

SilcoTek Coating Success and Care Guide

Please review this guide with your salesperson before sending your parts to SilcoTek for the first time. This document also contains important information for maintaining, cleaning, and using your coated parts after receiving them back from SilcoTek.

Since 2009, SilcoTek has been a leading global provider of performance coatings and surface treatments for high technology industries. SilcoTek provides cutting edge chemical vapor deposition (CVD) barrier coating technology, passivation services, as well as cleanroom packaging services to our customers in semiconductor, analytical, life sciences, and energy markets.

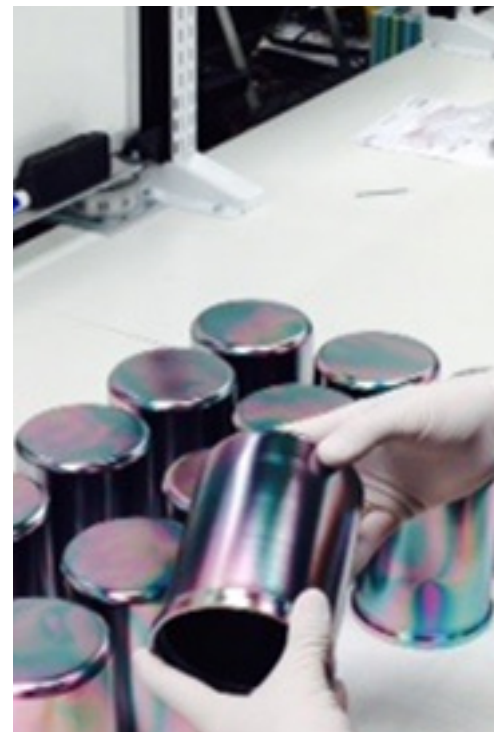
Before You Send Your Part to SilcoTek, You Should Know:

- Your part will be exposed to process temperatures ranging between 400-450°C.
 - Outgassing (vaporization, degradation) at these temperatures will interfere with proper SilcoTek deposition
 - Inorganic residue / contamination on the surface will interfere with proper SilcoTek deposition
- SilcoTek [will prepare the surface](#) to the best of our ability. Unless previously qualified, your part will be exposed to sonicated alkaline (NaOH-containing surfactant) or acidic (citric acid-containing) solutions, or both, for proper surface preparation of our deposition processes.
 - Alternative surface preparation techniques may be used by SilcoTek for unique situations (solvents, heat, [vacuum anneal](#), thermal oxidation in air.)
- A successful CVD coating application begins with a compatible customer part. Please reference SilcoTek's [material compatibility guide](#) and carefully read this guide to ensure parts arrive clean, compatible, disassembled, with all synthetic parts removed, and ready for treatment.

Surface Preparation

SilcoTek typically recommends that customers do not perform any precleaning of parts. Depending on what is used to “clean” a part and how it is performed, precleaning can do more harm than good in preparation for our deposition services. Please consult with our experts regarding precleaning strategies. With that stated, the following are some standard precleaning recommendations:

- Commercial cleaning solutions: SilcoTek does not recommend any “over the counter” cleaning solutions nor household detergents (e.g. Simple Green, Dawn). They are not sufficient cleaners and can be very difficult to completely rinse from the surface, leaving behind an invisible residue that cannot be easily removed and will often become visible stains after the CVD coating process.
- Alkaline solutions of degreasing detergents containing NaOH or KOH in high purity deionized water may be acceptable to remove contaminants from compatible substrates such as stainless steels and nickel alloys. Alkaline solutions are not compatible with some substrates such as aluminum.



- Acidic: Organic acid cleaners containing citric acid may be acceptable as well but are incompatible with certain substrates such as carbon steels.
- Solvents: Standard organic solvents, particularly those known to solvate known contamination on a part are acceptable for use.
- Additional energy such as heated solutions and sonication can also be used to preclean. However, beware of physical damage (pitting) from intense sonication and touchpoint damage during sonication. Heated baths can improve cleaning efficiency but can also accelerate potential damage to a substrate.
- The number one key to surface preparation is to never allow a cleaning solution to dry on to the substrate surface. It is imperative that any cleaning solution is thoroughly rinsed with high purity, deionized water while the part is still wet with the cleaning solution. Never use city or tap water as they contain minerals and additives that will leave behind residues and contamination that are then difficult to remove by SilcoTek surface preparation.

What Substrates and Materials Can SilcoTek Coat?

- Substrates: Some substrates are incompatible with our deposition processes. The [Substrate Compatibility List](#) is not exhaustive and is updated as needed. A customer may introduce a new material that is not compatible, or SilcoTek may develop a new process that allows us to deposit on substrates that were previously not compatible (i.e. Monel).
 - Not all steels are created equal, [stainless steel quality](#) matters.
- [Welding](#) recommendations: TIG welding with no filler is optimal.
- [Brazing and soldering](#) considerations. Vacuum nickel brazing is optimal.
- O-rings and compression connections:
 - O-rings and all polymeric seals are not thermally compatible with SilcoTek processing and must be removed prior to processing.
 - SilcoTek recommends that compression connections are disassembled prior to processing but can remain connected if necessary. Consult with our experts.