

SINTEF Technical Approval

TG 2423

Issued first time: 08.09.2005
 Revised: 29.09.2021
 Amended: 01.07.2022
 Valid until: 01.10.2026
 Provided listed on
www.sintefcertification.no

SINTEF confirms that

FUTURA RS 4 N AF 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

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

www.polyglass.com

2. Product description

FUTURA RS 4 N AF is a roofing membrane made of APP-modified bitumen; copolymer of atactic polyolefin, isotactic polypropylene and flame-retardants. It is covered on the upper face by mineral granules and reinforced with a spun bond polyester stem.

Measures and tolerances are shown in table 1.

The membrane system is based on hot air welded or torched 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 delivered with black, green, red, white and dark brown top surface.

Table 1

Measures and tolerances for FUTURA RS 4 N AF according to EN 1848-1 and EN 1849-1

Property	Measure	Unit	Tolerance
Thickness	ca 4.5	mm	-
Area weight	5.0	kg/m ²	± 10 %
Width	≥ 1	m	-
Length of roll	8 / 10	m	± 1 %
Weight of reinforcement	220	g/m ²	± 15 %

3. Fields of application

FUTURA RS 4 N 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 recommends in general a minimum slope of 1:40 for all roofs.

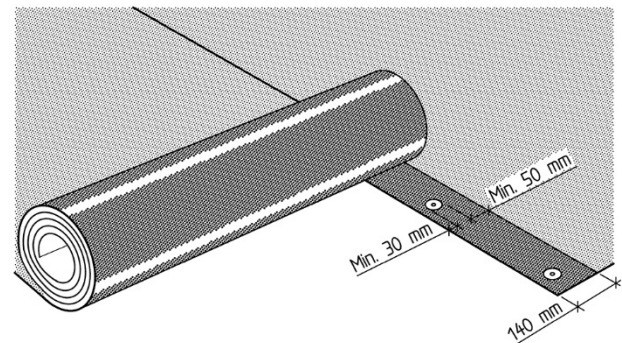


Fig. 1

FUTURA RS 4 N AF roofing membrane is mechanically fastened with 140 mm welded overlap joints. The product can be jointed both by open flame and hot air.

4. Properties

Product properties

Product characteristics for fresh material are shown in table 2.

Properties related to fire

FUTURA RS 4 N AF 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

FUTURA RS 4 N AF has shown satisfying properties after artificial ageing in connection with type-testing and audit testing.

Fastening capacity

The design capacity for the fastening of the membrane with different fasteners and premises 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 the fastening in membrane/substrate must always be used.

SINTEF is the Norwegian member of European Organisation for Technical Assessment, EOTA, and European Union of Agrément, UEAtc

SINTEF Certification
www.sintefcertification.no
 e-mail: certification@sintef.no

Contact, SINTEF: Bente W. Ofte
 Author: Bente W. Ofte

SINTEF AS
www.sintef.no
 Entreprise register: NO 919 303 808 MVA

Table 2

Product characteristics for fresh material of FUTURA RS 4 N AF

Property	Test method EN	DoP ¹⁾	Control limits ²⁾	SINTEF's recommended minimum performance ³⁾	Unit
Dimensional stability	1107-1	-	± 0.3	± 0.6	%
Flexibility at low at low temperature - upper face - lower face	1109-1	≤ -20 ≤ -20	≤ -20 ≤ -20	≤ -15	°C
Flow resistance at elevated temperature	1110	-	≥ 140	≥ 90	°C
Watertightness 10 kPa/24 h	1928 (A)	-	Pass ⁴⁾	Pass	-
Watertightness	1928 (B)	Pass	-	-	-
Adhesion of granules ⁵⁾	12039	-	≤ 2.5	≤ 2.5	g ⁵⁾
Resistance to tearing (nail shank) L/T	12310-1	250 ±30 %	≥ 175	≥ 150	N
Tensile strength L/T	12311-1	≥ 800	≥ 800	≥ 600	N/50 mm
Elongation at max load L/T	12311-1	≥ 35	≥ 35	≥ 10	%
Average peel resistance of joints Sidelap/Endlap	12316-1	≥ 50	≥ 50	≥ 50	N/50 mm
Shear resistance of joints Sidelap/Endlap	12317-1	≥ 600	≥ 600	≥ 600	N/50 mm
Resistance to - Impact +23 °C - Impact -10 °C - Static loading	12691 (A) 12691:2001 12730 (A)	≥ 1000 - ≥ 20	≥ 1000 ≤ 20 ⁴⁾ ≥ 20	≥ 500 ≤ 30 ≥ 20	mm mm diam. kg
Watertightness after stretching at low temperature (10% elongation at -10 °C)	13897	-	Pass ⁴⁾	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⁾ Result from type-testing⁵⁾ Modified to give the result of weight loss of granules in gram (according to EN 544)

L = Longitudinal

T = Transversal

Table 3

FUTURA RS 4 N AF single layer bituminous roofing membrane has fire classification B_{ROOF} (t2) on following substrates

Type of substrate	FUTURA RS 4 N AF
EPS *	Yes
Stone wool	Yes
Wood particle board	Yes
Concrete / silicate plate	Yes
Old roofing membrane on EPS *	Yes
Old roofing membrane on stone wool	Yes
Old roofing membrane on particle board	Yes
Old roofing membrane on concrete or silicate plates	Yes

* In case of roofing on lightweight combustible insulation (eg 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.

Table 4

Design capacity at ultimate limit state for the attachment of FUTURA RS 4 N AF single layer bituminous roofing membrane

Fastener/Fastening system Fastening in 140 mm welded joint	Design capacity N / fastener
Eurofast TLKB-45 plastic washer and EDS-S-4,8 screw Tested on soft substrate, attachment in steel plate Distance between fasteners: C/C 320 mm	692 ¹⁾
Eurofast Damp-50040H Ø 40 mm steel washer and 5,0x40 mm wood screw Tested on firm substrate, attachment in plywood Distance between fasteners: C/C 320 mm	769 ¹⁾

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

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" published by Takprodusentenes Forskningsgruppe (TPF), see www.tpf-info.org.

5. Environmental aspects

Substances hazardous to health and environment

FUTURA RS 4 N AF 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 FUTURA RS 4 N AF are evaluated to have no negative effects on soil or water.

Waste treatment/recycling

FUTURA RS 4 N AF 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 FUTURA RS 4 N AF.

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 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.

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

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.

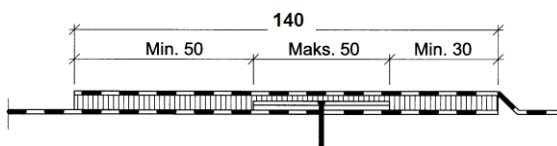


Fig. 2
Positions of mechanical fasteners in 140 mm welded overlap joints.

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*.

Substrates of combustible insulation as EPS or PIR must be covered or divided, and also replaced with non-combustible insulation around bushings and adjacent constructions according to regulations in "Veiledning om tekniske krav til byggverk" § 11-9 and further descriptions in SINTEF Building Research Design Guide no. 525.207 *Kompakte tak* and 520.339 *Bruk av brennbar isolasjon i bygninger*, plus "TPF informerer nr. 6 *Branntekniske konstruksjoner for tak*" published by Takprodusentenes Forskningsgruppe.

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.

Transport and storage

FUTURA RS 4 N AF must be stored upright on pallets.

7. Factory production control

FUTURA RS 4 N AF is produced by Polyglass S.p.A., Via delle industrie, 34, IT-31047 Ponte di Piave (TV), Italy.

The holder of the approval is responsible for the factory production control in order to ensure that FUTURA RS 4 N AF is produced in accordance with the preconditions applying to this approval.

The manufacturing of FUTURA RS 4 N AF is subject to continuous surveillance of the factory production control in accordance with the contract regarding SINTEF Technical Approval.

The manufacturer has a quality management system that is 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 FUTURA RS 4 N AF 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.

FUTURA RS 4 N AF is CE-marked in accordance with EN 13707.

The approval mark for SINTEF Technical Approval TG 2423 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



Hans Boye Skogstad
Approval Manager