Protan SE EX EXG

Protan SE is the principal material used on exposed roof applications, in vacuum or mechanically attached systems. These roofing systems are suitable for new build and refurbishment applications, flat and pitched roofs.
Protan EX is a Protan SE with a laminated polyester fleece on its reverse side and can be installed directly on old roofing underlay. Protan EXG is a Protan SE with a laminated glass fleece on its reverse side and can be installed directly on polystyrene thermal insulation. We recommend that all roofs have an inclination of minimum 1:40 to provide positive drainage.

Protan SE

Manufactured from pliable PVC with a reinforcement of woven polyester. The PVC contains stabilisers, which make the product resistant to high and low temperatures, UV-resistant and makes it flame retardant. Protan SE, EX and EXG are available in the thicknesses and specifications as shown below.

	Protan SE, EX, EXG		Protan EX	Protan EXG
Thickness	1,2 mm	1,6 mm	Weight of polyester fleece on side = 180 g/m²	Weight of glass fleece reverse side = 50 g/m²
Weight	≥1,4 kg/m²	≥1,75 kg/m²		

Low temperature flexibility – weather conditions

Protan SE is designed in Norway for the low temperature conditions in Scandinavia during winter months. The material remains flexible at low temperatures, during installation and use, without fracturing. The material can be installed in all kinds of weather conditions, even when it is raining.

	Protan SE, EX, EXG 1,2 mm - 1,6 mm
Flexibility at low temperatures EN 495-5	- 30 °C

Water vapour permeability

Protan SE, EX and EXG are vapour permeable materials. When used as a mechanically attached system, the membrane provides an ideal design solution for roof constructions with limited risks of interstitial condensation.

Solar reflection

A relative light coloured roofing material can reduce surface temperatures during warm weather and heat gain within the interior of the building. Where air conditioning is in use, cost savings may be significant.

Tensile strength and tear strength

Tensile strength is an important property in determining the material's ability to resist wind uplift forces, thermal movements and different movements of the building structure. High tear strength is essential for mechanically attached roofing membrane systems. Tensile and tear strength properties are shown in the table below.

	Protan SE and EXG		Protan EX	
	1,2 mm	1,6 mm	1,2 mm	1,6 mm
Tensile strength EN 12311-2	≥ 1050 N/50 mm	≥ 1050 N/50 mm	> 1200 N/50 mm	> 1200 N/50 mm
Elongation at break EN 12311-2	> 15 %	> 15 %	> 15 %	> 15 %
Tear resistance EN 13210-2	210N	210N	300N	300N

Puncture resistance

Protan SE, EX and EXG are resistant to normal foot traffic during roof maintenance and inspections. At areas where frequent foot traffic is expected, for example on walkways to roof-top plant, a Protan walkway membrane can be attached to the Protan SE material, normally in a contrasting colour. The different thickness and fleece lamination of respectively Protan SE, EX and EXG provide suitable resistance according to substrate. Details of puncture resistance are shown in the following table.

	Protan SE and EXG		Protan EX	
	1,2 mm	1,6 mm	1,2 mm	1,6 mm
Penetration by increasing force on EPS 20 kg/m³ EN 12730	< 350N	> 400 N	> 550 N	> 550 N
Resistance to puncture by impact + 23 °C EN 12691	8 mm	8 mm	6 mm	6 mm
Resistance to puncture by impact -20 °C EN 12691	10 mm	10 mm	8 mm	8 mm

Chemical resistance

The chemical resistance of Protan SE, EX and EXG
depends upon concentration, duration of contact and temperature. The table below indicates the resistance of Protan SE at normal temperature to various common substances. Please contact Protan TS-Department for particular concentrations and other materials.

Material	Resistance	Material	Resistance
Aluminium	*Well suited*	*Paraffin*	*Conditional*
Asphalt	*Not resistant*	*Petrol*	*Not resistant*
Bitumen	*Not resistant*	*Salt of Aluminium*	*Not resistant*
Caustic potash	*Well suited*	*Salt of Ammonium*	*Well suited*
Carbon Monoxide	*Well Suited*	*Salt of Calcium*	*Well suited*
Carbon tetrachloride	*Conditional*	*Salt of Magnesium*	*Well suited*
Common salt	*Well suited*	*Salt of Potassium*	*Well suited*
Copper & ferrous materials	*Well suited*	*Salt of sodium*	*Well suited*
Detergents	*Well suited*	*Sea water*	*Well suited*
Diesel oil & fuel oil	*Conditional*	*Soaps*	*Well suited*
Ethyl ether	*Not resistant*	*Softeners*	*Not resistant*
Fats (animal &vegetable)	*Not resistant*	*Solvent*	*Not resistant*
Formaldehyde	*Conditional*	*Steam*	*Well suited*
Iron residues	*Conditional*	*Tar*	*Not resistant*
Motor oils	*Conditional*	*Turpentine oil*	*Not resistant*
Nitric acid	*Conditional*	*Urea*	*Well suited*
Non-aromatic mineral oils	*Conditional*	*Weed killer (aqueous)*	*Well suited*
Oils (animal & vegetable)	*Not resistant*	*Wood preservatives*	*Conditional*

Ageing

Accelerated weathering tests have indicated that the minimum life expectancy of Protan SE 1,2mm thick membrane is 25 years. The effects of weathering commence at the external surface of the membrane and progress downwards through its thickness. Protan SE 1,6mm membrane thus has an even longer life expectancy. The use of lighter colours helps reduce surface temperature, and may thus improve the membrane's ageing performance.

Fire resistance

According to ENV 1187 part 2.

Colours

Protan SE, EX and EXG material are available in the following standard colours:
Dark grey, Light grey, Black, Blue, Red, and Copper green. Depending upon roof area, membrane material can also be produced in special customised colours.

Anti slip surface

Protan SE, EX and EXG have an unique slip resistance surface as standard. Compared with non-textured materials it provides a significant safety factor when walked on in wet weather.

PROTAN

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