SINTEF Technical Approval

TG 2022

Issued first time: 30.12.1994
Revised: 12.02.2026
Amended:
Valid until 01.03.2031
Provided listed on
www.sintefcertification.no

SINTEF confirms that

Isola Mestertekk 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

Isola as
NO-3945 Porsgrunn
www.isola.no

2. Product description

Isola Mestertekk is a single layer bituminous roofing membrane, with a reinforcement of spunbond polyester laminated with aluminium foil. The reinforcement is impregnated with bitumen and coated with SBS modified bitumen on both sides. The Isola Mestertekk has a surface protection of granules. The underside is covered with a plastic film, which melts during welding. Isola Mestertekk is available in several different surface colours.

Measures and tolerances are stated in table 1.

Table 1
Measures and tolerances for Isola Mestertekk according to EN 1848-1 and EN 1849-1

Property	Measure	Unit	Tolerance
Thickness	ca. 3.9	mm	-
Area weight	4.6	kg/m²	± 0.3 kg/m²
Width	1	m	± 2 mm
Length of roll	8	m	+100 mm / -0 mm
Weight of reinforcement	ca. 250	g/m²	-

3. Fields of application

Isola Mestertekk roofing membrane is used as a single layer membrane for sloped and flat roofs. The system is designed for use as a mechanically fixed single layer roofing membrane.

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. Product performance

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

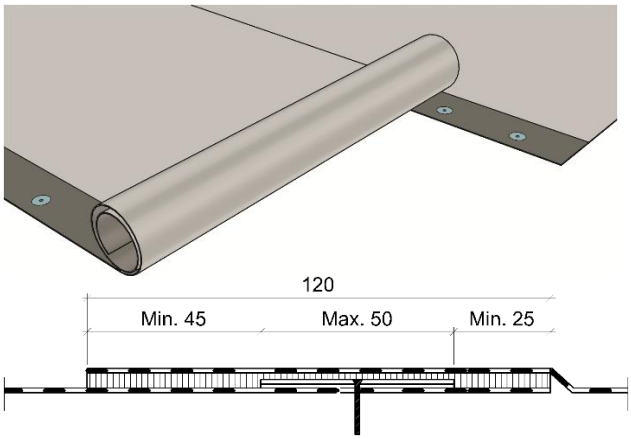

Fig. 1
Mechanical fastening of Isola Mestertekk in welded side overlap

Properties related to fire
Isola Mestertekk 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.

Durability
Isola Mestertekk has shown satisfactory 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 is given in table 4. Fastening in weaker substrates than those specified in table 4 may reduce the capacity and must be documented specifically.

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Table 2
Product properties for fresh material of Isola Mestertekk

Property		Test method EN	DoP [1]	Control limits [2]	SINTEF's recommended minimum performance [3]	Unit
Dimensional stability		1107-1	-	≤ 0,5	≤ ± 0.6	%
Flexibility at low temperature	- Surface out - Surface in	1109-1	≤ -20 ≤ -20	≤ -15 ≤ -15	≤ -15 ≤ -15	°C
Flow resistance	< 2 mm at tested temp.	1110	90	≥ 90	≥ 90	°C
Watertightness	10 kPa/24 h	1928 (A)	Passed	Passed [5]	Passed	-
Adhesion of granules [4]		12039	≤ 1,0	≤ 1,0	≤ 2,5	g [4]
Resistance to tearing (nail shank)	L T	12310-1	300 ±25 % 320 ±20 %	≥ 225 ≥ 255	≥ 150	N
Tensile strength	L T	1000 ±20 % 800 ±20 %	≥ 800 ≥ 640	≥ 600	≥ 600	N/50 mm
Elongation at max load	L T	45 ±20 % 50 ±20 %	≥ 35 ≥ 40	≥ 10	≥ 10	%
Average peel resistance of joints Sidelap/Endlap		12316-1	210 ± 20 %	≥ 165	≥ 50	N/50 mm
Shear resistance of joints Sidelap/Endlap		12317-1	750 ±20 %	≥ 600	≥ 600	N/50 mm
Resistance to	- Impact +23 °C - Static loading	12691 (A) 12730 (A)	≥ 800 ≥ 20	≥ 800 ≥ 20	≥ 500 ≥ 20	mm kg
Watertightness after 10% elongation at -10 °C		13897	-	Passed [5]	Passed	-

[1] The manufacturers Declaration of performance, DoP
[2] Control limits show values that the product has to satisfy both 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 Isola Mestertekk has fire classification B_{ROOF}(t2) on following substrates

Type of substrate	Isola Mestertekk
EPS	No
Mineral wool [1]	Yes
Wood particle board [2]	Yes
Concrete / calcium silicate board [3]	Yes
Old roofing membrane on EPS	No
Old roofing membrane on mineral wool [1]	Yes
Old roofing membrane on wood particle board [2]	Yes
Old roofing membrane on concrete / calcium silicate board [3]	Yes

[1] Fire class B_{ROOF}(t2) on mineral wool applies to non-combustible substrates with density ≥ 112.5 kg/m³.
[2] Fire class B_{ROOF}(t2) on wood particle board applies to combustible substrates with density ≥ 510 kg/m³.
[3] Fire class B_{ROOF}(t2) on calcium silicate board applies to non-combustible substrates with density ≥ 510 kg/m³.

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.

Table 4 Design capacity at ultimate limit state for the attachment of Isola Mestertekk

Fastener/Fastening system Fastening in 120 mm welded overlap/joint	Design capacity [1] [2] N/fastener
SFS Iso-tak R45 plastic washer Tested on soft substrate, attachment in 0.7 mm steel plate Distance between fasteners: C/C 240 / 480 mm Row distance: C/C 880 mm	666

[1] Measured according to method EN 16002, safety factor γ_m=1.5 according to EAD 030351-00-0402
[2] Wind load capacity is determined using a partial factor of γ_m=1.5. During a transitional period until January 1, 2028, designers may choose to use wind load capacities recalculated with a partial factor of γ_m=1.3.

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 can be included as part of the Isola Roof-Return program, where surplus material is recycled into road asphalt. Contact the manufacturer for more information and criteria for return.

Where this is not possible, the product shall be sorted as residual waste. The product shall be delivered to an authorized waste treatment plant for energy recovery.

Environmental declaration

An environmental declaration (EPD) has been worked out according to EN 15804 for Isola Mestertrekk. For complete documentation see EPD no. NEPD-6374-5636-EN, www.epd-norge.no.

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 tekking*
- 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

The roofing membrane shall be fixed mechanically in welded overlaps with a minimum width of 120 mm. The position of the fasteners is indicated by a marking line 50 mm from the edge of the sheet. This will normally give 30 mm of bonding on the inside of the washer and 50 mm on the outside. Bonding on the inside of the washers must be minimum 25 mm, and minimum 45 mm on the outer side, 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.

Isola Mestertekk can be torched or hot air welded. TPF informerer no. 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 no. 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*.

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

Isola Mestertekk must be transported in a manner that does not damage the product and stored upright on pallets.

7. Product and factory production control

Isola Mestertekk is produced by Isola as, 3945 Porsgrunn, Norway.

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.

Isola as 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

The packaging on each roll is marked with the manufacturer's name, product description and production date.

Isola Mestertekk is CE marked in accordance with EN 13707.

The approval mark for SINTEF Technical Approval TG 2022 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

Ola Asphaug
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