

PET (Polyester) Short Fiber Nonwoven Geotextile



Polyester short fiber nonwoven geotextile generally has a width of 4-6 meters and a length of 50-100 meters. Polyester short fiber nonwoven geotextile has a certain degree of tear resistance and deformation adaptability due to its soft fibers, as well as good flat drainage ability, which can play a good role in filtering, isolation, reinforcement, protection, and other functions. Polyester short fiber non-woven geotextile is suitable for soil filtration, soil separation, soil reinforcement and other engineering projects.

PET short fiber nonwoven geotextile is a geosynthetic material made from polyester fibers through thermal bonding or needle punching processes. Polyester short fiber nonwoven geotextile has high flexibility and impermeability, and can adapt to different shapes and curves of geotextiles, with good adaptability. Polyester staple nonwoven geotextile can effectively prevent the loss of soil particles, block the penetration of fluid, and improve the anti scouring ability of soil. It is widely used in railway lines, roads, sports venues, river embankments, soil and water engineering construction, tunnels, mudflat in coastal areas, reclamation, environmental protection and other engineering projects.



[PET (Polyester) Short Fiber Nonwoven Geotextiles]



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PET Short Fiber Nonwoven Geotextile Features:

- Isolate building materials with different physical properties to prevent loss or mixing between two or more materials, maintain the overall structure and function of the materials, and enhance the load-bearing capacity of the structure;
- When water flows from the fine soil layer to the coarse soil layer, the good breathability and permeability of the needle punched geotextile are utilized to allow water flow through and effectively intercept soil particles, fine sand, small stones, etc., in order to maintain the stability of soil and water engineering;
- Effectively diffusing, transmitting, or decomposing concentrated stress to prevent soil from being damaged by external forces.
- By utilizing the good breathability and water permeability of geotextiles, water can flow through and effectively retain sand and soil loss;
- Geotextiles have good water conductivity and can form drainage channels inside the soil to discharge excess liquids and gases from the soil structure;
- Utilizing geotextiles to enhance the tensile strength and deformation resistance of soil, enhance the stability of building structures, and improve soil quality;
- Effectively diffusing, transmitting, or decomposing concentrated stress to prevent soil from being damaged by external forces;
- Prevent mixing between upper and lower layers of sand, soil, and concrete;
- Due to the variability and mobility of the network structure formed by amorphous fibrous tissue, the mesh is not easily blocked;
- Under the pressure of soil and water, it can still maintain good permeability.

Geomembrane Products: POLYESTER SHORT FIBER NONWOVEN GEOTEXTILES

APPLICATION

- Thermal insulation and moisture protection of basic pavement;
- Isolation filtration and seepage materials for soil layer separation in drainage work;
- Anti erosion materials for embankments, river channels, and slope protection buildings, as well as reinforcement materials for railway, highway, and airport roadbeds;
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SPECIFICATIONS OF PET SHORT FIBER NONWOVEN GEOTEXTILE

TECHNICAL STANDARD FOR POLYESTER SHORT FIBER NONWOVEN GEOTEXTILE GB T 17638-1998

Mass per unit area (g/m ²)	100	150	200	250	300	350	400	450	500	600	800
Deviation of mass per unit area, %	-8	-8	-8	-8	-7	-7	-7	-7	-6	-6	-6
Thickness, mm ≥	0.9	1.3	1.7	2.1	2.4	2.7	3	3.3	3.6	4.1	5
Width deviation, %	-0.5										
Breaking strength, kN/m ≥	2.5	4.5	6.5	8	9.5	11	12.5	14	16	19	25
Elongation at break, %	25~100										
CBR breaking force, kN ≥	0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7	3.2	4
Equivalent aperture O ₉₀ , mm	0.07~0.2										
Vertical permeability coefficient, cm/s	K × (10 ⁻¹ ~10 ⁻³)										
Tearing strength, kN	0.08	0.12	0.16	0.2	0.24	0.28	0.33	0.38	0.42	0.46	0.6

TECHNICAL STANDARD FOR POLYESTER SHORT FIBER NONWOVEN GEOTEXTILE ASTM STANDARD

Index Properties	Test Method	Unit	Values											
Weight	ASTM D5261	g/m ²	100	125	150	200	250	300	350	400	450	500	550	600
Ultimate Tensile Strength	ASTM D4595	≥kN/m	2.5	3.5	4.5	6.5	8.0	9.5	11.0	12.5	14.0	16.0	17.5	19.0
Tensile Elongation	ASTM D4595	%	50											
Grab Tensile Strength	ASTM D4632	≥N	225	280	361	641	720	792	911	1036	1182	1346	1480	1584
Grab Elongation	ASTM D4632	%	50											
Trapezoid Tear Strength	ASTM D4533	≥N	80	100	120	160	200	240	280	330	380	420	440	460
CBR Puncture Strength	ASTM D6241	≥N	0.3	0.4	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7	2.9	3.2
Puncture Resistance	ASTM D4833	≥N	82	99	133	225	284	346	440	530	596	603	663	760
Drop Cone Resistance(hole-φ)	BS EN 918	mm	45	40	37	34	31	26	23	19	18	16	15	15
Hydraulic Properties														
Apparent Opening Size O ₉₀	ASTM D4751	≤mm	0.13	0.12	0.12	0.12	0.12	0.11	0.10	0.09	0.08	0.08	0.08	0.08
Permeability	ASTM D4491	cm/s	0.41	0.41	0.41	0.41	0.40	0.40	0.39	0.39	0.39	0.39	0.39	0.39
Physical Identification Properties														
Thickness	ASTM D5199	mm	1.0	1.3	1.7	2.1	2.4	2.5	2.8	3.0	3.2	3.5	3.6	3.8
Roll Width	-	m	4-6											

PROJECTS CASE OF THE PET (POLYESTER) SHORT FIBER NONWOVEN GEOTEXTILE



[Highway Pavement Maintenance in India]



[Dam Protection in Spain]

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

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



Short fiber nonwoven geotextile is a fabric made by carding synthetic fibers into a net after being loosened, and repeatedly piercing the fibers under the net with a needle to entangle and fix them together. The product thickness is generally above 1mm, with high porosity, high permeability, and excellent filtration and drainage performance. It can also be combined with geotextile membranes to form composite materials, providing reinforcement and protection for the membrane.