CHROMATOGRAPHIC SPECIALTIES INC.

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Technical Note CS34

Sample contamination is the primary cause of GC column failure!

Most of the common problems associated with poor peak shape and column failure in gas chromatography are due to contaminants in the chromatographic system; the primary source of these contaminants being the analytical sample.

How do you know if your sample contains substances that are hazardous to your analytical column?

Try this simple test.

1. Deposit approximately 20 μl of the sample onto a microscope slide.
2. Allow the sample to dry by setting it on the heated injection port or hot plate.
3. After drying, examine the slide to see if there is any visible residue.

The presence of residue indicates substances that could cause chromatographic problems or even damage to the stationary phase. Non-volatile sample contaminates will accumulate on the head of the column and interfere with the partitioning of solutes, causing peak tailing. Ghost peaks are often the result of the accumulation of semi-volatiles that eventually elute off the column.

Further sample preparation such as filtration, liquid-liquid or solid phase extraction to remove semi-and non-volatiles, not only improves chromatography but increases the longevity of the analytical column.

Chromatographic Specialties Inc. carries a wide assortment of sample preparation products to meet your analytical challenges.

Syringe Filters

Filtration using syringe filters is an effective way to remove particulate from the samples prior to injection. Injecting a purer filtrate helps to prolong the life of the instrumentation as well as removing contaminants that will interfere with the analysis. Syringe filters are disposable filtration devices that consist of a membrane integrally sealed into a polymeric housing with fittings that connect the syringe filter to a syringe or tubing. Contaminants which are larger than the pore size are trapped on the surface of the membrane; any particulate smaller than the pore size passes through.

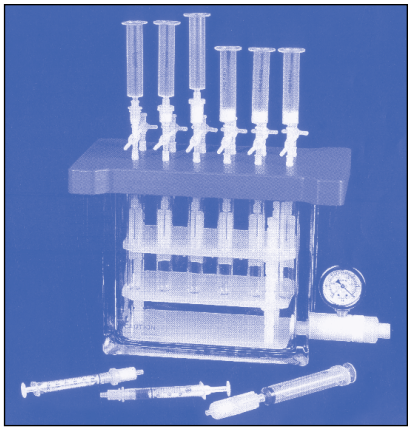
- 0.2μm pore size is used for removing particles from solutions and sterile venting
- 0.45μm pore size is used primarily for sample clarification of chromatography samples
- 1.0μm / 2.5μm / 5.0μm pore sizes are for coarse particle removal or viscous samples
- Difficult to filter solutions may require glass pre-filters to prevent the filter membrane from clogging

CHROMSPEC Syringe Filters are available in a variety of membranes and pores sizes for all your filtration needs.
For more information on these affordable high quality filters, request literature code **CS26**.

P.O. Bag 1150, 300 Laurier Blvd., Brockville, ON K6V 5W1
Toll Free: 1-800-267-8103 • Fax: 613-342-1144 • sales@chromspec.com

Solid Phase Extraction (SPE)

Solid phase extraction columns can be used either for simple clean-up or for more selective analtye extraction from the sample matrix. Unlike labor intensive liquid-liquid extraction techniques, SPE is rapid, selective, easily automated and consumes minimal organic solvent. SPE enables the simultaneous extraction of acidic, basic and neutral compounds. Interferences can be selectively removed as the sample is passed through the SPE column, producing a purer filtrate with higher analyte recoveries. Disposable polypropylene SPE columns are packed with either silica or polymeric based sorbents which may contain additional bonded functional groups for increased selectivity. The standard six step procedure for analyte extraction consists of sample pretreatment, SPE column conditioning /equilibration, sample application, interference wash and finally analyte elution.



Vacuum Manifold

SPE improves and simplifies sample clean-up while improving detection limits and increased column lifetimes.

Available SPE products through Chromatographic Specialties Inc ...

SPE Columns and Accessories from United Chemical Technologies (UCT)

UCT manufactures a wide range of highly reproducible columns for pharmaceutical, forensic, toxicological and environmental applications. All of UCT bonded phases are vigorously tested to ensure lot-to-lot reproducibility and performance with careful attention to particle size distribution.
CLEAN SCREEN * CLEAN-UP * XTRACK-T * ENVIRO-CLEAN * RSV * Vacuum Manifolds * Flash

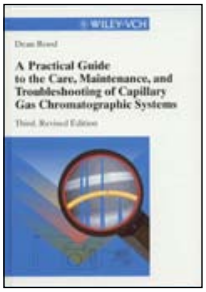
AccuBOND^{II} SPE Columns and Accessories from Agilent Technologies

The AccuBOND^{II} name on SPE cartridges indicates high quality in a wide selection of phases for use in routine analyses that call for consistent results with higher sample volumes.

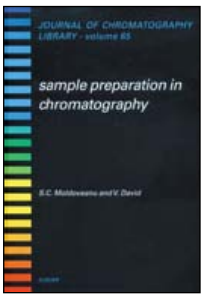
CHROMOSEP SPE Columns and Accessories

Affordable SPE columns and accessories for simple clean-up applications.

Related Reference Books:



A Practical Guide to the Care, Maintenance, and Troubleshooting of Capillary Gas Chromatographic Systems, 3rd Edition. D. Rood, Wiley-VCH, 1999, 343pp, ISBN 3-527-29750-2.
The topics covered are based on the most common problems, questions, and misconceptions about capillary gas chromatography. **Product number J9001013**



Sample Preparation in Chromatography
S.C. Moldoveanu and V. David, Elsevier Science, 2002, 940pp. ISBN 0-444-50394-3.
This book describes various ways to process the sample, explaining the principle, discussing the advantages and disadvantages, describing the applicability to different types of samples, and showing the fitness to specific chromatographic determinations.
Product number RK21446

If you have any questions about how to reduce sample contamination with SPE or filtration, contact our knowledgeable Technical Support Team at 1-800-267-8103 or tech@chromspec.com.

Visit our website, www.chromspec.com for other helpful technical tips.