



Globally Proven
Construction Solutions

Substrate Preparation and Primer Guide for LATICRETE Self-Levelling Products

TDS—1230

Substrate preparation is the most important factor for successful LATICRETE self-levelling and moisture mitigation product installations. While it is not possible to cover all of the conditions that may exist on every project, this guide will cover substrate preparation and primer application for some of the more common conditions found on most projects.

The installer is responsible for ensuring that the substrate is properly prepared and primed prior to installation. Any conditions discovered prior to or during preparation and installation must be brought to the attention of the project construction manager or general contractor immediately to remediate the condition and bring the affected areas into compliance. The project specifications should be consulted for any special substrate preparation or conditions that may apply.

I. GENERAL REQUIREMENTS

Verify Building Envelope or temporary enclosure is in place to provide a suitable ambient temperature range, protection from weather and direct sunlight for a minimum of 72 hours after application of self-levelling products. Substrate temperature must be maintained at a minimum 4°C during primer application and throughout drying time. Additionally, air temperature must be maintained between 10°C – 32°C during primer application and throughout drying time.

Verify Substrate Deflection under all live, dead, concentrated, and impact loads on floors do not exceed industry standards for the type of finished flooring to be installed. Confirm with the builder that the floors are designed and built in accordance with local codes and industry standards and are structurally sound.

Verify bond breakers are not present. Slabs must be clean, free of oil, wax, grease, sealers, curing compounds, asphalt, paint, deicing agents, dust, dirt, loose surface material and any other contaminant that will act as a bond breaker. Consult with an independent lab to analyse core samples to determine full depth of contamination. All potential bond breaking contaminants must be removed down to clean, absorptive, structurally sound concrete by shot blasting, scarifying or other mechanical means then swept and vacuumed clean. Remove contaminates down to maximum depth of contamination via mechanical means (e.g., shot blasting) to a minimum ICRI CSP 3, per ICRI Guideline No. 310.2R then swept and vacuumed clean. Use of chemicals to remove contaminants is not recommended.

Conduct Water Drop Test: Use the LATICRETE PRIMER Dilution chart and Water Drop Test chart below to help determine the absorption and dilution ratio when using PRIMER. Additional LATICRETE primers are available and can be used for most applications. See below for more information on LATICRETE primer options. Conduct Tensile pull-off test per ASTM C1583 or ICRI Guideline No. 03739. Concrete must have a minimum tensile strength of 0.7MPa for self-levelling product installations and a minimum 1.4MPa tensile strength for moisture mitigation product installations.

Note: When no bond breakers are present, concrete is absorptive per water drop test, and tensile pull test results are 0.7MPa or greater, mechanical preparation by shot blasting, scarifying, etc. may not be required.

Conduct Moisture Testing: LATICRETE self-levelling products can be installed over concrete that measures up to 100% relative humidity (RH) per ASTM F2170 provided there is no visible surface water on the slab. However concrete slabs may not be dry enough to meet moisture conditions required for finish flooring.

Test Concrete Slabs for moisture conditions in accordance with the finish flooring manufacturer's specifications prior to installing self-levelling products. LATICRETE Self-levelling products are not moisture mitigation systems. If a moisture mitigation system is needed use a LATICRETE Vapour Reduction Coating (VRC). Contact LATICRETE for information on the correct VRC.

Expansion Joints, Control Joints, Movement Joints and Cracks: Honour all types of active/dynamic joints and cracks in the substrate up through the underlayment and floor covering. Moving joints or cracks can transfer up through self-levelling, and moisture mitigation products and could cause cracks in the finish flooring.

Repair Active Cracks: Refer to Cement & Aggregates Australia - Concrete pavement maintenance or ACI 224.1R for guidance on evaluation and repair of cracks in concrete. Self-levelling underlayment product application over dynamic cracks is not recommended.

Fill Non-Active Cracks: Non-moving (static) cracks may be filled as required for leakage prevention using a LATICRETE mortar or LATICRETE VRC. Contact LATICRETE for more information.

Evaluate areas around walls, columns, penetrations, and other building elements where movement is anticipated. Areas where self-levelling abuts restraining surfaces can be isolated to allow for building movement. To help accommodate this type of movement, prior to application of self-levelling products attach a temporary compressible isolation strip to the perimeter walls, columns, protrusions, etc. to isolate the self-leveler from the restraining or moving surfaces. The isolation strip can be fastened in place with staples, tape, etc. and can be removed after the self-levelling product has set firm. Refer to ACI 302.2R-06 and ASTM F710 for more detailed information.

II. SUBSTRATE PREPARATION

High-Suction Concrete: Highly porous or extremely dry concrete may require two coats of LATICRETE PRIMER. Refer to **Priming** section for **High-Suction** priming instructions. Concrete slabs that are found to be brittle, weak, frozen or loose due to poor installation conditions, forced drying methods or any other cause must be repaired or replaced followed by tensile strength testing per ASTM C1583 or ICRI Guideline No. 03739 prior to primer application. Concrete must have a minimum tensile strength of 0.7MPa for self-levelling product installations and a minimum 1.4MPa tensile strength for moisture mitigation product installations.

Non-Suction Concrete: If water or primer beads up on surface and does not absorb into concrete the surface may be contaminated or over-troweled and in need of further evaluation and preparation prior to application of PRIMER. If the concrete has already been shot blast or scarified, the contaminant may have absorbed deep into the concrete or the slab may have become contaminated after shot blasting or scarification has taken place.

NOTE: Do not continue with application of PRIMER until the full depth of the issue has been remedied and the slab is absorptive.

Remove: bond breaking contaminants from concrete surfaces. Acceptable methods of mechanical cleaning are grinding, shot blasting, scarifying, needle scaling, scabbling, and milling. Refer to ICRI Guideline No. 03732 for more detailed information regarding these methods.

Sweep and Vacuum thoroughly, Water Drop Test, and tensile strength testing should always be conducted following mechanical removal of contaminants.

Other Non-Suction Substrates: Substrates such as cement terrazzo, epoxy terrazzo, ceramic tile, quarry tile and VCT must be solid, well bonded, clean, and free of any contaminants, glazes, wax, sealers, and any other potentially bond inhibiting substance. Most non-suction surfaces must be mechanically abraded and cleaned. **DO NOT abrade moisture mitigation epoxy.**

Test Tensile Strength after mechanical abrasion per ASTM C1583 or ICRI Guideline No. 03739. A minimum of 0.7MPa tensile strength is required prior to installation of self-levelling products and 1.4MPa for moisture mitigation products. Any areas that are loose, broken or do not meet a minimum tensile strength must be removed and repaired. Once repaired and clean, the surface must be properly primed prior to installing self-levelling products. Not all non-suction/non-porous substrates are suitable substrates for self-levelling product installations. See Primer Chart in PRIMING section below for Suitable Substrates.

Cutback Adhesives: Remove non-water-soluble cutback adhesives that do not contain asbestos by shot blasting, grinding or other mechanical means down to clean, structurally sound concrete. However, in some cases self-levelling underlayment can be installed over a thin, translucent residue of non-water-soluble cutback adhesive. Non-water-soluble adhesives that do not contain asbestos can be removed by razor scraping to a thin, translucent residue, then thoroughly swept and vacuumed. Once clean, conduct tensile/bond strength tests per ASTM C1583 or ICRI Guideline No. 03739. If the tensile/bond strength is 0.7MPa or greater, self-levelling may be installed. Prime using Non-Suction method in Primer section below. If the tensile strength is below 0.7MPa or the adhesive is water soluble, completely remove the adhesive by mechanical means to a minimum ICRI CSP of 3 then swept and vacuumed clean.

Moisture Mitigation Systems: When a moisture mitigation system is needed use a LATICRETE VRC. Contact LATICRETE for more details. Never install moisture vapor mitigation epoxy over adhesive or adhesive residue. Mechanical removal of adhesive residue can be hazardous as it may contain asbestos. Consult with adhesive manufacturer and Federal and State Government agencies regarding the proper removal of cutback adhesives containing asbestos by specialist contractors. Refer to ASTM F710 and the Australian Resilient Floor Covering Association for recommended practices for removal of existing resilient floor coverings.

Plywood Substrate: Verify that the plywood substrate, nominally Radiat pine, is stable and structurally sound enough to support total anticipated live, dead and impact loads. Deflection requirements for self-levelling underlayment is L/360 per ASTM F2873. Deflection requirements for ceramic tile is L/360. Deflection for natural stone is L/720. Plywood substrate must be clean and free of any contaminants. Substrate can be sanded, if necessary, then swept, vacuumed, and properly primed. After PRIMER application, fasten expanded galvanized diamond metal lath over entire wood substrate using corrosion resistant fasteners every 15cm overlapping lath seams by 2.5cm.

Poured Gypsum Underlayment: Gypsum underlayment must be allowed to cure and dry per gypsum manufactures guidelines prior to installing self-levelling products. Gypsum underlayment cure/dry time will vary due to job site conditions. Using a moisture content meter with a "gypsum reading scale" the moisture content in the gypsum underlayment must not exceed 1% prior to installing LATICRETE® PRIMER and self-levelling products.

- Consult the finished flooring manufacturer for moisture condition requirements. If a moisture mitigation epoxy is needed it must be installed prior to poured gypsum underlayment install. Never install LATICRETE epoxy products over gypsum underlayment.
- Confirm gypsum underlayment has a minimum compressive strength of 13.8MPa and have a minimum tensile strength of 0.7MPa for self-levelling product installations.
- Perform Water Drop Test: Poured gypsum underlayment tends to be highly porous and dry which may require two coats of PRIMER. Refer to Priming section for High-Suction priming instructions. If water or PRIMER beads up on gypsum and does not absorb into the surface, the surface may be contaminated or sealed and in need of further evaluation and preparation prior to application of PRIMER. Do not continue with application of PRIMER until the full depth of the issue has been remedied and the gypsum underlayment surface is absorptive.
- Remove gypsum underlayment sealer and all other bond breaking contaminants down to clean, absorptive, structurally sound gypsum by sanding, screening, or other mechanical means then sweep and vacuumed clean. Use of chemicals to remove contaminants is not recommended. Removal of sealer or contamination should always be followed by tensile strength testing.
- Do not use LATICRETE® self-levelling products over Poured gypsum underlayment installed on concrete slabs on or below ground. Remove poured gypsum and replace with a LATICRETE self-levelling product.

STRATA_MAT™: When installing LATICRETE Self-levelling underlayment over STRATA_MAT refer to product data sheet DS-1134 for more detailed information regarding the installation of the STRATA_MAT products. Note that no primer will be used when installing LATICRETE Self-levelling underlayment over STRATA_MAT. Allow mat to set firm (typically 12-24 hours at 21°C) prior to pouring self-levelling product.

NOTE: Minimum pour thickness over STRATA_MAT:

- Wood Substrate – Minimum 12mm
- Minimum 19mm pour thickness over the top of STRATA_MAT when LATICRETE Self-levelling underlayment is used as a wear surface.
- Minimum 12mm pour thickness over the top of STRATA_MAT when LATICRETE Self-levelling underlayment is used as an underlayment.

III. PRIMING: Use only LATICRETE® PRIMER when installing LATICRETE Self-levelling products.

Note: When installing LATICRETE® VRC refer to **Section IV.** for more detailed Epoxy Primer information.

General Priming Information: Most substrates must be primed with LATICRETE PRIMER. LATICRETE PRIMER is a concentrate and must be diluted with clean potable water prior to application. Dilution ratio and application methods vary depending on substrate. Always stir or shake PRIMER concentrate prior to diluting. Mix primer with clean potable water according to the PRIMER DILUTION / APPROXIMATE COVERAGE chart below. Water must always be carefully measured to ensure proper dilution. Use a mixing paddle to thoroughly combine PRIMER and water. Diluted PRIMER can be broom, roller, mop, or spray applied. Substrate temperature must be a minimum 4°C and Air temperature must be maintained between 10°C – 32°C during PRIMER application and throughout installation and drying time. The primed surface must also be protected from weather, water, and direct sunlight.

LATICRETE PRIMER Approximate Yield, Dilution, and Spread Rate			
SUITABLE SUBSTRATES	Dilution Ratio = PRIMER Concentrate : Water	Approximate Coverage: Per 5 Litres of Concentrate diluted with water ⁽¹⁾	<u>WATER DROP TEST</u>
Normal Suction:	1:3	48 m ²	<p>To help determine the appropriate PRIMER dilution, properly prepare slab in accordance with this guide then apply several 18 – 25mm size drops of water to properly prepared surface and observe.</p> <p>High-Suction = Water completely absorbs into surface within 15 seconds; surface may appear dark and wet with no visible water remaining on surface</p> <p>Normal-Suction = Water absorbs or partially absorbs within 30 seconds but not less than 15 seconds; bead of water may slowly shrink as it absorbs while dark, wet spot on surface slowly expands</p> <p>Non-Suction = Water beads up and does not absorb at all within 30 seconds; bead of water does not shrink or absorb, wet spot on surface does not expand</p> <p>* Do not use primer over STRATA_MAT</p>
High-Suction: Dry Concrete LATICRETE Self-levelling underlayment Cement Mortar Beds Gypsum underlayment	1st Coat: 1:5 2nd Coat: 1:3	25 m ²	
Exterior Glue Plywood	1:3	48 m ²	
Non-Suction: Ceramic, Stone, Quarry Tile, VCT, Sheet Vinyl, Terrazzo	1:1 with slurry	25 m ²	
LATICRETE Vapour Reduction Coating ⁽²⁾	1:1 with slurry	25 m ²	
STRATA_MAT™ *	N/A	N/A	
<p>(1). Approximate coverage in square meters per 5 Litres of concentrate PRIMER diluted with water. Use this column to estimate coverage rate of the PRIMER diluted with water.</p> <p>(2). Primer is not needed if used over moisture mitigation epoxies with sand broadcast.</p>			

LATICRETE PRIMER is sold as a concentrate. To estimate quantity of primer required for a job, select the type of SUITABLE SUBSTRATE from the table then look up the Approximate Coverage Column per 5 litres of PRIMER concentrate diluted with water. Divide project square meterage by the "Approximate Coverage per 5 litres of Concentrate diluted with water" square meterage to calculate quantity required.

Normal Suction: Dilute PRIMER 1:3 (1 part primer to 3 parts water). Apply a single coat of diluted PRIMER/water mix to the point of refusal so that the substrate is completely covered, and small puddles form in low spots. While PRIMER is still wet use a push broom to work primer into the substrate so that puddles are spread evenly over the surface, absorbed and a uniform film has been applied. Remove any remaining puddles by brooming and spreading over the surface. Or use PRIME-N-BOND™. See instructions in PRIME-N-BOND section below on this document. Then proceed below to the All Suitable Substrates and Protect Primer Application sections.

High-Suction: Apply two coats of PRIMER allowing adequate time to dry between coats. For the first coat, dilute LATICRETE PRIMER 1:5 (1 part primer to 5 parts water). Apply first coat of diluted primer/water mix to the point of refusal so that the substrate is completely covered, and small puddles form in low spots. While primer is still wet use a push broom to work primer into the substrate so that puddles are spread evenly over the surface, allowed to absorb and a uniform film remains on the surface. Remove any remaining puddles by brooming and spreading over the surface. Allow the primer to dry. The first coat is considered dry when a minimum of 3 hours dry time has elapsed, the primer turns from milky white to clear, is dry to the touch, and there is no release of primer from the substrate. First coat must not be opened to trade traffic prior to installation of second coat. If the primed floor becomes contaminated by trade traffic, construction dust, debris, or any other bond inhibiting substance, or is exposed to water/excessive moisture prior to second coat application, the contaminated first coat of PRIMER must be completely removed by shot blasting, scarification or other mechanical means, properly re-primed and allowed to dry.

For the second coat, dilute PRIMER 1:3 (1 part PRIMER to 3 parts water). Apply second coat of diluted PRIMER/water mix to the point of refusal so that the substrate is completely covered, and small puddles form in low spots. While second coat of PRIMER is still wet use a push broom to work PRIMER into the substrate so that puddles are spread evenly over the surface and a uniform film has been applied. Or use PRIME-N-BOND. See instructions in PRIME-N-BOND section below on this document. Then follow the All Suitable Substrates and Protect Primer Application sections.

Plywood: Dilute PRIMER 1:3 Using a sprayer or broom, apply a single coat of diluted PRIMER/water mix so that the substrate is completely covered, and a uniform film has been applied. Or use PRIME-N-BOND. See instructions in PRIME-N-BOND section below on this document. Fasten expanded galvanized diamond metal lath over entire wood substrate using corrosion resistant fasteners every 15cm overlapping lath seams by 2.5cm and follow All Suitable Substrates and

Protect Primer Application section.

Non-Suction Substrates and epoxy moisture mitigation products: Non-Suction substrate PRIMER dilution and application instructions are intended for ceramic tile, stone, quarry tile, VCT, sheet vinyl and LATICRETE VRC that have been properly prepared in accordance with this guide.

- Dilute Primer 1:1 (1 part PRIMER to 1 part water). Apply a single coat of diluted PRIMER/water mix to the point of refusal so that the substrate is completely and evenly covered. While PRIMER is still wet and white, immediately lightly scatter self-levelling dry powder (one 20kg bag lightly scattered should cover 150m² – 225m²) into the wet primer. Using a push broom, work the dry powder into the wet PRIMER/water mixture forming a slurry. Continue to broom so that puddles are spread evenly over the surface and a uniform film has been applied. For more information on this method contact the Technical Service Department. Or use PRIME-N-BOND. See instructions in PRIME-N-BOND section below on this document. Then follow All Suitable Substrates and Protect Primer Application instructions in this document.

STRATA_MAT™ : **Do not use primer** when installing LATICRETE Self-Levelling products over STRATA_MAT. Refer to product data sheet DS-1134 respectively for more detailed information regarding the proper installation of STRATA_MAT.

LATICRETE Underlayments and other Cement Mortar Beds: Follow **High-Suction** priming instructions for priming on top of LATICRETE underlayments and cement mortar beds. Or use PRIME-N-BOND. See instructions in PRIME-N-BOND section below on this document.

All Suitable Substrates: Remove any remaining puddles by broom or paint roller and spreading evenly over the surface. Allow the PRIMER to completely dry for a minimum of 3 – 5 hours at 21°C and 50% Relative Humidity. Primer coat is considered dry when a minimum of 3 hours dry time has elapsed, is dry to the touch, and there is no release of PRIMER from the substrate. Surface may feel slightly tacky. Drying time will vary depending on surface and ambient air conditions. Substrate temperature must be a minimum 4°C during primer application and throughout drying time. Additionally, air temperature must be maintained between 10°C – 32°C during primer application and throughout drying time. PRIMER must also be protected from weather and direct sunlight. Temperatures below 21°C and/or relative humidity above 50% will increase drying time. Insufficient drying or poor film formation will result in pinholes and poor bond strength and may cause self-levelling products to de-bond. If PRIMER dries within 30 minutes or if a 24-hour period is exceeded after primer application, the surface must be primed again.

Protect All PRIMER Applications: Primed floor must not be opened to trade traffic prior to installation of self-levelling products. If the primed floor becomes contaminated by trade traffic, construction dust, debris, or any other bond inhibiting substance, or is exposed to water/excessive moisture prior installing self-levelling product, the contaminated PRIMER must be thoroughly cleaned or completely removed by shot blasting, scarification or other mechanical means, properly re-primed and allowed to dry.

PRIME-N-BOND: All suitable substrates mentioned above may be primed with LATICRETE PRIME-N-BOND™ in lieu of LATICRETE PRIMER. Follow all surface preparation instructions for each substrate mentioned in this document. Stir PRIME-N-BOND before use to ensure that settling has not occurred during shipment and storage. Do not dilute as product is ready-to-use. Apply PRIME-N-BOND at approximately 18m – 37m² per 5 Litres with a 9mm nap paint roller evenly to a thin, uniform film. Do not allow to puddle. Remove puddles with a broom or paint roller. Allow to dry for 3 – 5 hours depending on job site conditions. If PRIME-N-BOND dries for more than 72 hours before application of the self-levelling product, clean the surface, re-apply an additional coat of PRIME-N-BOND, allow to dry for 3 – 5 hours and install the self-levelling product within 72 hours.

IV. Priming with a LATICRETE Vapor Reduction Coating

Surface Prep: Follow substrate preparation guidelines as described above. Note that minimum surface tensile pull strength of 1.5MPa is required for LATICRETE® Decorative Wear Surface products. Also note that substrate temperature must be maintained at a minimum 10°C during epoxy primer application and throughout drying time. Air temperature must be maintained between 16°C – 32°C during epoxy primer application and drying time. Do not install primer when there is standing or visible water on the substrate. Protect primer from direct sunlight and weather during primer application and throughout drying time.

Mixing: Mix LATICRETE VRC components according to the mixing instructions in the product data sheets.

Application: Apply Epoxy Primer by pouring ribbons onto the prepared concrete and spread using appropriate round or square notch squeegee, or a SPARTACOTE Coating Broom that is designed to apply the desired mil thickness in a single coat. Apply an even coat making sure to cover all areas thoroughly. Immediately following, while epoxy is still wet, use a high quality 9mm nap non-shedding paint roller to back-roll at 90° angle from the squeegee direction to help ensure full coverage and uniform thickness.

Working in small sections immediately broadcast clean, dry play sand (00 sand grain size: less than 0.5mm or pass 98.5% sieve size #35) into the wet, freshly applied epoxy (approximately 2.5 – 5kgs of sand per 1m²) to the point of refusal completely covering the wet epoxy with sand. Continue this process

maintaining a wet edge until entire area is covered. If epoxy dries prior to sand broadcast apply additional epoxy and immediately broadcast sand. Once sanded avoid walking on floor for a minimum 6 hours. Allow sanded epoxy to cure for a minimum of 16 hours then sweep and thoroughly vacuum until all loose sand and dust is completely removed from the surface. Any loose sand on the surface may appear in the finished decorative wear surface.

Protect Epoxy Primer Application: Primed floor must not be opened to trade traffic prior to installation of LATICRETE® Self-levelling underlayment products. If primed floor becomes contaminated by trade traffic, construction dust, debris, flooded or any other substance prior to LATICRETE Self-levelling underlayment installation, the contaminated epoxy must be completely removed by shot blasting, scarification or other mechanical means, properly re-primed and allowed to dry prior to LATICRETE Self-levelling underlayment installation.

V. Notes:

LATICRETE Elevation Pins: When required, survey the floor surface using a [LATICRETE NIVCOMP Digital Level survey device](#) and place Elevation Pins after primer has been allowed to dry to the touch. Shoes must be protected with clean, slip-on type booties during survey and elevation pin placement. See Protect Primer Application in this guide.

Mock-Up: The purpose of a mock-up is to determine the acceptability to all parties of the performance, appearance, and applicability of all materials and methods planned to be used. It is always recommended that the underlayment installer and the flooring contractor test performance, suitability, and compatibility of LATICRETE products and finished floor system. On site mock-ups should be installed and tested for intended use and appearance. Always refer to finished floor manufacturer's recommendations regarding surface preparation, moisture requirements, installation instructions, restrictions, and compatibility with underlayment. Mock-ups should be installed using all surface preparation and system components intended for use on the finished project including moisture mitigation (when applicable), primer, underlayment poured at the intended depth, finish flooring and any other applicable system components. When the finish flooring is unknown, the mock-ups should be conducted using just the LATICRETE products to ensure compatibility with the substrate. When flooring is specified after the underlayment has already been installed, the flooring contractor should install finish flooring over a section of properly prepared underlayment and test in accordance with flooring manufacturer instructions. It is important to note that since many jobsites will exhibit several conditions that require different types of surface preparation, finish flooring and other unknown conditions, it may be necessary to conduct several mock-ups to test each condition separately.