



# SCS PLASMAGUARD™

## SCS PLASMAGUARD™ COATINGS

SCS PlasmaGuard™ plasma polymerized conformal coatings provide excellent moisture barrier protection and dielectric properties to a host of electronic devices and components. Applied through a plasma-enhanced chemical vapor deposition (PECVD) process, PlasmaGuard coatings are ultra-thin (50nm – 3µm), lightweight and do not add significant mass to delicate components. In addition, the splash proof and waterproof nanocoatings are halogen-free, making them an ideal barrier coating to protect small consumer electronics devices and components from corrosion caused by exposure to moisture, humidity, perspiration, chemicals and other liquid or solid materials.

SCS PlasmaGuard coatings are available in two variants – PlasmaGuard S and PlasmaGuard E. While both are halogen-free, sustainable coatings, each offers their own unique barrier properties and benefits.

### PLASMAGUARD S SPLASH PROOF COATING

- Protection in ultra-thin coatings (50-500nm)
- High water contact angle (>105°)
- Significantly reduces water ingress
- Z-axis conductive
- Excellent membrane breathability
- No audible impact on acoustics
- Biocompatible per ISO 10993-5
- Not hypersensitive per ISO 10993-10
- REACH & RoHS compliant
- Abrasion resistant

### PLASMAGUARD E BARRIER COATING

- Superior barrier protection in ultra-thin coatings (1-3µm)
- Exceeds IPX7 and IPX8 requirements
- Excellent dielectric properties
- Excellent chemical, moisture, sweat and salt water barrier
- High water contact angle (>105°)
- Excellent adhesion
- Biocompatible per ISO 10993-5
- Not hypersensitive per ISO 10993-10
- REACH & RoHS compliant
- Abrasion resistant

## PLASMAGUARD COATING PROCESS

PlasmaGuard coatings are applied in a low temperature, low pressure PECVD process that is performed under vacuum. The plasma coating is formed by ionization of an organic monomer gas through an electrical discharge at high frequencies. The gaseous monomers then enter the chamber and polymerize, resulting in a coating that is highly cross-linked, enabling strong adhesion to substrates. The polymerization process extends throughout complex structures, conformally coating all surfaces of the device.

## APPLICATIONS FOR SCS PLASMAGUARD

PlasmaGuard nanocoatings are well suited to protect a wide array of consumer electronics, medical devices, wearables and more. Their ultra-thin nature enables the coatings to protect even the most delicate acoustic components from moisture without inhibiting sound; in addition, PlasmaGuard coatings are so thin that they can flex with underlying substrates without breaking.



**TABLE 1: SCS PlasmaGuard Properties**

	Method	PlasmaGuard S	PlasmaGuard E	
Operating Temperatures (°C)	1	-70, +125	-70, +125	
Flammability	2	Pass, V-0	Pass, V-0	
Decomposition Temperature (°C)	3	367	281	
Surface Insulation Resistance	4	Pass	Pass	
Hydrophobicity/Water Contact Angle	5	>105°	>105°	
Fluorescence	6	No	No	
PFAS Compliance	7	Yes	Yes	
Chemical Resistance	8, 9	Pass	Pass	
Transparency - Visible Light	6	Pass	Pass	
Appearance	6	Pass	Pass	
Flexibility	10	Pass	Pass	
Dielectric Constant	60 Hz	11	Not applicable	2.32
	1 KHz		Not applicable	2.31
	1 MHz		Not applicable	2.27
Dissipation Factor	60 Hz	11	Not applicable	0.0021
	1 KHz		Not applicable	0.0024
	1 MHz		Not applicable	0.0024
Dielectric Strength (V/um)	12	Not applicable	750	



**Test Methods:**

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|--|---|
| 1. Water contact angle is preserved      | 9. IPA Immersion  |
| 2. UL94                                  | 10. Class IIIA-MFG [SO <sub>2</sub> , NO <sub>2</sub> , H <sub>2</sub> S, Cl <sub>2</sub> ] |
| 3. TGA (10% weight loss in air)          | 10. IPC-CC-830 / IPC-TM-650, Method 2.4.5.1   |
| 4. IPC-9202 / IPC-TM-650, Method 2.6.3.5 | 11. ASTM D150   |
| 5. ASTM D7334                            | 12. ASTM D149   |
| 6. IPC-CC-830 / MIL-SPEC 46058           |   |
| 7. EPA 3550C                             |   |

## INNOVATIVE SOLUTIONS FROM THE LEADER IN CONFORMAL COATINGS

With over 50 years of experience in conformal coating engineering and applications, Specialty Coating Systems (SCS) a world leader in Parylene, liquid, plasma polymerized, atomic layer deposition (ALD) and multilayer conformal coating technologies. We're a direct descendant of the companies that originally developed Parylene, and we leverage that expertise on every project – from initial planning to process application.

SCS employs some of the world's foremost conformal coating specialists, highly experienced sales engineers and expert manufacturing personnel, working in state-of-the-art coating facilities around the world. Our extensive, proactive approach to production and quality requirements gives our customers peace of mind and minimizes the resources they need to meet even the most challenging requirements and specifications.

As worldwide industry requirements and directives continue to evolve, SCS is at the forefront, ensuring our facilities, products and services comply with relevant regulatory and environmental standards.

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|---|--|
| <ul style="list-style-type: none"> <li>AS/EN 9100 and ISO 9001 certifications</li> <li>Nadcap® accreditation</li> <li>Requirements of IPC-CC-830</li> <li>QPL for MIL-I-46058C</li> </ul> | <ul style="list-style-type: none"> <li>UL (QMJU2) recognized coatings</li> <li>Listings in the International Aerospace Database (OASIS)</li> <li>REACH and RoHS compliance</li> <li>ITAR (International Traffic in Arms Regulations) registered</li> </ul> |
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For additional standards and certifications to which SCS and/or SCS coatings comply, please visit [SCScomplies.com](http://SCScomplies.com) or contact SCS.



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