



# FLUROSEAL® OVER-COATING FOR PROTECTION OF BRIDGES, WINDMILL AND OTHER CRITICAL INFRASTRUCTURE:

- UV BLOCKING FROM DAMAGING MOLECULAR INTEGRITY OF STRUCTURAL COATING
- NEAR HERMETIC BARRIER COATING IN PREVENTING MOISTURE AND CORROSIVE GASES SUCH AS SULFUR, ETC. FROM PENETRATING STRUCTURE-COATING INTERFACES

## UV Blocking True Near-Hermetic Sealing Coating and Over-Coating in Protecting Critical Infrastructure:

Structural coatings on steel infrastructure such as steel bridges, windmills, etc. are effective under straight maintenance protocols. The maintenance processes of the structural coatings are extensive and expensive and often extended when the degradation is not obvious. However, the penetration and trapped water molecules along with dissolved corrosive gases are not always obvious.

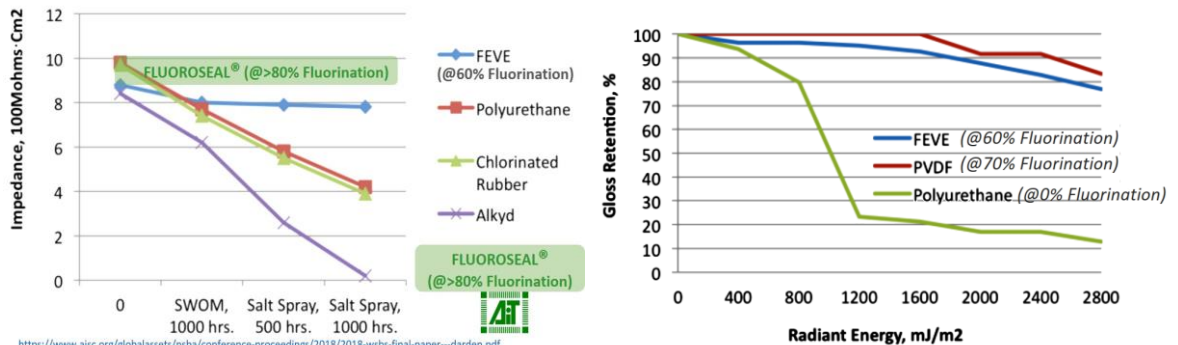
- Most of the structural coatings are made with alkyd, epoxy, and polyurethane that are susceptible to UV degradation overtime to create cracks and micro-fissures that in turn accelerate the degradation with corrosive elements penetration.
- Even in the best conditions, moisture along with dissolved salt can readily penetrate through the structure coating via their molecular free-space and pore. In the industrial environment, corrosive gases are also able to penetrate the structural coating and trapped at the coating-metal interfaces to cause additional steel and metal corrosion damages.
- FLUROSEAL® has been proven to block moisture and corrosive gases from penetrating and thus provide effective over-coat protection for the structural coating.
- FLUROSEAL® is available for spray and brush coating that is RoHS, REACH and WEEE compliant and meeting fire-retardant UL94V-0 rating.



## Effective UV-Moisture-Salt Spray-Corrosive Gases Blocking Barrier FLUROSEAL® Over-Coat Extend Service Life Multiple-Fold and Improves Safety of Critical Infrastructure:

What distinguishes AIT's FLUROSEAL® coating and over-coating in comparison to the traditional epoxy and polyurethane, or Alkyd structural coating is its molecular structure designed to block moisture, salt-fog, salt-spray, sulfur and other corrosive gases from penetration even at thin over-coating thickness of 50-100 micron.

- FLUROSEAL® coating with more than 80% fluorination have been proven to provide outstanding protection against UV and corrosive gases such as sulfur, etc. from penetration and dramatically improves reliability.
- FLUROSEAL® as over-coating for traditional alkyd, epoxy or polyurethane structural coatings proves to extend the useful life between maintenance by multiple-fold on bridges, concretes, windmills, etc.



<https://www.aisc.org/globalassets/rusha/conference-proceedings/2018/2018-wshs-final-paper--darden.pdf>



Traditional structure coating degrades under outdoor UV exposure and allows penetration of moisture with salt ions and corrosive gases such as H<sub>2</sub>S, SO<sub>2</sub>, etc. to cause structural corrosion and degradation of structural integrity and loss of lives and properties.





# FLUROSEAL® OVER-COATING FOR PROTECTION OF OIL REFINERY AND TANKERS, BRIDGES, WINDMILLS AND OTHER CRITICAL INFRASTRUCTURE

## UV, Water-Moisture and Corrosive gases Blocking Over-Coat Corrosion Protection for Traditional Protective Coatings on Critical Infrastructure:

- Structural coatings on steel infrastructure such as steel bridges, windmills, etc. are effective under straight maintenance protocols. However, the maintenance processes of these coatings are considerable and expensive.
- The penetration of trapped water molecules containing dissolved corrosive gases exacerbates the deterioration of the coating.
- These corrosive gases also penetrate the structural coating, which are then trapped at the coating-metal interface. Causing additional steel and metal corrosion damages.
- **FLUROSEAL®** has been proven to block moisture and corrosive gases from penetrating an aging structural coating!
- **FLUROSEAL® SCX7280-UVB** and **SC7550-UVB** are specialized versions for scratched and traffic resistance protection over-coating for oil storage and shipping tankers, and refinery facilities.



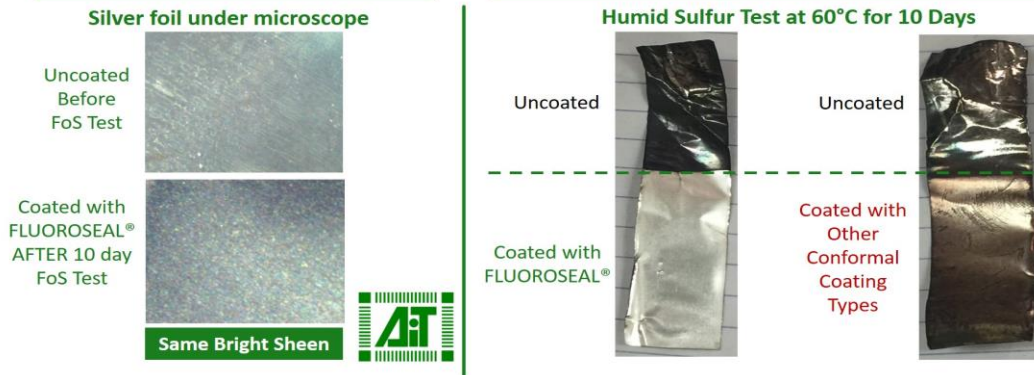
## Proven UV, Water-Moisture and Corrosive Gases Blocking Over-Coating for Existing Protective Coatings and Coating for Metals and Ceramics

<b>PHYSICAL CHARACTERISTICS OF SOLARBLOC™ FLUROSEAL®</b>			
	<b>SC 7150-UVB</b>	<b>SCX 7280-UVB</b>	<b>SC 7550-UVB</b>
<b>SPECIAL ATTRIBUTES</b>	1) UV, water-moisture, corrosive gases blocking 2) Brush or spray coating 3) Transparent flexible coating	1) VOC-free 2) Brush or spray coating 3) Transparent hard coating for vehicle-foot traffic	1) VOC-free 2) Brush or spray coating 3) 100% PVDF Protection Coating
<b>WATER-MOISTURE PROPERTIES</b>	STANDARD AND CONDITIONS (@25°C)		
Water Absorption (D570) %	<0.01 (Typical Acrylic: >0.4)	<0.01 (Typical Acrylic: >0.4)	<0.01 (Typical Acrylic: >0.4)
Water Permeability (gm.mm/m <sup>2</sup> .d) @ 1atm	0.0009 (Typical Acrylic: >5.2)	0.0009 (Typical Acrylic: >5.2)	0.0009 (Typical Acrylic: >5.2)
Percentage of PVDF (%)	>70%	>70%	>95%
<b>THERMAL PROPERTIES</b>	STANDARD AND CONDITIONS (@25°C)		
Glass Transition Temperature (T <sub>g</sub> , °C)	-45	-45	-45
"Melting Point" (°C)	>120	NA (Cured & Cross-linked)	NA (Cured & Cross-linked)
Coefficient of Thermal Expansion (ppm/°C)	95	70	75
Thermal Conductivity (BT U-in/hr-ft <sup>2</sup> -°F)	1	1	1
Thermal Decomposition (°C)	>350	>350	>350
<b>MECHANICAL PROPERTIES</b>	STANDARD AND CONDITIONS (@25°C)		
Hardness (Shore D)	50	85	80
Tensile Modulus (Psi/Mpa)	40000/(275)	200,000/(1,375)	180,000/(1,238)
Flexural Modulus (Psi/Mpa)	30,000/(206)	150,000/(1,031)	135,000/(928)
Tensile Elongation (%)	300	30	35
<b>OPTICAL PROPERTIES</b>	STANDARD AND CONDITIONS (@25°C)		
Refractive Index (D542)	1.43	1.43	1.43
<b>ELECTRICAL PROPERTIES</b>	STANDARD AND CONDITIONS (@25°C)		
Dielectric Strength (KV/mil)	0.8	0.8	0.8
Volume Resistivity (ohm-cm)	1.8x10 <sup>14</sup>	1.8x10 <sup>14</sup>	1.8x10 <sup>14</sup>

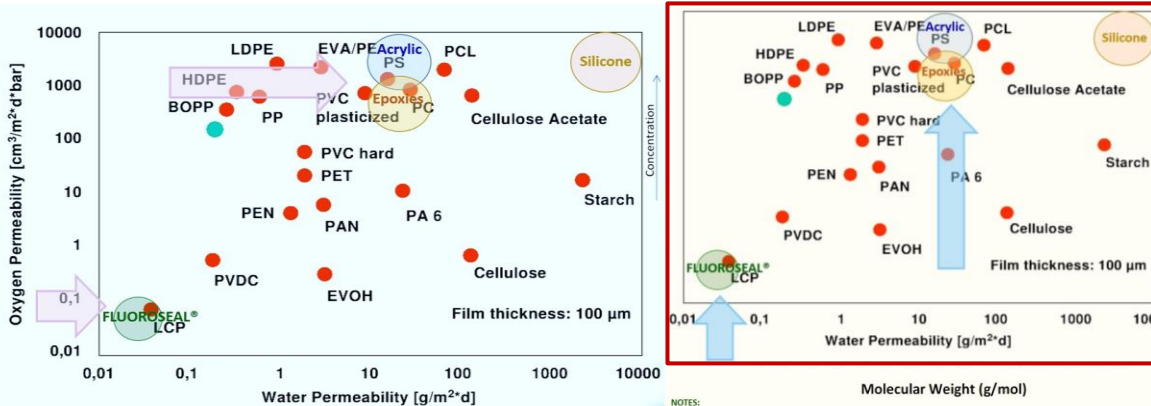
# FLUOROSEAL® COATINGS: MOLECULARLY ENGINEERED WITH HIGHEST FLUOROPOLYMER WITH PROVEN INHERENT UV BLOCKING AND RESISTANCE AND PROVEN MOISTURE-WATER, AND CORROSIVE GASES INGRESSION BLOCKING FOR BEYOND 50 YEARS PROTECTION



## FLUOROSEAL® Under Flower of Sulfur Testing



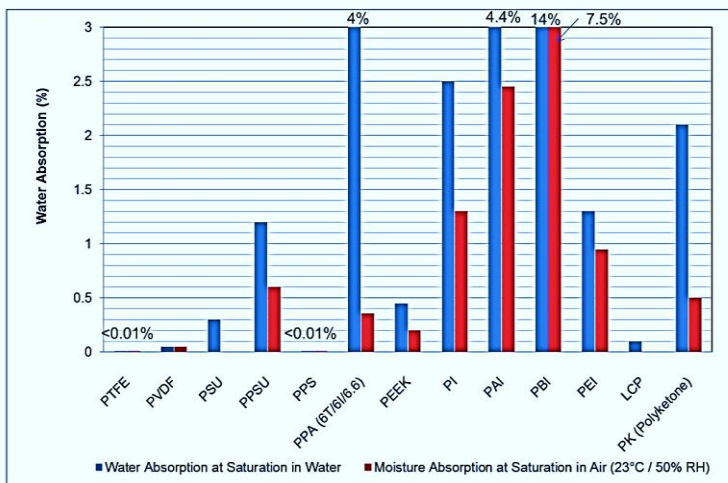
Hydrogen Sulfide (H<sub>2</sub>S) and Sulfur Dioxide (SO<sub>2</sub>) are some of the most potent corrosive gases that are responsible for corroding many steel and aluminum structures even with thick structural coatings. The ability to block these corrosive gases from penetrating the protective coating and getting onto the interfaces between the native metal surfaces and the structural coating to cause corrosion and damages increase the longevity of protection and structural integrity.



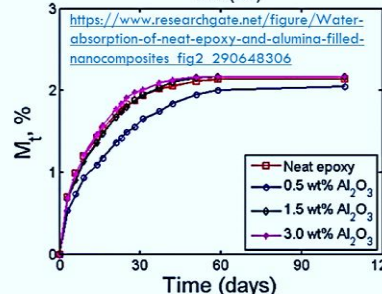
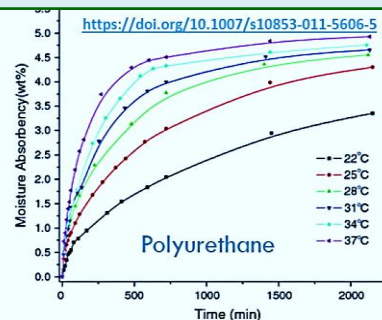
<https://www.slideshare.net/TopasAdvancedPolymers/high-aroma-barrier-films-for-food-packaging>

**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.**  
**FLUOROSEAL® PVDF coating is hydrophobic and has extremely low water retention besides blocking moisture-water ingress.**

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



Findoutaboutplastics.com | Herwigjuster.com



### Transparent UV and Corrosion Protection Over-Coating for Structural Protective Coatings:

- In comparison to epoxy, polyurethane and alkyd coatings, FLUOROSEAL® coatings are molecularly engineered to have 10-fold less moisture absorption and more than 100-fold lower in moisture and corrosive gases permeability to provide true near-hermetic sealing.
- FLUOROSEAL® sealing coating are hydrophobic and unlike most epoxies are intrinsically free of ionic impurities that could increase rate of corrosion.
- FLUOROSEAL® sealing coating have outstanding shear-bond strength and high temperature molecular stability for continuous use >150°C to provide protection even in the more stringent environment.
- Engineered molecular structure with low and high Tg molecular components for stress absorption and proven extreme thermal cycles and low temperature exposures.
- FLUOROSEAL® SCX series of sealing coatings are VOC-free for brush and spray coating anywhere.
- FLUOROSEAL® SCX series of sealing coatings are cross-linked and hardened over-time when used in outdoor condition.
- FLUOROSEAL® SCX 280-UVB is designed specifically for use on ship deck, oil tanker, and refinery facilities where vehicle and foot traffic are expected.



# FLUROSEAL®: PROVEN UV, MOISTURE-WATER, AND CORROSIVE GASES BLOCKING FOR BEYOND 30 YEARS CORROSION PROTECTION

- Ideal for Direct Over-coat Protection and Repair for Steel Bridges
- SCX Series of Cross-linked Hard Coatings for Vehicle and Foot Traffic
- Colored and Zinc-Enriched for Specialty Applications



Steel bridges with traditional protective coating degrade faster when they are exposed to UV and high moisture-water accumulation. The degradation further accelerates with corrosive gases in industrial and/or salt-laden environments. AIT FLUROSEAL® coatings are ideal for over-coat protection of for new and degraded coatings.

## Specialty FLUROSEAL® Coatings with Color:

FUNCTION	AIT PART#	Moisture, Water, Electrical other Relevant Properties
FLUROSEAL® UV and Corrosion Protection Coatings with Zinc Enhancement	<b>SC7153- "X"</b> ("X" =White, Black, Grey, Red, Green, Blue)	<ul style="list-style-type: none"> <li>• VOC free brush-sprayable FLUROSEAL® modified for vehicle-foot traffic</li> <li>• Exceeding "FEVE" UV blocking with outstanding moisture-water, salt-fog-spray, corrosive gases ingress blocking</li> <li>• Ideal over-coating for repairing existing rusted structural coatings</li> </ul>
FLUROSEAL® UV and Corrosion Protection Coatings	<b>SCX7283- "X"</b> ("X" =White, Black, Grey, Red, Green, Blue)	<ul style="list-style-type: none"> <li>• VOC free brush-sprayable FLUROSEAL® sun-UV curing thin coating</li> <li>• Exceeding "FEVE" for UV blocking with outstanding moisture-water, salt-fog-spray, corrosive gases ingress blocking</li> <li>• Ideal over-coating for repairing existing rusted structural coatings</li> </ul>
100% PVDF FLUROSEAL® UV and Corrosion Protection Coatings	<b>SC7553- "X"</b> ("X" =White, Black, Grey, Red, Green, Blue)	<ul style="list-style-type: none"> <li>• Air drying brush-sprayable FLUROSEAL® coating for vertical and horizontal surfaces protection</li> <li>• World first field applicable, <b>100% PVDF coating</b> with unparalleled moisture-water, salt-fog-spray, corrosive gases ingress blocking</li> <li>• Ideal over-coating for repairing existing rusted structural coatings</li> </ul>

## About AI Technology, Inc. and AIT Coatings:

With the introduction of AIT's patented solar materials and solutions (US\$8,394,650 and others pending), AIT offers UV blocking and UV transparent coatings as well as proven materials for cavity packaging, electronic board level and system level barrier protection against moisture, corrosive gases, salt-fog and water immersion. AIT FLUROSEAL® coatings build on the technology to provide field applicable, patent-pending, PVDF high fluoropolymer protection over the existing structural protective coatings or as original coating for metals, ceramics and concrete structure.

Since pioneering the use of flexible epoxy technology for electronic packaging in 1985, AI Technology (AIT) has been one of the leading forces in developing advanced materials and adhesive solutions for electronic interconnection and packaging with more than 30 patented technologies.

AIT develops and manufactures its product in two separate ISO 9001:2015 certified totaling over 100,000 sq ft on a 16 and 18-acre facilities in New Jersey, USA. AIT also has worldwide sales representation along with a manufacturing and service center in Shenzhen, China.



AIT Coating Division is set up to offer protective coatings that are results of over 35 years of R&D and experience in advanced materials and applications of AI Technology, Inc.

- Focusing on proven functional UV, moisture-water, corrosive gases blocking capability of highly fluorinated polymers in providing protection for metals, ceramics, plastics such as existing structural protection coatings.
- Most fluorinated polymers such as PTFE based or PVDF based coatings are typically applied in factory using specialized processes. FLUROSEAL® coatings are engineered to be field applicable using standard brush and spray coating methods.
- FLUROSEAL® SCX series coatings are unique innovation that are curable to a highly cross-linked fluorinated polymers that are hardened for vehicle and foot traffic while still maintaining its transparency as over-coating for existing structural protective coatings.
- FLUROSEAL® SCX series and SC series are available with VOC-free versions that can be used without environmental restrictions.
- FLUROSEAL® SCX series and SC series are available with VOC-free versions that can be used without environmental restrictions.
- FLUROSEAL® coatings are also available with different colors and zinc-enrichment protections.