



## Product Data Sheet – HydroTurf® CS w/ 40 mil MicroSpike®

STRUCTURED GEOMEMBRANE COMPONENT	TEST METHOD	HDPE VALUES	LLDPE VALUES
Thickness (nominal), mil (mm)	ASTM D5994	40 (1.0)	40 (1.0)
Thickness (min. avg.), mil (mm)	ASTM D5994	38 (0.95)	38 (0.95)
Thickness (min. 8 out of 10), mil (mm)	ASTM D5994	36 (0.90)	36 (0.90)
Thickness (lowest indiv.), mil (mm)	ASTM D5994	34 (0.85)	34 (0.85)
MicroSpike® Asperity Height, mil (mm)	ASTM D7466	20 (0.51)	20 (0.51)
Density, g/cc, min.	ASTM D792, Method B	0.94	0.939
Tensile Properties (both directions)	ASTM D6693, Type IV, 2 in/min.		
Strength @ Yield, lb/in width (N/mm)		88 (15.4)	N/A
Elongation @ Yield, % (GL=1.3 in.)		12	N/A
Strength @ Break, lb/in width (N/mm)		88 (15.4)	112 (19.6)
Elongation @ Break, % (GL=2.0 in.)		350	400
Tear Resistance, lb (N)	ASTM D1004	30 (133)	25 (111)
Puncture Resistance, lb (N)	ASTM D4833	90 (400)	55 (222)
Carbon Black Content, % (range)	ASTM D4218	2-3	2-3
Carbon Black Dispersion (Category)	ASTM D5596	Only near spherical agglomerates: 10 views in Cat. 1 or 2	Only near spherical agglomerates: 10 views in Cat. 1 or 2
Stress Crack Resistance (Single Point NCTL), hrs.	ASTM D5397, Appendix	500	N/A
Oxidative Induction Time, minutes	ASTM D3895, 200°C, 1 atm O <sub>2</sub>	≥140	≥140

Agru America's geomembranes are certified to pass Low Temp. Brittleness via. ASTM D746 (-80°C), and Dimensional Stability via. ASTM D1204 (± 2% @ 100°C)

ENGINEERED TURF COMPONENT	TEST METHOD	TURF TYPE 1	TURF TYPE 2
Yarn	N/A	Polyethylene Fibrillated Tape	Polyethylene Monofilament
Tensile Strength of Yarn	ASTM D2256	15 lb (min.)	15 lb (min.)
Tufted Pile Height	ASTM D5823	1.25 ± 0.25 in.	2.25 ± 0.25 in.
Pile Weight	ASTM D5848	16.5 oz/yd <sup>2</sup> (min.)	32 oz/yd <sup>2</sup> (min.)
CBR Puncture	ASTM D6241	800 lb (MARV)	800 lb (MARV)
Tensile Product (MD/XD)	ASTM D4595	1,000 lb/ft (min.) (MARV)	1,000 lb/ft (min.) (MARV)
Aerodynamic Evaluation	GTRI Wind Tunnel	120 mph w/ max. uplift 0.12 lb/ft <sup>2</sup>	120 mph w/ max. uplift 0.12 lb/ft <sup>2</sup>
Engineered Turf Fiber UV Stability	ASTM G147 / G7	> 60% retained tensile strength at 100 yrs.(projected)	> 60% retained tensile strength at 100 yrs. (projected)
Transmissivity w/underlying Structured Geomembrane at Normal Stress 50 psf and 0.33 Gradient (m <sup>2</sup> /s)	ASTM D4716	2.5 x 10 <sup>-3</sup> m <sup>2</sup> /s (min.)	2.5 x 10 <sup>-3</sup> m <sup>2</sup> /s (min.)
Steady State Hydraulic Overtopping	ASTM D7277 / D7276	40 ft/s flow velocity, passing	40 ft/s flow velocity, passing
Manning's 'n' Value	ASTM D7277 / D7276	0.017 to 0.020	0.018 to 0.025
Steady State Hydraulic Jump Test	Colorado State University Steep Flume	Dissipate 30 horsepower per ft (min.), no damage	Dissipate 30 horsepower per ft (min.), no damage
Full Scale Wave Overtopping Test, Cumulative Volume	Colorado State University Wave Overtopping Simulator	165,000 ft <sup>3</sup> /ft	165,000 ft <sup>3</sup> /ft
Full Scale Wave Overtopping Test, Discharge	Colorado State University Wave Overtopping Simulator	4.0 ft <sup>3</sup> /s/ft	4.0 ft <sup>3</sup> /s/ft
Internal Friction of Combined Components (Low Confining Stress)	ASTM D 5321	33° (min., peak)	33° (min., peak)
HydroBinder® Infill Mix	ASTM C387 / C109	¾ inch thick infill, 5,000 psi (min. 28 days)	¾ inch thick infill, 5,000 psi (min. 28 days)

### SUPPLY INFORMATION (Standard Roll Dimensions)

	Width		Length		Area (approx.)		Weight	
	ft	m	ft	m	ft <sup>2</sup>	m <sup>2</sup>	lb	Kg
MicroSpike®	23	7	750	229	17,250	1,603	~3,900	~1,770
Turf Type 1 Component	15	4.6	300	91.4	4,500	418	~840	~380
Turf Type 2 Component	12	3.6	300	91.4	3,600	335	~1,000	~454

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