

CURING & SEALING GUIDELINES

ALKALI-SILICA REACTION (ASR)

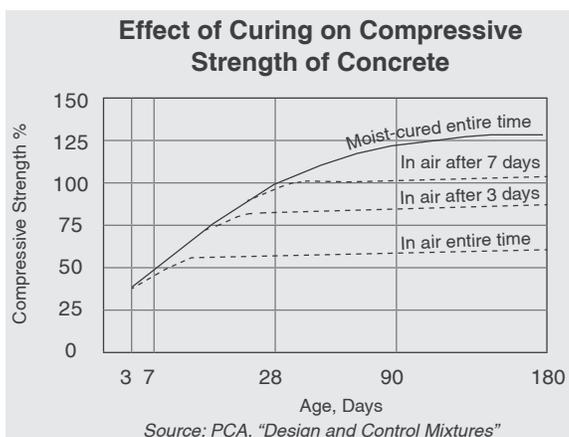
With warmer ambient temperatures or heated environments the potential for Alkali-Silica Reactions (ASR) pop-outs increases. ASR is a chemical reaction between the alkalis from cement and reactive silica minerals in aggregate which form a gel. The gel expands causing internal pressure leading to cracking, spalling and superficial pop-outs. Fine aggregate pop outs can start soon after finishing and continue for several days. All of the native sand in Minnesota have the potential to contain a small amount of alkali-silica reactive material. Most sands are produced to conform with Mn/DOT 3137 or ASTM C33 and can contain amounts of these materials. While these pop outs do not affect the structural performance of the slab, they can present an aesthetic concern. The problems can be even more troublesome when they occur below resilient flooring materials.

ASR MITIGATION

- ▲ The problem can be prevented by flushing the concrete surface with water after finishing and before curing. This flushing will remove the alkalis the surface and effectively halt the reaction before the pop outs occur. The use of certain flooring materials or adhesives may cause the alkalis from the cement to concentrate beneath the flooring material. Caution should be taken when selecting the adhesive used to secure the flooring materials as they may also cause an increase of alkali concentration.
- ▲ Flushing should be performed any time the following conditions occur: (Ambient Temperature F°) + (Concrete Temperature F°) ≥ 160° F.
- ▲ Ensure that the temperature of the concrete surface is as low as practicable. Direct sunlight on the concrete should be avoided.
- ▲ Reduce the surface evaporation by curing the concrete with water. The use of ponding or wet burlap has been shown to greatly reduce the potential for pop outs. This should be done after the surface has been flushed with water.
- ▲ Do not use chemical hardeners that contain potassium silicate or sodium silicate.
- ▲ The use of acrylic curing compounds can potentially increase the likelihood of pop-outs. The acrylic curing compound can trap the alkalis that cause this problem.

CURING CONCRETE

Begin curing **immediately** after final finishing. To increase the surface durability and service life of your concrete, it must be properly cured. Properly cured concrete retains the water added at the time of batching to maximize the hydration process of the concrete. Properly hydrated concrete increases strength, abrasion and freeze/thaw resistance. It also decreases permeability and thereby extends the service life of your concrete. Inadequate curing will result in a significant loss of surface strength and durability.



Methods of curing include:

1. Moist curing (ponding, continuous sprinkling or fogging)
2. Wet coverings (wet burlap, burlene, etc.)
3. Impervious paper and plastic sheets (preferably light in color)
4. Membrane-forming curing compounds

CURING CONCRETE

CURING CONCRETE BEFORE OCTOBER 1ST

MEMBRANE FORMING CURING COMPOUND

Apply a uniform curing compound membrane immediately after the final finishing is completed. In hot weather, flush the surface with water when safe to do so without marring the surface, and **before curing to minimize alkali-silica reaction (ASR)**.

Method 1: Wet Cure or CPC Dissipating Cure (water base)

Wet curing methods are chosen to provide thorough hydration, and a more evenly cured slab. New (recommended) wet curing products manufactured with natural cellulose fabric provide constant hydration and maintain 100% relative humidity condition on the slab providing a curing period up to 14 days.

Apply **CPC Dissipating Cure** water base at a rate of 300-400 square feet per gallon for broom finished concrete. Reference the product data sheet for coverage rate on all other concrete finishes.

Method 2: CPC CURE & SEAL (Solvent or Water Base)

Apply **CPC Cure & Seal** at a coverage rate not to exceed 300 square feet per gallon for broom-finished concrete. Over application may result in uneven color or discoloration. Reference the product data sheet for coverage on all other concrete finishes.

NOTE: Timing of the concrete cure is MORE crucial with ALL granite, quartzite and trap rock coarse aggregate mixes.

CURING CONCRETE AFTER OCTOBER 1ST

SPECIAL PRECAUTIONS MUST BE TAKEN WHEN PLACING/SEALING EXTERIOR CONCRETE AFTER OCTOBER 1ST TO ALLOW AMPLE TIME (generally 28 days) FOR THE CONCRETE TO DRY BEFORE UNDERGOING FREEZE/THAW CYCLES. Contact your Cemstone Sales Representative for more information.

SEALING CONCRETE

Properly sealing concrete helps maintain the appearance and durability of the concrete. Sealers should be applied approximately 28 days following placement. Sealing is designed to keep moisture and contaminants like deicing chemicals from penetrating into the concrete. Sealing your concrete should be implemented by one of the following methods:

SEALING CONCRETE BEFORE OCTOBER 1ST

Method 1: IF THE CONCRETE HAS BEEN CURED WITH CPC DISSIPATING CURE WATER BASED:

Approximately twenty-eight (28) days after installation seal the concrete by applying **CPC Siloxane**, (a penetrating water repellent sealer), at a rate of 100 to 200 square feet per gallon. Surface finish will determine actual coverage rate. An aggressive power washing or power brooming may be required to remove the dissipating cure prior to sealing.

NOTE: Using a dissipating cure or wet cure method allows for the flexibility to use ALL the recommended concrete sealers.

Method 2: IF THE CONCRETE HAS BEEN CURED WITH CPC CURE & SEAL (SOLVENT BASED OR WATER BASED):

Approximately twenty-eight (28) days after installation apply **CPC Cure and Seal, CPC Super Clear Coat, CPC Super Diamond Glaze, DURA-CRETE® Weather Shield or CPC Siloxane Final Seal** to the concrete. Recommended coverage rate varies by product and concrete finish, please verify recommended manufacturer's coverage rate. **DO NOT USE CPC SILOXANE.**

SEALING CONCRETE AFTER OCTOBER 1ST

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REAPPLYING SEALER

Since sealers eventually will degrade from environmental effects and no longer function as intended, concrete should be sealed on a regular basis in accordance with the sealer manufacturer's instructions or as needed. Before applying any sealer, thoroughly clean by pressure washing with water. Allow at least 72 hours to dry before application.