SINTEF

**SINTEF Certification**

**No. 2560**

# Technical Approval

Issued first time: 29.09.2009
Revised latest: 17.03.2017
Valid until: 01.04.2022
*Provided listed on www.sintefcertification.no*

SINTEF Building and Infrastructure confirms that

## Bauder PRO F 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

Bauder AS
Lindebergvegen 1
2016 Frogner
Norway

### 2. Product description

Bauder PRO F is a roofing membrane made of SBS modified bitumen, covered on the upper face by mineral granules and reinforced with polyester glass felt. Joints can be torched or hot air. Bauder PRO F can be supplied in different colours. Measures, tolerances and weight of the reinforcement are shown in Table 1.

Table 1
Measurements, tolerances for Bauder PRO F

| Property | Measure | Tolerance | Unit |
|---|---|---|---|
| Thickness | 5,2 | ± 0,1 | mm |
| Area weight | 5,8 | +10 % / -5 % | kg/m² |
| Width | 1,1 | ± 1 % | m |
| Roll length | 7,5 | +2 % / -0 % | m |
| Weight of reinforcement | 250 | - | g/m² |

Measured according EN 1848-1 and EN 1849-1

### 3. Fields of application

Bauder PRO F is used as single layer waterproofing membrane on sloping and flat roofs. The system is specially designed for mechanically fastened single layer roofing, used for new roofing or under rehabilitation. 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 Building and Infrastructure recommends in general a minimum slope of 1:40 for all roofs.

In general Bauder PRO F waterproof membrane can also be used for loose applied ballasted accessible and non-accessible roofs, terrace roofs and parking roofs with floating floor and culverters.

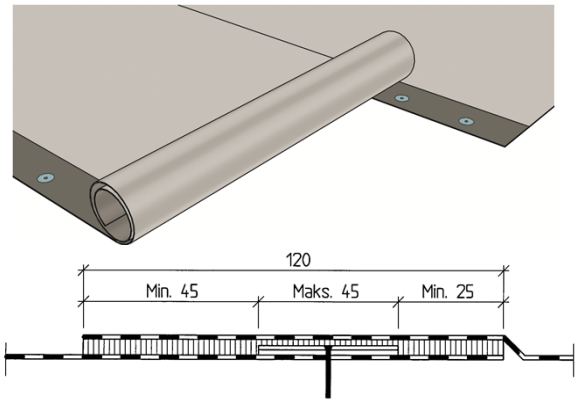


Fig. 1
Bauder PRO F roofing membrane is mechanically fastened with 120 mm welded overlap joints.

### 4. Properties

*Material properties*
Properties for fresh material are shown in Table 2.

*Safety in case of fire*
Bauder PRO F fulfils the requirements of class $B_{ROOF}$ (t2) according to EN 13501-5 for substrates, shown in Table 3. The product has been tested in accordance with CEN/TS 1187-2.

*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 and determined in form of a system test according EN 16002.

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

Calculation of fasteners spacing is carried out according to SINTEF Building Research Design Sheet 544.206 *Mekanisk feste av asfalt takbelegg og takfolie på flate tak* and "TPF Informs No. 5".



Contact person, SINTEF Building and Infrastructure: Bente Wallervand Ofte
Author: Holger Halstedt
www.sintefcertification.no
Phone: +47 73 59 30 00
E-mail: certification@sintef.no

Table 2
Product properties of fresh material of Bauder PRO F single-layer bituminous roofing membrane

| Property | Test method EN | DoP[1)] | Control limits [2)] | SINTEF's recommended minimum performance[3)] | Unit |
|---|---|---|---|---|---|
| Dimensional stability | 1107-1:1999 | - | ± 0.5 | ± 0.6 | % |
| Flexibility at low temperature upper face: / lower face: | 1109-1:1999 | ≤ -30 | ≤ -30 | ≤ -15 | °C |
| Flow resistance at elevated temperature | 1110:1999 | - | ≥ 90 | ≥ 90 | °C |
| Watertightness 10 kPa/24 h | 1928:2000 (A) | Tight | Tight | Tight | - |
| Adhesion of granules[4)] | 12039:2000 | - | ≤ 2.5 | ≤ 2.5 | g[4)] |
| Resistance to tearing (nail shank) L: / T: | 12310-1:2000 | - / - | ≥ 250 / ≥ 250 | ≥ 150 | N |
| Tensile strength L: / T: | 12311-1:2000 | 1000 ± 100 / 1000 ± 100 | ≥ 900 / ≥ 900 | ≥ 600 | N/50 mm |
| Elongation L: / T: | 12311-1:2000 | 45 ± 10 / 45 ± 10 | ≥ 35 / ≥ 35 | ≥ 10 | % |
| Average peel resistance of joints L: / T: | 12316-1:2000 | - / - | ≥ 50 / ≥ 50 | ≥ 50 | N/50 mm |
| Shear resistance of joints L: / T: | 12317-1:2000 | - / - | ≥ 600 / ≥ 600 | ≥ 600 | N/50 mm |
| Resistance to Impact +23 °C / Impact -10 °C / Static loading | 12691:2006 (A) / 12691:2001 / 12730:2001 (A) | - / - / - | ≥ 1000 / ≤ 30 / ≥ 20 | ≥ 500 / ≤ 30 / ≥ 20 | mm / diam / kg |
| Watertightness after stretching at low temperature (10% at -10 °C) | 13897:2005 | - | 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.

*Durability*
The product has been tested for durability in typetesting and during annual control with satisfactory results for the here declared fields of application.

Table 3
Bauder PRO F is classified to $B_{ROOF}$ (t2) on following substrates:

| Type substrate | Passed |
|---|---|
| EPS | No |
| Stone wool | Yes |
| Wooden sheeting | No |
| Concrete / silicate-plates | Yes |
| Reroofing on old membranes on EPS | No |
| Reroofing on old membranes on stone wool | Yes |
| Reroofing on old membranes on wooden sheet. | No |
| Reroofing on old membranes on concrete | Yes |

Table 4
Design capacity in the ultimate limit state for Bauder PRO F in 120 mm welded overlap, or in middle of the field

| Fastener | Capacity N/pcs |
|---|---|
| Ejot ECOTEC IH 50 | 950 |

## 5. Environmental aspects

*Substances hazardous to health and environment*
Bauder PRO F is containing 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 Bauder PRO F.

## 6. Special conditions for use and installation

*Fasteners*

Fastening with ordinary steel washers in longitudinal overlaps may be used on firm underlays such as wood-based sheathing or concrete.

Steel washers with recess or plastic washers should be used on underlays of thermal insulation with compressive strength ≥ 80 kN/m$^2$ (level CS(10)80 according to EN 13162/13163).

Fasteners with good telescopic effect must be used when the membrane is installed on thermal insulation materials with lower compressive strength. Fixture has to be checked once separately.

*Installation*

Longitudinal joints have to be torched or hot air welded with minimum 120mm overlap as shown in Fig. 1.

Mechanical fasteners shall be placed at welded overlaps. 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.

Apart from that the roofing has to be performed in accordance with the principles shown in SINTEF Building Design Guide 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* and "TPF informs No. 5".

*Substrate*

When a fire classification is required the substrate must be in accordance with the provisions stated in section 4 "Safety in case of fire".

When installing the membranes on an old roofing containing softeners, for example PVC, a separate migration barrier of polyester felt with density minimum 150 g/m² has to be included.

In case of mounting Bauder PRO F to concrete the surface has to be clean, dry and smooth at least like plank planed concrete surfaces.

*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.

*Storage*

Bauder PRO F must be stored upright on pallets.

## 7. Factory production control

The product is produced by Paul Bauder GmbH & Co KG, Werk Achim, Germany.

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.

Paul Bauder GmbH & Co KG has a quality management system which is certified by ESC Cert GmbH according to ISO 9001, certificate no. 70499/03-15_d.

Paul Bauder GmbH & Co KG has an environmental management system which is certified by ESC Cert GmbH according to ISO 14001, certificate no. 70499/03-15_e.

## 8. Basis for the approval

Product properties for Bauder PRO F have been determined by type testing on fresh and aged material, documented in the following reports:

- Norwegian Building Research Institute. Report no. O 14133-1 dated 19.11.2002 (wind load testing)
- Norwegian Building Research Institute. Report no. O 14133-2 dated 18.02.2003 (material properties)
- Helstrab, Hersfelder Labor für Strasse und Abdichtung GmbH. Report no. Ba-04/07 dated 30.11.2007 (spread of flames)
- SINTEF Building and Infrastructure. Report no. O 22325 dated 14.02.2008 (material testing).
- Helstrab, Hersfelder Labor für Strasse und Abdichtung GmbH. Report no. Ba-01/16 dated 01.08.2016 (spread of flames).

## 9. Marking

Each roll of the products has to be marked with manufacturer's name, product description and production date. The product is CE marked in accordance with EN 13707. The approval mark for SINTEF Technical Approval No. 2560 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

Marius Kvalvik
Approval Manager