

Material and Performance Specification P550 Turf Reinforcement Mat

Description
<p>The composite turf reinforcement mat (C-TRM) shall be a machine-produced mat of 100% UV stable polypropylene fiber matrix incorporated into permanent three-dimensional turf reinforcement matting. The matrix shall be evenly distributed across the entire width of the matting and stitch bonded between a ultra heavy duty UV stabilized nettings with 0.50 x 0.50 inch (1.27 x 1.27 cm) openings, an ultra heavy UV stabilized, dramatically corrugated (crimped) intermediate netting with 0.5 x 0.5 inch (1.27 x 1.27 cm) openings, and covered by an ultra heavy duty UV stabilized nettings with 0.50 x 0.50 inch (1.27 x 1.27 cm) openings. The middle corrugated netting shall form prominent closely spaced ridges across the entire width of the mat. The three nettings shall be stitched together on 1.50 inch (3.81cm) centers with UV stabilized polypropylene thread to form permanent three-dimensional turf reinforcement matting. All mats shall be manufactured with a colored thread stitched along both outer edges as an overlap guide for adjacent mats.</p> <p>The P550 shall meet Type 5A, B, and C specification requirements established by the Erosion Control Technology Council (ECTC) and Federal Highway Administration's (FHWA) <i>FP-03 Section 713.18</i></p>

Index Property	Test Method	Typical
Thickness	ASTM D6525	0.76 in (19.3 mm)
Resiliency	ASTM 6524	95%
Density	ASTM D792	0.53 oz/in ³
Mass/Unit Area	ASTM 6566	21.45 oz/yd ² (728 g/m ²)
UV Stability	ASTM D4355 /1000 hr	100%
Porosity	ECTC Guidelines	96%
Stiffness	ASTM D1388	366.3 oz-in
Light Penetration	ECTC Guidelines	16%
Tensile Strength –MD	ASTM D6818	763lbs/ft (11.15 kN/m)
Elongation – MD	ASTM D6818	10%
Tensile Strength – TD	ASTM D6818	1134lbs/ft (16.55 kN/m)
Elongation – TD	ASTM D6818	11%

Material Content		
Matrix	100% UV stable Polypropylene Fiber	0.5 lbs/yd ² (0.27 kg/m ²)
Netting	Top and Bottom, UV stabilized Polypropylene	24 lb/1000 ft ² (11.7 kg/100 m ²)
	Middle, Corrugated UV stabilized Polypropylene	24 lb/1000 ft ² (11.7 kg/100m ²)
Thread	Polypropylene, UV stable	

Maximum Permissible Shear Stress		
	Short Duration	Long Duration
Phase 1 Unvegetated	4.0 lbs/ft ² (191 Pa)	3.25 lbs/ft ² (156 Pa)
Phase 2 Partially Veg.	12.0 lbs/ ft ² (576 Pa)	12.0 lbs/ft ² (576 Pa)
Phase 3 Fully Veg.	14.0 lbs/ft ² (672 Pa)	12.0 lbs/ ft ² (576 Pa)
Unvegetated Velocity	12.5 ft/s (3.8 m/s)	
Vegetated Velocity	25 ft/s (7.6 m/s)	

Standard Roll Sizes	
Width	6.5 ft (2.0 m)
Length	55.5 ft (16.9 m)
Weight ± 10%	52 lbs (23.59 kg)
Area	40 yd ² (33.4 m ²)

Slope Design Data: C Factors			
	Slope Gradients (S)		
Slope Length (L)	≤ 3:1	3:1 – 2:1	≥ 2:1
≤ 20 ft (6 m)	0.0005	0.015	0.043
20-50 ft	0.0173	0.031	0.050
≥ 50 ft (15.2 m)	0.035	0.047	0.057

Bench Scale Testing (NTPEP)		
Test Method	Parameters	Results
ECTC 2 Rainfall	50 mm (2 in)/hr-30 min	SLR** = 10.79
	100mm (4 in)/hr-30 min	SLR** = 9.98
	150 mm (6 in)/hr-30 min	SLR** = 9.53
ECTC 3 Shear Res.	Shear at 0.50 inch soil loss	5.1 lbs/ft ²
ECTC 4 Germination	Top Soil, Fescue, 21 day incubation	354% improvement of biomass

* Bench Scale tests should not be used for design purposes
 ** Soil Loss Ratio = Soil Loss Bare Soil/Soil Loss with RECP

Roughness Coefficients- Unveg.	
Flow Depth	Manning's n
≤ 0.50 ft (0.15 m)	0.041
0.50 – 2.0 ft	0.040-0.013
≥ 2.0 ft (0.60 m)	0.013

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