

Comprehensive Introduction to Geocell

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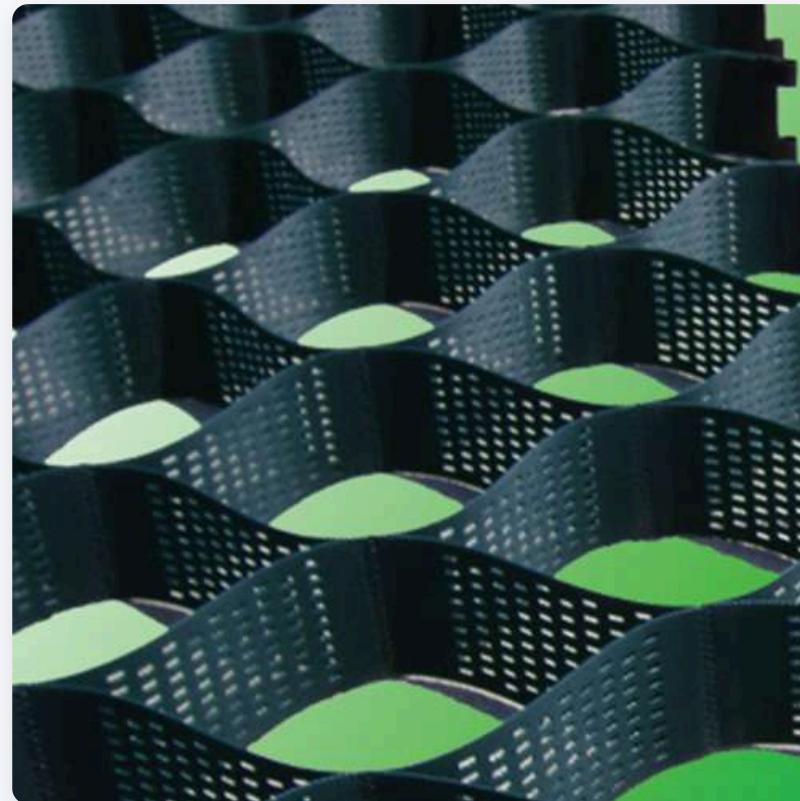
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Shahriyar Baspar Arian

Introduction and Definition of Geocell

Geocell is a **three-dimensional polymeric material** from the geosynthetic product family with a **honeycomb structure** that increases shear strength and prevents soil landslides.

- ⌚ History: Developed in the 1970s for military applications
- ▲ Position: One of the key products in the geosynthetic family
- ^K Structure: Expandable three-dimensional panels made of polyethylene
- ⌚ Global use: In over 50 countries for engineering projects

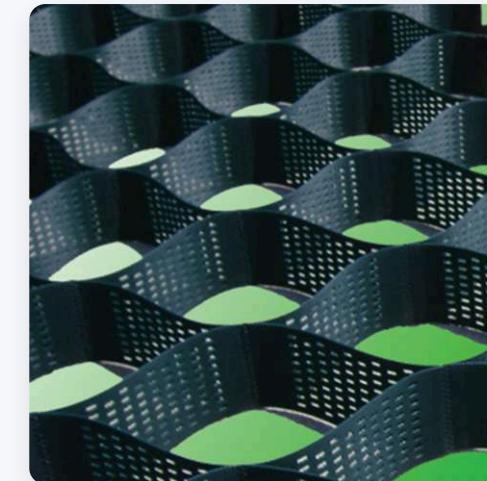


Structure and Types of Geocell

▲ Types by Material

◆ HDPE Polyethylene
(Geomembrane)

❖ Polyester (Geotextile)



❖ Types by Structure

■ Integrated Model

● Perforated Model

● Burst Model

Honeycomb cellular structure of Geocell



🔧 Types by Connection Method

● Welded Model

● Glued Model

● Stitched Model

Different types of Geocell with various structures

Advantages and Disadvantages of Geocell

Advantages

- ↗ Increases load-bearing capacity and soil stability
- ↘ Reduces settlement and soil erosion
- 💧 Maintains soil moisture and nutrients
- 🌿 Supports vegetation growth
- 💰 Reduces maintenance and repair costs
- 🔧 Easy installation and implementation

Disadvantages

- 🏗 Requires suitable infrastructure for installation
- 🏗 Requires high precision in connecting strips
- ☀ Requires protection against UV radiation
- 💦 Requires water supply for vegetation growth



Applications of Geocell

Industrial Applications

- ❖ Roads, railways, ports and airports
- ❖ Foundation reinforcement and load-bearing capacity
- ❖ Reduces settlement and erosion
- ❖ Creates soil or sand paving
- ❖ Building retaining walls



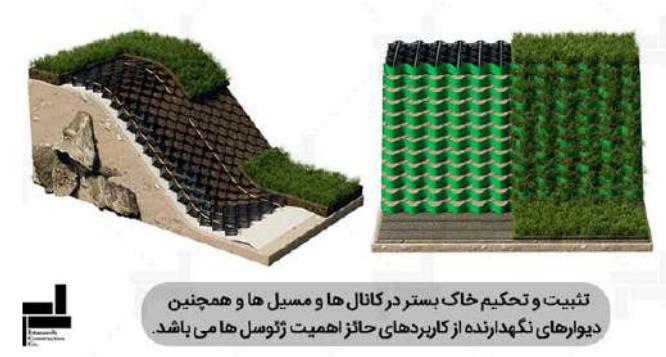
Agricultural Applications

- ❖ Soil reinforcement for vegetation growth
- ❖ Maintains soil moisture and nutrients
- ❖ Controls erosion on steep slopes
- ❖ Increases crop yield



Construction Applications

- ❖ Building sloping walls with green spaces
- ❖ Creating parking lot paving
- ❖ Building light and heavy infrastructure
- ❖ Building coastal roads with sand materials



Installation and Execution Methods of Geocell

1 Creating Suitable Infrastructure

- ➡ Leveling the soil surface
- ➡ Removing plants and unnecessary materials
- ➡ Cleaning and preparing the soil surface
- ➡ Compacting the soil surface



2 Connecting Geocell to Ground Surface

- ➡ Opening Geocell from accordion state
- ➡ Securing with metal or plastic pins
- ➡ Connecting strips with welding, glue or stitching
- ➡ Ensuring complete cell opening



3 Filling Geocell with Materials

- ➡ Selecting suitable materials (soil, sand, gravel)
- ➡ Distributing materials evenly
- ➡ Controlling material height (higher than Geocell)
- ➡ Compacting materials with suitable equipment



Introduction to Shahriyar Baspar Arian Company

Shahriyar Baspar Arian

⌚ History and Activities

- ⌚ Active since **2007** in geosynthetic products
- ↗ Started with geomembrane (HDPE) sheet production
- ▲ Diverse products: geomembrane, geotextile, geogrid, dimple sheets, geocell
- ⌚ Leading geosynthetic producer in the Middle East

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🏭 Factory: Shahriyar County, Amirieh Industrial Town

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━ Products and Services

- ☑ Products meeting global standards
- ☒ Geomembrane types: HDPE, EPDM, LLDPE, PVC, VLDPE
- ❖ Geotextile (100-1000g), geogrid, geocell, geodrain
- ≓ 3D drainage, geonet and various geocomposites
- 👤 Implementation services with expert teams in Iran and Middle East

🛠 Successful Projects

- ≓ Agricultural water storage ponds
- ≓ Fish, shrimp and algae farming ponds
- ▲ Foundation waterproofing (building excavations)
- ↑ Hip leaching ponds and water transfer channels

1M+

Square meters
implemented

15+

Years of experience

50+

Successful projects

Summary and Conclusion

- ↗ Geocell: **effective and economical** soil reinforcement solution
- ↗ Increases **load-bearing capacity** and reduces settlement
- ↗ Wide application in **engineering, agricultural and construction** projects
- ↗ Quick and easy installation with **low maintenance costs**

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Thank you for your attention

