

# Preventing Spalling Of A Concrete Floor Slab

The most common causes of the spalling of a concrete floor slab are as follows:

- Freshly placed concrete freezing before it has reached 500 psi.
  - Concrete slabs being closed up by finishing them before the first bleed-water has occurred.
  - Corrosion of the steel reinforcing within the concrete.
1. When concrete is placed at ambient temperatures below 32°F (0°C) proper procedures must be followed to prevent spalling of the concrete. Some of these might be:
    - a. The use of Set Accelerating Admixtures (See Product Specifications #8-1, 8-1A, 8-5 and 8-5A.
    - b. The use of external heat to bring ambient temperatures above 32°F (0°C).
    - c. The use of thermal blankets to keep the concrete warm.
  2. When concrete is placed some of the water of convenience migrates both up and down through the slab. The water migrating upward reaches the surface and appears as bleed-water shortly after placement.

If the installer starts floating the surface before the initial bleed water makes it to the surface, then because the installer closed up and compacted the surface the bleed-water cannot make it to the surface and therefore it accumulates just under the finished surface. This results in the delamination of the surface and subsequent spalling.

The warmer the ambient temperature and the greater the movement of the air upon and over the surface of the concrete, the greater the possibility the surface will dry and the installer will think they need to start finishing the concrete slab, even though the first bleed-water has not migrated to the surface.

3. When steel reinforcing bars and steel wire mesh are not properly installed, there exists conditions wherein the steel will be exposed to corrosion. This corrosion will cause the steel to expand and spall the surface of the concrete. Steel reinforcing bars are supposed to be 1½" below the surface of the concrete slab. Steel wire mesh is supposed to be installed at a depth equal to 1/3<sup>rd</sup> of the thickness of the concrete slab.

