Sicaleke Game-Changing Coatings™ for the Packaging Industry



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SilcoTek's Coating Solutions for the Packaging Industry







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- > Year Founded: 2009
- Number of Employees: 60
- Our Mission: To create game-changing coatings

An Overview of SilcoTek

Our Business: Chemical Vapor Deposition (CVD) coating services



An Overview of SilcoTek

Our History:

> 1987

Restek invents Silcosteel to coat SS tubing for the chromatography industry



> 1990-2000

A team is formed at Restek to investigate new coatings for other applications and markets

> 2000 - 2008

Launch and growth of Restek Performance Coatings Division

> 2009

Restek Performance Coating Division spins off to form SilcoTek

> 2013

SilcoTek builds 36,000 ft² state-of-the-art coating facility

> 2019

32,520 ft² addition to the original facility is completed adding additional coating capacity and office space



An Overview of SilcoTek

Our Markets:

- Packaging
- Medical (Pharmaceutical, Clinical Diagnostics and Devices)
- Plastic Molding
- Oil and Gas Exploration and Production
- Refining
- Gas and Liquid Chromatography
- Semiconductor Manufacturing
- Process Analytical
- Chemical Manufacturing
- > Aerospace
- Automotive

Silco



SilcoTek's CVD Coating Process





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What Problems in Wet and Dry Packaging can be Solved Using SilcoTek's Coating Technology?

Problem #1:

Corrosion of metal components used in packaging equipment

Problem #2:

Thorough cleaning of packaging machine components

Problem #3:

Flaking-off of metal plated coatings into packaged material

Problem #4:

Removal of plastic residue from machine components used in sealing plastic packaging











What Solution Can SilcoTek's Coating Technology Provide to Solve These Problems?

Dursan.!



- It can be applied to metal substrates, such as stainless steel, carbon and tool steel alloys as well as aluminum
- Application specifications include:
 - operating temperature range of 450°C to -210°C
 - thickness of 400 1600nm
 - contact angle of $\geq 81^{\circ}$
 - allowable pH of 0 14









What are the Performance Benefits of using Dursan[®] in my Packaging Equipment and Processes?

Promotes Corrosion Resistance...

Dursan protects processing equipment surfaces from potential damage and expensive replacement

Excellent adhesion properties...

Dursan is chemically bonded and molecularly fused onto the surface of your component surface preventing flaking to eliminate unwanted particles in your product

• Provides component re-cycling capability...

Dursan can be reapplied to your existing parts if necessary eliminating the need to order new and expensive parts with long lead times

Eliminates costly production down time...

Dursan has demonstrated its' long term durability outlasting alternative coatings such as nickel-PTFE

Safe to Use...

COTEK. Dursan has passed USP Class VI Plastics testing and is certified by NSF International

Applications of SilcoTek's Coating Solutions in the Packaging Industry







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What Applications in Packaging has Dursan[®] Been Successfully Used In?

Wet Packaging: Redox supplement

- A dietary supplement that ASEA manufactures is highly corrosive which created corrosion of the components in their fill systems
- Although a nickel-PTFE plating was applied to the filling related components to slow down the corrosion rate, it corroded in (2) weeks resulting in flakes of the plating getting into the packaged product
- To eliminate this situation, Dursan was recommended due to its proven increased corrosion protection against many chemicals
- The durability of the Dursan in this application has confirmed that after
 (1) year of continuous use, there was no corrosion on the coated components and no signs of a reduction of the thickness of the coating.



Nickel-PTFE



Dursan



Biocompatibility Testing

Dursan has passed the following Biocompatibility Tests:

- USP Biological Reactivity Tests, In Vivo / USP Plastic Class VI
- Cytotoxicity Study Using the ISO Elution Method

All of the above tests were completed by **NAMSA**, a very reputable test laboratory, which was the first independent company in the world to focus solely on testing medical device materials for safety.





Certifications & Compliance Statements

 SilcoTek® is ISO 9001:2015 certified by the independent auditing firm BSI America Inc.

Registration to ISO 9001 demonstrates SilcoTek's commitment to Zero Customer Disappointments, continuous quality system improvement and customer service.

NSF (National Sanitation Foundation) Certification

Our <u>Dursan[®]</u> coating is compliant with NSF/ANSI 51 and all applicable requirements. This means that it is safe for food contact and also meets the FDA's requirements for compliance.

California Proposition 65

SilcoTek[®] coatings do not contain chemicals which are listed on the state of California Safe Drinking Water and Toxic Enforcement Act of 1986, California Proposition 65. Proposition 65 protects California drinking water from contamination by chemicals known to cause cancer, birth defects, and other reproductive harm.









SilcoTek[®] coatings do not contain any compounds at levels exceeding RoHS compliance limits such as Cadmium, Mercury, Lead, etc.

• REACH-SVCH: Registration, Evaluation, Authorization, and Restriction of Chemicals - Substances of Very High Concern

SilcoTek coatings do not contain any of the 201 REACH Substances of Very High Concern (SVHC) as updated by the European Chemicals Agency (ECHA)

Safety Data Sheet (SDS) Exemption

SilcoTek[®] does not provide SDSs for our coatings as they are not hazardous chemical products.

RoHS 3: Restriction of Hazardous Substances Directive 2015/863/EU

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Certifications & Compliance Statements





What are my Options to Evaluate Dursan in my Packaging Applications?

There are (2) options:

- Ship your packaging components to SilcoTek to be coated to evaluate the performance benefits of Dursan in your production line.
- Request Dursan coated test coupons to be shipped to your facility to be evaluated in a laboratory scaled environment.





Need Additional Information about SilcoTek and our Coatings?

Be sure to visit SilcoTek's website for additional resource information such as:

- > Literature:
 - "CVD Coatings for Packaging Equipment" Application Brief
 - SilcoTek 101 Brochure
 - Dursan Coating Data Sheet
 - Coating Material Compatibility Guide
 - Coating Chemical Compatibility Chart
 - Coating Application Guide
 - Coating Case Studies
- Services
 - Get Technical Support
 - Receive no-charge "evaluation coupons" for initial testing
 - Request a Quotation





Questions?









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Thank You for Your Time to Review Our Presentation!





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