



# AIR & VAPOR BARRIER

## Barriseal®-R

### Description

Barriseal-R is a water-based asphalt emulsion modified with a blend of synthetic polymers and special additives. Barriseal-R is formulated to a thick consistency, so it will hang easily on vertical surfaces at high thickness. Barriseal-R is often used as an accessory product in the Barriseal-S spray-applied air & vapor barrier system. Barriseal-R can also be used as the principle membrane, and by itself performs as an air barrier, vapor barrier and waterproof membrane. Barriseal-R is applied by roller or brush, to achieve a nominal 0.040" (40-mil) dry film thickness. Barriseal-R can be applied over concrete block, concrete, exterior gypsum sheathing, foam insulation board, plywood, OSB and many other common building materials. The product is fully adhered to the substrate, flexible and rubber-like. The high film thickness and flexible, elastic properties enable Barriseal-R to bridge cracks and seal around penetrations, which creates a truly continuous, monolithic air, vapor and water barrier.



### Features and Benefits

- 1-part, cold-applied, roller installation – simple procedure with no special tools or equipment
- Effectively coats rough & porous surfaces
- High water resistance of cured membrane permits use in high moisture exposure areas
- Non-flammable & fume-free composition provides safe installation
- Monolithic coverage & self-sealing properties provide an air- and water-tight installation around fasteners
- Barriseal-R is a warranted air/vapor barrier system from Carlisle Coatings & Waterproofing

### Project Conditions

Building Codes and Project specifications require continuity of the air barrier installation. It is the installer's responsibility to understand the extent and sequencing of air barrier installation on the project. Do not proceed with installation until substrate and project conditions conform to requirements specified in this document. Identify any membranes, coatings, sealants, tapes and joint compounds by others which will come into contact with Barriseal-R and CCW accessories, and verify compatibility through CCW. All surfaces accepting Barriseal-R and CCW accessories shall be clean, dry, frost free and of sound condition. Verify that wall assemblies are dried in, such that water intrusion will not occur from above, behind or around the membrane installation. Gaps and cracks exceeding 1/4" across shall be filled with materials and techniques approved by CCW.

As Barriseal-R and CCW accessories cannot span any gap in excess of 1/4", (exception: up to a 1" gap for P/S Elastoform), electrical/mechanical penetrations, structural steel penetrations, columns/beams, expansion/seismic joints, shelf angles, tie-ins to fenestration and transitions to other building assemblies may require extra work and materials to provide suitable surfaces for continuous installation of the air barrier. Consult CCW Barriseal details for guidance.

# AIR & VAPOR BARRIER

## Barriseal-R

### Substrate Inspection

#### Vertical Installation

**Concrete:** Shall be cured in place 7 days minimum. Shall be smooth, with sharp protrusions such as cold joints ground flush. Honeycomb and holes/cracks exceeding ¼" across shall be filled with grout or mortar.

**Concrete Masonry Unit (CMU):** Mortar joints shall be struck flush and shall be free of voids exceeding ¼" across. Mortar droppings shall be removed from brick ties and all other surfaces accepting Barriseal-R and CCW accessories. Allow mortar joints to dry a minimum of 3 days prior to application of the Barriseal-R and CCW accessories.

**Gypsum Sheathing:** Sheathing boards shall be flush at joints, with gap between boards according to building code and sheathing manufacturer's requirements. Sheathing boards shall also be securely fastened to the structure with proper fastener type, technique and spacing according to building code and sheathing manufacturer's requirements. Sheathing boards shall be repaired or replaced if inspection reveals moisture damage, mechanical damage or if sheathing boards have exceeded the exposure duration or exposure conditions as required by the sheathing manufacturer.

**OSB, Plywood, Lumber, Pressure-Treated Wood:** Wood sheathing inspection carries the same protocol given for gypsum sheathing. Also, moisture content, measured with a wood moisture meter in the core of the substrate, shall be below 20%. Do not cover any wooden materials with Barriseal-R or CCW accessories if moisture content is 20% or above. Do not encapsulate wood (such as nailers) with membrane, as this will cause premature rot. In most cases fire- and pressure-treated wood must be kiln dried to accommodate the less than 20% moisture content requirement.

**Foam Insulation Board:** Foam insulation board shall be repaired or replaced if inspection reveals mechanical damage or surface damage. Holes/cracks exceeding ¼" across shall be properly repaired. Board joints shall be prepared with 4" Aluma-Grip™ 701 and primed with CCW-702 WB. Note: Due to surface heat gain, do not use CCW-705 or Barritape™ over foam insulation board.

### Installation

The following conditions shall be detailed in accordance with CCW Barriseal standard details:

Sheathing joints, rough openings, pipe/duct penetrations, expansion joints, control joints, transitions at roof to wall, transitions of dissimilar materials, wall-to-foundation transitions, shelf angles, and wall-to-fenestration transitions. Consult CCW Barriseal details for specific conditions.

**Applying Barriseal-R:** Obtain full, safe access to area, and mask adjacent surfaces to protect from droppings or splatter. Verify that the product is within shelf life, as indicated on the product label, and the product has not been frozen. Frozen or expired product will exhibit separation and should be discarded. Use a medium/long nap roller to cover open surfaces and a brush or a detail roller to cover tight areas. With roller application, apply two coats at 30 wet mils each. Allow first coat to dry firm before applying second. Barriseal-R can also be applied by airless spray through similar equipment suitable for spraying Barritech VP/Barritech NP™. Consult the CCW Spray Equipment Brochure for equipment specifications and operation. Where Barriseal-R is sprayed, it must be back-rolled, as the un-dispersed filler in Barriseal-R forms pinholes during spray. Like conventional roller application, sprayed and back-rolled Barriseal-R requires a minimum of two coats at 30 wet mils each with drying allowed between coats. Provide proper coverage over opaque surfaces and details as shown in Barriseal standard detail drawings. Provide complete coverage over surfaces, so that there are no voids, pinholes or similar passages through membrane. Allow the membrane to dry completely before subjecting it to inspection for air/water leakage and adhesion testing. Drying time varies with substrate, ambient temperature and humidity. Membrane is dry when it appears black and rubber-like, and feels dry when pressed.

**Repairing Damage to Installed Membrane:** Remove damaged and loosely adhered material. Clean weathered or dirty surfaces with a towel wet with xylene. Allow to dry and cover the damaged area with two 30-wet-mil coats of Barriseal-R.

**Installing Foam Plastic Board Insulation over Barriseal:** Allow the Barriseal membrane to dry completely. Attach insulation to the surface of the membrane with CAV-GRIP™ or approved insulation adhesive by others. Where CAV-GRIP is used, spray the adhesive over the surface of Barriseal, and press insulation in place. Secure insulation with mechanical fasteners or brick ties.

### Clean Up

Promptly clean uncured Fire Resist Barritech NP60 from hands, tools, surfaces and spray equipment with a solution of tap water and citrus degreaser. Cured product must be removed mechanically or by soaking in a solvent such as xylene.

## Limitations

- Do not allow product in packaging or in spray equipment to freeze. Product is not freeze-thaw stable.
- Do not apply during rain, or if precipitation is expected during drying time of the product.
- Do not proceed with application if ambient temperature is below 40°F.
- Surface temperature should not drop below 50°F until coating is cured.
- Do not apply if the temperature is expected to drop below 32°F in the next 16 hours.
- Do not install in areas expected to reach 180°F or above.
- Maximum permitted exposure time of Barriseal-R on a vertical wall is 30 days.
- Barriseal-R is a vapor barrier. The design professional shall determine appropriate use in project wall assemblies.
- Do not apply product in rain.
- Not intended for traffic resistance or as a wearing surface.
- Not for use on horizontal surfaces.
- Do not install on roofs.
- Do not install over PVC membrane, silicone, un-cured sealants or other incompatible materials. Consult Barriseal details for more information.
- Keep edge of membrane ½" minimum back from finished exterior.
- Do not allow the membrane to come into contact with any visible sealants.
- Do not apply solvent-based products over Barriseal-R.
- Product is designed to be used as a positive-side water barrier and will not function as negative-side water barrier.

## Storage

Store Barriseal-R and accessory products in a location protected from temperature extremes between 50°F and 90°F, precipitation and direct sunlight. Protect Barriseal-R from freezing temperatures during delivery, storage and handling. Shelf life of Barriseal-R in original, unopened packaging, stored under these conditions is nine months from the date of manufacture.

## Packaging

Product	Size
Barriseal-R	Fluid-applied, air/vapor barrier, 5-gal pails
CCW-705/705 LT	40-mil self-adhering sheet flashing/membrane, 36" x 75' rolls and 4", 6", 9", 12", 18" and 24" x 100' rolls
Aluma-GRIP-701	30-mil self-adhering aluminum/butyl tape, 2", 3", 4", 6", 9" and 12" x 50' rolls
Sure-Seal® Pressure-Sensitive Elastoform Flashing	90-mil malleable, self-adhering EPDM flashing, 6", 9" and 12" x 50' rolls
Sure-Seal EPDM Primers	EP-95 Splicing Cement: solvent based, 1-gal cans HP 250 Primer: solvent based, 2.5-gal pails Low-VOC Primer: OTC-Compliant, solvent based primer, 1-gal cans
LiquiFiber™-W	Glass matt consisting of randomly oriented strands in soluble binder, 6" and 12" x 300' rolls
DCH Reinforcing Fabric	Woven polyester fabric, 4", 6" and 12" x 324' rolls
<b>CCW Contact Adhesives: (select any)</b>	
CAV-GRIP	Aerosol spray contact adhesive packaged in pressurized cylinders containing 30-lb. fill weight of adhesive. Reusable spray gun and 6', 12' or 18' hoses are sold separately and are attached to cylinder for dispense.
CCW-702	Solvent-based contact adhesive, 1-gal cans and 5-gal pails
TRAVEL-TACK™	Solvent-borne, polymer-based contact adhesive, 15-oz. aerosol cans
CCW-702 LV	OTC-compliant, solvent-based contact adhesive, 5-gal pails
CCW-715	Solvent-based contact adhesive for green concrete, 5-gal pails
CCW-702 WB	Water-based contact adhesive, 5-gal pails
<b>Approved Sealants for Contact with Barriseal-R:</b>	
LM-800XL	1-part solvent-based synthetic rubber, 29-fl-oz tubes and 5-gal pails
CCW-201	2-part polyurethane, 1.5-gal kits
Sure-Seal Lap Sealant	Solvent-based synthetic rubber, 11-fl-oz tubes and 5-gal pails
<b>Sealants by others as approved in Barriseal details</b>	

# AIR & VAPOR BARRIER

## Barriseal-R

### Typical Properties

Property	Method	Results
Color	--	Un-cured: Dark brown Cured: Black
Volatile Organic Content	--	<20 g/L
Shelf Life	--	12 months
Percent Solids (weight)	--	64%
Coverage (Theoretical)*		25 sq ft per Gallon
Cured Film Thickness	--	40 mils, minimum
Application Temperature		Minimum 50°F, substrate
Drying Time, 30 Wet Mil Coat**		2 hours on CMU substrate @ 73°F/50% RH
Drying Time @ 73°F/50% RH, 2, 30 wet mil coats applied to CMU**		4 hours until firm 48 hours to full cure
Service Temperature		-20°F to 149°F
UV Exposure		30 days maximum
Resilience	ASTM D5329	98% (recovery)
Low-Temp Flexibility	ASTM D1970	No cracking at -20°F, bent over 1" mandrel
Peel Adhesion (lb/in)	ASTM D903	HDPE Film 12.2 Concrete 14.1 CMU 14.1 DensGlass® Gold 13.1
Elongation	ASTM D412	1,000%
Water Vapor Permeance	ASTM E96	0.02 Perm
Air Leakage Through Assembly	ASTM E283	<0.02 L/s*m2
Air Permeance, 40 Mil Thickness Free Film	ASTM E2178	0.000 L/s*m2
Air Permeance, CMU Substrate	ASTM E2178, Mod Barriseal-S at minimum 40 mils cured on CMU	0.002 L/s*m2
Water Leakage Through Assembly	ASTM E331	No visible leaks
Wind Loading of Assembly	ASTM E330	No de-lamination of membrane or propagation of air leakage.
Pull-Off Adhesion	ASTM D4541, modified 4" wood puck	14 PSI on DensGlass® sheathing (facer delamination) >24 PSI on OSB (substrate failure) >27 PSI on CMU (max. reading on pull tester)

Property	Method	Results
Air Barrier Assembly Test	ASTM E2357. Gypsum sheathing over steel studs, wall assembly. Sheathing joints were prepared with Barritape. Gaps, joints, penetrations and rough opening primed with CCW-702 and reinforced with CCW-705. Barriseal-S spray-applied at 45 wet mils. ASTM E2357. Gypsum sheathing over steel studs, wall assembly. Sheathing joints were prepared with Barritape. Gaps, joints, penetrations and rough opening primed with CCW-702 and reinforced with CCW-705. Barriseal-S spray-applied at 45 wet mils.	Air Leakage: Maximum 0.0603 L/s*m <sup>2</sup> @ 75 Pa [0.0119 CFM/ft <sup>2</sup> @ 1.57 PSF] infiltration & exfiltration, after deformation, pressure cycling and gust loading. Deformation: No Damage. 600 Pa [12.56 PSF], sustained load for 60 min. Pressure Cycling: No damage. 2000 cycles at +/- 800 Pa [16.75 PSF] Gust Load: No damage, 1440 Pa [110 mph wind], windward and leeward load, 10 sec each direction.
Water Resistance to Hydrostatic Pressure Head	AATCC 127, mod. 22" [55 cm] column of water for 5 hours	No leaking through membrane
Nail Sealability	ASTM D1970	Pass
Low-Term Crack Bridging	ASTM C1305	No cracking after 10 cycles at -15°F
Extensibility over Crack after Heat Aging	ASTM C1522	No cracking

\* Drying time varies with ambient temperature, ambient humidity, substrate temperature, substrate dampness, coating thickness, sun and wind. Cool, moist, shady conditions and high coating thickness present the worst case scenario, causing the product to take many days to dry. In conditions such as these, it is advisable to tarp, heat and ventilate the area or wait for better weather.

\*\* Actual coverage varies by substrate and is typically less than theoretical coverage due to substrate roughness and porosity, wind, scrap and installer skill. Measurable dry mil thickness may also be lower than theoretical, due to substrate roughness, porosity and measurement technique. On all substrates, coating shall be visibly continuous, with no pinholes. On CMU substrate, dry thickness, measurable with a pin gauge, comb gauge or micrometer shall be a minimum of 40 mils.

### 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 affect 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.