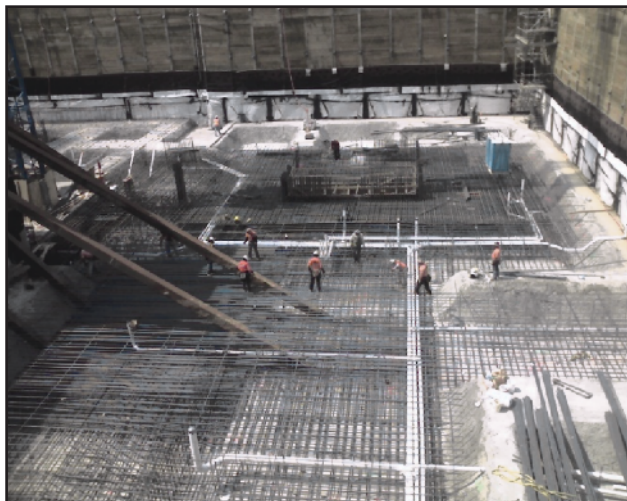


Bentonite Composite Waterproofing System



Blind-Side (Soldier Beam & Lagging) and Slab

Product Description

Bento-Pro Ultra is a multi-layer sheet waterproofing system consisting of a self-sealing, expandable layer of granular bentonite laminated to each side of an impermeable high density polyethylene film with a protective layer of non-woven polypropylene laminated to the bentonite layers. This multi-layer composite forms a high performance waterproofing system that is tough, self-sealing, vapor impermeable and able to withstand inclement weather, hydrostatic conditions and other factors encountered in today's construction environment.

Basic Uses

Bento-Pro Ultra is highly effective when waterproofing insulated below-grade free-standing walls, under slabs, tunnels, elevator pits and blindside applications including lagging, caissons, sheet pile and shot-crete retention systems. Applications include most all below-grade concrete structures requiring a high performance waterproofing system that protects against water intrusion from hydrostatic head, gas and vapor intrusion and is able to resist damage during construction from inclement weather and extreme construction techniques.

Installation

For complete installation guidelines, please contact EPRO, ask your EPRO technical representative or visit our website for details.

Preparatory Work

Examine all surfaces prior to application. Remove all debris, standing water, nails and other sharp protrusions over 1/4" (6.4 mm). On free-standing walls, fill voids and/or honeycomb areas with EPRO Ecoline T. For blind-side applications, fill all voids in lagging larger than 1" (2.5 cm) with grout or cover with plywood prior to installation. EPRO EcoDrain is recommended for covering large areas of voids and/ or irregular surfaces on blind-side applications.

Free-standing Poured Walls

Bento-Pro Ultra rolls are installed either vertically or horizontally by nailing across the top every 20" (0.51m) minimum, lapping seam edges 1-1/2" (3.8cm) and nailing vertical seam edges every 3' (0.9m) minimum with washer head masonry nails. Seal all overlap edges with Bento-Pro Seam Tape or Ecoline S or T. Pour a 1-1/2" (3.8cm) cove at juncture of wall and footing using EPRO Bento-Pro Granular or Ecoline T prior to roll application. Install insulation and compact backfill to minimum 85% Modified Proctor. A protection course is not required for most applications. For special applications, contact EPRO for details.

Blind-Side (Soldier Beam & Lagging or Shot-Crete)

Bento-Pro Ultra rolls are installed either vertically or horizontally. For poured concrete, lap joints 3" (7.6cm) shingle fashion (top over bottom). For shot-crete, lap joints 4" (10.2cm) reverse shingle fashion (bottom over top). Nail or box staple all overlap seams at 4" (10.2cm) O.C. Detail all tiebacks & penetrations with Epro Ecoline S (spray) or Ecoline T (trowel) as recommended by EPRO.

Under Structural Slab, Split Slab

Install over prepare sub-grade compacted to 85% Modified Proctor or mud slab. Roll out membrane over installed HDPE layer or mud slab. Overlap and stagger seams minimum 3" (7.6 cm). Fasten seams with box staples. For all penetrations and moisture/gas vapor barrier, detail penetrations and seams with Ecoline S (spray) or R (roller) as recommended by EPRO. For split slab construction, slab thickness shall be 4" (10.2 cm) minimum. Protect area from flooding prior to concrete pour.

Packaging

Roll size is 3.5' x 14.3' (1.1m x 4.4m) or 50 sq. ft. (4.6 m2). Custom size rolls are available by special order. Contact EPRO for details.



Structural Slab with Blind-Side Walls



BENTO-PRO ULTRA

Storage

Protect from moisture and rainfall. Store on skid or pallet and cover with tarp.

Availability

Available world-wide through EPRO Distributors. Contact EPRO at 800-882-1896 or www.eproserv.com for details.

Limitations

Bento-Pro Ultra is resistant to many common contaminants found in soil and water. Contact EPRO for soil and water compatibility testing. Bento-Pro Plus requires a minimum compaction or confinement of 24 psf to perform effectively.

Warranty

EPRO warrants these products to be free from defects. EPRO makes no other warranties with respect to these products, expressed or implied, including without limitation the implied warranties of MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE. EPRO's liability shall be limited in all events to supplying sufficient product to re-treat the specific area to which defective product has been applied. EPRO shall have no other liability, including liability for incidental or resultant damages, whether due to breach of warranty or negligence. This warranty may not be modified or extended by representatives of EPRO or its distributors.

Typical Physical Properties

Physical Property	Test Method	Value
Membrane		20 mil Virgin Resin HDPE
Bentonite		Wyoming Sodium Montmorillonite (High Swell Type)
Geotextile		Non-Woven Polypropylene (available in 1/2 oz., 3 oz., and 6 oz.)
Weight		1.5 lb. per sq. ft. (7.34 kg/m ²)
Puncture Resistance	ASTM E 154-88	172 lb. (77.5 kg)
Membrane Tensile Strength	ASTM D638	MD: 3670 psi (31.3 MPa) TD: 3500 psi (29.9 MPa)
% Elongation at Break	ASTM D638	>700%
Peel Adhesion of Geotextile	ASTM C 836	28 lb/in
Resistance to Hydrostatic Head	ASTM D 5385	100 psi max. Pressure (231 ft. water)
Permeability	ASTM E96-80	0.024 Perms (grains/ft ² hr in HG)
Resistance to Microorganisms	ASTM E 154-88-13	Unaffected
Non Toxic		Do Not Ingest
Freeze Thaw Cycles		No effect before or after Installation
Chemical Resistance		Extremely High. Contact EPRO for specific Information.
Life Expectancy		Bentonite & HDPE measurable in the thousands of years.
Installation Temperatures		-25°F to 150°F (-31.7°C to 54.4°C)

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