

# Geosynthetics – Polymeric strip/geostrip used as soil reinforcement in retaining structures – Specification

## IS 17372:2020

Polymeric strips or geostrips are used as soil reinforcement in retaining structures like reinforced soil walls and slopes. They are high-strength, durable materials that enhance the stability and load-bearing capacity of soil.

### Consumer expectations for geostrips:

Consumers, primarily civil engineers and construction companies, expect geostrips to possess the mentioned qualities like **high tensile strength** ability to withstand significant tensile forces to reinforce soil. **Resistance to environmental factors like UV radiation, moisture, and chemicals.** There should be **ease of installation and adaptability** to various soil conditions. Inertness to soil chemicals to prevent degradation.

**Material Properties:** The standard specifies requirements for the tensile strength, elongation, and modulus of elasticity of the geostrip material.

**Physical Properties:** It outlines requirements for properties like thickness, width, and mass per unit area.

**Chemical Resistance:** The standard mandates that geostrips must be resistant to various chemicals present in soil, such as acids, alkalis, and salts.

**Long-Term Performance:** The standard includes provisions for assessing the long-term performance of geostrips, including accelerated aging tests.

IS 17372:2020 is an important standard for geostrips in India, ensuring that these materials meet the necessary technical and environmental requirements for use in geotechnical applications. The standard's requirements are to address various aspects of geostrip performance, ensuring that they are durable, reliable, and suitable for diverse soil and environmental conditions. By implementing the standard, the above-mentioned requirements can be addressed.

### 1. Material Properties:

- **Tensile Strength:** Geostrips must have sufficient tensile strength to withstand the loads they are subjected to in geotechnical applications (e.g., reinforcement in soil structures).
- **Elongation:** The standard specifies an allowable range for elongation, which is critical for understanding how much the material can stretch under load without failing.
- **Modulus of Elasticity:** This property helps in assessing the material's ability to resist deformation under stress, which is important for its performance in load-bearing applications.

### 2. Physical Properties:

- **Thickness:** A uniform thickness is required to ensure that the geostrip performs consistently across its length and provides adequate reinforcement.

- **Width:** The width of the geostrip is crucial for ensuring that it covers the required area in applications like soil reinforcement and slope stabilization.
- **Mass per Unit Area:** This is important for determining the overall weight of the material, which impacts its installation and load-bearing capacity.

### 3. Chemical Resistance:

- Geostrips must be resistant to common chemicals found in soil, such as **acids, alkalis, and salts**. This is essential because the material will often be exposed to the harsh chemical environment in soils, and degradation could affect its performance over time.

### 4. Long-Term Performance:

- **Accelerated Aging Tests:** These tests simulate the long-term exposure of geostrips to environmental conditions, such as UV light, heat, and moisture, to assess their durability and performance over time. The standard ensures that geostrips will retain their strength and functionality over their intended lifespan, even under harsh conditions.

### 5. Testing:

- The standard specifies a series of **testing procedures** to verify that geostrips meet the required material and physical properties. These may include tests for tensile strength, elongation, thickness, and chemical resistance. By following the specifications in IS 17372:2020, manufacturers can produce geostrips that meet rigorous quality and performance criteria, while end-users can be assured of their durability and effectiveness in reinforcing soil structures and manufacturers can produce geostrips that meet the stringent requirements of civil engineering projects, ensuring the safety and durability of reinforced soil structures.