



High-strength Integrally Welded Geocell

High-strength integrally welded geocell is a three-dimensional honeycomb cell structure made of high-molecular polymers that are strongly stretched into sheets with high tensile strength and low elongation, and then processed by hot-melt strong welding. It is flexible and can be folded up during transportation. When used, it can be opened and filled with fillers such as earth, stone or concrete to form a structure with strong lateral restriction and high stiffness.

With its high lateral limit and anti-skid, anti-deformation properties, our geocell significantly enhances the roadbed's bearing capacity and effectively disperses the load. Additionally, its adjustable height, welding distance, and other geometric dimensions allow it to meet different engineering needs.

High-strength Integrally Welded Geocell, also known as a cellular confinement system (CCS) which is suitable for use in supporting loads, such as those present on roads, railways, parking areas, and pavements. In particular, the geocells also retain their dimensions after large numbers of load cycles and temperature cycles; thus the required confinement of the infill is retained throughout the design life cycle of the geocell.

High-strength Integrally Welded Geocell made from HDPE and MDPE are either smooth or texturized. Texturized geocells are most common in the market, since the texture may provide some additional friction of the geocell walls with the infill.



High-strength Integrally Welded Geocell Features:

- The nominal tensile strength of the geocell is high and its nominal elongation is low;
- The node connection is stable and will not move;
- The connection strength at the node connection is high;
- The traditional plane reinforcement is transformed into three-dimensional reinforcement, which has better reinforcement effect;
- There are no metal connectors at the cell node connections, and the long-term connection strength at the node connections is high;
- Resistant to acid and alkali corrosion, salt corrosion, and can adapt to strong acid or strong alkali engineering environments; no hydrolysis reaction will occur when used in a water environment for a long time, and the strength of the cell will not decrease.



[High-strength Integrally Welded Geocell]

High-strength Integrally Welded Geocell, is an array of containment cells resembling a "honeycomb" structure that is filled with granular infill, which can be cohesionless soil, sand, gravel, ballast, crushed stone, or any other type of granular aggregate. Also known as geocells, CCSs are mainly used in civil engineering applications that require little mechanical strength and stiffness, such as slope protection (to prevent erosion) or providing lateral support for slopes.

Geocell Products: High-strength Integrally Welded Geocell

APPLICATION

High-strength Integrally Welded Geocell is used for soft foundation treatment in civil engineering fields such as highways, railways, deserts, swamps, tidal flats, airports, ports, etc.

This product also be used for the reinforcement and reinforcement of saline soil, expansive soil and other roadbeds, and slope management projects, etc.

SPECIFICATIONS OF HIGH-STRENGTH INTEGRALLY WELDED GEOCELL

Material Properties	unit					Tested Method
Cell Depth	mm	75	100	150	200	
Polymer Density	g/cm ³	0.935-0.965				ASTM D 1505
Environment Stress Crack Resistance	Hours	>400				ASTM D 5397
Environment Stress Crack Resistance	Hours	6000				ASTM D 1693
Carbon Black Content	%	1.5%-2.0%				ASTM D 1603
Nominal Sheet Thickness Before Texturing	mm	1.27-5%, +10%				ASTM D 5199
Nominal Sheet Thickness After Texturing	mm	1.27-5%, +10%				ASTM D 5199
Strip Puncture Resistance	N	450				ASTM D 4833
Seam Peel Strength	N	1065	1420	2130	2840	EN ISO 13426-1B
Seam Efficiency	%	GRI100				GRI-GS13
Nominal Expanded Cell Size(width x length)	mm	320x287, 475x508 etc				
Nominal Expanded Panel Size(width x length)	M	2.56x8.35, 4.5x5.0, 6.5x4.5, 6.1x2.44				

SPECIFICATIONS OF HIGH-STRENGTH INTEGRALLY WELDED GEOCELL

Product Type	Height (mm)	Welding Distance (mm)	Thickness (mm)	Tensile Strength of Welding Points (N/cm)	Tensile Strength of Connection of Cells (N/cm)	Tensile Strength at Yield of Each Sheet (MPa)
Smooth and Not Perforated	50≤H≤300	300≤A≤1000	1.0—1.5	≥100	≥120	≥20
Smooth and Perforated	50≤H≤300	300≤A≤1000	1.0—1.5	≥100	≥120	≥20
Textured and Not Perforated	50≤H≤300	300≤A≤1000	1.3—1.5	≥100	≥120	≥20
Textured and Perforated	50≤H≤300	300≤A≤1000	1.3—1.5	≥100	≥120	≥20

Remarks:

1. This is a basic technical specification.
2. All of the technical indexes can be reached according to the customers' demand, and the other special standards will be carried out by agreement or contact.

GEOCELL MESH SIZE AND UNFOLDED AREA CALCULATION

Geogrid Model	Sheet material	Weld spacing(mm)	Sheet thickness(mm)		Peeling strength $\geq(N)$	Expanded panel size (mm)	Section expanded panel size
	Height(mm)		Smooth surface	Perforated			
TGLG-50-330	50	330	1.1	1.5	500	244X203	2.44X6.15
TGLG-75-330	75				750	244X203	2.44X6.15
TGLG-100-330	100				1000	244X203	2.44X6.15
TGLG-150-330	150				1500	244X203	2.44X6.15
TGLG-200-330	200				2000	244X203	2.44X6.15
TGLG-100-356	100	356	1.1	1.5	1000	259X224	2.56X6.52
TGLG-100-400	100	400	1.1	1.5	1000	295X250	4X5 5x6
TGLG-100-445	100	445	1.1	1.5	1000	320X287	2.56X8.35
TGLG-100-500	100	500	1.1	1.5	1000	370X310	3.7X6.2
TGLG-100-660	100	660	1.1	1.5	1000	488X406	2.44X12.24
TGLG-100-712	100	712	1.1	1.5	1000	508X475	2.56X13.72
TGLG-100-800	100	800	1.1	1.5	1000	590X500	4X10

DETAILS OF HIGH-STRENGTH INTEGRALLY WELDED GEOCELL

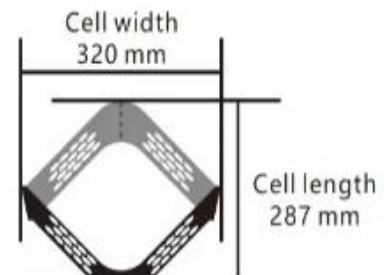
Geogrid 100-445 (Hight:100mm weld spacing:445mm) diagrammatic sketch



Seam peel strength



Sheet thickness



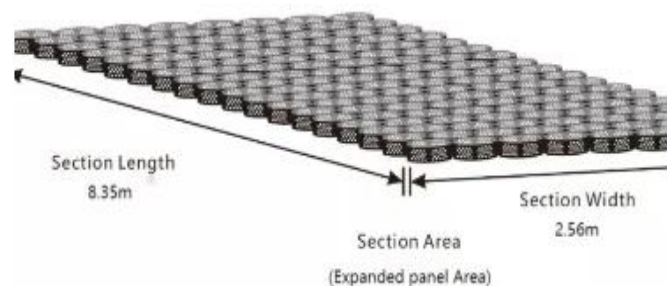
Cell size

Weld Spacing 445 mm



Weld spacing

Depth
100mm

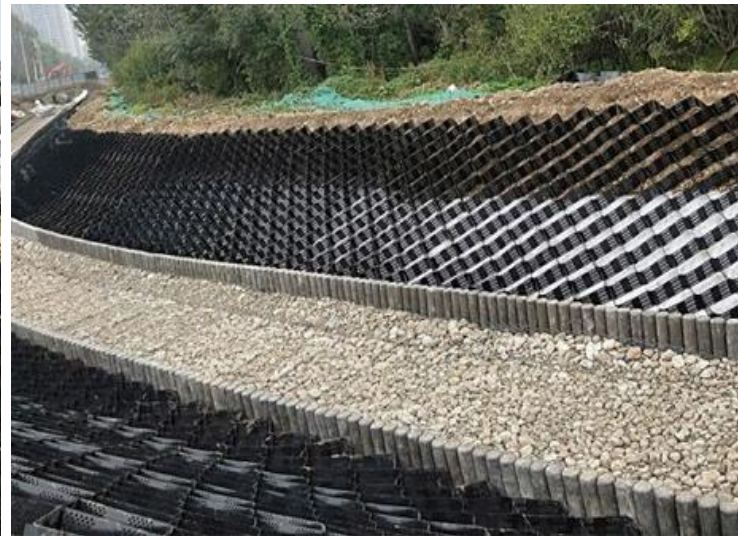


Expanded panel size

APPLICATION SCENARIOS OF HIGH-STRENGTH INTEGRALLY WELDED GEOCEL



[Stabilize river embankments in Morocco]



[River embankment slope protection in Nigeria]

HIGH-STRENGTH INTEGRALLY WELDED GEOCEL CONSTRUCTION

Construction method of HIGH-STRENGTH INTEGRALLY WELDED GEOCEL:

- Level the slope and remove some debris that is not conducive to the laying of the cells to keep the slope smooth.
- The two adjacent vertical joints should not be on a horizontal line, and it should be staggered by more than 1m.
- The cells should be laid from top to bottom in the main direction of stress, so that the cell sheets are perpendicular to the highway subgrade.
- First slope and backcourt.
- Fully open the compartment assembly and drive a hook-shaped rivet stake into each compartment at the top.
- After the grid is stretched, fill the grid space from top to bottom with high-quality soil suitable for planting turf or grass seeds.
- When used on the lower slope of a highway, drainage ditches should be set up to prevent accumulated water from directly eroding the slope protection.
- After the construction is completed, re-inspection should be done.
- David weather and wind force affect the construction of the geomembrane, the HDPE geomembrane to be welded and the sandbags are applied.

- In slope repair projects, high-strength integrally welded geocells are used to reinforce soil and plant grass and greening.
- In highway construction, high-strength integrally welded geocells are used for soft soil foundation treatment.
- In railway construction, high-strength integrally welded geocells are used for high-fill soil treatment.
- In the bridge abutment reinforcement project, high-strength integrally welded geocells are used to improve the shear resistance of the bridge abutment.
- In the flood control cofferdam construction project, high-strength integrally welded geocells are used to improve the erosion resistance of the cofferdam.

