

TSK-GEL NH₂-100 Columns

A Stable Amino-Based Column Offering Alternate Selectivity for Polar Compounds in Hydrophilic Interaction Liquid Chromatography (HILIC)

TSK-GEL
PRODUCT OVERVIEW

Introduction

Hydrophilic interaction liquid chromatography (HILIC) is used primarily to separate polar and hydrophilic compounds that are not sufficiently retained by reversed phase. Target applications for HILIC include the analysis of hydrophilic compounds such as saccharides, glycosides, oligosaccharides, peptides, and drug metabolites.

A new HILIC column, the TSK-GEL NH₂-100, provides a different selectivity from the well-known TSK-GEL Amide-80 columns. These novel amino-bonded phase columns (see Figure 1) stand out by providing much improved chemical stability, a prerequisite for achieving reproducible and reliable results. Due to a high ligand density and large surface area, these columns show high retention for very polar compounds.

TSK-GEL NH₂-100 columns are packed with 3 μ m silica particles containing 100Å pores. A novel bonding strategy improves chemical stability of the bonded phase (see Figure 2). First the silica is reacted with a trimethylsilane endcapping reagent at a low stoichiometric ratio, before reaction of the remaining and accessible silanol groups with trifunctional alkylaminosilane. The resulting bonded phase provides a better safeguard against hydrolysis of the underlying silica.

Product Highlights

- Alternative Selectivity to TSK-GEL Amide-80 HILIC Columns
- Novel Bonding Strategy Produces High Chemical Stability
- High Retention for Very Polar Compounds
- Ideally Suited for High Efficiency HPLC and LC/MS

Figure 1.

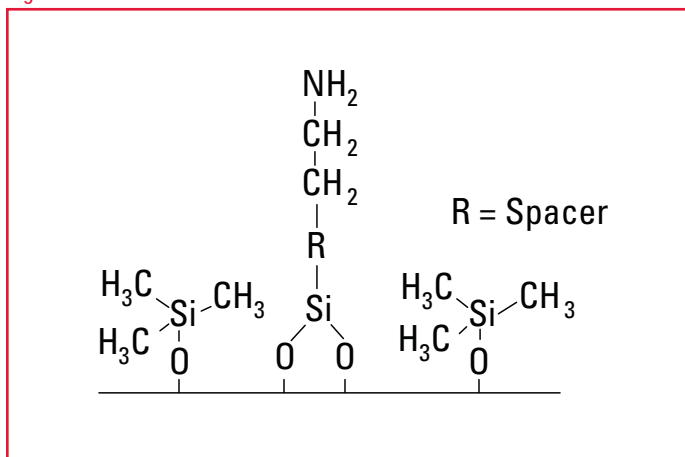
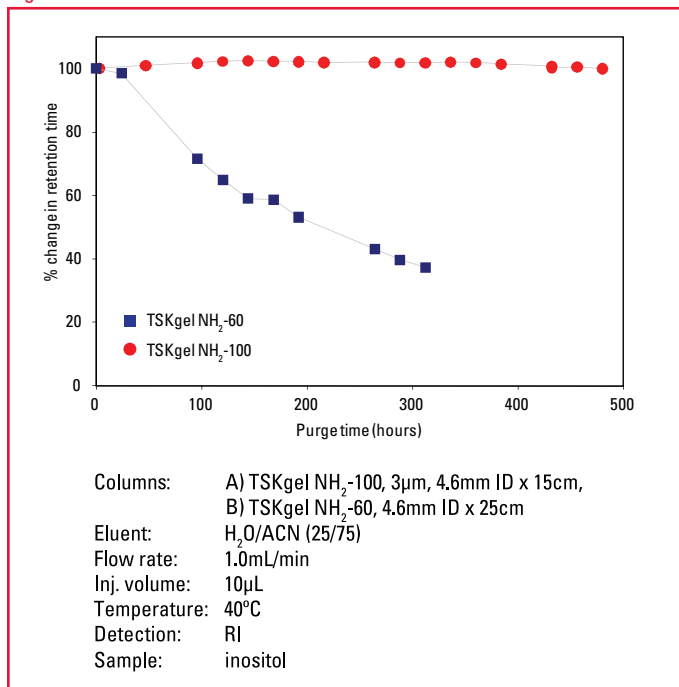


Figure 2.



Applications

Pyridylaminated Sugars

Although good separations of pyridylaminated (PA) sugars (Figure 3) can be obtained by reversed phase as well as by HILIC, all components are separated on the TSKgel NH₂-100 column, while two of the components coelute on the TSKgel ODS-100V column. It is believed that all acidic PA sugars were completely separated on the TSKgel NH₂-100 column due to an additional ionic interaction. The fact that the elution order of the acidic PA sugars is almost completely the opposite on the reversed phase and HILIC columns, demonstrates the potential of the TSKgel NH₂-100 column as a second dimension in 2D HPLC.

Figure 3.

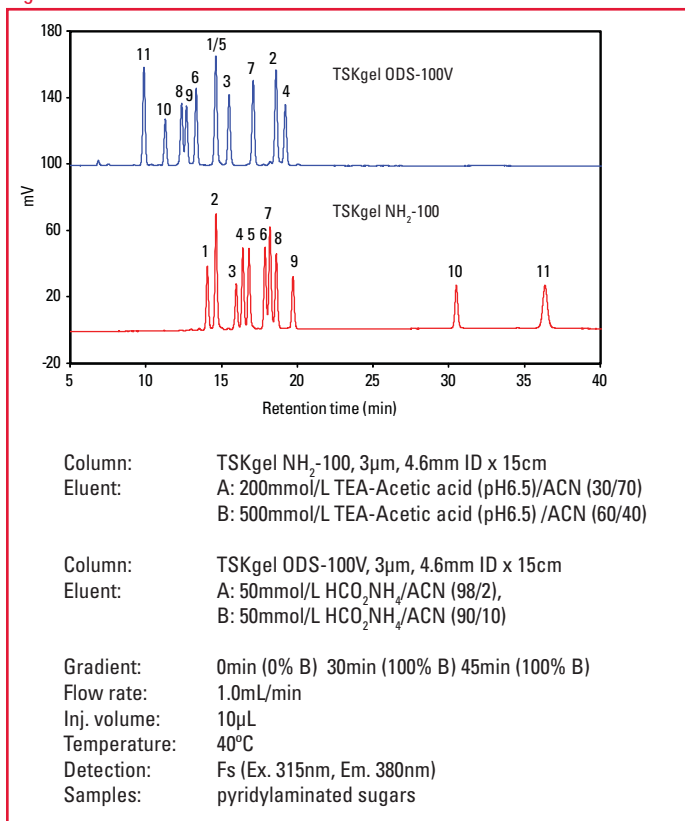
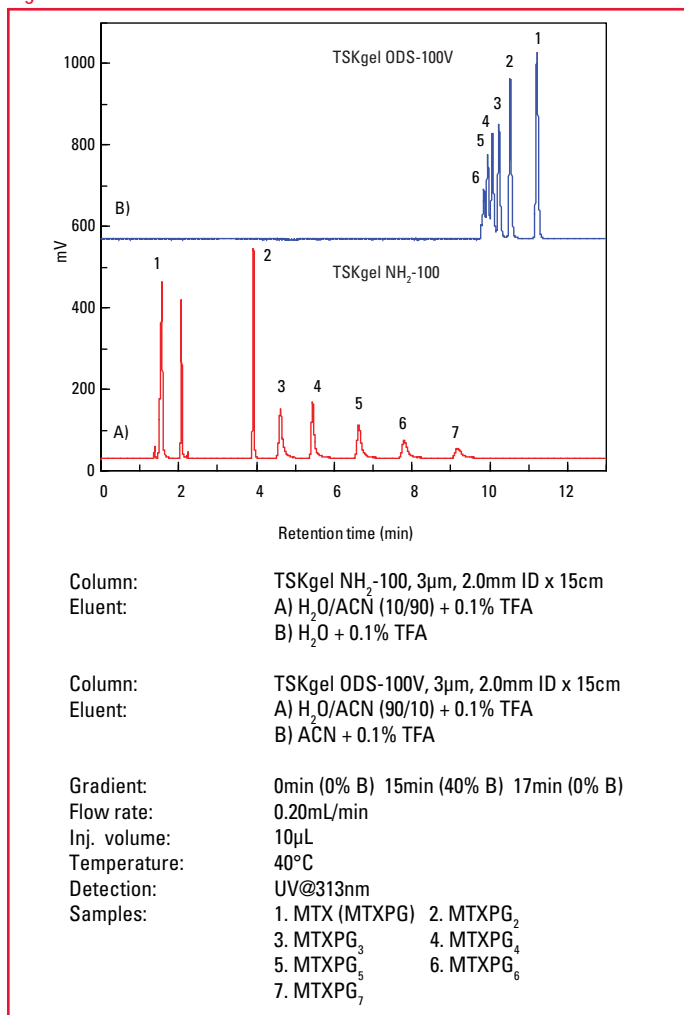


Figure 4.



MTX and its Derivatives

Polyglutamate metabolites of methotrexate (MTXPG₂-7) were separated on TSKgel NH₂-100 and TSKgel ODS-100V narrow bore columns (Figure 4). On the TSKgel NH₂-100 column, MTX polyglutamate metabolites were eluted in the order of the number of glutamate groups in their molecules. Despite the early elution of MTXPG₁ and MTXPG₂ on the TSKgel NH₂-100 column, the overall separation is superior over what can be accomplished on the C18 column.

Ordering Information

| Part # | Description | Matrix | Housing | ID (mm) | Length (cm) |
|--------|---------------------------------------|--------|-----------------|---------|-------------|
| 21967 | TSKgel NH₂-100, 3μm | Silica | Stainless Steel | 2 | 5 |
| 21968 | TSKgel NH₂-100, 3μm | Silica | Stainless Steel | 2 | 15 |
| 21969 | TSKgel NH₂-100, 3μm | Silica | Stainless Steel | 4.6 | 5 |
| 21970 | TSKgel NH₂-100, 3μm | Silica | Stainless Steel | 4.6 | 15 |



TOSOH

TOSOH BIOSCIENCE

TOSOH Bioscience LLC
 156 Keystone Drive
 Montgomeryville, PA 18936-9637
 Orders & Service: (800) 366-4875
 Fax: (215) 283-5035
 www.tosohbioscience.com