

## HPLC Chromatography

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<b>L1</b>	Octadecyl silane chemically bonded to porous silica or ceramic microparticles, 3 to 10 µm in diameter.	MEDITERRANEA SEA18 TRACER EXCEL 120 ODS A TRACER EXCEL 120 ODS B TRACER EXTRASIL ODS2 TRACER EXTRASIL ODS1 Advantix ODS Hyperpack ODS Hyperpack BASIC TSKgel ODS YMC PRO C18 HYPERSIL HYPERSIL BDS HyPURITY C18 LICHROSORB RP18 LICHROSPHER RP18 NUCLEOSIL 100 C18 NUCLEOSIL 120 C18 PARTISIL ODS3
<b>L3</b>	Porous silica microparticles, 5 to 10 µm in diameter.	TRACER EXCEL 120 Si TRACER EXTRASIL Si PINNACLE Si HYPERSIL Si ULTRA Si PINNACLE Si LICHROSORB Si LICHROSPHER Si NUCLEOSIL 100 Si NUCLEOSIL 120 Si PARTISIL Si
<b>L7</b>	Octyl silane chemically bonded to totally porous microsilica particles, 5 to 10 µm in diameter.	TRACER EXCEL 120 C8 TRACER EXTRASIL C8 Advantix C8 ULTRA C8 PINNACLE C8 TSKgel oCTYL HYPERSIL C8 LICHROSORB RP8 LICHROSPHER RP8 NUCLEOSIL 100 C8 NUCLEOSIL 120 C8
<b>L8</b>	An essentially monomolecular layer of aminopropyl-silane chemically bonded to totally porous silica gel support, 10 µm in diameter.	TRACER EXCEL 120 APS TRACER EXTRASIL NH2 TRACER EXCEL 120 C8 HYPERSIL NH2 LICHROSORB NH2 LICHROSPHER NH2 NUCLEOSIL 100 NH2 NUCLEOSIL 120 NH2
<b>L9</b>		TRACER EXTRASIL SCX PARTISIL SCX
<b>L10</b>	Nitrile groups chemically bonded to porous silica microparticles, 5 to 10 µm in diameter.	TRACER EXCEL 120 CN TRACER EXTRASIL CN HYPERSIL CPS HYPERSIL BDS CPS LICHROSORB CN LICHROSPHER CN NUCLEOSIL 100 CN NUCLEOSIL 120 CN
<b>L11</b>	Phenyl groups chemically bonded to porous silica microparticles, 5 to 10 µm in diameter.	TRACER EXCEL 120 PHENYL TRACER EXTRASIL PHENYL NUCLEOSIL 100 P
<b>L13</b>	Trimethylsilane chemically bonded to porous silica microparticles, 5 to 10 µm in diameter.	TRACER EXCEL 120 C1 TRACER EXTRASIL C1

<b>L14</b>	Silica gel, 10 µm in diameter, having a chemically bonded, strongly basic quaternary ammonium anion-exchange coating.	TRACER EXTRASIL SAX
<b>L15</b>	Hexyl silane chemically bonded to totally porous silica particles, 3 to 10 µm in diameter.	TRACER EXTRASIL C6
<b>L16</b>	Dimethyl silane chemically bonded to totally porous silica particles, 5 to 10 µm in diameter.	NUCLEOSIL 100 C2
<b>L17</b>	Strong cation-exchange resin consisting of sulfonated cross-linked styrene-divinylbenzene copolymer in the hydrogen form, 7 to 11 µm in diameter.	HAMILTON HC-75 HYDROGEN FORM COREGEL 87H ORH-801 ION-300
<b>L18</b>	Amino and cyano groups chemically bonded to porous silica particles, 5 to 10 µm in diameter.	PARTISIL PAC
<b>L19</b>	Strong cation-exchange resin consisting of sulfonated cross-linked styrene-divinylbenzene copolymer in the calcium form, 9 µm in diameter.	CARBOSEP CHO-820 CARBOSEP CHO-620 COREGEL 87-C CARBOSEP USP L19 CA HAMILTON HC-75 CALCIUM
<b>L20</b>	Dihydroxypropane groups chemically bonded to porous silica particles, 5 to 10 µm in diameter.	LICHROSORB DIOL LICHROSPHER DIOL
<b>L21</b>	A rigid, spherical styrene-divinylbenzene copolymer, 5 to 10 µm in diameter.	HAMILTON PRP-1
<b>L22</b>	A cation exchange resin made of porous polystyrene gel with sulfonic acid groups, about 10 µm in diameter.	HAMILTON PRP-X200
<b>L23</b>	An ion exchange resin made of porous polymethacrylate or polyacrylate gel with quaternary ammonium groups, about 10 µm in size.	HAMILTON PRP-X500
<b>L24</b>	A semi-rigid hydrophilic gel consisting of vinyl polymers with numerous hydroxyl groups on the matrix surface, 32 to 63µm in diameter.	TOYOPEARL HW, F Grade
<b>L25</b>	Packing having the capacity to separate compounds with a MW range from 100 to 5000 daltons (as determined by polyethylene oxide), applied to neutral, anionic, and cationic water-soluble polymers. A polymethacrylate resin base, crosslinked with polyhydroxylated ether (surface contained some residual carboxyl functional groups) was found suitable.	TSK-GEL G2500PW TSK-GEL G2500PWXL TSK-GEL G-Oligo PW
<b>L26</b>	Butyl silane chemically bonded to totally porous silica particles, 5 to 10 µm in diameter.	TRACER EXCEL 120 C4
<b>L27</b>	Porous silica particles, 30 to 50 µm in diameter.	Ymc-PACK SILICA 30/60
<b>L30</b>	Ethyl silane chemically bonded to a totally porous silica particle, 3 to 10 µm in diameter.	LICHROSORB RP-2
<b>L33</b>	Packing having the capacity to separate proteins of 4000 to 400000 daltons. It is spherical, silica-based and processed to provide pH stability.	TSK GEL SW AND SWXL SERIES
<b>L34</b>	Strong cation-exchange resin consisting of sulfonated cross-linked styrene-divinylbenzene copolymer in the lead form, about 9 µm in diameter.	CARBOSEP CHO-682 HAMILTON HC-75 Pb
<b>L37</b>	Polymethacrylate gel packing having the capacity to separate proteins by molecular size over a range of 2,000–40,000Da MW	TSK-Gel G 3000 PWXL
<b>L38</b>	Methacrylate-based size exclusion packing for water-solubles	TSK-GEL PW/PWXL
<b>L40</b>	Cellulose tris-3,5-dimethylphenylcarb-amate coated porous silica particles, 5 to 20 µm in diameter	CHIRALCEL AD
<b>L41</b>	Immobilized alpha-acid glyco-protein on spherical silica particles, 5 µm in diameter	CHIRAL-AGP
<b>L43</b>	Pentafluorophenyl groups chemically bonded to silica particles 5 to 10 µm in diameter	Hypersil GOLD PFP

# TK New Hardware Design Column: Ultrafit™ System

## New Hardware Design Column: Ultrafit™ System

The new Ultrafit™ design will make your work in the laboratory more comfortable and efficient. The Ultrafit™ system, as well as helping in the replacement of the frit at the column entrance, enables you to easily include either additional frits or a pre-column, always with the utmost simplicity and economy and in no way whatsoever is the quality of the separation affected.

In designing the Ultrafit™ column, the greatest care has been taken to cover all the aspects that may occur in the loss of efficiency of the column. As a result of all this, dead volumes have been reduced to a minimum, entered by the system by means of a high precision mechanism, with inlet and outlet holes of 0.2 mm and first-class tapers for the perfect distribution of the inlet and outlet flows, as seen in the three depicted Ultrafit™ options. The Ultrafit™ system enables a pre-column to be included without loss of efficiency, to columns as small as 30 x 4 mm packed with particles of 3 μm.

Moreover, the very best material has been selected for the construction of the column, with an ultra-shiny interior finish, of extremely low RMS, ensuring that no tube imperfection in the column will affect the quality of the separation.

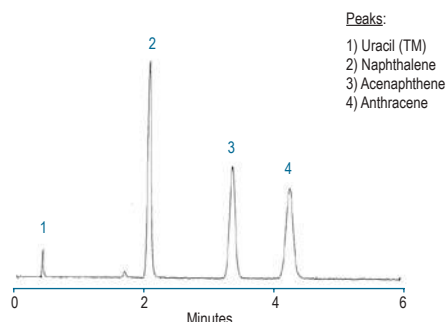
### Ultrafit™ System Efficiency

Column	Efficiency (N/m)	AS (10%)
<b>mediterranea sea18</b> Column 3 μm 5 x 0,46 cm Ultrafit™ System	134904	1,11
<b>mediterranea sea18</b> Column 3 μm 5 x 0,46 cm with Prefilter Ultrafilter™	135042	1,05
<b>mediterranea sea18</b> Column 3 μm 5 x 0,46 cm with Precolumn Ultraguard™	137819	1,07

### Chromatographic Conditions:

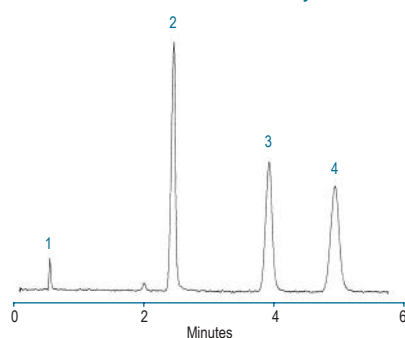
Column: mediterranea sea18 3 mm 5 x 0,46 cm  
 Eluant: Acetonitrile/Water 65:35  
 Flow: 0,9 ml/min  
 Det. UV 254 nm  
 Temp. Room  
 Sample: Acenaphthene 0,2 mg/ml

Our Columns **Mediterranea™**, **Europa Peptides™**, **Europa Proteins & Tracer Excel™** are built with the new Ultrafit™ System

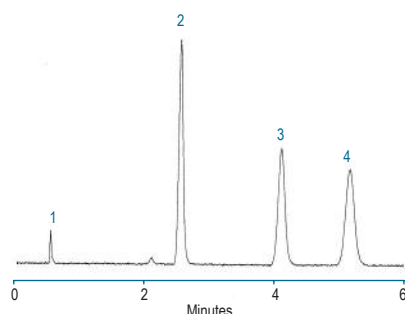


Peaks:  
 1) Uracil (TM)  
 2) Naphthalene  
 3) Acenaphthene  
 4) Anthracene

Column with Ultrafit™ System

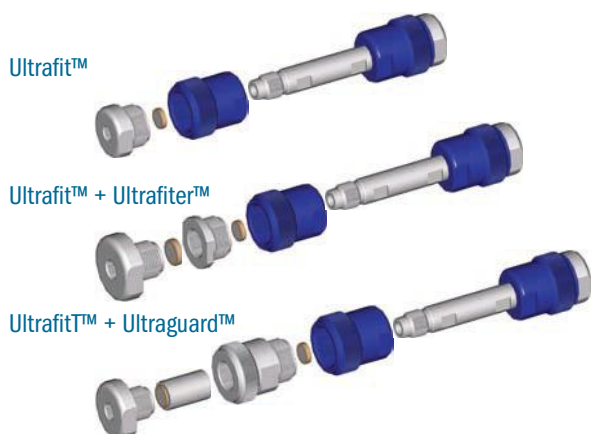


Column with Ultrafit™ System + Ultrafilter™



Column with Ultrafit™ System + Ultraguard™

### Ultrafit™ System Configuration





To get HPLC columns with maximum efficiency and peak symmetry, Teknokroma uses tubing and connections designed and fully optimized to provide you superior performance than achievable with columns from the major manufacturers.

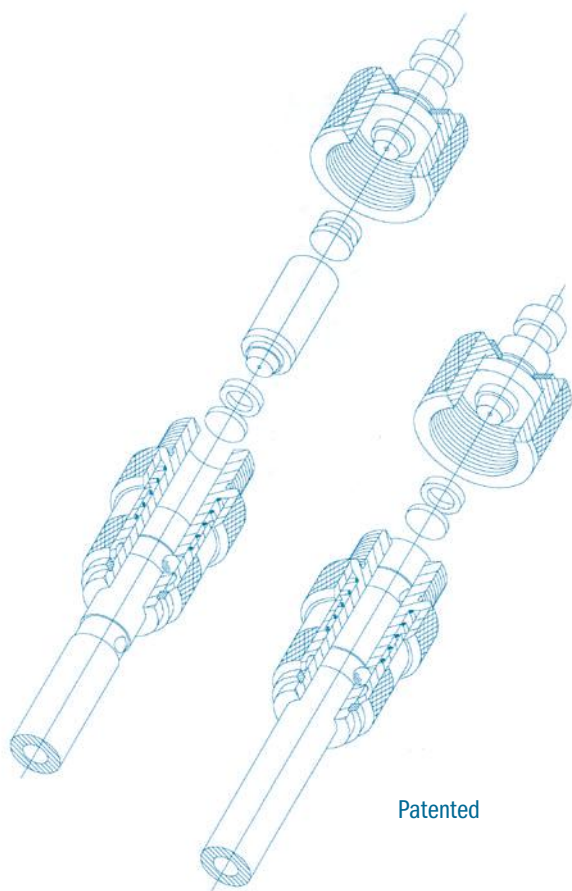
The Novacol™ columns, designed and manufactured by Teknokroma, use the best bonding reagents, packing support materials and proprietary Novabond™ procedures. Novacol™ tubing uniformity and polished interior finish generates higher efficiencies than columns from the major manufacturers. The latest in current research trends in HPLC are included in Novacol™ columns; including smaller particle size, greater particle uniformity, reduced tubing internal diameters and shorter columns for LC-MS applications. Novacol™ columns are designed with a new generation of tubing interior surfaces, connections, end-fittings and packing procedures. Our Novabond™ proprietary procedures allows us to manufacture columns as small as 2mm ID with 3 µm particles and columns as short as 5cm long with 2mm ID with no loss in theoretical efficiency.

Our Novacol™ columns have added another new feature - the incorporation of Microtaper™ in the design and manufacture of our Novacol frits to optimize the correct sample filtering distribution at the entry and exit of the column.

Lastly, we designed Novacol™ columns to allow you to easily change frits without running the risk of affecting the column packing during the exchange. Novacol™ columns are compatible with all 10/32 Valco-type connections.

Novacol™ columns are available in a wide range of standard internal diameters (4.6, 4.0, 3.0, and 2.1mm ID) and various standard lengths (3, 5, 10, 12.5, 15, 20, 25, and 30cm), which allows you to adapt to all chromatographic modes: microbore, ultrafast and analytical.

# TK Novafix™ HPLC Cartridge System



Teknokroma has designed and developed the original, patented Novafix™ Cartridge System for HPLC, which is the result of more than 14 years of experience researching and manufacturing Teknokroma HPLC columns.

## Novafix™ Quality

Teknokroma has always achieved its best in offering top-quality products and services. This quality-excellence philosophy has helped Teknokroma achieve HPLC market leadership wherever its products are marketed. Our research scientists have utilized the same quality-excellence philosophy to meticulously design the new Novafix™ HPLC Cartridge System. Novafix™ Cartridges are made from chosen materials and select bonded packings that guarantee the greatest column efficiency, peak symmetry and reproducibility.

In addition, Teknokroma's proprietary Novabond™ packing procedures are the result of years of exhaustive research and detailed manufacturing of HPLC columns. Novabond packing procedures provide you with the best column efficiency, peak symmetry and column lifetime available on the market.

## Novafix™ Easy Handling

The mechanism for rapid connection designed in the Novafix™ Cartridge System does not require you to use any tools for its assembly or dismantling. This design feature makes Novafix™ columns simple and easy to handle.

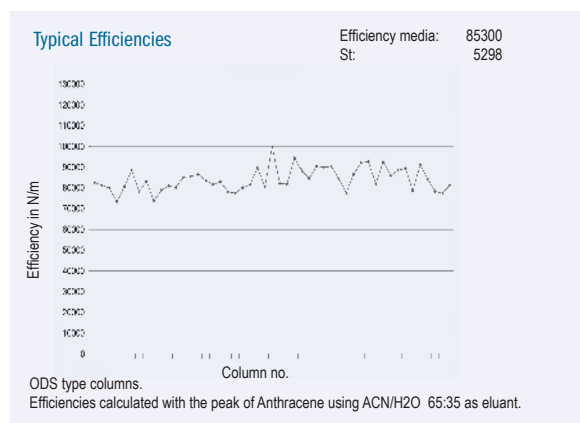
## Novafix™ Functional Design

Without requiring any additional accessories, the Novafix Cartridge System permits the insertion a 1cm-long precolumn at the head of the analytical cartridge. This is achieved without introducing any dead volume, thereby maximizing column efficiency and peak symmetry.

## Novafix™ Efficiency

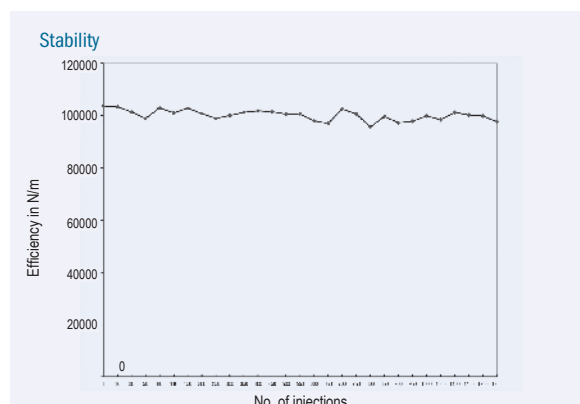
The Novafix™ HPLC Cartridge supplies the highest theoretical efficiency. These typically high efficiencies are achieved due to the zero dead-volume connections and proprietary Novabond™ packing procedures.

Particle size $\mu\text{m}$	Typical Efficiencies N/m
3	120-150.000
5	80-110.000
10	35-65.000



## Novafix™ Stability

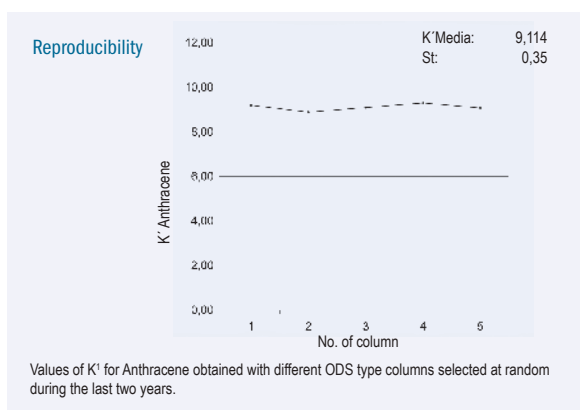
The design of the Novafix™ HPLC Cartridge System ensures not only maximum efficiencies, but also long useful lifetimes. Novafix™ Cartridges provide maximum stability for packing materials in the precolumn and analytical column cartridges, no matter how frequently the precolumn is exchanged.





## Novafix™ Reproducibility

In the Novafix™ cartridges manufacture, we only use the top valued packings of the market for guaranteeing the maximum reproducibility. That way the values of resolution, selectivity, efficacy and stability will repeat column by column and year by year, without requiring special modifications in the chromatographic method.



## Guard Cartridge

Function	Pkg	Cat.Nbr.
Silica	5 units	TR-015325
ODS	5 units	TR-015326
CN	5 units	TR-015327
NH <sub>2</sub>	5 units	TR-015328
SAX	5 units	TR-015329
SCX	5 units	TR-015330
C-8	5 units	TR-015510
Diol	5 units	TR-015511
C <sub>6</sub> H <sub>5</sub>	5 units	TR-015512
C-1	5 units	TR-015513
Carbohid.	5 units	TR-015331
Anions	5 units	TR-015335

## Kits and Accesories

Description	Cat.Nbr.
Holder: Connecting accessories : 2 units	TR-015323
Teflon seals: 10 units	TR-015324

## Novafix™ Versatility

Teknokroma provides a wide range of bonded packing and configurations in the Novafix™ HPLC Cartridge System. This includes the most popular bonded packings on the market as well as packings for special applications. The Novafix Cartridge versatility of packings represents a great advantage over other cartridge systems that normally limit the range of packings to one or a few select packings.

- Packings of 3, 5 and 10 µm
- Lengths of 7.5, 15 and 25cm
- Different Internal diameters
- Packings of Tracer Excel, Tracer Extrasil, Nucleosil, Lichrosorb, Lichrospher, Superspher, Partisil, etc.

## Guarantee

At Teknokroma, we guarantee the maximum quality of our products. This starts with quality in the mechanical components and finishes with final computerized quality control tests on each Novafix HPLC cartridge. Our quality controls ensure that you will receive only those cartridges which conform to the high quality demanded in our Novafix Cartridge specifications.

## Economy

To the criteria of maximum functionality and quality, we have also integrated the criterion of economy in the Novafix™ Cartridge System. The Novabond™ bonding and packing processes are rigidly controlled to produce superior yields of high-quality products. The Novabond™ processing makes NovafixNovafix™ Cartridges the most economical choice in the global HPLC market. This enables us to reduce the price even further with our “economy sets” of three NovafixNovafix™ Cartridges.

## Microbore Columns

### Low Dispersion Chromatography

Our experience in the manufacture of HPLC columns allow us to offer the possibility to work with this interesting chromatographic concept. These columns of 2 and 3mm of internal diameter, packed with the same packings than 3 and 5  $\mu\text{m}$  analytical columns, contribute to an important solvents saving and at the time a detectability considerable increase.

### Sensibility of Detection

Since the detectability depends on the grade of dilution of the sample while it passes through the column, a reduction of the internal diameter of the column redounds directly in a minor dilution and therefore in an increment of the detection sensibility.

### Solvents Saving

The same chromatogram obtained with a conventional 4,6 mm ID column working at 2 ml/min can be obtained with a flow of 0,4 ml/min when it is worked with a 2,1 mm ID microbore column. This represents a 80 % saving of the eluyent wasted in HPLC, which means that for a standard job in a chromatograph will represent a saving of 15 liters of solvent.

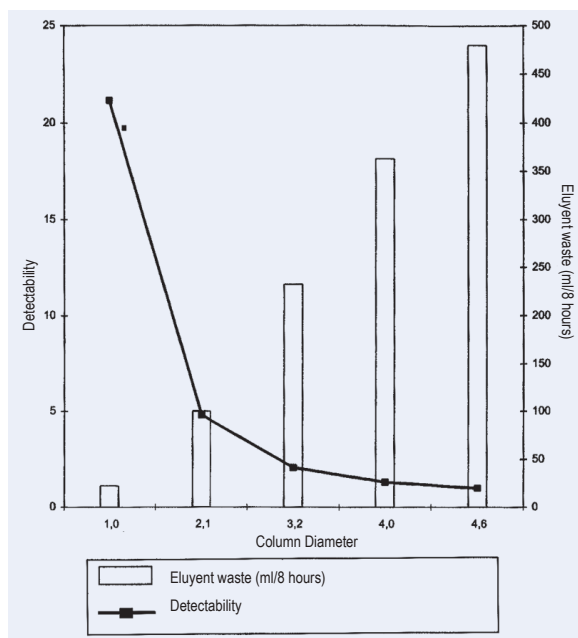
### Instrumentation

The level of development achieved by the instrumentation of HPLC allows that these kind of columns can be used by most of the commercialized chromatographs.

In many cases, the 90 % of efficiency loss owed to the chromatograph system, can be eliminated simply with the optimization of connections and the capilar tubes that connect the injector to column and column to detector.

Column (mm)	Eluyent Waste	Detectability
4.6	480	1
4.0	363	1.322
3.2	232	2.066
2.1	100	4.798
1	22.68	21.16

Available also 1 mm internal diameter columns.  
Please contact with your representative.



## High-speed chromatography

The use of ultrarapid columns is ideal when short times of analyses are needed (0.5-3.0 min) and high efficiencies of separation. These columns 3-10 cm of length, are packed with spherical packs of 3  $\mu\text{m}$ , and offer efficiencies of 5-15000 N column (equivalents to 120-150000 N/m), more than enough for the majority of separations.

## Sensibility of detection

Reducing the size of particle the dispersion of the sample in the inside of the column decreases also.

In this way, the use of ultrarapid columns give a significant improvement of the limit of detection when compared with the one obtained with analytical conventional columns.

## High resolution

Columns of 15-25 cm length packaged with 3  $\mu\text{m}$  packs achieve efficiencies of over 30000 N/column, which can be very useful when very complex samples require high separation capabilities.

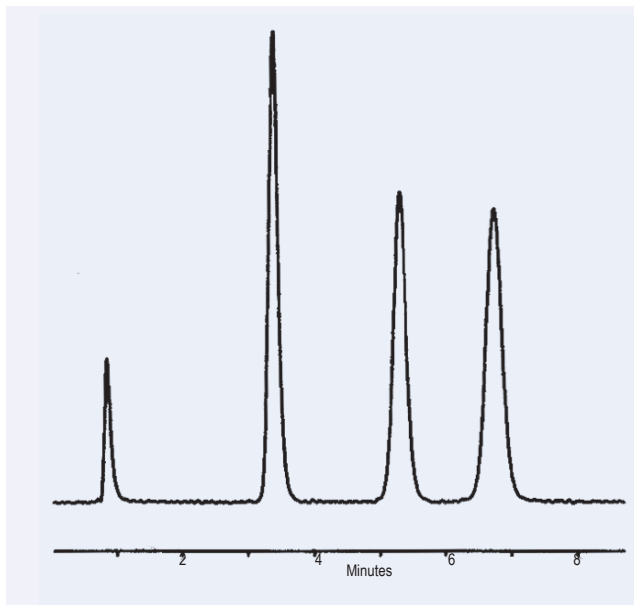
## Economy

The reduced time of analysis that is achieved with these columns and therefore the elevated number of samples that can be processed per time unit, compared with conventional columns, allows optimizing to the full the performance of one chromatographic equipment. The extensive selection of available phases allows turning any chromatographic separation into ultrarapid, with all the advantages that this bears.

## Instrumentation

The use of this kind of columns does not require any especial chromatographic equipment.

In some cases it may be necessary to optimize the system with the use of adequate conductions to minimize the efficiency losses due to extra-column dead volumes. Besides, thanks to the elevated number of plates (N/col) of these columns, it can be tolerated a certain loss of efficiency due to the system, without affecting greatly to the resolution.



### Sample:

1. Uracil
2. Naphtalene
3. Acenaphthene
4. Anthracene

**140,000 N m**

**4,900 N column**

**Time of analysis: 40 seg.**

**Column:** Tracer Extrasil  
ODS2 3 $\mu$  3,5 x 0,46 cm

**Eluyent:** Acetonitrile/H2O 65:35

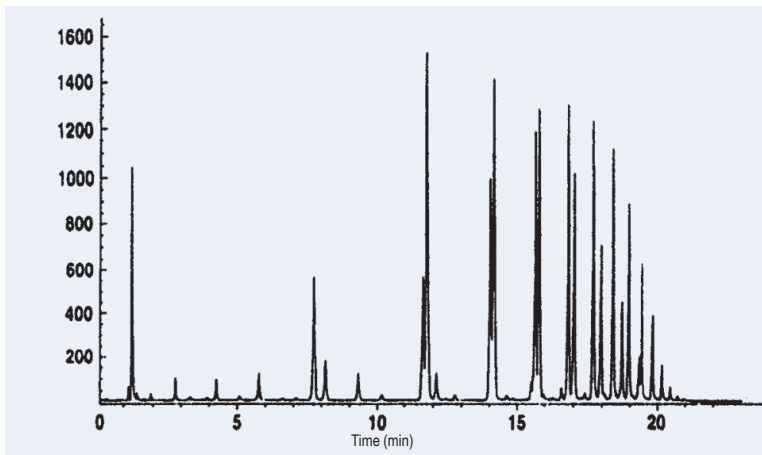
**Flow:** 4.0 ml/min

**Pressure:** 110 bar

**Sample volume:** 10  $\mu\text{l}$

**Temperature:** Amb.

**Detection:** UV 254 nm



**Sample :** Oligomeres of Polycarbonate

**Column:** Nucleosil 120 3 $\mu$  C-18 25 x 0.4 cm

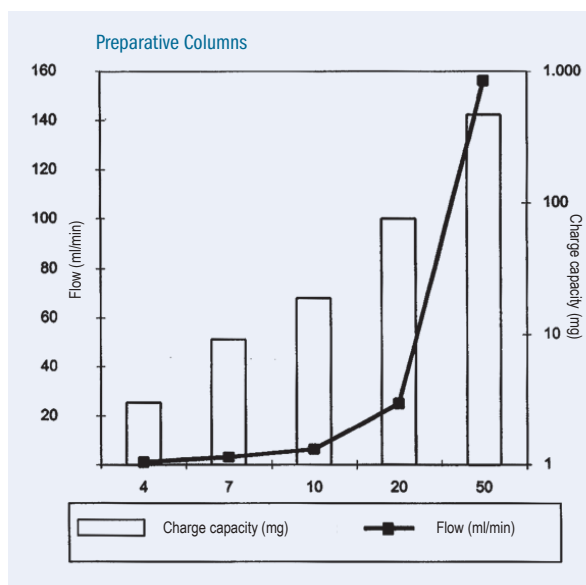
**Eluyent:** A: 10mM phosphoric acid

B: Acetonitrile

**Gradient:** 70-100% of B in 30 min

**Flow:** 3.0 ml/min

**Temperature:** 70  $^{\circ}\text{C}$ ; Detection: UV 200 nm



## Preparative Chromatography

Teknokroma has developed the semi-preparative columns with the same criteria of quality and versatility that has taken us to lead the market of HPLC analytical columns.

## Versatility

Teknokroma offers the highest range of phases of the market, covering practically all kind of functional groups. This simplifies enormously the transposition from the analytical scale to the preparative.

Besides, a complete range of dimensions of column, from 7.8 mm to 21 mm of diameter, with lengths up to 25 cm and with a high selection of particle sizes, makes it easy the definition of the ideal configuration of column in relation to his volume capacity and the kind of chromatographic equipment available in the laboratory.

## Quality

Teknokroma has selected only those materials that offer the maximum efficiency and reproducibility.

Each column is individually tested to guarantee that will fulfil the high standards of quality demanded, controlling the parameters of efficiency, peak symmetry and selectivity.

## Analytical Quality Packing

The preparative columns packaged with 5 and 10  $\mu\text{m}$  analytical packing offer exactly the same benefit levels than the correspondent analytical columns.

Its high pressure packing ensures a high stability and consequently a long life use of the column.

## Preparative quality packings

The packing of preparative quality are the recommended for 20 mm ID or upper columns. These packings are manufactured under the same quality standards, with the difference that they present a particle size normally bigger and a size dispersion not as adjusted as the analytical packings.

The result is an inferior cost of the column and, therefore, in many cases an optimized cost for preparative separations. Higher diameters of column available.

**All kind of preparative packings and process packings. Consult our technical department.**



Reference	Description
TR-C-160	Holder
TR-C-160K1	Holder + 2 cartridges ODS
TR-C-160K2	Holder + 2 cartridges Si
TR-C-160K3	Holder + 2 cartridges C8
TR-C-160K4	Holder + 2 cartridges NH <sub>2</sub>
TR-C-160K5	Holder + 2 cartridges SAX
TR-C-160K6	Holder + 2 cartridges CN
TR-C-160K7	Holder + 2 cartridges PAH
TR-C-160K8	Holder + 2 cartridges C6H5
TR-C-160K9	Holder + 2 cartridges CARBOHYDRATES
TR-C-160K10	Holder + 2 cartridges ANION
TR-C-160K11	Holder + 2 cartridges SCX
TR-C-160K12	Holder + 2 cartridges C2
TR-C-160K13	Holder + 2 cartridges 300 C4
TR-C-160K14	Holder + 2 cartridges 300 C8
TR-C-160K15	Holder + 2 cartridges DIOL
TR-C-160K16	Holder + 2 cartridges 300 C18
TR-C-160K17	Holder + 2 cartridges C4
TR-C-160K18	Holder + 2 cartridges PRP-1
TR-C-160K19	Holder + 2 cartridges PEPTIDE C18
TR-C-160K20	Holder + 2 cartridges C1
TR-C-160K21	Holder + 2 cartridges C6
TR-C-160-1	ODS Cartridges (5 units)
TR-C-160-2	Si Cartridges (5 units)
TR-C-160-3	C8 Cartridges (5 units)
TR-C-160-4	NH <sub>2</sub> Cartridges (5 units)
TR-C-160-5	SAX Cartridges (5 units)
TR-C-160-6	CN Cartridges (5 units)
TR-C-160-7	PAH Cartridges (5 units)
TR-C-160-8	C6H5 Cartridges (5 units)
TR-C-160-9	CARBOHYDRATES Cartridges (5 units)
TR-C-160-10	ANION Cartridges (5 units)
TR-C-160-11	SCX Cartridges (5 units)
TR-C-160-12	C2 Cartridges (5 units)
TR-C-160-13	300C4 Cartridges (5 units)
TR-C-160-14	300C8 Cartridges (5 units)
TR-C-160-15	DIOL Cartridges (5 units)
TR-C-160-16	300C18 Cartridges (5 units)
TR-C-160-17	C4 Cartridges (5 units)
TR-C-160-18	PRP-1 Cartridges (5 units)
TR-C-160-19	PEPTIDE C18 Cartridges (5 units)
TR-C-160-20	C1 Cartridges (5 units)
TR-C-160-21	C6 Cartridges (5 units)

## Guard Columns for HPLC Columns

- Interposed between the injector and the column these precolumns lengthen the life of the column and improve the reproducibility of their results.
- Packed with the most modern HPLC packings and Novabond™ proprietary packing procedures.
- Economic and easily replaced.
- For general use in any HPLC system.
- Packed at high pressure for maximum stability and duration.
- Their use does not imply any loss of efficiency, even with packings of 3 µm or with microbore columns of 2mm ID

## BIOCOMPATIBLE Precolumns

- 100% biocompatible.
- Economical cartridge system with titanium frits.

Constructed in PEEK® and packed with de-activated silica: the steel holder also ensures a total biocompatibility by having every µm in contact with the mobile phase made of PEEK®.

## Guard Column Cartridges, Biocompatible

### 2.0mm ID X 1 cm, 10 µm

UP-C-280	Reversed Phase C18	3-pk
UP-C-282	Reversed Phase C18	10-pk
UP-C-753	Absorption Si	3-pk
UP-C-754	Absorption Si	10-pk
UP-C-755	Amino Phase NH <sub>2</sub>	3-pk
UP-C-756	Amino Phase NH <sub>2</sub>	10-pk
UP-C-757	Cyano Phase CN	3-pk
UP-C-758	Cyano Phase CN	10-pk

## Guard Column Cartridges, Biocompatible

### 4.3mm ID X 1 cm, 5 µm

UP-C-750	Reversed Phase C18	3-pk
UP-C-752	Reversed Phase C18	10-pk
UP-C-759	Absorption Si	3-pk
UP-C-760	Absorption Si	10-pk
UP-C-761	Amino Phase NH <sub>2</sub>	3-pk
UP-C-762	Amino Phase NH <sub>2</sub>	10-pk
UP-C-763	Cyano Phase CN	3-pk
UP-C-764	Cyano Phase CN	10-pk

## Guard Column Cartridge Holders, Biocompatible

UP-C-270 High Pressure, Stainless Steel, with (2) F-200 Fittings

UP-C-283 Low Pressure, Teflon, with (2) P-200/P-245 Fittings

## Cartridge Guard Column Kits

UP-C-281 2.0mm ID C18 Cartridges (6-pk) with (1) C-270 Assembly

UP-C-751 4.3mm ID C18 Cartridges (6-pk) with (1) C-270 Assembly

# TK Guard Columns for HPLC

## Europa™ Guardcolumns

Product	Description	Cat.Nbr.
Ultrafilter™	Ultrafit prefilter adaptor (frit not included)	TR-010067
	Frits of 0.5 µm pore (10 units)	TR-010069
	Frits of 2.0 µm pore (10 units)	TR-010070



Ultraguard™	Ultrafit Guardcolumn adaptor (guard column not included)	TR-010068
Guard Column	Peptide C18 10 x 3.2 mm (5 units)	TR-C-160-19
Guard Column	Protein 300 C18 10 x 3.2 mm (5 units)	TR-C-160-16
Guard Column	Protein 300 C8 10 x 3.2 mm (5 units)	TR-C-160-14
Guard Column	Protein 300 C4 10 x 3.2 mm (5 units)	TR-C-160-13



## Tracer Excel™ Guardcolumns

Product	Description	Cat.Nbr.
Ultrafilter™	Ultrafit prefilter adaptor (frit not included)	TR-010067
	Frits of 0.5 µm pore (10 units)	TR-010069
	Frits of 2.0 µm pore (10 units)	TR-010070



Ultraguard™	Ultrafit Guardcolumn adaptor (guard column not included)	TR-010068
Guard Column	ODS 10 x 3.2 mm (5 units)	TR-C-160-1
Guard Column	Si 10 x 3.2 mm (5 units)	TR-C-160-2
Guard Column	C8 x 3.2 mm (5 units)	TR-C-160-3
Guard Column	NH2 10 x 3.2 mm (5 units)	TR-C-160-4
Guard Column	CN 10 x 3.2 mm (5 units)	TR-C-160-6
Guard Column	Ph 10 x 3.2 mm (5 units)	TR-C-160-8
Guard Column	C4 10 x 3.2 mm (5 units)	TR-C-160-17
Guard Column	C1 10 x 3.2 mm (5 units)	TR-C-160-20



## mediterranea™ sea<sub>18</sub> Guardcolumns

Product	Description	Cat.Nbr.
Ultrafilter™	Ultrafit prefilter adaptor (frit not included)	TR-010067
	Frits of 0.5 µm pore (10 units)	TR-010069
	Frits of 2.0 µm pore (10 units)	TR-010070



Ultraguard™	Ultrafit Guardcolumn adaptor (guard column not included)	TR-010068
Guard Column	Sea18 10 x 3.2 mm (5 units)	TR-010071
Guard Column	Sea8 10 x 3.2 mm (5 units)	TR-010073
Guard Column	Sea4 10 x 3.2 mm (5 units)	TR-010074



## COLUMN-GUARD COLUMN CONNECTOR

- Economical
- Minimum dead volume
- This column-Guard Column connector is the ideal solution for this type of connection, as its dead volume is practically negligible.

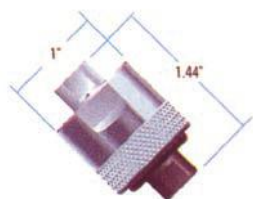


### Column-Guard Column connectors U-284 Union Column-Precolumn

Reference	Description
UP-U-284	Fingertight F-200 coupler, Delrin®, and .007" ID stainless steel tubing.
UP-U-287	Fingertight F-300 coupler, PEEK®, and .007" ID stainless steel tubing.

## Semipreparative Guard Columns

- For semipreparative HPLC and SFC 1 cm I.D.



UP-C-1000. Holder for semipreparative cartridge

Reference	Description
UP-C-1000	Semi-Prep holder
TR-C-360K1	Semi-Prep cartridge ODS (2 units) + UP-C-1000 holder
TR-C-360K2	Semi-Prep cartridge Si (2 units) + UP-C-1000 holder
TR-C-360K3	Semi-Prep cartridge C8 (2 units) + UP-C-1000 holder
TR-C-360K4	Semi-Prep cartridge NH2 (2 units) + UP-C-1000 holder
TR-C-360K6	Semi-Prep cartridge CN (2 units) + UP-C-1000 holder
TR-C-360K13	Semi-Prep cartridge Protein C4 (2 units) + UP-C-1000 holder
TR-C-360K14	Semi-Prep cartridge Protein C8 (2 units) + UP-C-1000 holder
TR-C-360K16	Semi-Prep cartridge Protein C18 (2 units) + UP-C-1000 holder
TR-C-360K17	Semi-Prep cartridge Peptide C18 (2 units) + UP-C-1000 holder
TR-C-360K18	Semi-Prep cartridge Mediterranean Sea 18 (2 units) + UP-C-1000 holder
TR-C-360-1	Semi-Prep cartridge ODS (2 units)
TR-C-360-2	Semi-Prep cartridge Si (2 units)
TR-C-360-3	Semi-Prep cartridge C8 (2 units)
TR-C-360-4	Semi-Prep cartridge NH2 (2 units)
TR-C-360-6	Semi-Prep cartridge CN (2 units)
TR-C-360-13	Semi-Prep cartridge Protein C4 (2 units)
TR-C-360-14	Semi-Prep cartridge Protein C8 (2 units)
TR-C-360-16	Semi-Prep cartridge Protein C18 (2 units)
TR-C-360-17	Semi-Prep cartridge Peptide C18 (2 units)
TR-C-360-18	Semi-Prep cartridge Mediterranean Sea 18 (2 units)

## Spares for Guard Column cartridges

Reference	Description
TR-C-1030	Stainless steel frit 2 µm
TR-C-1031	Titanium frit 2 µm

## Preparative Guard Column

- Valuable prep column protection, 20-50mm ID
- Low Pressure Drop
- High performance sample distribution mechanism



Reference	Description
TR-C-260	Preparative Holder
TR-C-260K1	Prep cartridge ODS (2 units) + TR-C-260 Preparative Holder
TR-C-260K2	Prep cartridge Peptide C18 (2 units) + TR-C-260 Preparative Holder
TR-C-260K3	Prep cartridge C8 (2 units) + TR-C-260 Preparative Holder
TR-C-260K4	Prep cartridge NH2 (2 units) + TR-C-260 Preparative Holder
TR-C-260K6	Prep cartridge CN (2 units) + TR-C-260 Preparative Holder
TR-C-260K13	Prep cartridge Protein C4 (2 units) + TR-C-260 Preparative Holder
TR-C-260K14	Prep cartridge Protein C8 (2 units) + TR-C-260 Preparative Holder
TR-C-260K16	Prep cartridge Protein C18 (2 units) + TR-C-260 Preparative Holder
TR-C-260K17	Prep cartridge Si (2 units) + TR-C-260 Preparative Holder
TR-C-260K18	Prep cartridge Mediterranean Sea 18 (2 units) + TR-C-260 Preparative Holder
TR-C-260-1	Prep cartridge ODS (2 units)
TR-C-260-2	Prep cartridge Peptide C18 (2 units)
TR-C-260-3	Prep cartridge C8 (2 units)
TR-C-260-4	Prep cartridge NH2 (2 units)
TR-C-260-6	Prep cartridge CN (2 units)
TR-C-260-13	Prep cartridge Protein C4 (2 units)
TR-C-260-14	Prep cartridge Protein C8 (2 units)
TR-C-260-16	Prep cartridge Protein C18 (2 units)
TR-C-260-17	Prep cartridge Si (2 units)
TR-C-260-18	Prep cartridge Mediterranean Sea 18 (2 units)

## Iso-Prep™ Filter for Preparative Columns



- Economical protection for preparative HPLC column and injector
- Pre-column/Inline filter functionality
- Stable to 8,000 psi
- Replaceable filters

Reference	Description
TR-C-260-F	In Line Filter
TR-C-260-FX	Replacement Filter (10 units)

# Tk mediterranea™ Sea<sub>18</sub> New Generation HPLC Column



## mediterranea sea<sub>18</sub> by Tknokroma



### Introduction

The mediterranea™ sea18 column provides a performance level that, until now, has not been reached in efficiency, inertness, pH-robustness, reproducibility and reliability. mediterranea™ sea18 columns simplify and make your HPLC work more pleasant. You won't worry about the extreme basic or acidic natures of your samples with the mediterranea™ sea18 column.

The versatility of the mediterranea™ sea18 column will enable you to deal successfully with the immense variety of separations in the fields of pharmaceuticals, life sciences, environment, foods, etc.

Once every ten years, the world of chromatography experiences a revolutionary technology that surpasses all others and meets the expectations of chromatographic scientists.

Tknokroma has focused all its efforts and all its know-how, accumulated through more than 30 years of chromatographic research and development, in offering the global-best reverse phase HPLC packing mediterranea™ sea18.

While developing the mediterranea™ sea18 column we created two novel proprietary bonding & packing technologies. In order to demonstrate the global-best technology of mediterranea™ sea18, we compared chromatographic results from the world's most popular reverse-phase HPLC columns. We invite you to try our mediterranea™ sea18 when you experience less-than-satisfactory results with your favourite column.

Today there is still a consensus about the fact that the best material to use as chromatographic packing continues to be silica. The particles of this material are very physically resistant, enable multiple functions, present maximum levels of efficiency and are also compatible with practically all solvents.

Tknokroma has been concentrated on obtaining the best silica particle in the market. The silica particle on which the mediterranea™ sea18 column is based is the result of an optimisation process in which, starting off from extremely pure materials with unusual low metal content, a perfectly spherical, rigid and inert particle has been obtained. Furthermore, the "porification" process developed for these ends (Surface Enhanced Accessibility, SEA) has achieved a high surface without losing any of its properties of physical resistance while also showing a very high load capacity, ideal for preparatory scaled processes. Moreover, the obtained porous structure ensures the maximum transfer speed of the solutes between the stationary and mobile phases, resulting in a greater separation efficiency.

Let us demonstrate the superior chromatographic properties of the mediterranea™ sea18 column, so you will feel comfortable with the performance of the world's best reverse-phase HPLC column.

## Purity of Silica

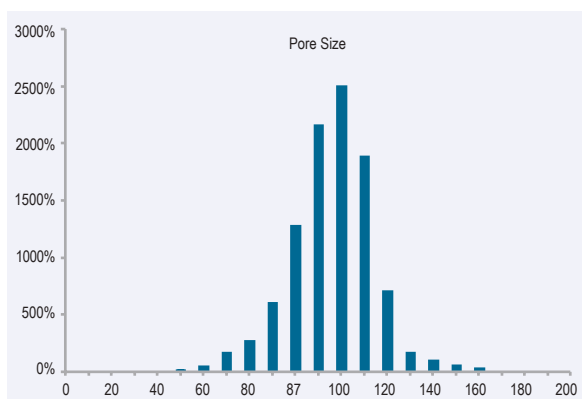
After evaluating many materials as a base for the global-best reverse phase chromatographic packing, the clear consensus is that the special characteristics of silica packings classify them as unsurpassable. No other packing material, apart from ultra-pure silica, achieves the perfect balance of physical resistance, functional use, chemical inertness, reproducibility and efficiency. Ultra-pure silica is also compatible with practically all solvents. Teknokroma concentrated on presenting the best silica particle to the HPLC market.

An essential condition for obtaining the global-best reverse phase packing is an extremely pure silica. The silica particle, on which the new mediterranea™ sea18 packing is based, is obtained from ultra-pure materials, using rigorously controlled manufacturing processes to ensure that the slightest possibility of contamination is avoided. The mediterranea™ sea18 silica required intensive optimisation of numerous processing factors to achieve a perfectly spherical, rigid and inert particle possessing unusually low metal content. The almost total absence of metals is one of the pillars over which the extraordinary properties of the mediterranea™ sea18 column reside.

## Metals Content (ppm)

Metal	Values Obtained
Al	<1ppm
Fe	<1ppm
Ti	<1ppm
Zr	<1ppm

## Porosity (Surface Enhanced Accessibility, SEA)



The pore distribution of the mediterranea™ sea18 column has been optimised by our own proprietary process called Surface Enhanced Accessibility (Sea). The Surface Enhanced Accessibility “porification” process creates high surface area without losing silica structural strength, chemical resistance, chemical inertness and high load capacity. Surface Enhanced Accessibility also ensures that practically 100% of the internal packing surface has been chemically bonded, endcapped, and is accessible to compounds being separated. Moreover, the Surface Enhanced Accessibility of mediterranea™ sea18 ensures the maximum transfer speed of the solutes between the stationary and mobile phases, resulting in a greater separation efficiency.

More than 98% of the silica surface area responsible for chromatographic separation of the sample is found inside the particle - within the pores. This explains the extreme importance of obtaining a very homogeneous pore distribution and the least possible number of nanopores. For most reverse-phase silica packings, these nanopores are not properly chemically bonded, endcapped or deactivated. So when nanopores are accessible to analytes, surface-analyte interactions frequently dominate. These surface-analyte interactions slow down the chromatographic process (“load transfer”), often resulting in decreased column efficiency. These treacherous nanopores may also negatively influence the phenomenon of dewetting which occurs with totally aqueous mobile phases.

## Multifunctional Endcapping Deactivation (MED)

The endcapping process is a critical step in obtaining a perfectly deactivated mediterranea™ sea18 column. Our proprietary Multifunctional Endcapping Deactivation (MED) technology maximizes surface-bonding, blocking practically all the active centres that may have remained on the surface of the silica after bonding the C18 chains. Thanks to our new MED technology, the mediterranea™ sea18 column enjoys an unusual low level of silanol activity - helping you to obtain symmetrical peaks from even the most basic and acidic pharmaceuticals and their metabolites. mediterranea™ sea18 bonding chemistries will help you to achieve an extraordinary resistance and column lifetime when running at extreme pH levels.

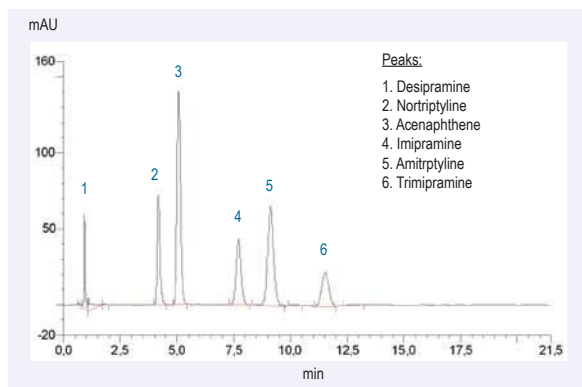
Moreover, the mediterranea™ sea18 column has been designed to show an excellent retention of polar compounds in a 100% aqueous environment without the problems of unwanted interactions which inefficiently endcapped conventional packings produce. Packing chemistry based on the new MED technology, “multifunctional endcapping deactivated”, achieves levels of deactivation, resistance to extreme pH values and versatility in its chromatographic applications never reached by conventional or polar-embedded reverse phase packings. The MED technology has been rigorously developed to achieve the maximum reproducibility, with the objective that its chromatographic separations will be, column to column, exactly the same.

The obtained deactivation is shown when we make chromatograms of a group of Basic compounds in neutral pH conditions, including a neutral compound (acenaphthene) as a comparison. Of the four tested columns, the mediterranea™ sea18 is the one that shows the greatest efficiency, whether measuring with the acenaphthene or with a peak as difficult as that of amitriptyline. The same occurs if we compare the asymmetry values of the peaks.

Column	As	Ncol	As	Ncol
	Acenaphthene	Acenaphthene	Amitriptyline	Amitriptyline
mediterranea™ sea18 5 µm 15 x 0,46	1,06	11031	1,21	8119
Xterra MSC18 5 µm 15 x 0,39	1,36	6476	1,32	4619
Gemini C18 5 µm 15 x 0,46	1,22	9524	1,23	7490
Nucleosil 100 C18 5 µm 15 x 0,46	1,07	7815	na	na

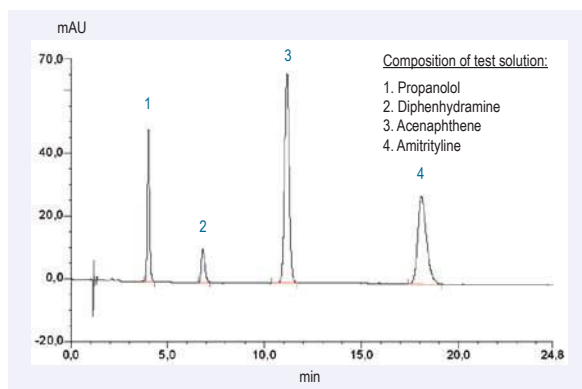
# Tk mediterranea™ Sea<sub>18</sub> New Generation HPLC Column

## Tricyclic Anti-depressants

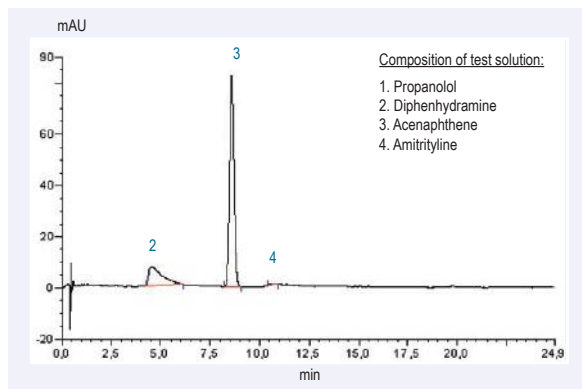


Column: **mediterranea sea 18**, 5  $\mu$ m 15 x 0,46 cm  
 Eluent: Methanol/20mM K<sub>2</sub>HPO<sub>4</sub> (pH 7.0) 70:30  
 Flow: 1ml/min  
 Room Temperature  
 Detection: UV 254 nm

## Basic Compounds



Column A - mediterranea™ sea 18



Column B - The Competition

Column A: **mediterranea sea 18**, 5  $\mu$ m 15 X 0,46 cm  
 Column B: **Other column from market** 5  $\mu$ m 15 x 0,46 cm  
 Eluent: Methanol/0,02M K<sub>2</sub>HPO<sub>4</sub>/KH<sub>2</sub>PO<sub>4</sub> pH7,00 (75:25)  
 Room temperature  
 Flow: 1.4 ml/min  
 Detection: UV 254 nm

## Aqueous Environments

The mediterranea sea18 packing is a 100% pure reverse phase with the added advantage of showing excellent retention of polar compounds and also enables work with 100% aqueous mobile phases without any limitation.

Most chromatographers agree that polar embedded packing have an advantage over conventional packings, in that they can work in 100% aqueous environments and separate basic compounds.

Nevertheless, these advantages are achieved at the expense of less retention for polar compounds, and poor column stability. Polar-embedded packings exhibit chromatographic behavior that cannot be considered as 100% reverse phase, since secondary interaction mechanisms may co-exist due to the nature of the unspecified polar groups anchored at the base of the hydrocarbon chains.

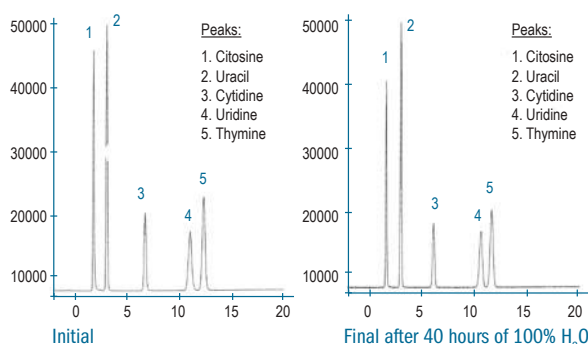
The mediterranea sea18 packing surpasses all the advantages of polar embedded packings by a wide margin and shows none of its inconveniences.

Furthermore, due to its specially optimised endcapping process (MED), the column has guaranteed pH-resistance, reproductibility and long life.

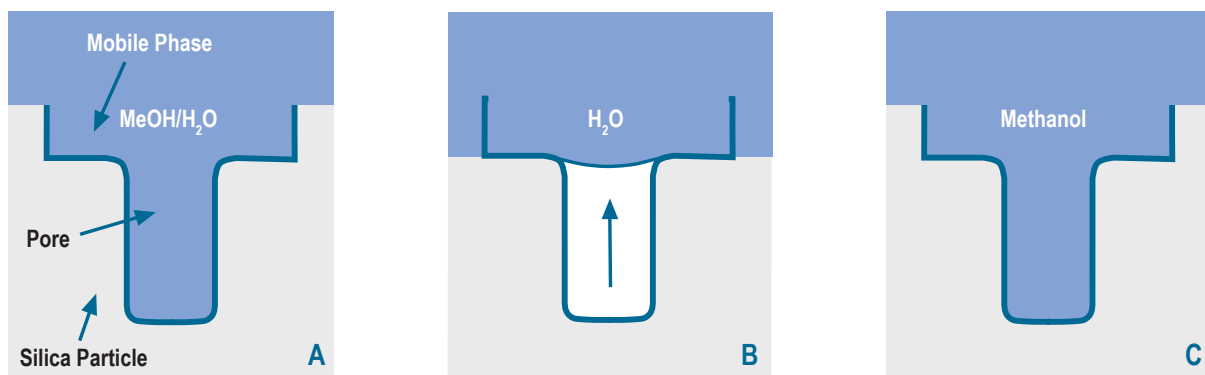
As can be seen, the chromatograms that are obtained after eluting the column with 100% water for more than 40 hours show no appreciable alteration in the retention times or in the efficiency of the chromatographed peaks.

The mediterranea™ sea18 column also widely surpasses the stop flow test, designed to be able to show up the dewetting phenomenon that usually occurs in highly deactivated ODS-type columns, causing irreversible expulsion of water included in the packing pores. As can be seen in the data of five successive Stop Flow Test cycles no significant alterations are observed in the chromatographed peaks.

## Aqueous Environments



Column: **mediterranea sea18** 5  $\mu$ m 15 X 0,46 cm  
 Mobile Phase: H<sub>2</sub>O  
 Flow: 1ml/min  
 Vol. Iny.: 10  $\mu$ l  
 Detection: UV 254 nm



## The phenomenon of “Dewetting”

When working with mixed mobile phases of an organic phase and water, for example Methanol/H<sub>2</sub>O, the pores of the packings are totally occupied with the mobile phase (A). However, when working with 100% H<sub>2</sub>O as the mobile phase in conventional reverse-phase columns, a phenomenon occurs with the expulsion of the mobile phase from the interior of the pore (B). The chromatographic effect that will be produced is a loss of retention and resolution of the chromatographic peaks since the solutes cannot enter the interior of the pores. These chromatographic losses can occur gradually or suddenly - making it difficult to restore to its initial conditions, especially with mostly aqueous mobile phases. (C).

This phenomenon is ruled by an equation which involves the pore's radius, the surface tension, the contact angle and the pressure exercised on the mobile phase. The surface tension and contact angle depends on the density of the bonded ligands and on their chemical functionality. The Stop Flow Test reproduces chromatographic run conditions by interrupting the flow of 100% aqueous mobile phase, the pressure goes to zero and favours the expulsion of water from the interior of the pores.

The mediterranea™ sea18 column surpasses this test with ease - the retention times of the five chromatographed compounds remain practically unaltered.

## Stop Flow

Compound	1st stop 2nd stop 3rd stop 4th stop 5th stop					
	tR initial	flow	flow	flow	flow	flow
Cytosine	3,32	3,33	3,3	3,35	3,16	3,21
Uracil	4,45	4,45	4,44	4,75	4,36	4,44
Cytidine	7,73	7,73	7,63	8,00	7,24	7,34
Uridine	11,57	11,57	11,53	12,02	11,25	11,24
Thymine	12,70	12,7	12,62	12,87	12,35	12,70

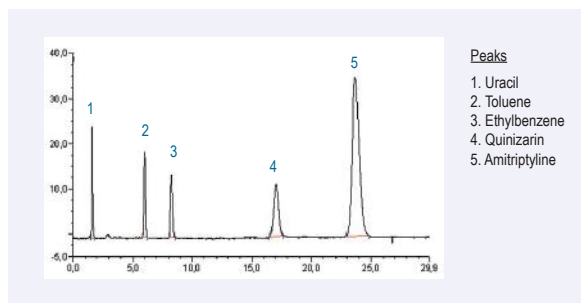
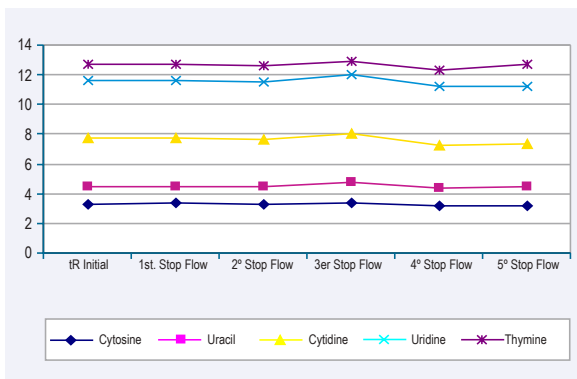
## NIST Test for HPLC Packing Characterization

The new mediterranea™ sea18 column has been subjected to the SRM870 test. This test, designed by the NATIONAL INSTITUTE OF STANDARDS & TECHNOLOGY and recently assessed by the experts committee of the USP (United States Pharmacopeia) is currently considered to be the most recommended for evaluating the most significant properties of a reverse phase column.

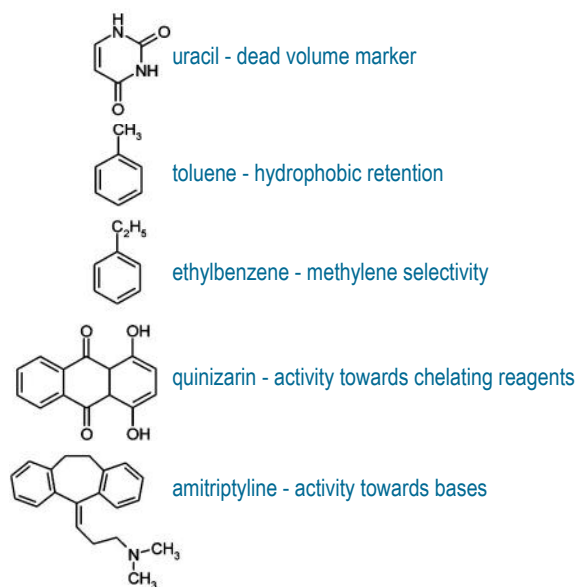
The high number of HPLC reverse phase packings available in the market and the big differences in their chromatographic behaviour has led to the need to design a characterisation and classification method for these packings.

This procedure uses a mixture of five organic components (uracil, toluene, ethylbenzene, quinizarin and amitriptyline) which are chromatographed using exact conditions of mobile phase, flow, and controlled temperatures.

The detailed analysis of the different peaks obtained will enable an objective, and more importantly, standardised evaluation of the behaviour of the chromatographic packing and therefore anticipate its suitability in normal analytical work.



# Tk mediterranea™ Sea<sub>18</sub> New Generation HPLC Column



## Uracil

This compound is commonly used as an indicator of the dead volume of the column (non-retained peak).

## Toluene/Ethylbenzene

The selectivity factor between these two compounds can be used to characterise the differences between packings primarily due to solvophobic interactions. The absolute retention times of these compounds give an idea of the column reverse-phase strength. Both compounds can also be used to measure the quality of the packing through the number of theoretical plates.

## Quinizarin (1,4-dihydroanthraquinone)

Quinizarin is a chelating compound and its behaviour in a reverse phase column is a clear indicator of the presence or absence of metals. A column of low activity will deliver symmetrical peaks whereas increasing surface activity exaggerates the tailing edge of the quinizarin peak - leading to higher asymmetry values.

Quinizarin normally elutes between the ethylbenzene and amitriptyline peaks. However, when the silica packing contains embedded polar groups they will retain this peak, causing it to elute after amitriptyline. In the mediterranea™ sea18 column, the quinizarin peak elutes with a perfect symmetrical form, indicating an extraordinary low level of metallic impurities.

According to quinizarin peak symmetry data obtained in our laboratories or published by the NIST (see Figure), the performance of the mediterranea™ sea18 column compares well with other popular reverse-phase packings.

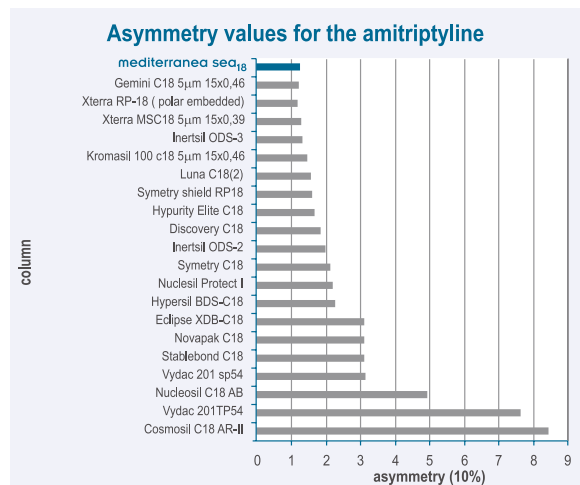
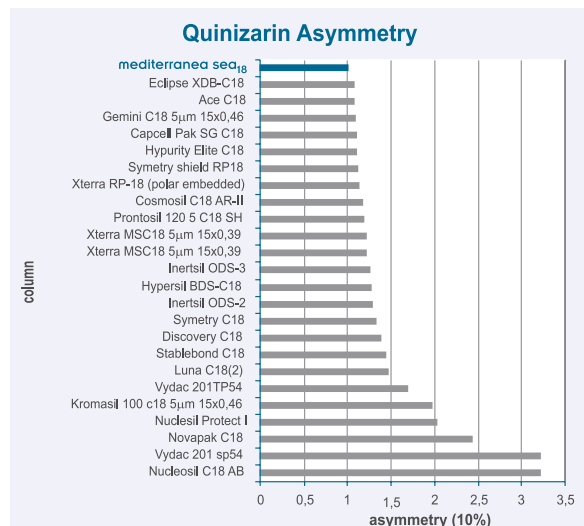
The top-positioning of the mediterranea™ sea18 packing indicates the ultra-high purity of the optimized silica. Teknokroma's ultra-pure silica is your guarantee of reproducibility and of the absence of secondary (and uncontrolled) mechanisms of interaction (common to popular polar-embedded columns).

## Amitriptyline

This basic (pKa=9.4) anti-depressant is an excellent indicator of residual silica surface silanol-activity. Amitriptyline will elute as a symmetrical peak on a well-deactivated column as seen with the new mediterranea™ sea18. In comparison, many popular reverse-phase packings leave many residual silanols through insufficient endcapping; leading to widespread peak tailing or to complete disappearance from the chromatogram.

Proper amitriptyline elution is important in consideration of the number of basic compounds, particularly in the fields of pharmaceuticals and life science. In fact, it guarantees that the problems with tailing or complete peak disappearance will be almost eradicated - along with day-to-day laboratory adjustments and complex mobile phase systems designs. With mediterranea™ sea18 a simple pH adjustment will serve to correctly elute the most basic and acidic substances.

The comparison of asymmetry factors for mediterranea™ sea18 and other popular packings is a clear indication of deactivation. mediterranea™ sea18 enters the market with a deactivation level not previously achieved by other reverse-phase packings. The proprietary Multifunctional Endcapped Deactivation produces reproducible column-to-column peak symmetry for a wider variety of pharmaceutical compounds thanks to strict silica purity and batch-to-batch reproducibility.



# mediterranea™ Sea<sub>18</sub> New Generation HPLC Column **Tk**



Packaging Sample

## Wide pH Range

A perfectly spherical particle, a totally controlled pore design, a total lack of metallic traces, a well-studied process of phase bonding and final endcapping, all combine in achieving a packing with a resistance to extreme pH values not previously reached.

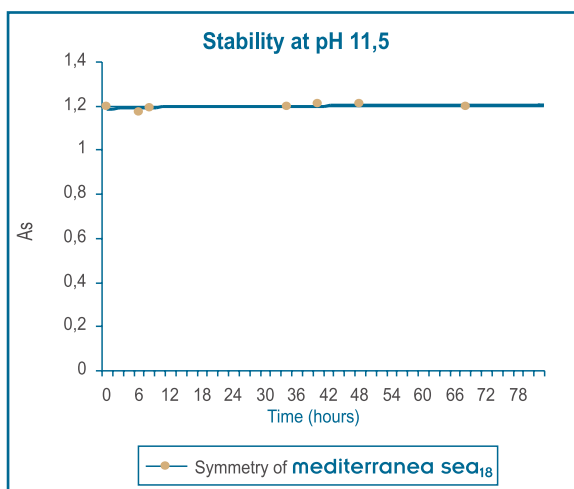
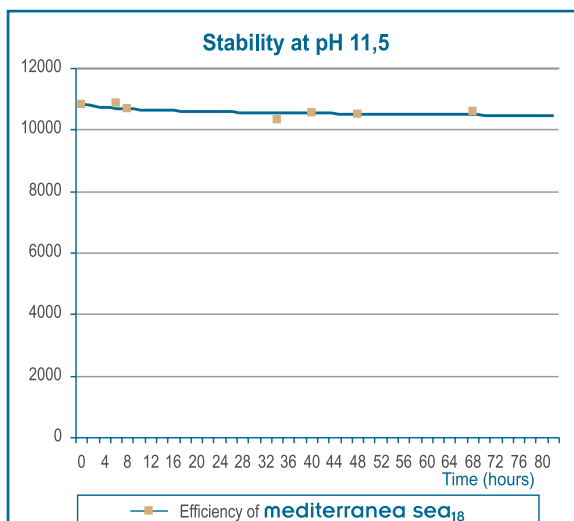
Until quite recently, silica packings were limited to working between pH 2 and pH 7 since below pH 2 the bonds between the C18 chains and the silica particle were hydrolysed, resulting in a gradual loss of retention capacity of the column. Above pH 7 the problem that arose was one of simply dissolving the silica, and therefore the pure destruction of the column.

Using mediterranea™ sea18 packing makes it possible to work with eluents from pH 1 to pH 12. Such unusual pH-resistance values have been secured as a result of phase bonding efficiency and a proprietary endcapping process which provides a protective shield that impedes acidic and basic eluents from attacking the silica surface.

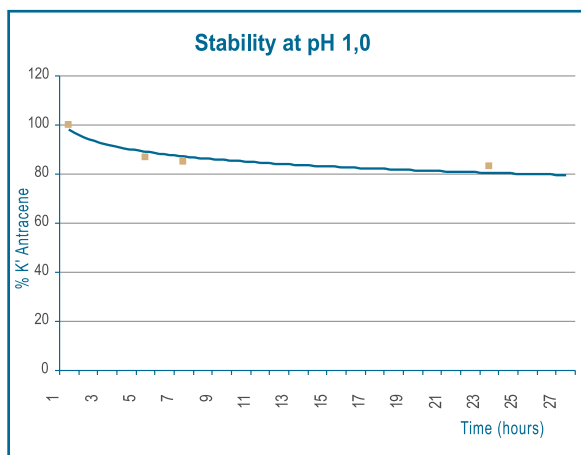
The pH stability graphs show the efficiency of the process.

Eluting the mediterranea™ sea18 column for 78 hours at pH 11.5, showed no significant deterioration in terms of both efficiency and peak symmetry for diphenhydramine..

With an eluent as acid as pH 1, the column stabilises in a short period of time so that it will even be possible to work in these extreme conditions.



An eluent of ACN//1- methylpyrrolidine 50mM pH 11,5 50:50, 1ml/min 25°C is passed through the column. With the same eluent 10 ml of diphenhydramine (1mg/ml dissolved in water) is injected and the efficiency and symmetry of the peak is tested.



An eluent of ACN/TFA1% pH 1.0 (10:90) 1ml/min 25°C is passed through the column at regular periods, checked with the reverse phase test and a retention comparison is made of the last anthracene peak.

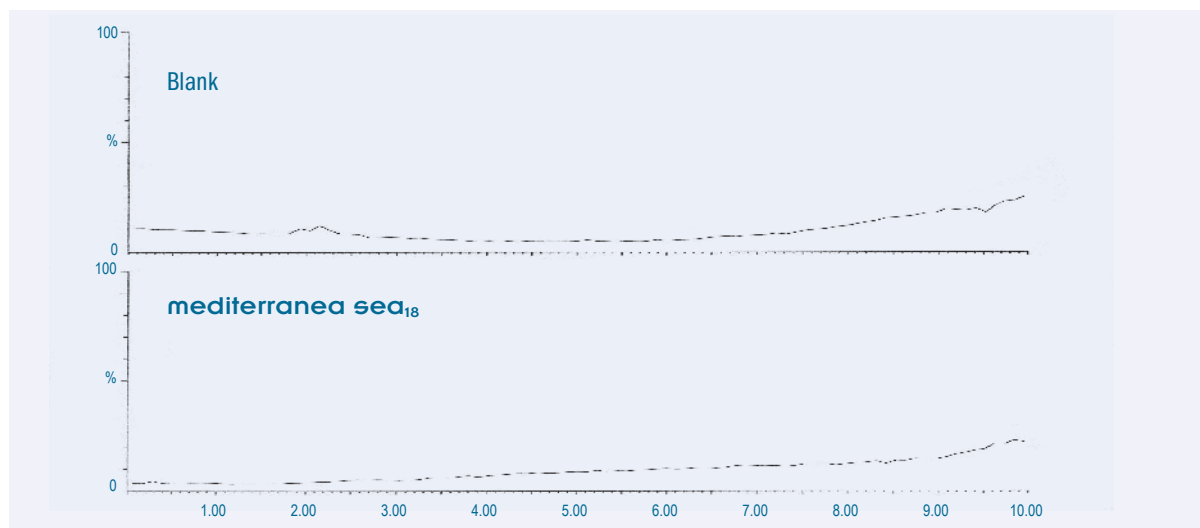
## LC-MS Mediterranea™ Sea 18 Columns

The Multifunctional Endcapping Deactivation (MED) technology guarantees extreme stability for every mediterranea™ sea18 reverse-phase column. Chromatographic stability (peak symmetry, peak retention times, and peak efficiency) under low-to-high pH (pH 1-12) conditions is required for high-speed, high-throughput LC-MS. The mediterranea™ sea18 is the ideal LC-MS reverse-phase column for stable chromatographic separation of pharmaceuticals and their metabolites.

The technological features designed into the mediterranea™ sea18 column makes it extremely useful for LC-MS applications where packing stability is demonstrated by low column bleed and consistent chromatographic results. The combination of mediterranea™ sea18 technology on a 3mm ultra-pure silica-based packing enables LC-MS separations to be made speedily and with maximum productivity.

# TK mediterranea™ Sea<sub>18</sub> New Generation HPLC Column

## Bleeding Profile Comparison



Assay by Instituto Químico de Sarrià I.Q.S. (Barcelona)

## Chromatographic Conditions

**Mobile Phase:** A: CH<sub>3</sub>CN (0,1% formic acid)  
B: Water (0,1% formic acid)  
**Elution Gradient:** 5/95(A/B) linear up to 95:5 in 8 minutes, maintaining the final composition 2 minutes.  
**Flow:** 0,5mL/min  
**Column Temperature:** 25°C

## Conditions for MS Detection

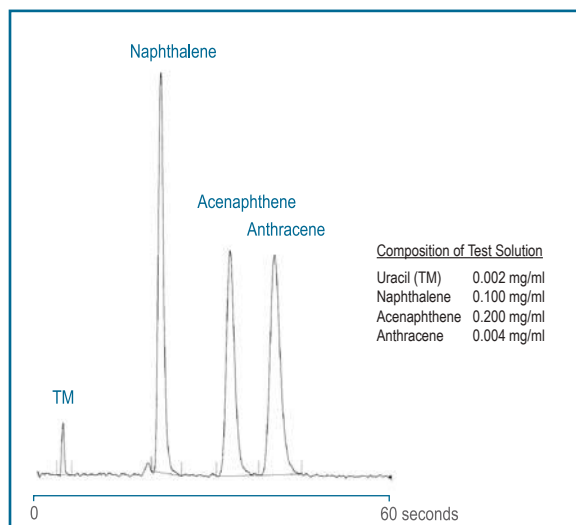
**MS Instrument:** Waters ZMD  
**Capillary Voltage:** 3kV (ESI positive)  
**Cone Voltage:** 20V  
**Source block Temp:** 100°C  
**Desolvation Temp:** 350°C  
**Gas:** 500l/h  
**Gas of cone:** 35 l/h  
**Mass Range:** 60 to100 amu

## Ultra-Rapid Columns

Within the wide range of possible configurations, the mediterranea™ sea18 columns are available with 3 mm packing with lengths of 3, 5 and 10 cm and inner diameters of 2.1, 3.0, 4.0 and 4.6 mm. By maintaining high quality control and specifications in manufacturing the mediterranea™ sea18 packing, these columns enable you to do ultra-fast separations, with extremely high levels of productivity and reduced analysis times. Ultrarapid mediterranea™ sea18 columns will help you optimize your instrument time and give you more time to analyze data.

With Ultra-rapid column separations, total analysis times of less than one minute are common, even when using gradient elution methods, since the high porosity of the mediterranea™ sea18 packing enables rapid mobile phase equilibration times.

The combination of 3 mm mediterranea™ sea18 packing with the column diameter of 2.1 mm is recommended for high sensitivity LC/MS analyses. Many of these ultra-rapid LC-MS screening analyses utilize minute sample and solvent quantities - for which, the 3 mm mediterranea™ sea18 columns are ideal.



## Chromatographic Conditions

**Column:** mediterranea sea18 3 μm 3 x 0,46 cm  
**Eluant:** Acetonitrile/Water  
**Proportion:** 65/35  
**Flow:** 3.0 ml/min  
**Pressure:** 70 bars  
**Vol Inyección:** 0.5 ml  
**Temperature:** Room  
**Detección:** UV 254 nm

# mediterranea™ Sea<sub>18</sub> New Generation HPLC Column Tk



## Preparative Columns

The mediterranea™ sea18 columns are characterized by their total inertness, by their wide range of working mobile phase pH, and by their high loading capacity - a result of the SEA process control (Surface Enhanced Accessibility).

The mediterranea™ sea18 preparative columns are the natural choice when high-service preparative columns are required, and in high-speed preparative applications as in the case of Combinatorial Chemistry.

## New Hardware Design for Mediterranea™ Column: Ultrafit™ System

The new Ultrafit™ design will make your work in the laboratory more comfortable and efficient. The Ultrafit™ system, as well as helping in the replacement of the frit at the column entrance, enables you to easily include either additional frits or a pre-column, always with the utmost simplicity and economy and in no way whatsoever is the quality of the separation affected.

In designing the Ultrafit™ column, the greatest care has been taken to cover all the aspects that may occur in the loss of efficiency of the column. As a result of all this, dead volumes have been reduced to a minimum, entered by the system by means of a high precision mechanism, with inlet and outlet holes of 0.2 mm and first-class tapers for the perfect distribution of the inlet and outlet flows, as seen in the three depicted Ultrafit™ options. The Ultrafit™ system enables a pre-column to be included without loss of efficiency, to columns as small as 30 x 4 mm packed with particles of 3 mm.

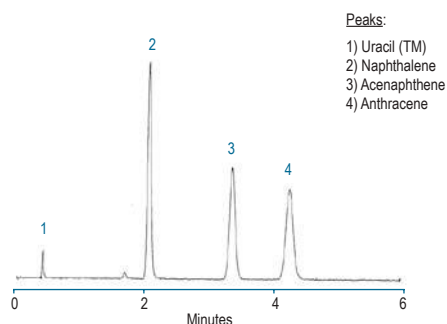
Moreover, the very best material has been selected for the construction of the column, with an ultra-shiny interior finish, of extremely low RMS, ensuring that no tube imperfection in the column will affect the quality of the separation.

## Ultrafit™ System Efficiency

Column	Efficiency (N/m)	AS (10%)
mediterranea sea18 Column 3 µm 5 x 0,46 cm Ultrafit™ System	134904	1,11
mediterranea sea18 Column 3 µm 5 x 0,46 cm with Prefilter Ultrafilter™	135042	1,05
mediterranea sea18 Column 3 µm 5 x 0,46 cm with Precolumn Ultraguard™	137819	1,07

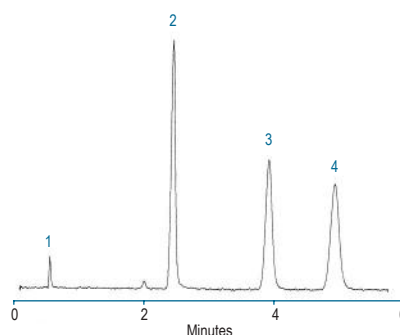
### Chromatographic Conditions:

**Column:** mediterranea™ sea18 3 mm 5 x 0,46 cm  
**Eluant:** Acetonitrile/Water 65:35  
**Flow:** 0,9 ml/min  
**Det.** UV 254 nm  
**Temp.** Room  
**Sample:** Acenaphthene 0.2 mg/ml

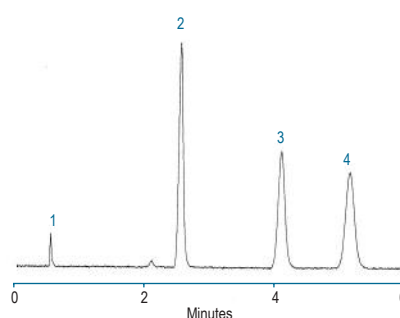


Peaks:  
 1) Uracil (TM)  
 2) Naphthalene  
 3) Acenaphthene  
 4) Anthracene

Column with Ultrafit™ System

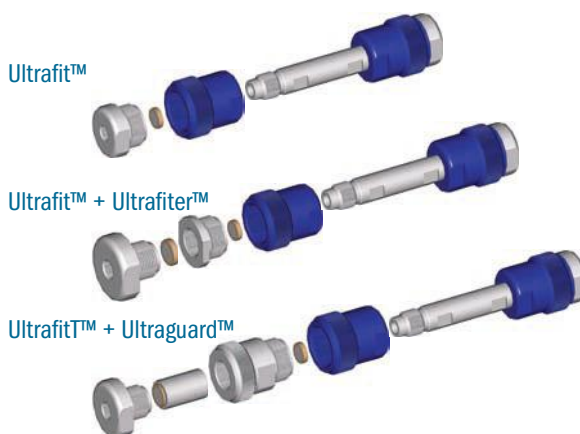


Column with Ultrafit™ System + Ultrafilter™



Column with Ultrafit™ System + Ultraguard™

## Ultrafit™ System Configuration



# TK mediterranea™ Sea<sub>18</sub> New Generation HPLC Column

## Analytical Columns 0.46 cm ID mediterranea™ sea<sub>18</sub> 5 μm

Packing	Funct.	Length		Diameter	Cat.Nbr.
		μm	cm	cm	
mediterranea	Sea18	5	3	0.46	TR-010000
mediterranea	Sea18	5	4	0.46	TR-010001
mediterranea	Sea18	5	5	0.46	TR-010002
mediterranea	Sea18	5	10	0.46	TR-010003
mediterranea	Sea18	5	15	0.46	TR-010004
mediterranea	Sea18	5	20	0.46	TR-010005
mediterranea	Sea18	5	25	0.46	TR-010006
mediterranea	Sea8	5	3	0.46	TR-010355
mediterranea	Sea8	5	4	0.46	TR-010356
mediterranea	Sea8	5	5	0.46	TR-010357
mediterranea	Sea8	5	10	0.46	TR-010358
mediterranea	Sea8	5	15	0.46	TR-010359
mediterranea	Sea8	5	20	0.46	TR-010360
mediterranea	Sea8	5	25	0.46	TR-010361
mediterranea	Sea4	5	3	0.46	TR-010362
mediterranea	Sea4	5	4	0.46	TR-010363
mediterranea	Sea4	5	5	0.46	TR-010364
mediterranea	Sea4	5	10	0.46	TR-010365
mediterranea	Sea4	5	15	0.46	TR-010366
mediterranea	Sea4	5	20	0.46	TR-010367
mediterranea	Sea4	5	25	0.46	TR-010368

## Analytical Columns 0.40 mm ID mediterranea™ sea<sub>18</sub> 5 μm

Packing	Funct.	Length		Diameter	Cat.Nbr.
		μm	cm	cm	
mediterranea	Sea18	5	3	0.40	TR-010007
mediterranea	Sea18	5	4	0.40	TR-010008
mediterranea	Sea18	5	5	0.40	TR-010009
mediterranea	Sea18	5	10	0.40	TR-010010
mediterranea	Sea18	5	15	0.40	TR-010011
mediterranea	Sea18	5	20	0.40	TR-010012
mediterranea	Sea18	5	25	0.40	TR-010013
mediterranea	Sea8	5	4	0.40	TR-410368
mediterranea	Sea8	5	5	0.40	TR-410369
mediterranea	Sea8	5	10	0.40	TR-410370
mediterranea	Sea8	5	15	0.40	TR-410371
mediterranea	Sea8	5	20	0.40	TR-410372
mediterranea	Sea8	5	25	0.40	TR-410373
mediterranea	Sea4	5	3	0.40	TR-410374
mediterranea	Sea4	5	4	0.40	TR-410375
mediterranea	Sea4	5	5	0.40	TR-410376
mediterranea	Sea4	5	10	0.40	TR-410377
mediterranea	Sea4	5	15	0.40	TR-410378
mediterranea	Sea4	5	20	0.40	TR-410379
mediterranea	Sea4	5	25	0.40	TR-410380

## Microbore Columns 0.21 cm ID mediterranea™ sea<sub>18</sub> 5 μm

Packing	Funct.	Length		Diameter	Cat.Nbr.
		μm	cm	cm	
mediterranea	Sea18	5	3	0.21	TR-010014
mediterranea	Sea18	5	5	0.21	TR-010015
mediterranea	Sea18	5	10	0.21	TR-010016
mediterranea	Sea18	5	15	0.21	TR-010017
mediterranea	Sea18	5	20	0.21	TR-010018
mediterranea	Sea8	5	3	0.21	TR-010381
mediterranea	Sea8	5	5	0.21	TR-010382
mediterranea	Sea8	5	10	0.21	TR-010383
mediterranea	Sea8	5	15	0.21	TR-010384
mediterranea	Sea8	5	20	0.21	TR-010385
mediterranea	Sea4	5	3	0.21	TR-010386
mediterranea	Sea4	5	5	0.21	TR-010387
mediterranea	Sea4	5	10	0.21	TR-010388
mediterranea	Sea4	5	15	0.21	TR-010389
mediterranea	Sea4	5	20	0.21	TR-010390

## Microbore Columns 0.30 cm ID mediterranea™ sea<sub>18</sub> 5 μm

Packing	Funct.	Length		Diameter	Cat.Nbr.
		μm	cm	cm	
mediterranea	Sea18	5	3	0.30	TR-010019
mediterranea	Sea18	5	5	0.30	TR-010020
mediterranea	Sea18	5	10	0.30	TR-010021
mediterranea	Sea18	5	15	0.30	TR-010022
mediterranea	Sea18	5	20	0.30	TR-010023
mediterranea	Sea18	5	25	0.30	TR-010024
mediterranea	Sea8	5	3	0.30	TR-010391
mediterranea	Sea8	5	5	0.30	TR-010392
mediterranea	Sea8	5	10	0.30	TR-010393
mediterranea	Sea8	5	15	0.30	TR-010394
mediterranea	Sea8	5	20	0.30	TR-010395
mediterranea	Sea8	5	25	0.30	TR-010396
mediterranea	Sea4	5	3	0.30	TR-010397
mediterranea	Sea4	5	5	0.30	TR-010398
mediterranea	Sea4	5	10	0.30	TR-010399
mediterranea	Sea4	5	15	0.30	TR-010400
mediterranea	Sea4	5	20	0.30	TR-010401
mediterranea	Sea4	5	25	0.30	TR-010402

# mediterranea™ Sea<sub>18</sub> New Generation HPLC Column **TK**

## SemiPreparative Columns

### mediterranea™ sea<sub>18</sub> 5 μm

Packing	Funct.	Length		Diameter		Cat.Nbr.
		μm	cm	cm	cm	
mediterranea	Sea18	5	10	0.78	TR-010025	
mediterranea	Sea18	5	15	0.78	TR-010026	
mediterranea	Sea18	5	25	0.78	TR-010027	
mediterranea	Sea18	5	10	1.00	TR-010028	
mediterranea	Sea18	5	15	1.00	TR-010029	
mediterranea	Sea18	5	25	1.00	TR-010030	
mediterranea	Sea18	5	5	2.12	TR-010031	
mediterranea	Sea18	5	10	2.12	TR-010032	
mediterranea	Sea18	5	15	2.12	TR-010033	
mediterranea	Sea18	5	25	2.12	TR-010034	
mediterranea	Sea8	5	10	0.78	TR-010403	
mediterranea	Sea8	5	15	0.78	TR-010404	
mediterranea	Sea8	5	25	0.78	TR-010405	
mediterranea	Sea8	5	10	1.00	TR-010406	
mediterranea	Sea8	5	15	1.00	TR-010407	
mediterranea	Sea8	5	25	1.00	TR-010408	
mediterranea	Sea8	5	5	2.12	TR-010409	
mediterranea	Sea8	5	10	2.12	TR-010410	
mediterranea	Sea8	5	15	2.12	TR-010411	
mediterranea	Sea8	5	25	2.12	TR-010412	
mediterranea	Sea4	5	10	0.78	TR-010413	
mediterranea	Sea4	5	15	0.78	TR-010414	
mediterranea	Sea4	5	25	0.78	TR-010415	
mediterranea	Sea4	5	10	1.00	TR-010416	
mediterranea	Sea4	5	15	1.00	TR-010417	
mediterranea	Sea4	5	25	1.00	TR-010418	
mediterranea	Sea4	5	5	2.12	TR-010419	
mediterranea	Sea4	5	10	2.12	TR-010420	
mediterranea	Sea4	5	15	2.12	TR-010421	
mediterranea	Sea4	5	25	2.12	TR-010422	

## Novafix™ Cartridges 0.40 cm ID

### mediterranea™ sea<sub>18</sub> 5 μm

Packing	Funct.	Length		Diameter		Cat.Nbr.
		μm	cm	cm	cm	
mediterranea	Sea18	5	7,5	0.40	TR-010035	
mediterranea	Sea18	5	10	0.40	TR-010036	
mediterranea	Sea18	5	15	0.40	TR-010037	
mediterranea	Sea18	5	25	0.40	TR-010038	
mediterranea	Sea8	5	7,5	0.40	TR-010423	
mediterranea	Sea8	5	10	0.40	TR-010424	
mediterranea	Sea8	5	15	0.40	TR-010425	
mediterranea	Sea8	5	25	0.40	TR-010426	
mediterranea	Sea4	5	7,5	0.40	TR-010427	
mediterranea	Sea4	5	10	0.40	TR-010428	
mediterranea	Sea4	5	15	0.40	TR-010429	
mediterranea	Sea4	5	25	0.40	TR-010430	

## Ultrarapid Columns 0.46 cm ID

### mediterranea™ sea<sub>18</sub> 3 μm

Packing	Funct.	Length		Diameter		Cat.Nbr.
		μm	cm	cm	cm	
mediterranea	Sea18	3	3	0.46	TR-010039	
mediterranea	Sea18	3	4	0.46	TR-010040	
mediterranea	Sea18	3	5	0.46	TR-010041	
mediterranea	Sea18	3	10	0.46	TR-010042	
mediterranea	Sea18	3	15	0.46	TR-010043	
mediterranea	Sea18	3	20	0.46	TR-010044	
mediterranea	Sea18	3	25	0.46	TR-010045	
mediterranea	Sea8	3	3	0.46	TR-010431	
mediterranea	Sea8	3	4	0.46	TR-010432	
mediterranea	Sea8	3	5	0.46	TR-010433	
mediterranea	Sea8	3	10	0.46	TR-010434	
mediterranea	Sea8	3	15	0.46	TR-010435	
mediterranea	Sea8	3	20	0.46	TR-010436	
mediterranea	Sea8	3	25	0.46	TR-010437	
mediterranea	Sea4	3	3	0.46	TR-010438	
mediterranea	Sea4	3	4	0.46	TR-010439	
mediterranea	Sea4	3	5	0.46	TR-010440	
mediterranea	Sea4	3	10	0.46	TR-010441	
mediterranea	Sea4	3	15	0.46	TR-010442	
mediterranea	Sea4	3	20	0.46	TR-010443	
mediterranea	Sea4	3	25	0.46	TR-010444	

## Ultrarapid Columns 0.40 cm ID

### mediterranea™ sea<sub>18</sub> 3 μm

Packing	Funct.	Length		Diameter		Cat.Nbr.
		μm	cm	cm	cm	
mediterranea	Sea18	3	3	0.40	TR-010046	
mediterranea	Sea18	3	4	0.40	TR-010047	
mediterranea	Sea18	3	5	0.40	TR-010048	
mediterranea	Sea18	3	10	0.40	TR-010049	
mediterranea	Sea18	3	15	0.40	TR-010050	
mediterranea	Sea18	3	20	0.40	TR-010051	
mediterranea	Sea18	3	25	0.40	TR-010052	
mediterranea	Sea8	3	3	0.40	TR-410431	
mediterranea	Sea8	3	4	0.40	TR-410432	
mediterranea	Sea8	3	5	0.40	TR-410433	
mediterranea	Sea8	3	10	0.40	TR-410434	
mediterranea	Sea8	3	15	0.40	TR-410435	
mediterranea	Sea8	3	20	0.40	TR-410436	
mediterranea	Sea8	3	25	0.40	TR-410437	
mediterranea	Sea4	3	3	0.40	TR-410438	
mediterranea	Sea4	3	4	0.40	TR-410439	
mediterranea	Sea4	3	5	0.40	TR-410440	
mediterranea	Sea4	3	10	0.40	TR-410441	
mediterranea	Sea4	3	15	0.40	TR-410442	
mediterranea	Sea4	3	20	0.40	TR-410443	
mediterranea	Sea4	3	25	0.40	TR-410444	

# TR mediterranea™ Sea<sub>18</sub> New Generation HPLC Column

## Microbore Columns 0.21 cm ID

### mediterranea™ sea<sub>18</sub> 3 μm

Packing	Funct.	Length		Diameter	Cat.Nbr.
		μm	cm	cm	
mediterranea	Sea18	3	3	0.21	TR-010053
mediterranea	Sea18	3	5	0.21	TR-010054
mediterranea	Sea18	3	10	0.21	TR-010055
mediterranea	Sea18	3	15	0.21	TR-010056
mediterranea	Sea18	3	20	0.21	TR-010057
mediterranea	Sea8	3	3	0.21	TR-010445
mediterranea	Sea8	3	5	0.21	TR-010446
mediterranea	Sea8	3	10	0.21	TR-010447
mediterranea	Sea8	3	15	0.21	TR-010448
mediterranea	Sea8	3	20	0.21	TR-010449
mediterranea	Sea4	3	3	0.21	TR-010450
mediterranea	Sea4	3	5	0.21	TR-010451
mediterranea	Sea4	3	10	0.21	TR-010452
mediterranea	Sea4	3	15	0.21	TR-010453
mediterranea	Sea4	3	20	0.21	TR-010454

## Microbore Columns 0.30 cm ID

### mediterranea™ sea<sub>18</sub> 3 μm

Packing	Funct.	Length		Diameter	Cat.Nbr.
		μm	cm	cm	
mediterranea	Sea18	3	3	0.30	TR-010058
mediterranea	Sea18	3	5	0.30	TR-010059
mediterranea	Sea18	3	10	0.30	TR-010060
mediterranea	Sea18	3	15	0.30	TR-010061
mediterranea	Sea18	3	20	0.30	TR-010062
mediterranea	Sea8	3	3	0.30	TR-010455
mediterranea	Sea8	3	5	0.30	TR-010456
mediterranea	Sea8	3	10	0.30	TR-010457
mediterranea	Sea8	3	15	0.30	TR-010458
mediterranea	Sea8	3	20	0.30	TR-010459
mediterranea	Sea4	3	3	0.30	TR-010460
mediterranea	Sea4	3	5	0.30	TR-010461
mediterranea	Sea4	3	10	0.30	TR-010462
mediterranea	Sea4	3	15	0.30	TR-010463
mediterranea	Sea4	3	20	0.30	TR-010464

## Novafix™ Cartridges 0.40 cm ID

### mediterranea™ sea<sub>18</sub> 3 μm

Packing	Funct.	Length		Diameter	Cat.Nbr.
		μm	cm	cm	
mediterranea	Sea18	3	7,5	0.40	TR-010063
mediterranea	Sea18	3	10	0.40	TR-010064
mediterranea	Sea18	3	15	0.40	TR-010065
mediterranea	Sea18	3	25	0.40	TR-010066
mediterranea	Sea8	3	7,5	0.40	TR-010465
mediterranea	Sea8	3	10	0.40	TR-010466
mediterranea	Sea8	3	15	0.40	TR-010467
mediterranea	Sea8	3	25	0.40	TR-010468
mediterranea	Sea4	3	7,5	0.40	TR-010469
mediterranea	Sea4	3	10	0.40	TR-010470
mediterranea	Sea4	3	15	0.40	TR-010471
mediterranea	Sea4	3	25	0.40	TR-010472

## Other Products

### mediterranea™ sea<sub>18</sub>

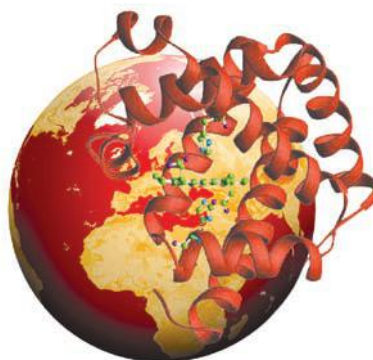
Product	Description	Cat.Nbr.
Ultrafilter™	Ultrafit prefilter adaptor <i>(frit not included)</i>	TR-010067
	Frits of 0.5 μm pore (10 units)	TR-010069
	Frits of 2.0 μm pore (10 units)	TR-010070



Product	Description	Cat.Nbr.
Ultraguard™	Ultrafit Guardcolumn adaptor <i>(guard column not included)</i>	TR-010068
	Guard Column Sea18 10 x 3.2 mm (5 units)	TR-010071
	Guard Column Sea8 10 x 3.2 mm (5 units)	TR-010073
	Guard Column Sea4 10 x 3.2 mm (5 units)	TR-010074



by Teknokroma  
**Europa**<sup>®</sup>



## Introduction

Teknokroma introduces in the market the new line of **Europa HPLC columns**.

After the versatility of our popular **mediterranea™ Sea 18** column that enables you to deal successfully with the immense variety of separations in the fields of pharmaceuticals, life sciences, environment, foods, etc. Teknokroma has focused all its efforts and all its know-how, accumulated through more than 30 years of chromatographic research and development, in offering the best reverse phase HPLC packing for identification and purification of peptides and protein compounds.

Manufactured using novel proprietary technologies, analytical and preparative Europa columns are simply the best reverse phase columns available today.

As a result of these, we launch into the market the Line of Europa HPLC columns, one of the best columns in the field of analysis of biomolecules.

The Europa HPLC columns for peptides and proteins, provide the best performance and unsurpassed efficiency, reliability and reproducibility.

There is still a consensus that the best material to use as chromatographic packing continues to be silica. The particles of silica material are physically resistant, enable multiple functions, present maximum levels of efficiency and are also compatible with practically all solvents.

Teknokroma has dedicated years of research and development in obtaining the best silica particle on the market. The silica particle on which the Europa columns is based is the result of an optimisation process, starting with extremely pure materials with unusually low metal content, and obtaining a perfectly spherical, rigid and inert particle.

Furthermore, the proprietary “porification process” (Surface Enhanced Accessibility, SEA) for Europa silica has achieved high surface area without sacrificing important properties like physical resistance and high loading capacity- making it ideal for preparative-scale processing. In addition, the Surface Enhanced Accessibility manufacturing process creates a porous structure that ensures maximum transfer speeds for solutes between the stationary and mobile phases-resulting in higher separation efficiency.

Our “Ultra-Fast” Europa columns are made in 3-5 cm length in order to get quick analytical results, whereas the “High Efficiency” columns are normally in 15-25 cm lengths to obtain best resolution.

The Teknokroma Europa Columns are uniquely designed with optimized pore size distribution; 120Å for Peptide and 300Å for the Protein Columns.

Europa columns are available for:

**Peptides:** Europa C18 with 0.21, 0.30, 0.40, 0.46, 0.78, 1.0 and 2.12 cm.

**Proteins:** Europa C18, C8 and C4 with 0.21, 0.30, 0.40, 0.46, 0.78, and 2.12 cm.

## Purity of silica

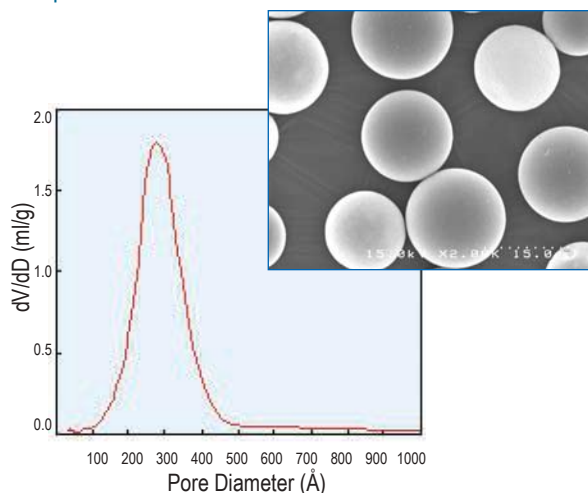
The responsibility for chromatographic separation of peptides and proteins is found inside the particle-within the pores. To obtain a very homogeneous pore distribution the least possible number of nanopores is essential.

For most reverse-phase silica packings, these nanopores are not properly chemically bonded, endcapped or deactivated. So when nanopores are accessible to the peptides and proteins, surface-peptide and protein interactions frequently dominate. These interactions often result in a decrease of column efficiency.

# TK Europa HPLC Column for Peptides and Proteins

## Europa Protein C4 Pore Distribution

### Europa Protein C 4 300



## Deactivation Process

Thanks to our proprietary new Multifunctional Endcapping Deactivation (MED) technology used with our popular HPLC columns *Mediterranea™ Sea 18*, we obtain with the Europa packing a specially designed C4, C8 and C18 ligand configuration, that blocks practically all the active centres that may have remained on the surface of the silica.

As a result of this, Europa columns have an unusual low level of silanol activity, helping you to obtain symmetrical peaks for the most basic and acidic compounds. The improved high density bonding and full endcapping make them suitable to separate or purify low molecular weight compounds (especially small peptides when using Europa Peptide column 120 Å) and separate or purify high molecular weight compounds, especially proteins when using Europa Protein column 300 Å.

Europa C 18 bonding chemistries will help you to achieve an extraordinary resistance and column lifetime when running at extreme pH levels.

## Wide pH Range

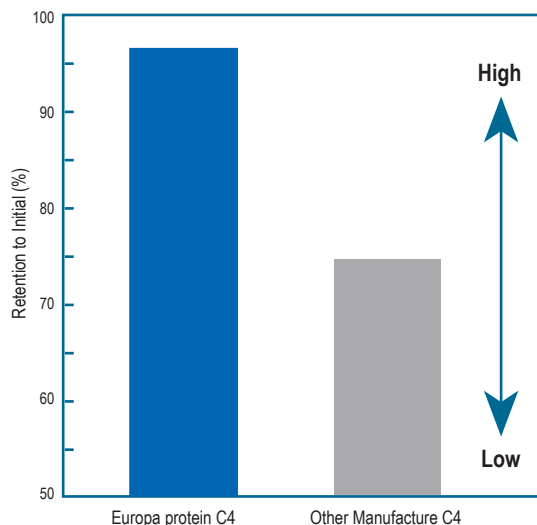
Using Europa C 18 packing materials it is possible to work with eluents from pH 1 to pH 12. Such unusual pH resistance values have been achieved as a result of phase bonding efficiency and a proprietary endcapping process which provides a protective shield against acidic and basic eluents.

Europa columns ensure greater separation efficiency, resistance to extreme pH conditions and can be used for an extended period of time.

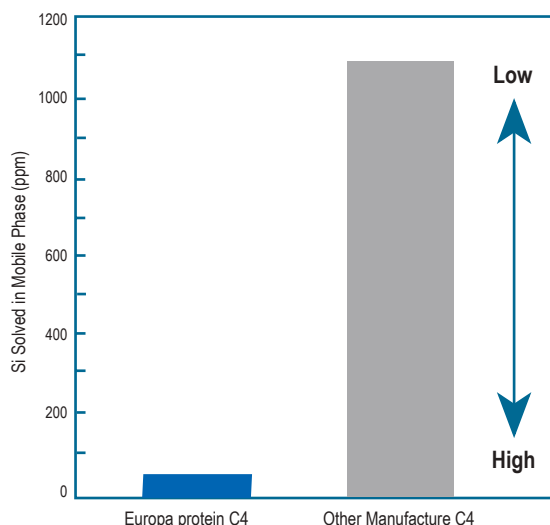
## Europa Protein C4 Phase Stability

Phase stability of Europa Protein C4 columns has been checked purging one 25 x 0.78 cm column either with CH<sub>3</sub>CN/1%TFA 10:90 (pH=1) during 15 hours at 0.9 ml/min or with CH<sub>3</sub>CN/20 mM Na<sub>3</sub>PO<sub>4</sub> 10:90 (pH=12) during 3 hours at 1.7 ml/min.

### Acid Resistance pH=1



### Alkalil Resistance pH=12

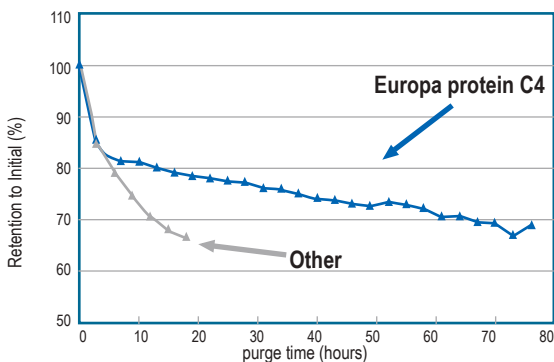


# Europa HPLC Column for Peptides and Proteins **Tk**

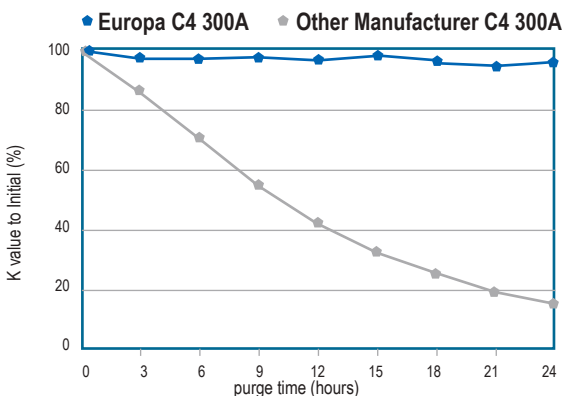
## Durability comparison in Alkaline Medium/RT

The graphic below shows the durability of the column after more than 80 hours of purge time passing through one Europa Protein C4 column a flow rate of 1.0 ml of alkaline solution at pH 12, CH<sub>3</sub>CN/0.01NaOH 10/90 .

There is represented in the graphic the retention time of naphthalene after every three hours of purge, using CH<sub>3</sub>CN / H<sub>2</sub>O 35:65 at 1.7 ml/min and 40°C (UV detection at 254 nm). It is seen that after 80 hours, Europa columns still perform very well.

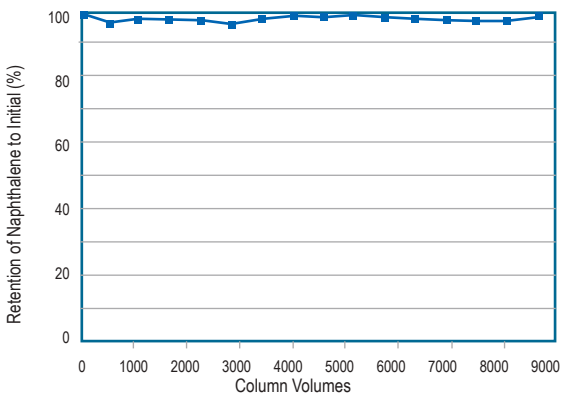


## Durability comparison in Acidic Medium / K value



Durability of Europa C4 has also been compared against other manufacturers using a 15 x 0.46 cm column and CH<sub>3</sub>CN / 1.0% TFA in water 10:90 (pH=1) at 70°C, and checking K values for naphthalene every 3 hours.

## Durability under Acidic Condition



Retention time for naphthalene using the same chromatographic conditions has also been controlled after up to 9000 column volumes of CH<sub>3</sub>CN / 0.05% TFA in water (pH=2) at a flow rate of 1.0 ml/min at room temperature. Column size was 15 x 0.46 cm

## Europa C18 Peptide HPLC columns

We invite you to try our Europa C18 peptide column when you experience unsatisfactory results with your favorite column.

Europa C18 Peptide columns are suitable to separate or purify low molecular weight compounds, especially small peptides.

Europa HPLC columns for peptides provide a high performance that is unsurpassed in efficiency, reliability and reproducibility. Manufactured using novel proprietary technologies, analytical and preparative Europa columns are simply the best reverse phase columns available today. Europa columns ensure greater separation efficiency, resistance to extreme pH conditions and longer column life.

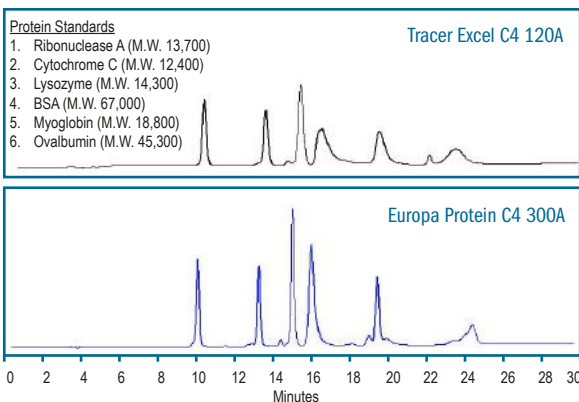
Our "Ultra-Fast" columns are made in 3-5 cm length in order to get quick analytical results, whereas the "High Efficiency" columns are normally in 15-25cm lengths to obtain the best resolution.

### Specifications:

- Ultra high purity, totally spherical silica gel
- High density bonding for extreme performance proprietary fully end-capped silica
- Porous Size: 120 Å, narrow particle size distribution
- Surface Area 300 m<sup>2</sup>/g
- % of Carbon 19 %
- High loading capacity of crude peptides
- Stable under basic and extreme acidic conditions
- Packed with 5µm sized silica particles

Microbore Columns are available in: 0.21, 0.30 cm ID  
 Analytical Columns are available in: 0.40 and 0.46 cm ID  
 Semi-Prep Columns are available in: 0.78 and 1.0 cm  
 Prep Columns are available in: 2.1 cm ID  
 Larger diameter available by request

## Influence of Pore size in Peak Shape



Column: 7.8 mm I.D. x 250 mm Length; Temperature: 35°C; Detector: UV 220 nm;  
 Mobile Phase: A) CH<sub>3</sub>CN/H<sub>2</sub>O/TFA = 20/80/0.1, B) CH<sub>3</sub>CN/H<sub>2</sub>O/TFA = 60/40/0.1,  
 Linear Gradient from A to B in 25 min and hold for 10 min; Flow Rate: 1.7 ml/min.

# TK Europa HPLC Column for Peptides and Proteins



Europa packaging

## Europa C18 Peptide Microbore HPLC Columns



Columns are particularly designed for LC/MS applications. The high detection sensitivity of these columns allows the use of smaller quantities of samples and also decreases the required volume of solvents.

Packing	Funct.	µm	Length		Diameter	Cat.Nbr.
			µm	cm	cm	
Europa Peptide 120	C18	5	3	0.21	0.21	TR-010130
Europa Peptide 120	C18	5	5	0.21	0.21	TR-010131
Europa Peptide 120	C18	5	10	0.21	0.21	TR-010132
Europa Peptide 120	C18	5	15	0.21	0.21	TR-010133
Europa Peptide 120	C18	5	20	0.21	0.21	TR-010134
Europa Peptide 120	C18	5	3	0.30	0.30	TR-010135
Europa Peptide 120	C18	5	5	0.30	0.30	TR-010136
Europa Peptide 120	C18	5	10	0.30	0.30	TR-010137
Europa Peptide 120	C18	5	15	0.30	0.30	TR-010138
Europa Peptide 120	C18	5	20	0.30	0.30	TR-010139
Europa Peptide 120	C18	5	25	0.30	0.30	TR-010140

## Europa C18 Peptide Analytical HPLC Columns



Packing	Funct.	µm	Length		Diameter	Cat.Nbr.
			µm	cm	cm	
Europa Peptide 120	C18	5	3	0.46	0.46	TR-010116
Europa Peptide 120	C18	5	4	0.46	0.46	TR-010117
Europa Peptide 120	C18	5	5	0.46	0.46	TR-010118
Europa Peptide 120	C18	5	10	0.46	0.46	TR-010119
Europa Peptide 120	C18	5	15	0.46	0.46	TR-010120
Europa Peptide 120	C18	5	20	0.46	0.46	TR-010121
Europa Peptide 120	C18	5	25	0.46	0.46	TR-010122
Europa Peptide 120	C18	5	3	0.40	0.40	TR-010123
Europa Peptide 120	C18	5	4	0.40	0.40	TR-010124
Europa Peptide 120	C18	5	5	0.40	0.40	TR-010125
Europa Peptide 120	C18	5	10	0.40	0.40	TR-010126
Europa Peptide 120	C18	5	15	0.40	0.40	TR-010127
Europa Peptide 120	C18	5	20	0.40	0.40	TR-010128
Europa Peptide 120	C18	5	25	0.40	0.40	TR-010129

## Europa C18 Peptide Semi Preparative HPLC Columns



Packing	Funct.	µm	Length		Diameter	Cat.Nbr.
			µm	cm	cm	
Europa Peptide 120	C18	5	10	0.78	0.78	TR-010141
Europa Peptide 120	C18	5	15	0.78	0.78	TR-010142
Europa Peptide 120	C18	5	25	0.78	0.78	TR-010143
Europa Peptide 120	C18	5	10	1.00	1.00	TR-010144
Europa Peptide 120	C18	5	15	1.00	1.00	TR-010145
Europa Peptide 120	C18	5	25	1.00	1.00	TR-010146

## Europa C18 Peptide Preparative HPLC Columns



Packing	Funct.	µm	Length		Diameter	Cat.Nbr.
			µm	cm	cm	
Europa Peptide 120	C18	5	5	2.12	2.12	TR-010147
Europa Peptide 120	C18	5	10	2.12	2.12	TR-010148
Europa Peptide 120	C18	5	15	2.12	2.12	TR-010149
Europa Peptide 120	C18	5	25	2.12	2.12	TR-010150

# Europa HPLC Column for Peptides and Proteins **Tk**

## Europa C18 Protein HPLC Columns

We invite you to try our Europa C18 Protein column when you experience unsatisfactory results with your favorite column.

Europa C18 Protein columns are designed and manufactured for identification and purification of proteins and for compounds with high molecular weight.

Europa HPLC columns for proteins provide a high performance that is unsurpassed in efficiency, reliability and reproducibility. Manufactured using novel proprietary technologies, analytical and preparative Europa columns are simply the best reverse phase columns available today.

Europa columns ensure greater separation efficiency, resistance to extreme pH conditions and longer column life.

Our “Ultra-Fast” columns are made in 3-5 cm length in order to get quick analytical results, whereas the “High Efficiency” columns are normally in 15-25 cm lengths to obtain best resolution.

### Specifications:

- Ultra high purity totally spherical silica gel provide a high resolution and excellent peak shape
- High loading capacity of crude proteins
- High density bonding for extreme performance proprietary fully end-capped silica
- Stable, featuring extended acidic and basic conditions
- Silica properties: ultra pure and totally spherical narrow distribution range and high density
- Fully end-capped silica
- Porous Size: 300Å narrow particle size distribution
- Surface Area 100 m<sup>2</sup>/gr.
- % of Carbon 7 %
- Packed with 5µm sized silica particles
- Available as C4, C8, and C18 columns
- Microbore Columns are available in: 0.21, 0.30 cm I.D.  
Analytical Columns in: 0.40 and 0.46cm I.D. Semi-Prep in: 0.70-1.0cm Prep Columns in: 2.1cm and larger diameter by request

## Europa C18 Protein Preparative HPLC Columns



Packing	Funct.	µm	Length		Cat.Nbr.
			µm	cm	
Europa Protein 300	C18	5	5	2.12	TR-010217
Europa Protein 300	C18	5	10	2.12	TR-010218
Europa Protein 300	C18	5	15	2.12	TR-010219
Europa Protein 300	C18	5	25	2.12	TR-010220

## Europa C18 Protein Analytical HPLC Columns



Packing	Funct.	µm	Length		Diameter	Cat.Nbr.
			µm	cm		
Europa Protein 300	C18	5	3	0.46	TR-010158	
Europa Protein 300	C18	5	4	0.46	TR-010159	
Europa Protein 300	C18	5	5	0.46	TR-010160	
Europa Protein 300	C18	5	10	0.46	TR-010161	
Europa Protein 300	C18	5	15	0.46	TR-010162	
Europa Protein 300	C18	5	20	0.46	TR-010163	
Europa Protein 300	C18	5	25	0.46	TR-010164	
Europa Protein 300	C18	5	3	0.40	TR-010172	
Europa Protein 300	C18	5	4	0.40	TR-010173	
Europa Protein 300	C18	5	5	0.40	TR-010174	
Europa Protein 300	C18	5	10	0.40	TR-010175	
Europa Protein 300	C18	5	15	0.40	TR-010176	
Europa Protein 300	C18	5	20	0.40	TR-010177	
Europa Protein 300	C18	5	25	0.40	TR-010178	

## Europa C18 Protein Microbore HPLC Columns



Columns are particularly designed for LC/MS applications. The high detection sensitivity of these columns allows the use of smaller quantities of samples and also decreases the required volume of solvents.

Packing	Funct.	µm	Length		Diameter	Cat.Nbr.
			µm	cm		
Europa Protein 300	C18	5	3	0.21	TR-010184	
Europa Protein 300	C18	5	5	0.21	TR-010185	
Europa Protein 300	C18	5	10	0.21	TR-010186	
Europa Protein 300	C18	5	15	0.21	TR-010187	
Europa Protein 300	C18	5	20	0.21	TR-010188	
Europa Protein 300	C18	5	3	0.30	TR-010195	
Europa Protein 300	C18	5	5	0.30	TR-010196	
Europa Protein 300	C18	5	10	0.30	TR-010197	
Europa Protein 300	C18	5	15	0.30	TR-010198	
Europa Protein 300	C18	5	20	0.30	TR-010199	
Europa Protein 300	C18	5	25	0.30	TR-010200	

## Europa C18 Protein Semi-Preparative HPLC Columns



Packing	Funct.	µm	Length		Diameter	Cat.Nbr.
			µm	cm		
Europa Protein 300	C18	5	10	0.70	TR-010211	
Europa Protein 300	C18	5	5	0.70	TR-010212	
Europa Protein 300	C18	5	25	0.70	TR-010213	
Europa Protein 300	C18	5	10	1.00	TR-010214	
Europa Protein 300	C18	5	15	1.00	TR-010215	
Europa Protein 300	C18	5	25	1.00	TR-010216	

# TK Europa HPLC Column for Peptides and Proteins



Semi preparative and Preparative Europa HPLC Columns

## Europa C8 Protein HPLC Columns

Europa C8 columns are recommended for compounds too strongly retained on C18 Phases.

## Europa C8 Protein Analytical HPLC Columns



Packing	Funct.	µm	Length		Diameter	Cat.Nbr.
			µm	cm		
Europa Protein 300	C8	5	3	0.46	TR-010151	
Europa Protein 300	C8	5	4	0.46	TR-010152	
Europa Protein 300	C8	5	5	0.46	TR-010153	
Europa Protein 300	C8	5	10	0.46	TR-010154	
Europa Protein 300	C8	5	15	0.46	TR-010155	
Europa Protein 300	C8	5	20	0.46	TR-010156	
Europa Protein 300	C8	5	25	0.46	TR-010157	
Europa Protein 300	C8	5	3	0.40	TR-010165	
Europa Protein 300	C8	5	4	0.40	TR-010166	
Europa Protein 300	C8	5	5	0.40	TR-010167	
Europa Protein 300	C8	5	10	0.40	TR-010168	
Europa Protein 300	C8	5	15	0.40	TR-010169	
Europa Protein 300	C8	5	20	0.40	TR-010170	
Europa Protein 300	C8	5	25	0.40	TR-010171	

## Europa C8 Protein Microbore HPLC Columns



Columns are particularly designed for LC/MS applications. The high detection sensitivity of these columns allows the use of smaller quantities of samples and also decreases the required volume of solvents.

Europa C8 columns are recommended for compounds too strongly retained on C18 Phases.

Packing	Funct.	µm	Length		Diameter	Cat.Nbr.
			µm	cm		
Europa Protein 300	C8	5	3	0.21	TR-010179	
Europa Protein 300	C8	5	5	0.21	TR-010180	
Europa Protein 300	C8	5	10	0.21	TR-010181	
Europa Protein 300	C8	5	15	0.21	TR-010182	
Europa Protein 300	C8	5	20	0.21	TR-010183	
Europa Protein 300	C8	5	3	0.30	TR-010189	

Packing	Funct.	µm	Length		Diameter	Cat.Nbr.
			µm	cm		
Europa Protein 300	C8	5	5	0.30	TR-010190	
Europa Protein 300	C8	5	10	0.30	TR-010191	
Europa Protein 300	C8	5	15	0.30	TR-010192	
Europa Protein 300	C8	5	20	0.30	TR-010193	
Europa Protein 300	C8	5	25	0.30	TR-010194	

## Europa C8 Protein Semi-Preparative HPLC Columns



Packing	Funct.	µm	Length		Diameter	Cat.Nbr.
			µm	cm		
Europa Protein 300	C8	5	10	0.70	TR-010201	
Europa Protein 300	C8	5	15	0.70	TR-010202	
Europa Protein 300	C8	5	25	0.70	TR-010203	
Europa Protein 300	C8	5	10	1.00	TR-010204	
Europa Protein 300	C8	5	15	1.00	TR-010205	
Europa Protein 300	C8	5	25	1.0	TR-010206	

## Europa C8 Protein Preparative HPLC Columns



Packing	Funct.	µm	Length		Diameter	Cat.Nbr.
			µm	cm		
Europa Protein 300	C8	5	5	2.12	TR-010207	
Europa Protein 300	C8	5	10	2.12	TR-010208	
Europa Protein 300	C8	5	15	2.12	TR-010209	
Europa Protein 300	C8	5	25	2.12	TR-010210	

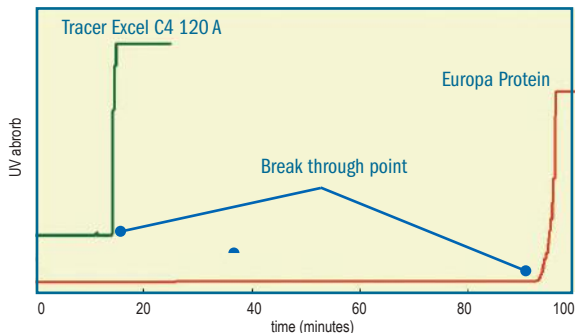
For Guard Columns please refer to pages 197-199

# Europa HPLC Column for Peptides and Proteins **Tk**

## Europa C4 Protein HPLC Columns

### Europa Protein C4 300 A - Loading Capacity of BSA

Protein 300 exhibited the highest loading capacity for proteins

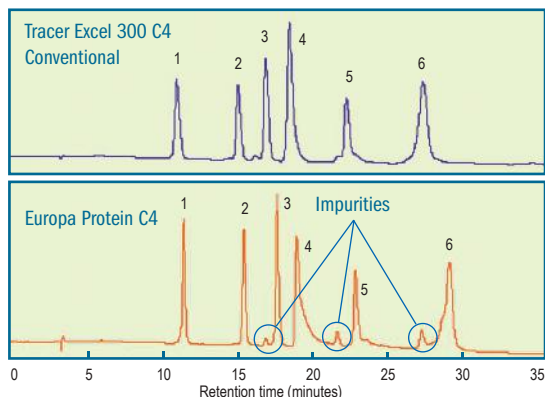


**Column:** 7 mm I.D. x 250 mm Length; Temperature: 35°C; Detector: UV 220 nm;  
**Flow Rate:** 1.0 ml/min.  
**Feed:** 10 mg/mL BSA in 0.1% TFAaq  
 Europa C4 columns are recommended for compounds too strongly retained on C 18 and C 8

### Europa Protein C4 300 A - Protein Separation Behaviors

- Similar Hydrophobic Selectivity
- Higher Resolution

Protein Standards	
1.	Ribonuclease A (M.W. 13,700)
2.	Cytochrome C (M.W. 12,400)
3.	Lysozyme (M.W. 14,300)
4.	BSA (M.W. 67,000)
5.	Myoglobin (M.W. 18,800)
6.	Ovalbumin (M.W. 45,300)



**Column:** 6 mm I.D. x 250 mm Length; Temperature: 35°C; Detector: UV 220 nm;  
**Mobile Phase:** A) CH<sub>3</sub>CN/H<sub>2</sub>O/TFA = 20/80/0.1, B) CH<sub>3</sub>CN/H<sub>2</sub>O/TFA = 60/40/0.1,  
 Linear Gradient from A to B in 25 min and hold for 10 min; Flow Rate: 1.7 ml/min.

### Europa C4 Protein Analytical HPLC Columns



Packing	Funct.	µm	Length		Cat.Nbr.
			cm	cm	
Europa Protein 300	C4	5	3	0.46	TR-010081
Europa Protein 300	C4	5	4	0.46	TR-010082
Europa Protein 300	C4	5	5	0.46	TR-010083
Europa Protein 300	C4	5	10	0.46	TR-010084
Europa Protein 300	C4	5	15	0.46	TR-010085
Europa Protein 300	C4	5	20	0.46	TR-010086

Length Diameter

Packing	Funct.	µm	cm	cm	Cat.Nbr.
Europa Protein 300	C4	5	25	0.46	TR-010087
Europa Protein 300	C4	5	3	0.40	TR-010088
Europa Protein 300	C4	5	4	0.40	TR-010089
Europa Protein 300	C4	5	5	0.40	TR-010090
Europa Protein 300	C4	5	10	0.40	TR-010091
Europa Protein 300	C4	5	15	0.40	TR-010092
Europa Protein 300	C4	5	20	0.40	TR-010093
Europa Protein 300	C4	5	25	0.40	TR-010094

### Europa C4 Protein Microbore HPLC Columns



Columns are particularly designed for LC/MS applications. The high detection sensitivity of these columns allows the use of smaller quantities of samples and also decreases the required volume of solvents.

Length Diameter

Packing	Funct.	µm	cm	cm	Cat.Nbr.
Europa Protein 300	C4	5	3	0.21	TR-010095
Europa Protein 300	C4	5	5	0.21	TR-010096
Europa Protein 300	C4	5	10	0.21	TR-010097
Europa Protein 300	C4	5	15	0.21	TR-010098
Europa Protein 300	C4	5	20	0.21	TR-010099
Europa Protein 300	C4	5	3	0.30	TR-010100
Europa Protein 300	C4	5	5	0.30	TR-010101
Europa Protein 300	C4	5	10	0.30	TR-010102
Europa Protein 300	C4	5	15	0.30	TR-010103
Europa Protein 300	C4	5	20	0.30	TR-010104
Europa Protein 300	C4	5	25	0.30	TR-010105

### Europa C4 Protein Semi-Preparative HPLC Columns



Length Diameter

Packing	Funct.	µm	cm	cm	Cat.Nbr.
Europa Protein 300	C4	5	10	0.78	TR-010106
Europa Protein 300	C4	5	15	0.78	TR-010107
Europa Protein 300	C4	5	25	0.78	TR-010108
Europa Protein 300	C4	5	10	1.00	TR-010109
Europa Protein 300	C4	5	15	1.00	TR-010110
Europa Protein 300	C4	5	25	1.00	TR-010111

### Europa C4 Protein Preparative HPLC Columns



Length Diameter

Packing	Funct.	µm	cm	cm	Cat.Nbr.
Europa Protein 300	C4	5	5	2.12	TR-010112
Europa Protein 300	C4	5	10	2.12	TR-010113
Europa Protein 300	C4	5	15	2.12	TR-010114
Europa Protein 300	C4	5	25	2.12	TR-010115



TRACER EXCEL™ is a range of totally new packings that employ the most advanced procedures of synthesis and chemical functionalization, resulting in some column packings that completely surpass other silica-based packings on the market.

To manufacture the silica particle, the basis of all TRACER EXCEL packings, we begin with materials of extreme purity and follow strictly controlled processes. In this way, we get a totally porous, spherically perfect particle, without surface irregularities and with an extremely low content of metals (Al, Fe, Ti and Zn).

The rigorous control of the process variables also allows us to obtain a material with a perfectly reproducible porosity and surface area, and with a practical absence of micropores. In other competitors' packings, these micropores cause chromatographic problems due to incomplete substitution of the support, while with TRACER EXCEL packings micropores are totally eliminated.

We are therefore able to offer you a complete line of HPLC packings with characteristics of reproducibility, purity, deactivation, fluido-dynamic behaviour and chemical and physical stability that are difficult to beat.

- Exceptional batch-to-batch reproducibility.
- Ultra-pure silica.
- Extremely low content of metals.
- Perfect sphericity.
- Meticulously controlled materials.
- Maximum pH range (between 1.5 and 11.0)
- 3, 5 and 10 µm particles
- Easily scaled-up, from microbore to preparative HPLC.
- Available with 300Å pore size for biochromatography.
- Exceptional long lifetime.
- Wide range of packings.
- Fully deactivated after functional bonding.

## TRACER EXCEL ODS-A

TRACER EXCEL ODS-A is a totally endcapped packing, notable for its extreme level of deactivation. This minimizes undesirable interactions when chromatographing strongly acidic or basic analytes or chelating compounds.

Additionally TRACER EXCEL ODS-A columns show extraordinary resistance to extreme pH values, between 1.5 to 11.0.

### Maximum Stability

The chemical and structural stability of TRACER EXCEL columns leads to long useful lifetimes, even under extreme conditions where columns of most major manufacturers would suffer rapid degradation.

### Total deactivation

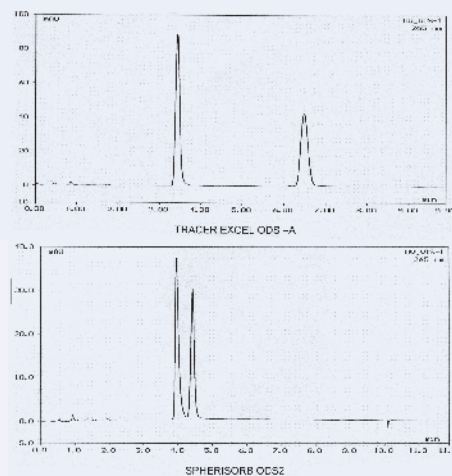
Free surface silanols that are left exposed following functional bonding of the silica particle are the chief cause of peak tailing and distortion that commonly appear with basic compounds.

If the silica particle also contains significant quantities of metals, these markedly increase the acidity of these surface silanols, keeping them ionized even at low pHs. These conditions can cause deleterious effects on eluting chromatographic peaks.

The Pyridine/Phenol test is an excellent marker of the presence of these surface silanols. Under ideal conditions, the pyridine peak should elute before the phenol peak and should also elute with total symmetry without tailing. Furthermore, a broader separation between the two peaks indicates superior deactivation.

The TRACER EXCEL ODS-A column complies with the pyridine/phenol test better than other columns from major manufacturers. This demonstrates the extraordinary deactivation achieved with TRACER EXCEL ODS-A columns. Another test that demonstrates the quality of TRACER EXCEL ODS-A columns is the acidic compounds test. This type of compound yields evidence of the presence of chelating centres or points of ionic interchange that may be present in the silica particle.

### Pyridine/Phenol test



#### Conditions of test

Eluant : Acetonitrile/Water, 30/70 1ml/min  
 Lambda: 265nm

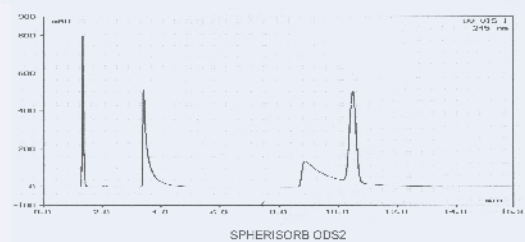
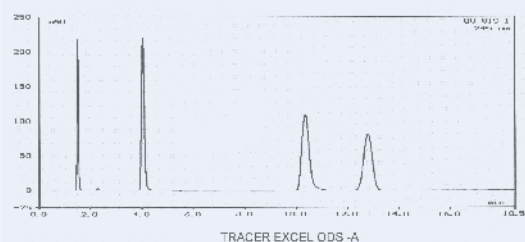
#### Composition:

Pyridine 2.1µl/ml  
 Phenol:14 mg/m

TRACER EXCEL columns show perfectly symmetrical peaks in contrast to the significant tailing which appears when this test is done with other columns on the market. Symmetrical peaks are achieved even when separating basic compounds.

Once again, TRACER EXCEL columns show, thanks to their exceptional level of deactivation, excellence in obtaining perfectly symmetrical peaks where other columns on the market clearly fail (giving peaks with pronounced tails or even irreversible adsorption).

## Acid Compounds Test



### Conditions of test

Eluant : 20 mM KH<sub>2</sub>PO<sub>4</sub>pH3.2/CH<sub>3</sub>CN 65:35  
1 ml/min. Temp 40°C UV 245nm

### Composition:

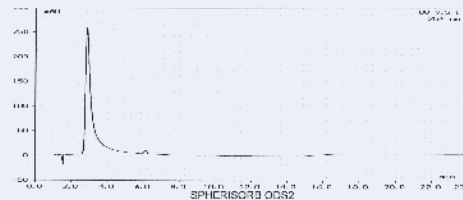
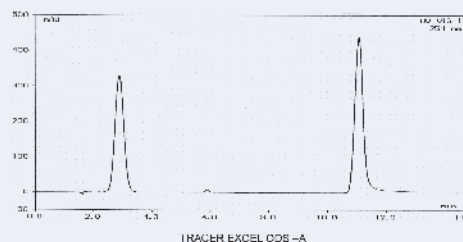
Uracil: 0.5mg/ml  
Benzoic acid: 3.6 mg/ml  
p-Ethylbenzoic acid: 0.9 mg/ml  
Methylbenzene: 3.0 mg/ml

## Purity of material

All of the advantages of TRACER EXCEL columns have as a base the quality of the silica particle. No bonding process can mask silica of inferior quality. Only silica particles absolutely free of metallic impurities, with a pore-size and pore-distribution absolutely controlled and synthesized through fully optimized processes, can give bonded packings of the highest grade.

The 8-quinolinol/acetylacetone test demonstrates the difference in chromatographic behavior between TRACER EXCEL ODS-A and a competitor's column with a high content of metallic impurities for the chelating compound 8-quinolinol.

## Metalic Trace Test



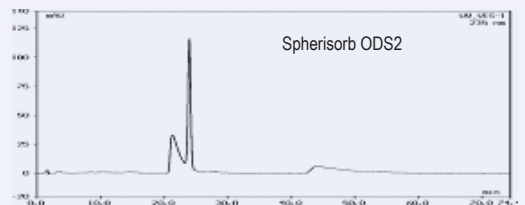
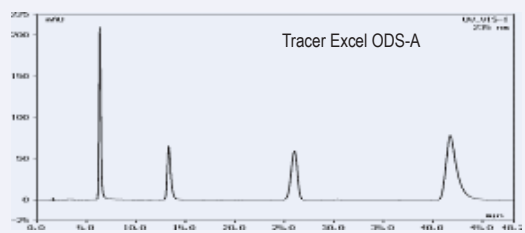
### Conditions of test

Tracer Excel ODS-A  
Eluant : 10 mM KH<sub>2</sub>PO<sub>4</sub>pH6.8/Metanol 60:40  
1 ml/min. Temp 30°C UV 254nm

### Composition:

8-Quinolinol: 0.5mg/ml  
Acetylacetone: 0.5mg/ml

## Basic Compounds Test



### Conditions of test

Tracer Excel ODS-A  
Eluant : 20 mM KH<sub>2</sub>PO<sub>4</sub>pH7/CH<sub>2</sub>CN 35:65  
1 ml/min. Temp 25°C UV 235nm

### Composition:

Propranolol: 0.08mg/ml  
Diphenidramine :1.28 mg/ml  
Acetonaphthalene: 0.2 mg/ml  
Amyltryptilene: 0.3 mg/ml

## Reproducibility

The high productivity which is now needed in analytical and governmental laboratories oblige everyone to use reliable HPLC equipment and reproducible columns.

TRACER EXCEL columns were developed with the final objective of achieving the very highest quality and reproducibility. Teknokroma's numerous and stringent process controls for every batch of packing fully guarantees high quality and exceptional reproducibility.

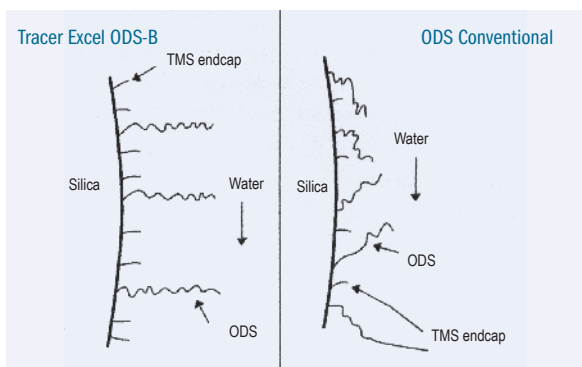
## TRACER EXCEL ODS-B

- Compatible with 100% aqueous eluant.
- Especially suitable for the separation of hydrophilic compounds.
- Strong retention in aqueous eluants.
- Long useful life with aqueous eluants
- Selectivity complementary to TRACER EXCEL ODS-A
- High mechanical stability
- Maximum versatility.

Based on the same principles as the TRACER EXCEL ODS-A columns, the TRACER EXCEL ODS-B column presents a high selectivity for hydrophilic and polar compounds, which are poorly retained on conventional ODS columns.

A special modification in the process of functionalizing the pure silica particle prevents the collapsing effect of the C18 chains when working with mainly aqueous eluants. So you can work with excellent chromatographic performance even when the percentage of the aqueous phase is 100%.

### EFFECT OF AQUEOUS ELUTANTS ON THE ORGANIZATION OF HYDROCARBON CHAINS.

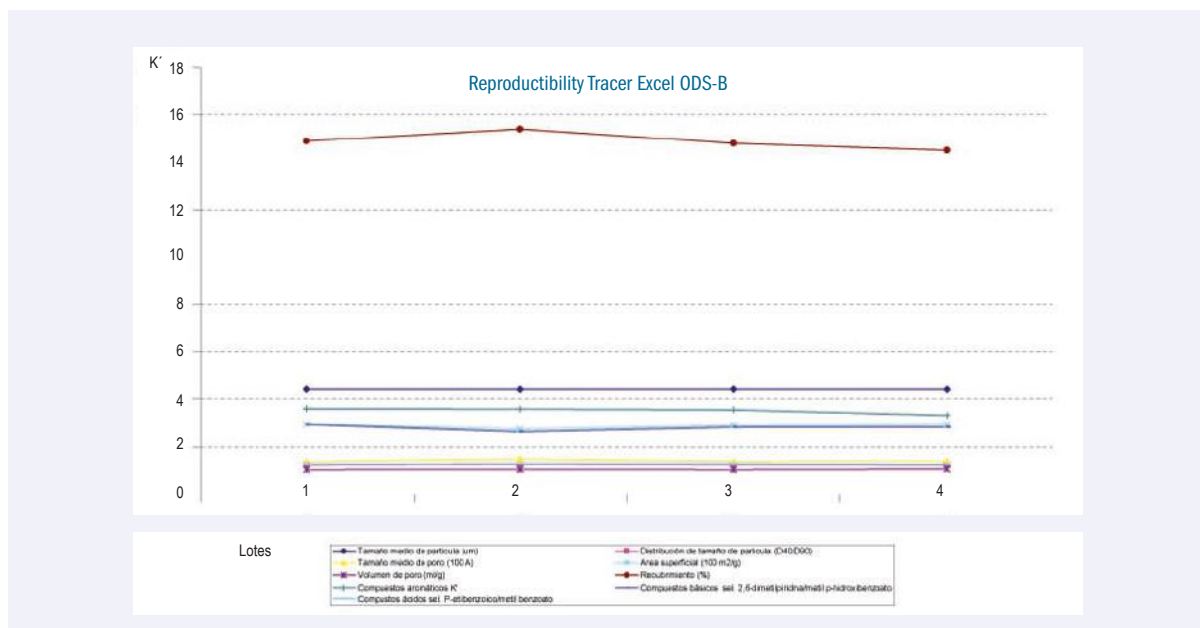
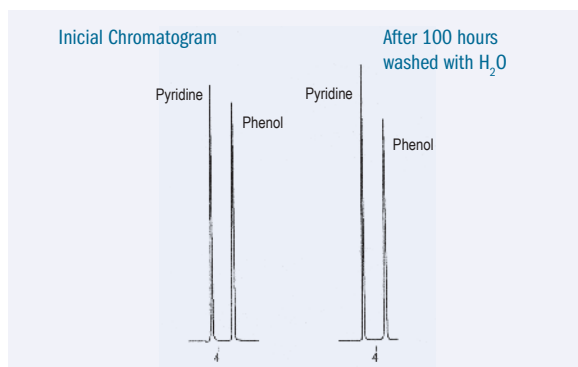


Generally, its field of application is the same as that of the TRACER EXCEL ODS-A, but its field of application is extended for samples which are especially difficult for conventional reversed phases, as is the case in separating oligosaccharides, amino acids, nucleotides and organic acids.

The special chromatographic conditions of TRACER EXCEL ODS-B also provide a specific selectivity for compounds which contain slightly polar groups in their structure.

This column is especially recommended for LC-MS in that, in many cases, the use of plugs or ionic blocking agents are avoided, which negatively affect detection when this technique is used.

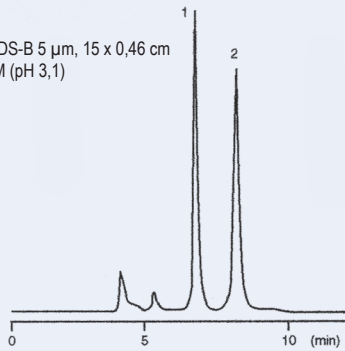
As shown in the chromatogram, after more than 100 hours of operations with water no alteration is observed in retention times, selectivity or distortion in the peaks of pyridine and phenol - a clear indication that no collapse of the bonded phase functionality is adversely achieved with TRACER EXCEL ODS-B columns. Interestingly, the collapsing of bonded phase functionality with the majority of reversed phase columns on the market is typical under these conditions.



## Antioxidants

Column: TRACER EXCEL ODS-B 5  $\mu$ m, 15 x 0,46 cm  
 Eluant: Phosphate Plug 0,1 M (pH 3,1)  
 Flow: 0,6 ml/min.  
 Detector: ECD

Sample: 1 Ascorbic Acid  
 2 GSH



## Water Soluble Vitamins

Column: TRACER EXCEL ODS-B 5  $\mu$ m, 15 x 0,46 cm  
 Eluant: Phosphate Plug 20 mM (pH 7,0)CH<sub>3</sub>CN 95/5 cm  
 Flow: 0,6 ml/min.  
 Detector: UV 210 nm

Sample: 1 Calcium Pantothenate  
 2 Pyridoxine hydrochloride (B<sub>6</sub>)  
 3 Nicotinamide



## Glycolid Acid and Latic Acid

Column: TRACER EXCEL ODS-B 5  $\mu$ m, 15 x 0,46 cm  
 Eluant: H<sub>3</sub>PO<sub>4</sub> 0,1%  
 Flow: 0,6 ml/min.  
 Temperature: 40°C  
 Detector: UV 210 nm

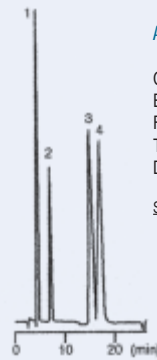
Sample: 1 Glycolic Acid  
 2 Lactic Acid



## Alcohols

Column: TRACER EXCEL ODS-B 5  $\mu$ m, 15 x 0,46 cm  
 Eluant: H<sub>2</sub>O  
 Flow: 0,6 ml/min.  
 Temperature: 40°C  
 Detector: RID

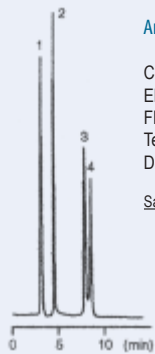
Sample: 1 Methanol  
 2 Ethanol  
 3 Iso-Propanol  
 4 n-propanol



## Aminoacids

Column: TRACER EXCEL ODS-B 5  $\mu$ m, 15 x 0,46 cm  
 Eluant: H<sub>2</sub>O  
 Flow: 0,6 ml/min.  
 Temperature: 40°C  
 Detector: RID

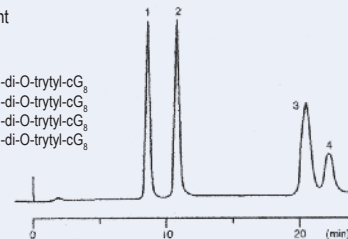
Sample: 1 Alanine  
 2 Valine  
 3 Isoleucine  
 4 Leucine



## Cyclodextrin derivatives

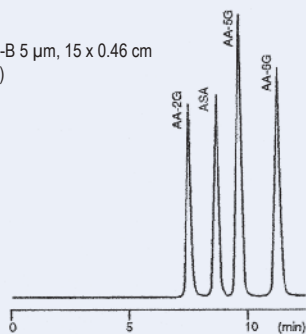
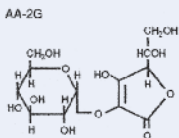
Column: TRACER EXCEL ODS-B 5  $\mu$ m, 15 x 0,46 cm  
 Eluant: MeOH/H<sub>2</sub>O 70:30  
 Flow: 0,6 ml/min.  
 Temperature: ambient  
 Detector: UV240 nm

Sample: 1 6', 6<sup>5</sup>-di-O-trytyl-cG<sub>3</sub>  
 2 6', 6<sup>1</sup>-di-O-trytyl-cG<sub>3</sub>  
 3 6', 6<sup>3</sup>-di-O-trytyl-cG<sub>3</sub>  
 4 6', 6<sup>2</sup>-di-O-trytyl-cG<sub>3</sub>



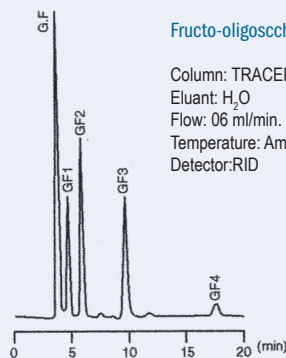
## Ascorbic Acid and Glycosides

Column: TRACER EXCEL ODS-B 5  $\mu$ m, 15 x 0,46 cm  
 Eluant: Phosphate Plug (pH 3,8)  
 Flow: 0,4 ml/min.  
 Temperature: Ambient  
 Detector: UV240 nm



## Fructo-oligosaccharides

Column: TRACER EXCEL ODS-B 5  $\mu$ m, 15 x 0,46 cm  
 Eluant: H<sub>2</sub>O  
 Flow: 0,6 ml/min.  
 Temperature: Ambient  
 Detector: RID



# Tk Other Tracer Excel Packings

The extraordinary qualities of TRACER EXCEL packings have been extended to a full range of operations, covering practically all the chromatographer's needs.

Si	Material of the ultrapure silica particle, the basis of all the TRACER EXCEL range.
C8	<p>This packing, made operative with octyl groups and totally endcapped, is extremely versatile.</p> <p>Its use is recommended for highly hydrophobic samples, which are retained excessively on ODS type packings.</p> <p>Developed on the same ultrapure silica as ODS-A and ODS-B, it is extremely reproducible and reliable.</p>
C4	<p>The same ultra pure silica of all the TRACER EXCEL range made operative with butyl groups, giving a moderately hydrophobic packing.</p> <p>Its principle field of application is the separation of peptides and proteins by reverse phase.</p> <p>In this case, the same packing is used with a 300 Å porosity, more suitable for the large size of protein molecules.</p> <p>Another field where this packing can be highly recommended is when the sample contains compounds of a very different hydrophobic nature.</p> <p>This packing permits perfect separation of a sample with a single injection.</p>
C1	<p>The same ultrapure silica of the TRACER EXCEL range is given its special function with tri-methylchlorosilane to create a low hydrophobic reversed phase.</p> <p>Its field of application includes the separation of peptides and proteins by reversed phase.</p> <p>It can also be used as a packing for normal phase with highly polar compounds.</p>
CN	<p>The type CN packings are much appreciated as alternatives to ODS-type packings for their special selectivity, as well as for the possibility they offer for working in both chromatographic modes, normal and reverse phase. However, in comparison with the latter, they have always been characterised by a lesser reproducibility and a notably shorter useful life.</p> <p>Thanks to the extraordinary level of quality of the silica of the particle and the optimization reached by the actuating processes, the new packing TRACER EXCEL 120 CN has satisfactorily overcome these limitations, so giving the chromatographer a completely reliable alternative.</p> <p>As a normal phase it is an excellent alternative to unsubstituted silica, given that retention times are much more reproducible, equilibration times much more rapid, and it does not suffer the problems of de-activation of silica itself.</p>
NH <sub>2</sub>	<p>This packing, with chemically bonded groups of aminopropyl silane, can be used as a phase normal or reverse phase packing depending on the eluant used.</p> <p>It is recommended for separations of basic compounds under normal phase conditions.</p> <p>Additionally, the reactivity of the amino group makes it very suitable as a support for later modifications as for example in the synthesis of quiral phases.</p> <p>It is also very suitable for SFC applications</p>
Ph	<p>In the same way as the CN type packing, the packing substituted with dimethyl phenyl can be used in normal or reversed phase, being in this latter case a very useful alternative to ODS type packings since its aromatic groups give it a special selectivity when polar compounds are being chromatographed.</p>
300 Angstrom	<p>A complete range of packings with a pore diameter of 300 Angstrom units is available, ideal for undertaking separations of complex molecules of very high molecular weight, e.g. proteins and peptides.</p>

# General Properties of Tracer Excel Packings **Tk**

	ODS-A	ODS-B	C8	C4	C1	CN	Ph	NH <sub>2</sub>	SI
<b>Size of pore in A units</b>	120	120	120	120	120	120	120	120	120
<b>Size of particle</b>	3, 5 and 10 µm	3, 5 and 10 µm	3, 5 and 10 µm	3, 5 and 10 µm	3, 5 and 10 µm	3, 5 and 10 µm	3, 5 and 10 µm	3, 5 and 10 µm	3, 5 and 10 µm
<b>Volume of pores in ml/g</b>	1.0 ml/g	1.0 ml/g	1.0 ml/g	1.0 ml/g	1.0 ml/g	1.0 ml/g	1.0 ml/g	1.0 ml/g	1.0 ml/g
<b>Surface area</b>	300 m <sup>2</sup> /g	300 m <sup>2</sup> /g	300 m <sup>2</sup> /g	300 m <sup>2</sup> /g	300 m <sup>2</sup> /g	300 m <sup>2</sup> /g	300 m <sup>2</sup> /g	300 m <sup>2</sup> /g	300 m <sup>2</sup> /g
<b>Purity of silica</b>	Ultrapure	Ultrapure	Ultrapure	Ultrapure	Ultrapure	Ultrapure	Ultrapure	Ultrapure	Ultrapure
<b>%C</b>	17%	15%	10%	8%	5%	7%	9%	4%	
<b>Type of phase</b>	Monofunctional and totally endcapped	Monofunctional and totally endcapped	Monofunctional and totally endcapped	Monofunctional and totally endcapped	Monofunctional	Monofunctional and totally endcapped		Trifunctional	
<b>Metallic impurities (Al, Fe, Ti, Zr)</b>	Less than 10ppm of each one	Less than 10ppm of each one	Less than 10ppm of each one	Less than 10ppm of each one	Less than 10ppm of each one	Less than 10ppm of each one	Less than 10ppm of each one	Less than 10ppm of each one	Less than 10ppm of each one





## Analytical columns 0.4 cm I.D. TRACER EXCEL 120/5 $\mu\text{m}$

Function	$\mu\text{m}$	L e n g t h   c m				
		4 cm	10 cm	15 cm	20 cm	25 cm
ODS-A	5	TR-416336	TR-416337	TR-416338	TR-416339	TR-416340
ODS-B	5	TR-416341	TR-416342	TR-416343	TR-416344	TR-416345
Si	5	TR-416356	TR-416357	TR-416358	TR-416359	TR-416360
C8	5	TR-416361	TR-416362	TR-416363	TR-416364	TR-416365
C4	5	TR-416366	TR-416367	TR-416368	TR-416369	TR-416370
C1	5	TR-416371	TR-416372	TR-416373	TR-416374	TR-416375
NH2	5	TR-416376	TR-416377	TR-416378	TR-416379	TR-416380
CN	5	TR-416381	TR-416382	TR-416383	TR-416384	TR-416385
Ph	5	TR-416386	TR-416387	TR-416388	TR-416389	TR-416390

## Ultrarapid columns 0.4 cm I.D. TRACER EXCEL 120/3 $\mu\text{m}$

Function	$\mu\text{m}$	L e n g t h   c m				
		4 cm	10 cm	15 cm	20 cm	25 cm
ODS-A	3	TR-413460	TR-413461	TR-413462	TR-413463	TR-413464
ODS-B	3	TR-413465	TR-413466	TR-413467	TR-413468	TR-413469
Si	3	TR-413470	TR-413471	TR-413472	TR-413473	TR-413474
C8	3	TR-413475	TR-413476	TR-413477	TR-413478	TR-413479
C4	3	TR-413480	TR-413481	TR-413482	TR-413483	TR-413484
C1	3	TR-413485	TR-413486	TR-413487	TR-413488	TR-413489
NH2	3	TR-413490	TR-413491	TR-413492	TR-413493	TR-413494
CN	3	TR-413495	TR-413496	TR-413497	TR-413498	TR-413499
Ph	3	TR-413500	TR-413501	TR-413502	TR-413503	TR-413504

## Analytical columns 0.46 cm I.D. TRACER EXCEL 120/5 $\mu\text{m}$

Function	$\mu\text{m}$	L e n g t h   c m				
		4 cm	10 cm	15 cm	20 cm	25 cm
ODS-A	5	TR-016336	TR-016337	TR-016338	TR-016339	TR-016340
ODS-B	5	TR-016341	TR-016342	TR-016343	TR-016344	TR-016345
Si	5	TR-016356	TR-016357	TR-016358	TR-016359	TR-016360
C8	5	TR-016361	TR-016362	TR-016363	TR-016364	TR-016365
C4	5	TR-016366	TR-016367	TR-016368	TR-016369	TR-016370
C1	5	TR-016371	TR-016372	TR-016373	TR-016374	TR-016375
NH2	5	TR-016376	TR-016377	TR-016378	TR-016379	TR-016380
CN	5	TR-016381	TR-016382	TR-016383	TR-016384	TR-016385
Ph	5	TR-016386	TR-016387	TR-016388	TR-016389	TR-016390

## Ultrarapid columns 0.46 cm I.D. TRACER EXCEL 120/3 µm

Function	µm	L e n g t h c m				
		4 cm	10 cm	15 cm	20 cm	25 cm
ODS-A	3	TR-013415	TR-013416	TR-013417	TR-013418	TR-013419
ODS-B	3	TR-013420	TR-013421	TR-013422	TR-013423	TR-013424
Si	3	TR-013425	TR-013426	TR-013427	TR-013428	TR-013429
C8	3	TR-013430	TR-013431	TR-013432	TR-013433	TR-013434
C4	3	TR-013435	TR-013436	TR-013437	TR-013438	TR-013439
C1	3	TR-013440	TR-013441	TR-013442	TR-013443	TR-013444
NH2	3	TR-013445	TR-013446	TR-013447	TR-013448	TR-013449
CN	3	TR-013450	TR-013451	TR-013452	TR-013453	TR-013454
Ph	3	TR-013455	TR-013456	TR-013457	TR-013458	TR-013459

## Microbore columns 0.21 cm I.D. TRACER EXCEL 120/5 µm

Function	µm	L e n g t h c m	
		10 cm	20 cm
ODS-B	5	TR-021353	TR-021354
Si	5	TR-021395	TR-021364
C8	5	TR-021365	TR-021366
C4	5	TR-021367	TR-021368
C1	5	TR-021369	TR-021370
NH2	5	TR-021371	TR-021372
CN	5	TR-021373	TR-021374
Ph	5	TR-021375	TR-021376

*Other configurations available on demand*

## Microbore columns 0.21 cm I.D. TRACER EXCEL 120/3 µm

Function	µm	L e n g t h c m	
		10 cm	20 cm
ODS-A	3	TR-021407	TR-021408
ODS-B	3	TR-021409	TR-021410
Si	3	TR-021411	TR-021412
C8	3	TR-021413	TR-021414
C4	3	TR-021415	TR-021416
C1	3	TR-021417	TR-021418
NH2	3	TR-021419	TR-021420
CN	3	TR-021421	TR-021422
Ph	3	TR-021423	TR-021424

*Other configurations available on demand*





## Analytical columns 0.3 cm I.D. TRACER EXCEL 120/5 µm

Function	µm	L e n g t h   c m	
		10 cm	20 cm
ODS-A	5	TR-021355	TR-021356
ODS-B	5	TR-021357	TR-021358
Si	5	TR-021381	TR-021382
C8	5	TR-021383	TR-021384
C4	5	TR-021385	TR-021386
C1	5	TR-021387	TR-021388
NH2	5	TR-021389	TR-021390
CN	5	TR-021391	TR-021392
Ph	5	TR-021393	TR-021394

*Other configurations available on demand*

## Microbore columns 0.3 cm I.D. TRACER EXCEL 120/3 µm

Function	µm	L e n g t h   c m	
		10 cm	20 cm
ODS-A	3	TR-021425	TR-021426
ODS-B	3	TR-021427	TR-021428
Si	3	TR-021429	TR-021430
C8	3	TR-021431	TR-021432
C4	3	TR-021433	TR-021434
C1	3	TR-021435	TR-021436
NH2	3	TR-021437	TR-021438
CN	3	TR-021439	TR-021440
Ph	3	TR021441	TR-021442

*Other configurations available on demand*

## NOVAFIX™ Cartridge 0.4 cm I.D. TRACER EXCEL 120/5 µm

Function	µm	L e n g t h   c m		
		7.5 cm	15 cm	25 cm
ODS-A	5	TR-015693	TR-015694	TR-015695
ODS-B	5	TR-015696	TR-015697	TR-015698
Si	5	TR-015705	TR-015706	TR-015707
C8	5	TR-015708	TR-015709	TR-015710
C4	5	TR-015714	TR-015715	TR-015716
C1	5	TR-015717	TR-015718	TR-015719
NH2	5	TR-015720	TR-015721	TR-015722
CN	5	TR-015723	TR-015724	TR-015725
Ph	5	TR-015726	TR-015727	TR-015728

*Other configurations available on demand*

NOVAFIX™ Cartridge 0.4 cm I.D.  
TRACER EXCEL 120/3 µm

Function	µm	L e n g t h c m		
		7.5 cm	15 cm	25 cm
ODS-A	3	TR-016427	TR-016428	TR-015731
ODS-B	3	TR-015732	TR-015733	TR-015734
Si	3	TR-015735	TR-015736	TR-015737
C8	3	TR-015738	TR-015739	TR-015740
C4	3	TR-015741	TR-015742	TR-01543
C1	3	TR-015744	TR-015745	TR-015746
NH2	3	TR-015747	TR-015748	TR-015749
CN	3	TR-015750	TR-015751	TR-015752
Ph	3	TR-015753	TR-015754	TR-015755

*Other configurations available on demand*

Semi-preparative columns 0.78 cm I.D.  
TRACER EXCEL 120/5 µm

Function	µm	L e n g t h c m	
		15 cm	25 cm
ODS-A	5	TR-016167	TR-016168
ODS-B	5	TR-016171	TR-016172
Si	5	TR-016175	TR-016176
C8	5	TR-016179	TR-016180
C4	5	TR-016183	TR-016184
C1	5	TR-016187	TR-016188
NH2	5	TR-016191	TR-016192
CN	5	TR-016195	TR-016196
Ph	5	TR-016199	TR-016200

*Other configurations available on demand*

Semi-preparative columns 1.0 cm I.D.  
TRACER EXCEL 120/5 µm

Function	µm	L e n g t h c m	
		10 cm	20 cm
ODS-A	5	TR-016169	TR-016170
ODS-B	5	TR-016173	TR-016174
Si	5	TR-016177	TR-016178
C8	5	TR-016181	TR-016182
C4	5	TR-016185	TR-016186
C1	5	TR-016189	TR-016190
NH2	5	TR-016193	TR-016194
CN	5	TR-016197	TR-016198
Ph	5	TR-016201	TR-016202





## Analytical columns 0.46 cm I.D. TRACER EXCEL 300/5 µm

Function	µm	L e n g t h   c m				
		4 cm	10 cm	15 cm	20 cm	25 cm
ODS-A	5	TR-016400	TR-016401	TR-016402	TR-016403	TR-016404
C8	5	TR-016400	TR-016406	TR-016407	TR-016408	TR-016409
C4	5	TR-016400	TR-016411	TR-016412	TR-016413	TR-016414

## Analytical columns 0.4 cm I.D. TRACER EXCEL 300/5 µm

Function	µm	L e n g t h   c m				
		4 cm	10 cm	15 cm	20 cm	25 cm
ODS-A	5	TR-416400	TR-416401	TR-416402	TR-416403	TR-416404
C8	5	TR-416405	TR-416406	TR-416407	TR-416408	TR-416409
C4	5	TR-416410	TR-416411	TR-416412	TR-416413	TR-416414

## Analytical columns 0.21 cm I.D. TRACER EXCEL 300/5 µm

Function	µm	L e n g t h   c m	
		10 cm	20 cm
ODS-A	5	TR-012395	TR-012396
C8	5	TR-012397	TR-012398
C4	5	TR-012399	TR-012400

## Analytical columns 0.3 cm I.D. TRACER EXCEL 300/5 µm

Function	µm	L e n g t h   c m	
		10 cm	20 cm
ODS-A	5	TR-021401	TR-021402
C8	5	TR-021403	TR-021404
C4	5	TR-021405	TR-021406

## NOVAFIX™ Cartridge System 0.4 cm I.D. TRACER EXCEL 300/5 µm

Function	µm	L e n g t h   c m		
		7.5 cm	15 cm	25 cm
ODS-A	5	TR-416417	TR-416418	TR-416419
C8	5	TR-416420	TR-416421	TR-416422
C4	5	TR-416423	TR-416424	TR-416425

For Guard Columns please refer to pages 197-198



The new range of Tracer Extrasil packings has been specially developed to replace one of the most popular packings on the market (WS).

All the physical and chromatographic parameters evaluated show a total equivalence between both materials, and what is more important, this has been certified by the excellent results obtained by the many users who up to now have tried this packing.

### Economy

Tracer Extrasil represents the most economical choice of HPLC packings.

### Reproducibility

An advanced manufacturing process and a strict control of each one of its steps ensures a maximum reproducibility and efficiency in every one of the columns.

### Guarantee

The confidence we have in our product enables us to offer a complete guarantee on these columns, so that if for any reason whatever a client thinks that a TRACER EXTRASIL column does not operate in an identical manner to the equivalent WS packing, we will refund his money.

### Characteristics of the material

As shown in the following table, the new packing TRACER EXTRASIL is perfectly equivalent to the reference material in all its physicochemical characteristics.

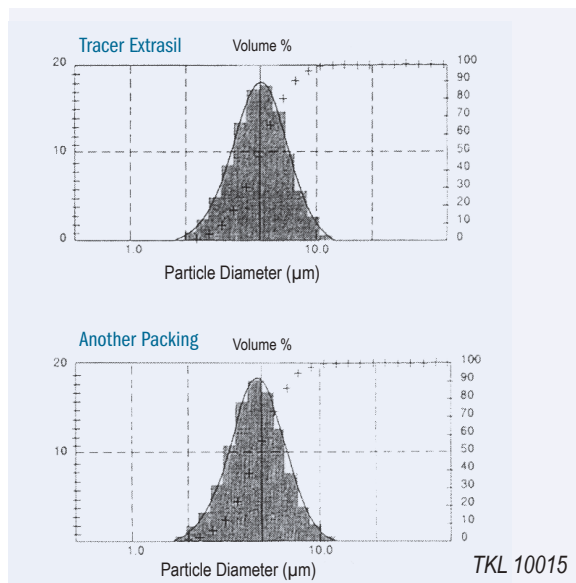
### Characteristics

Tracer Extrasil 3,5 & 10 µm 80 A 220 m <sup>2</sup> /g	Particle Size Pore Size Surface area Carbon content	WS Packing 3,5 & 10 µm 80 A 220 m <sup>2</sup> /g
4%	C1	4%
6%	C6	6%
6%	C8	6%
7%	ODS-1	7%
12%	ODS-2	12%
3,5%	CN	3,5%
2%	NH2	2%
3,0%	Phenyl	3,0%
-	8AX	-
-	SCX	-

### Distribution of particle size

In the development of this new material there has been special care in optimization of the size of the particle, given that this control is essential to get the best efficiency and stability in the packing.

The comparison made with the WS packing shows once more the total equivalence of these two materials.



### S.E.M. of the silica particle

The packing that results shows an almost perfect sphericity, as the images made by a scanning electron microscope show.

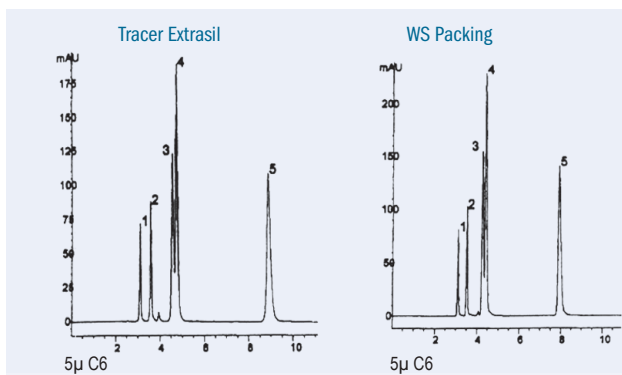


### Applications

In addition to the complete agreement between the comparative data for both packings, the definitive proof comes from their comparison in a wide range of applications.

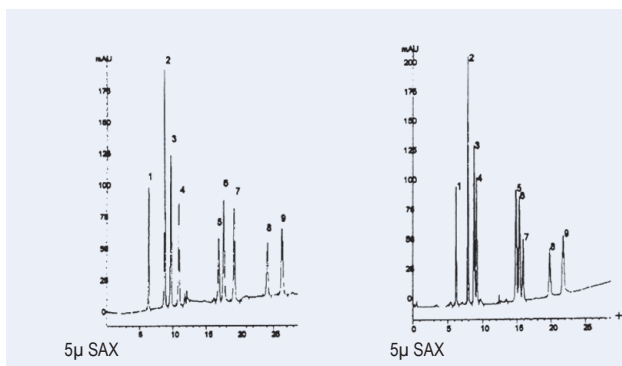
## Catecholamines

Dimensions: 250 x 4.6 mm  
 Mobil Phase: CH<sub>2</sub>OH:25 mM KH<sub>2</sub>PO<sub>4</sub> pH 2.0 (2:98)  
 Flow Rate: 1.0mL/min  
 Temperature: 40°C  
 Detection: UV@ 270nm  
 Sample: 1. Norepinephrine  
 2. Betametasone  
 3. Dopamine  
 4. L-DOPA  
 5. Serotonine



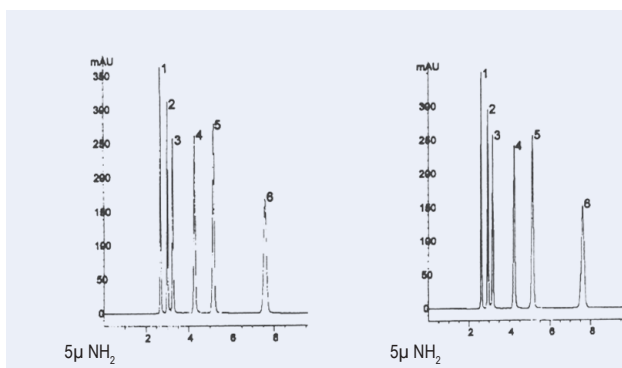
## Nucleotides

Dimensions: 250 x 4.6 mm  
 Mobil Phase: A: 0.04M KH<sub>2</sub>PO<sub>4</sub> pH 5.5  
 B: 0.5M KH<sub>2</sub>PO<sub>4</sub>TpH 5.5  
 Flow Rate: 1.0mL/min  
 Detection: UV@ 254nm  
 Sample: 1. β-NAD  
 2. IMP  
 3. GMP  
 4. AMP  
 5. GDP  
 6. ADP  
 7. NADP  
 8. ITP  
 9. ATP



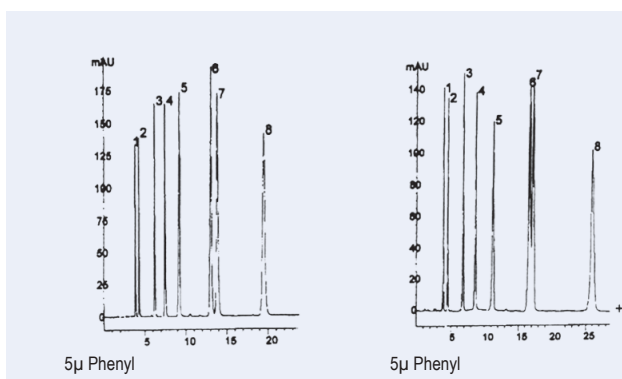
## Corticosteroids

Dimensions: 250 x 4.6 mm  
 Mobil Phase: CH<sub>2</sub>Cl<sub>2</sub>:CH<sub>3</sub>OH (95:5)  
 Flow Rate: 1.0mL/min  
 Detection: UV@ 254nm  
 Sample: 1. Deoxicorticosterone Acetate  
 2. Desoxicorticosterone  
 3. Hidrocortisone 21-Acetate  
 4. Corticosterone  
 5. Cortisone  
 6. Hidrocortisone



## Aromatic Cetones

Dimensions: 250 x 4.6 mm  
 Mobil Phase: CH<sub>2</sub> CN :CH<sub>2</sub> O (33:67)  
 Flow Rate: 1.0mL/min  
 Detection: UV@ 254nm  
 Sample: 1. Benzamide  
 2. Alcohol Bencilic  
 3. Acetophenone  
 4. Methyl Benzoat  
 5. Phenetole  
 6. Naphtalene  
 7. Benzophenone  
 8. Biphenile

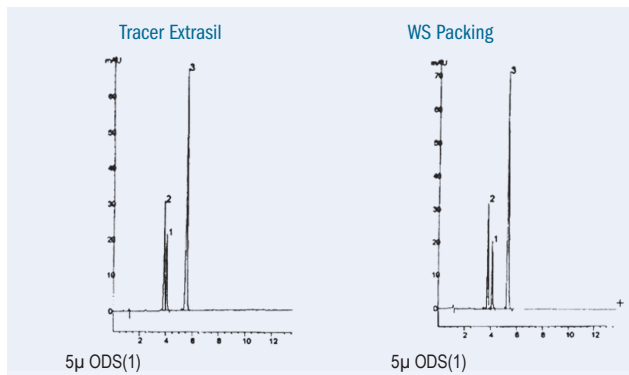


## SRM 869

Dimensions: 250 x 4.6 mm  
 Mobil Phase: H<sub>2</sub>O:CH<sub>3</sub>CN (15:85)  
 Flow Rate: 2.0mL/min  
 Temperature: 35°C  
 Detection: UV@ 260nm  
 Sample: 1. Benzo (a) pirene (BaP)  
 2. Phenantro (3,4-C)  
 2. Phenantrene (Ph Ph)  
 3. Tetrabenzonaphtalene

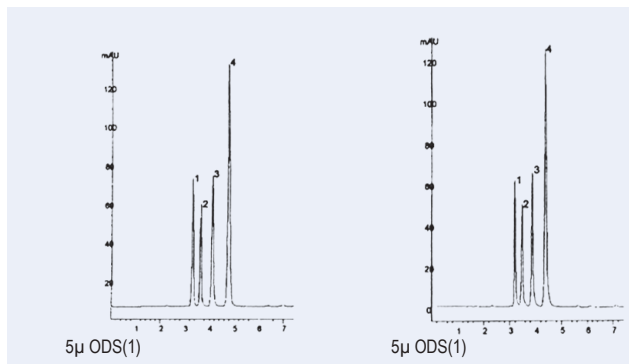
Tracer Extrasil ODS 2 aTBN/BaP = 1,77

Packing WS ODS-2 aTBN/BaP = 1,70



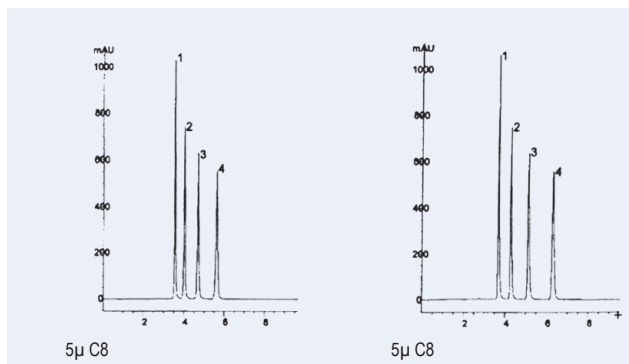
## 4-Hidroxi benzoates

Dimensions: 250 x 4.6 mm  
 Mobil Phase: H<sub>2</sub>O:CH<sub>3</sub>CN (35:65)  
 Flow Rate: 1.0mL/min  
 Detection: UV@ 254nm  
 Sample: 1. Methyl-4-hidroxi benzoate  
 2. Ethyl-4-hidroxi benzoate  
 3. Propyl-4-hidroxi benzoate  
 4. Butyl-4-hidroxi benzoate



## 4-Hidroxi benzoates

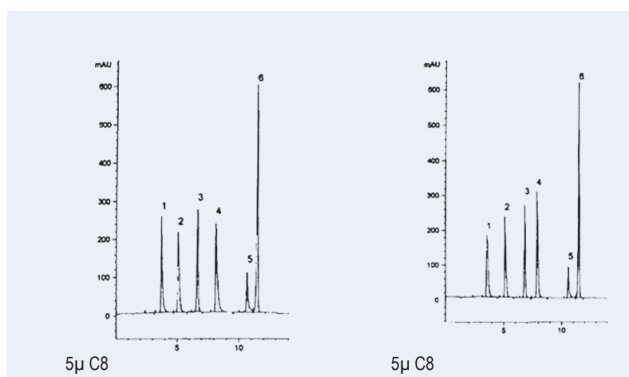
Dimensions: 250 x 4.6 mm  
 Mobil Phase: H<sub>2</sub>O:CH<sub>3</sub>CN (45:55)  
 Flow Rate: 1.0mL/min  
 Detection: UV@ 254nm  
 Sample: 1. Methyl- 4-hidroxi benzoate  
 2. Ethyl-4-hidroxi benzoate  
 3. Propyl-4-hidroxi benzoate  
 4. Butyl-4-hidroxi benzoate



## Hidrosoluble Vitamines

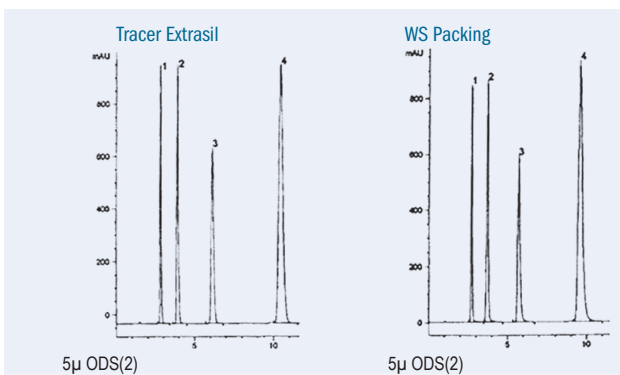
Dimensions: 150 x 4.6 mm  
 Mobil Phase: A: 5mM 1-Penta sodic nesulfonate in 0.1% H<sub>3</sub>PO<sub>4</sub>  
 B: 5mM 1-Sodic Pentanesulfonate in 0.1% H<sub>3</sub>PO<sub>4</sub> in 80 % CH<sub>3</sub>CN A:B (97.5:2.5) to A:B (70:30) in 20 min.

Flow Rate: 1.0mL/min  
 Detection: UV@ 254nm  
 Sample: 1. Nicotinamine  
 2. Pyridoxal  
 3. Acide p-amynobenzaic  
 4. Tyamine  
 5. Folic Acid  
 6. Riboflavine



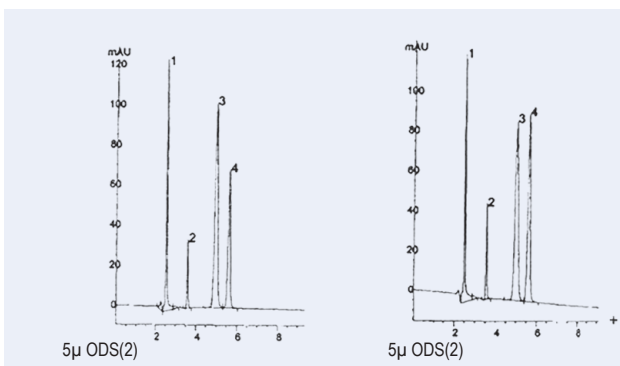
## 4-Hidroxi benzoat

Dimensions: 150 x 4.6 mm  
 Mobil Phase: H<sub>2</sub>O:CH<sub>3</sub>CN (40:60)  
 Flow Rate: 1.0 mL/min  
 Temperature: 40°C  
 Detection: UV@ 254nm  
 Sample: 1. Methyl-4-hidroxi benzoat  
 2. Ethyl-4-hidroxi benzoat  
 3. Propyl-4-hidroxi benzoat  
 4. Butyl-4-hidroxi benzoat



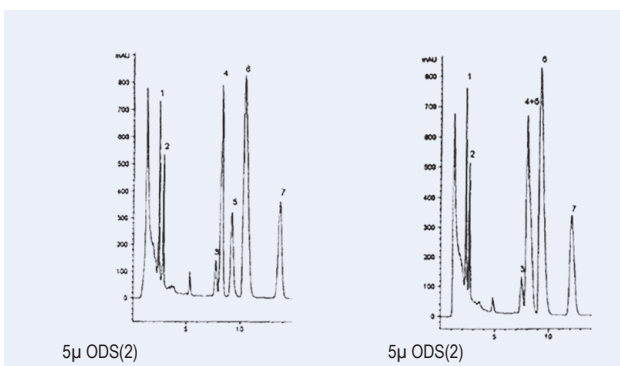
## Polar Compounds

Dimensions: 250 x 4.6 mm  
 Mobil Phase: 25mM KH<sub>2</sub>PO<sub>4</sub>, pH 2.5  
 Flow Rate: 1.0 mL/min  
 Temperature: 40°C  
 Detection: UV@ 230nm  
 Sample: 1. L-Cysteine  
 2. L-ascorbic Acid  
 3. Glutathione  
 4. Uric Acid



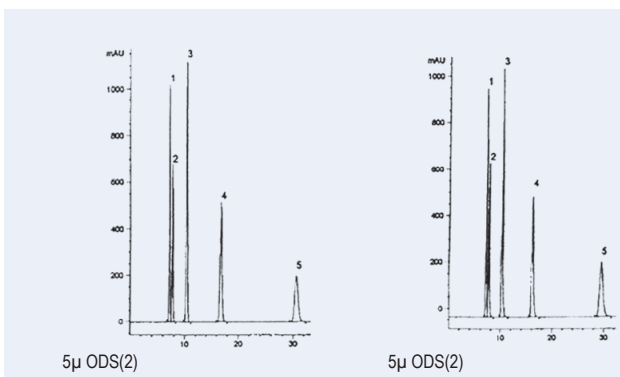
## Liposoluble Vitamin

Dimensions: 150 x 4.6 mm  
 Mobil Phase: CH<sub>3</sub>CN:CH<sub>3</sub>OH (75:25)  
 Flow Rate: 1.3 mL/min  
 Detection: UV@ 280nm  
 Sample: 1. Vitamine A  
 2. Vitamine A Acetate  
 3. Vitamine D2  
 4. Vitamine D3  
 5. Vitamine E  
 6. Vitamine E Acetate  
 7. Vitamine K1



## Pesticides/Herbicides

Dimensions: 150 x 4.6 mm  
 Mobil Phase: H<sub>2</sub>O:CH<sub>3</sub>CN (70:30)  
 Flow Rate: 1.0 mL/min  
 Detection: UV@ 254nm  
 Sample: 1. Baygon™  
 2. Carbofuran  
 3. Carbaryl  
 4. Propham  
 5. Captan



Analytical columns Tracer EXTRASIL

Function			Dimensions								
Particle size (µm)	10 x 0.46 cm	10 x 0.4 cm	12.5 x 0.46 cm	12.5 x 0.4 cm	15 x 0.46 cm	15 x 0.4 cm	20 x 0.46 cm	20 x 0.4 cm	25 x 0.46 cm	25 x 0.4 cm	
ODS1	5	TR-016050	TR-416050	TR-016051	TR-416051	TR-016052	TR-416052	TR-016053	TR-416053	TR-016054	TR-416054
ODS2	5	TR-016055	TR-416055	TR-016056	TR-416056	TR-016057	TR-416057	TR-016058	TR-416058	TR-016059	TR-416059
Si	5	TR-016060	TR-416060	TR-016061	TR-416061	TR-016062	TR-416062	TR-016063	TR-416063	TR-016064	TR-416064
C-1	5	TR-016065	TR-416065	TR-016066	TR-416066	TR-016067	TR-416067	TR-016068	TR-416068	TR-016069	TR-416069
C-6	5	TR-016070	TR-416070	TR-016071	TR-416071	TR-016072	TR-416072	TR-016073	TR-416073	TR-016074	TR-416074
C-8	5	TR-016075	TR-416075	TR-016076	TR-416076	TR-016077	TR-416077	TR-016078	TR-416078	TR-016079	TR-416079
CN	5	TR-016080	TR-416080	TR-016081	TR-416081	TR-016082	TR-416082	TR-016083	TR-416083	TR-016084	TR-416084
NH2	5	TR-016085	TR-416085	TR-016086	TR-416086	TR-016087	TR-416087	TR-016088	TR-416088	TR-016089	TR-416089
Phenyl	5	TR-016090	TR-416090	TR-016091	TR-416091	TR-016092	TR-416092	TR-016093	TR-416093	TR-016094	TR-416094
SAX	5	TR-016095	TR-416095	TR-016096	TR-416096	TR-016097	TR-416097	TR-016098	TR-416098	TR-016099	TR-416099
SCX	5	TR-016100	TR-416100	TR-016101	TR-416101	TR-016102	TR-416102	TR-016103	TR-416103	TR-016104	TR-416104
ODS1	10	TR-016105	TR-416105	TR-016106	TR-416106	TR-016107	TR-416107	TR-016108	TR-416108	TR-016109	TR-416109
ODS2	10	TR-016110	TR-416110	TR-016111	TR-416111	TR-016112	TR-416112	TR-016113	TR-416113	TR-016114	TR-416114
Si	10	TR-016115	TR-416115	TR-016116	TR-416116	TR-016117	TR-416117	TR-016118	TR-416118	TR-016119	TR-416119
C-1	10	TR-016156	TR-416156	TR-016157	TR-416157	TR-016158	TR-416158	TR-016159	TR-416159	TR-016160	TR-416160
C-6	10	TR-016120	TR-416120	TR-016121	TR-416121	TR-016122	TR-416122	TR-016123	TR-416123	TR-016124	TR-416124
CN	10	TR-016130	TR-416130	TR-016131	TR-416131	TR-016132	TR-416132	TR-016133	TR-416133	TR-016134	TR-416134
NH2	10	TR-016135	TR-416135	TR-016136	TR-416136	TR-016137	TR-416137	TR-016138	TR-416138	TR-016139	TR-416139
SAX	10	TR-016151	TR-416151	TR-016152	TR-416152	TR-016153	TR-416153	TR-016154	TR-416154	TR-016155	TR-416155
SCX	10	TR-016146	TR-416146	TR-016147	TR-416147	TR-016148	TR-416148	TR-016149	TR-416149	TR-016150	TR-416150

Ultrarapid columns Tracer EXTRASIL

Function			Dimensions								
Particle size (µm)	4 x 0.46 cm	4 x 0.4 cm	10 x 0.46 cm	10 x 0.4 cm	15 x 0.46 cm	15 x 0.4 cm	20 x 0.46 cm	20 x 0.4 cm	25 x 0.46 cm	25 x 0.4 cm	
ODS 1	3	TR-013200	TR-413200	TR-013201	TR-413201	TR-013202	TR-413202	TR-013203	TR-413203	TR-013204	TR-413204
ODS 2	3	TR-013205	TR-413205	TR-013206	TR-413206	TR-013207	TR-413207	TR-013208	TR-413208	TR-013209	TR-413209
Si	3	TR-013210	TR-413210	TR-013211	TR-413211	TR-013212	TR-413212	TR-013213	TR-413213	TR-013214	TR-413214
C1	3	TR-013215	TR-413215	TR-013216	TR-413216	TR-013217	TR-413217	TR-013218	TR-413218	TR-013219	TR-413219
C6	3	TR-013220	TR-413220	TR-013221	TR-413221	TR-013222	TR-413222	TR-013223	TR-413223	TR-013224	TR-413224
C8	3	TR-013226	TR-413226	TR-013227	TR-413227	TR-013228	TR-413228	TR-013229	TR-413229	TR-013230	TR-413230
CN	3	TR-013231	TR-413231	TR-013232	TR-413232	TR-013233	TR-413233	TR-013234	TR-413234	TR-013235	TR-413235
NH2	3	TR-013236	TR-413236	TR-013237	TR-413237	TR-013238	TR-413238	TR-013239	TR-413239	TR-013240	TR-413240
Phenyl	3	TR-013241	TR-413241	TR-013242	TR-413242	TR-013243	TR-413243	TR-013244	TR-413244	TR-013245	TR-413245

## Semi-Preparative columns Tracer EXTRASIL

Function	D i m e n s i o n s				
	Particle size (µm)	15 x 0.7 cm	25 x 0.7 cm	15 x 1.0 cm	25 x 1.0 cm
ODS 1	5	TR-014501	TR-014502	TR-014503	TR-014504
ODS 2	5	TR-014505	TR-014506	TR-014507	TR-014508
Si	5	TR-014509	TR-014510	TR-014511	TR-014512
C - 1	5	TR-014513	TR-014514	TR-014515	TR-014516
C - 6	5	TR-014517	TR-014518	TR-014519	TR-014520
C - 8	5	TR-014521	TR-014522	TR-014523	TR-014524
CN	5	TR-014525	TR-014526	TR-014527	TR-014528
NH2	5	TR-014529	TR-014530	TR-014531	TR-014532
Phenyl	5	TR-014533	TR-014534	TR-014535	TR-014536
SAX	5	TR-014537	TR-014538	TR-014539	TR-014540
SCX	5	TR-014541	TR-014542	TR-014543	TR-014544
ODS 1	10	TR-014545	TR-014546	TR-014547	TR-014548
ODS 2	10	TR-014549	TR-014550	TR-014551	TR-014552
Si	10	TR-014553	TR-014554	TR-014555	TR-014556
C - 6	10	TR-014557	TR-014558	TR-014559	TR-014560
C N	10	TR-014565	TR-014566	TR-014567	TR-014568
NH2	10	TR-014569	TR-014570	TR-014571	TR-014572
Phenyl	10	TR-014573	TR-014574	TR-014575	TR-014576
SAX	10	TR-014577	TR-014578	TR-014579	TR-014580
SCX	10	TR-014581	TR-014582	TR-014583	TR-014584

## Microbore columns Tracer EXTRASIL

Function	D i m e n s i o n s				
	Particle size (µm)	10 x 0.21 cm	20 x 0.21 cm	10 x 0.3 cm	20 x 0.3 cm
ODS1	5	TR-021200	TR-021201	TR-021236	TR-021237
ODS2	5	TR-021202	TR-021203	TR-021238	TR-021239
Si	5	TR-021204	TR-021205	TR-021240	TR-021241
C-1	5	TR-021206	TR-021212	TR-021242	TR-021243
C-6	5	TR-021207	TR-021208	TR-021244	TR-021245
C-8	5	TR-021209	TR-021210	TR-021246	TR-021247
CN	5	TR-021211	TR-021213	TR-021248	TR-021249
NH2	5	TR-021214	TR-021215	TR-021250	TR-021251
Phenyl	5	TR-021216	TR-021217	TR-021252	TR-021253
SAX	5	TR-021218	TR-021219	TR-021254	TR-021255
SCX	5	TR-021220	TR-021221	TR-021256	TR-021257

## Novafix™ Cartridge Tracer EXTRASIL

Function	Particle size (µm)	D i m e n s i o n s		
		7.5 x 0.4 cm	15 x 0.4 cm	25 x 0.4 cm
ODS1	3	TR-015666	TR-015667	TR-015668
ODS2	3	TR-015669	TR-015670	TR-015671
Si	3	TR-015672	TR-015673	TR-015674
C-1	3	TR-015675	TR-015676	TR-015677
C-6	3	TR-015678	TR-015679	TR-015680
C-8	3	TR-015681	TR-015682	TR-015683
CN	3	TR-015684	TR-015685	TR-015686
NH2	3	TR-015687	TR-015688	TR-015689
Phenyl	3	TR-015690	TR-015691	TR-015692
ODS1	5	TR-015600	TR-015601	TR-015602
ODS2	5	TR-015603	TR-015604	TR-015605
Si	5	TR-015606	TR-015607	TR-015608
C-1	5	TR-015609	TR-015610	TR-015611
C-6	5	TR-015612	TR-015613	TR-015614
C-8	5	TR-015615	TR-015616	TR-015617
CN	5	TR-015618	TR-015619	TR-015620
NH2	5	TR-015621	TR-015622	TR-015623
Phenyl	5	TR-015624	TR-015625	TR-015626
SCX	5	TR-015627	TR-015628	TR-015629
SAX	5	TR-015630	TR-015631	TR-015632
ODS1	10	TR-015633	TR-015634	TR-015635
ODS2	10	TR-015636	TR-015637	TR-015638
Si	10	TR-015639	TR-015640	TR-015641
C-1	10	TR-015642	TR-015643	TR-015644
C-6	10	TR-015645	TR-015646	TR-015647
CN	10	TR-015651	TR-015652	TR-015653
NH2	10	TR-015654	TR-015655	TR-015656
SCX	10	TR-015660	TR-015661	TR-015662
SAX	10	TR-015663	TR-015664	TR-015665

TEKNOKROMA CAN SUPPLY OTHER COMBINATIONS OF DIAMETER AND LENGTH ON APPLICATION

For Guard Columns please refer to pages 198-199



## Analytical columns 0.46 cm ID ADVANTIX 5 $\mu$ m

Packing	Funct.	$\mu$ m	Length		Diameter	Cat.Nbr.
			$\mu$ m	cm		
Advantix	ODS	5	3	0.46	0.46	TR-010221
Advantix	ODS	5	4	0.46	0.46	TR-010222
Advantix	ODS	5	5	0.46	0.46	TR-010223
Advantix	ODS	5	10	0.46	0.46	TR-010224
Advantix	ODS	5	15	0.46	0.46	TR-010225
Advantix	ODS	5	20	0.46	0.46	TR-010226
Advantix	ODS	5	25	0.46	0.46	TR-010080

## Analytical columns 0.40 cm ID ADVANTIX 5 $\mu$ m

Packing	Funct.	$\mu$ m	Length		Diameter	Cat.Nbr.
			$\mu$ m	cm		
Advantix	ODS	5	3	0.4	0.4	TR-410221
Advantix	ODS	5	4	0.4	0.4	TR-410222
Advantix	ODS	5	5	0.4	0.4	TR-410223
Advantix	ODS	5	10	0.4	0.4	TR-410224
Advantix	ODS	5	15	0.4	0.4	TR-410225
Advantix	ODS	5	20	0.4	0.4	TR-410226
Advantix	ODS	5	25	0.4	0.4	TR-410080

New packing made of spherical ultra-pure silica particles, with extremely low metals content, functionalized with groups octadecylsilane of polar embedded type. This polar group included in the base of the hydrocarbonate chains confers to the packing a high deactivation in front of basic compounds, being able to chromatograph with perfectly symmetric peaks all kind of bases, including the most difficult ones. Working with acid pH's are able to easily chromatograph acid compounds, basic and quelants.

Also, the polar group included in the functionalization of the packing provides an especial selectivity very useful in the resolution of mixtures separated in conventional C18 packings.

## Microbore columns 0.21 cm ID ADVANTIX 5 $\mu$ m

Packing	Funct.	$\mu$ m	Length		Diameter	Cat.Nbr.
			$\mu$ m	cm		
Advantix	ODS	5	3	0.21	0.21	TR-010227
Advantix	ODS	5	5	0.21	0.21	TR-010228
Advantix	ODS	5	10	0.21	0.21	TR-010229
Advantix	ODS	5	15	0.21	0.21	TR-010230
Advantix	ODS	5	20	0.21	0.21	TR-010231
Advantix	ODS	5	25	0.21	0.21	TR-010232

## Microbore columns 0.30 cm ID ADVANTIX 5 $\mu$ m

Packing	Funct.	$\mu$ m	Length		Diameter	Cat.Nbr.
			$\mu$ m	cm		
Advantix	ODS	5	3	0.3	0.3	TR-010233
Advantix	ODS	5	5	0.3	0.3	TR-010234
Advantix	ODS	5	10	0.3	0.3	TR-010235
Advantix	ODS	5	15	0.3	0.3	TR-010236
Advantix	ODS	5	20	0.3	0.3	TR-010237
Advantix	ODS	5	25	0.3	0.3	TR-010238

## Semi-preparative columns ADVANTIX 5 µm

Packing	Funct.	µm	Length		Diameter	Cat.Nbr.
			µm	cm	cm	
Advantix	ODS	5	10	0.78	TR-010239	
Advantix	ODS	5	15	0.78	TR-010240	
Advantix	ODS	5	25	0.78	TR-010241	
Advantix	ODS	5	10	1.00	TR-010242	
Advantix	ODS	5	15	1.00	TR-010243	
Advantix	ODS	5	25	1.00	TR-010244	
Advantix	ODS	5	5	2.12	TR-010245	
Advantix	ODS	5	10	2.12	TR-010246	
Advantix	ODS	5	15	2.12	TR-010247	
Advantix	ODS	5	25	2.12	TR-010248	

## Novafix™ Cartridges 0.40 cm ID ADVANTIX 5 µm

Packing	Funct.	µm	Length		Diameter	Cat.Nbr.
			µm	cm	cm	
Advantix	ODS	5	7,5	0.4	TR-010249	
Advantix	ODS	5	10	0.4	TR-010250	
Advantix	ODS	5	15	0.4	TR-010251	
Advantix	ODS	5	25	0.4	TR-010252	

## Ultrarapid columns 0.46 cm ID ADVANTIX 3 µm

Packing	Funct.	µm	Length		Diameter	Cat.Nbr.
			µm	cm	cm	
Advantix	ODS	3	3	0.46	TR-010253	
Advantix	ODS	3	4	0.46	TR-010254	
Advantix	ODS	3	5	0.46	TR-010255	
Advantix	ODS	3	10	0.46	TR-010256	
Advantix	ODS	3	15	0.46	TR-010257	
Advantix	ODS	3	20	0.46	TR-010258	
Advantix	ODS	3	25	0.46	TR-010259	

## Ultrarapid columns 0.40 cm ID ADVANTIX 3 µm

Packing	Funct.	µm	Length		Diameter	Cat.Nbr.
			µm	cm	cm	
Advantix	ODS	3	3	0.4	TR-410253	
Advantix	ODS	3	4	0.4	TR-410254	
Advantix	ODS	3	5	0.4	TR-410255	
Advantix	ODS	3	10	0.4	TR-410256	
Advantix	ODS	3	15	0.4	TR-410257	
Advantix	ODS	3	20	0.4	TR-410258	
Advantix	ODS	3	25	0.4	TR-410259	

## Microbore columns 0.21 cm ID ADVANTIX 3 µm

Packing	Funct.	µm	Length		Diameter	Cat.Nbr.
			µm	cm	cm	
Advantix	ODS	3	3	0.21	TR-010260	
Advantix	ODS	3	5	0.21	TR-010261	
Advantix	ODS	3	10	0.21	TR-010262	
Advantix	ODS	3	15	0.21	TR-010263	
Advantix	ODS	3	20	0.21	TR-010264	
Advantix	ODS	3	25	0.21	TR-010265	

## Microbore columns 0.30 cm ID ADVANTIX 3 µm

Packing	Funct.	µm	Length		Diameter	Cat.Nbr.
			µm	cm	cm	
Advantix	ODS	3	3	0.3	TR-010266	
Advantix	ODS	3	5	0.3	TR-010267	
Advantix	ODS	3	10	0.3	TR-010268	
Advantix	ODS	3	15	0.3	TR-010269	
Advantix	ODS	3	20	0.3	TR-010270	
Advantix	ODS	3	25	0.3	TR-010271	

For Guard Columns please refer to pages 198-199



Due to its characteristics of pore size, surface area, percentage of covering (%C), and the kind of silica it is build of, it is the suitable alternative to Hypersil ODS packings. Its chromatographic behavior exactly reproduces the one of this popular packing, being able to transfer the chromatographic methods without any kind of adjustment.

## 5 Microns Packing Analytical columns 45 mm i.d. HYPERPACK

Packing	Funct.	µm	Length		Cat.Nbr.
			cm	cm	
Hyperpack	ODS	5	3	0.46	TR-011000
Hyperpack	ODS	5	4	0.46	TR-011001
Hyperpack	ODS	5	5	0.46	TR-011002
Hyperpack	ODS	5	10	0.46	TR-011003
Hyperpack	ODS	5	15	0.46	TR-011004
Hyperpack	ODS	5	20	0.46	TR-011005
Hyperpack	ODS	5	25	0.46	TR-011006
Hyperpack	C8	5	3	0.46	TR-011021
Hyperpack	C8	5	4	0.46	TR-011022
Hyperpack	C8	5	5	0.46	TR-011023
Hyperpack	C8	5	10	0.46	TR-011024
Hyperpack	C8	5	15	0.46	TR-011025
Hyperpack	C8	5	20	0.46	TR-011026
Hyperpack	C8	5	25	0.46	TR-011027

## 5 Microns Packing Analytical columns 40 mm i.d. HYPERPACK

Packing	Funct.	µm	Length		Cat.Nbr.
			cm	cm	
Hyperpack	ODS	5	3	0.4	TR-411000
Hyperpack	ODS	5	4	0.4	TR-411001
Hyperpack	ODS	5	5	0.4	TR-411002
Hyperpack	ODS	5	10	0.4	TR-411003
Hyperpack	ODS	5	15	0.4	TR-411004
Hyperpack	ODS	5	20	0.4	TR-411005
Hyperpack	ODS	5	25	0.4	TR-411006
Hyperpack	C8	5	3	0.4	TR-410081
Hyperpack	C8	5	4	0.4	TR-410082
Hyperpack	C8	5	5	0.4	TR-410083
Hyperpack	C8	5	10	0.4	TR-410084
Hyperpack	C8	5	15	0.4	TR-410085
Hyperpack	C8	5	20	0.4	TR-410086
Hyperpack	C8	5	25	0.4	TR-410087

## 5 Microns Packing Microbore columns 2.1 mm i.d. HYPERPACK

Packing	Funct.	µm	Length		Cat.Nbr.
			cm	cm	
Hyperpack	ODS	5	3	0.21	TR-010272
Hyperpack	ODS	5	5	0.21	TR-010273
Hyperpack	ODS	5	10	0.21	TR-010274
Hyperpack	ODS	5	15	0.21	TR-010275
Hyperpack	ODS	5	20	0.21	TR-010276
Hyperpack	ODS	5	25	0.21	TR-010277
Hyperpack	C8	5	3	0.21	TR-011028
Hyperpack	C8	5	5	0.21	TR-011029
Hyperpack	C8	5	10	0.21	TR-011030
Hyperpack	C8	5	15	0.21	TR-011031
Hyperpack	C8	5	20	0.21	TR-011032
Hyperpack	C8	5	25	0.21	TR-011033

## 5 Microns Packing Microbore columns 3.0 mm i.d. HYPERPACK

Packing	Funct.	µm	Length		Cat.Nbr.
			cm	cm	
Hyperpack	ODS	5	3	0.3	TR-010278
Hyperpack	ODS	5	5	0.3	TR-010279
Hyperpack	ODS	5	10	0.3	TR-010280
Hyperpack	ODS	5	15	0.3	TR-010281
Hyperpack	ODS	5	20	0.3	TR-010282
Hyperpack	ODS	5	25	0.3	TR-010283
Hyperpack	C8	5	3	0.3	TR-011160
Hyperpack	C8	5	5	0.3	TR-011034
Hyperpack	C8	5	10	0.3	TR-011035
Hyperpack	C8	5	15	0.3	TR-011036
Hyperpack	C8	5	20	0.3	TR-011037
Hyperpack	C8	5	25	0.3	TR-011038

## 5 Microns Packing Semi-preparative columns HYPERPACK

Packing	Funct.	µm	Length		Cat.Nbr.
			cm	cm	
Hyperpack	ODS	5	10	0.78	TR-010284
Hyperpack	ODS	5	15	0.78	TR-010285
Hyperpack	ODS	5	25	0.78	TR-010286
Hyperpack	ODS	5	10	1.00	TR-010287
Hyperpack	ODS	5	15	1.00	TR-010288

Packing	Funct.	Length		Diameter	Cat.Nbr.
		$\mu\text{m}$	cm	cm	
Hyperpack	ODS	5	25	1.00	TR-010289
Hyperpack	ODS	5	5	2.12	TR-010290
Hyperpack	ODS	5	10	2.12	TR-010291
Hyperpack	ODS	5	15	2.12	TR-010292
Hyperpack	ODS	5	25	2.12	TR-010293
Hyperpack	C8	5	10	0.78	TR-011039
Hyperpack	C8	5	15	0.78	TR-011040
Hyperpack	C8	5	25	0.78	TR-011041
Hyperpack	C8	5	10	1.00	TR-011042
Hyperpack	C8	5	15	1.00	TR-011043
Hyperpack	C8	5	25	1.00	TR-011044
Hyperpack	C8	5	5	2.12	TR-011045
Hyperpack	C8	5	10	2.12	TR-011046
Hyperpack	C8	5	15	2.12	TR-011047
Hyperpack	C8	5	25	2.12	TR-011048

## 5 Microns Packing Novafix™ Cartridges 4 mm i.d. HYPERPACK

Packing	Funct.	Length		Diameter	Cat.Nbr.
		$\mu\text{m}$	cm	cm	
Hyperpack	ODS	5	7,5	0.4	TR-010294
Hyperpack	ODS	5	10	0.4	TR-010295
Hyperpack	ODS	5	15	0.4	TR-010296
Hyperpack	ODS	5	25	0.4	TR-010297
Hyperpack	C8	5	7,5	0.4	TR-011049
Hyperpack	C8	5	10	0.4	TR-011050
Hyperpack	C8	5	15	0.4	TR-011051
Hyperpack	C8	5	25	0.4	TR-011052

## 3 Microns Packing Ultrarapid columns 4.6 mm i.d. HYPERPACK

Packing	Funct.	Length		Diameter	Cat.Nbr.
		$\mu\text{m}$	cm	cm	
Hyperpack	ODS	3	3	0.46	TR-010298
Hyperpack	ODS	3	4	0.46	TR-010299
Hyperpack	ODS	3	5	0.46	TR-010300
Hyperpack	ODS	3	10	0.46	TR-010301
Hyperpack	ODS	3	15	0.46	TR-010302
Hyperpack	ODS	3	20	0.46	TR-010303
Hyperpack	ODS	3	25	0.46	TR-010304
Hyperpack	C8	3	3	0.46	TR-011053
Hyperpack	C8	3	4	0.46	TR-011054
Hyperpack	C8	3	5	0.46	TR-011055
Hyperpack	C8	3	10	0.46	TR-011056
Hyperpack	C8	3	15	0.46	TR-011057
Hyperpack	C8	3	20	0.46	TR-011058
Hyperpack	C8	3	25	0.46	TR-011059

## 3 Microns Packing Analytical columns 4.0 mm i.d. HYPERPACK

Packing	Funct.	Length		Diameter	Cat.Nbr.
		$\mu\text{m}$	cm	cm	
Hyperpack	ODS	3	3	0.4	TR-410298
Hyperpack	ODS	3	4	0.4	TR-410299
Hyperpack	ODS	3	5	0.4	TR-410300
Hyperpack	ODS	3	10	0.4	TR-410301
Hyperpack	ODS	3	15	0.4	TR-410302
Hyperpack	ODS	3	20	0.4	TR-410303
Hyperpack	ODS	3	25	0.4	TR-410304
Hyperpack	C8	3	4	0.4	TR-011060
Hyperpack	C8	3	5	0.4	TR-011061
Hyperpack	C8	3	10	0.4	TR-011062
Hyperpack	C8	3	15	0.4	TR-011063
Hyperpack	C8	3	20	0.4	TR-011064
Hyperpack	C8	3	25	0.4	TR-011065

## 3 Microns Packing Microbore columns 2.1 mm i.d. HYPERPACK

Packing	Funct.	Length		Diameter	Cat.Nbr.
		$\mu\text{m}$	cm	cm	
Hyperpack	ODS	3	3	0.21	TR-010305
Hyperpack	ODS	3	5	0.21	TR-010306
Hyperpack	ODS	3	10	0.21	TR-010307
Hyperpack	ODS	3	15	0.21	TR-010308
Hyperpack	ODS	3	20	0.21	TR-010309
Hyperpack	ODS	3	25	0.21	TR-010310
Hyperpack	C8	3	3	0.21	TR-011066
Hyperpack	C8	3	5	0.21	TR-011067
Hyperpack	C8	3	10	0.21	TR-011068
Hyperpack	C8	3	15	0.21	TR-011069
Hyperpack	C8	3	20	0.21	TR-011070
Hyperpack	C8	3	25	0.21	TR-011071

## 3 Microns Packing Microbore columns 3.0 mm i.d. HYPERPACK

Packing	Funct.	Length		Diameter	Cat.Nbr.
		$\mu\text{m}$	cm	cm	
Hyperpack	ODS	3	3	0.3	TR-010311
Hyperpack	ODS	3	5	0.3	TR-010312
Hyperpack	ODS	3	10	0.3	TR-010313
Hyperpack	ODS	3	15	0.3	TR-010314
Hyperpack	ODS	3	20	0.3	TR-010315
Hyperpack	ODS	3	25	0.3	TR-010316
Hyperpack	ODS	3	3	0.3	TR-011072
Hyperpack	ODS	3	5	0.3	TR-011073
Hyperpack	ODS	3	10	0.3	TR-011074
Hyperpack	ODS	3	15	0.3	TR-011075
Hyperpack	ODS	3	20	0.3	TR-011076
Hyperpack	ODS	3	25	0.3	TR-011077

It reproduces with total fidelity the chromatographic behavior of the columns Hypersil BDS C18. Available in 3 and 5µm and in all length and diameter configurations.

## 5 Microns Packing Analytical columns 4.6 mm i.d. HYPERPACK BASIC

Packing	Funct.	Length Diameter			Cat.Nbr.
		µm	cm	cm	
Hyperpack BASIC	ODS	5	3	0.46	TR-011007
Hyperpack BASIC	ODS	5	4	0.46	TR-011008
Hyperpack BASIC	ODS	5	5	0.46	TR-011009
Hyperpack BASIC	ODS	5	10	0.46	TR-011010
Hyperpack BASIC	ODS	5	15	0.46	TR-011011
Hyperpack BASIC	ODS	5	20	0.46	TR-011012
Hyperpack BASIC	ODS	5	25	0.46	TR-011013
Hyperpack BASIC	C8	5	3	0.46	TR-011108
Hyperpack BASIC	C8	5	4	0.46	TR-011109
Hyperpack BASIC	C8	5	5	0.46	TR-011110
Hyperpack BASIC	C8	5	10	0.46	TR-011111
Hyperpack BASIC	C8	5	15	0.46	TR-011112
Hyperpack BASIC	C8	5	20	0.46	TR-011113
Hyperpack BASIC	C8	5	25	0.46	TR-011114

## 5 Microns Packing Analytical columns 4.0 mm i.d. HYPERPACK BASIC

Packing	Funct.	Length Diameter			Cat.Nbr.
		µm	cm	cm	
Hyperpack BASIC	ODS	5	3	0.4	TR-411007
Hyperpack BASIC	ODS	5	4	0.4	TR-411008
Hyperpack BASIC	ODS	5	5	0.4	TR-411009
Hyperpack BASIC	ODS	5	10	0.4	TR-411010
Hyperpack BASIC	ODS	5	15	0.4	TR-411011
Hyperpack BASIC	ODS	5	20	0.4	TR-411012
Hyperpack BASIC	ODS	5	25	0.4	TR-411013

Packing	Funct.	Length Diameter			Cat.Nbr.
		µm	cm	cm	
Hyperpack BASIC	C8	5	3	0.4	TR-411108
Hyperpack BASIC	C8	5	4	0.4	TR-411109
Hyperpack BASIC	C8	5	5	0.4	TR-411110
Hyperpack BASIC	C8	5	10	0.4	TR-411111
Hyperpack BASIC	C8	5	15	0.4	TR-411112
Hyperpack BASIC	C8	5	20	0.4	TR-411113
Hyperpack BASIC	C8	5	25	0.4	TR-411114

## 5 Microns Packing Microbore columns 21 mm i.d. HYPERPACK BASIC

Packing	Funct.	Length Diameter			Cat.Nbr.
		µm	cm	cm	
Hyperpack BASIC	ODS	5	3	0.21	TR-010317
Hyperpack BASIC	ODS	5	5	0.21	TR-010318
Hyperpack BASIC	ODS	5	10	0.21	TR-010319
Hyperpack BASIC	ODS	5	15	0.21	TR-010320
Hyperpack BASIC	ODS	5	20	0.21	TR-010321
Hyperpack BASIC	ODS	5	25	0.21	TR-010322
Hyperpack BASIC	C8	5	3	0.21	TR-011115
Hyperpack BASIC	C8	5	5	0.21	TR-011116
Hyperpack BASIC	C8	5	10	0.21	TR-011117
Hyperpack BASIC	C8	5	15	0.21	TR-011118
Hyperpack BASIC	C8	5	20	0.21	TR-011119
Hyperpack BASIC	C8	5	25	0.21	TR-011120

## 5 Microns Packing Microbore columns 3.0 mm i.d. HYPERPACK BASIC

Packing	Funct.	Length Diameter			Cat.Nbr.
		µm	cm	cm	
Hyperpack BASIC	ODS	5	3	0.3	TR-010323
Hyperpack BASIC	ODS	5	5	0.3	TR-010324
Hyperpack BASIC	ODS	5	10	0.3	TR-010325
Hyperpack BASIC	ODS	5	15	0.3	TR-010326
Hyperpack BASIC	ODS	5	20	0.3	TR-010327
Hyperpack BASIC	ODS	5	25	0.3	TR-010328
Hyperpack BASIC	C8	5	3	0.3	TR-011121
Hyperpack BASIC	C8	5	5	0.3	TR-011122
Hyperpack BASIC	C8	5	10	0.3	TR-011123
Hyperpack BASIC	C8	5	15	0.3	TR-011124
Hyperpack BASIC	C8	5	20	0.3	TR-011125
Hyperpack BASIC	C8	5	25	0.3	TR-011126

## 5 Microns Packing Semi Preparative columns HYPERPACK BASIC

Packing	Funct.	Length Diameter			Cat.Nbr.
		µm	cm	cm	
Hyperpack BASIC	ODS	5	10	0.78	TR-010329
Hyperpack BASIC	ODS	5	15	0.78	TR-010330
Hyperpack BASIC	ODS	5	25	0.78	TR-010331
Hyperpack BASIC	ODS	5	10	1.00	TR-010332

Packing	Funct.	Length Diameter			Cat.Nbr.
		µm	cm	cm	
Hyperpack BASIC	ODS	5	15	1.00	TR-010333
Hyperpack BASIC	ODS	5	25	1.00	TR-010334
Hyperpack BASIC	ODS	5	5	2.12	TR-010335
Hyperpack BASIC	ODS	5	10	2.12	TR-010336
Hyperpack BASIC	ODS	5	15	2.12	TR-010337
Hyperpack BASIC	ODS	5	25	2.12	TR-010338
Hyperpack BASIC	C8	5	10	0.78	TR-011127
Hyperpack BASIC	C8	5	15	0.78	TR-011128
Hyperpack BASIC	C8	5	25	0.78	TR-011129
Hyperpack BASIC	C8	5	10	1.00	TR-011130
Hyperpack BASIC	C8	5	15	1.00	TR-011131
Hyperpack BASIC	C8	5	25	1.00	TR-011132
Hyperpack BASIC	C8	5	5	2.12	TR-011133
Hyperpack BASIC	C8	5	10	2.12	TR-011134
Hyperpack BASIC	C8	5	15	2.12	TR-011135
Hyperpack BASIC	C8	5	25	2.12	TR-011136

## 5 Microns Packing Cartridge System 4 mm i.d. HYPERPACK BASIC

Packing	Funct.	Length Diameter			Cat.Nbr.
		µm	cm	cm	
Hyperpack BASIC	ODS	5	7,5	0.4	TR-010339
Hyperpack BASIC	ODS	5	10	0.4	TR-010340
Hyperpack BASIC	ODS	5	15	0.4	TR-010341
Hyperpack BASIC	ODS	5	25	0.4	TR-010342
Hyperpack BASIC	C8	5	7,5	0.4	TR-011137
Hyperpack BASIC	C8	5	10	0.4	TR-011138
Hyperpack BASIC	C8	5	15	0.4	TR-011139
Hyperpack BASIC	C8	5	25	0.4	TR-011140

## 3 Microns Packing Analytical Columns 4.6 mm i.d. HYPERPACK BASIC

Packing	Funct.	Length Diameter			Cat.Nbr.
		µm	cm	cm	
Hyperpack BASIC	ODS	3	3	0.46	TR-011014
Hyperpack BASIC	ODS	3	4	0.46	TR-011015
Hyperpack BASIC	ODS	3	5	0.46	TR-011016
Hyperpack BASIC	ODS	3	10	0.46	TR-011017
Hyperpack BASIC	ODS	3	15	0.46	TR-011018
Hyperpack BASIC	ODS	3	20	0.46	TR-011019
Hyperpack BASIC	ODS	3	25	0.46	TR-011020
Hyperpack BASIC	C8	3	3	0.46	TR-011141
Hyperpack BASIC	C8	3	4	0.46	TR-011142
Hyperpack BASIC	C8	3	5	0.46	TR-011143
Hyperpack BASIC	C8	3	10	0.46	TR-011144
Hyperpack BASIC	C8	3	15	0.46	TR-011145
Hyperpack BASIC	C8	3	20	0.46	TR-011146
Hyperpack BASIC	C8	3	25	0.46	TR-011147

## 3 Microns Packing Ultrarapid Columns 4.0 mm i.d. HYPERPACK BASIC

Packing	Funct.	Length Diameter			Cat.Nbr.
		µm	cm	cm	
Hyperpack BASIC	ODS	3	3	0.4	TR-411014
Hyperpack BASIC	ODS	3	4	0.4	TR-411015
Hyperpack BASIC	ODS	3	5	0.4	TR-411016
Hyperpack BASIC	ODS	3	10	0.4	TR-411017
Hyperpack BASIC	ODS	3	15	0.4	TR-411018
Hyperpack BASIC	ODS	3	20	0.4	TR-411019
Hyperpack BASIC	ODS	3	25	0.4	TR-411020
Hyperpack BASIC	C8	3	3	0.4	TR-411141
Hyperpack BASIC	C8	3	4	0.4	TR-411142
Hyperpack BASIC	C8	3	5	0.4	TR-411143
Hyperpack BASIC	C8	3	10	0.4	TR-411144
Hyperpack BASIC	C8	3	15	0.4	TR-411145
Hyperpack BASIC	C8	3	20	0.4	TR-411146
Hyperpack BASIC	C8	3	25	0.4	TR-411147

## 3 Microns Packing Microbore Columns 2.1 mm i.d. HYPERPACK BASIC

Packing	Funct.	Length Diameter			Cat.Nbr.
		µm	cm	cm	
Hyperpack BASIC	ODS	3	3	0.21	TR-010343
Hyperpack BASIC	ODS	3	5	0.21	TR-010344
Hyperpack BASIC	ODS	3	10	0.21	TR-010345
Hyperpack BASIC	ODS	3	15	0.21	TR-010346
Hyperpack BASIC	ODS	3	20	0.21	TR-010347
Hyperpack BASIC	ODS	3	25	0.21	TR-010348
Hyperpack BASIC	C8	3	3	0.21	TR-011148
Hyperpack BASIC	C8	3	5	0.21	TR-011149
Hyperpack BASIC	C8	3	10	0.21	TR-011150
Hyperpack BASIC	C8	3	15	0.21	TR-011151
Hyperpack BASIC	C8	3	20	0.21	TR-011152
Hyperpack BASIC	C8	3	25	0.21	TR-011153

## 3 Microns Packing Microbore Columns 3.0 mm i.d. HYPERPACK BASIC

Packing	Funct.	Length Diameter			Cat.Nbr.
		µm	cm	cm	
Hyperpack BASIC	ODS	3	3	0.3	TR-010349
Hyperpack BASIC	ODS	3	5	0.3	TR-010350
Hyperpack BASIC	ODS	3	10	0.3	TR-010351
Hyperpack BASIC	ODS	3	15	0.3	TR-010352
Hyperpack BASIC	ODS	3	20	0.3	TR-010353
Hyperpack BASIC	ODS	3	25	0.3	TR-010354
Hyperpack BASIC	C8	3	3	0.3	TR-011154
Hyperpack BASIC	C8	3	5	0.3	TR-011155
Hyperpack BASIC	C8	3	10	0.3	TR-011156
Hyperpack BASIC	C8	3	15	0.3	TR-011157
Hyperpack BASIC	C8	3	20	0.3	TR-011158
Hyperpack BASIC	C8	3	25	0.3	TR-011159



Nucleosil is a totally porous silica packing, which is available with a full range of substituents. For its high quality level it has come to be one of the most popular HPLC packings.

There are a great variety of particle sizes, so that practically all the field of chromatography is covered, from ultrarapid columns with

packings of 3µm, to preparative scale, with packings of 25-40µm, the same selectivity being always maintained.

The packings of 3, 5, 10µm are characterized by their well adapted distribution of particle sizes, which produces a high efficiency and great stability in the HPLC columns.

The Nucleosil packings are also distinguished by their great stability when subject to extreme values of pH, being able to work between pH 1 and 9. These values are unreachable by the majority of silica packings.

## Analytical columns NUCLEOSIL 100

Function	Dimensions										
	Particle size (µm)	10 x 0.46 cm	10 x 0.4 cm	12.5 x 0.46 cm	12.5 x 0.4 cm	15 x 0.46 cm	15 x 0.4 cm	20 x 0.46 cm	20 x 0.4 cm	25 x 0.46 cm	25 x 0.4 cm
Si	5	TR-011331	TR-411331	TR-011333	TR-411333	TR-011335	TR-411335	TR-011337	TR-411337	TR-011339	TR-411339
C-18	5	TR-011341	TR-411341	TR-011343	TR-411343	TR-011345	TR-411345	TR-011347	TR-411347	TR-011349	TR-411349
C-8	5	TR-011351	TR-411351	TR-011353	TR-411353	TR-011355	TR-411355	TR-011357	TR-411357	TR-011359	TR-411359
P	5	TR-011361	TR-411361	TR-011363	TR-411363	TR-011365	TR-411365	TR-011367	TR-411367	TR-011369	TR-411369
C-2	7	TR-016031	TR-416031	TR-016032	TR-416032	TR-016033	TR-416033	TR-016034	TR-416034	TR-016035	TR-416035
CN	5	TR-011371	TR-411371	TR-011373	TR-411373	TR-011375	TR-411375	TR-011377	TR-411377	TR-011379	TR-411379
Diol	7	TR-011391	TR-411391	TR-011393	TR-411393	TR-011395	TR-411395	TR-011397	TR-411397	TR-011399	TR-411399
NH2	5	TR-011381	TR-411381	TR-011383	TR-411383	TR-011385	TR-411385	TR-011387	TR-411387	TR-011389	TR-411389
NO2	5	TR-016036	TR-416036	TR-016037	TR-416037	TR-016038	TR-416038	TR-016039	TR-416039	TR-016040	TR-416040
N(CH3)2	5	TR-016041	TR-416041	TR-016042	TR-416042	TR-016043	TR-416043	TR-016044	TR-416044	TR-016045	TR-416045
SA	5	TR-011401	TR-411401	TR-011403	TR-411403	TR-011405	TR-411405	TR-011407	TR-411407	TR-011409	TR-411409
SB	5	TR-011411	TR-411411	TR-011413	TR-411413	TR-011415	TR-411415	TR-011417	TR-411417	TR-011419	TR-411419
Si	10	TR-016600	TR-416600	TR-016601	TR-416601	TR-016602	TR-416602	TR-016603	TR-416603	TR-016604	TR-416604
C-18	10	TR-016605	TR-416605	TR-016606	TR-416606	TR-016607	TR-416607	TR-016608	TR-416608	TR-016609	TR-416609
C-8	10	TR-016610	TR-416610	TR-016611	TR-416611	TR-016612	TR-416612	TR-016613	TR-416613	TR-016614	TR-416614
CN	10	TR-016615	TR-416615	TR-016617	TR-416617	TR-016618	TR-416618	TR-016619	TR-416619	TR-016620	TR-416620
NH2	10	TR-016621	TR-416621	TR-016622	TR-416622	TR-016623	TR-416623	TR-016624	TR-416624	TR-016625	TR-416625
NO2	10	TR-016626	TR-416626	TR-016627	TR-416627	TR-016628	TR-416628	TR-016629	TR-416629	TR-016630	TR-416630
SA	10	TR-016631	TR-416631	TR-016632	TR-416632	TR-016633	TR-416633	TR-016634	TR-416634	TR-016635	TR-416635
SB	10	TR-016636	TR-416636	TR-016637	TR-416637	TR-016638	TR-416638	TR-016639	TR-416639	TR-016640	TR-416640

## Analytical columns NUCLEOSIL 120

Function	Dimensions										
	Particle size (µm)	4 x 0.46 cm	4 x 0.4 cm	10 x 0.46 cm	10 x 0.4 cm	15 x 0.46 cm	15 x 0.4 cm	20 x 0.46 cm	20 x 0.4 cm	25 x 0.46 cm	25 x 0.4 cm
Si	5	TR-016300	TR-416300	TR-016301	TR-416301	TR-016302	TR-416302	TR-016303	TR-416303	TR-016304	TR-416304
C-18	5	TR-016305	TR-416305	TR-016306	TR-416306	TR-016307	TR-416307	TR-016308	TR-416308	TR-016309	TR-416309
C-8	5	TR-016310	TR-416310	TR-016311	TR-416311	TR-016312	TR-416312	TR-016313	TR-416313	TR-016314	TR-416314
C4	5	TR-016162	TR-416162	TR-016163	TR-416163	TR-016164	TR-416164	TR-016165	TR-416165	TR-016166	TR-416166
P	7	TR-016315	TR-416315	TR-016316	TR-416316	TR-016317	TR-416317	TR-016318	TR-416318	TR-016319	TR-416319
CN	7	TR-016320	TR-416320	TR-016321	TR-416321	TR-016322	TR-416322	TR-016323	TR-416323	TR-016324	TR-416324
NH2	7	TR-016325	TR-416325	TR-016326	TR-416326	TR-016327	TR-416327	TR-016328	TR-416328	TR-016329	TR-416329
Si	10	TR-016641	TR-416641	TR-016642	TR-416642	TR-016643	TR-416643	TR-016644	TR-416644	TR-016645	TR-416645
C-18	10	TR-016646	TR-416646	TR-016647	TR-416647	TR-016648	TR-416648	TR-016649	TR-416649	TR-016650	TR-416650
C-8	10	TR-016651	TR-416651	TR-016652	TR-416652	TR-016653	TR-416653	TR-016654	TR-416654	TR-016655	TR-416655

## Ultrarapid columns NUCLEOSIL

Function	Dimensions										
	Particle size (µm)	4 x 0.46 cm	4 x 0.4 cm	10 x 0.46 cm	10 x 0.4 cm	15 x 0.46 cm	15 x 0.4 cm	20 x 0.46 cm	20 x 0.4 cm	25 x 0.46 cm	25 x 0.4 cm
100 C18	3	TR-013110	TR-413110	TR-013111	TR-413111	TR-013112	TR-413112	TR-013113	TR-413113	TR-013119	TR-413119
120 C18	3	TR-013101	TR-413101	TR-013103	TR-413103	TR-013105	TR-413105	TR-013107	TR-413107	TR-013109	TR-413109
120 C8	3	TR-013115	TR-413115	TR-013116	TR-413116	TR-013117	TR-413117	TR-013118	TR-413118	TR-013124	TR-413124

## Microbore columns NUCLEOSIL 100

Function	D i m e n s i o n s				
	Particle size (µm)	10 x 0.21 cm	20 x 0.21 cm	10 x 0.03 cm	20 x 0.03 cm
Si	5	TR-021125	TR-021126	TR-021258	TR-021259
C-18	5	TR-021127	TR-021128	TR-021260	TR-021261
C-8	5	TR-021129	TR-021130	TR-021262	TR-021263
C6 H5	5	TR-021131	TR-021132	TR-021264	TR-021265
C-2	7	TR-021133	TR-021134	TR-021266	TR-021267
CN	5	TR-021135	TR-021136	TR-021268	TR-021269
Diol	7	TR-021137	TR-021096	TR-021270	TR-021271
NH2	5	TR-021097	TR-021098	TR-021272	TR-021273
NO2	5	TR-021099	TR-021100	TR-021274	TR-021275
N(CH3)2	5	TR-021101	TR-021102	TR-021350	TR-021276
SA	5	TR-021103	TR-021104	TR-021277	TR-021278
SB	5	TR-021105	TR-021106	TR-021279	TR-021280

## Microbore columns NUCLEOSIL 120

Function	D i m e n s i o n s				
	Particle size (µm)	10 x 0.21 cm	20 x 0.21 cm	10 x 0.3 cm	20 x 0.3 cm
Si	5	TR-021115	TR-021116	TR-021283	TR-021284
C-18	5	TR-021065	TR-021067	TR-021281	TR-021282
C-8	5	TR-021117	TR-021118	TR-021285	TR-021286
C6 H5	7	TR-021119	TR-021120	TR-021287	TR-021288
CN	7	TR-021121	TR-021122	TR-021289	TR-021290
NH2	7	TR-021123	TR-021124	TR-021291	TR-021292

## Semi-preparative columns NUCLEOSIL 120

Function	D i m e n s i o n s				
	Particle size (µm)	15 x 0.7 cm	25 x 0.7 cm	15 x 1.0 cm	25 x 1.0 cm
Si	5	TR-014294	TR-014296	TR-014298	TR-014300
C-18	5	TR-014286	TR-014288	TR-014290	TR-014292
C-8	5	TR-014302	TR-014304	TR-014306	TR-014308
C-4	5	TR-014600	TR-014601	TR-014602	TR-014603
C6 H5	7	TR-014310	TR-014312	TR-014314	TR-014316
CN	7	TR-014318	TR-014320	TR-014322	TR-014324
NH2	7	TR-014326	TR-014328	TR-014330	TR-014332
Si	10	TR-014366	TR-014368	TR-014370	TR-014372
C-18	10	TR-014358	TR-014360	TR-014362	TR-014364
C-8	10	TR-014374	TR-014376	TR-014378	TR-014380

## Semi-preparative columns NUCLEOSIL 100

Function	D i m e n s i o n s				
	Particle size (µm)	15 x 0.7 cm	25 x 0.7 cm	15 x 1.0 cm	25 x 1.0 cm
Si	5	TR-014476	TR-014477	TR-014478	TR-014479
C-2	7	TR-014488	TR-014489	TR-014490	TR-014491
C-8	5	TR-014484	TR-014485	TR-014486	TR-014487
C-18	5	TR-014480	TR-014481	TR-014482	TR-014483
Phenyl	7	TR-014492	TR-014493	TR-014494	TR-014495
CN	5	TR-014496	TR-014497	TR-014498	TR-014499
Diol	7	TR-014585	TR-014586	TR-014587	TR-014588
NH2	5	TR-014589	TR-014590	TR-014591	TR-014592
N(CH3)2	5	TR-014597	TR-014598	TR-014599	TR-014769
SA	5	TR-014770	TR-014771	TR-014772	TR-014773
SB	5	TR-014774	TR-014775	TR-014776	TR-014777

Function	D i m e n s i o n s				
	Particle size(µm)	15 x 0.7 cm	25 x 0.7 cm	15 x 1.0 cm	25 x 1.0 cm
NO2	5	TR-014593	TR-014594	TR-014595	TR-014596
Si	10	TR-014733	TR-014734	TR-014735	TR-014736
C-8	10	TR-014737	TR-014738	TR-014739	TR-014740
C-18	10	TR-014741	TR-014742	TR-014743	TR-014744
CN	10	TR-014745	TR-014746	TR-014747	TR-014748
NO2	10	TR-014749	TR-014750	TR-014751	TR-014752
NH2	10	TR-014753	TR-014754	TR-014755	TR-014756
N(CH3)2	10	TR-014757	TR-014758	TR-014759	TR-014760
SA	10	TR-014761	TR-014762	TR-014763	TR-014764
SB2	10	TR-014765	TR-014766	TR-014767	TR-014768

## Novafix™ Cartridge NUCLEOSIL 100

Function	Particle size (µm)	D i m e n s i o n s		
		7.5 x 0.4 cm	15 x 0.4 cm	25 x 0.4 cm
Si	3	TR-015462	TR-015463	TR-015464
C-18	3	TR-015465	TR-015466	TR-015467
Si	5	TR-015514	TR-015515	TR-015516
C-18	5	TR-015517	TR-015518	TR-015519
C-8	5	TR-015520	TR-015521	TR-015522
C-2	7	TR-015523	TR-015524	TR-015525
C6H5	5	TR-015526	TR-015527	TR-015528
CN	5	TR-015529	TR-015530	TR-015531
NO2	5	TR-015532	TR-015533	TR-015534
NH2	5	TR-015535	TR-015536	TR-015537
N(CH3)2	5	TR-015538	TR-015539	TR-015540
DIOL	7	TR-015118	TR-015119	TR-015120
SA	5	TR-015121	TR-015122	TR-015123
SB	5	TR-015124	TR-015125	TR-015126
Si	10	TR-016598	TR-015541	TR-015542
C-18	10	TR-015543	TR-015544	TR-015545
C-8	10	TR-015546	TR-015547	TR-015548
CN	10	TR-015549	TR-015550	TR-015551
NO2	10	TR-015552	TR-015553	TR-015554
NH2	10	TR-015555	TR-015556	TR-015559
SA	10	TR-015151	TR-015152	TR-015153
SB	10	TR-015154	TR-015155	TR-015156

## Novafix™ Cartridge NUCLEOSIL 120

Function	Particle size (µm)	D i m e n s i o n s		
		7.5 x 0.4 cm	15 x 0.4 cm	25 x 0.4 cm
Si	3	TR-015468	TR-015469	TR-015470
C-8	3	TR-015471	TR-015472	TR-015473
C-18	3	TR-015474	TR-015475	TR-015476
Si	5	TR-015100	TR-015101	TR-015102
C-18	5	TR-015103	TR-015104	TR-015105
C-8	5	TR-015106	TR-015107	TR-015108
C6H5	7	TR-015109	TR-015110	TR-015111
CN	7	TR-015112	TR-015113	TR-015114
NH2	7	TR-015115	TR-015116	TR-015117
Si	10	TR-015130	TR-015131	TR-015132
C-18	10	TR-015133	TR-015134	TR-015135
C-8	10	TR-015136	TR-015137	TR-015138



This traditional irregular packing is packed following completely optimized methods, ensuring maximum efficiency, stability and reproductibility in all the columns.

With this irregular packing, the efficiencies normally obtained are of 30-40000 N/m for the 5 µm packings, and 50-70,000 N/m for the 5 µm.

## Analytical columns LICHROSORB

Function			Dimensions									
Particle size (µm)	10 x 0.46 cm	10 x 0.4 cm	12.5 x 0.46 cm	12.5 x 0.4 cm	15 x 0.46 cm	15 x 0.4 cm	20 x 0.46 cm	20 x 0.4 cm	25 x 0.46 cm	25 x 0.4 cm		
Si 60	5	TR-011421	TR-411421	TR-011423	TR-411423	TR-011425	TR-411425	TR-011427	TR-411427	TR-011429	TR-411429	
RP-8	5	TR-011441	TR-411441	TR-011443	TR-411443	TR-011445	TR-411445	TR-011447	TR-411447	TR-011449	TR-411449	
RP-18	5	TR-011431	TR-411431	TR-011433	TR-411433	TR-011435	TR-411435	TR-011437	TR-411437	TR-011439	TR-411439	
RP-Select B	5	TR-016046	TR-416046	TR-016047	TR-416047	TR-011969	TR-411969	TR-016048	TR-416048	TR-011970	TR-411970	
Diol	5	TR-011451	TR-411451	TR-011453	TR-411453	TR-011455	TR-411455	TR-011457	TR-411457	TR-011459	TR-411459	
NH2	5	TR-011461	TR-411461	TR-011463	TR-411463	TR-011465	TR-411465	TR-011467	TR-411467	TR-011469	TR-411469	
CN	5	TR-011471	TR-411471	TR-011473	TR-411473	TR-011475	TR-411475	TR-011477	TR-411477	TR-011479	TR-411479	
Si 60	10	TR-011481	TR-411481	TR-011483	TR-411483	TR-011485	TR-411485	TR-011487	TR-411487	TR-011489	TR-411489	
RP-8	10	TR-011501	TR-411501	TR-011503	TR-411503	TR-011505	TR-411505	TR-011507	TR-411507	TR-011509	TR-411509	
RP-18	10	TR-011491	TR-411491	TR-011493	TR-411493	TR-011495	TR-411495	TR-011497	TR-411497	TR-011499	TR-411499	
Diol	10	TR-011511	TR-411511	TR-011513	TR-411513	TR-011515	TR-411515	TR-011517	TR-411517	TR-011519	TR-411519	
NH2	10	TR-011521	TR-411521	TR-011523	TR-411523	TR-011525	TR-411525	TR-011527	TR-411527	TR-011529	TR-411529	
CN	10	TR-011531	TR-411531	TR-011533	TR-411533	TR-011535	TR-411535	TR-011537	TR-411537	TR-011539	TR-411539	

## Novafix™ Cartridge LICHROSORB

Function		Dimensions		
Particle size (µm)		7.5 x 0.4 cm	15 x 0.4 cm	25 x 0.4 cm
Si 60	5	TR-015196	TR-015197	TR-015198
RP-18	5	TR-015199	TR-015200	TR-015201
RP-8	5	TR-015202	TR-015203	TR-015204
Diol	5	TR-015205	TR-015206	TR-015207
NH2	5	TR-015208	TR-015209	TR-015210
CN	5	TR-015211	TR-015212	TR-015213
RP-Select B	5	TR-015345	TR-015346	TR-015347
Si 60	10	TR-015178	TR-015179	TR-015180
RP-18	10	TR-015181	TR-015182	TR-015183
RP-8	10	TR-015184	TR-015185	TR-015186
Diol	10	TR-015187	TR-015188	TR-015189
NH2	10	TR-015190	TR-015191	TR-015192
CN	10	TR-015193	TR-015194	TR-015195
RP-Select B	10	TR-015561	TR-015562	TR-015563

## Semi-preparative Tracer columns LICHROSORB

Function		Dimensions			
Particle size (µm)		15 x 0.7 cm	25 x 0.7 cm	15 x 1.0 cm	25 x 1.0 cm
RP-18	7	TR-014429	TR-014431	TR-014433	TR-014436

For Guard Columns please refer to pages 198-199

For precolumns of cartridge system Novafix please refer to page 193.



Lichrospher's spherical packing of 5 and 10 µm particle size, giving all the advantages that are common to all the spherical packings: high permeability, high efficiency and excellent column stability.

## Analytical columns LICHROSPHER

Function	D i m e n s i o n s										
Particle size (µm)	10 x 0.46 cm	10 x 0.4 cm	12.5 x 0.46 cm	12.5 x 0.4 cm	15 x 0.46 cm	15 x 0.4 cm	20 x 0.46 cm	20 x 0.4 cm	25 x 0.46 cm	25 x 0.4 cm	
Si 100	5	TR-011541	TR-411541	TTR-011543	TR-411543	TR-011545	TR-411545	TR-011547	TR-411547	TR-011549	TR-411549
100 RP-18	5	TR-011551	TR-411551	TR-011553	TR-411553	TR-011555	TR-411555	TR-011557	TR-411557	TR-011559	TR-411559
100 RP-18 ec	5	TR-011561	TR-411561	TR-011563	TR-411563	TR-011565	TR-411565	TR-011567	TR-411567	TR-011569	TR-411569
100 RP-8	5	TR-011571	TR-411571	TR-011573	TR-411573	TR-011575	TR-411575	TR-011577	TR-411577	TR-011579	TR-411579
100 RP-8 ec	5	TR-011581	TR-411581	TR-011583	TR-411583	TR-011585	TR-411585	TR-011587	TR-411587	TR-011589	TR-411589
100 NH <sub>2</sub>	5	TR-011591	TR-411591	TR-011593	TR-411593	TR-011595	TR-411595	TR-011597	TR-411597	TR-011599	TR-411599
100 CN	5	TR-011601	TR-411601	TR-011603	TR-411603	TR-011605	TR-411605	TR-011607	TR-411607	TR-011609	TR-411609
100 Diol	5	TR-011611	TR-411611	TR-011613	TR-411613	TR-011615	TR-411615	TR-011617	TR-411617	TR-011619	TR-411619
60 RP-Select B	5	TR-016813	TR-416813	TR-016814	TR-416814	TR-016815	TR-416815	TR-016816	TR-416816	TR-016817	TR-416817
Si 100	10	TR-011621	TR-411621	TR-011623	TR-411623	TR-011625	TR-411625	TR-011627	TR-411627	TR-011629	TR-411629
100 RP-18	10	TR-011631	TR-411631	TR-011633	TR-411633	TR-011635	TR-411635	TR-011637	TR-411637	TR-011639	TR-411639
100 RP-18 ec	10	TR-011641	TR-411641	TR-011643	TR-411643	TR-011645	TR-411645	TR-011647	TR-411647	TR-011649	TR-411649
100 RP-8	10	TR-011651	TR-411651	TR-011653	TR-411653	TR-011655	TR-411655	TR-011657	TR-411657	TR-011659	TR-411659
100 RP-8 ec	10	TR-011661	TR-411661	TR-011663	TR-411663	TR-011665	TR-411665	TR-011667	TR-411667	TR-011669	TR-411669
100 CN	10	TR-011681	TR-411681	TR-011683	TR-411683	TR-011685	TR-411685	TR-011687	TR-411687	TR-011689	TR-411689
100 Diol	10	TR-011691	TR-411691	TR-011693	TR-411693	TR-011695	TR-411695	TR-011697	TR-411697	TR-011699	TR-411699
60 RP-Select B	10	TR-016808	TR-416808	TR-016809	TR-416809	TR-016810	TR-416810	TR-016811	TR-416811	TR-016812	TR-416812

## Semi-preparative Tracer columns LICHROSPHER

Function	D i m e n s i o n s				
Particle size (µm)	15 x 0.7 cm	25 x 0.7 cm	15 x 1.0 cm	25 x 1.0 cm	
RP-18	10	TR-014437	TR-014439	TR-014441	TR-014443
RP-18 EC	10	TR-014445	TR-014447	TR-014449	TR-014451

## Microbore Tracer columns LICHROSPHER

Function	D i m e n s i o n s				
Particle size (µm)	15 x 0.7 cm	25 x 0.7 cm	15 x 1.0 cm	25 x 1.0 cm	
RP-18	5	TR-021069	TR-021071	TR-021293	TR-021294
RP-18 EC	5	TR-021073	TR-021075	TR-021295	TR-021296

## Novafix™ Cartridge LICHROSPHER

Function	D i m e n s i o n s			
Particle size (µm)	7.5 x 0.4 cm	15 x 0.4 cm	25 x 0.4 cm	
Si 100	5	TR-015238	TR-015239	TR-015240
100 RP-18	5	TR-015241	TR-015242	TR-015243
100 RP-18 ec	5	TR-015244	TR-015245	TR-015246
100 RP-8	5	TR-015247	TR-015248	TR-015249
100 RP-8 ec	5	TR-015250	TR-015251	TR-015252
100 NH <sub>2</sub>	5	TR-015253	TR-015254	TR-015255
100 CN	5	TR-015256	TR-015257	TR-015258
100 Diol	5	TR-015259	TR-015260	TR-015261
60 RP-Select B	5	TR-015572	TR-015573	TR-015574
Si 100	10	TR-015214	TR-015215	TR-015216
100 RP-18	10	TR-015217	TR-015218	TR-015219
100 RP-18 ec	10	TR-015220	TR-015221	TR-015222
100 RP-8	10	TR-015223	TR-015224	TR-015225
100 RP-8 ec	10	TR-015226	TR-015227	TR-015228
100 NH <sub>2</sub>	10	TR-015229	TR-015230	TR-015231
100 CN	10	TR-015232	TR-015233	TR-015234
100 Diol	10	TR-015235	TR-015236	TR-015237
60 RP-Select B	10	TR-015569	TR-015570	TR-015571



A totally porous spherical packing, with a particle size of 4 $\mu$ m, giving a compromise alternative between the packings of 3 and 5 $\mu$ m.

### Novafix™ Cartridge SUPERSPHER

Function	Particle size ( $\mu$ m)	D i m e n s i o n s		
		7.5 x 0.4 cm	15 x 0.4 cm	25 x 0.4 cm
Si 60	4	TR-015262	TR-015263	TR-015264
60 RP-8	4	TR-015265	TR-015266	TR-015267
100 RP-18	4	TR-015268	TR-015269	TR-015270
60 RP-8 ec	4	TR-015271	TR-015272	TR-015273
100 RP-18 ec	4	TR-015274	TR-015275	TR-015276

### Analytical columns SUPERSPHER

Function	Particle size ( $\mu$ m)	D i m e n s i o n s									
		10 x 0.46 cm	10 x 0.4 cm	12.5 x 0.46 cm	12.5 x 0.4 cm	15 x 0.46 cm	15 x 0.4 cm	20 x 0.46 cm	20 x 0.4 cm	25 x 0.46 cm	25 x 0.4 cm
Si 60	4	TR-011701	TR-411701	TR-011703	TR-411703	TR-011705	TR-411705	TR-011707	TR-411707	TR-011709	TR-411709
60 RP-8	4	TR-011711	TR-411711	TR-011713	TR-411713	TR-011715	TR-411715	TR-011717	TR-411717	TR-011719	TR-411719
100 RP-18	4	TR-011721	TR-411721	TR-011723	TR-411723	TR-011725	TR-411725	TR-011727	TR-411727	TR-011729	TR-411729
60 RP-8 ec	4	TR-011731	TR-411731	TR-011733	TR-411733	TR-011735	TR-411735	TR-011737	TR-411737	TR-011739	TR-411739
100 RP-18 ec	4	TR-011741	TR-411741	TR-011743	TR-411743	TR-011745	TR-411745	TR-011747	TR-411747	TR-011749	TR-411749

For Guard Columns please refer to pages 198-199

For precolumns of cartridge system Novafix please refer to page 193.



Partisil's high quality irregular packing with a very high surface area. Different degrees of coating for the ODS packings permit optimum selectivity.

Partisil ODS is 5% coated, while Partisil ODS2 has 15% and the Partisil ODS3 is covered by a 10% of carbon.

## Novafix™ Cartridge PARTISIL

Function Particle size	D i m e n s i o n s (µm)	D i m e n s i o n s		
		7.5 x 0.4 cm	15 x 0.4 cm	25 x 0.4 cm
Silica	5	TR-015423	TR-015424	TR-015425
ODS 3	5	TR-015426	TR-015427	TR-015428
C-8	5	TR-015429	TR-015430	TR-015431
PAC	5	TR-015432	TR-015433	TR-015434
Silica	10	TR-015435	TR-015436	TR-015437
ODS	10	TR-015438	TR-015439	TR-015440
ODS 2	10	TR-015441	TR-015442	TR-015443
ODS 3	10	TR-015444	TR-015445	TR-015446
PAC	10	TR-015447	TR-015448	TR-015449
SAX	10	TR-015450	TR-015451	TR-015452
SCX	10	TR-015453	TR-015454	TR-015455

## Analytical columns PARTISIL

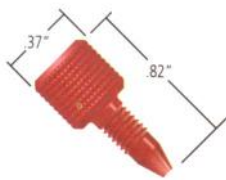
Function Particle size (µm)	D i m e n s i o n s										
	10 x 0.46 cm	10 x 0.4 cm	12.5 x 0.46 cm	12.5 x 0.4 cm	15 x 0.46 cm	15 x 0.4 cm	20 x 0.46 cm	20 x 0.4 cm	25 x 0.46 cm	25 x 0.4 cm	
Silica	5 TR-016205	TR-416205	TR-016206	TR-416206	TR-016207	TR-416207	TR-016208	TR-416208	TR-016209	TR-416209	
ODS3	5 TR-016211	TR-416211	TR-016212	TR-416212	TR-016213	TR-416213	TR-016214	TR-416214	TR-016215	TR-416215	
C-8	5 TR-016217	TR-416217	TR-016218	TR-416218	TR-016219	TR-416219	TR-016220	TR-416220	TR-016221	TR-416221	
PAC	5 TR-016222	TR-416222	TR-016223	TR-416223	TR-016224	TR-416224	TR-016225	TR-416225	TR-016226	TR-416226	
Silica	10 TR-016227	TR-416227	TR-016228	TR-416228	TR-016229	TR-416229	TR-016230	TR-416230	TR-016231	TR-416231	
ODS	10 TR-016330	TR-416330	TR-016331	TR-416331	TR-016332	TR-416332	TR-016333	TR-416333	TR-016334	TR-416334	
ODS2	10 TR-011817	TR-411817	TR-011819	TR-411819	TR-011821	TR-411821	TR-011823	TR-411823	TR-011825	TR-411825	
ODS3	10 TR-011827	TR-411827	TR-011829	TR-411829	TR-011831	TR-411831	TR-011833	TR-411833	TR-011835	TR-411835	
PAC	10 TR-016232	TR-416232	TR-016233	TR-416233	TR-016234	TR-416234	TR-016235	TR-416235	TR-016236	TR-416236	
SAX	10 TR-011837	TR-411837	TR-011839	TR-411839	TR-011841	TR-411841	TR-011843	TR-411843	TR-011845	TR-411845	
SCX	10 TR-016237	TR-416237	TR-016238	TR-416238	TR-016239	TR-416239	TR-016240	TR-416240	TR-016241	TR-416241	

## One Piece or Two?

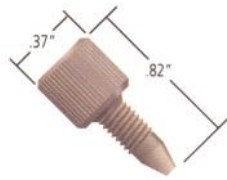
A one-piece fitting is more convenient and less cumbersome, since the ferrule cannot stick in a receiving port and the fitting is more easily found if dropped. With two-Piece Fingertight, you only replace the ferrule instead of the entire unit, making these Fingertights more economical than the one-piece version.

## One Piece Fingertight Fittings

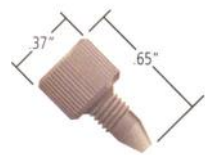
All of our One-Piece Fingertight Fittings are designed to be used with 1/16" OD tubing, except the M-645 (1/32") and P-100 (1/8").



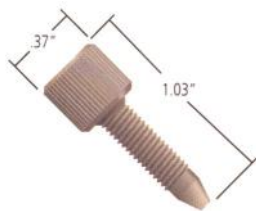
**UP-F-100**  
10-32 Kel-F™ Fitting  
Max Pressure 276 bar



**UP-F-120**  
10-32 PEEK™ Fitting  
Max Pressure 414 bar



**UP-F-127**  
10-32 PEEK™ Fitting  
Max Pressure 414 bar



**UP-F-130**  
10-32 PEEK™ Fitting  
Max Pressure 414 bar



**UP-M-645**  
6-40 PEEK/Kel-F™ Fitting  
for 1/32" OD tubing  
Max Pressure 121-224 bar



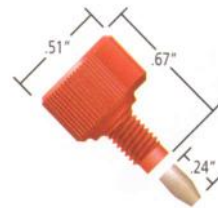
**UP-P-100**  
1/14-28 Kel-F™ Fitting  
for 1/8" OD tubing  
Max Pressure 69 bar

## One-Piece Fingertight Fittings<sup>1,2</sup>

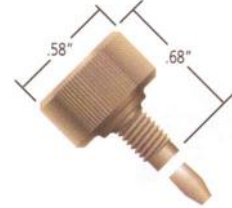
Cat.No.	Description	Qty.
UP-F-100x	Kel-F, Red, 10-32 for 1/16" OD tubing	10-pk
UP-F-120x	PEEK, Natural, 10-32 1/16" OD tubing	10-pk
UP-F-127x	PEEK, Natural, 10-32 Short 1/16" OD tubing	10-pk
UP-F-130x	PEEK, Natural, 10-32 Long 1/16" OD tubing	10-pk
UP-M-645x	PEEK/Kel-F, Natural, 6-40, for 1/32" OD tubing	10-pk
UP-P-100	Kel-F, Natural, 1/4-28, for 1/8" OD tubing	ea.

## Two-Piece Fingertight Fittings

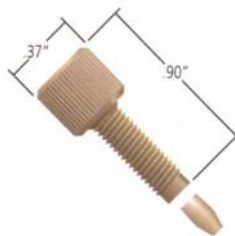
Our original Two-Piece Fingertight Fittings were designed exclusively for 1/16" OD tubing. We now offer optional ferrules for connecting 1/32" OD and 190 µm OD tubing with any Fingertight nut on last page. Our M-215 Conductive Perfluorelastomer Ferrule is designed for mass spectrometer electrospray applications.



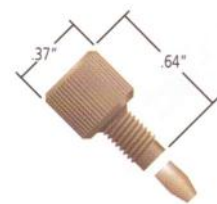
**UP-F-200**  
10-32 Delrin™ Winged Nut  
with F-142 PEEK™ Ferrule



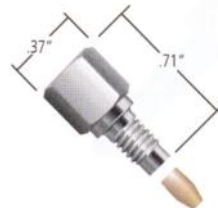
**UP-F-300**  
10-32 PEEK™ Double Winged Nut  
with F-142 PEEK™ Ferrule



**UP-F-330**  
10-32 PEEK™ Nut  
with F-142 PEEK™ Ferrule



**UP-F-331**  
10-32 PEEK™ Nut  
with F-142 PEEK™ Ferrule



**UP-F-140**  
10-32 Stainless Steel Nut  
with F-142 PEEK™ Ferrule



**UP-F-150**  
10-32 Stainless Steel Nut  
with F-142 PEEK™ Ferrule

To order please follow these guidelines:

### 1/16" OD tubing

Select the desired nut, which comes complete with the appropriate ferrule. Or order the optional UP-F-142N Ferrule, along with the desired nut by replacing the "x" at the end of its product number with "-01". For instance, if you want an UP-F-113 Ferrule Nut, order UP-F-200-01, not UP-F-200x.

Please note: "-0.1" denotes a single nut without the ferrule.

### 1/32" OD tubing

Select the UP-F-113 Ferrule. Order the desired nut by replacing the "x" at the end of its product number with "-0.1", as described above.

### 190 µm OD tubing

Select the UP-F-148 Ferrule. Order the desired nut by replacing the "x" at the end of its product number with "-0.1", as described above.

# TK Fingertight Fittings - Stainless Steel Tubing

## 360-510 µm OD tubing

For electrospray applications, choose the UP-M-215 Conductive Ferrule. Order the desired nut by replacing the "x" at the end of its product number with "-0.1", as described at previous page.

## Two-Piece Polymer Fingertight Fittings

Cat.No.	Description	Qty.
UP-F-200x	Delrin Nuts, Red, with UP-F-142 Ferrules, 10-32	10-pk
UP-F-300x	PEEK Nuts, Natural, with UP-F-142 Ferrules, 10-32	10-pk
UP-F-330x	Long PEEK Nuts, Natural, with UP-F-142 Ferrules, 10-32	10-pk
UP-F-331x	Short PEEK Nuts, Natural, with UP-F-142 Ferrules, 10-32	10-pk

## Two-Piece Stainless Steel Fingertight Fittings

UP-F-140x	Stainless Steel Nuts, with UP-F-142 Ferrules, 10-32	10-pk
UP-F-150x	Long Stainless Steel Nuts, with UP-F-142 Ferrules, 10-32	10-pk



**UP-F-113**  
Optional PEEK  
Ferrule  
for 1/32" OD tubing



**UP-F-142N**  
Optional Tefzel™  
Ferrule  
for 1/16" OD tubing



**UP-F-148**  
Optional Kel-F™  
Ferrule  
for 190µm OD tubing



**UP-M-215**  
Optional  
Perfluoroelastomer  
Ferrule  
for 360-510µm OD  
tubing (conductive)

## Replacement Ferrules

Cat.No.	Description	Qty.
<b>For 1/16" OD Tubing</b>		
UP-F-142x	PEEK Ferrules, Natural	10-pk
UP-F-142Nx	Tefzel Ferrules, Natural	10-pk
<b>For 1/32" OD Tubing</b>		
UP-F-113	PEEK Ferrules, Natural	ea.
<b>For 360-510 µm OD Tubing</b>		
UP-F-151	Kel-F Ferrule, Natural	ea.
UP-M-215	Conductive Perfluoroelastomer Ferrules, Black	ea.
<b>For 190 µm OD Tubing</b>		
UP-F-148	Kel-F Ferrule, Natural	ea.

## Stainless Steel Tubing

- Precut 316 Stainless Steel\*
- The Cleanest, Best Finish available
- Color-Coded Banding for easy identification



## Stainless Steel, .005" (125µm) ID x 1/16" OD (Red Colour Band)

Reference	Length
UP-U-152	5 cm
UP-U-153	10 cm
UP-U-154	20 cm
UP-U-155	30 cm
UP-U-156	0.5 m
UP-U-157	1 m**
UP-U-158	1.5 m**
UP-U-160	7.5 m**

## Stainless Steel, .010" (.25mm) ID x 1/16" OD (Blue Colour Band)

Reference	Length
UP-U-111	5 cm
UP-U-112	10 cm
UP-U-113	20 cm
UP-U-114	30 cm
UP-U-132	0.5 m
UP-U-133	1 m**
UP-U-106	1.5 m**
UP-U-162	7.5 m**

## Stainless Steel, .007" (175µm) ID x 1/16" OD (Black Colour Band)

Reference	Length
UP-U-126	5 cm
UP-U-127	10 cm
UP-U-128	20 cm
UP-U-129	30 cm
UP-U-130	0.5 m
UP-U-131	1 m**
UP-U-108	1.5 m**
UP-U-161	7.5 m**

## Stainless Steel, .020" (.50mm) ID x 1/16" OD (Yellow Colour Band)

Reference	Length
UP-U-101	5 cm
UP-U-102	10 cm
UP-U-103	20 cm
UP-U-104	30 cm
UP-U-134	0.5 m
UP-U-135	1 m**
UP-U-105	1.5 m**
UP-U-163	7.5 m**

\*\* All Stainless Steel tubing of longer than 1m is coiled.

## PEEK™ Tubing

- 1/16", 1/8" and 1.8mm ODs Available
- Biocompatible, Inert and Easily Cut
- Great for High Pressure Applications



PEEK (polyetheretherketone) polymer tubing is biocompatible, chemically inert to most solvents, and can be used to replace stainless steel tubing in most liquid analytical systems. Unlike stainless steel and titanium tubing, PEEK tubing is flexible and can be easily cut to desired lengths. PEEK tubing can be used with stainless steel or polymer fittings.

The benefits of PEEK polymer tubing include a high pressure rating (up to 7,000 psi in most cases) and a high temperature rating (maximum continuous use temperature of 100°C). Additionally, PEEK tubing has a very smooth internal surface, which causes less turbulence than similar sized metal tubing. Turbulence can cause remixing of separated sample bands and dilution of bands by the mobile phase. Of all our polymer tubing materials, PEEK is the least permeable to gas.

### PEEK tubing 1/16" OD X 5'

Reference	Description	Colour	psi	bar
UP-1560	.0025" (65 µm) ID	Natural	7,000 psi	(483 bar)*
UP-1561	.004" (100 µm) ID	Black	7,000 psi	(483 bar)*
UP-1535	.005" (125 µm) ID	Red	7,000 psi	(483 bar)*
UP-1562	.006" (150 µm) ID	Purple	7,000 psi	(483 bar)*
UP-1536	.007" (175 µm) ID	Yellow	7,000 psi	(483 bar)*
UP-1531	.010" (.25 mm) ID	Natural	7,000 psi	(483 bar)*
UP-1531B	.010" (.25 mm) ID	Blue	7,000 psi	(483 bar)*
UP-1565	.015" (.40 mm) ID	Gray	7,000 psi	(483 bar)*
UP-1532	.020" (.50 mm) ID	Orange	7,000 psi	(483 bar)*
UP-1533	.030" (.75 mm) ID	Green	7,000 psi	(483 bar)*
UP-1538	.040" (1.00 mm) ID	Natural	5,000 psi	(345 bar)*
UP-1537	.055" (1.40 mm) ID	Natural	500 psi	(345 bar)*

### PEEK tubing 1/8" OD X 5'

Reference	Description	Colour	psi	bar
UP-1534	.062" (1.60 mm) ID	Natural	4,000 psi	(276 bar)*
UP-1544	.080" (2.00 mm) ID	Natural	3,000 psi	(207 bar)*

### PEEK tubing 1.8 mm OD X 5'

Reference	Description	Colour	psi	bar
UP-1545	.010" (.25 mm) ID	Natural	7,000 psi	(483 bar)*
UP-1546	.020" (.50 mm) ID	Natural	7,000 psi	(483 bar)*
UP-1547	.030" (.75 mm) ID	Natural	7,000 psi	(483 bar)*
UP-1540	.042" (1.05 mm) ID	Natural	5,000 psi	(345 bar)*
UP-1539	.055" (1.40 mm) ID	Natural	500 psi	(34 bar)*

## Polymer Tubing Cutters

for 1/16", 1/8", 3/16", 1/4" and 5/16 OD tubing



Polymer tubing cutters

Reference	Description
UP-A-327	Standard Polymer Tubing Cutter* for 1/16" and 1/8" OD tubing
UP-A-329	Large Bore Polymer Tubing Cutter* for 3/16" - 5/16" OD tubing
UP-A-328	Replacement Blades for A-327 and A-329 - 5 pk.

# TK Inlet Solvent Filters

## General Use Inlet Solvent Filters

- Large Surface Areas
- Disposable
- 2 µm, 10 µm and 20 µm Filters Available
- General use and Prep Filters for Higher Flow Applications

It is good practice to filter your solvents to prevent pump damage. These 316 stainless steel filters provide that protection. Their large surface areas also mean longer life without pump cavitation.

Because filters should be changed periodically, we make it easy to replace them, without tools. For those filters using a plastic nut, thread the nut into the filter and finger tighten. Our other filters have stems, allowing easy insertion directly into your inlet tubing. Please Note: The internal design of the UP-A-309 and the UP-A-230A Filters allows solvent to be drawn to within 1/8" (3.2mm) of the bottom of your solvent bottle, with Bottom-of-the-Bottle™ designs similar to the stainless steel and UHMWPE filters.



## General Use Inlet Filters

### For Analytical HPLC

Reference	Description
UP-A-220	10µm Inlet Solvent Filter, for 1/8" OD tubing <sup>1</sup>
UP-A-221	UP-A-220, 5-pack, for 1/8" OD tubing <sup>1</sup>
UP-A-222	2µm Inlet Solvent Filter, for 1/8" OD tubing <sup>1</sup>
UP-A-223	UP-A-222, 5-pack, for 1/8" OD tubing <sup>1</sup>
UP-A-228	2µm Inlet Solvent Filter with stem, for 1/8" ID tubing
UP-A-302	10µm Inlet Solvent Filter with stem, for 1/16" ID tubing
UP-A-302A	10µm Inlet Solvent Filter with Flangeless Fittings, for 1/8" OD tubing <sup>2</sup>
UP-A-309	10µm Inlet Solvent Filter with stem, for 1/16" ID tubing

### For Waters™ Analytical HPLC Systems

UP-A-231A	20µm Inlet Solvent Filter for 3/16" OD tubing <sup>3</sup>
UP-A-310	10µm Inlet Solvent Filter with stem, for 1/8" tubing

### For Preparative HPLC Systems

UP-A-225	20µm Inlet Solvent Filter with stem, for 1/16" ID tubing
UP-A-225A	20µm Inlet Solvent Filter with Flangeless Fittings, for 1/8" OD tubing <sup>4</sup>
UP-A-226A	10µm Inlet Solvent Filter, for 5/16" OD tubing <sup>5</sup>
UP-A-227A	10µm Inlet Solvent Filter, for 1/4" OD tubing <sup>6</sup>
UP-A-230A	20µm Inlet Solvent Filter, for 1/4" OD tubing <sup>6</sup>
UP-A-231A	20µm Inlet Solvent Filter, for 3/16" OD tubing <sup>6</sup>
UP-A-311	10µm Inlet Solvent Filter with stem, for 1/16" ID tubing
UP-A-311A	10µm Inlet Solvent Filter with Flangeless Fittings, for 1/8" OD tubing <sup>2</sup>

<sup>1</sup> Requires a UP-P-100 Fitting (not included). Order the UP-A-210 Kit above, or purchase the UP-P100 alone.

<sup>2</sup> Includes a UP-P-315 Tefzel™ (ETFE) Nut and a UP-P-300 ETFE Ferrule.

<sup>3</sup> Includes a UP-P-132 PEEK™ Nut and a UP-P-133 ETFE Ferrule.

<sup>4</sup> Includes a UP-P-315 ETFE Nut and a UP-P-300N ETFE Ferrule.

<sup>5</sup> Includes a UP-U-622 PEEK Nut and a UP-U-660 ETFE Ferrule.

<sup>6</sup> Includes a UP-U-655 PEEK Nut and a UP-U-650 ETFE Ferrule.

## Maximum Suggested Flow Rates

Flow Rates are determined by porosity surface area

Reference	Porosity	Max. Flow Rate
UP-A-222	2 µm	10 mL/min.
UP-A-220	10 µm	40 mL/min.
UP-A-302	10 µm	40 mL/min.
UP-A-302A	10 µm	40 mL/min.
UP-A-309	10 µm	40 mL/min.
UP-A-310	10 µm	40 mL/min.
UP-A-225	20 µm	100 mL/min.
UP-A-225A	20 µm	100 mL/min.
UP-A-226A	10 µm	100 mL/min.
UP-A-227A	10 µm	100 mL/min.
UP-A-230A	20 µm	100 mL/min.
UP-A-231A	20 µm	100 mL/min.
UP-A-311	10 µm	100 mL/min.
UP-A-311A	10 µm	100 mL/min.

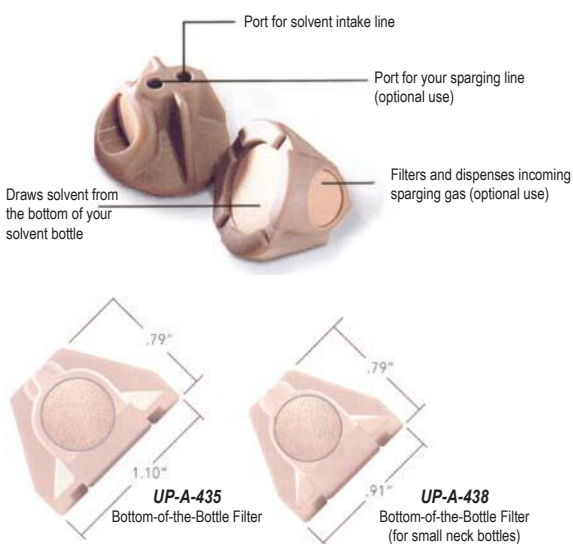
# Bottle Caps - PEEK Bottom-of-the-Bottle Solvent Filters

## PEEK Bottom-of-the-Bottle Solvent Filters

- Our Most Recommended Filtering Unit!
- 100% PEEK Polymer Construction
- Easy Operation - No fittings required!

These Upchurch Scientific biocompatible filters are made from 100% PEEK polymer. Each has two PEEK frits. The bottom frit (2µm or 10µm) will draw solvents from within 0.28" (2mm) of the bottom of the solvent bottle. The 2µm frit on the side may be used for a 1/8" OD helium sparging line.

To use, simply press fit your appropriately sized Teflon® tubing firmly into the top holes. That's it!



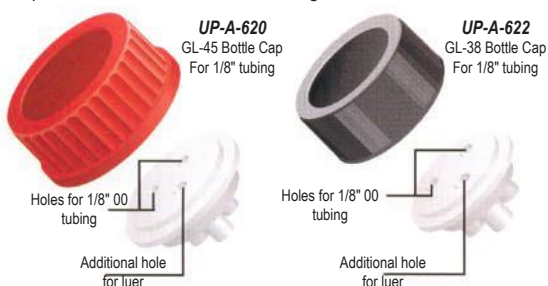
## Bottle Caps

- Inexpensive
- Extremely Simple - No Threaded Ports or Fittings!

If you are looking for a bottle cap that is quick and easy, but still allows many options, we have just what you need!

These injection-molded caps are manufactured of inert Tefzel™ and polypropylene. They fit standard GL-45 or smaller-neck GL-38 bottles.

Three holes are provided in each insert. With two of the holes you simply push your tubing straight through. The third hole, with a luer taper, can be used for a number of options. Any male luer will fit snugly in this hole, or you can use our UP-A-626 or UP-A-627 Plug. The exceptions are the UP-A-610 and UP-A-610B Bottle Plug. Please see the note to the right.

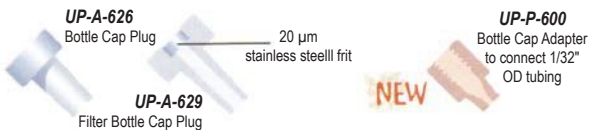


## Bottle Caps for UP-GL-45, 1L Bottles

Reference	Description
UP-A-610	for 3/16" OD tubing, red
UP-A-610B	for 3/16" OD tubing, blue
UP-A-620	for 1/8" OD tubing, red
UP-A-620B	for 1/8" OD tubing, blue
UP-A-630	for 1/16" OD tubing, red
UP-A-630B	for 1/16" OD tubing, blue

## Bottle Caps for UP-GL-38, 4L Bottles

Reference	Description
UP-A-622	for 1/8" OD tubing, black or white <sup>1</sup>
UP-A-632	for 1/16" OD tubing, black or white <sup>1</sup>



## Bottle Cap Plugs and Adapter

Reference	Description
UP-A-626	Bottle Cap Plug for luer hole, UHMWPE
UP-A-627	Filter Bottle Cap Plug for luer hole, UHMWPE with 20 µm stainless steel Irit
UP-A-628	Bottle Cap Plug for 1/16" or 1/8" hole, UHMWPE
UP-A-629	Filter Bottle Cap Plug for 1/16" or 1/8" hole, UHMWPE with 20 µm stainless steel Irit
UP-P-600	Bottle Cap Adapter for 1/8" hole <sup>2</sup> , PEEK to connect 1/32" OD tubing

## UHMWPE Bottom-of-the-Bottle Solvent Filters

Reference	Description
UP-A-445	10µm UHMWPE Filter Assembly for 1/16" OD tubing <sup>1</sup>
UP-A-446	10µm UHMWPE Filter Assembly for 1/8" OD tubing <sup>2</sup>
UP-A-427	10µm UHMWPE Replacement Solvent Filter Cups, 5pk

## PEEK Bottom-of-the-Bottle Solvent Filters

Reference	Description
UP-A-435	2µm PEEK Filter for 1/8" OD tubing
UP-A-436	2µm PEEK Filter for 3/16" OD tubing <sup>3</sup>
UP-A-437	2µm PEEK Filter for 1/8" OD tubing for small-neck (GL-38) bottles
UP-A-438	10µm PEEK Filter for 1/8" OD tubing for small-neck (GL-38) bottles
UP-A-440	10µm PEEK Filter for 1/8" OD tubing
UP-A-441	10µm PEEK Filter for 3/16" OD tubing <sup>3</sup>
UP-A-450	2µm PEEK Filter for 1/16" OD tubing
UP-A-451	10µm PEEK Filter for 1/16" OD tubing
UP-A-452	2µm PEEK Filter for 1/16" OD tubing for small-neck (GL-38) bottles
UP-A-453	10µm PEEK Filter for 1/16" OD tubing for small-neck (GL-38) bottles

<sup>1</sup> Includes a UP-P-200 Tefzel™ Ferrule and a UP-P-245 Teflon™ PFA Nut

<sup>2</sup> Includes a UP-P-300 Tefzel™ Ferrule and a UP-P-345 Teflon™ PFA Nut

<sup>3</sup> Typically for Waters® systems.

<sup>1</sup> Designed for use with The UP-A-622 and UP-A-632 Bottle Cap Rings now come in black or white, depending on availability

# TK Precolumn and Inline Filters

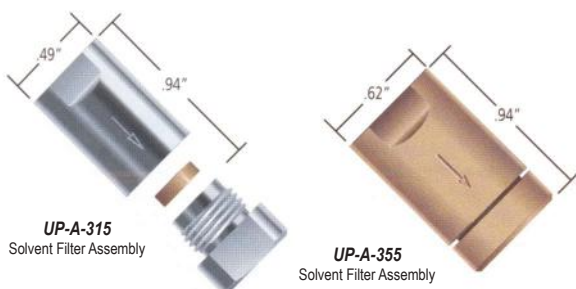
## Increase the Life of your Column

A precolumn filter placed between the sample injection valve and the HPLC column protects the column from particles originating in the sample and from pump/valve seal wear. Why use a precolumn filter when there is a frit at the head of the column itself? Because changing the column frit risks ruining the column by disturbing the column packing. A precolumn filter provides relatively inexpensive insurance against column damage, and changing its frit is easy.

## Precolumn Filters

- 0.5 µm or 2 µm Frits Available
- Great Column Protection
- Stainless Steel and Biocompatible PEEK™ Polymer Versions Available

These Precolumn Filters have .020" diameter thru-holes and 8° distribution cones for minimal band spreading and mixing. They are available in stainless steel (UP-A-315/UP-A-316), pressure rated to 9,000 psi (620 bar) and biocompatible PEEK polymer versions (UP-A-355/UP-A-356), pressure rated to 5,000 psi (345 bar). Choose either the 0.5 µm or 2 µm version to filter particulates from your flow path.



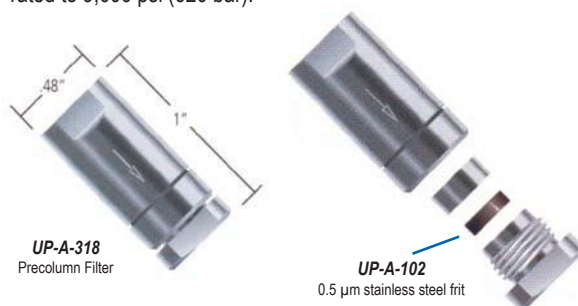
## Precolumn Filters

Reference	Description	Swept Volume*
UP-A-315	2µm Solvent Filter Assembly, with UP-A-101 Frit	1.4 µL
UP-A-316	0.5µm Solvent Filter Assembly, with UP-A-102 Frit	1.3 µL
UP-A-355	2µm Solvent Filter Assembly, with UP-A-700 ID PEEK Frit, Biocompatible	1.4 µL
UP-A-356	0.5µm Solvent Filter Assembly, with UP-A-701 ID PEEK Frit, Biocompatible	1.3 µL
UP-A-101x	2µm Replacement Frits, Stainless Steel, 10-pk	0.74 µL
UP-A-102x	0.5µm Replacement Frits, Stainless Steel, 10-pk	0.61 µL
UP-A-700	2µm Replacement Frit, PEEK Polymer	0.74 µL
UP-A-701	0.5µm Replacement Frit, PEEK Polymer	0.61 µL

## Ultra-Low Volume Precolumn Filter

- Our Lowest Swept Volume Precolumn Filter for 1/16" OD Tubing

With a .010" diameter thru-hole, our UP-A-318 Filter has one of the lowest swept volumes (0.61µL\*) of any HPLC filter available, ensuring maximum protection with no band broadening. Pressure rated to 9,000 psi (620 bar).



## Ultra-Low Volume Precolumn Filters

Reference	Description	Swept Volume*
UP-A-318	0.5µm Solvent Filter Assembly, with UP-A-102 Frit	0.84 µL
UP-A-102x	0.5µm Replacement Frits, Stainless Steel, 10-pk	0.61 µL

## Inline Solvent Filter

- Excellent for General Purpose In line Use
- Placed between the pump and sample injection valve, our Inline Solvent Filter traps particles released through normal piston seal wear. Without an inline filter, these particles can be flushed through your system's tubing to the sample injection valve, resulting in valve damage and further system contamination. This filter is pressure rated to 8,500 psi (586 bar) and uses a 2µm stainless steel frit with a PEEK ring. An 8° distribution cone spreads the flow of the mobile phase over the entire surface of the frit, while the .050" diameter thru-hole allows proper solvent flow.



## Inline Solvent Filters

Reference	Description	Swept Volume*
UP-A-314	2.0µm Solvent Filter Assembly, with UP-A-100 Frit	4.0 µL
UP-A-100x	2.0µm Replacement Frits, Stainless Steel, 10-pk	1.4 µL

\* Swept volumes include/reflect theoretical frit volume values.

## Agilent Deuterium Lamps



Cat.No	Model	Description	Ref. Agilent
TR-G1103-60001	Agilent 1100	Visible Light Bulb	N/A
TR-LD-AGI-100	Agilent 1050 A	D2 Lamp	79853-60002
TR-LD-AGI-100LL	Agilent 1050 A	<b>Longlife</b> D2 Lamp	79851-60002
TR-LD-AGI-101	Agilent 1050 C 1050 DAD 1090, 1040	D2 Lamp	79883-60002
TR-LD-AGI-104	Agilent 1100 VWD	D2 Lamp	G1314-60100
TR-LD-AGI-104-LL	Agilent 1100 VWD	<b>Longlife</b> D2 Lamp	2140-0585
TR-LD-AGI-105	Agilent 1100 DAD 8453	D2 Lamp	2140-0590
TR-LD-AGI-105LL	Agilent 1100 DAD	<b>Longlife</b> D2 Lamp	5181-1530
TR-LD-AGI-106	Agilent 8452	D2 Lamp	08452-60104
TR-LD-AGI-107	Agilent CE System Lamp		2140-0585
TR-LX-AGI-100	Agilent 1046 FLD,	Xe Lamp	2140-0549
TR-LX-AGI-101	Agilent 1100 FLD,	Xe Lamp	2140-0600

## Waters Deuterium Lamps



Cat.No	Model	Description	Ref. Waters
TR-LD-WAT-100	Waters 480LC 481LC 481 Lambda Max	D2 Lamp	WAT099499
TR-LD-WAT-101	Waters 484	D2 Lamp	WAT080357
TR-LD-WAT-102	Waters 486	D2 Lamp	WAT080678
TR-LD-WAT-104LL	Waters 996, 2996 PDA	<b>Longlife</b> D2 Lamp	WAT052586
TR-LD-WAT-105LL	Waters 2487 Alliance	<b>Longlife</b> D2 Lamp	WAS081142
TR-LD-WAT-134	Waters 990/991/994	D2 Lamp	WAT021516
TR-LX-WAT-150MO	Waters 470 474 2475	Xe Lamp	3132

## Shimadzu Deuterium Lamps



Cat.No	Model	Description	Ref. Shimadzu
TR-LD-SHI-100	Shimadzu LC4A LC6A SPD2A SPD6A SPD6AV SP4	D2 lamp	062-65056-03
TR-LD-SHI-101-LL	Shimadzu SPD10A, 10A3, 10AV, 10AVP, 20A, 20AV	<b>Longlife</b> D2 Lamp	228-34016-02
TR-LD-SHI-102	Shimadzu Spectrophotometer	D2 Lamp	200-75503-00
TR-LD-SHI-102LL	Shimadzu Spectrophotometer	<b>Longlife</b> D2 Lamp	200-75503-01
TR-LD-SHI-103LL	Shimadzu LC2010	<b>Longlife</b> D2 Lamp	228-37401
TR-LD-SHI-104	Shimadzu SPD-M10A, M10AV	D2 Lamp	N/A
TR-LX-SHI-150MO	Shimadzu RF1501.5301 5000	Xe Lamp	200-81500
TR-LX-SHI-150S	Shim. RF540 RF535 RF551 RF500 RF10A RF10AXL	Xe Lamp	N/A
TR-LX-SHI-75XE	Shimadzu RF530 RF510	Xe Lamp	N/A

## Varian Deuterium Lamps



Cat.No	Model	Description	Ref. Varian
TR-LD-VAR-100	Varian 2050 2550 5500	D2 Lamp	
TR-LD-VAR-101	Varian 75 series, AA & Spectra A series Superscan	D2 Lamp	5610021800
TR-LD-VAR-102	Varian Cary 1 4 5 100 300 400 500	D2 Lamp	5610013250
TR-LD-VAR-103LL	Varian UV50/100/200 9050 Prostar 310, Vista 5000, 5500	<b>Longlife</b> D2 Lamp	0391615691
TR-LD-VAR-103LLE	Varian UV50/100/200 9050 Prostar 310 Retur bracked	<b>Longlife</b> D2 Lamp	N/A
TR-LD-VAR-104	Varian Prostar 330 DAD	D2 Lamp	393570502
TR-LD-VAR-105LL	Varian Prostar 325 335	<b>Longlife</b> D2 Lamp	110715400
TR-LD-VAR-107	Varian Cary 2200/2300, 210, 219	D2 Lamp	5618000100
TR-LD-VAR-122	Varian UV10	D2 Lamp	N/A
TR-LD-VAR-149	Varian UV634 635 Variscan	D2 Lamp	56-100132-00
TR-LX-VAR-100	Varian Prostar 320 , UV-1	Xe Lamp	R007200556
TR-LX-VAR-101	Varian 9070	Xe Lamp	N/A
TR-LX-VAR-152H	Varian Prostar 363	Xe Lamp	392613103

# TK Deuterium Lamps for a Detector

## Merck Hitachi Deuterium Lamps



Cat.No	Model	Description	Ref. Hitachi
TR-LD-MEH-100	Hitachi L & U Series	D2 Lamp	HITA 890-2430
TR-LD-MEH-101	Hitachi 100-10, 124, 100-40, 100-50, 100-60	D2 Lamp	982-1035
TR-LD-MEH-102	Hitachi 101, 102, 111	D2 Lamp	N/A
TR-LD-MEH-152	Hitachi 181	D2 Lamp	N/A
TR-LX-MEH-152H	Hitachi Fluorescence Detector	Xe Lamp	N/A

## Dionex Deuterium Lamps



Cat.No	Model	Description	Ref. Dionex
TR-LD-DIO-100	Dionex CES1 CZESYST 2001 VDM-2	D2 Lamp	40651
TR-LD-DIO-102LL	Dionex PDA-100, PDA-3000, AD-25	<b>Longlife</b> D2 Lamp	939016T
TR-LD-DIO-103	Dionex AD20	D2 Lamp	N/A
TR-LD-DIO-104	Ultimate Dionex UVD 3000 Nano LC	D2 Lamp	N/A
TR-LD-DIO-108	Dionex Durrum	D2 Lamp	N/A
TR-LD-GYN-100LL	Dionex / Gynkotek UVD 320/160/170S 340 DAD	<b>Longlife</b> D2 Lamp	5053, 1204
TR-LX-DIO-150S	Dionex Fluorescence Detector	Xe Lamp	N/A

## Gilson Deuterium Lamps



Cat.No	Model	Description	Ref. Gilson
TR-LD-GIL-100	Gilson Holochrome	D2 Lamp	N/A
TR-LD-GIL-101	Gilson 115/116/117/118/119/151/152/155/156	D2 Lamp	100326
TR-LD-GIL-105	Gilson 170 D.A.D.	D2 Lamp	2140-0590
TR-LD-GIL-105LL	Gilson 170 D.A.D.	<b>Longlife</b> D2 Lamp	5181-1530
TR-LX-GIL-150MO	Gilson 122	Xe Lamp	N/A

## TSP Deuterium Lamps



Cat.No	Model	Description	Ref. TSP
TR-LD-TSP-100	TSP 3100	D2 Lamp	N/A
TR-LD-TSP-101	TSP SP8400 8480 8430 8440 8450 8490 8200	D2 Lamp	3302-9540
TR-LD-TSP-102	TSP UV100/1000/2000/3000, Focus, CE Series	D2 Lamp	9551-0023
TR-LD-TSP-106	TSP UV 6000 DAD Surveyor	D2 Lamp	108052
TR-LD-TSP-150	TSP LC871	D2 Lamp	N/A
TR-LD-TSP-101	TSP FL2000, FL3000, LC304	Xe Lamp	N/A

## ABI Deuterium Lamps



Cat.No	Model	Description	Ref. ABI
TR-LD-ABI-100	ABI 757 759 783A 785A 1000S FS980 120A 130A	D2 Lamp	2900-0484

## Perkin Elmer Deuterium Lamps

Cat.No	Model	Description	Ref. Perkin Elmer
TR-LD-PER-100	Perkin Elmer Series 200	D2 Lamp	N2920149
TR-LD-PER-101	PE AAnalyst 100,300,3100,3110,3300	D2 Lamp	N0370119
TR-LD-PER-102	Perkin Elmer Series 200 DAD	D2 Lamp	N2922046
TR-LD-PER-103	PE LC235,1335,LC55,65,75,85,95,135 Lambda 1.3 Integral	D2 Lamp	N2351285
TR-LD-PER-104	Perkin Elmer LC240, 90, 290, 295, 481	D2 Lamp	02712224
TR-LD-PER-105	Perkin Elmer LC295	D2 Lamp	02712266
TR-LD-PER-149	PE Lambda Array 3480	D2 Lamp	C6760011
TR-LD-PER-152	PE M46 M55 55E M57 575 Lambda 1 3 6 LC55 65T	D2 Lamp	N/A
TR-LD-PER-160	PE Lambda 2 4 5 7 to 45 800 900 Bio, 55X series	D2 Lamp	B016-0917
TR-LD-PER-161	Perkin Elmer 3030, 4000, 4100, 5000 Agnelist Zeeman	D2 Lamp	0057-0194
TR-LD-PER-162	Perkin Elmer 1100 , 2100, 4100	D2 Lamp	B0148615
TR-LD-PER-175	PE M550S 550SE M551S M552 M554 555	D2 Lamp	N/A
TR-LD-PER-178	PE 400 410 420 430	D2 Lamp	N/A
TR-LD-PER-181	PE M550 M551 M552 M555	D2 Lamp	B0160917
TR-LD-PER-150MO	PE 203 204 MPF2A MPF3 MPF4 650	Xe Lamp	N/A

## Jasco Deuterium Lamps

Cat.No	Model	Description	Ref. Jasco
TR-LD-JAS-100	Jasco 870 875	D2 Lamp	5330-0097
TR-LD-JAS-101	Jasco 975 (B & C Series) 1570 1575, 2075	D2 Lamp	5330-0091
TR-LD-JAS-102	Jasco 530, 550, 560 570	D2 Lamp	N/A
TR-LD-JAS-103	Jasco 975 (A series)	D2 Lamp	5330-0092
TR-LD-JAS-150MO	Jasco 820 821	Xe Lamp	N/A
TR-LD-JAS-274	Jasco 920 921 1520	Xe Lamp	N/A

## Kontron Deuterium Lamps

Cat.No	Model	Description	Ref. Kontron
TR-LD-KON-101	Kontron 332/335/430/432/433/770 Uvikon 430	D2 Lamp	93-00636
TR-LD-KON-102LL	Kontron 535DAD, 332/335/430/432/433/770	Longlife D2 Lamp	91-91494
TR-LD-KON-103LL	Kontron 540DAD 540+ 545V	Longlife D2 Lamp	54-02007
TR-LD-KON-104	Kontron Uvikon 922, 923, 943, 930, 932, 933, 940	D2 Lamp	90-007825T
TR-LD-KON-105	Kontron 735, Uvikon 722, 730	D2 Lamp	54-02002
TR-LT-KON-106	Kontron , Uvikon XL, XS, CSA	Tungsten Lamp	96-90297
TR-LD-KON-134	Kontron 440 DAD	D2 Lamp	91-91095
TR-LX-KON-150MO	Kontron SFM25	Xe Lamp	N/A
TR-LT-KON-100	Kontron 900 series	Tungsten Lamp	N/A

## Biorad Deuterium Lamps

Cat.No	Model	Description	Ref. Biorad
TR-LD-BIO-100	Biorad 1305 1306	D2 Lamp	N/A
TR-LD-BIO-101	Biorad 206, 300, 1790, BioDimensions,	D2 Lamp	930-6106
TR-LD-BIO-125	Biorad HPE100, MDL1790, CE2000, Biofocus	D2 Lamp	N/A

## Beckman Deuterium Lamps

Cat.No	Model	Description	Ref. Beckman
TR-LD-BEC-100	Beckman 163	D2 Lamp	22 947029
TR-LD-BEC-101	Beckman DU500 DU530	D2 Lamp	N/A
TR-LD-BEC-102	Beckman DU600 620 630 640 650 6000 7000 7500	D2 Lamp	514366
TR-LD-BEC-103	Beckman 166	D2 Lamp (prealigned)	239372
TR-LD-BEC-104	Beckman 164 165 167 System Gold 5200 Acta 24-36	D2 Lamp	236920
TR-LD-BEC-105	Beckman 168	D2 Lamp (prealigned)	538711
TR-LD-BEC-106	Beckman DU60 DU62 DU64 DU65 DU68 DU 70	D2 Lamp	596791
TR-LD-BEC-108	Beckman P/ACE 2000	D2 Lamp	359058
TR-LD-BEC-109	Beckman P/ACE 5000 5010 5500 5510	D2 Lamp	N/A

# TK Deuterium Lamps for a Detector

## Beckman Deuterium Lamps

Cat.No	Model	Description	Ref. Beckman
TR-LD-BEC-110	Beckman P/ACE MDQ	D2 Lamp	N/A
TR-LD-BEC-149	Beckman 155	D2 Lamp	22 887153

## Philips and Unicam Deuterium Lamps

Cat.No	Model	Description	Ref. Philips/Unicam
TR-LD-PHU-100	Unicam 4225	D2 Lamp	N/A
TR-LD-PHU-101	Unicam UV & Helios series	D2 Lamp	9423U/9004B
TR-LD-PHU-102	Unicam 4110	D2 Lamp	4013-166-66428
TR-LD-PHU-104	Unicam SP700 800 1700 1750 1800 8000 8800 8820	D2 Lamp	4013-160-24263
TR-LD-PHU-109	Unicam SP8450 8700 8710 8720 8730 8740 8750	D2 Lamp	N/A
TR-LD-PHU-121	Unicam SP8620 SP8625	D2 Lamp	N/A
TR-LD-PHU-127	Unicam SP8 8150 8200 8400 8500 8600 8740 5600	D2 Lamp	4013-163-75402
TR-LD-PHU-150	Unicam LC3 LCUV 4020 4025	D2 Lamp	4013-164-45861
TR-LD-PHU-171	Unicam 4021 4120 D.A.D.	D2 Lamp	4013-164-39401
TR-LD-PYU-120	Pye Unicam SP500	D2 Lamp	4013-160-94202

## LKB-Pharmacia Deuterium Lamps

Cat.No	Model	Description	Ref. LKB
TR-LD-LKB-100	LKB Pharmacia 2141 4050 4054 Ultraspec	D2 Lamp	N/A
TR-LD-LKB-101	LKB Productor 2140	D2 Lamp	8010-3135

## Cecil Deuterium Lamps

Cat.No	Model	Description	Ref. Cecil
TR-LD-CEC-111	Cecil Series 2 1000 to 9000 CE	D2 Lamp	N/A

## Knauer Deuterium Lamps

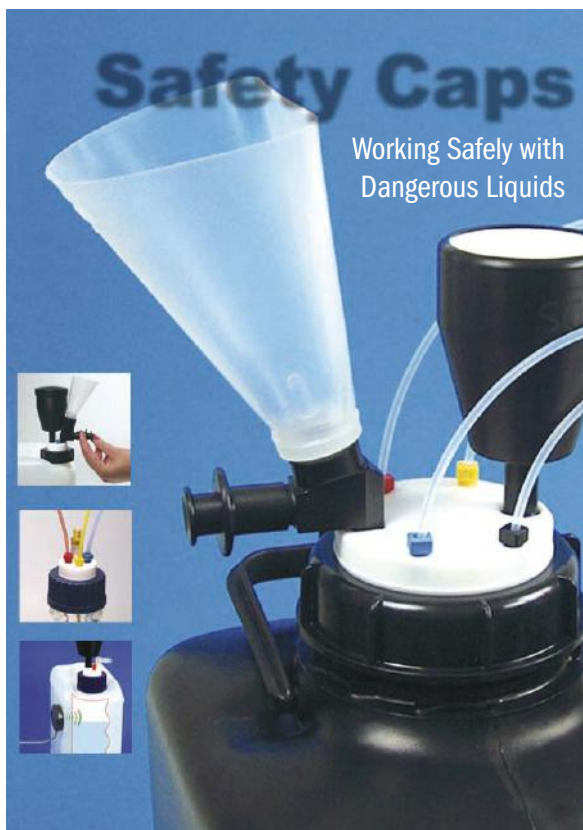
Cat.No	Model	Description	Ref. Knauer
TR-LD-KNA-101LL	Knauer Welchrom K2000 K2500 K2501 D2	Longlife D2 Lamp	N/A

## LDC Deuterium Lamps

Cat.No	Model	Description	Ref. LDC
TR-LD-LDC-100	LDC 3000 & 4000 Series Spectromonitor I II III D	D2 Lamp	108035
TR-LD-LDC-102	LDC 5000 D.A.D.	D2 Lamp	N/A
TR-LX-LDC-150MO	LDC FM4100	Xe Lamp	

## ACS Deuterium Lamps

Cat.No	Model	Description	Ref. ACS
TR-LD-ACS-100	ACS LC 750 11E 12	D2 Lamp	N/A



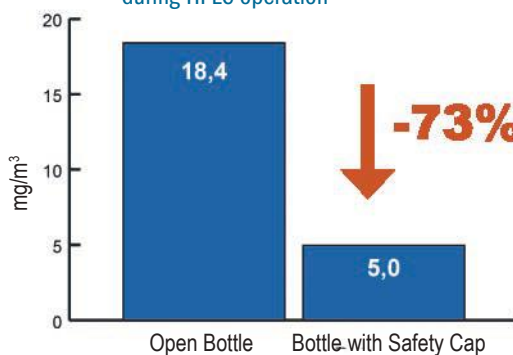
## Troubleshooting by SCAT Safety Caps

- **No escape of hazardous vapours**  
Integrated air valve and exhaust filters keep your containers sealed safely.
- **No pollution**  
Containers always remain shut, even during extraction or filling of liquids.
- **No shift of tubing**  
Tubes remain fixed - no air intake into sensitive equipment like chromatography systems
- **Easy container exchange**  
Safety Caps are freely turnable without twisting tubes.
- **No air intake**  
No interruption of chromatography processes.

## Reduce pollution

Ecological and sanitary damage can be reduced intensely by SCAT Safety Caps. Officially accredited testing laboratories verify a reduction of toxic concentrations in the air amounting to 73%.

Emissions of Acetonitrile in a test laboratory during HPLC operation

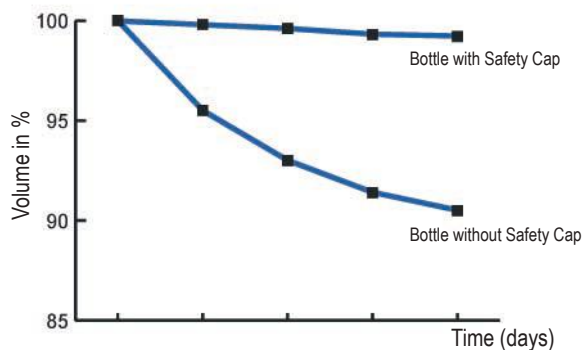


## Avoid shrinkage

Spend less money on chemicals - SCAT Safety Caps avoid decrease of expensive solvents which otherwise evaporate into extraction hoods or into the environmental air.

Solvent shrinkage

Methanol-Water mixture (80/20 after 1 week of testing)



## Dangers and hazards in many laboratories



## Safety for HPLC users

Vapours and gases of dangerous liquids can cause damage to your health and to your environment. Bottles and containers with unsafe contents always have to be sealed reliably to avoid health hazards and environment pollution.

Many directives are already regulated by law - in addition, you should always take care of your health and integrity yourself.

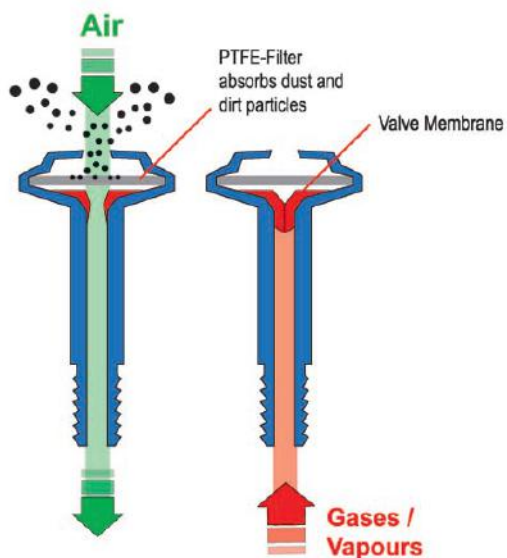
# TK HPLC Safety Caps

## Safe and comfortable

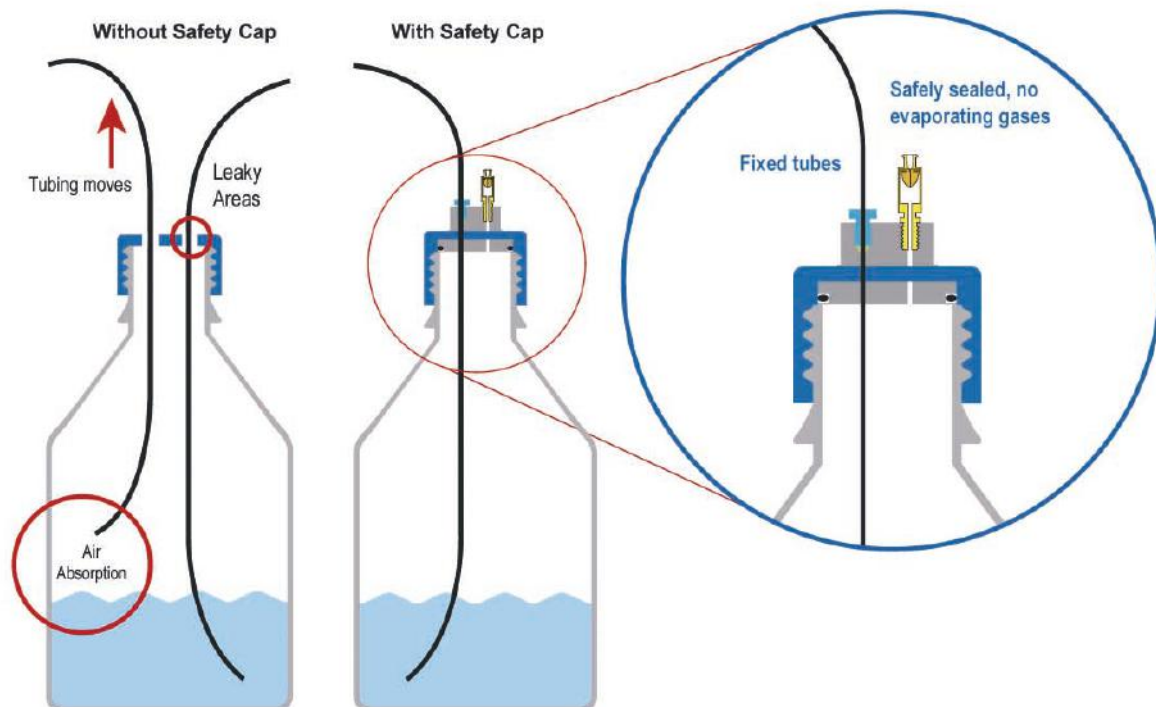
Safety Caps rotate freely without twisting tubes. Even when using multiple connectors, you can easily exchange your containers and reservoirs without interruptions.

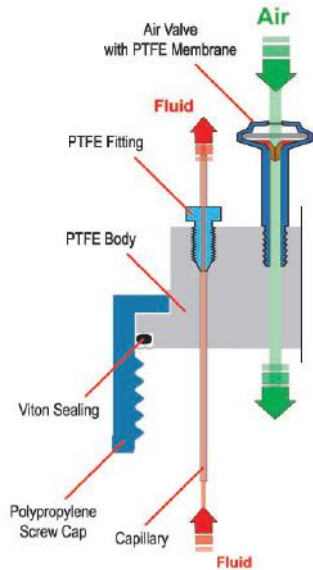


## Air Valve Function



## The Difference in Liquid Handling





## Safety Caps GL 45 - Safe Fluid Supply

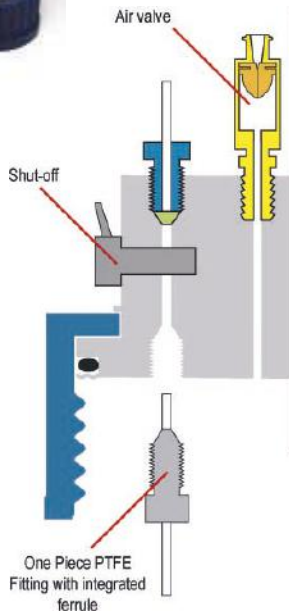
Safe venting for pressure equalization during the solvent supply by integrated air valve. Protection against dangerous solvent vapours.

### Available connectors for tubing:

- 1.6mm (1/16") OD
- 2.3mm OD
- 3.2mm (1/8") OD

Cat.No	Description
SCA-107019	Safety Cap I, GL 45 1 port for 3.2mm (1/8") OD tubing
SCA-107909	Safety Cap II, GL 45 2 ports for 3.2mm (1/8") OD tubing
SCA-107910	Safety Cap III, GL 45 3 ports for 3.2mm (1/8") OD tubing
SCA-108032	Safety Cap I, GL 45 for 3/16" tubing 1 port for 4.7mm (3/16") OD tubing

*Adapters for other thread sizes available*



## Safety Caps GL 45 - with Shut-Off

Remove or exchange your reservoirs easily by using the **shut-off** to stop the liquid flow. Especially recommended for HPLC use.

### Available connectors for tubing:

- 1.6mm (1/16") OD
- 2.3mm OD
- 3.2mm (1/8") OD

Cat.No	Description
SCA-107119	Safety Cap I with Shut-Off, GL 45 1 port for 3.2mm (1/8") OD tubing
SCA-107919	Safety Cap II with Shut-Off, GL 45 2 ports for 3.2mm (1/8") OD tubing
SCA-107920	Safety Cap III with Shut-Off, GL 45 3 ports for 3.2mm (1/8") OD tubing

*Adapters for other thread sizes available*



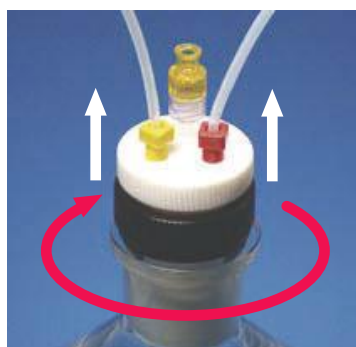
## Safety Caps (2 in 1) for GL 45

Ports with shut-off plus 1 standard port each.

### Available connectors for tubing:

- 1.6mm (1/16") OD
- 2.3mm OD
- 3.2mm (1/8") OD

Cat.No	Description
SCA-107219	Safety Cap II (2 in 1), GL 45 1 port (standard), 1 port with shut-off
SCA-107319	Safety Cap III (2 in 1), GL 45 1 port (standard), 2 ports with shut-off



## Safety Cap for NS 29/32mm bottles

For ground neck bottles with NS 29/32mm diameter. With counter nut for easy disconnecting and removal even after long time of use. **Ports for tubing with 1.6mm (1/16"), 2.3mm and 3.2mm (1/8") OD.**

Cat.No	Description	Pk
SCA-107607	Safety Cap for NS 29/32 bottles 2 ports for tubing with 3.2mm (1/8") OD	1



## Adapter: GL45 to NS 29/32mm

For use with GL45 Safety Caps on bottles with a NS 29/32mm ground neck. **With counter nut** for easy disconnecting and removal even after long time of use.

Cat.No	Description	Pk
SCA-107509	Adapter GL45 to NS 29/32mm Core material: PTFE. Counter nut: PP.	1



NEW !!!

## Air Valve for Safety Caps

Appropriate for all Safety Caps. **Recommended service life: 6 months..**

Cat.No	Description	Pk
SCA-107010	Air Valve for Safety Caps	1
SCA-117010;1	Air Valve with Filter Function	1



## Bottles (Clear Glass) - GL 45 Thread

Round bottles with scale (ml) and screw cap.

**Also available with protective covering!**

Cat.No	Volume	Cat.No. with protective Covering
SCA-501117	250 ml	SCA-101994
SCA-501116	500 ml	SCA-101995
SCA-501113	1000 ml	SCA-101996
SCA-501118	2000 ml	SCA-101997
SCA-501125	5000 ml	SCA-101998



## Bottles (Brown Glass) - GL 45 Thread

Round bottles (brown glass) with scale (ml) and screw cap.

Cat.No	Volume
SCA-501121	250 ml
SCA-501120	500 ml
SCA-501119	1000 ml



## Square Bottles (Clear Glass) - GL 45 Thread

Four-cornered bottles for space saving placement. Each bottle with scale (ml) and screw cap.

Cat.No	Volume
SCA-501112	250 ml
SCA-501115	500 ml
SCA-501110	1000 ml

## Safety Waste Caps for Safe Disposal of Liquid Waste

Find appropriate Safety Waste Caps for most common thread sizes on the following pages.

The exhaust filters can be used with any SCAT Safety Waste Cap.

Only pure PTFE and PE is used for the construction of Safety Waste Caps, so they have a high chemical resistance against aggressive organic solvents.

The exhaust filters are suitable for all Safety Waste Caps and can be exchanged easily.



The exhaust filter absorbs **99%** of all volatile gases and avoids unfiltered escape of hazardous vapours. The filter is charged with a special granulate which has a specific filtering surface of **1.200 m<sup>2</sup>/g** - the optimum filter media for any type of solvent vapours. The different sizes of exhaust filters have the following real filtering surface:

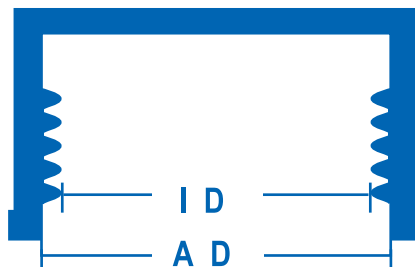
- Size S: **28.800 m<sup>2</sup>**
- Size M: **57.600 m<sup>2</sup>**
- Size L: **120.000 m<sup>2</sup>**

## Safety Waste Caps

Each Safety Waste Cap has got a port for the exhaust filter. Fittings and ferrules for tubing with 2.3mm and 3.2mm (1/8") OD are included in delivery.

Adapters and ports for other tubing size are also available.

Please note this information for ordering:



ID = Internal Diameter of the Cap Thread  
AD = External Diameter of the Cap Thread



### Thread S 60/61



ID approx. 55.5 mm, AD approx. 61 mm



Cat Nbr.	SCA-107918	SCA-107925	SCA-107916	SCA-107944
Tubing Ports	3x 2.3/3.2mm OD	2x 2.3/3.2mm OD	3x 2.3/3.2mm OD	2x 2.3/3.2mm OD
Leak Ports	---	1x 6-8mm ID	---	1x 6-8mm ID
Antistatic Port	---	---	Yes	Yes

*Note: The exhaust filteres are not included. Please order your exhaust filteres separately.*



### S 60 / S 61 - Containers (PE-HD - optional: conductive PE-HD)

Select from different Materials: PE-HD or **electrically conductive PE-HD**. Each container delivered with screw cap and UN approval.

Cat Nbr.	Volume	Material	Measurements (LxBxH) in mm
SCA-107953	10 L	PE-HD (conductive)	198 x 264 x 298
SCA-108028	10 L	PE-HD (conductive)	230 x 195 x 340
SCA-108027	20 L	PE-HD (conductive)	298 x 198 x 498
SCA-107956	20 L	PE-HD (translucent)	290 x 255 x 390
SCA-107959	30 L	PE-HD (translucent)	380 x 280 x 400
SCA-108042	10 L	PE-HD (conductive)	
<b>NEW</b>		with level floater	380 x 280 x 420
SCA-108043	20 L	PE-HD (conductive)	
<b>NEW</b>		with level floater	298 x 198 x 518
SCA-108056	20 L	PE-HD (translucent)	
<b>NEW</b>		with level floater	290 x 255 x 450

# TK HPLC Safety Waste Caps



## Thread GL 45



ID approx. 41.5 mm, AD approx. 45 mm



Leak port for bigger tubing sizes

Cat Nbr.	SCA-107912	SCA-107923
Tubing Ports	3x 2.3/3.2mm OD	2x 2.3/3.2mm OD
Leak Ports	---	1x 6-8mm ID
Antistatic Port	---	---



## GL 45 - Containers (PE-HD)

Qualified for any Safety Caps with GL45 thread.  
Made of chemically resistant PE-HD.

Cat Nbr.	Volume	Measurements (LxBxH) in mm
SCA-107950	2.5 L	150 x 122 x 194
SCA-107951	5.0 L	192 x 145 x 247
SCA-107952	10.0 L	231 x 192 x 317



## Thread S 55



ID approx. 50.5 mm, AD approx. 55 mm



Cat Nbr.	SCA-107917	SCA-107924	SCA-107936	SCA-107943
Tubing Ports	3x 2.3/3.2mm OD	2x 2.3/3.2mm OD	3x 2.3/3.2mm OD	2x 2.3/3.2mm OD
Leak Ports	---	1x 6-8mm ID	---	1x 6-8mm ID
Antistatic Port	---	---	Yes	Yes



## S 55 - Containers (PE-HD)

Qualified for any Safety Caps with S55 thread.  
Made of chemically resistant PE-HD.

Cat Nbr.	Volume	Thread	Measurements (LxBxH) in mm
SCA-107957	5.0 L	S 55	182 x 162 x 235
SCA-107955	10.0 L	S 55	230 x 196 x 310



## Thread S 51



ID approx. 45.5 mm, AD approx. 50 mm



Cat Nbr.	SCA-107930	SCA-107922	SCA-107935	SCA-107942
<b>Tubing Ports</b>	3x 2.3/3.2mm OD	2x 2.3/3.2mm OD	3x 2.3/3.2mm OD	2x 2.3/3.2mm OD
<b>Leak Ports</b>	---	1x 6-8mm ID	---	1x 6-8mm ID
<b>Antistatic Port</b>	---	---	Yes	Yes

*Note: The exhaust filteres are not included. Please order your exhaust filteres separately.*



## S 51 - Containers (PE-HD)

Qualified for any Safety Caps with S51 thread.  
Made of chemically resistant PE-HD.

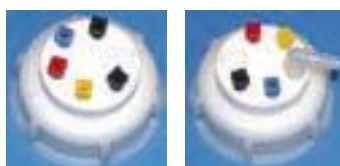
Cat Nbr.	Volume	Thread	Measurements (LxBxH) in mm
SCA-107958	5.0 L	S 51	165 x 190 x 223



## Thread S 65



ID approx. 62 mm, AD approx. 65.5 mm



Ports and connectors for other tubing sizes are also available !

Cat Nbr.	SCA-108046	SCA-108047
<b>Tubing Ports</b>	5x 2.3/3.2mm OD	4x 2.3/3.2mm OD
<b>Leak Ports</b>	---	1x 6-8mm ID
<b>Antistatic Port</b>	---	---



## S 65 - Containers (PE-HD)

Qualified for any Safety Caps with S65 thread.  
Made of chemically resistant PE-HD.

Cat Nbr.	Volume	Measurements (LxBxH) in mm
SCA-107704	10 L	Round Container S65 Height 430mm, Original Screw Cap Ø 210mm.



## Thread S 70/71



ID approx. 66 mm, AD approx. 71.5 mm



Cat Nbr.	SCA-107913	SCA-107926	SCA-107915	SCA-107945
<b>Tubing Ports</b>	3x 2.3/3.2mm OD	2x 2.3/3.2mm OD	3x 2.3/3.2mm OD	2x 2.3/3.2mm OD
<b>Leak Ports</b>	---	1x 6-8mm ID	---	1x 6-8mm ID
<b>Antistatic Port</b>	---	---	Yes	Yes



## S 70 / S 71 - Containers (PE-HD, electroconductive)

Qualified for any Safety Caps with S70 / 71 thread.  
Made of chemically resistant PE-HD, **electroconductive or translucent**

Cat Nbr.	Volume	Measurements (LxBxH) in mm	Kind
SCA-107954	30 L	265 x 425 x 365	electroconductive
SCA-107940	60 L	330 x 360 x 620	electroconductive
SCA-107710	60 L	330 x 360 x 620	translucent



## Thread B 83



ID approx. 83 mm, AD approx. 90 mm



Without photo

Ports and connectors for other tubing sizes are also available !

Cat Nbr.	SCA-107034	SCA-107036
<b>Tubing Ports</b>	4x 2.3/3.2mm OD	4x 2.3/3.2mm OD
<b>Leak Ports</b>	1x 6-8mm ID	---
<b>Antistatic Port</b>	---	---



## B 83 - Containers (PE-HD)

Qualified for any Safety Caps with B83 thread.  
Made of chemically resistant PE-HD.

Cat Nbr.	Volume	Measurements (LxBxH) in mm
SCA-107706	10 L	Round Container B83, Height 390mm, with Screw Cap

## Safety Waste Caps - with Safety Funnel

SCAT Safety Funnels are solely opened when disposing waste fluids. When releasing the opening mechanism, the waste container closes automatically. Furthermore you can discharge fluids permanently through the tubing ports (e.g. for HPLC applications).

The exhaust filter avoids unfiltered escape of hazardous vapours. The most reliable way to collect waste fluids.



Cat Nbr.	Thread	Tubing Ports with Safety Funnel
SCA-108132	S 50	2 ports for 2.3/3.2mm OD tubing
SCA-108033	S 55	2 ports for 2.3/3.2mm OD tubing
SCA-108034	S 60 / 61	2 ports for 2.3/3.2mm OD tubing
SCA-108150	S 65	2 ports for 2.3/3.2mm OD tubing
SCA-108035	S 70 / 71	2 ports for 2.3/3.2mm OD tubing
SCA-108151	B 83	4 ports for 2.3/3.2mm OD tubing
SCA-108152	S 90	4 ports for 2.3/3.2mm OD tubing
SCA-108153	S 95	4 ports for 2.3/3.2mm OD tubing 1 leak port for 6-8mm ID tubing

*Please order your exhaust filters separately.*



**Optimum protection: Waste Cap with safety funnel and conductive container with level floater.**

# TK Exhaust Filters for Safety Caps

120,000 sqm screening surface versus hazardous vapours for clean air.

Our multicomponent granulate offers a specific filtering surface of 1.200 sqm/g and absorbs 99% of all particulate materials evaporating from your solvents.



The screening surfaces of the different filter sizes are:

**Size S:** 28.800 sqm

**Size M:** 57.600 sqm

**Size L:** 120.000 sqm

The lifetime of exhaust filters depends on concentration and chemical quality of the used solvent mixtures. To calculate the individual lifetime of the filters for your application, please ask your Sales Representative.



**Optional:**  
Exhaust filter with splash guard

## Exhaust Filters (standard)



Cat Nbr.	SCA-107911	SCA-107914	SCA-107615
Size	S	M	L

## Exhaust Filters (with splash guard)



Cat Nbr.	SCA-107985	SCA-107982	SCA-107986
Size	S	M	L
	with splash guard	with splash guard	with splash guard

## Join Adapters for Exhaust Filters



Not enough space in your lab? Don't worry - with our special adapters, you can fix the exhaust filter in any position you like. Practical, space-saving and flexible.

The extension offers more free moving space for connecting tubes to the cap. **The adapters can be joined in multiple ways (see photos).**

Cat Nbr.	Description	Picture	Profile
SCA-107621	Extension for exhausted filters <i>(can be joined with any other adapter)</i>		
SCA-107622	Angle adapter (fixed) for exhausted filters <i>(can be joined with any other adapter)</i>		
SCA-107624	Angle adapter for exhausted filters <i>(can be joined with any other adapter)</i>		



## Collect your solvents and laboratory waste safely

SCAT Safety Funnels are made up of electroconductive PE-HD. The **ball valve** only opens during disposal of liquid waste. Evaporation of hazardous solvent dases is prevented.



Available for most standard container sizes!  
The **earthing cable** (included in delivery) prevents electrostatic charge.



### Safety Funnels (PE-HD, electroconductive)

Available with and without sieve. Delivered with antistatic cable.

Cat Nbr.	Cap	Material	Cat Nbr. with sieve
SCA-107672	GL 45	PE-HD (electroconductive), black	SCA-108972
SCA-107674	S 51	PE-HD (electroconductive), black	SCA-108974
SCA-107675	S 55	PE-HD (electroconductive), black	SCA-108975
SCA-107671	S 60 / 61	PE-HD (electroconductive), black	SCA-108971
SCA-107676	S 65	PE-HD (electroconductive), black	SCA-108976
SCA-107678	S 70 / 71	PE-HD (electroconductive), black	SCA-108978
SCA-107677	B 83	PE-HD (electroconductive), black	SCA-108977
SCA-107673	S 90	PE-HD (electroconductive), black	SCA-108973



### Safety Funnels (PE-HD)

Available with and without sieve. Delivered with antistatic cable.

Cat Nbr.	Cap	Material	Cat Nbr. with sieve
SCA-107972	GL 45	PE-HD, white	SCA-108672
SCA-107974	S 51	PE-HD, white	SCA-108674
SCA-107975	S 55	PE-HD, white	SCA-108675
SCA-107971	S 60 / 61	PE-HD, white	SCA-108671
SCA-107976	S 65	PE-HD, white	SCA-108676
SCA-107978	S 70 / 71	PE-HD, white	SCA-108678
SCA-107979	B 83	PE-HD, white	SCA-108679
SCA-107973	S 90	PE-HD, white	SCA-108673



### Stainless Steel Sieve (singular) for Safety Funnels

Cat Nbr.	Description
SCA-107715	Stainless steel sieve, singular, for safety funnels. Housing: PE-HD, electroconductive, black. Sieve: Stainless steel.

# TK Accessories and Consumables

## Polypropylene Fittings

For 1.6, 2.3 and 3.2mm OD tubing (same fitting for all sizes).  
Please choose suitable PTFE ferrules for your tubing size separately (see below).



Cat Nbr.	Description	Unit
SCA-160304	Polypropylene Fittings, coloured	Box of 10

## PTFE Ferrules

For Polypropylene Fittings. Please take care of correct assembling



Cat Nbr.	Description	Unit
SCA-107905	PTFE Ferrules, ID=1.6mm (1/16")	Box of 10
SCA-107906	PTFE Ferrules, ID=2.3mm	Box of 10
SCA-107908	PTFE Ferrules, ID=3.2mm (1/8")	Box of 10

## PTFE Plugs for Safety Caps

If several Safety Cap ports are temporarily not in use, you can close them with PTFE plugs. That way you maintain protection against escaping vapours.



Cat Nbr.	Description	Unit
SCA-160504	PTFE Plugs for Standard Ports	Box of 10
SCA-160506	PTFE Plug for Leak Ports	Box of 1
SCA-107620	PTFE Plug for Exhaust Filter Ports	Box of 1

## PTFE 3-way Angled Collector for Leak Port

Suitable for the leak port on all Safety Caps. Space-saving version.



NEW

Cat Nbr.	Description	Unit
SCA-160131	3-way Angled Collector for Leak Port 3 Ports for 1.6/2.3/3.2mm OD tubing Materials: Collector PTFE, Fittings Polypropylene	Box of 1
SCA-160130	3-way Angled Collector for Leak Port 2 Ports for 1.6/2.3/3.2mm OD tubing 1 Leak Port for 6-8mm ID tubing Materials: Collector PTFE, Fittings Polypropylene	Box of 1

## PTFE Distance Rings for GL45 Safety Caps

Distance Rings for Safety Caps. For short neck bottles.



NEW

Cat Nbr.	Description	Unit
SCA-107020	PTFE Distance Rings for GL 45	Box of 1

## Electroconductive Plastic Tubing

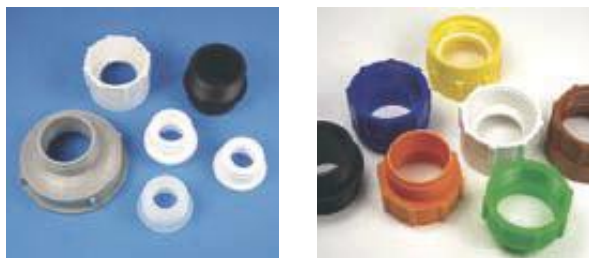
Made of electrically conductive PTFE. Extremely light, for safe transfer of flammable and sensitive fluids



Cat Nbr.	ID	OD	Profile
SCA-10801	6.0 mm	8.0 mm	Plane

## Thread Adapters

Suit Safety Caps to nearly any kind of bottle or container. Simply choose a qualified adapter for your thread size.



Cat Nbr.	Container	Safety Cap	Material, Colour
SCA-107993	GL 32	GL 45	PTFE, white
SCA-107996	GL 32	GL 45	Polypropylene, natural
SCA-107992	GL 38	GL 45	PTFE, white
SCA-107995	GL 38	GL 45	Polypropylene, natural
SCA-107991	GL 40/S 40	GL 45	PTFE, white
SCA-107994	GL 40/S 40	GL 45	Polypropylene, natural
SCA-117094	GL 45	S 55	PTFE, white
SCA-107094	GL 45	S 55	Polypropylene, natural
SCA-107093	S 51	GL 45	Polypropylene, natural
SCA-117095	S 51	S 55	PTFE, white
SCA-107095	S 51	S 55	Polypropylene, natural
SCA-107097	S 51	S 60	Polypropylene, natural
SCA-107099	S 55	GL 45	Polypropylene, natural
SCA-107096	S 55	S 60	Polypropylene, natural
SCA-108021	2" BSP	S 60 (interior)	Polypropylene, grey
SCA-108022	2" BSP	S 60 (exterior)	Polypropylene, black
SCA-108444	2" Fine Thread	S 63 - S 65	Polypropylene, white
SCA-107022	2" Fine Thread	TriSure Grob	Polypropylene, orange

## Y-Connectors (Polypropylene)

For any kind of flexible tubing (e.g. silicone)



Cat Nbr.	for Tubing ID	Cat Nbr.	for Tubing ID
SCA-107801	3 mm	SCA-107804	6-7 mm
SCA-107802	4 mm	SCA-107806	8-9 mm
SCA-107803	5 mm	SCA-107807	11 mm

## Straight Connectors for Leak Port

These connectors fit into the leak port on any SCAT Safety Waste Cap.



Leak port for major sized tubing

Cat Nbr.	OD (Tubing ID)	Cat Nbr.	OD (Tubing ID)
SCA-107811	2-3 mm	SCA-107814	5-6 mm
SCA-107812	3-4 mm	SCA-107816	6-8 mm
SCA-107813	4-5 mm	SCA-107817	10 mm

## Angle Connectors for Leak Port

These connectors fit into the leak port on any SCAT Safety Waste Cap.

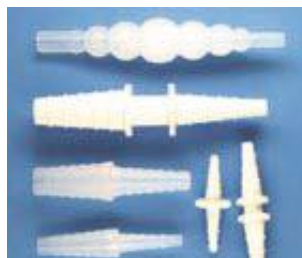


Leak port for major sized tubing

Cat Nbr.	OD (Tubing ID)
SCA-107808	6.40 - 8.00 mm
SCA-107810	9.50 - 10.50 mm

## Conical Connectors and Reducers

For any kind of flexible tubing (e.g. silicone).



Cat Nbr.	Side 1 tubing ID	Side 2 Tubing ID
SCA-107818	11 to 15 mm	7 to 12 mm
SCA-107819	7 to 11 mm	4 to 7 mm
SCA-107820	10.5 to 16 mm	6.5 to 12 mm
SCA-107821	12 to 16 mm	4 to 8 mm
SCA-107822	6.5 to 11 mm	3 to 7.5 mm
SCA-107823	6.5 to 11 mm	6.5 to 11 mm
SCA-107824	4.2 to 8 mm	4.2 to 8 mm
SCA-107825	3 to 5.9 mm	3 to 5.9 mm
SCA-107826	5 to 18 mm	7.5 to 18 mm

# Tk HPLC Column Heaters

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CIL heaters can accommodate any type of length of HPLC columns from any supplier.

## Main features are:

- Functional and Compact**  
 Can be used with any instrument and any column  
 Remote control  
 Rheodyne or Vici valves can be installed internally  
 Mobile phase preheating (optional)
- Accurate**  
 The opposite metal mesh beds guarantee uniform temperature spread as the metal acts as an ideal heat conductor while, at the same time, allowing air to circulate freely (patented).  
 Electronic temperature regulation produces reproducible retention times (CV < 1%)
- Safe**  
 Mobile phase leaks easily detectable (leak detector)



## Standard Column Heaters

Cat. Nbr.	Model	Dimensions	T range	Stability	Accuracy	Applications
CI-100-025-220P	Croco-Cil Short	25x8x8 cm	RT-99°C	±0.1°C	±0.5°C	Short columns and guard columns
CI-100-040-220P	Croco-Cil Standard	40x8x8 cm	RT-99°C	±0.1°C	±0.5°C	Standard length columns and guard columns
CI-100-080-220P	Croco-Cil Double Length	80x8x8 cm	RT-99°C	±0.1°C	±0.5°C	Long columns
CI-100-040-220TW	Croco-Cil Triple Wide	40x24x8 cm	RT-99°C	±0.1°C	±0.5°C	GPC, 1" ID columns
CI-G3080	Gecko-2000	40x8x10.5 cm	30-80°C	±0.2°C	±1.0°C	Anal. Column and guard columns
CI-560PEL	560CIL (Peltier Effect)	40x10x10 cm	5-60°C	±0.5°C	±1.0°C	Anal. Column and guard columns
CI-99PEL	IglooCil (Peltier Effect)	41x16x11 cm	5-99°C	±0.5°C	±0.8°C	Anal. Column and guard columns

# TK Sample Injection Rheodyne™ Valves

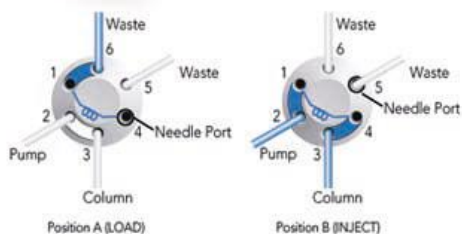
Complet range of HPLC sample injectors, from nanoscale to preparative applications.

## Rheodyne Injecion Valves for Microscale Applications

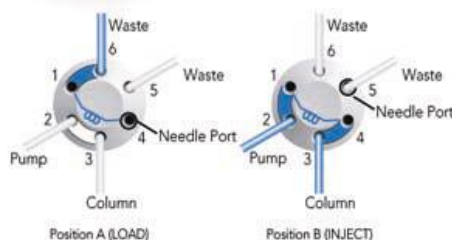
### Model 8125

Manufactured in stainless steel and designed for 1.0 and 2.0 mm microbore columns. This sample injector can also be used for analytical columns between 3.0 and 5.0 mm ID. Maximum recommended injection volume is 200 µl.

Cat.No	Description
RH-8125	Microscale sample injector, dual mode, stainless steel

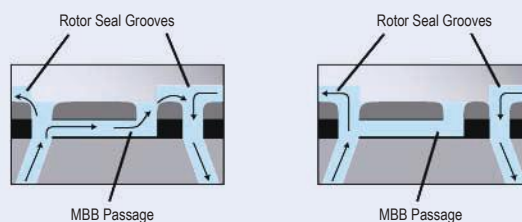
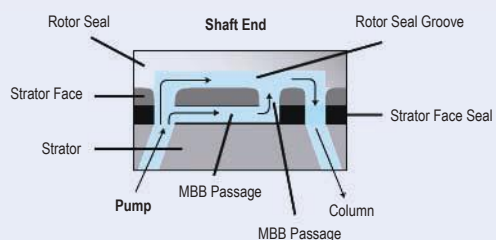


Cat.No	Description	Stator Material
RH-7725	Dual Mode Analytical Injector	Stainless Steel
RH-7725i	Dual Mode Analytical Injector with switch	Stainless Steel
RH-9725	Dual Mode Analytical Injector	PEEK
RH-9725i	Dual Mode Analytical Injector wiyh switch	PEEK



### Patented Rheodyne MBB Design:

Flow paths of Model 7725 and 9725 with patented Rheodyne MBB design



## Rheodyne Injecion Valves for Analytical Applications

### Models 7725, 7725i, 9725 and 9725i

All these well recognized valves are manufactured in 316 stainless steel. Some specialized features include :

- The Rheodyne patented Make-Before-Break (MBB™) architecture allows continuous flow between LOAD and INJECT positions wich greatly reduces transient pressure shocks that disrupt your system.
- Wide 30° portangles offer easier access to fittings using the Rheodyne wrench (P/N RH-6810).
- Front-end pressure screw makes easy to adjust and maintain pressure.
- A built-in position sensor switch ("i" versions) provides a "start" signal to the instrument
- Small diameter internal flow paths assure minimal dispersion.

## Rheodyne Injection Valves for Preparative Applications

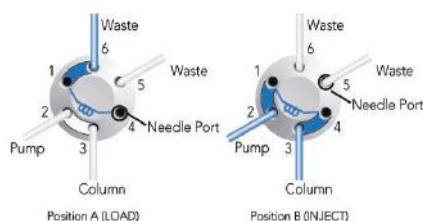
Models 3725-038, 3725i-038, 3725 and 3725i



These valves have been designed for high injection volumes and flow rates up to 100 ml/min. 1/8" or 1/16" tubing can be attached using the right fitting adapter.

MBB™ patented Rheodyne architecture allows continuous and stable flow when switching from LOAD to INJECT.

Cat.No	Description
RH-3725-038	Preparative Scale Injector, Dual Mode, Stainless Steel
RH-3725i-038	Preparative Scale Injector with switch, Dual Mode, Stainless Steel
RH-3725	Preparative Scale Injector, Dual Mode, PEEK
RH-3725i	Preparative Scale Injector with switch, Dual Mode, PEEK



## Rheodyne Rotor Seals and Stators



- Genuine Rheodyne Parts
- For Popular Rheodyne Valves

A rotor seal is a polymeric disc that makes a high pressure seal against the stator in a valve. The seal wears with use and is one of the few valve parts that may need to be replaced routinely. Stators need replacement only if the threaded ports are damaged or the sealing surface is scored.

Vespel™ blend Rotor Seals have an operating pH range of 0-10. Tefzel™ are usable at a pH range from 0 to 14. Some stators can also be manufactured in stainless steel.

### Rotors Vespel

Cat.No	Valve	Material
RH-7010-039	7010,7000,7040	Vespel
RH-7030-003	7030	Vespel
RH-7060-070	7060,7066	Vespel
RH-7125-047	7125,7725	Vespel
RH-7410-038	7410	Vespel
RH-7413-013	7413	Vespel
RH-8125-038	8125	Vespel

### Rotors Tefzel

Cat.No	Valve	Material
RH-7010-071	7010,7010-087,7000,7040	Tefzel
RH-7030-015	7030	Tefzel
RH-7060-074	7060,7066,9060	Tefzel
RH-7125-079	7125,7125-081,7725	Tefzel
RH-7410-075	7410	Tefzel
RH-8125-097	8125	Tefzel
RH-9010-051	9010	Tefzel
RH-9125-082	9125,9725	Tefzel

### Rotors Peek

Cat.No	Valve	Material
RH-3030-005	3030,3030-038	Peek
RH-3060-001	3060,3060-038	Peek
RH-3710-008	3000,3000-038,3710,3710-038	Peek
RH-3725-018	3725,3725-038	Peek
RH-7610-011	7610-400,7610-600	Peek

### Stators

Cat.No	Valve
RH-3060-009	3060
RH-3725-006	3725,3710-038,3000-038
RH-3725-085	3725-038,3710-038,3000-038,3030-038
RH-7010-040	7010,7125,7000,7030,7040
RH-7010-066	7125-081,7010-087
RH-7060-039	7060,7066
RH-7410-041	7410,7413
RH-7610-048	7610-600
RH-7725-010	7725
RH-8125-098	8125
RH-9060-016	9060
RH-9125-043	9125,9010,9030,9725

# TK Sample Injection Rheodyne™ Valves

## Rheodyne RheBuild™ Kits

Included in each individualized RheBuild Kit are genuine Rheodyne parts, tools and instructions to maintain the precision and performance of your Rheodyne valve. Rheodyne kits eliminate individual part ordering at a very convenient price.



RheBuild Kit	Model
RH-3725-999	3725, 3725i, 3725-038, 3735i-038
RH-7010-996	Conversion Kit with strator for 7010 model
RH-7010-997	7010 strator included
RH-7010-999	7010 and 7010 models
RH-7125-999	7125, 7126
RH-7410-999	7410
RH-7520-999	7520, 7526
RH-7725-999	7725, 7725i
RH-8125-999	8125, 8126
RH-9010-999	9010
RH-9125-999	9125, 9126
RH-9725-999	9725, 9725i

## Sampling Loops for Rheodyne Injection Valves

Available in stainless steel and PEEK. Please note that stainless steel loops are not interchangeable between valve types 7125, 7010 and 7725.



## Stainless Steel Sampling Loops for 7125 and 7010 Valves (Not to be used in 7725 Valves)

Cat.No.	Volume	Tubing
RH-7020	5 µL Loop	0,18 mm (0,007")ID x 1/16" OD
RH-7021	10 µL Loop	0,30 mm (0,012")ID x 1/16" OD
RH-7022	20 µL Loop	0,51mm (0,020")ID x 1/16" OD
RH-7023	50 µL Loop	0,51 mm (0,020")ID x 1/16" OD
RH-7024	100 µL Loop	0,51 mm (0,020")ID x 1/16" OD
RH-7025	200 µL Loop	0,76 mm (0,030")ID x 1/16" OD
RH-7026	500 µL Loop	0,76 mm (0,030")ID x 1/16" OD
RH-7027	1000 µL Loop	0,76 mm (0,030")ID x 1/16" OD
RH-7028	2000 µL Loop	1 mm (0,040")ID x 1/16" OD
RH-7029	5000 µL Loop	1 mm (0,040")ID x 1/16" OD
RH-1876	10000 µL Loop	2 mm (0,080")ID x 1/8" OD
RH-1877	20000 µL Loop	2 mm (0,080")ID x 1/8" OD

## Stainless Steel Sampling Loops for 3725-038 and 3725i-038 valves

Cat.No.	Volume	Tubing
RH-3065-018	2000 µL Loop	2 mm (0,080")ID x 1/8" OD
RH-3065-019	5000 µL Loop	2 mm (0,080")ID x 1/8" OD
RH-3065-023	10000 µL Loop	2 mm (0,080")ID x 1/8" OD
RH-3065-025	20000 µL Loop	2 mm (0,080")ID x 1/8" OD

## Stainless Steel Sampling Loops for 7725 and 7725i (Not to be used in 7125 valves)

Cat.No.	Volume	Tubing
RH-7755-020	5 µL Loop	0,18 mm (0,007")ID x 1/16" OD
RH-7755-021	10 µL Loop	0,30 mm (0,012")ID x 1/16" OD
RH-7755-022	20 µL Loop	0,30mm (0,012")ID x 1/16" OD
RH-7755-023	50 µL Loop	0,51 mm (0,020")ID x 1/16" OD
RH-7755-024	100 µL Loop	0,51 mm (0,020")ID x 1/16" OD
RH-7755-025	200 µL Loop	0,76 mm (0,030")ID x 1/16" OD
RH-7755-026	500 µL Loop	0,76 mm (0,030")ID x 1/16" OD
RH-7755-027	1000 µL Loop	0,76 mm (0,030")ID x 1/16" OD
RH-7755-028	2000 µL Loop	1 mm (0,040")ID x 1/16" OD
RH-7755-029	5000 µL Loop	1 mm (0,040")ID x 1/16" OD
RH-1876	10000 µL Loop	2 mm (0,080")ID x 1/8" OD
RH-1877	20000 µL Loop	2 mm (0,080")ID x 1/8" OD

## Stainless Steel Sampling Loops for 8125 and 7010 Valves (Please use RH-7755-029 for vol. >50 µl)

Cat.No.	Volume	Tubing
RH-8020	5 µL Loop	0,2 mm (0,008")ID x 1/16" OD
RH-8021	10 µL Loop	0,2 mm (0,008")ID x 1/16" OD
RH-8022	20 µL Loop	0,25 mm (0,010")ID x 0,020" OD
RH-8023	50 µL Loop	0,3 mm (0,012")ID x 1/16" OD

## PEEK Sampling Loops for 3725 and 3725i Valves



Cat.No.	Volume	Tubing
RH-3055-018	2000 µL Loop	1,6 mm(0,062")ID x 1/8" OD
RH-3055-019	5000 µL Loop	1,6 mm(0,062")ID x 1/8" OD
RH-3055-023	10000 µL Loop	2 mm(0,080")ID x 1/8" OD
RH-3055-025	20000 µL Loop	2 mm(0,080")ID x 1/8" OD

## PEEK Sampling Loops for 9725 and 9010

Cat.No.	Volume	Tubing
RH-7755-015	2 µL Loop	Internal Loop
RH-9055-020	5 µL Loop	0,18 mm(0,007")ID x 1/16" OD
RH-9055-021	10 µL Loop	0,25 mm(0,010")ID x 1/16" OD
RH-9055-022	20 µL Loop	0,25 mm(0,010")ID x 1/16" OD
RH-9055-023	50 µL Loop	0,51 mm(0,020")ID x 1/16" OD
RH-9055-024	100 µL Loop	0,51 mm(0,020")ID x 1/16" OD
RH-9055-025	200 µL Loop	0,51 mm(0,020")ID x 1/16" OD
RH-9055-026	500 µL Loop	0,76 mm(0,030")ID x 1/16" OD
RH-9055-027	1000 µL Loop	0,76 mm(0,030")ID x 1/16" OD
RH-9055-028	2000 µL Loop	0,76 mm(0,030")ID x 1/16" OD
RH-9055-029	5000 µL Loop	0,76 mm(0,030")ID x 1/16" OD
RH-9055-033	10000 µL Loop	0,76 mm(0,030")ID x 1/16" OD

## PEEK Sampling Loops for 7725 and 7725i

Cat.No.	Volume	Tubing
RH-7755-015	2 µL Loop	Internal Loop

## RHEFLEX Fittings

Cat.No.	Description
RH-6000-083	Nut and Ferrule for 1/8" Loop, 5u.
RH-6000-210	Ferrules for 1/8" loops, 10u.
RH-6000-211	Nuts and ferrules for 1/16" Loops, 10u.
UP-P-331	Super Flangeless Nut for RH-1876 and RH-1877 1/8" Loops, 1u.
UP-P-350X	Super Flangeless Ferrule for RH-1876 and RH-1877 Loops, 10u.
UP-P-654	PEEK adapter for RH-1876 and RH-1877 1/8" Loops, 1u.

## RHEFLEX Fittings for PEEK Loops

Cat.No.	Description
RH-6000-251	PEEK Ferrules for 1/16" Loops, 10u
RH-6000-254	PEEK Nuts and ferrules for 1/16" Loops, 10u
RH-6000-078	PEEK Nuts and Ferrules for 1/8" Loops, 1u
RH-6000-079	PEEK Ferrules for 1/8" Loops, 5u

## Rheodyne Accessories

### Accessories for the Injection Port

Cat.No.	Description
RH-7012	Stainless Steel Loop Filler Point
RH-9012	PEEK Loop Filler Point
RH-9013	PEEK Needle Port
RH-7125-054	Needle Port Cleaner
RH-9125-076	Suction Needle Adapter (for Model 9725)

### Mounting Brackets

Rheodyne mounting brackets and panels of different shapes and sizes organize and provide a sturdy support for Rheodyne valves. The Ring Stand Mounting Bracket now allows the valves to mount onto common laboratory equipment.

Cat.No.	Description
RH-7160	Mounting Panel
RH-7160-010	Valve Angle Bracket
RH-7160-029	Ring Stand Mounting Bracket



### Other Accessories

Cat.No.	Description
RH-7161-020	Position Sensor Switch for 7125
RH-7161-016	Pos. Sensor Switch for 7010, 7410, 7000, 7030, and 7040
RH-7165	Pos. Sensor Switch for 7250
RH-6810	Rheodyne Wrench

