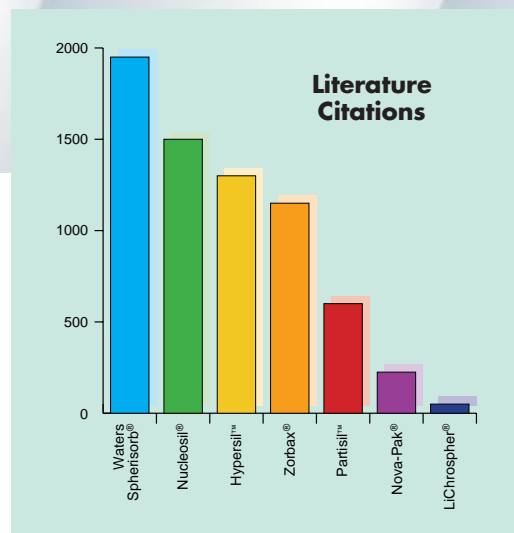


Waters Spherisorb® Columns

The Best Packed Waters Spherisorb® Column You Can Buy



The Waters Spherisorb® column: A good story gets even better.

It is hard to improve on a good thing. But Waters has done just that.

Now you can get Waters Spherisorb® columns from Waters Corporation - packed as only Waters knows how, and backed by Waters' superior technical support staff.

We're proud to bring you the famous Waters Spherisorb® column. Here are some of the advantages we offer:

- Best packed column for better efficiency, peak shape, reproducibility and lifetime
- A wide range of particle sizes and chemistries, giving you flexibility in method development
- A rugged silica particle for longer column lifetime
- Wide availability throughout the world
- The most used chromatographic material
- Unparalleled support from Waters' chromatography experts
- Competitive pricing

Waters

New Benefits of Waters Spherisorb® Columns

Recently, Waters acquired the manufacturing and distribution rights for Spherisorb® high-performance liquid chromatography (HPLC) columns. Linking one of the world's most widely used HPLC columns with the world's largest supplier of HPLC columns will bring existing and new users of Waters Spherisorb® columns significant advantages.

Waters Spherisorb® columns are the most widely referenced HPLC columns in the scientific literature. There are over 2000 analytical abstracts published on Spherisorb® columns, providing a tremendous range of validated methods and applications to assist you in your method development process.

Packing the best Waters Spherisorb® column

The way a column is packed will influence four very important performance features: peak symmetry, column efficiency, column lifetime and column-to-column reproducibility. At Waters, our column packing processes are developed in three stages, to ensure maximum performance at all times.

1 Quality

Waters Spherisorb® columns are manufactured in our dedicated chromatography chemistry manufacturing plant that works under cGMP. This plant is ISO 9002 certi-

fied and registered with the FDA as a manufacturer of Class 1 medical devices. This is Waters' guarantee to you that Waters Spherisorb® columns will consistently meet the quality standards required in today's regulated laboratories.

2 Packing Parameter Optimization

In order to pack the best column, the effect of all process parameters such as slurry solvent choice, packing pressure, time, temperature, flow rate and slurry volume need to be understood. Waters R&D engineers develop a packing process for each product we offer to ensure best peak symmetry, highest column efficiency and best column stability.

3 Column Testing Procedures

Every Waters Spherisorb® column is individually tested and a copy of the test chromatogram is supplied with each column.

A wide range of sizes and bonded phases

One of the great advantages of choosing Waters Spherisorb® columns is the range of choices available to you. Waters Spherisorb® columns are produced in a wide range of sizes and bonded phases to meet your chromatographic needs. Silica is produced in 3, 5 and 10 micron particle sizes. The high quality bonded phases give many different and unique separation selectivities.

You can choose from a variety of column and cartridge configurations. Your choice of column configuration should be based on your sensitivity needs, sample capacity, mobile phase, and budgetary needs. If you need a configuration not listed in this brochure, please contact your Waters sales representative for additional product information.

It's all backed by Waters world-class support

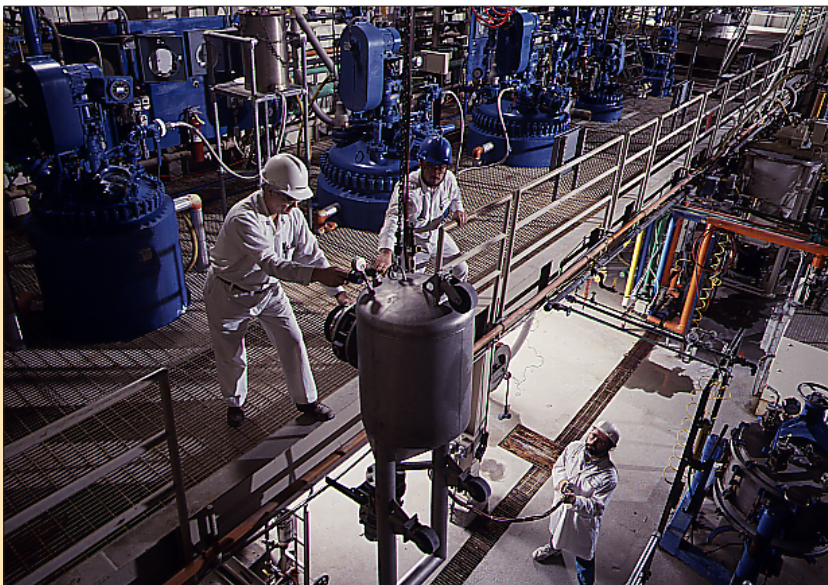
Waters has the largest technical support team dedicated to chromatography, so you get your questions answered correctly and quickly. Based on your needs, Waters can help you choose the right packing material and the most effective column configuration for your application.

Based on our experience, we make it easy for you to get the Waters Spherisorb® column you need.

The right column at the right price

Waters Spherisorb® columns are superior in quality, competitively priced, and they're available everywhere through Waters' worldwide distribution network.

Contact your Waters representative today, and find out how Waters Spherisorb® columns can meet your chromatographic challenge.



Waters cGMP manufacturing plant where silica-based and polymeric chromatography materials are synthesized and packed into columns and solid-phase extraction devices.

Product Description	Particle Shape	Surface Area (m ² /g)	Pore Size (Å)	Pore Volume (mL/g)	Particle Size (µm)	Carbon Load %	Ligand Coverage µMol/m ²	End-capped
Waters Spherisorb® Phases								
Waters Spherisorb® ODS2	Spherical	200	80	0.50	3,5,10	11.5	2.98	y
Waters Spherisorb® ODS1	Spherical	200	80	0.50	3,5,10	6.2	1.49	n
Waters Spherisorb® ODSB	Spherical	200	80	0.50	5	11.5	2.98	y
Waters Spherisorb® C8	Spherical	200	80	0.50	3,5,10	5.75	3.12	y
Waters Spherisorb® C6	Spherical	200	80	0.50	3,5,10	4.7	3.36	y
Waters Spherisorb® C1	Spherical	200	80	0.50	3,5,10	2.15	2.97	n
Waters Spherisorb® NH2 (Amino)	Spherical	200	80	0.50	3,5,10	1.9	2.64	n
Waters Spherisorb® Phenyl	Spherical	200	80	0.50	3,5,10	2.5	1.72	n
Waters Spherisorb® CN (Nitrile)	Spherical	200	80	0.50	3,5,10	3.1	3.29	n
Waters Spherisorb® OD/CN	Spherical	200	80	0.50	5	5	1.15	y
Waters Spherisorb® W (Silica)	Spherical	200	80	0.50	3,5,10			

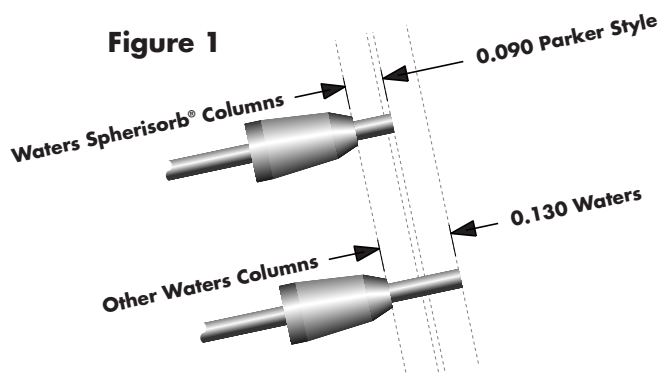
Waters Spherisorb® Ion-Exchangers

Waters Spherisorb® SCX	Spherical	200	80	0.50	5,10	1	1.38	n
Waters Spherisorb® SAX	Spherical	200	80	0.50	5,10	3	2.10	n

New Column Hardware

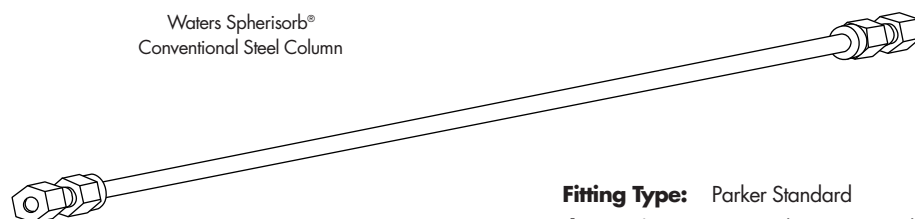
Waters Spherisorb® columns and cartridges utilize Parker style endfittings (Figure 1).

Therefore, if you are using Waters columns on your equipment and you want to use a Waters Spherisorb® column, then you will need to reset your endfitting connections to the Parker style standard.



Waters Spherisorb® Column Ordering Information

Waters Spherisorb® conventional analytical columns come with industry standard endfittings. The threaded female fitting requires a Parker-style compression screw and ferrule to connect the HPLC tubing to the analytical column. If your instrument is set up for Waters' columns, replace your ferrule on the connector tubing and set it for the Parker standard.



Fitting Type: Parker Standard
For Column Sizes: 1 mm i.d. to 20 mm i.d.
Length: 50 mm to 250 mm

Waters Spherisorb® Column Ordering Information

Waters Spherisorb® Columns Packed with 3 µm Material - 4.6 mm i.d.

3 µm Material	Chemistry	50 mm	100 mm	150 mm
Waters Spherisorb®	S3 ODS2	PSS 832111	PSS 832112	PSS 832113
	S3 ODS1	PSS 833411	PSS 833412	PSS 833413
	S3 C8	PSS 832211	PSS 832212	PSS 832213
	S3 C6	PSS 833111	PSS 833112	PSS 833113
	S3 C1	PSS 832911	PSS 832912	PSS 832913
	S3 NH2	PSS 832311	PSS 832312	PSS 832313
	S3 P (Phenyl)	PSS 833711	PSS 833712	PSS 833713
	S3 CN	PSS 832411	PSS 832412	PSS 832413
	S3 W (Silica)	PSS 832011	PSS 832012	PSS 832013

Waters Spherisorb® Columns Packed with 5 µm Material - 4.6 mm i.d.

5 µm Material	Chemistry	100 mm	150 mm	250 mm
Waters Spherisorb®	S5 ODS2	PSS 831912	PSS 831913	PSS 831915
	S5 ODS1	PSS 830612	PSS 830613	PSS 830615
	S5 C8	PSS 831812	PSS 831813	PSS 831815
	S5 C6	PSS 831012	PSS 831013	PSS 831015
	S5 C1	PSS 832612	PSS 832613	PSS 832615
	S5 NH2	PSS 831112	PSS 831113	PSS 831115
	S5 P (Phenyl)	PSS 830812	PSS 830813	PSS 830815
	S5 CN	PSS 830912	PSS 830913	PSS 830915
	S5 CN (NP)*	—	PSS 830908	PSS 830909
	S5 W (Silica)	PSS 830112	PSS 830113	PSS 830115
	Ion-Exchange	S5 SAX	PSS 832712	PSS 832713
S5 SCX		PSS 837512	PSS 837513	PSS 837515
Mixed Mode	S5 OD/CN	PSS 837812	PSS 837813	PSS 837815

Waters Spherisorb® Columns Packed with 10 µm Material - 4.6 mm i.d.

10 µm Material	Chemistry	100 mm	150 mm	250 mm
Waters Spherisorb®	S10 ODS2	—	PSS 832513	PSS 832515
	S10 ODS1	PSS 830712	PSS 830713	PSS 830715
	S10 C8	—	PSS 832813	PSS 832815
	S10 C6	—	PSS 833213	PSS 833215
	S10 C1	—	PSS 833013	PSS 833015
	S10 NH2	PSS 833612	PSS 833613	PSS 833615
	S10 P (Phenyl)	—	PSS 833813	PSS 833815
	S10 CN	PSS 833512	PSS 833513	PSS 833515
	S10 W (Silica)	PSS 830212	PSS 830213	PSS 830215
	Waters Spherisorb® Ion-Exchange	S10 SAX	PSS 833912	PSS 833913
S10 SCX		—	PSS 837613	PSS 837615

Waters Spherisorb® Columns Packed with 5 µm Material - 4.0 mm i.d.

5 µm Material	Chemistry	125 mm	250 mm
Waters Spherisorb®	S5 ODS2	PSS 845543	PSS 845277
	S5 ODS1	PSS 835541	PSS 845542
	S5 C8	PSS 845280	PSS 845281
	S5 C6	PSS 845284	PSS 845285
	S5 C1	PSS 845288	PSS 845289
	S5 NH2	PSS 845300	PSS 845301
	S5 P (Phenyl)	PSS 845292	PSS 845293
	S5 CN	PSS 845296	PSS 845297
	S5 W (Silica)	PSS 845539	PSS 845540
	S5 SAX	PSS 845304	PSS 845305
	S5 SCX	PSS 845308	PSS 845309

* Packed in normal phase compatible solvents.

**Waters Spherisorb® Narrowbore Columns
Packed with 3 µm Material - 2 mm i.d.**

Chemistry	100 mm	150 mm
S3 ODS2	PSS 832122	PSS 832123
S3 ODS1	PSS 833422	PSS 833423
S3 C8	PSS 832222	PSS 832223
S3 NH2	PSS 832322	PSS 832323
S3 CN	PSS 832422	PSS 832423
S3 W (Silica)	PSS 832022	PSS 832023

**Waters Spherisorb® Narrowbore Columns
Packed with 5 µm Material - 2 mm i.d.**

Chemistry	150 mm	250 mm
S5 ODS2	PSS 831923	PSS 831925
S5 ODS1	PSS 830623	PSS 830625
S5 C8	PSS 831823	PSS 831825
S5 NH2	PSS 831123	PSS 831125
S5 CN	PSS 830923	PSS 830925
S5 W (Silica)	PSS 830123	PSS 830125

**Waters Spherisorb® Microbore Columns
Packed with 3 µm Material - 1 mm i.d.**

Chemistry	100 mm	150 mm
S3 ODS2	PSS 832132	PSS 832133
S3 ODS1	PSS 833432	PSS 833433
S3 C8	PSS 832232	PSS 832233
S3 NH2	PSS 832332	PSS 832333
S3 CN	PSS 832432	PSS 832433
S3 W (Silica)	PSS 832032	PSS 832033

**Waters Spherisorb® Microbore Columns
Packed with 5 µm Material - 1 mm i.d.**

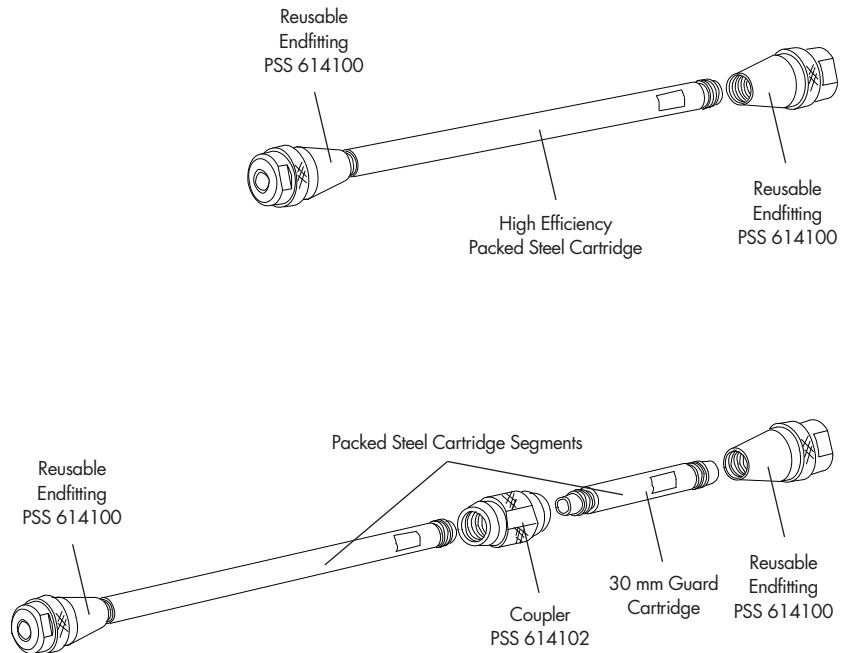
Chemistry	100 mm	150 mm	250 mm
S5 ODS2	PSS 831932	PSS 831933	PSS 831935
S5 ODS1	PSS 830632	PSS 830633	PSS 830635
S5 C8	PSS 831832	PSS 831833	PSS 831835
S5 C6	PSS 831032	—	—
S5 NH2	PSS 831132	PSS 831133	PSS 831135
S5 CN	PSS 830932	PSS 830933	PSS 830935
S5 W (Silica)	PSS 830132	PSS 830133	PSS 830135

**Waters Spherisorb® Columns Packed
with 10 µm Semi-Prep Material**

Chemistry		10 mm i.d. 250 mm	20 mm i.d. 250 mm
Waters Spherisorb®	S10ODS2	PSS 832585	PSS 832595
	S10ODS1	PSS 830785	PSS 830795
	S10C8	PSS 832885	PSS 832895
	S10C6	PSS 833285	PSS 833295
	S10C1	PSS 833085	PSS 833095
	S10NH2	PSS 833685	PSS 833695
	S10P	PSS 833885	PSS 833895
	S10CN	PSS 833585	PSS 833595
	S10W	PSS 830285	PSS 830295
	Waters Spherisorb® Ion-Exchange	S10SAX	PSS 833985
S10SCX		PSS 837685	PSS 837695

Waters Spherisorb® Steel Cartridge Column Ordering Information

Waters Spherisorb® cartridge columns require reusable cartridge endfittings. These endfittings should be ordered the first time a cartridge is purchased. For economy and convenience, the cartridge of your choice can be purchased as a starter kit containing the necessary endfittings. Please ask your sales representative for details on cartridge starter kits which include the necessary endfittings. The reusable endfittings are a Parker-style standard endfitting. Coupler fittings are also available to allow you to link a guard cartridge to your analytical cartridge.



Fitting Type: Parker Standard
For Cartridge Sizes: 3.0 mm i.d. to 4.6 mm i.d.
Length: 50 mm to 250 mm

Waters Spherisorb® Cartridge Columns Packed with 5 µm Material - 4.6 mm i.d.

5 µm Material	Chemistry	50 mm	100 mm	150 mm	250 mm
Waters Spherisorb®	S5 ODS2	PSS 839536	PSS 839537	PSS 839538	PSS 839540
	S5 ODS1	PSS 839506	PSS 839507	PSS 839508	PSS 839510
	S5 ODS B	—	—	PSS 839613	PSS 839615
	S5 C8	PSS 839531	PSS 839532	PSS 839533	PSS 839535
	S5 C6	PSS 839521	PSS 839522	PSS 839523	PSS 839525
	S5 C1	PSS 839566	PSS 839567	PSS 839568	PSS 839570
	S5 NH2	PSS 839526	PSS 839527	PSS 839528	PSS 839530
	S5 P (Phenyl)	PSS 839511	PSS 839512	PSS 839513	PSS 839515
	S5 CN	PSS 839516	PSS 839577	PSS 839518	PSS 839520
	S5 W (Silica)	PSS 839501	PSS 839502	PSS 839503	PSS 839505
Waters Spherisorb® Ion-Exchange	S5 SAX	PSS 839571	PSS 839572	PSS 839573	PSS 839575
	S5 SCX	PSS 839651	PSS 839652	PSS 839653	PSS 839655
Mixed Mode	S5 OD/CN	—	—	PSS 839643	PSS 839645

**Waters Spherisorb® Cartridge Columns
Packed with 3 µm Material - 4.6 mm i.d.**

3 µm Material	Chemistry	50 mm	100 mm	150 mm
Waters Spherisorb®	S3 ODS2	PSS 839546	PSS 839547	PSS 839548
	S3 ODS1	PSS 839586	PSS 839587	PSS 839588
	S3 C8	PSS 839551	PSS 839552	PSS 839553
	S3 C6	PSS 839581	PSS 839582	PSS 839583
	S3 C1	PSS 839576	PSS 839577	PSS 839578
	S3 NH2	PSS 839556	PSS 839557	PSS 839558
	S3 P (Phenyl)	PSS 839591	PSS 839592	PSS 839593
	S3 CN	PSS 839561	PSS 839562	PSS 839563
	S3 W (Silica)	PSS 839541	PSS 839542	PSS 839543

**Waters Spherisorb® Cartridge Columns
Packed with 3 µm Material - 4.6 mm i.d.**

3 µm Material	Chemistry	30 mm
Waters Spherisorb®	S3 ODS2	PSS 830065
	S3 W	PSS 830068

**Waters Spherisorb® Cartridge Columns
Packed with 5 µm Material - 4.0 mm i.d.**

5 µm Material	Chemistry	125 mm	150 mm
Waters Spherisorb®	S5 ODS2	PSS 845553	PSS 845554
	S5 ODS1	PSS 845551	PSS 845552
	S5 C8	PSS 845555	PSS 845556
	S5 C6	PSS 845557	PSS 845558
	S5 C1	PSS 845559	PSS 845560
	S5 NH2	PSS 845565	PSS 845566
	S5 P (Phenyl)	PSS 845561	PSS 845562
	S5 CN	PSS 845563	PSS 845564
	S5 W (Silica)	PSS 845549	PSS 845550
	S5 SAX	PSS 845567	PSS 845568
	S5 SCX	PSS 845569	PSS 845570

**Waters Spherisorb® Cartridge Columns
Packed with 5 µm Material - 3.0 mm i.d.**

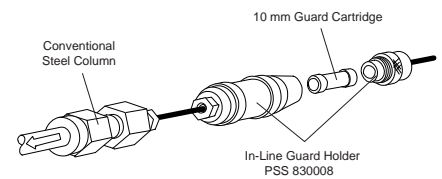
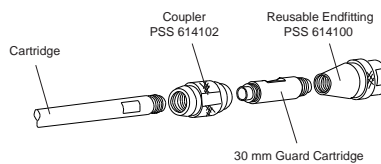
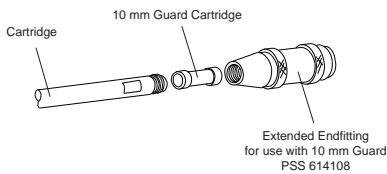
5 µm Material	Chemistry	125 mm	250 mm
Waters Spherisorb®	S5 ODS2	PSS 838529	PSS 838522
	S5 ODS1	PSS 838530	PSS 838523
	S5 C8	PSS 838533	PSS 838525
	S5 NH2	PSS 838535	PSS 838526
	S5 CN	PSS 838531	PSS 838524
	S5 W (Silica)	PSS 838554	PSS 838521

Waters Spherisorb® Guard Cartridges and Columns

Waters Spherisorb® 10 mm and 30 mm Steel Guard Cartridges

Description	Pack Size	*10 mm Integral Guard	† 30 mm Coupled Guard
ODS 1	3	PSS 830073	PSS 839472
ODS 2	3	PSS 830053	PSS 839458
C8	3	PSS 830074	PSS 839473
C6	3	PSS 830075	PSS 839474
C1	3	PSS 830076	PSS 839475
CN	3	PSS 830077	PSS 839476
Phenyl	3	PSS 830078	PSS 839477
NH2	3	PSS 830079	PSS 839478
Silica	3	PSS 830051	PSS 839451
SAX	3	PSS 830055	PSS 839465
SCX	3	PSS 830057	PSS 839471
ODS-B	3	PSS 830059	PSS 839470

* 10 mm Integral Guard requires Part No PSS 614108 below, † 30 mm Guard requires PSS 614102 below.



Steel Cartridge Fittings and Accessories

These endfittings and accessories can be used with 4.6 mm, 4.0 mm or 3.0 mm i.d. cartridges



1. 30 mm stand-alone Guard/Column (Endfittings not included)
2. Extended Endfitting for use with 10 mm Integral Guard: PSS 614108
3. 10 mm Integral Guard Column
4. Column Coupler : PSS 614102

Description	Pack Size	Part No
Removable Column Endfitting	2	PSS 614100
Frit Assembly (2 µm)	5	PSS 614103
Frit Assembly (0.5 µm)	5	PSS 614104
Column Coupler	2	PSS 614102
Long Tail Endfitting	2	PSS 614101
Extended Endfitting for use with 10 mm Integral Guard	1	PSS 614108
Nylon Column Plugs for Storage of Complete Column	10	PSS 614115
Nylon Column Caps for Storage of Replacement Cartridge Column	10	PSS 614113
In-Line 10 mm Guard Cartridge Holder for use with above items		PSS 830008

Waters

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All other countries: Waters Corporation U.S.A. 508 478 2000/800 252 4752



The quality management system of Waters' manufacturing facility, Taunton, Massachusetts, complies with the International Standard ISO 9002 Quality Management and Quality Assurance Standards. Waters' quality management system is periodically audited by the registering body to ensure compliance.

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