Tennis Round Table

Concrete FAQ, Asphalt Rap, Multi-Sport Growth, Surface Evolution

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What Causes Efflorescence and How Do I Remove It?

- Most frequently caused by lime travelling to the surface through capillaries in the concrete. (non soluble) Removal by acid etching with phosphoric or muriatic acid.
- Salts appearing from cement, aggregates, water or admixes can also form efflorescence. These are more soluble than a lime reaction and can typically be removed by pressure washing.
Why does the slab require a specific finish?

The specified texture will vary depending on the system being installed. Some primers are designed to penetrate into the concrete and would typically require less texture. Other systems lay flat on the slab and require a textured finish for an adequate bond. Most manufactures will have requirements for minimum acceptable adhesion to the substrate (measured in psi via ASTM D7324).

The specified finish should directly correlate with the highest possible psi adhesion rating. So a system requiring a broom finish or CSP-3-5 equivalent would have maximum adhesion to the substrate at that specified texture (per manufacturer’s testing).
Concrete Surface Profile Scale

International Concrete Repair Institute (ICRI) Concrete Surface Profile (CSP) Scale

- CSP 1 (acid-etched)
- CSP 2 (grinding)
- CSP 3 (light shotblast)
- CSP 4 (medium shotblast)
- CSP 5 (medium-heavy shotblast)
- CSP 6 (heavy shotblast)
- CSP 7 (heavy shotblast)
- CSP 8 (extreme shotblast)
- CSP 9 (extreme shotblast)
Concrete – Causes For Bonding Failure

- Efflorescence
- Excessive Vapor Emission
- Slab Texture
- Compatibility with Admix or Curing Agent
Is this Coatable?
Identify Source of Failure

- Moisture
- Texture
- Efflorescence
- Admix/Curing Agent

Identify Steps To Remedy Source of Failure
Concrete – Testing to Prevent Failure

- **Vapor Emission** – ASTM F2170-11 (Rh %), ASTM F1869 (MVER), ASTM D4263 (plastic sheet)
  
  When vapor pressure exceeds a coating's breathability the pressure will gradually increase causing the surface to blister. Rh or MVER should be below manufacturer's specified limitations.

- **Adhesion** – ASTM D7324 (PSI)
  
  Poor adhesion is typically caused by inadequate texture or incompatibility with admix, curing agent or existing surface.

- **Water Permeability?**
  
  There are admixes and curing agents that can prevent/limit water penetration. You would typically notice water beading on the concrete. Topical curing agents can typically be removed with a solvent, while other systems may require shot blasting or grinding to open the slab pores.
Recycled Asphalt Concerns

- Extended Asphalt Cure Time?
- Is the asphalt plant accurately accounting for RAP binder contribution?
- Does RAP blend with virgin binder?
- Asphalt integrity concerns with high RAP %?
NYSDOT RAP Study – Crack Resistance

- Overlay test for determining crack resistance (via overlay tester TxDOT Tex-248F)
- 100% RAP failed at 185 cycles
- 75% RAP failed at 293 cycles
- 50% RAP failed at 359

Overlay Tester simulating expansion and Contraction movements.

Mixtures with higher RAP content were not equal to lower RAP content mixtures via the overlay tester (crack propagation) (1.)

Mixtures with the highest RAP content performed the worst in crack initiation testing, while mixes with lower RAP content showed little difference (1.)

NYSDOT believes that at higher RAP quantities (above 20%), the RAP binder is not completely mobilized and has difficulty blending with virgin binder. (2.)


Multi-Sport Growth
Multi-Sport Facilities Are Typically Exposed to Greater Wear – With typically 3-4x the number of players of tennis, it’s important to offer systems that are designed to provide greater durability.
Multi-Sport Growth
Changing The Way We Market Our Business?

- What can we do to let end users know we surface more than tennis courts?
- What can we do to support this growth?
- Are there Creative ways to market your business to these sports on the rise?
Advancements in Chemical Technologies have allowed manufacturers to tackle some of the industries biggest hurdles.

- Advancements in Cushion
- Mold/Mildew Inhibition
- Rust Inhibition
- Water Resistance
- Vapor Blocking Technologies
- Greater Concrete Bonding

Speak with your manufacturer to discuss what new surfacing technology may be available to help with your project.
Additional Round Table Questions
Submitted via email

- Is it necessary to grind an existing acrylic coating prior to resurfacing?
- How do you achieve planarity of the concrete slab with a broom finish?
- What is the optimum width of a tennis gate for player access?
Thank You!