![ClosureTurf logo]

ClosureTurf® w 40 mil MicroSpike® Liner

Product Data	Test Method	LLDPE Values	HDPE 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 (lowest indiv.), mil (mm)	ASTM D5994	34 (0.85)	34 (0.85)
Asperity Height (min. avg.), mil (mm)	ASTM D7466	20 (0.51)	20 (0.51)
Density, g/cc	ASTM D792, Method B	0.939 (max.)	0.94 (min.)
Tensile Properties (avg. both directions)	ASTM D6693, Type IV		
Strength @Yield (min. avg.), lb/in. width (N/mm)		N/A	88 (15.4)
Elongation @ Yield (min. avg.), % (GL=1.3 in.)		N/A	12
Strength@Break (min. avg.), lb./in. width (N/mm)		112 (19.6)	88 (15.4)
Elongation@Break (min. avg.), %(GL=2.0 in.)		400	350
Tear Resistance (min. avg.), lbs. (N)	ASTM D1004	25 (111)	30 (133)
Puncture Resistance (min. avg.) lbs. (N)	ASTM D4833	50 (222)	90 (400)
Carbon Black Content (range %)	ASTM D4218	2-3	2-3
Carbon Black Dispersion (Category)	ASTM D5596	Only near spherical agglomerates for 10 views in Cat. 1 or 2	
Stress Crack Resistance (Single Point NCTL), hours	ASTM D5397, Appendix	N/A	500
Oxidative Induction Time, minutes	ASTM D3895, 200°C, 1 atm O_2	≥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 (CT)

Product Data	Test Method	Values
Yarn Type	N/A	Polyethylene, Fibrillated
Yarn Color	N/A	Olive Green, Play Green, Tan
Yarn Weight (Total Product Weight)	ASTM D5261 (sample size, 1 yd^2)	≥20 oz. / sq. yd. (> 32 oz. / sq. yd.)
Tensile Strength of Yarn	ASTM D2256	15 lbs. min.
CBR Puncture	ASTM D6241	1,500 lb. (MARV)
Tensile Product (MD/XD)	ASTM D4595	2,100 MD / 1,600 XD lb/ft (MARV)
Interface Friction between ClosureTurf CT and MicroSpike®	ASTM D5321	21°, min. Peak*
Engineered Turf Fiber UV Stability	ASTM G147	>60% retained tensile strength at 100 yrs. (projected)
Backing System UV Stability (Exposed)	ASTM G154 Modified Cycle 1., UVA340	110 lbs./ft. retained tensile strength at 6,500 hrs (projected)
Aerodynamic Evaluation	GTRI Wind Tunnel	120 mph with max. uplift of 0.12 lb/sf
Rainfall Induced Erosion	ASTM D6459	Infill Loss 0.1% at 6 in./hr. Rainfall
Steady State Hydraulic Overtopping (ClosureTurf® w/ HydroBinder®)	ASTM D7277/D7276	5 ft. overtopping resulting in 29 ft/s velocity and 8.8 psf shear stress for Manning's *n* value of 0.02
Full Scale Wave Overtopping Test Cumulative Volume (ClosureTurf® with HydroBinder®)	Colorado State University Wave Simulator	165,000 ft^3/ft
Full Scale Wave Overtopping Test Discharge (ClosureTurf® with HydroBinder®)	Colorado State University Wave Simulator	4.0 ft^3/s/ft
HydroBinder® Infill Mix	ASTM C387 / ASTM C109	3/4 in. infill 5,000 psi (min. at 28 days)

*Engineered turf/geomembrane interface. Geomembrane/subgrade interface is site specific and should be evaluated per Engineer of Record's requirements.

SUPPLY INFORMATION (Standard Roll Dimensions)

	Thickness		Width		Length		Area (approx.)		Weight (avg.)	
	mil	mm	ft.	m	ft.	m	ft^2	m^2	lbs	kg
MicroSpike®	40	1.0	23	7	750	229	17,250	1,603	~3,900	~1,770
Turf Component	N/A	N/A	15	4.6	300	91.44	4,500	418	~1,000	~454