

SINTEF confirms that

MAPEPLAN B

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
 31047 Ponte di Piave (TV)
 Italy
www.polyglass.com

2. Product description

Mapeplan B is a synthetic roofing waterproofing membrane in PVC-P, reinforced with a core of glass mat. The colour of the top layer is light grey, and the bottom layer is dark grey. Measures and tolerances are shown in Table 1.

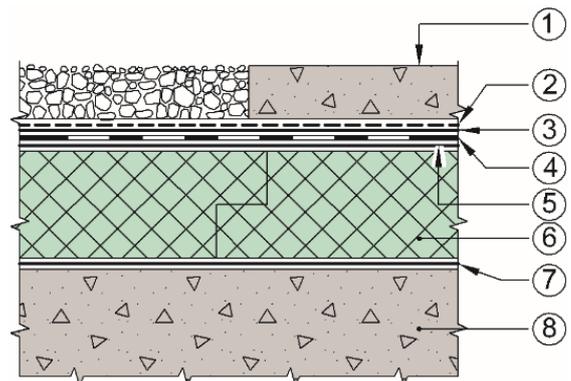
Table 1
 Measures and tolerances for Mapeplan B
 according to EN 1848-2 and EN 1849-2

Property	Mapeplan B 15	Mapeplan B 18	Mapeplan B 20
Thickness	1.5 mm +10/-5 %	1.8 mm +10/-5 %	2.0 mm +10/-5 %
Area weight	1.8 kg/m ² +10/-5 %	2.2 kg/m ² +10/-5 %	2.5 kg/m ² +10/-5 %
Roll width	2.10 m +1 /-0,5 %	2.10 m +1 /-0,5 %	2.10 m +1 /-0,5 %
Roll length	20 m +5 /-0 %	15 m +5 /-0 %	15 m +5 /-0 %
Weight of reinforcement	50 g/m ² ±5 %	50 g/m ² ±5 %	50 g/m ² ±5 %

3. Fields of application

Mapeplan B can be used as roofing membrane on flat roofs. The product is intended for ballasted roof constructions, is suitable for utility decks, such as pedestrian, parking and roof garden systems, and is resistant to ultraviolet rays, microbiological attacks and penetration of roots. It can also be used for bonding to exposed roof areas and detail flashings.

The membrane is laid loosely with a ballast weight. The membrane cannot be used in exposed, mechanically fastened applications. Examples of intended use are shown in figure 1 – 4.



1	Shingle, slabs of lightweight aggregate or concrete etc.	5	Migration barrier when insulation of EPS/XPS
2	Optional separation layer Mapeplan PE Micro-perforated	6	Insulation
3	Protection layer geotextile Polydren	7	Vapour barrier
4	Mapeplan B	8	Supporting structure

Fig. 1
 Example of Mapeplan B used as roofing with ballast covering.

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.

Other structures, such as parking decks and terraces, must have adequate slope to drain water from rain and melted snow. For inverted constructions or duo constructions the membrane can be laid horizontally when integrally casted wear layers have a slope towards gutter and drain of at least 1:100.

4. Properties

Product properties

Product properties for fresh material are shown in Table 2.

Properties related to fire

Fire technical classification for Mapeplan B is not documented. In order to achieve satisfactory fire safety in buildings with requirements to class B_{ROOF} (t2) for the roofing the product must be covered. See more detailed description in chapter 6. *Special conditions for use and installation*, section Loosely laid with ballast.

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

Table 2
Product properties for fresh material of Mapeplan B

Property	Test method EN	Mapeplan B 15/ B 18/ B 20		SINTEF's recommended minimum performance ³⁾	Unit
		DoP ¹⁾	Control limit ²⁾		
Foldability at low temperature	495-5	≤ -25	≤ -25	≤ -25	°C
Dimensional stability	1107-2	-	± 0.2	± 0.5	%
Water tightness 10 kPa/24 h	1928 (A)	Pass	Pass ⁵⁾	Pass	-
Tear resistance L/T	12310-2	≥ 100	≥ 100	≥ 80	N
Tensile strength L/T	12311-2 (B)	≥ 9 ⁴⁾	≥ 9 ⁴⁾	≥ 380 N/50 mm	N/mm ²
Elongation at max load	12311-2 (B)	≥ 200	≥ 200	≥ 180	%
Average peel resistance of joints (T-peel)	12316-2	≥ 300	-	-	N/50 mm
Shear resistance of joints	12317-2	≥ 500	≥ 500	≥ 380	N/50 mm
Resistance to puncture by - impact at +23°C - impact at -10°C - static loading	12691 (A) 12691:2001 12730 (A)	≥ 400/600/700 - -	≥400/600/700 ≤ 20 ⁵⁾ ≥ 20/25/25	≥ 400 ≤ 20 ≥ 20	mm mm diam. kg
Resistance to roots, test FLL	CEN/TS 14416	Pass	-	-	-

¹⁾ The manufacturers Declaration of performance, DoP

²⁾ Control limit shows values the product must satisfy during internal factory production control and audit testing.

³⁾ SINTEF's recommended minimum values in SINTEF Technical Approval for ballasted roofing membranes.

⁴⁾ Value is shown in N/mm². Value is equivalent to 675/810/900 N/50mm for Mapeplan B 15/18/20, respectively.

⁵⁾ Result from type testing

L = Longitudinal

T = Transversal

Durability

Mapeplan B has shown satisfying properties after artificial ageing in connection with type-testing and audit testing performed by SINTEF.

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

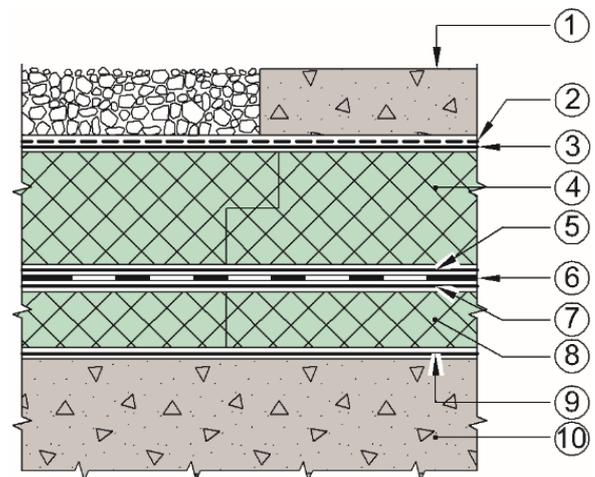
The leaching properties of the product are evaluated to have no negative effects on soil or water.

Waste treatment/recycling

The product shall be sorted as residual waste. The product shall be delivered to an authorized waste treatment plant for energy recycling.

Environmental declaration

An environmental declaration (EPD) has been worked out according to EN 15804 for Mapeplan B. For complete documentation see EPD no. S-P-00905, www.environdec.com.



1	Shingle, slabs of lightweight aggregate or concrete etc.	6	Mapeplan B
2	Optional separation layer Mapeplan PE Micro-perforated	7	Migration barrier when insulation of EPS/XPS
3	Protection layer geotextile Polydren	8	Insulation
4	Insulation	9	Vapour barrier
5	Migration barrier when insulation of EPS/XPS	10	Supporting structure

Fig. 2
Example of use in roof without traffic.

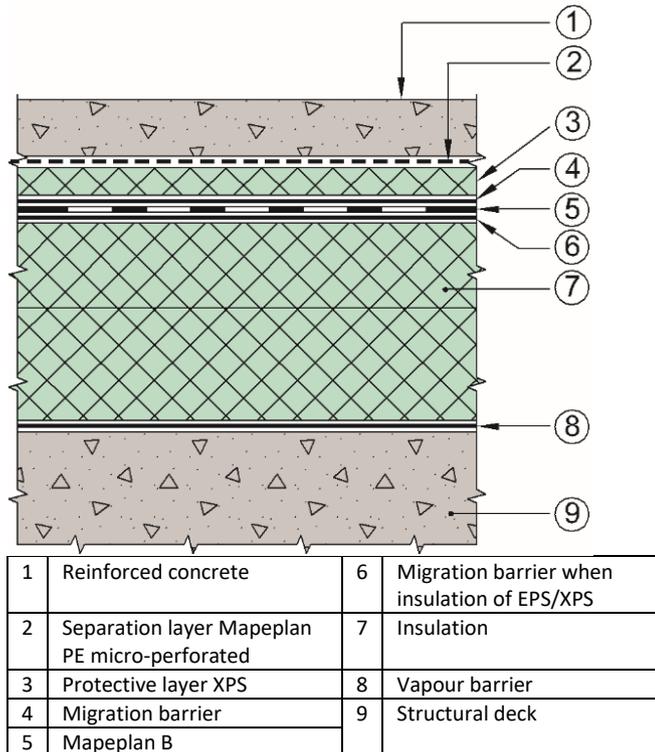


Fig. 3
Roofs with traffic.

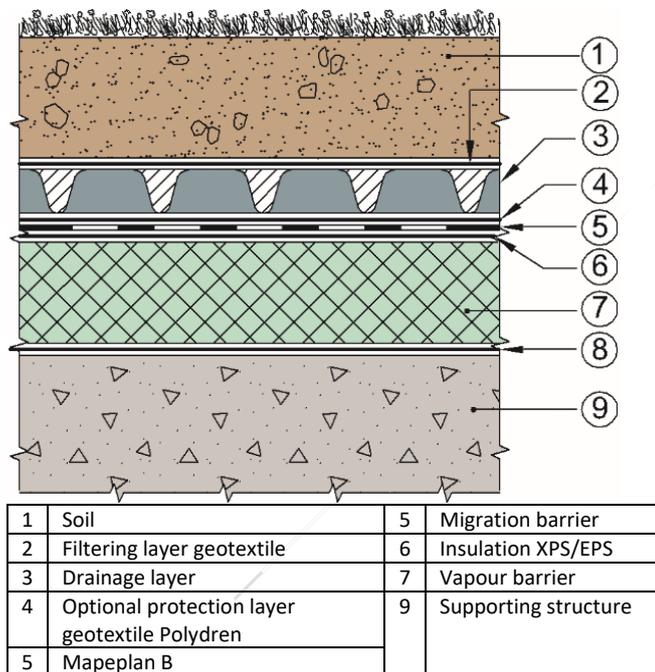


Fig. 4
Intensive green roof

6. Special conditions for use and installation

Installation

The installation shall be performed in accordance with the manufacturer’s instructions in *Installation Manual Mapeplan PVC*, by approved contractors and operatives who have undertaken training to install the Mapeplan systems, and the principles shown in SINTEF Building Research Design Guide no. 544.202 *Takfolie. Egenskaper og tekking* and 544.204 *Tekking med asfalttakbelegg eller takfolie. Detaljløsninger*, plus TPF informerer nr. 5 *Innfesting av fleksible takbelegg, dimensjonering og utførelse*, published by Takprodusentenes Forskningsgruppe (TPF), see www.tpf-info.org.

All joints of Mapeplan B must be hot air welded by a specialized installer, and the overlap shall achieve a width of minimum 50 mm (minimum 80 mm when Mapeplan B is placed above the insulation).

The substrate shall be thoroughly cleaned before installation, and without sharp edges that may puncture the membrane. In particular it must be checked that the membrane is not damaged by impacts from sharp objects, or objects being trampled into the membrane during installation.

Roofs, terraces and parking decks

Application in roofs, terraces and parking decks shall additionally be in accordance with the principles shown in SINTEF Building Research Design Guide no. 525.207 *Kompakte tak*, 525.304 *Terrasse på etasjeskiller av betong for lett eller moderat trafikk*, 525.306 *Terrasser med beplantning på bærende betongdekker*, 525.307 *Tak for biltrafikk og parkering*, as well as TPF informerer nr. 6 *Branntekniske konstruksjoner for tak*, published by Takprodusentenes Forskningsgruppe (TPF).

When used in parking decks the concrete (top layer) should be joined to the actual construction in order to prevent it from moving. The insulation density must be intended for future maximum load.

Loosely laid with ballast

The membrane is laid loosely with a ballast weight. Necessary ballast must be calculated according to SINTEF Building Research Design Guide no. 544.202 *Takfolie. Egenskaper og tekking* and TPF informerer nr. 5 *Innfesting av fleksible takbelegg, dimensjonering og utførelse*, clause 6.1 *Ballast*, published by Takprodusentenes Forskningsgruppe (TPF).

After welding the ballast must be applied immediately on the loose-laid roofing membrane to secure its position against wind uplift.

Adequate covering or ballast on the roofing membrane for fire protection is 40-60 mm gravel. Any other ballast or coverings must be documented to give the required fire resistance of the roof with the actual substrates.

There are special requirements and restrictions when using the product under "green roofs", see TPF informerer nr. 10 *Bygningsmessige aspekter ved prosjektering og bygging av grønne tak*, published by Takprodusentenes Forskningsgruppe (TPF).

In inverted roofs or duo-constructions, extruded polystyrene (XPS) should be used over the membrane. EPS should be avoided as EPS will absorb water and give reduced insulation.

Substrate

Substrates 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 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 (TPF).

When the membranes are installed directly on EPS or XPS insulation, a separate glass fiber barrier of minimum 120 g/m² or a geotextile barrier of minimum 200 g/m² shall be used as instructed by the producer.

When the membranes are installed on old asphalt roofing, without additional insulation, a geotextile barrier of minimum 400 g/m² shall be used as instructed by the producer.

When the membranes are applied directly on a rough substrate, without additional insulation, a protection layer of polyester or polypropene felt, or similar, shall be used. SINTEF recommends use of approx. 250 g/m² felt when applied directly on a substrate of concrete and minimum 300 g/m² felt on a substrate of concrete in constructions with heavy traffic.

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 in Mapeplan PVC maintenance book.

Transport and storage

Mapeplan B shall be stored in a dry location, elevated from the ground/roof and protected with waterproof tarpaulins against exposure to rain. The rolls should be placed horizontally on pallets at the building site and protected by wrapping. Exposure to sunlight must be avoided.

7. Factory production control

Mapeplan B is produced by Polyglass S.p.A. in Via Giorgio Squinzi 2, 31047 Ponte di Piave (TV), Italy.

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

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.

Polyglass S.p.A has a quality management system 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 Mapeplan B 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 shall be marked on the label, wrapping, or cover with producer, product name, dimensions, batch number and fire classification.

Mapeplan B is CE-marked in accordance with EN 13956.

The approval mark for SINTEF Technical Approval TG 20528 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

Susanne Skjervø
Approval Manager