Innovative product reshapes concrete use forever

By **SARAH WRIGHT** | The Municipal

IN AREAS WITH HARSH WINTER CONDITIONS, CONCRETE TAKES a beating. Common deicers can result in calcium oxychloride growth that rots concrete joints, and freeze-and-thaw cycles cause surface delamination or scaling. Such deterioration proves frustrating when it occurs well before the concrete's life expectancy is up. However, an innovative product is available to solve this issue. PAVIX, a unique dual crystalline waterproofing product, penetrates the surface of cured concrete to fill and seal the pores and capillary voids. This advance technology results in not only longer-lasting concrete but also the ability for municipalities to show their constituents they are pursuing environmentally friendly options.

Being 100% green with no volatile organic compounds, PAVIX uses dual crystalline diffusion technology. When hydrated, the hydrophilic crystals expand while the hygroscopic crystals grow toward moisture. Together, they mitigate water/vapor; resist deicing chemicals, jet fuel and oils; and eliminate bacterial growth. When dehydrated, the crystals shrink to allow for faster evaporation.

Because of its active chemistry, Vice President of Sales and Marketing for ICC Distribution Group Mark Chew added PAVIX actually has a secondary benefit: During a rain event, it self-cleanses concrete, purging previous deicing chemicals out of the surface, while protecting against and purging future oils, fuels and other concrete contaminants out of the capillaries and off the surface.

"When the crystals are in their hydrated phase, they are generating a small amount of energy or activity," explained Chew. "Because of this absorption and diffusion activity, water cannot penetrate the pores and capillaries, so the ice will be there, but with much less adhesion."

PAVIX's dual crystalline diffusion technology prevents water from penetrating into cracks formed in concrete. (Photos provided)

Seeing is believing, and Chew described one client who had opted to only treat half a parking lot with PAVIX as a test. Afterward in early spring, a rain event occurred. Their customer sent ICC a photo. "It looked like it'd been Photoshopped," Chew said. "The side that had been treated was 100% dry. On the untreated side, there was water and slush that refroze when the temps dropped again."

If there's concrete — whether it's a street, bridge deck, parking lot, sidewalk or airport — it needs PAVIX. Concrete joints have become prime candidates for PAVIX. "Joint deterioration is the main reason we got in the business," Chew said. "PAVIX makes it so the destructive chemistry caused by deicing chemicals cannot occur."

ICC Distribution Group and International Chemcrete have had this advanced technology "PAVIX" put under some of the most stringent testing by several third-party labs, the CP Technical Center at Iowa State and Brunel University, London, England. Most currently much more advanced testing taking place at the University of Missouri-Kansas City. Several of these test results are available at www.iccdistributiongroup.com.

For time-crunched cities struggling to find workers, PAVIX saves time and headaches by reducing maintenance demands and offering ice mitigation that can boost the performance of more green deicers. Or use less of the current deicers because they will now be much more efficient. The de-icing chemicals will be on the surface not in your concrete.

"Once applied, retreatments are not required as long as the surface substrate is intact, we have Midwest parking lots and bridges 15 years later with no retreatment performing really well," Chew stated.

Bob Schiesl, assistant city engineer for Dubuque, Iowa, said keeping concrete in good condition is a challenge for his Midwest city with its climate, and upon learning about PAVIX, Dubuque had to test it out.

"The city of Dubuque uses it on all of our bridge decks," he said. "We've also applied it to some street projects where we did a dowel bar retrofit, reinforcing the dowel joints and protecting them from deicing chemicals."

City workers applied the PAVIX on the bridge decks themselves while one of the city's contractors handled the dowel joint retrofit. "We're really pleased with the product," Schiesl said. "It was easy to apply."

The city currently monitors areas that have been treated with PAVIX to judge performance over time, with Schiesl noting, so far, everyone has been pleased with what they are seeing, and there is hope about finding cost savings over time. "If we can get longevity out of our bridges, that is a massive benefit," he said.

Quick PAVIX Facts

How long does PAVIX last? Pavix product application is long lasting. Once placed, the crystals remain active indefinitely. Its unique crystalline growth structure will not deteriorate.

How resistant is PAVIX to chemicals? Based on independent testing, PAVIX is not affected by a wide range of chemicals, including mild acids, solvents, chlorides and caustic materials. It is resistant to oils and jet fuels. And it protects against glycol and deicing liquid as well. PAVIX greatly enhances glycol reclamation effects, and it has the ability to shed glycol off of the surface to the reclamation tanks.

Is PAVIX affected by temperature, humidity, ultraviolet and oxygen levels? Humidity, ultraviolet and oxygen level (oxidation) have no effect on PAVIX. As humidity increases, the crystals actually swell in the capillaries to block moisture from entering the capillary.

Does PAVIX protect reinforcing steel? Yes. By preventing the intrusion of chemicals, salt water, sewage and other harmful materials, PAVIX protects concrete and reinforcing steel from deterioration and oxidation. If corrosion is already present, it will slow the process by not allowing further moisture to enter.

Can PAVIX be applied against hydrostatic pressure? Yes. Because PAVIX is not dependent upon adhesion to the concrete surface and instead becomes an integral part of the concrete mass through crystallization, it is capable of resisting hydrostatic pressure from either side (positive or negative) of the concrete.

Is PAVIX used to waterproof cracks, joints and other defects in concrete? Yes. PAVIX has a specific repair system that utilizes its unique crystalline waterproofing technology to stop water flow through up to 1/16-inch cracks. In the case of expansion joints or chronic moving cracks, a flexible sealant is recommended.

Is PAVIX suitable for use on surfaces other than concrete? PAVIX is totally compatible with the chemistry of concrete, whether poured in-place, pre-cast or concrete block. PAVIX may also be used on mortar, limestone, sandstone, plaster, stucco, efis, terrazzo, exposed aggregate and any sand aggregate cement combination.

Can paint and other finishing materials be applied over a PAVIX coating? Yes. Paint, cement purge coats, plaster and stucco can be applied or installed over concrete protected with PAVIX.

What are some typical PAVIX applications? PAVIX can be applied to any concrete surface. Applications include bridge decks, airport runways, aprons, taxiways, rams, deicing areas, hangars, tunnels, parking structures, sidewalks, foundations, roof decks and exterior below grade construction.

What is the recommended application rate for PAVIX? Typically, a coverage rate of between 150 and 200 square feet per gallon will provide ample coverage. Consultation with the manufacturer's technical department or a local PAVIX representative for assistance in determining the appropriate dosage rate based on specific requirements and condition of your project.

How easy is it to apply PAVIX? One single application of PAVIX is all you need. PAVIX is the viscosity of water and applied so. Using a low PSI sprayer (backpack or boom) make it simple to apply. You can apply PAVIX on freshly poured concrete at de-bleeding/de-watering stage as long as there's a curing compound used immediately after. Thus, the construction process is not slowed. M

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