

SilcoTek's most robust coating technology.

The Siltride[®] coating process deposits a chemically protective barrier of hydrogenated amorphous silicon oxynitride that is excellent for improved corrosion, dielectric, and durability performance without affecting vacuum performance. Siltride is applied via chemical vapor deposition (CVD), enabling excellent corrosion protection on complex part geometries and blind areas with ease.

The Kurt J. Lesker Company is proud to offer its standard manufacture and custom vacuum parts now with SilcoTek's game-changing CVD coating technology. The Siltride 1000 coating process deposits a thin (500-2000nm) layer of hydrogenated amorphous silicon oxynitride that protects vacuum components from corrosive materials without affecting vacuum or pump down performance. See below for the current offerings from Kurt J. Lesker and SilcoTek.

Siltride[®] Properties

Coating Composition:	Hydrogenated amorphous silicon oxynitride (a-SiO _x N _y :H)	
Deposition Process:	Thermal chemical vapor deposition (not-plasma enhanced)	
Maximum Temperature:*	700° C	
Typical Thickness:	500 - 2000 nm	
Hydrophobicity (contact angle):	≤ 40°	
Allowable pH Exposure:	0 - 14	

Siltride 1000 treated standard manufacture and custom vacuum parts will experience:

- Enhanced corrosion resistance
- Strong pump down performance
- High temperature compatibility
- · Broad base material and vacuum component capability



Common component examples include: Vacuum flex hoses, KF, ISO, and CF flanges and components.







High Temperature Stability

Siltride maintains its performance up to 700°C making it one of SilcoTek's best high temperature coatings.



Increased Corrosion Protection

Siltride shines as a coating for corrosion protection. The graphs below show it outperforming uncoated coupons and various other SilcoTek coatings.

6M (18.5%) HCl 7 days @ Room Temp.



Uncoated 316L SS Siltride Surface 6M (18.5% HCI) 7 days at room temp. - Coupons were immersed in 6M HCI for 7 days at room temp. (ASTM G31). This test shows an aggressive environment testing the limits of Siltride. In these conditions,

Siltride performed well with minimal corrosion while considerably



EIS in 5% NaCI - Coupons were exposed to 5% NaCI solution for 50 days and monitored via Electrical Impedance Spectroscopy (ASTM G106). Siltride shows a high impedance value at low frequencies, maintaining excellent stability and protection.

*Siltride® refers to the Siltride process, a thermal CVD that is performed on customer parts to have the properties identified above

Maintain Vacuum Performance

Siltride offers excellent protective properties while maintaining the same vacuum performance and pump down times as uncoated or electropolished surfaces.



Pump down comparison at 150°C, 100°C, Room Temp. - 6"OD CF 304L SS Full nipple test piece coated with Siltride 1000 from SilcoTek and compared to uncoated electropolished equivalent. The coated sample enables similar pump down and ultimate vacuum performance to uncoated standards at various temperature levels.



RGA comparison at 150°C - No anomalous AMU points on coated samples compared to uncoated, typical expected peaks for H_2 , H_20 , N_2 , etc. The difference in peaks between coated and uncoated samples is in the 10e-11 range indicating minimal outgassing differential.

Improved Wear Resistance

Wear track SEM images (both taken at 500X) of bare SS and Siltride after pin-on-disk test (top), and wear track crosssectional profiles (bottom left) show Siltride has more than double the wear resistance and hardness of bare SS.





Pin-on-disk (1N and 15 minutes)	
Bare 316 SS	Siltride
113.132	44.411
9.428	3.701
4-6	10
	Pin-on-disk [1N i Bare 316 SS 1113.132 9.428 4-6

