

TENSEAL GM

The TENSEAL GM geocomposite is a combination of cusped/textured HPDE membrane (TENSEAL) and a non-woven geotextile. The product is capable of providing **filtration - drainage - protection - water proofing**, and will have properties conforming to the values and test methods listed below. The cusped/textured HPDE membrane meets GRI-GM13 values for 40 mil thick textured membrane. TENSEAL GM has smooth edges on both sides to enable wedge welds to be made between adjacent sheets.

PROPERTY	TEST METHODS	UNITS	VALUE	QUALIFIER	TEST FREQUENCY
Cusped/Textured Membrane¹					
• Membrane Thickness ²	ASTM D 5994	mil	40	MAV	50,000 sf
Lowest individual for 8 of 10 values		%	-10		
Lowest individual for any of 10 values		%	-15		
• Asperity height	GM 12	mil	10	MAV	50,000 sf
• Density	ASTM D1505	g/cm ³	0.94	MAV	100,000 sf
• Tensile properties	ASTM D6693				
Yield Strength	Type IV	lb/in	84	MAV	100,000 sf
Break Strength		lb/in	60	MAV	100,000 sf
Yield Elongation		%	12	MAV	100,000 sf
Break Elongation		%	100	MAV	100,000 sf
• Tear Resistance	ASTM D1004	lb	28	MAV	100,000 sf
• Puncture Resistance	ASTM D4833	lb	60	MAV	100,000 sf
• Stress Crack Resistance	ASTM D5397	lb	300 hrs	MAV	Per each formulation
• Carbon Black Content	ASTM D4218	%	2.0 - 3.0	range	100,000 sf
• Carbon Black Dispersion	ASTM D5596	For 10 views	9 in Cat 1 and 2, 1 in Cat 3		Per each formulation
• Oxidative Induction Time (OIT)	ASTM D3895	min	100	MAV	Per each formulation
• Oven Aging at 85° C HP OIT (% retained after 90 days)	ASTM D5721 ASTM D5885	%	80	MAV	Per each formulation
• UV Resistance (20 hr UV cycle at 75°C followed by 4 hr condensation at 60°C) HP OIT (% retained after 1600hrs)	GM11 ASTM D5885	%	50	MAV	Per each formulation
Top Filter Geotextile^{1,2}					
• U.V. Resistance (500 hrs)	ASTM 4355	%	70		Per each formulation
• Grab Tensile	ASTM D4632	lbs.	160	MARV	100,000 sf
• MD Grab Elongation	ASTM D4632	%	50	MARV	100,000 sf
• Puncture Resistance	ASTM D4833	lbs.	85	MARV	100,000 sf
• Tear Strength	ASTM D4533	lbs	60	MARV	100,000 sf
• AOS	ASTM D4751	US Std. Sieve (mm)	70 (0.212)	MaxARV	500,000 sf
• Permittivity	ASTM D4491	sec ⁻¹	1.1	MARV	500,000 sf
Geocomposite					
• Thickness	ASTM D5199	mil (mm)	280 (7.1)	MAV	100,000 sf
• Peel Adhesion - MD	ASTM D7005	lb/in (g/in)	0.5 (227)	MAV	100,000 sf
• Tensile Strength - MD	ASTM D4595	lb/ft (kN/m)	1000 (14.7)	Typical	100,000 sf
• Labeling	Product code, geotextile type, roll dimensions, finished product lot and roll number				
Hydraulic Behavior of Geocomposite					
• Transmissivity ³ - MD	ASTM D4716 GRI - GC8	m ² /sec		MAV	200,000 sf
<u>Gradient/Load</u>			<u>1,000 psf (48 kPa)</u>		
0.1			6.0*10 ⁻³		
0.33			3.5*10 ⁻³		

Qualifiers: MARV=Minimum Average Roll Value (MARV), MAV=Minimum Average Value, MaxARV=Maximum average roll value

NOTES: **1.** Geotextile and cusped/textured membrane properties listed are prior to lamination. **2.** Top filter geotextile meets AASHTO Standard Specification M 288-00 strength requirements of class 2 and the highest filter requirements. **3.** Geocomposite transmissivity measured by manufacturer per ASTM D4716 with testing boundary conditions as follows: steel plate/sand/geocomposite/steel plate, and seating period of 100 hours according to GRI-GC8.