



enka® solutions

# ENKAGRID®

HIGH PERFORMANCE GEOGRIDS  
PRODUCT OVERVIEW

INNOVATING TOGETHER

 **FREUDENBERG**  
PERFORMANCE MATERIALS

Enka®Solutions values	3
Geogrids	4
EnkaGrid® PRO	6
EnkaGrid® MAX	8
EnkaGrid® MAX C	10
EnkaGrid® TRC	12
Addresses and info	16



# ENKASOLUTIONS EXPERTISE, RELIABILITY AND RESPONSIBILITY

## **Expertise**

We began creating our knowledge and expertise base on our products and the industry way back in the 1950s, which means that today we have a multitude of project references worldwide. Coupled with extensive research conducted internally and externally with renowned universities and specialist organisations, our Research, Development and Innovation team is constantly working in conjunction with clients all over the world to develop new solutions to add to our range of products and applications. Our team of experienced engineers providing support across all market segments adds to this to make the numerous innovative solutions come into fruition. We see expertise both as the foundation of our business and as an ongoing process. Building on our already long-standing expertise is work that is never done.

## **Reliability**

It's our daily mission to be a reliable partner for our customers in order for them to grow their business in a sustainable way. Reliability covers a range of different areas and ensures peace of mind for our partners.

As well as our wide, high quality product range, we offer technical and marketing support for all market segments. All our processes are ISO 9001 certified and every single product is tested by our highly qualified laboratory staff. Furthermore, we hold specific product certifications in many different countries (e.g. Asqual, NorGeoSpec, Benor, HPQ, and BBA). Delivering what we promise is part of our nature.

## **Responsibility**

We take our responsibilities seriously. This is why you can also rely on our solutions being sustainable. We not only examine the full product lifecycle and its impact on the environment to make continual improvements in terms of environment, nature and soil, but also ensure we meet all legal requirements. We train and advise clients and stakeholders, and contribute to the establishment of new standards to help propel our entire industry forward into the future. It will therefore come as no surprise that safety is also a high priority for EnkaSolutions. Safety is inherent to all our solutions and products, as part of our responsibility to care both for the people who use them on building sites, and our employees.



# GEOGRIDS

Soil is strong in compression but weak in tension. The addition of a geogrid helps to disperse the lateral strain generated in the soil by compressive forces. The tension within the geogrid is mobilised by a combination of skin friction and granular interlock and performs a reinforcing function which improves the mechanical properties of the soil, providing reinforcement to the soil mass.

This reinforcement function assists in preventing the deformation and lateral spread of granular layers forming the foundation of working platforms and roads. It can be used on inclined planes to provide a grip layer preventing planar failures of sloping surfaces. It can be layered horizontally to enable steep sloping structures or retaining walls to be built.

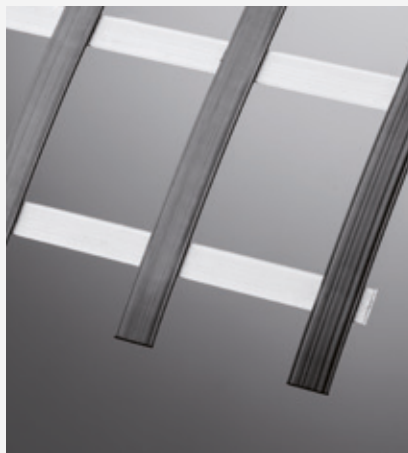
Our EnkaGrid range of products offers a perfect combination of geometry and polymers to create the optimum soil-grid interaction for all types of soil and deliver outstanding mechanical long-term durability.

## **Why is EnkaGrid ideal for reinforcement of all soil structures?**

- A perfect combination of geometry and polymers to create the optimum soil-grid interaction for all types of soil
- Excellent mechanical long-term durability based on high quality
- Ease of handling and installation
- A wide choice of products and tensile strengths to suit your needs



EnkaGrid® PRO



EnkaGrid® MAX



EnkaGrid® TRC

## ENKAGRID PRODUCT RANGE

### EnkaGrid PRO

- Rigid geogrid of extruded polyester straps
- Available in a number of different strengths
- PROfessional solution with unparalleled strength, performance and reliability
- Ideal for the reinforcement of slopes, walls and embankments
- Laserwelded polyester bars for powerful and dependable reinforcement

### EnkaGrid MAX

- A rigid geogrid of extruded polypropylene straps
- Available in a number of different strengths in both axes
- Multifunctional product type available including a bonded nonwoven geotextile
- MAXimum cost-effective performance
- Ideal for subbase stabilisation beneath permanent and temporary roadway projects and foundations
- Unique laser-bonded structure gives rigid junctions with consistent stress-strain performance throughout the matrix
- High-speed installation with long-term high performance due to high passive bearing resistance and optimum soil interaction

### EnkaGrid TRC

- Multifunctional geogrid composite with the same strength in both axes
- A unique combination of high-modulus low-elongation aramid fibers embedded in a nonwoven textile
- Reinforcement, separation and filtration in one easy to install product
- The nonwoven prevents mixing of fill and subsoil
- Ideal for paved roads, parking areas and platforms
- Reduces the required subbase thickness and increases road life

# ENKAGRID® PRO

## UNIAXIAL LASER WELDED GEOGRID FOR CHALLENGING ENVIRONMENTS

EnkaGrid PRO is a uniaxial high strength laser-welded geogrid for the reinforcement of slopes, walls, embankments, platforms and foundations.



The structure of highly oriented laser-welded polyester strips provides powerful and dependable reinforcement in demanding situations in civil engineering or building projects. Thanks to its superior mechanical properties, the long term performance of EnkaGrid PRO is outstanding. The engineered structure of EnkaGrid employs cutting edge manufacturing concepts such as the patented computer controlled laser-welding process. Using this laser technology, the quality of the junction bonds is precisely controlled during production.

This creates consistently rigid joints throughout the geogrid without affecting the polymer orientation or stress strain performance of the extruded strips.

### Technical details

EnkaGrid PRO is a uniaxial geogrid of extruded polyester strips available in a number of different tensile strengths for specific applications. The highly oriented strips are laser-welded for powerful reinforcement in demanding applications. EnkaGrid PRO is available in 2.45 m and 5 m wide rolls.



**Functions**

- Reinforcement
- Stabilisation
- Veneer stabilisation

**Application areas**

- EnkaGrid PRO is specially designed for more demanding applications.
- Steep slopes
- Retaining walls
- Segmental block walls
- Gabions

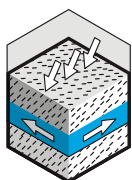
- Bridge abutments
- Embankments
- Platforms
- Foundations

**Features and benefits**

- Maximizes use of available space
- Reduces carbon footprint
- Redistributes shear forces within soil
- Limits differential settlements during consolidation
- Improves internal stability of soil block

- High stiffness and low creep properties maximize soil performance
- Excellent durability and long term performance
- Interacts perfectly with all granular soil types
- High resistance to mechanical damage
- High resistance to chemical and environmental influences
- Cost effective
- Fast installation with rolls up to 5 m wide
- Ease of handling on site

**Product functions**



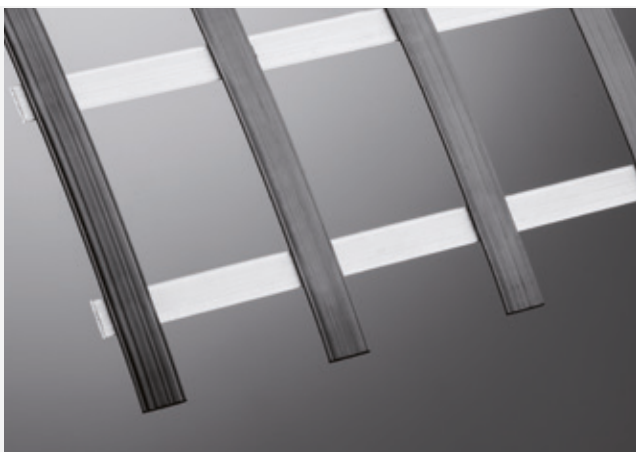
Soil reinforcement



# ENKAGRID® MAX

## BIAXIAL LASER WELDED GEOGRID FOR CHALLENGING ENVIRONMENTS

EnkaGrid MAX is a high performance and cost-effective biaxial geogrid used worldwide in civil engineering projects for subbase stabilisation, designed for achieving maximum bearing capacity and shear resistance.



EnkaGrid MAX exhibits an optimum interaction with all granular soil types, making it ideal for subbase stabilisation. It is typically used for construction of roads or platforms on weak soils where it delivers extra stiffness and prevents differential settlements, thus prolonging the life expectancy of the project.

Decades of research and development have made EnkaGrid the product of choice for demanding technical structures worldwide.

### Technical details

EnkaGrid MAX is a rigid, biaxial geogrid of extruded polypropylene or polyester strips with the same design strength in both machine and cross-machine directions. EnkaGrid MAX is available in different tensile strengths in rolls up to 5 m width.

The engineered structure of EnkaGrid employs cutting edge manufacturing concepts such as the patented computer controlled laser welding process. Using laser technology,

the quality of the junction bonds is precisely controlled during the production process. This creates consistently rigid joints throughout the geogrid without affecting the polymer orientation or stress strain performance of the extruded strips.



**Functions**

- Reinforcement
- Subbase stabilisation

**Application areas**

- Construction roads
- Permanent and temporary roadways
- Paved and unpaved roads
- Parking areas

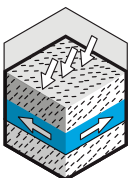
- Airport runways
- Platforms

**Features and benefits**

- Reduces the depth of subbase layer required
- Cost effective
- Absorbs dynamic loads generated by traffic

- Excellent mechanical long-term durability
- Consistent stress-strain performance
- Optimum interaction with all granular soil types
- Excellent resistance to mechanical damage
- High levels of UV resistance
- Chemically inert
- Fast installation with practical 5 m wide rolls
- Ease of handling on site
- Lower carbon footprint impact

**Product functions**



Soil reinforcement

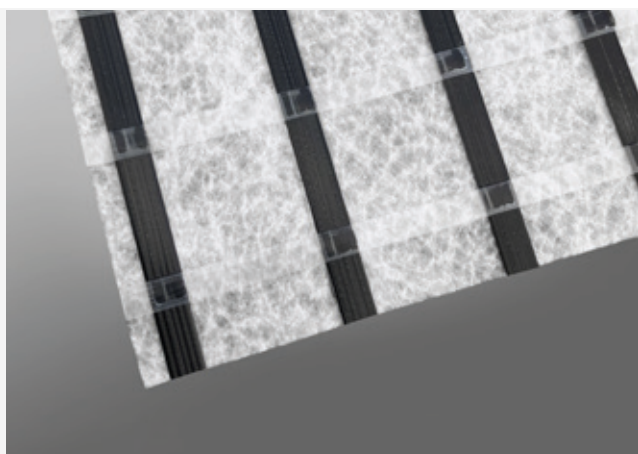


# ENKAGRID® MAX C

## BIAXIAL GEOGRID COMPOSITE

### FOR SOIL REINFORCEMENT, FILTRATION AND SEPARATION

EnkaGrid MAX C is the latest addition to the range of EnkaGrid high-performance reinforcement solutions. In addition to reliable soil stabilization, the multifunctional product provides the filtration and separation needed in both temporary and permanent site works.



Available in different strengths, EnkaGrid MAX C consists of a biaxial geogrid bonded to a nonwoven geotextile. The geogrid stabilizes the sub-base and improves its load-bearing capacity, reducing its required thickness and extending the structure's design life. At the same time, the nonwoven geotextile prevents the intermixing of adjacent soils, and retains soil particles while allowing free movement of water.

The unique connection technique for both layers leaves sufficient space for optimal interlocking of granular soils with the geogrid strips.

Purchasing, stocking and installing EnkaGrid MAX C rather than individual geogrid and geotextile layers helps reduce complexity and substantially enhances efficiency throughout the value chain of construction projects. Applying this geogrid composite so saves time and money for contractors and project owners alike.

#### Technical details

EnkaGrid MAX C is a multifunctional geogrid composite with the same strength in both axes. It consists of two components: The first component is an EnkaGrid MAX geogrid. It is made of

polypropylene or polyester strips of equal tensile strength in longitudinal and transverse direction. Using a computer-controlled laser welding technology, these strips are connected to create consistently rigid joints throughout the reinforcement layer. The second component, to which the geogrid is bonded at intervals, is a mechanically bonded polypropylene nonwoven geotextile.

EnkaGrid MAX C is available in different tensile strengths ranging from 20 to 80 kN/m. For maximum speed of installation, the composite is delivered on rolls with a width of five metres.



### Functions

- Subbase reinforcement and stabilization
- Separation and filtration

### Application areas

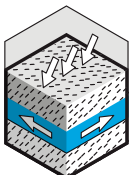
- Permanent and temporary roads
- Parking areas
- Airport runways
- Working platforms

### Features and benefits

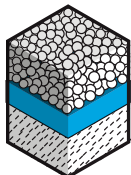
- Multifunctional 3 in 1 geocomposite: provides soil reinforcement, separation and filtration
- Design enables optimal interlocking of granular soils with the geogrid

- Boosts procurement efficiency (purchasing one product rather than two consolidates order management)
- Enhances logistics management processes including stock keeping
- Safer and easier to install than two single products
- Maximizes speed of installation, thus significantly enhancing cost efficiency on site
- Excellent long-term durability in all soil types

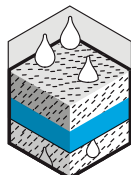
### Product functions



Soil reinforcement



Separation

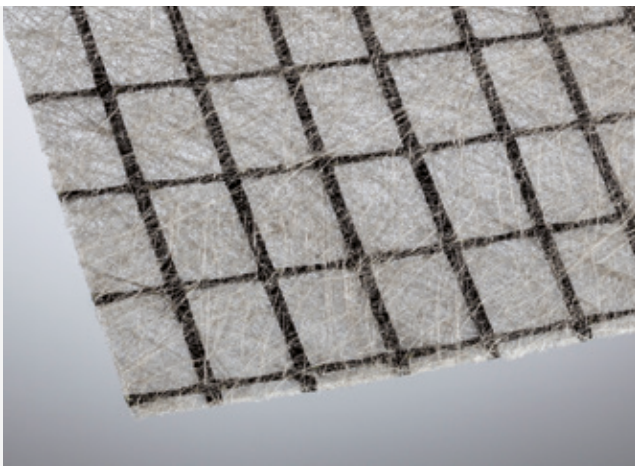


Filtration



# ENKAGRID® TRC ARAMID REINFORCED GEOCOMPOSITE FOR REINFORCEMENT, SEPARATION AND FILTRATION

EnkaGrid TRC is a high strength composite of aramid mesh and a thermally bonded nonwoven combining reinforcement, separation and filtration functions in one product. It resolves a number of engineering issues in a single solution.



When no creep deformation is allowable in reinforcement or stabilisation layers, EnkaGrid TRC is the solution. The high strength geogrid composite reinforces the base course beneath roads, runways, and foundations over weak subsoils. The nonwoven prevents fine particles from percolating up into the subbase, providing a layer for in-plane water flow during compaction of the subbase.

#### Technical details

EnkaGrid TRC is a multifunctional geogrid composite comprising a nonwoven geotextile combined with a coated aramid woven grid. It exhibits high modulus combined with a maximum strain value of just 3% at break. EnkaGrid TRC has the same design strength in both machine and cross-machine directions. It is available in rolls of 5 m width.



### Functions

- Reinforcement
- Stabilisation
- Separation
- Filtration

### Application areas

- Paved and unpaved roads
- Parking areas
- Embankment foundations
- Building foundations

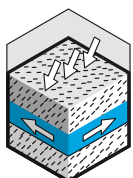
- Platforms
- Runways

### Features and benefits

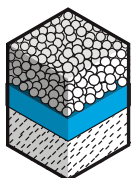
- Three functions in one product: reinforcement, separation and filtration
- Limits the propagation of cracks
- Reduces the required subbase thickness
- Prevents fine subsoil from penetrating into the road structure
- Increases the subbase strength on weak soils

- Outstanding mechanical properties; low creep
- Increases service life of roads with minimal deformation of the subbase
- Excellent durability and long term performance
- Fast installation with practical 5 m wide rolls
- Ease of handling on site

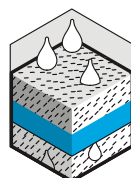
### Product functions



Soil reinforcement




Separation



Filtration





EnkaSolutions originated in the late 60s when we invented the unique 3D-structured polymeric mat which is typical of so many Enka products even today. Ever since its invention we've been pushing forward its possibilities in terms of varieties of product and applications, constantly expanding the EnkaSolutions portfolio through proprietary technologies.

The scope of markets supported by EnkaSolutions is wide-ranging – from Civil Engineering and Waste Management to Building and Sports – including solutions in such specializations as water and gas drainage, prevention of erosion, soil stabilization, soil consolidation, vibration control, shock absorption and ventilation.

We serve industrial markets in areas such as Filtration and Composites. The EnkaSolutions portfolio includes market-leading and certified products such as EnkaMat®, EnkaDrain®, EnkaGrid®, EnkaVent®, EnkaSonic®, Enka®Flex,

Enka®Spacer, Enka®Fusion, and Colbondrain®, each with proven track records around the world.

For global supply, we maintain production facilities and sales offices in Europe, North America and China. (Customer-specific) product developments and tests are conducted by our in-house R&D centers in Europe and North America and by independent external institutions. Our quality management system has been approved by Lloyd's Register Quality Assurance to the ISO 9001:2015 standard.

Provision of the best solutions demands a thorough understanding of the need, and much of our success is down to our close collaboration with our valued customers.

EnkaSolutions is a brand of Freudenberg Performance Materials.

### Would you like to discover what EnkaSolutions can do for you?

Simply contact the local team with your requirements and together we will find the best solution to your challenge.

#### Freudenberg Performance Materials

##### Europe

###### Netherlands

Westervoortsedijk 73  
6827 AV Arnhem  
T +31 85 744 1300

##### Americas

###### USA

1301 Sand Hill Road  
Candler, NC 28715  
T +1 828 665 5000

##### Asia

###### China

No.9 Xingtang West Road, Chunjiang Zhen  
New District, 213034, Changzhou  
T +86 519 6858 5555

© Freudenberg. All information contained in this document corresponds to our current knowledge and assumptions and is granted without guarantee or representation of being exhaustive or correct. It is only an indication for your own internal evaluation, and shall not substitute for any assessment you may need to conduct to determine the suitability of the product for your particular purposes. Freudenberg assumes no liability or responsibility for the completeness or accuracy of the information contained herein. These are regularly reviewed. The product brands marked ® are registered trademarks of companies that are part of the Freudenberg Group in several countries and regions.

B-CIV-E-ENG-EGRDOverview-2361020-11/2024