

SLOPES
EMBANKMENTS
LANDFILLS
SHORELINES
CHANNEL LININGS
DITCHES
PONDS
EARTHEN DAMS
STORM CHANNELS
SPILLWAYS
BIOENGINEERING
LEVEES
WETLANDS
GOLF COURSES
RESIDENTIAL

Enkamat[®]

Root Reinforcement Matrix R²M



The thin line between comfort and catastrophe™



Kansas City, KS before



Kansas City, KS after

Enkamat R²M is designed to grow wetland plants and / or native ecospecies. TRM's are designed for turf only.

Why Green Engineering?

Green engineering focuses on improving local and global environmental quality. It is applying environmentally conscious attitudes, values and principles and combining them with science and technology to make the world a better place to live. Restoring natural vegetation with Enkamat® reduces soil erosion, filters pollutants, recharges groundwater, improves water quality and enhances native ecosystems.

Enkamat Enhances the Environment

Soil erosion and sedimentation caused by stormwater runoff and concentrated water flow is a big problem, not only during construction, but during the post closure phase of construction projects. The Phase II Rule of the EPA's Clean Water Act (1998), National Pollutant Discharge Elimination System (NPDES) promotes stricter requirements and increased federal dollars for the implementation of best management practices (BMP's) for erosion and sedimentation control. It is estimated that 97% of all acreage under development is, and will continue to be, affected by this legislation. One of the most cost effective ways to prevent erosion and reduce sediment loss is to stabilize disturbed land

with bioengineering, especially around wetlands, lakes,

streams, and channels. Enkamat anchors natural vegetation and can be used to re-engineer the land to enhance the natural cover's performance on designed steeper slopes or under high water velocity and shear conditions.

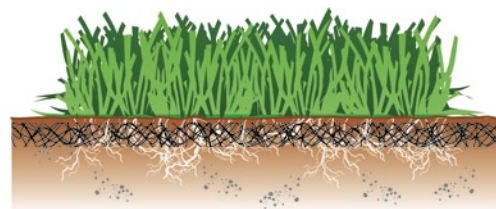
Enkamat Technology

Enkamat root reinforcement technology was introduced in the early 1970's and set the parameters for success for all erosion control products:

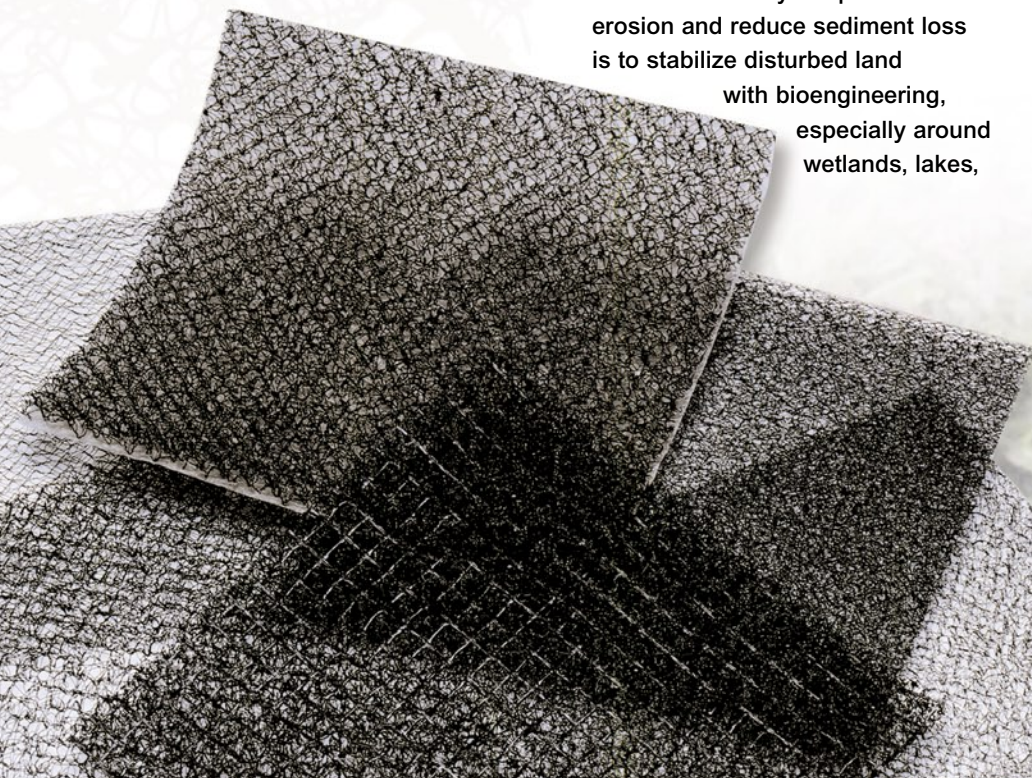
Conformability / Flexibility - the ability to conform and adapt to any ground surface.

Survivability / Durability - resistance to damage before, during and after construction.

Performance - the ability to minimize soil and vegetation movement during rainfall (hydraulic loading).



The 95% open structure of Enkamat is designed to ensure that any type of vegetative growth is not restricted when interacting with the mat. As the roots grow, they become entwined within the Enkamat, making an extremely stable cover. Its tough root reinforcing system anchors vegetation and provides a holding cavity for the soil. These unique properties ensure a true interaction between the vegetation, soil and the Enkamat.



Enkamat will not unravel or lose its structural integrity when cut in the field during installation.

Note: Some competitive products lose their fibers if the RECP is cut. This compromises the integrity of the product and causes environmental concerns when loose fibers migrate into ecological systems.

The performance parameter that best predicts failure or maximum performance of a TRM is resistance to shear force created by hydraulic loading. Also, Enkamat is manufactured from nylon which has a specific gravity > 1 to ensure that it will not float under any hydraulic condition. TRM's manufactured from polypropylene have a specific gravity < 1 which causes them to float.

Consider these factors when using Enkamat:

- Soil characteristics
- Gradient / slope
- Flow characteristics
- Water runoff
- Frequency of rain events
- Establishing / maintenance of vegetation

Enkamat vs. Temporary Erosion Control

Enkamat, unlike temporary erosion control products, is designed to stay in place permanently to protect seeds and soil. The protection improves over time with the establishment of vegetation.

Why use Enkamat?

- Reinforced vegetation layer
- Increased permissible shear of the vegetation
- Will not lose performance or integrity when cut in the field
- Non-restrictive vegetation growth

Slopes and Channels

Because of the dense concentration of land development, erosion and slope failures due to upstream construction activities are becoming more of a burden for communities. An increase in runoff and shear stresses on slopes and channels cause sediment loss and downstream deposition, which is a costly violation of NPDES / Phase II Rules. Enkamat helps vegetation perform better on steep slopes and high velocity channels by anchoring roots permanently in the soil.

This is a major factor to consider in slopes steeper than 3:1 and channels with a high water velocity.

Green Slopes and Channels Provide:

- Erosion control
- Filters pollutants
- Groundwater recharge
- Oxygen production
- Cooling effect
- Recreation
- Aesthetics



Beverly Hills, CA before



Beverly Hills, CA after



Reno, NV before



Reno, NV after

EnkaGreen e-engineering with Enkamat®

Designing with Enkamat on your next erosion control project is just a few clicks away. EnkaGreen allows engineers / designers to analyze various channel linings using FHWA's Hydraulic Engineer Circulation (HEC-15) design methodology. It can also calculate slope linings using USDA's Revised Universal Soil Loss Equation (RUSLE). Once slope or channel costs are calculated, the results can be analyzed and compared.

What makes EnkaGreen better than the erosion control design software currently available?

- Extensive help files and graphics make the CD more user friendly.
- Ability to analyze user-determined Manning's roughness coefficient.
- Haestad Flow Master results can be verified.
- Cost analysis module allows more freedom to enter whatever tasks or materials are needed.

Extend the boundaries of natural vegetation with the GreenArmor™ System.

The GreenArmor System combines engineering and agronomic excellence to create the world's most effective Green-Engineering™ alternative. Enkamat provides a permanent, lofty and open matrix that is hydraulically infilled with Flexterra® FGM (Flexible Growth Medium) to intimately bond soil and seeds while accelerating growth. This unique system protects against elevated levels of hydraulic lift and shear forces while encouraging turf establishment and long-term root reinforcement—growing denser vegetation, faster. Other benefits include:

- Hydraulically Infilled—Flexterra FGM provides immediate erosion control.
- Twice as Fast—Holding 15 times its weight in water, the GreenArmor System doubles turf establishment rates.
- Unmatched Factors of Safety—The GreenArmor System exceeds safety factors at 1/3 to 1/2 the cost of hard armor.
- Higher-Density Turf—With 95% open space, Enkamat TRM assures thicker turf establishment and enhanced root reinforcement.
- 99% Effective—Upon installation, the GreenArmor System delivers superior erosion control on slopes and in channels.

PROFILE Products LLC is the world's largest supplier of erosion control blankets, hydraulic mulches, flexible growth media, bonded fiber matrices, storm water treatment devices and complementary accessories.

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.

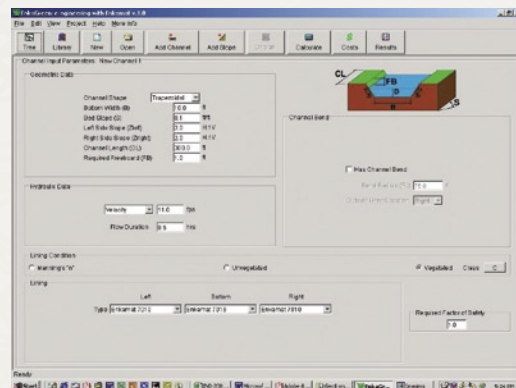
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PROFILE EROSION CONTROL SOLUTIONS

By: **Profile**

750 Lake Cook Rd., Suite 440
Buffalo Grove, IL 60089
www.profileproducts.com

For technical information,
customer service call
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