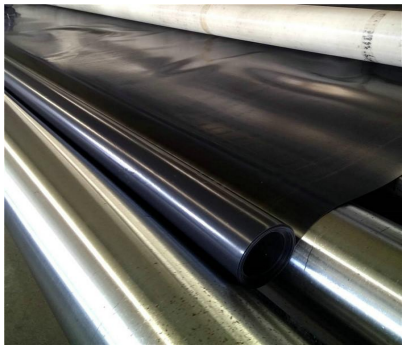
High Density Polyethylene Smooth Surface Geomembrane

HDPE geomembrane is "high density polyethylene geomembrane". It has excellent environmental stress cracking resistance, low temperature resistance, aging resistance, corrosion resistance, as well as a large operating temperature range (-60 to 60) and a long service life of 50 years, HDPE geomembrane are widely used in domestic waste landfill anti-seepage, solid waste landfill anti seepage, sewage treatment plant anti-seepage, artificial lake anti seepage, tailings treatment and other anti-seepage projects.The colors are white and black. Width: 1-8 meters. Film thickness: 0.30-2.00 millimeters. The manufacturing process is divided into blown film and rolled film.

HDPE composite membrane is also known as high-density polyethylene membrane, HDPE geomembrane, and HDPE anti-seepage membrane. HDPE membrane is a plastic roll made of HDPE material, which is a highly crystalline, non-polar thermoplastic resin.



[HDPE Smooth Surface Geomembranes]

HDPE geomembrane is used for polyethylene resin. The main components are high-density polyethylene, carbon black, antioxidants, antioxidants, ultraviolet absorbers, stabilizers and other auxiliary materials. Complete specifications, meet the requirements of water conservancy, construction, municipal engineering, garden, landscape, petrochemical, mining, salt, agriculture, and aquaculture.

[High Density Polyethylene Smooth Surface Geomembranes]

HDPE geomembrane has environmental stress-resistant cracking performance, anti-seepage performance, high resistance, high resistance puncture, extension rate, and abrasion resistance. Product stretching strength, low temperature resistance, high temperature resistance, anti-aging, high tearing strength, high adhesion performance.

HDPE Smooth Surface Geomembrane Features:

- HDPE geomembrane is a flexible waterproof material, which has a high anti-seepage coefficient;
- HDPE geomembrane has good heat resistance and cold resistance;
- HDPE geomembrane has good chemical stability performance, and can resist the corrosion of strong acid, alkali, and oil is a better anticorrosive material;
- HDPE geomembrane has high resistance to tension, so that it has a high tensile strength to meet the needs of high standard engineering projects;
- HDPE geomembrane has strong weather resistance, strong anti-aging performance, can be used for a long time and maintains its original performance;
- HDPE geomembrane has a strong tensile strength and the elongation of the break, so that the HDPE geomembrane can be used under different geological and climatic conditions to adapt to the strong stress of geological unevenness.

APPLICATION

HDPE geomembrane is mainly used in garbage landfills, sewage treatment plants, power plant tail residue treatment, chemical plants, fertilizer factories, sugar plant sewage residue treatment, non-ferrous metallurgy, sulfate pool, tailings treatment, subway, basement, tunnel, roof, roof, roof, roof special environmental anti-seepage (dedicated) such as lining; staplers, canals, and dams of the dams of the horizontal anti-seepage, vertical seepage anti seepage laying; seawater, freshwater, and farm prevention.

SPECIFICATIONS OF HDPE SMOOTH SURFACE GEOMEMBRANE

ORDINARY SMOOTH SURFACE GEOMEMBRANE GB T17643-2011 GH-1 TYPE

Item	Indicators								
Thickness(mm)	0.3	0.5	0.75	1	1.25	1.5	2	2.5	3
Density(g/m³)	≥0.940								
Longitudinal and transverse tensile yield strength(N/mm)	≥4	≥7	≥10	≥13	≥16	≥20	≥26	≥33	≥40
Longitudinal and transverse tensile fracture strength(N/mm)	≥6	≥10	≥15	≥20	≥25	≥30	≥40	≥50	≥60
Longitudinal and transverse yield elongation(%)	-		-	≥11					
Longitudinal and transverse elongation at break(%)	≥600								
Vertical and horizontal right angle tear load(N)	≥34	≥56	≥84	≥115	≥140	≥170	≥225	≥280	≥340
Puncture resistance strength(N)	≥72	≥120	≥180	≥240	≥300	≥360	≥480	≥600	≥720
Carbon black content(%)	2.0~3.0								
Carbon black dispersibility	Out of 10 data points, there should be no more than 1 level 3, and levels 4 and 5 are not allowed.								
Induction time of atmospheric pressure oxidation(OIT)(min)	≥60								
Low temperature impact embrittlement performance	Pass								
Water vapor permeability coefficient(g·cm/cm·s·Pa)	≤1.0×10^{-13}								
Dimensional stability(%)	±2.0								

ENVIRONMENTALLY FRIENDLY SMOOTH SURFACE GEOTEXTILE FILM-GB T17643-2011 GH-2S TYPE

Item	Indicators						
Thickness (mm)	0.75	1	1.25	1.5	2	2.5	3
Density (g/cm³)	≥0.940						
Tensile yield strength (woven, transverse)N /mm	≥11	≥15	≥18	≥22	≥29	≥37	≥44
Tensile fracture strength (woven, transverse) N/mm	≥20	≥27	≥33	≥40	≥53	≥67	≥80
Yield elongation (longitudinal and transverse) %	≥12						
Elongation at break (longitudinal and transverse) %	≥700						
Right angle tear load (longitudinal and transverse) N	≥93	≥125	≥160	≥190	≥250	≥315	≥375
Puncture resistance strength (N)	≥240	≥320	≥400	≥480	≥640	≥800	≥960
Tensile load stress cracking (notch constant load tensile method) h	≥300						
Carbon black content (%)	2.0～3.0						

SPECIFICATIONS OF HDPE SMOOTH SURFACE GEOMEMBRANE

SMOOTH SURFACE HDPE GEOMEMBRANE FOR LANDFILL SITES-TECHNICAL SPECIFICATIONS CJ/T 234-2006

Number	Item	Indicators						
1	Thickness (mm)	0.75	1	1.25	1.5	2	2.5	3
2	Density (g/cm³)	≥0.939						
3	Tensile yield strength (woven, transverse) N /mm	≥11	≥15	≥18	≥22	≥29	≥37	≥44
4	Tensile fracture strength (woven, transverse) N/mm	≥20	≥27	≥33	≥40	≥53	≥67	≥80
5	Yield elongation (longitudinal and transverse) %	≥12						
6	Elongation at break (longitudinal and transverse) %	≥700						
7	Right angle tear load (longitudinal and transverse) N	≥93	≥125	≥156	≥187	≥249	≥311	≥374
8	Puncture resistance strength (N)	≥240	≥320	≥400	≥480	≥640	≥800	≥960
9	Resistance to environmental stress cracking		≥300					
10	Carbon black content (%)	2.0～3.0						
11	Carbon black dispersibility	Out of 10 data points, there should be no more than 1 level 3, and levels 4 and 5 are not allowed.						
12	Atmospheric pressure oxidation induction time (OIT) (min)	Induction time of atmospheric pressure oxidation ≥100						
		Induction time of high-pressure oxidation ≥400						
13	85℃thermal aging (atmospheric pressure OIT retention rate after 90 days)	≥55						
14	UV resistance (OIT retention rate after 1600 hours of UV irradiation) %	≥50						

TECHNICAL STANDARD FOR ASTM GM13 HDPE GEOMEMBRANE-SMOOTH

Properties	Test Method (ASTM)	Test Value						
		0.75 mm	1.00 mm	1.25 mm	1.50 mm	2.00 mm	2.50mm	3.00mm
Density	D 792	0.940 g/cm³	0.940 g/cm³	0.940 g/cm³	0.940 g/cm³	0.940 g/cm³	0.940 g/cm³	0.940 g/cm³
Tensile properties Yield strength N/mm Break strength N/mm Yield elongation % Break elongation %	D6693 Type IV	11 20 12 700	15 27 12 700	18 33 12 700	22 40 12 700	29 53 12 700	37 67 12 700	44 80 12 700
Tear Resistance	D 1004	93 N	125 N	156 N	187 N	249 N	311N	374N
Puncture Resistance	D 4833	240 N	320 N	400 N	480 N	640 N	800N	960N
Stress Crack Resistance	D 5397	500 hr.	500 hr.	500hr.	500hr.	500 hr.	500 hr.	500 hr.
Carbon Black Content Carbon black content (range) Carbon black dispersion	D 1603 D 5596	2.0-3.0%	2.0-3.0%	2.0-3.0%	2.0-3.0%	2.0-3.0%	2.0-3.0%	2.0-3.0%
		Carbon black dispersion(only near spherical agglomerates) for 10 different views:9 in categories 1 or 2 and 1 in category 3.						
Oxidative Induction Time (OIT) Standard OIT	D 3895	100 min.	100 min.	100 min.	100 min.	100 min.	100 min.	100 min.
High Pressure OIT	D 5885	400 min.	400 min.	400 min.	400 min.	400 min.	400 min.	400 min.
Oven Aging at 85 ℃ Standard OIT retained after 90 days	D 5721 D 3895	55%	55%	55%	55%	55%	55%	55%
High Pressure OIT retained after 90 days		80%	80%	80%	80%	80%	80%	80%
UV Resistance Standard OIT	D 3895	50%	50%	50%	50%	50%	50%	50%
High Pressure OIT	D 5885	50%	50%	50%	50%	50%	50%	50%

SPECIFICATIONS OF HDPE SMOOTH SURFACE GEOMEMBRANE

TECHNICAL STANDARD FOR ANTI-SEEPAGE GEOMEMBRANE IN AQUACULTURE

Number	Item	Indicators								
1	Thickness (mm)	0.30	0.50	0.75	1.00	1.25	1.50	2.00	2.50	3.00
2	Density (g/cm³)	≥ 0.939								
3	Tensile yield strength (woven, transverse) N /mm	≥6	≥ 9	≥14	≥ 19	≥ 23	≥28	≥37	≥47	≥ 56
4	Tensile fracture strength (woven, transverse) N/mm	≥ 560								
5	Right angle tear load (longitudinal and transverse) N	≥ 27	≥45	≥ 63	≥ 90	≥108	≥135	≥180	≥ 225	≥ 270
6	Puncture resistance strength (N)	≥ 52	≥84	≥135	≥175	≥220	≥ 260	≥ 350	> 435	> 525
7	Carbon black content (%)	2.0-3.0								
8	Carbon black dispersibility	Out of 10 data points, there should be no more than 1 level 3, and levels 4 and 5 are not allowed								
9	Atmospheric pressure oxidation induction time (OIT) (min)	≥ 60								
10	Low temperature impact embrittlement performance	Pass								
11	Water vapor permeability coefficient g · cm/(cm · s · Pa)	1.0×10-13								
12	Dimensional stability %	±2.0								

The anti-seepage film for aquaculture has the characteristics of tensile resistance, impact resistance, tear resistance, strong strength, high static water pressure resistance, UV resistance, and good anti-seepage performance. It is particularly suitable for application in fish pond anti-seepage, shrimp pond anti-seepage, and loach pond anti-seepage engineering. Covering the entire fish and shrimp pond or bottom with aquaculture anti-seepage film can separate the pond bottom from the water, and has a significant effect on preventing leakage, virus pollution, and microbial erosion in high and low level shrimp ponds. Due to the smoothness of the aquaculture anti-seepage film, it is not only convenient for disinfection and dredging, but also helps to prevent the spread of pathogens at the bottom, shortening the time for cleaning the bottom of the shrimp pond and sun drying the pond.

AQUATIC BREEDING ANTI-SEEPAGE GEOMEMBRANE CONSTRUCTION PLAN

A. Personnel unrelated to laying are not allowed to enter the construction site.
B. The method and equipment used for laying must not damage the anti seepage membrane or the geotextile and substrate underneath.
C. Construction personnel must wear shoes that do not damage the anti seepage membrane during construction on the construction site,
D. There must be sufficient ballast or anchorage to prevent the anti-seepage membrane from being blown up by the wind.
E. The anti-seepage membrane should be laid smoothly, tightly, and minimize wrinkles as much as possible. After laying, it should be loaded or anchored in a timely manner.
F. Reasonably choose the laying direction and minimize the stress on the joints as much as possible.
G. Reasonably layout the position of each piece of material, striving for fewer seams.
H. During the laying process, prevent any factors from damaging the anti seepage membrane, and the laying tools must not cause damage to the soil anti-seepage membrane.
I. There shall be no transverse joints on slopes with a slope greater than 10% within a range of 1.5m from the foot of the slope.

SELECTION OF GEOMEMBRANE THICKNESS FOR DIFFERENT ENGINEERING PROJECTS

- Aquaculture waterproofing: Fish pond, shrimp pond, lotus root pond, water storage tank (0.3, 0.35, 0.4, 0.5 mm, commonly known as aquaculture membrane).
- Landscape waterproofing: Artificial lake landscape lake (0.5, 0.75, 1.0, 1.5mm), courtyard landscape (0.3-0.75mm).
- Building waterproofing: Roof waterproofing (0.3-1.0mm), garage roof and floor waterproofing (0.5-0.75mm), basement waterproofing (0.2-0.5mm), workshop floor waterproofing (1.5-2.0mm).
- Landfill waterproofing: Newly built landfill (1.5 and 2.0 mm) with garbage cover (0.5, 0.75, 1.0mm).

PROJECTS CASE OF THE HDPE SMOOTH SURFACE GEOMEMBRANE

[Fish in Kenya]

[Landfill in Australia]

GEOMEMBRANE CONSTRUCTION

Construction method of geomembrane:

• It should be extended from the bottom to the high level. Do not pull too tightly. There should be 1.50% of the remaining sinking stretch. Considering the actual situation of this project, the slope adopts the order of laying from top to bottom.

• The two adjacent vertical joints should not be on a horizontal line, and it should be staggered by more than 1m;

• The vertical connector should be from the dam of the dam. At the bending foot of 1.50m, it should be located on the plane;

• First slope and backcourt;

• When the slope is laid, the direction of the exhibition membrane should basically parallel on the maximum slope line.

Climate requirements for geomembrane construction:

• The temperature should geomembrane be above five degrees Celsius. At low temperature, the geomembrane should be tense, and the geomembrane should be relaxed at high temperature.

• The wind is below level four.

• When the temperature is too low, the wind and rainy weather above level 4 should not be constructed.

• David weather and wind force affect the construction of the geomembrane, the HDPE geomembrane to be welded and the sandbags are applied.

• HDPE geomembrane is suitable for environmental protection and sanitation: such as garbage landfills, sewage treatment plants, power plants regulating ponds, industrial, hospital solid waste, etc.
• HDPE geomembrane in municipal engineering: subway, building underground engineering, planting roof, roof garden, sewage pipe anti-seepage;
• HDPE geomembrane is suitable for gardens: artificial lakes, rivers, pools, pond bottoms of golf courses, slope protection, green lawn waterproof and moisture-proof, etc.
• HDPE geomembrane is suitable for mining: washing the selection pool, piles, ash fields, dissolved ponds, dissolved ponds, sedimentation tanks, stacked yards, tailings, etc.
• HDPE geomembrane is suitable for agriculture: reservoir, drinking pool, water storage pond, waste residue treatment field, anti-seepage of irrigation system;
• HDPE geomembrane is suitable for aquaculture industry: intensive, factory breeding ponds, fish ponds, lining of shrimp ponds, sea cucumber circle slope, etc.