

MAY 31, 2023

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Surface Preparation for NEW Concrete

Proper surface preparation is necessary for the successful performance of all protective systems. Proper system selection for the job requirements, quality and condition of substrate are equally important for the success of the application. Surface preparation procedures must also comply with all local, state and federal environmental regulations.



Proper basic concrete construction practices should be followed when preparing for surfaces to have additional finished products such as tile systems applied once concrete is cured. For example, expansion joint cuts in new concrete should also be per the finished product manufacturer. The photo shown here has expansion joints cut in an unacceptable location for the function of the expansion joint as well as the recommendations of the manufacturer of the additional products being applied to the substrate.

The concrete substrate must be structurally sound, clean, dry and of sufficient profile to optimize bond of the protective system to be applied. The finished concrete must be free of ridges, protrusions, fins, mortar splatter and have a tight laitance-free steel trowel finish. Imbedded foreign matter, such as plastic or paper, must be removed. Honeycomb and other voids must be filled.

The soundness of the concrete can be evaluated through the use of instruments, such as the Swiss (Schmidt) hammer, as outlined in ASTM C805, “Standard Test Method for Rebound Number of Hardened Concrete”.

The next step in preparing new concrete involves roughening the surface. Abrasive grit blasting is recommended for removing surface laitance and providing an adequate profile. Follow the equipment manufacturer’s safety precautions. Note: Use of Blastrac on concrete will leave a “zebra stripe” pattern which will be visible through clear finishes.

Acid washing, when required, also provides a good surface for sound concrete. A mixture of one-part muriatic acid to two parts water or one part phosphoric acid to eight parts water is recommended. Wet the concrete with water then acid wash. Following the acid etching, neutralize with household ammonia or a solution of one pint trisodium phosphate or sodium carbonate per two gallons of water. Flush thoroughly with clean water and allow to dry. Protect the surroundings and equipment from acid fumes. Plastic film or a protective coating, such as petroleum jelly, may be used. Follow manufacturer’s safety precautions for handling acid.

The pH of the slab can be checked by testing with Universal Indicator Paper (pH paper). Pour a small amount of water on the slab and allow to stand at least five minutes. Press a strip of pH paper onto the wetted area. Compare the color to the color on the chart. If the concrete slab is in the acidic range, wash the floor with a solution of ammonia or trisodium phosphate. Rinse thoroughly and recheck the pH. Alkaline pH may only indicate the natural alkalinity of the concrete. Readings of 12 or higher could indicate alkaline contamination.

For additional and excellent guidance on surface preparation of concrete for various applications, see surface preparation methods as described in I.C.R.I. (International Concrete Repair Institute) Guideline No. 310.2R – 6.0, Concrete Surface Profiles (CSP – 1 thru CSP – 10). Refer to the specific ATLAS Data Sheet PS-30 or contact ATLAS' Technical Service Department for assistance.