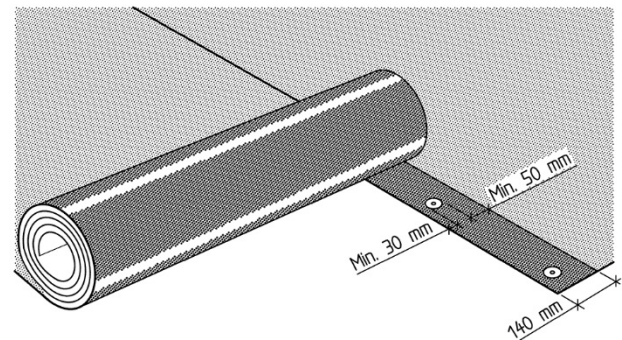


Fig. 1
 Elastoflex S6 AF Mineral roofing membrane is mechanically fastened with 140 mm welded overlap joints. The products can be jointed both by open flame and hot air.

Properties related to fire

Elastoflex S6 AF Mineral fulfils 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

Elastoflex S6 AF Mineral has shown satisfying properties after artificial ageing in connection with type-testing and audit testing.

Fastener capacity

The design capacity for tested fasteners is given in table 4. The capacity applies to the connection between the membrane and the fasteners according to EN 16002.

For weak substrates the connection between the substrate and the fastener might limit the capacity. This must be considered. The lowest value for membrane/substrate must always be used.

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

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 properties for fresh material of Elastoflex S6 AF Mineral

Property	Test method EN	DoP ¹⁾	Control limits ²⁾	SINTEF's recommended minimum performance ³⁾	Unit
Dimensional stability	1107-1	-	≤ 0.6	± 0.6	%
Flexibility at low temperature - upper face out - lower face out	1109-1	≤ -20	≤ -20	≤ -15	°C
Flow resistance at elevated temperature	1110	-	≥ 90	≥ 90	°C
Watertightness 10 kPa/24 h	1928 (A)	-	Pass ⁵⁾	Pass	-
Adhesion of granules ⁴⁾	12039	-	≤ 2.5	≤ 2.5	g ⁴⁾
Resistance to tearing (nail shank) L/T	12310-1	≥ 150	≥ 150	≥ 150	N
Tensile strength L T	12311-1	900 ±20 % 750 ±20 %	≥ 720 ≥ 600	≥ 600	N/50 mm
Elongation at max load L/T	12311-1	≥ 35	≥ 35	≥ 10	%
Average peel resistance of joints Side lap/End lap	12316-1	≥ 50	≥ 50	≥ 50	N/50 mm
Shear resistance of joints Side lap/End lap	12317-1	≥ 600	≥ 600	≥ 600	N/50 mm
Resistance to - Impact +23 °C - Impact -10 °C - Static loading	12691 (A) 12691:2001 12730 (A)	≥ 600 - ≥ 20	≥ 600 ≤ 20 ⁵⁾ ≥ 20	≥ 500 ≤ 30 ≥ 20	mm mm diam. kg
Watertightness after stretching at low temperature (10% elongation at -10 °C)	13897	-	Pass ⁵⁾	Pass	-

¹⁾ The manufacturers Declaration of performance, DoP.

²⁾ Control limits show values that 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.

⁴⁾ Modified to give the result of weight loss of granules in gram.

⁵⁾ Result from type-testing

L = Longitudinal

T = Transversal

Table 3
Elastoflex S6 AF Mineral has fire classification B_{ROOF} (t2) on following substrates

Type of substrate	Elastoflex S6 AF Mineral
EPS	No
Stone wool	Yes
Wood particle board	Yes
Concrete / silicate plate	Yes
Old roofing membrane on EPS	No
Old roofing membrane on stone wool	Yes
Old roofing membrane on particle board	Yes
Old roofing membrane on concrete or silicate plates	Yes

Table 4
Design capacity at ultimate limit state for the attachment of Elastoflex S6 AF Mineral One Layer System

Fastener/Fastening system Fastening in 140 mm welded joint	Design capacity N / fastener
SFS Intec R45 plastic washer Tested on soft substrate, attachment in steel plate Distance between fasteners: C/C 240 mm	850 ¹⁾

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

5. Environmental aspects

Substances hazardous to health and environment

Elastoflex S6 AF Mineral 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 Elastoflex S6 AF Mineral are evaluated to have no negative effects on soil or water.

Waste treatment/recycling

Elastoflex S6 AF Mineral shall be sorted as residual waste. The product shall be delivered to an authorized waste treatment plant for energy recycling.

Environmental declaration

No environmental declaration (EPD) has been worked out for Elastoflex S6 AF Mineral

6. Special conditions for use and installation

Installation

The joints are torched or hot air welded with 140 mm overlap joints. Transverse joints must have an overlap of minimum 150 mm. 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.

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.

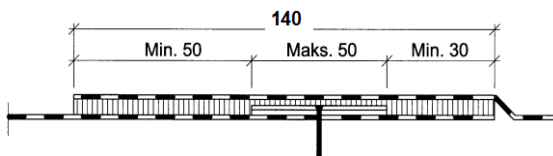


Fig. 2
Positions of mechanical fasteners in 140 mm welded overlap joints.

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 innfesting av asfalttakbelegg og takfolie på skrå og flate tak*, plus "TPF informerer nr. 5" published by Takprodusentenes Forskningsgruppe (TPF), see www.tpf-info.org.

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*.

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

Elastoflex S6 AF Mineral must be stored upright on pallets.

7. Factory production control

Elastoflex S6 AF Mineral is produced by Polyglass S.p.A., Via delle industrie, 34, 31047 Ponte di Piave (TV), Italy.

The holder of the approval is responsible for the factory production control in order to ensure that Elastoflex S6 AF Mineral is produced in accordance with the preconditions applying to this approval.

The manufacturing of the product(s) and the manufacturer's system for factory production control (FPC) is subject to continuous surveillance in accordance with the contract regarding SINTEF Technical Approval.

The manufacturer Polyglass S.p.A. has a quality management system certified according to EN ISO 9001 and an environmental management system certified according to EN ISO 14001.

8. Basis for the approval

The evaluation of Elastoflex S6 AF Mineral 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

All rolls are marked on the packaging with the manufacturer's name, product description and the manufacturing date.

Elastoflex S6 AF Mineral is CE marked in accordance with EN 13707.

The approval mark for SINTEF Technical Approval TG 20269 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

Susanne Skjervø
Approval Manager