



# CarboPac™ MA1 QuickStart

Read This First!

## System Validation:

Perform the following run to verify performance of your CarboPac MA1:

- A. Prepare a carbonate-free 600 mM sodium hydroxide solution. See Section 3.4, Eluent Preparation, for details.
- B. Install the CarboPac MA1 into your HPLC system. Equilibrate the column with 600 mM NaOH for at least 20 minutes at 0.4 mL/min.
- C. Program your Pulsed Amperometric Detector for carbohydrate detection. The following program assumes that a PAD-II with a solvent compatible cell and small gasket is being used:

E1 = 0.05 V	T1 = 4
E2 = 0.65 V	T2 = 3
E3 = -0.10 V	T3 = 6
Range = 3 K (nA)	

See Section 3.8, System Setup, for details.

- D. Prepare a standard solution using 0.1 mM each of the following monosaccharides: inositol, xylitol, sorbitol, dulcitol and mannitol. Inject 10  $\mu$ L of this standard solution onto the column and elute with 600 mM NaOH at 0.4 mL/min flow rate (ambient temperature) to verify column and system performance. See Section 4.3, Production Test Chromatogram, for details.

## Elution Selection:

Analyte separation is highly dependent on hydroxide concentration. Many separations require only an isocratic separation. However, some groups of analytes will require a step or gradient elution. The following chart summarizes run conditions for several classes of analytes.

Group	Analytes	Run Conditions	Reference
Sugar alcohols and monosaccharides commonly found in food products	myo-Inositol, Glycerol, Arabitol, Sorbitol, Dulcitol, Mannitol, Mannose, Glucose, Galactose, Fructose, Sucrose	480 mM NaOH isocratic, 0.4 mL/min	Section 4.4
Disaccharide alcohols found in sweeteners	Isomaltitol, Lactitol, Gp-Mannitol, Maltitol	250 mM NaOH isocratic, then step to 600 mM NaOH	Section 4.5
Alditols found in biological fluids	Glycerol, myo-Inositol, scyllo-Inositol, Erthritol, Arabitol, Sorbitol, Dulcitol	80 mM isocratic, then gradient from 80 mM to 700 mM NaOH	Section 4.6
Alditols released by direct $\beta$ -elimination from glycoproteins	Fucitol, GalNAcol, GlcNAcol, Mannitol	100 mM NaOH, then gradient from 100 mM to 700 mM NaOH	Section 4.7



## Operational Conditions

	Typical	Limits
<b>Eluent pH Range:</b>	> pH 11	0-14
<b>Flow Rate:</b>	0.4 mL/min	0.8 mL /min
<b>Pressure:</b>	1,100 psi using 600 mM NaOH at 0.4 mL/min	2,000 psi at 0.8 mL/min
<b>Eluent Ionic Form:</b>	Hydroxide or acetate	Avoid all other forms
<b>Operational Hydroxide Concentration:</b>	80 - 700 mM	
<b>Organic Eluents:</b>	Not used	Avoid all use of organic solvents in eluents
<b>Detergents:</b>	Not used	Avoid anionic detergents (e.g., SDS)
<b>Temperature Range:</b>	Ambient	4 - 50 °C