

Geocell

(1) Product Definition



Advanced Polymer Structure

A three-dimensional honeycomb cellular confinement system manufactured from high-density polyethylene (HDPE), polypropylene (PP), or other high-performance engineering polymers, ensuring flexibility and robust durability.



Stabilizing Composite Mechanism

When expanded and filled with soil, gravel, or concrete, it forms a rigid composite structure. This enhances load distribution, restricts lateral soil movement, improves erosion resistance, and reinforces weak subgrades.



Infrastructure & Cost Efficiency

Ideal for transportation infrastructure, slope protection, retaining walls, and erosion control. It offers a cost-effective method to improve weak soils, extend pavement service life, and reduce long-term maintenance expenses.

(2) How It Works

1 Cell Expansion & Installation

Expands on hydration to form a rigid, interconnected honeycomb network. Installed by pouring or pumping, it seamlessly conforms to terrain irregularities with minimal labor.

2 Infill Confinement

Traps soil, aggregate, or concrete within cells, eliminating lateral movement under load. This prevents differential settlement and maintains structural integrity.

3 Load Distribution

Acts as a stiffened mattress to spread concentrated loads over a wider area, significantly reducing bearing pressures on weak subgrades and preventing punch-through.

4 Long-Term Stabilization

Creates a 3D mechanically stabilized layer that resists erosion, creep, and washout, providing permanent reinforcement for roads, railways, and slopes.

(3) Key Benefits

01. Superior Load Spread

Evenly distributes heavy traffic or structural loads, minimizing stress on soft ground and preventing costly infrastructure deformation.

02. Strong Soil Confinement

Locks loose or unstable soils in place, creating a solid, homogeneous base that resists lateral spreading under dynamic conditions.

03. Proven Erosion Control

Secures embankments and slopes against water runoff and wind, preserving soil structure and preventing environmental degradation.

04. Cost & Material Savings

Reduces reliance on expensive imported fill by utilizing local soils, cutting transportation costs and lowering the project's environmental footprint.

05. Rapid Installation

Lightweight and easy to deploy, it minimizes labor time and heavy machinery needs, accelerating project completion and reducing disruption.

06. Extreme Durability

Resistant to UV rays, chemicals, and biological degradation, ensuring a long service life with minimal maintenance requirements.

(4) Applications



Roads and Pavements

Boosts load-bearing capacity and fatigue resistance of asphalt/concrete surfaces. Reduces rutting and cracking in high-traffic zones, extending pavement lifespan by up to 30% and cutting long-term maintenance expenses.



Slope Protection & Stabilization

Reinforces embankments and cut slopes to prevent erosion and shallow landslides. Creates a mechanically stable soil matrix ideal for highways, residential developments, and critical infrastructure in hilly terrain.



Channel & Riverbank Protection

Shields waterways from scouring and hydraulic erosion. Constructs flexible, permeable barriers that withstand high flow velocities while preserving the natural habitat and ecological balance of rivers and canals.



Retaining Walls & Foundations

Enhances soil bearing capacity for gravity walls, MSE structures, and shallow foundations. Mitigates lateral earth pressure and differential settlement, ensuring structural integrity in dense urban environments.



Railway Trackbeds & Subgrades

Optimizes stability for high-speed and heavy-haul rail networks. Reduces track settlement and dynamic loading effects, minimizing maintenance disruptions and ensuring a smooth, safe ride. Ideal for stabilizing soft subgrades and improving ballast performance.



Mining & Heavy Industrial Sites

Stabilizes haul roads, tailings dams, and stockpiles in mining operations. Provides a solid foundation for heavy machinery pads, processing plants, and storage facilities, reducing the risk of ground failure and ensuring uninterrupted industrial productivity.



Landscaping & Green Infrastructure

Integrates structural stability with ecological design for green roofs, bio-swales, and permeable pavements. Supports sustainable stormwater management and urban biodiversity while providing erosion control in parks, campuses, and eco-friendly developments.