

# The Advantage

Innovators of  
High Resolution  
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Products

## Restek's Silcosteel® HPLC Columns

*the strength of steel and inertness of glass*

by Matt Piserchio

*in this issue*

Combine the ruggedness and pressure limits of stainless steel with the inertness of PEEK or GLT.

- Provide a shield between the metal surface and active species.
- Applicable to all column dimensions.

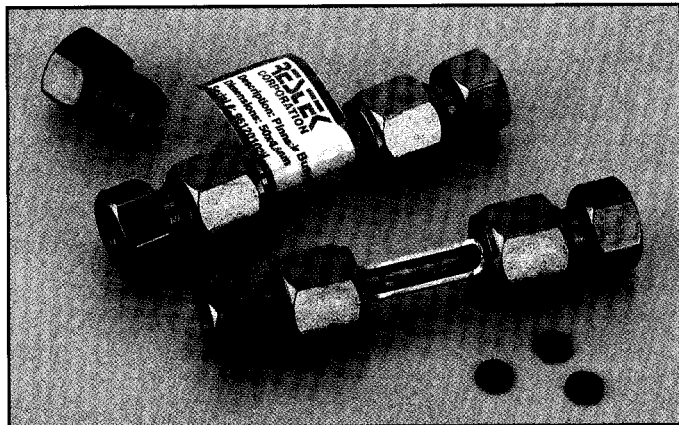
When analyzing active components, GC and HPLC sample pathways must be inert to prevent adsorption and poor chromatography. Unfortunately, GC sample pathways are constructed from metal to achieve and maintain the high temperatures needed for sample vaporization. In HPLC, columns and sample pathways require materials that can withstand high pressures. Contact of an active analyte

with metal surfaces can result in adsorption, sample degradation, and inaccurate quantitation.

Silcosteel is a proprietary process developed by Restek that applies a thin layer of material to the surface of metals. This coating acts as a passivation layer by providing a shield between the metal surface and the active species, eliminating detrimental interactions.

Silcosteel GC columns and accessories have been proven effective by a significant number of satisfied customers. We have coated FID jets, FPD jets, entire injection ports, inlet seals, metal injection port liners, head space needles, nickel reaction tubes, and air sampling canisters. MXT columns, rugged and inert metal GC capillary columns treated with Silcosteel, are the column of choice in the process analyzer and portable GC markets. Now Silcosteel technology is available for a full line of normal phase, reverse phase, and ion exchange HPLC columns.

Metal-free pathways are desired to reduce irreversible adsorption during HPLC analyses of proteins, peptides, and any other compounds that can undergo metal complexation.\*\* Currently, columns constructed of PEEK (polyetheretherketone) or GLT (glass-lined stainless steel tubing) are utilized for such analyses. Although both materials are effective, each of these materials has definite limitations.



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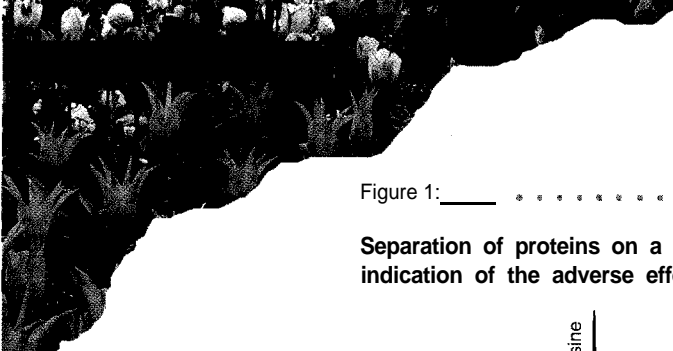


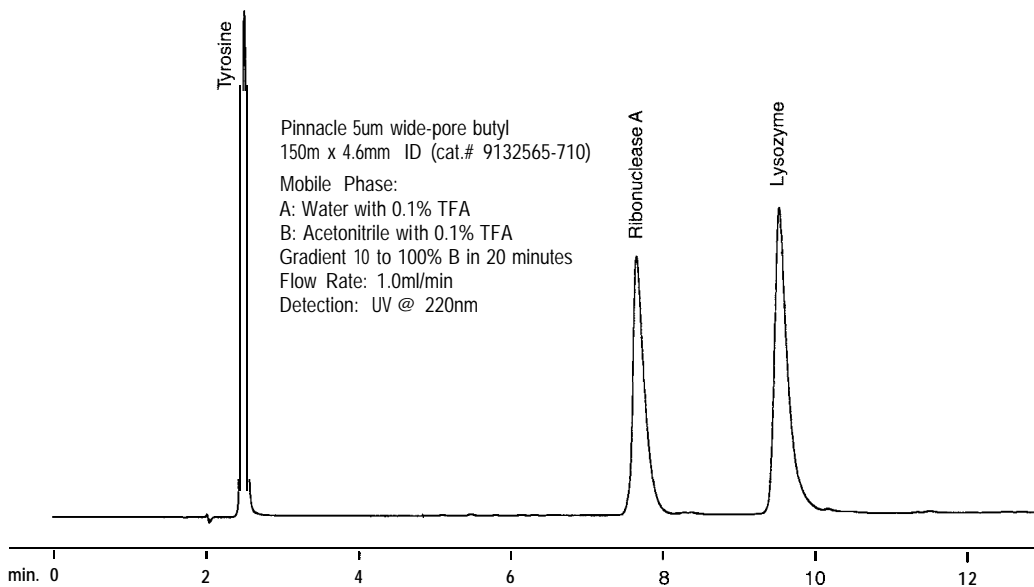
Figure 1: \_\_\_\_\_

Separation of proteins on a Pinnacle wide-pore butyl in Silcosteel hardware shows no indication of the adverse effects of metal on protein adsorption.

PEEK has a limited pressure threshold and can contain chemical impurities. GLT can crack, especially at the column inlet or outlet, causing a disturbance in the flow pattern resulting in peak distortion and adsorption. Finally, both PEEK and GLT are available in limited configurations. Silcosteel combines the ruggedness, thermal stability, and pressure limits of stainless steel with the inertness of GLT or PEEK. Silcosteel can also be applied to any size HPLC column and virtually any other metal surface in the HPLC sample pathway.

The separation of proteins in Figure 1 illustrates the inertness of the Silcosteel layer. Ribonuclease A and Lysozyme elute with excellent symmetry using a standard gradient profile. Sharp, symmetrical peaks indicate the absence of the catalytic effect of metal surfaces that may cause protein adsorption. This will result in improved resolution and recovery when analyzing active species.

If your analyses demand a metal-free pathway, Restek has the Silcosteel-treated HPLC column that is right for you. Our complete line of Pinnacle HPLC columns is now available in Silcosteel hardware. **Simply add a "-710" to your part number to add the benefits of Silcosteel to your HPLC analysis.**



For part numbers and prices, please call  
**your local distributor**  
 or call to request a copy of our new 1997  
**Chromatography Products Guide**

Add "-710" to your  
 part number and  
 get the benefits of  
**Silcosteel®**  
 with your HPLC  
 analysis!

A complete line of HPLC columns is available from Restek in either  
**Silcosteel® or Stainless Steel hardware:**

**Reverse Phase**

- Pinnacle ODS
- Pinnacle Octyl
- Pinnacle Phenyl
- Pinnacle Butyl
- Pinnacle Methyl
- Pinnacle Ultra C18
- Kromasil C18
- Kromasil C8
- Kromasil C4
- Nucleosil C18
- Nucleosil C8

**Base Deactivated**

- Pinnacle ODS Amine
- Pinnacle Octyl Amine
- Pinnacle Phenyl Amine
- Pinnacle Cyano Amine

**Normal Phase**

- Pinnacle Silica
- Pinnacle Amino
- Pinnacle Cyano
- Nucleosil Cyano

**Ion Exchange**

- Pinnacle SAX
- Nucleosil SCX

**Specialty**

- Pinnacle TO-11
- Pinnacle PAH
- Pinnacle EcoSep
- Pinnacle Wide-Pore Butyl

**Act now to receive  
the added benefits  
of Silcosteel® for  
your HPLC column  
at no extra cost!\***

*\* This special offer expires  
May 30, 1997.*

**References**

- 1.P.C. Sadek, P.W. Carr, L.D. Bowers and L.C. Haddad, *Anal. Biochem.*, 144( 1985)128.
- 2.C.N. Trumbore, R.D. Tremblay, J.T. Penrose, M. Mercer and F. Kelleher, J. *Chromatogr.*, 280(1983)43.



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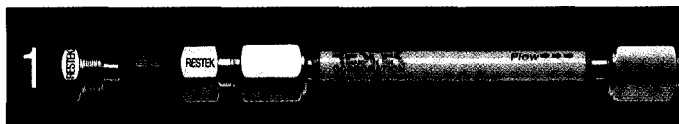
**Please call  
your local distributor  
for more information or HPLC Technical Service**

# HPLC Trident™ Guard Column System

by Matt Piserchio

**Call for ordering information!**

- **Our convenient and economical leak-free system is as easy as 1-2-3.**
- **The versatile configuration protects against all levels of contamination.**
- **The Trident system's integral design eliminates troublesome tubing connections.**



1. The system's foundation consists of the analytical column configured with our exclusive Trident end fitting and XF filter fitting. This configuration contains the standard internal frit as well as a replaceable external frit, which can be easily changed without disturbing the packed bed. Changing the external frit can reverse the effects of accumulated particles, such as high back pressure or peak distortion. To order this basic configuration, add a "-700" to any Restek HPLC column catalog number.

2. The system can also be configured to accept an integral guard cartridge for greater protection against sample contaminants. The integral design eliminates

the need for a separate holder and connecting tubing, which can cause additional band broadening. To obtain this configuration, order any Restek HPLC column (include the "-700" suffix), the XG male fitting, and the appropriate pack of guard cartridges.

3. For maximum protection against contaminants and particulate matter, the system can be configured with both an integral guard cartridge and a replaceable external frit. To obtain this configuration, order any Restek HPLC column (include the "-700" suffix), the XG-XF male fitting, and the appropriate pack of guard cartridges.