

HPLC Guard Column Cartridges (Prepacked)

ES Industries guard column cartridges offer excellent protection for your analytical column. Adding a guard column to your HPLC system extends the life of your analytical column (up to 400%). Placed between the injector and the analytical column, the guard column traps components that would otherwise irreversibly contaminate the stationary phase of the analytical column. Guard columns also buffer against the effects of aggressive mobile phases.

Guard column cartridge packing should exactly match the analytical column. They add capacity to your system and ensure no adverse chemical influence on sensitive separations. Using a guard column packed with a stationary phase different from that in the analytical column will provide selective elimination of specific compounds.

ES Industries guard column cartridges are packed by a high performance slurry method and will not reduce system performance. They are easy to use and can be changed in seconds. They are available in analytical (3.2 mm I.D., 2 mm I.D. and 1 mm I.D.) and semi-preparative (10 mm I.D.) sizes. A bio-compatible system is also available for broad chemical resistance and low biological binding.

| Catalog No. | Description |
|-------------|---|
| 300100 | Analytical 316 Stainless Steel Cartridge Holder (3.2 mm) |
| 300101 | Pack of 5 Analytical New Guard Column Cartridges (3.2 mm) (Please specify packing material) |
| 300120 | Semi-Preparative 316 Stainless Steel Cartridge Holder |
| 300121 | Pack of 3, Semi-Preparative New Guard Cartridges |
| 300130 | Bio-Compatible Analytical Cartridge Holder |
| 300131 | Pack of 5, Biocompatible New Guard Cartridges |
| 300102 | Analytical Guard Cartridge (2.0 mm) |
| 300103 | Pack of 5 Analytical Cartridges (2.0 mm) (Please specify packing) |
| 300104 | Microbore Guard Cartridge (1.0 mm) |
| 300105 | Packed Microbore Guard Cartridge (1.0 mm) (Please specify packing) |



HPLC Guard Columns (Prepacked)

ES Industries offers any size guard column (standard columns) prepacked with the material requested. These specialty guard columns are available in microbore, minibore, and semi-preparative sizes to suit the particular application. It is highly recommended to use prep guard columns with both semi-preparative and preparative columns. Please call for technical assistance for a specialty guard column 1-800/356-6140.



2 mm I.D x 2 cm Guard Column Kit

HPLC users find this column quite easy to pack and extremely economical. The narrow-bore short column causes only a slight pressure increase and no detectable theoretical plate loss when used with a 4.6 mm column. The 2 micron frits are easy to change, prolonging the guard column's life. A 3 gram bottle of packing material will pack 30 guard columns. Each kit contains two guard columns, a package of ten 2 µm frits and one packing funnel.

| Catalog No. | Description |
|-------------|--|
| 400050 | Guard Column Kit |
| 400010 | Precolumn |
| 400020 | Funnel |
| 400040 | Adapter for Slurry Packing |
| 400021 | 0.5 µm Replaceable Frit (Pkg. 10) |
| 400011 | 2 µm Replaceable Frit (Pkg. 10) |
| 400012 | 2 µm Titanium Replaceable Frit (Pkg. 10) |



Ultra Low Volume Guard Column Kit

This 1 mm I.D. x 2 cm guard column is ideal for microbore chromatography. The total volume of .15 μ l insures maximum column efficiency and column protection. The column can easily be dry-packed using the specially designed funnel. A 3 gram bottle of packing material will pack this column over 120 times. Each kit contains two guard columns, a package of 100 .5 μ frits and a packing funnel.



| Catalog Number | Description |
|----------------|-------------------------------------|
| 400060 | Low Volume Guard Column Kit |
| 400070 | Low Volume Guard Column |
| 400080 | Funnel |
| 400090 | Replaceable Frits 2 μ (Pkg. 10) |
| 400091 | Replaceable Frits 0.5 μ |
| 400100 | Adapter for Slurry Packing |

Packing Material for ES Industries Guard Columns

Any large particle material produced by ES Industries will work very well in these self-packing guard columns. The unit can be taken apart and repacked in minutes, the 2 cm and 2 mm I.D. has only a 0.6 μ l dead volume for minimal detectable effect. These are some of the more popular bonded phases*.

| Catalog Number | Description |
|----------------|--|
| 400500 | 3 g Chromega™ SI 60, 25-40 μ |
| 400510 | 3 g Chromegabond® C-18, 25-40 μ |
| 400520 | 3 g Chromegabond C-8, 25-40 μ |
| 400530 | 3 g Chromegabond C-2, 25-40 μ |
| 400540 | 3 g Chromegabond NH ₂ , 25-40 μ |
| 400550 | 3 g Chromegabond CN, 25-40 μ |

* Please call for other types of packing material



Silica Saturator Column Kit

A Silica Saturation Column is a means to saturate your alkaline mobile phase with silicate ions prior to entering an analytical or preparative column. Only your mobile phase, not your chromatography, will be affected since the saturator column is installed before the injector. Mobile phase saturation with silicate ions protects your analytical column from aggressive mobile phases. ES Industries offers as standard a 15 cm x 4.6 mm silica saturation column kit consisting of an empty column, 2 μ frits, and 10 grams of 40-63 μ silica for this purpose. However, there are applications where materials other than silica should be used. Please call for technical assistance.

| Catalog Number | Description |
|----------------|-----------------------------|
| 300100S | Silica Saturator Column Kit |
| 300101S | Empty Column 15 cm x 4.6 mm |
| 300102S | 2 μ Frit (2 ea.) |
| 300103S | 10 grams 40-63 μ Silica |



HPLC Precolumn Filter

Protect your HPLC columns from particles that can increase back pressure and degrade a column. The ES Industries Precolumn Filter with replaceable frit offers a simple, convenient, and effective means of protection which will lengthen the life of your HPLC column. Available with either 0.5 or 2 μ stainless steel frit with a Kel-F® ring.

| Catalog Number | Description |
|----------------|--|
| 300010 | Precolumn Filter with 2 μ frit (each) |
| 300020 | Precolumn Filter with 0.5 μ frit (each) |
| 300011 | Replaceable Frit (.062" dia.) (2 μ) (Pkg.10) |
| 300021 | Replaceable Frit (.062" dia.) (0.5 μ) (Pkg.10) |
| 300022 | Replaceable Frit (.094" dia.) (0.5 μ) (Pkg. 10) |
| 300023 | Precolumn Filter 2 μ frit (each) (Ultra-low dead volume) |
| 300024 | Precolumn Filter 0.5 μ frit (each) (Ultra-low dead volume) |



All dimensions and lengths available for micro bore 1.0 mm, semi-preparative, preparative, specialty sizes, and threaded modular column, please refer to page 5.



Column Couplers

- Inexpensive
- Low dead volume
- No loss of column efficiency
- Fingertight

Low cost efficient method of attaching HPLC columns to guard columns, precolumn filters, etc.

| Catalog Number | Description |
|----------------|--|
| ES9302 | 2 Fingertights, .007" I.D., 316SS tube |
| ES9303 | 2 Fingertights, .010" I.D., PEEK Tube |

Universal Coupler

- Low dead volume
- For column to column connection
- Column to guard or prefilter

Universal coupler for small length connection, very handy and practical.

| Catalog Number | Description |
|----------------|---------------------------|
| 300106 | Coupler, .005", PEEK Tube |

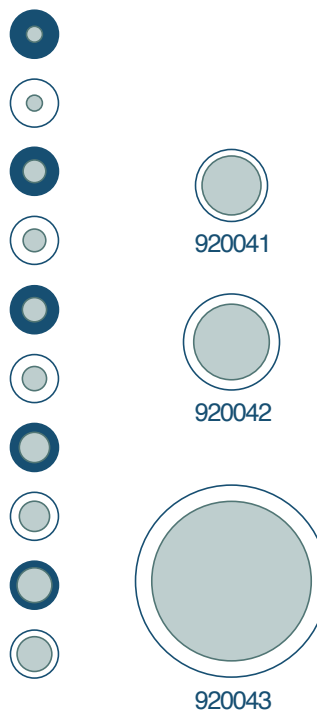
316 Stainless Steel HPLC Frits

ES Industries offers the finest HPLC stainless steel frits available for a variety of column sizes and dimensions. These frits are available in both 0.5 micron and 2.0 micron porosity.

0.032" and 0.062" Thick

Stainless Steel Frits with PEEK Sealing Rings

| Catalog Number | Thickness (inches) | Column OD (inches) | Column ID (mm) | Frit (micron) |
|----------------|--------------------|--------------------|----------------|---------------|
| 920021 | 0.032 | .250 | 2.1 | 0.5 |
| 920022 | 0.062 | .250 | 2.1 | 0.5 |
| 920023 | 0.032 | .250 | 2.1 | 2.0 |
| 920024 | 0.062 | .250 | 2.1 | 2.0 |
| 920025 | 0.032 | .250 | 3.0 | 0.5 |
| 920026 | 0.062 | .250 | 3.0 | 0.5 |
| 920027 | 0.032 | .250 | 3.0 | 2.0 |
| 920028 | 0.062 | .250 | 3.0 | 2.0 |
| 920029 | 0.032 | .250 | 3.2 | 0.5 |
| 920030 | 0.062 | .250 | 3.2 | 0.5 |
| 920031 | 0.032 | .250 | 3.2 | 2.0 |
| 920032 | 0.062 | .250 | 3.2 | 2.0 |
| 920033 | 0.032 | .250 | 4.0 | 0.5 |
| 920034 | 0.062 | .250 | 4.0 | 0.5 |
| 920035 | 0.032 | .250 | 4.0 | 2.0 |
| 920036 | 0.062 | .250 | 4.0 | 2.0 |
| 920037 | 0.032 | .250 | 4.6 | 0.5 |
| 920038 | 0.062 | .250 | 4.6 | 0.5 |
| 920039 | 0.032 | .250 | 4.6 | 2.0 |
| 920040 | 0.062 | .250 | 4.6 | 2.0 |
| 920041 | 0.062 | .375 | 7.8 | 2.0 |
| 920042 | 0.062 | .500 | 10.0 | 2.0 |
| 920043 | 0.062 | 1.000 | 21.1 | 2.0 |



Please inquire for all frit types available.

Biocompatible HPLC Frits

ES Industries offers biocompatible HPLC frits in two materials, PEEK and Titanium. These frits are available in both .5 μ and 2 μ porosity. Please inquire for a specific application need.

0.062" Thick PEEK Frits with PEEK Sealing Rings

| Catalog Number | Column OD (inches) | Column ID (mm) | Frit Micron |
|----------------|--------------------|----------------|-------------|
| 920113 | .250 | 2.1 | 0.5 |
| 920114 | .250 | 2.1 | 2.0 |
| 920115 | .250 | 3.0 | 0.5 |
| 920116 | .250 | 3.0 | 2.0 |
| 920117 | .250 | 4.6 | 0.5 |
| 920118 | .250 | 4.6 | 2.0 |
| 920119 | .750 | 10.0 | 2.0 |



Titanium Frits

| Catalog Number | Column OD (inches) | Column ID (mm) | Frit Micron |
|----------------|--------------------|----------------|-------------|
| 920111 | .250 | 4.6 | 2.0 |
| 920112 | .250 | 3.2 | 2.0 |
| 920113 | .250 | 2.1 | 2.0 |



Fingertight Fittings

ES Industries offers a variety of Fingertight fittings for different HPLC applications. They are used with any 1/16" female fittings, and do not crimp to tubing, which allow reuse of the Fingertight in any other fitting.

The universal Fingertight fittings are ideal for use at the inlet and outlet of a column. You can change a column without changing fittings, adding column adaptors, or cutting tubing.

| Catalog Number | Material |
|----------------|-----------------------------------|
| 930011 | PEEK 10-32 |
| 930012 | PEEK 10-32 |
| 930013 | PEEK 10-32 |
| 930014 | PEEK 10-32 |
| 930015 | Kel-F [®] 10-32 |
| 930016 | (X-long) PEEK 10-32 |
| 930017 | (X-long) PEEK 10-32 |
| 930018 | PEEK 10-32 w/PEEK Ferrule |
| 930019 | Delrin 10-32 w/PEEK Ferrule 1/16" |
| 930020 | PEEK |
| 930021 | Delrin 10-32 |
| 930022 | Delrin 10-32 |
| 930023 | Delrin Ex-Long 10-32 |



All dimensions and lengths available for micro bore 1.0 mm, semi-preparative, preparative, specialty sizes, and threaded modular column, please refer to page 5.

LC Connectors

- Adjust to any 10-32 port
- Void-free connections guaranteed
- Reduce column change over time
- Color-coded for easy identification of I.D. size
- Fingertight to 10,000 psi

LC connectors provide void-free, fingertight connections in all 10-32 ports, regardless of manufacturer. Precision-manufactured, these connectors guarantee connections to be leak-free at any pressure up to 10,000 psi.

Our single connector is recommended for use between the injector valve and column. Double connectors are recommended for column coupling or anywhere within the LC system where connections are frequently made.

Every connector is shipped assembled and included pre-cut color-coded capillary tubing and the appropriate fittings.

Choose the right diameter for your application.

| I.D. (inches) | Color | Application |
|---------------|--------|------------------------------------|
| 0.007 | Black | 4.6 mm I.D. columns or smaller |
| 0.010 | Blue | Routine work |
| 0.020 | Yellow | Pre-injection, semi-prep, and prep |

Single Connectors

| Catalog Number | Description |
|----------------|--------------------|
| 9376 | 6 cm x 0.007 I.D. |
| 9371 | 10 cm x 0.007 I.D. |
| 9372 | 20 cm x 0.007 I.D. |
| 9373 | 30 cm x 0.007 I.D. |
| 9316 | 6 cm x 0.010 I.D. |
| 9311 | 10 cm x 0.010 I.D. |
| 9312 | 20 cm x 0.010 I.D. |
| 9313 | 30 cm x 0.010 I.D. |
| 9326 | 6 cm x 0.020 I.D. |
| 9321 | 10 cm x 0.020 I.D. |
| 9322 | 20 cm x 0.020 I.D. |
| 9323 | 30 cm x 0.020 I.D. |

LC Connectors

| Catalog Number | Description |
|----------------|--------------------|
| 9476 | 6 cm x 0.007 I.D. |
| 9471 | 10 cm x 0.007 I.D. |
| 9472 | 20 cm x 0.007 I.D. |
| 9473 | 30 cm x 0.007 I.D. |
| 9416 | 6 cm x 0.010 I.D. |
| 9411 | 10 cm x 0.010 I.D. |
| 9412 | 20 cm x 0.010 I.D. |
| 9413 | 30 cm x 0.010 I.D. |
| 9426 | 6 cm x 0.020 I.D. |
| 9421 | 10 cm x 0.020 I.D. |
| 9422 | 20 cm x 0.020 I.D. |
| 9423 | 30 cm x 0.020 I.D. |

Spare Parts

| Catalog Number | Description |
|----------------|-----------------|
| 9130-F | Vespel ferrule |
| 9130-B | Compression nut |
| 9130-N | Locking nut |

Note: Connectors can be supplied with PEEK ring on compression nut. Call customer service for more information.

