

SilcoTek Coatings and HF, Fluorine Applications

Guidance for Coating Selection



Silicon Coatings and Fluorine

- HF and other fluorine species will etch silicon (Si), the base material of most SilcoTek coatings.
- Only Au and Pt are 100% resistant to HF. All metal alloys will react.
- When matched with the appropriate metal substrate, SilcoTek coatings offer cost savings over exotic materials via improved performance and longer use life.
- Every corrosive application is different. A variety of material/coating combinations may be suggested based on specific conditions.

Provide SilcoTek as much information as possible: specific fluorine and other chemical species, state (gas, liquid, etc.), concentration and temperature range, parts needing coating.

Application	Coating Recommendation	Comment
ppm-level HF in analytical sample vapor streams at room temperature	SilcoNert® 2000	Hastelloy® base substrate recommended for longest system lifetime. 316L SS acceptable.
ppm-level HF in analytical sample vapor streams at elevated temperature	Silcolloy® 1000	Thicker, same base coating material as SilcoNert® 2000
ppm- to low % dry HF vapor	Silcolloy® 1000	Thicker, same base coating material as SilcoNert® 2000
Fluoride gas corrosion and/or stress corrosion cracking mechanisms	Siltride® 1000	Common applications include exhaust scrubber systems, semiconductor
Aqueous HF solutions at 10:1 or lower HF concentrations, room temperature	Silcolloy® 1000	Hastelloy® base substrate recommended for longest system lifetime. 316L SS acceptable.
Aqueous HF solutions, unknown concentration	Custom	Contact SilcoTek
Other not listed	Contact SilcoTek	Contact SilcoTek

SilcoTek coatings offer 5x+ improvement over uncoated stainless steel at a fraction of the price of exotic alloys.

