

Enkamat®

Enkagrid®

Colbondrain®

Enkadrain®

Civil Engineering Products



The thin line between comfort and catastrophe™

Enka-Engineered

CIVIL ENGINEERING
PRODUCTS

COLBOND

Multiple solutions for:

- slopes
- embankments
- landfills
- shorelines
- channel linings
- ditches
- ponds
- earthen dams
- storm channels
- spillways
- bioengineering
- levees

Enkamat is available in a variety of weights, thicknesses, widths, and components.

Colbond Inc. has developed a family of high performance geosynthetics to help engineers around the world face increasingly more complex construction and environmental challenges. Our Enka-Engineered family includes Enkamat, Enkagrid, Colbondrain, and Enkadrain. These well-respected products are used worldwide for erosion control, soil improvement, drainage, and waste containment.



Slope Protection

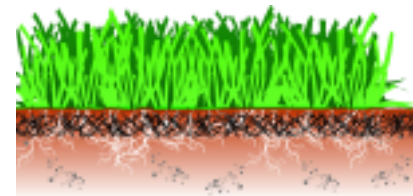
Enkamat provides immediate soil stabilization to the surface of even the steepest slopes. Its tough root reinforcing system anchors vegetation and protects against hydraulic lift and shear forces created by high water flow.

Enkamat "S" incorporates a high-strength geogrid with Enkamat. The geogrid reinforcement takes over when extreme conditions exist and where surface root reinforcement is not the only issue. It is suitable for vegetating steep, weathered rock slopes and improving veneer stability by reinforcing soil covers on lining systems.



Channel Linings

Enkamat provides maximum protection of vegetation and stabilizes soil particles even in the most extreme hydraulic events. Enkamat can withstand velocities greater than 20 feet per second and has no buoyancy factor (specific gravity >1).



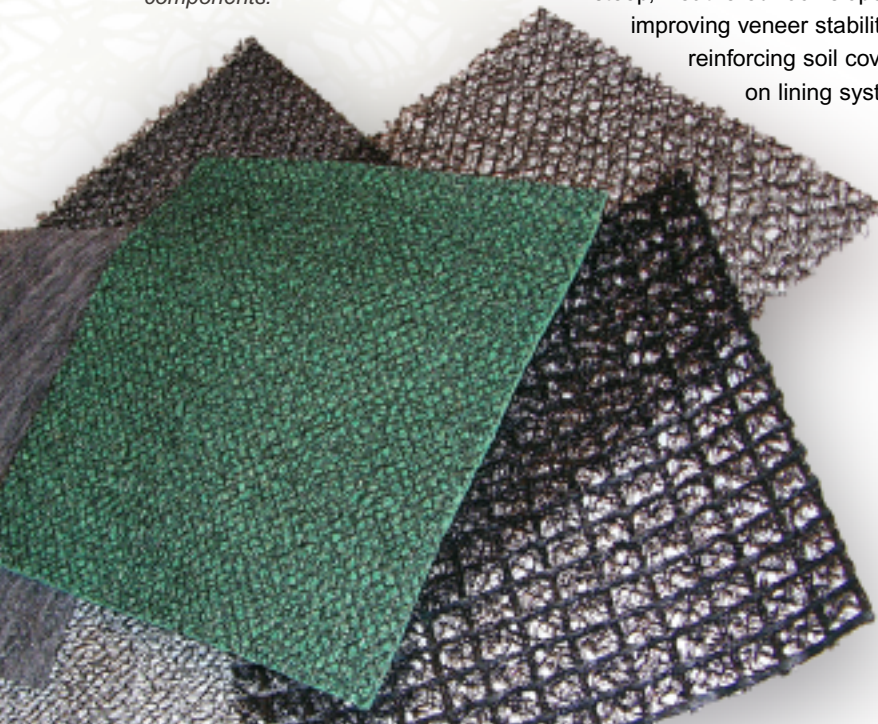
What is Enkamat?

Enkamat is a three-dimensional matrix joined at the intersections of randomly oriented nylon filaments. 95% of the geomatrix is open space which supplements nature's own erosion control system by reinforcing the plant roots. As the roots grow, they become entwined within the Enkamat, making an extremely stable cover.



Enkamat II

The newest member of the Enkamat family combines the proven technology of the original Enkamat with cutting-edge developments of fiber-reinforced, biodegradable materials. It provides immediate erosion protection to prevent soil loss and creates the optimum micro-environment to enhance seed germination and plant emergence.



Soil improvement

Enkagrid PRO and Enkagrid MAX are instantly recognizable by distinctive high tensile, extruded polymeric bars. Enkagrid TRC, introduced in 1997 as the first multi-functional geogrid composite, offers the highest modulus of any polymeric grid. These powerful geogrids are the future of soil reinforcement and are among the strongest and most durable geogrids on the market today.

Base Reinforcement

Enkagrid MAX is a rigid, biaxial geogrid of extruded polypropylene bars developed to provide a high passive bearing resistance with optimum interaction in all soil types. This unique double-weft structure provides consistent stress-strain performance throughout - making it ideal for base stabilization in permanent and temporary roadway projects. By stabilizing the base or subbase, Enkagrid MAX can significantly reduce the granular fill.



Enkagrid TRC is the solution when separation, in addition to reinforcement, is required. Constructed of high-modulus Twaron® aramid fibers embedded in Colback®, a high tenacity polyester nonwoven, it *combines both separation and reinforcement in a single product.*

When used as base reinforcement, **Enkagrid PRO** increases the bearing capacity of an embankment or working platform on soft soils with very low shear strengths. It delivers extra stiffness to prevent differential settlement during consolidation and prevents sliding by increasing the external stability.

Slopes and Walls

Enkagrid PRO is a rigid, uniaxial geogrid of extruded polyester bars that are laser welded at the junctions for optimum soil-geosynthetic interaction, high junction efficiency,



and long term performance. The highly-oriented polyester bars provide powerful and dependable reinforcement and create an anchoring effect required for steep slopes and vertical wall applications.

Land Reclamation

Colbondrain consists of a nonwoven polyester filter jacket and a three-dimensional open PET core. Colbondrain accelerates consolidation of silts and clay soils by offering a highly permeable drainage path for the release of excess pore water. Using Colbondrain allows for rapid consolidation in reclaiming previously unusable land.



Multiple solutions for:

- paved roads
- parking lots
- construction haul roads
- trucking terminals
- airport runways
- holding aprons
- railways
- mining
- embankments
- slopes and walls
- segmental block walls
- bridge abutments
- foundations

drainage



Order your free copy of *EnkaGreen* or *EnkaSlope* design software online at www.colbond-usa.com.

COLBOND

1301 Sand Hill Road
P.O. Box 1057
Enka, NC 28728
Tel. (+1) 828-665-5050
Toll Free: (+1) 800-365-7391
Fax (+1) 828-665-5009

email:
enka-engineered@colbond.com

Internet:
www.colbond-usa.com

Structural Drainage

Enkadrain is a subsurface drainage composite consisting of a 95% open, three-dimensional polymeric core with one or two nonwoven filter fabrics attached. Designed to relieve hydrostatic pressure from soils abutting below grade structures, Enkadrain



provides a lightweight alternative to traditional sand and gravel drains. Around foundations, in tunnels, and behind retaining walls, Enkadrain filters percolating water and transports it to a collector drain for evacuation.

Roadway/Tunnel Drainage

When used directly under the pavement, under the base aggregate, or below frost susceptible soils, **Enkadrain** quickly removes subsurface water away from the road base by allowing multi-directional flow to



outlet pipes. The result is better drainage and longer lasting roadways.

Enkadrain is also used in tunnels to protect the waterproofing layer and remove precipitation before it ever reaches the tunnel lining. The geotextile fabric holds soil fines back while allowing the water to pass quickly through the 95% open core.

Colbondrain provides a vertical drainage path to accommodate rapid pore water pressure dissipation. Using Colbondrain allows consolidation of silts and clays to occur in months, rather than years.



Design Software

EnkaGreen e-engineering with Enkamat makes designing your next erosion control project just a few clicks away. It uses FHWA's HEC-15 design methodology and USDA's RUSLE for channel linings and slopes. Once slope or channel costs are calculated, the results can be analyzed and compared.

The **EnkaSlope** software program was developed exclusively for Colbond by Dr. Dov Lechinsky. It utilizes state-of-the-practice calculation methods to determine the layout and minimum tensile requirements for any given slope geometry and factor of safety.

Colbond is a global producer of high-quality synthetic nonwovens for flooring, automotive, and construction applications and three-dimensional polymeric mats and composites for civil engineering, building and industrial applications.

DISCLAIMER

IN NO EVENT SHALL COLBOND INC. BE LIABLE FOR CONSEQUENTIAL DAMAGES OR DAMAGES OF ANY KIND EXCEEDING THE SALE PRICE OF OUR PRODUCTS FOUND TO HAVE BEEN DEFECTIVE. COLBOND MAKES NO WARRANTIES, EXPRESS OR IMPLIED BY OPERATION OF LAW OR OTHERWISE INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSES OR END USE. INFORMATION CONTAINED HEREIN REGARDING APPLICATIONS OF OUR PRODUCTS IS OF A GENERAL NATURE, AND SINCE CONDITIONS VARY WITH EACH SITE, COLBOND MAKES NO GUARANTEE OF RESULTS OR THE SUFFICIENCY OF THE INFORMATION CONTAINED HEREIN FOR THE USE CONTEMPLATED. Enkamat, Enkagrid, Colbondrain, and Enkadrain are registered trademarks of Colbond by and are covered by a number of U.S. patents. No license is granted or implied by these materials.

© Colbond Inc. R: 11/05

Printed in the U.S.A.

