

SINTEF Technical Approval

TG 2377

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 Provided listed on
www.sintefcertification.no

SINTEF confirms that

Bauder Pro 40 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

Bauder AS
 Lindebergveien 1
 2016 Frogner
 Norway
www.bauder.no

2. Product description

Bauder PRO 40 is a roofing membrane made of SBS modified bitumen, covered on the upper face by mineral granules and reinforced with polyester glass felt. Measures and tolerances are shown in Table 1.

The membrane system is based on welded joints, see Fig. 1. The lower face has a thin plastic film which melts off when the joints are welded. The membrane is delivered in various colours; black, green, red, grey, mixed green and white, and mixed brown and red.

Table 1
 Measures and tolerances of Bauder PRO 40
 according to EN 1848-1 and EN 1849-1

Property	Measure	Unit	Tolerance
Thickness	4.2	mm	± 0.1
Area weight	5.0	kg/m ²	+10/-5 %
Width	1	m	+1/-0 %
Length of roll	7,5	m	+2/-0 %
Weight of core	ca 230	g/m ²	

3. Fields of application

Bauder PRO 40 is used as single layer waterproofing membrane on sloping and flat roofs. The system is specially designed for mechanically fastened single layer roofing. The product may also be used as a top layer in a double-layer system.

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.

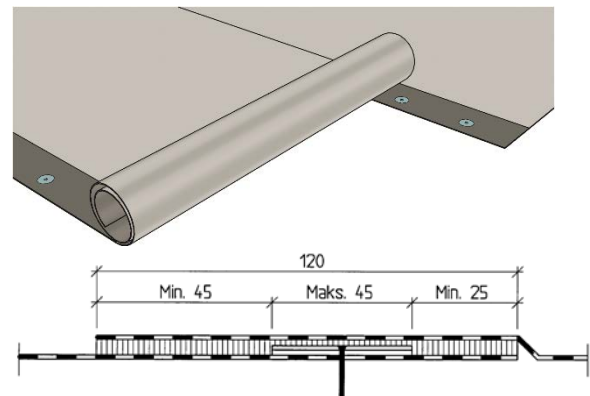


Fig. 1

Bauder PRO 40 roofing membrane is mechanically fastened with 120 mm welded overlap joints.

4. Properties

Product properties

Product properties for fresh material are shown in Table 2.

Properties related to fire

Bauder PRO 40 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

The products have shown satisfying properties after artificial ageing.

Fastening capacity

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

For weak substrates the connection between the substrate and the fastener might limit the capacity. This must be considered, and only the lowest capacity for membrane or substrates must always be used.

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

Table 2
Product properties of fresh material of Bauder PRO 40

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 (Upper face / Lower face)	1109-1	≤ -25	≤ -25	≤ -15	°C
Flow resistance at elevated temperature	1110	-	≥ 90	≥ 90	°C
Watertightness 10 kPa/24 h	1928 (A)	Tight	Tight	Tight	-
Adhesion of granules ⁴⁾	12039	-	≤ 2.5	≤ 2.5	g
Resistance to tearing (nail shank) L/T	12310-1	-	≥ 250	≥ 150	N
Tensile strength L	12311-1	800 ± 10%	≥ 720	≥ 600	N/50 mm
T		700 ± 10%	≥ 630		
Elongation L	12311-1	35 ± 5	≥ 30	≥ 10	%
T		45 ± 5	≥ 40		
Average peel resistance of joints Sidelap/Endlap	12316-1	-	≥ 50	≥ 50	N/50 mm
Shear resistance of joints Sidelap/Endlap	12317-1	-	≥ 600	≥ 600	N/50 mm
Resistance to Impact +23 °C	12691 (A)	-	≥ 800	≥ 500	mm
Impact -10 °C	12691:2001	-	≤ 30	≤ 30	mm diam.
Static loading	12730 (A)	-	≥ 20	≥ 20	kg
Watertightness after stretching at low temperature (10% elongation at -10 °C)	13897	-	Tight	Tight	-

¹⁾ The manufacturers Declaration of performance, DoP.

²⁾ Control limit shows 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 only give the result of weight loss of granules in gram

L = Longitudinal T = Transversal

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

Table 3
Bauder PRO 40 a has fire classification B_{ROOF} (t2) on following substrates

Type of substrate	Pro 40
EPS*	No
"Sandwich" system on 30mm rockwool and EPS	Yes
Rock wool	Yes
Wooden sheeting	Yes
Concrete	Yes
Reroofing on old membrane on EPS*	No
Reroofing on "Sandwich" system on 30mm rockwool and EPS	Yes
Reroofing on old membrane on rock wool	Yes
Reroofing on old membrane on wooden sheeting	Yes
Reroofing on old membrane on concrete	Yes

*) In case of roofing on lightweight combustible insulation (eg EPS, XPS or PIR): See section 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 fastening of Bauder Pro 40

Fastener/Fastening system	Design capacity N / fastener
Ejot Ecotec 45 plastic washer and integrated sleeve	950 ¹⁾

¹⁾ Measured according to the Nordtest method NT BUILD 307

5. Environmental aspects

Substances hazardous to health and environment

Bauder PRO 40 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 Bauder PRO 40 are evaluated to have no negative effects on soil or water.

Waste treatment/recycling

Bauder PRO 40 shall be sorted as asphalt. The product shall be delivered to an authorized waste treatment plant for material recycling.

Environmental declaration

No environmental declaration (EPD) has been worked out for Bauder PRO 40.

6. Special conditions for use and installation

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 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 feste av asfalttakbelegg og takfolie på flate tak*, plus "TPF informerer nr. 5" published by Takprodusentenes Forskningsgruppe, 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 be checked particularly.

Substrate

When a fire classification is required the substrate must be in accordance with the provisions stated in section 4 regarding *Properties related to fire*.

Substrate of combustible insulation as EPS, XPS 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 description in "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.

Maintenance

Before starting any welding, as a part of repair work, the roofing membrane must be cleaned locally.

Transport and storage

Bauder PRO 40 must be stored upright on pallets.

7. Factory production control

Bauder PRO 40 is produced by Paul Bauder GmbH & Co. KG, Zeppelinstrasse 1, 28832 Achim, Germany.

The holder of the approval is responsible for the factory production control in order to ensure that Bauder PRO 40 is produced in accordance with the preconditions applying to this approval.

The manufacturing of Bauder PRO 40 is subject to continuous surveillance of the factory production control in accordance with the contract regarding SINTEF Technical Approval.

The manufacturer has a quality system which is certified by DQS German Institut of Certification according to EN ISO 9001, certificate no. 002735 QM.

8. Basis for the approval

The evaluation of Bauder PRO40 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.

Bauder PRO 40 is CE marked according to EN 13707.

The approval mark for SINTEF Technical Approval TG 2377 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