

## TENSEAL GM 70 - 1

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
<b>Cusped/Textured Membrane<sup>1</sup></b>					
• Membrane Thickness <sup>2</sup>	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 D 792	g/cm <sup>3</sup>	0.94 – 0.96	range	100,000 sf
• Tensile properties	ASTM D 6693				
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 D 1004	lb	28	MAV	100,000 sf
• Puncture Resistance	ASTM D 4833	lb	60	MAV	100,000 sf
• Stress Crack Resistance	ASTM D 5397	lb	300 hrs	MAV	Per each formulation
• Carbon Black Content	ASTM D 4218	%	2.0 - 3.0	range	100,000 sf
• Carbon Black Dispersion	ASTM D 5596	for 10 views	9 in cat 1 and 2, 1 in cat 3		Per each formulation
• Oxidative Induction Time (OIT)	ASTM D 3895	min	100	MAV	Per each formulation
• Oven Aging at 85° C HP OIT (% retained after 90 days)	ASTM D 5721 ASTM D 5885	%	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 D 5885	%	50	MAV	Per each formulation
<b>Top filter Geotextile<sup>1,2</sup></b>					
• U.V. Resistance (500 hrs)	ASTM D 4355	%	70		Per each formulation
• Grab Tensile	ASTM D 4632	lbs.	160	MARV	100,000 sf
• MD Grab Elongation	ASTM D 4632	%	50	MARV	100,000 sf
• Puncture Resistance	ASTM D 4833	lbs.	85	MARV	100,000 sf
• Tear Strength	ASTM D 4533	lbs	60	MARV	100,000 sf
• AOS	ASTM D 4751	US Std. Sieve (mm)	70 (0.212)	MaxARV	500,000 sf
• Permittivity	ASTM D 4491	Sec <sup>-1</sup>	1.1	MARV	500,000 sf
<b>Geocomposite</b>					
• Thickness	ASTM D 5199	mil (mm)	280 (7.1)	MAV	100,000 sf
• Peel Adhesion - MD	ASTM D 7005	lb/in (g/in)	0.5 (227)	MAV	100,000 sf
• Tensile Strength - MD	ASTM D 4595	lb/ft (kN/m)	1000 (14.7)	Typical	100,000 sf
• Labeling	Product code, geotextile type, roll dimensions, finished product lot and roll number				
<b>Hydraulic Behavior of Geocomposite</b>					
• Transmissivity <sup>3</sup> - MD	ASTM D 4716 GRI - GC8	m <sup>2</sup> /sec		MAV	200,000 sf
<u>Gradient/Load</u>			<u>1,000 psf (48 kPa)</u>		
0.1			6.0*10 <sup>-3</sup>		
0.33			3.5*10 <sup>-3</sup>		

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 D 4716 with testing boundary conditions as follows: steel plate/sand/ geocomposite/steel plate, and seating period of 100 hours according to GRI - GC8.

