

thermoscientific



# Thermo Scientific Dionex IonPac IC column selection guide

Find the best IC column for your application

**ThermoFisher**  
SCIENTIFIC

# Thermo Scientific™ Dionex™ IonPac™ Anion Hydroxide Columns

Column	Part Number - Format (Capacity µeq/col)	Recommendations	Target Applications	Application Notes
<a href="#">Dionex IonPac AS32-Fast-4µm</a>	303151 - 4 x 150 mm (126 µeq) 303153 - 2 x 150 mm (31.5 µeq) 303152 - 4 x 30 mm (25 µeq) 303154 - 2 x 30 mm (8 µeq)	Fast analysis of polarizable anions with a simple, isocratic eluent. HPIC system required.	Polythionates (dithionate, trithionate, and tetrathionate), persulfate, polysulfonated aromatics, aromatic dyes, and pigments in complex matrices. Resolves perchlorate in high sulfate matrices.	
<a href="#">Dionex IonPac AS31</a>	303147 - 2 x 250 mm (116 µeq) 303148 - 2 x 50 mm (1.5 µeq)	Fast analysis (~35 min) of haloacetic acids, bromate, and dalapon prior to MS or MS/MS detection. HPIC system required.	Haloacetic acids in drinking water at low µg/L levels.	<a href="#">WP 72958</a> : Fast Determination of HAAs in Drinking Water <a href="#">AN 73342</a> : Low-level Haloacetic Acids, Bromate, and Dalapon in Drinking Water Using IC-MS <a href="#">AN 73343</a> : Trace level Haloacetic Acids, Bromate, and Dalapon in Drinking Water Using IC-MS/MS <a href="#">AN 73390</a> : Haloacetic acids, Bromate, and Dalapon in Drinking Water Using IC-HRAM <a href="#">AN 73051</a> : Bromate in Flour and Bread by IC-MS <a href="#">TN 001167</a> : Choosing internal standards for IC-MS
<a href="#">Dionex IonPac AS30</a>	303159 - 4 x 250 mm (477 µeq) 303161 - 2 x 250 mm (119 µeq) 303160 - 4 x 50 mm (6 µeq) 303162 - 2 x 50 mm (1.5 µeq)	Analysis of oxyhalides and inorganic anions in the presence of ethylenediamine (EDA). HPIC system required.	Trace bromate in drinking water preserved with ethylenediamine (EDA). Analysis of drinking water without pretreatment or concentration. Resolves carbonate and sulfate.	<a href="#">AU 73278</a> : Trace Oxyhalides and Bromide in Drinking Water Samples Preserved with Ethylenediamine (EDA)
<a href="#">Dionex IonPac AS28-Fast-4µm</a>	088747 - 4 x 150 mm (230 µeq) 088749 - 2 x 150 mm (57.5 µeq) 088751 - 0.4 x 150 mm (2.3 µeq) 088748 - 4 x 30 mm (20 µeq) 088750 - 2 x 30 mm (5 µeq) 088752 - 0.4 x 35 mm (0.2 µeq)	Trace analysis of inorganic anions and low molecular weight organic acids in high purity water matrices. Recommended replacement for Dionex IonPac AS15 column. HPIC system required.	Trace analysis in semiconductor and power industries.	<a href="#">AN 72481</a> : Trace Anions in Basic Solutions by Single Pass AutoNeutralization <a href="#">PN 71981</a> : A New Hydroxide Selective Anion Exchange Phase for IC <a href="#">AN 73852</a> : Trace Anions in High Purity Water Using Large Volume Injection <a href="#">AU 000610</a> : Trace Organic Acids and Inorganic Anions in Boric-Acid Treated Power Plant Waters <a href="#">AN 000900</a> : Phosphite and phosphate in ibandronate sodium <a href="#">TN 73982</a> : Techniques for Successful Trace Anion Determinations in High Purity Waters
<a href="#">Dionex IonPac AS27</a>	088437 - 4 x 250 mm (220 µeq) 088439 - 2 x 250 mm (55 µeq) 088441 - 0.4 x 250 mm (2.2 µeq) 088438 - 4 x 50 mm (5 µeq) 088440 - 2 x 50 mm (1.25 µeq) 088442 - 0.4 x 50 mm (0.05 µeq)	Analysis of trace bromate in drinking water preserved with ethylenediamine (EDA). Use the Dionex IonPac AS30 column in HPIC systems for better resolution of carbonate and sulfate.	Trace bromate in drinking water preserved with ethylenediamine (EDA). Analysis of drinking water without pretreatment or concentration. Meets or exceeds EPA Methods 300.0 and 300.1 requirements.	<a href="#">AU 198</a> : Oxyhalides and Bromide in Drinking Water
<a href="#">Dionex IonPac AS25</a>	076014 - 4 x 250 mm (350 µeq) 076016 - 2 x 250 mm (87.5 µeq) 076015 - 4 x 50 mm (3.5 µeq) 076017 - 2 x 50 mm (0.875 µeq)	Multivalent anions and polarizable anions in complex sample matrices.	Iodide, perchlorate, sulfur species (sulfate, sulfite, thiosulfate, and thiocyanate) in wastewater effluent, scrubber solutions, and food and beverage samples.	<a href="#">AN 72622</a> : Fast Separation of Heat Stable Salts
<a href="#">Dionex IonPac AS24</a>	064153 - 2 x 250 mm (140 µeq) 064151 - 2 x 50 mm (1.5 µeq)	Haloacetic acids and bromate prior to MS or MS/MS detection.	Specific for HAAs in drinking water as specified in EPA Method 557.	<a href="#">AN 187</a> : Sub-ppb Bromate in Water Using Preconcentration with 2D-IC <a href="#">AN 201</a> : Chloride and Sulfate in Methanol Fluoroacetate in Water by IC-MS <a href="#">AN 276</a> : Fluoroacetate in Water by IC-MS <a href="#">AN 661</a> : Polar Pesticides in Food by IC-MS/MS <a href="#">AN 666</a> : Trace Polar Pesticides in Water by IC-MS/MS <a href="#">AN 1000</a> : Small Organic Acids in Sea Water by IC-MS <a href="#">PN 70428</a> : HAAs in Drinking Water Using IC-MS/MS <a href="#">PN 70429</a> : Development of a New Column for HAAs by IC-MS <a href="#">PN 70726</a> : Glyphosate and AMPA by IC-MS/MS
<a href="#">Dionex IonPac AS21</a>	063009 - 2 x 250 mm (45 µeq) 063071 - 2 x 50 mm (1.5 µeq)	Trace perchlorate prior to MS or MS/MS detection.	Specific for trace perchlorate in drinking water as specified in EPA Method 331.0.	<a href="#">AN 491</a> : Glyphosate and AMPA by IC-ESI-MS/MS





## Dionex IonPac Anion Hydroxide Columns *(continued)*

Column	Part Number - Format (Capacity µeq/col)	Recommendations	Target Applications	Application Notes
<a href="#">Dionex IonPac AS20</a>	063148 - 4 × 250 mm (310 µeq) 063065 - 2 × 250 mm (77.5 µeq) 075399 - 0.4 × 250 mm (3.1 µeq) 063154 - 4 × 50 mm (6 µeq) 063066 - 2 × 50 mm (1.5 µeq) 075400 - 0.4 × 50 mm (0.06 µeq)	Trace perchlorate prior to suppressed conductivity detection. Capillary format offers reduced eluent consumption and operating costs. Standard bore 4 mm column is used in the first dimension of 2D-IC method for trace perchlorate in drinking water.	Trace perchlorate in drinking water when high concentrations of chloride, carbonate and sulfate are present. Specified in EPA Method 314.1.	<p><a href="#">AB 72480</a>: Inorganic Anions Using IC-MS <a href="#">AN 176</a>: Sub-ppb Perchlorate in Drinking Water with Preconcentration (EPA 314.1) <a href="#">AN 239</a>: Iodide in Seawater <a href="#">AN 243</a>: Anions and Organic Acids by IC-MS <a href="#">AN 258</a>: Tetrafluoroborate, Perchlorate and Hexafluoro phosphate in Electrolyte Solution</p> <p><a href="#">AN 276</a>: Fluoroacetate in Water by IC-MS <a href="#">AN 279</a>: Nitrate and Nitrite in Milk <a href="#">AN 1002</a>: Tartaric Acid in Tolterodine Tartrate Drug Products <a href="#">AN 73345</a>: Oxalate in Cromolyn Sodium <a href="#">AN 1024</a>: Improved Determination of Trace Perchlorate using 2D-IC <a href="#">AN 1047</a>: Tartaric Acid and Tolterodine in Tolterodine Tartrate <a href="#">AN 72587</a>: Perchlorate by EPA 332.0 Using IC-MS <a href="#">AU 72507</a>: Perchlorate in Environmental Waters by IC-MS</p> <p><a href="#">AN 73053</a>: Assay of Potassium Bitartrate <a href="#">AN 73105</a>: Total Fluorine, Chlorine, Bromine, and Sulfur in LPG by Combustion IC <a href="#">CAN 73481</a>: Adsorbable Organically Bound Fluorine by Combustion IC <a href="#">AB 203</a>: Perchlorate by US EPA Method 332.0 Using IC-MS <a href="#">AN 178</a>: Trace Perchlorate in Drinking Water Using 2D-IC <a href="#">AN 44475</a>: Iodine Containing Species in Seaweed Using IC-ICP-MS <a href="#">AN 73854</a>: Chlorate and Perchlorate in Infant Formula Using IC-MS <a href="#">AN 000069</a>: Iodide in Multivitamin-Mineral Supplements <a href="#">AB 000487</a>: Chloride in Multivitamin-Mineral Supplements <a href="#">AU 002026</a>: Tetrafluoroborate, Perchlorate, and Hexafluorophosphate in Electrolytes <a href="#">AN 001509</a>: Anion-exchange Based Method for Nucleotide Sugar Determination</p>
<a href="#">Dionex IonPac AS19-4µm</a>	083217 - 4 × 250 mm (240 µeq) 083223 - 2 × 250 mm (60 µeq) 083230 - 0.4 × 250 mm (2.4 µeq) 083221 - 4 × 50 mm (6 µeq) 083225 - 2 × 50 mm (1.5 µeq) 083233 - 0.4 × 50 mm (0.06 µeq)	High resolution separations for routine analysis of inorganic anions and oxyhalides. Capillary format offers reduced eluent consumption and operating costs.	Trace bromate and inorganic anions in drinking water, wastewater, ground water and diverse sample matrices. High resolution analysis of drinking water without pretreatment or concentration. Meets or exceeds EPA Methods 300.0 and 300.1 requirements.	<p><a href="#">AN 1157</a>: Organic Acids in Kombucha Using HPIC <a href="#">AU 203</a>: Trace Oxyhalides and Bromide in Water <a href="#">AN 72886</a>: Oxyhalides and Bromide in Drinking Water Using IC-MS <a href="#">AN 72911</a>: Oxyhalides and Bromide in Drinking Water Using IC-MS <a href="#">AN 73339</a>: Anionic Polar Pesticides by IC-MS <a href="#">AN 72915</a>: Polar Pesticides in Grapes by IC-MS <a href="#">AN 73608</a>: Four Polar Pesticides in Drinking Water by IC-MS <a href="#">AN 73987</a>: Nitrite in Pharmaceuticals <a href="#">WP 000031</a>: Nitrate and Nitrite in Metformin <a href="#">WP 000025</a>: Nitrate and Nitrite in Ranitidine Drugs</p>
<a href="#">Dionex IonPac AS19</a>	062885 - 4 × 250 mm (240 µeq) 062886 - 2 × 250 mm (60 µeq) 072064 - 0.4 × 250 mm (2.4 µeq) 062887 - 4 × 50 mm (6 µeq) 062888 - 2 × 50 mm (1.5 µeq) 072065 - 0.4 × 50 mm (0.06 µeq)	Routine analysis of inorganic anions and oxyhalides. Capillary format offers reduced eluent consumption and operating costs.	USP Designation: L103 (Dionex IonPac AS19) and L121 (Dionex IonPac AG19). Trace bromate and inorganic anions in drinking water, wastewater, ground water, diverse sample matrices. Analysis of drinking water without pretreatment or concentration. Meets or exceeds EPA Methods 300.0 and 300.1 requirements.	<p><a href="#">AB 133</a>: Anions and Cations in Drinking Water <a href="#">AB 136</a>: Inorganic Counter-ions in Pharmaceutical Drugs <a href="#">AN 93</a>: Trace Anions in Conc. Bases <a href="#">AN 167</a>: Trace Oxyhalides and Bromide in Water <a href="#">AN 168</a>: Trace Anions and Bromide in Drinking Water <a href="#">AN 171</a>: Disinfection By-Product Anions in Water <a href="#">AN 184</a>: Trace Chlorite, Bromate and Chlorate in Bottled Water <a href="#">AN 187</a>: Sub-ppb Bromate in Water Using Preconcentration with 2D-IC <a href="#">AN 1088</a>: Thiosulfate and Pyrophosphate in Crayfish Wash Powder <a href="#">AN 2967</a>: Fast Separation of Pharmaceutical Ions Using High-Pressure Capillary IC <a href="#">AU 154</a>: Bromate in Drinking Water and Mineral Water <a href="#">AU 159</a>: Anions in Caustic Solutions <a href="#">AU 169</a>: Silicate and Anions in HPW <a href="#">TN 112</a>: Trace Anions in Ultrapure Water <a href="#">TN 113</a>: Guidance for Capillary Anion IC <a href="#">CN 001941</a>: Chlorate in Agar</p>

High Capacity
  Moderate Capacity
  Low Capacity
  Solvent Compatible

## Dionex IonPac Anion Hydroxide Columns *(continued)*

Column	Part Number - Format (Capacity µeq/col)	Recommendations	Target Applications	Application Notes
<a href="#">Dionex IonPac AS18-Fast-4µm</a>	076034 - 4 × 150 mm (174 µeq) 076036 - 2 × 150 mm (43.5 µeq) 082314 - 0.4 × 150 mm (1.74 µeq) 076035 - 4 × 30 mm (4.2 µeq) 076037 - 2 × 30 mm (1.05 µeq) 076033 - 0.4 × 35 mm (0.042 µeq)	Super fast, high resolution separation (<3 min) of inorganic anions. Requires high-pressure IC for fastest runs. Replacement for Dionex IonPac AS4A, AS12A, AS14A, and AS17-C, and AS18-Fast columns.	Super fast routine analysis of inorganic anions in drinking water and wastewater.	<a href="#">AN 72693</a> : Total Fluorine, Chlorine, and Sulfur in Aromatic Hydrocarbons Using Combustion IC <a href="#">AB 72910</a> : Fast Analysis of N-containing Bisphosphonates Without Derivatization using IC-MS <a href="#">AN 72917</a> : Brominated Compounds in Carbonated Beverages Using Combustion IC <a href="#">AN 73280</a> : Fluorine and Chlorine in Iron Ore Using Combustion IC <a href="#">AN 1075</a> : Chloride and Sulfate in Adenosine <a href="#">AN 1113</a> : Chloride and Sulfate in Water and Soil <a href="#">AN 72268</a> : Fluoride in Tea Using Combustion IC <a href="#">AN 72333</a> : Adsorbable Organic Halogens in Wastewater Using Combustion IC <a href="#">AN 72440</a> : Inorganic Anions in Wastewater Using Capillary IC <a href="#">AN 72481</a> : Trace Anions in Basic Solutions by Single Pass AutoNeutralization <a href="#">AU 200</a> : Fast Anion Determinations in Water <a href="#">TN 127</a> : Fast Separations of Inorganic Anions in Water <a href="#">TN 130</a> : Fast Analysis of Salton Sea Samples
<a href="#">Dionex IonPac AS18-Fast</a>	075760 - 4 × 150 mm (171 µeq) 075759 - 2 × 150 mm (45 µeq) 072062 - 0.4 × 150 mm (1.71 µeq) 075762 - 4 × 30 mm (6 µeq) 075761 - 2 × 30 mm (1.5 µeq) 072063 - 0.4 × 35 mm (0.07 µeq)	Fast analysis (<5 min).	Super fast analysis of inorganic anions in various matrices.	<a href="#">AB 132</a> : Anions in Drinking Water <a href="#">AN 1001</a> : Bisphosphonate Pharmaceuticals and Excipients by IC-MS <a href="#">AU 185</a> : Determination of Nitrite and Nitrate in Wastewater Using Capillary IC with UV Detection
<a href="#">Dionex IonPac AS18</a>	060549 - 4 × 250 mm (285 µeq) 060553 - 2 × 250 mm (75 µeq) 075772 - 0.4 × 250 mm (2.85 µeq) 060551 - 4 × 50 mm (10 µeq) 060555 - 2 × 50 mm (2.5 µeq) 075773 - 0.4 × 50 mm (1 µeq)	Common inorganic anions and low MW organic acids in diverse matrices. Meets or exceeds EPA Method 300.0 requirements. Capillary format offers reduced eluent consumption and operating costs.	USP Designations: L113 (Dionex IonPac AS18) and L120 (Dionex IonPac AG18). Source and drinking waters, industrial cooling waters, hazardous waste waters, dump leachates, acid rain, foods and beverages, pharmaceutical counterions, polyols and polysulfonates.	<a href="#">AB 106</a> : Trace Anions Using Dionex ICS-2100 <a href="#">AN 154</a> : Inorganic Ions in Environmental Waters <a href="#">AN 156</a> : Anions in Toothpaste <a href="#">AN 160</a> : Residual Trifluoroacetate in Protein Purification Buffers <a href="#">AN 165</a> : Benzoate in Liquid Foods <a href="#">AN 175</a> : Sulfate and Chloride in Ethanol <a href="#">AN 190</a> : Sulfate Counterion and Anionic Impurities in Aminoglycoside Drug Substances <a href="#">AN 209</a> : Fluoride in Acidulated Topical Solution <a href="#">AN 254</a> : Total Phosphorus in Wastewater <a href="#">AN 260</a> : Monitoring Anions and Cations during Desalination <a href="#">AN 1078</a> : Benzenesulfonic Acid Counterion in Amlodipine Besylate by IC <a href="#">AN 1105</a> : Anions and Cations in Produced Water from Hydraulic Fracturing <a href="#">AU 146</a> : Anions in Acid Rain <a href="#">AU 163</a> : Trace Anions in Organic Solvent <a href="#">AN 72926</a> : Monofluorophosphate in Toothpaste <a href="#">AP 002317</a> : Benzoate in Soy Sauce
<a href="#">Dionex IonPac AS17-C</a>	066294 - 4 × 250 mm (30 µeq) 066296 - 2 × 250 mm (7.5 µeq) 066295 - 4 × 50 mm (6 µeq) 066297 - 2 × 50 mm (1.5 µeq)	Fast analysis of common inorganic anions in diverse matrices. Low sulfate blanks. Excellent retention of fluoride from water dip. Meets or exceeds EPA Methods 300.0 and 300.1 requirements. Recommend Dionex IonPac AS18 column for diverse sample matrices.	USP Designation: L83. Fluoride, chloride, acetate, nitrate, bromide, nitrate, carbonate, sulfonate, phosphate in <10 min, source and drinking waters, industrial cooling waters, hazardous waste waters, dump leachates, acid rain, food and beverage, pharmaceutical counterions, polyols and polysulfonates.	<a href="#">AB 108</a> : Phosphite in Electroless Nickel Plating Bath <a href="#">AB 198</a> : Trace Anions in Ultrapure Water <a href="#">AN 146</a> : Trace Anions in High Purity Water <a href="#">AN 153</a> : Trace Anions in Extracts of Electronic Component <a href="#">AN 170</a> : Silicate in High Purity Water <a href="#">AN 206</a> : Oxalate and Anions in Bayer Liquor <a href="#">AN 72573</a> : Halogens in Polymers and Electronics Using Combustion IC <a href="#">AN 73865</a> : Total Halides in Cleanroom Gloves Using Combustion IC <a href="#">AU 157</a> : Trace Anions on Electronic Components <a href="#">TN 72206</a> : Trace Anions in Ultrapure Water <a href="#">TN 73982</a> : Techniques for Successful Trace Anion Determinations in High Purity Waters
<a href="#">Dionex IonPac AS16-4µm</a>	302753 - 4 × 250 mm (170 µeq) 302755 - 2 × 250 mm (42.5 µeq) 302757 - 0.4 × 250 mm (1.7 µeq) 302754 - 4 × 50 mm (3.5 µeq) 302756 - 2 × 50 mm (0.88 µeq) 302758 - 0.4 × 50 mm (0.04 µeq)	Fast analysis of highly polarizable anions including thiosulfate, iodide, thiocyanate, and perchlorate with a simple, isocratic eluent. Polyvalent anions including polyphosphates and polycarboxylates. Offers improved peak efficiencies and resolution compared to standard Dionex IonPac AS16 columns. HPIC system required.	U.S. EPA Methods 314.0, 314.1, 314.2, and 332.	<a href="#">AN 73267</a> : Perchlorate in Drinking Water <a href="#">AP 002316</a> : Perchlorate in Drinking Water Using a Compact RFC System

High Capacity
  Moderate Capacity
  Low Capacity
  Solvent Compatible

## Dionex IonPac Anion Hydroxide Columns *(continued)*

Column	Part Number - Format (Capacity µeq/col)	Recommendations	Target Applications	Application Notes
<a href="#">Dionex IonPac AS16</a>	055376 - 4 × 250 mm (170 µeq) 055378 - 2 × 250 mm (42.5 µeq) 055377 - 4 × 50 mm (3.5 µeq) 055379 - 2 × 50 mm (0.875 µeq)	High capacity for hydrophobic, highly polarizable anions including iodide, thiocyanate, thiosulfate, and perchlorate. Polyvalent anions including polyphosphates and polycarboxylates. Use the Dionex IonPac AS16-4µm column in HPIC systems for improved peak efficiencies and resolution.	USP Designation: L31. Perchlorate in drinking water, surface water, and ground water samples by large loop injection.	<a href="#">AN 134:</a> Trace Perchlorate in Waters <a href="#">AN 138:</a> Thiosulfate in Refinery Waste Waters <a href="#">AN 144:</a> Perchlorate in High Ionic Strength Fertilizer <a href="#">AN 1136:</a> Perchlorate in Drinking Water <a href="#">AN 151:</a> Perchlorate by IC-MS <a href="#">AN 176:</a> Sub-ppb Perchlorate with Preconc./ Matrix Elimination <a href="#">AN 178:</a> Trace Perchlorate in Drinking Water Using 2D-IC <a href="#">AN 263:</a> Endothall in Water by IC-MS/MS <a href="#">AN 533:</a> Perchlorate in Infant Formula <a href="#">AN 1024:</a> Improved Determination of Trace Perchlorate in Water Using 2D-IC <a href="#">AU 172:</a> Polyphosphates using IC <a href="#">AU 148:</a> Perchlorate by RFIC <a href="#">AU 145:</a> Perchlorate in Water
<a href="#">Dionex IonPac AS15</a>	053940 - 4 × 250 mm (225 µeq) 057594 - 3 × 150 mm (70 µeq) 053941 - 2 × 250 mm (56.25 µeq) 075662 - 0.4 × 250 mm (2.25 µeq) 053942 - 4 × 50 mm (45 µeq) 057597 - 3 × 30 mm (14 µeq) 053943 - 2 × 50 mm (11.25 µeq) 075663 - 0.4 × 50 mm (0.45 µeq)	Trace analysis of inorganic anions and low molecular weight organic acids in high purity water matrices. Available in 5 µm particle size (3 × 150 mm) for fast, high-capacity analysis. Use the Dionex IonPac AS28-Fast-4µm column in HPIC systems for improved peak efficiencies and resolution.	USP Designation: L92. Trace anion analysis in semiconductor and power industries. Use with Dionex IonPac AC15 concentrator column for ng/L (ppt) determinations.	<a href="#">AB 125:</a> Trace Anions in High Purity Water Using Capillary IC <a href="#">AB 151:</a> Trace Anions in Nuclear Power Plant Secondary Feed Water Containing Polyacrylic Acid <a href="#">AN 137:</a> Trace Anions in High-Nitrate Matrices <a href="#">AN 171:</a> Disinfection Byproduct Anions and Bromide Using RFIC <a href="#">AN 172:</a> Azide in Aqueous Samples <a href="#">AN 173:</a> Cyanide in Drinking Water by PAD <a href="#">AN 185:</a> Trace Anions in Power Plant Waters <a href="#">AN 200:</a> Cyanate in Urea <a href="#">AN 220:</a> Anion Impurities in Water Insoluble Pharmaceuticals <a href="#">AN 73455:</a> Nitrite in Dalteparin Sodium <a href="#">AN 1155:</a> Chloride in Infant Formula and Adult Nutritional <a href="#">AN 72907:</a> Fluoride in Tooth Gel <a href="#">AU 142:</a> Trace Anions in High Purity Water <a href="#">AU 143:</a> Chloride in Acid Copper Plating Bath <a href="#">TN 48:</a> Trace Anions in High Purity Water <a href="#">TN 112:</a> Trace Anions in Ultrapure Water Using Capillary IC <a href="#">TN 113:</a> Guidance for Using Capillary Anion IC <a href="#">TN 73982:</a> Techniques for Successful Trace Anion Determinations in High Purity Waters
<a href="#">Dionex IonPac AS11-HC-4µm</a>	082313 - 4 × 250 mm (290 µeq) 078035 - 2 × 250 mm (72.5 µeq) 078031 - 0.4 × 250 mm (2.9 µeq) 078034 - 4 × 50 mm (7 µeq) 078036 - 2 × 50 mm (1.75 µeq) 078032 - 0.4 × 50 mm (0.07 µeq)	High capacity, high resolution for the separation of organic acids and inorganic anions in complex matrices. Requires high-pressure IC system.	Anions and organic acids in foods and beverages, wastewater, brines, and fermentation broths.	<a href="#">AN 72808:</a> Organic Acids in Herbal Beverages Using IC-MS <a href="#">AN 1068:</a> Organic Acids in Fruit Juices and Wine by HPIC <a href="#">AN 1157:</a> Organic Acids in Kombucha using HPIC <a href="#">AN 1163:</a> Anions on PCBs by IPC-TM-650 Method 2.3.28 <a href="#">AB 72363:</a> Common Organic Acids by IC-MS <a href="#">AN 73344:</a> Organic Acids in Pharmaceuticals Using IC-MS <a href="#">AN 72349:</a> Chlorine, Bromine, and Sulfur in Polyethylene Materials by Combustion IC <a href="#">AN 72438:</a> Organic Acids in Animal Feed <a href="#">AN 73827:</a> Nitrite and Nitrate in Sugar <a href="#">AU 205:</a> Citrate and Phosphate in Pharmaceuticals <a href="#">TN 122:</a> Heat Stable Amine Salts in MDEA Solutions <a href="#">TN 126:</a> Organic Acids in Beer using HPIC

High Capacity
  Moderate Capacity
  Low Capacity
  Solvent Compatible

## Dionex IonPac Anion Hydroxide Columns *(continued)*

Column	Part Number - Format (Capacity $\mu\text{eq}/\text{col}$ )	Recommendations	Target Applications	Application Notes
<a href="#">Dionex IonPac AS11-HC</a>	052960 - 4 × 250 mm (290 $\mu\text{eq}$ ) 052961 - 2 × 250 mm (72.5 $\mu\text{eq}$ ) 078429 - 0.4 × 250 mm (2.9 $\mu\text{eq}$ ) 052962 - 4 × 50 mm (7 $\mu\text{eq}$ ) 052963 - 2 × 50 mm (1.75 $\mu\text{eq}$ ) 078430 - 0.4 × 50 mm (0.07 $\mu\text{eq}$ )	High capacity for the determination of organic acids and inorganic anions in uncharacterized samples.	USP Designation: L81. Carboxylic acids (acetate, lactate, quinate, formate, butyrate) in foods and beverages, wastewater, brine, fermentation broths.	<a href="#">AB 104:</a> Organic Acids in Biomass by IC-MS <a href="#">AB 112:</a> Organic Acids in Cranberry and Bilberry Extracts <a href="#">AN 123:</a> Inorganic Anions and Organic Acids in Fermentation Broths <a href="#">AN 143:</a> Organic Acids in Fruit Juices <a href="#">AN 244:</a> Total Phosphorous using 2D-IC <a href="#">AN 1068:</a> Organic Acids in Fruit Juices and Wine by HPIC <a href="#">AN 1076:</a> Monochloroacetic Acid in Carbocisteine <a href="#">AN 73450:</a> Nitrate and Nitrite in Spinach and Meat <a href="#">AN 1107:</a> Anions and Carboxylic Acids in Urban Fine Particles <a href="#">AN 72204:</a> Formic and Acetic Acids in Petroleum Products <a href="#">AN 73749:</a> Methanesulfonic Acid in Busulfan <a href="#">AU 178:</a> OSCP in Heparin Sodium <a href="#">TN 44:</a> Trace Anions in Conc. Phosphoric Acid <a href="#">TN 45:</a> Trace Anions in Hydrofluoric Acid <a href="#">AB 001809:</a> Anions and Organic Acids on Printed Circuit Boards <a href="#">AN 001509:</a> Anion-exchange Based Method for Nucleotide Sugar Determination
<a href="#">Dionex IonPac AS11</a>	044076 - 4 × 250 mm (45 $\mu\text{eq}$ ) 044077 - 2 × 250 mm (11 $\mu\text{eq}$ ) 044078 - 4 × 50 mm (9 $\mu\text{eq}$ ) 044079 - 2 × 50 mm (2.2 $\mu\text{eq}$ )	Fast gradient screening of inorganic anions and organic acids in simple matrices.	USP Designation: L61. Inorganic anions and organic acids in wastewater, power plant waters, pharmaceutical formulations, food and beverage samples.	<a href="#">AN 25:</a> Anions and Organic Acids in Beverages <a href="#">AN 37:</a> Iodide and Iodate in Infant Formula <a href="#">AN 46:</a> Analysis of Beer by IC <a href="#">AN 71:</a> Analysis of Polyphosphates by IC <a href="#">AN 104:</a> Personal Care Products by IC <a href="#">AN 106:</a> IC in the Pharmaceutical Industry <a href="#">AN 107:</a> Ions in Physiological Fluids <a href="#">AN 112:</a> Nitrate and Nitrite in Meat <a href="#">AN 113:</a> Trace Anions in High Purity Water <a href="#">AN 116:</a> Anions in Pharmaceuticals <a href="#">AN 121:</a> Perchlorate in Water <a href="#">AN 123:</a> Inorganic Anions and Organic Acids in Fermentation Broths <a href="#">AN 161:</a> Metal Cyanide Complexes by IC/UV <a href="#">AN 164:</a> Citrate and Phosphate in Pharmaceutical Formulations <a href="#">AN 165:</a> Benzoate in Liquid Food Products <a href="#">AN 235:</a> Sulfates in Heparin Sodium by IC/UV <a href="#">AN 238:</a> Sulfate and Sulfamate in Topiramate by IC <a href="#">AN 253:</a> Infant Formula Sialic Acids by HPAE-PAD <a href="#">AN 262:</a> 2-Ethylhexanoic Acid Impurity in Clavulanate <a href="#">AN 295:</a> Phytic Acid in Soybeans and Sesame Seeds <a href="#">AN 1000:</a> Small Organic Acids in Sea Water by IC-MS <a href="#">AN 1007:</a> Polyphosphates and Citrate in Shrimp by IC <a href="#">AN 1044:</a> Anions in Dried Distiller Grains with Solubles <a href="#">AU 122:</a> Iodide in Brine <a href="#">AU 140:</a> Iodide in Urine <a href="#">AU 147:</a> Metal Cyanides by IC/UV <a href="#">AU 149:</a> Metal Cyanides in Solid Wastes by IC/UV <a href="#">AU 73406:</a> Phytic Acid in Beans, Wild Rice, and Almonds <a href="#">PN 64526:</a> Lithium-Ion Battery Anode Samples by IC-HRAM-MS <a href="#">PN 71652:</a> Phosphorous Degradation Products in Lithium-Ion Batteries by IC-HRAMS <a href="#">PN 71671:</a> Ionic Manganese Degradation Products From Lithium-Ion Batteries by IC-HRAMS
<a href="#">Dionex IonPac Fast Anion IIIA</a>	062964 - 3 × 250 mm (55 $\mu\text{eq}$ ) 062966 - 3 × 50 mm (1 $\mu\text{eq}$ )	Fast determination of inorganic anions using an isocratic eluent	Fast analysis (<7 min) of phosphoric and citric acids in cola soft drinks. Fast separation (~4 min) of chloride and sulfate in simple sample matrices.	<a href="#">AN 210:</a> Phosphate Content of Phosphorylated Proteins <a href="#">AU 153:</a> Fast Determinations of Phosphate and Citrate in Carbonated Beverages Using Online Degassing <a href="#">AN 72501:</a> Rapid Determination of Phosphate and Citrate in Carbonated Soft Drinks

High Capacity
  Moderate Capacity
  Low Capacity
  Solvent Compatible

## Dionex IonPac Anion Carbonate Columns

Column	Part Number - Format (Capacity $\mu\text{eq}/\text{col}$ )	Recommendations	Target Applications	Application Notes
<a href="#">Dionex IonPac AS29-Fast-4<math>\mu\text{m}</math></a>	302833 - 4 $\times$ 150 mm (126 $\mu\text{eq}$ ) 302835 - 2 $\times$ 150 mm (31.5 $\mu\text{eq}$ ) 302834 - 4 $\times$ 30 mm (4 $\mu\text{eq}$ ) 302836 - 2 $\times$ 30 mm (1 $\mu\text{eq}$ )	Recommended for fast analysis (<10 min) of common inorganic anions in high ionic strength samples, including acidic or basic samples. HPIC system required. Use with Dionex AS29 Eluent Concentrate for convenient eluent preparation.	Fast analysis of inorganic anions in drinking water. Meets or exceeds EPA 300.0 and 300.1 requirements.	<a href="#">AN 73607</a> : Inorganic Anions in Drinking Water, Wastewater, and High Ionic Strength Water <a href="#">AB 73727</a> : Anions in Water <a href="#">AN 002343</a> : Chloride and Sulfate in Saturated Lithium Hydroxide <a href="#">AB 001056</a> : Citric Acid in Mixed Beer Beverages
<a href="#">Dionex IonPac AS23-4<math>\mu\text{m}</math></a>	302555 - 4 $\times$ 250 mm (320 $\mu\text{eq}$ ) 302557 - 2 $\times$ 250 mm (80 $\mu\text{eq}$ ) 302556 - 4 $\times$ 50 mm (6 $\mu\text{eq}$ ) 302558 - 2 $\times$ 50 mm (1.5 $\mu\text{eq}$ )	Recommended for inorganic anions and oxyhalides. Improved peak efficiencies and resolution compared to standard Dionex IonPac AS23 column. HPIC system required. Use with Dionex AS23 Eluent Concentrate for convenient eluent preparation.	Trace bromate in drinking water. Meets or exceeds EPA 300.0 and 300.1, ASTM 4327, ISO 10304, and ISO 15061 requirements.	<a href="#">AN 72751</a> : Anionic Impurities in Sulfuric Acid <a href="#">AN 72209</a> : Trace Oxyhalides and Bromide in Water <a href="#">AN 72331</a> : Anions in Sodium Hydroxide <a href="#">AP 002342</a> : Trace Oxyhalides and Bromide in Water
<a href="#">Dionex IonPac AS23</a>	064149 - 4 $\times$ 250 mm (320 $\mu\text{eq}$ ) 064145 - 2 $\times$ 250 mm (80 $\mu\text{eq}$ ) 064147 - 4 $\times$ 50 mm (6 $\mu\text{eq}$ ) 064143 - 2 $\times$ 50 mm (15 $\mu\text{eq}$ )	Recommended for inorganic anions and oxyhalides. Replacement for Dionex IonPac AS9-HC column.	Trace bromate in drinking water. Meets or exceeds EPA 300.0 and 300.1 requirements.	<a href="#">AN 184</a> : Chlorite, Bromate, and Chlorate in Bottled Mineral Water <a href="#">AN 208</a> : Bromate in Bottled Mineral Water <a href="#">AU 72588</a> : Chlorine, Bromine, and Sulfur in Polyethylene Materials Using Combustion IC <a href="#">AN 001967</a> : Inorganic Anions in Saturated Lithium Carbonate
<a href="#">Dionex IonPac AS22-Fast-4<math>\mu\text{m}</math></a>	088486 - 4 $\times$ 150 mm (126 $\mu\text{eq}$ ) 088488 - 2 $\times$ 150 mm (31.5 $\mu\text{eq}$ ) 088487 - 4 $\times$ 30 mm (4 $\mu\text{eq}$ ) 088489 - 2 $\times$ 30 mm (1 $\mu\text{eq}$ )	Fast, high resolution separation (<5 min) of inorganic anions. Requires high-pressure IC for fastest runs. Use with Dionex AS22 Eluent Concentrate for convenient eluent preparation.	Fast analysis of inorganic anions in drinking water. Meets or exceeds EPA 300.0 and 300.1 requirements.	<a href="#">AB 184</a> : Anions in Drinking Water <a href="#">AB 73726</a> : Anions in Drinking Water <a href="#">AP 002335</a> : Municipal Drinking Water by Fast IC <a href="#">AP 002340</a> : Fast Determination of Anions in Drinking Water
<a href="#">Dionex IonPac AS22-Fast</a>	079936 - 4 $\times$ 150 mm (126 $\mu\text{eq}$ ) 079937 - 2 $\times$ 150 mm (31.5 $\mu\text{eq}$ ) 072784 - 4 $\times$ 30 mm (4 $\mu\text{eq}$ ) 072785 - 2 $\times$ 30 mm (1 $\mu\text{eq}$ )	Recommended for fast analysis of common inorganic anions (<5 min). Use with Dionex AS22 Eluent Concentrate for convenient eluent preparation.	Fast analysis of inorganic anions in drinking water. Meets or exceeds EPA 300.0 and 300.1 requirements.	<a href="#">AB 120</a> : Drinking Water by Fast-IC <a href="#">AN 1002</a> : Tartaric Acid in Tolterodine Tartrate Drug Products
<a href="#">Dionex IonPac AS22</a>	064141 - 4 $\times$ 250 mm (220 $\mu\text{eq}$ ) 064137 - 2 $\times$ 250 mm (52.5 $\mu\text{eq}$ ) 064139 - 4 $\times$ 50 mm (6 $\mu\text{eq}$ ) 064135 - 2 $\times$ 50 mm (1.5 $\mu\text{eq}$ )	Recommended for fast analysis of common inorganic anions. Alternative to Dionex IonPac AS4A-SC, AS12A, AS14 and AS14A columns. Use with Dionex AS22 Eluent Concentrate for convenient eluent preparation.	Analysis of common inorganic anions in drinking water, wastewater and process waters. Meets or exceeds EPA 300.0 and 300.1 requirements.	<a href="#">AB 121</a> : Anions in Drinking Water <a href="#">AB 165</a> : Toluene-sulfonic Acid in Water-Insoluble Drugs <a href="#">AN 249</a> : Methacholine Chloride and Potential Impurities <a href="#">AN 254</a> : Total Phosphorus in Wastewater <a href="#">AN 297</a> : Tartaric Acid in Tolterodine Tartrate Drug Products <a href="#">AN 1002</a> : Tartaric Acid in Tolterodine Tartrate Drug Products <a href="#">AN 1052</a> : Chloride and Sulfate in Gasoline-Denatured Products <a href="#">AN 1113</a> : Chloride and Sulfate in Water and Soil <a href="#">AU 113</a> : Dissolved Silica and Anions <a href="#">AU 161</a> : Sulfate and Chloride in Ethanol <a href="#">AU 175</a> : Anions and Organic Acids in NPP Waters <a href="#">AU 194</a> : Existent and Potential Sulfate and Total Inorganic Chloride in Denatured Alcohol <a href="#">AU 196</a> : Anions in Drinking Water <a href="#">AU 197</a> : Anions in Wastewater <a href="#">TN 72778</a> : Anions in Drinking Water <a href="#">AU 72996</a> : Sulfate in Denatured Ethanol Using Modified ASTM D7328 Method <a href="#">AN 002345</a> : Fluoride in Sodium Fluoride Oral Solution <a href="#">AN 002344</a> : Fluoride in Sodium Fluoride Oral Solution Using Carb/Bicarb Eluent <a href="#">AP 002323</a> : Potential Sulfate in E85 Denatured Ethanol
<a href="#">Dionex IonPac AS14A</a>	056904 - 4 $\times$ 250 mm (120 $\mu\text{eq}$ ) 056901 - 3 $\times$ 150 mm (40 $\mu\text{eq}$ ) 056897 - 4 $\times$ 50 mm (24 $\mu\text{eq}$ ) 056899 - 3 $\times$ 30 mm (8 $\mu\text{eq}$ )	Analysis of common inorganic anions. Use with Dionex AS14A Eluent Concentrate for convenient eluent preparation. The Dionex IonPac AS22, AS22-Fast, AS22-Fast-4 $\mu\text{m}$ , and AS29-Fast-4 $\mu\text{m}$ columns are recommended for common inorganic anions.	USP Designation: L74. Meets or exceeds EPA 300.0 (A) requirements. Available in 5 $\mu\text{m}$ (3 $\times$ 150 mm) for fast analysis of common anions in <8 min.	<a href="#">AN 140</a> : Fast Anions in Water <a href="#">AN 175</a> : Sulfate and Chloride in Ethanol

 High Capacity

 Moderate Capacity

 Low Capacity

 Solvent Compatible



## Dionex IonPac Anion Carbonate Columns *(continued)*

Column	Part Number - Format (Capacity µeq/col)	Recommendations	Target Applications	Application Notes
<a href="#">Dionex IonPac AS14</a>	046124 - 4 × 250 mm (65 µeq) 046129 - 2 × 250 mm (16 µeq) 046134 - 4 × 50 mm (13 µeq) 046138 - 2 × 50 mm (3.25 µeq)	Moderate capacity for fast analysis of common inorganic anions. Excellent fluoride retention. Use with Dionex AS14 Eluent Concentrate for convenient eluent preparation. The Dionex IonPac AS22, AS22-Fast, AS22-Fast-4µm, and AS29-Fast-4µm columns are recommended for common inorganic anions.	Meets or exceeds EPA 300.0 (A) and (B) requirements.	<a href="#">AN 2:</a> Nitrate and Sulfate on Air Filters <a href="#">AN 114:</a> Trace Anions in High Purity Water <a href="#">AN 115:</a> TFA in Peptides <a href="#">AN 116:</a> Anions in Pharmaceuticals <a href="#">AN 133:</a> Anions in Drinking Water <a href="#">AN 135:</a> Anions in Wastewater <a href="#">AN 166:</a> Trace Anion Analysis in Borated Water <a href="#">AN 73866:</a> Trace Anions in Borated Waters Using Large Volume Injection <a href="#">AU 191:</a> Trace Anions in Lithium-Containing Borated Water <a href="#">TN 47:</a> Low Baseline Noise by Suppression
<a href="#">Dionex IonPac AS12A</a>	046034 - 4 × 200 mm (52 µeq) 046055 - 2 × 200 mm (13 µeq) 079801 - 4 × 50 mm (4 µeq) 046056 - 2 × 50 mm (1 µeq)	Moderate capacity for analysis of inorganic anions and oxyhalides. The Dionex IonPac AS23 and AS23-4µm columns are recommended for inorganic anions and oxyhalides.	USP Designations: L105 (Dionex IonPac AS12A) and L110 (Dionex IonPac AG12A). Trace chloride and sulfate in high carbonate matrices.	<a href="#">AN 284:</a> Ethyl Sulfate Impurity in Indinavir Sulfate Drug <a href="#">AN 1148:</a> Assay of Nitrite and Nitrate Impurity in Sodium Nitrite <a href="#">AN 72502:</a> Assay of Sodium Thiosulfate and Impurities
<a href="#">Dionex IonPac AS9-HC</a>	051786 - 4 × 250 mm (190 µeq) 052244 - 2 × 250 mm (47.5 µeq) 051791 - 4 × 50 mm (6 µeq) 052248 - 2 × 50 mm (1.5 µeq)	Carbonate column for inorganic anions and oxyhalides. The Dionex IonPac AS23 and AS23-4µm columns are recommended for inorganic anions and oxyhalides.	Trace bromate in drinking water. Specified column in EPA 300.1 and 317.0.	<a href="#">AN 81:</a> Oxyhalides and Bromide, Direct Injection <a href="#">AN 85:</a> Anions in Solvent <a href="#">AN 135:</a> Anions in Wastewater <a href="#">AN 136:</a> Oxyhalides and Bromide in Drinking Water (postcolumn reaction) <a href="#">AN 149:</a> Chlorite, Bromate, Bromide, Chlorate in Water <a href="#">TN 46:</a> Trace Anions in Concentrated Glycolic Acid
<a href="#">Dionex IonPac AS4A-SC</a>	043174 - 4 × 250 mm (20 µeq) 043125 - 2 × 250 mm (5 µeq) 043175 - 4 × 50 mm (4 µeq) 043126 - 2 × 50 mm (1 µeq)	Low capacity for fast analysis of common inorganic anions. Use with Dionex AS4A Eluent Concentrate for convenient eluent preparation. The Dionex IonPac AS22, AS22-Fast, AS22-Fast-4µm, and AS29-Fast-4µm columns are recommended for common inorganic anions.	USP Designation: L12. Specified column in U.S. EPA Method 300.0 (A).	<a href="#">AN 31:</a> Anions in Acid Rain <a href="#">AN 36:</a> Oxalate in Urine <a href="#">AN 56:</a> Trace Anions and Organic Acids in Power Plant Waters <a href="#">AN 133:</a> Anions in Drinking Water <a href="#">AN 135:</a> Anions in Wastewater <a href="#">AN 290:</a> Sulfate and Chloride in Ethanol <a href="#">AN 296:</a> Sulfate and Chloride in Fuel-Grade Butanol

## Dionex IonPac Ion-Exclusion Columns

Column	Part Number - Format (Capacity µeq/col)	Recommendations	Target Applications	Application Notes
<a href="#">Dionex IonPac ICE-AS1</a>	043197 - 9 × 250 mm (27 µeq) 064198 - 4 × 250 mm (5.3 µeq) 302622 - 9 × 150 mm (16.2 µeq) 067842 - 4 × 50 mm (1 µeq)	Fast separation of aliphatic organic acids and alcohols in complex or high-ionic strength samples.	USP Designation: L22. Ideal for electroactive ions such as cyanide and sulfite. Useful for organic acids and alcohols in complex sample matrices including brines, mineral acids, wastewater, power plant water, foods and beverages, Kraft liquors, and soil extracts.	<a href="#">TN 45:</a> Trace Anions in HF, Ammonium Fluoride, and a Buffered Oxide Etchant <a href="#">AN 291:</a> Organic Acids in Wastewater <a href="#">AN 54:</a> Total and Free Sulfite in Foods and Beverages <a href="#">AN 21:</a> Organic Acids in Wine <a href="#">AN 117:</a> Carbohydrates and Glycols in Pharmaceuticals <a href="#">AN 188:</a> Glycols and Alcohols in Fermentation Broths <a href="#">AN 409:</a> Acrylamide in Food <a href="#">TN 001036:</a> Electrolytic Eluent Generation in HPICE
<a href="#">Dionex IonPac ICE-AS6</a>	079798 - 9 × 250 mm (27 µeq)	Fast analysis of aliphatic organic acids and alcohols in complex or high-ionic strength samples, elution of strong acid anions into the void, difficult separations (e.g., tartrate from citrate, glycolate from lactate and formate, lactate from malate, and formate from succinate). Ideally suited for most applications performed on the Dionex IonPac ICE-AS1 column.	Determination of aliphatic organic acids and alcohols in matrices that include food and beverage products, biological samples, industrial process liquors, and wastewater.	<a href="#">AN 106:</a> IC in the Pharmaceutical Industry <a href="#">AN 104:</a> Analysis of Personal Care Products by IC <a href="#">AN 46:</a> Analysis of Beer by IC <a href="#">AN 72438:</a> Organic Acids in Animal Feeds <a href="#">TN 46:</a> Trace Anions in Concentrated Glycolic Acid <a href="#">TN 44:</a> Trace Anions in Concentrated Phosphoric Acid
<a href="#">Dionex IonPac ICE-Borate</a>	053945 - 9 × 250 mm (27 µeq)	Monitoring trace levels of borate in high-purity water; used with Dionex IonPac TBC-1 concentrator column and suppressed conductivity detection.	USP Designation: L22. Trace level (ppt) borate detection in water purification systems.	<a href="#">AN 1119:</a> Trace Boric Acid in Cosmetics <a href="#">AN 00010:</a> Trace Borate in High Purity Waters

 High Capacity

 Moderate Capacity

 Low Capacity

 High Solvent Compatibility

 Moderate Solvent Compatibility

 Low Solvent Compatibility



## Dionex IonPac Cation Columns

Column	Part Number - Format (Capacity µeq/col)	Recommendations	Target Applications	Application Notes
<a href="#">Dionex IonPac CS21-Fast-4µm</a>	303348 - 2 x 150 mm (110 µeq) 303349 - 2 x 30 mm (22 µeq)	Dionex IonPac CS17 replacement column for cationic polar pesticide applications. Separates diquat/paraquat critical pair and other cationic pesticides including chlormequat and paraquat within 15 min.	IC-MS/MS and IC-HRAM-MS determination and quantitation of cationic polar pesticides in food and beverages.	<a href="#">TN 73990</a> : Four Quaternary Ammonium Polar Pesticides in Food and Beverages by IC-MS/MS <a href="#">AN 000607</a> : Cationic Polar Pesticides in Cereals by IC-MS/MS <a href="#">TN 001900</a> : Cationic Quaternary Amines by IC-MS <a href="#">TN 001521</a> : Choosing the Appropriate Cation Column for Quaternary Amines <a href="#">AN 001166</a> : Cationic Polar Pesticides in Oat Cereals by IC and ESI-MS
<a href="#">Dionex IonPac CS20</a>	302608 - 4 x 250 mm (3000 µeq) 302606 - 2 x 250 mm (750 µeq) 302610 - 0.4 x 250 mm (30 µeq) 302609 - 4 x 50 mm (600 µeq) 302607 - 2 x 50 mm (150 µeq) 302611 - 0.4 x 50 mm (6 µeq)	Determination of inorganic cations and amines including methylamines, ethylamines, ethanalamines, and alkanolamines. Supports the use of high temperatures and solvents for complex separations. HPIC system required.	Common cations and amines in environmental waters, power plant waters, chemical process solutions, refinery scrubber solutions, personal care products, and food and beverage samples.	<a href="#">AN 73030</a> : Alkanolamines in Amine Scrubbing Solutions <a href="#">AN 000165</a> : Tromethamine in Pharmaceutical Formulations <a href="#">AN 001055</a> : Guanidine in Pharmaceutical Formulations
<a href="#">Dionex IonPac CS19-4µm</a>	078837 - 4 x 250 mm (2410 µeq) 078836 - 2 x 250 mm (600 µeq) 078835 - 0.4 x 250 mm (24 µeq) 078840 - 4 x 50 mm (46 µeq) 078839 - 2 x 50 mm (11 µeq) 078838 - 0.4 x 50 mm (0.5 µeq)	Dionex IonPac CS18 replacement column high resolution separation of cations, small polar amines, moderately hydrophobic amines and polyvalent amines. Requires high-pressure IC for faster runs using higher flow rates.	Common cations and amines in environmental waters, power plant waters, chemical process solutions, refinery scrubber solutions, personal care products, and food and beverage samples.	<a href="#">AN 72609</a> : Cations and Amines in Alkanolamine Scrubbing Solutions by IC-ESI MS <a href="#">AN 000164</a> : Histamine, Agmatine, and Putrescine in Wine by IC-MS
<a href="#">Dionex IonPac CS19</a>	076026 - 4 x 250 mm (2410 µeq) 076028 - 2 x 250 mm (600 µeq) 076027 - 4 x 50 mm (46 µeq) 076029 - 2 x 50 mm (11 µeq)	Dionex IonPac CS18 replacement column for common cations, small polar amines, moderately hydrophobic amines, and polyvalent amines. Operates under 3000 psi for use on standard IC systems.	USP Designations: L97 (Dionex IonPac CS19) and L98 (Dionex IonPac CG19). Common cations and amines in environmental waters, power plant waters, chemical process solutions, refinery scrubber solutions, personal care products, and food and beverage samples.	<a href="#">AN 1054</a> : Ammonia in Tobacco Smoke <a href="#">AN 1057</a> : Methylamine in Drug Products <a href="#">AN 1062</a> : Morpholine in Linezolid by IC <a href="#">AN 72649</a> : Validation of IC Method for Limit of Choline Test in USP Succinylcholine Chloride Monograph <a href="#">AU 189</a> : Determination of Choline in Infant Formula and Other Food Samples <a href="#">AU 193</a> : Choline in Infant Formula and Adult Nutritionals
<a href="#">Dionex IonPac CS18</a>	062878 - 2 x 250 mm (290 µeq) 062880 - 2 x 50 mm (58 µeq)	Polar amines (alkanolamines and methylamines) and moderately hydrophobic amines (biogenic amines, diamines and polyamines).	Amines, biogenic amines in food and beverage samples.	<a href="#">AN 182</a> : Biogenic Amines in Alcoholic Beverages <a href="#">AN 183</a> : Biogenic Amines in Fermented and Non-Fermented Foods <a href="#">AU 162</a> : Biogenic Amines in Fruit, Vegetables and Chocolate
<a href="#">Dionex IonPac CS17</a>	060557 - 4 x 250 mm (1450 µeq) 060561 - 2 x 250 mm (363 µeq) 060560 - 4 x 50 mm (290 µeq) 060563 - 2 x 50 mm (73 µeq)	Dionex IonPac CS14 replacement column for gradient separation of polyvalent, more hydrophobic amines, biogenic amines, and diamines. Solvent compatibility allows elution of more hydrophobic amines and easy column cleanup.	USP Designation: L77. Gradient separations of Power Industry amines, such as cyclohexylamine, without solvent.	<a href="#">AN 194</a> : Carbachol in Ophthalmic Solutions <a href="#">AN 199</a> : N-Methylpyrrolidine in Cefepime <a href="#">AN 231</a> : Melamine in Milk <a href="#">AN 249</a> : Methacholine Chloride and Potential Impurities <a href="#">AU 155</a> : Cations and Amines in H <sub>2</sub> O <sub>2</sub> <a href="#">AU 160</a> : N,N-Dimethyl-o-Toluidine and N,N-Diethyl-p-Toluidine in Ethylene Gas <a href="#">AN 72908</a> : Polar Pesticides in Fruits and Vegetables by IC-HRAM-MS
<a href="#">Dionex IonPac CS16-Fast-4µm</a>	088599 - 4 x 150 mm (3220 µeq) 088601 - 2 x 150 mm (800 µeq) 088600 - 4 x 30 mm (650 µeq) 088602 - 2 x 30 mm (160 µeq)	Fast determination of disparate concentration ratios of sodium and ammonium in simple matrices. HPIC system required.	Sample matrices containing trace sodium in the presence of high ammonium (and vice versa). Short chain amines (e.g., alkylamines and alkanolamines) in simple matrices.	<a href="#">AN 72482</a> : Urea in Ultrapure Water by IC-MS/MS <a href="#">TN 73982</a> : Techniques for Successful Trace Cation Determinations in High Purity Waters
<a href="#">Dionex IonPac CS16-4µm</a>	088584 - 4 x 250 mm (5370 µeq) 088582 - 2 x 250 mm (1340 µeq) 088615 - 0.4 x 250 mm (50 µeq) 088585 - 4 x 50 mm (1070 µeq) 088583 - 2 x 50 mm (270 µeq) 088616 - 0.4 x 50 mm (10 µeq)	Determination of disparate concentration ratios of sodium and ammonium in complex matrices. Offers improved peak efficiencies and resolution compared to standard Dionex IonPac CS16 columns. Capillary format offers reduced eluent consumption and lower operating cost. HPIC system required.	Industrial samples containing trace sodium in the presence of high ammonium (and vice versa). Short chain amines (e.g., alkylamines and alkanolamines) in complex matrices.	<a href="#">AU 204</a> : Cations and Ammonium in Environmental Waters <a href="#">TN 73982</a> : Techniques for Successful Trace Cation Determinations in High Purity Waters <a href="#">AP 002341</a> : Cations and Ammonium in Environmental Waters Using a Compact RFC System

 High Capacity

 Moderate Capacity

 Low Capacity

 High Solvent Compatibility

 Moderate Solvent Compatibility

 Low Solvent Compatibility

## Dionex IonPac Cation Columns *(continued)*

Column	Part Number - Format (Capacity µeq/col)	Recommendations	Target Applications	Application Notes
<a href="#">Dionex IonPac CS16</a>	079805 - 5 × 250 mm (8400 µeq) 059596 - 3 × 250 mm (3000 µeq) 075401 - 0.5 × 250 mm (84 µeq) 057574 - 5 × 50 mm (1700 µeq) 079931 - 3 × 50 mm (600 µeq) 075402 - 0.5 × 50 mm (17 µeq)	Highest capacity cation column to separate high- to low-concentration ratios of sodium and ammonium in complex sample matrices. Best carboxylate column for low pH and high capacity. Capillary format offers reduced eluent consumption and lower operating cost.	USP Designation: L84. Short chain amines e.g., alkylamines and alkanolamines in various sample matrices. Low sodium in the presence of high ammonium (and the reverse) in industrial samples.	<a href="#">AN 94:</a> Trace Cations in Concentrated Acids Using AutoNeutralization Pretreatment <a href="#">AN 141:</a> Inorganic Cations/Ammonium in Environmental Waters <a href="#">AN 152:</a> Sodium (ppt) in High Concentration Ethanolamine in Power Plant Waters <a href="#">AN 157:</a> Cations by Suppressed and Non-Suppressed IC <a href="#">AN 247:</a> Morpholine, Ethanolamine, and Hydrazine in NPP Wastewaters <a href="#">AN 73389:</a> Sodium, Potassium, and Calcium in Vitamins and Sauerkraut <a href="#">AN 1073:</a> Ammonia in Sodium Bicarbonate <a href="#">AN 1090:</a> Lithium, Sodium and Calcium in Lithium Carbonate <a href="#">AN 1105:</a> Anions and Cations in Produced Water from Hydraulic Fracturing <a href="#">AN 2967:</a> Fast Separation of Pharmaceutical Ions Using High Pressure Capillary IC <a href="#">AN 73482:</a> Ammonia Impurity in Potassium Bitartrate <a href="#">AN 73745:</a> Sodium, Potassium, and Calcium in Rice and Wheat Flours <a href="#">AN 74041:</a> Magnesium Oxide Monograph Modernization with IC <a href="#">TN 121:</a> Inorganic Cations in Municipal Wastewater <a href="#">TN 74093:</a> Amines in Pharmaceuticals <a href="#">AP 002384:</a> Ammonia in Sodium Bicarbonate
<a href="#">Dionex IonPac CS12A</a>	046073 - 4 × 250 mm (2800 µeq) 046075 - 2 × 250 mm (700 µeq) 079914 - 0.4 × 250 mm (28 µeq) 059960 - 2 × 100 mm (280 µeq) 046074 - 4 × 50 mm (560 µeq) 046076 - 2 × 50 mm (140 µeq) 072067 - 0.4 × 50 mm (5.6 µeq)	Separation of mono- and divalent cations especially manganese. For high- to low-concentration ratios of adjacent eluting cations use Dionex IonPac CS16 column. Capillary format offers reduced eluent consumption and operating costs.	USP Designation: L106. Common cations and ammonium in drinking water, process waters and industrial samples. Trace cations in various matrices.	<a href="#">AB 117:</a> Cations in Fruit Juices <a href="#">AB 133:</a> Anions and Cations in Drinking Water <a href="#">AB 136:</a> Inorganic Counter ions in Pharmaceutical Drugs <a href="#">AN 106:</a> IC in the Pharmaceutical Industry <a href="#">AN 107:</a> Ions in Physiological Fluids <a href="#">AN 120:</a> Calcium and Magnesium in Brine <a href="#">AN 124:</a> Choline in Dry Milk and Infant Formula <a href="#">AN 203:</a> Cations in Biodiesel <a href="#">AN 222:</a> Trace Strontium by Pre-Concentration <a href="#">AN 1003:</a> Trace Sodium in Cranberry Powder <a href="#">AN 1053:</a> Dissolved Manganese in Lithium/Manganese Oxide Battery Electrolyte <a href="#">AN 2967:</a> Fast Separation of Pharmaceutical Ions Using High Pressure Capillary IC <a href="#">AU 137:</a> Trace Lithium in Process Waters <a href="#">AU 158:</a> Manganese in Brine
<a href="#">Dionex IonPac CS12A-5µm</a>	057185 - 3 × 150 mm (940 µeq) 072068 - 0.4 × 150 mm (9.4 µeq) 057184 - 3 × 30 mm (190 µeq) 072069 - 0.4 × 35 mm (1.9 µeq)	High efficiency and fast analysis (9 minutes) of mono- and divalent cations. Super fast analysis (<5 min.) Reduced analysis time and eluent use, increased sensitivity. Capillary format offers reduced eluent consumption and operating costs.	Fast analysis of inorganic cations and ammonium in various matrices.	<a href="#">AB 72403:</a> Inorganic Cations and Low Mass Amines in Spoiled Grape Juice by IC-MS <a href="#">AB 72404:</a> Inorganic Cations and Low Mass Amines in Spoiled Cranberry Juice by IC-MS <a href="#">AB 72405:</a> Inorganic Cations and Low Mass Amines in Tea Using IC-MS <a href="#">AB 72406:</a> Inorganic Cations in Groundwater Using IC-MS <a href="#">AN 260:</a> Monitoring Anions and Cations During Desalination <a href="#">AN 269:</a> Trace Cations and Amines by IC-MS <a href="#">AN 1072:</a> IC Assay for Ammonia in Adenosine <a href="#">TN 117:</a> Inorganic Cations in Wastewater <a href="#">TN 130:</a> Fast Analysis of Salton Sea Samples <a href="#">TN 73982:</a> Techniques for Successful Trace Cation Determinations in High Purity Waters
<a href="#">Dionex IonPac SCS 1</a>	079809 - 4 × 250 mm (318 µeq) 079808 - 2 × 250 mm (80 µeq) 079933 - 4 × 50 mm (63 µeq) 079810 - 2 × 50 mm (16 µeq)	Non-suppressed conductivity detection of common inorganic cations, ammonium, select alkanolamines, and transition metals.	USP Designation: L76. Common cations and ammonium in power generation, chemical, petrochemical, and environmental samples. Recommended when extended calibration linearity for ammonium or alkanolamines is required.	<a href="#">AN 157:</a> Comparison of Suppressed to Nonsuppressed Conductivity Detection <a href="#">AN 158:</a> Trace Sodium and Transition Metals in Power Industry Samples with Nonsuppressed Conductivity Detection <a href="#">AN 259:</a> N-Methylpyrrolidine in Cefepime with Nonsuppressed Conductivity Detection <a href="#">AN 286:</a> Trace Copper, Nickel, and Zinc in Boiling Water Reactors with Nonsuppressed Conductivity Detection

 High Capacity

 Moderate Capacity

 Low Capacity

 High Solvent Compatibility

 Moderate Solvent Compatibility

 Low Solvent Compatibility

## Dionex IonPac Specialty Columns

Column	Part Number - Format (Capacity µeq/col)	Recommendations	Target Applications	Application Notes
<a href="#">Dionex IonPac AmG-3µm C18</a>	302693 - 4 × 150 mm (n/a) 302694 - 4 × 30 mm (n/a)	Optimized for various aminoglycoside antibiotic analyses including drug purity characterization and quantification, therapeutic drug monitoring, and residual control testing.	Separation of Etimicin, Gentamicin, Spectinomycin, Netilmicin, and related impurities.	<a href="#">AN 72647</a> : Gentamicin and Related Impurities in Gentamicin Sulfate <a href="#">AU 72648</a> : Gentamicin and Related Impurities in Gentamicin Sulfate Using Simple Eluents <a href="#">AN 72792</a> : Etimicin and Related Impurities in Etimicin Sulfate <a href="#">AN 72880</a> : Spectinomycin and Related Impurities in Spectinomycin Dihydrochloride
<a href="#">Dionex IonPac AS7</a>	035393 - 4 × 250 mm (100 µeq) 063097 - 2 × 250 mm (25 µeq) 035394 - 4 × 50 mm (25 µeq) 063099 - 2 × 50 mm (6.25 µeq)	Separation of polyvalent anions in complex matrices.	USP Designation: L48. Hexavalent chromium in environmental matrices.	<a href="#">AB 107</a> : Cr(VI) in Dyes <a href="#">AN 44407</a> : Chromium Species Using IC-ICP-MS <a href="#">AN 80</a> : Hex Chrome in Water <a href="#">AN 268</a> : Chelating Agents in Water <a href="#">AN 289</a> : USP Risedronate Sodium Assay <a href="#">AN 43175</a> : Chromium in Toys by IC-ICP-MS <a href="#">AU 107</a> : Cyanide in Alkaline Solutions <a href="#">AU 144</a> : Hex Chrome in Water <a href="#">AU 179</a> : Hex Chrome in Drinking Water <a href="#">TN 26</a> : Cr(VI) in Wastewater <a href="#">TN 43357</a> : Arsenic Speciation in Human Urine by IC-ICP-MS <a href="#">AN 43255</a> : Inorganic Arsenic in Rice Using IC-ICP-MS <a href="#">AN 000779</a> : Cyanide in Alkaline Solutions
<a href="#">Dionex IonPac CS5A</a>	046100 - 4 × 250 mm (40 µeq, anions) (20 µeq, cations) 052576 - 2 × 250 mm (10 µeq, anions) (5 µeq, cations) 046104 - 4 × 50 mm (8 µeq, anions) (4 µeq, cations) 052836 - 2 × 50 mm (2 µeq, anions) (1 µeq, cations)	Recommended for the separation of transition and lanthanide metals. Also useful for aluminum separation.	USP Designation: L100. Transition and lanthanide metals in power industry waters.	<a href="#">AN 72680</a> : Zinc Oxide in Sunscreen <a href="#">AN 108</a> : Transition Metals in Serum and Whole Blood <a href="#">AN 131</a> : Transition Metals in High Purity Water <a href="#">AN 277</a> : Transition Metals in Power Plant Waters <a href="#">AN 1079</a> : Trivalent and Hexavalent Chromium Using ASE and IC <a href="#">AN 73340</a> : Cupric Chloride Assay <a href="#">AN 43130</a> : Mercury in Herbal Medicines by IC-ICP-MS <a href="#">AU 165</a> : Cr(III) and Cr(VI) by IC <a href="#">AU 168</a> : Transition Metals in Complex Matrices <a href="#">TN 10</a> : Transition Metals by IC <a href="#">TN 27</a> : Lanthanides in Rocks by Chelation IC

High Capacity
  Moderate Capacity
  Low Capacity
  High Solvent Compatibility
  Moderate Solvent Compatibility
  Low Solvent Compatibility

Find out more at [thermofisher.com/ICColumns](https://thermofisher.com/ICColumns)

**ThermoFisher**  
SCIENTIFIC

**General Laboratory Equipment – Not For Diagnostic Procedures.** © 2018-2024 Thermo Fisher Scientific Inc. All rights reserved. All trademarks are the property of Thermo Fisher Scientific and its subsidiaries. This information is presented as an example of the capabilities of Thermo Fisher Scientific products. It is not intended to encourage use of these products in any manners that might infringe the intellectual property rights of others. Specifications, terms and pricing are subject to change. Not all products are available in all locations. Please consult your local sales representatives for details. **ST70588-EN 0224S**