

# PYRAMAT®

## HIGH PERFORMANCE TURF REINFORCEMENT MATS



Pyramat® High Performance Turf Reinforcement Mats (HPTRMs) feature Propex patented woven technology composed of a unique, three-dimensional matrix of polypropylene yarns. These yarns are designed in a uniform, dimensionally stable and homogenous configuration of pyramid-like structures, and they feature Propex patented X3® fibre technology specially created to lock soil in place. HPTRMs exhibit extremely high tensile strength as well as superior interlock and reinforcement capacity with both soil and root systems. They stand up to the toughest erosion applications where high loading and/or high survivability conditions are required, including maintenance access, steep slopes, arid and semi-arid environments, pipe inlets and outlets, structural backfills, utility cuts, potential traffic areas, abrasion, high-flow channels and/or areas where greater factors of safety are desired. Pyramat's superior characteristics provide a longer design life than Propex first and second generation standard TRMs, and meet the definition of HPTRM as defined by the U.S. EPA Storm Water Fact Sheet, "Turf Reinforcement Mats" (EPA 832-F-99-002) and FHWA FP-03 Specifications Section 713.8.

### FEATURES & BENEFITS

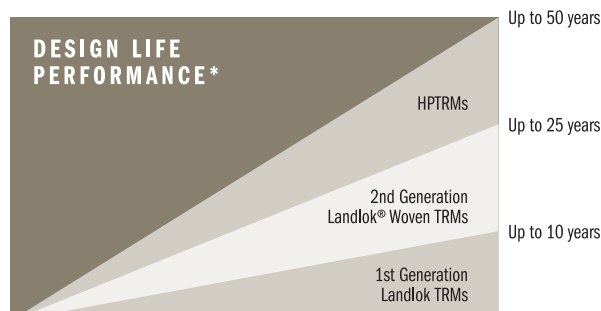
- ▶ A unique, patented matrix of pyramids formed with X3 fibres that gridlocks soil in place under un-vegetated, partially vegetated and high-flow conditions
- ▶ Ideal for extended ultraviolet (UV) exposure, utility cuts, maintenance equipment traffic, pipe inlets and outlets and other high loadings
- ▶ X3 cross-sectional area for additional tensile strength, flexibility and seedling emergence
- ▶ Holds seed and soil in place on channels and slopes while vegetation grows
- ▶ Provides permanent reinforcement to enhance vegetation's natural ability to filter soil particles and prevent soil loss during storm events
- ▶ Promotes infiltration which leads to groundwater recharge
- ▶ Vegetation solution providing more pleasing aesthetics than conventional methods (i.e. rock riprap and concrete paving)
- ▶ Greater flexibility to maintain intimate contact with subgrade, resulting in rapid seedling emergence and minimal soil loss
- ▶ Can be used in arid and semi-arid environments
- ▶ Completely interconnected yarns that provide superior UV resistance throughout the HPTRM
- ▶ Superior product testing, performance and design life

Outperforms and is more cost effective than conventional erosion control methods, including:

- ▶ Large rock riprap
- ▶ Grouted riprap
- ▶ Gabions
- ▶ Concrete paving
- ▶ Hard roadside shoulders
- ▶ Concrete blocks
- ▶ Fabric formed revetments

### PYRAMAT® HPTRMs PRODUCT FAMILY TABLE

PRODUCT			FUNCTIONAL LONGEVITY	COLOR	FIBRE TYPE	Nº OF NETS	FP-03, SECTION 713 COMPLIANCE
		PYRAMAT®	PERMANENT	TAN OR GREEN	POLYPROPYLENE X3® FIBRE TECHNOLOGY	0 (WOVEN)	EXCEEDS TYPE 5C



\*Design life performance may vary depending upon field conditions and applications.

# PYRAMAT®

## HIGH PERFORMANCE TURF REINFORCEMENT MATS

### APPLICATION SUGGESTIONS FOR PYRAMAT® HPTRMs

	APPLICATION	FUNCTIONAL LONGEVITY	PRODUCT STYLE	ANCHOR SUGGESTIONS <sup>2</sup>
SLOPES	1H:1V OR STEEPER	PERMANENT	PYRAMAT®	3 ANCHORS/m <sup>2</sup>
CHANNELS	SHEAR STRESS UP TO 718 N/m <sup>2</sup> VELOCITY UP TO 7.6 m/sec			
BANKS	MODERATE WAVE ACTION = 30 - 60 cm			
CRITICAL STRUCTURES	PIPE INLETS & OUTLETS			

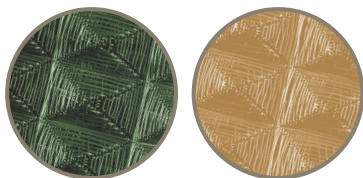
NOTES: For anchor size and style, please see our HPTRM Installation Guidelines.

### KEY PHYSICAL PROPERTIES OF PYRAMAT® HPTRMs

- Construction: Patented three-dimensional woven matrix makes it 10 times stronger than first generation TRMs, with performance unequalled in turf reinforcement.
- Tensile Strength: 58.4 kN/m tensile strength meets U.S. EPA definition of a High Performance Turf Reinforcement Mat.
- UV Resistance: Patented UV protection package provides superior resistance to the damaging effects of ultraviolet radiation.

### SEVEN STEPS FOR SUCCESSFUL TRM SELECTIONS\*

1	2	3	4	5	6	7
SELECT APPLICATIONS	DETERMINE FUNCTIONAL LONGEVITY	ANTICIPATE CLIMATE (ARID, SEMI-ARID, OR TEMPERATE)	UNDERSTAND TRADITIONAL SOLUTION	PREDICT NON-HYDRAULIC STRESSES (MAINTENANCE STRESSES)	KNOW VEGETATION TYPE	CALCULATE HYDRAULIC STRESSES



Geosynthetics

## PYRAMAT® HPTRM PROPERTY TABLE<sup>1</sup>

	PROPERTY	TEST METHOD	VALUE <sup>2</sup>	PYRAMAT®
PHYSICAL	MASS PER UNIT AREA	ASTM D-6566	MARV	455 g/m <sup>2</sup>
	THICKNESS	ASTM D-6525	MARV	10.2 mm
	LIGHT PENETRATION	ASTM D-6567	TYPICAL	10%
	COLOUR	VISUAL	—	GREEN, TAN
MECHANICAL	TENSILE STRENGTH	ASTM D-6818	MARV	58.4 x 43.8 kN/m
	TENSILE ELONGATION	ASTM D-6818	MaxARV	65%
	RESILIENCY	ASTM D-6524	MARV	80%
	FLEXIBILITY/STIFFNESS	ASTM D-6575	TYPICAL	615000 mg-cm
ENDURANCE	FUNCTIONAL LONGEVITY	OBSERVED	TYPICAL	PERMANENT
	UV RESISTANCE <sup>4</sup>	ASTM D-4355	MINIMUM	90% @ 6000 HOURS
PERFORMANCE	SEEDLING EMERGENCE <sup>3</sup>	ECTC DRAFT METHOD #4	TYPICAL	296%
PACKAGING	ROLL WIDTH	MEASURED	TYPICAL	2.6 m
	ROLL LENGTH	MEASURED	TYPICAL	27.4 m
	ROLL WEIGHT	CALCULATED	TYPICAL	39 kg
	ROLL AREA	MEASURED	TYPICAL	71 m <sup>2</sup>

NOTES: 1. The listed property values are effective 08/2006 and are subject to change without notice. 2. MARV indicates Minimum Average Roll Value calculated as the typical minus two standard deviations. Statistically, it yields a 97.7% degree of confidence that any sample taken during quality assurance testing will exceed the reported value. Maximum Average Roll Values (MaxARV) is calculated as typical plus two standard deviations. 3. Calculated as percent increase in average plant biomass with tall fescue grass seed in sand 14 days after seeding versus a non-RECP protected control specimen. 4. All components must meet UV resistance values.

## PYRAMAT® HPTRM PERFORMANCE VALUES

MATERIAL	FUNCTIONAL LONGEVITY	SHORT-TERM MAXIMUM SHEAR STRESS AND VELOCITY						MANNING'S "n"		
		VEGETATED <sup>5</sup>		PARTIALLY <sup>6</sup>		UNVEGETATED <sup>7</sup>		0"-6"	6"-12"	12"-24"
PYRAMAT®	PERMANENT	718 N/m <sup>2</sup>	7.6 m/sec	478 N/m <sup>2</sup>	6.1 m/sec	285-383 N/m <sup>2</sup>	4.6 m/sec	0.035	0.028	0.017

NOTES: 5. Maximum permissible shear stress has been obtained through fully vegetated (70% to 100% density) testing programs featuring specific soil types, vegetation classes, flow conditions and failure criteria. Achieved after 14 weeks of vegetative establishment versus the industry standard of two full growing seasons. These conditions may not be relevant to every project nor are they replicated by other manufacturers. Please contact Geosynthetics for further information. 6. Maximum permissible shear stress has been obtained through partially vegetated (30% to 70% density) testing programs featuring specific soil types, vegetation classes, flow conditions and failure criteria. These conditions may not be relevant to every project nor are they replicated by other manufacturers. Please contact Geosynthetics for further information. 7. Maximum permissible shear stress has been obtained through un-vegetated (0% to 30% density) testing programs featuring specific soil types, vegetation classes, flow conditions and failure criteria. These conditions may not be relevant to every project nor are they replicated by other manufacturers. Please contact Geosynthetics for further information.

[www.geosyn.co.uk](http://www.geosyn.co.uk)

Geosynthetics Limited Tel: 01455 617 139 Fax: 01455 617 140 Email: [sales@geosyn.co.uk](mailto:sales@geosyn.co.uk)