



enka® solutions

ENKADRAIN®

HIGH PERFORMANCE DRAINAGE COMPOSITES
PRODUCT OVERVIEW

INNOVATING TOGETHER

 **FREUDENBERG**
PERFORMANCE MATERIALS



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.



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 up to 100 years according to CE standards.



EnkaDrain®



EnkaDrain® Wide



EnkaDrain® CK

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

EnkaDrain CK and CKL

- For specialist applications in building and civil engineering including tunneling
- Suited to fulfill vibration damping and drainage functions
- Supplied with various types of lamination 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.



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.



Functions

- Drainage
- Protection
- Filtration
- Vibration damping
- Hydrostatic pressure relief

Application areas

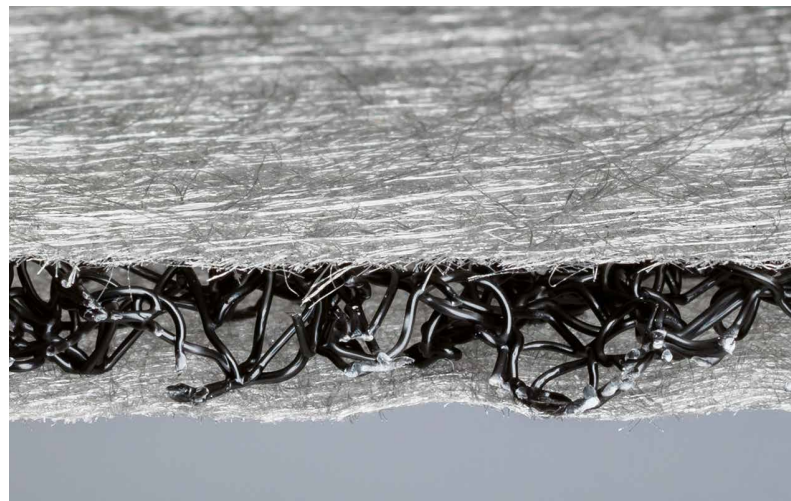
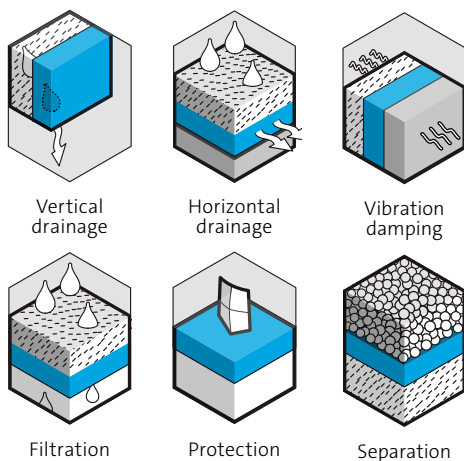
- Basement walls
- Retaining walls
- Bridge abutments
- Embankments
- Tunnels
- Parking decks

- Green roofs
- 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 long-term performance
- 100 years durability according to CE standard (v-shaped core)
- 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

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.



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 needle-punched 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. All EnkaDrain types with a V-shaped core have been granted 100 years of durability according to CE standards.

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.



Functions

- Seepage water drainage
- Gas venting
- Leachate drainage
- Drainage on geomembranes
- Regular drainage on large areas

Application areas

- Landfills
- Large embankments
- Rooftop gardens

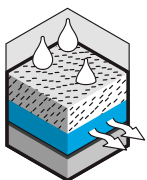
- Parking decks
- Foundation slabs

Features and benefits

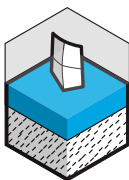
- Benchmark as leading drainage composite for over four decades
- Excellent performance under high loads
- Long term performance proven by numerous laboratory tests and landfill excavations
- Good internal shear resistance

- Protects waterproof coatings and membranes from damage
- Open structure and low fleece intrusion under load means continuous high discharge capacity 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

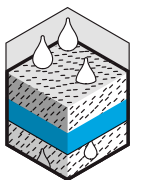
Product functions



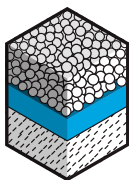
Horizontal drainage



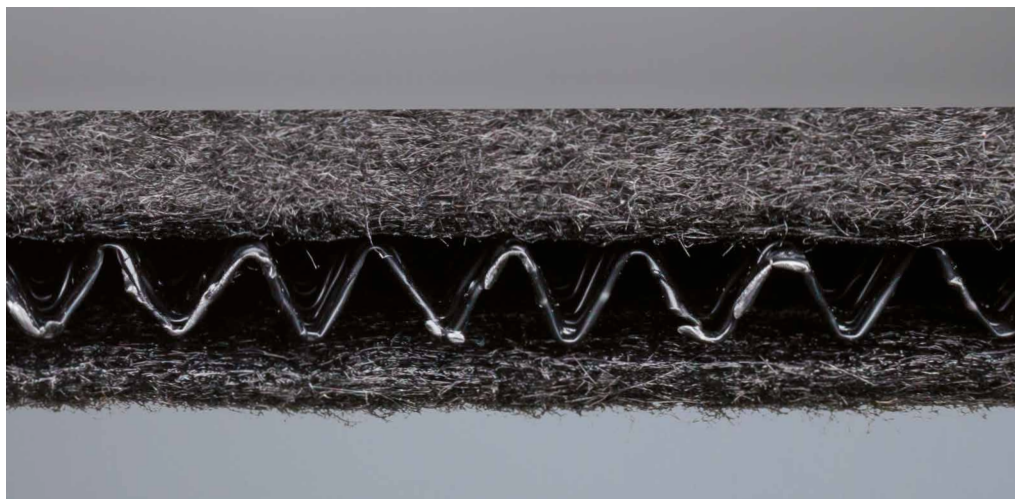
Protection



Filtration



Separation



ENKADRAIN® CK AND CKL MULTIFUNCTIONAL GEOCOMPOSITES FOR DRAINAGE, LOST SHUTTERING AND VIBRATION DAMPING

EnkaDrain CK and CKL are multifunctional geocomposites that feature a cavity-rich polyamide core connected to a PVC layer (CK) or coated filter (CKL) on one side, and on the other side to a nonwoven fleece. The products are developed for a range of specialist applications, for instance tunneling and complex formwork.



Drainage

Both EnkaDrain CK and EnkaDrain CKL are used as protective drainage layers between existing structures, new structure walls and in tunnels. Thanks to their flexibility they easily adapt to the most complex geometries. The products are suitable for drainage at great depth.

Lost shuttering

When used as lost shuttering, the PVC layer or the coated nonwoven layer 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 and CKL are multifunctional geocomposites with cavity-rich cores featuring on one side either a lamination tight PVC layer or coated filter, and on the other side a protective fleece. Their 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 are laid adjacent to one another. The products come in rolls of 1 m width.



Functions

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

Application areas

- Complex formwork
- Deep drainage
- Neighbouring constructions

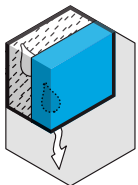
- Tunnelling
- Underneath concrete ground slabs
- Road, rail and other vibration impacted areas

Features and benefits

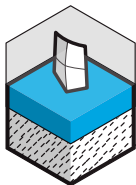
- Multifunctional product
- Reduces environmental impact
- Cement milk proof
- Cuts excavation volume
- Flexible and suitable for complex geometries
- Matches any substrate

- Resists ground movements
- High compressive strength
- High flow capacity
- Consistent long term performance
- 100 years durability according to CE standards
- Compact lightweight rolls
- Quick and easy to install in all weather conditions
- Frost resistant
- Can be disposed of safely after service life

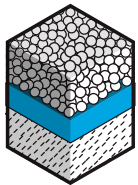
Product functions



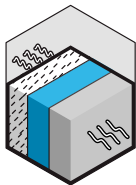
Vertical drainage



Protection

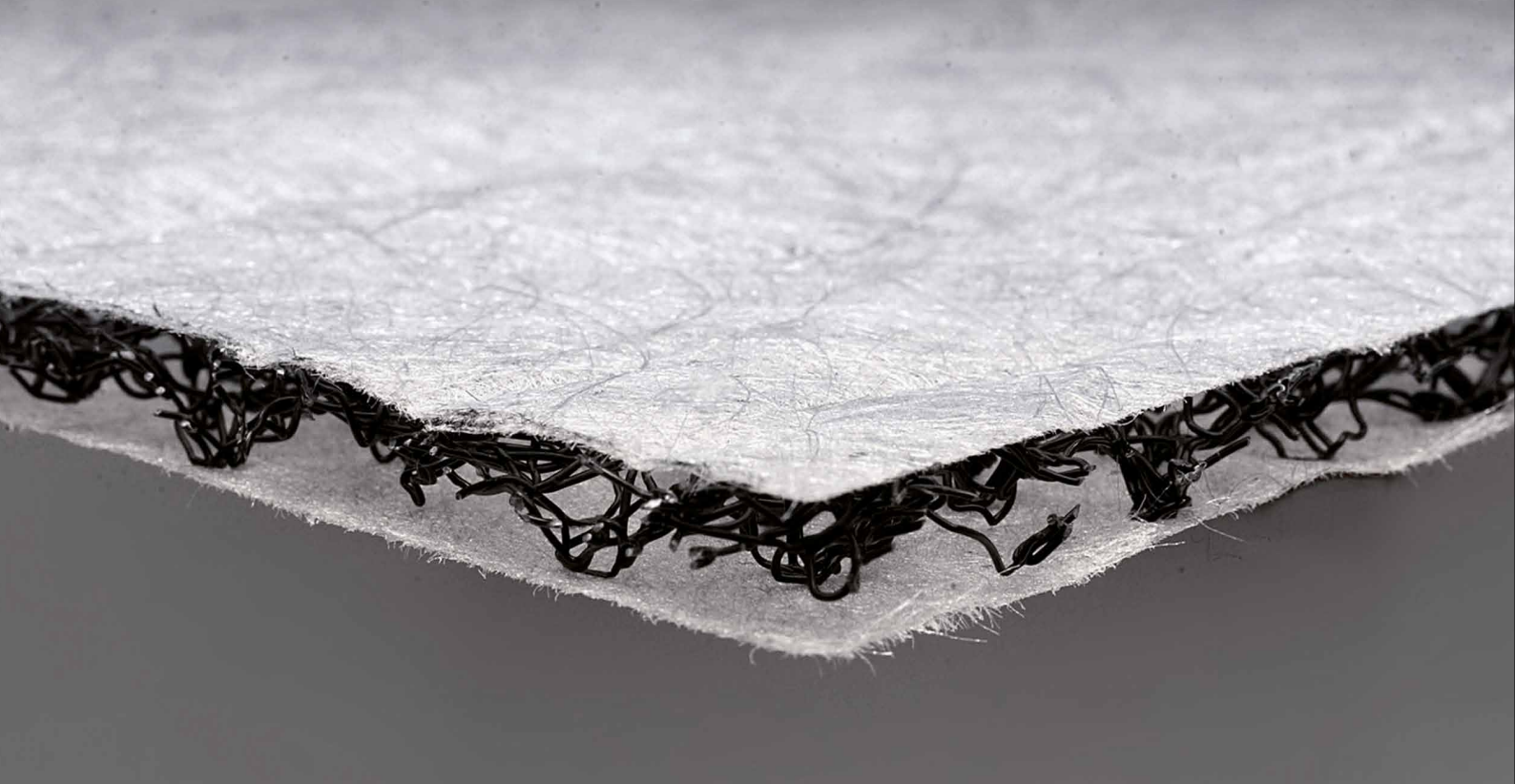


Separation



Vibration damping





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 like 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 Enka Solutions can do for you?

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

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