

“HOW TO PROPERLY ACID ETCH A FLOOR IN PREPARATION FOR EPOXY COATINGS”

Acid Etching- USE EXTREME CAUTION AND USE PROPER PPE.

Proper PPE for handling phosphoric based acid etch solutions:

Rubber gloves, full cover safety goggles and/or face shield, rubber boots, long sleeve shirt and long pants.

Etching solution:

- **Legacy Industrial’s HD-357 Acid Etch:** Concentrated phosphoric acid etch solution.

Dilute & Mix Etch:

When using DeltaDye Concrete Stain or Legacy sealers or coatings: The concentrated solution must be diluted with water prior to use. Mix 1 part etch solution to 2 parts water. Be sure both parts are well mixed.

Dampen the Concrete:

- **Pre-Wet the Concrete:** The concrete surface should be pre-wet with clean, potable water. The substrate should be uniformly wet without any puddling or standing water. The concrete should remain wet until the acid solution is applied. Note: The area being treated should be done in small sections so the concrete does not dry out before applying and working the acid.

Apply HD-357 Acid Etch:

- **Application:** The HD-357 Acid Etch solution should be applied uniformly over the surface of the concrete. An excellent means of application is with a plastic garden sprinkling container. The solution should be deposited in a consistent manner over the entire surface so the etching results will be uniform. The acid solution should not be dumped onto the floor and swept over the surface. Acid spread in this manner will be partially spent and will not yield uniform results. The solution will begin bubbling indicating it is reacting to the surface layer of concrete. Any areas failing to produce the bubbling action would indicate the area has contaminants that are preventing the acid from reaching the concrete. It will be necessary to properly clean and re-etch or prepare these areas by mechanical means. The solution should be scrubbed thoroughly with a stiff bristled brush during the application process.

Allow HD-357 time to React:

- The solution should be allowed to remain on the concrete as long as the bubbling continues (usually 2-10 minutes, however, this would depend on the floor conditions and

acid concentration used for the project). The floor should not be allowed to dry out during the acid etching process. If a white residue appears due to allowing the etch to dry, only another etch process will remove it.

Rinse the Concrete:

- When the bubbling action of the solution slows down, spray the area with a generous amount of water or first spray a solution of one cup of baking soda in one gallon of water to neutralize the acid and then flush with water. For proper disposal of all liquids, use a wet vac if no drains are present. The surface should have a uniform texture of medium grit sandpaper, if not; the acid etching process must be repeated. The substrate should be flushed two or three times while scrubbing with a stiff bristle broom in order to remove any existing powdery residue. To avoid possible adhesion failure, vacuum any residue or white powder after the surface is dry (before coating).

Neutralize the Concrete as Required:

- Check the pH of the final rinse water on the wet concrete with pH paper. An ideal pH reading is 7.0 (neutral); however, a range of 6.0-9.0 is usually acceptable for most coatings, unless otherwise stated. A pH range below 6.0 would indicate acid residue remains in the pores of the concrete and must be neutralized. A strong ammonia solution or two pounds of baking soda in five gallons of water will generally neutralize the concrete in one application. The neutralizing solution should be spread uniformly over the substrate in the same manner as the acid solution. The surface should remain wet with the solution for at least ten minutes before agitating and flushing with water as recommended when etching the substrate. The pH should be re-checked and the neutralization process repeated if the pH of the rinse water is still below 6.0. For a pH reading over 9.0, repeat the rinsing process until the pH is at an acceptable level.

Dry the Concrete Thoroughly before coating:

- No matter what coating system is selected, it is important the moisture in the concrete is low enough that it will not affect the application, cure or performance of the coating. An ideal moisture content would be below 12% for most coatings and below 15% for acrylic paints and sealers. Should a moisture meter be unavailable, ASTM Test Method D 4263-83 should be followed to determine moisture content. This is the Standard Method for Indicating Moisture in Concrete by taping sheets of minimum 4 mil thick polyethylene plastic, at least 18 by 18 inches square, onto the concrete with 2-inch wide duct tape. A test patch should be applied for each 500 square feet of concrete. These test patches should be allowed to remain in place at least 16 hours before removing to check for moisture on the back of the plastic and concrete area being tested. This method is not an exact measurement of the moisture content; however, it will determine the relative amount of free moisture in the concrete and whether or not to postpone the coatings application. Warm, dry air blown over the surface will hasten drying of the concrete. Using fans alone will speed up the dry time.