

PERM-A-BARRIER® VPO

Fluid applied vapor permeable air barrier membrane designed for indirect and intermittent UV exposure

Description

Perm-A-Barrier® VPO is a fluid applied, one component, acrylic membrane that provides continuous air tightness and water protection throughout the wall assembly. Perm-A-Barrier VPO is dark-colored and designed for exposure to indirect and intermittent sunlight, such as behind open joint rain screen systems.

Perm-A-Barrier VPO is for wall assemblies requiring “breathable” characteristics. As a vapor permeable membrane, Perm-A-Barrier VPO permits the transfusion of water vapor that may otherwise condense in the wall structure; but is impermeable to liquid water, which

allows the material to act as a water drainage plain.

The Volatile Organic Compound (VOC) content of Perm-A-Barrier VPO is less than 20 g/L.

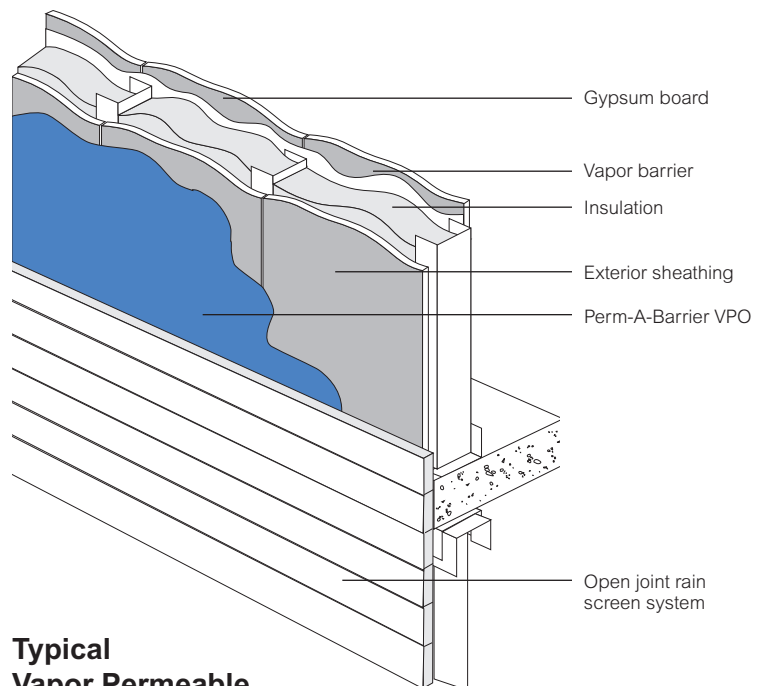
Advantages

- **Dark-colored**—provides design flexibility
- **Indirect and intermittent UV exposure**—can be used with open joint rain screen systems
- **Air tight**—protects against air passage and associated energy losses. Meets new ASTM E2357 standard
- **Vapor permeable**—prevents moisture from being trapped in the wall cavity by allowing walls the ability to dry
- **Single component**—fast and easy application with simple spray equipment



Product Advantages

- Dark-colored
- Indirect and intermittent UV exposure
- Air tight
- Vapor permeable
- Single component
- Fully bonded
- Seamless
- Damp surface tolerant
- Weather resistant
- Strong adhesion to common construction substrates such as wood, block, concrete, OSB, gypsum sheathing and metal
- Compatible with Grace Perm-A-Barrier Flashing Systems



Typical Vapor Permeable Air Barrier Application

*Consult Grace for climate specific details

Drawings are for illustration purposes only. Please refer to graceconstruction.com for specific application details.

- **Fully bonded**—transmits wind loads directly to the substrate
- **Seamless**—continuous membrane integrity with no laps
- **Damp surface tolerant**—can be applied to damp-to-touch surfaces
- **Weather resistant**—can be exposed to rain, wind and direct sunlight up to a maximum of 6 months
- **Strong adhesion** to common construction substrates such as wood, block, concrete, OSB, gypsum sheathing and metal
- **Compatible** with Grace Perm-A-Barrier Flashing Systems

Principal Applications

Vapor permeable air barrier for new and remedial commercial and residential applications requiring indirect and intermittent UV exposure such as behind open joint rain screen systems

System Components

- **Perm-A-Barrier VPO**—for vertical applications
- **Bituthene® Liquid Membrane**—for details and terminations
- **Perm-A-Barrier Wall Flashing**—heavy duty fully-adhered membrane for through-wall flashing detailing
- **Perm-A-Barrier Detail Membrane**—flexible, fully-adhered membrane for detail flashing areas
- **Perm-A-Barrier Aluminum Flashing** —flexible, aluminum faced, fully-adhered membrane for detail flashing areas

Installation

Safety

Refer to product label and Material Safety Data Sheet before use. All users should acquaint themselves with this information prior to working with the material. Carefully read detailed precaution statements on the product labels and MSDS before use.

MSDSs can be obtained from our web site at graceconstruction.com or by contacting us toll free at 866-333-3SBM (3726).

Surface Preparation

All surfaces must be sound and free from spalled areas, loose aggregate, loose nails or screws, sharp protrusions or other matter that will hinder the adhesion or regularity of the membrane installation. The surface must also be free from frost, dirt, grease, oil or other

contaminants. Clean loose dust and dirt from the surface by brushing or wiping with a clean, dry cloth.

Concrete and Other Monolithic Cementitious Surfaces

Surface irregularities greater than 1/4 in. (6 mm) across and/or 1/8 in. (3 mm) in depth should be pre-treated with Bituthene Liquid Membrane or repaired with a lean mortar mix or nonshrinking grout. Remove concrete form lines and any high spots greater than 1/8 in. (3 mm) in height to ensure uniform surface. On highly dusty or porous substrates it may be necessary to apply a scratch coat of Perm-A-Barrier VPO prior to spraying to full thickness.

Perm-A-Barrier VPO may be applied to green (minimum 3 day cure time) concrete or over damp to-touch surfaces. Remove any visible water prior to application.

Concrete Masonry Units (CMU)

The CMU surface should be smooth and free from projections. Strike all mortar joints full and flush to the face of the concrete block. Fill all voids and holes, particularly at the mortar joints, with a lean mortar mix or nonshrinking grout. Alternatively, a parge coat (typically one part cement to three parts sand) may be used over the entire surface.

Exterior Sheathing Panels

Perm-A-Barrier VPO may be applied directly to exterior sheathing panels such as exterior drywall, plywood and oriented strand board (OSB) and glass faced wall boards, for further information refer to Technical Letter 2, *Substrate Preparation for Application of Perm-A-Barrier Products to Glass-Mat Faced Gypsum Sheathing*. To avoid deflection at the panel joints, fasten corners and edges with appropriate screws. Fasteners should be driven flush with the panel surface (not counter sunk) and into the framing system in accordance with the manufacturers recommendations. Tape the sheathing board butt joints using either reinforced or mesh-style wallboard tape, min. 2 in. (50 mm) wide (i.e. FibaTape® brand products).

When using mesh-style wallboard tape, ensure that all holes in the tape are filled with Perm-A-Barrier VPO. Gaps greater than 1/4 in. (6 mm) should be filled with a compatible sealant, allowing sufficient time for the sealant to fully cure before application of the tape and Perm-A-Barrier VPO. Refer to Technical Letter # 13 for compatible sealants and caulks.

Detailing

Detailing should be completed prior to applying the full coverage of Perm-A-Barrier VPO. The field application should completely cover the detail areas to provide a continuous membrane.

For a complete description and instructions on individual details, consult the separate detail sheets found on our web site at graceconstruction.com.

Transitions to beams, columns, window and doorframes, etc. should be made with a strip of Perm-A-Barrier Detail Membrane, Perm-A-Barrier Aluminum Flashing or Perm-A-Barrier Wall Flashing. Only Perm-A-Barrier Wall Flashing can be used for through wall flashing applications or under masonry units. Optimum adhesion will be achieved when the membrane or flashing is lapped onto the cured Perm-A-Barrier VPO. As soon as the Perm-A-Barrier VPO is cured (approximately 24 hrs after application at 50% R.H, 68°F), it is ready to accept the tape.

Gaps around penetrations should be caulked with a compatible sealant. Consult Technical Letter 13, *Adhesion Compatibility of Perm-A-Barrier VP LT and VPO with Sealants and Caulks* or contact your Grace Construction Products representative.

Membrane Application

Perm-A-Barrier VPO can be installed through a spray application. Perm-A-Barrier VPO may be applied by roller or brush, however spray application is the preferred method. If applying Perm-A-Barrier VPO by roller or brush, multiple material passes may be necessary to ensure that the required wet thickness is achieved.

Contact Grace for further details of local applicators, application techniques and spray equipment.

Application Temperature—In spray applications, Perm-A-Barrier VPO may be applied at temperatures as low as 40°F (4°C). Perm-A-Barrier VPO is not recommended for use when cold and/or damp conditions exist for prolonged periods. Perm-A-Barrier VPO is a water-based material. As with all water-based materials, it is subject to freezing at temperatures below 32°F (0°C).

Thickness Control

Application thickness is controlled in vertical applications by marking the area and spot-checking the thickness with a wet film thickness gauge. Swipe marks on the surface of the Perm-A-Barrier VPO are acceptable as long as the minimum thickness is maintained.

Coverage Rates

Perm-A-Barrier VPO is typically applied at a minimum thickness of 90 mils wet. The theoretical coverage rate (not including waste) at a thickness of 90 mils is approximately 18 ft²/gal to reach a 45 mil dry thickness.

Coverage may vary depending on application technique and may be reduced over rough and uneven substrates. The applicator goal should be a continuous membrane at a thickness of 90 mils wet, adjust coverage rate accordingly.

Drying

Perm-A-Barrier VPO is dry to touch and can be overcoated within 4 hours under normal conditions (50% R.H, 68°F). Perm-A-Barrier VPO dries through in 24 hours at normal conditions (50% R.H, 68°F). Drying and skinning times may vary depending on temperature, humidity and surface conditions.

Application of Insulation and Finishes

Perm-A-Barrier VPO is not suitable for permanent weather exposure. Insulation boards may be installed after Perm-A-Barrier VPO has fully cured. If the insulation cannot be applied within 6 months of the Perm-A-Barrier VPO application, some form of temporary protection (such as tarpaulins) should be used to protect the product from the effects of sunlight. Installation of insulation boards can be accomplished by using compatible mechanical fasteners or, solvent free insulation adhesive.

Cleaning

Tools and equipment are most effectively cleaned using a damp cloth and removing material as soon as possible to prevent curing on tools and equipment. For short shutdown periods, material can remain in the lines and equipment. Material should not be left in the lines for any period of time if temperatures are expected to drop below 40°F (4°C). For long-term storage, thoroughly flush the entire system with water and then purge with Procor® Flushing Oil. Good preventative maintenance will lengthen the life of the pumps.

Storage and Handling

Perm-A-Barrier VPO is available in 55 gallon drums and 5 gallon pails. Perm-A-Barrier VPO should be stored under cover in original sealed containers above 40°F (4°C) and below 100°F (38°C).

The shelf life is 9 months in unopened containers. Store opened containers with plastic protective liner covering the material.

Physical Properties

Property	Typical Value	Test Method
Air permeance at a test pressure of 0.3 in. water (75 Pa) on CMU block	<0.0004 cfm/ft ² (<0.002 L/s/m ²)	ASTM E2178
Assembly air permeance at test pressure of 1.57 psf (75 Pa) ¹	<0.0008 cfm/ft ² (<0.004 L/s/m ²)	ASTM E2357
Water vapor transmission	11.2 perms	ASTM E96—method B
Peel adhesion to concrete block (CMU)	20 lbs/in.	ASTM D903
Peel adhesion of Perm-A-Barrier Wall Flashing	3 lbs/in.	ASTM D903
Peel adhesion to glass faced wall board ²	5 lbs/in.	ASTM D903
Pull adhesion to glass faced wall board ²	50 psi	ASTM D4541
Pull adhesion to concrete	200 psi	ASTM D4541
Tensile strength	300 psi	ASTM D412—die C
Elongation	300%	ASTM D412—die C
Color	Very Dark Green	
Solids content	50% (approx.)	
Density	8.6 lbs/gal	
Drying time @ 50% R.H. 68°F—initial set ³	4 hours	
Drying time @ 50% R.H. 68°F	24 hours	
Weather resistance	6 months	ASTM D412, ASTM E96—method B (After 6 months UV exposure)
Nail sealability	Pass	ASTM D1970
Low temperature flexibility and crack bridging -15°F (at -26°C)	Pass	ASTM C836

Footnotes:

1. Results below detectable limits of laboratory equipment.
2. Failure occurs when glass facing pulls away from gypsum core.
3. Drying and skinning times may vary depending on temperature, humidity and surface conditions.

Limitations

Perm-A-Barrier VPO should not be exposed to direct sunlight, weather or traffic for more than 6 months.

Perm-A-Barrier VPO should not be used with open joint rain screen systems where joints are greater than 1" wide. Do not apply Perm-A-Barrier VPO in wet weather.

Perm-A-Barrier VPO should not be applied if rain or temperatures below 40°F (4°C) are expected within 24 hours.

Perm-A-Barrier VPO should be kept from freezing as it is subject to freezing at temperatures below 32°F (0°C).

Finished and exposed surfaces should be protected from overspray.

Perm-A-Barrier VPO should not be used in waterproofing applications in hydrostatic condition.

Perm-A-Barrier VPO is not compatible with petroleum solvents, fuels and oils, materials containing creosote, pentachlorophenol or linseed oil. Perm-A-Barrier VPO has a maximum in-service temperature of 175°F (80°C).

www.graceconstruction.com

For technical assistance call toll free at 866-333-3SBM (3726)

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