

Siltek™, Sulfinert®, and Silcosteel-CR® Treated Swagelok® Fittings

High-Quality System Fittings Made Inert for Demanding Applications

by Gary Barone, Manager, Restek Performance Coatings

new



Restek
Performance
Coatings

- ✓ Siltek™ treatment ensures ultimate inertness.
- ✓ Silcosteel®-CR treatment enhances corrosion resistance by 10X, or more.
- ✓ Custom treatment available for any Swagelok® fitting or other system parts.

Restek is pleased to set the new standard for tubing system components: Swagelok® fittings made inert or corrosion resistant through proprietary Restek surface treatments. These items represent the first of two steps in applying our surface treatments to Swagelok®-manufactured parts—later this year we anticipate introducing valves that are assembled and tested by Swagelok after receiving surface treatment at Restek.

Swagelok® fittings are world-renowned for being manufactured to the highest standards. Now, you can obtain these superior products with Restek's unparalleled surface treatments. Unlike coatings, Restek surface treatments produce a layer that is integral with the fitting surface—it cannot chip, flake, or delaminate, even in the most stressful applications. Fittings available from stock have received our most inert surface treatment, Siltek™ treatment, our second generation coating for inertness, succeeding the Silcosteel® surface treatment we introduced in the late 1980s. In most situations Siltek™ treatment is the ideal choice for ultimate inertness. A closely related process produces Sulfinert® treated fittings, which are intended specifically for systems used to collect, store, and transfer active sulfur-containing compounds. A Siltek™ or Sulfinert® layer can be applied at a thickness of up to 0.12µm. At this thickness even parts-per-billion levels of the most reactive materials will not interact with the surface. Silcosteel®-CR treated fittings also are available. This new treatment enhances the corrosion resistance of

stainless steel by an order of magnitude, or more. Until now, inferior surface coatings or expensive special alloys have been employed to protect system components from corrosive mineral acid environments. We developed the Silcosteel®-CR treatment specifically to protect equipment exposed to hydrochloric acid, nitric acid, sulfuric acid, or marine environments. In independent tests, Silcosteel®-CR treatment upgraded the corrosion resistance of 300-grade stainless steels by more than an order of magnitude. Table 1 summarizes data from pitting and crevice corrosion testing of Silcosteel®-CR treated 316L stainless steel samples and bare steel samples (ASTM G48, Method B). Silcosteel®-CR treatment enhanced corrosion protection more than tenfold, and, as demonstrated in Figure 1, completely protected the samples against crevice corrosion.



If you need highly inert system fittings for demanding applications, you will not find more suitable fittings than Restek-treated Swagelok® fittings. All Restek surface treatments can be applied to other fittings or parts on a custom basis. To find out if Restek-treated components will improve your system's performance, use our Technical Service extension (ext. 4) and ask for our coating experts, or contact your Restek representative.



For current products and prices, please contact our Customer Service representatives (ext. 3) or your local Restek representative.

Let the Restek Performance Coatings Team solve your surface activity problems. Contact us at 800-356-1688 or 814-353-1300, or contact your local Restek representative

Table 1 Silcosteel®-CR treatment enhances corrosion protection of 316L stainless steel by an order of magnitude (results of ASTM G48, Method B)

Sample	Weight Loss (g/m ²)*
Silcosteel®-CR treated sample 17	19
Silcosteel®-CR treated sample 28	25
Silcosteel®-CR treated sample 47	25
Bare steel sample 27	231
Bare steel sample 34	209
Bare steel sample 37	228

*After 72 hours exposure to 6% w/w ferric chloride solution.

Figure 1 Silcosteel®-CR treated 316L stainless steel samples show no crevice corrosion and only slight pitting corrosion, while bare 316L stainless steel samples exhibit severe crevice corrosion.



Silcosteel®-CR-treated 316L stainless steel



Bare 316L stainless steel