SINTEF

SINTEF Certification

No. 2253

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Technical Approval

SINTEF Building and Infrastructure confirms that

Isola Roofing Shingle and Isola Roofing Shingle Premium

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
Norway
www.isola.com

2. Product description

Material

Isola Roofing Shingle and Isola Roofing Shingle Premium are flat pieces of reinforced bitumen material installed with overlap for roof waterproofing, see figure 1a and 1b. Isola Roofing Shingle and Isola Roofing Shingle Premium have a reinforcement of non-woven glass impregnated with bitumen and coated with special bitumen on both sides. The lower part of the underside is covered with fine sand, while the upper part is coated with a plastic film. This film assures easy removal from the packaging without damaging the shingles, and prevents the shingles from sticking to the wood based roof sheathing.

Isola Roofing Shingle

The upper side is covered with slate granules. In addition, the upper side has areas with bitumen adhesive for bonding and sealing of overlapping tabs, see figure 2. Isola Roofing Shingles are available in seven different types as shown in figure 1a and b, with slate chippings of various colours.

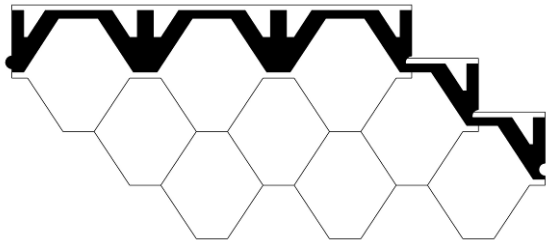
Isola Roofing Shingle Premium

The upper side is covered with mineral granules, colour crystal black. The roofing shingle has a slightly stronger fiberglass reinforcement than the traditional Isola Roofing Shingle. Isola Roofing Shingle Premium is delivered in type "Skrå" and "Karat".

Accessories

Eaves and ridge plates are available in the same material as the shingle. For Swing/Biber, Tyri and Skifer special eaves plates, designed for this shingle type, must be used.

Skrå



Kuttet

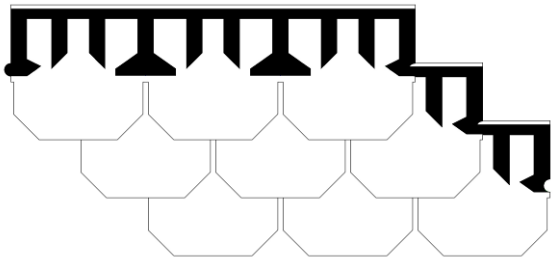


Fig. 1a
Types of Isola Roofing Shingles. Isola Roofing Shingle Premium is delivered in type "Skrå" and "Karat".

Table 1
Dimensions and tolerances for Isola Roofing Shingle and Isola Roofing Shingle Premium

Designation	Measures and tolerances	
Thickness	3.0 mm	
Area weight per plate	4.1 kg/m²	±0.3 kg/m²
Height[1)]	275/317/333/341 mm	± 3 mm
Width[2)]	945/1000 mm	± 3 mm
Tolerance, edge straightness	± 2 mm	
Straightness	± 2 mm	
Weight of reinforcement	110-135 g/m²	

1) Depends on shingle type
2) Type Skifer is 945 mm wide, the other types are 1000 mm.

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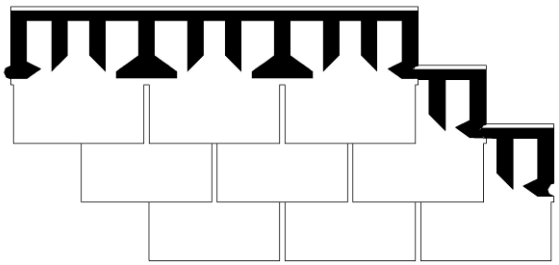
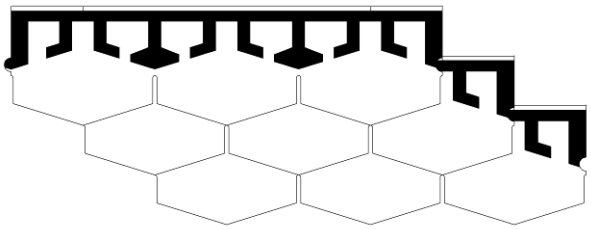
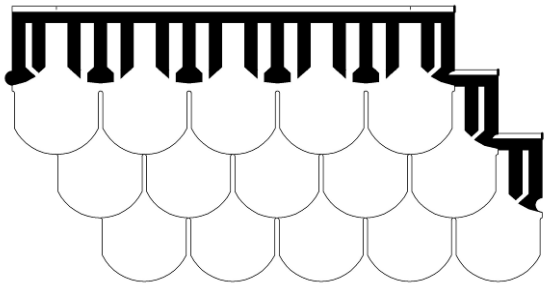
Rett



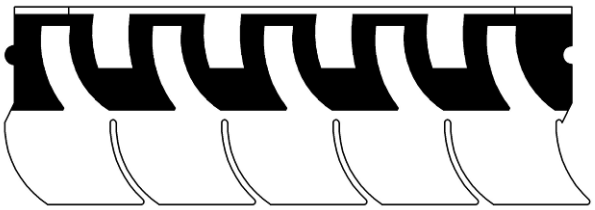
Karat



Swing/ Biber



Skifer



Tyri

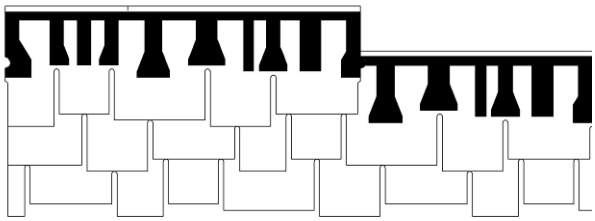


Fig. 1b
Types of Isola Roofing Shingles. Isola Roofing Shingle Premium is delivered in type "Skrå" and "Karat".

Table 2
Product properties for fresh material of Isola Roofing Shingle and Isola Roofing Shingle Premium according to test methods described in EN 544

Property	Test method EN	Isola Roofing Shingle		Isola Roofing Shingle Premium		SINTEF's recommended min. values [3]	Unit
		DoP [1]	Control limit [2]	DoP [1]	Control limit [2]		
Mass of bitumen	544:2011	1300	≥ 1300	1300	≥ 1300	1300	g/m²
Tensile strength, +23°C Longitudinal (shingle's width) Transversal (shingle's height)	544:2011	 890 ± 200 690 ± 200	 ≥ 690 ≥ 490	 1200 ± 200 690 ± 120	 ≥ 1000 ≥ 570	 600 400	N/50 mm
Nail shank tear resistance (shingel's height/ transversal)	544:2011	120 ± 20	≥ 100	130 ± 20	≥ 110	100	N
Water absorption	544:2011	< 1	< 1	< 1	< 1	2	%
Resistance to UV radiation	544:2011	-	No cracking/ damage	-	No cracking/ damage	No cracking/ damage	Visual
Resistance to blistering, +90°C	544:2011	-	No blisters	-	No blisters	No blisters	Visual
Flow resistance, +90°C	544:2011	< 2	< 2	< 2	< 2	2	mm
Adhesion of granules[4]	544:2011	< 1.2	< 1.2	< 1.2	< 1.2	2.5	g

[1] The manufacturers Declaration of Performance, DoP

[2] Control limit shows values, product has to satisfy during internal factory production control and audit testing

[3] SINTEF's recommended min. values to issue a SINTEF Technical Approval for roofing shingles

[4] Modified EN 12039; result given in grams in stead of % of relative difference

3. Fields of application

Isola Roofing Shingle and Isola Roofing Shingle Premium can be used on pitched roofs with a minimum slope of 15°, see paragraph 6. Isola Roofing Shingle and Isola Roofing Shingle Premium can be installed on load bearing roof sheathing of timber boards, OSB or plywood. The roof sheathing must always be ventilated underneath.

4. Properties

Product properties

Product properties for fresh material are shown in Table 2.

Tightness

Isola Roofing Shingle and Isola Roofing Shingle Premium without any underlay membrane has been tested for driving rain tightness according to the method NT Build 421.

Results from the testing of Isola Roofing Shingle show that the roofing is rainproof at wind pressure differences up to 350 Pa, when installed according to the manufacturer's installation manual.

Results from the testing of Isola Roofing Shingle Premium show that the roofing is rainproof at wind pressure differences up to 240 Pa, when installed according to the manufacturer's installation manual.

Safety in case of fire

For use in Norway Isola Roofing Shingle and Isola Roofing Shingle Premium satisfy fire classification B_{ROOF} (t2) according to EN 13501-5 on wooden underlay in general.

For use in other countries the shingles also satisfy fire classification B_{ROOF} (t1) and (t3) according to EN 13501-5 on all continuous wood based substrates and non-combustible underlays with gaps not exceeding 5 mm.

The tests have been performed according to CEN/TS 1187 Test1, 2 and 3.

Isola Roofing Shingle and Isola Roofing Shingle Premium are classified as Class E according to EN 13501-1. The test has been performed according to EN ISO 11925-2.

5. Environmental aspects

Substances hazardous to health and environment

The products contain 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 products are evaluated to have no negative effects on soil or ground water.

Waste treatment/recycling

The products 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 the products.

6. Special conditions for use and installation

Storage

The packages of shingle must be stored flat on a pallet, in a cool place, and not exposed to direct sunshine.

Roof structure

The roofing shingles must only be installed on ventilated, cold roofs, with a minimum pitch of 15°.

The ventilation between the insulation and the sheathing, and the thermal insulation of the roof, must be sufficient enough to prevent snow melting and water pounding.

Pitched roofs with thermal insulation along the plane of the roof should have ventilation openings at the ridge. Large roofs and roofs with valleys, dormers etc. must have cross ventilation. The roof structure shall otherwise be in accordance with the principles shown in SINTEF Building Research Design Guides 525.101 *Isolerte skrå tretak med lufting mellom vindsperre og undertak*, 525.106 *Skrå tretak med kaldt loft* and 525.107 *Skrå tretak med oppholdsrom på deler av loftet*.

The use of roofing underlay

A roofing underlay with a separation layer, ex. Isola Isokraft, shall always be used under shingle type Karat and Skifer. For roof pitches between 15° and 18° a roofing underlay shall be used for all shingle types. Underlayers should be used in harsh climates regardless of roof pitch. Underlayers should also be used on heated homes in areas with large annual snowfall. This should be considered in relation to the roof structure and, how the roof is ventilated.

Roofing shingles installed without roofing underlay has a higher risk of water leakages. Therefore, SINTEF Building and Infrastructure generally recommends the use of underlay below roofing shingles. Experience has shown that roofs with a pitch greater than 18° can function satisfactory with a roofing shingel without an underlay in areas less exposed to wind, rain and snow. In areas with a large amount of snow and an obvious risk for ice formation at eaves and valley gutters a roofing underlay must be used.

Load bearing roof sheathing

The load bearing roof sheathing shall be in accordance with SINTEF Building Research Design Guide 525.861 *Taktro av tre*.

Underlay
Before installation the surface must be clean, levelled and smooth.

New shingle installed on top of old shingle or uneven surfaces can give a reduced quality, and result in leakages. The new shingle should match the old shingle perfectly to avoid pockets in the roofing.

Installation
Isola Roofing Shingle and Isola Roofing Shingle Premium shall be mechanically fastened to the roof sheathing with hot galvanized roofing nails, with the dimensions 2.8 x 25 mm and a nail head diameter of approximately 10 mm. The nail shall be driven with the head flush with the shingle surface, and not cutting into the shingle material. For positioning of nails, see figure 2.

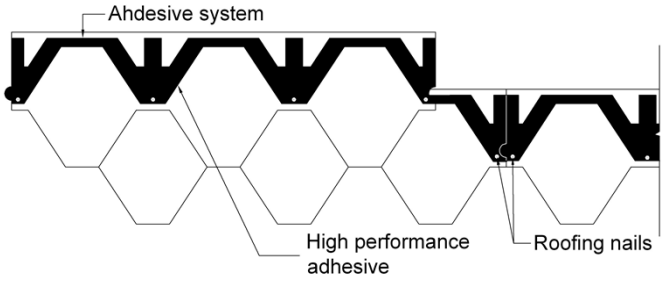


Fig. 2
Adhesive system and and principle of installation for Isola Roofing Shingle and Isola Roofing Shingle Premium

For installation of new shingle on top of old shingle a longer roofing nail must be used (2.8 x 32/35 mm). It is recommended to use roofing nails only for fastening Isola Roofing Shingle and Isola Roofing Shingle Premium. When installing new shingle on top of old shingle the minimum roof slope is 19°.

To achieve good adhesion between the shingle plates it is important that the surfaces are dry, and that the tabs are pressed down properly. At temperatures below +5°C the adhesive areas should be preheated before sticking the shingles together.

Furthermore, the roofing shingles shall be installed in accordance with the manufacturer's installation instructions and the principles shown in SINTEF Building Research Design Guides 544.105 *Tekking med asfalttakshingel*.

7. Factory production control

The product is produced by Isola as, NO-3945 Porsgrunn, Norway.

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.

Isola has a quality management system certified by Det norske Veritas (DNV) according to EN ISO 9001:2008, certificate no. QSC-6011. Isola Roofing Shingle and Isola Roofing Shingle Premium are CE-marked.

8. Basis for the approval

The approval is based on type testing documented in the following reports from Norwegian Building Research Institute/ SINTEF Building and Infrastructure concerning material- and performance testing, and Materialprüfungsamt Nordrhein-Westfalen and PAVUS a.s. concerning fire testing and fire classification:

- Norwegian Building Research Institute. Report no. O 8523 dated 29.11.1999 (type testing)
- SINTEF Building and Infrastructure. Report: "102000852-21_RAWI-Rapport_test 210416_v.2.0" dated 30.05.2016 (tightness against driving rain)
- Norwegian Building Research Institute. Report no. O 21139 dated 25.04.2006 (tightness against driving rain)
- SINTEF Building and Infrastructure. Report no. O 22425 dated 15.02.2008 (material testing)
- SINTEF Building and Infrastructure. Report no. 3D0319 dated 12.08.2008 (tightness against driving rain)
- Materialprüfungsamt Nordrhein-Westfalen. Report no. 230004611-1 and 230004611-2 dated 14.01.2005
- Materialprüfungsamt Nordrhein-Westfalen. Report no. 210003818-01 and 210003818-02 dated 25.01.2005
- PAVUS a.s. Report no. Pr-14-2.131-En dated 23.10.2014 (fire testing according to. EN 13501 Test 3)
- Materialprüfungsamt Nordrhein-Westfalen. Report no. 230009673 dated 30.01.2015
- (fire testing according to EN 13501 Test 1)
- Fire tests according to EN 13501-5 Test 2 are performed as part of the annual surveillance control.

9. Marking

All packages are marked with the manufacturer's name, product description and time of production.

The product is CE marked in accordance with EN 544.

The approval mark for SINTEF Technical Approval No. 2253 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 Building and Infrastructure

Hans Boye Skogstad
Approval Manager