

Substrate Preparation

General

Impermitek highly recommends the use of the Self-Adhered Base Ply for most roofing and waterproofing applications. Impermitek's Self-Adhered Base Ply may be used for both a vapor barrier applied over approved substrates and carrier layer in hybrid systems incorporating a self-adhered membrane base-ply with liquid applied membrane. These hybrid systems offer several advantages including reduced substrate preparation, fast dry-in, temporary waterproofing, and redundancy. Impermitek's Self-Adhered Base Ply may be used in all roofing and nontraffic bearing waterproofing applications as a vapor barrier and/or carrier layer.

Prior to application of any Impermitek Self-Adhered products or materials, the substrate must be clean, dry and free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, release agents, lacquers, or any other condition that would be detrimental to adhesion of the Self-Adhered Primer and base-ply to the substrate. Prior to starting application, conduct adhesion/peel tests by applying primer and membrane where necessary to ensure satisfactory adhesion is achieved.

NOTE: Impermitek's Self-Adhered Base Ply typically eliminates the need for substrate mechanical abrasion.

Concrete, Masonry & Brick Substrate Requirements

Impermitek recommends concrete, masonry and brick substrates meet the following minimum requirements:

- ACI 301/ACI 308 with minimum 3,500 psi (25 N/mm²) compressive strength
- Structural lightweight or air entrained concrete that is 100 lb/ft³ (1,600 kg/m³) density or higher and with compressive strength 3,000 psi (25 N/mm²) or greater
- Structurally sound masonry & brick substrates, built of hard kiln dried brick, concrete block, precast tilt-up or cast-in-place concrete construction

NOTE: Impermitek components must not be applied over spalling concrete, soft or scaling brick or block, faulty mortar joints, or walls with structural damage, cracks, and/or other deficiencies. Hollow tile walls or other materials allowing moisture infiltration from the backside are not

suitable for receiving Impermitek components unless properly waterproofed to prevent moisture infiltration from above or behind.

Inspect all substrates, and correct defects before application of Impermitek materials.

Unless otherwise noted, all prepared substrates must comply with the following:

- Substrates should have a maximum moisture content of 75% relative humidity (RH) tested in accordance with ASTM F2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes unless otherwise approved.
- Substrates should be prepared as required to provide the Impermitek system to substrate with minimum bond strength of peel resistance. The peel resistance should equal or exceed 2 lbf per lineal inch for all roofing and non-traffic bearing waterproofing applications in accordance with ASTM C794.
- Substrates should be free of surface voids greater than 1/16 in (1.5 mm) wide x 1/16 in (1.5 mm) deep and otherwise be corrected as required in accordance with acceptable methods.

NOTE: Determinations of substrate moisture content and bond strength should be performed periodically by the contractor prior to and throughout the course of work.

New, Green, or Damp Concrete Applications

Impermitek advises against applications over "green", damp, or wet concrete, substrates with RH above recommended levels or where latent moisture is suspected. When such applications are necessary due to project conditions or scheduling, use of an acceptable moisture mitigation primer or venting base ply is required. In all cases, substrates should have proper means to completely hydrate and dry laterally or downward.

When using an acceptable moisture mitigation primer the structural concrete must be cured in 5 to 7 days and have reached minimum 3,000 psi (21 N/mm²) compressive strength per ASTM D7234, 200 psi tensile strength per ASTM C1583, and be mechanically prepared (i.e. Shot blast or scarified) to a concrete surface profile (CSP) 3– 5 per the International Concrete Repair Institute (ICRI) Guideline No. 301-2R-2013.

The final prepared concrete substrate must be clean, abraded, free of standing water, moisture-sensitive patching and leveling materials, adhesives, coatings, curing compounds, concrete sealers, efflorescence, dust, grease, oils and any other materials or contaminants that can act as bond breakers.

NOTE: Consult Impermitek technical support for approval before proceeding with any new, green, or damp concrete applications.

Split Slab Construction

Impermitek advises against applications over “split slab” construction due to potential for trapped moisture within the existing assembly and potential issues that can result. Latent moisture in substrates (especially in split slab construction) can lead to a host of problems including blistering, delamination, condensation, mold and structural damage. The best solution for split slab construction is to remove the overburden and existing membrane, assure a dry substrate, and apply new waterproofing direct to the supporting structural concrete slab.

When split slab applications are necessary due to project conditions, use of an acceptable moisture mitigation primer or venting SBS base-ply is required. When using an acceptable moisture mitigation primer, the structural concrete properties and preparation would be the same as for new, green, or damp concrete previously discussed in the guide.

NOTE: Consult Impermitek technical support for approval before proceeding with any split slab applications.

Metal Panel Roof Recover

Impermitek recommends all metal panel roof recovery applications to be completed using an appropriate self-adhered base-ply. Contact the Impermitek Technical Department for suitable self-adhered primer and base-ply for these applications.

Wood Sheathing, Plank, & Timber

Impermitek recommends using an approved base-ply for application over wood sheathing. However, applications direct to wood sheathing, plank and timber are possible and may be required for certain applications and flashings.

Hygroscopic building materials such as wood sheathing, plank, and timber will normally have higher moisture content (in the range of 8% to 12%) as they absorb or desorb moisture to reach equilibrium moisture content with the surrounding air. Impermitek components should not be applied to damp or wet sheathing materials but may be applied to materials with higher moisture contents as indicated above, provided the exposed surface

is clean and dry. Determinations of moisture content and the resulting bond strength should be performed periodically to confirm acceptability. If poor adhesion or blistering occurs, substrate will require additional drying time before proceeding.

Always install panels with “best” side up, edges supported by blocking or structural framing, fastened using only non-corrosive screw fasteners with heads installed flush with sheathing applied at 6 in (150 mm) minimum o.c. along panel edges and 12 in (300 mm) o.c. over intermediate supports and/or additional fastening as required by jurisdictional codes.

For Impermitek applications direct to wood, the following are required:

Plywood sheathing should be structural panels performance-rated pursuant to National Institute of Standards and Technology (NIST) voluntary product standard PS-1-95; identified by American Plywood Association (APA) grade designations as follows:

Single layer:	¾ in (19 mm) minimum thickness, APA A-C, Group 1, Exterior or Exposure 1, 48 in (1220 mm) x 96 in (2440 mm) tongue & groove panels.
Double layer:	15/32" minimum thickness per layer, APA A-C, Group 1, Exterior or Exposure 1, 48 in (1220 mm) x 96 in (2440 mm) square edge panels with staggered joints.

- Prime all wood substrates with an appropriate Impermitek Self-Adhered Primer followed by the Impermitek Self-Adhered Base-Ply.

Insulation Cover Boards

Impermitek recommends using an approved Impermitek base-ply for application over insulation cover boards. However, application directly to cover boards is possible and may be required for certain applications.

For direct application over acceptable insulation coverboards, the following is required:

- Prime the cover board or sheathing with an appropriate Impermitek Self-Adhered Primer followed by the Impermitek Self-Adhered Base-Ply.

Roof Recovery Applications

General

For most roof recovery applications, Impermitek liquid applied membranes will be applied directly over existing roofs as a roof recovery waterproofing membrane. Regardless of direct liquid

membrane application or hybrid system using a self-adhered base-ply, the existing roof surface, flashings, and accessories must be appropriately cleaned to remove all dust, dirt, debris, mold, moss, or fungal growth.

Cleaning requirements vary for each roofing substrate type. For certain applications this may require use of water-based surface cleaners, fungicides, and pressure washing. When required, substrates must be free of any residues, clean, and fully dry prior to proceeding with application of Impermitek components.

Refer to Impermitek's **"Roof Recovery Substrate Evaluation, Repair & Cleaning Guidelines"**

TDS and to published cleaning guidelines or roofing industry guidelines where appropriate.

Asphalt Built-Up Roofing & Modified Bitumen Membranes

Impermitek hybrid membrane systems incorporating a self-adhering base-ply may be used for reroofing and direct roof recover overlays, flashings, and tie-ins on asphalt built-up roofing.

Remove all loose granules, dust, dirt and debris from the surface of modified bitumen membranes as required. Remove all dust, dirt and debris from the surface of the built-up roof (BUR) membrane as required. For gravel surfaced BUR membranes, gravel should be removed by spudding and power vacuuming. BUR membranes with gravel surfacing removed generally require a leveling coat of Impermitek Self-Leveling Mortar or an acceptable coverboard and/or base-ply overlay. In recovery applications, all blisters, ridges and deficiencies must be cut and patched using Impermitek Self-Leveling Mortar or an acceptable base-ply used to create a reasonably smooth substrate.

Following the necessary substrate repairs, the entire substrate must be prepared and primed as recommended, specified, or required for the specific project application.

Smooth Surface APP Modified Bitumen or Emulsion Coated Membranes

Impermitek typically does not recommend applying Impermitek systems directly to smooth surface APP modified bitumen or emulsion coated membranes.

Adhesion to a weathered and oxidized smooth APP membrane surface may be possible with an appropriate primer. However, this must be evaluated on a case-by-case basis through field adhesion testing.  appropriate Impermitek primers. Consult

Impermitek technical support for approval before proceeding with any direct recovery applications over smooth APP modified bitumen membranes.

Alternately, direct recovery applications of smooth APP modified bitumen membranes are possible by heating and broadcasting the membrane top surface with #1 (0.7 - 1.2 mm) quartz aggregate to full cover. Using a torch or hot-air welder, sufficiently soften the top surface of the in-place membrane and embed aggregate into the softened asphalt. After the asphalt has cooled, remove all loose granules, dust and dirt from the surface of the membrane by broom, blower, and/or power vacuuming.

Where the above recommendation is not viable, Impermitek recommends smooth surface APP modified bitumen membranes have an acceptable coverboard and/or base-ply overlay prior to applying Impermitek components or membrane.

Emulsion Coated Membranes

Impermitek recommends emulsion coated membranes have an acceptable properly secured coverboard and/or base-ply overlay prior to applying Impermitek liquid components. For direct recovery where an overlay is not used, the emulsion coating must be heated and broadcast with #1 (0.7 - 1.2 mm) quartz aggregate to full cover. Using a torch or hot-air welder, sufficiently soften the top surface of the in-place membrane and embed aggregate into the softened asphalt. After the asphalt has cooled, remove all loose granules, dust and dirt from the surface of the membrane by broom, blower, and/or power vacuuming.

Coal Tar Pitch BUR & Coal Tar Modified Bitumen Membranes

Coal tar pitch is known for its low melting point and cold flow characteristics and will not provide a reliable stable substrate; therefore, Impermitek does not recommend application of any Impermitek components directly to coal tar pitch or a coal tar pitch based built-up roof membrane. Impermitek's components and membranes are, however, chemically compatible with coal tar and may be applied to substrates that contain coal tar pitch staining and/or residue remaining after removal of the coal tar pitch membrane and deck scarification.

Contact Impermitek Technical Support for project specific recommendations.

Single Ply Membranes

Impermitek liquid applied membranes can be used for reroofing overlays, flashings, and tie-ins on qualified single-ply roof membranes.

NOTE: Single-ply membranes typically are NOT compatible with asphaltic membranes such as

Impermitek Standard Self-Adhered Base Ply or Foil-Faced Base Ply. Impermitek liquid applied membranes therefore must be installed directly to the cleaned, prepared, and primer single-ply membrane without use of a Impermitek Self-Adhered Base Ply.

Refer to Impermitek “**TDS SC104 Impermitek Liquid Applied Component Substrate Preparation Guidelines**” for substrate requirements and recommended preparation with Impermitek liquid applied membrane used for single-ply reroofing overlays.

Other Substrates

Remove all contaminants as required. Contact Impermitek for acceptable preparation and treatment of substrates not specifically indicated above. Field adhesion testing is recommended for all substrates.

Other Conditions

For job specific conditions encountered and not found in this guide contact Impermitek Technical Support for specific recommendations and guidance.

Impermitek Self-Adhered Primer & Base-Ply Application

General

Impermitek self-adhesive membranes are composed of elastomeric SBS modified bitumen in combination with a high tack self-adhesive layer. The underside of the self-adhesive baseply membrane is surfaced with protective polyolefin release film that is removed during application. The top side is sand surfaced to promote adhesion of Impermitek liquid applied components.

NOTE: Impermitek self-adhesive primer is required for application of Impermitek self-adhesive base-ply membrane on all approved substrates.

Refer to individual Product Data Sheets and Safety Data Sheets (SDS) for storage, handling, precautions, and application.

Environmental Conditions

Ensure environmental conditions are acceptable to proceed. Monitor precipitation, temperature, humidity, wind, cloud cover and sun that may influence materials and roofing application.

Conditions should remain dry and the ambient temperature should be well above the dew point at all times during roofing application.

Cold Weather Application During cold weather, the ambient temperature should be at least 40°F (4.4°C) and rising to ensure conditions remain acceptable to apply self-adhesive primers and base-ply membrane.

The self-adhesive primer and membrane temperature should be 70°F (21°C) or more at the point of membrane application.

To ensure the primer is applied at 70°F (21°C) during cold weather, drums and 5-gallon pails should be stored in heated areas. Drums and 5gallon pails exposed to cold temperatures on the roof should be provided with heaters when necessary to ensure the minimum application temperature is maintained.

Store rolls in a heated area to maintain the rolls at 70°F (21°C) during cold weather.

Impermitek Self-Adhered Primer Application
Ensure all substrates are clean, dry and prepared to receive the specified self-adhesive primer and membrane.

Apply primer using brush, roller, or sprayer at the recommended consumption rate and uniform coverage. Do not apply heavy or thick coats of primer. Apply primer to clean, dry masonry, metal, wood and other compatible substrates before applying self-adhesive SBS base-ply membrane.

Examine the primed areas before installing the SBS base-ply membrane to ensure self-adhesive primer is tacky to-the-touch, but not wet. Primer should not transfer to the fingertips when touched. Depending upon ambient conditions including sun exposure, temperature, wind, and humidity, the primer will typically require a minimum of 20-30 minutes up to 12-hour cure before applying the self-adhesive SBS base-ply membrane. Once applied, the primer can remain viable throughout the day of application, again depending on ambient conditions.

If the primer becomes fully dry, dirty and loses all tack, re-prime the substrate as necessary to achieve membrane adhesion. Examine adhesion of self-adhesive base-ply membrane during installation and adjust primer and membrane application methods as necessary to achieve the desired results.

Ensure all substrates are primed using self-adhesive membrane primer. Adhesion/peel tests are encouraged for concrete, masonry and other substrates where surface conditions may vary. Refer to Impermitek's "**Application & Quality Control Guidelines**" for information regarding field adhesion testing and adhesion peel testing.

Peel test results should demonstrate strong resistance to peeling. A strong bond will result in significant residual materials remaining adhered to the substrate, or part of the substrate itself may be removed along with the sample. Samples that peel away easily from the substrate may indicate further preparation is needed, or alternate materials and/or application methods may be necessary.

Where quantitative measurements of peel resistance are desired, the peel resistance should equal or exceed 2 lbf per lineal inch for all roofing and non-traffic bearing waterproofing applications in accordance with ASTM C794. Peel test samples should not peel away "clean" from the substrate.

Self-Adhered Base-Ply Application

Remove all roll packaging tape prior to installation AND unroll self-adhesive membrane ply onto the roof surface and allow time to relax prior to installing the membrane.

Starting at the low point of the roof, lay out the membrane to ensure the base-ply is installed perpendicular to the roof slope, shingled to prevent back-water laps.

Ensure all roofing and flashing substrates are prepared to receive the self-adhesive membrane and the self-adhesive primer is tacky to-the-touch, but not wet. Primer should not transfer to the fingertips when touched. Do not proceed if the primer is wet, fully dry, or dirty. If the primer becomes fully dry, dirty and loses all tack, reprime the substrate as necessary to achieve membrane adhesion.

Cut rolls to working lengths and widths to conform to rooftop conditions, and lay sheets onto the roof surface, always working to a selvage edge. Ensure membrane side-laps and 6 in (150 mm) end-laps are maintained. NOTE: All end-laps with Impermitek STANDARD Self-Adhered Base-Ply must be properly heat welded and sealed.

Peel the release film from the underside of the membrane. Press and adhere the leading edge of the membrane to the substrate. As the release film is removed, use a weighted roller to firmly set the sheet in place. Ensure full contact is made between the self-adhesive base-ply and the substrate for full adhesion. Use a hand-roller to roll-in vertical flashings and confined areas. Note that hand-pressure alone is not sufficient to make good contact between the primer and base-ply.

Daily Inspection

Each day, physically inspect all side and end-laps, and ensure the membrane is sealed watertight. Where necessary, use a torch or hot-air welder and a clean trowel to ensure all laps are fully sealed.

Inspect the installation each day to ensure the base-ply is fully adhered. Repair all voids, wrinkles, open laps, blisters and all other deficiencies before proceeding.

Temporary night seals are required to seal membrane and flashing terminations watertight. Temporary night seals must be removed upon resuming the installation.

Balcony & Terrace Applications

When not required as a vapor barrier, should the owner wish to remove any visual overlaps and provide a more aesthetically pleasing finish, the Self-Adhered Base Ply rolls can be butt jointed provided the joint is staggered or offset from any underlying board joints.

Self-Adhered Standard Base Ply in Liquid Component High Temperature Application

In most cases, the surface of the Impermitek Standard Self-Adhered Base Ply does not require priming prior to applying the Impermitek Protec membranes. However, it is recommended the Impermitek Standard Self-Adhered Base Ply be primed with Impermitek Uni-Primer DP in temperatures over 77°F (25°C) to reduce surface temperature before the application of the main Impermitek liquid applied components.

Self-Adhered Base-Ply Exposure & Phased Construction

In some cases, the Self-Adhered Base-Ply may be left exposed for an extended period due to weather delays, project scheduling, or as temporary roofing.

Due to the wide range of environmental conditions based on time of year, project location, and the work activities for each project the effects from extended exposures will vary.

Impermitek's Self-Adhered Foil Faced Base Ply is NOT intended for use as temporary waterproofing but may be left exposed in place during construction for up to 90-days to accommodate construction scheduling and weather delays.

Impermitek STANDARD Self-Adhered Base-Ply may be left exposed for extended periods up to 90-days as temporary roofing with favorable project conditions.

Regardless of the base-ply used, when left exposed for an extended period to UV, dust, debris, traffic and other extreme conditions, thoroughly examine the base ply to ensure conditions are satisfactory to install subsequent Impermitek components. Damaged or deteriorated base-ply must be removed and replaced prior to continuing with work.

Refer to product data sheets and contact Impermitek technical services for review of project conditions.

Self-Adhered BASE-PLY ON STEEP SLOPE ROOFING

Impermitek Self-Adhered Base-Ply membranes may be installed on steep-sloped roofs. However, "Back-nailing" which includes fastening the base-ply within the sealed end lap through the substrate below as required to prevent membrane slippage. Back nailing may be done into wood nailers or directly into the structural deck as required. Contact Impermitek for appropriate method of application and "back-nailing" requirements and additional information.

DISCLAIMER

The purpose of this Guide is to provide fundamental information and important design and/or application considerations for Impermitek roofing, waterproofing and surfacing assemblies. Impermitek manufactures and sells roofing, waterproofing, and traffic surfacing materials and does not practice architecture or engineering.

Impermitek is not responsible for the performance or damage to its products caused by such things as improper building design, construction flaws, or defects in workmanship. These guidelines should not be construed as being all-inclusive, nor should they be considered as a substitute for good application practices. This document and/or any other literature produced by or on behalf of Impermitek are offered for the purpose of guidance and must be evaluated and modified as required, by the Designer of Record and or applicator for each individual project.

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