

Gas Sampling

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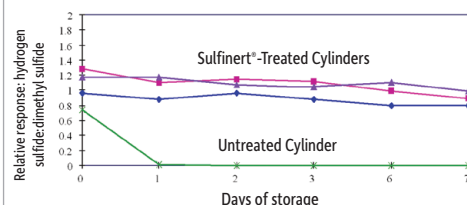
Sample Cylinders

- All cylinders have 1/4" female NPT threads on both ends.
- TPED compliant cylinders available for EU community.

Swagelok® sample cylinders are made of 304L and 316L stainless steel to resist corrosion and DOT rated to 1,800 and 5,000 psig (TPED cylinders rated to 1,450 and 4,350 psig), which allows sampling at gas wellheads as well as on-site refineries. Each cylinder is hydrostatically tested to at least 5/3 the working pressure.

Sulfur compounds are stable in Sulfinert®-treated stainless steel systems.

17 ppbv hydrogen sulfide in 500 mL cylinders



Applications:

- ASTM D1265
- Hydrocarbon sampling in refineries & petrochemical plants

Analyzing sulfur or mercury?

- Sulfinert® coating provides stable storage of sulfur and mercury at ppb levels.
- Inert coating doesn't flake; more durable than PTFE.

Sample Cylinders, High Pressure (Stainless Steel & Sulfinert®-Treated)

- 304L stainless steel; DOT rating to 1,800 psig (TPED cylinders to 1,450 psig).
- Range of cylinder sizes, 75 cc to 2,250 cc.

Size	1,800 psig (12,411 kPa), 304L SS		TPED, 1,450 psig (9,997 kPa), 304L SS	
	Stainless Steel cat.#	Sulfinert-Treated cat.#	Stainless Steel cat.#	Sulfinert-Treated cat.#
75 cc	22921	24130	22921-PI	24130-PI
150 cc	22922	24131	22922-PI	24131-PI
300 cc	22923	24132	22923-PI	24132-PI
500 cc	22924	24133	22924-PI	24133-PI
1,000 cc	22925	24134	22925-PI	24134-PI
2,250 cc	22926	21394	22926-PI	21394-PI

Sample Cylinders, Ultra-High Pressure (Stainless Steel & Sulfinert®-Treated)

- 316L stainless steel; DOT rating to 5,000 psig (TPED cylinders to 4,350 psig).
- Range of cylinder sizes, 150 cc to 500 cc.

Size	5,000 psig (34,474 kPa), 316L SS		TPED, 4,350 psig (29,992 kPa), 316L SS	
	Stainless Steel cat.#	Sulfinert-Treated cat.#	Stainless Steel cat.#	Sulfinert-Treated cat.#
150 cc	22927	22111	22927-PI	22111-PI
300 cc	22928	22112	22928-PI	22112-PI
500 cc	22929	22113	22929-PI	22113-PI

also available

Certificates are available upon request.

Sample Cylinder Valves (Stainless Steel & Sulfinert®-Treated)

- Multiple valve configurations, including dip tube and rupture discs.
- Large, durable, Kel-F® seat ensures leak-free operation.
- Temperature range: -40 °C to 120 °C
- 303 stainless steel.

Alta-Robbins' unique valve design incorporates a fully contained soft seat that provides durability and longer lifetime. Tight shut-off is easily achieved with very low torque, yet the valve is rugged enough to withstand overtightening.

Multiple valve configurations are available for both high-pressure and ultra-high-pressure sample cylinders. An outage tube or dip tube provides a headspace above liquefied gases so that, should expansion occur with an increase in temperature, the pressure is not dramatically increased. Outage is expressed as a percent of the total cylinder volume, based on the ratio of the length of headspace to the total length of the cylinder, with a maximum available outage of 50%. The dip tube is welded directly to the male inlet of the valve and cut to a length of up to 5.25 inches. Rupture discs function to protect sample cylinders from over-pressurization by venting to the atmosphere. The pressure rating on the rupture disc should always be lower than the cylinder.

Description	Stainless Steel cat.#	Sulfinert-Treated cat.#
3,500 psig (24,132 kPa) DOT Pressure Rating		
1/4" Male NPT x 1/4" Male NPT	26297	21400
1/4" Male NPT x 1/4" Female NPT	26298	26299
1/4" Male NPT x 1/4" Male Compression	26300	21401
1/4" Male NPT x 1/4" Male NPT w/5.25" Dip Tube*	26301	21402*
1/4" Male NPT x 1/4" Male NPT w/1,800 psi (12,411 kPa) Rupture Disc	26302	26303
1/4" Male NPT x 1/4" Female NPT w/1,800 psi (12,411 kPa) Rupture Disc	26304	26305
Replacement Rupture Disc, 1,800 psig (12,411 kPa)	26320	—
5,000 psig (34,474 kPa) DOT Pressure Rating		
1/4" Male NPT x 1/4" Male NPT	26306	26307
1/4" Male NPT x 1/4" Female NPT	26308	26309
1/4" Male NPT x 1/4" Male Compression	26310	26311
1/4" Male NPT x 1/4" Male NPT w/5.25" Dip Tube*	26312	26313
1/4" Male NPT x 1/4" Male NPT w/2,850 psi (19,650 kPa) Rupture Disc	26314	26315
1/4" Male NPT x 1/4" Female NPT w/2,850 psi (19,650 kPa) Rupture Disc	26316	26317
Replacement Rupture Disc, 2,850 psig (19,650 kPa)	26324	—

*To order a sample cylinder valve with dip tube, please call Restek® Customer Service at 800-356-1688, ext. 3, or contact your Restek® representative. Specify dip tube length or % outage when ordering (maximum length = 5.25" / 13.3 cm).
Note: End of part will not be treated after cutting tube to length.

Rupture Disc Tee (Stainless Steel & Sulfinert®-Treated)

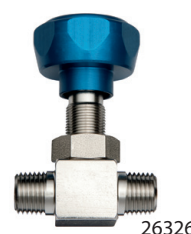
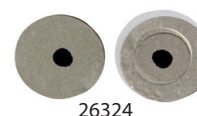
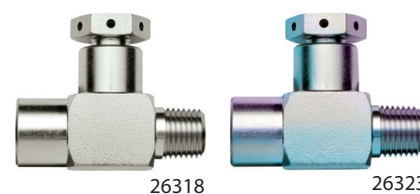
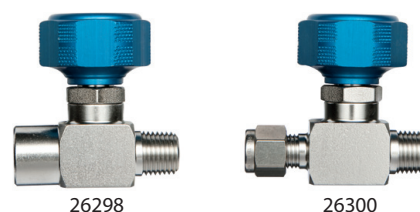
Unlike other designs, Alta-Robbins rupture disc tee is NOT permanently soldered to the disc, making the discs replaceable. Discs are easily changed without removing the valve or tee from the cylinder. These tees are designed to be installed into existing systems to provide reliable over-pressure protection.

Description	Stainless Steel cat.#	Sulfinert-Treated cat.#
1,800 psig DOT Pressure Rating		
Rupture Disc Tee, 1/4" Male NPT x 1/4" Female NPT	26318	26319
Replacement Rupture Disc	26320	—
2,850 psig DOT Pressure Rating		
Rupture Disc Tee, 1/4" Male NPT x 1/4" Female NPT	26322	26323
Replacement Rupture Disc	26324	—

Metering Control Valves (Stainless Steel & Sulfinert®-Treated)

- Reduces pressure between sample cylinder and GC injector.
- Maintains fine metering control.
- Contains Kel-F® seat.

Description	Stainless Steel cat.#	Sulfinert-Treated cat.#
3,500 psig (24,132 kPa) DOT Pressure Rating		
Metering Control Valve, 1/4" Male NPT x 1/4" Male NPT	26326	26327



Sample Cylinder Accessories

Description	Fittings	qty.	cat.#
Sample Cylinder Carrying Handle, 304 SS for 1.9" & 2" OD Cylinders (Includes handle and two attachment rings)	—	ea.	26373
Sample Cylinder Carrying Handle, 304 SS for 3.5" & 4" OD Cylinders (Includes handle and two attachment rings)	—	ea.	26374
Sample Cylinder 316 SS End Pipe Plug, Stainless Steel	1/4" Male NPT	ea.	26375
Sample Cylinder 316 SS End Pipe Plug, Sulfinert-Treated	1/4" Male NPT	ea.	26376
Sample Cylinder 316 SS Hollow Hex Plug	1/4" Male NPT	ea.	26377
Sample Cylinder SS Pipe Cap w/Lanyard	1/4" Female NPT & 20" Lanyard	ea.	26378
Sample Cylinder SS Pipe Cap, Stainless Steel	1/4" Female NPT	ea.	22969
Sample Cylinder SS Pipe Cap, Sulfinert-Treated	1/4" Female NPT	ea.	22970

SS=stainless steel

Protecting Your Sulfinert®-Treated Products

Cleaning Tips

When cleaning a treated part, rinse with a solvent that will dissolve probable surface contaminants (i.e., use a nonpolar solvent to remove hydrocarbon contaminants, or a more polar solvent to remove more active contaminants).

Avoid using cleaners containing abrasives as they can scratch the layer. Mild sonication may assist in contaminant removal, but do not oversonicate—this could damage the layer. Solids can be removed with a soft nylon bristle brush using light pressure.

Caution! Do not use basic solutions or soaps with pH>8. Do not steam clean Sulfinert®-treated components or lines as this could damage the layer.

Preventing Galling

As with any threaded fitting, galling may occur when assembling two treated parts. To prevent thread damage, use a PTFE tape.

A scouring pad can be used to remove coating from the threads to reduce galling.

Ferrules used in compression fittings should not be coated—leaks may occur.

Troubleshooting

Under normal use, your treated items should deliver outstanding performance for years to come. However, effective lifetime is dependent on the severity of the environment. Factors that can reduce performance are:

- *Contamination*—Failure to properly clean the surface can allow increased surface activity. If performance changes, thoroughly clean the surface and inspect the layer for damage.
- *Erosion*—Contact with abrasives can accelerate surface wear.
- *Bases*—Contact with a base (pH 8 or higher) can accelerate deterioration of the layer.

Surface finish and color should stay consistent throughout the life of the product. Changes in the finish or color may indicate a partial loss of the layer. To prevent further loss, ensure no exposure to bases or abrasives.

Gas Sampling Valves and Sample Loops (Sulfinert®-Treated)

- Ideal for samples containing low concentrations of sulfur or other active compounds.
- Sample loop sizes from 5 µL to 5 mL.

Sulfinert® treatment eliminates active sites in the valve or loop for better recovery of active compounds.

Gas Sampling Valves & Replacement Rotors (Sulfinert®-Treated)

(1/16" Fittings, 0.40 mm Port Diameter; "W Type" Valve)

Description	qty.	cat.#
Sulfinert Gas Sampling Valve; 4-Port	ea.	20584
Sulfinert Gas Sampling Valve; 6-Port	ea.	20585
Sulfinert Gas Sampling Valve; 10-Port	ea.	20586

Replacement Rotors (Not Coated)

Description	qty.	cat.#
Replacement Rotor (not coated) for 4-Port Sulfinert Gas Sampling Valve	ea.	20587
Replacement Rotor (not coated) for 6-Port Sulfinert Gas Sampling Valve	ea.	20588
Replacement Rotor (not coated) for 10-Port Sulfinert Gas Sampling Valve	ea.	20589

Gas Sample Loops (Sulfinert®-Treated)

(1/16" fittings, 1 mm ID, for "W Type" valves)

Description	Size	qty.	cat.#
Sample Loops, Sulfinert-Treated	5 µL	ea.	22840
Sample Loops, Sulfinert-Treated	10 µL	ea.	22841
Sample Loops, Sulfinert-Treated	20 µL	ea.	22842
Sample Loops, Sulfinert-Treated	25 µL	ea.	22843
Sample Loops, Sulfinert-Treated	50 µL	ea.	22844
Sample Loops, Sulfinert-Treated	100 µL	ea.	22845
Sample Loops, Sulfinert-Treated	250 µL	ea.	22846
Sample Loops, Sulfinert-Treated	500 µL	ea.	22847
Sample Loops, Sulfinert-Treated	1 mL	ea.	22848
Sample Loops, Sulfinert-Treated	2 mL	ea.	22849
Sample Loops, Sulfinert-Treated	5 mL	ea.	22850



Jumbo Syringe

Clear acrylic syringes, ideal for holding and dispensing large volumes of gas. An adjustable plunger on the O-ring ensures that the syringe is gas-tight over a long period of time. The central port is supplied with a luer lock fitting; the secondary port is supplied with a septum nut. This enables access to the gas sample for adding standards or removing a subsample. The plunger stem is detachable, making sample storage easy.

Volume	Model	SGE cat.#	Restek cat.#	qty.
500 mL	500MAR-LL-GT	009910	21275	ea.
1000 mL	1000MAR-LL-GT	009920	21276	ea.
2000 mL	2000MAR-LL-GT	009930	21277	ea.



Syringe O-Rings

Syringe Volume	SGE cat.#	Restek cat.#	qty.
500 mL	032527	21278	ea.
1,000 mL	032532	21279	ea.

