

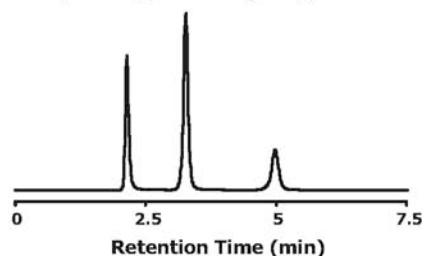
ZIC®-HILIC

HYDROPHILIC STATIONARY PHASE FOR LIQUID CHROMATOGRAPHY

- ◆ Permanent zwitterionic groups covalently attached to porous silica
- ◆ Excellent properties for Hydrophilic Interaction Liquid Chromatography (HILIC)
- ◆ Available in column dimensions from capillary through analytical to preparative

Orthogonal Selectivity Compared to Reversed Phase

Analytes that are poorly retained and elute in, or very close to, the void volume and that may be affected by wettability problems on a reversed phase column, are those that are the most retained on the ZIC®-HILIC column. A striking example of this is the retention of uracil, a compound which elute in the void volume on reversed phase material, but shows appreciable retention on the ZIC®-HILIC stationary phase. The orthogonal separation selectivity offered by the ZIC®-HILIC column is highly suitable for analysis of hydrophilic analytes such as peptides, carbohydrates, protein digests, plant extracts and various polar compounds.

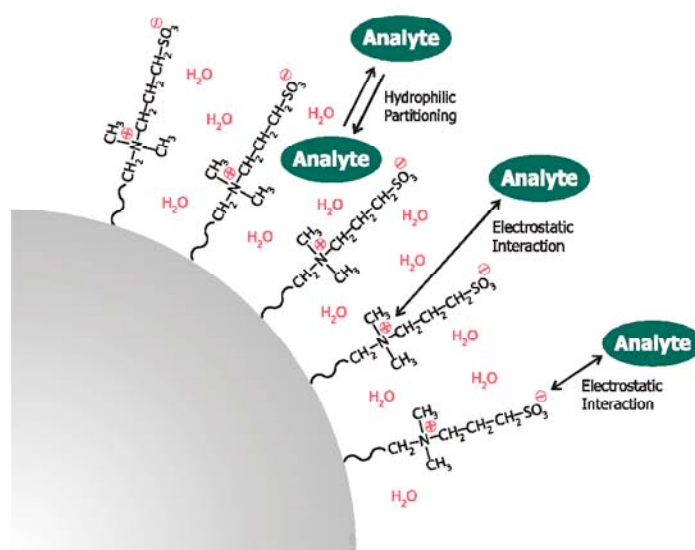


Separation of toluene, uracil and cytosine on a ZIC®-HILIC column (50 x 4.6 mm, 5 µm, 200 Å, P/N 2712-055) using isocratic elution with a mobile phase of 80:20 acetonitrile/aqueous ammonium acetate buffer (5 mM).

Unique Hydrophilic Zwitterionic Functional Group

The permanently charged, yet overall neutral, highly polar zwitterionic ZIC®-HILIC material provides a unique environment, not only particularly capable of solvating polar and charged compounds, but also offering the possibility of weak electrostatic interaction with analytes carrying either positive or negative charges. The retention thus generally increase with hydrophilicity and with charge of the analyte, and the selectivity can be tuned while maintaining a low ionic strength. These properties makes the ZIC®-HILIC material excellent for separations of a wide range of polar and hydrophilic compounds and an ideal choice for LC/MS analysis.

Retention on the ZIC®-HILIC column increase with hydrophilicity and charge of the analyte

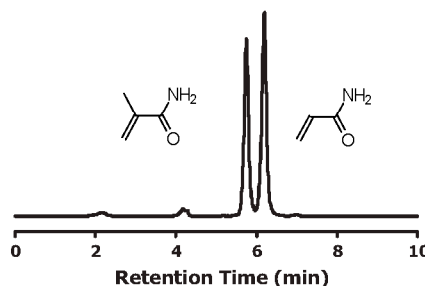


Schematic illustration of the processes causing retention on the ZIC®-HILIC stationary phase.

Hydrophilic Interaction Liquid Chromatography

Separations in HILIC mode are, as the name implies, based on hydrophilic interactions between the analyte and the hydrophilic zwitterionic stationary phase. The eluent is an aqueous buffer to which a large amount of an organic solvent such as acetonitrile has been added to force the analyte to partition from the eluent into the wetted ZIC®-HILIC stationary phase. The selectivity of the ZIC®-HILIC column can be tuned by varying the amount of organic modifier, the pH and the low ionic strength of the eluent, where an increase in the organic solvent content or a decrease in the ionic strength promotes retention.

Example Application - Acrylamide Separation



Separation of methacrylamide and acrylamide on a ZIC®-HILIC column (250 x 4.6 mm, 5 µm, 200 Å, P/N 2712-255) using isocratic elution with a mobile phase of 75:25 acetonitrile/aqueous ammonium acetate buffer (5 mM).



Local Distributor

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Local Distributor

Ordering Information

The ZIC®-HILIC porous silica material is packed in column formats from capillaries and microbore columns made of glass-lined stainless steel, to analytical and semi-preparative columns made of PEEK with PEEK frits. The ZIC®-HILIC functionality is also available as preparative columns, as SPE cartridges for solid-phase extraction and as bulk material for Flash Chromatography. Other options available upon request.

Capillary and Microbore Columns

| P/N | dp µm | Porosity Å | Length mm | ID mm | Description |
|----------|----------|---------------|--------------|----------|---|
| 2902-030 | 3 | 200 | 30 | 0.3 | Capillary column, glass-lined stainless steel |
| 2912-030 | 5 | 200 | 30 | 0.3 | Capillary column, glass-lined stainless steel |
| 2902-150 | 3 | 200 | 150 | 0.3 | Capillary column, glass-lined stainless steel |
| 2912-150 | 5 | 200 | 150 | 0.3 | Capillary column, glass-lined stainless steel |
| 2902-031 | 3 | 200 | 30 | 1.0 | Microbore column, glass-lined stainless steel |
| 2912-031 | 5 | 200 | 30 | 1.0 | Microbore column, glass-lined stainless steel |
| 2902-151 | 3 | 200 | 150 | 1.0 | Microbore column, glass-lined stainless steel |
| 2912-151 | 5 | 200 | 150 | 1.0 | Microbore column, glass-lined stainless steel |
| 2912-710 | 5 | 200 | 5 | 0.3 | Pre-column (1-pak) |
| 2912-750 | 5 | 200 | 5 | 0.3 | Pre-column (5-pak) |
| 2912-711 | 5 | 200 | 5 | 1.0 | Pre-column (1-pak) |
| 2912-751 | 5 | 200 | 5 | 1.0 | Pre-column (5-pak) |

Analytical and Semi-Preparative Columns

| P/N | dp µm | Porosity Å | Length mm | ID mm | Description |
|----------|----------|---------------|--------------|----------|-------------------------------|
| 2712-052 | 5 | 200 | 50 | 2.1 | Analytical column, PEEK |
| 2712-102 | 5 | 200 | 100 | 2.1 | Analytical column, PEEK |
| 2712-152 | 5 | 200 | 150 | 2.1 | Analytical column, PEEK |
| 2712-252 | 5 | 200 | 250 | 2.1 | Analytical column, PEEK |
| 2712-055 | 5 | 200 | 50 | 4.6 | Analytical column, PEEK |
| 2712-105 | 5 | 200 | 100 | 4.6 | Analytical column, PEEK |
| 2712-155 | 5 | 200 | 150 | 4.6 | Analytical column, PEEK |
| 2712-255 | 5 | 200 | 250 | 4.6 | Analytical column, PEEK |
| 2712-058 | 5 | 200 | 50 | 7.5 | Semi-preparative column, PEEK |
| 2712-108 | 5 | 200 | 100 | 7.5 | Semi-preparative column, PEEK |
| 2712-158 | 5 | 200 | 150 | 7.5 | Semi-preparative column, PEEK |
| 2712-258 | 5 | 200 | 250 | 7.5 | Semi-preparative column, PEEK |

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