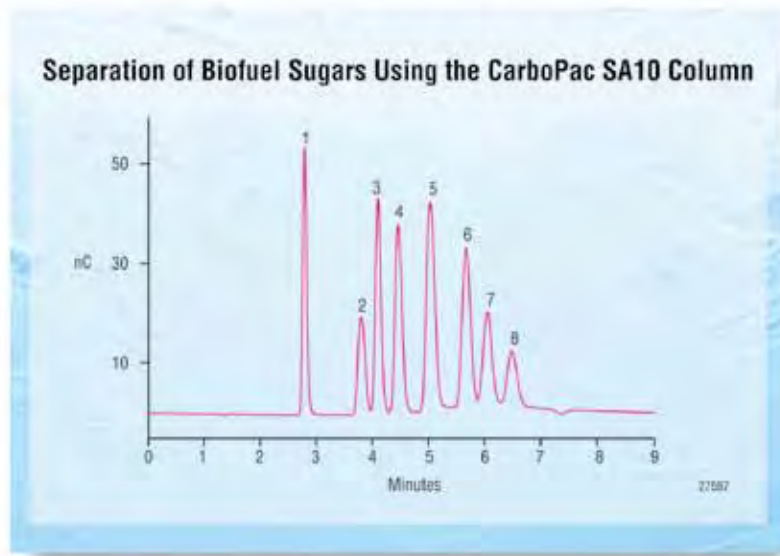


CarboPac SA10 Column for Fast, High-Resolution Mono- and Disaccharide Analysis



The CarboPac® SA10 is an anion-exchange column for the fast separation and accurate quantification of mono- and disaccharides in biofuels, foods, and beverages. The column provides:

- Fast analysis and short separation times
- High resolution
- High capacity
- High reproducibility
- No derivatization required

Now sold under the
Thermo Scientific brand

Thermo
SCIENTIFIC

Fast, High-Resolution Analysis of Mono- and Disaccharides

The CarboPac SA10 anion-exchange column is optimized for the fast chromatographic analysis of biofuel and food simple sugars. The fast, efficient separations of mono- and disaccharides are achieved without compromising resolution. For the eight most common biofuel mono- and disaccharides, the CarboPac SA10 column provides the unsurpassed fast separation time of less than 10 min. The six most common food sugars can be separated in the exceptionally fast time of only 10 min. The column is also capable of separating a broad range of sample concentrations, including high-concentration samples.

The CarboPac SA10 column is composed of a unique macroporous substrate coated with a strong anion-exchange layer of latex nano beads, which provides high capacity and rapid, high-resolution separations. The excellent resolution and linearity of the column results in accurate quantitative carbohydrate analysis. The CarboPac SA10 anion-exchange column is used with pulsed amperometric detection (PAD) systems and permits the direct quantification of nonderivatized carbohydrates with minimal sample preparation. The column provides high reproducibility, and 1000 injection cycles under high pH conditions are possible.



Passion. Power. Productivity.

Biofuel and Food Applications

The biofuel, food, and beverage industries process very high volumes of carbohydrate samples, and require high throughput mono- and disaccharide analysis capabilities. The CarboPac SA10 column is specifically designed for the exceptionally fast, high-resolution analysis of carbohydrate samples for biofuel and food applications. Rapid separation of the eight most common biofuel mono- and disaccharides can be achieved on the CarboPac SA10 (Figure 1). The capability to analyze the six most common food sugars with a short separation time is an important application. The CarboPac SA10 column can separate these six common food sugars in only 10 min, as shown in Figure 2.

High Concentration Samples

The CarboPac SA10 column is capable of analyzing a broad range of sample concentrations, including high-concentration samples. Packed with porous bead resin, the SA10 has significantly higher capacity than other CarboPac columns and is the column of choice for high-concentration mono- and disaccharide sample analysis. When high-concentration simple sugar samples are separated on a CarboPac SA10, linearity is maintained and accurate quantitative analysis is achieved. Figure 3 demonstrates the separation of a high-concentration corn stover hydrolysate sample on the CarboPac SA10 column. With the use of a 0.4 μ L injection valve and a 15 mil ED gasket, the 150 g/L corn stover hydrolysate sample was separated with high resolution after only a 1:200 dilution.

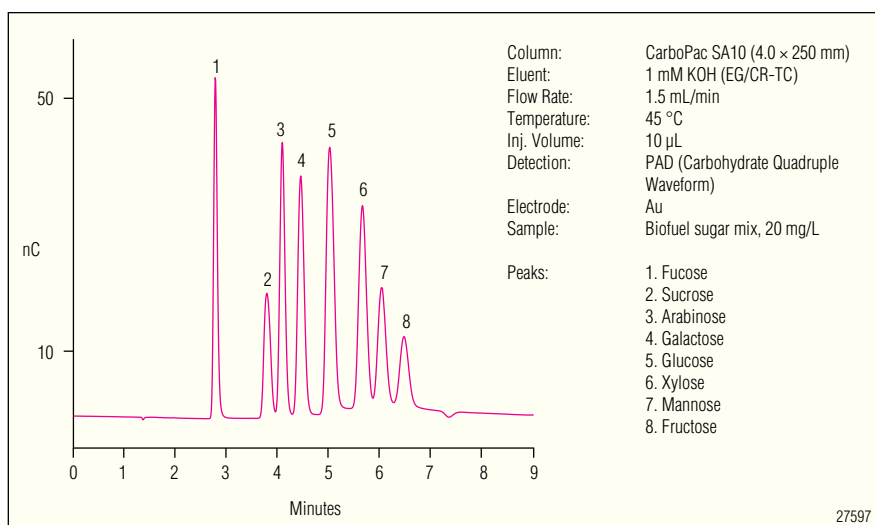


Figure 1. Fast 7 min separation of biofuel sugars on the CarboPac SA10.

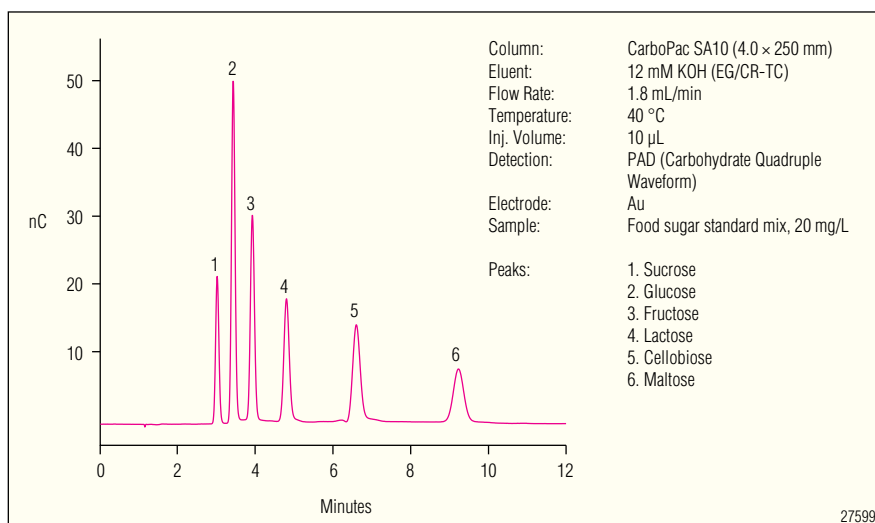


Figure 2. Fast 10 min separation of food sugars on the CarboPac SA10.

Innovative Resin Technology

The CarboPac SA10 column is composed of a unique macroporous substrate coated with a strong anion-exchange layer of latex nano beads, which provides high capacity and rapid, high-resolution separations. The resin consists of 6 µm diameter macroporous beads covered with the quaternary ammonium ion functionalized nano beads. This wide-pore resin structure permits excellent fast mass transfer, resulting in high-resolution chromatography. The highly porous beads have large surface areas, providing high capacity. Together, the morphology of the porous substrate and agglomerated functionalized nano beads results in fast, high-resolution separations of common sugars with exceptionally short analysis times.

High Reproducibility

The CarboPac SA10 column provides consistent chromatographic performance and highly reproducible analysis. Figure 4 shows the high reproducibility of the column, with consistent separation results obtained after 1000 runs of a biofuel sugar sample. The CarboPac SA10 can be used with the on-line eluent generator, (EG), which produces carbonate-free hydroxide eluent to ensure reproducible separations.

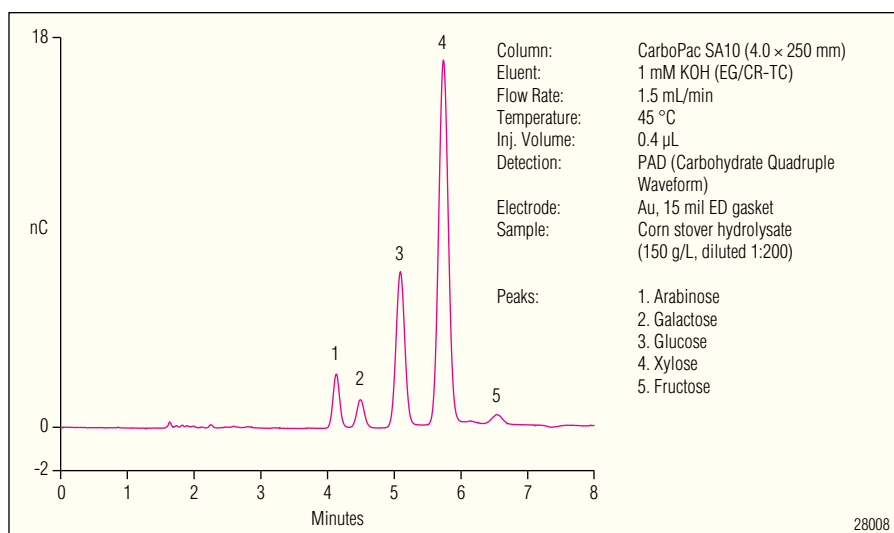


Figure 3. High-resolution separation of a high-concentration corn stover hydrolysate sample using the CarboPac SA10 column.

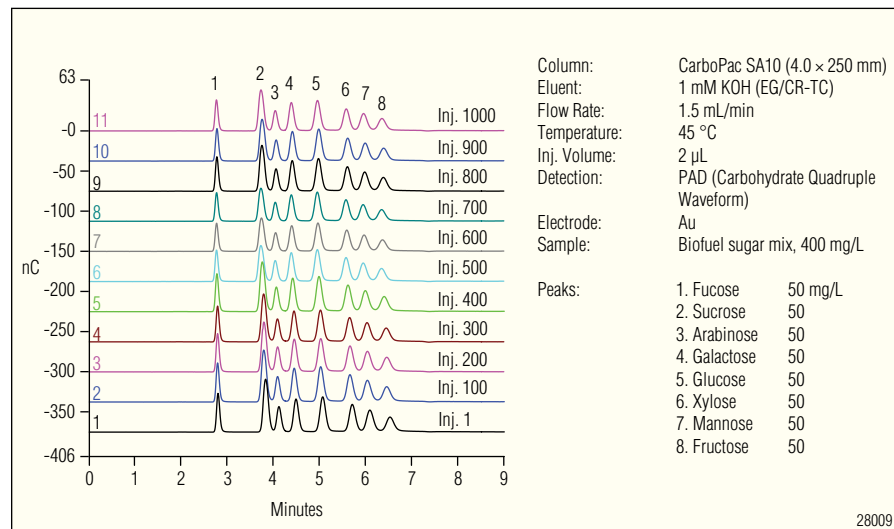


Figure 4. Consistent separation results obtained after 1000 separations of a biofuel sugar sample using a CarboPac SA10 column.

CARBOPAC SA10 COLUMN SPECIFICATIONS

Resin Characteristics:

Particle Size:

6 µm

Pore Size:

Macroporous (2000 Å)

Substrate:

Ethylvinylbenzene crosslinked
with divinylbenzene

Crosslinking:

55%

Ion-Exchange Capacity:

290 µeq per 4.0 × 250 mm
column

Latex Nano Bead Characteristics:

Functional Group:

Difunctional quaternary
ammonium ion

Latex Diameter:

55 nm

Latex Crosslinking:

4.5%

Typical Operating Parameters:

pH Range:

0–14

Temperature Range:

4–60 °C

Recommended Flow Rate:

1.5 mL/min

Flow Rate Range:

1.0–2.0 mL/min

Pressure Limit:

3500 psi

Organic Solvent Limit:

100% compatible

Typical Eluents:

Potassium hydroxide or
sodium hydroxide

ORDERING INFORMATION

To order, use the following part numbers and contact your local Dionex office or distributor nearest you. In the U.S., call (800) 346-6390. In other regions, refer to the phone numbers below.

Description	Part Number
CarboPac SA10 Analytical Column (4 × 250 mm)	074641
CarboPac SA10 Guard Column (4 × 50 mm)	074902

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Dionex Corporation

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