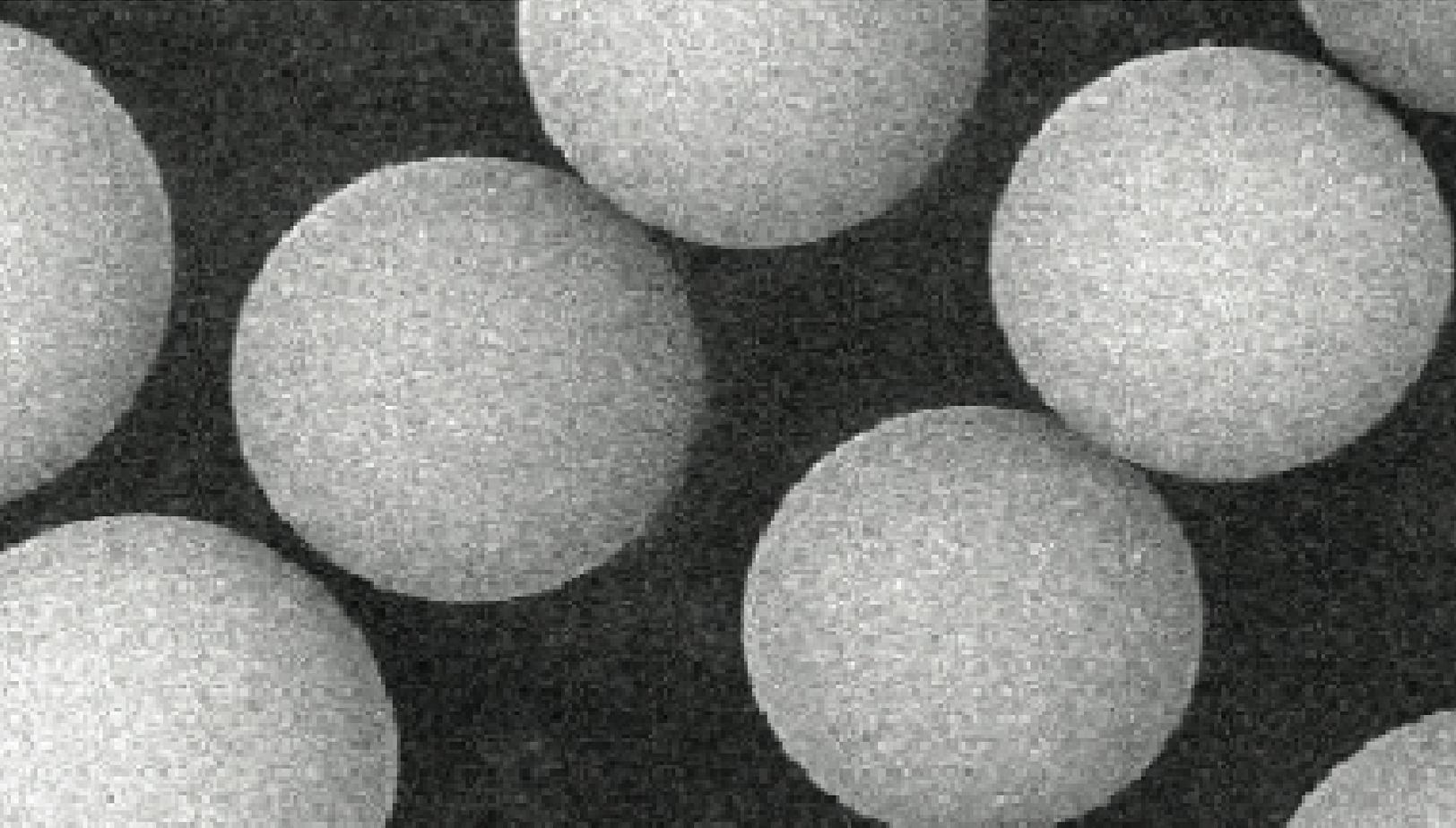


HiQ SIL HPLC Columns



anachem

KYA Technologies of Japan



Electron micrograph of 5um silica gel particle

KYA Technologies Corporation, Tokyo, Japan established in 1998 to develop a range of HPLC products. The latest product HiQ sil HS is a high performance silica for rapid separations under normal reverse phase applications.

Over the last 9 years we have developed a complete range of high quality columns in the HiQ sil™ series which has gained a loyal following in Japan and East Asia. The DiNa range of products is dedicated to NanoLC and NanoLC-MS. The DiNa™ (Direct Nano) series of instruments has become the industry standard for proteomics separations in Japan.

Introduction of the HiQ silTM series

HiQ silTM HPLC columns are made from an ultra purity silica gel as the starting material. The unique manufacturing process ensures high mechanical strength and a very regular particle size whilst minimising fines to give a long life under the toughest conditions.

The HiQ sil gel is manufactured in a range of particle sizes, pore sizes and with a variety of chemical surface bondings for reverse phase and normal phase chromatography.

Our QA/QC

Incoming material is checked in accordance with our intensive QC procedure to ensure the highest possible quality from the outset.

The silica gel is subject to chemical treatment under strict conditions to ensure batch-to-batch reproducibility.

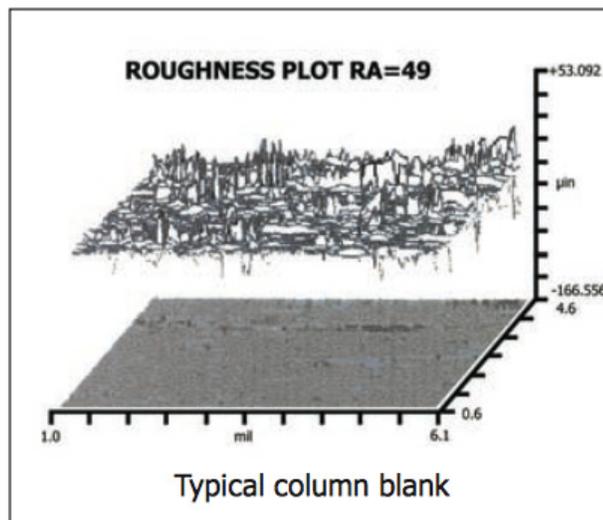
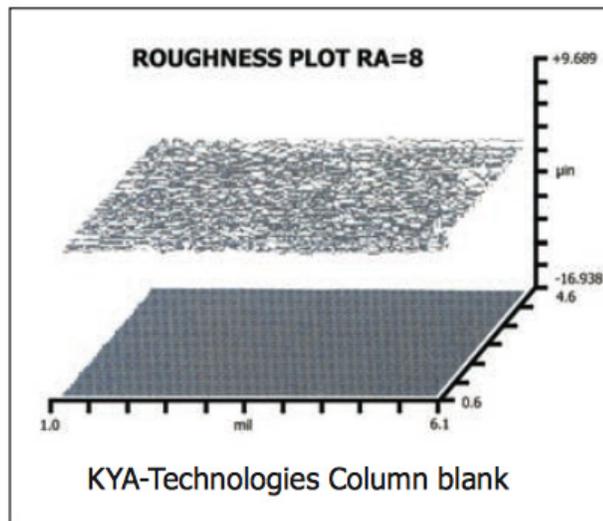
The columns are packed by trained experts under controlled conditions.

Before leaving the factory each column manufactured at KYA-Technologies is tested and a Column Test Report is attached to guarantee performance in your laboratory.

Our attention to detail doesn't end with the packing material, we are also concerned with the finish of blank columns. Our column blanks are manufactured from highly polished stainless steel. – a measure of the smoothness or flatness of the surface, expressed as the root average (Ra) in micro inches. The smaller the number, the smoother or flatter the surface. The surface finish of the inner diameter of our column blanks is extremely flat to eliminate preferential flow paths and eddy spots.

These topographic plots illustrate the difference in surface finish between our column blank (top) and other commercial available column blank (bottom).

The end fittings on each of our columns is also manufactured to the same high standard with accurate ZDV female threads.



Column Selection Guide

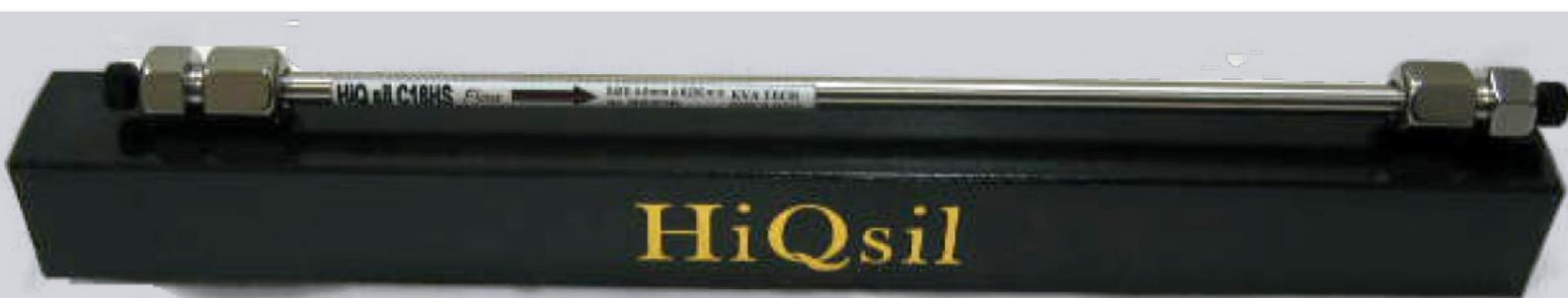
Sample characteristics		Separation mode	Product name	Base material	Functional group Particle and pore sizes
Water soluble Low polarity compounds to high polarity compounds		Reserved-phase distribution Separation by difference in polarity	HiQ sil C18 or C18HS	High Purity Silica gel	3um-100Å ; 3um-120Å 3um-200Å ; 5um-100Å 5um- 120Å; 5um-300Å 10um-100Å; 10um-120Å 15um-120Å
			C8		3um-120Å; 5um-120Å 5um-300Å; 10um-120Å 15um-120Å
			C4		3um-120Å; 5um-120Å 5um-300Å
			C1		5um-120Å; 10um-120Å
			Ph		5um-120Å; 10um-120Å
			CN		5um-120Å; 10um-120Å
			NH2		5um-120Å; 10um-120Å
Organic solvent soluble Low polarity compounds	Soluble in polar solvents, such as methanol or etc	Normal phase distribution Separation by difference in adsorptivity	CN		5um-120Å; 10um-120Å
	Soluble in non-polar solvents, such as hexan		NH2		5um-120Å; 10um-120Å
			Normal phase distribution Separation by difference in adsorptivity		HiQ sil SIL

Guaranteed Performance HiQ C18HS

All HiQ C18HS columns have been tested to guarantee that every column gives excellent performance at the customers' site. A validation certificate is included with every HiQ C18HS column.



HiQ sil™ series for micro to Analytical to preparative



- Outstanding loadability
- Effective end-cap to minimize residual free silanol
- Outstanding acid and alkalinity resistance
- Excellent reproducibility
- Long life time – highly durable
- High pH tolerance for acid and alkali
- Good retention even with 100% aqueous eluents



- New HiQ sil C18 HS high performance high resolution analytical columns
- Capillary
- Semi-micro
- Analytical
- Preparative
- NanoLC spray columns
- DiNa trap columns

Excellent batch to batch reproducibility

Reproducibility on batch-to-batch productions has been further improved due to our strict manufacturing control. The following data shows chromatograms from HiQ silTM C18HS columns taken from three different batches.

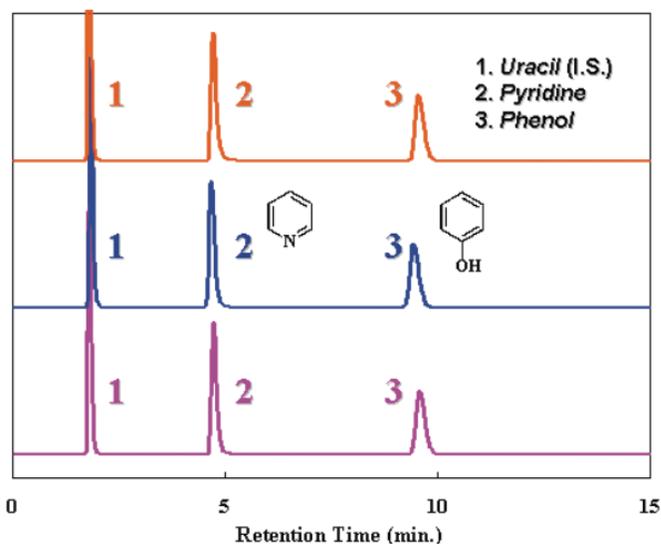
Measurement conditions :

Column: HiQ silTM C18HS 4.6mmID x 150mmL

Mobile Phase: CH3OH/H2O=30/70

Flow rate : 1.0mL/min Temperature: 40 degC

Detector : UV 254nm



Excellent peak shape

The new HiQ silTM HS packing material has great peak symmetry characteristics. NMR data shows that the free silanol groups are completely undetectable. The carbon loading is around 17%. Even with difficult materials the new HS packing offers great resolution with virtually no tailing.

Effective newly developed high carbon loading end-capping method has dramatically improved peak shape; this is due the near absence of free silica moieties. There is virtually no tailing on the peaks and excellent symmetrical peaks can be obtained from every HiQ silTM C18HS column.batches.

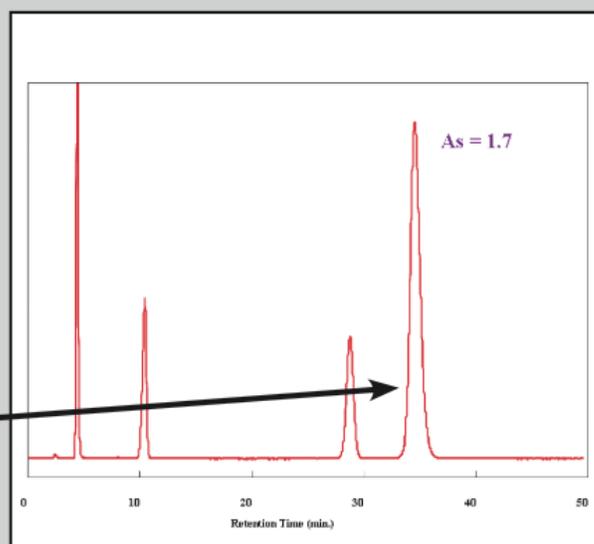
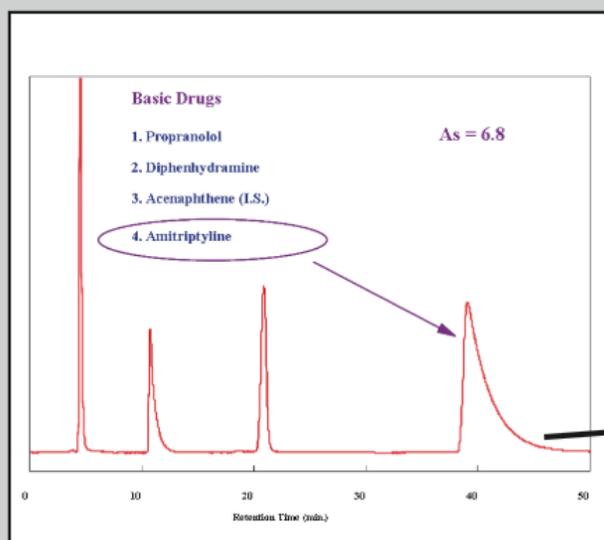
Measurement conditions :

Column: HiQ silTM C18HS 4.6mmID x 150mmL

Mobile Phase: CH3OH/20mM K2HPO4-KH2PO4(pH-7.0)-65/35

Flow rate : 1.0mL/min, Temperature: 40 degC

Detector : UV 254nm

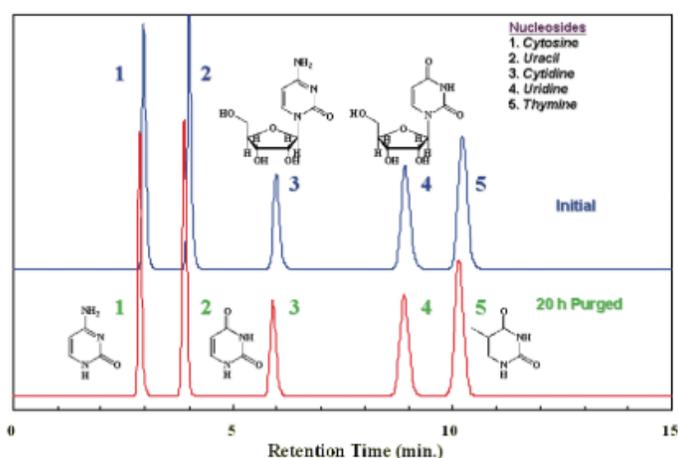


Excellent Sample Loading

HiQ sil has been developed for sample capacity whilst retaining good peak shape. The new packing material has shown a capacity up to 3 times higher than some popular brands. The key benefit of this new packing material is evident in preparative chromatography where you can obtain more material from fewer clean-up cycles, but it also aids regular chromatography for users that need to measure differences between very large and very small peaks; you can now improve the chromatography by loading the column with more material to improve the smaller peak's signal to noise.

Wide pH Tolerance in Both, Acid and Alkali Mobile Phases

Reproducibility on batch-to-batch productions has been further improved due to our strict manufacturing control. The following data shows chromatograms from HiQ sil™ C18HS columns taken from three different batches.



Even with 100% aqueous mobile phase, the HiQ sil™ C18HS show good retention.

Column: HiQ sil C18HS 4.6mmID x 150mmL

Mobile Phase: 100% H₂O

Flow Rate: 1.0mL/min

Temperature: 40 deg C

Detector: UV254nm

Analytical and Semi-Micro Columns

For regular analytical HPLC columns the typical sizes are still 3µm and 5µm particle size with either a 2mm or 4.6mm ID - Lengths do tend to vary according to application; but those assays which need high resolution still demand a 250mmL column. Now with improved resolution the 150mmL x 4.6 or (2mmID is becoming more and more popular due to lower solvent consumption, quarter the flow rate compared to a 4.6mmID) without compromising peak resolution.

Stationary phases are typically C8 and C18, but you can choose from the complete range of material including C1, C4, silica, cyano, amino and phenyl.



Typical column sizes

3µm 100Å C18		5µm 100Å C18	
A046-150-03-100HS	4.6mm ID x 150mm L	A046-150-05-100HS	4.6mm ID x 150mm L
A046-250-03-100HS	4.6mm ID x 250mm L	A046-250-05-100HS	4.6mm ID x 250mm L
A021-150-03-100HS	2.1mm ID x 150mm L	A021-150-05-100HS	2.1mm ID x 150mm L

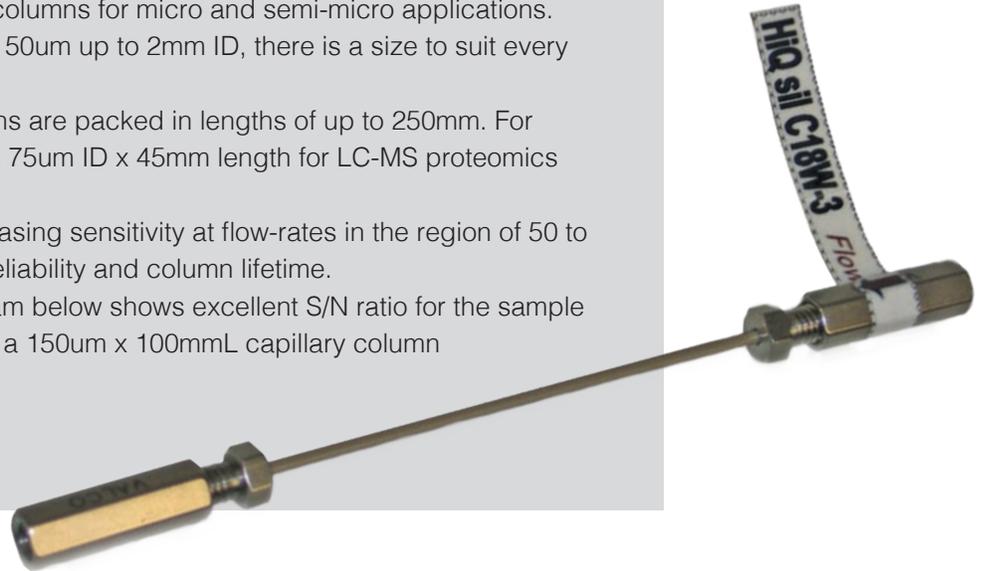
Semi-Micro and Capillary Columns for LC-MS Applications

The HiQ sil is packed into a range of columns for micro and semi-micro applications. Starting from narrow capillaries of just 50µm up to 2mm ID, there is a size to suit every low flow-rate application.

Columns for high resolution separations are packed in lengths of up to 250mm. For capacity the columns normally start at 75µm ID x 45mm length for LC-MS proteomics applications.

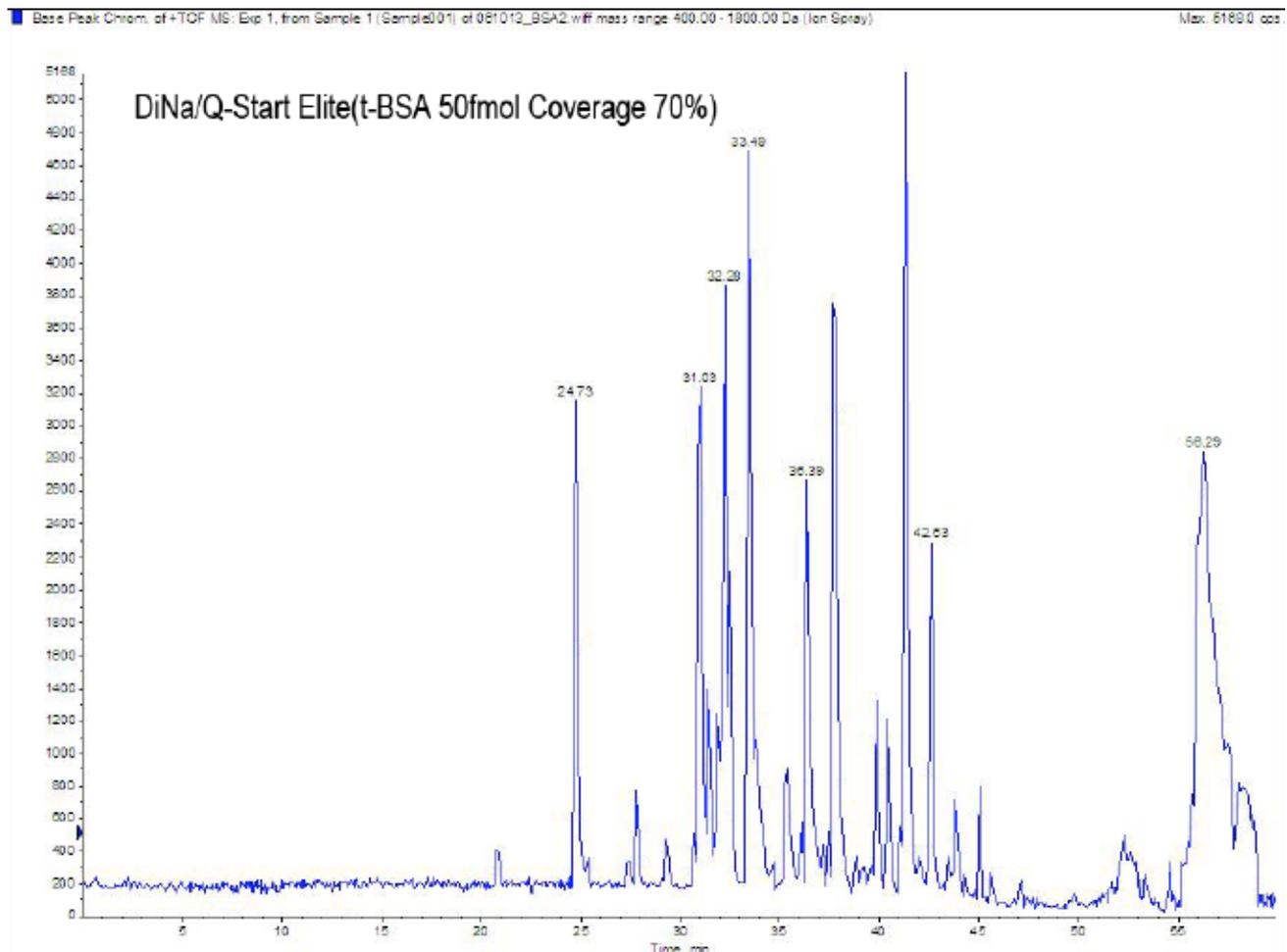
Our 1mm columns are useful for increasing sensitivity at flow-rates in the region of 50 to 100µL/min whilst still retaining good reliability and column lifetime.

The example mass-spec chromatogram below shows excellent S/N ratio for the sample measured by LC-MS separated using a 150µm x 100mmL capillary column



Column: HiQ silTMC18-3(150µm x 100mmL)

Sample: HAS (Tryptic digest,)





HiQ silTM Packed Trap-Columns for Sample Clean-Up and Pre-Concentration

Fritless direct ESI nano spray columns for sub-microlitre flow-rates!

Easily handled with a ZDV fitting, not a connection sleeve! The metal fitting allows easy attachment to the ESI spray holder.

DiNaSprayTM columns can be used with virtually any ESI LC-MS interface.

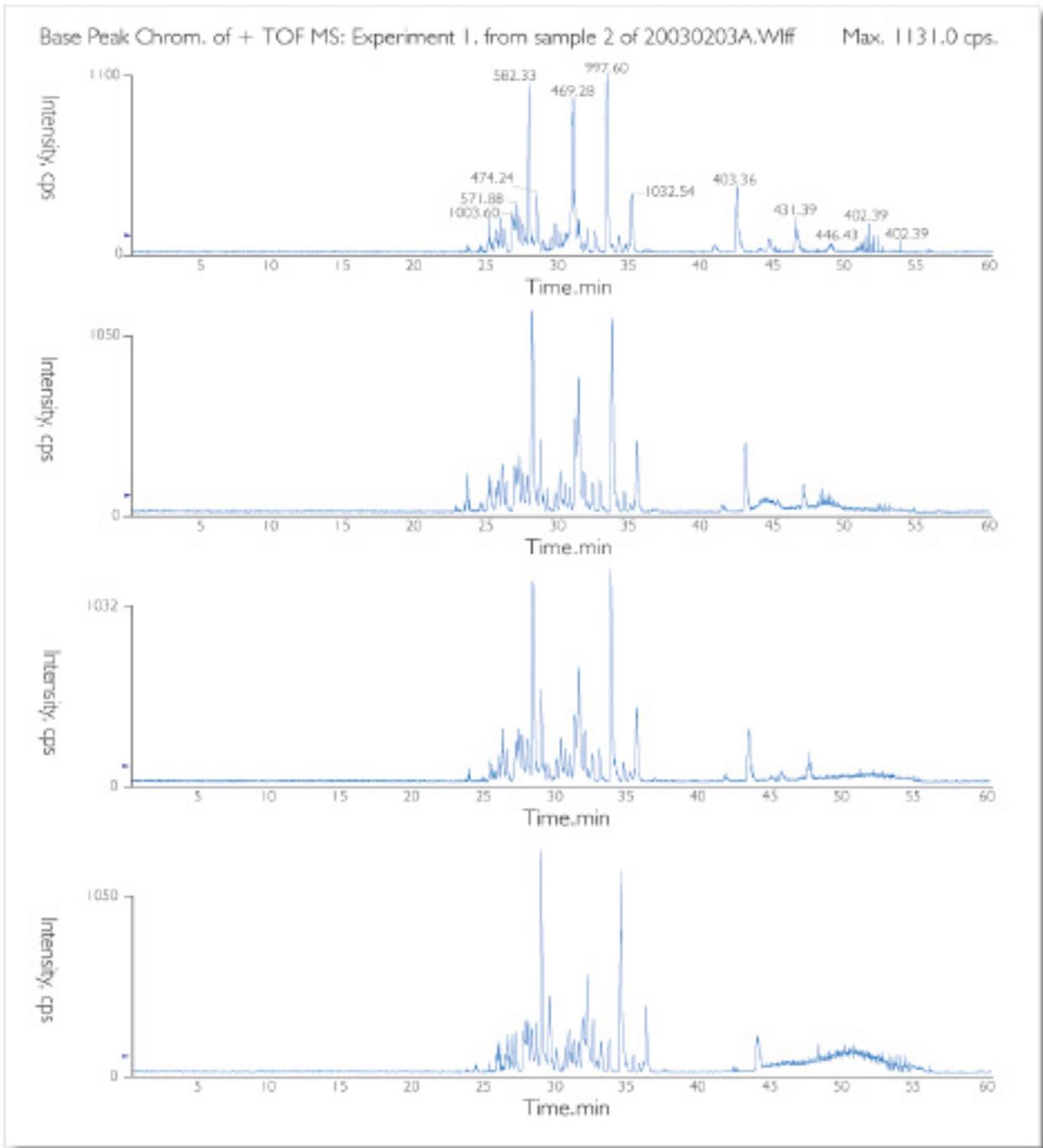
Particle size is 3µm with a 120 Å pore size. Stationary phases are typically C8 and C18 for proteomics applications. Standard column dimensions are 150µm ID x 45mm length, but we can pack to your specific requirements from 50µm ID to 200µm ID and from 30mm to 150mm length.



DiNaTM Trap-Columns

DiNaTM Trap-Columns can be used with any system, easy to handle and install, the outlet side is supplied with a length of pre-cut capillary. These columns are packed in the same way as conventional columns making them more reliable and able to accept a higher sample loading than most other commercially available and home-made trap columns. Particle size is 3µm with a 120 Å pore size.

Stationary phase is C18 (other packing materials are available - C8, CN, Phenyl, Amino etc) column dimension is 0.5mm ID x 1mm L.



Column : HiQ sil C18-3(150um x100nmL)

DiNa™ Trap Columns

Sample : BSA (Tryptic digest, 500 fmol)

HiQ sil C18HS (Particle Size : 5µm , Pore Size : 100A)

HiQ Sil C18HS columns are packed with ultra pure silica gel. After binding ODS, the residual silanol are fully end-capped which performs high resolution and superior retention. These column enables to use up to 100% aqueous mobile phases and achieve efficient, reproducible results for acidic, basic compounds and peptides.

HiQ sil C18HS-3 (Particle Size : 3µm , Pore Size : 100A)

HiQ Sil C18HS columns are packed with ultra pure silica gel. After binding ODS, the residual silanol are fully end-capped which performs high resolution and superior retention. These column enables to use up to 100% aqueous mobile phases and achieve efficient, reproducible results for acidic, basic compounds and peptides.

HiQ sil C18HS-10 (Particle Size : 10µm , Pore Size : 100A)

HiQ Sil C18HS columns are packed with ultra pure silica gel. After binding ODS, the residual silanol are fully end-capped which performs high resolution and superior retention. These column enables to use up to 100% aqueous mobile phases and achieve efficient, reproducible results for acidic, basic compounds and peptides.

HiQ sil C18W (Particle Size : 5µm , Pore Size : 120A)

HiQ Sil C18W columns are packed with ultra pure silica gel. After binding ODS, the residual silanol are highly end-capped which performs high resolution and superior retention. This column shows high reproducibility at low pressure range and achieves efficient, reproducible results for acidic, basic compounds and peptides.

HiQ sil C18W-3 (Particle Size : 3µm , Pore Size : 120A)

HiQ Sil C18W columns are packed with ultra pure silica gel. After binding ODS, the residual silanol are highly end-capped which performs high resolution and superior retention. This column shows high reproducibility at low pressure range and achieves efficient, reproducible results for acidic, basic compounds and peptides.

HiQ sil C18P (Particle Size : 5µm , Pore Size : 300A)

HiQ Sil C18P columns are packed with ultra pure silica gel. After binding ODS, the residual silanol are highly end-capped which performs high resolution and superior retention. This columns silica gel has a wide pore size, and suites for analysis of low molecule proteins and poly peptides.

HiQ sil C18-10 (Particle Size : 10µm , Pore Size : 120A)

HiQ Sil C18-10 columns are packed with ultra pure silica gel. After binding ODS, the residual silanol are highly end-capped which performs high resolution and superior retention.

HiQ sil C18-15 (Particle Size : 15µm , Pore Size : 120A)

HiQ Sil C18-15 columns are packed with ultra pure silica gel. After binding ODS, the residual silanol are highly end-capped which performs high resolution and superior retention.

HiQ sil C8 (Particle Size : 5 μ m , Pore Size : 120A)

HiQ Sil C8 columns are packed with ultra pure silica gel. After binding C8, the residual silanol are highly end-capped which performs high resolution and superior retention.
C8 columns have less retention than C18, it suites for analyzing hydrophobic compounds.

HiQ sil C8P (Particle Size : 5 μ m , Pore Size : 300A)

HiQ Sil C8P columns are packed with ultra pure silica gel. After binding C8, the residual silanol are highly end-capped which performs high resolution and superior retention.
Suitable for analyzing proteins and polypeptides.

HiQ sil C8-3 (Particle Size : 3 μ m , Pore Size : 120A)

HiQ Sil C8 columns are packed with ultra pure silica gel. After binding C8, the residual silanol are highly end-capped which performs high resolution and superior retention.
C8 columns have less retention than C18, it suites for analyzing hydrophobic compounds.

HiQ sil C8-10 (Particle Size : 10 μ m , Pore Size : 120A)

HiQ Sil C8 columns are packed with ultra pure silica gel. After binding C8, the residual silanol are highly end-capped which performs high resolution and superior retention.
C8 columns have less retention than C18, it suites for analyzing hydrophobic compounds.

HiQ sil C8-15 (Particle Size : 15 μ m , Pore Size : 120A)

HiQ Sil C8 columns are packed with ultra pure silica gel. After binding C8, the residual silanol are highly end-capped which performs high resolution and superior retention.
C8 columns have less retention than C18, it suites for analyzing hydrophobic compounds.

HiQ sil C4 (Particle Size : 5 μ m , Pore Size : 120A)

HiQ Sil C4 columns are high performance column which bind C4 to ultra pure silica gel.

HiQ sil C4P (Particle Size : 5 μ m , Pore Size : 300A)

HiQ Sil C4P columns are high performance column which bind C4 to ultra pure silica gel.
Suitable for protein analysis.

HiQ sil C4-3 (Particle Size : 3 μ m , Pore Size : 120A)

HiQ Sil C4 columns are high performance column which bind C4 to ultra pure silica gel.

HiQ sil C4-10 (Particle Size : 10µm , Pore Size : 120A)

HiQ Sil C4 columns are high performance column which bind C4 to ultra pure silica gel.

HiQ sil C1 (Particle Size : 5µm , Pore Size : 120A)

HiQ Sil C1 columns are high performance column which bind C1 to ultra pure silica gel.

HiQ sil C1-10 (Particle Size : 10µm , Pore Size : 120A)

HiQ Sil C1 columns are high performance column which bind C1 to ultra pure silica gel.

HiQ sil NH2 (Particle Size : 5µm , Pore Size : 120A)

HiQ Sil NH2 columns are high performance column which bind NH2 to ultra pure silica gel.

Enable to use in both normal and reverse phase.

Mainly used for suger analysis.

HiQ sil NH2-10 (Particle Size : 10µm , Pore Size : 120A)

HiQ Sil NH2 columns are high performance column which bind NH2 to ultra pure silica gel.

Enable to use in both normal and reverse phase.

Mainly used for suger analysis.

HiQ sil CN (Particle Size : 5µm , Pore Size : 120A)

HiQ Sil CN columns are high performance column which bind CN to ultra pure silica gel.

Enable to use in both normal and reverse phase.

HiQ sil CN-10 (Particle Size : 10µm , Pore Size : 120A)

HiQ Sil CN columns are high performance column which bind CN to ultra pure silica gel.

Enable to use in both normal and reverse phase.

HiQ sil Ph (Particle Size : 5µm , Pore Size : 120A)

HiQ Sil Ph columns are high performance column. The influence of the double bond of phenyl group shows a unique separation of compound which has a pi bond.

When the compound which is difficult to separate with ODS has a multiple bond, it may separate by this column.

HiQ sil Ph-10 (Particle Size : 10µm , Pore Size : 120A)

HiQ Sil Ph columns are high performance column. The influence of the double bond of phenyl group shows a unique separation of compound which has a pi bond.

When the compound which is difficult to separate with ODS has a multiple bond, it may separate by this column.

HiQ SIL (5µm, 60Å) ,HiQ SIL120 (5µm, 120Å),HiQ SIL300 (5µm, 300Å),
HiQ SIL-10 (10µm, 120Å),HiQ SIL-15 (15µm, 120Å)

HiQ SIL columns are high performance column packed by ultra pure silica gel.

Variation of Functional Groups			
Product Name	Particle size & Pore size	Product Name	Particle size & Pore size
HiQ sil C18HS	5µm-100Å,3µm-100Å,10µm-100Å	HiQ sil C1	5µm-120Å,10µm-120Å
HiQ sil C18W	3µm-120Å,5µm-120Å,5µm-300Å,15µm-120Å	HiQ sil SIL	5µm-60Å,5µm-100Å,5µm-120Å,10µm-120Å,15µm-120Å
HiQ sil C8	5µm-120Å,5µm-300Å,10µm-120Å	HiQ sil Ph	5µm-120Å,10µm-120Å
HiQ sil C4	5µm-120Å,5µm-300Å	HiQ sil CN	5µm-120Å,10µm-120Å
HiQ sil Nh ²	5µm-120Å,10µm-120Å		

Variation of Column Size		
Column I.D	Column length	Scale
50µm,75µm,100µm,150µm,	50mmL - different length is available.	LC-MS
0.3mm,0.5mm	35mmL,50mmL,75mmL,100mmL,150mmL, 250mm	Micro
1.0mm,1.5mm,2.1mm	35mm,50mm,75mm,100mm,150mm,250mm	Semi micro
4.0mm,4.6mm	35mm, 50mm, 75mm, 100mm, 150mm, 250mm, 300mm	Analytical
7.8mm,10.0mm,30.0mm,50.0mm	35mm, 50mm, 75mm, 100mm, 150mm, 250mm, 300mm	Preparative