FLUOROSEAL® Conformal Coatings: molecularly designed for Hydrophobicity, Moisture and corrosive gases barrier for Unparalleled Corrosion Protection and Reliability of PCB

Enhancing Reliability with Stress Management and Moisture Barrier

Unparalleled Corrosion Protection for Circuit Boards and Electronics in Blocking Moisture and Corrosive Gases:

What distinguishes AIT's FLUOROSEAL® Conformal Coatings are their unparalleled ability to block moisture and moisture laden with salt ions and corrosion acidic gases.

These capabilities are achieved with unconventional polymer engineering and designs such as PVDF and polyolefin structures that are now new classes of IPC qualified conformal coatings. AIT's advanced conformal PCB or PWB protection products are ideal for large area and high-performance electronic devices operating at harsh chemical and salt-fog and spray conditions.

- Conforms to properties in IPC-CC-830, IPC-TM-650, MIL-I-46058, ASTM-D-1005, UL 94; Parylene equivalent performance
- Proven to outperform all market leading conformal coating in protecting high temperature high humidity exposure for aeronautic electronics
- UV-blocking and moisture barrier microelectronic and electronic system coating for long-term usage under direct sun and rain exposure.
- Exceeds RTCA DO 160 coating requirements
- RoHS, REACH and WEEE compliant to meet UL94V-0 rating.

What distinguishes AIT's Conformal Coatings in comparison to the traditional acrylic, epoxy, polyurethane, and silicone conformal coatings are the unique combination of hydrophobic (water repelling) and much lower moisture and corrosive acidic gases permeability.

- FLUOROSEAL® CC-SC7130; CC-SC7150; and CC7650 PVDF based conformal coatings are proven to provide >1,000 times more blocking barrier than traditional acrylic-silicone-epoxy conformal coating while flexible and reworkable in providing stress-free protection at thickness from 10-30µm.
- CC-7130-PR is a polyolefin molecular structured conformal coating that have passed with proven records in use and passed all Radio Technical Commission for Aeronautics (RTCA DO 160) beyond traditional conformal requirements. It has >100 times more moisture barrier and low retention of moisture-water retention to protect against corrosion.
- CC-UVC3350 is 100% solid (solvent-free) conformal coating. It is engineered to have novel polyolefin based molecular structure to provide lower moisture-water retention and higher moisture barrier than traditional acrylic-silicone-epoxy conformal coating.
- CC-SC7150-UVB and CC-SC7650-UVB are the only UV-blocking and moisture barrier microelectronic and electronic system coating for long-term usage under direct sun and rain exposure.

FLUOROSEAL® is effective for consumer electronics that may be accidentally immersed in water

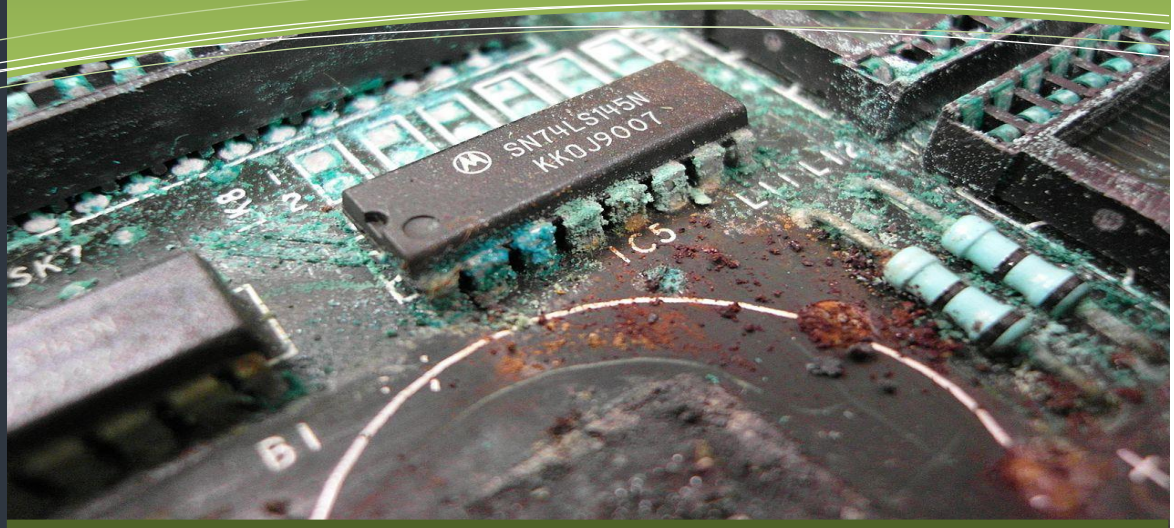
FLUOROSEAL® is effective in protecting battery terminals exposed to saturated moisture and salt mist

Outstanding protection for Extreme Temperatures Against Moisture and Salt Fog Exposure

UV Blocking Moisture Barrier for Sensitive Electronics

FLUOROSEAL® PVDF-BASED CONFORMAL COATINGS:

- >100 Times More Moisture and Corrosive Gases Barrier than Acrylic, Silicone, Epoxy, and Parylene Coatings
- Provide ANSI ISA-71.04-2013 GX environment corrosion protection
- Provide IP68 Ingress Protection



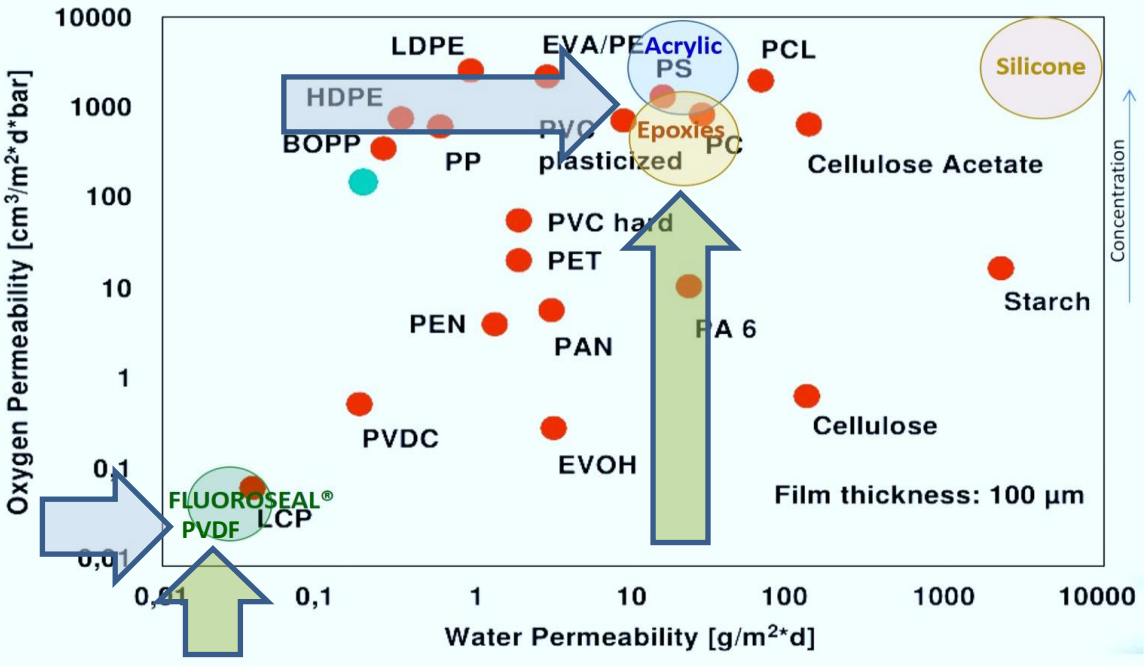
Stress-Free and Electrical Insulating Moisture Protection

Hydrophobic Moisture and Corrosive Acidic Gases Blocking Conformal Coatings for Printed Circuit Boards and Electronic Devices Protection, Protective Coatings for Electrical Contacts of Battery and Printed Circuits:

- Traditional acrylic, silicone, epoxy and polyurethane conformal coatings are not hydrophobic and do not provide adequate protection in heavy moisture and particularly susceptible to salt-fog and other industrial corrosive gases in heavy industrial and traffic environments.
- **FLUOROSEAL®** PVDF-based conformal coatings are proven to provide >1,000 times higher moisture and corrosive gases barrier and >100 times less moisture-water retention. These PVDF conformal coatings that have been proven to provide unparalleled protection against moisture, water, salt fog, salt spray and even direct salt water immersion for printed circuit boards.
- FLUOROSEAL® CC-SC7150) (SC7130-CC) is **PVDF based conformal coating** proven to provide outstanding moisture and corrosive gases barrier in protecting printed circuits.
- FLUOROSEAL® CC-SC7650 is a patent-pending **100% PVDF coating** for ultimate corrosion protection under extreme adverse atmosphere.

Acrylics, epoxies, polyurethane conformal coatings allow some moisture to penetrate and retain from 0.3-1.0% of moisture in the material, meaning they are somewhat hygroscopic. Water tends to spread well on these conformal coating materials as well as demonstrated by its relatively low contact angles when water drops on these surfaces. Silicone has a very low contact angle when what drop on its surface and thus very hydrophobic. However, it also has 10-20 times higher moisture permeability through these conformal coating that will enables the printed circuit boards and its metallization to retain these moisture and water to cause potential corrosion.

FLUOROSEAL® PVDF-based conformal coatings are proven to provide >1,000 times higher moisture and corrosive gases barrier and >100 times less moisture-water retention. Conforms to properties in IPC-CC-830, IPC-TM-650, MIL-I-46058, ASTM-D-1005, UL 94; Parylene equivalent performance

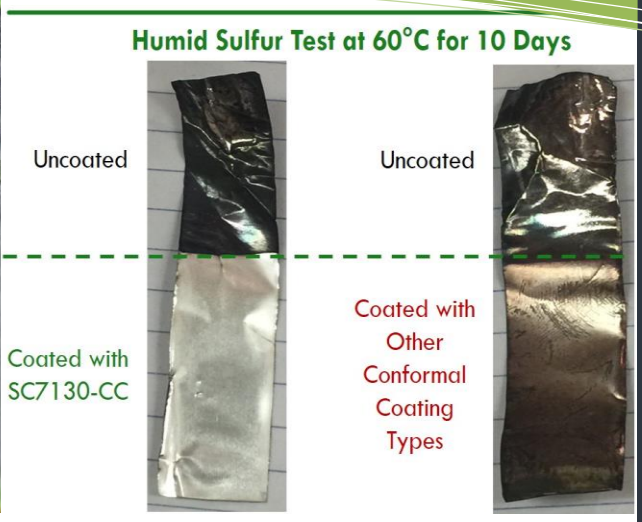


https://www.slideshare.net/TopasAdvancedPolymers/high-aroma-barrier-films-for-food-packaging

- PVDF conformal coating is **>1,000 times more moisture barrier** than acrylic-epoxy-PU-silicone
- PVDF is **>5-10,000X more effective in blocking corrosive gases** than acrylic-epoxy-PU-silicone

CIRCUITSEAL® POLYOELFIN-BASED CONFORMAL COATINGS:

- CC-7130-PR AND CC-UVC3350 (SOLVENT-FREE UV-HEAT CURING)
- >100 TIMES MORE MOISTURE AND CORROSIVE GASES BARRIER THAN ACRYLIC, SILICONE, AND EPOXY COATINGS, AND
- >10 TIMES LESS MOISTURE-WATER RETENTION



CONFORMAL COATINGS FOR CORROSION PROECTION			
PROPERTY	**CC-SC7130; CC-SC7650**	**CC7130-PR**	**CC-UVC3350**
Water Absorption, (D570)	<0.01% (Typical Acrylic >0.4%)	<0.01% (Typical Acrylic >0.4%)	<0.1% (Typical Acrylic >0.4%)
Water Permeability, (gm.mm/m².d) @ 1atm	<0.0009 (Typical Acrylic >5.2)	<0.05 (Typical Acrylic >5.2)	<0.3 (Typical Acrylic >5.2)
Electrical Resistivity	>2X10^{14} Ω-cm	>2X10^{14} Ω-cm	>2X10^{14} Ω-cm
Viscosity @10.0 rpm	500 cps	500 cps	500 cps
Dielectric Strength (KV/mil)	0.8	0.7	0.7
Dielectric Constant/Loss (1GHz)	3.0/0.01	2.7/0.01	2.9/0.01
Glass Transition Tg (°C)	-45	-55	-40
Modulus of Elasticity (psi)	40,000	20,000	100,000
Hardness (Type)	~ 40 (D)	~ 60 (A)	~ 40 (D)
Cured Density (gm/cc)	1.6-1.8	1.0	1.0
Thermal Conductivity	> 0.2 W/m-°K	> 0.16 W/m-°K	> 0.2 W/m-°K
Thermal Expansion Coefficient (ppm/°C)	85 (Isotropic)	105 (Isotropic)	90 (Isotropic)
Maximum Continuous Operation Temperature (°C)	>125	>125	>150
Decomposition Temp. @1% weight loss (°C)	>450	>350	>350
Recommended Drying-Curing Temp. (°C/Min)	Ambient/60	Ambient/60	UV in Seconds
Coating Form Factors	Spray, Brush and Dip **VOC Exempt** Liquid	Spray, Brush and Dip Liquid	Spray, Brush and Dip **SOLVENT-FRE**E Liquid

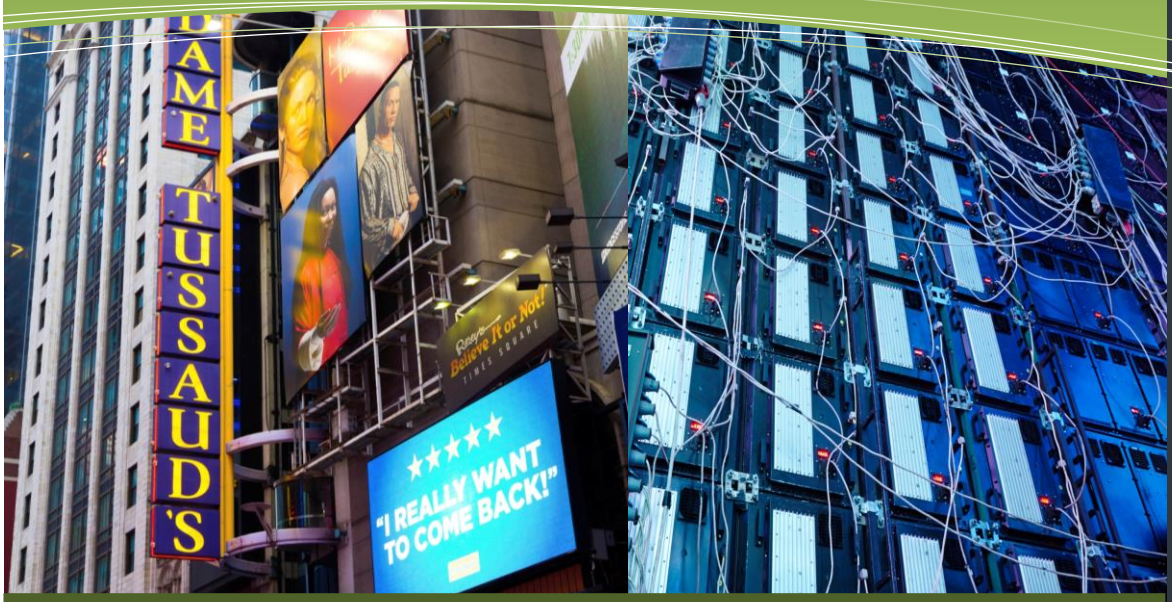
(1) CC-SC7130 and CC-SC7150 are same as SC7130-CC and SC7150-CC respectively.
(2) CC-SC7650 is a 100% PVDF conformal coating for ultimate corrosion protection.
(3) CC-UVC3350 is a UV curing 100% solid solvent free coating.

Polyolefin Based Hydrophobic Moisture and Corrosive Gases Blocking Conformal Coating with Low Glass Transition (T_g):

- **CC-7130-PR** is the first polyolefin molecular structured conformal coating proven to provide more than >100 times moisture and corrosive acidic gases barrier and <1/10 water-moisture water retention even in saturated conditions.
- **CC-UVC3350** is a **100% solid, solvent free** conformal coating with polyolefin molecular structure. It is the first of its molecular classes that is UV-Heat curing without solvent. It is a complementary solution that is ideal for spray and dip coating processes in clean room and indoor.
- These polyolefin molecularly structured conformal coatings have been proven to provide corrosion protection even when submerged in water.
- Majority of the conformal coatings such as acrylics, epoxies and polyurethanes have Tg at around 40-90°C that will induce undue stresses to cause excessive failure when coating thickness is not carefully controlled. AIT engineered its conformal coatings with Tg @-55°C to **provide stress-free protection** against moisture penetration, corrosive salt fog, acid rain, and salt water immersion in cold and hot weather.

TRANSPARENT UV RESISTANT AND UV BLOCKING OUTDOOR CONFORMAL ELECTRONIC AND DISPLAY COATINGS

- PATENT-PENDING 100% PVDF FIELD APPLICABLE CONFORMAL COATING FOR ULTIMATE CORROSION PROTECTION
- PROVEN MOISTURE AND CORROSIVE GASES BARRIER FOR OUTDOOR DISPLAYS AND ELECTRONICS



TRANSPARENT UV BLOCKING CONFORMAL COATINGS FOR OUTDOOR ELECTRONICS AND DISPLAYS

Conformal UV Protection Coatings

FUNCTION	AIT PART#	Moisture, Water, Electrical other Relevant Properties
Transparent, UV Resistant, Proven Hot Weather Salt-Fog Conformal Coating for PWB	**SC7150-UVB**	• Conforms to properties in IPC-CC-830, IPC-TM-650, MIL-I-46058, ASTM-D-1005, UL 94; Parylene equivalent performance • Proven performance in use for Radio Technical Commission for Aeronautics (RTCA DO 160) conformal coating requirements • Designed to also conform to NASA-STD-8739.1 • Outstanding protection for water, moisture, salt-fog and UV for exposed plastics and protecting metals from tarnishing and rust
"Parylene Replacement" Conformal Coating for PWB	**SC7650-UVB**	• 100% PVDF: Optically translucent with ultra-moisture blocking function • Conforms to properties in IPC-CC-830, IPC-TM-650, MIL-I-46058, ASTM-D-1005, UL 94; Parylene equivalent performance • Proven performance in use for Radio Technical Commission for Aeronautics (RTCA DO 160) conformal coating requirements. Designed to also conform to NASA-STD-8739.1 • Unparalleled protection for water, moisture, salt-fog for exposed plastics and protecting metals from tarnishing and rust
Non-Transparent UV Blocking Coating	**SC715X-UVB**	• Optically opaque and UV blocking coating with choices of colors • Outstanding protection for moisture, salt-fog and UV for exposed plastics and protecting metals from tarnishing and rust • Similar in effectiveness as SC-7150-UVB in conformal protection • For protecting plastics, decorating coating and metal from corrosion

About AI Technology, Inc. in Chip and Board Protection

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.

AIT has recently focused a lot more effort in products for flip-chip Under-fill, glob-top or conformal coating actively. However, AIT is meeting these challenges and developing modified epoxies and modified cyanate esters for the new generation of chip and component level packaging that must withstand lead-free soldering.

With the introduction of AIT's patented solar materials and solutions (US8,394,650 and others pending), AIT offers UV blocking and UV transparent coatings as well as proven materials for electronic board level and system level protection against moisture, salt-fog and spray, and water immersion.

AI Technology, Inc. (AIT) offers one of the most comprehensive lines of advanced materials for packaging and protection from chip to board level:

- Die attach film and dicing die-attach film adhesive for chip stacking and high-power microelectronic devices
- Die-Attach films and pastes for extreme high temperatures, extreme stress management requirements and extreme high-power applications
- Thermal interface materials including greases, gels, adhesives, patented compressible phase-change pads, high compressibility and conforming "gum-pads" with unparalleled performance
- EMI/RFI mitigation material solutions for component and systems with conductive caulks and adhesives
- Advanced flexible and Insulated Metal Circuit Substrates for camber-free modules
- Insulated metal substrate for high temperature and high-power modules

AIT develops and manufactures its product in an ISO 9001:2015 certified 16 acres and 18 acres facility campuses in Princeton and Princeton Junction, NJ, USA with service centers in China.

Products are available worldwide with distributors and agents besides direct office in USA and Shenzhen-China.

AI Technology, Inc. (© 2025, Rev 4.1) | 18 Roszel Road, Princeton, NJ 08540; 70 Washington Rd., Princeton Junction, NJ 08550, USA
Tel: +1 609-799-9388 | www.aitechnology.com | ait@aitechnology.com