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Geosynthetic Polymeric Barriers (GBR-P) – three-layer geomembrane GEOCHRON

Geosynthetic Polymeric Barriers – three-layer geomembrane **GEOCHRON*** smooth and textured made from high density polyethylene PE-HD:

- **smooth** geomembrane with thickness:

0,75mm; 1,0mm; 1,5mm; 2,0mm; 2,5mm and width **5 - 5,5m**

- textured geomembrane with thickness:

1,0mm; 1,5mm; 2,0mm; 2,5mm and width **5 - 5,5m**

* may exist under the trade name: IZOVIL GEO and GEOPLAN HDPE.

Application

Geosynthetic polymeric barriers geomembrane GEOCHRON are applied as insulation against moisture and vapour-tight for the building elements.

Geosynthetic polymeric barriers geomembrane GEOCHRON are applied for manufacturing:

- tunnels and underground structures,
- liquid waste disposal sites, transfer stations or secondary containment,
- solid waste storage and disposal sites,
- reservoirs and dams,
- canals,
- transportation infrastructure.

Characteristics of smooth geomembrane

Thickness, min. [mm]	PN-EN 1849-2	0,75 (±10%)	1,0 (±10%)	1,5 (±10%)	2,0 (±10%)	2,5 (±10%)
Width, [m]	PN-EN 1848-2	5,0 – 5,5 (± 0,2)				
Basis weight, min. [g/m^2]	PN-EN 1849-2	705 (±10%)	940 (±10%)	1410 (±10%)	1880 (±10%)	2350 (±10%)
Water permeability, [m^3 /m^2 /day]	PN-EN 14150	$<10^{-6}$				
Methane gas permeability , [cm^2 /sec*atm]	ASTM D 1434 (Procedure V)	$1,3\times10^{-7}$				
Tensile resistance (max tensile stress), min. [MPa] along and across	PN-EN ISO 527-1 PN-EN ISO 527-3	27				
Elongation at break, min. [%] along and across		750				
Static Puncture (method CBR) min. [kN]	PN-EN ISO 12236	2,0 (±10%)	3,0 (±10%)	4,5 (±10%)	5,5 (±10%)	6,5 (±10%)
Tear resistance, min. [kN/m] along and across	PN-ISO 34-1	120 (±10%)	130 (±10%)	132 (±10%)	135 (±10%)	140 (±10%)
Classification in range of the reaction to fire. Response to fire tests.	PN EN 13501-1 PN-EN ISO 11925-2	Class E				
Chemical durability and resistance to: - oxidation - climatic conditions - stress crack - leaching - chemicals -microbiological - foldability at low temperature (-40°C)	PN-EN 14575:2007 PN-EN 12224:2002 ASTM D 5397 PN-EN 14415:2006 PN-EN 14414:2006 (Met. C) PN-EN 12225:2002 PN-EN 495-5:2002	Fulfils the requirements				
Linear thermal extension rate, [1/K]	ASTM D 696	$1,56\times10^{-4}$				
Hygienic Attest	-	HK/W/1071/01/2009 valid to February 12, 2015 issued by Narodowy Instytut Zdrowia Publicznego - Państwowy Zakład Higieny w Warsaw				

Characteristics of smooth geomembrane-defined addition to the requirements of the harmonized standards

Density, [g/cm^3]	ASTM D 1505	≥ 0,94				
Carbon content, [%]	ASTM D 1603 (mod).	2-3				
Carbon dispersion	ASTM D 5596	9 in categories 1 or 2, and 1 in category 3				
Puncture resistance,[N]	ASTM D 4833	240	320	480	640	800
Tear resistance, [N]	ASTM D 1004	93	125	187	249	311
Stress crack resistance (NCTL), min. [h]	ASTM D 5397)	≥300				
Oxidative-Induction Time* , [min]	ASTM D 3895	≥100*				
UV Resistance High Pressure Oxidative-Induction Time (after 1600h)	GRI GM 11	≥50%				

* parameter applies only to product manufactured from raw materials Marlex K307 (Chevron)

Characteristics of textured geomembrane

Width, [m]	PN-EN 1848-2	5,0 – 5,5 (± 0,2)			
Basis weight, min. [g/m^2]	PN-EN 1849-2	940	1410	1880	2350
Water permeability, [m^3 /m^2 /day]	PN-EN 14150	$<10^{-6}$			
Methane gas permeability , [cm^2 /sek*atm]	ASTM D 1434 (Procedure V)	$1,3\times10^{-7}$			
Tensile resistance (max tensile stress), min. [MPa] along and across	PN-EN ISO 527-1 PN-EN ISO 527-3	17			
Elongation at break, min. [%] along and across	PN-EN ISO 527-1 PN-EN ISO 527-3	200			
Static Puncture (method CBR) min. [kN]	PN-EN ISO 12236	2,0 (±10%)	3,0 (±10%)	4,5 (±10%)	5,5 (±10%)
Tear resistance, min. [kN/m] along and across	PN-ISO 34-1	80 (±10%)	90 (±10%)	100 (±10%)	105 (±10%)
Classification in range of the reaction to fire. Response to fire tests.	PN EN 13501-1 PN-EN ISO 11925-2	Class E			
Chemical durability and resistance to: - oxidation - climatic conditions - stress crack - leaching - chemicals -microbiological - foldability at low temperature (-40°C)	PN-EN 14575:2007 PN-EN 12224:2002 ASTM D 5397 PN-EN 14415:2006 PN-EN 14414:2006 (Met. C) PN-EN 12225:2002 PN-EN 495-5:2002	Fulfils the requirements			
Linear thermal extension rate, [1/K]	ASTM D 696	$1,56\times10^{-4}$			
Hygienic Attest	-	HK/W/1071/01/2009 valid to February 12, 2015 issued by Narodowy Instytut Zdrowia Publicznego - Państwowy Zakład Higieny w Warsaw			

Characteristics of textured geomembrane-defined addition to the requirements of the harmonized standards

Density, [g/cm^3]	ASTM D 1505	≥ 0,94			
Carbon content, [%]	ASTM D 1603 (mod).	2-3			
Carbon dispersion	ASTM D 5596	9 in categories 1 or 2, and 1 in category 3			
Puncture resistance,[N]	ASTM D 4833	267	400	534	667
Tear resistance, [N]	ASTM D 1004	125	187	249	311
Stress crack resistance (NCTL), min. [h]	ASTM D 5397	≥300			
Oxidative-Induction Time* , [min]	ASTM D 3895	≥100*			
UV Resistance High Pressure Oxidative-Induction Time (after 1600h)	GRI GM 11	≥50%			

* parameter applies only to product manufactured from raw materials Marlex K307 (Chevron)

How to use

Geosynthetic Polymeric Barriers – three-layer geomembrane GEOCHRON smooth and textured should be applied according to compulsory legal regulations in scope of civil engineering, including compulsory standards and building design.

Reference standards and quality requirements

The product is manufactured according to standards:

- PN-EN 13491:2006 + PN-EN 13491:2006/A1:2007 Geosynthetic barriers - Characteristics required for use as a fluid barrier in the construction of tunnels and underground structures,
- PN-EN 13492:2006 + PN-EN 13492:2006/A1:2007 Geosynthetic barriers - Characteristics required for use in the construction of liquid waste disposal sites, transfer stations or secondary containment,
- PN-EN 13493:2007 Geosynthetic barriers - Characteristics required for use in the construction of solid waste storage and disposal sites
- PN-EN 13361:2006 + PN-EN 13361:2006/A1:2007 Geosynthetic barriers - Characteristics required for use in the construction of reservoirs and dams
- PN-EN 13362:2007 Geosynthetic Barriers - Characteristics required for use in the construction of canals
- PN-EN 15382:2010 Geosynthetic barriers - Characteristics required for use in transportation infrastructure

The product has Certificate of the Factory Production Control NR 1488-CPD-0139/Z issued by Instytut Techniki Budowlanej In Warsaw dated 30.05.2011r.

Storage and transport

Geosynthetic Polymeric Barriers – three-layer geomembrane GEOCHRON is in the form of rolls, and is protected from development and deformation, packed in polythene film.
Geomembrane IZOVIL GEO / GEOPLAN HDPE / GEOCHRON should be stored and transported in a manner that protects against mechanical damage or destruction. During transport and storage to protect against mechanical damage rolls (abrasion, perforation, cuts) caused by, among others damaged pallets or friction film during transportation.