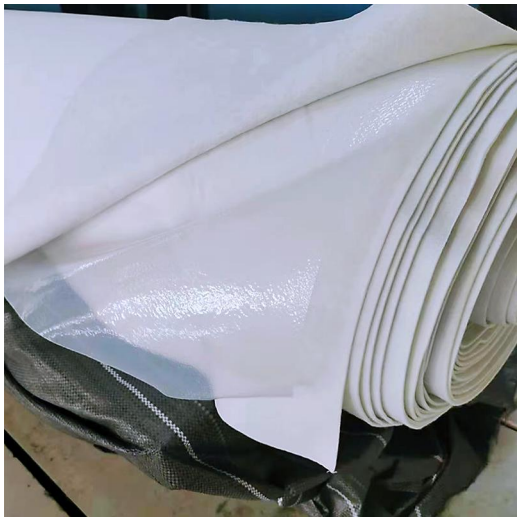

Staple Fiber Geotextile Composite Geomembrane

Staple fiber geotextile composite geomembrane is an impervious material composed of short fiber nonwoven geotextile and geomembrane composite, divided into a cloth a membrane and two cloth a membrane, a wide width commonly used 4-6 meters, weight of 200-1500 g/m^2. Staple fiber geotextile composite geomembrane is generally used in highway/railway projects, artificial lake landscape lake projects, engineering sewage ponds, lotus shrimp and fish breeding projects, reservoir water conservancy projects, etc.

Staple fiber geotextile composite geomembrane is composed of short fiber needled geotextile and impermeable geomembrane by thermal bonding together, widely used in water conservancy dam, road construction, airport, drainage, housing, environmental protection and many other fields, in the project mainly plays the role of seepage prevention, protection, reinforcement and so on. Due to the use of polymer materials and the addition of anti-aging agents in the production process, it can be used in unconventional temperature environments. It is a geosynthetic material composed of a layer of geotextile and a layer of polymer material (usually membrane material) through rolling or hot melt composite.

[Staple Fiber Geotextile Composite Geomembrane]

[Staple Fiber Geotextile Composite Geomembrane]

Composite geomembrane is a geosynthetic anti-seepage material composed of plastic film as the anti-seepage substrate and nonwoven fabric. Its anti-seepage performance mainly depends on the anti-seepage performance of the plastic film.The plastic films used for anti-seepage applications both domestically and internationally mainly include polyvinyl chloride (PVC), polyethylene (HDPE, LDPE, LLDPE), and ethylene/vinyl acetate copolymer (EVA). They are polymer chemical flexible materials with small specific gravity, strong extensibility, high adaptability to deformation, corrosion resistance, low temperature resistance, and good frost resistance.

Staple Fiber Geotextile Composite Geomembrane Features:

- High tensile strength and tearing str ength;
- Excellent seepage control, seepage prevention and moisture proof perfor mance;
- Excellent chemical resistance;
- High strength, anti puncture;
- High friction coefficient, excellent we ar resistance;
- Excellent UV resistance;
- Stable low temperature resistance to brittleness;
- Anti-aging and anticorrosion;
- Easy to deploy efficiently;
- Cost saving;
- Staple fiber nonwoven geotextile composite geomembrane not only has the functions of geotextile isolation, drainage, reinforcement protection, but also has the function of sealing (anti-seepage);
- Excellent drainage resistance, suitable for water conservancy, chemical industry, construction, transportation, subway, tunnel, garbage disposal and other projects.

Composite Products: STAPLE FIBER GEOTEXTILE COMPOSITE GEOMEMBRANE

APPLICATION

Staple fiber geotextile composite geomembrane can be used in water conservancy, municipal, construction, transportation, subway, tunnel, engineering construction in the seepage prevention, isolation, reinforcement, crack reinforcement and other civil engineering needs; It is often used for anti-seepage treatment of dams, drainage ditches, and anti-pollution treatment of waste yards. In the aquaculture industry, the use of composite geomembrane is also quite large, and many farms use composite geomembrane to do pond slope protection.

SPECIFICATIONS OF STAPLE FIBER GEOTEXTILE COMPOSITE GEOMEMBRANE

TECHNICAL STANDARD FOR STAPLE FIBER GEOTEXTILE COMPOSITE GEOMEMBRANE GB T 17642-2008

Number	Item	Indicators							
	Nominal fracture strength (kN/m)	5	7.5	10	12	14	16	18	20
1	Longitudinal and transverse fracture strength ≥(KN/m)	5	7.5	10	12	14	16	18	20
2	Longitudinal and transverse standard strength corresponds to elongation (%)	30~100							
3	CBR Bursting strength kN ≥	1.1	1.5	1.9	2.2	2.5	2.8	3	3.2
4	Longitudinal and transverse tear strength ≥(kN)	0.15	0.25	0.32	0.4	0.48	0.56	0.62	0.7
5	Resistant to hydrostatic pressure /(MPa)	Table 2							
6	Peel strength ≥(N/cm)	6							
7	Vertical permeability coefficient (cm/s)	As per design or contract requirements							
8	Width deviation (%)	-1							
Item		Membrane thickness/mm							
		0.2	0.3	0.4	0.5	0.6	0.7	0.8	1
Resistant to hydrostatic pressure /(Mpa)≥	A cloth and a membrane	0.4	0.5	0.6	0.8	1	1.2	1.4	1.6
	Two cloth one membrane	0.5	0.6	0.8	1	1.2	1.4	1.6	1.8

TECHNICAL STANDARD FOR STAPLE FIBER GEOTEXTILE COMPOSITE GEOMEMBRANE ASTM STANDARD

Properties	Test Method	GMSH050	GMSH075	GMSH100	GMSH150	GMSH200
Thickness	ASTM D5199	0.50 mm	0.75 mm	1.00 mm	1.50 mm	2.00 mm
Density	ASTM D1505	0.940 g/cc	0.940 g/cc	0.940 g/cc	0.940 g/cc	0.940 g/cc
Tensile Properties						
Yield strength	ASTM D6693	7 kN/m	11 kN/m	15 kN/m	22 kN/m	29 kN/m
Break strength	Type IV	13 kN/m	20 kN/m	27 kN/m	40 kN/m	53 kN/m
Yield elongation		12%	12%	12%	12%	12%
Break elongation		700%	700%	700%	700%	700%
Tear Resistance	ASTM D1004	62 N	93 N	125 N	187 N	249 N
Puncture Resistance	ASTM D4833	160 N	240 N	320 N	480 N	640 N
Stress Crack Resistance	ASTM D5397	500 hrs	500 hrs	500 hrs	500 hrs	500 hrs
Carbon Black Content	ASTM D1603	2.0%	2.0%	2.0%	2.0%	2.0%
Carbon Black Dispersion	ASTM D5596	For 10 different views:9 in Categories 1 or 2 and 1 in Category 3				
Oxidative Induction Time (OIT)	ASTM D3895	100 min.	100 min.	100 min.	100 min,	100 min,
UV Resistance High Pressure OIT retained after 1600hrs	ASTM D5885	50%	50%	50%	50%	50%
Dimensions						
Roll Width (m)	-	7	7	7	7	7
Roll Length (m)	-	420	280	210	140	105

PROJECTS CASE OF THE STAPLE FIBER GEOTEXTILE COMPOSITE GEOMEMBRANE

[Yard Pile in Philippines]

[River Bank Pin Turkey]

COMPOSITE GEOMEMBRANE CONSTRUCTION

The laying of composite geomembrane is divided into two parts: laying at the bottom of the channel and laying on the slope surface. Laying method: Horizontal rolling along the channel axis direction. After the acceptance of the slope surface, the slope surface is laid by rolling along the axis direction of the slope surface, and the composite geotextile membrane at the bottom of the channel is connected in a T-shape. The laying should be carried out in dry weather. In order to facilitate splicing and prevent stress concentration, a wavy relaxation method should be used for laying, with an excess of about 1.5%. After spreading, it should be leveled in a timely manner, and the membrane should match the slope surface smoothly without any protrusions or wrinkles. Construction personnel should wear flat bottomed cloth shoes or soft rubber shoes, and nail shoes are strictly prohibited to avoid stepping on them. If damage is found to the geotextile membrane during construction, it should be repaired in a timely manner.

COMPARISON BETWEEN ONE CLOTH AND MEMBRANE & TWO CLOTH AND MEMBRANE

- One cloth and one film is suitable for the environment with a little debris on the base surface, and the geotextile replaces the grain material as the geomembrane protective layer to protect the geomembrane impermeable layer from damage and can play the role of drainage.
- Compared to one cloth one film, two cloth one film can adapt to more complex environments and has higher tensile strength and elongation. The laying construction is simple, reduces transportation volume, lowers project cost, and shortens the construction period.

APPLICATION SCENARIOS

- Horizontal anti-seepage cover for embankments and dams, vertical anti-seepage layer for foundations, construction cofferdams, and waste disposal areas.
- Seawater and freshwater aquaculture farms.
- Landfill, sewage or waste residue treatment for anti-seepage.
- Subway, basement and tunnel anti-seepage lining.

The composite geomembrane liner combines the functions and benefits of geotextiles and geomembranes. The geotextile layer enhances the essential tensile strength, while the geomembrane layer provides exceptional impermeability, preventing leaks and moisture penetration. This versatile liner is extensively utilized in various applications such as landfills, wastewater treatment facilities, road construction, aquaculture, landscaping, and agriculture.

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