GLOBAL COVERAGE

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Dan Adamo Celebrates 35 Years at SCS

SCS is pleased to honor Dan Adamo, Southeast Territory Manager, for 35 years of outstanding service and achievement at Specialty Coating Systems!

Dan began his career as an assembler at Kenco Industries manufacturing Omegameter ionic contamination test systems shortly after graduating from DeVry Institute of Technology in 1983. Based in Alpharetta, Georgia, Kenco was a small, family-owned business specializing in PCB assembly chemicals. Due to the company's success, it was acquired by Alpha Metals/Cookson Electronics, a merger that brought together two leading ionic contamination test platforms – Kenco's Omegameter and Alpha Metal's Ionograph®. Cookson Electronics later acquired Specialty Coating Systems in 1994.

Dan Adamo, SCS Southeast Territory Manager

Over the years, as the testing instruments business grew, Dan's responsibilities expanded from assembler to production supervisor to department manager, a role in which he oversaw the product line's materials, manufacturing and quality. During this period, Dan was involved in the design and development of the Omegameter 600SMD and the Ionograph 500M platforms. By the late 1990's, the instrument group came under SCS management and was moved into a stand-alone building in Alpharetta. Dan played a significant role in the site selection, build out, planning and relocation of the operation and, later, became the site and product manager.

In 2002, instrument manufacturing was transferred to SCS' equipment manufacturing facility in Indianapolis, Indiana, and Dan transitioned into a new position as the Southeast Territory Manager. In this role, Dan works with new and existing customers, educating them on the properties and benefits of Parylene coatings and helping ensure their coating needs are met. Over the last

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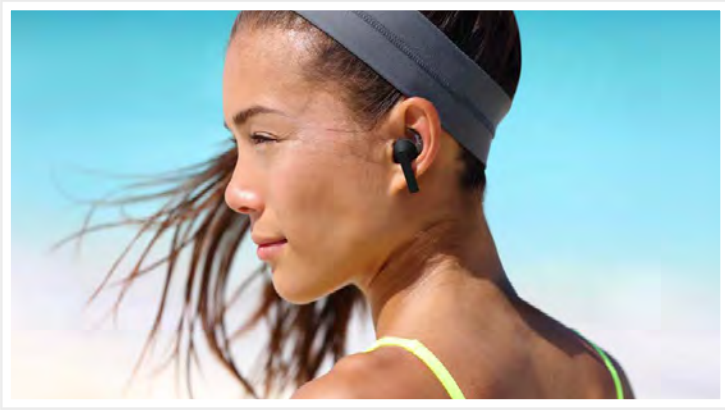
Parylene Protects Consumer Electronics in Harsh Environments

Over the past two decades, rapid growth and innovation in the consumer electronics industry have dramatically impacted the global economic and social landscape. Consumer electronics in the late 1990's were primarily limited to household items such as cordless phones, televisions and personal computers. With the global adoption of the Internet, Wi-Fi and an improving cellular infrastructure in the early 2000's, the use of consumer electronics expanded beyond household devices. During these years, consumers often carried three devices: personal digital assistants (PDAs) for organization, cell phones for communication and MP3 players for music. These devices merged into one consumer electronic product with the introduction of the smartphone, a single device that allows users to communicate, be more productive through the use of apps and be entertained with games, music and video streaming.

Today, smartphones and other consumer electronic devices are an integral part of our daily lives. The adoption of Bluetooth® wireless



headphones, for example, has provided users greater freedom to communicate with others and listen to music without being tethered

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SPECIALTY COATING SYSTEMS®

A KISCO Company

SCS Parylene C-UVF® Enables Visual Inspection

Parylene coatings have many properties that are beneficial to applications across the industries. One such property – the coating's optical clarity – is why Parylene is commonly chosen to protect applications such as lenses, LEDs and optical sensors. While its clarity is a distinct advantage on these applications, some customers need to verify that their product is, indeed, coated with Parylene.

SCS Parylene C-UVF® is an ultra-thin conformal coating that is specifically designed to fluoresce under a black light, allowing inspectors to verify the presence of Parylene. Parylene C-UVF maintains the same physical, electrical and mechanical properties of Parylene C, including extremely low water vapor transmission rate, high dielectric strength and a continuous service temperature of 80°C. In oxygen-free atmospheres or in the vacuum of space, Parylene C and Parylene C-UVF will survive continuous exposure of 220°C.

Over the years, Parylene C-UVF has been used to identify coated circuit boards, backplanes, power supplies and sensors used in aerospace and defense applications. Beyond these industries, however, the coating can be applied to components whenever there is a requirement for coating verification. If you would like more information on how Parylene C-UVF can add value to your application, contact Tim Seifert at 317.244.1200, ext. 0220, or **tseifert@scscoatings.com**.

Parylene C-UVF (left) and Parylene C (right) coated boards under visible light.

Parylene C-UVF coated board (left) fluoresces under black light, whereas the Parylene C coated board does not.

SCS to Exhibit at CES 2019

SCS has announced plans to exhibit at the Consumer Electronics Show (CES), scheduled to take place January 8-11, 2019, in Las Vegas, Nevada. SCS will exhibit its Parylene coating services and technologies in Booth #62204.

CES is the world's gathering place for all those who thrive on the business of consumer technologies. It has served as the proving ground for innovators and breakthrough technologies for 50 years — the global stage where next-generation innovations are introduced to the marketplace.

Numerous components, including circuit boards, sensors, MEMS, LEDs, elastomeric components, etc., benefit from the chemical, moisture and dielectric barrier protection offered by Parylene conformal coatings. For protection in harsh environments, SCS Parylene HT® offers unmatched UV and thermal stability, up to 350°C long-term. SCS Parylenes are listed on the QPL for MIL-I-46058C and meet the requirements of IPC-CC-830.

Visit SCS at Booth 62204

CES

Las Vegas, NV
Jan. 8-11

To learn more about Parylene conformal coatings or to schedule a meeting at the show, contact Aaron Thomas at 317.244.1200, ext. 0229, or **athomas@scscoatings.com**.

Parylene Protects Consumer Electronics in Harsh Environments (continued)

to their device. Additionally, smart speakers allow consumers to listen to music and get quick responses to simple questions such as "Who wrote this song?" or "What is the weather forecast today?" The list of smart devices available to consumers includes everything from household appliances, security systems, thermostats and locks to fitness trackers, watches and headphones, to name only a few.

As consumer electronics further integrate into our daily activities, manufacturers continue to seek new and innovative ways to protect these devices from the environments (e.g., perspiration, humidity, rain, extreme temperatures, UV, dust, etc.) in which they must operate. Such conditions often wreak havoc on electronic devices, causing corrosion that ultimately leads to premature device failure. Parylene conformal coatings, however, have been shown to provide excellent protection to a wide range of applications, including the latest consumer electronics technologies.

Parylenes are known in the electronics, transportation, defense, aerospace and medical device industries to provide unmatched barrier protection and electrical properties to devices that must survive frequent exposure to harsh environments. To demonstrate the coatings' protective properties, SCS Parylene C and Parylene HT®-coated circuit boards were subjected to salt fog testing for 144 hours per ASTM B117-(0). The Parylene-coated boards showed no signs of corrosion whereas notable corrosion is seen on the uncoated control boards. Key properties of the Parylenes and how they compare with other coating materials are presented in the chart below.

As electronics packages have grown smaller and thinner over the years, not all materials can meet the challenge of providing reliable protection for delicate electronics and devices. Parylenes coatings, however, are applied in thicknesses ranging from several hundred angstroms to a few microns, resulting in lightweight protection that does not add significant mass or dimension to components.

To achieve the highest level of protection from a conformal coating, adhesion of a coating to its substrate is critical. As new materials have been developed and are being utilized in today's consumer electronics,

Parylene-coated (top) and uncoated (bottom) boards after testing in salt-fog environment. The coated board shows no signs of corrosion.

adhesion of Parylene to various substrates can be challenging for some manufacturers. In addition to improving adhesion with an application of A-174 silane, SCS offers customers a family of advanced adhesion promotion technologies (AdPro Plus® and AdPro Poly®) that were specifically developed to improve the bonding of Parylene coatings to smooth metallic and polymeric materials.

As a fully integrated Parylene supplier, SCS is uniquely able to respond to customer needs with resources that include regulatory support, capacity for large volume production quantities and specialized materials and processes. SCS offers regionally-located engineering teams for application and process development and AS9100 and ISO9001-certified coating service centers throughout the Americas, Europe and Asia.

Parylene conformal coatings have a rich history of protecting critical components across industries and the reliability they offer consumer electronics components is unmatched by traditional materials. For more information on Parylene coatings and the resources SCS offers its customers, contact Aaron Thomas at 317.244.1200, ext. 0229, or **athomas@scscoatings.com**.

SCS PARYLENE PROPERTIES

		Parylene HT®	Parylene C	Parylene N	Acrylic (AR)	Epoxy (ER)	Polyurethane (UR)	Silicone (SR)
Dielectric Strength V/mil		5,400	5,600	7,000	3,500	2,200	3,500	2,000
Dielectric Constant	**60Hz**	2.21	3.15	2.65	-	3.3 - 4.6	4.1	3.1 - 4.2
	1KHz	2.20	3.10	2.65	-	-	-	-
	1MHz	2.17	2.95	2.65	2.7 - 3.2	3.1 - 4.2	3.8 - 4.4	3.1 - 4.0
Dissipation Factor	**60Hz**	<0.0002	0.020	0.0002	0.04 - 0.06	0.008 - 0.011	0.038 - 0.039	0.011 - 0.02
	1KHz	0.0020	0.019	0.0002	-	-	-	-
	1MHz	0.0010	0.013	0.0006	0.02 - 0.03	0.004 - 0.006	0.068 - 0.074	0.003 - 0.006
Water Vapor Transmission Rate (g•mm)/(m²•day)		0.22	0.08	0.59	13.9	0.94	0.93 - 3.4	1.7 - 47.5
Water Absorption (% after 24 hours)		<0.01	<0.1	<0.1	0.3	0.05 - 0.10	0.6 - 0.8	0.1
Service Temperature	**Continuous**	350°C	80°C	60°C	82°C	177°C	121°C	260°C
	Short-Term	450°C	100°C	80°C	-	-	-	-
UV Stability		≥2,000 hrs	≤100 hrs	≤100 hrs	-	-	-	-
Coefficient of Friction	**Static**	0.15	0.29	0.25	-	-	-	-
	Dynamic	0.13	0.29	0.25	-	-	-	-
Tensile Strength (psi)		7,500	10,000	7,000	7,000 - 11,000	4,000 - 13,000	175 - 10,000	350 - 1,000
Penetration Ability		50 x dia.	5 x dia.	40 x dia.	Spray or Brush	Spray or Brush	Spray or Brush	Spray or Brush

SCS Exhibits at Sensors Midwest and SMTA International

SCS recently exhibited at Sensors Midwest and SMTA International. The shows were co-located at the Donald E. Stephens Convention Center in Rosemont, Illinois.

Sensors Midwest

At Sensors Midwest, Vice President of Technology Rakesh Kumar, Ph.D. presented "Enhancing Reliability of Sensors and Electronics Components in Various Environments." Dr. Kumar's presentation highlighted the development of a high-temperature vapor phase polymeric material, Parylene HT®, which offers solutions to many existing and future protective, packaging and reliability issues for various types of sensors and related electronics at a micro and nano scale. Its high level of protection is due to Parylene HT's unique optical, electrical and mechanical properties, chemical inertness and long-term thermal stability up to 350°C long-term, 450°C short-term.

SCS also exhibited Parylene conformal coatings at Sensors Midwest. SCS Parylenes offer superior moisture, chemical and dielectric barrier protection to a host of components, including sensors, circuit boards and assemblies, MEMS, LEDs and wafers, to name a few.

To learn more about Parylene conformal coatings, please contact Alan Hardy at 317.244.1200, ext. 0261, or **ahardy@scscoatings.com**.

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Coating Center Spotlight: Costa Rica

SCS opened its coating operation in Heredia, Costa Rica, in 2006 to provide high quality Parylene conformal coating services to customers in the region.

The Costa Rica facility is led by Plant Manager Max Montero, who joined the company in 2005 and is responsible for managing daily operations at the site. Throughout its years of operation, the Costa Rica team has implemented numerous improvement projects to optimize the coating process and grow with its customers' needs. The Costa Rica site recently achieved ISO 9001:2015 certification and serves customers in Central America.

To learn more about Parylene conformal coatings or any of SCS' worldwide facilities, visit **scscoatings.com/locations**.

Dan Adamo Celebrates 35 Years at SCS (continued)

16 years, he has been involved in many unique and diverse customer projects and has been a solid leader within the sales organization. When asking Dan about his experiences over the past 35 years, Dan shared, "It has been great to see and be part of the company's growth, and I look forward to the company's continued success. I'm thankful to be part of the SCS family, and I value the many relationships that have been built over the years."

Through his interactions with both colleagues and customers, Dan embodies SCS' core values – respect, integrity, service and excellence. Thank you, Dan, for your 35 years of service, and congratulations on your success and achievement at Specialty Coating Systems!

Personnel Highlights

In 2017, **Dave Diemel** accepted the position of Director of Coating Operations, Americas. In his new role, Dave is responsible for leading plant management throughout the Americas, ensuring they have the necessary tools and support to manage all facets of their coating center operations.

Dave joined SCS in 2013 as the Clear Lake Plant Manager and has over 15 years of manufacturing experience. He earned his bachelor's degree from the University of Wisconsin-Stevens Point. Dave and his wife have three children. He enjoys hunting, fishing and watching his son play college football.

SCS Exhibits at Sensors Midwest and SMTA International (continued)

SMTA International (SMTAI)

At SMTA International, SCS provided live demonstrations of the SCS PrecisionCoat and its Automatic Quick Change feature (AQC). The AQC feature allows the use of five separate tools within a single machine. In standard systems, using multiple valves on the same machine limits head travel, which reduces the overall work envelop of the system. In contrast, the AQC allows customers to use up to five valves or heads, individually positioned with independent materials and functionality.

The SCS PrecisionCoat AQC feature provides a robust solution to manufacturers looking to solve any number of challenges. An in-depth look at this versatile feature was highlighted in Issue 84 of *Global Coverage*. To view it and other articles, visit SCS' Technical Library at **scscoatings.com/gcarchive**.

To learn more about the PrecisionCoat AQC, please contact Hans Bok at 508.997.4136, or **hbok@scscoatings.com**.

Upcoming SCS Trade Shows

October 31 - November 1, 2018 | MD&M Minneapolis | Minneapolis, Minnesota

November 12 – 15, 2018 | COMPAMED | Düsseldorf, Germany

November 13 – 15, 2018 | High-Reliability Cleaning and Conformal Coating Conference | Schaumburg, Illinois

November 13 – 16, 2018 | electronica | München, Germany

November 28 – 30, 2018 | Japan International Aerospace | Tokyo, Japan

December 5 – 6, 2018 | BIOMEDevice San Jose | San Jose, California

January 8 – 11, 2019 | CES | Las Vegas, Nevada

January 29 – 31, 2019 | IPC APEX | San Diego, California

For more information and booth numbers, visit **scscoatings.com/shows.**

Connect with SCS

Specialty Coating Systems welcomes you to connect with us on social media. Be one of the first to explore new advances in Parylene technology, upcoming educational opportunities, trade show appearances and much more! Find us on Facebook, LinkedIn and Twitter.

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Aerospace and Defense Applications | Tim Seifert, Ext. 0220
Inside Sales – Coating Service | Meredith Rhodes, Ext. 0255
Customer Service – Coating Service | John Winkler, Ext. 0283
PrecisionCoat and Cure Systems | Hans Bok, 508.997.4136
Spin Coating, Instruments and Lab Systems | Kurtis Olson, Ext. 0268
Equipment Technical Support | Steve Spencer, Ext. 0223
Customer Service – Equipment | Joanna Sellars, Ext. 0280

Regional Coating Sites

Amherst, New Hampshire, USA | Chase Markey, 603.883.3339
Austin, Texas, USA | Tom Zavada, 512.222.1292
Clear Lake, Wisconsin, USA | Alex Dix, 715.263.2333
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*The **Global Coverage** exists to promote a better understanding of Parylene and the capabilities of Specialty Coating Systems. For previous issues, visit **scscoatings.com**.*

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