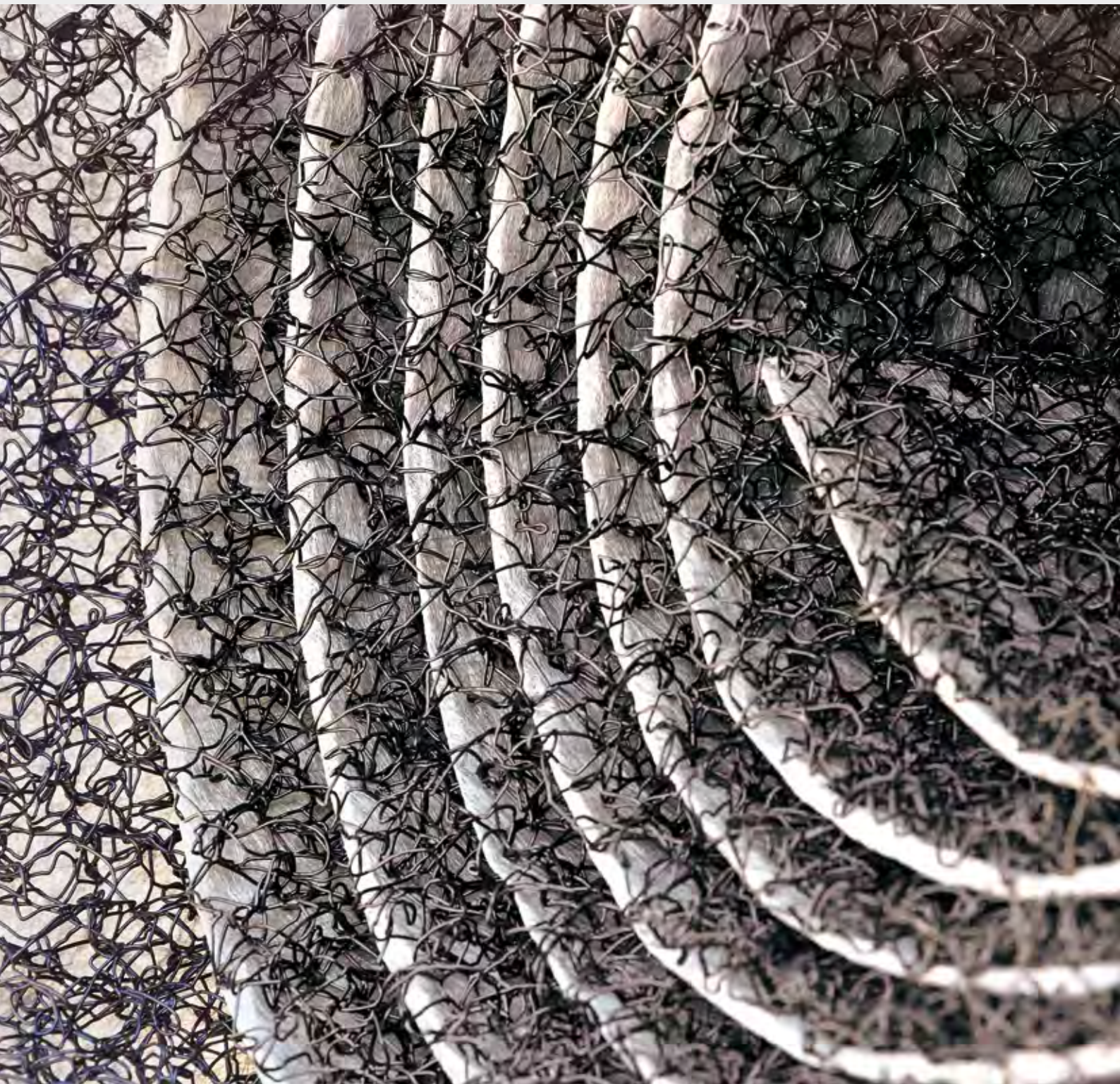


EnkaDrain[®]

High performance drainage composites
Product overview





Engineering Nature

Three fundamental values underpin Enka Solutions: 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 Enka Solutions. 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.

These values that are the core of Enka Solutions are reflected in our statement 'Engineering Nature', because not only is engineering in our nature, we also see ourselves as engineers delivering reliable solutions that respect nature.

Enka Solutions values	3
Drainage composites	4
EnkaDrain	6
EnkaDrain Wide	8
EnkaDrain CK	10
Addresses and Low & Bonar info	12



EnkaDrain®

EnkaDrain® Wide

EnkaDrain® CK

Drainage composites

Groundwater can cause significant problems for civil engineering and building projects, both during construction and in service: 70% of all damage to buildings is water-related, with half of this due to insufficient or incorrect sealant and lack of drainage. A traditional drainage layer consists of granular material often more than 300 mm thick. However, the performance of such a drain can be inconsistent and decrease with time, due to deterioration of the boundaries and clogging of the material itself.

World leading geocomposite drainage system

EnkaDrain, a geocomposite material, offers significant advantages. The product is the number one brand in geocomposite drainage systems. Over the past 40 years, millions of square meters of EnkaDrain have been installed worldwide. All EnkaDrain products are

lightweight, strong, flexible, easy to handle and fast to install in one operation. They deliver high water flow capacity with consistent and uniform long-term performance. Every variant is based on the same basic concept of a three-dimensional composite that consists of a drainage core either connected to one or sandwiched between two nonwoven

fabrics. The drainage core is composed of tough, looped synthetic filaments that are fused together where they cross, forming an open structural material with over 90% voids. The resulting product is chemically inert and durable.

Why is EnkaDrain an ideal solution to avoid drainage issues?

- Protects waterproof coatings and membranes from damage during backfilling
- Prevents silting up of the collector drain
- High discharge capacity due to its open structure
- Forms an insulating air gap between wall and soil
- Lightweight, flexible, easy to cut and install
- Can be installed under all weather conditions
- Negligible waste
- Rot-proof, no risk of pollution of the subsoil
- Unaffected by chemicals commonly occurring in the soil
- Fire resistant

EnkaDrain product range

EnkaDrain

- Suitable for non-specific applications with excellent price performance
- Packaged in small rolls with laying guide included for ease of handling and on-site installation
- Suitable for smaller projects where detail design may not be required

EnkaDrain Wide

- Used for waste containment and draining poor quality fills
- Used for constructing embankments
- Core and filters tailored for specific application

Multifunctional EnkaDrain

EnkaDrain CK

- For specialist applications in building and civil engineering including tunneling
- Suited to fulfill vibration damping and drainage functions
- Supplied with various types of littance tight layers on one side so suitable as lost shuttering

EnkaDrain®

Geocomposite for drainage

The EnkaDrain product family consists of a range of drainage composites comprising a polymer drainage core connected to a protective and filtering nonwoven on one or both sides. EnkaDrain can be used in a variety of horizontal and vertical applications, combining drainage, protection and filtration in one product.



Functions

- Drainage at various gradients
- Protection
- Filtration
- Vibration damping
- Hydrostatic pressure relief
- Capillary layer

Application areas

- Basement walls
- Retaining walls
- Bridge abutments
- Embankments
- Tunnels
- Parking decks

- Green roofs
- Artificial sports fields
- Concrete slabs

Features and benefits

- Leading drainage composite for over four decades
- Combines drainage, protection and filtration in one product
- Various discharge capacities and compressive strengths available
- Eliminates clogging of the drainage core
- No deterioration of the boundaries associated with traditional drainage methods

- Will not degrade over time and will not pollute the subsoil
- Excellent durability and long-term performance
- The product is lightweight, strong and easy to install in all weathers
- Supplied in small rolls for ease of handling and installation
- Can be disposed of and recycled safely after service life
- Reduces carbon footprint compared to more traditional drainage methods

EnkaDrain's extensive range includes a large number of product types, each having properties tailored for specific applications. Although the primary application is drainage, some EnkaDrain types have also proven themselves as a cost-effective vibration control layer, as well as for hydrostatic pressure relief.

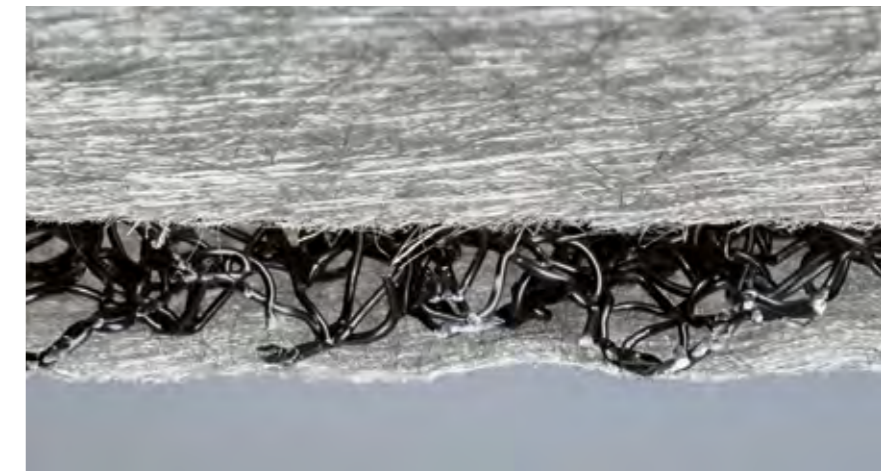
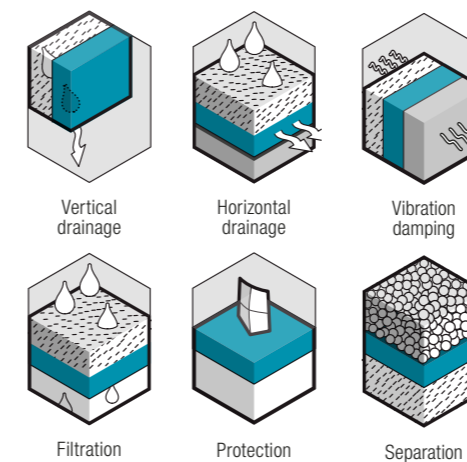
Technical details

EnkaDrain is a range of drainage composites that consist of a polymer drainage core which is thermally bonded or spot welded to a protective and separating nonwoven filter on one or both sides. The core can be v-shaped or consisting of looped filaments fused where they cross. Properties regarding stiffness,

discharge capacity or tensile strength vary per product type, as do the properties of the fleece.

Thickness varies between 4 and 22 mm. The standard EnkaDrain is available in rolls of 1 and 2 m width. The range includes fire retardant types.

Product functions



EnkaDrain® Wide

Drainage for landfills and large infrastructure areas

EnkaDrain Wide consists of a 5 metre wide three-dimensional monofilament drainage core with either a thermally bonded or needle punched nonwoven or woven fabric stitched to it. The product is a versatile and reliable geocomposite for landfills and large infrastructure projects.



Functions

- Landfill drainage
- Landfill gas venting
- Landfill leachate drainage
- General drainage on large areas
- Drainage on membranes

Application areas

- Landfills
- Large embankments
- Rooftop gardens
- Parking decks
- Foundation slabs

Features and benefits

- Benchmark as leading drainage composite for over four decades
- Excellent performance under high loads
- Long term performance proven by numerous laboratory tests and landfill excavations
- Good internal shear resistance
- Protects waterproof coatings and membranes from damage
- Open structure means high discharge capacity
- High flow transmission even at low gradients
- Is inert and will not degrade over time
- Non-toxic
- Large rolls (5 m x 100 m) for ease of installation on site
- Lightweight and easy to cut
- Can be installed in all weather conditions
- Cost efficient solution
- Can be disposed of safely or recycled after service life

For waste containment purposes, EnkaDrain Wide is used as a drainage layer on top of the capping membrane and as the gas venting layer below the capping liner, as well as for leachate drainage.

EnkaDrain Wide is available in different product types, one of which has a 100 year predicted durability reflecting the long service life that can be expected from this high performance product range. The fabric of this high quality geocomposite can be stitched to either one or both sides of the core.

Technical details

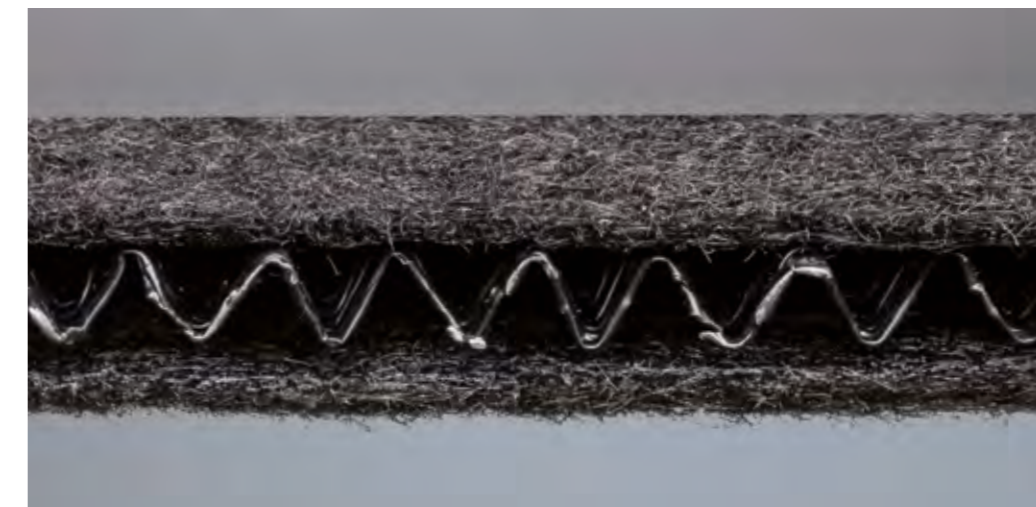
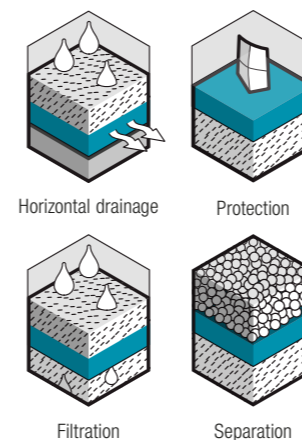
The EnkaDrain Wide core consists of a unique V-shaped zigzag structure. The thermally bonded or needlepunched nonwoven is stitched to the core at closely spaced intervals longitudinally, on either one or both sides. This core is thermally pre-formed in a V-shape configuration, making it optimally pressure resistant. All EnkaDrain Wide product types are manufactured in 5 m width.

EnkaDrain Wide production is subject to stringent internal and external monitoring. EnkaDrain ZB-350

offers >100 years predicted durability, assessed by BAM.

Individual test reports and opinions have been conducted or assessed by independent organizations and authorities. Independent inspectors are monitoring the product's use at numerous landfills.

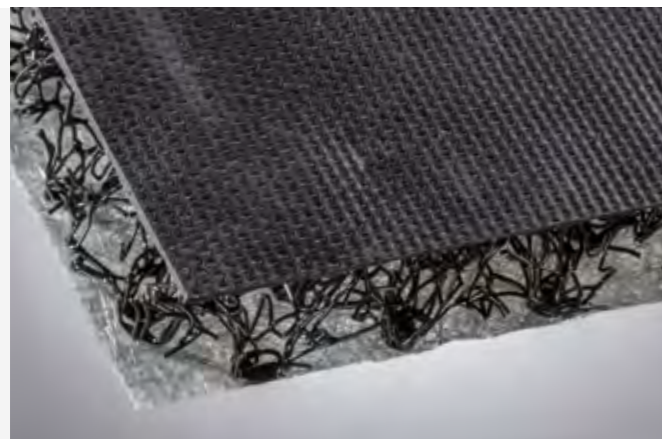
Product functions



EnkaDrain® CK

Multifunctional geocomposite for drainage, lost shuttering and vibration damping

EnkaDrain CK is a multifunctional geocomposite with a cavity-rich polyamide core featuring on one side either a PVC layer or coated filter, and on the other side a nonwoven fleece. EnkaDrain CK is developed for a range of specialist applications, for instance tunneling and complex formwork.



Functions

- Drainage
- Protection
- Separation
- Lost shuttering
- Vibration damping

Application areas

- Complex formwork
- Deep drainage
- Neighbouring constructions
- Tunnelling

- Underneath concrete ground slabs
- Road, rail and other vibration impacted areas

Features and benefits

- Multifunctional product
- Reduces environmental impact
- Cement milk proof
- Cuts excavation volume
- Flexible and suitable for complex geometries
- Matches any substrate
- Resists ground movements
- High compressive strength
- High flow capacity
- Consistent long term performance
- Compact lightweight rolls
- Quick and easy to install in all weather conditions
- Frost resistant
- Can be disposed of safely after service life

Drainage

EnkaDrain CK is used as a protective drainage layer between existing structures, new structure walls and in tunnels. Thanks to its flexibility it easily adapts to the most complex geometries. EnkaDrain CK is suitable for drainage at great depth.

Lost shuttering

When used as lost shuttering, the PVC layer or the coated nonwoven layer on EnkaDrain CK will prevent cement milk from entering the core. The concrete can be applied directly, without any loss of space.

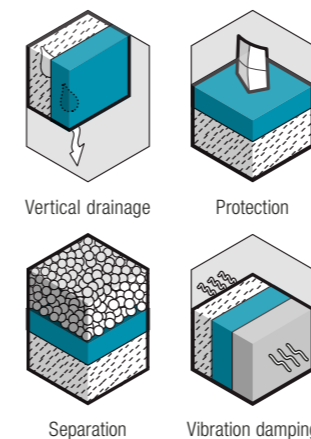
Vibration damping

EnkaDrain CK decouples or dampens structure- or soil-borne vibrations that can be caused by various sources such as road and rail traffic, construction operations, transmissions between neighbouring buildings or machinery and power plants. EnkaDrain CK provides an effective and cost efficient solution for vibrations that would otherwise result in structural damage or negative environmental impact.

Technical details

EnkaDrain CK is a multifunctional geocomposite with a cavity-rich core featuring on one side either a tight PVC layer or coated filter, and on the other side a protective fleece. Its core comprises looped polyamide filaments that are fused together where they cross. Both the PVC layer and the nonwoven filter extend 10 cm beyond the core on opposite sides. This ensures that the joint is covered when lanes of EnkaDrain CK are laid adjacent to one another. EnkaDrain CK has a roll width of 1 m.

Product functions





The Enka Solutions product range is manufactured by Low & Bonar who is a global leader in the field of high performance technical textiles operating since 1903. The product range serves a wide range of applications. Continuous focus on quality along with strategic business partnerships are amongst the key drivers of the Company's success. The current product portfolio includes nonwovens, geosynthetics and building products as well a comprehensive range of specialty

fabrics and composites serving customers in the most diverse industries. Manufacturing plants are located in Europe, North America and China. For product and application development work as well as customer specific material testing Low & Bonar maintains R&D facilities on both sides of the Atlantic Ocean. Approved by Lloyd's Register Quality Assurance to the NEN-EN-ISO 9001:2015 Quality Management System Standard.

China	T +86 21 6057 7287	Hungary	T +36 70 646 1150
France	T +33 1 57 63 67 40	Netherlands	T +31 85 744 1300
Germany	T +49 6022 812020	USA	T +1 828 665 5050

Or contact your local distributor

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