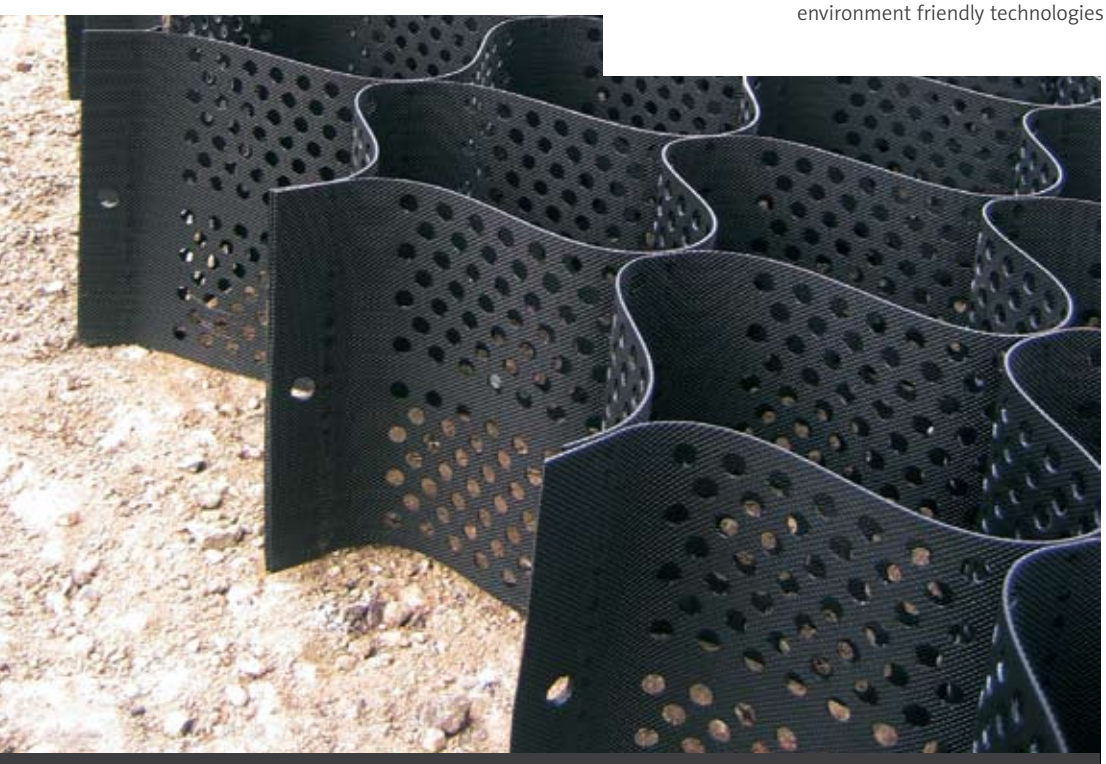
Geo
Globe
Polska

environment friendly technologies



Everything tailor-made

Geocells

Why geocells?

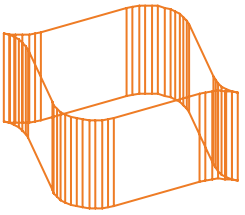
The cellular confinement system was developed in the late 1970s as part of a scientific research of Presto Product Co. with the U.S. Army Corps of Engineers. This method was used as a pioneering project in operation Desert Storm during the Persian Gulf War.

Cellular confinement system improves the performance of such cohesionless materials as gravel or sand. By confining the material, the geosynthetic structure enables also the proper density of compaction.

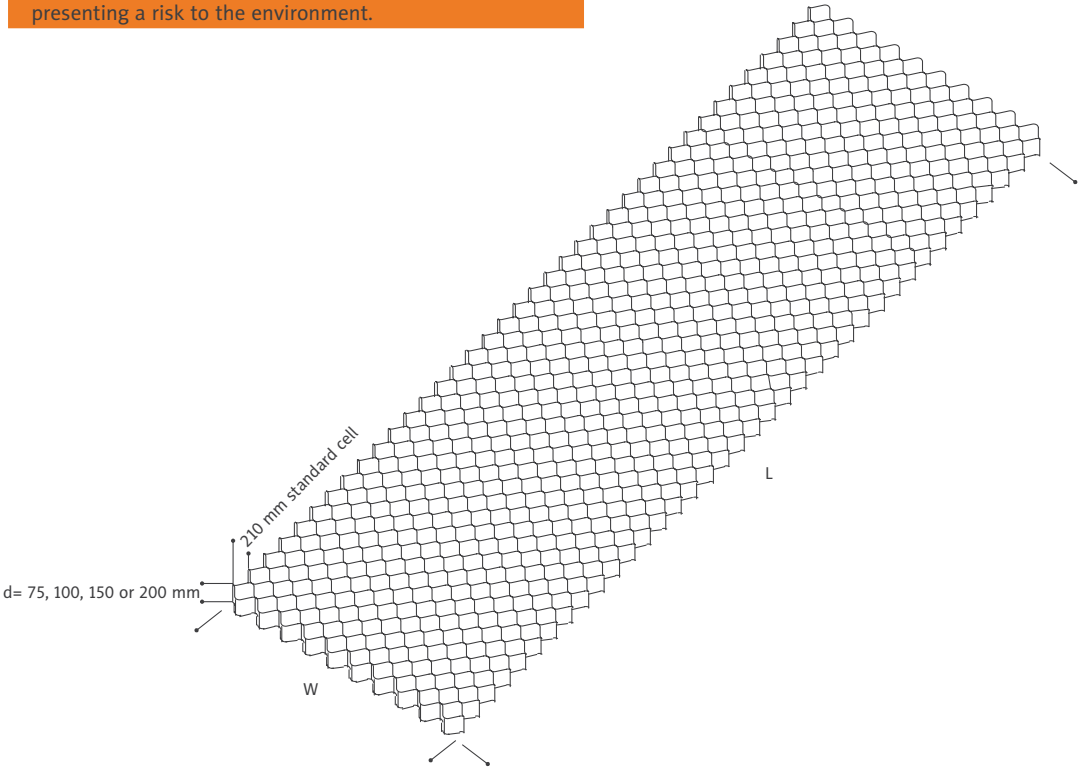
The main elements of this system are open sections filled with various infill materials. This infill improvement helps to eliminate the need for more costly, complicated structural elements or expensive techniques. Cellular confinement system provides optimal solutions for poor carrying capacity of soil and at the same time cost-effective soil stabilization results.

Cellular confinement system has been popular on the Polish market as geocells or geokrata, fabricated using medium-density polyethylene (MDPE) or high-density polyethylene (HDPE) which is classified as non-hazardous product. Its operating temperature ranges from –50 °C to +80 °C, its melting point can vary from +125 °C to +132 °C.

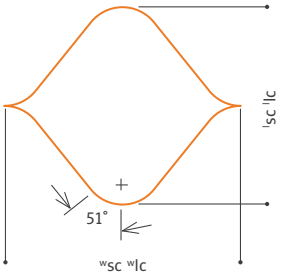
The plastic and its product itself are not regarded as dangerous to health. Also, thanks to its insolubility in water and chemical resistance (also in soil) it is regarded as not presenting a risk to the environment.



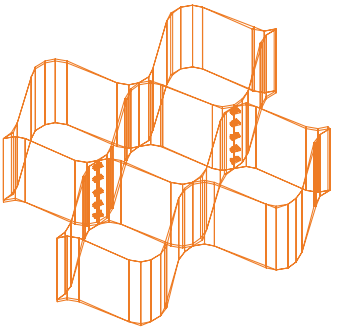
Single cell view



Section expanded



Cell dimentions



Connected sections – abutted cells walls

Cellular confinement system popular on market as geocells is manufactured in two variants:

- cellular confinement system from non-perforated textured strips, marking: (**TN**),
- cellular confinement system from perforated textured strips, marking: (**TP**).

Geocell is also available for the following cell depths: 50 mm, 75 mm, 100 mm, 150 mm, 200 mm, 300 mm. The width dimension of the strip indicates the cell depth.

Cellular confinement system is also available in different variants regarding the cell size that is determined by following weld spacing:

- small cells – 330 mm ± 2 % – GWS marking,
- medium cells – 465 mm ± 2 % – GWM marking,
- large cells – 660 mm ± 2 % – GWL marking,

Cellular confinement system brings about the following effects:

- reduction of road-structure thickness as different from the conventional solutions, due to elimination of deep soil replacement,
- increasing shear resistance of the geocell infill materials due to its their confinement and compaction within the cells,
- reduction of soil settlement as the effect of natural compaction and prevention of lateral movements of aggregate infill of geocell,
- reduction of high stresses to the subbase as the result of the improved load distribution on the adjacent geocells.
- enabling stormwater filtration through the bedding layers thanks to the application of loose materials,
- stability and erosion resistance of earth slope surfaces,
- soil reinforcing and stabilisation for example under road embankments and sports fields.

Different type of infill material

With reference to the design requirements and geotechnical site conditions, the application of different types of infill materials is possible:

- topsoil with various selected vegetation,
- various mineral materials including sand, gravel, aggregate or stones
- concrete of various strengths and surface finishes,
- on-site fill materials,
- with reference to the design requirements – combined options of the ones above.

Perforation benefits

- perforations and a textured surface increase the friction angle between aggregate infill and the cell wall, generating better aggregate lockup and greater overall load distribution,
- perforations facilitate lateral cell-to-cell drainage of excessive ground and surface water, reducing the negative effects of trafficking over saturated soils.

Installation

Lightweight sections are delivered in collapsed form and are easily expanded. They can be fast and easily expanded in an uncomplicated manner. Infill can be placed manually, with simple tools or construction equipment.
Geocell is installed using rectangular stretcher frames – their aim is to expand the suitably dimensioned sections. **Stretcher frames used in installation are necessary to obtain proper section geometry. They are used only during infilling and are designed for multiple use.**
Individual geocell sections can be easily connected using versatile clip arms, staples and anchors. For more demanding constructions some other accessories are also used including tendons, anchoring systems, etc.
Suitably dimensioned geocell sections are shipped to the construction site in their collapsed form, banded and secured with stretch foil on pallets.

Sections are folded in such a manner that is easy to unfold and expand them at site.

Flexible design solution

Geocell constructions can be easily adapted to a wide range of design requirements and site conditions. The versatility of the system results from its inherent flexibility, unique load deformation behavior and suitability for a wide range of infill materials and foundation soils.

Natural colored facing

Standard wall sections are available with **green, tan,** or **black** facia colors to create a blending with natural environments. Special facia colors can be manufactured to meet unique aesthetic requirements.

To meet up your individual expectations we have prepared polyethylene which is ultraviolet-light-stabilized to resist color fading and increase system durability and quality performance to levels meeting typical engineering requirements.

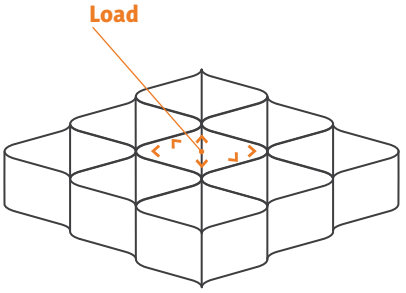
Strengths of cellular confinement

The confining cell structure imparts an effective cohesion to the infill material, thereby increasing its shear strength and stiffness. This improvement results from the hoop strength of the cell walls, the passive resistance of the adjacent cells and the high frictional interaction between the infill and the cell walls.

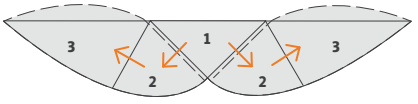
The cell wall structure shows improved lateral load spreading as the result of increased wall-infill interface friction; The blocks create a flexible structure bridge system of increased stiffness. The structural bridge results in significant improvements in the long-term performance of the load support system and helps to reduce the thickness of structural support elements.

The advantages of using cellular confinement system (geocells) for single-layer road bases, yards or paved surfaces is the reduction of costs of ground works and infill materials. The cellular confinement system enables also the application of less expensive on-site aggregate infill in place of more costly imported materials.

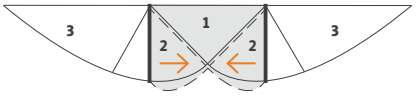
As loads are distributed through the structural bridge over the soft subgrade, the thickness and weight of structural support elements can be reduced by 50% or more in comparison to the conventional load support.



Distribution of confinement strengths



Rutting without cellular confinement system – starts when the wedge 1 pushes and displaces zones 2 and 3

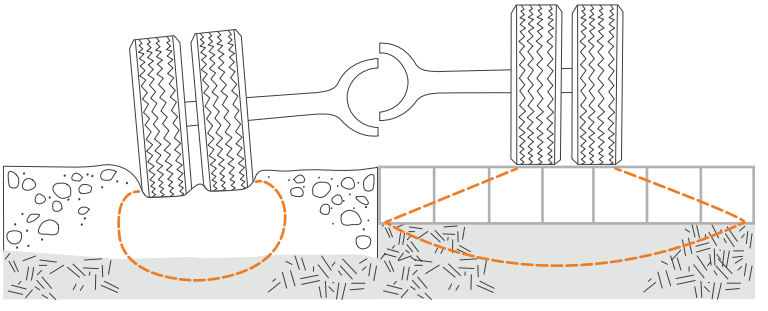


The system of geocells prevents rutting of the ground confining zone 2 by stopping its displacement caused by the load.

1 Confinement strengths created by friction strengths between the infill material and the cells walls.

2 Confinement strengths created by passive resistance of adhering cells.

3 Confinement strengths created by boudary durability of the cells walls.



Rutting without confinement **Load distribution with the Geocells system**

About us

15 years of experience

Clear cut development strategy

We can say that it is the existence of our two strengths that makes us a strong and dynamically developing enterprise. We are aiming to develop strategy based on solid information, to win advantage on the competitive market and to create efficient, customer-oriented and cost-effective enterprise. Our mission is a broader development on the European markets while keeping a strong position of a leader on our domestic market in Poland.

Everything tailor-made

Our aim is the delivery of tailor-made services. Fast and efficient sales require an individual approach to consumer preference!

Unique performance

What makes Geo Globe Polska different from its competitors is both quality and a comprehensive range of provided services. We take greatest care of every detail at each stage of work. Our production involves the highest technology. We hold electronic circulation of documentation and ERP management system. **Thanks to our professionally equipped laboratory our products undergo a thorough testing before they reach our Client.**

CERTYFIKAT ZAKŁADOWEJ KONTROLI PRODUKCJI WE

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HYGIENIC CERTIFICATE

Our team – professionals and enthusiasts

There is more than a hundred qualified specialists in Geo Globe Polska, among them a lot of employees with life experience in plastic processing industry.

Certified quality

In Geo Globe Polska we opt for quality. In 2005 we implemented and certified an integrated environment and quality management system that conforms to **ISO 9001** and **ISO 14001 standards.** Our products hold many approvals and certifications. We are also very proud of our cooperation with *Barbara* Experimental Mine in Mikołów, Central Mining Institute in Katowice, Building Technical Institute and Road and Bridge Research Institute.

TÜV CERT
ISO 14001:2004
no: 01 104 052152

TÜV CERT
ISO 9001:2000
ZN: 75.100.30169
TÜV Rheinland InterCert

Awards

For the three consecutive years our company has been awarded **Gazela Biznesu**, a prestigious award for the most dynamically developing companies.

In 2008 Kruk i Fischer was among the laureates of the 18th edition of **Teraz Polska** contest for the production of cellular confinement system, winning the highest assessment scores in analyses carried out by a panel of experts in the category of Best Products. Dun and Brand Street Poland together with its partner Getin Bank granted to Kruk i Fischer the Certificate of **Transparent Enterprise**. Being awarded is an expression of financial reliability and honesty; it also boosts our prestige and competitiveness on the market.

We have also been exceptionally honoured during the 6th Gala Event of the Polish Nationwide Ranking **Export Leaders**. From the Award Committee we received rewards in the following categories: Sales Dynamics, Sales Dynamics – Regional Stage – Southern Poland, Innovativeness 2008.

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