



# CCW MiraCLAY® EF

## BENTONITE CLAY

### WATERPROOFING MEMBRANE

#### DESCRIPTION

CCW MiraCLAY EF has a uniform layer of sodium bentonite clay that is sandwiched between a durable puncture resistant nonwoven polypropylene fabric and a high tensile strength woven polypropylene fabric and then needlepunched together with thousands of high strength denier yarns. These fibers are then thermally fused to the polypropylene in a proprietary Infrabond™ procedure that locks the sodium bentonite into place.

#### TYPICAL USES

CCW MiraCLAY EF is designed for waterproofing below grade structural slabs as well as construction methods incorporating lagging, concrete caisson or shotcrete retention walls. CCW MiraCLAY EF is also very effective in rehab waterproofing and zero clearance property line construction.

#### ADVANTAGES

- CCW MiraCLAY EF is used where ground water is contaminated with either salt, chemicals or other foreign substances, as determined by a site water analysis, which can keep CCW MiraCLAY from hydrating.
- CCW MiraCLAY EF waterproofing membrane has the ability to heal itself if ripped or punctured.
- In a hydrated state, the bentonite clay has tremendous impermeability and excellent resistance to chemicals (i.e., acids, bases and hydrocarbons).
- CCW MiraCLAY EF has the ability to expand and seal cracks in concrete.

#### INSTALLATION

##### UNDERSLAB APPLICATIONS

CCW MiraCLAY EF is designed for use under reinforced concrete slabs 4" (100 mm) thick or greater on a compacted earth/gravel substrate. If installed over a mud slab, CCW MiraCLAY EF requires a minimum 5" (150 mm) thick reinforced concrete slab.

When hydrostatic conditions exist, CCW MiraCLAY EF should be installed under footings and grade beams as shown in CCW MiraCLAY EF details.

##### SUBSTRATE PREPARATION

*NOTE:* Do not begin construction in work areas where there is standing water or in situations which may cause the CCW MiraCLAY EF to prematurely hydrate.

Before installing CCW MiraCLAY EF, the substrate must be properly prepared. Substrate may be concrete, earth, sand, pea gravel or crushed stone. Earth and sand substrates should be compacted to a minimum 85% Modified Proctor density. Crushed stone should not be larger than 3/4" (18 mm) in size. Substrate should be smooth and uniform without sharp projections or pockets. Complete all required elevator pit, sump pit and grade beam and piling work before installing CCW MiraCLAY EF under main slab area

##### INSTALLATION

Install CCW MiraCLAY EF over the properly prepared substrate with the non-woven geotextile side up. Overlap adjoining edges a minimum of 4" (100 mm); stagger sheet ends a minimum of 24" (600 mm); and nail or staple edges together as required to prevent any displacement during concrete placement. CCW MiraCLAY Granules may also be placed in the seam for additional waterproofing performance.

#### TECHNICAL DATA

Property	Test Method	Unit	Typical Value
Bentonite Content <sup>1</sup>	@ 12% moisture content	lb/ft <sup>2</sup> (kg/m <sup>2</sup> )	1.0 (4.88)
Permeability <sup>4</sup>	ASTM D 5084	cm/sec, max	1 X 10 <sup>-9</sup>
Grab Tensile Strength <sup>2</sup>	ASTM D 4632	lbs. (N)	95 (422)
Grab Elongation <sup>2</sup>	ASTM D 4632	%	100
Internal Shear Strength <sup>5</sup>	ASTM D 5321	psf (kPa)	500 (24)
Swell Index	ASTM D 5890	—	2g. (24ml) min.
Fluid Loss	ASTM D 5891	ml	18 ml max.
Low Temperature Flexibility	ASTM D 1970	@ -25°F (-32°C)	unaffected
Peel Strength <sup>3</sup>	ASTM D 4632	lbs (N)	15 (66)

<sup>1</sup>At 12% moisture content. Equates to 0.893 lbs at 0%. When indexed to a 12% moisture content. <sup>2</sup>Measure at maximum peak, in the weakest principle direction. <sup>3</sup>Modified to use a 4 inch wide grip. The maximum peak of five specimens averaged. <sup>4</sup>DeAired Tap water@ 5 psi maximum effective confining stress and 2 psi head. <sup>5</sup>Typical peak value or specimen hydrated for 25hr. and sheared under a 200 psf normal stress.

When the slab is poured in sections, CCW MiraCLAY should extend a minimum 12" (300 mm) beyond the slab edge. When the installation reaches the outer edge of the slab, continue CCW MiraCLAY EF up and out of the form a minimum of 12" (300 mm). At the corner, CCW MiraCLAY EF should remain in contact with the substrate and inside the surface of the concrete form. When the form is removed, the CCW MiraCLAY EF outside the form should be positioned and fastened onto the footing or vertical wall. Overlay the CCW MiraCLAY EF a minimum of 6" (150 mm) with the succeeding vertical waterproofing membrane.

At property line retaining walls, such as soldier pile or lagging, continue the underslab CCW MiraCLAY EF application up the retaining wall a minimum 12" (300 mm) above the top edge of the slab or footing and secure. Overlap the vertical CCW MiraCLAY EF waterproofing membrane by a minimum of 6" (150 mm) or a minimum of 12" (300 mm) under hydrostatic head conditions.

## PROPERTY LINE OR LAGGING APPLICATION

### SUBSTRATE PREPARATION

Gaps between the wood lagging greater than 1" (25 mm) must be filled with cementitious grout. In areas with large gaps (1" to 5" / 25mm to 125mm) between lagging, install plywood to provide a uniform substrate. Where drainage issues may arise, install CCW MiraDRAIN to provide a uniform substrate as well as to facilitate drainage.

### INSTALLATION

Install CCW MiraCLAY EF with the non-woven side facing the installer. Secure the CCW MiraCLAY EF into position with fasteners and 1" (25 mm) washers. Use the appropriate fasteners for the type of substrate used to receive the CCW MiraCLAY EF. Install succeeding courses of CCW MiraCLAY EF by overlapping the previous course a minimum of 4" (100 mm). Stagger the seams a minimum of 24" (600 mm). Install in shingle fashion so that the upper roll of CCW MiraCLAY EF is overlaps the lower roll. Fasten membrane once every 18" (45 cm) on seams or as required to prevent blousing.

At grade line, after the wall has been poured, terminate CCW MiraCLAY EF with a rigid termination bar or fasten 12" (300 mm) on center. Embed the top edge of CCW MiraCLAY EF and termination bar with a thick bead of CCW MiraCLAY Mastic 2" (50 mm) wide by 1/2" (12 mm) thick.

## STANDARD FOUNDATION WALLS

### SUBSTRATE PREPARATION

The substrate must be properly prepared to receive the CCW MiraCLAY EF waterproofing membrane. All honeycombs, form-tie cavities and indentations should be filled with CCW MiraCLAY Mastic or filled with latex Portland Cement. Substrate must be smooth and uniform removing any protrusions over 1/2" (12mm) from the surface. Footings must be free of soil, rocks or debris to provide a suitable substrate to receive the CCW MiraCLAY EF waterproofing membrane.

## INSTALLATION

The CCW MiraCLAY EF waterproofing membrane should be installed with the non-woven side facing the applicator. Create a cant at any vertical to horizontal transition by applying a 1.5" (39 mm) to 2" (50mm) of CCW MiraCLAY Granules along that junction. At the base of the foundation wall where the vertical wall meets the horizontal footing, install a stripping ply of CCW MiraCLAY EF out onto the horizontal plane and up the vertical wall a minimum of 6" (300 mm). Install the adjacent rolls of CCW MiraCLAY EF in a horizontal manner extending out onto the footing a minimum of 24" (600mm). Fasten the CCW MiraCLAY EF in place with concrete fasteners and 1" (25 mm) washers. Install succeeding courses of CCW MiraCLAY EF by overlapping the previous course a minimum of 4" (100 mm). Stagger the seams a minimum of 24" (61 cm). Install in shingle fashion so that the upper roll of CCW MiraCLAY EF is overlaps the lower roll. Fasten membrane once every 18" (46 cm) on seams or as required to prevent blousing. At grade line, terminate CCW MiraCLAY EF with a rigid termination bar or fasten 12" (300 mm) on center. Embed the top edge of CCW MiraCLAY EF and termination bar with a thick bead of CCW MiraCLAY Mastic 2" (50 mm) wide by 1/2" (12 mm) thick.

## PACKAGING

Available in 5.12ft x 13.62ft (69.75sqft) rolls

## DETAIL REQUIREMENTS

For standard installation details, follow the CCW MiraCLAY details drawings. For non-standard installation instructions contact your local Carlisle Coatings & Waterproofing representative.

## RECOMMENDATIONS

Carlisle Coatings & Waterproofing recommends the use of CCW MiraDRAIN, a geocomposite sheet drain, to facilitate the removal of water away from the structure. The CCW MiraCLAY EF and CCW MiraDRAIN waterproofing and drainage system provides maximum protection against water penetration.

## LIMITED WARRANTY

CARLISLE COATINGS & WATERPROOFING INCORPORATED (CARLISLE) warrants this product to be free of defects in workmanship and materials only at the time of shipment from our factory. If any CARLISLE materials prove to contain manufacturing defects that substantially effect their performance, CARLISLE will, at its option, replace the materials or refund its purchase price.

This limited warranty is the only warranty extended by CARLISLE with respect to its materials. There are no other warranties, including the implied warranties of merchantability and fitness for a particular purpose. CARLISLE specifically disclaims liability for any incidental, consequential, or other damages, including but not limited to, loss of profits or damages to a structure or its contents, arising under any theory of law whatsoever.

The dollar value of CARLISLE's liability and buyer's remedy under this limited warranty shall not exceed the purchase price of the CARLISLE material in question.