

# PATENT-PENDING FIELD APPLICABLE PVDF COATING TECHNOLOGY FOR STOPPING CONCRETE CHEMICAL AND REBAR CORROSION WEAKENING

*The first field applicable PVDF coating that blocks dissolved salts ions and corrosive acidic gases from weakening of the concrete buildings and infrastructure.*

PRINCETON JUNCTION, NJ, UNITED STATES, May 30, 2023

/EINPresswire.com/ -- AIT Coating Division of AI Technology, Inc. is proud to introduce the world's first field applicable PVDF concrete weakening protection coating at the 2023 AIA Architecture Show (booth 4219) at Moscone Center, San Francisco, CA on June 8-9, 2023.



Chemical reaction and rebar corrosion from moisture and water laden with acidic gases, weakened the reinforced concrete like a cancer. The interior corrosion and chemical reactions are sometimes not found until major fixes have to be performed or the build

Why does seemingly indestructible concrete buildings and infrastructure need a protective coating?

The collapse of the Florida Surfside Condominium on June 24, 2021, is a wake-up call for the building industry. The weakening of the concrete structural strength by chemical reactions inside the concrete and corrosion of the rebars by environmental moisture laden with dissolved salts and corrosive gases, is like "cancer" of concrete. The weakening of the structure due to the slow degradation processes inside the concrete are not always obvious from traditional inspection methods.

Why is FLUOROSEAL® [PVDF concrete protection coating](#) the best choice for protecting existing buildings and infrastructure from further weakening?

To be effective in protecting concrete buildings and infrastructure from corrosion weakening, the solution must not only have measurable or incremental improvements but must be indisputable in effectiveness in stopping further weakening by:

1. Blocking moisture laden with corrosive ionic salts and corrosive acidic solutions from passing

through the concrete and causing rebar corrosion weakening and stress.

2. Blocking corrosive gases such as H<sub>2</sub>S, SO<sub>2</sub>, CO<sub>2</sub>, NO, CL<sub>2</sub> from penetrating the encasing concrete. These gases cause concrete

carbonation-alkalization weakening and steel rebar corrosion.

3. Preventing freeze-thaw induced expansion, causing delamination and concrete fractures, by blocking penetration of moisture/water at concrete-rebar interfaces and concrete pores.

4. Blocking UV from degrading acrylic, stucco, epoxy and/or polyurethane structural coatings. UV molecular disintegration of these coatings accelerates the penetration of corrosive elements that cause steel rebar corrosion and concrete chemical reactions.

FLUOROSEAL® concrete and corrosion protection coating is a modified PVDF polymer. PVDF is well known for its ultra-low permeability to moisture and corrosive gases. This property provides 3-5 orders higher effectiveness in blocking moisture-water with dissolved salt ions and corrosive gases from penetrating inside the concrete.

• FLUOROSEAL® PVDF corrosion protection coating also maintains its intrinsically 1-2 orders of magnitude lower moisture-water absorption and retention, blocking off [concrete chemical reactions and rebar corrosion](#).

• FLUOROSEAL® PVDF concrete and corrosion protection coating is a single

**FLUOROSEAL® PVDF is one of most densely molecularly packed coating to most effective in blocking H<sub>2</sub>O moisture and O<sub>2</sub> that are the smallest kinetic diameter and thus orders of magnitude lower in permeability to the exhaust corrosive gases such as CO<sub>2</sub>, H<sub>2</sub>S, SO<sub>2</sub>, NO, CO, Cl<sub>2</sub>, etc., when compared to other traditional polymer coatings.**

**Design Properties for Engineers: Water and Moisture Absorption of High Performance Polymers**

**Besides having the highest capability in blocking moisture ingress (least moisture permeability), FLUOROSEAL® PVDF is molecularly packed to absorb and retain the least amount of water among all of the common coating polymers.**

**4-Story parking garage collapsed in New York City's Financial District (2023)**

**CLEVELAND, Ohio (Dec 23, 2021) - Collapse of a multi-level underground parking garage at a Lakewood apartment building**

**Five-story parking garage at Miami-Dade College, South Florida (2012)**

Lower floor, underground garages, and independent garage buildings are subjected to higher amounts of corrosive gases such as CO<sub>2</sub>, H<sub>2</sub>S, SO<sub>2</sub>, CL<sub>2</sub> and typically higher moisture. When located near the sea, they are exposed to salt-fog and spray with dissolve

component, VOC-exempt solution that can be roller, brush or spray coated onto bare concrete for immediate protection. It is dry to the touch in less than an hour and effective for protection. It can also be re-applied anytime as needed.

- FLUOROSEAL® PVDF coating provides an immediate effective sealing barrier to protect the concrete and rebar structure as applied. For existing buildings and infrastructure, stopping further concrete weakening is the best solution for safeguarding the property and safety of the occupants.
- The intrinsic UV resistance and stability of FLUOROSEAL® PVDF is far better than other polymer coatings of epoxy, polyurethane, acrylic and silicones.
- PVDF coatings have a proven record of effectiveness under the Florida sun for 60+ years. FLUOROSEAL® PVDF concrete and corrosion protection coating seals against moisture and corrosive gases and offers similar chemical and physical properties providing similar longevity and effectiveness.

Garage Buildings and Vehicle Tunnels are more Vulnerable with Heavy Corrosive Exhaust Gases that can Benefit Most from the FLUOROSEAL® PVDF concrete and corrosion protection coating: Similar to the underground and lower car park levels of high-rise buildings, parking garages and tunnels for vehicle traffic, concrete infrastructures are exposed to higher amounts of corrosive gases such as CO<sub>2</sub>, H<sub>2</sub>S, SO<sub>2</sub>, CL<sub>2</sub> and also typically more humidity. Undersea tunnels and tunnels located in temperate and colder zones during winter months, are exposed to salt-fog and spray with dissolved salt ions that penetrate inside the concrete and collect at rebar-concrete interfaces, thus accelerating the concrete chemical reactions and rebar corrosion, resulting in weakening of the reinforced structure and requiring frequent expensive repairs.

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