

PP (Polypropylene) Short Fiber Nonwoven Geotextile



Polypropylene short fiber nonwoven geotextile is a kind of solid and durable geotextile product with strong permeability and deformation resistance, which is used to increase ground support and soil stability. It has the characteristics of high tensile strength, high elongation, good UV stability, good filtration performance, good wear resistance, etc. It is mainly used in hydropower, roads, railways, ports, airports, sports venues, tunnels, coastal mudflat, reclamation, environmental protection and other fields, and plays the role of isolation, filtration, drainage, reinforcement, protection, sealing, etc.

Polypropylene short fiber nonwoven geotextile is made of polypropylene as raw materials and is processed by combing network paving equipment and acupuncture equipment.

Polypropylene short fiber nonwoven geotextile is also known as PP short fiber nonwoven geotextile. Polypropylene short fiber nonwoven geotextile has good breathability and water permeability, which can form drainage channels inside the soil, allowing water flow to pass through and effectively controlling the loss of sand and gravel. It is widely used in filtration, separation, protection, and drainage of civil environmental engineering and construction engineering.



[PP (Polypropylene) Short Fiber Nonwoven Geotextiles]



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High strength PP short fiber nonwoven geotextile is mainly used in water and electricity, roads, railways, ports, airports, sports venues, tunnels, coastal mudflat, reclamation, environmental protection and other fields, playing the role of isolation, filtration, drainage, reinforcement, protection, sealing, etc.

PP Short Fiber Nonwoven Geotextile Features:

- High intensity and high breaks and elongation rates to ensure that they have excellent damage in the construction process;
- Made of high intensity UV stable primitive polypropylene, these fibers have been extracted in large quantities to ensure that they have excellent long-term durability in all soil types;
- Made using a randomly oriented mesh, providing completely isotropic performance, ensuring high strength is not limited to a single direction;
- Good uniformity, good permeability, small pore diameter, suitable for soil filtration;
- Anti-ultraviolet rays, corrosion resistance, wear resistance, and biological degradation;
- High temperatures to 230°C, maintain structural stability and original physical properties;
- High resistance to creep and degeneration.

Geotextile Products: POLYPROPYLENE SHORT FIBER NONWOVEN GEOTEXTILES

APPLICATION

- Reinforcement effect: It is used for rock engineering such as highways, railways, airports, stone dams, slope embankments, retaining walls, dikes, etc., decentralized soil stress, increasing soil models, limiting soil slippery, and improving stability.
- Protection function: Prevent the embankment from wind, waves, tide, and rain punching brush for shore protection, slope protection, bottom protection, and waterproof soil loss.
- Anti-filtering: Filter layers used as dikes, dams, rivers, coast rocks, soil slopes, and retaining walls to prevent sand grains from passing, so that water or air freely pass.

SPECIFICATIONS OF POLYPROPYLENE SHORT FIBER NONWOVEN GEOTEXTILE

TECHNICAL STANDARD FOR POLYPROPYLENE SHORT FIBER NONWOVEN GEOTEXTILE GB T 17638-2017

Project		Nominal fracture strength/(kN/m)								
		3	5	8	10	15	20	25	30	40
1	Longitudinal and transverse fracture strength /(kN/m) ≥	3.0	5.0	8.0	10.0	15.0	20.0	25.0	30.0	40.0
2	Elongation corresponding to nominal fracture strength /%	20-100								
3	Bursting Strength/kN ≥	0.6	1	1.4	1.8	2.5	3.2	4	5.5	7
4	Deviation rate of mass per unit area /%	±5								
5	Width deviation rate %	-0.5								
6	Thickness deviation rate %	±10								
7	equivalent aperture $O_{30}(O_{35})$ /mm	0.07-0.20								
8	Vertical permeability coefficient cm/s	$K \times (10^{-1}-10^{-3})$ among $K=1.0-9.9$								
9	Vertical and horizontal tearing strength /kN ≥	0.1	0.15	0.2	0.25	0.4	0.5	0.65	0.8	1
10	Acid and alkali resistance (strong retention rate) % ≥	80								
11	Antioxidant performance (strong retention rate) % ≥	80								
12	UV resistance performance (strong retention rate) % ≥	80								

TECHNICAL STANDARD FOR POLYPROPYLENE SHORT FIBER NONWOVEN GEOTEXTILE ASTM STANDARD

Properties	TestMethod	Unit	GXS F150	GXS F200	GXS F300	GXS F400	GXS F500	GXS F600	GXS F800	GXS F1000
Tensile Strength (MD/TD)	ASTM D4595	kN/m	8	11	20	24	28	34	48	50
Tensile Elongation (MD/TD)	ASTM D4595	%	50	60	60	60	60	60	60	60
Grab Tensile Strength (MD/TD)	ASTM D4632	N	520	700	1100	1500	1800	2200	2800	3000
Grab Elongation (MD/TD)	ASTM D4632	%	50	50	60	60	60	60	60	60
Trapezoidal Tear Strenath (MD/TD)	ASTM D4533	N	220	330	400	480	560	620	860	880
CBR Burst Strength	ASTM D6241	N	1700	2400	3200	4300	5300	6000	6800	7000
Pore Size O90	ASTM D4751	μm	90	85	80	75	70	60	55	50
Water Flow Q100	ASTM D4491	L/m ² /s	160	145	140	120	105	95	90	80
Weight	ASTM D5261	g/m ²	150	200	300	400	500	600	800	1000
Roll Width	-	m	5.95	5.95	5.95	5.95	5.95	3.95	3.95	3.95
Roll Length	-	m	250	150	100	100	75	50	50	50

PROJECTS CASE OF THE PP (POLYPROPYLENE) SHORT FIBER NONWOVEN GEOTEXTILE



[Civil Engineering in Canada]



[Pavement Stabilisation in Japan]

GEOTEXTILE CONSTRUCTION

Construction method of geotextile:

- Clean up and level the construction site;
- Spread the geotextile evenly on the construction site;
- Connect the geotextile, and when overlapping, the overlapping width of the flat ground construction should be greater than 30cm, and the overlapping width of the uneven ground or extremely bad foundation soil should be greater than 50cm;
- Spread and level the filling material;
- Compact the fill soil and ensure that vehicles do not directly roll over the geotextile during construction.

COMPARISON BETWEEN PP GEOTEXTILE AND PET GEOTEXTILE

- The special structure of polypropylene gives it excellent acid and alkali resistance, especially its alkali resistance is superior to polyester. When used in underground engineering with strong soil acidity and alkalinity for protection, reinforcement, waterproofing, and seepage prevention, its effect is better than polyester.
- The surface friction coefficient of polypropylene fibers is small, the friction between fibers is small, and the wear resistance is good. The anti vibration friction performance is much better than that of polyester.
- Polypropylene has good hydrophobicity and does not absorb water, making it superior to polyester in water supply and drainage engineering applications.
- Polypropylene fiber needle punched geotextile has higher strength than polyester needle punched geotextile with the same weight, and the longitudinal and transverse strengths are equal

APPLICATION SCENARIOS

- PP Short fiber geotextile can be used as dam protection.
- PP Short fiber geotextile can be used for road bed reinforcement.
- PP Short fiber geotextile is applicable for highway pavement maintenance.
- PP Short fiber geotextile can be used for railway bed reinforcement.



Polypropylene short fiber nonwoven geotextile has superior physical properties and good chemical stability, therefore, it is suitable for most rock processes, especially in acidic and alkaline environments.