



Game-Changing Coatings™

SilcoTek's patented coatings solve the most demanding material challenges found in energy, medical, food, science, and technology industries.

Features

- Chemically inert
- Corrosion resistant
- Flexible, won't flake
- Thin (<2µm)
- Hydrophobic
- Easy to clean
- High temperature

Advantages

- 3D, non-line-of-sight process
- Significant cost savings over exotic alloys or materials
- Enables trace analysis required for regulatory compliance
- Easy to integrate from prototype to production

Benefits

- Improve system efficiency and uptime
- Decrease maintenance
- Increase productivity
- Save money



Innovative surface coatings that make the impossible possible

Bring robust chemical inertness, corrosion resistance, and surface control to the molecular level of metal, ceramic, and more substrates.

FOR CHEMICAL ANALYSIS

SilcoTek's silicon-based coatings are specially tailored for chemical compatibility (inertness) to highly active chemical compounds. They substantially improve analysis of trace-level sulfurs, mercury, and more.

SilcoNert® is the industry-preferred coating for highly sensitive sampling and analysis applications. Dursan® is a tough and versatile coating suited for harsh analytical environments. Modern chemical detectors and analyzers manufactured worldwide rely on these inert coatings to give accurate results.

FOR CORROSION PROTECTION

Protect critical investments in a wide array of corrosive environments. SilcoTek coatings provide a uniform, molecularly-bonded barrier of non-reactive silicon material between the substrate and flow path.

Dursan® includes oxygen and carbon in the base silicon layer for a ceramic-like, durable, and highly corrosion resistant coating. Suited for pH 0-14 and harsh corrosives like HCl, H₂SO₄, bleach, and more. Silcolloy® adds significant potential lifetime to parts in oxidative or acidic environments. Bring exotic alloy performance to stainless steel for a fraction of the cost.

FOR “SURFACE ENGINEERING”

Prevent leaching of iron ions and other contaminants from metal equipment into critical process streams while increasing system uptime. Control the wetting properties of your surfaces to improve release and cut downtime.

Silcolloy® offers oxidation, chemical, and corrosion protection even at temperatures as high as 1410° C. Dursox™ is a silica-like coating with excellent barrier properties and high durability. SilcoKlean® greatly reduces carbon coking in fuel combustion applications. Notak™ offers solutions to save money and energy by reducing maintenance caused by fouling and sticking. All four coatings lead to higher efficiency from your equipment.

CHOOSING THE RIGHT COATING

Customers should work with SilcoTek's technical experts to help them select the best coating for their application. Some applications require a very specific treatment whereas any SilcoTek coating could work for others. SilcoTek's complete line of coating solutions offers a multitude of surface properties in addition to what's highlighted above:

- Low surface energy
- High purity
- Hydrophobicity
- Oleophobicity
- Easy cleaning/non-stick
- Low outgassing

The coating selection and scale-up process often involves samples, testing, technical consultation, visits, and more. The SilcoTek service experience couples technical expertise with coating capability and performance to give customers a solution they and their customers can rely on.



Coating Properties

SilcoTek's innovative chemical vapor deposition (CVD) process introduces proprietary process gases into a special oven containing your parts. The gas penetrates torturous passageways and provides a thin, uniform coating even on complex part geometries.

Each standard SilcoTek® coating is tailored to specific applications but can be used successfully in a wide variety of environments. Contact SilcoTek for coating recommendations.



COATING	MATERIAL COMPOSITION	MAXIMUM TEMPERATURE	CONTACT ANGLE*	WHAT IT DOES
SilcoNert® Superior inertness and chemical compatibility	Silicon (functionalized)	450° C (inert atmosphere) 400° C (oxidative)	99°	Makes surfaces non-reactive and inert. A durable, high temperature alternative to fluoropolymers like PTFE or PFA.
Dursan® Corrosion and abrasion resistant, inert, non-stick	Silicon, oxygen, carbon (functionalized)	500° C (inert atmosphere) 450° C (oxidative)	119°	Provides low surface energy and excellent protection in very corrosive environments. Hydrophobic, 2x as wear resistant as stainless steel and makes surfaces easier to clean.
Silcolloy® Oxidation resistant, high temperature	Silicon	1410° C	54°	Protects parts from oxidation and corrosion while preventing metal ions from leaching out of surfaces. Ideal for high temperature and/or high purity applications.
SilcoKlean® Anti-coking	Silicon (functionalized)	450° C (max. for functionalization) 1410° C (melting)	90°	Prevents hot fuels and gases from coking or fouling on metal surfaces. Ideal for fuel transfer and exhaust gas applications.
SilcoGuard® UHV low outgassing, high purity	Silicon	1410° C	54°	Isolates materials trapped on or in metal surfaces and prevents them from entering ultra-high vacuum or other high purity environments.
Dursox® Silica-like, ceramic	Silicon, oxygen** **<2% labile carbon	1250° C	<60°	Gives durability, erosion, and corrosion protection to processing equipment. Ideal especially for high temperature, high purity applications.
Notak™ Hydrophobic, oleophobic, anti-fouling	Direct fluoro-functionalization of surface	300° C	143°	Improves anti-wetting properties on a variety of substrate materials. Ideal for mold release, heat exchange, and other applications needing low surface energy.

*Evaluated on 120 grit, 58 rms (µin.) 300-series stainless steel

A Note on Thickness

SilcoTek's chemical vapor deposition (CVD) process has been optimized to produce surface coatings that meet the performance characteristics and material properties listed above, unrelated to thickness. All coatings are typically less than 2000 nm (2µm) thick.



Industries & Applications

General Industrial

- Process analyzers
- Injection molding/mold release
- Packaging
- Heat exchangers
- Tubing
- Flow control components
- Vessels, mixers, tanks, etc.

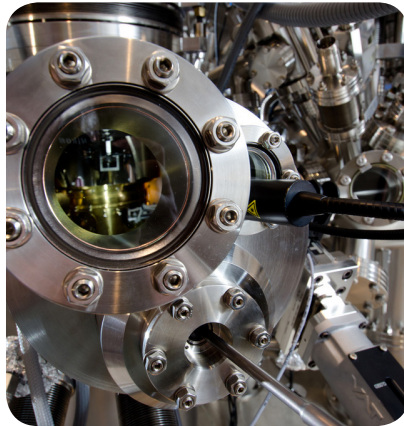
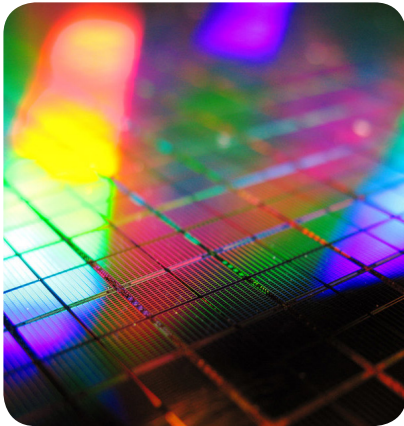


Petrochemical, Oil, and Gas

- Process analyzers
- Downhole sampling tools
- Offshore instrumentation
- Odorant testing
- CEMS
- Refinery, flare, and stack gas
- LNG, CNG, ULSD, ULSG

Semiconductor Manufacturing

- Etch and deposition
- Epitaxy
- MOCVD and PECVD
- CMP
- OLED
- Ozone
- Moisture analysis
- Process vessels



Aerospace and Automotive

- Fuel and injector nozzles
- Feed lines
- Fuel injectors
- Exhaust testing
- Exhaust gas recirculation equipment



Life Sciences and Laboratory

- Chromatography
- Needles and probes
- Environmental testing
- Medical diagnostic devices
- Ultra high vacuum
- Flow control
- Food and beverage analysis

Game-Changing Coatings™

Whether in the laboratory, plant, or field, SilcoTek's patented coating technologies provide advanced material solutions that save you time, increase your productivity and improve performance, all while lowering operating costs and protecting your critical investments.

SilcoNert®

Dursan®

Silcolloy®

Dursox™

SilcoKlean®

SilcoGuard®

Notak™



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Coating Use

All statements, technical information and recommendations contained in this document are based upon tests or experience that SilcoTek believes are reliable. However, many factors beyond SilcoTek's control can affect the use and performance of a SilcoTek coating in a particular application, including the conditions under which the product is used and the time and environmental conditions in which the product is expected to perform. Since these factors are uniquely within the user's knowledge and control, it is essential that the user evaluate the SilcoTek coating to determine whether it is fit for a particular purpose and suitable for the user's method of application.

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