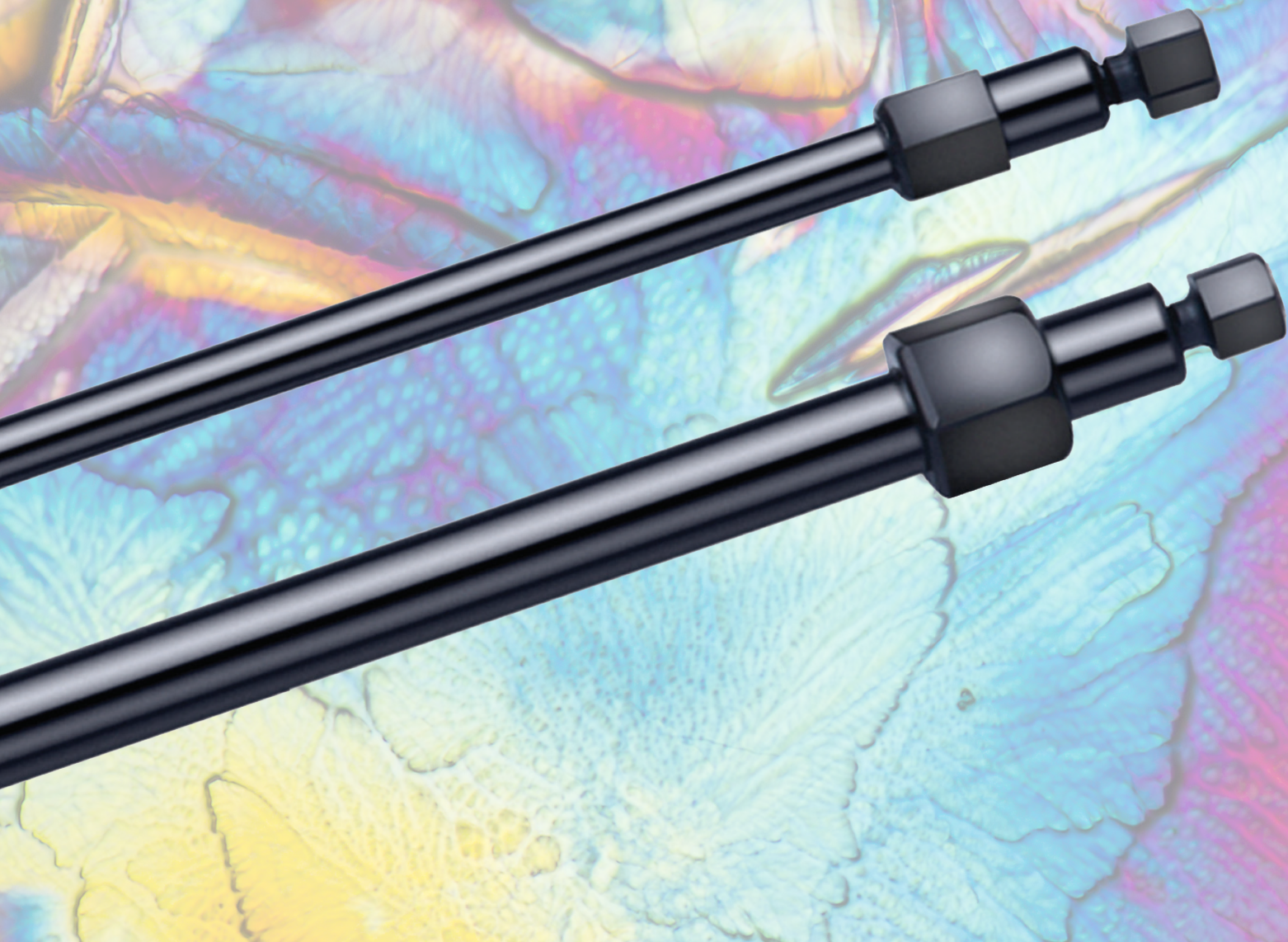


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Thermo Scientific Dionex Bio-IC Column Selection Guide

ThermoFisher
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Dionex CarboPac and Dionex AminoPac Columns

Column	Part Number - Format Capacity ($\mu\text{eq}/\text{column}$)	Recommendations	Official Method/ Target Applications	Application Notes
Thermo Scientific™ Dionex™ CarboPac™ PA300-4 μm	303346 – 2 × 250 mm (85 μeq) 303347 – 2 × 50 mm (1.3 μeq)	Efficient and high resolution separations of neutral and charged glycans of different sizes in complex, heterogeneous samples with no derivatization required	Analysis of complex oligosaccharides from heterogeneous biological and food samples	AN 002330 : HPAE-PAD method for determination of oligosaccharides in atmospheric aerosol samples AN 74042 : Structural characterization of mucin O-linked glycans using HPAE-PAD-MS
Thermo Scientific™ Dionex™ CarboPac™ PA210-Fast-4 μm	088953 – 4 × 150 mm (66 μeq) 088954 – 2 × 150 mm (16.5 μeq) 088955 – 4 × 30 mm (13.2 μeq) 088956 – 2 × 30 mm (3.3 μeq)	High resolution analysis of mono-, di-, tri-, tetra- and pentasaccharides in various types of food samples	Separations of food sugars like glucose, galactose, fructose, sucrose, rhamnose, stachyose, raffinose, and verbascone in complex food and beverage samples	AN 1158 : HPAE-PAD Determination of Carbohydrates in Honey
Thermo Scientific™ Dionex™ CarboPac™ PA200 Columns for Dual EGC mode on the Thermo Scientific™ Dionex™ ICS-6000 HPIC™ system	302861 – 1 × 250 mm (4 μeq) 302862 – 1 × 50 mm (0.8 μeq)	Columns for predictable, high-resolution, isocratic and gradient separation of oligosaccharides using the Dual EGC mode, Thermo Scientific™ Dionex™ RFIC™ systems to electrolytically generate KOH/KMSA eluents by using a methanesulfonic acid (MSA) EGC cartridge and a potassium hydroxide (KOH) EGC cartridge in series with each other	Predictable, and accurate high resolution separations of oligosaccharides, linear polysaccharides and galacto-oligosaccharides	AN 71993 : Profiling Galactosyloligosaccharide-Containing Samples by High-Performance Anion-Exchange Chromatography with Pulsed Amperometric Detection (HPAE-PAD)
Thermo Scientific™ Dionex™ CarboPac™ PA200	062896 – 3 × 250 mm (35 μeq) 062895 – 3 × 50 mm (7 μeq)	High resolution separations of charged and neutral oligosaccharides	Separation of neutral and sialylated N-linked oligosaccharides from glycoproteins. Plant-derived oligosaccharides (e.g. maltodextrins, xylans, etc.).	AN 1151 : Profiling Galactosyloligosaccharide (GOS)-Containing Samples by HPAE-PAD AN 1050 : Protein Glycosylation in Limited-Quantity AN 1013 : Polysialic Acid Analysis AN 215 : Asparagine-Linked Oligosaccharides from Polyclonal IgG AN 67 : Determination of Plant-Derived Neutral Oligo- and Polysaccharides AU 150 : Plant-Derived Neutral Oligo- and Polysaccharides AN 1091 : Uronic Acids and Wood Sugars in Wood Based Hydrolysates AN 202 : HPAE-PAD Analysis of Mannose-6-Phosphate
Thermo Scientific™ Dionex™ CarboPac™ PA20-Fast-4 μm	302749 – 2 × 100 mm 302750 – 2 × 30 mm	Fast and efficient analysis of monosaccharides for therapeutics and food and beverage samples	Provide fast separation and accurate quantification of mono- and disaccharides in food/beverage and pharmaceutical samples	
Thermo Scientific™ Dionex™ CarboPac™ PA20 columns for Dual EGC mode	303369 – 1 × 150 mm (7.2 μeq) 303370 – 1 × 30 mm (1.4 μeq)	Isocratic and gradient separation of monosaccharides, disaccharides, and sialic acids using Dual EGC mode	Predictable, high-resolution separations of monosaccharides, disaccharides, and sialic acids using electrolytically-generated KOH/KMSA eluents	AN 000280 : Determination of sugars in foods using HPAE-PAD in Dual EGC mode AN 74121 : Determination of glycoprotein sialic acid composition using HPAE-PAD in Dual EGC mode
Thermo Scientific™ Dionex™ CarboPac™ PA20	060142 – 3 × 150 mm (65 μeq) 060144 – 3 × 50 mm (13 μeq) 072072 – 0.4 × 150 mm (1.16 μeq) 072073 – 0.4 × 50 mm (0.23 μeq)	High-resolution separations of mono- and disaccharides with optimized resolution of glucosamine/galactose and glucose/mannose peak pairs. The capillary format requires high pressure IC for fastest runs.	USP L Designation – L69 Glycoprotein monosaccharides, sialic acids	AN 253 : Sialic Acids in Infant Formula AN 1050 : Protein Glycosylation in Limited-Quantity AU 180 : Sialic Acids in Glycoprotein Hydrolysates by HPAE-PAD AN 1091 : Uronic Acids and Wood Sugars in Wood Based Hydrolysates AN 202 : HPAE-PAD Analysis of Mannose-6-Phosphate AN 248 : Lactose in Lactose-Free Milk Products by HPAE-PAD AN 233 : Galactosamine Containing Organic Impurities in Heparin by HPAE-PAD AN 197 : Glucosamine in Dietary Supplements Using HPAE-PAD AN 159 : Determination of Sucralose Using HPAE-PAD AU 164 : Glucosamine in Chondroitin Sulfate-Containing Dietary Supplements Using HPAE-PAD

 Currently recommended columns.

 Columns currently not recommended due to the availability of better-performing columns.
Columns are sold to accommodate customers using them in validated standard operating procedures.

 100% solvent-compatible with common organic solvents.

 Up to 90% compatible with common organic solvents.

 2–5% compatible with common organic solvents.

Dionex CarboPac and Dionex AminoPac Columns *(continued)*

Column	Part Number - Format Capacity (µeq/column)	Recommendations	Official Method/ Target Applications	Application Notes
Thermo Scientific™ Dionex™ CarboPac™ PA20 Fast Sialic Acid	076381 – 3 × 30 mm (13 µeq)	Fast separation of N-acetyl- and N-glycolylneuraminic acids	Sialic acid	AU 181 : Rapid screening of Sialic Acids in Glycoproteins
Thermo Scientific™ Dionex™ CarboPac™ MA1	044066 – 4 × 250 mm (1450 µeq) 044067 – 4 × 50 mm (290 µeq)	High-capacity, strong anion-exchange column for separation of small reduced sugars (sugar alcohols)	USP L Designation – L47 First Action AOAC Method 2011.18 - Myo-inositol (free and bound as phosphatidylinositol) Reduced mono and disaccharides in commercial sweeteners and other food products and reduced monosaccharides	AN 246 : Ethylene Glycol and Diethylene Glycol in a Sorbitol Solution AN 122 : Carbohydrates, Alcohols, and Glycols in Fermentation Broths AN 117 : Quantification of Carbohydrates and Glycols in Pharmaceuticals AN 87 : Sugar Alcohols in Confections and Fruit Juices by HPAE-PAD
Thermo Scientific™ Dionex™ CarboPac™ SA10	074641 – 4 × 250 mm (290 µeq)	Fast and high capacity separation of mono- and disaccharides in biofuels, foods, and beverages	Fast analysis of monosaccharides and disaccharides in various matrices	AN 282 : Biofuel Sugars by HPAE-PAD AN 280 : Carbohydrates in Coffee AU 192 : Carbohydrates in Biofuel Samples
Thermo Scientific™ Dionex™ CarboPac™ SA10-4µm	088233 – 4 × 250 mm (290 µeq) 088234 – 4 × 50 mm (58 µeq) 088235 – 2 × 250 mm (73 µeq) 088236 – 2 × 50 mm (14.6 µeq)	High resolution fast and high capacity separation of mono- and disaccharides in biofuels, foods, and beverages	High resolution fast analysis of monosaccharides and disaccharides	AN 1089 : Carbohydrates in Acid wood Hydrolysates TN 146 : Lactose and Lactulose in Milk Products
Thermo Scientific™ Dionex™ BorateTrap™	047078 – 4 × 50 mm	Highly recommended for optimal performance during carbohydrate analysis to remove borate contamination from eluents	Eliminates peak tailing for mannose, fructose, and reduced monosaccharides, resulting from borate contamination in the eluent	
Thermo Scientific™ Dionex™ AminoTrap™	046122 – 4 × 50 mm 060146 – 3 × 30 mm SP5578 – 2 × 50 mm	An in-line pretreatment column designed to retain amino acids present in carbohydrate samples	Column optimized to delay the elution of amino acids and small peptides in glycoprotein hydrolysates	TN 40 : Glycoprotein Monosaccharide Analysis
Thermo Scientific™ Dionex™ AminoPac™ PA10	SP5678 – 4 × 250 mm (240 µeq) 055406 – 2 × 250 mm (60 µeq) 055407 – 2 × 50 mm (12 µeq)	Hydrophobic, polymeric, pellicular, anion-exchange resin for the separation of carbohydrates and amino acids. The capillary format requires high pressure IC for fastest runs	Analysis of free amino acids, vitamins, amino sugars, carbohydrates, phosphorylated amino acids, and common oxidation products of sulfur-containing amino acids	AN 179 : Carbohydrate and Amino Acid Analysis AN 150 : Amino Acids in Cell Cultures and Fermentation AN 142 : Tryptophan Using AAA-Direct TN 55 : Screening of Matrices and Matrix Ingredients for AAA-Direct TN 50 : Amino Acid Content of Peptides by AAA-Direct
Thermo Scientific™ Dionex™ Carbohydrate Removal Cartridge (CRC)	068598 – 2 × 15 mm	In-line sample pretreatment cartridge for removal of carbohydrates from amino acid samples	The Dionex CRC cartridge is an in-line pretreatment cartridge packed with cation-exchange resin to bind amino acids while carbohydrates go to waste	
Thermo Scientific™ Dionex™ CarboPac™ PA100	043055 – 4 × 250 mm (90 µeq) 043054 – 4 × 50 mm (18 µeq) 057182 – 2 × 250 mm (23 µeq) 057183 – 2 × 50 mm (4.6 µeq)	Separations of oligosaccharides	Separation of closely related oligosaccharides (isomers) and neutral and charged oligosaccharides	AN 1070 : Inositol Phosphates in Dried Distillers Grains with Solubles AN 105 : Glycosylation Analysis of Human Serum Transferrin Glycoforms TN 42 : Glycoprotein Oligosaccharide Analysis Using High-Performance Anion-Exchange Chromatography AN 67 : Determination of Plant-Derived Neutral Oligo- and Polysaccharides AN 46 : Ion Chromatography: A Versatile Technique for the Analysis of Beer
Thermo Scientific™ Dionex™ CarboPac™ PA10	046110 – 4 × 250 mm (100 µeq) 046115 – 4 × 50 mm (20 µeq) 057180 – 2 × 250 mm (25 µeq) 057181 – 2 × 50 mm (5 µeq)	Separation of amino, neutral, and acidic monosaccharides	USP L Designation – L46 Analysis of mono- and disaccharides in foods, drugs, and plants, and separates sialic acids with the addition of sodium acetate to the eluent	AN 117 : Carbohydrates and Glycols in Pharmaceuticals TN 41 : Sialic Acids Using HPAE-PAD AU 141 : N-Acetylneuraminic Acid and N-Glycolylneuraminic Acid Peak Area Responses TN 53 : Glycoprotein Monosaccharide Composition by HPAE-PAD Using On-Line Electrolytically Generated Eluents

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Dionex CarboPac and Dionex AminoPac Columns *(continued)*

Column	Part Number - Format Capacity (µeq/column)	Recommendations	Official Method/ Target Applications	Application Notes
Thermo Scientific™ Dionex™ CarboPac™ PA1 columns for Dual EGC mode	303272 – 1 × 250 mm (76.25 µeq) 303273 – 1 × 50 mm (1.25 µeq)	Isocratic and gradient separation of monosaccharides and disaccharides using Dual EGC mode	Predictable, high-resolution separations of monosaccharides and disaccharides using electrolytically-generated KOH/ KMSA eluents	AN 73986 : Determination of trans-galactooligosaccharides in foods using HPAE-PAD in Dual EGC mode AN 73896 : Carbohydrate analysis of agave syrup using HPAE-PAD in Dual EGC mode
Thermo Scientific™ Dionex™ CarboPac™ PA1	035391 – 4 × 250 mm (100 µeq) 043096 – 4 × 50 mm (20 µeq) 057178 – 2 × 250 mm (25 µeq) 057179 – 2 × 50 mm (5 µeq) 039686 – 9 × 250 mm (500 µeq) 063501 – 9 × 50 mm (100 µeq)	Rugged all-purpose column for determining monosaccharides, disaccharides and oligosaccharides	AOAC Method 995.13 - Carbohydrates in Soluble Coffee AOAC Method 996.04 - Sugars in Molasses Method 997.08 - Fructans in Food and Food Products AOAC Method 2000.11 - Polydextrose AOAC Method 2000.17 - Low- Level Glucose and Fructose in Raw and Refined Sugar AOAC Method 2001.02 - Transgalacto-oligosaccharides First Action AOAC Method 2011.18 - Myo-inositol (free and bound as phosphatidylinositol) USP L Designation – L46 Anion-exchange column for the separation of mono-, disaccharides, oligosaccharides, and aminoglycosides	AN 186 : Paromomycin by HPAE-PAD AN 66 : Neomycin B and Impurities by HPAE-PAD AN 147 : Polydextrose in Foods by AOAC Method 2000.11 AN 92 : Sugars in Molasses by HPAE-PAD AN 82 : Analysis of Fruit Juice Adulterated with Medium Invert Sugar from Beets AU 167 : Tobramycin in Crude and In-Process Production Samples During Manufacturing Using HPAE-PAD AN 155 : Trans-Galactooligosaccharides in Food by AOAC Method 2001.02 AN 61 : Determination of Tobramycin and Impurities Using HPAE-PAD

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Find out more at thermofisher.com/iccolumns

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