Substrate preparation is the most important factor to successful LATICRETE® self-leveling and moisture mitigation product installations. While it is not possible to cover all 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, protect from weather, and direct sunlight for a minimum of 72 hours after application of self-leveling products. Substrate temperature must be maintained at a minimum 40°F (4°C) during primer application and throughout drying time. Additionally, air temperature must be maintained between 50–90°F (10–32°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 general contractor 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 analyze 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 NXT® Primer Dilution chart and Water Drop Test chart below to help determine the absorption and dilution ratio when using NXT Primer. Additional LATICRETE primers are available and can be used for most applications. See below for more information on LATCRETE primer options.

Conduct Tensile pull-off test per ASTM C1583 or ICRI Guideline No. 03739. Concrete must have a minimum tensile strength of 100 psi (0.7 MPa) for self-leveling product installations and a minimum 200 psi (1.4 MPa) 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 100 psi (0.7 MPa) or greater, mechanical preparation by shot blasting, scarifying, etc. may not be required.

Conduct Moisture Testing: LATICRETE self-leveling 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-leveling products. LATICRETE Self-leveling products are not moisture mitigation systems. If a moisture mitigation system is needed use NXT Vapor Reduction Coating, VAPOR BAN™ Primer ER, or
II.

SUBSTRATE PREPARATION

High-Suction Concrete: Highly porous or extremely dry concrete may require two coats of 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 100 psi (0.7 MPa) for self-leveling product installations and a minimum 200 psi (1.4 MPa) 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, VCT and 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 100 psi (0.7MPa) tensile strength is required prior to installation of self-leveling products and 200 psi (1.4 MPa) 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-leveling products. Not all non-suction/non-porous substrates are suitable substrates for self-leveling 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-leveling 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 100 psi (0.7 MPa) or greater, self-leveling may be installed. Prime using Non-Suction method in Primer section below. If the tensile strength is below 100 psi (0.7 MPa) 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 VAPOR BAN™ Primer ER, NXT® Vapor Reduction Coating, or SUPERCAP Moisture Vapor Control. See data sheets DS-507.0, DS-35222, or DS-061.0 for more detailed installation information. 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 proper governmental agencies regarding the proper removal of cutback adhesives containing asbestos. Refer to ASTM F710 and the Resilient Floor Covering Institute for recommended practices for removal of existing resilient floor coverings.

**Wood Substrate:** Verify that the wood substrate is stable and structurally sound enough to support total anticipated live, dead and impact loads. Deflection requirements for self-leveling underlayment is L/360 per ASTM F2873. Deflection requirements for ceramic tile is L/360. Deflection for natural stone is L/480. Wood 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 6” (15 cm) overlapping lath seams by 1” (2.5 cm).

**Poured Gypsum Underlayment:** Gypsum underlayment must be allowed to cure and dry per gypsum manufactures guidelines prior to installing self-leveling 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-leveling 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 2,000 psi (13.8 MPa) and have a minimum tensile strength of 100 psi (0.7 MPa) for self-leveling 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-leveling products over poured gypsum underlayment installed on concrete slabs on or below ground. Remove poured gypsum and replace with a LATICRETE self-leveling product.

**STRATA_MAT™ and STRATA_HEAT Mat:** When installing NXT® Level Plus or NXT Level DL over STRATA_MAT™ or STRATA_HEAT Mat refer to product data sheet DS 026.0 or DS 026.1 for more detailed information regarding the installation of the STRATA_MAT products. Note that no primer will be used when installing NXT Level Plus or NXT Level DL over STRATA_MAT or STRATA_HEAT Mat. Allow mats to set firm (typically 12-24 hours at 70°F/21°C) prior to pouring self-leveling product.

**NOTE:** Minimum pour thickness over STRATA_MAT:

- Wood Substrate – Minimum ½” (12mm)
- Minimum ¾” (19mm) pour thickness over the top of STRATA_HEAT Mat or STRATA_MAT when NXT Level DL is used as a wear surface.
- Minimum ½” (12mm) pour thickness over the top of STRATA_HEAT Mat or STRATA_MAT when NXT Level DL or NXT Level Plus is used as an underlayment.

### III. PRIMING: Use only LATICRETE® Primers when installing LATICRETE Self-Leveling products.

**Note:** When installing LATICRETE® Wear Surface products use NXT Epoxy Primer, VAPOR BAN Primer ER, NXT Moisture Reduction Coating, or SUPERCAP Moisture Vapor Control with sand broadcast. Refer to Section IV. for more detailed Epoxy Primer information.

**General Priming Information:** Most substrates must be primed with a LATICRETE primer. **NXT Primer** and **SUPERCAP Primer Plus** are 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 40°F (4°C) during installation and throughout installation and drying time. The primed surface must also be protected from weather, water, and direct sunlight.

<table>
<thead>
<tr>
<th>SUITABLE SUBSTRATES</th>
<th>Approximate Yield of Concentrate per gallon</th>
<th>Dilution Ratio = Primer: Water</th>
<th>Approximate Spread Rate Diluted with Water</th>
<th>WATER DROP TEST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Suction:</td>
<td>400 ft² (37 m²)</td>
<td>1:3</td>
<td>100 ft² (9 m²)</td>
<td></td>
</tr>
<tr>
<td>High-Suction: Dry Concrete LATICRETE SLU Cement Mortar Beds Gypsum underlayment</td>
<td>200 ft² (19 m³)</td>
<td>1st Coat: 1:5 2nd Coat: 1:3</td>
<td>50 ft² (5 m²)</td>
<td></td>
</tr>
<tr>
<td>Exterior Glue Plywood</td>
<td>200 ft² (19 m³)</td>
<td>1:1</td>
<td>100 ft² (9 m²)</td>
<td></td>
</tr>
<tr>
<td>Non-Suction: Ceramic, Stone, Quarry Tile, VCT, Sheet Vinyl, Terrazzo</td>
<td>200 ft² (19 m³)</td>
<td>1:1 with Slurry</td>
<td>100 ft² (9 m²)</td>
<td></td>
</tr>
<tr>
<td>NXT Vapor Reduction Coating ³</td>
<td>200 ft² (19 m³)</td>
<td>1:1 with slurry</td>
<td>100 ft² (9 m²)</td>
<td></td>
</tr>
<tr>
<td>STRATA_MAT™ STRATA_HEAT™ Mat</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td></td>
</tr>
</tbody>
</table>

1. Approximate yield in square feet per gallon of concentrated primer. Use this column to estimate gallons of NXT Primer or SUPERCAP Primer Plus to purchase.
2. Approximate spread rate in square feet per gallon of diluted primer. Use this column to guide spread rate of the diluted primer.
3. Primer is not needed if used over moisture mitigation epoxies with sand broadcast.

* Do not use primer over STRATA_MAT or STRATA_HEAT Mat
**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 NXT 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.

**Wood:** Dilute Primer 1:1 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 6” (15 cm) overlapping lath seams by 1” (2.5 cm) 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, NXT Vapor Reduction Coating, and SUPERCAP Moisture Vapor Control 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-leveling dry powder (one 55 lb. [25kg] bag lightly scattered should cover 2000 – 3000 ft² [186 – 279 m²]) 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™ and STRATA_HEAT Mat:** Do not use primer when installing LATICRETE Self-Leveling products over STRATA_MAT or STRATA_HEAT Mat. Refer to product data sheet DS 026.0 or DS 026.1 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 70°F (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 40°F (4°C) during primer application and throughout drying time. Additionally, air temperature must be maintained between 50–90°F (10–32°C) during primer application and throughout drying time. Primer must also be protected from weather and direct sunlight. Temperatures below 70°F (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-leveling products to debond. 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 Application: Primed floor must not be opened to trade traffic prior to installation of self-leveling 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-leveling 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 NXT® 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 150 – 300 ft² per gallon with a 3/8” (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-leveling product, clean the surface, re-apply an additional coat of PRIME-N-BOND, allow to dry for 3-5 hours and install the self-leveling product within 72 hours.

IV. Priming with NXT® Epoxy Primer, VAPOR BAN™ Primer ER, NXT Vapor Reduction Coating, or SUPERCAP® Moisture Vapor Control

Surface Prep: Follow substrate preparation guidelines as described above. Note that minimum surface tensile pull strength of 200 psi (1.5 MPa) is required for LATICRETE® Decorative Wear Surface products. Also note that substrate temperature must be maintained at a minimum 50°F (10°C) during epoxy primer application and throughout drying time. Air temperature must be maintained between 60–90°F (16–32°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 NXT® Epoxy Primer, VAPOR BAN™ Primer ER, NXT Vapor Reduction Coating, or SUPERCAP® Moisture Vapor Control components according to the mixing instructions in the product data sheets (DS-029.3, DS-507.0, DS-35222, or DS-061.0).

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 3/8” (9 mm) nap non-shedding paint roller to back-roll at 90⁰ from the squeegee direction to help ensure full coverage and uniform thickness.

NOTE: When using VAPOR BAN Primer ER with LATICRETE self-leveling underlayment no sand broadcast is needed if self-leveling product is installed within the 24 hour recoat window. When installing LATICRETE wear surfaced products a sand broadcast is required.
Working in small sections immediately broadcast clean, dry play sand (00 sand grain size: less than 1/50" or pass 98.5% sieve size #35) into the wet, freshly applied epoxy (approximately 0.5 - 1 lb. of sand per square foot) 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® Decorative Wear Surface products. If primed floor becomes contaminated by trade traffic, construction dust, debris, flooded or any other substance prior to LATICRETE Decorative Wear Surface 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 Decorative Wear Surface 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.