

Alltech Ion Chromatography

See
what's **new**



New! Novosep™ A-2 Anion Columns

in **IC**



New! Amine & Organic Acid Standards



New! Suppressors and Detection Systems

Easily add **IC capability** to your **HPLC**

Alltech

Brochure #484

Introduction to Ion Chromatography

Table of Contents

Columns

Anion Columns	4-7
Cation Columns	7-8
Organic Acid Columns	9-10
Specialty Columns	10-11

Accessories

Guard Cartridges	12
Starter Kits	13
Reagents & Standards	14-15
Other Accessories	16-20

Instruments

Pumps	22-23
Degassing Systems	24
Autosampler	25
Conductivity Detector and Column Heater	26
UV Detectors	27
Suppressors	28-30
Detection Systems	31

Anion Exchange Columns

Cation Exchange Columns

Organic Acid Columns

Specialty Columns

Tips for IC Column Selection

Particle Size

For common anion and cation separations, smaller particle size resins will result in better peak shapes and higher resolution than larger particle size resins. Larger particle sizes may offer better flow rates for some sample types.



Polymer vs. Silica

Polymer-based columns have higher capacities and broader pH stability. Silica-based columns give sharper peaks and overall better efficiency, but have a limited pH range and are not compatible with suppressor-based methods.

Suppressed vs. Non-Suppressed Detection

Most anion separations require suppression, while most cation separations do not. Consider whether a column has been optimized for suppressor-based detection, or is better suited to non-suppressed (single column) detection.

Column Length:

For the same packing material, shorter columns provide faster run times, while longer columns provide better resolution. Always pick the packing that has the best selectivity for your sample, and then pick the column length based on the tradeoff between resolution and speed, taking into consideration the complexity of your sample and your desired run time.

Column ID:

Narrower columns provide better mass sensitivity, accommodate smaller sample sizes, and significantly reduce solvent usage. Wider columns allow for larger sample sizes and minimize the negative effects of the system's dead volume.

IC Column Selection Guide

IC Column Specifications						
COLUMN	COMPOSITION	pH RANGE	APPLICATIONS	EPA METHODS	OPTIMIZED FOR SUPPRESSED OR NON-SUPPRESSED CONDUCTIVITY	PAGE
Allsep™	polymer-based anion exchanger, 7µm	pH 2-10	inorganic anions, weak and strong acid ions, metal complexes, organic acids	300.0, Part A	both	4
Allsep™ A-2	polymer-based anion exchanger, 7µm	pH 2-11	inorganic anions, organic acids, suitable for both weak and strong anions in a single run	300.0, Part A	both	4
Novosep™ A-1	polymer-based anion exchanger, 7µm	pH 2-11	inorganic anions, weak and strong acid anions; ideal for separation of hydrophobic anions	314.0	suppressed	5
Novosep™ A-2	polymer-based anion exchanger, 5µm	pH 3-12	inorganic anions and oxyhalides; ideal for separation of 7 common anions plus 3 oxyhalide anions in one run	300.0, 300.1, 317.0, 326.0	suppressed	5
Anion/S	silica-based anion exchanger, 10µm	pH 2-5.5	inorganic anions		non-suppressed	6
Anion/R	polymer-based anion exchanger, 10µm	pH 2-12	inorganic anions, weak and strong acid ions		non-suppressed	6
PRP®-X100	polymer-based anion exchanger, 10µm	pH 1-13	inorganic anions, weak and strong acid ions		non-suppressed	7
AN1™	polymer-based anion exchanger, 9µm	pH 2-13	inorganic anions, weak and strong acid ions, organic acids		both	7
PRP®-X200	polymer-based cation exchanger, 10µm	pH 1-13	groups I and II cations (separate runs), amines, lanthanides		non-suppressed	7
Universal Cation	silica-based cation exchanger, 7µm	pH 2-7	groups I and II cations, amines, divalent transition metals	300.7	both	8
Universal Cation HR	silica-based cation exchanger, 3µm	pH 2-7	groups I and II cations, amines, divalent transition metals; smaller particle size for improved peak resolution	300.7	both	8
Prevail™ Organic Acid	silica-based reversed phase, 3µm and 5µm	pH 1-9	organic acids		N/A	9
Organic Acid	polymer-based cation exchanger, 6.5µm, 8µm, and 9µm	pH 1-14	organic acids, aromatic acids, sugars/organic acids/alcohols in one run; multiple particle sizes available		non-suppressed	9
Anion Exclusion	polymer-based cation exchanger, 10µm	pH 1-13	organic acids, weak acid anions		non-suppressed	10
Transition Metal	silica-based reversed phase, 3µm and 7µm	pH 2-7	high capacity, separates divalent transition metals and metal-cyano complexes more selectively than a cation exchange column		non-suppressed	10
Surfactant/R	polymer-based reversed phase, 7µm	pH 1-14	anionic and cationic surfactants; separate short and long chain surfactants in one gradient run		both	11
Surfactant C8	silica-based reversed phase, 5µm	pH 2-7	short chain anionic surfactants		non-suppressed	11
Surfactant C18	silica-based reversed phase, 5µm	pH 2-7	long chain or aromatic anionic surfactants		non-suppressed	11

Anion Columns

Economical, general purpose anion columns

Allsep™ Anion IC Columns

- Resolve fluoride away from the water dip
- Meet requirements for U.S. EPA Method 300.0 part A

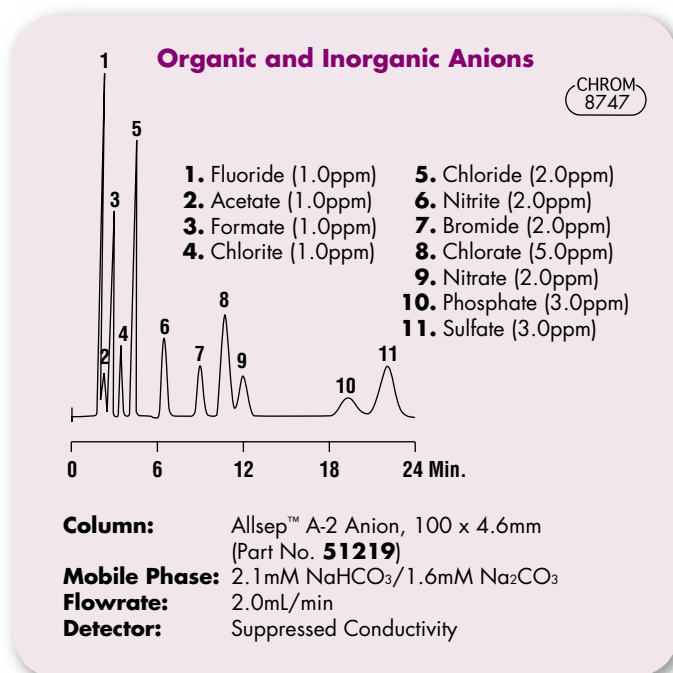
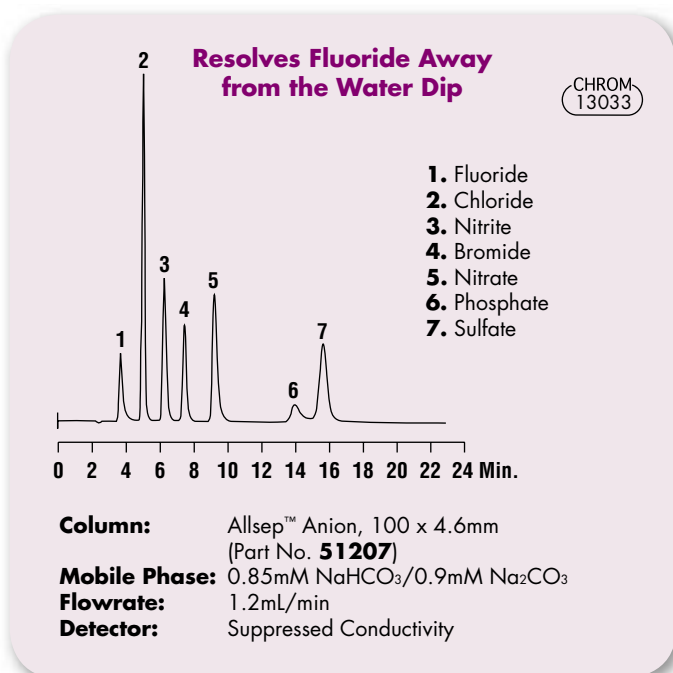
The Allsep™ Anion Column is compatible with common IC mobile phases: carbonate, bicarbonate, p-hydroxybenzoic acid, phthalic acid, succinic acid, and sodium octane sulfonate.

Use this column for performing EPA Method 300.0 Part A "Determination of Inorganic Anions in Water" per U.S. EPA guidelines.

Allsep™ A-2 Anion IC Columns

- Separate both weak and strong acid anions in one run
- Resolve formate away from fluoride and chloride

The Allsep™ A-2 Anion Column separates both weakly retained organic and strongly retained inorganic anions in one run. The high capacity Allsep™ A-2 Anion Column is also suitable for the separation of chlorite and chlorate.



Allsep™ Anion Specifications

Composition: Methacrylate based w/quaternary ammonium functional groups
Particle Size: 7µm
Mobile Phase Limits: pH 2-10, 0-100% organic modifier

Allsep™ A-2 Anion Specifications

Composition: Methacrylate based w/quaternary alkanol amine functional groups
Particle Size: 7µm
Mobile Phase Limits: pH 2-11, 0-100% organic modifier

Allsep™ Anion Columns

PACKING	PARTICLE SIZE	LENGTH x ID	PEEK PART NO.	SS PART NO.
Allsep™ Anion	7µm	30 x 4.6mm	51217	51216
		50 x 4.6mm	51213	51214
		100 x 4.6mm	51207	51200
		150 x 4.6mm	51209	51208

Allsep™ A-2 Anion Columns

PACKING	PARTICLE SIZE	LENGTH x ID	PEEK PART NO.	SS PART NO.
Allsep™ A-2	7µm	50 x 4.6mm	51221	51220
		100 x 4.6mm	51219	51218

To protect your columns from contamination, select a guard column from page 12.

Allsep™ Anion is available in a starter kit, including buffers, standards, and guards. See page 13.

Anion Columns

For demanding suppressor-based analyses

Novosep™ A-1 Anion IC Columns

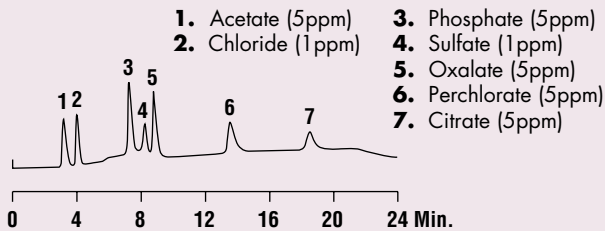
- Separate common anions and strongly retained hydrophobic anions
- Meet the requirements of U.S. EPA Method 314.0

The Novosep™ A-1 Column is your best choice for routine anion analysis and for determining other strongly retained hydrophobic anions that previously required specialty columns.

The Novosep™ A-1 Column can simultaneously separate weakly and strongly retained anions by gradient elution. Carbonate/bicarbonate gradients offer a powerful tool for separating anions that have a wide range of affinities for the column.

Weakly and Strongly Retained Anions

CHROM
9299



Column: Alltech Novosep™ A-1, 100 x 4.6mm (Part No. **51406**)
Mobile Phase: **A:** Water **B:** 10mM Sodium Bicarbonate **C:** 10mM Sodium Carbonate with 1mM Cyanophenol
Gradient:

Time:	0	5	10	15	20	20.1
%B:	17	28	50	0	0	17
%C:	0	22	50	100	100	0

Flowrate: 1.5mL/min
Detector: Suppressed Conductivity

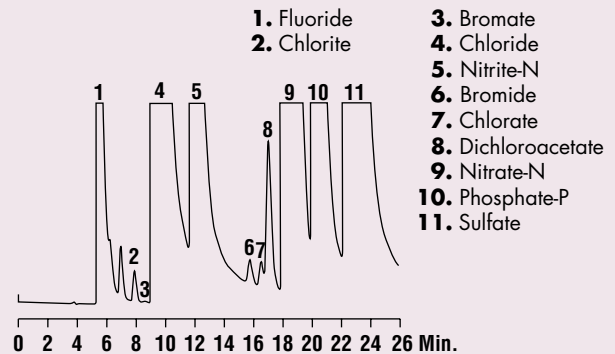
Novosep™ A-2 Anion IC Columns

- Separate seven inorganic anions and three oxyhalide anions in a single run
- Meet the requirements of U.S. EPA Methods 300.0, 300.1, 317.0, and 326.0

The Novosep™ A-2 Anion Column is ideal for the separation of 10 inorganic anions by suppressor-based ion chromatography using U.S. EPA Method 300.1. The column can also be used to determine inorganic anions in drinking water per U.S. EPA Method 300.0 and trace bromate in drinking water using U.S. EPA Methods 317.0 and 326.0.

Anions in High Ionic Strength Water by EPA Method 300.0

CHROM
10121



Column: Novosep™ A-2 Anion, 250 x 4.0mm (Part No. **51410**)
Mobile Phase: 3.6mM NaHCO₃
Flowrate: 0.8mL/min
Detector: Suppressed Conductivity

Novosep™ A-1 Anion Specifications

Composition: Methacrylate based w/quaternary ammonium functional groups
Particle Size: 7µm
Mobile Phase Limits: pH 2-11, 0-100% organic modifier (methanol, acetonitrile, acetone)

Novosep™ A-2 Anion Specifications

Composition: Polyvinyl alcohol based w/quaternary ammonium functional groups
Particle Size: 5µm
Mobile Phase Limits: pH 3-12, 0-100% organic modifier, 10% modifier is practical upper limit

Novosep™ A-1 Anion Columns

PACKING	PARTICLE SIZE	LENGTH x ID	PEEK PART NO.	SS PART NO.
Novosep™ A-1	7µm	30 x 4.6mm	51401	51402
		50 x 4.6mm	51403	51404
		100 x 4.6mm	51405	51406
		150 x 4.6mm	51407	51408

Novosep™ A-2 Anion Columns

PACKING	PARTICLE SIZE	LENGTH x ID	PEEK PART NO.
Novosep™ A-2	5µm	250 x 4.0mm	51410

To protect your columns from contamination, select a guard column from page 12.

Novosep™ Columns are available in starter kits, including buffers, standards, and guards. See page 13.

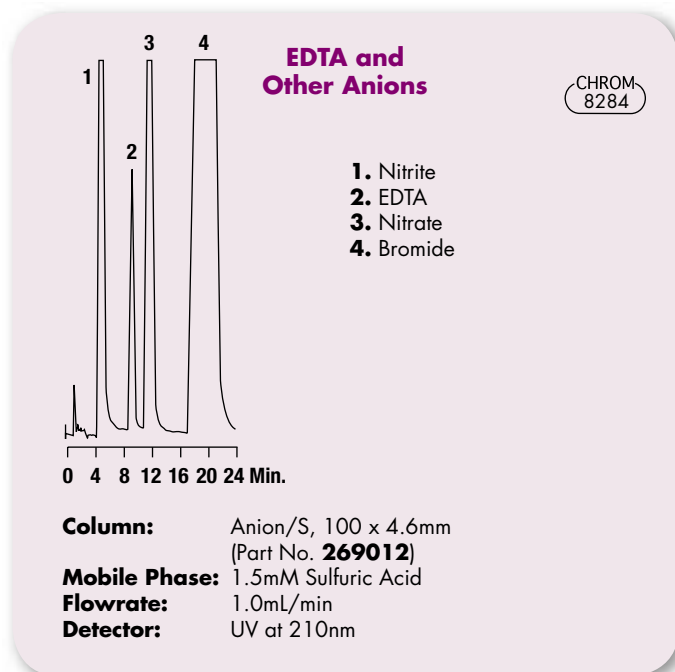
Anion Columns

Economical anion columns for non-suppressed analyses

Anion/S IC Columns

- Silica-based for symmetrical peak shapes
- Separate inorganic and organic anions

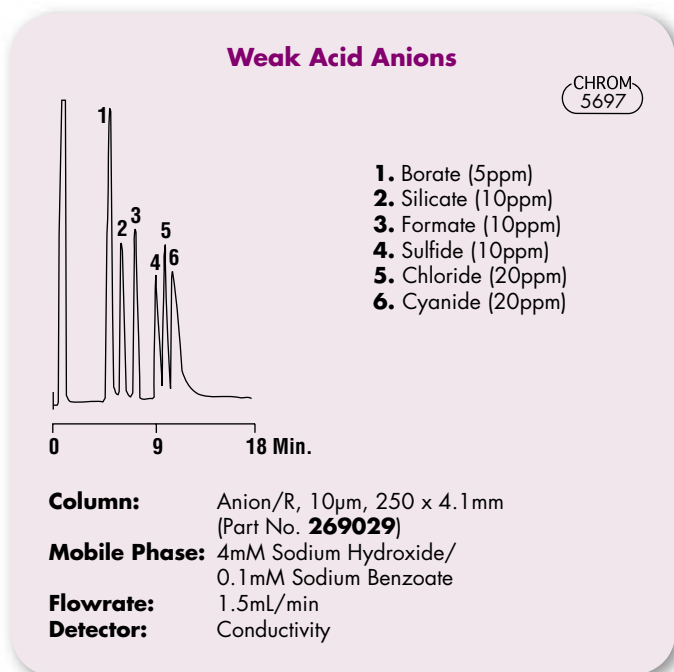
The Anion/S Columns are best suited for routine separations of chloride, bromide, nitrate, and sulfate. Not suitable for fluoride analysis.



Anion/R IC Columns

- Polymer-based for broad pH stability
- Separate seven common inorganic anions

Because of its high pH stability, this column is ideal for the separation of anions using high pH mobile phases such as p-hydroxybenzoate, sodium hydroxide, and sodium carbonate/bicarbonate. The larger dimension columns (150mm and 250mm) are suitable for a high resolution separation of the seven common inorganic anions.



Anion/S Specifications

Composition: Silica w/quaternary ammonium ion exchanger
Particle Size: 10 μ m
Exchange Capacity: 0.25meq/g
Mobile Phase Limits: pH 2-5.5, 0-100% organic modifier

Anion/R Specifications

Composition: Poly(styrene-divinylbenzene) Trimethylammonium
Particle Size: 10 μ m
Exchange Capacity: 0.19 \pm 0.02meq/g
Mobile Phase Limits: pH 2-12, 0 - 100% organic modifier

Anion/S Columns

PACKING	PARTICLE SIZE	LENGTH X ID	PEEK PART NO.	SS PART NO.
Anion/S	10 μ m	100 x 4.6mm	-	269013
		250 x 4.6mm	-	269001
	100 x 4.6mm	269012	-	
	250 x 4.6mm	269011	-	

Anion/R Columns

PACKING	PARTICLE SIZE	LENGTH X ID	PEEK PART NO.	SS PART NO.
Anion/R	10 μ m	100 x 4.1mm	-	269031
		250 x 4.1mm	-	269029
	100 x 4.6mm	269036	-	
	150 x 4.6mm	269034	-	

To protect your columns from contamination, select a guard column from page 12.

Anion and Cation Columns

Additional IC columns from Sarasep and Hamilton

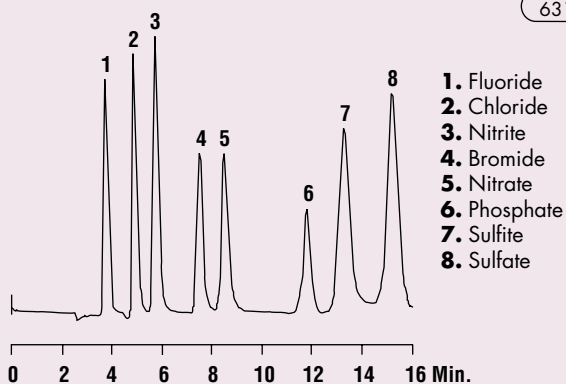
Sarasep AN1™ IC Columns

- Separates anions with carbonate/bicarbonate and hydroxide mobile phases

The Sarasep AN1™ Column is compatible with both suppressor-based and non-suppressed detection. A variety of mobile phases including sodium carbonate/bicarbonate, sodium hydroxide, and borate/gluconate may be used.

Separation of Sulfite and Sulfate

CHROM
6316



1. Fluoride
2. Chloride
3. Nitrite
4. Bromide
5. Nitrate
6. Phosphate
7. Sulfite
8. Sulfate

Column: Sarasep AN1™, 9µm, 250 x 4.6mm (Part No. **38140**)
Mobile Phase: 1.8mM NaHCO₃, 1.8mM Na₂CO₃
Flowrate: 1.0mL/min
Detector: Suppressed Conductivity

Sarasep AN1™ Specifications

Composition: Poly(styrene-divinylbenzene) alkyl dimethyl ethanol ammonium functional group
Particle Size: 9µm
Exchange Capacity: 0.05meq/g
Mobile Phase Limits: pH 2-13, No organic solvents

Sarasep AN1™ Columns

PACKING	PARTICLE SIZE	LENGTH X ID	PEEK PART No.
AN1™	9µm	250 x 4.6mm	38140

Hamilton IC Columns

PRP®-X100 Inorganic Anion Analysis Columns

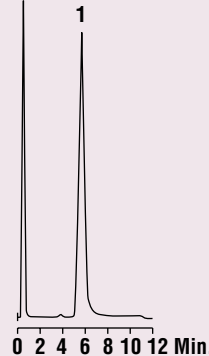
High pH stability makes this column ideal for the separation of weak anions. PRP®-X100 provides excellent resolution for the seven most frequently analyzed inorganic anions. For non-suppressed analyses only.

PRP®-X200 Cation Analysis Columns

For high resolution separations of the alkali metal and alkaline earth cations, in separate runs.

EDTA in Eye Drops

CHROM
8068



1. CuEDTA

Column: PRP®-X100, 10µm, 150 x 4.1mm (Part No. **79434**)
Mobile Phase: 0.003N Sulfuric Acid
Flowrate: 2mL/min
Detector: UV at 254nm

Hamilton PRP® Specifications

Composition: X100: trimethylammonium psDVB copolymer
X200: sulfonated psDVB copolymer
Particle Size: 10µm, spherical
Exchange Capacity: 0.19meq/g (X100), 35µmeq/g (X200)
Mobile Phase Limits: pH 1-13, 0 - 100% organic modifier

Hamilton PRP® Columns

PACKING	PARTICLE SIZE	LENGTH X ID	PEEK PART No.
PRP® X-100	10µm	150 x 2.1mm	79348
	10µm	250 x 2.1mm	79346
	10µm	100 x 4.1mm	79439
	10µm	150 x 4.1mm	79434
	10µm	250 x 4.1mm	79433
PRP® X-200	10µm	150 x 2.1mm	79394
	10µm	250 x 2.1mm	79347
	10µm	150 x 4.1mm	79441
	10µm	250 x 4.1mm	79442

To protect your columns from contamination, select a guard column from page 12.

Cation Columns

High-performance cation columns for suppressed or non-suppressed analyses

Universal Cation and Universal Cation HR IC Columns

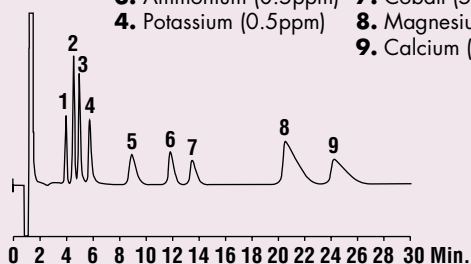
- Separate Group I and Group II cations in one isocratic run
- Separate transition metals without post-column reaction
- New Universal Cation HR 3µm particle size for improved efficiency

Compatible with a variety of mobile phases including complexing acids (citric acid, tartaric acid, oxalic acid), mineral acids (nitric acid, hydrochloric acid, sulfuric acid) and non-complexing organic acids (methanesulfonic acid).

Metal Ions

CHROM
10318

- | | |
|-----------------------|------------------------|
| 1. Lithium (0.5ppm) | 5. Nickel (5ppm) |
| 2. Sodium (0.5ppm) | 6. Zinc (5ppm) |
| 3. Ammonium (0.5ppm) | 7. Cobalt (5ppm) |
| 4. Potassium (0.5ppm) | 8. Magnesium (0.35ppm) |
| | 9. Calcium (0.7ppm) |

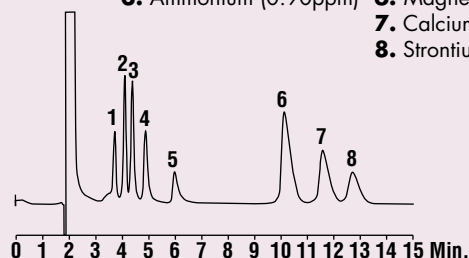


Column: Universal Cation, 7µm, 100 x 4.6mm (Part No. **27106**)
Mobile Phase: 2mM Tartaric Acid/1mM Oxalic Acid
Flowrate: 1.0mL/min
Detector: Conductivity

Cesium and Strontium

CHROM
13035

- | | |
|-----------------------|-----------------------|
| 1. Lithium (0.12ppm) | 4. Potassium (1.5ppm) |
| 2. Sodium (0.90ppm) | 5. Cesium (0.8ppm) |
| 3. Ammonium (0.90ppm) | 6. Magnesium (1.2ppm) |
| | 7. Calcium (1.2ppm) |
| | 8. Strontium (1.6ppm) |

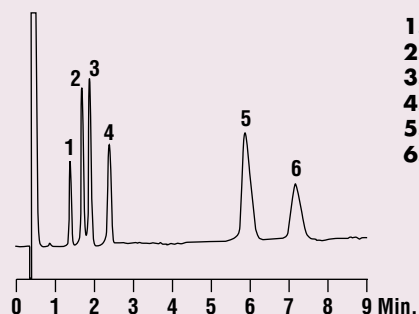


Column: Universal Cation, 7µm, 100 x 4.6mm (Part No. **27106**)
Mobile Phase: 3mM Methanesulfonic Acid
Flowrate: 1.0mL/min
Detector: Conductivity

Rapid Analysis of Monovalent and Divalent Cations

CHROM
13013

- | |
|--------------|
| 1. Lithium |
| 2. Sodium |
| 3. Ammonium |
| 4. Potassium |
| 5. Magnesium |
| 6. Calcium |



Column: Universal Cation HR, 3µm, 53 x 7.0mm (Part No. **23109**)
Mobile Phase: 3mM Methanesulfonic Acid
Flowrate: 2.5mL/min
Detector: Conductivity

Universal Cation Specifications

Composition: Silica coated with polybutadiene/maleic acid copolymer
Particle Size: 3µm and 7µm, spherical
Mobile Phase Limits: pH 2-7, 0-100% organic modifier

Universal Cation Columns

PACKING	PARTICLE		PEEK		SS
	SIZE	LENGTH x ID	PART NO.	PART NO.	PART NO.
Universal Cation	7µm	100 x 4.6mm	27106	27100	
Universal Cation HR	3µm	100 x 4.6mm	-	23100	
	3µm	53 x 7.0mm	-	23109	

To protect your columns from contamination, select a guard column from page 12.

Universal Cation is available in a starter kit, including buffers, standards, and guards. See page 13.

Organic Acid Columns

Durable columns for organic acid separations

Alltech Organic Acid Columns

- Analyze organic acids and alcohols in a single run
- Polymer-based for broad pH stability

OA: selective for aliphatic and aromatic acids

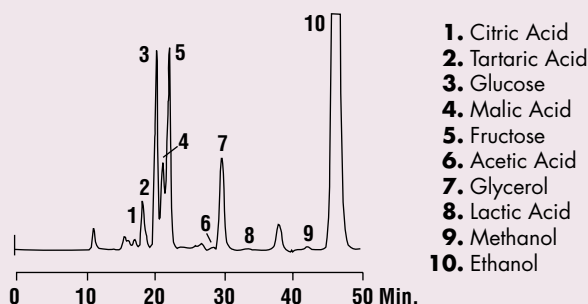
Use OA-1000 for inorganic anions and most organic acids. Use OA-2000 for low pKa organic acids, low molecular weight straight chain acids, and aromatic acids.

IOA: separate short chain organic acids from fructose and glucose

Use IOA-1000 for TCA or Krebs cycle acids, carbohydrates, and alcohols. Use IOA-2000 for fast separation of acids and some alcohols.

Wine Analysis by High Resolution Ion Exclusion

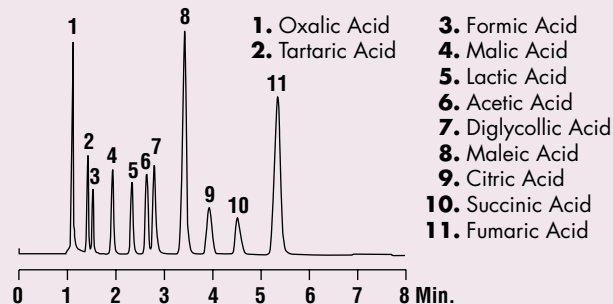
CHROM-5411



Column: IOA-1000, 300 x 7.8mm (Part No. **9646**)
Mobile Phase: 0.005N Sulfuric Acid
Flowrate: 0.3mL/min
Temp: 60°C
Detector: RI

Organic Acids

CHROM-9384



Column: Prevail™ Organic Acid, 5µm, 150 x 4.6mm (Part No. **88640**)
Mobile Phase: 25mM KH₂PO₄, pH2.5
Flowrate: 1.5mL/min
Detector: UV at 210nm

Alltech Organic Acid Specifications

Composition: Highly sulfonated poly (styrene-divinylbenzene) cation exchanger
Particle Size: 6.5µm, 8µm, and 9µm
Mobile Phase Limits: pH 1-14, isocratic aqueous mobile phases only; no organics

Prevail™ Organic Acid Specifications

Composition: Silica base, with specially modified reversed phase functional groups
Particle Size: 3µm and 5µm
Mobile Phase Limits: pH 1-9, 0-100% organic modifier

Alltech Organic Acid Columns

PACKING	PARTICLE SIZE	LENGTH x ID	SS PART No.
OA-1000	9µm	300 x 6.5mm	9046
OA-2000	6.5µm	100 x 6.5mm	9048
IOA-1000	9µm	300 x 7.8mm	9646
IOA-2000	8µm	150 x 6.5mm	9648

Prevail™ Organic Acid Columns

PACKING	PARTICLE SIZE	LENGTH x ID	SS PART No.
Prevail OA	3µm	100 x 4.6mm	88650
	3µm	150 x 4.6mm	88655
	5µm	150 x 4.6mm	88640
	5µm	250 x 4.6mm	88645

Alltech Organic Acid Guard Columns

DESCRIPTION	QTY	PART No.
Organic Acid Guard Cartridge Kit Includes: 1 Holder, 2 Cartridges	Ea	28883
OA Cartridge, 24 x 4.0mm	2	28884

Prevail™ Organic Acid Guard Columns

DESCRIPTION	QTY	PART No.
Prevail™ OA All-Guard™ Cartridge, PEEK	3	96429
All-Guard™ Cartridge Holder*	Ea	80101

*Includes Direct-Connect™ Column Coupler.

Specialty Columns

Unique columns for organic acids and transition metals

Anion Exclusion IC Columns

- Separate organic acids and weak acid anions
- Polymer-based for broad pH stability
- Economical choice for small inorganics

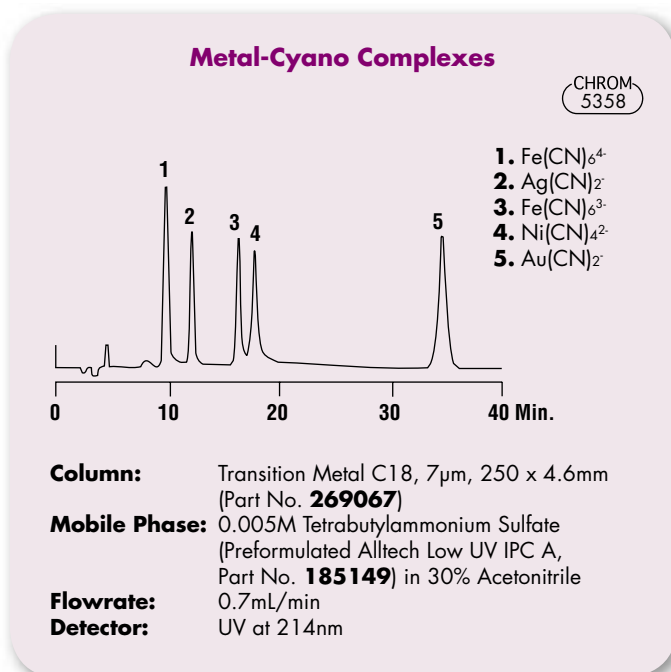
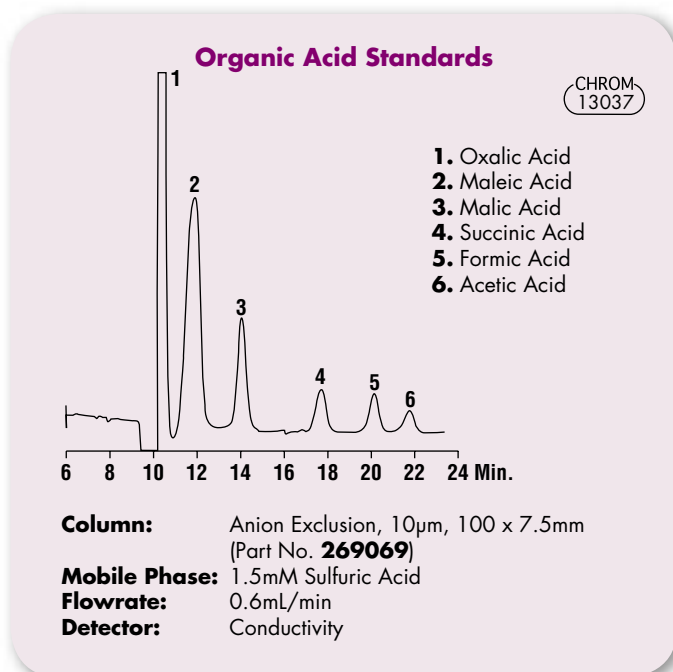
Anion Exclusion Columns separate organic acids and weakly ionized anions by an anion exclusion mechanism. Dilute mineral acids are the typical mobile phases for the separation. Acetonitrile may be used as an organic modifier to decrease the retention of hydrophobic compounds.

Transition Metal IC Columns

- Separate divalent transition metals and metal-cyano complexes more selectively than a cation exchange column

To separate divalent transition metals, use conductivity detection for concentrations as low as 1ppm, or UV detection with post-column reaction for ppb-level concentrations

To separate metal-cyano complexes, use Alltech's low UV IPC A (Part No. **185149**) as the ion-pair reagent, and methanol or acetonitrile as the organic modifier.



Anion Exclusion Specifications

Composition: Highly sulfonated poly(styrene-divinylbenzene) cation exchanger
Particle Size: 10µm
Mobile Phase Limits: <10% acetonitrile, no methanol <5% isopropyl or ethyl alcohols

Transition Metal Specifications

Composition: Silica-based with C18 bonded phase (20% Carbon)
Particle Size: 3µm and 7µm, spherical
Mobile Phase Limits: pH 2-7

Anion Exclusion Columns

PACKING	PARTICLE		PEEK	SS
	SIZE	LENGTH X ID	PART NO.	PART NO.
Anion Exclusion	10µm	100 x 7.8mm	-	269068
		300 x 7.8mm	-	269006
		100 x 7.5mm	269069	-
		300 x 7.5mm	269062	-

Transition Metal Columns

PACKING	PARTICLE		PEEK	SS
	SIZE	LENGTH X ID	PART NO.	PART NO.
C18	3µm	100 x 4.6mm	269064	-
		7µm	269067	-

To protect your columns from contamination, select a guard column from page 12.

Surfactant Columns

A choice of columns for surfactant analyses

Surfactant/R IC Columns

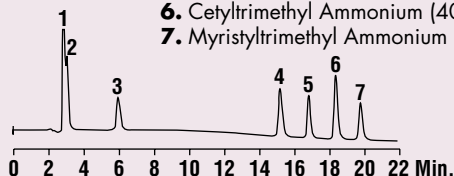
- Separate anionic and cationic surfactants
- Separate short and long chain surfactants in one gradient run

The Surfactant/R Column separates anionic and cationic surfactants by ion-pair chromatography along with suppressed conductivity detection. This column can also be used for other reversed-phase applications.

Short and Long Chain Cationic Surfactants

CHROM-10317

1. Tetramethyl Ammonium (20ppm)
2. Tetraethyl Ammonium (20ppm)
3. Tetrapropyl Ammonium (20ppm)
4. Tetrabutyl Ammonium (30ppm)
5. Dodecyltrimethyl Ammonium (30ppm)
6. Cetyltrimethyl Ammonium (40ppm)
7. Myristyltrimethyl Ammonium (50ppm)



Column: Surfactant/R Column, 7µm, 150 x 4.6mm (Part No. **25101**)

Mobile Phase: **A:** 2mM Nonafluoropentanoic Acid
B: 100% Acetonitrile

Gradient: **Time:** | 0 | 5 | 8 | 20 |
%B: | 30 | 30 | 35 | 80 |

Flowrate: 1.0mL/min

Detector: Suppressed Conductivity

Surfactant IC Columns

- For non-suppressed analyses
- Silica-based for symmetrical peak shapes

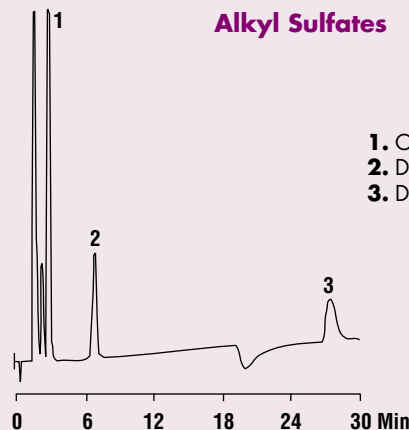
Choose Surfactant C8 for short chain anionic surfactants such as alkyl sulfates and alkyl sulfonates

Choose Surfactant C18 for long chain or aromatic surfactants such as xylene sulfonate and dodecyl benzene sulfonate.

Alkyl Sulfates

CHROM-5998

1. Octyl Sulfate
2. Decyl Sulfate
3. Dodecyl Sulfate



Column: Surfactant C8, 5µm, 250 x 4.6mm (Part No. **269072**)

Mobile Phase: 0.02g/L Ammonium Acetate in 40% Methanol

Flowrate: 1.2mL/min

Detector: Conductivity

Surfactant/R Specifications

Composition: Polydivinylbenzene (DVB) based resin

Particle Size: 7µm

Mobile phase Limits: pH 1-14, 0-100% organic modifier

Surfactant Specifications

Composition: Silica-based C8 or C18

Particle Size: 5µm

Mobile Phase Limits: pH 2-7, 0-100% organic modifier

Surfactant/R Columns

PACKING	PARTICLE		PEEK	SS
	SIZE	LENGTH x ID	PART NO.	PART NO.
Surfactant/R	7µm	150 x 4.6mm	25101	25100

Surfactant Columns

PACKING	PARTICLE		PEEK	SS
	SIZE	LENGTH x ID	PART NO.	PART NO.
C8	5µm	250 x 4.6mm	269072	269092
C18	5µm	250 x 4.6mm	269071	269091

To protect your columns from contamination, select a guard column from page 12.

Alltech Guard Cartridges

Extend the life of your IC columns



Inert, metal-free PEEK fluid path

IC Guard Cartridges

- Convenient - change cartridges in seconds without tools
- No connecting tubing required
- All-Guard™ Holders work with other manufacturer's columns

Protect your IC columns from contaminants with All-Guard™ Cartridges. The All-Guard™ System's unique holder is open on the side for fast and easy installation of cartridges.

Save money with IC Guard Cartridge Starter Kits, including an All-Guard™ Holder and three guard cartridges. Connect the All-Guard™ Holder directly to your analytical column using Alltech's patented Direct-Connect™ Column Coupler, included with each holder.

Starter Kits

DESCRIPTION	QTY	PART NO.
All-Guard™ Kits (Includes 3 PEEK Cartridges, 1 Holder, and 1 Direct-Connect™ Column Coupler)		
GA-1 Anion	Ea	38109
GC-1 Cation	Ea	38113
GC-2 Universal Cation	Ea	27109
GC-3 Universal Cation HR	Ea	23115
GIE-1 Anion Exclusion	Ea	38117
GRP-1 Resin Reversed-Phase	Ea	38122
GRP-2 Silica Reversed-Phase	Ea	38123

Guard Holder (Includes Direct-Connect™ Column Coupler)

All-Guard™ Cartridge Holder	Ea	80101
Replacement Column Coupler	Ea	28191

Guard Reference Table

COMPANY	COLUMN TYPE	CARTRIDGE TYPE	ALL-GUARD™ KIT PART No.
Alltech	Allsep™, Allsep™ A-2, Novosep™ A-1	GA-1	38109
	Novosep™ A-2	GA-1	38109
	Anion/R, Anion/S	GA-1	38109
	Universal Cation	GC-2	271010
	Universal Cation HR	GC-3	23110
	Anion Exclusion	GIE-1	38117
	Transition Metal C18	GRP-2	38123
	Surfactant/R	GRP-1	38122
	Surfactant C8, C18	GRP-2	38123
	Dionex	IonPac™ AS4, AS4A, AS4A-SC, AS7, AS9, AS10, AS11, AS12, AS14	GA-1
IonPac™ CS3, CS10, CS11		GC-1	38113
IonPac™ CS12, CS14, CS15		GC-2	27109
IonPac™ NS1		GRP-1	38122
IonPac™ AS1, AS5		GIE-1	38117
Waters™		IC-Pak™-A	GA-1
	IC-Pak™-M/D	GC-2	27109
	Ion Exclusion	GIE-1	38117
	µBondapak™ C18	GRP-2	38123
	Radial-Pak™ C18	GRP-2	38123
	Nova-Pak™ C18	GRP-2	38123
Hamilton	PRP®-X100	GA-1	38109
	PRP®-X200	GC-1	38113
	PRP®-X300	GIE-1	38117
	PRP®-1	GRP-1	38122
Misc.	Sarasep ANIONSEP AN1™	GA-1	38109
	Bio-Rad®, Aminex®, HPX-87	GIE-1	38117
	Interaction® ION-120	GA-1	38109
	Interaction® ION-210	GC-1	38113
	Interaction® ORH-801	GIE-1	38117
	Metrohm Metrosep	GA-1	38109
Metrohm SUPER SEP™	GC-2	27109	

Replacement Cartridges

DESCRIPTION	QTY	PART NO.
All-Guard™ Replacement Cartridges, PEEK		
GA-1 Anion	3	38108
GC-1 Cation	3	38114
GC-2 Universal Cation	3	271010
GC-3 Universal Cation HR	3	23110
GIE-1 Anion Exclusion	3	38118
GRP-1 Resin Reversed-Phase	3	38124
GRP-2 Silica Reversed-Phase	3	38129



For organic acid column guards, see page 9.



Alltech offers several IC kits to help you set up and maintain your IC system quickly and economically.

Non-suppressed IC Anion Kit

- For the analysis of anions by non-suppressed IC methods

Non-suppressed IC Anion Kit

DESCRIPTION	PART No.
Non-suppressed IC Anion Kit	270102

Includes:

- Part No. 51207: Allsep™ Anion Column, 100 x 4.6mm
- Part No. 38109: All-Guard™ GA-1 Guard Cartridge Kit
- Part No. 470212: 12 x 25mL EZ-LUTE™ 4mM pHBA Buffer Concentrates
- Part No. 37035: Anion Standards Kit

U.S. EPA Methods Anion Kit

- U.S. EPA Methods 300.0, 300.1, 317.0, and 326.0

U.S. EPA Methods Anion Kit

DESCRIPTION	PART No.
U.S. EPA Methods Anion Kit	270107

Includes:

- Part No. 51410: Novosep™ A-2 Anion Column, 250 x 4.0mm
- Part No. 38109: All-Guard™ GA-1 Guard Cartridge Kit
- Part No. 470123: 100mL EZ-LUTE™ 3.6mM Carbonate Buffer Concentrate
- Part No. 37085: Anion and Oxyhalide Standards Kit

Suppressor-based IC Anion Kit

- For the analysis of anions by suppressor-based IC methods

Suppressor-based IC Anion Kit

DESCRIPTION	PART No.
Suppressor-based IC Anion Kit	270106

Includes:

- Part No. 51407: Novosep™ A-1 Anion Column, 150 x 4.6mm
- Part No. 38109: All-Guard™ GA-1 Guard Cartridge Kit
- Part No. 470119: 100mL EZ-LUTE™ 1.7mM Bicarbonate/1.8mM Carbonate Buffer Concentrate
- Part No. 37035: Anion Standards Kit

Mono- and Divalent Cation Kit

- For the simultaneous analysis of monovalent and divalent cations using the Universal Cation Column

Mono- and Divalent Cation Kit

DESCRIPTION	PART No.
Mono- and Divalent Cation Kit	269105

Includes:

- Part No. 27106: Universal Cation PEEK Column, 100 x 4.6mm
- Part No. 27109: All-Guard™ GC-2 Guard Cartridge Kit
- Part No. 470211: 12 x 25mL EZ-LUTE™ 3mM Methanesulfonic Acid Buffer Concentrates
- Part No. 37040: Cation Standards Kit

IC Accessory Kit

- A must for new and experienced IC users

IC Accessory Kit

DESCRIPTION	PART No.
IC Accessory Kit	269101

Includes:

- Part No. 35712: 1/16" x 0.007" ID PEEK Tubing, 10ft
- Part No. 35702: 1/16" x 0.010" ID PEEK Tubing, 10ft
- Part No. 32233: One-Piece Fitting, 10/pkg
- Part No. 32141: PEEK 1/16" Union
- Part No. 90536: #22Ga Needle with CTFE Luer-Hub, 6/pkg
- Part No. 44701100: 1mL Plastic Syringe for Injection, 12/pkg
- Part No. 447018: 20mL Plastic Syringe for Priming Pump, 2/pkg
- Part No. 3206: Plastic Tubing Cutter
- Part No. 1998: Open-End Wrench
- Part No. 32170: Metal-Free Solvent-Inlet Filter
- Part No. 68250: Metal-Free In-Line Filter

To Purchase Kit Components Separately:

Guard Cartridges.....	page 12
Allsep™ Columns	page 4
Novosep™ Columns	page 5
Universal Cation Columns	page 8
Standards	page 14
EZ-LUTE™ Buffers	page 15

Certified IC Reagents and Standards

Certified IC standards improve the accuracy of your ion analyses



Certificate of analysis included

IC Reagents and Standards

- Prepared from NIST standard reference materials
- Certified by two independent methods

Individual Certified Anion and Cation Standards

Anion Standards (125mL)

STANDARD	1000PPM PART No.	200PPM PART No.
Bromate	37058	-
Bromide	37005	37006
Chlorate	37034	-
Chloride	37009	37010
Chlorite	37038	-
Chromate	37042	-
Fluoride	37011	37012
Iodide	37013	-
Nitrate	37019	37020
Nitrate-N	37234	-
Nitrite	37021	37022
Nitrite-N	37235	-
Perchlorate	37048	-
Phosphate	37023	37024
Phosphate-P	37236	-
Sulfate	37031	37032
Thiocyanate	37046	-

Cation Standards (125mL)

STANDARD	1000PPM PART No.	200PPM PART No.
Ammonium	37001	37002
Ammonium-N	37233	-
Calcium	37007	37008
Lithium	37015	37016
Magnesium	37017	37018
Potassium	37025	37026
Sodium	37029	37030

Individual Certified Organic Anion Standards

Organic Anion Standards (125mL)

DESCRIPTION	1000PPM PART No.
Acetate	37052
Citrate	37091
Formate	37050
Glycolate	37054
Lactate	37093
Malate	37095
Maleate	37099
Methanesulfonate	37221
Nitritotriacetate (NTA)	37228
Oxalate	37056
Propionate	37229
Succinate	37223
Tartrate	37224

Individual Certified Organic Acid Standards

Organic Acid Standards (125mL)

DESCRIPTION	1000PPM PART No.
Oxalic Acid	37033
Maleic Acid	37037
Malic Acid	37039
Succinic Acid	37043
Formic Acid	37045
Acetic Acid	37047
Citric Acid	37049
Tartaric Acid	37051
Lactic Acid	37053
Abietic Acid	37055
Methanesulfonic Acid	37057

Individual Certified Amine Standards

Amine Standards (125mL)

DESCRIPTION	1000PPM PART No.
Ethanolamine	37225
Diethanolamine	37226
Triethanolamine	37227
Monomethylamine	37230
Dimethylamine	37231
Trimethylamine	37232

Certified IC Reagents and Standards

Pre-formulated standards and buffers reduce prep time

Certified Multi-Standard Kits

- Cost-effective ways to purchase multiple single-ion standards

Multi-Standard Kits

DESCRIPTION	PART NO.
Anion Kits	
200ppm Kit: Contains 125mL ea of 200ppm Certified Cl, F, Br, NO ₃ , NO ₂ , PO ₄ , & SO ₄	37035
1000ppm Kit: Contains 125mL ea of 1000ppm Certified Cl, F, Br, NO ₃ , NO ₂ , PO ₄ , & SO ₄	37036
Anion and Oxalate Kit: (EPA 300.1Part B) Contains 125mL ea of 200ppm certified Cl, F, Br, NO ₃ , NO ₂ , PO ₄ , SO ₄ , ClO ₂ , ClO ₃ , BrO ₃	37085

Cation Kits

200ppm Kit: Contains 125mL ea of 200ppm Certified Li, Na, NH ₄ , K, Mg, & Ca	37040
1000ppm Kit: Contains 125mL ea of 1000ppm Certified Li, Na, NH ₄ , K, Mg, & Ca	37041

Certified Multi-Component Mixtures

- Multiple ions in a single mixture

Multi-Component Mixtures (125mL)

DESCRIPTION	PART NO.
Anion Mixtures	
Mix A: 125mL Mixture Contains: F(10ppm), Cl(20ppm), NO ₂ (20ppm), Br(20ppm), NO ₃ (20ppm), PO ₄ (30ppm), SO ₄ (30ppm)	26910200
Mix 1: 125mL Mixture Contains: F(1ppm), Cl(5ppm), NO ₂ (5ppm), Br(5ppm), NO ₃ (5ppm), PO ₄ (5ppm), SO ₄ (5ppm)	269106
Mix 2: 125mL Mixture Contains: F(1ppm), Cl(10ppm), NO ₂ (10ppm), Br(10ppm), NO ₃ (10ppm), PO ₄ (10ppm), SO ₄ (10ppm)	269107
Mix 3: 125mL Mixture Contains: F(10ppm), Cl(20ppm), NO ₂ (20ppm), Br(20ppm), NO ₃ (20ppm), PO ₄ (20ppm), SO ₄ (20ppm)	269108
Mix 4: 125mL Mixture Contains: F(20ppm), Cl(40ppm), NO ₂ (40ppm), Br(40ppm), NO ₃ (40ppm), PO ₄ (40ppm), SO ₄ (40ppm)	269109
Mix 5: 125mL Mixture Contains: F(25ppm), Cl(50ppm), NO ₂ (50ppm), Br(50ppm), NO ₃ (50ppm), PO ₄ (50ppm), SO ₄ (50ppm)	269110
Mix 6: 125mL Mixture Contains: Cl(1000ppm), Br(1000ppm), NO ₃ (1000ppm), PO ₄ (1000ppm), SO ₄ (1000ppm)	269111
Mix 7: 125mL Mixture Contains: Cl(15ppm), Br(15ppm), NO ₃ (15ppm), PO ₄ (15ppm), SO ₄ (5ppm)	269112
Mix 8: 125mL Mixture Contains: F(25ppm), Cl(50ppm), SO ₄ (100ppm)	269113

Cation Mixtures

Mix A: 125mL Mixture Contains: Li(0.5ppm), Na(3ppm), NH ₄ (3ppm), K(6ppm)	26910300
Mix B: 125mL Mixture Contains: Li(0.2ppm), Na(1.5ppm), NH ₄ (1.5ppm), K(2.5ppm), Mg(2.0ppm), Ca(2.0ppm)	26910400



EZ-LUTE™ Buffers for accurate concentrations every time

EZ-LUTE™ Buffer Concentrates

- Simplify mobile phase preparation
- For anion, cation, and organic acid analyses
- Dilution instructions included

EZ-LUTE™ Buffer Concentrates*

DESCRIPTION	PART NO.
Non-suppressed Buffers, 12 x 25mL	
4mM Phthalic Acid,	470217
4mM Phthalic Acid, pH 4.5	470216
4mM p-Hydroxybenzoic Acid	470212
5mM p-Hydroxybenzoic Acid	470215
7mM p-Hydroxybenzoic Acid	470214
5mM LiOH/Benzoate	470213
3mM Methanesulfonic Acid	470211
Suppressor-based Buffers, 1 x 100mL	
1.7mM Bicarbonate/1.8mM Carbonate	470119
2.8mM Bicarbonate/2.2mM Carbonate	470201
0.68mM Bicarbonate/0.72mM Carbonate	470202
2.1mM Bicarbonate/1.6mM Carbonate	470203
1.02mM Bicarbonate/1.08mM Carbonate	470205
0.85mM Bicarbonate/0.9mM Carbonate	470208
0.7mM Bicarbonate/1.2mM Carbonate	470122
3.6mM Carbonate	470123
500mM Bicarbonate	470209
500mM Carbonate	470210

*Concentration after dilution.

IC SPE Devices

Eliminate interferences from real-world samples



Maxi-Clean™ Cartridges are easy to process by syringe

IC Maxi-Clean™ Cartridges

- Improve your chromatography – seven resin types available to remove interfering ions from your sample
- Protect your investment – remove metals, salts, and surfactants that can irreversibly damage expensive IC columns and instruments
- Metal-free construction

IC Maxi-Clean™ Cartridges

RESIN TYPE	REMOVES	PART NO.
0.5mL Bed Volume, 50/pkg		
IC-RP	Hydrophobic components	30260
IC-OH	Anions, & increases pH	30262
IC-H	Cations, & decreases pH	30264
IC-Ag	Chloride, iodide, & bromide	30266
IC-Ba	Excess sulfate	30268
IC-Na	Cations	30270
IC-Chelate	Transition metals	30250

1.5mL Bed Volume, 25/pkg

IC-RP	Hydrophobic components	30252
IC-OH	Anions, & increases pH	30254
IC-H	Cations, & decreases pH	30256
IC-Ag	Chloride, iodide, & bromide	30258
IC-Ba	Excess sulfate	30261
IC-Na	Cations	30263
IC-Chelate	Transition metals	30265

IC-Ag Removes Chloride

CHROM-10059

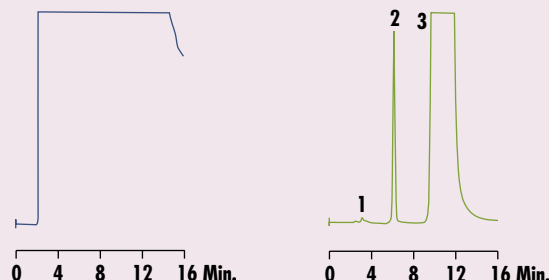
CHROM-10060

Nitrate in Brine

Unextracted

Extracted

1. Fluoride
2. Nitrate
3. Sulfate



Column: Novosep™ A-1, 7µm, 150 x 4.6mm (Part No. **51407**)
Mobile Phase: 1.7mM NaHCO₃, 1.8mM Na₂CO₃
Flowrate: 1.2mL/min
Detector: Suppressed Conductivity

IC-Ag removes high levels of chloride, revealing the other ions in the sample.

IC-Chelate Protects Anion Columns

CHROM-10057

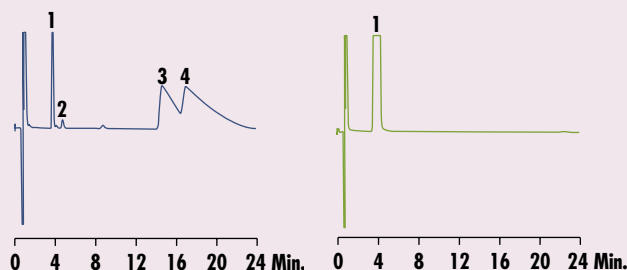
CHROM-10058

Tap Water

Unextracted

Extracted

1. Sodium
2. Potassium
3. Magnesium
4. Calcium



Column: Universal Cation, 7µm, 100 x 4.6mm (Part No. **27106**)
Mobile Phase: 3mM Methanesulfonic Acid
Flowrate: 1.0mL/min
Detector: Suppressed Conductivity

IC-Chelate protects anion columns by removing polyvalent metals.

Metal-Free Tubing

Easily plumb IC systems with flexible, inert, polymeric tubing

Flex-Connect™ Tubing

- Flexible coils stretch and contract to make connections easier
- Color identifies ID
- Includes 2 one-piece PEEK fittings



Flex-Connect™ PEEK Tubing

COLOR	DIMENSIONS OD x ID	PRES. RATE (PSIG)	SIZE RANGE*	STRIPED PART NO.	SOLID PART NO.
Red	1/16" x 0.005"	7,000	1-5cm	35851	35801
	1/16" x 0.005"	7,000	2-10cm	35852	35802
	1/16" x 0.005"	7,000	3-15cm	35853	35803
	1/16" x 0.005"	7,000	5-25cm	35854	35804
Yellow	1/16" x 0.007"	7,000	1-5cm	35861	35811
	1/16" x 0.007"	7,000	2-10cm	35862	35812
	1/16" x 0.007"	7,000	3-15cm	35863	35813
	1/16" x 0.007"	7,000	5-25cm	35864	35814
Blue	1/16" x 0.010"	5,000	1-5cm	35871	35821
	1/16" x 0.010"	5,000	2-10cm	35872	35822
	1/16" x 0.010"	5,000	3-15cm	35873	35823
	1/16" x 0.010"	5,000	5-25cm	35874	35824
	1/16" x 0.010"	5,000	10-50cm	35875	35825
1/16" x 0.010"	5,000	15-75cm	35876	35826	
Orange	1/16" x 0.020"	4,000	1-5cm	35881	35831
	1/16" x 0.020"	4,000	2-10cm	35882	35832
	1/16" x 0.020"	4,000	3-15cm	35883	35833
	1/16" x 0.020"	4,000	5-25cm	35884	35834
Green	1/16" x 0.030"	4,000	1-5cm	35891	35841
	1/16" x 0.030"	4,000	2-10cm	35892	35842
	1/16" x 0.030"	4,000	3-15cm	35893	35843
	1/16" x 0.030"	4,000	5-25cm	35894	35844

*First dimension is relaxed coil, second dimension is extended coil. Does not include 6" straight lengths at ends.

Color-Coded Teflon® Tubing

- Maximum inertness
- For low pressures
- Color identifies ID



Color-Coded Teflon® Tubing

COLOR	DIMENSIONS OD x ID	PRES. RATE (PSIG)	QTY	PART NO.
Blue	1/16" x 0.010"	1500	10ft	35660
	1/16" x 0.010"	1500	50ft	35661
Orange	1/16" x 0.020"	1200	10ft	35662
	1/16" x 0.020"	1200	50ft	35663
Green	1/16" x 0.030"	900	10ft	35664
	1/16" x 0.030"	900	50ft	35665

PEEK Tubing

- For high pressures
- Color identifies ID
- Choose solid or striped colors



Color-Coded PEEK Tubing

COLOR	DIMENSIONS OD x ID	PRES. RATE (PSIG)	QTY	STRIPED PART NO.	SOLID PART NO.
Red	1/16" x 0.005"	7,000	10ft	35714	35720
Yellow	1/16" x 0.007"	7,000	10ft	35712	35722
Blue	1/16" x 0.010"	5,000	10ft	35702	35728
Orange	1/16" x 0.020"	4,000	10ft	35708	35726
Green	1/16" x 0.030"	4,000	10ft	35710	35724

Teflon® Tubing

- Maximum inertness
- For low pressures



Teflon® Tubing

DIMENSIONS OD x ID	PRES. RATE (PSIG)	QTY	PART No.
1/16" x 0.007"	1600	10ft	35677
1/16" x 0.010"	1500	10ft	20064
1/16" x 0.020"	1200	10ft	20033
1/16" x 0.030"	900	10ft	20031
1/16" x 0.040"	600	10ft	20106
1/8" x 0.063"	900	10ft	20063
1/8" x 0.100"	300	10ft	20096

Plastic Tubing Cutter

- Ideal for PEEK, Tefzel®, and other plastic tubing up to 1/8" OD



Plastic Tubing Cutter

DESCRIPTION	PART No.
Plastic Tubing Cutter	3206
Replacement Blade	3214

Metal-Free Fittings

Durable, easy-to-use fittings for every need



High-pressure ergonomic fittings



Low-pressure, hassle-free nuts and ferrules

SofGrip™ One-Piece Fittings

- Graph-Tite™ construction is 3X stronger than PEEK
- Soft elastomer cushion makes hand-tightening comfortable
- One-piece integrated ferrule eliminates handling small pieces
- No-Slip™ version lightly grips tubing which holds the fitting in place between connections

Flange-Free™ Nuts and Ferrules†

- Connects to 1/4-28 flat bottomed ports without flanging tools
- Hand-tightens to a leak-free seal
- Inert, biocompatible construction

† U.S. Patent #4,690,437

SofGrip™ Fittings

Max. Temperature: 100°C
Max. Pressure: 5000psig
Thread Type: 10-32 UNF
Connection: 1/16" OD Tubing

Flange-Free™ Fittings

Max. Temperature: 100°C
Max. Pressure: 500psig for 1/8", 1000psig for 1/16"
Thread Type: 1/4-28 UNF
Connection: 1/8" or 1/16" OD Tubing

SofGrip™ Fittings

LENGTH	COLOR	QTY	PART No.
Standard One-Piece			
Short	Black	10	40501
Short	Red	10	40502
Short	Blue	10	40503
Short	Green	10	40504
Short	Yellow	10	40505
Short	Assorted	10	40507

No-Slip™ One-Piece

Long	Black	10	40516
Short	Black	10	40511
Short	Red	10	40512
Short	Blue	10	40513
Short	Green	10	40514
Short	Yellow	10	40515
Short	Assorted	10	40517

Flange-Free™ Nuts and Ferrules

DESCRIPTION	MATERIAL	QTY	TUBING	
			1/16" OD PART No.	1/8" OD PART No.
Finger-Tight™ Nuts				
Natural	PEEK	10	37065	37075
Black	PEEK	10	37067	37077
Red	PEEK	10	37062	37072
Yellow	PEEK	10	37064	37074
Blue	PEEK	10	37066	37076
Green	PEEK	10	37068	37078

Flange-Free™ Ferrules

PEEK	10	201171	201271
Kel-F®	10	201152	201251

Polypropylene Vials

Eliminate interferences by avoiding glass surfaces



Inert polypropylene for IC samples



Hinged lid with secure snap clasp

Polypropylene Vials

Metallic ions can leach from glass under certain conditions. Avoid these potential contaminants by choosing polypropylene vials.

Polypropylene Vials and Caps

DESCRIPTION	PART No.
12x32mm Standard Mouth Screw Thread Vials, 100/pkg	
600µL Polypropylene Vial with 8/425 Thread	89073
100µL Polypropylene Vial with 8/425 Thread	12962
8/425 Black Cap with TFE/Silicone Liner	98061

12x32mm Wide Mouth Screw Thread Vials, 100/pkg	
750µL Polypropylene Vial with 10/425 Thread	98099
500µL Polypropylene Vial with 10/425 Thread	98310
10/425 Black Cap with TFE/Butyl Liner	97274
10/425 Black Cap with TFE/Silicone Liner	98144

12x32mm Crimp Style Vials, Use 11mm Seal, 100/pkg	
750µL Polypropylene Vial	98050
600µL Polypropylene Vial	88363
500µL Polypropylene Vial	98842
300µL Polypropylene Vial	12990
100µL Polypropylene Vial	12960
11mm Aluminum Seal with TFE/Butyl Liner	73070
11mm Aluminum Seal with TFE/Silicone Liner	98740
11mm Poly Crimp™ Seal with TFE/Butyl Liner	95232
11mm Poly Crimp™ Seal with TFE/Silicone Liner	95234

15x45mm (4mL) Vials, 100/pkg	
2.5mL Polypro. Vial with 13/425 Screw Thread	98091
2.5mL Polypropylene Crimp Vial with 13mm Seal	98054
13/425 Black Cap with TFE/Silicone Liner	98610
13mm Snap TOP Cap™ with TFE/Butyl Liner	98048
13mm Snap TOP Cap™ with TFE/Silicone Liner	98044

8x40mm (1mL) Shell Vials, 100/pkg	
Polypropylene Shell Vial	88625
Polyethylene Starburst Snap Plug	88613

Larger Volume Vials, Supplied with Caps and Liners	
5mL Teflon® PFA Vials, 10/Pkg	97050
7mL Teflon® PFA Vials, 10/Pkg	97070
Replacement Liners for Teflon® Vials, 30/Pkg	95363
7mL Polyethylene Vials, 100/Pkg	97052

Polypropylene Storage Boxes

- Stackable with writing panel on lid
- Alpha-numeric code on grids for easy sample ID
- Rated to -90°C
- Available in six colors

Polypropylene Storage Boxes

DESCRIPTION	QTY	PART No.
For 12x32mm Vials to Hold 100 Vials		
Clear	5	95129
Blue	5	95131
Green	5	95132
Orange	5	95133
Pink	5	95134
Yellow	5	95135
Assorted, 1 of Ea/5 Colors	5	95005
to Hold 50 Vials		
Clear	5	95029
Blue	5	95106
Green	5	95027
Orange	5	95028
Pink	5	95089
Yellow	5	95108
Assorted, 1 of Ea/5 Colors	5	95008



For the full listing of Alltech vials, request brochure #445, or visit our online technical library at www.alltechWEB.com.

Other IC Accessories

Metal-free filters, loops, valves, and syringes to complete your IC system

Metal-Free Mobile Phase Inlet Filters

- Easy connection to 1/4-28 fittings
- Inert PEEK and polyethylene construction



Metal-Free Inlet Filters

DESCRIPTION	POROSITY	QTY	PART No.
for 1/8" OD	20µm	Ea	32170
for 1/16" OD	20µm	Ea	32171
Replacement Polyethylene Filter Elements	20µm	5	32173

Metal-Free In-Line Filter

- Install between injection valve and column
- Inert PEEK and PAT* construction
- Use with 10-32 fittings
- 5,000psig pressure limit

*PEEK Alloyed with Teflon.



Metal-Free In-Line Filters

DESCRIPTION	QTY	PART No.
For 1/16" OD	Ea	68250
Replacement PAT 2µm Filter Elements	5	68152

Flex-Connect™ Sample Loops

- Flexible coil for easy installation
- Universal fittings prevent dead volume
- 100% PEEK construction prevents corrosion and sample loss
- Use with Rheodyne or other common injection valves



Flex-Connect™ Sample Loops

DESCRIPTION	QTY	PART No.
Flex-Connect™ Sample Loops (PEEK)		
5µL Flex-Loop	Ea	32194
10µL Flex-Loop	Ea	32196
20µL Flex-Loop	Ea	32195
50µL Flex-Loop	Ea	32202
100µL Flex-Loop	Ea	32204
200µL Flex-Loop	Ea	32206
500µL Flex-Loop	Ea	32210
1mL Flex-Loop	Ea	32222

Fittings (PEEK)

Short Hex-Head Nut and Ferrule	5	32215
Long Hex-Head Nut and Ferrule	5	32217
Two-Piece Ferrule	5	32218

Plastic Syringes

- Economical and disposable
- All polypropylene construction
- Luer hub needles sold separately



Disposable Plastic Syringes

DESCRIPTION	QTY	PART No.
1mL Plastic Syringe	12	44701100
5mL Plastic Syringe	12	447012
20mL Plastic Syringe	2	447018
CTFE Luer-Hub Needle for Rheodyne, Valco (VISF-2), and other common injection valves	6	90536

Rheodyne® Manual PEEK Injection Valves

- For complete or partial loop filling
- 5,000psig maximum pressure
- Metal-free flow path



Manual PEEK Injection Valves

DESCRIPTION	PART No.
Model 9725	40010
Model 9725i with Position Sensing Switch	40011
Suction Needle Adaptor	40016

Rheodyne® MX Semi-Automatic Injection Valves

- The push of a button injects sample without the inconsistencies of manually turning a handle. Also capable of unattended injection.
- Installs easily without special software
- 5,000psig maximum pressure

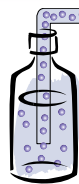


Semi-Automatic Injection Valves

DESCRIPTION	PART No.
PEEK, 100-240VAC, 50/60Hz	449925
Stainless Steel, 100-240VAC, 50/60Hz	447925

Instrument Introduction

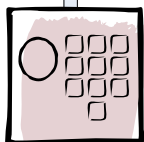
Buy only the components you need or build a complete system



Ion Chromatography System Components

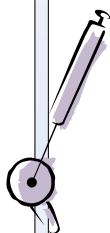
Degassers remove unwanted air from the mobile phase, giving stable baselines

Page 24



Pumps deliver the sample and solvents to the column

Pages 22-23



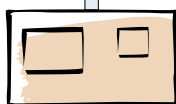
Injection valves or autosamplers inject samples onto the column

Pages 20, 25



IC columns separate the ionic compounds in the sample

Pages 4-11



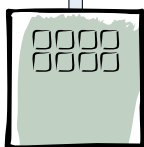
Column heaters control the temperature of the column

Page 26



Ion suppressors reduce the conductivity of the mobile phase for high-sensitivity anion analyses

Pages 28-30



Conductivity detectors visualize the ions in the sample based on their electrical conductance

Pages 26



Data system software can collect and log data from instruments

Back Cover

Don't buy an entire system if all you need is detection-

Now you can easily and affordably add IC detection to your existing HPLC equipment with Alltech's conductivity detector and NEW low-cost, high-performance Models 640 and 641 Suppressors. More durable than membrane suppressors, these patented suppressors continuously regenerate and are compatible with carbonate mobile phases (even gradients!).



Q: What is the difference between suppressed and non-suppressed detection?

A: Suppressor-based detection is the best method for anion analysis. Suppression is only required when using a conductivity detector. What is suppression? Some anion exchange mobile phases are highly conductive, and can interfere with conductivity detection – they introduce too much background to visualize the low-level anions in the sample. Mobile phase conductivity needs to be “suppressed” to efficiently detect sample anions at low concentrations. Suppressors allow the ppb-level sensitivity required for many EPA methods. Suppressors also let you use gradient elution for complex samples.

Non-suppressed detection is the best method for cation analysis. It is sometimes called Single Column Ion Chromatography (SCIC). It is also useful for anion exchange applications that do not require ppb-level sensitivity. It allows more mobile phase choices than suppressed IC, such as phthalic acid or p-hydroxy benzoic acid mobile phases used for some separations.

*Can we help with your chromatography questions?
Email us at tech_service@alltechemail.com*

Pumps

Low cost, high performance pumps



Two models available for standard or macro flow rates.

Model 426 Pump

- Pressure monitoring and adjustable upper/lower pressure limits
- Isocratic, single-piston pump
- Automatic prime/purge for easy operation

The Model 426 pump is a low cost, high performance pump ideal for many LC and IC applications including semi-preparative, preparative, analytical research and development, and quality assurance. It is available in either traditional 316 stainless steel or biocompatible PEEK. It has interface features for control by another instrument, such as an autosampler or integrator. Use an RS-232C jack for remote operation from your PC.

Biocompatible Polyethylene Bottle Kits

- Improve pump performance by pressurizing solvent bottles
- Thick-walled HDPE bottles will not break
- Safety pop-up valve

Kits include one bottle with purge vent valve cap, storage cap, tubing, and three titanium spargers.



HDPE Bottle Kits

DESCRIPTION	PART No.
1L Bottle Kit	90000365
2L Bottle Kit	90000362
4L Bottle Kit	90000360

Model 426 Pump Specifications

Maximum Pressure:	6,000psig (Standard, SS) 5,000psig (Standard, PEEK) 1,500psig (Macro)
Flowrate Range:	0.01 to 10mL/min (Standard) 0.04 to 40mL/min (Macro)
Flowrate Precision:	0.2% RSD
Flow Accuracy:	2.0%
Dimensions:	6" H x 11" W x 18" D (15 x 26 x 46cm)
Weight:	30 lbs (14kg)
Warranty:	3 year parts excluding seals and check valves; 1 year labor

Model 426 Pumps

DESCRIPTION	VOLTAGE	PART No.
Standard		
PEEK	110V/50-60Hz	426100
	220V/50-60Hz	426101
Stainless Steel	110V/50-60Hz	426200
	220V/50-60Hz	426201
Macro		
PEEK	110V/50-60Hz	426300
	220V/50-60Hz	426301
Stainless Steel	110V/50-60Hz	426400
	220V/50-60Hz	426401

Model 426 Kits and Accessories

DESCRIPTION	PART No.
Pump Head Kits	
Standard, PEEK	120800
Standard, Stainless Steel	120799
Macro, PEEK	120802
Macro, Stainless Steel	120801
Replacement Parts	
Piston Seal Kit, Standard Head, 10mL	120680
Piston Seal Kit, Macro Head, 40mL	120681
Piston, Standard Head, 10mL	121486
Piston, Macro Head, 40mL	121504
Check Valve Kit, Stainless Steel	120679
Check Valve Kit, PEEK	060141

Isocratic pump upgrades to a binary system



Use one pump for isocratic applications, or choose a two-pump binary gradient system for high-pressure binary gradient applications.

Model 626 Pump

- Suitable for standard and microflow applications
- Dual piston mechanism for pulse-free operation
- Pressure monitoring and adjustable upper/lower pressure limits
- Programmable flow rates from 0.001 mL/min to 12.0 mL/min

The Model 626 Pump is a rugged and reliable component for a basic analytical system, a sophisticated method development system, or for general laboratory or industrial use. It is available in either traditional 316 stainless steel or biocompatible PEEK.

Buy one pump now, and upgrade to a binary system later by purchasing a second pump and a High-Pressure Gradient Kit.

Polypropylene Filter Funnel Systems

- Unbreakable, inert polypropylene
- Leak-proof GL45 threads
- Use with 47mm filter membranes
- In-line version available - visit our website



Polypropylene Filter Funnel System

DESCRIPTION	PART NO.
1L Filter Funnel System Includes: base, adaptor kit, mesh filter support, 1L funnel	6409
2L Filter Funnel System Includes: base, adaptor kit, mesh filter support, 2L funnel	6429

Model 626 Pump Specifications

Maximum Pressure:	6,000psig (Stainless Steel) 5,000psig (PEEK)
Flowrate Range:	0.001 - 12.0 mL/min
Flowrate Precision:	0.2% RSD
Flow Accuracy:	2.0%
Gradient Programming:	10 methods with up to 100 lines per method
Dimensions:	6" H x 11" W x 18" D (15cm x 26cm x 46cm)
Weight:	30 lbs (14 kg)
Warranty:	3 year parts excluding seals and check valves; 1 year labor

Model 626 Pump

DESCRIPTION	PART NO.
Isocratic System	
Stainless Steel	
110V	626100
220V	626101
PEEK	
110V	626200
220V	626201

Binary Gradient System

Includes 2 pumps, system controller, control cables, mixing tee, tubing, and fittings

Stainless Steel	
110V	626300
220V	626301
PEEK	
110V	626400
220V	626401

Model 626 Kits and Accessories

DESCRIPTION	PART NO.
High Pressure Gradient Kit	
Includes system controller, control cables, mixing tee, fittings & tubing	
PEEK	105626
Stainless Steel	105624
Replacement Parts	
Piston Seal Kit	160566
Piston	160565
Check Valve Kit, Stainless Steel	120679
Check Valve Kit, PEEK	060141

Note: All replacement parts contain parts for one pump head only.

On-Line Degassing Systems

Upgradable systems to meet every need and budget



Alltech's On-Line Degassing System use the latest technology to remove air from your mobile phase efficiently and economically.

On-Line Degassing Systems

- Most advanced degassing technology
- Choose from two families for basic or advanced features
- Choose from three flowrates, up to 10mL/min
- Upgrade the number of channels as your needs change

With today's smaller sample volumes and more sensitive detection methods, degassing your mobile phases has never been so important. Unwanted air in the mobile phase gives noisy baselines and fluctuating flow rates in your analytical results.

Why choose an Alltech Degassing System?

1. Teflon® AF membranes for high efficiency and fast equilibration.
2. Continuous-run pumps for stable baselines.
3. NO-OX® tubing keeps the solvent degassed as it travels to the pump.

Two families to choose from:

Choose the Elite™ Degassing System for output validation, Smart Sensor to detect leaks, a self-adjusting vacuum pump, and a 4-year warranty.

Choose the Select™ Degassing System for the same degassing efficiency with a cost-conscious price tag and a 1-year warranty.

Channel Upgrade Capability

As your needs change, you can replace or add up to four degassing channels per unit. For example, upgrade from a 2-Channel Micro Degassing System to a 4-Channel Analytical Degassing System. Or, keep your current channels and add other channels for other flow rates. Change the channels yourself in under an hour or let Alltech do it for you.

Degassing System Specifications

	ELITE™ FAMILY	SELECT™ FAMILY
Membrane Type:	Teflon® AF	Teflon® AF
Pump Type:	Continuous-run, self-adjusting speed	Continuous-run, one speed
NO-OX® Tubing	Yes	Yes
Smart Vacuum Sensor:	Yes	No
Validation Output:	Yes (5mVDC/1mm Hg)	No
Warranty:	4 year	1 year

On-Line Degassing Systems

DESCRIPTION	ELITE™ FAMILY PART No.	SELECT™ FAMILY PART No.
-------------	---------------------------	----------------------------

Micro, 0-1mL/min, 195µL internal volume

2 Channel	590507	590500
4 Channel	590508	590501

Analytical, 0-5mL/min, 480µL internal volume

1 Channel	590509	590502
2 Channel	590510	590503
3 Channel	590511	590504
4 Channel	590512	590505

Semi-Prep, 0-10mL/min, 925µL internal volume

1 Channel	590517	590514
2 Channel	590513	590506
3 Channel	590518	590515
4 Channel	590519	590516

Channel Upgrade Kits*

DESCRIPTION	PART No.
Micro, 0-1mL	590520
Analytical, 0-5mL	590521
Semi-Prep, 0-10mL	590522

*Includes degassing channel, vacuum tubing, mounting screw, identification sticker, and instructions.

Face Plates*

DESCRIPTION	PART No.
For 1 Channel	590506A
For 2 Channel	590506B
For 3 Channel	590506C
For 4 Channel	590506D

*To replace an existing degassing channel, only a channel upgrade kit is necessary. To add more channels, a new face plate is also required.

Alltech Upgrade Labor Charge*

DESCRIPTION	PART No.
Labor	590525

*Channel upgrade kit and face plate must be ordered separately.

Autosampler

Inject up to 96 samples reliably and reproducibly



Interfaces to any LC or IC system

Model 570 Autosampler

- Low cost automation
- Nine injections per vial
- PEEK versions available

The Model 570 Autosampler is the perfect autosampler for everyday needs. It has input and output signals and programmable contact closures. This easy-to-use unit is ideal for routine automated IC or HPLC analysis.

Choose the best model for you:

Loop Filling:

- Flushed – maximum precision and reproducibility
- Partial – ideal when sample waste must be minimized

Construction:

- PEEK – for ion-sensitive or biological applications, or for use with corrosive buffers
- Stainless Steel – for standard applications

Cooling:

- All models are available with or without a cooling option. Cooling prevents biological sample spoilage and gives more reproducible injections of volatile samples.

570 Autosampler Specifications

Vial Capacity:	96 samples (92 with needle wash)
Injection Volume:	<i>Flushed Loop Fill:</i> 5-500 μ L (dispenser controlled), 5-5000 μ L (by head space pressure). <i>Partial Loop Fill:</i> 10-490 μ L in steps of 10 μ L (depending on the loop volume, maximum 50% of the loop volume)
Injections/Vial:	9 Maximum
Needle Wash:	Selectable, 50 μ L fixed volume between vials
Reproducibility:	<i>Flushed Loop Injections:</i> RSD \leq 0.5% <i>Partial Loop Injections:</i> RSD \leq 1.0%
Power:	115 VAC/230VAC; 50/60Hz
Dimensions:	11.8" W x 17.3" D x 11.1" H (30cm W x 44cm D x 28cm H)
Weight:	34lbs (15.5kg)
Warranty:	1 year

Model 570 Autosampler

DESCRIPTION	PART No.
Flushed Loop Filling	
Standard Volume, 1.5mL Vials	575100
Standard Volume w/Cooling Option	575300
Standard Volume, PEEK	575500
Standard Volume w/Cooling, PEEK	575700

Partial Loop Filling	
Standard Volume, 1.5mL Vials	570150
Standard Volume w/Cooling Option	570350
Standard Volume, PEEK	570550
Standard Volume w/Cooling, PEEK	570750

Replacement Parts

DESCRIPTION	PART No.
Pump Tubing Cassette	575115
Side-Port Sample Needle, 3/pkg	575130
Large Volume Option, Field Installable	575165
Air Needle	575125
Sample Drain for Headspace Pressure	575170
Auxiliary and Control I/O Cable	570101
Tubing from Needle to Valve, 10ft	20064
Needle Connection Nut	575175
Needle Connection Ferrule, 10/pkg	575185
Standard Vial Tray	575110



See page 19 for polypropylene vials.

Conductivity Detector and Column Heater

The easy way to add IC capability to any HPLC system



Use the conductivity detector alone, or in conjunction with its dedicated column heater for the best control and reproducibility of your results.

Model 650 Conductivity Detector and Model 630 Column Heater

- Precise temperature control gives stable, drift-free baselines
- Detects charged species at ppb levels
- Compatible with suppressor-based and non-suppressed methods

Unlike other detectors, the Model 650 Conductivity Detector can discriminate between random noise and the analyte signal, improving sensitivity. You can easily program and store up to 10 methods through the front panel controls.

You can further improve your results by using the Model 630 Column Heater to eliminate problems caused by fluctuating column temperatures. The Model 630 Column Heater cannot be used as a stand-alone column heater; it is programmed and controlled by the Model 650 Conductivity Detector. Not sure you need a column heater? You can always add it to your system later.



Do you need a stand-alone column heater? Visit our website to learn about the Model 631 Column Heater.

See page 31
for pricing on
detection systems.

Model 650 Conductivity Detector Specifications

Detection:	Alternating current, synchronous detection, 3KHz frequency
Range:	0.01-5000 μ S in 12 steps
Display:	Graphical LCD
Autozero:	Offsets up to 10,000 μ S
Time Constant:	0.1, 0.5, 1, 5, 10sec, software selectable
Method Storage:	0-9, user defined
Output:	10mV, 100mV, 1V Full Scale
Computer Interface:	RS-232 Serial Communications
Fluid Path:	Teflon [®]
Dimensions:	10.5" W x 19" L x 5.5" H (26.7cm x 48cm x 14cm)

Cell Compartment

Size:	2.25" W x 2.25" H x 6.25" L (5.7cm x 5.7cm x 15.9cm)
Insulation:	Minimum 1" (2.54cm) all sides
Heater:	25W DC heating element vulcanized to aluminum block
Preheater:	Teflon [®] tubing knitted and encased in high thermal mass housing
Cell Temperature:	Factory set at 35°C, User adjustable ambient to 60°C
Temp. Precision:	\pm 0.05°C
Cell Type:	2 electrode, gold-plated SS electrodes
Cell Volume:	0.5 μ L
Pressure Rating:	400psig
Fluid Path:	Teflon [®]

Model 630 Column Heater Specifications

Cavity Dimensions:	1.8" H x 5.0" W x 16.5" D (4.5 H x 12.7 W x 41.9 D cm)
Preheater:	2' x 0.01" ID PEEK coil cast in tin alloy block
Temperature Control:	Ambient to 60°C
Temperature Accuracy:	\pm 2.5°C
Temperature Stability:	\pm 1.25°C
Operating Voltage:	115V, 230V
Fluid Path Construction:	PEEK
Dimensions:	5.0" H x 10.3" W x 19.5" D (13cm H x 26cm W x 50cm D)

Model 650 Conductivity Detector & Column Heater

DESCRIPTION	PART No.
Model 650 Conductivity Detector	
120V	650100
220V	650101
Model 630 Column Heater	
120V	630100
220V	630200

UV Detectors

UV detection for specialized IC applications



High efficiency, low drift UV/VIS detector operates from 190nm to 800nm



Affordability for today, adaptability for tomorrow

Model 200, Variable Wavelength

- Simple analog controls
- Interchangeable flowcells and lamps

Includes a deuterium lamp for detection from 190nm to 365nm. Use the optional tungsten lamp to detect from 366nm to 800nm. Lamps and flowcells are easy to change and install.

Model 460, Fixed Wavelength

- Low maintenance
- Upgrade as needed

Optional lamp and flowcells let you upgrade and customize for your ever-changing needs. Detect most aromatic compounds with the standard 254nm lamp. Change to the higher sensitivity 280nm lamp for proteins, peptides, phenols, and catecholamines. Lamps are easy to change and are self-aligning.

Model 200 UV/VIS Specifications

Wavelength Range:	190-800nm with deuterium and tungsten lamps
Wavelength Precision:	±1.0nm
Spectral Bandwidth:	6nm
Noise:	<±1.0 × 10 ⁻⁵ AU @ 254nm
Drift:	<2 × 10 ⁻⁴ AU/Hour after warm-up
Absorbance Range:	0.0005-2.0 AUFS
Data Output:	1 AU/V
Recorder Outputs:	10mV, 100mV, 1V FS
Dimensions:	6.3" H x 13.4" W x 9.8" D (16cm H x 34cm W x 25cm D)
Weight:	20lbs (9.1kg)
Warranty:	1 year, 90 days on flowcell

Model 460 UV Detector Specifications

Wavelength:	254nm or 280nm		
Lamp Life:	4000 – 6000 hours		
Flow Cells:	Standard	Microbore	Preparative
Path Length:	10mm	2mm	1mm
Volume:	19µL	1µL	15µL
Wavelength Precision:	> ± 0.2nm		
Spectral Bandwidth:	0.1nm		
Noise:	< ± 1 × 10 ⁻⁵ AU		
Drift:	< ± 1 × 10 ⁻⁴ AU		
Absorbance Range:	0.0005 – 4.0 AU/V with voltage range of ± 4 V at any scale		
Data Output:	1.0 V/AU		
Inputs:	Autozero and event mark		
Dimensions:	6.6" H x 9.4" W x 15" D		
Weight:	12lb (5.5kg)		
Warranty:	1 year		

Model 200 UV/VIS Detector (C)

DESCRIPTION	PART No.
-------------	----------

Model 200 Detector

With 6mm, 9µL SS Flowcell	
110V	27410000
220V	27410002
With 6mm, 9µL Kel-F® Flowcell	
110V	27410010
220V	27410020

Lamps

Tungsten Lamp and Mounting Plate **2037079**



For additional replacement parts and accessories, request ISO22, or visit our online technical library at www.alltechWEB.com.

Model 460 UV Detector (C)

DESCRIPTION	PART No.
-------------	----------

460 UV Detector with 254nm Lamp	
Standard Cell	460300
Microbore Cell	460400
Preparative Cell	460500

Lamp

Optional 280nm Lamp **460201**



For additional replacement parts and accessories, request ISO20, or visit our online technical library at www.alltechWEB.com.

New! Suppressors

For high-sensitivity anion analysis that outlasts and outperforms membrane suppressors



Model 640 Suppressor for isocratic separations



Model 641 Suppressor for gradient separations

Alltech Suppressors

- Continuous regeneration for automated runs
- Stand-alone units are easy to add to any IC or HPLC system
- Patented technology eliminates water dip and improves baseline stability
- Meets requirements of EPA Methods 300.0 and 300.1

Suppressors reduce background conductance of the mobile phase while simultaneously increasing the analyte signal, for ppb-level anion detection. Alltech's patented* regeneration and degassing features make our suppressors the most reliable, flexible suppressor systems available. You won't find these critical features on any other suppressor.

Reagent-free regeneration – no down-time, no chemicals, no extra equipment.

Alltech's suppressor cell continuously regenerates and is always ready for the next run. You need no extra reagents or regeneration steps, and never have to interrupt a run to regenerate or change cells. Alltech's suppressors make it easy to automate your procedures.

Automatic degassing – reduce or eliminate water dips and baseline shifts.

Carbonate/bicarbonate mobile phases are powerful separation tools, but produce carbon dioxide during suppression, which can interfere with conductivity detection. Alltech's suppressors automatically degas the effluent, leaving your sample in pure, non-conductive water for maximum sensitivity. This lets you enjoy all the advantages of carbonate mobile phases (even gradients with the Model 641) without the disadvantages.

Add IC detection to any HPLC system

With Alltech's suppressors and a conductivity detector, you can add high-performance IC capability to your favorite HPLC system. Our suppressors are simple to operate – say goodbye to long equilibration times and multiple operating modes!

*U.S. patent number 6,444,475 6,468,804. Other patents pending.

Two models to choose from

Choose the Model 640 for isocratic applications up to 20mM sodium hydroxide or 10mM sodium carbonate.

Choose the Model 641 for gradient applications up to 40mM sodium hydroxide or 20mM sodium carbonate.

Simplify methods by using fewer columns and mobile phases

Alltech's suppressors streamline your IC methods. Use powerful, selective carbonate/bicarbonate mobile phases (even gradients with the Model 641) and just one or two column chemistries for almost any anion separation. With carbonate/bicarbonate, the separating power is in the mobile phase, so fewer column types are needed to perform most separations.

Suppressor Specifications

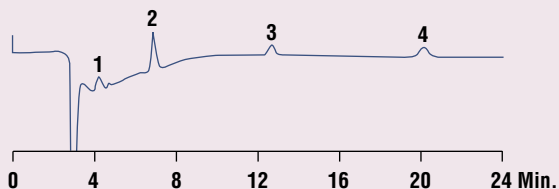
Display:	LED Indicators
Fluid path:	PEEK and Teflon®
Power:	120/240 VAC, 50-60 Hz
Outputs:	Contact Closure (NO or NC) on error
Dimensions:	5.06"H x 10.33" W x 19" D, (12.9cm H x 26.2cm W x 48.3cm D)
Weight:	19.5lbs (8.8kg)
Capacity:	Model 640: 20mN sodium Model 641: 40mN sodium
Warranty:	1 year parts and labor, 6 months on suppressor cell

New! Suppressors

Alltech's suppressors give you superior results compared to other suppressors

Trace Anions in Morpholine

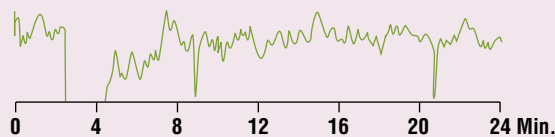
CHROM-9290



With Alltech Suppressors

1. Fluoride (0.6ppb)
2. Chloride (5ppb)
3. Nitrate (3ppb)
4. Sulfate (2ppb)

CHROM-9291

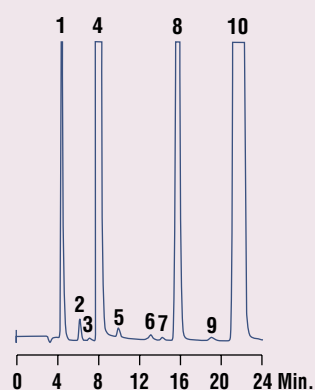


With Other Suppressors

Column: AS9-HC, 250 x 4.0mm
Mobile Phase: 9.0mM Na₂CO₃
Flowrate: 1.0mL/min
Detector: Suppressed Conductivity

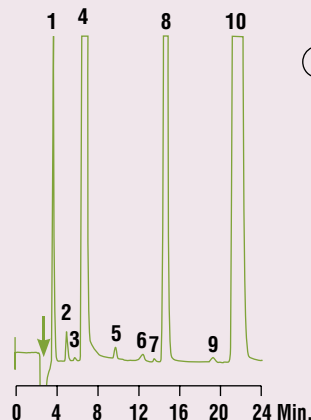
Alltech's patented degassing feature improves sensitivity, baseline stability, and resolving power.

Inorganic Anions and Oxalides



With Alltech Suppressors

CHROM-9289



With Other Suppressors

CHROM-9287

1. Fluoride (1 ppm)
2. Chlorite (0.5ppm)
3. Bromate (0.05ppm)
4. Chloride (50ppm)
5. Nitrite (0.1ppm)
6. Bromide (0.05ppm)
7. Chlorate (0.05ppm)
8. Nitrate (10ppm)
9. Phosphate (0.1ppm)
10. Sulfate (50ppm)

Column: AS9-HC, 250 x 4.0mm
Mobile Phase: 9.0mM Na₂CO₃
Flowrate: 1.0mL/min
Detector: Suppressed Conductivity

Alltech's patented degassing feature dramatically reduces and often eliminates the water dip that interferes with early eluting peaks.

With these new, low cost suppressors, adding a complete IC detection system to your lab is easy and affordable! See page 31 for details.

Alltech Suppressors



DESCRIPTION	PART No.
Model 640 Suppressor (Isocratic)	
120V	640100
240V	640200
Model 641 Suppressor (Gradient)	
120V	641100
240V	641200

Suppressors

Economical disposable cartridge suppressor



Installs easily in any IC or HPLC system

Model 335 Suppressor

- Meets U.S. EPA Method 300.0 requirements
- Convenient disposable cartridges

Add the Model 335 Ion Suppressor to any IC or LC system that has a conductivity detector. Explore new separations or run existing suppressor-based methods, including EPA Method 300.0 part A and B.

This suppressor uses two disposable suppressor cartridges. While one cartridge provides suppression, the other is equilibrated or replaced. Changing the disposable cartridge is fast and easy.

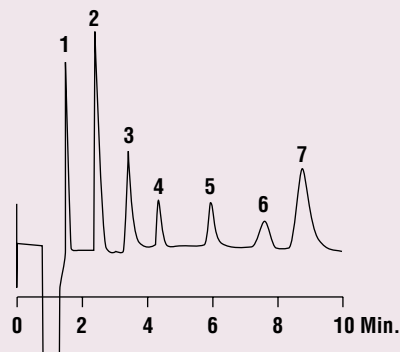


The Model 335 Suppressor is ideal for educational labs and labs that do not frequently use Ion Chromatography. For fully unattended, cartridge-free, sophisticated suppression, see our new Model 640 and Model 641 Suppressors on pages 28-29.

Can we help with your chromatography questions?
Email us at tech_service@alltechemail.com

Low Level Anions per US EPA Method 300.0

CHROM
8542

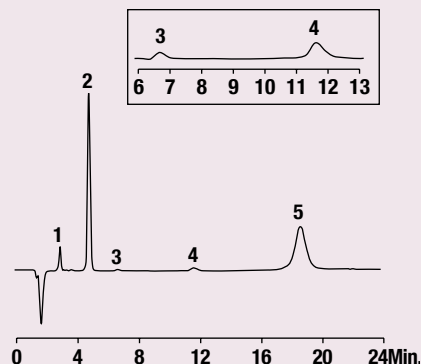


1. Fluoride
2. Chloride
3. Nitrite
4. Bromide
5. Nitrate
6. Phosphate
7. Sulfate

Column: Allsep™ Anion, 7µm, 100 x 4.6mm
(Part No. **51207**)
Mobile Phase: 0.85mM NaHCO₃/0.9mM Na₂CO₃
Flowrate: 2.0mL/min
Detector: Suppressed Conductivity

Tap Water Analysis with 335 Suppressor

CHROM
13002



1. Fluoride
2. Chloride
3. Nitrite
4. Nitrate
5. Sulfate

Column: Allsep™ Anion, 7µm, 100 x 4.6mm
(Part No. **51207**)
Mobile Phase: 0.85mM NaHCO₃/0.9mM Na₂CO₃
Flowrate: 1.2mL/min
Detector: Suppressed Conductivity

Model 335 Suppressor Module

DESCRIPTION	PART NO.
Model 335 Suppressor Module (Includes 25 Anion Cartridges)	335100
Anion SPCS Cartridges, 25/pkg	335002



For more information on the 335 Suppressor Module, request instrument support sheet #019. Also available on our website.

IC Detection Systems

Save on IC Detection System packages

IC Detection Systems

- Compatible with suppressor-based and non-suppressed methods
- Modular-design is easy to change and upgrade

Choose the Model 650 Conductivity Detector in combination with other components to easily and economically add IC capability to your existing HPLC equipment. You can quickly switch between HPLC and IC applications.

System Components:

Model 650 Conductivity Detector – compatible with suppressor-based and non-suppressed methods, detect anions to ppb-levels and cations to ppm-levels. Program and store up to 10 methods. See page 26 for more information.

Model 630 Column Heater – eliminates problems caused by fluctuating column temperatures. Works only in combination with the Model 650 Conductivity Detector. See page 26 for more information.

Model 640 Suppressor – economical, general-purpose suppressor suitable for most isocratic applications. See pages 28-29 for more information.

Model 641 Suppressor – high capacity, carbonate gradient compatible ion suppressor for demanding applications. See pages 28-29 for more information.

For Cation Analysis

- Model 650 Conductivity Detector
- Model 630 Column Heater



Cation Detection Systems



DESCRIPTION

PART NO.

Cation Detection System

Includes: Conductivity Detector and Column Heater

120V
220V

597100
597105

For Anion Analysis

- Model 650 Conductivity Detector
- Choice of Model 640 or 641 Suppressors



Anion Detection Systems



DESCRIPTION

PART NO.

Anion Isocratic Detection System

Includes: Conductivity Detector and Model 640 Suppressor

120V
220V

597101
597106

Anion Gradient Detection System

Includes: Conductivity Detector and Model 641 Suppressor

120V
220V

597102
597107

For Cation and Anion Analysis

- Model 650 Conductivity Detector
- Model 630 Column Heater
- Choice of Model 640 or 641 Suppressors



Cation and Anion Detection Systems



DESCRIPTION

PART NO.

Cation and Anion Isocratic Detection System

Includes: Conductivity Detector, Column Heater, & Model 640 Suppressor

120V
220V

597103
597108

Cation and Anion Gradient Detection System

Includes: Conductivity Detector, Column Heater, & Model 641 Suppressor

120V
220V

597104
597109



For added convenience, choose an IC Starter Kit! You can read more about them on page 13.

Data Acquisition Software

An affordable, simple-to-use chromatography data system

EZStart™ Data Acquisition Software

- Control instruments from many manufacturers
- PC-based data handling at low prices
- Easily upgrade to EZChrom Elite™

EZStart™ software provides the basic requirements for data acquisition and instrument control from a single workstation.

Computer Requirements:

EZStart™ software requires Windows XP (SP1), Windows 2000 (SP3), or Windows NT (SP6), and Microsoft Internet Explorer version 4.0 or greater. Some EZStart™ packages require, but do not include, a GPIB card. RS232 ports on the computer may be required for some instruments. Recommended System: Pentium IV (800 MHZ), 128 MB RAM, 10 GB hard disk space.

EZStart™ Software with SS420X Interface



DESCRIPTION	PART No.
120V	1886011
220V	1886211
100V (Japan)	1886311



For more information on EZStart™ Software, request document M078, or visit our online technical library at www.alltechWEB.com.

1

Simple configuration

Collects data from any instrument generating an analog output using the Software's SS420X data interface.

2

Run in one window

Set up all runs from a single window using simple wizards.

3

Generate graphic reports

Select from existing templates or customize with the report editor.



Your Online Technical Resource for Chromatography



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Alltech

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