

# Application of acrylic coatings over concrete

Concrete can be a long lasting and low maintenance base for sports surfaces if the concrete is designed and prepared properly. Concrete contains chemicals that migrate to its surface, pulled by water and water vapor, which leave residue and salts (efflorescence). Acrylic coatings on concrete without proper design and preparation may bubble or blister, leading to delamination. This condition is caused by the nature of concrete itself and not installation or coating related.

Owners should be made aware of the possibility of bonding problems on concrete slabs that are not designed or prepared correctly for accepting surface coatings. Additionally, resurfacing (new coatings on top of old coatings) a concrete court that was not properly designed or prepared may lead to bubbling/blistering/delamination of the original coatings. This is because new coatings reduce the ability of gases and water vapor to escape the concrete and can expose flaws in the original design/preparation. If proper concrete design and preparation is not performed, the coatings warranty will be invalidated.

## Concrete Design and Construction

Proper concrete design and construction is critical and should conform to the American Sports Builders Association guidelines. Additionally, AT Sports recommends the following:

1. A vapor barrier must be installed under new slabs. Vapor barriers generally consist of two layers perpendicular to each other with taped joints.
2. The concrete mix design should not include fly ash. Fly ash is standard in typical concrete mixes but not suitable for when surface coatings are to be applied. Fly ash causes concrete to become especially dense, creates excessive efflorescence (dusting) , and can also cause an oily residue on the surface as it is a byproduct of coal.
3. Portland Limestone Cement (PL1) should not be used when possible. PL1 can hinder adhesion, typically when used above 10% in place of cement. Specify Ordinary Portland Cement (OPC/Type1/1A).
4. Control joints should be minimized or left off in sports construction. If they must be used, place them outside of the playing area.
5. Some drying retarders are not appropriate. Contact AT Sports for compatibility.
6. A light to medium broom finish is preferred to ensure a mechanical bond of coatings.
7. In standard practice, concrete should naturally cure a minimum of 30 days, preferably 60, to allow for proper curing. High humidity and cold environmental conditions result in delayed curing times. Alternatively, ACRY-Lock may be applied within 3-7 days of the concrete pour. See ACRY-Lock TDS for more information.
8. Curing agents can cause issues and are not recommended as they may interfere with bonding. Moisture curing is recommended. If a curing agent is requested, verify with the manufacturer for water based latex compatibility, and contact AT Sports for compatibility.

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9. After standard curing, concrete must be acid etched with a water diluted muriatic or phosphoric acid solution and thoroughly rinsed or pressure washed. Alternatively, concrete may be shot blasted or ground, then pressure washed.
10. A specialty primer must be applied to the top of bare concrete after pressure washing. The primer must be latex compatible. ACRY-Lock is suitable for priming concrete and providing a top side moisture barrier.

#### Helpful Hints

1. Existing paint may need to be removed if there is delamination or peeling.
2. If an acid solution does not bubble on the concrete surface, it is not going to etch the concrete.
3. To acid etch fill an empty bucket with 4 gallons of water and pour the acid into the bucket. This helps with splattering and potential acid burns. Wear protective clothing, boots and goggles. Pour the solution onto the surface and scrub using stiff brushes. Push brooms work well. Once the solution stops bubbling, move to the next. It is very important to rinse off the spent acid. Pressure washing is recommended.
4. A quick test of how well the new surface will bond is to stick a piece of masking tape on the slab. Another test: In a small area, apply primer and after drying stick a piece of masking tape on it. Peel off the tape. If the primer sticks to the tape instead of the concrete, more preparation is needed.
5. Check moisture content: ASTM F1869: below 20 lb/24hr/1000ft<sup>2</sup>, ASTM F2170: 85% RH or less
6. Concrete that has been slick finished with commercial finishing equipment is difficult to obtain a good bond. Shot blasting, scarifying or extreme etching may be necessary.
7. Fewer coats are better than many coats. More coats seal off water vapor transmission and promote blistering.
8. Fibers in the poured concrete can be problematic but can also aid in bonding of the surface coatings. If the concrete has fibers, they may not be evident until an acid bath is completed. After applying primer, fibers may stick out from the surface. This gives the coatings a stronger bond than without fibers in the concrete. Before the final coat is applied the visible fibers can be scraped or rapidly burned off with a propane torch.