

# MATERIAL PROPERTY DATA SHEET

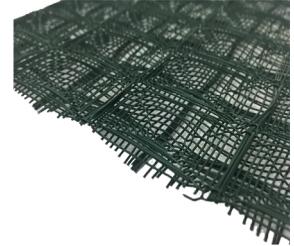


## EXCEL PP5-Pro™

Permanent • 3-D Woven • UV Stable •  
High Performance Turf Reinforcement Mat

### DESCRIPTION

Excel PP5-Pro™ is a High-Performance Turf Reinforcement Mat (HP-TRM) produced by weaving 100% UV-stabilized, high denier synthetic mono-filament yarns woven into permanent, high-strength, three-dimensional structure. The optimized properties of the material provide immediate erosion control with excellent vegetation establishment and long-term turf reinforcement. The strength, resiliency, and durability of PP5-Pro provides a decades long design life and suitability for harsh environments including debris flow and light vehicle traffic. When incorporated with high-load anchors, PP5-Pro can add strength to sub-surface soil and improve slope stability.



Material Content	
Woven, Single Layer	Green or Tan

Standard Roll Sizes			
Width	11.5 ft (3.5 m)	8 ft (2.4 m)	
Length	78 ft (24.0 m)	135 ft (40.5 m)	
Weight ± 10%	72 lb (33.0 kg)	86 lb (40 kg)	
Area	100 sy (83.6 m <sup>2</sup> )	120 SY (100 m <sup>2</sup> )	

Material available in custom roll sizes

Approvals & Classification	
Classification	FHWA: Type 5.C / ECTC: 5.F
TTI Approvals	Class 2 Type H
NTPEP Number	ECP-2022-01-011

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Index Property	Test Method	MARV	
Thickness	ASTM D6525	0.3 in.	(6 mm)
Mass/Unit Area	ASTM D6566	7.5 oz/sy	(250 g/sm)
Tensile Strength – MD	ASTM D6818	3,000 lbs/ft	(43.8 kN/m)
Tensile Strength – TD	ASTM D6818	3,000 lbs/ft	(43.8 kN/m)
Elongation - MD	ASTM D6818	25%	
Elongation – TD	ASTM D6818	25%	
UV Stability	ASTM D4355	90% @3000 hr	
UV Stability	ASTM D7238	90% @3000 hr	
Resiliency	ASTM D6524	70%	
Light Penetration	ASTM D6567	35%	
Biomass Improvement	ASTM D7322	300%	
Specific Gravity	ASTM D792	57.4 lb/ft <sup>3</sup>	(0.92 g/cm <sup>3</sup> )
Porosity	ECTC	96%	
Carbon Footprint	GHG*	1.3 kg CO <sub>2</sub> e/m <sup>2</sup>	

Design Parameters		
Property	Unvegetated	Vegetated <sup>3</sup>
RUSLE C Factor <sup>2</sup>	N/A	N/A
Slope Maximum Gradient <sup>1</sup>	0.5H:1V	0.5H:1V
Permissible Shear Stress <sup>2</sup>	2.3 psf	14.0 psf (670 Pa)
Permissible Velocity <sup>2</sup>	8.0 fps	20.0 fps (6.1 m/s)
$\tau_{veg} / \tau_{TRM}$ (HEC-15)	N/A	0.35
Manning's n Roughness (HEC-15)		
$\tau_{lower}$	$\tau_{mid}$	$\tau_{upper}$
0.033	0.030	0.028

1 Maximum Gradient a recommendation for typical installations.

2 Hydraulic thresholds compliant with ASTM D6459/D6460 but generalized for typical applications.

3 Vegetated values dependent on established stand of vegetation

\*WRI/WBCSD Greenhouse Gas Protocol: Product Life Cycle Accounting and Reporting Standard, 2013.