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Fluid iSolator

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FLUID ISOYLATOR™

THE NEED

The reliability of concrete infrastructure is vital to ensuring daily life, as well as commerce, can progress without interruption. From the pavement of interstate highways to the driveways and sidewalks in a local neighborhood, concrete is expensive to install and often even more expensive, and intrusive, when it needs to be replaced. Unfortunately, to maintain functionality in winter climates concrete is heavily exposed to deicing salts. This not only affects the roads, driveways, and sidewalks where salt is applied directly, but many other areas such as parking and residential garages where vehicles (and people) will track salt along with water or melting snow that transports dissolved salt into the concrete.

When salt water enters the concrete it eventually dries out. The water evaporates leaving the salt behind in the concrete's pores, returned to its expanded crystalline form. Over time this salt in the pores will accumulate until the stress it is creating begins to cause the concrete to fail from within the pores. This damaging process is supplemented by repeated freezing and expanding of any water within the concrete during winter freeze/thaw cycles.

Large scale infrastructure, such as highways, are often designed with the idea of keeping water out of saw- cut joints (rather than protecting the concrete itself). In practice these solutions, such as backer-rod and silicone sealant, are ineffective because any small damage or debonding creates an access point for water and salts to reach the unprotected concrete below. Even this futile consideration is a step above the protection most concrete surfaces receive. From bridge decks to driveways and sidewalks, the majority of concrete surfaces go unprotected. Existing topical treatments for these applications, such as Water Based Silane(WBS) or Solvent Based Silane (SBS) sealants, are easily damaged and come with what is often a prohibitively expensive price tag. Fluid iSoylator™ protects the concrete by soaking in and creating a hydrophobic barrier within the pores instead of on the exterior surface.

FIGURE 1 AN UNTREATED SAMPLE (LEFT), TWO SAMPLES TREATED WITH FLUID ISOYLATOR™ (MIDDLE), AND A SAMPLE TREATED WITH SOLVENT BASED SILANE (RIGHT) AFTER THE COMPLETION OF ASTM C 666 FREEZE/THAW TESTING (GOLIAS ET AL., 2012)

THE TECHNOLOGY

Fluid iSoylators™ is a hydrophobic sealant that is sprayed onto the concrete's surface and is absorbed into the pores, creating a barrier to block water and salt. Since this barrier is created within the concrete, it is not susceptible to mechanical abrasion or other damage at the surface like most sealing methods (visit [Environmental Concrete Products](#) for graphics and more information on the advantages of this method).

FIGURE 2 AN X-RAY VISUAL OF FLUID ISOYLATOR ABSORPTION (A) 10 MINUTES AFTER APPLICATION (LEFT) AND (B) 5 HOURS AFTER APPLICATION (RIGHT) (COATES ET AL., 2009)

Not only does Fluid iSoylators offer a durable, lasting protection, it is very easy to apply, handle, and store. Made from soybean oil, Fluid iSoylators is a USDA Certified Biobased product as part of the USDA

Biopreffered® program. Fluid iSoylator contains (93%) USDA certified biobased content. Application is performed with a backpack sprayer in most instances, but can also be done with brush/roller or with a pull behind trailer depending on size and shape of the application area.

Fluid iSoylator remains fluid in the concrete's pores. This property minimizes the effect of a stress crack in a treated area. With reactive film sealants, a crack (caused by traffic, etc.) creates an entry point for water/salt to pass through the film. With Fluid iSoylator the pores surrounding a crack are still sealed, so the concrete in that area remains protected.

TECHNICAL SPECIFICATIONS:

- Appearance: Pale yellow liquid, mild odor
- Application Rate: 130 ft²/gallon
- Specific Gravity: 0.88
- Volatiles (% by volume): <2

FIGURE 3 FLUID ISOYLATOR

THE BENEFITS

- Penetrates concrete's pores where it remains protected
- Repels water (hydrophobic)
- Blocks salt
- Easy to apply
- Safe to handle and store
- USDA Certified Biobased Product

STATUS

Fluid iSoylator is a patented product which resulted from research in Purdue Civil Engineering. A summary of a portion of the initial research can be found on [the Purdue Joint Transportation Research Program's website](#).

Fluid iSoylator is available for retail purchase [at the Home Depot](#) with free shipping to any address or store in the continental United States. Fluid iSoylator is also preapproved for use by some state D.O.T.'s. Commercial or wholesale quantities can be purchased directly from ECP. Supplier opportunities are available in many regions.

POINTS OF CONTACT

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REVIEWERS

Peer reviewed as an emerging construction technology

DISCLAIMER

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PUBLISHER

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