

# HPLC COLUMNS



## HPLC COLUMNS

simply Quality



# GREYHOUND - *setting the standard*

## Q Range

As a trusted name in the supply of chromatography consumables and certified reference standards, Greyhound also offers a comprehensive selection of top quality own brand HPLC columns, Capillary columns, SPE columns and Certified syringe filters. This catalogue contains details of the Q-Col range of HPLC Columns. Other product catalogues are available on request.

These quality products are backed by the guaranteed reliability and technical support which has become synonymous with the name Greyhound. Visit our website at: [www.greyhoundchrom.com](http://www.greyhoundchrom.com)

*Welcome to a new era in analyte detection and column performance.*





# GREYHOUND CHROMATOGRAPHY

## Q-CoI HPLC COLUMNS

### INDEX

|   | <i>Page</i> |
|---|-------------|
| About Greyhound Chromatography                              | ifc         |
| GenSphere™ HPLC Columns                                     | 2           |
| Q-Col GenSphere ODS-1                                       | 2           |
| Q-Col GenSphere ODS-2                                       | 5           |
| GenSphere Chemistry   | 7           |
| GenSphere Definitions                                       | 8           |
| GenSphere Columns Data                                      | 9           |
| Spheripak HPLC Columns                                      | 12          |
| Spheripak Columns Data                                      | 16          |
| <b>Accessories</b>  |             |
| Guard Columns   | 18          |
| ZDV Unions  | 18          |
| Fingertight Fittings  | 18          |
| Pre-cut Stainless Steel Tubing                              | 19          |
| Stainless Steel Tubing                                      | 20          |
| PTFE Tubing   | 20          |
| PEEK Tubing   | 21          |
| PEEK Springy™ Tubing  | 21          |
| Striped Colour Coded PEEK Springy™ Tubing                   | 22          |
| PEEK In-Line Filter Kit - High Pressure                     | 23          |
| Last Drop Mobile Phase Filter                               | 23          |
| Column Coupler - One Piece Fingertight                      | 24          |
| Last Drop Filter/Sparger                                    | 24          |
| PEEK Tubing Elbow   | 25          |
| Clean-Cut Tubing Cutter                                     | 25          |
| Guillotine Polymer Tubing Cutter                            | 25          |
| Sainless Steel Tubing Cutter (for non-critical connections) | 25          |
| Stainless Steel Tubing Pliers                               | 26          |
| Tubing Clip - the LC Tubing Organiser                       | 26          |
| Rheodyne Wrench   | 26          |
| Solvent recycler, SolventTrak™                              | 27          |



## Greyhound Chromatography Q-Col HPLC Columns

Our extensive range of HPLC columns and accessories are designed and manufactured to the most exacting and rigorous standards.

Greyhound have been supplying HPLC columns and consumables for over 30 years, our experience places us in a unique position to offer advice and guidance when choosing the most suitable column for a particular analysis.

The manufacturing of our Q-Col silica is the first critical stage in the production of the high performance columns. Q-Col silica is ultra-pure, totally porous and perfectly spherical, the elimination of surface irregularities and extremely low metals content make it superior to other silica-based packings on the market. The absence of micropores eliminate the chromatographic problems associated with incomplete substitution of the support, a problem found in other manufacturers packings. The manufacturing process of Q-Col silica, the bonding of the phase, right through to the packing and final testing of each column is monitored to meet the most demanding specifications in the industry and strict ISO 9001 procedures. These rigorous processes result in columns of the highest quality, with longer lifespans and reproducible column-to-column results every time - with every column.

Greyhound Q-Col GenSphere™ and Spheripak™ HPLC Columns are individually tested and supplied with a comprehensive test chromatogram and product specification sheet.

The most common size of columns for analytical applications have traditionally been either 4.6 or 4.0mm ID and 150 or 250mm length, however there is a continual move towards shorter columns and narrower IDs.

We offer columns from just 2mmID for high throughput LC/MS analysis right through to large semi-preparative and preparative columns, enabling true scale-up from microbore to preparative HPLC. With column lengths from 3cm to over 30cm, Greyhound offers one of the largest selection of columns on the market

If you have a specific requirement for other manufacturers packing materials, we offer many brands in addition to our own Q-Col range, and the columns are manufactured to the same high standards as with our own materials.

**Q-Col GenSphere™ HPLC Columns offer many advanced features including:**

- Exceptional batch-to-batch reproducibility
- Extremely low metals content
- Meticulously controlled materials
- Ultra-pure silica

- Perfect spherical particles
- Maximum pH range (between 1.5 and 11.0)
- 3, 5 and 10 µm particle sizes
- Easily scaled-up, from microbore to preparative HPLC.
- Available with 300Å pore size for biochromatography.
- Exceptionally long column lifetimes
- Wide range of packings
- Fully deactivated after functional bonding

**Q-Col Spheripak™ HPLC silica has been specially developed to replace Waters Spherisorb™ one of the most popular packings on the market today.**

Every parameter of the material has been evaluated to confirm total correlation between the two materials and the results of rigorous testing by users in many different fields confirm the excellent results obtained by using Q-Col Spheripak™

Our strictly controlled manufacturing processes have been specifically designed to ensure the maximum reproducibility and efficiency of every Q-Col Spheripak™ HPLC column.

We are so confident every Q-Col Spheripack™ column will work in an identical manner to the equivalent WS column - **we guarantee it!** If you are dissatisfied in any way with its comparative performance we will refund the price you paid.

## GenSphere™ HPLC Columns

### Q-Col GenSphere ODS-1

Q-Col GenSphere ODS-1 is a totally endcapped packing with an exceptionally high level of deactivation, which minimises interfering interactions when analysing strongly acidic or basic analytes or chelating compounds. GenSphere ODS-1 is highly stable at pH values of 1.5 to 11.0.

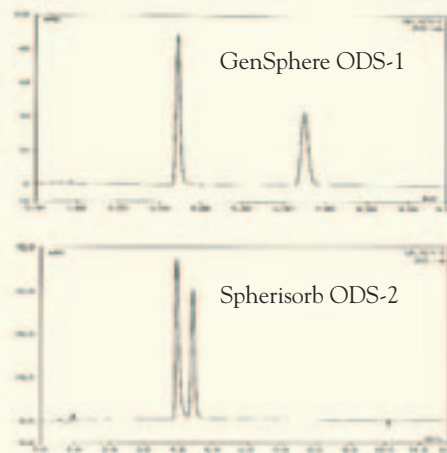
**Stability** - The advanced manufacturing processes of the Q-Col GenSphere columns ensure extended column life even under extreme conditions where most manufacturers columns would suffer severe degradation.

**Deactivation** - A major cause of peak tailing and distortion associated with the analysis of basic compounds is caused by free surface silanols which are left exposed during the bonding process. Elevated quantities of metals in the silica will increase the acidity of the surface silanols, keeping them ionised even at low pHs, these conditions can have a seriously detrimental effect on chromatographic peaks. The Pyridine/Phenol test is used as a marker of the presence of these surface silanols. Ideal conditions will show the pyridine peak eluting before the phenol peak, both peaks eluting with total symmetry without any evidence of tailing, likewise a broader separation between the two peaks indicates a superior deactivation process. Q-Col GenSphere ODS-1 columns lead the way with the pyridine/phenol test compared to other manufacturers columns, confirming the exceptional level of deactivation of the GenSphere silica.

Additional confirmation of the exceptional quality of the Q-Col GenSphere ODS-1 columns is the acidic compounds test. Acidic compounds highlight the presence of chelating centres or points of ionic interchange which may be present in the silica particles. Q-Col GenSphere ODS-1 columns have perfectly symmetrical peaks compared to the significant tailing observed when using this test with other columns on the market. Symmetrical peaks are also achieved when separating basic compounds.

The exceptional level of deactivation of the Q-Col GenSphere ODS-1 columns provide perfectly symmetrical peaks time after time where other columns on the market fail badly resulting in peaks with pronounced tailing or irreversible adsorption.

#### Pyridine / Phenol Test



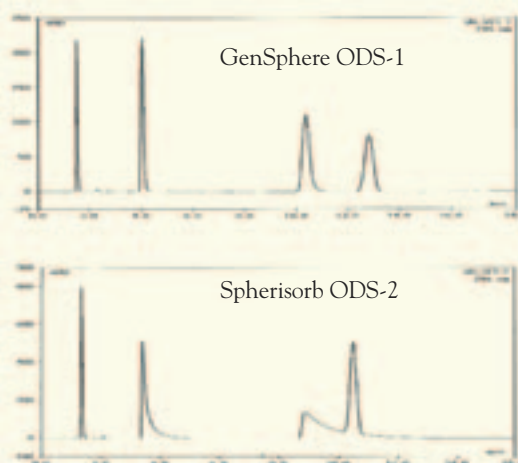
##### Test Conditions

Eluant: Acetonitrile/Water 30/70, 1mL/min  
Lambda: 265nm

##### Composition

Pyridine 2.1ul/min  
Phenol 14mg/ml

#### Acid Compounds Test



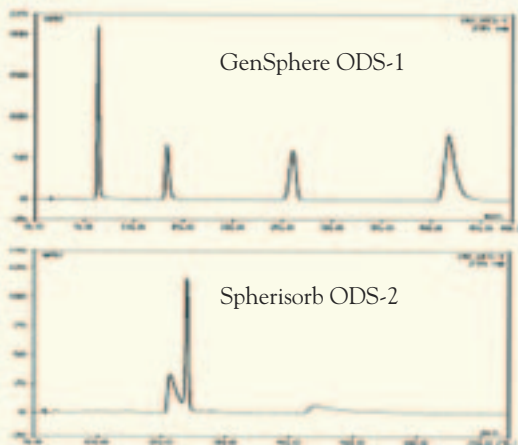
##### Test Conditions

Eluant: 20 mM KH<sub>2</sub>PO<sub>4</sub> pH3.2/CH<sub>3</sub>CN 65:35  
1ml/min. Temp. 40°C.  
UV 254 nm

##### Composition

Uracil: 0.5 mg/ml  
Benzoic Acid: 3.6 mg/ml  
p-Ethylbenzoic acid: 0.9 mg/ml  
Methylbenzene: 3.0 mg/ml

#### Basic Compounds Test



##### Test Conditions

GenSphere ODS-1  
Eluant: 20 mM KH<sub>2</sub>PO<sub>4</sub> pH7/CH<sub>2</sub>CN 35:65  
1ml/min. Temp. 25°C. UV 235 nm

##### Composition

Propranolol: 0.08 mg/ml  
Diphenidramine: 1.28 mg/ml  
Acetonaphthalene: 0.2 mg/ml  
Amyltryptilene: 0.3mg/ml



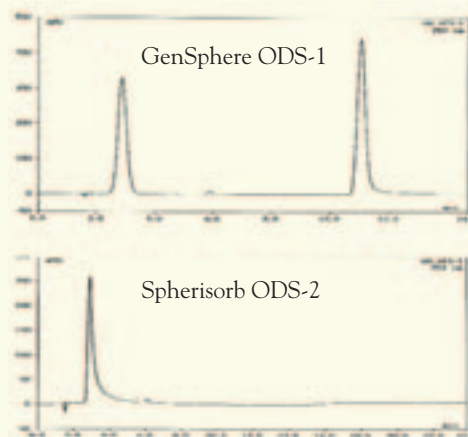
## GenSphere™ HPLC Columns

### Silica Purity

At the heart of every Q-Col GenSphere HPLC column is its exceptionally pure silica. The elimination of metallic impurities, the precise control of its pore size and pore distribution all result from the stringent quality procedures used in its manufacturing processes, making GenSphere one of the finest chromatography silicas on the market.

The 8-quinolinol/acetylacetone test demonstrates chromatographic differences between Q-Col GenSphere ODS-1 and a competitor's column with a high level of metallic impurities for chelating compound 8-quinolinol.

### Metallic Trace Test



#### Test Conditions

GenSphere ODS-1

Eluant: 10 mM KH<sub>2</sub>PO<sub>4</sub> pH6.8/Methanol 60:40  
1 ml/min. Temp 30°C. UV 254nm

#### Composition

8-Quinolinol: 0.5mg/ml

Acetylacetone: 0.5 mg/ml



## Q-Col GenSphere ODS-2

Similar to the Q-Col GenSphere ODS-1 columns, our GenSphere ODS-2 columns have a high selectivity for hydrophilic and polar compounds, which are often poorly retained on conventional ODS columns.

By modifying the process of functionalising the pure silica particles, the collapsing effect of the C18 chains when working with mainly aqueous eluants is prevented. This adaptation enables the chromatographer to achieve excellent performance even with a 100% aqueous phase.

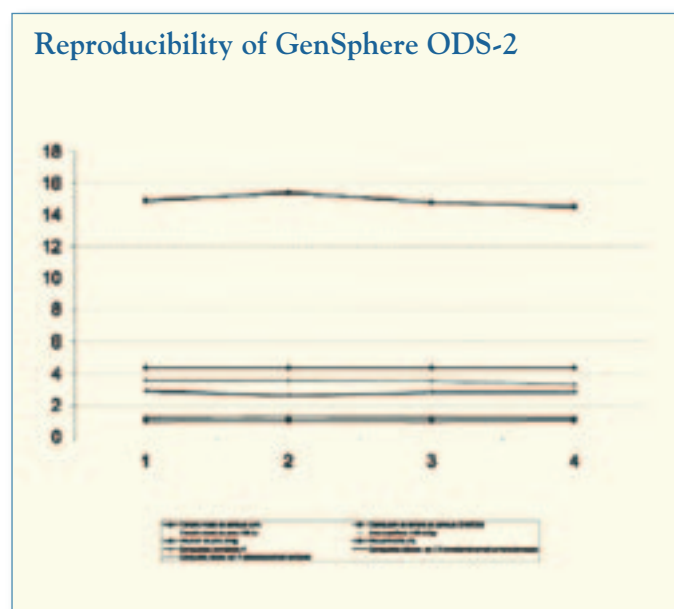
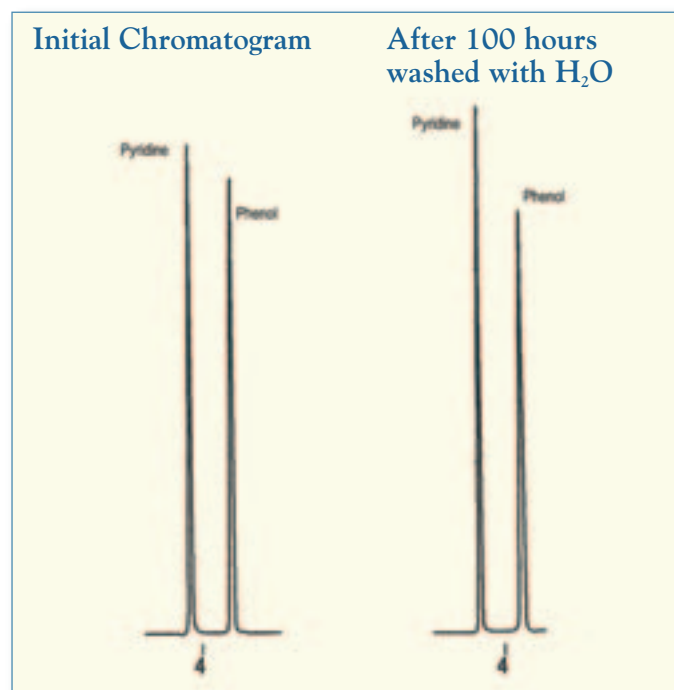
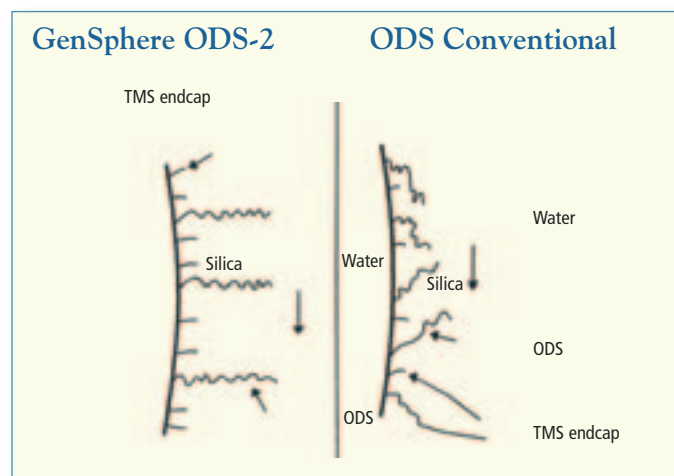
Principal features -

- Compatible with 100% aqueous eluant
- Particularly suitable for the separation of hydrophilic compounds
- Strong retention in aqueous eluants
- Long useful lifespan with aqueous eluants
- Selectivity compliments Q-Col GenSphere ODS-1
- High mechanical stability
- Maximum versatility

Applications for GenSphere ODS-2 columns are generally the same as for the ODS-1 columns. However, this field of applications is extended to include particularly difficult separations such as oligosaccharides, amino acids, nucleotides and organic acids, which conventional reversed phase columns may not be able to separate satisfactorily.

GenSphere ODS-2 columns have a specific selectivity for compounds which contain slightly polar groups in their structure. The columns are especially recommended for LC-MS in that, in many cases, the use of plugs or ionic blocking agents are avoided, which negatively affect detection when this technique is used.

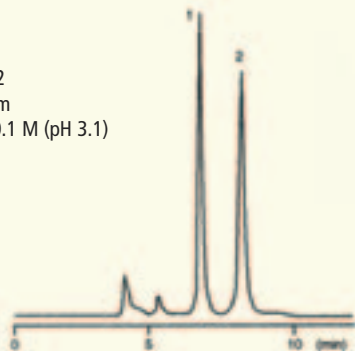
As can be seen in the chromatograms, even after more than 100 hours of operation with water, no alteration is observed in retention times, selectivity or distortion of the pyridine and phenol peaks - a clear indication that no collapse of the bonded phase functionality is adversely achieved with Q-Col GenSphere ODS-2 columns. Notice how the bonded phase functionality has collapsed with the majority of reversed phase columns on the market, which is typical under these conditions.



## Antioxidants

Column GenSphere ODS-2  
5µm, 15 x 0.46 cm  
Eluant: Phosphate Plug 0.1 M (pH 3.1)  
Flow: 0.6ml/min  
Detector ECD

Sample: 1. Ascorbic Acid  
2. GSH



## Water Soluble Vitamins

Column GenSphere ODS-2  
5µm, 15 x 0.46 cm  
Eluant: Phosphate Plug 20 mM (pH 7) CH3CN 96/5  
Flow: 0.6ml/min  
Detector UV 210 nm

Sample: 1. Calcium Pantothenate  
2. Pyridoxine hydrochloride (B6)  
3. Nicotinamide



## Glycolic Acid and Lactic Acid

Column GenSphere ODS-2  
5µm, 15 x 0.46 cm  
Eluant: H3PO4 0.1%  
Flow: 0.6ml/min  
Detector UV 210 nm

Sample: 1. Glycolic Acid  
2. Lactic Acid



## Alcohols

Column GenSphere ODS-2  
5µm, 15 x 0.46 cm  
Eluant: H2O  
Flow: 0.6ml/min  
Detector RID  
Temperature: 40°C.

Sample: 1. Methanol  
2. Ethanol  
3. iso-Propanol  
4. n-Propanol



## Amino Acids

Column GenSphere ODS-2  
5µm, 15 x 0.46 cm  
Eluant: H2O  
Flow: 0.6ml/min  
Detector RID  
Temperature: 40°C.

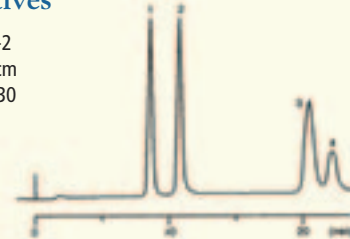
Sample: 1. Alanine  
2. Valine  
3. Isoleucine  
4. Leucine



## Cyclodextrin derivatives

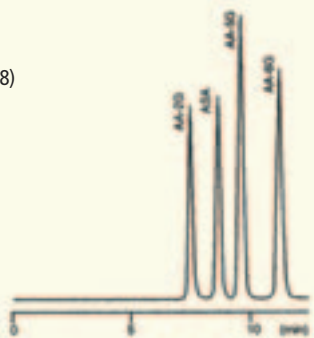
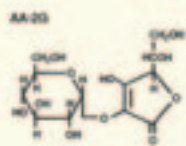
Column GenSphere ODS-2  
5µm, 15 x 0.46 cm  
Eluant: MEOH/H2O 70:30  
Flow: 0.6ml/min  
Detector UV 240 nm  
Temperature: ambient

Sample: 1. 6',6'-di-O-trytyl-cG8  
2. 6',6'-di-O-trytyl-cG8  
3. 6',6'-di-O-trytyl-cG8  
4. 6',6'-di-O-trytyl-cG8



## Ascorbic Acid and Glycosides

Column GenSphere ODS-2  
5µm, 15 x 0.46 cm  
Eluant: Phosphate Plug (pH 3.8)  
Flow: 0.4ml/min  
Detector UV 240 nm  
Temperature: Ambient



## Fructo-oligosaccharides

Column GenSphere ODS-2  
5µm, 15 x 0.46 cm  
Eluant: H2O  
Flow: 0.6 ml/min  
Detector RID  
Temperature: Ambient





The exceptional qualities of GenSphere HPLC packings are available in a full range of chemistries

|                                      | ODS-1                                | ODS-2                                | C1                      | C4                                   | C8                                   |
|--------------------------------------|--------------------------------------|--------------------------------------|-------------------------|--------------------------------------|--------------------------------------|
| Pore Size                            | 120Å                                 | 120Å                                 | 120Å                    | 120Å                                 | 120Å                                 |
| Particle Size                        | 3, 5 and 10 µm                       | 3, 5 and 10 µm                       | 3, 5 and 10 µm          | 3, 5 and 10 µm                       | 3, 5 and 10 µm                       |
| Volume of pores in ml/g              | 1.0 ml/g                             | 1.0 ml/g                             | 1.0 ml/g                | 1.0 ml/g                             | 1.0 ml/g                             |
| Surface area                         | 300 m <sup>2</sup> /g                | 300 m <sup>2</sup> /g                | 300 m <sup>2</sup> /g   | 300 m <sup>2</sup> /g                | 300 m <sup>2</sup> /g                |
| Purity of silica                     | Ultrapure                            | Ultrapure                            | Ultrapure               | Ultrapure                            | Ultrapure                            |
| %C                                   | 17%                                  | 15%                                  | 5%                      | 8%                                   | 10%                                  |
| Type of phase                        | Monofunctional and totally endcapped | Monofunctional and totally endcapped | Monofunctional          | Monofunctional and totally endcapped | Monofunctional and totally endcapped |
| Metallic impurities (Al, Fe, Ti, Zr) | Less than 10ppm of each              | Less than 10ppm of each              | Less than 10ppm of each | Less than 10ppm of each              | Less than 10ppm of each              |

|                                      | CN                                   | NH <sub>2</sub>         | Ph                      | SI                      |
|--------------------------------------|--------------------------------------|-------------------------|-------------------------|-------------------------|
| Pore Size                            | 120Å                                 | 120Å                    | 120Å                    | 120Å                    |
| Particle Size                        | 3, 5 and 10 µm                       | 3, 5 and 10 µm          | 3, 5 and 10 µm          | 3, 5 and 10 µm          |
| Volume of pores in ml/g              | 1.0 ml/g                             | 1.0 ml/g                | 1.0 ml/g                | 1.0 ml/g                |
| Surface area                         | 300 m <sup>2</sup> /g                | 300 m <sup>2</sup> /g   | 300 m <sup>2</sup> /g   | 300 m <sup>2</sup> /g   |
| Purity of silica                     | Ultrapure                            | Ultrapure               | Ultrapure               | Ultrapure               |
| %C                                   | 7%                                   | 4%                      | 9%                      |                         |
| Type of phase                        | Monofunctional and totally endcapped | Trifunctional           |                         |                         |
| Metallic impurities (Al, Fe, Ti, Zr) | Less than 10ppm of each              | Less than 10ppm of each | Less than 10ppm of each | Less than 10ppm of each |



## GenSphere HPLC packings definitions

|                       |   |
|-----------------------|---|
| <b>ODS-1</b>          | A totally endcapped packing with an exceptionally high level of deactivation, which minimises interfering interactions when analysing strongly acidic or basic analytes or chelating compounds. GenSphere ODS-1 has excellent stability at pH values between 1.5 and 11.0.  |
| <b>ODS-2</b>          | Similar to GenSphere ODS-1, GenSphere ODS-2 has a high selectivity for hydrophilic and polar compounds, which are often poorly retained on conventional ODS columns. By modifying the process of functionalising the pure silica particles, the collapsing effect of the C18 chains when working with mainly aqueous eluants is prevented. This adaptation facilitates excellent performance even with a 100% aqueous phase.  |
| <b>C1</b>             | GenSphere ultrapure silica is given its special function with tri-methylchlorosilane to create a low hydrophobic reversed phase. Its field of applications includes the separation of peptides and proteins by reversed phase HPLC. It can also be used as a packing for normal phase with highly polar compounds.  |
| <b>C4</b>             | The same GenSphere ultra pure silica made operative with butyl groups, resulting in a moderately hydrophobic packing. Its principle field of application is the separation of peptides and proteins by reverse phase HPLC. C4 silica is also available with a 300 Å porosity which is more suitable for the larger size of protein molecules. Another field where this packing is highly recommended is where the sample contains compounds of a very different hydrophobic nature. This packing permits perfect separation of a sample with a single injection.  |
| <b>C8</b>             | This packing, made operative with octyl groups and totally endcapped, is extremely versatile. Recommended for highly hydrophobic samples, which are retained excessively on ODS type packings. Developed on the same ultrapure silica as ODS-1 and ODS-2, it is extremely reproducible and reliable.  |
| <b>CN</b>             | GenSphere ultrapure CN packings are much appreciated as alternatives to ODS-type packings due to their special selectivity, as well as for the possibilities that they offer for working in both normal and reverse phase chromatographic modes. However, in comparison with the latter, they have always been characterised by a lower reproducibility and a notably shorter useful life. Thanks to the exceptional quality of the GenSphere silica and the optimization reached by the actuating processes, the Q-Col GenSphere CN HPLC packing has satisfactorily overcome these limitations, giving the chromatographer a completely reliable alternative. As a normal phase packing it is an excellent alternative to unsubstituted silica, given that retention times are much more reproducible, equilibration times much more rapid, and it does not suffer the problems of de-activation of the silica itself. |
| <b>NH<sub>2</sub></b> | The GenSphere NH <sub>2</sub> packing has chemically bonded groups of aminopropyl silane and can be used as a normal phase or reverse phase packing depending on the eluant used. It is recommended for separations of basic compounds under normal phase conditions. Additionally, the reactivity of the amino group makes it very suitable as a support for later modifications as for example in the synthesis of chiral phases. It is also very suitable for SFC applications.  |
| <b>Ph</b>             | In the same way as with the CN type packings, our GenSphere Ph packing is substituted with dimethyl phenyl and can be used in normal or reversed phase modes. It is a very useful alternative reversed phase to ODS type packings since its aromatic groups give it a special selectivity when polar compounds are being analysed.  |
| <b>Si</b>             | Ultrapure silica, the basis of all the Q-Col GenSphere range of HPLC columns.   |
| <b>300 Å</b>          | A range of Q-Col GenSphere packings with a pore diameter of 300 Angstrom which are ideal for undertaking separations of complex molecules with a very high molecular weight, e.g. proteins and peptides.  |

## GenSphere™ Analytical columns 0.46cm I.D. 120Å 5µm

| Function        | µm | 4 cm      | 10 cm     | 15 cm     | 20 cm     | 25 cm     |
|-----------------|----|-----------|-----------|-----------|-----------|-----------|
| ODS-1           | 5  | 20-105200 | 20-105201 | 20-105202 | 20-105203 | 20-105204 |
| ODS-2           | 5  | 20-105208 | 20-105209 | 20-105210 | 20-105211 | 20-105212 |
| C1              | 5  | 20-105238 | 20-105239 | 20-105240 | 20-105241 | 20-105242 |
| C4              | 5  | 20-105230 | 20-105231 | 20-105232 | 20-105233 | 20-105234 |
| C8              | 5  | 20-105223 | 20-105224 | 20-105225 | 20-105226 | 20-105227 |
| CN              | 5  | 20-105253 | 20-105254 | 20-105255 | 20-105256 | 20-105257 |
| NH <sub>2</sub> | 5  | 20-105245 | 20-105246 | 20-105247 | 20-105248 | 20-105249 |
| Ph              | 5  | 20-105260 | 20-105261 | 20-105262 | 20-105263 | 20-105264 |
| Si              | 5  | 20-105215 | 20-105216 | 20-105217 | 20-105218 | 20-105219 |

## GenSphere™ Analytical columns 0.46cm I.D. 120Å 3µm

| Function        | µm | 4 cm      | 10 cm     | 15 cm     | 20 cm     | 25 cm     |
|-----------------|----|-----------|-----------|-----------|-----------|-----------|
| ODS-1           | 3  | 20-105000 | 20-105001 | 20-105002 | 20-105003 | 20-105004 |
| ODS-2           | 3  | 20-105008 | 20-105009 | 20-105010 | 20-105011 | 20-105012 |
| C1              | 3  | 20-105040 | 20-105041 | 20-105042 | 20-105043 | 20-105044 |
| C4              | 3  | 20-105033 | 20-105034 | 20-105035 | 20-105036 | 20-105037 |
| C8              | 3  | 20-105025 | 20-105026 | 20-105027 | 20-105028 | 20-105029 |
| CN              | 3  | 20-105056 | 20-105057 | 20-105058 | 20-105059 | 20-105060 |
| NH <sub>2</sub> | 3  | 20-105048 | 20-105049 | 20-105050 | 20-105051 | 20-105052 |
| Ph              | 3  | 20-105063 | 20-105064 | 20-105065 | 20-105066 | 20-105067 |
| Si              | 3  | 20-105015 | 20-105016 | 20-105017 | 20-105018 | 20-105019 |

## GenSphere™ Analytical columns 0.4cm I.D. 120Å 5µm

| Function        | µm | 4 cm      | 10 cm     | 15 cm     | 20 cm     | 25 cm     |
|-----------------|----|-----------|-----------|-----------|-----------|-----------|
| ODS-1           | 5  | 20-105543 | 20-105544 | 20-105545 | 20-105546 | 20-105547 |
| ODS-2           | 5  | 20-105550 | 20-105551 | 20-105552 | 20-105553 | 20-105554 |
| C1              | 5  | 20-105580 | 20-105581 | 20-105582 | 20-105583 | 20-105584 |
| C4              | 5  | 20-105573 | 20-105574 | 20-105575 | 20-105576 | 20-105577 |
| C8              | 5  | 20-105565 | 20-105566 | 20-105567 | 20-105568 | 20-105569 |
| CN              | 5  | 20-105595 | 20-105596 | 20-105597 | 20-105598 | 20-105599 |
| NH <sub>2</sub> | 5  | 20-105588 | 20-105589 | 20-105590 | 20-105591 | 20-105592 |
| Ph              | 5  | 20-105605 | 20-105606 | 20-105607 | 20-105608 | 20-105609 |
| Si              | 5  | 20-105558 | 20-105559 | 20-105560 | 20-105561 | 20-105562 |

## GenSphere™ Analytical columns 0.4cm I.D. 120Å 3µm

| Function        | µm | 4 cm      | 10 cm     | 15 cm     | 20 cm     | 25 cm     |
|-----------------|----|-----------|-----------|-----------|-----------|-----------|
| ODS-1           | 3  | 20-105475 | 20-105476 | 20-105477 | 20-105478 | 20-105479 |
| ODS-2           | 3  | 20-105483 | 20-105484 | 20-105485 | 20-105486 | 20-105487 |
| C1              | 3  | 20-105513 | 20-105514 | 20-105515 | 20-105516 | 20-105517 |
| C4              | 3  | 20-105505 | 20-105506 | 20-105507 | 20-105508 | 20-105509 |
| C8              | 3  | 20-105498 | 20-105499 | 20-105500 | 20-105501 | 20-105502 |
| CN              | 3  | 20-105528 | 20-105529 | 20-105530 | 20-105531 | 20-105532 |
| NH <sub>2</sub> | 3  | 20-105520 | 20-105521 | 20-105522 | 20-105523 | 20-105524 |
| Ph              | 3  | 20-105535 | 20-105536 | 20-105537 | 20-105538 | 20-105539 |
| Si              | 3  | 20-105490 | 20-105491 | 20-105492 | 20-105493 | 20-105494 |

Other column configurations are available on request



## GenSphere™ HPLC Columns

### GenSphere™ Analytical columns 0.3cm I.D. 120Å 5µm

| Function        | µm | 10 cm     | 20 cm     |
|-----------------|----|-----------|-----------|
| ODS-1           | 5  | 20-105300 | 20-105301 |
| ODS-2           | 5  | 20-105304 | 20-105305 |
| C1              | 5  | 20-105308 | 20-105309 |
| C4              | 5  | 20-105312 | 20-105313 |
| C8              | 5  | 20-105316 | 20-105317 |
| CN              | 5  | 20-105320 | 20-105321 |
| NH <sub>2</sub> | 5  | 20-105324 | 20-105325 |
| Ph              | 5  | 20-105328 | 20-105329 |
| Si              | 5  | 20-105332 | 20-105333 |

### GenSphere™ Analytical columns 0.3cm I.D. 120Å 3µm

| Function        | µm | 10 cm     | 20 cm     |
|-----------------|----|-----------|-----------|
| ODS-1           | 3  | 20-105430 | 20-105431 |
| ODS-2           | 3  | 20-105435 | 20-105436 |
| C1              | 3  | 20-105455 | 20-105456 |
| C4              | 3  | 20-105450 | 20-105451 |
| C8              | 3  | 20-105445 | 20-105446 |
| CN              | 3  | 20-105465 | 20-105466 |
| NH <sub>2</sub> | 3  | 20-105460 | 20-105461 |
| Ph              | 3  | 20-105470 | 20-105471 |
| Si              | 3  | 20-105440 | 20-105441 |

### GenSphere™ Analytical columns 0.21cm I.D. 120Å 5µm

| Function        | µm | 10 cm     | 20 cm     |
|-----------------|----|-----------|-----------|
| ODS-1           | 5  | 20-105340 | 20-105341 |
| ODS-2           | 5  | 20-105344 | 20-105345 |
| C1              | 5  | 20-105348 | 20-105349 |
| C4              | 5  | 20-105352 | 20-105353 |
| C8              | 5  | 20-105356 | 20-105357 |
| CN              | 5  | 20-105360 | 20-105361 |
| NH <sub>2</sub> | 5  | 20-105364 | 20-105365 |
| Ph              | 5  | 20-105368 | 20-105369 |
| Si              | 5  | 20-105372 | 20-105373 |

### GenSphere™ Analytical columns 0.21cm I.D. 120Å 3µm

| Function        | µm | 10 cm     | 20 cm     |
|-----------------|----|-----------|-----------|
| OOS-1           | 3  | 20-105390 | 20-105391 |
| ODS-2           | 3  | 20-105395 | 20-105396 |
| C1              | 3  | 20-105412 | 20-105413 |
| C4              | 3  | 20-105410 | 20-105411 |
| C8              | 3  | 20-105405 | 20-105406 |
| CN              | 3  | 20-105420 | 20-105421 |
| NH <sub>2</sub> | 3  | 20-105417 | 20-105418 |
| Ph              | 3  | 20-105425 | 20-105426 |
| Si              | 3  | 20-105400 | 20-105401 |



Other column configurations are available on request

## GenSphere™ Semi-preparative columns 0.70cm I.D. 120Å 5µm

| Function        | µm | 15 cm     | 25 cm     |
|-----------------|----|-----------|-----------|
| ODS-1           | 5  | 20-105160 | 20-105161 |
| ODS-2           | 5  | 20-105164 | 20-105165 |
| C1              | 5  | 20-105168 | 20-105169 |
| C4              | 5  | 20-105172 | 20-105173 |
| C8              | 5  | 20-105176 | 20-105177 |
| CN              | 5  | 20-105180 | 20-105181 |
| NH <sub>2</sub> | 5  | 20-105184 | 20-105185 |
| Ph              | 5  | 20-105188 | 20-105189 |
| Si              | 5  | 20-105192 | 20-105193 |

## GenSphere™ Semi-preparative columns 1.0cm I.D. 120Å 5µm

| Function        | µm | 10 cm     | 20 cm     |
|-----------------|----|-----------|-----------|
| ODS-1           | 5  | 20-105650 | 20-105651 |
| ODS-2           | 5  | 20-105654 | 20-105655 |
| C1              | 5  | 20-105658 | 20-105659 |
| C4              | 5  | 20-105662 | 20-105663 |
| C8              | 5  | 20-105666 | 20-105667 |
| CN              | 5  | 20-105670 | 20-105671 |
| NH <sub>2</sub> | 5  | 20-105674 | 20-105675 |
| Ph              | 5  | 20-105678 | 20-105679 |
| Si              | 5  | 20-105682 | 20-105683 |



## GenSphere™ Analytical columns 0.46cm I.D. 300Å 5µm

| Function | µm | 4 cm      | 10 cm     | 15 cm     | 20 cm     | 25 cm     |
|----------|----|-----------|-----------|-----------|-----------|-----------|
| ODS-1    | 5  | 20-105268 | 20-105269 | 20-105270 | 20-105271 | 20-105272 |
| C4       | 5  | 20-105283 | 20-105284 | 20-105285 | 20-105286 | 20-105287 |
| C8       | 5  | 20-105275 | 20-105276 | 20-105277 | 20-105278 | 20-105279 |

## GenSphere™ Analytical columns 0.4cm I.D. 300Å 5µm

| Function | µm | 4 cm      | 10 cm     | 15 cm     | 20 cm     | 25 cm     |
|----------|----|-----------|-----------|-----------|-----------|-----------|
| ODS-1    | 5  | 20-105268 | 20-105269 | 20-105270 | 20-105271 | 20-105272 |
| C4       | 5  | 20-105283 | 20-105284 | 20-105285 | 20-105286 | 20-105287 |
| C8       | 5  | 20-105275 | 20-105276 | 20-105277 | 20-105278 | 20-105279 |

## GenSphere™ Analytical columns 0.3cm I.D. 300Å 5µm

| Function | µm | 10 cm     | 20 cm     |
|----------|----|-----------|-----------|
| ODS-1    | 5  | 20-105376 | 20-105377 |
| C4       | 5  | 20-105386 | 20-105387 |
| C8       | 5  | 20-105380 | 20-105385 |

## GenSphere™ Analytical columns 0.21cm I.D. 300Å 5µm

| Function | µm | 10 cm     | 20 cm     |
|----------|----|-----------|-----------|
| ODS-1    | 5  | 20-105700 | 20-105701 |
| C4       | 5  | 20-105704 | 20-105705 |
| C8       | 5  | 20-105708 | 20-105709 |

Other column configurations are available on request



## Spheripak HPLC Columns

The new Q-Col Spheripak™ HPLC silica has been specially developed to replace Waters Spherisorb™ one of the most popular packings on the market today.

Every parameter of the material has been evaluated to confirm total correlation between the two materials and the results of rigorous testing by users in many different fields confirm the excellent results obtained by using Q-Col Spheripak™

Our strictly controlled manufacturing processes have been specifically designed to ensure the maximum reproducibility and efficiency of every Q-Col Spheripak™ HPLC column.

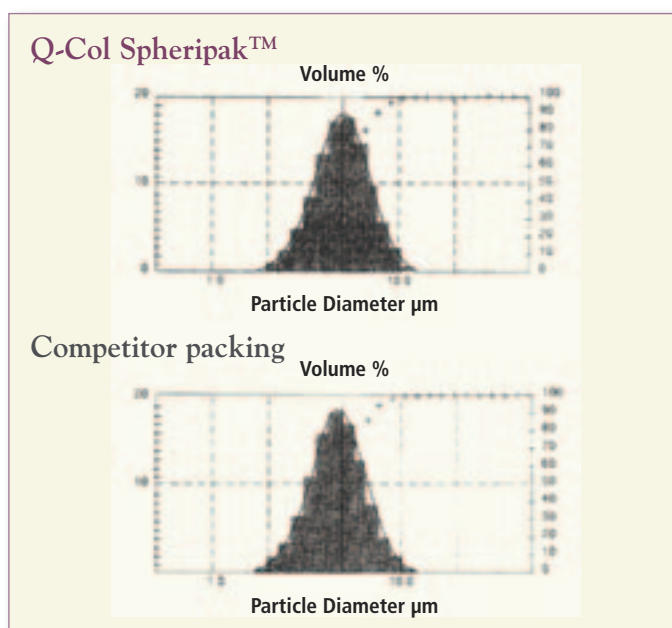
We are so confident your Q-Col Spheripak™ column will work in an identical manner to the equivalent WS column - **we guarantee it!** If you are dissatisfied in any way with its comparative performance we will refund the price you paid.

The table below shows the comparative physiochemical characteristics between the Q-Col Spheripak™ and WS materials.

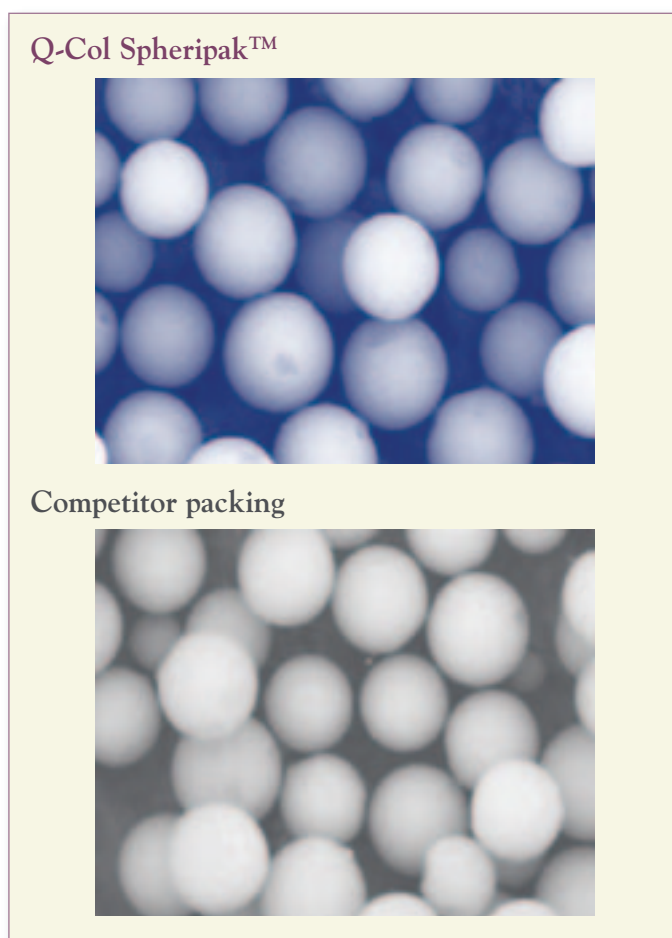
| Spheripak<br>3,5, & 10µm<br>80A<br>220m <sup>2</sup> /g<br>Carbon Content | Packing<br>Particle Size<br>Pore Size<br>Surface Area | WS<br>3,5 & 10<br>80A<br>220m <sup>2</sup> /g<br>Carbon Content |
|---|---|---|
| 5%  | C1  | 5%  |
| 6%  | C6  | 6%  |
| 6%  | C8  | 6%  |
| 7%  | ODS-1   | 7%  |
| 12%   | ODS-2   | 12%   |
| 3.50%   | CN  | 3.50%   |
| 2%  | NH <sub>2</sub>                                       | 2%  |
| 3.00%   | Phenyl  | 3.00%   |
| -   | 8AX   | -   |
| -   | 8CX   | -   |

The rigorous manufacturing processes of the Spheripak silica ensure that extreme care is taken in optimisation of the particle size to ensure the maximum efficiency and stability of the packing.

The comparison of the Q-Col Spheripak and WS packings shows the complete correlation between the two packings.



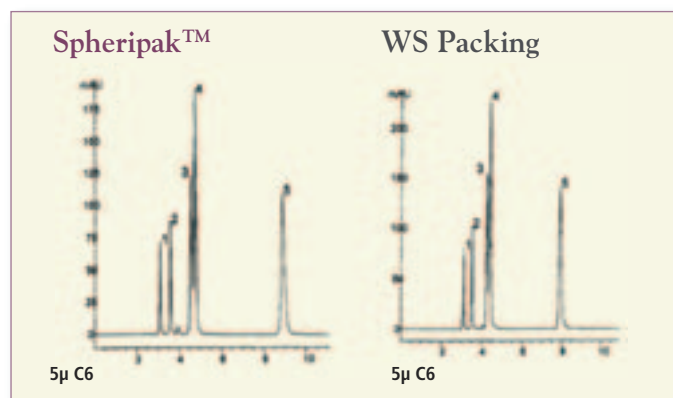
Comparative scanning electron microscope of Q-Col Spheripak and WS packing materials, shows an almost perfect sphericity in both materials



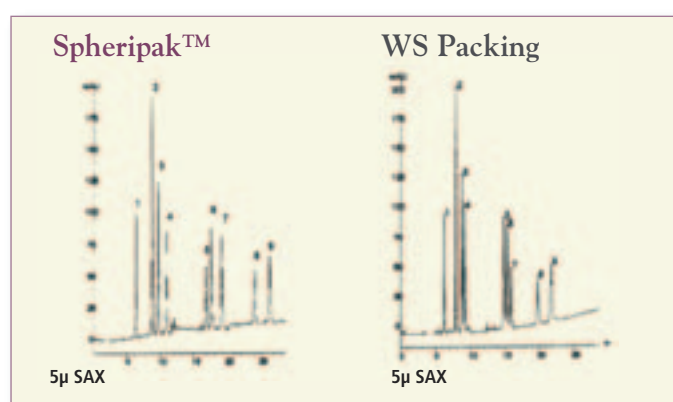
Applications showing the comparative results between the two packings follow, confirming the benefits of using Q-Col Spheripak HPLC columns.

**Catecholamines**

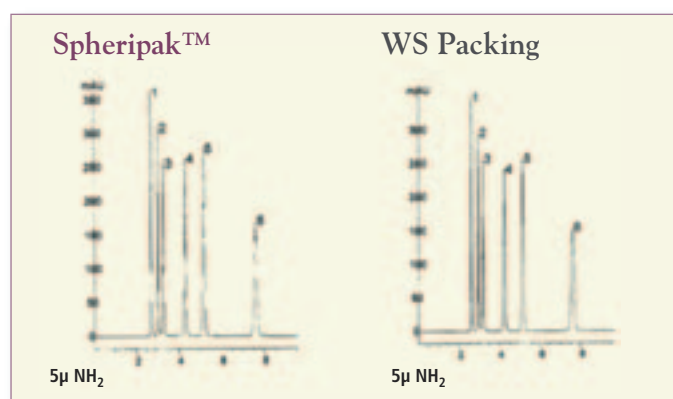
Dimensions: 250 x 4.6mm  
 Mobile Phase: CH<sub>2</sub>OH:25 mM KH<sub>2</sub>PO<sub>4</sub> pH 2.0 (2.98)  
 Flow Rate: 1.0mL/min  
 Temperature: 40°C.  
 Detection: UV @ 270nm  
 Sample:  
 1. Norepinephrine  
 2. Betametasone  
 3. Dopamine  
 4. L-DOPA  
 5. Serotonine

**Nucleotides**

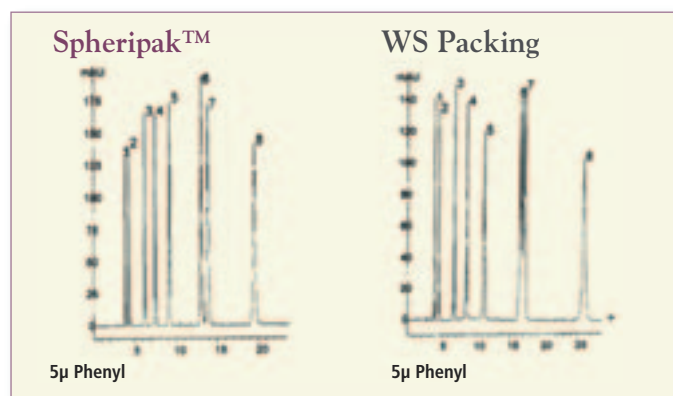
Dimensions: 250 x 4.6mm  
 Mobile Phase:  
 A: 0.04M KH<sub>2</sub>PO<sub>4</sub> pH 5.5  
 B: 0.5M KH<sub>2</sub>PO<sub>4</sub>T pH 5.5  
 Flow Rate: 1.0mL/min  
 Detection: UV @ 254nm  
 Sample:  
 1. β-NAD  
 2. IMP  
 3. GMP  
 4. AMP  
 5. GDP  
 6. ADP  
 7. NADP  
 8. ITP  
 9. ATP

**Corticosteroids**

Dimensions: 250 x 4.6mm  
 Mobile Phase: CH<sub>2</sub>Cl<sub>2</sub>:CH<sub>3</sub>OH (95:5)  
 Flow Rate: 1.0mL/min  
 Detection: UV @ 254nm  
 Sample:  
 1. Deoxicorticosterone Acetate  
 2. Desoxicorticosterone  
 3. Hydrocortisone 21-Acetate  
 4. Corticosterone  
 5. Cortisone  
 6. Hydrocortisone

**Aromatic Ketones**

Dimensions: 250 x 4.6mm  
 Mobile Phase: CH<sub>2</sub> CN : CH<sub>2</sub> O (33:67)  
 Flow Rate: 1.0mL/min  
 Detection: UV @ 254nm  
 Sample:  
 1. Benzamide  
 2. Benzyl Alcohol  
 3. Acetophenone  
 4. Methyl Benzoate  
 5. Phenetole  
 6. Naphthalene  
 7. Benzophenone  
 8. Biphenyl

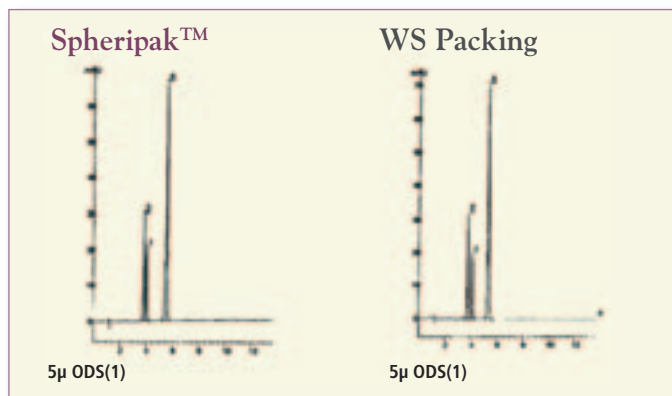


## SRM 869

Dimensions: 250 x 4.6mm  
 Mobile Phase: H<sub>2</sub>O:CH<sub>3</sub>CN (15;85)  
 Flow Rate: 2.0mL/min  
 Temperature: 35°C.  
 Detection: UV @ 260nm  
 Sample:
 

1. Benzo(a)pyrene
2. Phenantro (3,4-C)
3. Phenanthrene
4. Tetrabenzonaphthalene

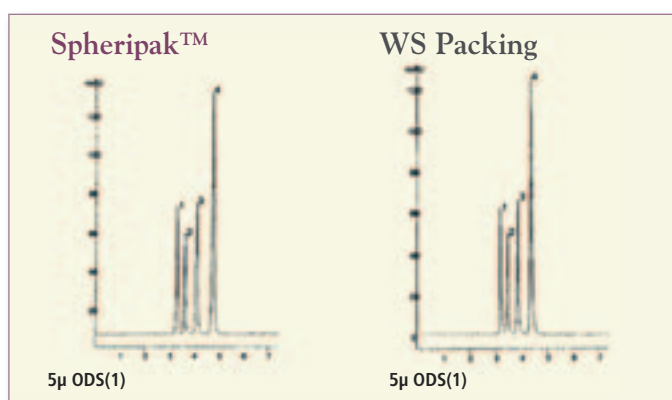
Q-col Spheripak™ ODS-2 a TBN/BaP = 1.77  
 WS Packing ODS-2 a TBN/BaP = 1.70



## 4-Hydroxibenzoates

Dimensions: 250 x 4.6mm  
 Mobile Phase: H<sub>2</sub>O:CH<sub>3</sub>CN (35;65)  
 Flow Rate: 1.0mL/min  
 Detection: UV @ 254nm  
 Sample:
 

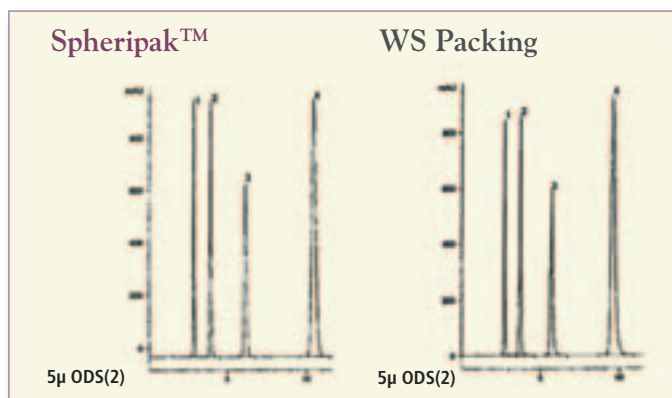
1. Methyl-4-hydroxybenzoate
2. Ethyl-4-hydroxybenzoate
3. Propyl-4-hydroxybenzoate
4. Butyl-4-hydroxybenzoate



## 4-Hydroxibenzoates

Dimensions: 150 x 4.6mm  
 Mobile Phase: H<sub>2</sub>O:CH<sub>3</sub>CN (40;60)  
 Flow Rate: 1.0mL/min  
 Temperature: 40°C.  
 Detection: UV @ 254nm  
 Sample:
 

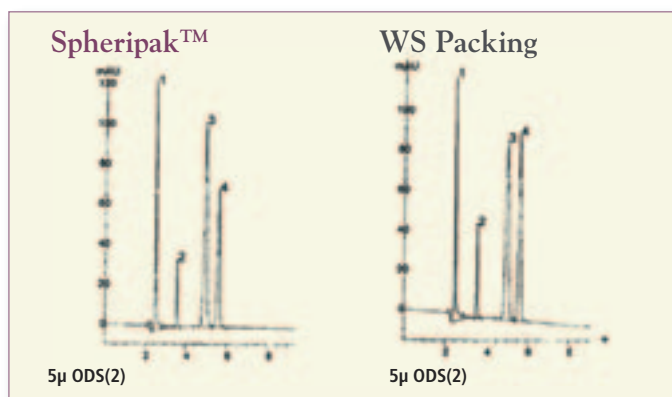
1. Methyl-4-hydroxybenzoate
2. Ethyl-4-hydroxybenzoate
3. Propyl-4-hydroxybenzoate
4. Butyl-4-hydroxybenzoate



## Polar Compounds

Dimensions: 250 x 4.6mm  
 Mobile Phase: 25mM KH<sub>2</sub>PO<sub>4</sub>, pH 2.5  
 Flow Rate: 1.0mL/min  
 Temperature: 40°C.  
 Detection: UV @ 230nm  
 Sample:
 

1. L-Cysteine
2. L-Ascorbic Acid
3. Glutathione
4. Uric Acid

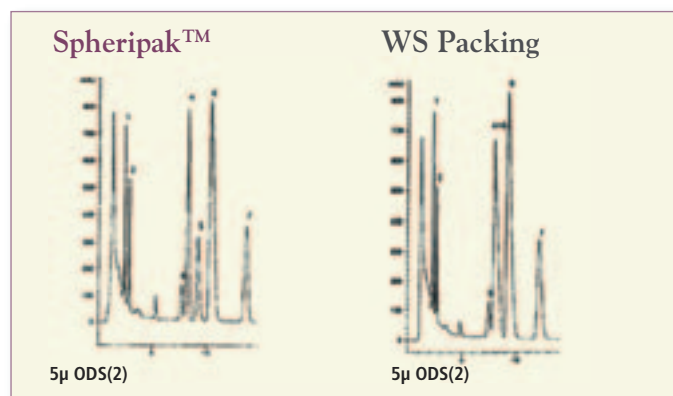




### Liposoluble Vitamins

Dimensions: 150 x 4.6mm  
 Mobile Phase: CH<sub>3</sub>CN:CH<sub>3</sub>OH (75:25)  
 Flow Rate: 1.3mL/min  
 Detection: UV @ 280nm  
 Sample:
 

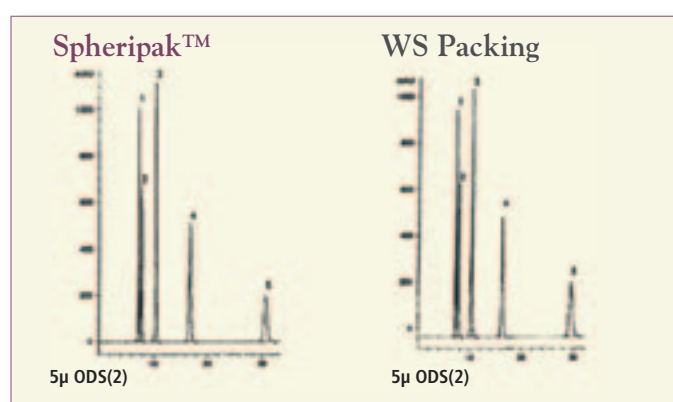
1. Vitamin A
2. Vitamin A Acetate
3. Vitamin D<sub>2</sub>
4. Vitamin D<sub>3</sub>
5. Vitamin E
6. Vitamin E Acetate
7. Vitamin K<sub>1</sub>



### Pesticides / Herbicides

Dimensions: 150 x 4.6mm  
 Mobile Phase: H<sub>2</sub>O:CH<sub>3</sub>CN (70:30)  
 Flow Rate: 1.0mL/min  
 Detection: UV @ 254nm  
 Sample:
 

1. Baygon
2. Carbofuran
3. Carbaryl
4. Protham
5. Captan





## Spheripak HPLC Columns

### Spheripak™ Analytical Columns

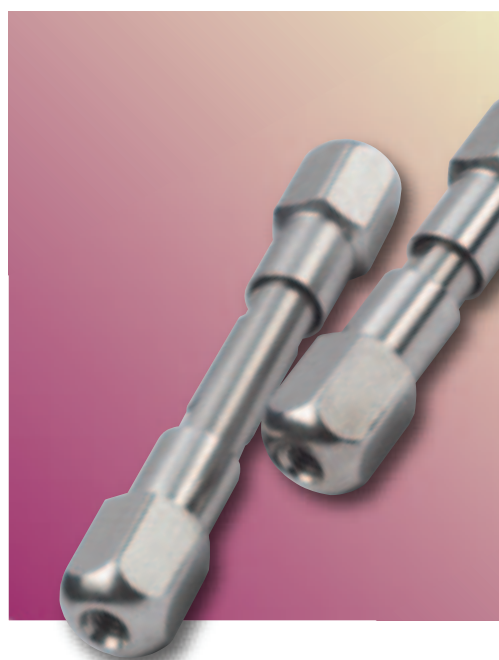
| Function        | Particle Size<br>(µm) | Dimensions |            |             |             |             |             |             |             |             |              |
|-----------------|-----------------------|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|
|                 |                       | 4 x 0.46cm | 4 x 0.40cm | 10 x 0.46cm | 10 x 0.40cm | 15 x 0.46cm | 15 x 0.40cm | 20 x 0.46cm | 20 x 0.40cm | 25 x 0.46cm | 25 x 0.40 cm |
| ODS-1           | 3                     | 20-106100  | 20-105800  | 20-106101   | 20-105801   | 20-106102   | 20-105802   | 20-106103   | 20-105803   | 20-106104   | 20-105804    |
| ODS-2           | 3                     | 20-106120  | 20-105820  | 20-106121   | 20-105821   | 20-106122   | 20-105822   | 20-106123   | 20-105823   | 20-106124   | 20-105824    |
| Si              | 3                     | 20-106140  | 20-105840  | 20-106141   | 20-105841   | 20-106142   | 20-105842   | 20-106143   | 20-105843   | 20-106144   | 20-105844    |
| C1              | 3                     | 20-106160  | 20-105860  | 20-106161   | 20-105861   | 20-106162   | 20-105862   | 20-106163   | 20-105863   | 20-106164   | 20-105864    |
| C6              | 3                     | 20-106180  | 20-105880  | 20-106181   | 20-105881   | 20-106182   | 20-105882   | 20-106183   | 20-105883   | 20-106184   | 20-105884    |
| C8              | 3                     | 20-106200  | 20-105900  | 20-106201   | 20-105901   | 20-106202   | 20-105902   | 20-106203   | 20-105903   | 20-106204   | 20-105904    |
| CN              | 3                     | 20-106220  | 20-105920  | 20-106221   | 20-105921   | 20-106222   | 20-105922   | 20-106223   | 20-105923   | 20-106224   | 20-105924    |
| NH <sub>2</sub> | 3                     | 20-106240  | 20-105940  | 20-106241   | 20-105941   | 20-106242   | 20-105942   | 20-106243   | 20-105943   | 20-106244   | 20-105944    |
| Phenyl          | 3                     | 20-106260  | 20-105960  | 20-106261   | 20-105961   | 20-106262   | 20-105962   | 20-106263   | 20-105963   | 20-106264   | 20-105964    |

| Function        | Particle Size<br>(µm) | Dimensions  |             |               |             |             |             |             |             |             |             |
|-----------------|-----------------------|-------------|-------------|---------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                 |                       | 10 x 0.46cm | 10 x 0.40cm | 12.5 x 0.46cm | 12 x 0.40cm | 15 x 0.46cm | 15 x 0.40cm | 20 x 0.46cm | 20 x 0.40cm | 25 x 0.46cm | 20 x 0.40cm |
| ODS-1           | 5                     | 20-106105   | 20-105805   | 20-106106     | 20-105806   | 20-106107   | 20-105807   | 20-106108   | 20-105808   | 20-106109   | 20-105809   |
| ODS-2           | 5                     | 20-106125   | 20-105825   | 20-106126     | 20-105826   | 20-106127   | 20-105827   | 20-106128   | 20-105828   | 20-106129   | 20-105829   |
| Si              | 5                     | 20-106145   | 20-105845   | 20-106146     | 20-105846   | 20-106147   | 20-105847   | 20-106148   | 20-105848   | 20-106149   | 20-105849   |
| C1              | 5                     | 20-106165   | 20-105865   | 20-106166     | 20-105866   | 20-106167   | 20-105867   | 20-106168   | 20-105868   | 20-106169   | 20-105869   |
| C6              | 5                     | 20-106185   | 20-105885   | 20-106186     | 20-105886   | 20-106187   | 20-105887   | 20-106188   | 20-105888   | 20-106189   | 20-105889   |
| C8              | 5                     | 20-106205   | 20-105905   | 20-106206     | 20-105906   | 20-106207   | 20-105907   | 20-106208   | 20-105908   | 20-106209   | 20-105909   |
| CN              | 5                     | 20-106225   | 20-105925   | 20-106226     | 20-105926   | 20-106227   | 20-105927   | 20-106228   | 20-105928   | 20-106229   | 20-105929   |
| NH <sub>2</sub> | 5                     | 20-106245   | 20-105945   | 20-106246     | 20-105946   | 20-106247   | 20-105947   | 20-106248   | 20-105948   | 20-106249   | 20-105949   |
| Phenyl          | 5                     | 20-106265   | 20-105965   | 20-106266     | 20-105966   | 20-106267   | 20-105967   | 20-106268   | 20-105968   | 20-106269   | 20-105969   |
| SAX             | 5                     | 20-106285   | 20-105985   | 20-106286     | 20-105986   | 20-106287   | 20-105987   | 20-106288   | 20-105988   | 20-106289   | 20-105989   |
| SCX             | 5                     | 20-106305   | 20-106005   | 20-106306     | 20-106006   | 20-106307   | 20-106007   | 20-106308   | 20-106008   | 20-106309   | 20-106009   |

|                 |    |           |           |           |           |           |           |           |           |           |           |
|-----------------|----|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| ODS1            | 10 | 20-106110 | 20-105810 | 20-106111 | 20-105811 | 20-106112 | 20-105812 | 20-106113 | 20-105813 | 20-106114 | 20-105814 |
| ODS2            | 10 | 20-106130 | 20-105830 | 20-106131 | 20-105831 | 20-106132 | 20-105832 | 20-106133 | 20-105833 | 20-106134 | 20-105834 |
| Si              | 10 | 20-106150 | 20-105850 | 20-106151 | 20-105851 | 20-106152 | 20-105852 | 20-106153 | 20-105853 | 20-106154 | 20-105854 |
| C6              | 10 | 20-106190 | 20-105890 | 20-106191 | 20-105891 | 20-106192 | 20-105892 | 20-106193 | 20-105893 | 20-106194 | 20-105894 |
| CN              | 10 | 20-106230 | 20-105930 | 20-106231 | 20-105931 | 20-106232 | 20-105932 | 20-106233 | 20-105933 | 20-106234 | 20-105934 |
| NH <sub>2</sub> | 10 | 20-106250 | 20-105950 | 20-106251 | 20-105951 | 20-106252 | 20-105952 | 20-106253 | 20-105953 | 20-106254 | 20-105954 |
| SAX             | 10 | 20-106290 | 20-105990 | 20-106291 | 20-105991 | 20-106292 | 20-105992 | 20-106293 | 20-105993 | 20-106294 | 20-105994 |
| SCX             | 10 | 20-106310 | 20-106010 | 20-106311 | 20-106011 | 20-106312 | 20-106012 | 20-106313 | 20-106013 | 20-106314 | 20-106014 |

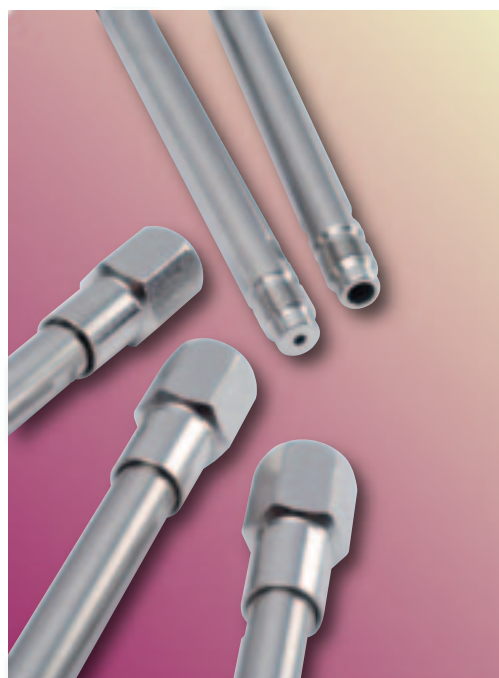
## Spheripak™ 5µm Microbore Columns

| Function        | Particle Size<br>(µm) | Dimensions  |             |            |            |
|-----------------|-----------------------|-------------|-------------|------------|------------|
|                 |                       | 10 x 0.21cm | 20 x 0.21cm | 10 x 0.3cm | 20 x 0.3cm |
| ODS-1           | 5                     | 20-106500   | 20-106501   | 20-106502  | 20-106503  |
| ODS-2           | 5                     | 20-106505   | 20-106506   | 20-106507  | 20-106508  |
| C1              | 5                     | 20-106515   | 20-106516   | 20-106517  | 20-106518  |
| C6              | 5                     | 20-106520   | 20-106521   | 20-106522  | 20-106523  |
| C8              | 5                     | 20-106525   | 20-106526   | 20-106527  | 20-106528  |
| CN              | 5                     | 20-106530   | 20-106531   | 20-106532  | 20-106533  |
| NH <sub>2</sub> | 5                     | 20-106535   | 20-106536   | 20-106537  | 20-106538  |
| Phenyl          | 5                     | 20-106540   | 20-106541   | 20-106542  | 20-106543  |
| SAX             | 5                     | 20-106545   | 20-106546   | 20-106547  | 20-106548  |
| SCX             | 5                     | 20-106550   | 20-106551   | 20-106552  | 20-106553  |
| Si              | 5                     | 20-106510   | 20-106511   | 20-106512  | 20-106513  |



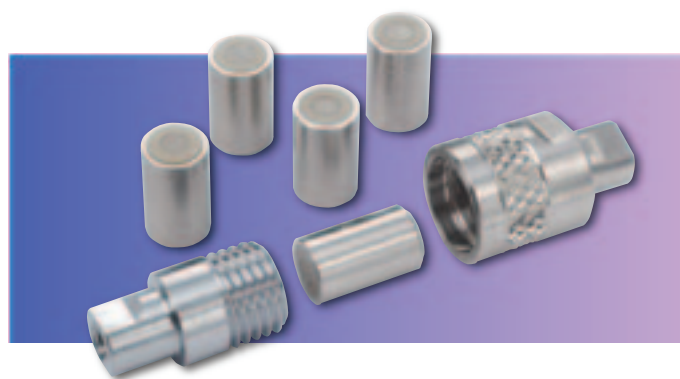
## Spheripak™ 5 &amp; 10µm Semi-Preparative Columns

| Function        | Particle Size<br>(µm) | Dimensions |            |             |             |
|-----------------|-----------------------|------------|------------|-------------|-------------|
|                 |                       | 15 x 0.7cm | 25 x 0.7cm | 15 x 1.0 cm | 25 x 1.0 cm |
| ODS-1           | 5                     | 20-106350  | 20-106351  | 20-106352   | 20-106353   |
| ODS-2           | 5                     | 20-106355  | 20-106356  | 20-106357   | 20-106358   |
| C1              | 5                     | 20-106365  | 20-106366  | 20-106367   | 20-106368   |
| C6              | 5                     | 20-106370  | 20-106371  | 20-106372   | 20-106373   |
| C8              | 5                     | 20-106375  | 20-106376  | 20-106377   | 20-106378   |
| CN              | 5                     | 20-106380  | 20-106381  | 20-106382   | 20-106383   |
| NH <sub>2</sub> | 5                     | 20-106385  | 20-106386  | 20-106387   | 20-106388   |
| Phenyl          | 5                     | 20-106390  | 20-106391  | 20-106392   | 20-106393   |
| SAX             | 5                     | 20-106395  | 20-106396  | 20-106397   | 20-106398   |
| SCX             | 5                     | 20-106400  | 20-106401  | 20-106402   | 20-106403   |
| Si              | 5                     | 20-106360  | 20-106361  | 20-106362 2 | 0-106363    |
| ODS-1           | 10                    | 20-106420  | 20-106421  | 20-106422   | 20-106423   |
| ODS-2           | 10                    | 20-106425  | 20-106426  | 20-106427   | 20-106428   |
| C6              | 10                    | 20-106435  | 20-106436  | 20-106437   | 20-106438   |
| CN              | 10                    | 20-106440  | 20-106441  | 20-106442   | 20-106443   |
| NH <sub>2</sub> | 10                    | 20-106445  | 20-106446  | 20-106447   | 20-106448   |
| Phenyl          | 10                    | 20-106450  | 20-106451  | 20-106452   | 20-106453   |
| SAX             | 10                    | 20-106455  | 20-106456  | 20-106457   | 20-106458   |
| SCX             | 10                    | 20-106460  | 20-106461  | 20-106462   | 20-106463   |
| Si              | 10                    | 20-106430  | 20-106431  | 20-106432   | 20-106433   |



## Guard Columns

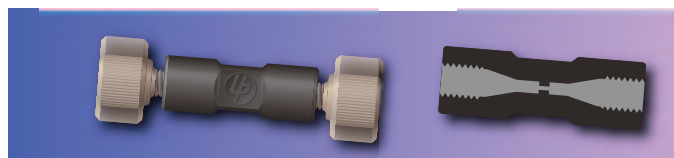
- 1cm x 3mm ID
- Positioned between the injector and the column, these guard columns extend the life of the analytical column and improve the reproducibility of the results.
- Packed with the latest high performance packings
- Economic and easy to replace
- Ideal for use in any HPLC system
- Packed at high pressure for maximum stability and duration.
- Will not reduce efficiency even when using 3µm packings or 2mm ID columns



| Cat. No.  | Description                    | Unit |
|-----------|--------------------------------|------|
| 20-106500 | Guard Cartridges Anion         | pk/5 |
| 20-106501 | Guard Cartridges C1            | pk/5 |
| 20-106502 | Guard Cartridges C2            | pk/5 |
| 20-106503 | Guard Cartridges C4            | pk/5 |
| 20-106504 | Guard Cartridges C6            | pk/5 |
| 20-106505 | Guard Cartridges C6H5          | pk/5 |
| 20-106506 | Guard Cartridges C8            | pk/5 |
| 20-106507 | Guard Cartridges Carbohydrates | pk/5 |
| 20-106508 | Guard Cartridges CN            | pk/5 |
| 20-106509 | Guard Cartridges DIOL          | pk/5 |
| 20-106510 | Guard Cartridges NH2           | pk/5 |
| 20-106511 | Guard Cartridges ODS           | pk/5 |
| 20-106512 | Guard Cartridges PAH           | pk/5 |
| 20-106513 | Guard Cartridges Peptide C18   | pk/5 |
| 20-106514 | Guard Cartridges PRP-1         | pk/5 |
| 20-106515 | Guard Cartridges SAX           | pk/5 |
| 20-106516 | Guard Cartridges SCX           | pk/5 |
| 20-106517 | Guard Cartridges Si            | pk/5 |
| 20-106518 | Guard Cartridges 300A C18      | pk/5 |
| 20-106519 | Guard Cartridges 300A C4       | pk/5 |
| 20-106520 | Guard Cartridges 300A C8       | pk/5 |

## ZDV Unions

All PEEK ZDV Unions are supplied complete with two F-300 Fingertight fittings for 1/16"OD tubing and are pressure rated to 6,000psi (414 bar).



| Cat. No. | Description                   | Unit |
|----------|-------------------------------|------|
| P-742    | ZDV Union, 0.010 hole, 10-32  | Each |
| P-704    | ZDV Union, 0.020 hole, 10-33  | Each |
| P-760    | ZDV Union, 0.050 hole, 10-34  | Each |
| P-706    | ZDV Union, 0.050 hole, 1/4-28 | Each |

## Fingertight Fittings



| Cat. No.  | Description   | Unit |
|-----------|---|------|
| 53-100000 | Fingertight fitting, PEEK, One Piece, for 1/16" OD, 10-32                 | pk/5 |
| 53-100001 | Fingertight fitting, PEEK, One Piece, Short head, for 1/16" OD, 10-32     | pk/5 |
| 53-100002 | Fingertight fitting, PEEK, One Piece, Long, for 1/16" OD, 10-32           | pk/5 |
| 53-100003 | Fingertight fitting, PEEK, One Piece, Narrow Hexhead, for 1/16" OD, 10-32 | pk/5 |



| Cat. No. | Description                                     | Unit |
|----------|---|------|
| F-120X   | Fingertight Fitting, PEEK, natural, 10-32       | Each |
| F-127X   | Fingertight Fitting, PEEK natural, 10-32, Short | Each |
| F-130X   | Fingertight Fitting, PEEK, natural, 10-32, Long | Each |



| Cat. No. | Description  | Unit  |
|----------|--|-------|
| F-300X   | Fingertight Fitting, 2 piece, PEEK nuts, 10-32                     | pk/10 |
| F-331X   | Fingertight Fitting, 2 piece, PEEK nuts, short, 10-32              | pk/10 |
| F-330X   | Fingertight Fitting, 2 piece, PEEK nuts, long, 10-32               | pk/10 |
| F-301X   | Fingertight Fitting, 2 piece, PEEK nuts, 1/4" - 28                 | pk/10 |
| F-142X   | Fingertight Fitting Ferrules, PEEK for 1/16" OD, 10-32             | pk/10 |
| F-162X   | Fingertight Fitting Ferrules, PEEK Ferrules for 1/16" OD, 1/4 - 28 | pk/10 |

### Pre-cut Stainless Steel Tubing

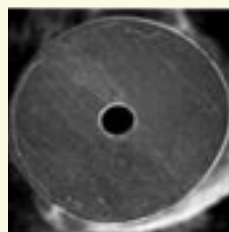
- Precision cut 316 SS tubing
- Square, burr-free ends
- Ultra clean
- Colour coded banding for easy identification

Every piece of pre-cut stainless steel tubing is machine cut and polished. The ends are deburred both inside and outside and the tubing is passivated. Finally, reagent grade methanol is flushed through each piece of tubing.

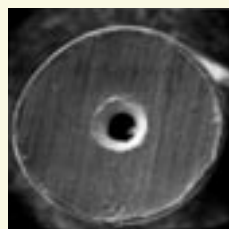
All this is done to provide you with tubing which has flat, burr-free ends to enable you to make true zero dead volume connections.

| Cat. No.  | Colour | OD"   | ID"   | IDmm | Length |
|-----------|--------|-------|-------|------|--------|
| 18-100010 | Red    | 1/16" | 0.005 | 0.13 | 5      |
| 18-100011 |        |       |       |      | 10     |
| 18-100012 |        |       |       |      | 20     |
| 18-100013 |        |       |       |      | 30     |
| 18-100020 | Black  | 1/16" | 0.007 | 0.18 | 5      |
| 18-100021 |        |       |       |      | 10     |
| 18-100022 |        |       |       |      | 20     |
| 18-100023 |        |       |       |      | 30     |
| 18-100030 | Blue   | 1/16" | 0.010 | 0.25 | 5      |
| 18-100031 |        |       |       |      | 10     |
| 18-100032 |        |       |       |      | 20     |
| 18-100033 |        |       |       |      | 30     |
| 18-100040 | Yellow | 1/16" | 0.020 | 0.50 | 5      |
| 18-100041 |        |       |       |      | 10     |
| 18-100042 |        |       |       |      | 20     |
| 18-100043 |        |       |       |      | 30     |
| 18-100050 | White  | 1/16" | 0.030 | 0.75 | 5      |
| 18-100051 |        |       |       |      | 10     |
| 18-100052 |        |       |       |      | 20     |
| 18-100053 |        |       |       |      | 30     |
| 18-100060 |        | 1/16" | 0.040 | 1.00 | 5      |
| 18-100061 |        |       |       |      | 10     |
| 18-100062 |        |       |       |      | 20     |
| 18-100063 |        |       |       |      | 30     |

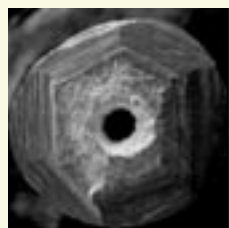
### The beauty of pre-cut tubing



Pre-cut tubing



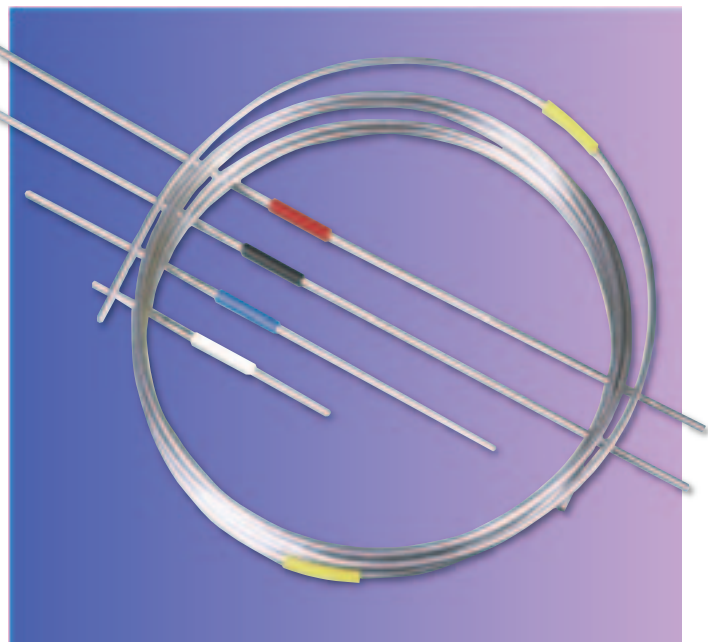
Tubing cut by a commercially available tubing cutter



File cut tubing

### Stainless Steel Tubing

- SS316 welded and annealed
- Variety of sizes for HPLC and GC applications
- Smooth internal surface
- Soft annealed OD for easy ferrule connections



| Cat. No.  | OD "  | ID "   | ID mm |
|-----------|-------|--------|-------|
| 18-100100 | 1/16" | 0.005" | 0.13  |
| 18-100101 | 1/16" | 0.007" | 0.18  |
| 18-100102 | 1/16" | 0.010" | 0.25  |
| 18-100103 | 1/16" | 0.020" | 0.50  |
| 18-100104 | 1/16" | 0.030" | 0.75  |
| 18-100105 | 1/16" | 0.040" | 1.00  |
| 18-100106 | 1/8"  |        | 2.10  |
| 18-100107 | 1/4"  |        | 4.65  |

### PTFE Tubing

- Suitable for mobile phase inlet lines
- Chemically inert

| Cat. No.  | OD "  | ID "  | ID mm | Max Pressure (bar/psi)* |
|-----------|-------|-------|-------|-------------------------|
| 18-100300 | 1/16" | 0.007 | 0.18  | 60 / 850                |
| 18-100301 | 1/16" | 0.01  | 0.25  | 55 / 800                |
| 18-100302 | 1/16" | 0.02  | 0.50  | 50 / 725                |
| 18-100303 | 1/16" | 0.03  | 0.75  | 35 / 510                |
| 18-100304 | 1/16" | 0.04  | 1.00  | 25 / 365                |
| 18-100305 | 1/8"  | 1/16" | 1.59  | 35 / 510                |
| 18-100306 | 1/4"  | 3/16" | 4.75  | 20 / 290                |

### ETFE Tubing (Tefzel)

- Suitable for low and medium laboratory applications
- Relatively high burst pressure

| Cat. No.  | OD "  | ID "  | ID mm | Max Pressure (bar/psi)* |
|-----------|-------|-------|-------|-------------------------|
| 18-100330 | 1/16" | 0.067 | 0.17  | 200 / 2900              |
| 18-100331 | 1/16" | 0.01  | 0.25  | 186 / 2900              |
| 18-100332 | 1/16" | 0.02  | 0.50  | 152 / 2700              |
| 18-100333 | 1/16" | 0.03  | 0.75  | 117 / 1700              |
| 18-100334 | 1/16" | 0.04  | 1.00  | 83 / 1200               |

### PEEK Tubing

Greyhound Chromatography PEEK tube is extruded from Victrex® virgin raw material and is well known for its very high degree of hardness even at elevated temperatures (+228°C). Coupled with this, our PEEK tube has resistance to extremely high pressures and in many cases has replaced stainless steel tubing HPLC applications.

Due to its high purity, our PEEK tubing does not leech out damaging “extractables” & is very effective in the trace analysis of complex fluids. Being resistant to high doses of gamma & beta radiation, our PEEK tube can be used in nuclear reactor environments without becoming brittle.

- Ultra hard material.
- Very good chemical resistance.
- Stable at temperatures up to +228°C.
- Excellent abrasion resistance.
- Flame retardant (UL94 V-0).
- Very tight dimensional tolerances.

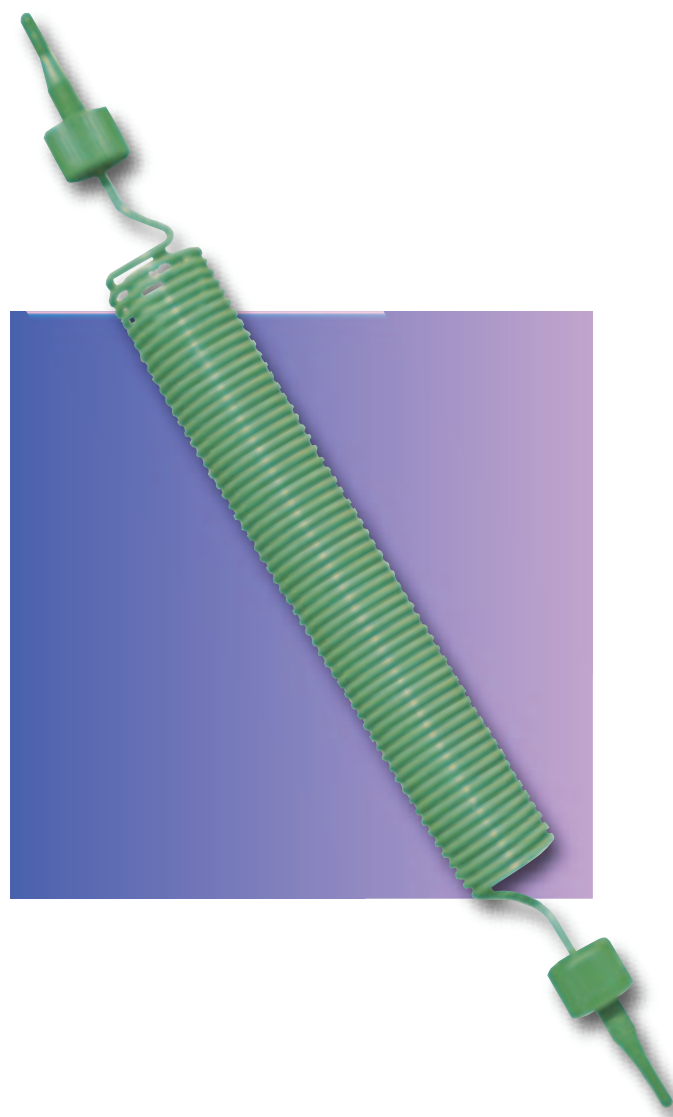


| Cat. No.  | Colour | OD"   | ID"   | IDmm | Max Pressure (bar/psi) |
|-----------|--------|-------|-------|------|------------------------|
| 18-100200 | Red    | 1/16" | 0.005 | 0.13 | 420 / 6100             |
| 18-100201 | Purple | 1/16" | 0.006 | 0.15 | 410 / 6000             |
| 18-100202 | Yellow | 1/16" | 0.007 | 0.18 | 400 / 5800             |
| 18-100203 | Blue   | 1/16" | 0.010 | 0.25 | 385 / 5600             |
| 18-100204 | Orange | 1/16" | 0.020 | 0.50 | 350 / 4500             |
| 18-100205 | Green  | 1/16" | 0.030 | 0.75 | 240 / 3500             |
| 18-100206 | Grey   | 1/16" | 0.040 | 1.00 | 165 / 2400             |

### PEEK Springy™ Tubing

- Will not bend or kink
- Self-adjusts its length
- All PEEK construction

Greyhound Springy™ PEEK tubing is perfect for today's modular LC systems. Springy™ PEEK tubing enables you to move components without breaking the connections. The new coil format ‘springs’ back to keep the excess tubing out of your way. Each piece has a 6” length of straight tubing at each end and is supplied with two one-piece finger tight fittings. Tubing is colour striped to indicate its ID.





## Accessories

### PEEK Springy™ Tubing

| Measurements- all Springy Peek Tubing is 1/16" OD |                    |                     |                           |                         |
|---|--------------------|---------------------|---------------------------|-------------------------|
| Coil Length<br>mm                                 | Coil Resting<br>mm | Extended Coil<br>mm | Tube fully extended<br>mm | Total Tube Length<br>mm |
| Size 1  | 10                 | 30                  | 330                       | 710                     |
| Size 2  | 20                 | 120                 | 420                       | 945                     |
| Size 3  | 35                 | 200                 | 500                       | 1225                    |
| Size 4  | 50                 | 300                 | 600                       | 1585                    |
| Size 5  | 100                | 400                 | 700                       | 2060                    |
| Size 6  | 150                | 500                 | 900                       | 3150                    |
| Size 7  | 170                | 800                 | 1100                      | 4710                    |
| Size 8  | 225                | 1100                | 1400                      | 6100                    |
| Size 9  | 250                | 1300                | 1600                      | 6930                    |

### Striped Colour Coded PEEK Springy™ Tubing

| Internal Diameter | 0.005"<br>0.13mm | 0.007"<br>0.18mm | 0.010"<br>0.25mm | 0.020"<br>0.50mm | 0.030"<br>0.75mm |
|-------------------|------------------|------------------|------------------|------------------|------------------|
| Colour            | Red              | Yellow           | Blue             | Orange           | Green            |
|                   | Cat. No.         | Cat No.          | Cat No.          | Cat No.          | Cat No.          |
| Size 1            | 18-100400        | 18-100410        | 18-100420        | 18-100430        | 18-100440        |
| Size 2            | 18-100401        | 18-100411        | 18-100421        | 18-100431        | 18-100441        |
| Size 3            | 18-100402        | 18-100412        | 18-100422        | 18-100432        | 18-100442        |
| Size 4            | 18-100403        | 18-100413        | 18-100423        | 18-100433        | 18-100443        |
| Size 5            | 18-100404        | 18-100414        | 18-100424        | 18-100434        | 18-100444        |
| Size 6            | 18-100405        | 18-100415        | 18-100425        | 18-100435        | 18-100445        |
| Size 7            | 18-100406        | 18-100416        | 18-100426        | 18-100436        | 18-100446        |
| Size 8            | 18-100407        | 18-100417        | 18-100427        | 18-100437        | 18-100447        |
| Size 9            | 18-100408        | 18-100418        | 18-100428        | 18-100438        | 18-100448        |

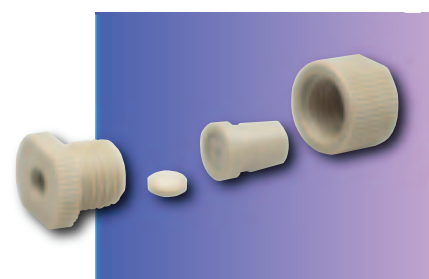


### PEEK In-Line Filter Kit - High Pressure

- PEEK In-Line Filter Kit
- 100% Biocompatible
- Minimal Hold-up of Volume
- Biocompatible PAT Frits or TI Frits
- Different Porosities

The PEEK In-Line Filter traps fines and other particles from samples and mobile phases before they damage valuable instruments and columns. This design is made entirely of PEEK for biocompatibility and chemical resistance. PAT (PEEK Alloyed with Teflon) filter elements are used for complete biocompatibility. The design has virtually no hold-up volume and can be used in analytical applications with virtually no band broadening or loss of efficiency.

| Cat. No.       | Description                  | Internal Volume | Unit |
|----------------|------------------------------|-----------------|------|
| JR-68250       | In-line Filter, PEEK, 5µm    | 12.4 ul         | Each |
| JR-68251       | In-line Filter, PEEK, 10µm   | 12.4 ul         | Each |
| Spare Frits    |                              | Frit Volume     | Unit |
| JR-68152-5     | Frit, PAT, PEEK-encased 5µm  | 9.77 ul         | pk/5 |
| JR-9000-0460-5 | Frit, PAT, PEEK-encased 10µm | 9.77 ul         | pk/5 |



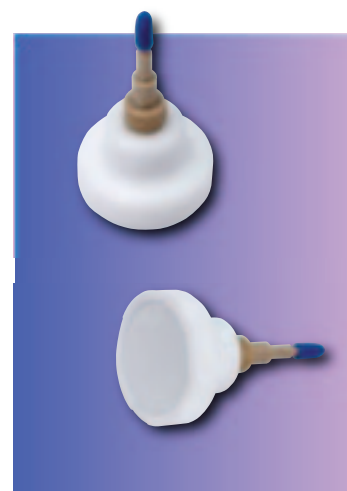
### Last Drop Mobile Phase Filter

- No Loss of Mobile Phase
- Biocompatible PTFE Frits or SS Frits
- Three Different Porosities
- Two Connector Types

The Last Drop Mobile Phase Filter utilises a flat filter element which sits parallel to the bottom of the reservoir. This design allows the filter to draw all but the last 2% of the mobile phase from the reservoir without drawing air into the system. Conventional cylindrical mobile phase filters begin to draw air into the system when less than 10% of the solvent remains in the reservoir. We recommend the metal free PTFE version for sensitive bio-chromatography applications where metal surfaces may corrode and contaminate the solvent with ions.

The stepped 'tripod' connector accommodates 1.5, 2.2 and 3.5mm ID tubing. The 1/4"-28 fitting connector is suitable for 1/8" od tubing.

| Cat. No.      | Description   | Unit |
|---------------|---|------|
| JR-9000-0520  | Filter, PTFE, Last Drop 2.5µm, stepped tubing connector | Each |
| JR-9000-0520F | Filter, PTFE, Last Drop 2.5µm, fitting connector        | Each |
| JR-9000-0521  | Filter, PTFE, Last Drop 5µm, stepped tubing connector   | Each |
| JR-9000-0521F | Filter, PTFE, Last Drop 5µm, fitting connector          | Each |
| JR-9000-0522  | Filter, PTFE, Last Drop 10µm, stepped tubing connector  | Each |
| JR-9000-0522F | Filter, PTFE, Last Drop 10µm, fitting connector         | Each |





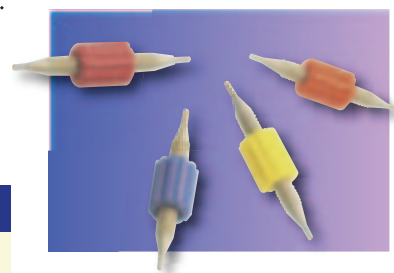
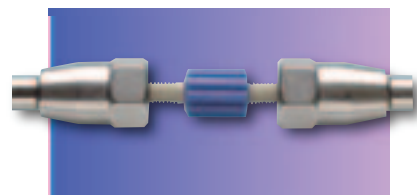
## Accessories

### Column Coupler - One-Piece, Fingertight

- Zero dead volume connections
- Self-adjusts to fit all column designs
- Biocompatible PEEK construction
- Four bore sizes

The unique feature of the Column Coupler is that it adjusts to fit all 10-32 fitting types. No matter what the fitting type and pilot length – Valco®, Waters®, Upchurch®, Rheodyne®, etc, the coupler adapts to bottom out in the pilot automatically, consequently creating only small void volumes. The column coupler is fingertight to 350 bar (5000 psi).

| Cat. No. | Description                                       | Unit |
|----------|---|------|
| JR-26501 | Column Coupler, PEEK, universal 0.13mm ID, Red    | Each |
| JR-26502 | Column Coupler, PEEK, universal 0.17mm ID, Yellow | Each |
| JR-26503 | Column Coupler, PEEK, universal 0.25mm ID, Blue   | Each |
| JR-26504 | Column Coupler, PEEK, universal 0.50mm ID, Orange | Each |



### Last Drop Filter/Sparger

- Parallel Filtering and Sparging
- Biocompatible PTFE Frits or SS Frits
- Three Different Porosities

This Filter/Sparger combines filtration and sparging in one single unit. The PTFE housing contains a mobile phase filter, either a stainless steel or a PTFE filter element. The stepped PEEK connector is for the solvent line, the fitting connection for the Helium line.

The Last Drop Filter/Sparger combines filtration and sparging in a single unit. The PTFE housing contains a mobile phase filter with either a stainless steel or PTFE filter element. Connect the solvent line to the stepped "tripod" connector, which accommodates 1.5, 2.2, and 3.5 mm ID tubing. A 1/4"-28 fitting connector connects a 1/8" helium line to the 10 µm sparger. Both connectors are PEEK. We recommend our 1/8" No-Ox tubing to prevent 'regassing' of helium degassed solvents.

| Cat. No.     | Description  | Unit |
|--------------|--|------|
| JR-9000-0602 | Filter/Sparger, PTFE, Last Drop 2.5µm filter, 10µm sparger | Each |
| JR-9000-0603 | Filter/Sparger, PTFE, Last Drop 5µm filter, 10µm sparger   | Each |
| JR-9000-0604 | Filter/Sparger, PTFE, Last Drop 10µm filter, 10µm sparger  | Each |
| JR-9000-0640 | Filter/Sparger, SS, Last Drop 2µm filter, 10µm sparger     | Each |
| JR-9000-0641 | Filter/Sparger, SS, Last Drop 5µm filter, 10µm sparger     | Each |
| JR-9000-0642 | Filter/Sparger, SS, Last Drop 10µm filter, 10µm sparger    | Each |



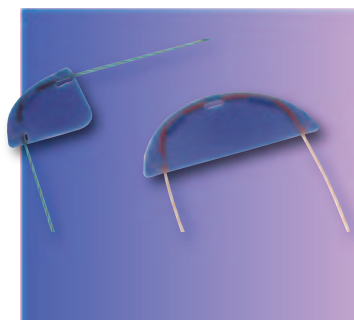
### Replacement Parts

|              |                                      |       |
|--------------|--------------------------------------|-------|
| JR-20116-10  | Nut, PEEK, Flangeless, 1/8", natural | pk/10 |
| JR-051-10    | Ferrule, ETFE, 1/8"                  | pk/10 |
| JR-8000-0485 | Tripod Adapter, PEEK, universal      | Each  |

### PEEK Tubing Elbows

Our Tubing Elbows (90° and 180°) are ideal for routing 1/16"OD PEEK tubing. Simply snap the tubing into the elbow. Prevent pinching of PEEK tubing which can cause high pressure in the system.

| Cat. No.  | Description            | Unit |
|-----------|------------------------|------|
| 70-100039 | PEEK Tubing Elbow 90°  | Each |
| 70-100040 | PEEK Tubing Elbow 180° | Each |



### Clean-Cut Tubing Cutter

Cuts PEEK, PTFE, ETFE, and other polymeric tubing without burring. There is no distortion of OD or closing of the ID. Incorporates a safety lock to secure the blade. The Clean-Cut Tubing Cutter is supplied with one replacement blade.

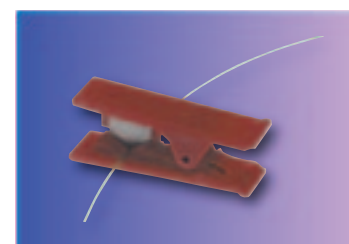
| Cat. No.  | Description                 | Unit |
|-----------|-----------------------------|------|
| 70-100042 | Clean-Cut Tubing Cutter     | Each |
| 70-100043 | Clean-Cut replacement blade | Each |



### Guillotine Polymer Tubing Cutter

Cuts PEEK, PTFE, ETFE and other polymeric tubing

| Cat. No.  | Description                          | Unit |
|-----------|--------------------------------------|------|
| 70-100044 | Guillotine Cutter for polymer tubing | Each |
| 70-100045 | Guillotine Cutter replacement blade  | Each |



### Stainless Steel Tubing Cutter (for non-critical connections)

This is the ideal tool for cutting 1/16" and 1/8" stainless steel tubing with an ID >0.5 mm for non-critical connections. The smooth, uniform cuts require little deburring or reaming. The easily replaced cutting wheel scores the tubing.

| Cat. No.  | Description                             | Unit |
|-----------|---|------|
| 70-100046 | Tubing Cutter for metal tubing          | Each |
| 70-100047 | Tubing Cutter replacement cutting wheel | Each |



### Stainless Steel Tubing Pliers

- Ideal for cutting 1/16" tubing.
- Reaches hard-to-get places in an HPLC system
- Cuts quickly, reducing distortion.
- Cuts clean, eliminating the need for deburring

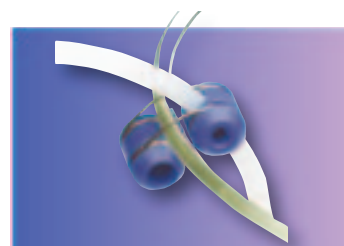
| Cat. No.  | Description                                     | Unit |
|-----------|---|------|
| 70-100048 | Tubing Cutter Pliers for Stainless Steel tubing | Each |



### Tubing Clip - the LC Tubing Organiser

The Tubing Clip holds 1/16" and 1/8" polymer tubing precisely where you want it in a beaker, flask, or bottle, etc., up to 4 mm wall thickness.

| Cat. No.  | Description | Unit |
|-----------|-------------|------|
| 70-100041 | Tubing Clip | Each |



### Rheodyne Wrench

A double-ended slotted socket wrench which fits over 1/16" and 1/8" OD tubing. It easily loosens and tightens 1/4" and 5/16" SS or PEEK fittings. The 'Z' shape provides ideal leverage for changing sample loops and fittings.

| Cat. No.  | Description                   | Unit |
|-----------|-------------------------------|------|
| 70-100049 | Rheodyne Wrench, 1/4" x 5/16" | Each |



## Solvent Recycler, SolventTrak™

- Saves up to 90% of isocratic HPLC solvent consumption
- Unique peak detection algorithm accurately defines peaks
- Diverts them to waste automatically
- Decreases solvent disposal cost
- Easy to use, no complex programming
- Pays for itself in 60 to 90 days

The solvent recycler is a solvent conservation system designed to recycle uncontaminated solvents used in isocratic HPLC systems. In most systems a high proportion of the mobile phase can be recycled and reused, which saves money by reducing solvent consumption and the need for solvent disposal.

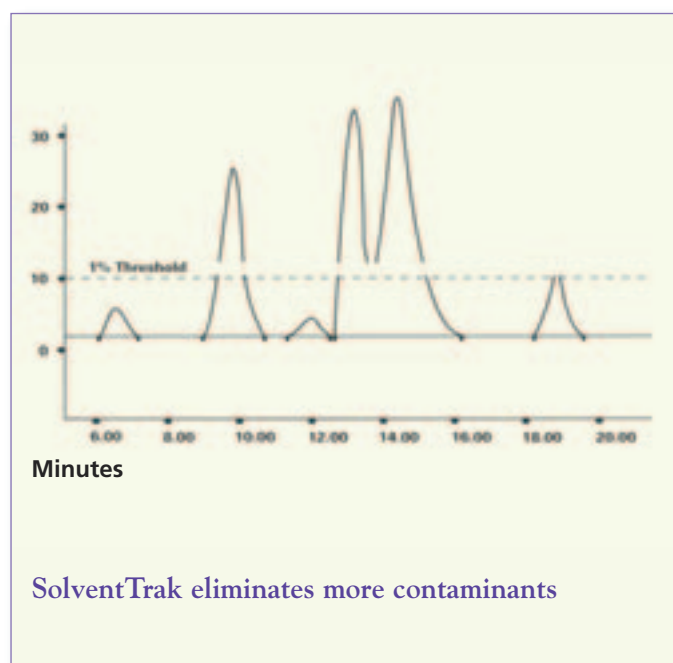
### Reliably Accurate

The solvent recycler automatically detects eluting peaks and diverts them to waste while sending clean, uncontaminated solvent back to the reservoir for recycling. Traditional recycling systems use a fixed voltage level (or threshold above the baseline) which must be exceeded before peaks can be detected. If the baseline changes, new settings must be applied or contaminants may be recycled instead of being sent to waste. Conversely, pure solvent may be sent to waste instead of being recycled.

The solvent recycler incorporates a unique integration algorithm to accurately detect peaks in the eluant to ensure that contaminants are eliminated even if chromatography system conditions cause the baseline to drift up or down. Solvents are therefore cleaner and can be used longer.

### Important Special Features

The solvent recycler can place a peak marker on the output signal to show exactly where peaks have been detected and sent to waste. This is very useful when initially setting up the system and even more important for validation purposes. Sophisticated circuitry permits the signal to be zeroed automatically via a contact closure or manually by a button on the front panel.





## Solvent Recycler, SolventTrak™

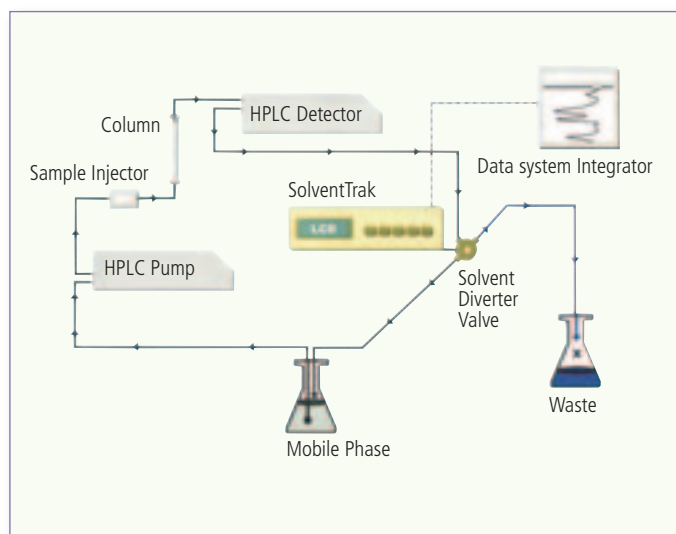
### How does it work?

The signal from any HPLC detector is connected to the solvent recycler which monitors and continuously displays the voltage level on a large, easily readable LED panel located on the front of the instrument. The signal is then connected directly to an integrator or data system.

Peak detection sensitivity may be adjusted to control familiar peak width and peak threshold parameters, similar to those found on most integrators and data systems.

When a peak is identified, an additional delay time may be set to allow for volume between the detector and valve. This further enhances the accuracy and purity of the recycling. An LED indicator, as well as a switchable buzzer, alert the operator that a peak has been found.

A reliable and inert electrically actuated solvent diverter valve automatically switches mobile phase to waste when peaks are detected. This valve may also be intentionally switched via contact closure if and when required.

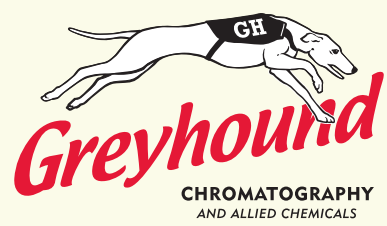


### Specifications:

|                             |  |
|-----------------------------|--|
| Signal input range:         | -1,000V to + 1,000V  |
| Sampling rate:              | 200Hz, continuous during operation   |
| Peak width range:           | 1, 5, 15, 30, 45, 60, 75, 90, 105, 120, 150, 18, 21, 24, 270, or 300 sec   |
| Peak slope ranges:          | User-settable, 15 to 14,400  |
| Diverter valve delay timer: | 0 to 99 seconds, 1 second increment  |
| Peak waste marker:          | (Valve open) Defeatable, duration 0.1 second; tick mark height is user-adjustable                                  |
| Contact closure outputs:    | Normally open/normally closed; Peak waste/valve open, 1 sec. duration; Clean complete                              |
| Contact closure/TTL inputs: | Enable/disable autozero, 1 sec. duration enable peak waste/valve override (continuous) Clean (Start CleanUp Cycle) |
| Peak-to-Waste/Valve Open:   | LCD Display status, 1 sec. audio beep (defeatable)   |
| Display: Autozero:          | Manual autozero key or contact closure enable (1 sec. duration)  |
| Dimensions:                 | 9" W x 10" D 3.75" H, 7 lbs.   |
| Power:                      | 100 to 240 VAC, 50/60 Hz   |

*The Solvent Recycler is compatible with any isocratic liquid chromatography system.*

*NOTE: Each SolventTrak is calibrated and certified to an NIST traceable standard and includes a Certificate of Validation. SolventTrak-11 complies with CE requirements. Power requirements are 95 to 250 VAC self switching.*



[www.greyhoundchrom.com](http://www.greyhoundchrom.com)

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