BENTOMAT® 600CL CERTIFIED PROPERTIES

CETCO® Bentomat® 600CL is a reinforced geosynthetic clay liner (GCL) consisting of a layer of sodium bentonite between a polypropylene woven geotextile and a polypropylene nonwoven geotextile, which are needle-punched together and laminated to a polyethylene geofilm.

MATERIAL PROPERTY	TEST METHOD	TEST FREQUENCY	CERTIFIED VALUES
Woven Base Geotextile Mass/Area[1]	ASTM D5261	200,000 ft² (20,000 m²)	3.2 oz/yd² (108 g/m²) min.
Nonwoven Cap Geotextile Mass/Area[1]	ASTM D5261	200,000 ft² (20,000 m²)	3.0 oz/yd² (100 g/m²) min.
Bentonite Swell Index[2]	ASTM D5890	1 per 50 tonnes	24 mL/2g min.
Bentonite Fluid Loss[2]	ASTM D5891	1 per 50 tonnes	18 mL max.
Bentonite Mass/Area[3]	ASTM D5993	40,000 ft² (4,000 m²)	0.75 lb/ft² (3.7 kg/m²) min.
Geofilm Density[1]	ASTM D1505	200,000 ft² (20,000 m²)	0.92 g/cm³
Geofilm Thickness[1]	ASTM D5199	200,000 ft² (20,000 m²)	5 mil (0.12 mm) min.
Geofilm Break Strength[1,4]	ASTM D882	200,000 ft² (20,000 m²)	14 lbs/in (2.5 kN/m) min.
Total Mass/Area[3]	ASTM D5993	40,000 ft² (4,000 m²)	0.82 lb/ft² (4.0 kg/m²) min.
GCL Moisture Content	ASTM D5993	40,000 ft² (4,000 m²)	35% max.
GCL Grab Strength[5]	ASTM D6768	200,000 ft² (20,000 m²)	30 lbs/in (5.3 kN/m) min.
GCL Peel Strength	ASTM D6496	40,000 ft² (4,000 m²)	1.0 lbs/in (175 N/m) min.
GCL Hydraulic Conductivity[6]	ASTM D5887	250,000 ft² (25,000 m²)	5×10^{-12} m/s max.
GCL Index Flux[6]	ASTM D5887	250,000 ft² (25,000 m²)	1×10^{-9} m³/m²/s max.
GCL Hydrated Internal Shear Strength[7]	ASTM D6243	1,000,000 ft² (100,000 m²)	150 psf (7.2 kPa) typ.@ 200 psf (9.6 kPa)

Notes:

[1] Geosynthetic property tests performed on the geosynthetic components before they are incorporated into the finished GCL product.

[2] Bentonite property tests performed before the bentonite is incorporated into the finished GCL product.

[3] Reported at 0% moisture content.

[4] Geofilm tensile break strength performed in the machine and cross-machine directions using ASTM D882.

[5] GCL tensile strength testing is performed in the machine direction using ASTM D6768.

[6] ASTM D5887 is modified to include the laminated thin flexible membrane on the test specimen. Index flux and hydraulic conductivity testing with deaired distilled/deionized water at 80 psi (550 kPa) cell pressure, 77 psi (530 kPa) headwater pressure and 75 psi (515 kPa) tailwater pressure. ASTM D5887 (modified) testing is performed only on a periodic basis because the thin flexible membrane is essentially impermeable. The Bentomat® GCL core (without the flexible membrane) has a maximum hydraulic conductivity of 5×10^{-11} m/s with deaired distilled/deionized water. For more information, see CETCO® Technical Reference (TR) Nos. 111 and 112.

[7] Peak values measured at 200 psf (9.6 kPa) normal stress for a specimen hydrated for 48 hours. Site-specific materials, GCL products, and test conditions must be used to verify internal and interface strength of the proposed design.