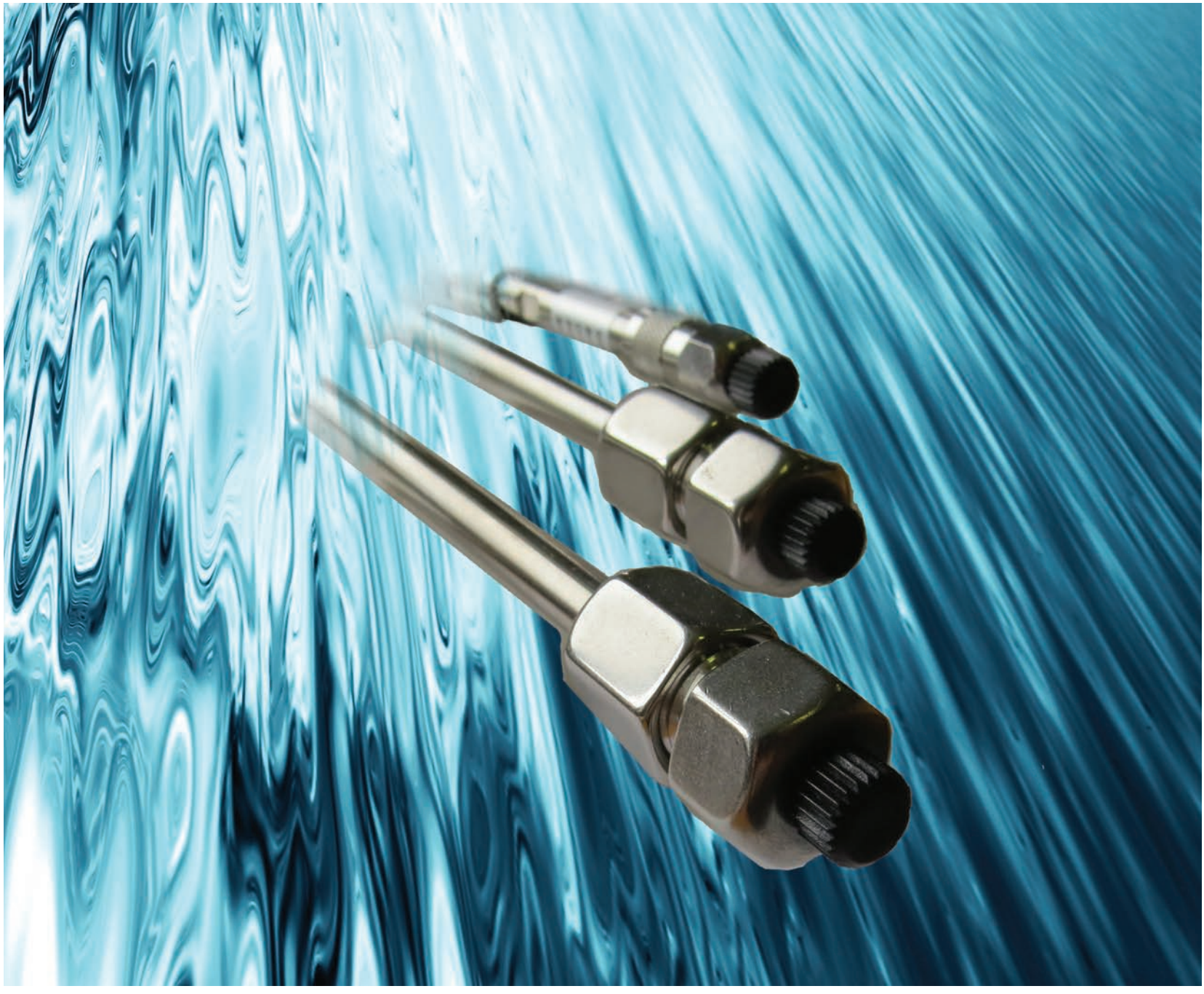
Quattro

The Science of Hydration and Dehydration: SiO_2



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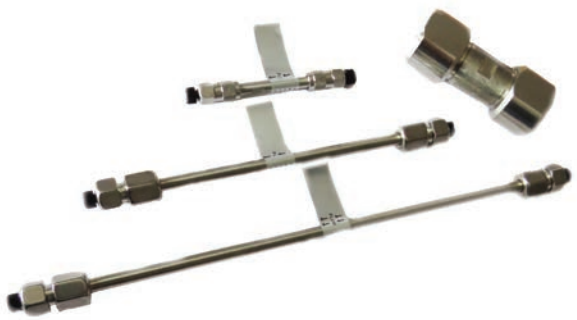
Quattro Silica Based Columns

A New 4th Generation Silica

Quattro columns are designed for HPLC, LC-MS, UHPLC, and Prep-LC.

The Quattro is based on a new 120Å ultra-high purity of 99.999% pure silica. This silica ensures minimal surface metal sites available for chelation. At neutral pH you will notice reduced silica acidity.

Quattro silica is manufactured under the most stringently controlled conditions, guaranteeing constant particle size, pore volume and low metal impurities.



Quattro columns are well end-capped for reproducibility and durability. Quattro columns have therefore a low concentration of free silanols. Quattro columns are manufactured in ISO 9001:2000 accredited facilities, operating under strict protocols using extensive quality control testing.
Consistent performance is therefore ensured.

Quattro columns are available in 1.9, 3, 5, and 10µm particles , all of them high-purity silica.
We provide various lengths and inside diameters.
These columns have a superb performance for a variety of applications in the pharmaceutical, chemical, environmental, toxicology and food separation areas.

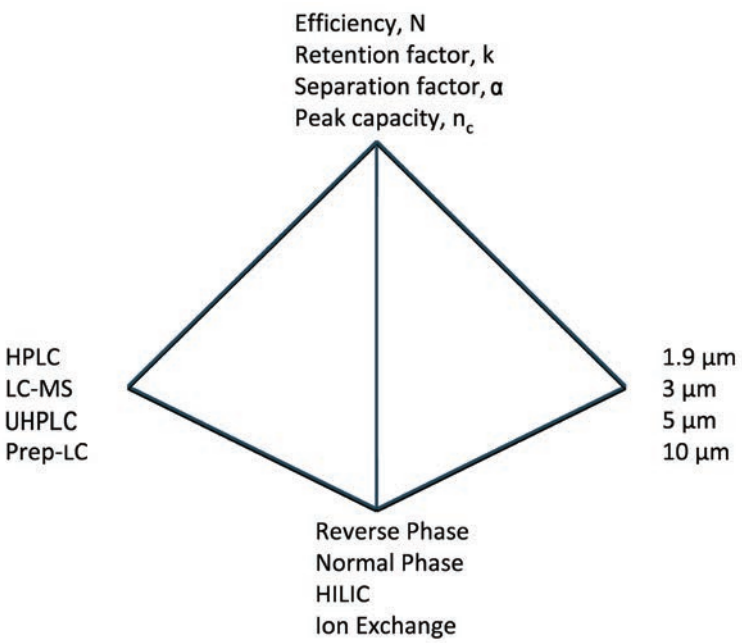
The family of Quattro columns is available in C18, C8, C4, AQ, CN, Phenyl and Phenyl-Hexyl.

The six bonded phases offer alternative selectivity in the same column family for flexibility in method development.

Future phases will include Phenyl HR (high retentivity), NH2, Diol and Silica.

Advantages of Quattro columns

1) High-purity, fully end-capped silica
2) Excellent peak shape, resolution and reproducibility for acids, bases, and neutrals
3) Available in various pore and particle sizes for easy to scale up
4) Includes a range of chemistries for the most challenging applications

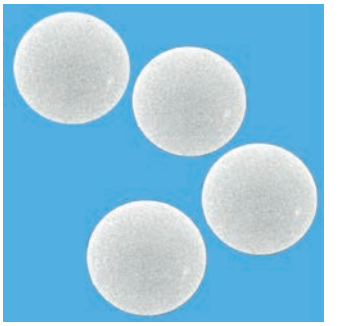


Quattro Silica Based Columns

Bare Silica Information

Quattro columns provide a silica material with SiO2>99.999% purity, which points to a total metal content of <10 ppm.

· Lot data shows less than 10 ppm metal content
· Selection of particle sizes to optimize the efficiency
· Spherical particle shape to reduce the back pressure
· Consistent and reproducible retention times to allow direct scale-up from the laboratory through process applications
· Lot-to-lot consistency for reproducible performance



Bare silica gel

Bonded Phase Specifications

Phase	Functional Group	Carbon Load %	pH Range	Max Temp. °C
C18	Octadecyl	15.0	1.8 - 9.5	60
C8	Octyl	8.7	1.8 - 9.5	60
C4	Butyl	5.3	1.8 - 9.5	60
AQ	Proprietory*	10.6	1.8 - 9.5	60
CN	Cyano	5.3	2.0 - 7.5	50
Ph	Phenyl	9.1	1.8 - 9.5	60
Phenyl-Hexyl	Phenyl-Hexyl	11.8	2.0 - 8.0	60

* Polar group embedded in a C18 ligand.

Silica Specifications

	Unit	Specification
Particle size	µm	1.9, 3, 5, 10
Surface area	m2/g	275
Pore Size	Å	120
Na	ppm	< 10 Max
Mg	ppm	< 10 Max
Al	ppm	< 10 Max
Ca	ppm	< 10 Max
Fe	ppm	< 10 Max
Zr	ppm	< 10 Max
Ti	ppm	< 10 Max

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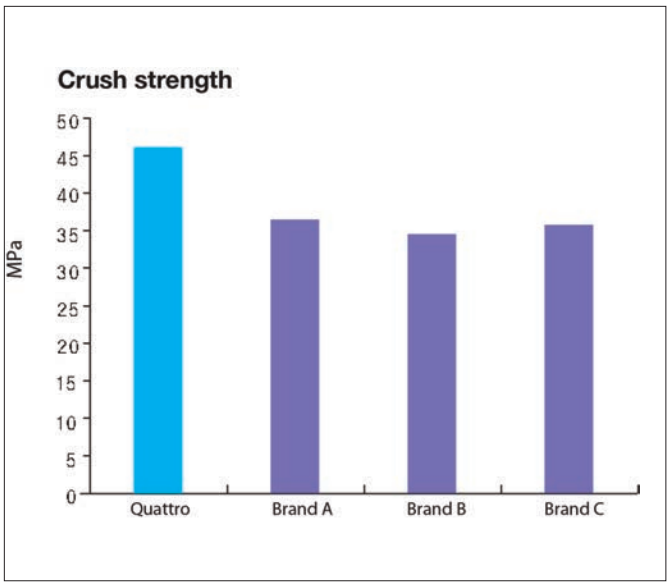
Quattro Silica Based Columns

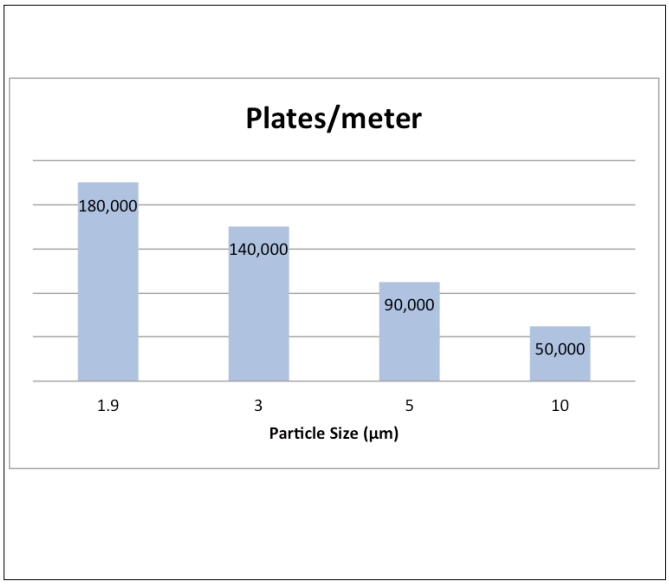
Bare Silica Information

The narrow distribution of the silica in the Quattro columns permits their utilization for a broad range of applications, allowing optimization of selectivity and capacity. The tight particle size distribution for the available particles is ideal for choosing the best compromise between efficiency, operating pressure, and process time, giving you the right separation factor and peak capacity.

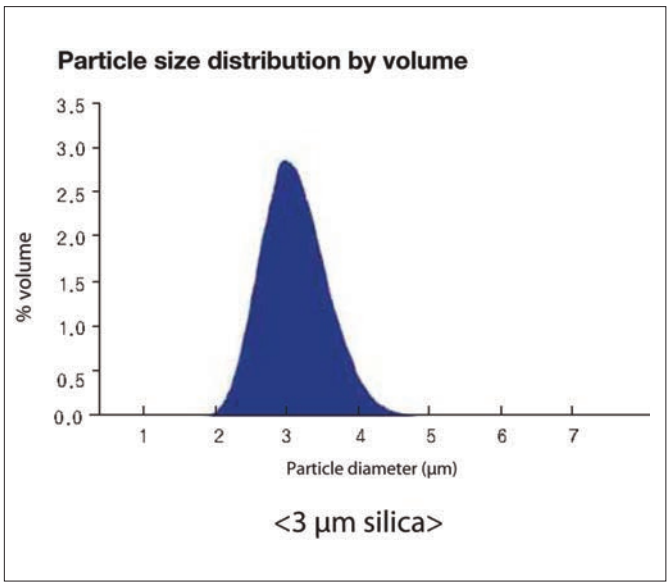
Mechanical and chemical stability

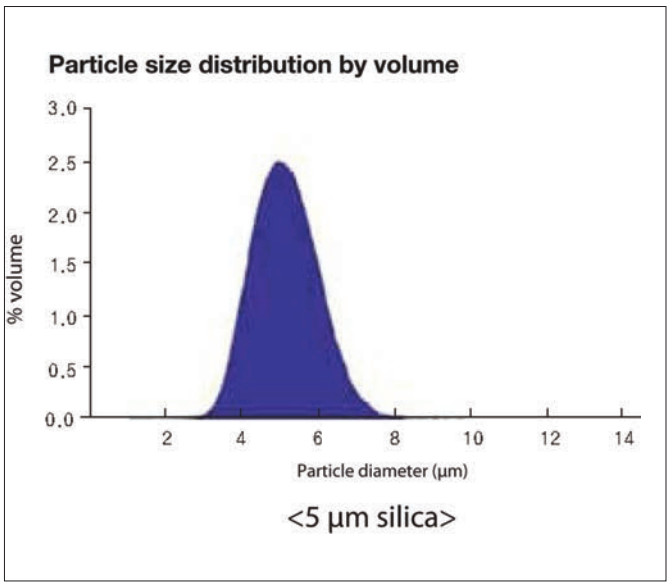


Efficiency and particle size



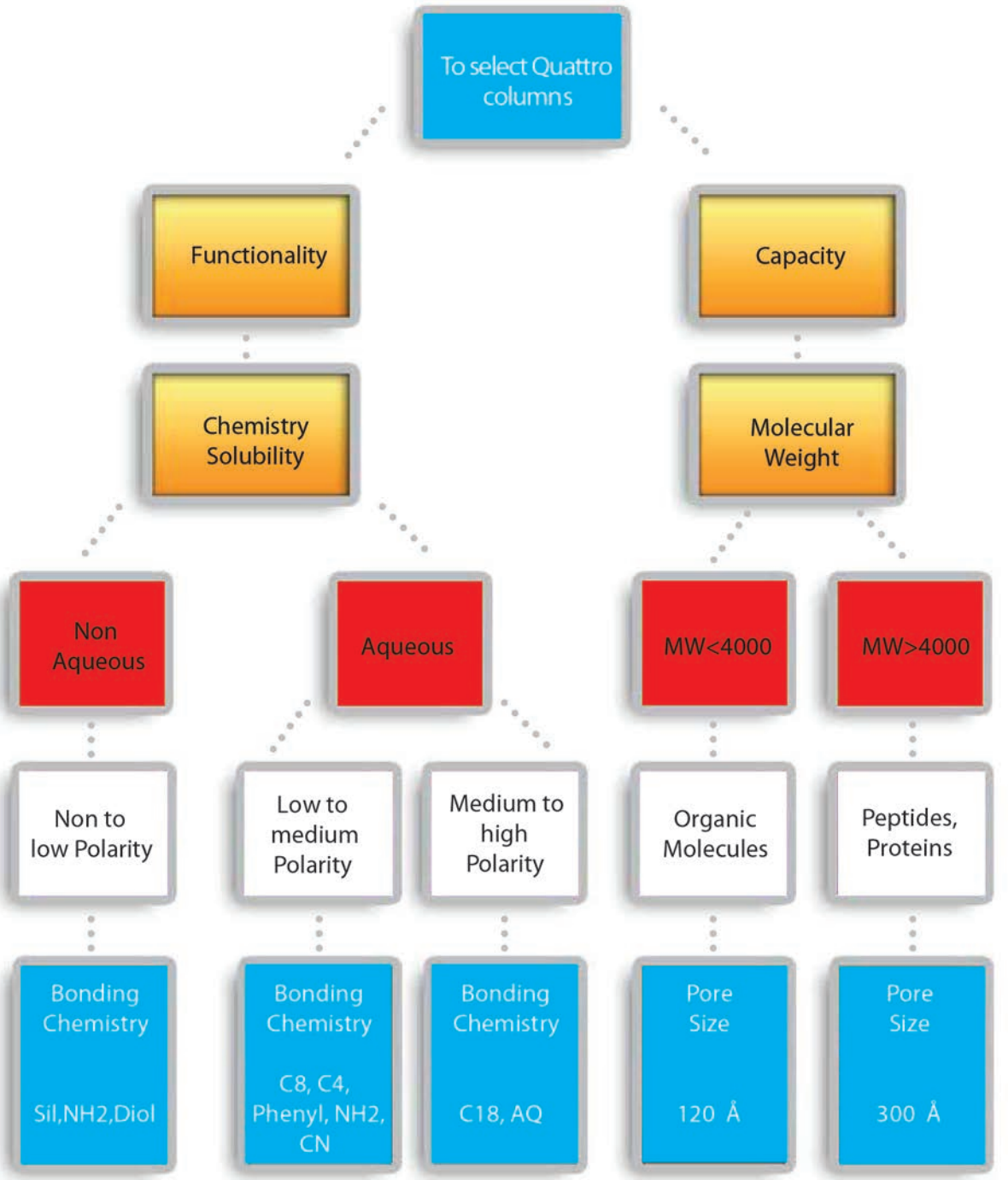
Pore size





Quattro Silica Based Columns

Column Selection Tree



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Quattro Silica Based Columns

Column Selection by Application

Amino Acids	Quattro AQ, Quattro C18, Quattro Phenyl HR
Anions	Quattro NH_2
Antibiotics	Quattro C18
Carbohydrates (Sugar)	Quattro NH_2
DNA	Quattro C18
Environmental (Carbamates, PAH's)	Quattro C18
Fatty acids	Quattro C8
Foods, Flavors and Fragrances	Quattro Phenyl-Hexyl, Quattro C18, Quattro NH_2
Insecticides/Pesticides	Quattro C18
Lipids	Quattro C18
Nucleosides and Nucleotides	Quattro AQ, Quattro C18, Quattro NH_2
Organic acids	Quattro AQ
Pharmaceuticals	Quattro C18, Quattro C8, Quattro Phenyl-Hexyl
Peptides/Proteins	Quattro C18, Quattro NH_2
Vitamins	Quattro C18, Quattro C8

Quattro Silica Based Columns

Column Selection by USP Listing

USP No.	USP Description	Quattro Phases
L1	Octadecylsilane chemically bonded to porous silica or ceramic particles, 3 to 10μm in diameter.	Quattro C18 Quattro C18-AQ
L3	Porous silica particles, 3 to 10μm in diameter.	Quattro Silica
L7	Octylsilane chemically bonded to totally porous silica particles, 3 to 10μm in diameter.	Quattro C8
L8	An essentially monomolecular layer of aminopropyl-silane chemically bonded to a totally porous silica gel support, 10μm in diameter.	Quattro NH_2
L10	Nitrile groups chemically bonded to porous silica particles, 3 to 10μm in diameter.	Quattro CN
L11	Phenyl groups chemically bonded to porous silica particles, 5 to 10μm in diameter.	Quattro Phenyl Quattro Phenyl-Hexyl Quattro Phenyl HR
L20	Dihydroxypropane groups chemicallybonded to porous silica particles, 3 to 10μm in diameter.	Quattro Diol
L26	Butylsilane chemically bonded to totally porous sil-ica particles, 5 to 10μm in diameter.	Quattro C4

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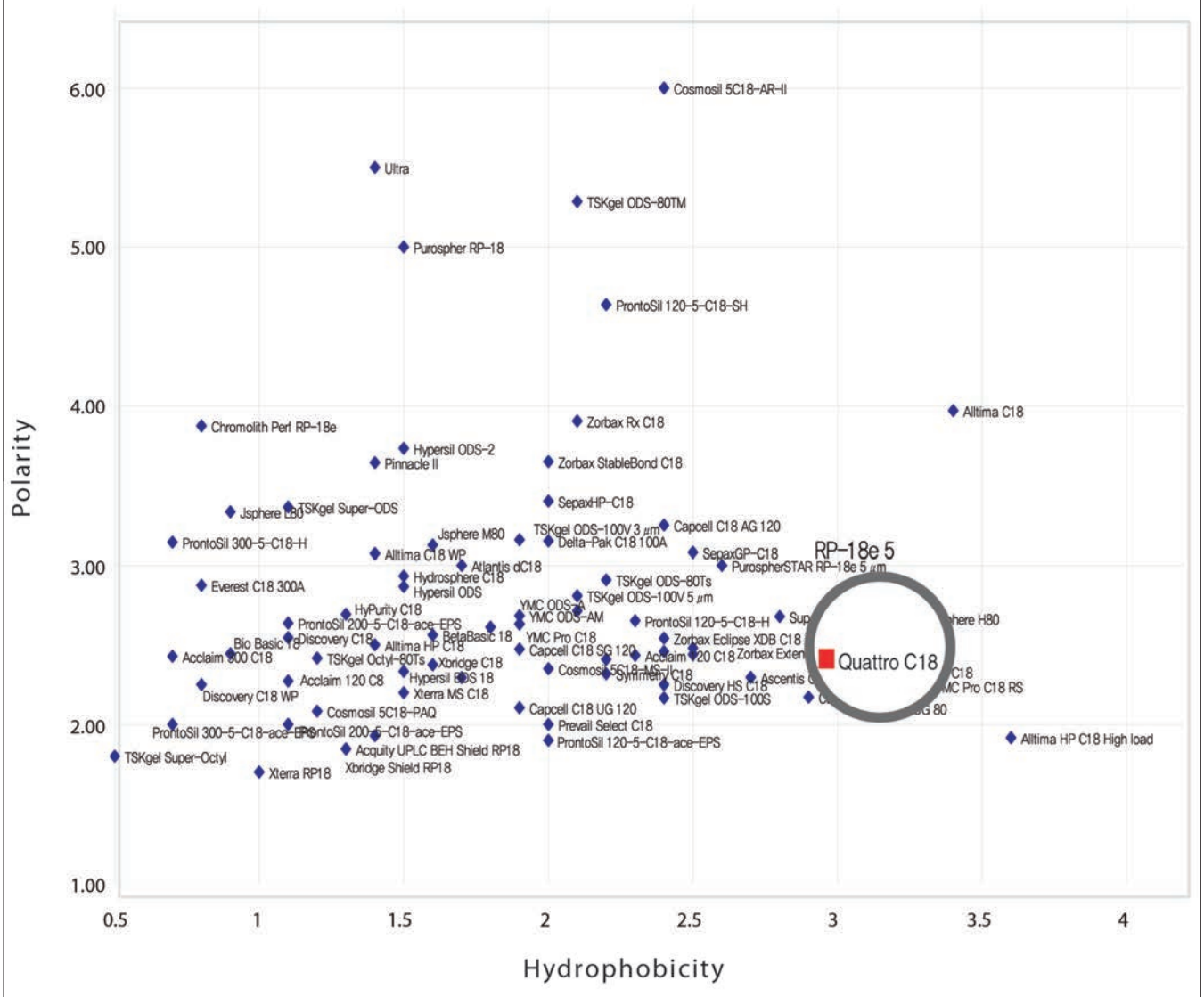
Quattro Silica Based Columns

Characterization by Hydrophobicity & Polarity



HPLC condition is same SRM 870 TEST.

Quattro Silica Based Columns

Quattro-PREP

Wide range selection of stationary phase supports customer demands from analytical to Prep-LC scale.

For reversed phase mode, C18, C8, C4, AQ, CN and Phenyl phases are available. NH_2 coming soon. NH_2, Diol, and CN will soon be available for normal phase mode.

These normal phase columns can separate acidic, neutral, and basic compounds.

Advantages of Quattro-PREP

· First choice for most regular samples
· High coverage and exhaustive end-capping
· Sharp peak shape
· Exceptional batch-to-batch reproducibility
· Enhanced mechanical stability
· Suitable for acidic, basic, neutral compounds separation
· High resolution
· High efficiency
· High peak capacity
· Low metal content in silica

Quattro-PREP

National Institute of Standards & Technology Standard Reference Material 870, NIST SRM 870 is a mixture of five organic compounds in methanol intended for use in characterizing general aspects of liquid chromatographic (LC) column performance, including efficiency, void volume, methylene selectivity, retentiveness, and activity toward chelators and organic bases.

Other possible uses include (1) column classification to aid column selection during method development, (2) as a control material for monitoring LC column performance over time, and (3) in quality control for column manufacturing.

SRM 870 consists of a mixture of the following five organic compounds in methanol: uracil, toluene, ethylbenzene, quinizarin, and amitriptyline.

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Quattro Silica Based Columns - Ordering Information

Quattro Analytical Columns - Ordering Information

I.D. (mm)	Length (mm)	Particle Size (µm)	C18	C8	C4	AQ	CN	Ph
2.1	50	1.9	QU-1.9C18-05021	QU-1.9C8-05021	QU-1.9C4-05021	QU-1.9AQ-05021	QU-1.9CN-05021	QU-1.9PH-05021
2.1	100	1.9	QU-1.9C18-10021	QU-1.9C8-10021	QU-1.9C4-10021	QU-1.9AQ-10021	QU-1.9CN-10021	QU-1.9PH-10021
2.1	150	1.9	QU-1.9C18-15021	QU-1.9C8-15021	QU-1.9C4-15021	QU-1.9AQ-15021	QU-1.9CN-15021	QU-1.9PH-15021
2.1	50	3	QU-3C18-05021	QU-3C8-05021	QU-3C4-05021	QU-3AQ-05021	QU-3CN-05021	QU-3PH-05021
2.1	100	3	QU-3C18-10021	QU-3C8-10021	QU-3C4-10021	QU-3AQ-10021	QU-3CN-10021	QU-3PH-10021
2.1	150	3	QU-3C18-15021	QU-3C8-15021	QU-3C4-15021	QU-3AQ-15021	QU-3CN-15021	QU-3PH-15021
2.1	250	3	QU-3C18-25021	QU-3C8-25021	QU-3C4-25021	QU-3AQ-25021	QU-3CN-25021	QU-3PH-25021
2.1	50	5	QU-5C18-05021	QU-5C8-05021	QU-5C4-05021	QU-5AQ-05021	QU-5CN-05021	QU-5PH-05021
2.1	100	5	QU-5C18-10021	QU-5C8-10021	QU-5C4-10021	QU-5AQ-10021	QU-5CN-10021	QU-5PH-10021
2.1	150	5	QU-5C18-15021	QU-5C8-15021	QU-5C4-15021	QU-5AQ-15021	QU-5CN-15021	QU-5PH-15021
2.1	250	5	QU-5C18-25021	QU-5C8-25021	QU-5C4-25021	QU-5AQ-25021	QU-5CN-25021	QU-5PH-25021
3.2	50	1.9	QU-1.9C18-05032	QU-1.9C8-05032	QU-1.9C4-05032	QU-1.9AQ-05032	QU-1.9CN-05032	QU-1.9PH-05032
3.2	100	1.9	QU-1.9C18-10032	QU-1.9C8-10032	QU-1.9C4-10032	QU-1.9AQ-10032	QU-1.9CN-10032	QU-1.9PH-10032
3.2	150	1.9	QU-1.9C18-15032	QU-1.9C8-15032	QU-1.9C4-15032	QU-1.9AQ-15032	QU-1.9CN-15032	QU-1.9PH-15032
3.2	50	3	QU-3C18-05032	QU-3C8-05032	QU-3C4-05032	QU-3AQ-05032	QU-3CN-05032	QU-3PH-05032
3.2	100	3	QU-3C18-10032	QU-3C8-10032	QU-3C4-10032	QU-3AQ-10032	QU-3CN-10032	QU-3PH-10032
3.2	150	3	QU-3C18-15032	QU-3C8-15032	QU-3C4-15032	QU-3AQ-15032	QU-3CN-15032	QU-3PH-15032
3.2	250	3	QU-3C18-25032	QU-3C8-25032	QU-3C4-25032	QU-3AQ-25032	QU-3CN-25032	QU-3PH-25032
3.2	50	5	QU-5C18-05032	QU-5C8-05032	QU-5C4-05032	QU-5AQ-05032	QU-5CN-05032	QU-5PH-05032
3.2	100	5	QU-5C18-10032	QU-5C8-10032	QU-5C4-10032	QU-5AQ-10032	QU-5CN-10032	QU-5PH-10032
3.2	150	5	QU-5C18-15032	QU-5C8-15032	QU-5C4-15032	QU-5AQ-15032	QU-5CN-15032	QU-5PH-15032
3.2	250	5	QU-5C18-25032	QU-5C8-25032	QU-5C4-25032	QU-5AQ-25032	QU-5CN-25032	QU-5PH-25032
4.6	50	1.9	QU-1.9C18-05046	QU-1.9C8-05046	QU-1.9C4-05046	QU-1.9AQ-05046	QU-1.9CN-05046	QU-1.9PH-05046
4.6	100	1.9	QU-1.9C18-10046	QU-1.9C8-10046	QU-1.9C4-10046	QU-1.9AQ-10046	QU-1.9CN-10046	QU-1.9PH-10046
4.6	150	1.9	QU-1.9C18-15046	QU-1.9C8-15046	QU-1.9C4-15046	QU-1.9AQ-15046	QU-1.9CN-15046	QU-1.9PH-15046
4.6	50	3	QU-3C18-05046	QU-3C8-05046	QU-3C4-05046	QU-3AQ-05046	QU-3CN-05046	QU-3PH-05046
4.6	100	3	QU-3C18-10046	QU-3C8-10046	QU-3C4-10046	QU-3AQ-10046	QU-3CN-10046	QU-3PH-10046
4.6	150	3	QU-3C18-15046	QU-3C8-15046	QU-3C4-15046	QU-3AQ-15046	QU-3CN-15046	QU-3PH-15046
4.6	250	3	QU-3C18-25046	QU-3C8-25046	QU-3C4-25046	QU-3AQ-25046	QU-3CN-25046	QU-3PH-25046
4.6	50	5	QU-5C18-05046	QU-5C8-05046	QU-5C4-05046	QU-5AQ-05046	QU-5CN-05046	QU-5PH-05046
4.6	100	5	QU-5C18-10046	QU-5C8-10046	QU-5C4-10046	QU-5AQ-10046	QU-5CN-10046	QU-5PH-10046
4.6	150	5	QU-5C18-15046	QU-5C8-15046	QU-5C4-15046	QU-5AQ-15046	QU-5CN-15046	QU-5PH-15046
4.6	250	5	QU-5C18-25046	QU-5C8-25046	QU-5C4-25046	QU-5AQ-25046	QU-5CN-25046	QU-5PH-25046
4.6	50	10	QU-10C18-05046	QU-10C8-05046	QU-10C4-05046	QU-10AQ-05046	QU-10CN-05046	QU-10PH-05046
4.6	100	10	QU-10C18-10046	QU-10C8-10046	QU-10C4-10046	QU-10AQ-10046	QU-10CN-10046	QU-10PH-10046
4.6	150	10	QU-10C18-15046	QU-10C8-15046	QU-10C4-15046	QU-10AQ-15046	QU-10CN-15046	QU-10PH-15046
4.6	250	10	QU-10C18-25046	QU-10C8-25046	QU-10C4-25046	QU-10AQ-25046	QU-10CN-25046	QU-10PH-25046

Quattro Prep-LC Columns - Ordering Information

I.D. (mm)	Length (mm)	Particle Size (µm)	C18	C8	C4	AQ	CN	Ph
10	50	10	QU-10C18-050P1	QU-10C8-050P1	QU-10C4-050P1	QU-10AQ-050P1	QU-10CN-050P1	QU-10PH-050P1
10	100	10	QU-10C18-100P1	QU-10C8-100P1	QU-10C4-100P1	QU-10AQ-100P1	QU-10CN-100P1	QU-10PH-100P1
10	150	10	QU-10C18-150P1	QU-10C8-150P1	QU-10C4-150P1	QU-10AQ-150P1	QU-10CN-150P1	QU-10PH-150P1
10	250	10	QU-10C18-250P1	QU-10C8-250P1	QU-10C4-250P1	QU-10AQ-250P1	QU-10CN-250P1	QU-10PH-250P1
21.2	50	10	QU-10C18-050P2	QU-10C8-050P2	QU-10C4-050P2	QU-10AQ-050P2	QU-10CN-050P2	QU-10PH-050P2
21.2	100	10	QU-10C18-100P2	QU-10C8-100P2	QU-10C4-100P2	QU-10AQ-100P2	QU-10CN-100P2	QU-10PH-100P2
21.2	150	10	QU-10C18-150P2	QU-10C8-150P2	QU-10C4-150P2	QU-10AQ-150P2	QU-10CN-150P2	QU-10PH-150P2
21.2	250	10	QU-10C18-250P2	QU-10C8-250P2	QU-10C4-250P2	QU-10AQ-250P2	QU-10CN-250P2	QU-10PH-250P2
30	50	10	QU-10C18-050P3	QU-10C8-050P3	QU-10C4-050P3	QU-10AQ-050P3	QU-10CN-050P3	QU-10PH-050P3
30	75	10	QU-10C18-07530	QU-10C8-07530	QU-10C4-07530	QU-10AQ-07530	QU-10CN-07530	QU-10PH-07530
30	100	10	QU-10C18-100P3	QU-10C8-100P3	QU-10C4-100P3	QU-10AQ-100P3	QU-10CN-100P3	QU-10PH-100P3
30	150	10	QU-10C18-150P3	QU-10C8-150P3	QU-10C4-150P3	QU-10AQ-150P3	QU-10CN-150P3	QU-10PH-150P3
30	250	10	QU-10C18-250P3	QU-10C8-250P3	QU-10C4-250P3	QU-10AQ-250P3	QU-10CN-250P3	QU-10PH-250P3

Quattro Silica Based Columns - Ordering Information

Quattro Analytical Columns - Ordering Information

I.D. (mm)	Length (mm)	Particle Size (µm)	Phenyl-Hexyl	Phenyl HR	NH2	Diol	Silica
2.1	50	1.9	QU-1.9PHEX-05021				
2.1	100	1.9	QU-1.9PHEX-10021				
2.1	150	1.9	QU-1.9PHEX-15021				
2.1	50	3	QU-3PHEX-05021				
2.1	100	3	QU-3PHEX-10021				
2.1	150	3	QU-3PHEX-15021				
2.1	250	3	QU-3PHEX-25021				
2.1	50	5	QU-5C18-05021				
2.1	100	5	QU-5C18-10021				
2.1	150	5	QU-5C18-15021				
2.1	250	5	QU-5C18-25021				
3.2	50	1.9	QU-1.9PHEX-05032				
3.2	100	1.9	QU-1.9PHEX-10032				
3.2	150	1.9	QU-1.9PHEX-15032				
3.2	50	3	QU-3PHEX-05032		*Available soon!*		
3.2	100	3	QU-3PHEX-10032				
3.2	150	3	QU-3PHEX-15032				
3.2	250	3	QU-3PHEX-25032				
3.2	50	5	QU-5PHEX-05032				
3.2	100	5	QU-5PHEX-10032				
3.2	150	5	QU-5PHEX-15032				
3.2	250	5	QU-5PHEX-25032				
4.6	50	1.9	QU-1.9PHEX-05046				
4.6	100	1.9	QU-1.9PHEX-10046				
4.6	150	1.9	QU-1.9PHEX-15046				
4.6	50	3	QU-3PHEX-05046				
4.6	100	3	QU-3PHEX-10046				
4.6	150	3	QU-3PHEX-15046				
4.6	250	3	QU-3PHEX-25046				
4.6	50	5	QU-5PHEX-05046				
4.6	100	5	QU-5PHEX-10046				
4.6	150	5	QU-5PHEX-15046				
4.6	250	5	QU-5PHEX-25046				
4.6	50	10	QU-10PHEX-05046				
4.6	100	10	QU-10PHEX-10046				
4.6	150	10	QU-10PHEX-15046				
4.6	250	10	QU-10PHEX-25046				

Quattro Prep-LC Columns - Ordering Information

I.D. (mm)	Length (mm)	Particle Size (µm)	Phenyl-Hexyl	Phenyl HR	NH2	Diol	Silica
10	50	10	QU-10PHEX-050P1				
10	100	10	QU-10PHEX-100P1				
10	150	10	QU-10PHEX-150P1				
10	250	10	QU-10PHEX-250P1				
21.2	50	10	QU-10PHEX-050P2				
21.2	100	10	QU-10PHEX-100P2				
21.2	150	10	QU-10PHEX-150P2		*Available soon!*		
21.2	250	10	QU-10PHEX-250P2				
30	50	10	QU-10PHEX-050P3				
30	75	10	QU-10PHEX-07530				
30	100	10	QU-10PHEX-100P3				
30	150	10	QU-10PHEX-150P3				
30	250	10	QU-10PHEX-250P3				

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Care and Use of Quattro UHPLC and HPLC Columns

Please read this information carefully before using this column. All Quattro UHPLC and HPLC columns are individually manufactured and tested to meet stringent specification criteria. The following measures will enhance its performance and lifetime.

Column Installation

System Compatibility: Quattro UHPLC and HPLC columns are compatible with UHPLC and HPLC instrumentation offered by all leading manufacturers. Quattro UHPLC columns may be used on HPLC systems, provided that system pressure limits are not exceeded.

System Dead Volume: Reduce dead volume in the system to a minimum by using connection tubing with an internal diameter of 0.010" (0.25mm) or less for analytical columns. Connections between injector, column and detector should be kept as short as possible.

Column Connection: The direction of flow is marked on the column. For optimum performance, the tubing connecting the column to injector and detector must abut the internal shoulder of the fitting. For HPLC columns, the use of PEEK fingertight fittings (p/n# UPF120X, 10 pack) are recommended. For UHPLC columns at pressures up to 15,000psi (1000bar), the use of UHPLC reuseable fittings (p/n# UPUH-196, 10 pack) are recommended.

Mechanical Damage: Protect the column from mechanical shock. Dropping a column can impair its performance.

Equilibration: The storage solvent in a new column is the mobile phase used to evaluate the column, unless otherwise specified on the chromatogram. Initially, care should be taken not to pass any material through the column that may precipitate in the storage solvent. Ensure that the column is fully equilibrated with the mobile phase prior to starting analysis. Normal-phase or ion exchange silica columns usually require more conditioning than reversed-phase columns.

Guard Cartridges: For HPLC columns, guard cartridges are recommended to prevent both inlet frit blockage and irreversible sample adsorption onto the top of the column. Guard cartridges are available for all Quattro HPLC columns – for further guidance on the recommended guard cartridge for this column, contact our Technical Support Department.

Precolumn Filters: As an alternative to guard cartridges, precolumn filters may be used to protect the column inlet frit from blockage. Due to their ultra low dispersion design, column performance and retention remain unaffected. For analytical (2.1 - 4.6mm id) HPLC columns packed with particles ≥5µm, the use of 2µm precolumn filters (p/n# AS-850-1051-10, 10 pack) are recommended. For analytical (2.1 - 4.6mm id) HPLC columns packed with particles ≤3µm, the use of 0.5µm precolumn filters (p/n# AS-850-1050-10, 10 pack) are recommended. For UHPLC columns at pressures up to 15,000psi (1000bar), UHPLC precolumn filters (p/n# AS-850-1010-10, 10 pack) are recommended.

Performance Testing: It is recommended that the performance of columns is tested on arrival and periodically during use. Performance parameters are defined below.

Efficiency;

$N_{0.5} = 5.54 (t_r / W_{0.5})^2$ (measured at 50% peak height)

$N_{0.1} = 18.55 (t_r / W_{0.1})^2$ (measured at 10% peak height)

Asymmetry;

$As_1 = N_{0.1} / N_{0.5}$ (for a perfect Gaussian peak $As_1 = 1.00$)

$As_2 = B/A$ (calculated at 10% peak height – for a symmetrical peak $As_2 = 1.00$, for a fronted peak $As_2 < 1.00$ and for a tailed peak $As_2 > 1.00$)

Operational Guidelines

Solvents: Use only UHPLC/HPLC grade solvents and freshly prepared aqueous buffer solutions to minimise bacterial growth. A slip-on pump inlet filter will remove extraneous particles. For maximum column lifetime, filter the mobile phase using a 0.2µm filter.

Mobile Phase pH: The recommended mobile phase pH for silica columns is generally between 2.0 and 7.5. However, use of a pH between 3.5 and 6.5 will ensure maximum column life. For further guidance on the pH range of the silica contained within this column, contact our Technical Support Department.

Sample: For maximum column lifetime, always use freshly prepared sample and filter using a 0.2µm filter.

Vials: Premium quality CleanVials™ are recommended for use with Quattro UHPLC and HPLC columns. Please contact our Technical Support Department for further information and to request your free trial samples.

Pressure: Exposure to rapid changes in pressure may reduce column lifetime. For HPLC columns, exposure to pressures >4000psi (275bar) may reduce column lifetime. For UHPLC columns, exposure to pressures >15000psi (1000bar) and/or high linear flows (equivalent to >0.6ml/min for 2.1mm id) may reduce column lifetime.

Temperature: For Quattro HPLC and UHPLC columns, temperatures >60°C may reduce column lifetime, dependent upon bonded phase and mobile phase conditions selected. For further guidance on the maximum recommended temperature of this column under your chosen conditions, contact our Technical Support Department.

Storage: Wash out any buffer (ensure that precipitation does not occur) and flush onto the storage solvent defined overleaf. Replace the end-stops to prevent the packing bed drying out and store in a cool area.

Column Cleaning: Over a period of time, columns may still become contaminated by strongly adsorbed sample components. This may be indicated by a deterioration in column performance and/or an increase in back pressure. In such instances, specific cleaning protocols may be used in an attempt to regenerate column performance and further extend the lifetime of the column. For further guidance on the recommended cleaning protocol for this column, contact our Technical Support Department.

Column Warranty: All columns are warranted to meet the specifications stated on the Test Chromatogram. Removal of an end fitting to replace a frit or top-up the packing material should be regarded as a last resort to prolonging column lifetime. Removal of the column end fittings will automatically invalidate the column warranty.

Safety and Disposal: This column contains amorphous silica which may be hazardous to health if the column is unpacked and the silica allowed to dry. The silica presents no hazard whilst contained within the column. When the column has reached the end of its useful life, dispose of it in a similar manner to the samples that have been injected onto it. Alternatively, contact our Technical Support Department for details of our column disposal program.