AIR BARRIER - PERMEABLE

321 K-NRG Seal™ VP

KARNAK
THE SEAL OF QUALITY

Read Safety Data Sheet before using this product.

DESCRIPTION: 321 K-NRG Seal™ VP is a liquid applied, elastomeric membrane designed to provide a vapor permeable air & water barrier when applied to above-grade wall assemblies. This product is a single-component, water-based acrylic coating that cures to a tough monolithic rubber-like membrane with expansion and contraction properties, which resists air leakage. 321 K-NRG Seal VP incorporates antimicrobial technology to produce a mold resistant membrane that passes stringent NFPA 285 Fire Test.

USES: 321 K-NRG Seal VP is a liquid applied membrane used to construct high performance building envelope air & water barrier membrane assemblies requiring vapor permeability. When combined with KARNAK's sealants and accessories, 321 K-NRG Seal VP forms a complete vapor-permeable wall air-barrier system. Commonly used on variety of wall substrates and sheathing prior to installation of exterior cladding.

FEATURES, BENEFITS AND ADVANTAGES:

- Monolithic, vapor permeable, elastomeric membrane for above-grade wall applications
- Easily applies by spray application, roller or brush
- Integral mold resistant formulation
- High water vapor permeance provides "breather" characteristics
- Excellent adhesion to most construction surfaces such as exterior gypsum boards, CMU, concrete, stone, wood and metal – can be applied to damp concrete
- Passes NFPA 285 Fire Test – Exceeds ASTM E2178 and ASTM E2357

SURFACE PREPARATIONS: Surfaces should be clean and free of frost, oil, grease, dirt, excess mortar or other contaminants. Recommended application temperature is 40°F to 120°F. All surfaces must be sound and dry (except damp concrete). New concrete should be cured a minimum of 7 days before 321 K-NRG Seal VP is applied. Concrete surfaces should be sound and free of large voids and spalled areas. CMU wall mortar joints should be flush with wall without excess mortar. Joints between panels of exterior grade gypsum, plywood and rigid insulation up to 1/4" wide should be filled with a trowel application of 323 K-NRG Gap Seal™ prior to application of liquid membrane. Joints between 1/4" – 1/2" wide should be three-coursed with 323 K-NRG Gap Seal and reinforcement fabric. Reinforcing fabric should extend 3" beyond each side of the joint and be completely covered with another layer of 323 K-NRG Gap Seal. Joints wider than 1/2" are not permitted. Steps should be taken to use an appropriate backer material to fill the joint first before three-coursing with 323 K-NRG Gap Seal and reinforcement fabric. Transition joints between two dissimilar materials such as at beams, columns, window and door frames, etc., should be three-coursed with 323 K-NRG Gap Seal and reinforcement fabric. Center fabric reinforcement so that it extends a minimum of 3" onto both substrates. Refer to local code for flashing requirements on the exterior wall assembly.

APPLICATION: 321 K-NRG Seal VP is easily applied by brush, roller or spray. Application by airless spray equipment in a single or two-coat application is the preferred method. Work to apply in a continuous, monolithic application. Liquid-applied film should be free of sags or runs. Application should be free of voids when transitioning onto applied flashing membrane to create a uniform air-barrier. Check wet mil thickness regularly with wet-mil gauge to assure uniform coverage meeting required application rate. For best application practices, apply liquid membrane first in even horizontal spray strokes followed by vertical strokes to ensure a uniform and consistent application. Upon completion of work, check for voids. In areas where voids are present simply spray a light coat to cover. Do not spray in excess to cause sagging or running of the material. Apply when ambient air, substrate and material temperatures are all 40°F and rising. Do not apply if ambient air or surface temperatures exceed 120°F.

321 K-NRG Seal VP is not designed for permanent exposure. Product is designed to withstand job site exposure for up to 9 months, however, good construction practice calls for covering as soon as possible. Wherever possible, begin covering membrane on south exposures, followed by remainder of surface. Do not apply if rain is expected within 24 hours after application.

COVERAGE RATE:

- Smooth Surfaces such as exterior gypsum sheathing or formed concrete apply 2.5 gallons per 100 square feet to give a wet film thickness of approximately 40 mils (20 mils DFT) depending on texture and porosity of surface.
- Rough Surfaces such as CMU apply 3 gallons per 100 square feet to give a wet film thickness of approximately 48 mils (24 mils DFT) depending on texture and porosity of surface.
- Apply using airless spray equipment, 1-1/4" nap roller or brush.

PHYSICAL PROPERTIES & SPECIFICATIONS

Weight per Gallon:	10.4 lbs.
Solids by Weight:	60%, Nominal
Solids by Volume:	50%, Nominal
Color:	Gray
Dry Time:	2 hrs. to touch; 24 hrs. firm set at 60°F, 50% RH
Elongation:	160%, Nominal ASTM D412
Tensile Strength:	125 PSI, Nominal ASTM D412
Cure Time:	24 to 48 hours@ 77°F and 50% Relative Humidity
Application Temp.:	40°F to 120°F
Service Temp (Cured Film):	-40°F to 160°F
VOC Content:	<50 g/L max.

ASTM E2357
ASTM E2178
NFPA 285 Fire-Rated Assembly

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PERFORMANCE PROPERTIES:

Peel Strength to Concrete:	100 kPa	ASTM C836
Low Temperature Flexibility and Crack Bridging @ -20°C:	Pass	ASTM C836
Aging – Long Term Flexibility:	Pass, No Fracturing	CGSB 71-GP-24M
Resistance to Mold, Mildew & Fungal Growth:	0 / No Growth	ASTM D5590
NFPA 285 – Standard Fire Test Method For Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components:	Pass	NFPA 285
Water Vapor Transmission ($ng/Pa{\cdot}s{\cdot}m^2$) 0.40mm (16 mil) dft:	134 $ng/Pa{\cdot}s{\cdot}m^2$	ASTM E96 (Procedure A)
Water Vapor Transmission ($ng/Pa{\cdot}s{\cdot}m^2$) 0.40mm (16 mil) dft:	2.34 perms	ASTM E96 (Procedure A)
Water Vapor Transmission ($ng/Pa{\cdot}s{\cdot}m^2$) 0.40mm (16 mil) dft:	1588 $ng/Pa{\cdot}s{\cdot}m^2$	ASTM E96 (Procedure B)
Water Vapor Transmission ($ng/Pa{\cdot}s{\cdot}m^2$) 0.40mm (16 mil) dft:	27.77 perms	ASTM E96 (Procedure B)
Air Leakage of Air Barrier Assembly Opaque Wall – ABAA Specification & 2012 IECC Code:	0.010	ASTM E2357
Penetration Check; @ Referenced Air Leakage ABAA Specification and 2012 IECC Code:	Pass	ASTM E2357
Air Permeance – SI Units ($L/s{\cdot}m^2$) 0.40 mm (16 mil) dft:	0.001	ASTM E2178
Air Permeance – US Customary Units (CFM/ft^2) 0.40 mm (16 mil) dft:	0.000	ASTM E2178
Water Resistance – Visual Inspection for Water Infiltration:	Pass	AATCC 127
Self-Sealability – Bottom Can 0.40 mm (16 mil) dft:	Pass	ASTM D1970
Self-Sealability – Nail Shank 0.40 mm (16 mil) dft:	Pass	ASTM D1970
Self-Sealability – Underside of Plywood 0.40 mm (16 mil) dft:	Pass	ASTM D1970
Self-Sealability – Between Plywood & Membrane 0.40 mm (16 mil) dft:	Pass	ASTM D1970
Crack Bridging:	Pass	ASTM C1305
Pull Off Strength (kPa) to Concrete:	678	ASTM D4541
Pull Off Strength (kPa) to USG Securock Glass-Mat Sheathing:	266	ASTM D4541
Pull Off Strength (kPa) to OSB:	907	ASTM D4541
Pull Off Strength (kPa) to Plywood:	922	ASTM D4541
Pull Off Strength (kPa) to CMU Block:	832	ASTM D4541

CHEMICAL RESISTANCE:

Solvents:	Not Resistant
Water:	High Resistance
Acids - Mild Acid Solutions:	Mild Resistance
Bases - Mild Base Solutions:	Mild Resistance
Salt:	High Resistance

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SUBSTRATE & ACCESSORY COMPATIBILTY:

Concrete, Wallboard, Stucco, Wood, Metal OSB, Cementitious Boards, Sheetrock, Brick, Gypsum Board, All Standard Roofing Materials Except Bitumen:	Highly Compatible
Polystryrene Insulation:	Mildly Compatible
Silicone, Tyvec®, Polyethylene:	Not Compatible
Bitumen:	Mildly Compatible
Cured Water-Based Sealants, Caulks & Coatings:	Highly Compatible
Cured Moisture Cured Sealants, Caulks & Coatings:	Highly Compatible
Cured Solvent-Based Primer, Coatings & Sealants:	Highly Compatible

CAUTION: PROTECT FROM FREEZING. Product must be protected from damage during construction. Do not apply to wet surfaces, except damp concrete. Coating not designed for permanent exposure to weather. Protect as soon as possible. However, coating may be exposed up to 9 months, if necessary.

321 K-NRG Seal VP shall not be applied when ambient (air) and substrate temperatures are below 40°F (5°C). The product should not be applied if it is raining, or rain is forecasted within 24 hours after application. Product should not be applied if it is expected that the ambient temperature will fall below 32°F within 48 hours. Ensure newly coated CMU walls are protected at the roof line to prevent water infiltration into the wall cavity.

Blisters may form when applied in hot weather or direct sun applications over porous substrates such as concrete due to rapid drying of the coating. To help prevent blisters from forming in this situation, apply a thin “prime coat” at the rate of 0.5 gal. per 100 sq. ft. to the substrate. Allow to dry then apply a full coverage application. This will help to prevent blister formation in subsequent application. A two coat application versus a single heavy coat will also assist in reducing the occurrence of blister from forming. Back rolling the first coat will also help to prevent blister formation in hot weather.

Close container when not in use. Avoid prolonged contact with skin. Use proper protective equipment during application. Avoid breathing of vapors as it may cause respiratory tract irritation. If swallowed, seek medical attention immediately. In case of eye contact, open eyelids wide and flush immediately with plenty of water for at least 15 minutes. Dispose of in an environmentally safe manner. Cover air intakes during application and while drying. Keep out of reach of children. For exterior use only.

PACKAGING: Available in 5-gallon pails and 55-gallon drums.

If further information is needed, contact KARNAK Technical services at 800-526-4236.