



Prevent Adsorption of Mercury, Sulfur, and Nitrogen Compounds In Stack and Monitoring Equipment

As concerns grow over mercury in the environment, new regulations have been developed to measure, and eventually reduce, mercury emissions from coal-fired electric utilities. For example, the US EPA will require all electric utilities to measure mercury emissions starting on January 1, 2009. The most popular methods of sampling will be based on continuous mercury monitoring systems (CMMS) and sorbent tube samplers. To ensure quantitative storage and transfer, and accurate analysis, of the low levels of mercury in streams sampled from flue stacks, these sampling systems must be inert.

Siltek® surface treatment has been used in a wide variety of applications in which an inert surface is of paramount importance. To measure the impact of Siltek® treatment on adsorption of mercury during storage, we compared the performances of 304 grade stainless steel gas sampling cylinders (Swagelok®, Solon OH) with and without Siltek® treatment.

We filled each cylinder with $8\mu\text{g}/\text{m}^3$ of elemental mercury (approximately 1 part per billion) (Spectra Gases, Alpha NJ) and assessed the mercury concentration in each cylinder over time to determine changes in mercury concentration. Detection was achieved by direct interface gas sampling to an atomic adsorption detector. Sample pathway regulator and tubing were Siltek® treated to ensure accurate transfer.

The data in Figure 1 demonstrate that Siltek® treatment provides a stable surface for elemental mercury, and untreated stainless steel does not. Based on these results, we conclude that Siltek® surface treatment for steel or stainless steel components and tubing in CMMS and sorbent tube mercury sampling systems will improve analytical reliability. For more information about Siltek® surface treatment, visit us at: www.restekcoatings.com

industries served

Stack gas monitoring

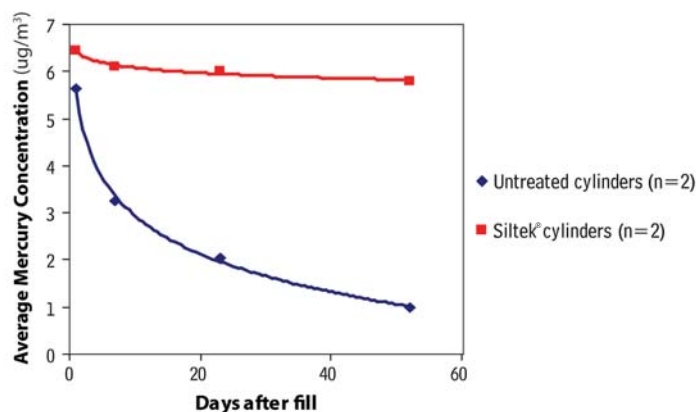
free sample

www.restekcoatings.com/sample

thank you

Ted Neeme and Steve Mandel from Spectra Gases for their contributions to this work.

Figure 1 Siltek® treated gas sampling cylinders show very good inertness toward mercury.



it's a fact

Improve analytical reliability and prevent corrosion, using Siltek®/Sulfinit® treated components. See Frequently Asked Questions on [page 391](#).

product guide



Sulfinit® treated **sample cylinders and valves**—see page 385.

Coiled electropolished Siltek® tubing (page 394); Coiled 316L Siltek® tubing (page 395); or 6-foot length seamless, straight 316L Siltek® tubing (page 396).

Siltek® fittings (pages 392–393.)

Custom treatment is available for **your existing equipment**—see page 398.