

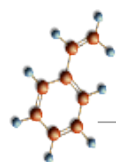
Column Selection:

Benson Polymeric offers a wide variety of columns for the analysis of carbohydrates. All of our columns are packed with polymeric materials specifically designed to maximize your separation needs. Benson Polymeric columns utilize a variety of separation mechanisms that allow carbohydrates to be separated without the need of gradients. By altering the ionic form of our polymers (calcium, lead, sodium, silver, and potassium) specific carbohydrate mixtures can be separated (see Applications section) by simply using water as your mobile phase.

Another technique Benson Polymeric uses to maximize your separation is to offer a range of cross-linked polymers (see Polymer Description). The degree of cross-linkage determines the porosity of the polymers which can be used to enhance certain separations. Benson Polymeric recommends using column ovens in combination with our columns since the best separations are usually obtained at elevated temperatures (typical range 30 – 90° Celsius).

Column Description:

| Benson Column Description | Benson Part Number | Column Size (mm) | Ionic Form | Particle Size (um) | Mobile Phase |
|---------------------------|--------------------|------------------|------------|--------------------|--------------|
| BP-100 Ca | 1000-0 | 300 x 7.8 | Calcium | 9 | Water |
| BP-100 Ca | 1040-0 | 250 x 4.0 | Calcium | 9 | Water |
| BP-100 Ca | 1070-0 | 300 x 6.5 | Calcium | 9 | Water |
| BP-200 Ca | 1500-0 | 300 x 7.8 | Calcium | 16 | Water |
| BP-200 Na | 1550-0 | 300 x 7.8 | Sodium | 16 | Water |
| BP-200 Ag | 1600-0 | 300 x 7.8 | Silver | 16 | Water |
| BP-100 Pb | 1200-0 | 300 x 7.8 | Lead | 9 | Water |
| BP-800 Ca | 8000-0 | 300 x 7.8 | Calcium | 9 | Water |
| BP-800 K | 8300-0 | 300 x 7.8 | Potassium | 9 | Water |
| BP-800 Na | 8700-0 | 300 x 7.8 | Sodium | 9 | Water |
| BP-800 Pb | 8200-0 | 300 x 7.8 | Lead | 9 | Water |
| BP-100 Ca Guard | 1000-2 | 50 x 4.6 | Calcium | 16 | Water |
| BP-100 Pb Guard | 1200-2 | 50 x 4.6 | Lead | 16 | Water |
| BP-100 K Guard | 1300-2 | 50 x 4.6 | Potassium | 16 | Water |
| BP-100 Ag Guard | 1400-2 | 50 x 4.6 | Silver | 16 | Water |
| BP-100 Na Guard | 1700-2 | 50 x 4.6 | Sodium | 16 | Water |



During the past 35 years, as Benson Company and Benson Polymeric, Inc., we have provided premium column packing materials and pre-packed columns to the major chromatography equipment manufacturers and supply distributors in the industry as well as direct sales through dealers. The primary objective of our company is to provide the highest quality products and technical services to our customers.

Benson's sole focus is to provide high quality polymeric products. We are able to offer a complete line of columns at competitive pricing. Not only can we reduce your analysis costs, we also provide quick and knowledgeable service to our customers.

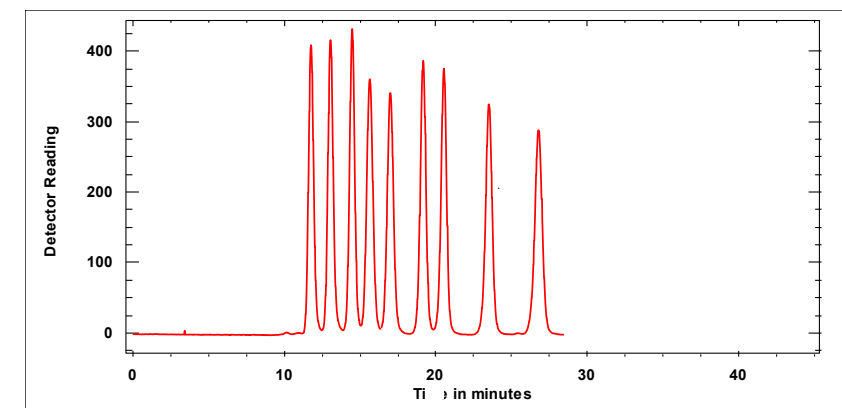
Column Comparison Chart:

The chart below lists the typical types of standards that can be separated on Benson Polymeric columns. For specific recommendations on the column best suited to maximize your particular sample please do not hesitate to contact the support staff at Benson Polymeric.

| Benson Column Description | Benson Part Number | Bio-Rad (Aminex) Part Number | Phenomenex (Rezex) Part Number | Varian (Metacarb) Part Number | Trans-genomic Part Number | Waters/Hamilton/Alltech Part Number | Shodex Part Number |
|---------------------------|--------------------|------------------------------|--------------------------------|-------------------------------|---------------------------|-------------------------------------|--------------------|
| BP-100 Ca | 1000-0 | | | | | | |
| BP-100 Ca | 1040-0 | 125-0094 | | A5092 | CHO-99-8453 | Hamilton 79431 | MN-431 |
| BP-100 Ca | 1070-0 | | | | CHO-99-9753 | Waters WAT085188 Alltech 70057 | |
| BP-200 Ca | 1500-0 | 125-0096 | | | | Hamilton 79432 | |
| BP-200 Na | 1550-0 | | 00P-0137-NO | | CHO-99-9850 | | |
| BP-200 Ag | 1600-0 | 125-0097 | 00P-0133-NO | A5223 | CHO-99-9851 | | |
| BP-100 Pb | 1200-0 | | | | CHO-99-9854 | | |
| BP-800 Ca | 8000-0 | | | | CHO-99-9855 | | |
| BP-800 Ca | 8000-0 | 125-0095 | 00H-0130-KO | A5200 | CHO-99-9860 | Hamilton 79436 | F6378102 |
| BP-800 K | 8300-0 | 125-0142 | 00H-3252-KO | A5095 | CHO-99-9862 | | |
| BP-800 Na | 8700-0 | 125-0143 | 00H-0136-KO | A5041 | CHO-99-9863 | | F6378010 |
| BP-800 Pb | 8200-0 | 125-0098 | 00H-0135-KO | A5241 | CHO-99-9864 | Hamilton 79476 | F6378105 |
| BP-100 Ca Guard | 1000-2 | | | A5201 & A5206 | CHO-99-3560 | | |
| BP-100 Pb Guard | 1200-2 | | | A5221 | CHO-99-3564 | | |
| BP-100 K Guard | 1300-2 | | | | | | |
| BP-100 Ag Guard | 1400-2 | | | | | | |
| BP-100 Na Guard | 1700-2 | | | | | | F6700020 |

Carbohydrate Analysis:

Many carbohydrate samples can be separated using calcium form columns (BP-100 Ca and BP-800 Ca). A typical sample separation on the BP-100 Ca column is shown below.



Eluent: DI H₂O
 Flow Rate: 0.4 mL/min
 Pressure: 250 psi
 Detection: RI
 Temperature: 80°C
 Sample Size: 20 uL, 30 mg/ml

Sample: 1 - Maltotriose
 2 - Maltose
 3 - Lactulose
 4 - Glucose
 5 - Xylose
 6 - Arabinose
 7 - Ribitol
 8 - Arabitol
 9 - Xylitol