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**CCW MiraDRI  
860/861  
Self-Adhering  
Waterproofing Membrane**

**DESCRIPTION**

CCW MiraDRI 860/861 are self-adhering sheet membranes consisting of 56 mils (1.4 mm) of rubberized asphalt laminated to 4 mils (0.1 mm) of polyethylene to form a minimum 60-mil (1.5 mm) membrane. CCW MiraDRI 860 membrane is a summer-grade material, suitable for installations where the ambient temperature is 40°F (4.4°C) or above. CCW MiraDRI 861 should be used for applications between 25°F (-3.9°C) and 65°F (18°C). The combination of these two excellent waterproofing materials provides a high-performance, extremely durable waterproofing barrier.

**TYPICAL USE**

CCW MiraDRI 860/861 membranes are used for vertical and horizontal waterproofing on structural foundation walls and decks. Below-grade foundation walls, tunnels, split slabs, plaza decks and parking decks are all areas where CCW MiraDRI 860/861 may be applied. CCW MiraDRI 860/861 also may be used in interior areas such as mechanical rooms, laboratories, kitchens and bathrooms. CCW MiraDRI 860/861 should be covered with either CCW 200V/300HV Protection Course, CCW Protection Board, or CCW MiraDRAIN® drainage composites.

**LIMITATIONS**

- Do not apply where membrane will be subject to continuous exposure to sunlight.
- Do not apply primer or membrane to frozen concrete. Optimum results are obtained when membrane is installed at temperatures above 25°F. Between 25°F and 65°F use the CCW MiraDRI 861 membrane. CCW MiraDRI 860 can be used from 40°F and above.
- Do not apply primer or membrane to a damp, frosty or contaminated surface.
- Not recommended as a pond or tank liner except for between slab applications.
- Do not apply over sealants containing coal tar or polysulfides. In the event of existing bitumen-modified materials, consult your Carlisle representative.

**APPLICABLE STANDARDS**

CCW MiraDRI 860/861 meets the applicable requirements of:

- GSA; PBS PCD 07121
- USN; NAVFAC TS-07111
- VA; H-08-1
- Federal Construction Guide Specs; FCGS-07111
- Corps of Engineers; CEGS-07111-3-82
- UL 790, Class A
- LA Research Report Number 25094L

**TECHNICAL DATA**

PROPERTY	METHOD	RESULTS
Color	—	Dark Gray
Thickness	ASTM D3767	60 mils
Tensile (Membrane)	ASTM D412	325 psi
Tensile (Film)	ASTM D882	5000 psi
Elongation	ASTM D412	350%
Permeance	ASTM E96	0.05 perms
Low Temp. Flexibility	ASTM D1970	Unaffected @ -45°F Crack Cycling*
(100 cycles)	ASTM C836	Unaffected @ -25°F
Peel Strength	ASTM D903	10.0 lb/in
Lap Adhesion	ASTM D1876	19.0 lb/in
Puncture Resistance	ASTM E154	60 lb (min)
Soil Burial	GSA-PBS 07121	16 wks, no effect
H <sub>2</sub> O Absorption	ASTM D570	0.1% by wt
Hydrostatic Head	ASTM D5385	230 ft
*180° bend over a 1" (25MM) mandrel at -45°F (-43°C)		

**PACKAGING**

CCW MiraDRI 860/861-36 = 36" wide x 67' roll (200 ft<sup>2</sup>) 25 rolls per pallet (5000 ft<sup>2</sup>) - Weight = 80 lb/roll (approx.)

Other membrane thicknesses and configurations are available by special order.

CCW-702 VOC-Compliant Solvent-Based Primer:  
5 gallon pails (45 pails per pallet)

CCW-714 Water Base Primer:  
1 gallon pails (100 pails per pallet)

CCW-AWP Water Base Primer:  
1 gallon pails (100 pails per pallet)  
5 gallon pails (45 pails per pallet)

CCW-715 Damp Concrete Primer:  
5 gallon pails (45 pails per pallet)

CCW-704 Mastic and CCW LM-800XL:  
30 oz. Qt. Tube (12 tubes per carton),  
5 gallon pails (45 pails per pallet)

**INSTALLATION**

**Weather Conditions**

CCW MiraDRI 860 is used for applications where the surface temperature is 40°F, (4.4°C,) and above. CCW MiraDRI 861 is used for applications where the surface temperature is between 25°F (-3.9°C,) and 65°F (18°C). Do not apply CCW MiraDRI 860/861 to frozen or wet substrates. The membrane should not be left exposed to direct sunlight for longer than 14 days.

**Substrate Preparation:** CCW MiraDRI 860/861 can be applied to concrete, metal, wood, insulated wall systems or masonry surfaces. All substrates must be clean, dry and free of surface irregularities.

**Concrete Substrates:** Structural concrete must be cured a minimum of 7 days and lightweight structural concrete must cure a minimum of 14 days before the application of CCW MiraDRI 860/861. Repair surfaces that are not structurally sound, have voids, protrusions, rough spalled areas, loose aggregate or exposed course aggregate. Void areas should be filled with latex Portland cement, concrete or epoxy concrete and troweled smooth to match the existing surface. Protrusions and other rough areas should be broken off and patched as above. CCW LM-800XL or CCW-201 may be used to fill small voids, honeycombs or bug holes.

**Masonry Substrate:** Rough masonry may require the surface to be parged with a plaster coat of cementitious material to form a well adhered, smooth and uniform finish. Allow the parge coat to dry before priming and installing the CCW MiraDRI 860/861 waterproofing membrane.

**Chemical Additives:** Curing compounds should be a clear resin-based material without waxes, oils or pigments. Form release agents must not transfer to the concrete. Curing compounds or form release agents that adversely affect the adherence of the CCW MiraDRI 860/861 waterproofing membrane must be removed from the substrate prior to application.

**Priming and Detailing:** All concrete, metal and masonry substrates require primer. Wood surfaces and insulated wall systems may not require a primer. Carlisle Coatings & Waterproofing recommends an adhesion test of the CCW MiraDRI 860/861 on any unprimed substrate to verify proper adhesion. Apply the appropriate CCW Primer at the specified coverage rate. Apply primer with a lambswool roller, brush or spray apparatus. Allow primer to dry for a minimum of 30 minutes. The CCW Primer will dry to a tacky finish. Areas primed but not covered with CCW MiraDRI 860/861 within 24 hours should be reprimed. All vertical to horizontal transitions must have a 3/4" (18 mm) fillet of CCW LM-800XL or CCW-201 Sealant.

The 3/4" (18 mm) fillet must be allowed to cure before covering with the CCW MiraDRI 860/861 membrane. All inside and outside corners, as well as the vertical-to-horizontal transitions, should be double covered. A CCW MiraDRI 860/861 Membrane Strip should be applied to each surface a minimum of 4.5" (112 mm) before being covered by the field membrane. Refer to the standard detail drawings for specific detail instructions.

## VERTICAL INSTALLATION

Start at the low point and work towards the high point. Remove 6" (150 mm) to 8" (200 mm) of the release paper, and then begin applying the membrane. Press and smooth the membrane against the substrate while pulling the release paper free. Install membrane with side laps overlapped a minimum of 2.5" (63 mm) and end laps a minimum of 5" (127 mm). Carlisle Coatings & Waterproofing recommends that the membrane be rolled in place immediately after its placement to ensure full adhesion to the primed substrate. Apply a bead of CCW-704 Mastic OR CCW-703V Liqueiseal at terminations and cut edges, joints, drains, penetrations

and protrusions. For walls over 8' (240 cm), the membrane should be placed in lifts. Protect the CCW MiraDRI 860/861 membrane with the appropriate CCW MiraDRAIN drainage composite, CCW 200V/300HV Protection Course or CCW Protection Board V.

## HORIZONTAL INSTALLATION

Start at the low point (establish a starting point with a chalk line if necessary) and work towards the high point in shingle fashion. Remove 2' to 3' (60 cm to 90 cm) of the release paper and apply the membrane to the substrate. Continue pulling the release paper free while pressing and smoothing the membrane against the substrate. Apply in a straight line avoiding wrinkles and over-correcting. Roll the membrane with a minimum 75 lb. (34 kg) linoleum roller. Install membrane with side laps overlapped a minimum of 2.5" (63 mm) and end laps a minimum of 5" (127 mm). Apply a bead of CCW-704 Mastic at all terminations of the membrane and "T" joints. Apply a 3/4" (18 mm) fillet of CCW LM-800XL or CCW-201 in all inside corners of planter boxes, shower stalls and shower pans applications. Patch inadequately lapped seams and damaged areas with CCW MiraDRI 860/861 membrane covering the damaged area by a minimum of 6" (150 mm). "Fish-mouths" and severe wrinkles should be slit, flaps overlapped and repaired as above. Protect the CCW MiraDRI 860/861 membrane with the appropriate CCW MiraDRAIN drainage composite or CCW 300HV Protection Course.

**Detail Requirements:** For standard installation details follow the CCW MiraDRI 860/861 details drawings. For non-standard installation instructions contact your local Carlisle Coatings & Waterproofing representative.

## WARNINGS AND HAZARDS

CCW-702 and CCW-704 contain flammable and combustible solvents. Avoid exposure to open flame. Avoid breathing vapors. Use only in areas with adequate ventilation. Refer to MSDS for important warnings and product information.

## 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.

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# CCW MiraDRAIN® 9000 Drainage Composite

## DESCRIPTION

CCW MiraDRAIN 9000 is a high-performance, high-strength drainage composite consisting of a three-dimensional, high-impact polystyrene core, and a woven filter fabric. The filter fabric is bonded to the individual dimples of the molded polystyrene core. The fabric serves as a filter medium to prevent the passage of particles into the core, while allowing surface moisture to pass freely. CCW MiraDRAIN 9000's woven, monofilament fabric withstands high abrasion from applied overburden and prevents intrusion into the drainage core due to its low elongation characteristics. The woven fabric is better suited to receive a directly poured concrete topping than nonwoven geotextile fabrics.

## TYPICAL USES

CCW MiraDRAIN 9000 is designed for use in horizontal plaza, roof deck and between-slab drainage applications where single-sided subsurface drainage is required.

CCW MiraDRAIN 9000 also serves as a protection course when used in conjunction with CCW Waterproofing Membranes.

## FEATURES AND BENEFITS

- Manufactured at an ISO 9001:2000 Facility
- Relief of hydrostatic pressure buildup
- Consistent and proven long-term performance due to a multi-directional core configuration providing a uniform flow path for water to escape
- High-flow drainage capacity assuring effective drainage for virtually any horizontal application
- No-clogging drainage performance
- High compressive strength system withstands overburden stresses
- Enhancement of waterproofing system by channeling water away and providing a secondary water retention layer
- Cost-saving, lightweight, easy-to-install panels eliminate the need for bringing aggregate to the construction site

## INSTALLATION

### GENERAL INFORMATION

CCW MiraDRAIN prefabricated drainage panels may be installed in a variety of construction applications. They may be installed against split slabs, plaza decks and planters. CCW MiraDRAIN can be cut with a utility knife or scissors. Concrete may be placed directly onto either side of the panels. The panels can terminate at the top of the footing

## TECHNICAL DATA

PROPERTY	METHOD	UNIT	TYPICAL VALUE
<b>CORE</b>			
Thickness	ASTM D1777	in (mm)	0.40 (10.16)
Compressive Strength	ASTM D1621	psf (kPa)	18,000 (862)
Maximum Flow Rate <sup>1</sup>	ASTM D4716	gpm/ft <sup>2</sup> (l/min/m)	21 (260)
Installed Horizontally <sup>2</sup>	ASTM D4716	gpm/ft <sup>2</sup> (l/min/m)	3.8 (47)
<b>FABRIC (FW402)</b>			
Apparent Opening Size	ASTM D4751	US Std Sieve (mm)	40 (0.42)
Water Flow Rate	ASTM D4491	gpm/ft <sup>2</sup> (l/min/m)	145 (5,907)
Grab Tensile Strength	ASTM D4632	lbs (kN)	365 (1.62)
Grab Longation	ASTM D4632	%	24
Puncture Resistance	ASTM D4833	lbs (kN)	100 (0.44)
<b>SYSTEM</b>			
Performance Index	*		27,198

All flow rates were tested at 3600 psf. \*Drainage Performance Index is a function of ASTM D4833, D4632 and D1621 <sup>1</sup>In plane flow rate @ gradient of 1.0 <sup>2</sup>Installed flow rate with concrete overburden at horizontal gradient of 0.05

and are flexible enough to form right angles to cover the top of the footing. CCW MiraDRAIN eliminates the need for a protection course over waterproofing systems. Native soils can be used over CCW MiraDRAIN. (Contact your local Carlisle Coatings & Waterproofing representative for specific guidelines).

## UNDERSLAB / HORIZONTAL APPLICATIONS

### Floor Slabs and Concrete-Lined Channels

Proper preparation of the subgrade will require grading to a 2% minimum slope. The area of installation should be clear of rubble, rock, large soil clods, etc. Place CCW MiraDRAIN with the fabric side toward the soil. The flange of the second and subsequent panels should be placed over the back side of the preceding dimpled core and butted as close as possible to the preceding panel. The panel joints, longitudinal and transverse on the CCW MiraDRAIN core, should be

sealed with duct tape. This will aid in preventing concrete or soil from intruding into the CCW MiraDRAIN core during subsequent construction phases. Construction traffic should be minimized over the installed CCW MiraDRAIN. Sand and/or concrete may be poured directly over the CCW MiraDRAIN core.

#### Planters

Place the CCW MiraDRAIN in the planter so that the fabric on the vertical and horizontal surfaces faces the soil. Utilize the installation procedures and attachment method appropriate for the type of substrate. Overlap the fabric of the vertical panel onto the horizontal panel at the transition point. If cutting of the panels is required, exposed cuts must be covered with supplemental pieces of filter fabric to prevent soil intrusion. A minimum overlap of 6" (15 cm) will be required to cover cut sections.

#### Plaza Decks

Place fabric side up over a properly waterproofed substrate. The panels should be placed so that water runs with the overlap not against it. Secure CCW MiraDRAIN to the substrate with ballast or CCW DRAIN GRIP to hold it in place. The first panels should be placed with the flanged edge uphill. Cut the fabric along the flange edge and strip off this fabric exposing the edge of the core and the flange. Place the dimpled edge over the preceding flanged edge to join the next panel. Secure the remaining fabric flap with CCW DRAIN GRIP or duct tape. Terminal edges that have been cut will require a supplemental piece of filter fabric to seal the panel from soil intrusion and if there is insufficient fabric, the core shall be cut out from the fabric by a depth of 3 dimples to provide excess fabric for wrapping behind the core.

#### DRAINAGE COLLECTOR/DISCHARGE SYSTEM

##### Collector Pipe

Place CCW QuickDRAIN or collector pipe as required in design details. The CCW QuickDRAIN should be installed adjacent to the CCW MiraDRAIN. Care must be taken to ensure a continuous drainage path between the CCW QuickDRAIN and the CCW MiraDRAIN panels. For installations where a collector pipe is specified, encapsulate the collector pipe in a gravel bed with a supplemental section of filter fabric as a separator/filter.

#### DETAIL REQUIREMENTS

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

#### PACKAGING INFORMATION

Packaging: CCW MiraDRAIN 9000 is available in rolls of 4' x 50' (1.22 m x 15.24 m).

#### LIMITED WARRANTY

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# CCW LM-800XL

## Liquid Mastic

### DESCRIPTION

CCW LM-800XL Liquid Mastic is a fast-drying elastomeric, single component, cold-applied liquid material.

### TYPICAL USES

CCW LM-800XL is an accessory product used in conjunction with CCW MiraDRI 860/861 membranes. CCW LM-800XL is designed to be used as a fillet and reinforcement under CCW MiraDRI 860/861 membranes at footing foundation wall junctures or other inside corners; and between footing and foundations when tying in slab waterproofing with the foundation wall.

Other applications include terminations and flashing to protrusions from horizontal and vertical surfaces; terminations at drains; and detailing of the substrate prior to CCW MiraDRI 860/861 membrane application.

### APPLICATION

CCW LM-800XL should be applied directly from the gallon with a putty knife at 40-50 mil thickness unless otherwise specified. When used as a fillet under CCW MiraDRI 860/861, use a 3/4" (1.9 cm) fillet and continue the CCW LM-800XL out 6" (15 cm) in each direction. At membrane terminations, use 60 mils of CCW LM-800XL as a flashing and apply at the minimum of 2" (5 cm) wide over the CCW membrane, and a minimum of 1" (2.5 cm) onto the surface being waterproofed. CCW MiraDRI 860/861 can be placed over CCW LM-800XL after it has cured. Allow CCW LM-800XL to cure 24 hours before flood testing. Do not use CCW LM-800XL in applications subject to more than 57.8 ft (17.6m) head of water. Coverage Rate at 3/4" fillet is 30' per 29 oz. tube, coverage rate at 40-50 mill is 20'-25' sq ft per gallon.

### PACKAGING

5 gallon (19 liter) pails;  
 1gallon (4 liter) pails;  
 29 oz. (822 kg) tubes, 12 per box;

### CAUTIONS & LIMITATIONS

CCW LM-800XL Liquid Membrane should not be used near open flame and adequate ventilation should be provided for the protection of the applicators. Do not store CCW LM-800XL in direct sunlight or at temperatures exceeding 95°F. Improper storage could lead to product deterioration.

Tools and equipment may be thoroughly cleaned after use with mineral spirits, taking the necessary precaution when handling combustible materials. Refer to MSDS for other product safety information.

### TECHNICAL DATA

PROPERTY	METHOD	UNIT	VALUE
Color	—	—	Green
Solids	—	%	58
Pliability @ 25°F (-32°C)	ASTM E1970	lbs (kg)	Pass
Hydrostatic Head Resistance	ASTM D751	—	57.8 ft (17.6) max
Elongation	ASTM D412	%	1396
Peel Adhesion	ASTM D903	lbs/in (kN/m)	28 (4.9)
VOC Content	—	g/l	377.5

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## CCW-702

For Use With  
Sheet Membranes

### DESCRIPTION

CCW-702 is a quick drying, solvent based, high-tack adhesive specifically designed to promote maximum adhesion of CCW Sheet Membrane Waterproofing products.

Apply by long nap roller or brush in an even film at 300 to 350 square feet per gallon. Allow adhesive to dry for 20 minutes minimum at 75° F. Porous substrates require reduced coverage rates for proper adhesion. Adhesive has a satisfactory cure when surface is tacky, but will not transfer when touched. Apply only areas to be waterproofed the same day. Reapply if area becomes dirty or wet. When used in adverse climactic conditions (i.e. humid, cool, etc.) or on a porous substrate, additional time will be required.

### PACKAGING

5 Gallon pails, 45 pails per pallet

Store at 35° to 110°F (2° to 43°C)

**CAUTION:** Flammable liquid and vapors. Use only with adequate ventilation and avoid breathing vapors. Refer to MSDS for other important warnings and product safety information.

### TECHNICAL DATA

PROPERTY	RESULTS
Weight per Gallon	7.5 lbs
Solids Content	46% by wt
VOC Content	450 g/l
Color	Blue
Flash Point	-4°F (-20°C)
Adhesion to Concrete	11.0 lb/lin in
Minimum Application Temp	25°F (3.9°C)
Viscosity	200 cps
Storage Temp	35°F to 110°F

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