

Why SilcoNert[®] 2000?

CONCOA's revolutionary SilcoNert 2000 products boost performance and can dramatically reduce costs for industries that use reactive or corrosive gases by improving cycle times and analytical results.

More than mere coating or passivation, the proprietary SilcoNert process impregnates 316L stainless steel with an amorphous silicon layer bound into the metal crystal structure, making it over one hundred times more inert.

When surface reactivity is a concern, as with low level reactive mixtures of hydrogen sulfide, methyl mercaptan, nitric oxide, sulfur dioxide, and reduced sulfur, CONCOA's SilcoNert 2000 products are essential to ensuring rapid response and accurate results by virtually eliminating adsorption and catalytic conversion.

SilcoNert 2000 regulators and switchovers:

- Improve analytical accuracy
- Avoid process delays
- Eliminate false data
- Reduce calibration time
- Improve test audits
- Reduce maintenance costs
- Reduce calibration costs



CONCOA[®]
PRECISION GAS CONTROLS

www.CONCOA.com



420 Series
Single Stage Regulators



430 Series
Dual Stage Regulators



515 Series Automatic
Gas Switchover Systems

SilcoNert 2000

SilcoNert[®] is a trademark of SilcoTek Co.

Calibration

There are many processes where 316L stainless steel is no longer sufficiently inert or corrosive resistant. Refineries, petrochemical plants, and coal or gas power plants require rapid and accurate analysis of low level sulfur and mercury. A SilcoNert® 2000 system will not adsorb compounds in calibration standards, giving faster calibration times with repeatable results. Calibration cycles in these environments can be reduced by as much as 70%, and accuracy improved by as much as 17% (Figure 1), which results in significant savings (Figure 2).

Calibration Cycles

Figure 1

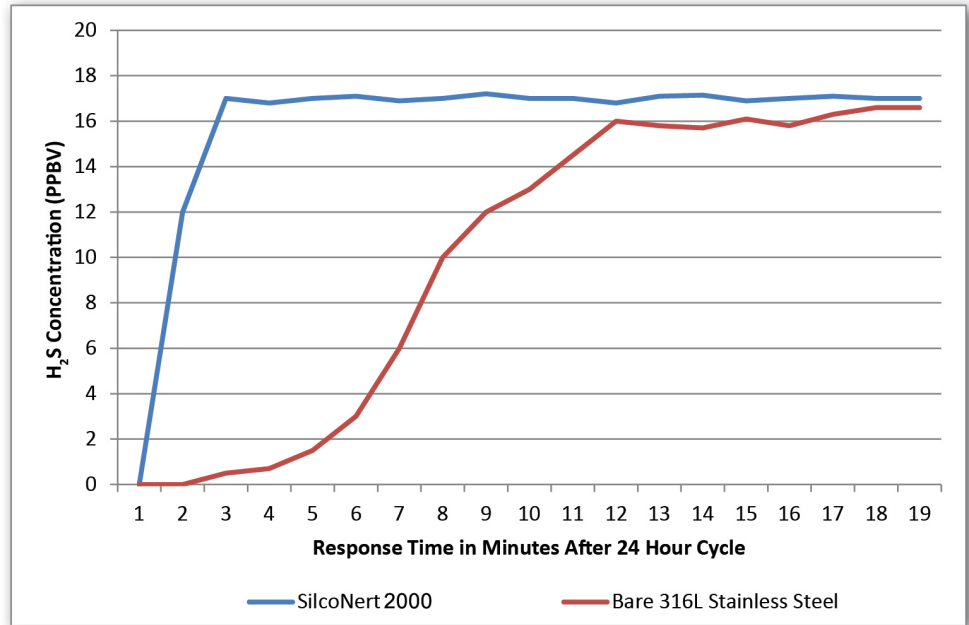


Figure 1 compares the response time of a calibration gas containing 17 ppbv of hydrogen sulfide delivered through a 316L stainless steel regulator and a CONCOA SilcoNert 2000 regulator after 24 hours. In this typical scenario, calibration was more than ten minutes faster with SilcoNert 2000 than with 316L stainless steel.

Savings

Figure 2

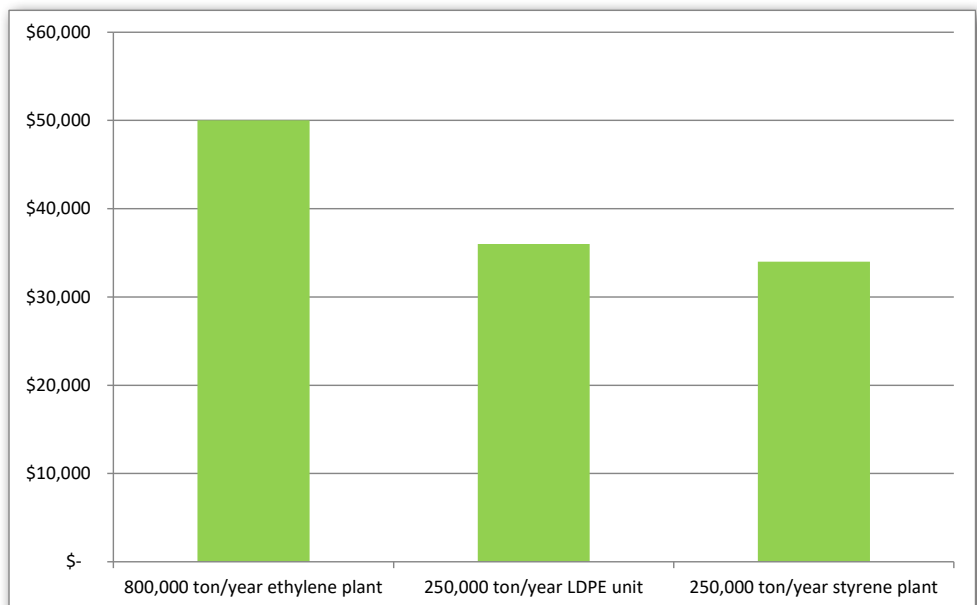


Figure 2 shows possible savings from improved process control afforded by SilcoNert 2000 in a variety of petrochemical facilities.

SilcoNert2000 Advantages

- Improve H₂S sample accuracy
- Eliminate H₂S adsorption
- Eliminate cross reaction of sulfurs
- Resist corrosion 100 times better than 316L stainless steel
- Eliminate mercury adsorption
- Improve low sulfur diesel analysis
- Calibrate faster every day
- Improve Relative Accuracy Test Audits (RATA) results
- Avoid EPA penalties

Applications

- H₂S analysis ppm to ppb levels
- Reduced sulfur analysis
- Low sulfur diesel
- Refinery stack monitoring
- Natural gas testing
- NO/SO₂ monitoring
- Mercury analysis
- Odorant testing
- Stack gas monitoring
- Automotive exhaust testing
- International Society of Beverage Technologist (ISBT) CO₂ testing

Regulators



420 Series Single Stage Regulator

- All wetted surfaces SilcoNert® 2000
- Metal-to-metal diaphragm seal
- 1×10^{-9} scc/sec helium leak integrity
- Delivery pressure ranges: 0-15 psig through 0-500 psig
- Max inlet pressure: 3000 psig (210 bar) or 4500 psig (310 bar)

Intended for primary pressure control of reactive or corrosive calibration gases where minor fluctuations in outlet pressure due to diminishing inlet pressure can be tolerated. Available with a wide selection of inlet and outlet options, including diaphragm valves, compression tube fittings, and protocol purge station configurations, all with the same SilcoNert 2000 wetted internals.



430 Series Dual Stage Regulator

- All wetted surfaces SilcoNert 2000
- Metal-to-metal diaphragm seal
- 1×10^{-9} scc/sec helium leak integrity
- Delivery pressure ranges: 0-15 psig through 0-250 psig
- Max inlet pressure: 3000 psig (210 bar) or 4500 psig (310 bar)

Intended for primary pressure control of reactive or corrosive calibration gases that require precise and constant outlet pressure control regardless of inlet pressure variation. Available with a wide selection of inlet and outlet options, including diaphragm valves, compression tube fittings, and protocol purge station configurations, all with the same SilcoNert 2000 wetted internals.

Mixtures Which Benefit from SilcoNert 2000 Regulators

Mixture Minor Component	Concentration to use SilcoNert 2000
Hydrogen Sulfide (H ₂ S)	< 25 ppm (any if with other sulfurs)
Carbonyl Sulfide (COS)	< 200 ppm (any if with other sulfurs)
Carbon Disulfide (CS ₂)	<200 ppm (any if with other sulfurs)
Dimethyl Disulfide (DMDS)	<200 ppm (any if with other sulfurs)
Ethyl Mercaptan	<200 ppm (any if with other sulfurs)
Methyl Mercaptan	<200 ppm (any if with other sulfurs)
Other Mercaptanes	<200 ppm (any if with other sulfurs)
Mercury	Any concentration
Nitric Oxide (NO)	<10 ppm
Sulfur Dioxide (SO ₂)	<10 ppm
Hydrogen Chloride (HCl)	Any concentration
Chlorine (Cl ₂)	Any concentration

Continuous Supply

SilcoNert 2000



515 Series Automatic Switchover

- All wetted surfaces SilcoNert® 2000
- Metal-to-metal diaphragm seal
- 1×10^{-8} scc/sec helium leak integrity
- Delivery pressure ranges: 0-15 psig through 0-400 psig
- Max inlet pressure: 3000 psig (210 bar)

Provides continuous supply of reactive or corrosive calibration gases with a selection of four switchover pressures and can be ordered with an integral line regulator for constant control of downstream pressure. Available with a wide variety of SilcoNert 2000 inlet options and can be ordered with or without a remote alarm option.

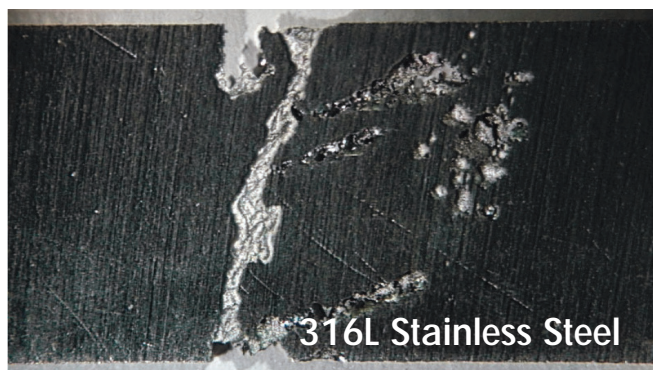
Corrosion Resistance

Figure 3

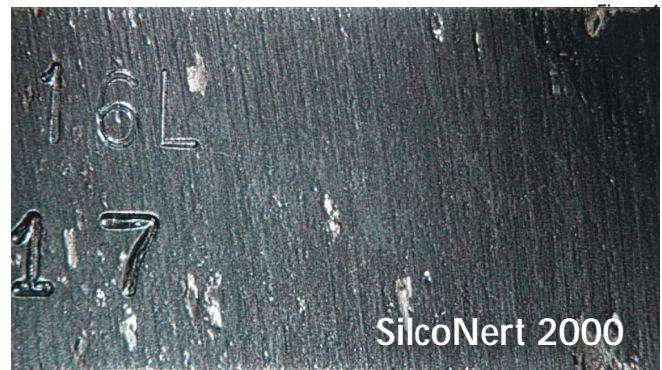
Material	Weight Loss (g)	Corrosion Rate (g/hr cm ²)	MPY (mils per year)
Hastelloy C-22	0.008	1.69×10^{-6}	0.673
316L Stainless Steel	0.309	6.93×10^{-5}	29.94
SilcoNert 2000	0.003	6.65×10^{-7}	0.287

Figure 3 shows material corrosion after 72 hours in a 6N HCl solution. The superior corrosion resistance of SilcoNert 2000 is remarkable at nearly 1/100th the corrosion rate of bare 316L stainless steel. This drastically reduces the long term costs of systems in corrosive or reactive process mixtures like those found in gas pipeline odorant applications.

It Just Makes Sense.



316L Stainless Steel



SilcoNert 2000

Figure 4 above shows the difference between an untreated 316L stainless steel test sample and a SilcoNert 2000 test sample exposed to an acid chloride solution per ASTM G 61.

Find out more: 1.800.225.0473 • www.CONCOA.com

Corporate Headquarters: 1501 Harpers Road • Virginia Beach, Virginia 23454 USA

SilcoNert