

PET Filament Geotextile

Product Introduction

How PET Filament Geotextile Works

PET filament geotextile functions primarily by performing one or more of the following roles: separation, filtration, reinforcement, protection, and drainage. Its effectiveness stems from the unique properties of polyester and its manufactured structure.



Separation:

- When placed between two layers of different materials (e.g., aggregate and subgrade soil), the geotextile prevents them from intermixing. This maintains the integrity and function of each layer, preventing the contamination of granular base materials by fine-grained soils, which can lead to structural failure.

Filtration:

- The fabric's controlled pore size allows water to pass through while retaining soil particles. In drainage systems, for example, it acts as a filter around perforated pipes or in trenches, preventing the migration of fine soils into the drainage medium, which would otherwise clog the system over time.

Reinforcement:

- Polyester has high tensile strength and a high modulus of elasticity, meaning it can withstand significant pulling forces without deforming excessively. When incorporated into soil structures (like embankments or retaining walls), it effectively distributes loads over a wider area and increases the overall shear strength of the soil mass, preventing localized failures and improving stability. It essentially acts like rebar in concrete, but for soil.

Protection:

- The geotextile can absorb and distribute localized stresses, protecting geomembranes (impermeable liners) from punctures or damage by sharp aggregate or irregularities in the subgrade. This is crucial in landfill liners or pond linings where the integrity of the geomembrane is paramount to prevent leakage.

Drainage:

- While primarily a filter, the planar structure of the geotextile can also facilitate the in-plane flow of water. When used in conjunction with other drainage components, it can help dissipate pore water pressure within saturated soils, improving stability and reducing consolidation time.



Key Properties of Polyester that Contribute to its Function:

- **High Tensile Strength:** Allows it to withstand significant loads and act as effective reinforcement.
- **Creep Resistance:** Polyester retains its strength over long periods under sustained load, crucial for long-term civil engineering applications.
- **Good Modulus of Elasticity:** Provides stiffness and resistance to deformation.
- **Chemical Resistance:** Resists degradation from common chemicals found in soils.
- **UV Resistance (when treated):** Important for applications where it might be exposed to sunlight during construction.
- **Biological Resistance:** Not susceptible to rot or attack by microorganisms.

In summary, PET filament geotextiles work by leveraging their robust physical and chemical properties to perform critical functions within civil engineering projects, ultimately leading to more stable, durable, and efficient infrastructure.

Product Specifications

Index Properties	Unit	6	9	12	18	24	30	36	48	54
Longitudinal And Transverse Tensile Strength	KN/m	6.0	9.0	12.0	18.0	24.0	30.0	36.0	48.0	54.0
Tensile Elongation	%	30~80								
CBR Puncture Strength	KN	0.9	1.6	1.9	2.9	3.9	5.3	6.4	7.9	8.5
Longitudinal And Transverse Tear Strength	KN	0.15	0.22	0.29	0.43	0.57	0.71	0.83	1.10	1.25
Apparent Opening Size $O_{90}(O_{95})$	mm	0.05~0.30								
Vertical Permeability Coefficient	cm/s	$K \times (10^{-1} \sim 10^{-3})$ inside: $K=1.0 \sim 9.9$								
Dynamic Perforation, Hole Diameter	mm	37.0	33.0	27.0	20.0	17.0	14.0	11.0	9.0	7.0
Longitudinal And Transverse Breaking Strength	KN	0.3	0.5	0.7	1.1	1.4	1.9	2.4	3.0	3.5
UV Resistance(Xenon Arc Lamp Method)	%	70								
Uv resistance (Fluorescent UV Lamp Method)	%	80								

