

SINTEF Technical Approval

TG 20032

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 Amended:
 Valid until 01.10.2030
 Provided listed on www.sintefcertification.no

SINTEF confirms that

Astroflex SBS 5000 SUPRA and Astroflex 6000 SUPRA 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

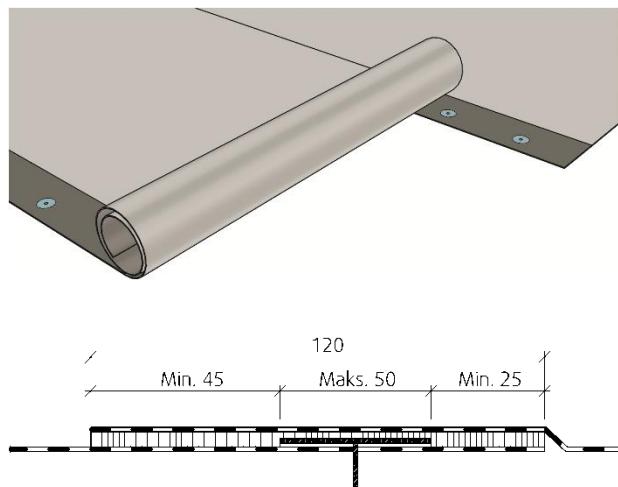


Fig. 1
Astroflex SBS 5000 SUPRA and Astroflex SBS 6000 SUPRA mechanically fixed in a 120 mm welded side-overlap

1. Holder of the approval

Copernit S.r.l.
Via Provinciale Est 64,
46020 Pegognaga (Mantova), Italy
www.copernit.it

2. Product description

Astroflex SBS 5000 SUPRA and Astroflex SBS 6000 SUPRA are single layer roofing membranes made of SBS modified bitumen. The products are covered on the upper face with slate granules and with a thin plastic film on the lower face which melts off when the joints are welded. The reinforcement in the membrane is composite polyester stabilised with longitudinal glass fibres. Measures and tolerances for the membranes are shown in Table 1.

The membranes are delivered with black mineral finish (on demand other colours are available).

Table 1
Measures and tolerances for Astroflex SBS SUPRA
according to EN 1848-1 and EN 1849-1

Property	Astroflex SBS SUPRA			
	5000	6000	Unit	Tolerance
	Measure	Measure		
Thickness	4.5	5.0	mm	± 5 %
Area weight	5.0	5.7	kg/m ²	± 5 %
Width	1,0	1,0	m	- 1 %
Length of roll	8,0	5.0	m	- 1 %
Weight of reinforcement	ca. 160	ca. 160	g/m ²	-

3. Fields of application

Astroflex SBS 5000 SUPRA and Astroflex SBS 6000 SUPRA flexible roofing membranes are used as single layer membranes for covering sloping and flat roofs.

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.

The systems are designed specially for use as mechanically fixed single layer roofing membranes. See Fig. 1.

Astroflex SBS 5000 SUPRA and Astroflex SBS 6000 SUPRA flexible roofing membranes can be used for new roofing or for rehabilitation.

4. Product performance

Product properties

Product properties for fresh material are shown in table 2.

Properties related to fire

Astroflex SBS 5000 SUPRA and Astroflex SBS 6000 SUPRA 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.

For more information regarding fire property requirements for the roofing, see TPF informerer no. 6 *Branntekniske løsninger for kompakte tak og terrasser* 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

SINTEF Certification

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Table 2 Product characteristics for fresh material of Astroflex SBS 5000 SUPRA and Astroflex SBS 6000 SUPRA flexible roofing membranes

Property	Test method EN	Astroflex 5000		Astroflex 6000		SINTEF's recommended minimum performance ³⁾	Unit
		DoP ¹⁾	Contr. Limit ²⁾	DoP ¹⁾	Contr. Limit ²⁾		
Dimensional stability	1107-1	$\leq \pm 0.3$	± 0.3	$\leq \pm 0.3$	± 0.3	± 0.6	%
Flexibility at low temperature	1109	≤ -20 ≤ -20	- 20 - 20	≤ -20 ≤ -20	- 20 - 20	≤ -15	°C
Flow resistance at elevated temperature	1110	≥ 100	100	≥ 100	100	≥ 90	°C
Water tightness	10kPa / 24t	1928 (A)	Tight	Tight	Tight	Tight	-
Adhesion of granules ⁴⁾		12039	30	30	-	$\leq 2.5 \text{ g}$ ⁴⁾	%
Resistance to tearing	L: T:	12310-1	$265 \pm 30 \%$ $395 \pm 30 \%$	185 275	$265 \pm 30 \%$ $395 \pm 30 \%$	185 275	≥ 150
Tensile strength	L: T:	12311-1	$815 \pm 20 \%$ $750 \pm 20 \%$	650 600	$875 \pm 20 \%$ $750 \pm 20 \%$	700 600	≥ 600
Elongation	L: T:	12311-1	45 ± 15 50 ± 15	30 35	45 ± 15 50 ± 15	30 35	≥ 10
Average peel resistance of joints		12316-1	60 ± 10	50	60 ± 10	50	≥ 50
Maximum peel resistance of joints		12316-1	100 ± 20 ⁵⁾	≥ 80	100 ± 20 ⁵⁾	≥ 80	-
Shear resistance of joints	Sidelap/Endlap	12317-1	$750 \pm 20 \%$	600	$750 \pm 20 \%$	600	≥ 600
Resistance to puncturing	Impact +23 °C: Static load:	12691 (A) 12730 (A)	≥ 900 ≥ 20	900 20	≥ 900 ≥ 20	900 20	≥ 500 ≥ 20
Watertightness after stretching at low temperature (10% elongation at -10 °C)		13897	-	Tight	-	Tight	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 testing³⁾ SINTEF's recommended minimum performance in SINTEF Technical Approval for single layer bituminous waterproofing membrane⁴⁾ Modified to mass loss of granules in gram

L = Longitudinal

T = Transversal

Table 3

Astroflex SBS 5000 SUPRA and Astroflex SBS 6000 SUPRA achieves reaction-to fire classification class BROOF (t2) on following substrates

Type of substrate	Astroflex membranes
EPS ^{1) 5)}	No
EPS ¹⁾ + min. 120 g/m ² glass felt ^{5) 7)}	Yes
PIR ⁵⁾	No
Mineral wool ²⁾	Yes
Wood particle board ³⁾	Yes
Concrete / calcium silicate board ⁴⁾	Yes
Old roofing membrane ⁶⁾ on EPS ^{1) 5)}	Yes
Old roofing membrane ⁶⁾ on EPS ¹⁾ + min. 120 g/m ² glass felt ^{5) 7)}	Yes
Old roofing membrane ⁷⁾ on PIR ⁵⁾	No
Old roofing membrane on mineral wool ²⁾	Yes
Old roofing membrane on wood particle board ³⁾	Yes
Old roofing membrane on concrete / calcium silicate board ⁴⁾	Yes

¹⁾ Fire class BROOF(t2) on EPS applies to combustible and non-combustible substrates with density $\geq 15 \text{ kg/m}^3$, except PIR.

²⁾ Fire class BROOF(t2) on mineral wool applies to non-combustible substrates with density $\geq 130 \text{ kg/m}^3$.

³⁾ Fire class BROOF(t2) on wood particle board applies to combustible substrates with density $\geq 630 \text{ kg/m}^3$.

⁴⁾ Fire class BROOF(t2) on calcium silicate board applies to non-combustible substrates with density $\geq 630 \text{ kg/m}^3$.

⁵⁾ In case of roofing on combustible insulation (e.g. EPS 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.

⁶⁾ See clause 6 *Conditions of use*, section *Substrate*, regarding requirements for the old roofing membrane.

⁷⁾ Fire class BROOF(t2) on EPS + min. 120 g/m² glass felt applies only to the described substrate, with EPS with density $\geq 15 \text{ kg/m}^3$.

Durability

The products have shown satisfying properties after artificial ageing in connection with type-testing and audit testing performed by SINTEF.

Fastening capacity

The design capacity for the fastening of the membrane with different fasteners and premises is given in table 4.

Fastening to weaker substrates than given in Table 4 may limit capacity and must be specifically documented.

Table 4

Design capacity in ultimate limit state for Astroflex SBS 5000 SUPRA and Astroflex SBS 6000 SUPRA

Fastener	Capacity N/stk
SFS RP50 + SFS BS-4,8	667 ^{1) 2) 3)}
Guardian R50 + Guardian BS-4,8	667 ^{1) 2) 3)}

¹⁾ Measured according to method EN 16002, safety factor $\gamma_m=1.5$ according to EAD 030351-00-0402.

²⁾ Tested on soft substrate, fastened to 0,75 mm steel plate, $f_y = 320 \text{ mm}^2$.

Distance between fasteners c/c 320 mm and row distance c/c 880 mm

³⁾ Wind load capacity is determined using a partial factor of 1.5. During a transitional period until January 1, 2028, designers may choose to use wind load capacities recalculated with a partial factor of 1.3.

Calculation of fasteners' 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 *Innfesting av fleksible takbelegg, dimensjonering og utførelse* published by Takprodusentenes Forskningsgruppe (TPF), see www.tpf-info.org. It is not possible to assume increased wind load capacity by decreasing the distance between the fasteners; due to uncertainty in the type of failure, ref. EAD 030351-00-0402 Annex 1. The lowest capacity for attachment in the membrane / substrate must always be used for the calculation. The fastener capacity can be reduced if the distance between the fastener rows is increased and/or if the difference between the row distance and the fastener distance is increased.

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.

6. Conditions of use

General

The roofing membrane shall be installed in accordance with the manufacturer's installation manual and the principles shown in SINTEF Building Research Design Guide no.:

- 544.203 *Asfalttakbelegg. Egenskaper og teknikk*
- 544.204 *Tekking med asfalttakbelegg eller takfolie. Detaljløsninger*
- 544.206 *Mekanisk innfesting av asfalttakbelegg og takfolie på skrå og flate tak*
- 525.207 *Kompakte tak*

plus information sheets issued by Takprodusentenes Forskningsgruppe (TPF), see www.tpf-info.org:

- TPF informerer nr. 5 *Innfesting av fleksible takbelegg, dimensjonering og utførelse*
- TPF informerer nr. 6 *Branntekniske løsninger for kompakte tak og terrasser*
- TPF informerer nr. 13 *Tak under oppføring – forholdsregler og tiltak ved bruk*

Installation

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 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.

Astroflex SBS 5000 SUPRA and Astroflex SBS 6000 SUPRA can be torched or hot air welded.

TPF informerer nr. 6 *Branntekniske løsninger for kompakte tak og terrasser* describes which roofing methods can be used on various roof structures. When roofing with hot air or open flame all combustible insulation must in principle be protected with non-combustible insulation. However, TPF informerer nr. 6 describes exceptions for hot air welding of roofing membranes with fire class B_{ROOF} (t2).

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 kPa (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, such as EPS, must be covered or divided into areas, and replaced with non-combustible insulation around bushings and adjacent constructions, such as parapets and walls, according to pre-accepted performances given in the guidance to *Forskrift om tekniske krav til byggverk § 11-9* and in TPF informerer nr. 6 *Branntekniske løsninger for kompakte tak og terrasser*.

In connection with re-roofing, on old bituminous roofing membrane laid on insulation of EPS, the membrane in the old roofing must fulfil the requirements of class B_{ROOF} (t2) according to EN 13501-5 on EPS.

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 vendor's installation manual.

Transport and storage

Astroflex SBS 5000 SUPRA and Astroflex SBS 6000 SUPRA must be transported in a manner that does not damage the product and stored upright on pallets.

horizontally on pallets and protected at the building site.

7. Product and factory production control

The product is produced by:
Copernit S.r.l.
Via Provinciale Est 64,
46020 Pegognaga (Mantova)
Italy

The holder of the approval is responsible for maintaining the factory production control to ensure that the product is manufactured in compliance with the preconditions upon which this approval is based.

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 has a quality management system certified according to EN ISO 9001

8. Basis for the approval

The product's characteristics are documented in reports issued by independent bodies. The technical documentation serves as the basis for SINTEF's product assessment with respect to the product standard EN 13707, the guidelines for SINTEF Technical Approval, and recommendations as outlined in SINTEF Building Research Design Guides.

9. Marking

Each roll of Astroflex SBS 5000 SUPRA and Astroflex SBS 6000 SUPRA shall be marked with the manufacturer's name, product description and production date.

Astroflex SBS 5000 SUPRA and Astroflex SBS 6000 SUPRA is CE marked according to EN 13707.

The approval mark for SINTEF Technical Approval no. 20032 may also be used.

10. Liability

The holder/manufacturer has sole product liability according to current law. Claims can only be made against SINTEF under general law or other special grounds.

for SINTEF



Hans Boye Skogstad
Approval Manager