

SilcoTek Coatings for Pure Gas Delivery

The raw material supply chain has become ever-increasingly important in meeting global demand. It has never been more important to enhance and increase material purity. The standards for purity in gas delivery in the semiconductor space are critical for successful manufacturing. In modern production, purity can be difficult to achieve between reactive metal surfaces like stainless steel and the increasing cost and scarcity of more inert exotic alloys. SilcoTek coatings are the industry leaders for delivering a metal-free surface while respecting the cost of manufacturing, creating a higher quality, longer-lasting end product.



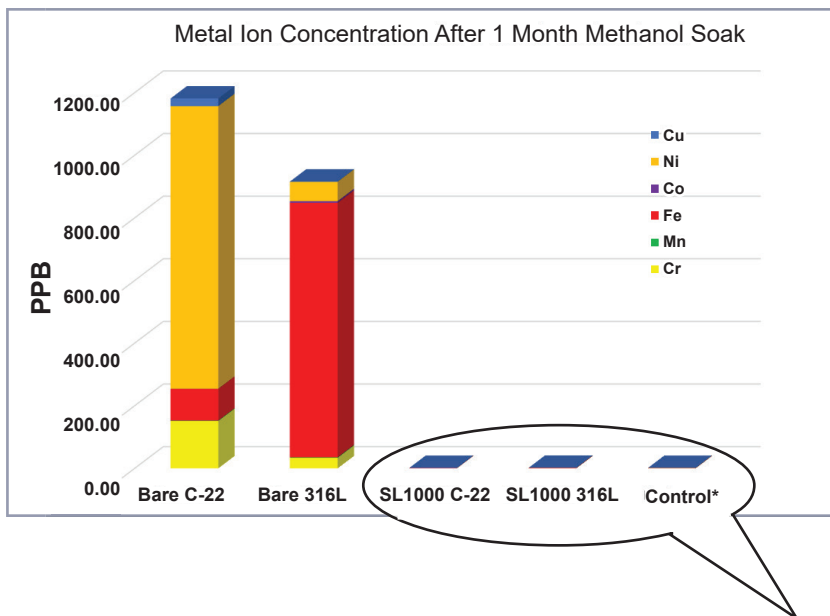
- **Prevent 99% of metal ion contamination** in liquid precursor canisters with inert, metal-free, CVD coatings. SilcoTek silicon based coatings provide a barrier eliminating any metal interaction.
- **Reduce the cost of equipment ownership** by improving the lifetime of parts. Experience a significant reduction in replacement parts as well as a lower manufacturing cost than exotic alloys.

Eliminate Metal Ion Contamination

Method- Solvent Extraction ICP-MS.
Technique- Parts were soaked in methanol for 30 days to allow for measurable metal extraction. Samples were then analyzed by mass spectroscopy to investigate metal ions present in solution.

After soaking in methanol for 30 days, the C-22 sample measured over 1000 ppb of harmful metal contamination.

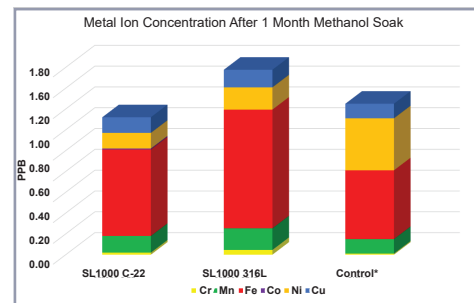
This image shows the amount (PPB) of metal contamination found after soaking the samples in methanol for 30 days. The Silcolloy-coated C-22 outperformed the uncoated C-22 by 1000x.



SilcoTek's Silcolloy coating eliminated over 99% of contamination, providing better corrosion protection on C-22 and even 316L SS.

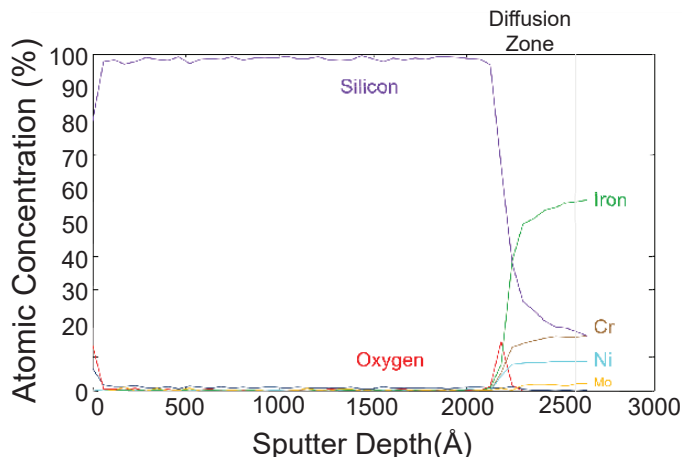
This is an enlarged version of the above graph, showing the samples with the lowest metal contamination. Silcolloy-coated C-22 slightly outperforms 316L SS. Values of coated samples are within errors of measurement.

The most effective surface for preventing metal contamination is Silcolloy-coated C-22, ~1.20 ppb metal contamination.



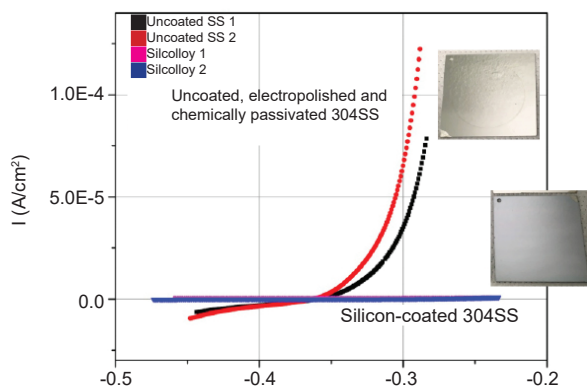
CHEMICALLY COMPATIBLE

The amorphous silicon structure applied by the SilcoTek process provides excellent barrier properties in a variety of applications.



CORROSION RESISTANT

The SilcoTek coating process produces a continuous, pinhole-free corrosion barrier to aggressive acidic conditions.



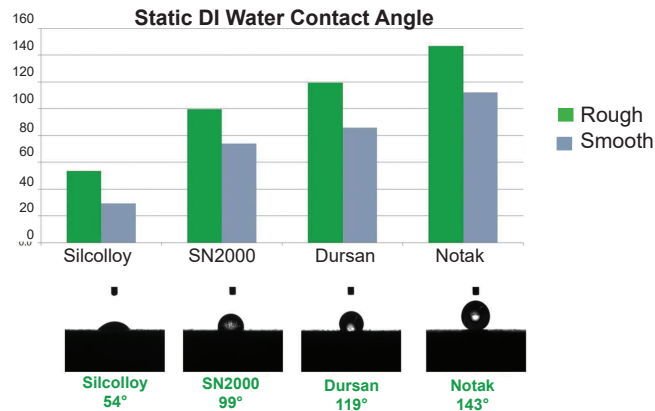
PURE

The SilcoTek process produces a chemically pure layer that improves compatibility between your equipment and process stream.

Element	Coating Contents
Aluminum	<20 ppm
Chromium	0 ppm
Iron	<100 ppm
Nickel	<10 ppm
SilcoTek Silicon CVD Coating	99.98% purity

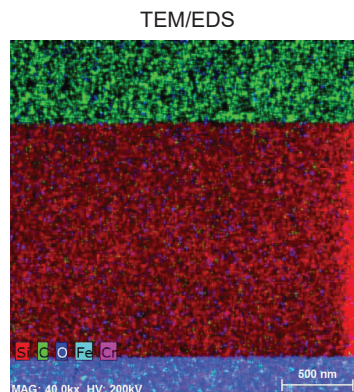
HYDROPHOBICITY COMPARISON

SilcoTek offers a general purpose moisture barrier that improves hydrophobicity over uncoated stainless steel.



UNIFORM

The SilcoTek process produces a uniform, inert, amorphous silicon surface.



PROTECTIVE LAYER

The SilcoTek process creates a barrier layer protecting your parts from corrosion and metal ion leaching.

