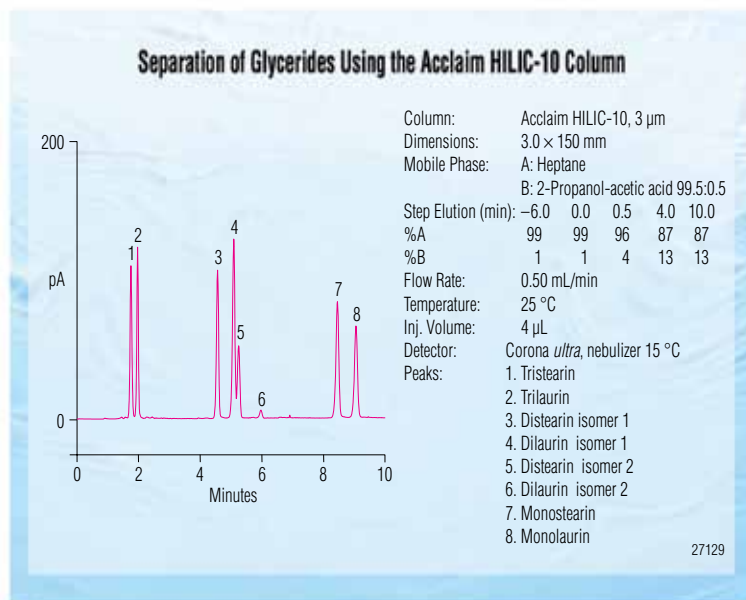


Acclaim HILIC-10 Column for Separating Highly Hydrophilic Molecules



The Acclaim[®] HILIC-10 column is designed for separating highly hydrophilic molecules by Hydrophilic Interaction Liquid Chromatography (HILIC). This new column is based on high-purity, spherical porous silica gel covalently modified with a proprietary hydrophilic layer, and is suited for use in a broad range of applications including separation of hydrophilic drugs and drug metabolites.

Features

- Retains highly polar molecules that are unretained by reversed-phase chromatography
- Unique selectivity, complementary to reversed-phase columns
- Hydrolytically stable
- Rugged column packing
- Broad application range

Column Chemistry

HILIC is a complementary technique to Reversed-Phase Liquid Chromatography (RPLC) with several benefits. Polar analytes that cannot be retained using RP columns can be retained and separated using the Acclaim HILIC-10 column. Traditionally, Normal-Phase Liquid Chromatography (NPLC) has been used for this type of separation, utilizing a polar stationary phase such as unbonded silica with highly organic mobile phases. The limitation of unbonded silica is that irreproducible results may be obtained due to the presence of uncontrollable amounts of moisture in the mobile phase.



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The advantage of the HILIC phases is that they allow the use of 5–20% aqueous mobile phase, while maintaining affinity for polar analytes. The Acclaim HILIC-10 column is rugged and reproducible with greater control of the chromatographic separation. This column is also superior for electrospray LC/MS applications with highly polar compounds; the organic solvent-rich mobile phase used in HILIC provides a ten- to twenty-fold improvement in sensitivity. Moreover, by eliminating the need for evaporation and reconstitution of a sample dissolved in a nonaqueous solvent, sample throughput can be greatly increased.

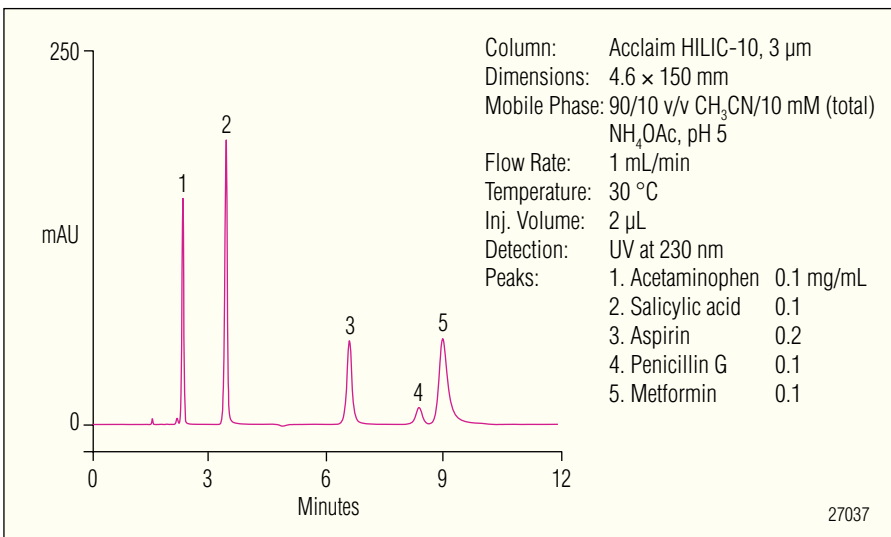


Figure 1. Separation of hydrophilic pharmaceuticals.

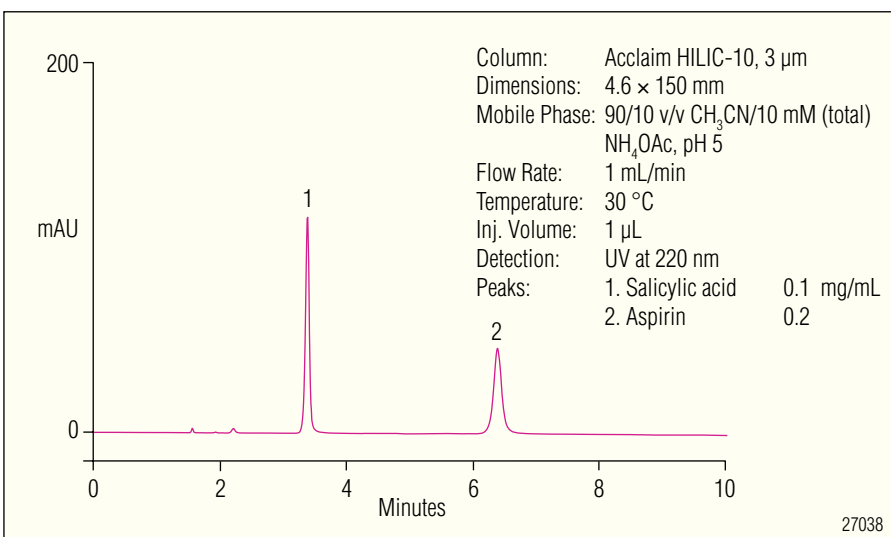


Figure 2. Separation of aspirin and degradation product.

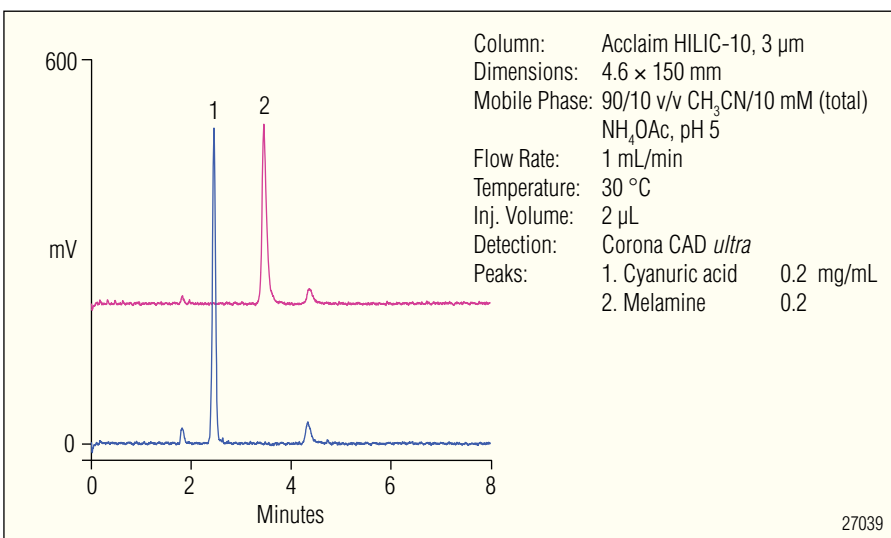


Figure 3. Separation of melamine and cyanuric acid.

Applications

The Acclaim HILIC-10 column is ideally suited for analysis of polar analytes and has demonstrated its use in a wide variety of applications. In analysis of hydrophilic pharmaceuticals and metabolites (Figures 1 and 2) good chromatographic separation is achieved in <10 min with 10% aqueous mobile phase. Separation of melamine and cyanuric acid (Figure 3) has become increasingly important in detection of food and wastewater contamination. The Acclaim HILIC-10 column can be used for the simultaneous separation of both compounds.

Monomers for industrial applications (Figures 4–6) can be eluted in the order of their hydrophilicity using the Acclaim HILIC-10 column.

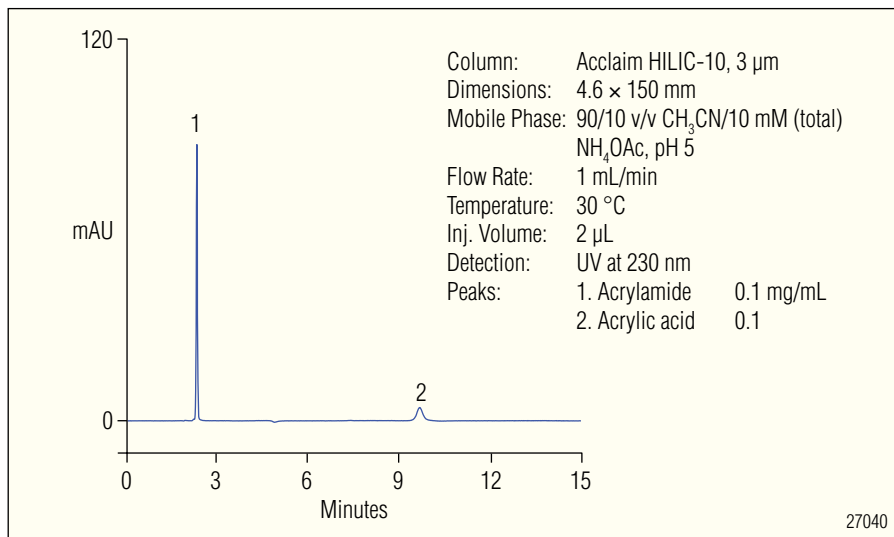


Figure 4. Separation of acrylamide and acrylic acid.

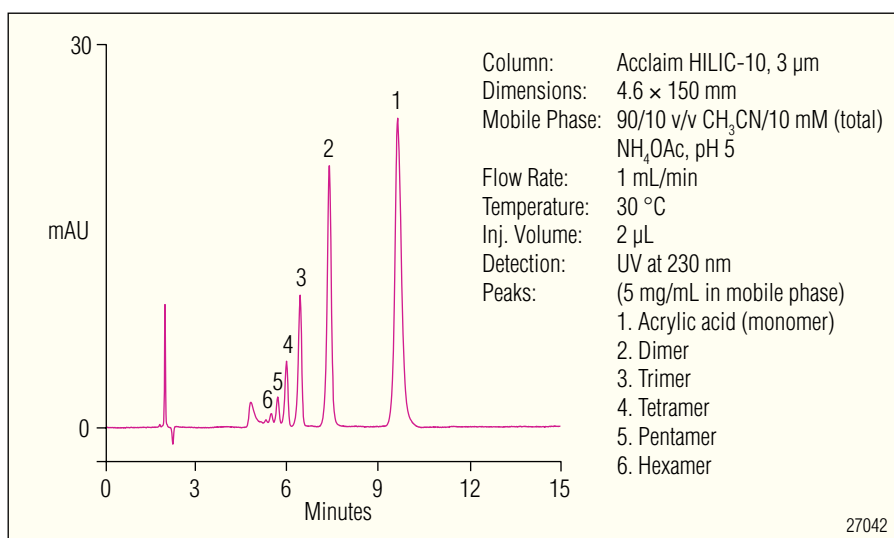
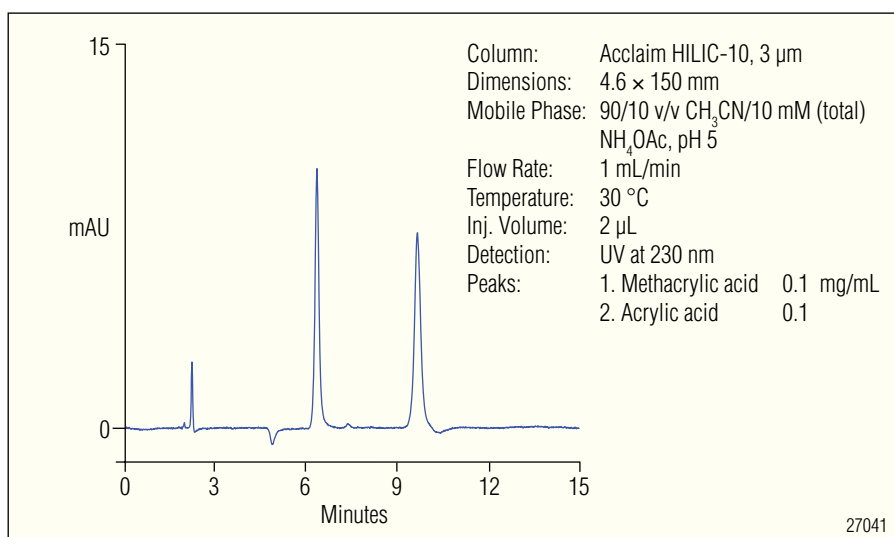


Figure 6. Separation of acrylic acid and oligomers.

The Acclaim HILIC-10 column can be used for separation of fat-soluble vitamins. Retinyl acetate and retinyl palmitate are two forms of vitamin A that are commonly used in vitamin supplements and fortified foods. Using reversed-phase HPLC, these two compounds are widely separated and require either long run times or gradient conditions. The Acclaim HILIC-10 column provides good resolution using simple isocratic conditions as illustrated in figure 7. Vitamin E is an antioxidant compound found in nuts, grains, and leafy green vegetables, and it protects cell membranes and other parts of the cell from damage. Deficiencies of vitamin E are believed to cause neurological problems due to poor nerve conduction. Figure 8 shows separation of vitamin E (α -tocopherol and its acetate form).

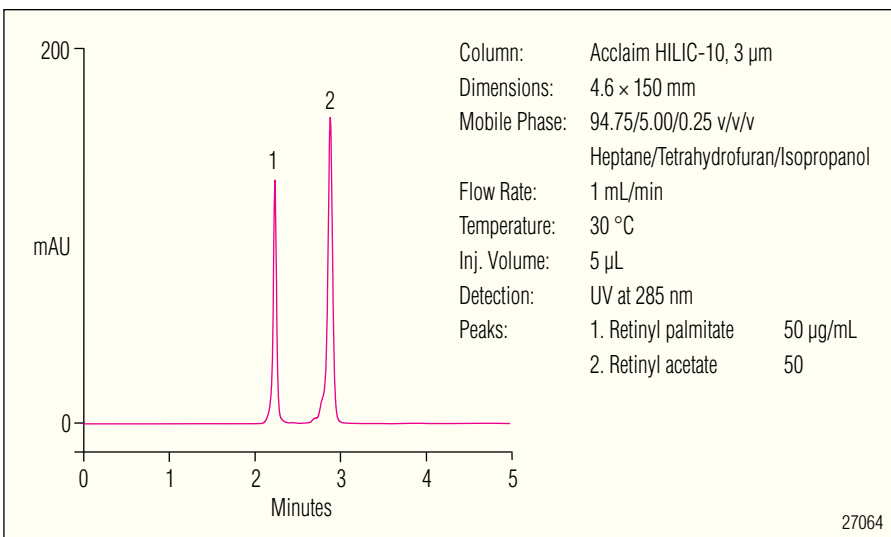


Figure 7. Separation of retinyl palmitate and retinyl acetate.

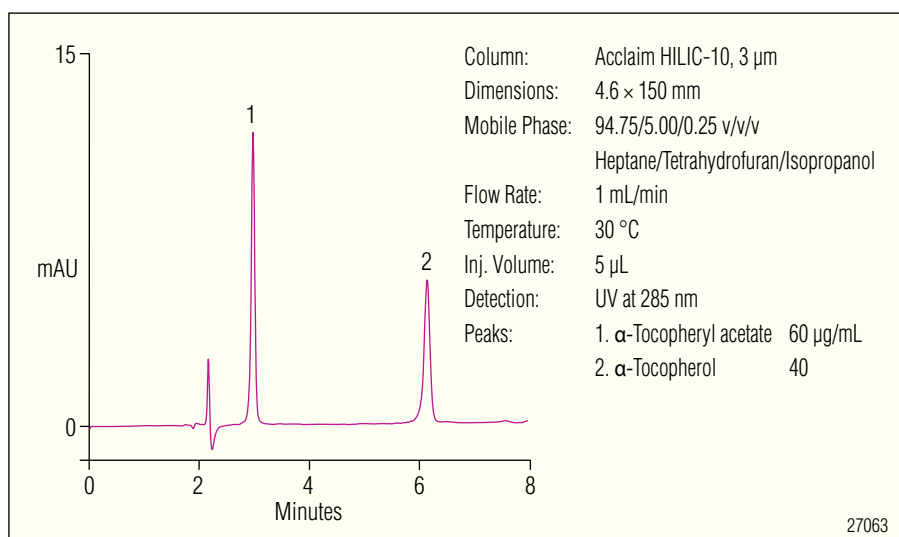


Figure 8. Separation of α -tocopherol and α -tocopheryl acetate.

Excellent baseline resolution is achieved with the Acclaim HILIC-10 column for separation of Good's buffer salts (Figure 9).

The Acclaim HILIC-10 column can be operated in its primary HILIC mode or, alternately, in Normal-Phase mode. NP mode is often useful for simple class separations as shown in Figure 10 where triglycerides elute using 1% 2-propanol, diglycerides elute using 13% 2-propanol, and monoglycerides elute using 13% 2-propanol. Under these conditions, 1,2 diglycerides and 1,3 diglycerides were resolved.

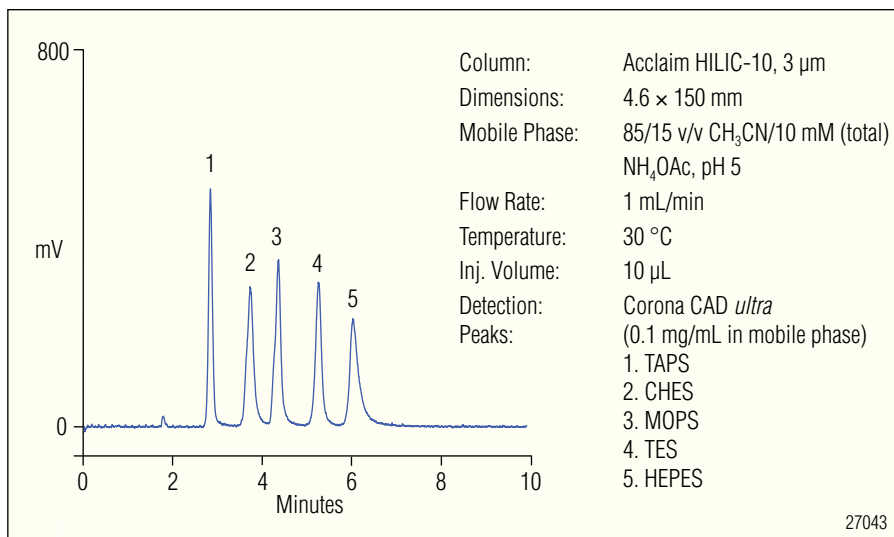


Figure 9. Separation of Good's buffer salts.

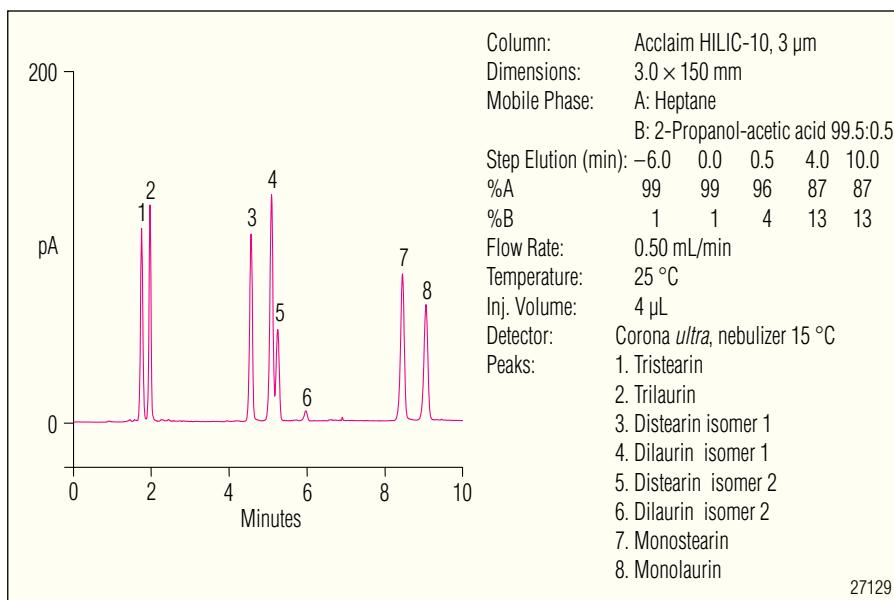


Figure 10. Separation of mono-, di-, and triglycerides.

Multiple Column Formats

The Acclaim HILIC-10 column is available in a variety of column formats: 4.6 × 150 mm, 3 μm for high-throughput routine analysis; 3.0 × 150 mm, 3 μm for high-throughput analysis with reduced solvent consumption; and 2.1 × 150 mm, 3 μm for LC-MS analysis.

Acclaim HILIC-10 columns are manufactured to stringent specifications to ensure column performance. Each column is shipped with a lot validation sheet showing the test results and specifications for the lot of bonded silica packed into the column. In addition, the columns are individually tested and shipped with a test chromatogram that validates column performance.

SPECIFICATIONS

<i>Column Chemistry:</i> Proprietary polar group	<i>Pore Size:</i> 120 Å
<i>Basic Silica:</i> High purity, spherical, porous	<i>pH Range:</i> 2.0 to 8.0
<i>Particle Size:</i> 3 μm	<i>Temperature Limit:</i> 80 °C

ORDERING INFORMATION

In the U.S., call (800) 346-6390 or contact the Dionex Regional Office nearest you. Outside the U.S., order through your local Dionex office or distributor. Refer the following part numbers:

Acclaim HILIC Columns

Acclaim HILIC-10, 3 μm, Analytical, 4.6 × 150 mm.....	074257
Acclaim HILIC-10, 3 μm, Analytical, 3.0 × 150 mm.....	074258
Acclaim HILIC-10, 3 μm, Analytical, 2.1 × 150 mm.....	074259
Acclaim HILIC-10, 3 μm, Guard 4.6 × 10 mm 2 each (requires holder 069580)	074262
Acclaim HILIC-10, 3 μm, Guard 3.0 × 10 mm 2 each (requires holder 069580)	074261
Acclaim HILIC-10, 3 μm, Guard, 2.1 × 10 mm 2 each (requires holder 069580)	074263
Acclaim SST Guard Cartridge Holder, V-2	069580

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