SYLVAGEO

Geocell System

Technical FAQ

Frequently Asked Questions for the Polymeric Nano Composite Alloy (PCA) Geocell System

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Document: Technical Reference

Product Line: Geocell System Series (Type A / B / C / D)

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1. General System Information

Q: What is a Geocell System?

A: It is an advanced, three-dimensional cellular confinement technology manufactured from a proprietary blend of polyethylene and high-performance nanofibers. It is designed for robust soil stabilization and severe erosion control.

Q: What is the design life of the system?

A: The Geocell System is engineered to achieve a design life of up to 50 years.

Q: What are its primary applications?

A: The system is primarily used for heavy-duty pavement (load support), soft soil stabilization (confinement of loose ground), slope and erosion control (resisting hydraulic shear), and earth retention (ecological retaining walls).

2. Installation and Construction

Q: How should infill material be placed?

A: Filling operations should begin from the top of the slope and proceed to the bottom. The drop height of the infill material must be less than 0.5 meters, and the cells should be overfilled by at least 50 mm.

Q: What are the requirements for compaction?

A: The number of compaction passes should be determined by on-site testing. For coarse-grained soil infill, the compaction degree should reach 93% or above; for fine-grained soil, 95% or above. The distance between the compaction equipment and the geocell surface must be maintained at least 50 mm.

Q: What is the correct anchoring pattern?

A: Anchoring pins must be installed at all panel intersections and along the perimeter. On slopes, additional anchors should be placed at intervals of 1 to 2 meters depending on the slope angle and soil conditions. The pins should penetrate the subgrade by a minimum of 300 mm.

Q: What environmental conditions are required for installation?

A: Installation should be performed when the ambient temperature is between -5C and +50C. The subgrade must be properly prepared, compacted, and free of standing water before geocell placement. Installation during heavy rain or on frozen ground is not recommended.

3. Material and Performance

Q: What is the tensile strength of the Geocell System?

A: The tensile strength varies by model: Type A at 20 MPa minimum, Types B and C at 23 MPa minimum, and Type D at 23 MPa minimum. The weld strength ranges from 100 N/cm (Type A) to 150 N/cm (Type D).

Q: What is the elongation at break?

A: The elongation at break is 10% or greater for all Geocell System types. This controlled elongation ensures the material maintains structural integrity under load while allowing necessary flexibility for ground movement adaptation.

Q: What temperatures can it withstand?

A: The Geocell System can be installed in temperatures from -20C to +60C. The polymer material maintains structural integrity across this range without degradation. UV stabilizers are included to resist environmental aging.

4. Product Selection

Q: How do I choose the right geocell type?

A: Selection depends on three factors: application type (slope, road, channel, or mining), load requirement (light, medium, or heavy), and soil condition (firm, medium, or soft CBR value). Type A is for light-duty slope protection; Type B for road subgrade; Type C for heavy-duty pavement; Type D for mining and extreme loads.

Q: What cell heights are available?

A: Cell heights range from 50 mm to 200 mm: Type A offers 50 mm and 75 mm; Type B offers 100 mm; Type C offers 150 mm; Type D offers 200 mm. Greater cell height provides higher load-bearing capacity and deeper soil confinement.

5. Accessories and Components

Q: What accessories are required for installation?

A: The primary accessories include: Anchoring Pins to secure the geocell to the surface; Tendons/Reinforcement Straps to increase tensile strength and assist in fixing positions; Limit Caps that act as load-transfer nodes in the tendon anchoring system; and Connectors that facilitate rapid connection of panels.

6. Storage and Transportation

Q: How should geocells be stored?

A: They must be stored in a dedicated warehouse away from high-heat sources and protected from direct sunlight. If stored outdoors temporarily, they must be covered with tarpaulins.

Q: What is the maximum shelf life?

A: The maximum storage shelf life is 12 months from the date of production.

Q: What are the transport prohibitions?

A: During loading and transport, heavy pressing is strictly prohibited. The use of sharp tools like iron hooks is forbidden to avoid scratching or damaging the material.

7. Technical Principles

Q: How does the geocell improve load-bearing?

A: It creates a semi-rigid composite mattress that dissipates localized vertical surface loads over a vastly expanded foundation footprint, substantially reducing subgrade stress.

Q: How does it prevent erosion?

A: The cellular walls create localized environments that reduce the hydraulic energy of surface water. By physically locking the soil in place, it prevents rill and gully formation.

Contact Us

For any further questions, please contact our technical support team.

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