

TECHNOKOTES PCI

When specified in new construction, TECHNOKOTES PCI line of concrete admixtures offers reinforcing steel superior corrosion protection against carbonation and chloride attack.

Comparison of TECHNOKOTES PCI Admixtures to Other Inhibitors:

Feature	TECHNOKOTES PCI Inhibitor	Calcium Nitrite
Environmentally friendly, derived from renewable resources	True	False
Used in small quantities—less than 3 liter/m ³	True	False
Required dosage rate is not affected by expected chloride exposure	True	False
Ability to migrate through concrete in a vapour phases at ambient temperatures	True	False
Does not increase shrinkage compared to a control	True	False
Does not require adjustments to concrete mix design (chemical or water)	True	False
Does not affect concrete resistivity	True	False
Does not accelerate concrete set time	True	False
Has approval to meet Standard (contact w/potable water)	True	False
Spills can be flushed with large quantities of water down drain	True	False

How Does PCI Technology Work?

The corrosive effects of carbonation and chlorides cause a breakdown of the natural passivating layer on steel in concrete. PCI's provide protection because of their ability to migrate to the depth of the metal, and form a protective, molecular layer on steel when they come into contact with it.

1. PCI move as a liquid into the concrete matrix. In new construction, PCI is admixed either with the batch water or directly into a mixer. For existing structures, PCI applied to the surface is drawn into the concrete via capillary action—the concrete acts like a sponge, drawing PCI inside.
2. PCI move in a vapour phase throughout the concrete pore structure. This movement is governed by Fick's Law, meaning molecules move randomly throughout the matrix from areas of high concentration to areas of low concentration.
3. When PCI comes into contact with steel, it has an ionic attraction to it, and forms it's protective, molecular layer. PCI's affinity to the metal is stronger than water, chlorides and other corrosive contaminants.
4. Independent testing has confirmed that PCI can absorb onto metal to a depth of 75-85 nm, forming a layer that is between 20 and 100 Å thick. In the same testing, chlorides were shown to penetrate only 60 nm deep. This confirmed the ability of PCI to displace chlorides on the metal surface and provide protection even in their presence.