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RECOMMENDATION

TEC® Level Set® 500 HF is a next-generation high flow self-leveling underlayment that has revolutionized substrate preparation by providing unprecedented surface smoothness combined with ease of installation. By following the best practice tips outlined in this Technical Bulletin, installers can achieve super smooth surfaces on a fast-track schedule.

Proper Substrate Preparation & Priming

Proper substrate preparation starts with a subfloor that is structurally sound, clean and free of contaminants or bond breakers such as adhesive residue, tar, sealers/curing compounds, oil/grease, joint compound, paint or drywall dust. Weak or contaminated surfaces must be mechanically removed. If moisture mitigation is required, this process must be completed prior to installation of floor preparation underlayments. Consult with product manufacturers to determine the Moisture Vapor Emission Rate (MVER) and Relative Humidity (% RH) limitations of the floor coverings, self-leveler, and adhesives to determine if moisture mitigation is needed.

All substrates require primer application before SLU installation. Make sure to use the correct primer specified for use with the SLU. TEC Multipurpose Primer is designed for use with TEC SLUs. Substrate porosity/absorbency must be tested before priming to determine primer dilution and number of coats required. Very porous substrates like gypsum or patching compounds typically require more than one coat of primer. A simple water droplet test will determine the surface porosity per ASTM F3191. Typical concrete with normal absorption will absorb a portion of a water droplet within 60 seconds and require a single coat of primer diluted at 1:3 (primer:water). Unsealed Gypcrete will likely absorb a water drop in less than 15 seconds and require a two-coat minimum of primer.



Figure 1. Water droplet partially absorbed after 1 minute indicating concrete is porous

Primer acts as a sealer by reducing moisture absorption from the SLU into the subfloor, thereby ensuring proper hydration of the SLU. An inadequately primed substrate can cause failure in the SLU by pulling water from the SLU. Additionally, priming will reduce outgassing that causes air bubbles and pinholes in the SLU – resulting in a smoother surface. Importantly, the primer functions as a bonding agent or tie coat to ensure that the SLU bonds properly to the substrate. It is necessary to prime between lifts when installing a second layer of SLU. Refer to the primer label for information regarding application methods and dilution per ASTM F3191.

Always allow the primer to fully dry to a clear film before installing the SLU. To ensure the primer is fully dried, apply a water droplet to the surface and rub with a fingertip for 15 seconds. If the water droplet remains clear, the primer is fully dried. If the water drop turns milky white, more dry time is required. Avoid excessive foot traffic or surface contamination of the primed subfloor.

Lastly, make sure to plug all floor openings, gaps and cracks and install termination dams to prevent any seepage.

Mixing Correctly

To achieve maximum flow and smoothness results with high flow SLUs, it is important to follow the product mixing instructions. Most high flow SLUs require a single specific water addition amount and do not allow a water range as is common with grouts and mortars. Overwatering will reduce strength and potentially cause cracking, pinholing and shrinkage. The formation of a white film on the surface is an indication of overwatering. The specified water addition for Level Set 500 HF is 6.5 quarts per 50 lb bag.

Mix 2-3 bags at a time in a clean container using an appropriate mixing blade for the mixing container and a heavy-duty drill with a minimum speed of 650 rpm. Add the water first and then add the SLU into the water while mixing at full speed. Because high flow SLUs are extremely fluid and mix more easily than traditional SLUs it can be tempting to mix for too short a time. To achieve maximum flow properties, it is important to use a timer and mix for the full specified time. Level Set 500 HF requires a full two-minute mix time.

Additionally, the temperature of the powder and the water are crucial. Leaving product in the sun, or in a hot environment can lead to reduced working time and flash setting. In situations where warm product is unavoidable, mixing with cold water may help combat installation issues. To maintain cold water temperatures in hot conditions, use blocked or bagged ice in your water barrel.

Use clean mixing containers and mixing blades to avoid flash setting. Contamination of high-flow calcium aluminate-based SLU with Portland cement-based products, can cause flash setting. Do not use old, open bags of SLU. Aged, pre-hydrated SLU will not yield results comparable to fresh product in sealed bags and may cause failure.

Pour to at Least the Minimum Required Depth

SLUs have a specified minimum pour thickness that is required to allow the product to flow properly and avoid premature dehydration that could negatively impact surface smoothness. To ensure optimum results, the installer needs to make sure that the minimum thickness is achieved throughout the entire pour area, especially over the floor high spots. This could mean, for example, that the majority of a pour is $\frac{1}{8}$ " deep while the high spots will be at $\frac{1}{16}$ ". Before starting the pour, installers should map out the floor with a laser and mark high and low spots to ensure sufficient SLU thickness. Use of self-leveling pins with graduated depth markings will ensure proper pour depth.

The minimum pour depth for Level Set 500 HF is $\frac{1}{16}$ " (1.59 mm/0.062"). An easy way to verify $\frac{1}{16}$ " SLU depth is to check with a new penny (1.52 mm/0.059"). A $\frac{1}{16}$ " pour depth will just cover a penny laid flat on the floor but not cover a quarter (1.75 mm/0.069").



Figure 2. A $\frac{1}{16}$ " SLU Pour Will Cover a Penny

Note that a feather edge transition with an SLU to an adjoining area at a different elevation is not the same as pouring SLU at a skimcoat thickness (which is never a good idea). Feather edging involves a sharper thickness transition that allows the SLU to remain properly hydrated. Pouring SLU less than the specified thickness will result in a very high surface area relative to a shallow depth that will result in poor flow and dehydration which will negatively impact smoothness and strength and may cause failure.

A common theme connects these best practice guidelines: noting and adhering to the manufacturer's instructions. Always read and follow the product label and data sheet instructions carefully to achieve the best possible results with your high-flow self-leveling underlayment job.

Questions?

Call the Technical Support Hotline at 1-800-832-9023.

This Technical Bulletin has been prepared in good faith on the basis of information available at the time of publication. It is intended to provide users with information about and guidelines for the proper use and application of the covered TEC brand product(s) under normal environmental and working conditions. Because each project is different, TEC Specialty Products LLC cannot be responsible for the consequences of variations in such conditions, or for unforeseen conditions.

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