



## ACID ETCHING

Acid etching as a surface preparation is the process of applying an acid solution to a concrete surface, allowing the acid to react with and 'etch' the concrete. Etching removes the weak cement paste and profiles the surface slightly by exposing the fine aggregate and opening the pores of the concrete. This is usually considered a concrete preparation step done before the application of a concrete sealer, thin-film epoxy, or other concrete coating.

### **DIRECTIONS:**

The following are the to procedures required to properly acid etch. For the best performance from a coating system, concrete must be clean and have a uniform, open/porous surface. The surface must be etched until this is achieved. More than one treatment may be required.

**CAUTION:** Acid etching requires the use of strong chemicals. Used improperly these chemicals can result in serious injury. When handling harmful chemicals, always wear protective clothing, protective eyewear/face shield, rubber gloves, and boots. Do not breath vapours.

### **Always add acid to water. Never add water to acid!**

Protect surfaces not to be etched from chemical vapours, splash and spill.

**NOTE:** If the concrete is contaminated with oils or grease, the first step is to clean and degrease the surface with a degreaser such as Con-Spec Grease & Spot Remover.

**1. Properly clean concrete surface.** Remove all dirt, dust, grease, oils, wax, release agents, or any other contaminants that will interfere with the acid etching process. Mechanical cleaning with brushes, by hand or machine, may be required for cleaners to work properly. Some contaminants such as sealers and curing compounds may not be removed by cleaning and will

require the surface layer of the concrete to be removed by mechanical means. (Shot blasting, sanding, grinding, or any other approved method to remove the contaminant.) If one of these methods is used etching should not be necessary.

**2. Properly mix acid solution.** Use only plastic or acid resistant containers for mixing and applying acid. Acid concentrations can vary. To determine the strength and concentration needed to etch the concrete, test with a very diluted solution then add acid to container until strong bubbling action is noted in the test. A typical dilution ratio used is 1 part acid mixed with 3-10 parts water. Allow approximately 50 – 75 sq.ft./diluted gal for rough concrete, and 75 – 100 sq.ft./diluted gal for smooth concrete.

**Remember: Always add acid to water.  
Never add water to acid!**

**3. Wet-out concrete surface.** Wet-out the concrete with clean fresh, potable water so the concrete is uniformly wet, without any standing or ponding water. The concrete must stay wet until the acid solution is applied.

**4. Apply acid solution uniformly.** Apply acid solution uniformly over the surface of the concrete. The use of a plastic watering can will enable you to make sure fresh acid is applied evenly over the surface to be etched. (Do Not take a bucket of acid and dump it over the floor and spread it around with a broom. It will roll over the area and will neutralize as it spreads out giving an uneven etch to the surface.) Applied properly to a clean surface the acid will begin to bubble indicating that the acid is reacting with the concrete. (If the acid fails to bubble on all or parts of the floor it means that the surface wasn't cleaned thoroughly enough and must be cleaned and etched again.) Use a stiff bristle brush to scrub the acid into the surface and remove the layer of concrete to create the profile needed to apply the coating system.

Seller warrants that the product described on the face hereof has been manufactured of selected raw materials by skilled technicians. Neither seller nor manufacturer shall be responsible for any claims resulting from the failure to utilize the product in the manner in which it was intended and in accordance with instructions provided for use of product. The only obligation of either the seller or manufacturer shall be to replace any quantity of this product which proved to be defective. Neither seller nor manufacture assumes any liability, loss, or damage resulting from use of this product.

**5. Allow acid time to react: 5 – 10 minutes.** Allow the acid to remain on the surface of the concrete until the bubbling stops, usually between 5 to 10 minutes. Do not allow any areas of the etched concrete to dry out during this time.

**6. Rinse/scrub surface.** When the bubbling of the acid on the concrete surface slows noticeably, flush the concrete thoroughly with plenty of water while scrubbing the surface with stiff bristle brooms to remove the powdery residue from the pores of the concrete. This process may need to be repeated more than once to properly rinse the concrete. Collect and dispose of the liquids according to local and federal regulations. After the floor is dry any powdery residue that remains on the concrete must be removed before applying the coating system.

**7. Check profile.** Check the profile of the concrete surface. It should be the roughness of 80 grit – 120 grit open-coat sand paper. The concrete must have a uniform open/porous surface before application of the coating system. The surface must be etched until this is achieved. More than one etch may be required.

**8. Check the pH.** Neutralize surface if necessary. Rinse/scrub surface. After the final rinse check the pH of the wet surface. The ideal pH is 7, (neutral) but a pH of 6 – 9 is acceptable for most coatings unless otherwise specified. If the pH is below 6 residual acid remains in the concrete surface and must be neutralized. One cup of household bleach or quarter cup of baking soda per gal of fresh potable water will usually neutralize the concrete in one application. Apply solution uniformly over the surface. Let stand for 10 minutes before flushing and scrubbing with fresh potable water. Re-check the pH and repeat if pH is below 6.

**9. Dry total surface thoroughly before applying the coating system.** Check moisture content with acceptable moisture meter. In the absence of acceptable moisture meter follow ASTM Test Method D 4263-83: Standard Test for Indicating Moisture in Concrete by the Plastic Sheet Method. Tape sheets of 4-mil thick polyethylene plastic, at least 18 inch by 18-inch square onto the concrete with 2-inch wide duct tape. Do at least one test for each 500 sq.ft. of concrete. Allow sheets to remain in place for at least 16 hours before removing and testing back of sheet and concrete surface for moisture. Drying the concrete can be accelerated by heat and the use of fans to blow air across the surface to the concrete.

**Remember: For the best performance from a coating system, concrete must be clean and have a uniform open/porous surface before application. The surface must be etched until this is achieved. More than one etch may be required.**