



THE JOHNSON GROUP

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3-D Woven Technology: The “Next Generation” in Turf Reinforcement Mats

The designers at Propex have taken the technology in their high performance turf reinforcement mats (HPTRMs) and used it to design the next generation of turf reinforcement mats (TRMs). These new netless, composite-free three-dimensional woven TRMs are designed to deliver superior, long-term performance, and are proven to outperform traditional methods like rock riprap, concrete paving and first generation netted, fused, glued or stitch-bonded composite TRMs. And what separates the new 3-D woven mats from first generation products? Their rugged material construction that combines superior tensile strength, flexibility and UV stability for better design life.

Material Construction

The quality of the construction starts with each component of a TRM or HPTRM. Unlike round or oval fibers used in conventional TRMs, Propex woven mats feature X3[®] fibers that are extruded through a proprietary process that provide over 40% more surface area. The unique shape of these UV-stabilized polypropylene fibers allows them to capture the moisture needed to enhance seedling growth. When formed into a dimensionally stable, uniform configuration of resilient pyramid-like projections, this homogenous, 3-D pattern creates a thick matrix of voids for trapping and housing the sediment, soil and water required for rapid and lush vegetation growth.

Tensile Strength

The tensile strength of a TRM and HPTRM is a key property that shows its value when mobilized. These mats should be used especially when field conditions exist with high loading and/or high survivability requirements, including maintenance, structural backfills protecting critical structures, utility cuts, potential traffic areas, abrasion and high factors of safety and/or durability concerns. The tensile resistance of first generation TRMs can't withstand the stresses induced by these loads. But Propex woven mats feature unequalled tensile strength and abrasion-resistant properties for superior performance.

Flexibility

Establishing and maintaining intimate contact with the subgrade is crucial to a successful TRM installation. Regardless of how well prepared the subgrade is, there are always irregularities. Stiffness of most products on the market and different rates of thermal expansion/contraction of composites cause lack of intimate contact with the soil. The result is rilling and undermining of the

subgrade beneath the TRM. This has a direct correlation on the material's ability to achieve and maintain intimate contact with the soil surface, which will allow significant erosion to occur. A flexible woven mat will drape over the subgrade and maintain intimate contact to help rapid seedling emergence and minimize soil loss.

UV Resistance

The long-term durability of a TRM largely depends on its UV resistance. Propex's 3-D woven mats are constructed so that all yarns are interconnected and provide the same superior UV resistance throughout. Traditional first generation TRM's are made up of composites that do not always offer the same UV characteristics. Over time properties can change resulting in rapid degradation. This is especially critical in arid and semi-arid applications where TRMs must withstand UV exposure for prolonged periods.

Propex Woven Products

Propex's patented three-dimensional woven technology is featured in Pyramat[®] high performance turf reinforcement mats. Pyramat meets the definition of HPTRM as defined in the U.S. EPA Storm Water Fact Sheet, "Turf Reinforcement Mats" (EPA 832-F-99-002), and FHWA FP-03 Specifications, Section 713.8. And now Propex has made this revolutionary woven technology available in its new Landlok[®] turf reinforcement mat known as Landlok 300.

For more information on Propex Pyramat and Landlok 300 woven products with X3 fiber technology, visit www.geotextile.com. Or call 800-621-1273.