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## Best Practices for Concrete Floor Surface Prep

While proper surface preparation is integral to the success of any painting project, this is especially true with concrete floors. Coating concrete floors can be a challenge as there are specific factors that need to be taken into consideration to avoid systems failures.

Typically concrete floors are “poured in place” and finished with a steel trowel to produce a smooth, dense surface. Also curing compounds are often applied, after the troweling process is complete, in order to slow down the rate of water evaporation and improve hydration and curing of the slab.

Both of these factors could cause problems for any potential coating system. Below you will find information on how to deal with them:



### Curing Compounds

Although curing compounds improve the strength and hardness, as well as the physical and chemical properties of the concrete slab, they are typically made from low strength resins that do not provide sufficient adhesion or film strength to function as either a primer or sealer. If these compounds are not adequately removed any coating applied over them will fail.

In order to accomplish this, the surface should be washed with a suitable detergent or an emulsion cleaning solution and then thoroughly rinsed with clean water to remove any remnants of the curing compound.

One of the ways to test for any remaining compound is to apply a muriatic acid solution to various test areas of the surface. If the applied acid does not react with the concrete by bubbling, spitting or foaming, that means there is residual curing compound remaining that requires additional cleaning.

### **Smooth Surface**

The troweling process leaves a smooth surface on the concrete. If the surface is too smooth, there is no profile for an applied coating to adhere too. An ideally prepared concrete floor will have a texture similar to 100 grit sandpaper.

In order to accomplish a sufficient anchor pattern for the coating to adhere to the surface should be abrasive blasted or acid etched.

### **Acid etching**

Surfaces shall first be wetted down with clean water, then a solution of muriatic acid (commercial quality - 30 to 38% Hydrochloric acid) made by diluting one part of concentrated acid (See Caution Note) with two parts of water by volume, is recommended. Apply at the rate of one gallon (4.5 liters) of the solution to each 100 square feet, and scrub well while applying. Allow the solution to remain on the surface until it stops bubbling (approximately 20 minutes), and then flush thoroughly with a large quantity of clean water. If the surface does not dry uniformly within a few hours, not all of the acid has been removed. In this case, flush the area again, but use a weak solution of household ammonia and clean water. After the surface has dried thoroughly, painting may proceed.

Caution Note: Adequate handling precautions must be taken. Always refer to the material safety data sheet (MSDS) to become aware of relevant safety hazards. Any person handling, mixing, or applying acid solutions, should wear rubber gloves, aprons, boots, goggles, a face shield and proper breathing apparatus. DO NOT mix acid with any other chemical. When diluting, always add acid to water. Never add water to acid. Accidental splashes on the skin should be treated immediately by flushing with clean water. If the burns are severe (or in all cases of eye contact), contact a physician immediately. Wash hands thoroughly before handling food. (Taken from 1.3 ACID ETCHING - CONCRETE AND MASONRY - MPI Architectural Coatings Manual)

### **Environmental Conditions**

As with all coating applications - environmental conditions before and during application, and during drying, should be considered. Due to the density of concrete, the surface temperature must be monitored during cold or humid weather and dew point calculated.

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## **Professional Tip**

*Paintable caulking must be allowed to dry thoroughly before it is painted. If the caulking is painted before the volatile component has evaporated, the caulking will shrink more than the paint, and the paint will crack.*