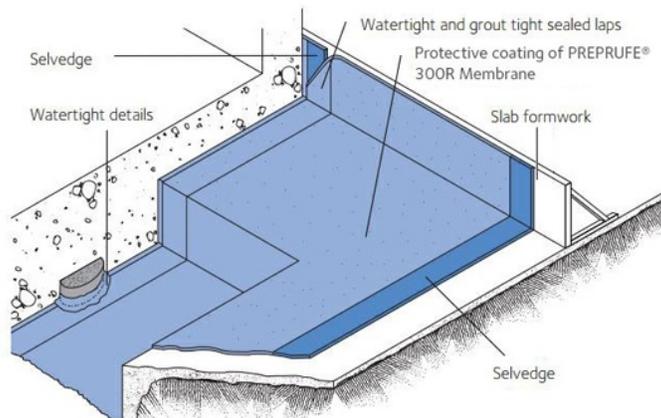


PREPRUFE® 300R & 160R Membranes Data Sheet (US Version)

Pre-applied waterproofing membranes that bond integrally to poured concrete for use below slabs or behind basement walls on confined sites

Product Description

GCP Applied Technologies (“GCP”) PREPRUFE® 300R & 160R membranes are proprietary composite sheets comprised of a thick HDPE film, pressure sensitive adhesive and weather resistant protective coating. Designed with Advanced Bond Technology™, PREPRUFE® 300R & 160R membranes form a proprietary, integral bond to poured concrete, designed to prevent lateral migration of water while providing a robust barrier to water, moisture and gas penetration.



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

Product Advantages

- Forms a continuous adhesive bond to concrete poured against it specifically designed to prevent water migration
- Continuous bond to poured concrete means PREPRUFE® 300R & 160R membranes are unaffected by ground settlement
- Can be placed directly over properly prepared compacted soil
- Does not activate prematurely during construction
- Fully adhered watertight laps and detailing
- Provides a barrier to water, moisture and gas – physically isolates the structure from the surrounding ground
- BBA Certified for all basement grades (BS 8102:2009)
- Impermeable- Perm rating less than 0.1 Perms
- Solar reflective - reduced temperature gain during construction
- Simple and quick to install – requires no priming on surfaces properly prepared following GCP surface preparation requirements

- Can be applied to permanent formwork - maximizes use of confined sites
- Allows for foot traffic immediately after application
- Ready for immediate placing of reinforcing steel
- Inherently waterproof--does not require water activation
- Waterproofing is not reliant on confining pressures or hydration
- Installed membrane is not affected by exposure to water during construction
- Waterproofing performance unaffected by wet/dry cycling
- Chemical resistance – protects structure from salt and sulfate attack, effective in most types of soils and waters

System Components:

Membrane

- PREPRUFE® 300R membrane- heavy-duty 46 mil grade can be used in horizontal applications below slabs and on rafts (i.e. mud slabs) and can be applied to vertical (blind side) substrates.
- PREPRUFE® 300R membrane is designed to accept the placing of heavy reinforcement using conventional concrete spacers
- PREPRUFE® 160R membrane 32 mil grade for blindside, zero property line applications against soil retention systems.
- PREPRUFE® 160R membrane is for vertical use only.

Ancillary Components (the most current Data Sheets for all system components are available on gcpat.com)

- PREPRUFE® Tape LT – Low temperature tape for covering cut edges, roll ends, penetrations and detailing in cold weather
- PREPRUFE® Tape HC - High temperature tape for covering cut edges, roll ends, penetrations at elevated temperatures
- PREPRUFE® CJ Tape LT – Low temperature joint tape for construction joints and detailing in cold weather conditions
- PREPRUFE® CJ Tape HC – High temperature joint tape for construction joints and detailing at elevated temperatures
- BITUTHENE® Liquid Membrane - for sealing around penetrations, etc.
- ADCOR® - waterstop for joints in concrete walls and floors
- PREPRUFE® Tieback Covers - preformed cover for soil retention wall tieback heads
- PREPRUFE® 300LT and 160LT membranes are an equal alternate for application at low temperatures. See GCPAT.com

Limitations of Use

- Approved uses only include those uses specifically detailed in this Product Data Sheet and other current Product Data Sheets that can be found at gcpat.com
- PREPRUFE® 300R & 160R membranes are not intended for any other use. Contact GCP Technical Services where any other use is anticipated or intended.
- PREPRUFE® 300R membranes are designed for in-service temperatures below 120°F (49°C)
- PREPRUFE® 160R membrane is not for use in horizontal applications
- PREPRUFE® 300R & 160R membranes should not be used with conventional twin-sided formwork. (See PREPRUFE® Technical Letter #13 Forming Systems For Use with PREPRUFE® Membranes)
- **Special Note:** When this information is printed from the gcpat.com global website, a footer appearing on this document will restrict its applicability to the United States. Note that the information and references in this document are hereby expanded and apply to North, Central and South America.

Safety and Handling

Users must read and understand the product label and Safety Data Sheets (SDS's) for each system component before use. All users must acquaint themselves with this information prior to working with the material. Carefully read detailed precaution statements on the product labels and SDS's before use. The most current SDS's can be obtained from the GCP web site at gcpat.com or by contacting GCP toll free at 1-866-333-3SBM (3726).

Storage

- Observe 1 year shelf life and use on a first in first out basis
- Store in dry conditions at 40°F (4.5°C)-90°F (32°C)
- Store off ground under tarps or otherwise protected from rain and ground moisture
- See PREPRUFE® Technical Letter #30 Shelf Life/Storage and Handling of GCP Waterproofing

Installation

Technical Support, Details and Technical Letters

The most up to date detail drawings and technical letters are available at gcpat.com. For complete application instructions, please refer to the current GCP Applied Technologies Contractor Handbook and Literature on (www.gcpat.com). Documents in hardcopy as well as information found on websites other than www.gcpat.com may be out of date or in error. Before using this product it is important that information be confirmed by accessing www.gcpat.com and reviewing the most recent product information, including without limitation Product Data Sheets and Contractor Manuals, Technical Bulletins, Detail Drawings and detailing recommendations. Please review all materials prior to installation of PREPRUFE® 300R & 160R membranes.

Support is also available by full-time technically trained GCP Applied Technologies field sales representatives and technical service personnel, backed by a central research and development technical services staff. For technical assistance with detailing and problem solving please call toll-free at (866) 333-3SBM (3726).

Temperature Requirements

- PREPRUFE® membranes can be applied at temperatures of 25 °F (-4 °C) or above. When installing PREPRUFE® products in cold or marginal weather conditions <55 °F (<13 °C) the use of PREPRUFE® Tape LT is required at all laps and detailing. All surfaces to receive PREPRUFE® Tape LT must be clean and dry.
- As an alternate, where temperatures are between between 25 °F (-4 °C) and 60 °F (15.5 °C) PREPRUFE® Low Temperature (LT) Membrane is can be used without taping of laps. Refer to PREPRUFE® LT Membrane data sheet and Technical Letter #16 PREPRUFE® Waterproofing membranes: Cold Weather installation for more information.

Substrate Preparation

All surfaces - It is essential to create a sound and solid substrate to eliminate movement during the concrete pour. Substrates must be regular and smooth with no gaps or voids greater than 0.5 in. (12 mm). Grout around all penetrations such as utility conduits, etc. for stability.

Horizontal - The substrate must be free of loose aggregate and sharp protrusions. Avoid curved or rounded substrates. When installing over earth or crushed stone, ensure substrate is well compacted to avoid displacement of substrate due to traffic or concrete pour. The surface does not need to be dry, but standing water must be removed.

Vertical - Use concrete, plywood, insulation or other approved facing to sheet piling to provide support to the membrane. Board systems such as timber lagging must be close butted to provide support and not more than 0.5" (12mm) out of alignment.

Membrane Application

PREPRUFE® 300R & 160R membranes are supplied in rolls 4 ft. (1.2m) wide, with a selvedge on one side to provide self-adhered laps for continuity between rolls. The rolls of PREPRUFE® Membrane and PREPRUFE® Tape are manufactured with a disposable plastic release liner which must be removed before placing reinforcement and concrete. NOTE that the release liner must also be removed before application of any required tapes and at all surfaces where a bond between layers is to be formed.

Horizontal substrates –

PREPRUFE® 300R membrane can be applied horizontally to smooth prepared concrete or well rolled and compacted earth or crushed stone substrate. Place the PREPRUFE® 300R membrane HDPE film side to the substrate with the clear plastic release liner facing towards the concrete pour. End laps should be staggered to avoid a buildup of layers. Leave plastic release liner in position until overlap procedure is completed. When completed remove release liner. When installing over carton forms, contact your local GCP representative.

Accurately position succeeding sheets to overlap the previous sheet 3 in. (75 mm) along the marked selvedge. Ensure the underside of the succeeding sheet is clean, dry and free from contamination before attempting to overlap. Peel back the plastic release liner from between the overlaps allowing the two overlapped layers to bond together. Ensure a continuous bond is achieved without creases and roll firmly with a heavy roller. Completely remove the plastic liner to expose the white protective coating. Any initial tack will quickly disappear. Notes:

- PREPRUFE® 300R membrane can be returned up the inside face of slab formwork. To attain a fully bonded system and to allow a tie in with BITUTHENE® self-adhered membrane or PROCOR® fluid-applied membrane to all vertical structural surfaces after removal of formwork.
- Rebar Chairs: See PREPRUFE® Technical Letter #15 Rebar Chairs on PREPRUFE® Membranes.

Vertical substrates –

PREPRUFE® 300R & 160R membranes can be applied vertically to permanent formwork or adjoining structures. Concrete should then be cast directly against the adhesive side of the membrane. The membrane may be installed in any convenient length. The clear plastic release liner must be facing towards the concrete pour. Membrane must be shingle overlapped a minimum of 3" (75mm) All laps over cut edges must be taped using PREPRUFE® Tape.

Vertically placed sheets can be held in place using fasteners appropriate to the substrate. Fastening can also be made through the selvedge overlap area using a small and low profile head fastener so that the membrane lays flat and allows firmly rolled overlaps. Fasteners should be placed in the selvedge approximately 0.5"(12.5mm) from the edge of the membrane. The adhesive selvedge of successive membrane sheets must completely cover any fasteners by a minimum of 1 in. (25mm). After rolling immediately remove the plastic release liner. When placing successive sheets insure the underside of each succeeding sheet is clean, dry and free from contamination before attempting to overlap. After placement roll the membrane firmly to ensure a watertight seal.

Note that PREPRUFE® 300R & 160R membranes are not recommended for use with conventional twin-sided formwork. (See PREPRUFE® Technical Letter #13 Forming Systems For Use with PREPRUFE® Membranes)

Roll ends and cut edges –

Overlap all roll ends and cut edges by a minimum 3 in. (75 mm) and ensure the area is clean and free from contamination, wiping with a damp cloth if necessary. Allow the membrane to dry and apply PREPRUFE® Tape LT (or HC in hot climates) centered over the lap edges and roll firmly. Immediately remove plastic release liner from the tape.

Membrane Repair

Inspect the membrane before installation of reinforcement steel, formwork and final placement of concrete. The membrane can be easily cleaned by power washing if required. Repair damage by wiping the area with a damp cloth to ensure the area is clean and free from dust, and other contaminants and allow the membrane to dry. Repair small punctures and slices (0.5 in. (12 mm) or less by applying PREPRUFE® Tape centered over the damaged area. Repair punctures and holes larger than 0.5 in. (12mm) by applying a patch of PREPRUFE® membrane. Extend the patch 6 in. (150 mm) beyond the damaged area. Seal all edges of the patch with PREPRUFE® Tape. Where exposed selvedge has lost adhesion or laps have not been sealed, ensure the area is clean and dry and cover with fresh PREPRUFE® Tape. Any areas of damaged adhesive should be covered with PREPRUFE® Tape. All PREPRUFE® Tape must be rolled firmly and the tinted release liner removed.

Slices or relief cuts can be butted or overlapped and repaired by applying PREPRUFE® Tape centered over the edge of the overlap or center of the butt joint. Where it is not possible to create a butt joint or overlap, repair with fresh membrane and PREPRUFE® Tape as detailed above.

Pouring of Concrete

Ensure the plastic release liner is removed from all areas of PREPRUFE® 300R & 160R Membrane and Tape.

Under most climatic conditions concrete should be poured within 56 days of membrane installation. Where ambient temperatures will exceed 38°C (100°F) for more than a total of 7 days, concrete should be placed within 42 days of installation of the membrane. Concrete must be placed and compacted carefully to avoid damage to the Membrane. Never use a sharp object to consolidate the concrete.

Removal of Formwork

A minimum concrete compressive strength of 3000 psi (20 N/mm²) is recommended prior to stripping formwork supporting PREPRUFE® membranes. Premature stripping may result in displacement of the membrane and/or spalling of the concrete. (see PREPRUFE® Technical Letter #17 Removal of Formwork Placed against PREPRUFE® membranes)

After removal of the formwork and prior to backfilling, all exposed PREPRUFE® Membrane must be protected from damage with an approved protective course.

Supply

DIMENSIONS (NOMINAL)	PREPRUFE® 300R MEMBRANE	PREPRUFE® 160R MEMBRANE
Roll size	4 ft x 98 ft (1.2 m x 30 m)	4 ft x 115 ft (1.2 m x 35 m)
Roll weight	108 lbs (50 kg)	92 lbs (42 kg)
Minimum side and end laps	3 in. (75 mm)	3 in. (75 mm)

Physical Properties

PROPERTY	TYPICAL VALUE 300R	TYPICAL VALUE 160R	TEST METHOD
Color	white	white	
Thickness	0.046 in. (1.2 mm)	0.032 in. (0.8 mm)	ASTM D3767
Lateral Water Migration Resistance	Pass at 231 ft (71 m) of hydrostatic head pressure	Pass at 231 ft (71 m) of hydrostatic head pressure	ASTM D5385 ¹
Low Temperature Flexibility	Unaffected at -20°F (-29°C)	Unaffected at -20°F (-29°C)	ASTM D1970
Resistance to Hydrostatic Head	231 ft (71 m)	231 ft (71 m)	ASTM D5385 ²
Elongation	400%	400%	ASTM D412 ³
Tensile Strength, Film	4000 psi (27.6 MPa)	4000 psi (27.6 MPa)	ASTM D412
Crack Cycling at -9.4°F (-23°C), 100 cycles	Unaffected, Pass	Unaffected, Pass	ASTM C836 ⁶
Puncture Resistance	200 lbs (890 N)	100 lbs (445 N)	ASTM E154
Peel Adhesion to Concrete	5 lbs/in. (880 N/m)	5 lbs/in. (880 N/m)	ASTM D903 ⁴
Lap Peel Adhesion	5 lbs/in. (880 N/m)	5 lbs/in. (880 N/m)	ASTM D1876 ⁵
Permeance to Water Vapor Transmission (HDPE side exposed)	<0.1 perms (5.74 ng/(Pa x s x m ²))	<0.1 perms (5.74 ng/(Pa x s x m ²))	ASTM E96, method B
Water Absorption	0.5%	0.5%	ASTM D570

Footnotes:

- Lateral water migration resistance is tested by casting concrete against membrane with a hole and subjecting the membrane to hydrostatic head pressure with water. The test measures the resistance of lateral water migration between the concrete and the membrane.
- Hydrostatic head tests of PREPRUFE Membranes are performed by casting concrete against the membrane with a lap. Before the concrete cures, a 0.125 in. (3 mm) spacer is inserted perpendicular to the membrane to create a gap. The cured block (cured min. 7 days) is placed in a chamber where water is introduced to the membrane surface up to the head indicated.
- Elongation of membrane is run at a rate of 2 in. (50 mm) per minute.
- Concrete is cast against the protective coating surface of the membrane and allowed to properly cure (7 days minimum). Peel adhesion of membrane to concrete is measured at a rate of 2 in. (50 mm) per minute at room temperature.
- The test is conducted 15 minutes after the lap is formed and run at a rate of 2 in. (50 mm) per minute.
- Test conducted at -9.4°F (-23°C)

gcpat.com | North America customer service: 1 (866) 333-3SBM (1 (866) 333-3726

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gcpat.com/solutions/products/preprufe-pre-applied-waterproofing-solutions/preprufe-300r-160r

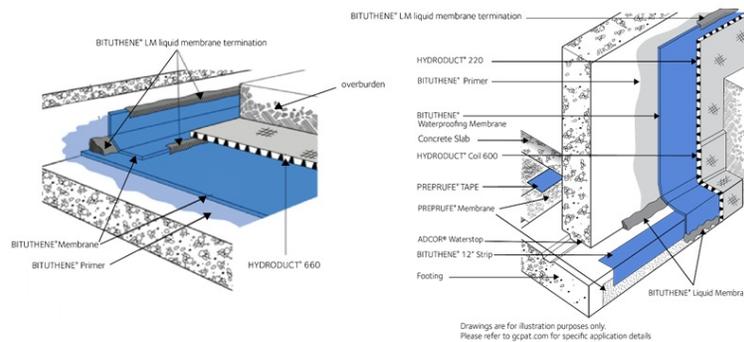
BITUTHENE[®] 4000 System (US version)

Membrane and Surface Conditioner System

Product Description

GCP Applied Technologies' ("GCP") BITUTHENE[®] 4000 system combines a robust, flexible, pre-formed membrane made of a high performance, cross laminated, HDPE carrier film with a tacky, self-adhesive rubberized asphalt compound and BITUTHENE[®] 4000 surface conditioner.

BITUTHENE[®] 4000 surface conditioner is water-based primer that is specifically formulated to promote adhesion by binding dust and concrete efflorescence to help provide a suitable surface for the BITUTHENE[®] 4000 waterproofing membrane. For convenience, BITUTHENE[®] 4000 surface conditioner is packaged inside each roll of BITUTHENE[®] 4000 membrane.



Product Advantages

- Provides a barrier to water, moisture and gas — physically isolating the structure from the surrounding substrate
- Excellent adhesion — Special adhesive compound engineered for use with BITUTHENE[®] 4000 surface conditioner
- Cross-laminated, high density polyethylene carrier film provides high tear strength, puncture and impact resistance
- Cold applied — Simple application to substrates, including low temperature applications
- Reduced inventory and handling costs due to the inclusion of primer in the packaging
- Wide application temperature range — Excellent bond at temperatures as low as 25 °F (-4 °C)
- Designed to accommodate a wide range of building configurations and details
- RIPCORD[®] integrated filament — Split release on demand feature allows for ease of installation in detailed areas

System Components

Membrane

BITUTHENE[®] 4000 membrane – Self-adhered, rubberized asphalt waterproofing membrane

Ancillary components (Data sheets for all system components are available at gcpat.com.)

- BITUTHENE® 4000 surface conditioner – Water-based latex primer adhesive with added alcohol to allow application at low temperatures
- BITUTHENE® B2 LVC adhesive primer – Low VOC, solvent-based primer to increase adhesion of the BITUTHENE® 4000 membrane to concrete surfaces
- BITUTHENE® LM liquid membrane – Two-component, elastomeric, liquid-applied detailing compound
- BITUTHENE® mastic – Rubberized, asphalt-based mastic
- BITUTHENE® Edgeguard tape – Double-sided self-adhesive tape
- HYDRODUCT® drainage composite – High impact and creep-resistant geo-composite and protection layer
- BITUTHENE® Deck Prep surface treatment – Surface leveler for application to uneven or rough concrete surfaces

Limitations of Use

- The BITUTHENE® 4000 membrane and BITUTHENE® 4000 surface conditioner are specifically designed for use as detailed in this product data sheet, and are not intended for any other use. Contact GCP Technical Support if any other use is anticipated or intended.
- The BITUTHENE® 4000 membrane is designed for waterproofing surfaces where in-service temperatures will not exceed 130 °F (54 °C).
- Do not use BITUTHENE® mastic to terminate the BITUTHENE® 4000 membrane to PREPRUFE® pre-applied waterproofing systems. Terminations to PREPRUFE® membranes should only be done with BITUTHENE® LM liquid membrane.

Special note: When this information is printed from the gcpat.com global website, a footer appearing on this document may contain wording restricting its applicability to the United States. Note that the information and references in this document also apply to North, Central and South America.

Safety and Handling Information

Read and understand the product label and safety data sheet (SDS) for each system component. All users should acquaint themselves with this information prior to working with the products and follow the precautionary statements. SDSs can be obtained by contacting your local GCP representative or office, by calling GCP toll free at 1-866-333-3SBM (3726) and in some cases from our website at gcpat.com.

Storage

The BITUTHENE® 4000 membrane should be stored upright. Storage temperatures should not be below 25 °F (-4 °C) and should not exceed 90 °F (32 °C).

Installation

Technical Support, Details, and Technical Letters

The most up-to-date detail drawings and technical letters are available at gcpat.com. For complete application instructions, please refer to the current GCP Applied Technologies Contractor Handbook and Literature at www.gcpat.com. Documents in hardcopy as well as information found on websites other than www.gcpat.com may be out of date or in error. Before using this product, it is important that information be confirmed by accessing www.gcpat.com and reviewing the most recent product information, including and not limited to product data sheets and contractor manuals, technical bulletins, detail drawings and detailing recommendations. Please review all materials prior to installation of BITUTHENE® 4000 membranes. For technical assistance with detailing and problem solving, please call toll-free at (866) 333-3SBM (3726).

Temperature

- Apply BITUTHENE® 4000 membranes and BITUTHENE® surface conditioner only in dry weather and when air and surface temperatures are 25 °F (-4 °C) or above.
- BITUTHENE® B2 LVC adhesive primer and BITUTHENE® 4000 surface conditioner should only be applied in dry weather when the temperature is above 25 °F (-4 °C). See separate product information sheets and applicable application instructions.

Surface Preparation

Surfaces must be structurally sound and free of voids, spalled areas, loose aggregate and sharp protrusions. Remove contaminants such as grease, oil and wax from exposed surfaces. Remove dust, dirt, loose stone and debris. Concrete must be properly cured (minimum seven-days for normal weight structural concrete and 14 days for lightweight structural concrete). For horizontal applications, double the above cure times of concrete if placed over non-vented decks. Certain conditions, such as unusually wet weather or late removal of forms, may require longer dry times.

Dry weather application of BITUTHENE® 4000 membranes and BITUTHENE® 4000 surface conditioner is preferred. On vertical applications, if time is critical and damp conditions are unavoidable, BITUTHENE® B2 LVC adhesive primer may be used in place of BITUTHENE® surface conditioner. The use of BITUTHENE® B2 LVC adhesive primer may allow priming and installation of BITUTHENE® 4000 membranes on damp surfaces or green concrete. When using BITUTHENE® B2 LVC adhesive primer, priming may begin as soon as the concrete will maintain structural integrity.

Only use form release agents that will not transfer to the concrete. Remove forms as soon as possible from below horizontal slabs to prevent entrapment of excess moisture. Excess moisture may lead to blistering of the membrane.

Cure concrete with clear, resin-based curing compounds that do not contain oil, wax or pigment. See Technical Letter 5, Curing Compounds and Form Release Agents. Before application of BITUTHENE® surface conditioner and BITUTHENE® 4000 membranes, allow concrete to thoroughly dry following any rain (except with BITUTHENE® B2 LVC adhesive primer as noted above). Do not apply any products to frozen concrete.

Repair substrate defects such as spalled or poorly consolidated areas. Remove sharp protrusions and form match lines. For rough or uneven deck surfaces, use BITUTHENE® Deck Prep surface treatment as a repair and leveling agent. See BITUTHENE® Deck Prep surface treatment product information sheet for details. On masonry surfaces such as rough concrete block and brick walls, apply a parge and trowel cut mortar joints flush to the face of the concrete blocks and bricks.

Surface Conditioning

BITUTHENE® 4000 surface conditioner is ready to use, and can be applied by spray or roller. For best results, use a pump-type air sprayer with a fan tip nozzle. Apply BITUTHENE® 4000 surface conditioner to clean, dry, frost-free surfaces at a coverage rate of 300 ft²/gal (7.4 m²/L). Coverage should be uniform. The surface conditioner should not be applied so heavily that it puddles or runs. Do not apply conditioner directly to BITUTHENE® 4000 membranes. Allow BITUTHENE® 4000 surface conditioner to dry until the substrate returns to its original (dry) color. At low temperatures or in high humidity conditions, dry time may be extended to greater than one hour.

BITUTHENE® 4000 surface conditioner is clear when dry and may remain slightly tacky. In general, conditioning should be limited to what can be covered within 24-hours. In situations where long dry times may prevail, substrates may be conditioned up to 24-hours in advance. Substrates must be reconditioned if dirt or dust accumulates on the conditioned surface. Tools should be cleaned with water before the surface conditioner dries.

Application on Horizontal Surfaces

Note: PREPRUFE® 300R and 300R Plus pre-applied membranes are strongly recommended and are the preferred products for below slab applications or for any application where the membrane is applied before concrete is poured. See PREPRUFE® membrane waterproofing product information sheets at gcpat.com.

All horizontal surfaces to receive BITUTHENE® 4000 membranes should be sloped to drain at least 1/8 in./ft. (11 mm/m). When a minimum slope of 1/8 in. /ft. (11 mm/m) cannot be achieved, two layers of BITUTHENE® 4000 membranes or 80-mils of BITUTHENE® Deck Prep surface treatment and one layer of BITUTHENE® 4000 membranes maybe an option. Contact your local GCP representative for more details.

Apply the membranes from the low point to the high point so that laps shed water. Overlap all seams at least 2.5 in. (65 mm). Stagger all end laps. Roll the entire membrane firmly, and completely as soon as possible. Use a linoleum roller or standard water-filled garden roller less than 30 in. (760 mm) wide, weighing a minimum of 75 lbs (34 kg) when filled. Cover the face of the roller with a “conforming” material such as 1/2 in. (13 mm) plastic foam sheeting or two wraps of indoor-outdoor carpet to allow the membrane to fully contact the primed substrate. Seal all T-joints and membrane terminations with BITUTHENE® LM liquid membrane by the end of the day of membrane application.

Application on Vertical Surfaces

Apply BITUTHENE® 4000 membranes in lengths up to 8 ft (2.5 m). Overlap all seams at least 2.5 in. (65 mm). On walls higher than eight feet, apply membranes in two or more “shingled” lifts, with the upper sheet overlapping the lower by at least 2.5 in. (65 mm). Roll all membranes with a hand roller.

Terminate the membranes at grade level. Press each membrane firmly to the wall with the butt end of a hardwood tool such as a hammer handle or secure into a reglet. Failure to use heavy pressure at terminations can result in a poor seal.

All top-of-wall terminations should be sealed with BITUTHENE® LM liquid membrane or BITUTHENE® mastic. A termination bar may be used to ensure a tight seal. If the wall has been only partially covered by the end of the working day, apply a maximum ¼" bead of BITUTHENE® mastic tooled thin or BITUTHENE® LM liquid membrane along the exposed edges of the membrane at its temporary terminations to prevent vertical drainage of precipitation, which could undermine the membrane adhesion. Terminate the membranes at the base of the wall if the bottom of the interior floor slab is at least 6 in. (150 mm) above the footing.

Otherwise, use appropriate inside corner detail where the wall and footing meet. A 1/8 in. (3 mm) x 1 in. (25 mm) aluminum termination bar aligned with the top of the membrane is recommended for terminations on CMU, in earth covered decks and in earth-bermed applications where soil cannot be fully compacted. See technical letter 26 about BITUTHENE® membrane terminations for additional information.

Membrane Repairs

Patch tears and inadequately lapped seams with additional membrane. Clean any damaged membrane with a damp cloth and dry. Slit fish-mouths and repair with a patch extending 6 in. (150 mm) in all directions from the slit, and seal edges of the patch with BITUTHENE® LM liquid membrane. Inspect all membranes thoroughly before covering, and repair any damaged areas.

Drainage

HYDRODUCT® drainage composites are recommended for both active drainage and protection of the membranes. See HYDRODUCT® drainage composite product data sheet at gcpat.com.

Insulation

Always apply BITUTHENE® 4000 membranes directly to primed or conditioned structural substrates. Insulation, if used, must be applied over the membranes. Do not apply BITUTHENE® membranes over insulation or lightweight insulating concrete.

Flood Testing (Horizontal Surfaces Only)

Flood test all horizontal applications with a minimum 2 in. (51 mm) head of water for 24-hours. Mark any leaks and repair when the membrane is dry. Before flood testing, be sure the structure will withstand the dead load of the water. For highly sloped decks, segment the flood test to avoid excessively deep water near drains. Conduct the flood test 24-hours after completing the application of BITUTHENE® 4000 membranes. Immediately after flood testing is completed and all necessary repairs have been made, install HYDRODUCT® drainage composite to protect the BITUTHENE® membranes from damage by other trades.

As an alternate to flood testing, appropriate electronic leak detection may be used to check the integrity of the system.

Protection of Membrane

To prevent damage from other trades, construction materials or backfill, protect BITUTHENE® 4000 membranes immediately after application. To avoid potential blisters, place protection immediately where temperatures are above 77°F (25°C).

- On vertical applications, use HYDRODUCT® 220 drainage composite. Adhere HYDRODUCT® 220 Drainage Composite to membranes with PREPRUFE® Detail Tape. Alternative methods of protection are to use nominal 1.0 lb/ft³ (16kg/m³), min. 1 in. (25 mm) extruded polystyrene or min. 1/4 in. (6 mm) asphaltic hardboard. Such alternatives do not provide positive drainage to the system. If 1/4 in. (6 mm) extruded polystyrene protection board is used, backfill must not contain sharp rock or aggregate over 2 in. (50 mm) in diameter or any debris that might puncture the protection board and/or the membranes. See Technical 27 Letter Protection Courses used with GCP Waterproofing Systems for additional information.
- On horizontal applications, use HYDRODUCT® 660 Drainage Composite. Alternate methods of protection are to use 1 in (25 mm) extruded polystyrene or ¼" asphaltic hardboard.

Placing Steel

On horizontal applications when placing steel over properly protected membranes, use concrete bar supports (dobies) or chairs with plastic tips or rolled feet to prevent damage from sharp edges. Use special care when using wire mesh, especially if the mesh is curled.

Backfill

Place backfill as soon as possible. (See Protection of Membrane above) Use care during backfill operation to avoid damage to the waterproofing system. Follow generally accepted practices for backfilling and compaction. Backfill should be added and compacted in 6 in. (150 mm) to 12 in. (300 mm) lifts.

Approvals

- City of Los Angeles Research Report RR 24386 Miami-Dade County Code Report NOA 18-1109.01
- U.S. Department of Housing and Urban Development (HUD) HUD Materials Release 628j
- BITUTHENE® 4000 membranes carry a Underwriters' Laboratory Class A Fire Rating (Building Materials Directory (File TFGU.R7910) when used in either of the following constructions:
 1. Limited to noncombustible decks at inclines not exceeding 1/4 in. (6 mm) to the horizontal 1 ft (0.3 m). One layer of BITUTHENE® waterproofing membrane, followed by one-layer of 1/8 in. (3 mm) protection board, encased in 2 in. (50 mm) minimum concrete monolithic pour.
 2. Limited to noncombustible decks at inclines not exceeding 1/4 in. (6 mm) to the horizontal 1 ft (0.3 m). One layer of BITUTHENE® waterproofing membrane, followed by one layer of DOW styrofoam PD insulation board [2 in. (50 mm) thick]. This is covered with one layer of 2 ft x 2 ft x 2 in. (0.6 m x 0.6 m x 50 mm) of concrete paver topping.

Physical Properties for BITUTHENE® 4000 Membrane

PROPERTY	TYPICAL VALUE	TEST METHOD
Color	Dark gray-black	
Dimensions	3 ft x 66.7 ft roll (200 ft ²)	
Thickness	60 mils (1.5 mm) nominal	ASTM D3767—method A
Flexibility, 180° bend over 1 in. (25 mm) mandrel at -25°F (-32°C)	Unaffected	ASTM D1970

Tensile strength, Membrane, die C	325 psi (2240 kPa) minimum	ASTM D412 ¹
Tensile strength, film	5,000 psi (34.5 MPa) minimum	ASTM D882 ¹
Elongation, ultimate failure of rubberized asphalt	300% minimum	ASTM D412 ¹
Crack cycling at -25 °F (-32 °C), 100 cycles	Unaffected	ASTM C836
Lap shear	20 lbs (89 N)	ASTM D1002 ²
Peel strength	11 lbs/in. (1926 N/m)	ASTM D903 ⁴
Puncture resistance, Membrane	50 lbs (222 N) minimum	ASTM E154
Resistance to hydrostatic head	230 ft (70m) of water	ASTM D5385
Permeance	<0.1 perms	ASTM E96, section 12—water method
Water absorption	<0.1%	ASTM D570

Footnotes:

1. The test is run at a rate of 2 in. (50 mm) per minute.
2. The test is conducted at a speed of 4 in. (102 mm) per minute.
3. Individual Roll Length may vary +/- 1%
4. Test conducted with BITUTHENE® 4000 surface conditioner at minimum application temperature

gcpat.com | North America customer service: 1-866-333-3SBM (3726).

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Stego® Wrap 20-Mil Vapor Barrier

STEGO INDUSTRIES, LLC



Vapor Retarders
07 26 00, 03 30 00

1. Product Name

Stego Wrap 20-Mil Vapor Barrier

2. Manufacturer

Stego Industries, LLC
216 Avenida Fabricante, Suite 101
San Clemente, CA 92672
Sales, Technical Assistance
Ph: (877) 464-7834
Fx: (949) 257-4113
www.stegoindustries.com

3. Product Description

USES: Stego Wrap 20-Mil Vapor Barrier is used as a below-slab vapor barrier, and as a protection course for below grade waterproofing applications.

COMPOSITION: Stego Wrap 20-Mil Vapor Barrier is a multi-layer plastic extrusion manufactured with only the highest grade of prime, virgin, polyolefin resins.

ENVIRONMENTAL FACTORS:

Stego Wrap 20-Mil Vapor Barrier can be used in systems for the control of soil gases (radon, methane), soil poisons (oil by-products) and sulfates.

5. Installation

UNDER SLAB: Unroll Stego Wrap 20-Mil Vapor Barrier over an aggregate, sand or tamped earth base. Overlap all seams a minimum of six inches and tape using Stego Tape or Crete Claw® Tape. All penetrations must be sealed using a combination of Stego Wrap and Stego accessories.

For additional information, please refer to Stego's complete installation instructions.

6. Availability & Cost

Stego Wrap 20-Mil Vapor Barrier is available nationally via building supply distributors. For current cost information, contact your local Stego Wrap distributor or Stego Industries' sales department.

7. Warranty

Stego Industries, LLC believes to the best of its knowledge, that specifications and recommendations herein are

accurate and reliable. However, since site conditions are not within its control, Stego Industries does not guarantee results from the use of the information provided and disclaims all liability from any loss or damage. NO WARRANTY, EXPRESS, IMPLIED OR STATUTORY, IS GIVEN AS TO THE MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE WITH RESPECT TO THE PRODUCTS REFERRED TO. Please see www.stegoindustries.com/legal.

8. Maintenance

None required.

9. Technical Services

Technical advice, custom CAD drawings, and additional information can be obtained by contacting Stego Industries' technical assistance department or via the website.

10. Filing Systems

• www.stegoindustries.com



4. Technical Data

TABLE 1: PHYSICAL PROPERTIES OF STEGO WRAP 20-MIL VAPOR BARRIER

PROPERTY	TEST	RESULTS
Under Slab Vapor Retarders	ASTM E1745 Class A, B & C - Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs	Exceeds Class A, B & C
Water Vapor Permeance	ASTM F1249 - Test Method for Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor	0.0071 perms
Puncture Resistance	ASTM D1709 - Test Methods for Impact Resistance of Plastic Film by Free-Falling Dart Method	3500+ grams*
Tensile Strength	ASTM D882 - Test Method for Tensile Properties of Thin Plastic Sheeting	97.7 lbf/in.
Permeance After Conditioning (ASTM E1745 Sections 7.1.2 - 7.1.5)	ASTM E154 Section 8, F 1249 - Permeance after wetting, drying, and soaking ASTM E154 Section 11, F 1249 - Permeance after heat conditioning ASTM E154 Section 12, F 1249 - Permeance after low temperature conditioning ASTM E154 Section 13, F 1249 - Permeance after soil organism exposure	0.0088 perms 0.0081 perms 0.0084 perms 0.0077 perms
Radon Diffusion Coefficient	K124/02/95	9.9 x 10 ⁻¹² m ² /second
Thickness		20 mils
Roll Dimensions		14 ft. wide x 105 ft. long or 1,470 ft ²
Roll Weight		140 lbs.

Note: perm unit = grains/(ft² *hr* in.Hg)

* The material maxed out the testing equipment and did not fail at 3746 grams.

