HULK STPE®
Surface Preparation & Substrate Specification Guide

Proper surface preparation is the single most critical factor in ensuring long-term adhesion, preventing blistering, and maximizing the performance of the Hulk STPE® Modified Silicone-Polyurethane Waterproofing Coating System. As a single-component, high-solids, moisture-cure silyl-terminated polyether (STPE) formulation, Hulk STPE offers distinct application advantages over traditional acrylic and silicone coatings; including cold-weather installation, rain-safety within minutes, high build in a single lift, and high moisture tolerance. However, the coating still requires a sound, clean substrate to achieve its high-performance properties.

1. General Hulk STPE Application Windows & System Limits

- Temperature Range: Application can proceed safely at ambient and substrate temperatures as low as -4°C (25°F). Do not apply if temperatures drop below this threshold.
- Moisture Tolerance: Hulk STPE utilizes a moisture-cure formulation. It can be applied to damp substrates or green concrete. While standing puddles or saturated insulation must still be removed, standard post-wash dry times are dramatically reduced compared to water-based coatings.
- Curing Dynamics (at 70°F / 20°C):
  - Skin Formation: 35 to 90 minutes.
  - Rain-Safe: Within minutes of application.
  - Minimum Recoat Window: 2 hours.
  - Cure in Depth: 1.5 to 4.0 mm per day.
  - Full Performance Cure: 14 to 21 days (The timeframe required for the cross-linking matrix to reach peak tensile strength, maximum elongation properties, and ultimate chemical/environmental resistance specifications).
- Thickness Capacity: Thanks to its high solids content, Hulk STPE can be applied at a minimum thickness of 20 mils, and up to 60 mils in a single lift for heavy-duty detailing.
- Cleanup Mandate: All equipment, rollers, trowels, and sprayers must be cleaned using alcohol or water-free solvents (such as Xylene) before the product hardens. Exposure to water or atmospheric moisture will accelerate curing inside tools and spray lines.

2. Substrate Preparation Protocols

A. Metal Substrates

- Pressure Washing: Wash metal panels at 2,500 to 2,700 psi using an industrial-grade substrate cleaner or degreaser to strip away atmospheric soot, dirt, grease, and factory passivating oils. Because Hulk STPE handles damp surfaces, application can begin as soon as standing water is cleared.
- Mechanical Etching & Rust Mitigation: Wire brush, grind, or sand all loose, flaking rust scale down to a sound, tightly adhered substrate. Hulk STPE creates an impermeable, anti-corrosive moisture barrier; however, heavily pitted areas must receive a localized 30-mil detail coat worked into the crevices to fully isolate the steel.
- Chemical Washing & Priming: Due to Hulk STPE's aggressive native mechanical bond, phosphoric acid etching can generally be omitted on weathered metals. For brand-new, unweathered galvanized steel or aluminum exhibiting a smooth "mill slick" factory finish, a solvent wipe or a dedicated wash primer is recommended to establish an anchoring profile.
- Large Gaps, Holes, & Open Joints: For oversized joints, open metal transitions, or voids at laps, installers can choose between standard joint sealants or modifying Hulk STPE by blending in thixotropic fibers (e.g., short-strand structural fibers) or fumed silica (e.g., Cab-O-Sil). This creates a highly viscous, non-sag putty ideal for bridging gaps, building up high-build localized fills, and heavy trowel detailing.
- Adhesion & Profiling Disclaimer: Adhesion testing must be performed on a mock-up test area prior to full-scale application to verify bond strength. If test areas reveal inadequate adhesion, further mechanical profiling, chemical etching, or a specialized metal primer may need to be performed.

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B. Single-Ply Membrane Substrates (EPDM, TPO, PVC, & Modified Bitumen)

- EPDM Membranes: Thoroughly power wash with an EPDM-specific cleaning solution and soft-bristle brooms to chemically suspend and remove all black carbon dust and weathering chalk. Because of EPDM's extreme rate of thermal expansion, a dedicated tie-coat or adhesion primer must be applied before coating with Hulk STPE.
- TPO & PVC (Vinyl): Scrub with a non-filming commercial detergent to remove accumulated plasticizers, surface oils, and dirt, followed by a thorough power rinse. Smooth TPO has a low surface energy and requires a specialized thermoplastic adhesion promoter to ensure a permanent bond. For PVC, ensure the surface is completely clean of migrating oils.
- SBS / APP Modified Bitumen: Power wash gently to clear away loose granules and asphalt soot without scoring the underlying bitumen matrix. Unlike standard acrylics that suffer from asphalt bleeding (turning yellow or brown), Hulk STPE features excellent chemical resistance. It can be applied directly to clean modified bitumen without an asphalt bleach-blocking primer.
- Detailing & Void Filling: Treat all field laps, pipe penetrations, curbs, and flashing seams with a 60-mil detail application of Hulk STPE to form a smooth, monolithic water drainage plane. For wide open gaps at curb corners or unraveled seams, Hulk STPE thickened on-site with fumed silica or thixotropic fibers may be used as a non-sag patching paste to bridge voids prior to the general application.
- Adhesion & Profiling Disclaimer: Adhesion testing must be performed on a mock-up test area prior to full-scale application to verify bond strength. If test areas reveal inadequate adhesion, further mechanical profiling, chemical etching, or a specialized membrane primer may need to be performed.

C. Concrete & Masonry Substrates

- Surface Assessment: All concrete, masonry block, brick, and mortar substrates must be structurally sound, clean, and free from grease, laitance, curing compounds, or form-release agents.
- Moisture Buffering: Hulk STPE's moisture-cure formulation permits direct application over damp or green concrete, achieving an exceptional pull-off adhesion rating of >1,000 psi per ASTM D4138.
- Defect & Joint Remediation: Pre-fill all voids, deep pits, and surface gaps in the concrete or masonry blocks. Treat all control joints, expansion joints, and transitions with a minimum 60-mil application of Hulk STPE to yield a continuous, monolithic surface.
- Large Defect & Void Filling Options: Large voids, spalls, and deep pockets can be pre-filled with traditional repair mortars. Alternatively, a high-build, non-slump repair compound can be mixed on-site by incorporating thixotropic fibers or fumed silica into liquid Hulk STPE. This thick paste can be trowel-applied directly into vertical or overhead concrete gaps to prevent the material from running or sagging out of the defect.
- Crack Pre-treatment: Treat all structural cracks and dynamic corners with a 30-mil detail coat. This detail coat must extend a minimum of 3 inches (7.6 cm) on both sides of the crack or corner line before the main coating layer is applied.
- Adhesion & Profiling Disclaimer: Adhesion testing must be performed on a mock-up test area prior to full-scale application to verify bond strength. If test areas reveal inadequate adhesion, further mechanical profiling (such as shot-blasting or scarifying), chemical etching, or a specialized masonry primer may need to be performed.

D. Wood Substrates (Plywood & OSB Decking)

- Structural Stability: Wood panels must be securely fastened to the framing according to local engineering and structural codes to minimize deflection under load. Rotted, delaminated, or water-saturated wood panels must be completely replaced.
- Cleaning: Ensure the wood deck is free of sawdust, dirt, grease, and standing water. Hulk STPE achieves an adhesion rating of >1,000 psi to wood surfaces.
- Seams & Fasteners: Treat all wood panel joints and flush-driven fastener heads with a 30-mil detail coat of Hulk STPE, spanning a minimum of 3 inches (7.6 cm) on either side of the seam to accommodate natural structural shifting. For wide, irregular gaps between wood sheets (exceeding 1/8 inch), Hulk STPE blended with fumed silica or thixotropic fibers provides an approved alternative to wood caulking to flush-fill the seams before final coating.
- Adhesion & Profiling Disclaimer: Adhesion testing must be performed on a mock-up test area prior to full-scale application to verify bond strength. If test areas reveal inadequate adhesion, further mechanical profiling, chemical etching, or a specialized wood primer may need to be performed.

HULK STPE®
Surface Preparation & Substrate Specification Guide

E. Low-Slope Insulation Packages (XPS / EPS / ICF Foam)

- Substrate Compatibility: Hulk STPE is engineered to protect and adhere directly to Insulated Concrete Form (ICF) foam and commercial wall/roof insulation systems without melting, dissolving, or degrading the polystyrene foam matrix.
- Gap Remediation: Inspect the foam board layout for physical defects. Any open gaps between insulation boards exceeding 1/16 inch (1.6 mm) must be pre-filled. While low-expansion spray foam is the baseline standard, installers may optionally fill and bridge these insulation board joints using Hulk STPE modified with thixotropic fibers or fumed silica. This generates a paste configuration that can be tightly troweled across the joints to seal the insulation plane. Once cured or shaved flush, the main body application can proceed.
- Application Technique: Apply Hulk STPE via trowel, roller, or specialized spray equipment, ensuring the final film creates a continuous, downward water drainage plane. If installing heavy-duty drainage panels or protection boards over the cured system, mechanically attach them using coarse-thread screws.
- Adhesion & Profiling Disclaimer: Adhesion testing must be performed on a mock-up test area prior to full-scale application to verify bond strength. If test areas reveal inadequate adhesion, further mechanical profiling, chemical etching, or a specialized insulation primer may need to be performed.

3. General Disclaimer & Liability Limitation

Hulk Systems Inc. ensures the quality and performance of Hulk STPE when used strictly according to corporate guidelines. While the product is designed to deliver consistent, high-performance waterproofing and protection, outcomes may vary based on specific site conditions, environmental variables, and application methods. Liability is strictly limited to the replacement of the product or a refund of the physical purchase price in the rare case of a manufacturing defect. Hulk Systems Inc. explicitly excludes coverage for labor costs, consequential damages, or improper application. For optimal results, users must rigidly adhere to all preparation and application instructions provided.