



HPAEC column selection

Introduction

This technical note gives an overview of the High-Pressure Anion-Exchange Chromatography (HPAEC) and trap columns that were used by Antec Scientific to make application notes for the DECADE Elite electrochemical detector and/or ALEXYS HPAEC-PAD analyzer.

HPAEC columns

The HPAEC columns are listed in Table 1 together with a reference to the application(s) for which the columns were used. The application notes can be downloaded from the Antec Scientific website:

<https://antecscientific.com/support/documents-and-downloads/application-notes>

For columns which meet the specifications for stationary phases set forth in the United States Pharmacopeia (USP), the corresponding USP L number is also shown; for details see <https://www.usp.org/resources/chromatographic-columns>.

Table 1: HPAEC column selection guide

Column material	Dimensions (guard + analytical)	USP L#	Appl note #	Topic of application note
CarboPac™ PA1*	50 x 4.0 mm ID, 10 µm 250 x 4.0 mm ID, 10 µm	L46	217.036	Streptomycin, USP
CarboPac™ PA1*	50 x 2.0 mm ID, 10 µm 250 x 2.0 mm ID, 10 µm	L46	220.004	Carbohydrates in plants (NIOO) ISO/DIS 22184 Carbohydrates in milk
CarboPac™ PA10*	50 x 4.0 mm ID, 10 µm 250 x 4.0 mm ID, 10 µm	L46	217.038A	FDG, EP
RCX-10 [#]	8 x 3.0 mm ID, 12-20 µm 250 x 4.6 mm ID, 7 µm	L47	217.015 220.002	Kanamycin Amikacin, USP Carbohydrates in food products
CarboPac™ MA1*	50 x 4.0 mm ID, 7.5 µm 250 x 4.0 mm ID, 7.5 µm	L47	220.013	Sugar alcohols
CarboPac™ PA200*	50 x 3.0 mm ID, 5.5 µm 250 x 3.0 mm ID, 5.5 µm			Oligosaccharides
CarboPac™ PA210-Fast-4µm*	30 x 2.0 mm ID, 4 µm 150 x 2.0 mm ID, 4 µm		220.009 220.006	Lactose-free dairy products Carbohydrates in coffee beans
CarboPac™ PA210-Fast-4µm*	30 x 4.0 mm ID, 4 µm 150 x 4.0 mm ID, 4 µm		216.007	AMPA & Glyphosate
IonPac™ AS11*	50 x 4.0 mm ID, 13 µm 250 x 4.0 mm ID, 13 µm	L61	217.037	Betadex Sulfobutyl Ether Sodium USP
CarboPac™ PA20*	30 x 3.0 mm ID, 6 µm 150 x 3.0 mm ID, 6 µm	L69	220.003 217.033 217.038	Monosaccharides Heparin, USP FDG, USP/EP

* Thermo Scientific™ Dionex™ (Thermo Fisher Scientific)

[#] (Hamilton)

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Table 1 - *continued*: HPAEC column selection guide

Column material	Dimensions (guard + analytical)	USP L#	Appl note #	Topic of application note
PAX-500**	50 x 4.0 mm ID, 8.5 µm 250 x 4.0 mm ID, 8.5 µm	L50	217.041	Erythromycin Ointment, USP
CarboPac™ PA20-Fast-4µm*	30 x 2.0 mm ID, 6 µm 100 x 2.0 mm ID, 4 µm		220.010	Peroxide in tooth paste
AminoPac™ PA10*	50 x 2.0 mm ID, 8.5 µm 250 x 2.0 mm ID, 8.5 µm		220.015	Amino acid analysis

* Thermo Scientific™ Dionex™ (Thermo Fisher Scientific)

** Thermo Scientific™ OmniPac™ (Thermo Fisher Scientific)

Trap columns

Trap columns can help to improve the chromatographic profiles and method robustness. Examples of application notes that show results using trap columns are listed in Table 2. There are different traps available:

Trapping of borate ions: Borate ions might be present as a contaminant in the mobile phase. These ions can complex with carbohydrates and this leads to peak tailing, especially for saccharide, fructose, mannose, lactulose and reduced monosaccharides (sugar alcohols). A trap for borate ions is installed between the pump and injector.

Trapping of amino acids: For samples that contain interfering amino acids (such as glycoprotein hydrolysates or lysine containing food samples), a dedicated trap column can be installed before the analytical column instead of the guard column. This can help to improve the chromatographic profile and/or minimize working electrode contamination.

Table 2: Trap column selection guide

Trap column	Dimensions	Appl note #	Topic of application note
BorateTrap™ Inline trap column*	50 x 4.0 mm ID	220.009	Lactose-free Dairy products
AminoTrap™ *	30 x 3.0 mm ID	217.033	Heparin, USP

* Thermo Scientific™ Dionex™ (Thermo Fisher Scientific)

For research purpose only. The information shown in this communication is solely to demonstrate the applicability of the ALEXYS system and DECADE Elite detector. The actual performance may be affected by factors beyond Antec's control. Specifications mentioned in this application note are subject to change without further notice.

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