



84 Spring Lane, Farmington, CT 06032-3159  
860-747-6333 Fax 860-747-6739  
www.mottcorp.com

## [Porous Metal Frits in Liquid Chromatography](#)

Mott's pressed and sintered porous metal frits are used in liquid chromatography columns to filter microbial and inorganic contaminants. These frits protect HPLC (*high pressure/performance liquid chromatography*) columns from particulate contamination and distribute dissolved samples evenly for optimal column performance.

### **PRIMARY APPLICATION OBJECTIVES:**

- Retain packing in column
- Complete distribution of sample uniformly into column
- Provide uniform flow of sample into column
- Precisely fit customer's dimensional flow
- Must withstand high-pressure (upwards of 6000 psi) and highly corrosive applications

### **SECONDARY APPLICATION OBJECTIVES:**

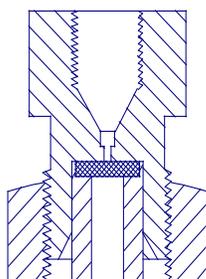
To eliminate one or more of the following:

- Flow distribution plate
- Fitting distribution cone
- Counter-boring of column tube ends
- Assembly of frits into counterbore
- Reduce dead volume, improving symmetry of peaks

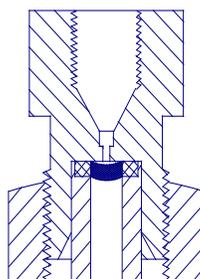
### **MOTT MEETS THE CUSTOMER'S OBJECTIVES:**

Through the use of Mott's UniDense, Dual-Density and Concave Frits, the chromatography customer's application requirements can be satisfied. Unlike other media used in such applications (i.e., fritted glass, *Gortex*, porous *Teflon*®, porous plastics and ceramics), Mott's porous metal frits are capable of withstanding high-pressure applications, resisting highly caustic solvents, and are non-shedding which promotes overall column quality and contributes to more credible test results.

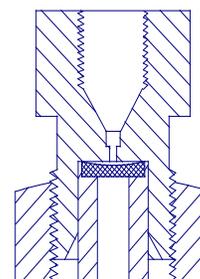
## Mott Frit Types in Column



**UniDense**



**Dual-Density**



**Concave**

### What's the Difference?

- ❑ UniDense Frits - Used for uniform flow across entire frit surface.
- ❑ Dual-Density Frits - Used to limit flow to the interior region of the frit, greatly reducing dead volume that can cause peak asymmetry.
- ❑ Concave Frits - Used to enhance flow uniformity, eliminating the need for a flow distribution plate.

## Chromatography.....The A-B-C's

### *What is it?*

Chromatography is the analytical chemistry term for a method of separating and analyzing mixtures of chemical substances based on the selective retention of the molecules, atoms or ions onto a solid adsorbent such as activated carbon, alumina or silica gel.

### **HPLC**

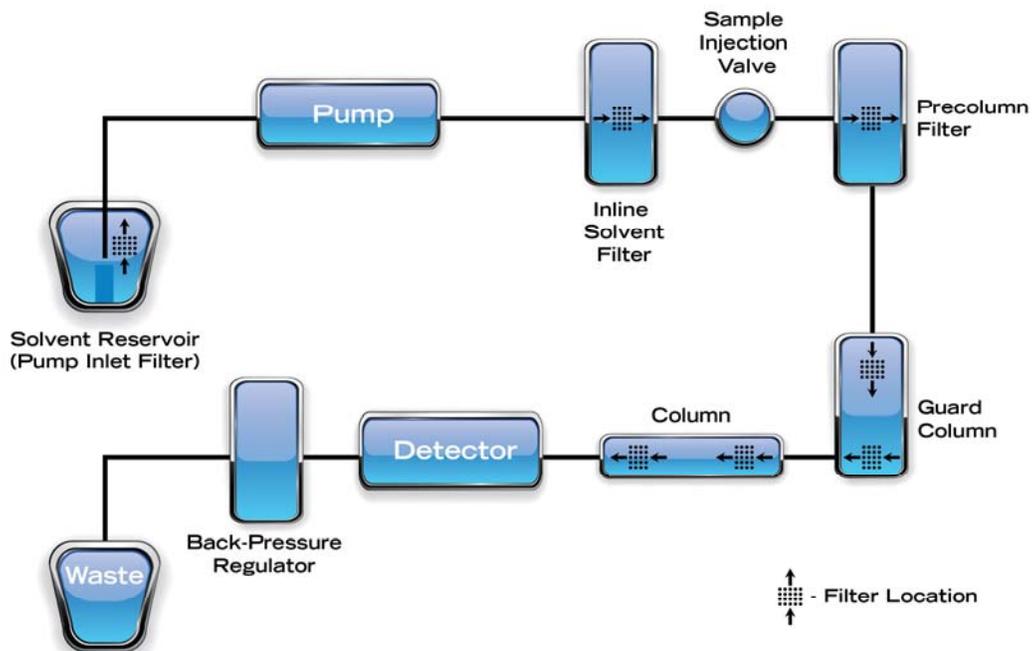
#### *What is it?*

HPLC is the analytical chemistry term for the quantitative separation technique involving a liquid moving phase and fixed adsorbent stage.

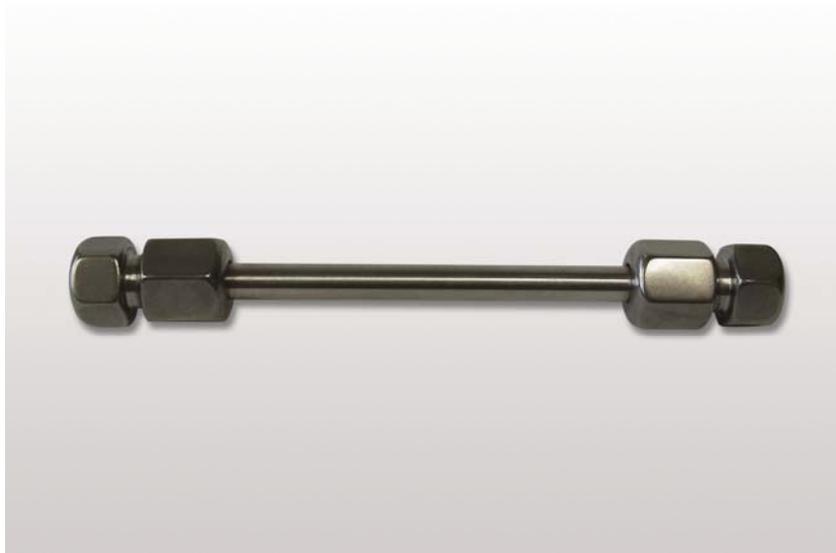
#### *How does it work?*

Sample is introduced to a gaseous or liquid moving phase and carried down a column containing a stationary phase. This second phase is an involatile liquid held on an inert support or an active solid. As the sample is carried down the stationary phase, its components distribute themselves between the two phases at different rates and exit in distinct zones separated by the purer moving phase. The zone is referred to as a peak. The higher the peak, the greater the amount of the component in the sample. Emerging zones are sent to a detector where the component and quantity are determined.

## Typical HPLC System



## Typical Chromatography Column



## Mott Porous Metal Frits

### FEATURES

Uniform Porosity

Uniform Pore Distribution

Irregular, Tortuous Pore Paths

Non-Shedding Media

Unique Concave Surface  
(Concave and Dual Density Frits)

Unique Dual Density  
(Dual Density Frits)

Unique Denser Outer Ring  
(Dual Density Frits)

Variety of Porous Metal Materials

### BENEFITS

Consistent, repeatable flow rate = predictable column loading and test time = easier work load scheduling = more efficient use of equipment.

Uniform distribution of packing into column = uniform distribution of user's sample into column = less secondary peaks = more credible and easier to read results = improved overall column quality.

Depth filtration = better performing column and column life = improved overall column quality.

Metallic filter integrity = more credible test results = enhanced column performance.

Improves flow distribution = enhanced flow uniformity = elimination of distribution plate or fitting modifications (distribution cone) = saves money.

Reduced dead volume = improved peak symmetry = eliminates a source of secondary peak = easier to read results = enhanced overall credibility.

Eliminates counter boring of tubing and press fitting of porous into the counterbore = saves time and money.

Alloys available to meet temperature, solvent, high pressure and specific sample requirements.

In the chromatography business there's no room for media that doesn't carry its weight. Porous metal consistently outperforms all other media types and that is why customers always come back to Mott. For over 50 years, we've been selling our products to companies like Agilent, Perkin Elmer, Thermo, Fisher, and Waters helping them achieve their filtration goals in chromatography.

### Common Frit Specifications for Chromatography

**Media Grade:** 0.2, 0.5, 2, and 5

**Thickness:** 0.039", 0.062", and 0.125"

**Diameters:** 0.062", 0.093", 0.125", 0.156", 0.181", 0.188", 0.250", 0.375", 0.500", 0.625", 0.750", 1.000"

**Common Materials:** 316L SS, Titanium, Hastelloy® C-276, Nickel 200

*Other sizes and material variations available upon request.*