

High Performance TRM Technical Note (TN)

November 2021



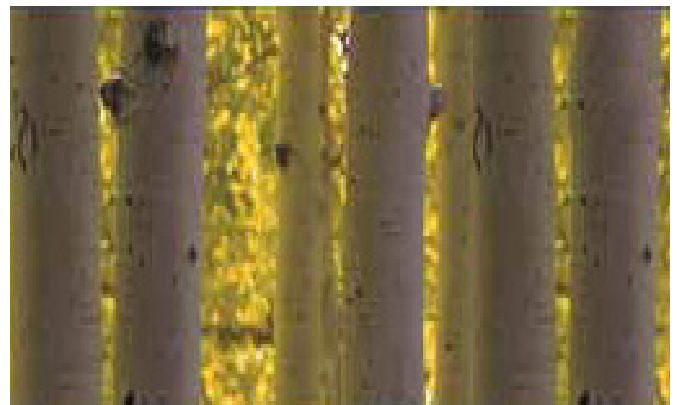
Introduction to Terramat® TMAX / XTREME

Terramat Technical Note is produced by Polyfabrics to furnish education pertinent and specific to the erosion control industry. Technical Note is Intended to offer erosion control professionals an educational resource to serve as a foundation for performance focused solutions. Technical Note has been developed to provide an introduction to TMAX/Xtreme, continuously woven, high strength Turf Reinforcement Mat (TRM).

TRMs are produced in various forms. hopped fiber TRMs are constructed by mechanically securing (stitching) a matrix of loose chopped fiber between two or more nets. Melt bonded TRMs use individual members together with a heat process. Continuously woven TRMs combine individual high strength yarns in a precise weaving process to form a stable, strong three-dimensional matrix. Continuously woven TRMs provide the greatest consistency, overall strength and durability. Since each filament within the material is providing coverage and tensile strength, continuously woven TRMs provide sufficient tensile strength to be used as geotechnical reinforcement for some applications. TMAX/Xtreme is a continuously woven TRM designed specifically for high performance turf reinforcement and plant germination.

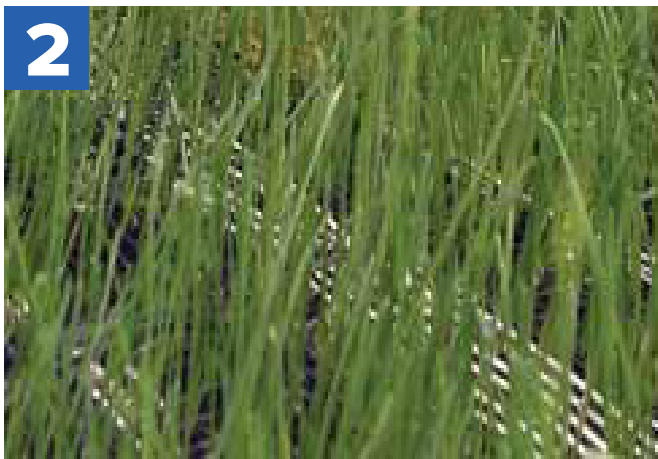
What are TRMs

Rolled Erosion Control Products (RECPs) are produced in a wide variety of types and configurations. Turf Reinforcement Mats (TRMs), a subset of RECPs consisting of permanent, structurally stable products, are used to provide immediate erosion control and long term vegetation support and reinforcement. By providing a permanent, structural matrix, secured to the ground surface, TRMs create a systemic erosion control installation from individual plants. Conceptually, TRMs function similarly to rebar reinforcement in concrete or the steel super-structure of a building. By securing plant stems and protecting plant roots, the reinforced system is capable of resisting greater hydraulic forces and reducing vegetal fatigue.



TMAX/Xtreme

The objective in development of TMAX/Xtreme was to yield a high strength, high durability TRM, balancing material properties to obtain the maximum overall performance. Thus, Western Excelsior designed an entirely new, proprietary production process and optimized material properties for maximum, overall performance. TMAX/Xtreme is produced with sufficient thickness to yield excellent erosion control and turf reinforcement while maintaining an open matrix to allow for the establishment of vegetation. As vegetation matures in the matrix of the material, individual plants are well secured, incorporated into a systemic erosion control installation. Seedlings are protected and benefit immediately upon installation of TMAX/Xtreme. Mature vegetation benefits from the long-term durability of the material, resisting chemical, biologic, physical and ultra-violet damage.



Western Excelsior utilised ASTM D6460 to evaluate the performance of TMAX/Xtreme in its ultimate role of turf reinforcement. Under test conditions, an adequate stand of vegetation for evaluation had been developed in less than ninety days. The rate and quality of vegetation establishment shows the superior design of TMAX/Xtreme, compared to other TRM materials with restrictive matrices. In less than three months, a full, healthy stand of vegetation had stabilized the test soil. Additionally, no tenting was evident in the test plot. The reinforced, vegetated system was then subjected to the forces of flowing water for multiple, one-hour events. The vegetation was securely held within the high-strength, woven matrix and the test soil was protected.

Once the initial test was completed, the vegetated stand was given a full season to mature. The ultimate performance of the reinforced system was determined in a second test series. TMAX/Xtreme exhibited industry leading performance by demonstrating stability when exposed to extraordinary hydraulic forces. In selecting or specifying a TRM, it is imperative to choose the material demonstrating properties that are of greatest benefit to the growth and the securing of the vegetation. Put simply, a TRM can only reinforce what a TRM can grow. Specify TMAX/Xtreme to provide the highest level of turf reinforcement and turf establishment in a high strength material.



Vegetated Testing of TMAX/Xtreme in channelised flow

TMAX/Xtreme Properties			
Tensile Strength (MD x TD)	64 kN/m x 48 kN/m	Unit Weight	350 gsm approx.
Roll Size	2.4/3.5 x 40/24 m	Longevity	Permanent
Configuration	Continuously Woven	Design Shear Stress (fully vegetated)	766 Pa
Roll Area	96 m ² / 84 m ²	Design Velocity (fully vegetated)	7.6 m/s