Teknisk Godkendelse til Anvendelsen Nr. TGA.2024/010

Issued:
Valid untill: 2028-07-01

MATERIAL OR CONSTRUCTION:

Designation:
Protan SE

PREPARED FOR:
Protan AS
Baches vei 1
NO-3413 Lier
www.protan.no

MARKING:
The roofing membranes must be delivered in packaging marked with the product name and this number (TGA 2024/010)

COMMENTS:

The documentation considers the system's use in areas where exposure is typical for residential buildings.

This approval does not address whether the system contains hazardous substances nor whether the product emits particles, gases, or radiation that negatively affect indoor climate.

DESCRIPTION:
Protan SE is a membrane product. It consists of a softened PVC roofing membrane reinforced with a polyester textile core. The PVC is stabilized for resistance to high and low temperatures, UV radiation, and atmospheric pollution, and also to improve fire resistance. The membranes are welded using hot air.

Protan SE is used as a mechanically fastened single-ply roofing membrane with welded overlaps.

Protan SE is available in thicknesses of 1.2 mm, 1.6 mm, 1.8 mm, and 2.0 mm in rolls with widths of 1.0 m or 2.0 m and standard lengths from 10 m to 20 m. Protan SE is also available in custom dimensions. Roll weight depends on thickness.

The rolls must be stored packaged or covered on pallets. They must be kept dry until installation and not exposed to mechanical damage.

Installation must follow the manufacturer's instructions. The substrate must be clean and free of sharp protrusions that could puncture the membrane. The roof must have sufficient slope to avoid harmful water accumulation. The overlap of the sheets must be done according to the manufacturer's instructions.

APPLICATION:
The single-ply membrane consisting of Protan SE is suitable for exposed roof surfaces regardless of pitch.

Waterproofing
Properly installed, the Protan SE single-ply membrane provides a waterproof roof. The membrane is resistant to typical weather exposure on all roof pitches without harmful water accumulation and can accommodate moisture or thermal movement in the substrate.

Diffusion Properties
See table in Annex 1.

Fire Classification
The Protan SE single-ply membrane is classified as Euroclass E according to EN 13501-1.
It meets the EU fire class $B_{ROOF}(t2)$ under EN 13501-5 when tested on both combustible and non-combustible substrates with a density ≥ 12.5 kg/m², and on the following combustible substrates:
- Kingspan Therma TR26 PIR
- Unilin LE PIR
- BEWI UniPIR

Mechanical Fastening
Mechanical fastening of Protan SE must be designed according to relevant Eurocodes and associated Danish annexes per BR2020 §344 for structural safety and load requirements. Design for wind load must include both the anchoring of the fastening element to the substrate and to the insulation or roofing membrane. Systems using Protan SE have been tested per EN 16002 and Eurocodes. Values depend on the specific fasteners used. Information on suitable fasteners and design can be obtained from the supplier.

ETA-Danmark A/S
Göteborg Plads 1
DK-2150 Nordhavn

Telefon: +45 72 24 59 00
E-mail: eta@etadanmark.dk
Internet: www.etadanmark.dk

CVR-nr.: 15 69 96 71
SWIFT address: NDEADKKK
IBAN no.: DK9420004371927021
Bank: Nordea Bank Danmark A/S

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Common steel washers in longitudinal overlaps can be used on solid substrates such as wood-based underlay and concrete.

On insulation substrates with good compressive strength like EPS ≥ 80 kPa (class CS(10)80 per EN 13162/13163), steel washers with ribs or plastic disks are used. For insulation with lower compressive strength, mechanical fasteners with a telescopic function should be used and verified specially.

Welding
Protan SE is installed with side and end overlaps. Information about overlap widths is available from the manufacturer. Welding is done by heating the membrane underside with hot air and pressing it down onto the substrate.

For work involving open flame, follow the fire technical guidelines 10 and 10A 'Hot Work – Roofing' issued by the Danish Institute of Fire and Security. Further details can be obtained from the supplier.

Maintenance
In case of damage, the membrane should be repaired by welding on a patch made from the same material type.

Service Life
Protan SE single-ply membrane has been used in Scandinavia since 1990 and has performed satisfactorily. Accelerated aging tests and field investigations confirm that the physical properties remain adequate. A field study covering 12 cases with a total of approx. 50,000 m² of roofing shows that original physical properties are largely retained after 25 years. Based on this, the Protan SE single-ply membrane, when properly applied, is expected to have a lifespan of at least 50 years. This expected service life is not a warranty from ETA-Danmark A/S.

CONTROL:
The system is not monitored by ETA-Danmark, but it is assumed the manufacturer maintains a valid:

1. Quality control system per EN 13956. SINTEF performs external audits of quality control, see certificate no. 1071-CPR-1142.

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Characteristic	Test method				
Type		**SE 1,2**	**SE 1,6**	**SE 1,8**	**SE 2,0**
Dimensional stability (%) (MLV)	EN 1107-2	± 0,5	± 0,5	± 0,5	± 0,5
Watertightness, 10 kPa/24 h	EN 1928 A	Watertight	Watertight	Watertight	Watertight
Tear resistance (N) (MDV) Longitudinal Transverse	EN 12310-2	≥ 210 ≥ 210	≥ 210 ≥ 210	≥ 210 ≥ 210	≥ 210 ≥ 210
Tensile strength (N pr. 50 mm) (MDV ± tol.) Longitudinal Transverse	EN 12311-2	≥ 1100 ≥ 1050	≥ 1100 ≥ 1100	≥ 1100 ≥ 1100	≥ 1100 ≥ 1100
Elongation at break (%) (MDV ± tol.) Longitudinal Transverse	EN 12311-2	≥ 15 ≥ 15	≥ 15 ≥ 15	≥ 15 ≥ 15	≥ 15 ≥ 15
Flexibility at low temperature (ºC) (MLV) Virgin material	EN 495-3	≤ -30	≤ -30	≤ -25	≤ -25
Static load resistance (kg) (MLV)	EN 12730	> 20	> 20	> 20	> 20
Impact resistance (MLV)	EN 12691	≥ 400	≥ 500	≥ 700	≥ 800
Peelstrength of overlap (MDV ± tol.) (N pr. 50 mm) Virgin material	EN 12316-2	> 200	> 200	> 200	> 200
Shear strength of overlap (MDV ± tol.) (N pr. 50 mm) Virgin material	EN 12317-2	≥ 1000	≥ 1000	≥ 1000	≥ 1000
UV Resistance > 5000 timer	EN 1297	Pass	Pass	Pass	Pass
Diffusion resistance Z-værdi, GPa×s×m^2/kg	EN 1931	90	125	-	-

Abbreviations per EN 13956:
- MLV: Manufacturer's Limiting Value – threshold to be met during testing
- MDV: Manufacturer's Declared Value – nominal value with tolerance provided by the manufacturer

Properties of Protan SE verified by testing | **ANNEX - 01**

ETA-Danmark A/S
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