Ultisil™ Series HPLC Column

Ultisil™ Series HPLC Columns based on ultra pure (purity > 99.999%) spherical and totally porous silica, adopted unique bonding chemistry and proprietary surface modification technique, which provide excellent peak shape, column efficiency and exceptional lot-to-lot reproducibility. Ultisil™ column is the best choice for method development, due to the complete bonding chemistries and stable performance.

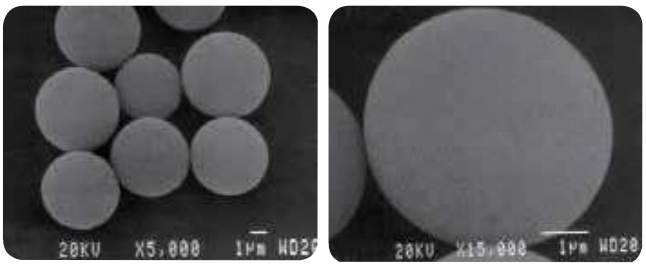
Features:

- Competitive price
- Ultra pure spherical porous silica, purity> 99.999%
- Unique bonding chemistry and endcapping technology
- High efficiency: Theoretical plate>80000/m
- Excellent peak symmetry: tailing factor=0.95~1.05
- Wide pH range: 1.5-10
- Long column lifetime
- Exceptional lot-to-lot reproducibility
- Compete bonding chemistries, provide different selectivities

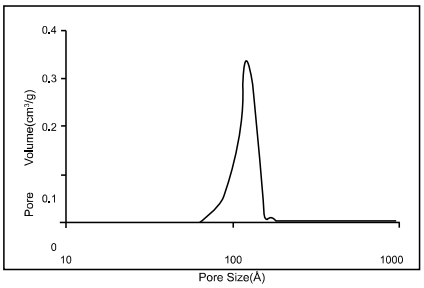
Ultisil™ HPLC Column Packing Materials

The pictures show the uniformity of the particle sizes and smoothness of particle surface, which enables more uniform packing with less channeling effect and leads to lower back pressure and the higher column efficiency. Our silica has a surface area of 320 m2/g with a controlled mean pore size of 120 Å.

SEM Pictures of Ultisil™ Particles

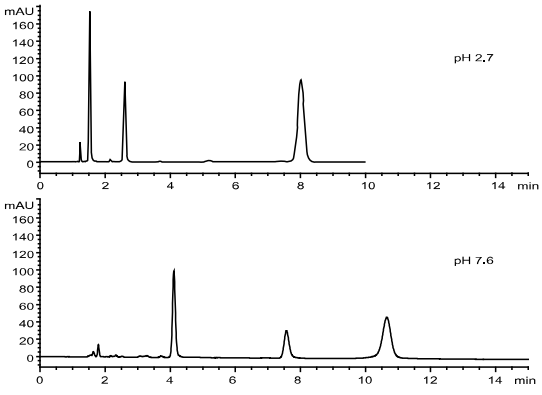


Ultisil™ Pore Size Distribution



Trace Amount Metal Contents Test

A useful chromatographic test of trace amount of metal contents in the column is to compare the peak symmetry of one pair of positional isomers, 4,4'-dipyridyl and 2,2'-dipyridyl, and one neutral chelating reagent, 2,2-dihydroxylnaphthalene. 4,4'-dipyridyl, which cannot form chelating complex with metal, is used as a reference. 2,2'-dipyridyl and 2,2-dihydroxylnaphthalene, which are chelating reagents, are sensitive to trace amount metal in silica. When type A silica based C18 column or other so-called type B silica with higher metal content column is used, the peaks of 2,2'-dipyridyl and 2,2-dihydroxylnaphthalene would tail or even totally disappear.



Column:	Ultisil™ XB-C18, 4.6 ×150 mm, 5 μm
Mobile Phase:	45% MeOH/55% 20 mM phosphate, pH 7.6
Flow Rate:	1.0 ml/min
Detector:	215 nm
Temperature:	25 °C
Injection Volume:	1 μl
Samples:	1) 4,4'-Dipyridyl 2) 2,2'-Dipyridyl 3) 1,2-Dihydroxylnaphthalene

Ultisil™ XB Series HPLC Column

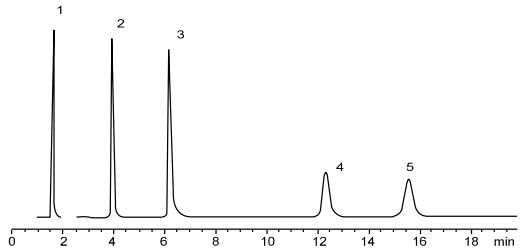
Ultisil™ XB series column is the first series introduced by welch, which contains complete bonding chemistries, provides a variety of selectivities for method development.

- Develop or improve your HPLC method
- Excellent performance, exceptionally rugged USP phases
- Exceptional lot-to-lot reproducibility

Ultisil™ XB-C18—Universal HPLC Analytical Column

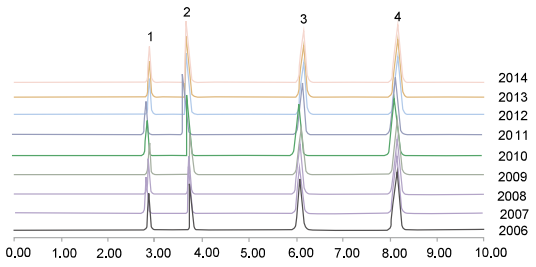
Ultisil™ XB-C18 is the most common used column in the market, which can substitute Waters Symmery C18, Agilent Zorbax XDB C18, Phenomenex Luna C18, Supelcosil LC-18-DB, YMC ODS-AM, Alltima C18, GL Inertsil ODS-2 etc. XB-C18 has high theoretical plates and peak capacity, so it's suitable for analysis of complex samples.

Separation of Basic Compound Antidepressant at pH 7.0



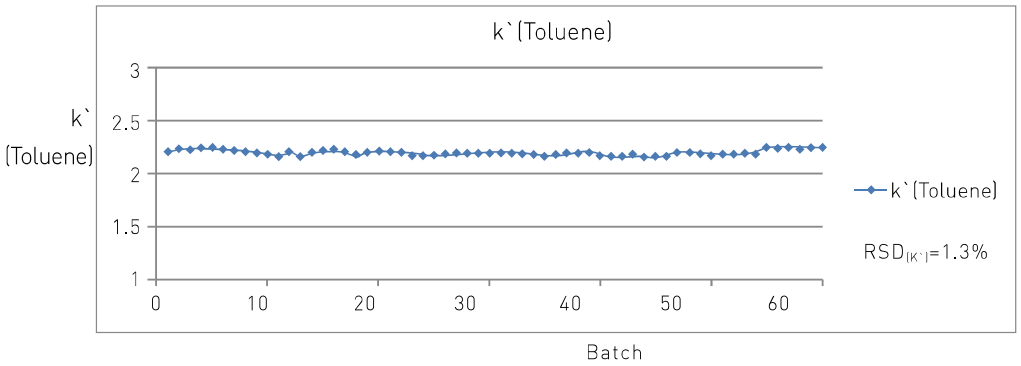
Column:	Ultisil™ XB-C18, 4.6 × 150 mm, 5 µm
Mobile Phase:	20% phosphate, pH 7.0. 80% MeOH
Flow Rate:	1.0 ml/min
Detector:	215 nm
Temperature:	25 °C
Samples:	1) Uracil 2) Ropranolol 3) Ortriptyline 4) Amitryptyline 5) Trimipramine

Comparison of Peak Shape Between Batch to Batch

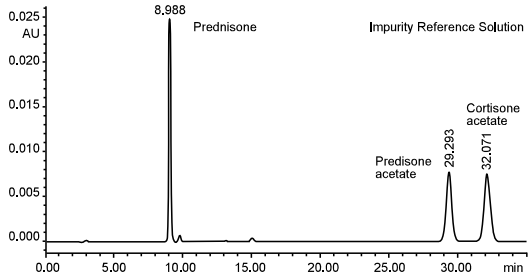


Column:	Ultisil™ XB-C18, 4.6 × 250 mm, 5 µm
Mobile Phase:	75% MeOH/25% water
Flow Rate:	1.0 ml/min
Detector:	254 nm
Temperature :	25 °C
Samples:	1) Uracil 2) Phenol 3)4-chloronitrobenzene 4) Methylbenzene

Capacity Factor(K') of Batch to Batch Reproducibility

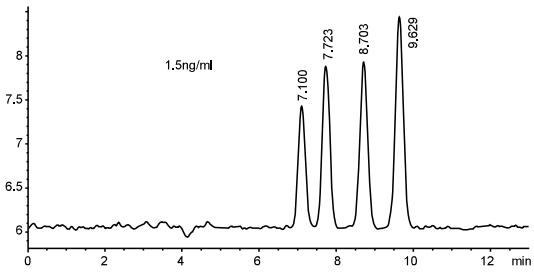


Analysis of Prednisone Acetate



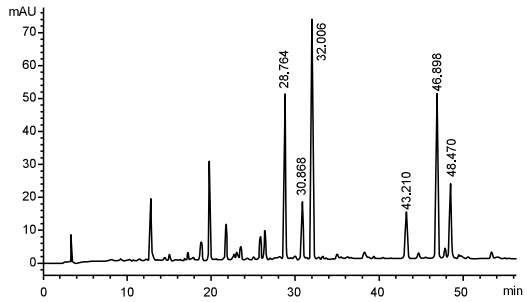
Column:	Ultisil™ XB-C18, 4.6 ×150 mm, 5 μm
Mobile Phase:	ACN/Water=33:67
Flow Rate:	1.0 ml/min
Detector:	240nm
Temperature:	30 °C
Injection Volume:	20 μl

Analysis of Aflatoxin



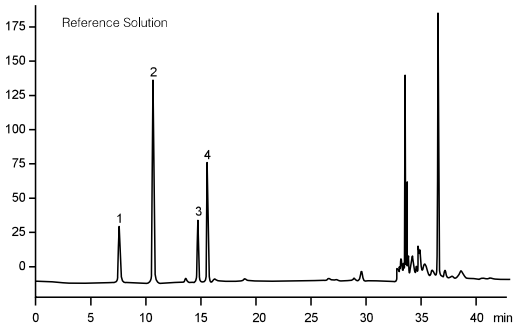
Column:	Ultisil™ XB-C18, 4.6×250 mm, 5 μm
Mobile Phase:	Water:MeOH:ACN=46:40:14
Flow Rate:	1.0 ml/min
Detector:	Excitation wavelength:360 nm Emission wavelength:450 nm Gain:17
Temperature:	30 °C
Derivation Way:	Post -column photo chemical derivation(254nm)
Aflatoxin B1, B2, G1, G2 mixed standards, meets separation requirements	

Tropa Belladonna Spectrogram



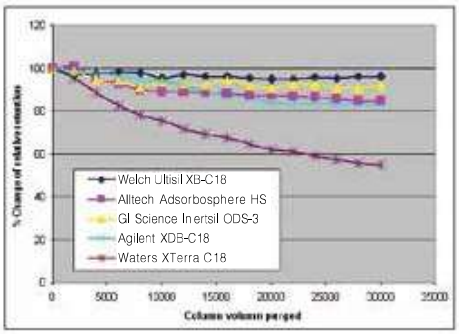
Column:	Ultisil™ Special column for Tropa Belladonan, 4.6 ×250 mm, 5 μm
Mobile Phase:	Mobile phase A: MeOH Mobile phase B:0.05% Phosphoric acid solution
Flow Rate:	1.0 ml/min
Detector:	344nm
Temperature:	30 °C
Injection Volume:	10 μl

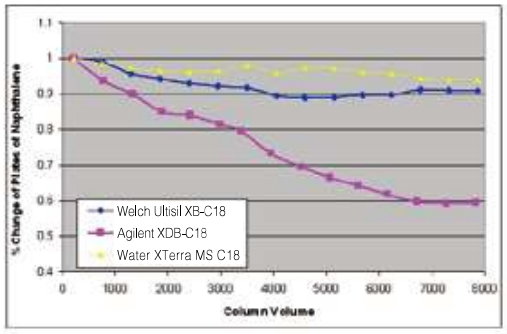
Analysis of Donkey-hide Gelatin



Column:	Ultisil™ XB-C18, 4.6 ×250 mm, 5 μm		
Mobile Phase:	Mobile phase A: ACN:0.1 mol/L NaAC(pH 6.5)=7:93 Mobile phase B: ACN:water=4:1		
Gradient Program:	Time(min)	Mobile Phase A	Mobile Phase B
	0~11	100~93	0~7
	11~13.9	93~88	7~12
	13.9~14	88~85	12~15
	14~29	85~66	15~34
	29~30	66~0	34~100
Flow Rate:	1.0 ml/min		
Temperature:	43 °C		
Injection Volume:	5 μl		
Reference Samples:	L-hydroxyproline、glycine、alanine、L-proline		

Excellent Stability at Low pH and High pH



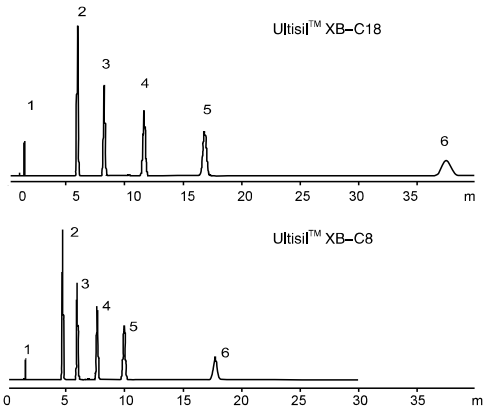


The stability of XB-C18 is better than other brand columns under pH 1.3 and pH 10.

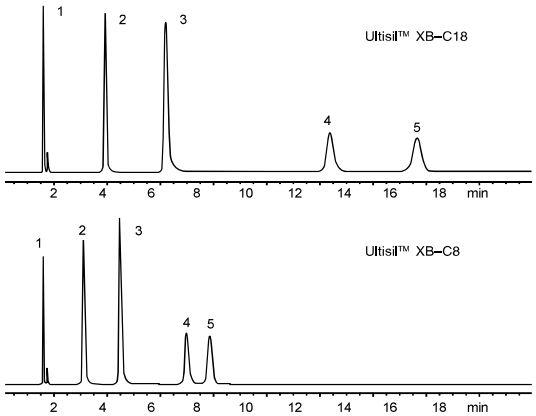
Ultisil™ XB-C8----Less retentive than XB-C18

The XB-C8 phase is less retentive than XB-C18 phase, more useful for strong hydrophobic compounds that are too strongly retained on C18 phase, and for LC/MS applications, where the long retention is not required. When separating neutral or other highly retained compounds, using XB-C8 can save analytical time. However, when separating polar compounds, XB-C8 column provides alternative selectivity than XB-C18 column.

Comparison of Retention of XB-C18 and XB-C8

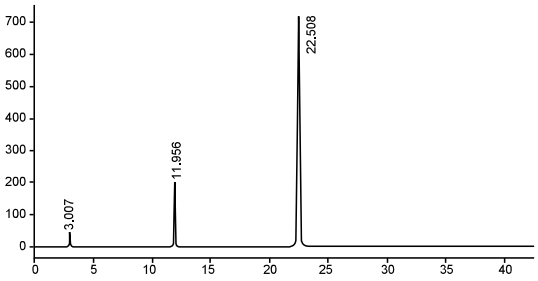


Column:	4.6 ×150 mm, 5 μm
Mobile Phase:	30% water/70% ACN
Flow Rate:	1.0 ml/min
Detector:	344nm
Temperature:	25 °C
Samples:	1. Uracil 2. Ethylbenzene 3. Propylbenzene 4. Butylbenzene 5. Amylbezene 6. Heptylbenzene



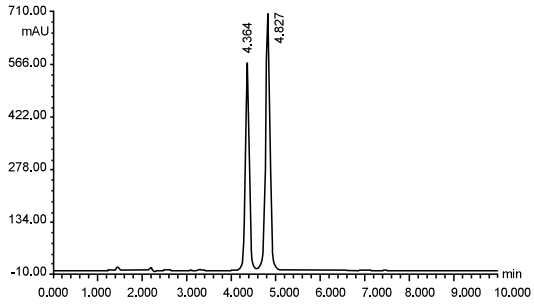
Column:	4.6 ×150 mm, 5 μm
Mobile Phase:	20% 20mM phosphate, pH7.0, 80% MeOH
Flow Rate:	1.0 ml/min
Detector:	215nm
Temperature:	25 °C
Samples:	1. Uracil 2. Ropranolol 3. Ortriptyline 4. Amitryptyline 5. Trimipramine

Analysis of Adefovir Dipivoxil



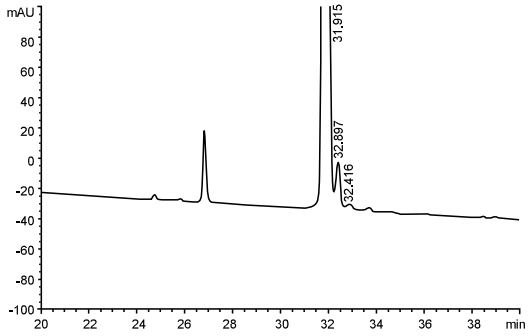
Column:	Ultisil™ XB-C8, 4.6 ×250 mm, 5 μm		
Mobile Phase:	Mobile phase A: 0.05mol/L KH_2PO_4 buffer: ACN=50:50 Mobile phase B: 0.05mol/L KH_2PO_4		
Gradient Program:	Time(min)	Mobile Phase A	Mobile Phase B
	0	20	80
	5	20	80
	20	100	0
	32	100	0
	35	20	80
	40	20	80
Flow Rate:	1.0 ml/min		
Temperature:	40 °C		
Injection Volume:	10 μl		
System suitability soluiton: adefovir, adefovir monopivoxil, adefovir dipivoxil.			

Analysis of Albuterol



Column:	Ultisil™ XB-C8, 4.6 ×150 mm, 5 μm
Mobile Phase:	Sodium heptanesulfonate solution(Sodium heptanesulfonate 2.5g, dilute with water to 1000ml, adjust pH to 3.65 with H_3PO_4):ACN=78:22
Flow Rate:	1.0 ml/min
Detector:	220nm
Temperature:	30 °C
Injection Volume:	20 μl

Analysis of Insulin Detemir

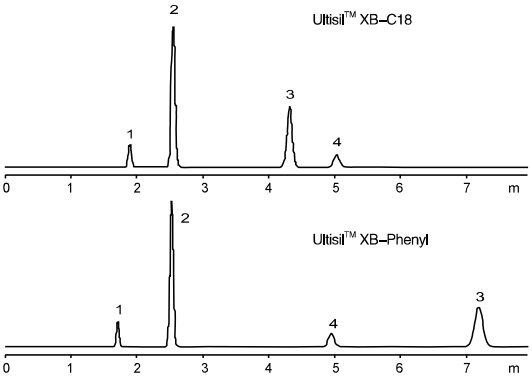


Column:	Ultisil™ XB-C8, 4.6 ×150 mm, 5 μm
Mobile Phase:	A: 20g $(NH_4)_2SO_4$, 900ml water, 100ml ACN, adjust pH to 2.3 B: ACN:water=80:20; %B=0(0min) , 30(9min), 60(40min)
Flow Rate:	1.0 ml/min
Detector:	214nm
Temperature:	30 °C
Injection Volume:	20 μl

Ultisil™ XB-Phenyl--- Different selectivity to alkyl phase

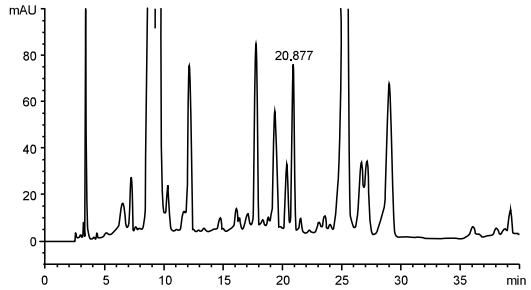
Ultisil™ XB Phenyl phase is less retentive than conventional C18 and C8 phases, but more retentive than standard cyano phase. Due to their ability to participate in interactions, XB-Phenyl columns may actually more retentive than C18 or C8 columns towards certain polar aromatic compounds, depending on running conditions. The selectivity for highly polar aromatics, which are poorly retained on alkyl-bonded phases, combined with the reduced retentivity towards non-polar compounds, makes XB-Phenyl an excellent choice for the analysis of complex mixtures of polar and non-polar analytes. High surface coverage and exhaustive double end-capping

Unique Selectivity for Aromatic Compounds of Ultisil™ XB-Phenyl Phase



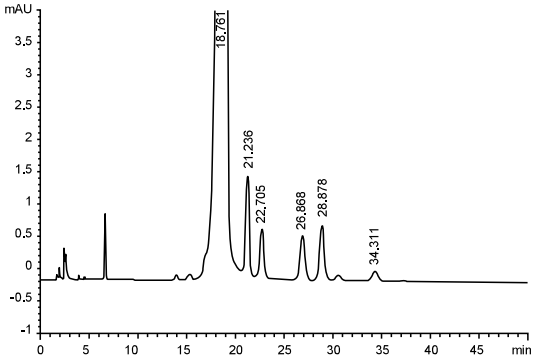
Column:	4.6 ×150 mm, 5 µm
Mobile Phase:	70% MeOH/30% water
Flow Rate:	1.0 ml/min
Detector:	254nm
Temperature:	24 °C
Samples:	1. Uracil 2. Phenol 3. Paranitrotoluene 4. Toluene

Analysis of Galuteolin in Honeysuckle



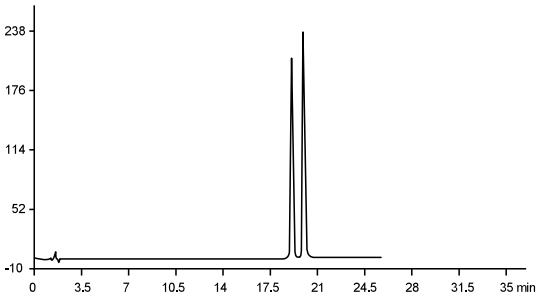
Column:	Ultisil™ XB-Phenyl, 4.6 ×250 mm, 5 µm		
Mobile Phase:	A:ACN B:0.5% glacial acetic acid		
Gradient Program:	Time(min)	A(%)	B(%)
	0-15	10-20	90-80
	15-30	20	80
	30-40	30	80-70
Flow Rate:	1.0 ml/min		
Detector:	350nm		
Temperature:	30 °C		
Injection Volume:	10 µl		

Analysis of Galuteolin in Honeysuckle



Column:	Ultisil™ XB-Phenyl, 4.6 ×250 mm, 5 µm
Mobile Phase:	(0.5g TBAHS, 1g KH_2PO_4, 3.4g(2mL) H_3PO_4, 1000mL water):MeOH=72:28
Flow Rate:	1.3 ml/min
Detector:	293nm
Temperature:	45 °C
Injection Volume:	10 µl

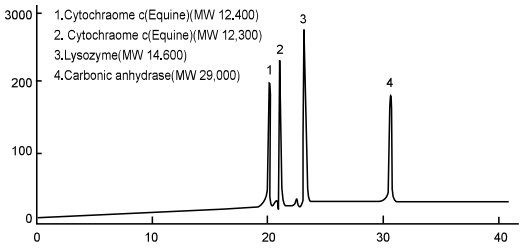
Separaton of Montelukast Sodium Isomers



Column:	Ultisil™ XB-Phenyl, 4.6 ×150 mm, 3 μm		
Mobile Phase:	A:0.2% TFA B:MeOH:ACN=60:40		
	Time(min)	A(%)	B(%)
	0	48	52
	5	45	55
	12	45	55
	22	25	75
	23	25	75
	25	48	52
	30	48	52
Flow Rate:	1.0 ml/min		
Detector:	255nm		
Temperature:	30 °C		
Injection Volume:	10 μl		

Ultisil™ XB-C4---Suitable for separation of bio-samples

- Strong retention for hydrophobic and polar compounds
- 300Å big pore size column is appropriate for separation of peptide and protein samples with sharp peak shape
- Minibore column can be used for LC/MS(/MS)



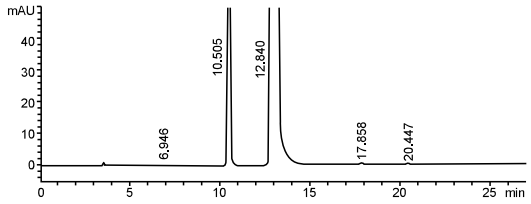
Column:	Ultisil™ XB-C4(300Å), 4.6 ×250 mm, 5 μm
Mobile Phase:	A: H_2O:ACN:TFA=90:10:0.05 B: H_2O:ACN:TFA=20:80:0.05 0%-100%B(0-15min)
Flow Rate:	1.0 ml/min
Temperature:	45 °C
Injection Volume:	10 μl

Ultisil™ XB-CN---Unique selectivity for polar compounds

Ultisil™ XB-CN column can be used in both reversed and normal phase. Reversed phase CN column has special selectivity for polar compounds, and due to its low hydrophobicity, elution of hydrophobic molecules is fast. Furthermore, XB-CN column shows perfect peak shape for strong basic analytes (including quaternary ammonium salts). Polarity of XB-CN column is the strongest among all the reversed columns, it is a good choice for the compounds that are strong retain on standard reversed columns.
Normal phase CN column can replace SiO_2 column. Equilibrium of normal phase column is fast, and the silica surface activity is better than silica column. To prolong the life time of the column, it should be avoid to alternately using reversed phase and normal phase. CN column can be used in reversed and normal phase, but when at different separation mode, the elution sequence is different.

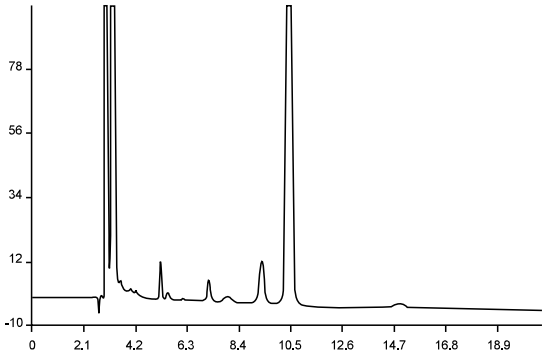
- Can be used in both reversed and normal phases
- Stable bonding chemistry and excellent surface coverage
- Low hydrophobicity, unique selectivity

Analysis of Alogliptin Benzoate



Column:	Ultisil™ XB-CN, 4.6 ×250 mm, 5 μm		
Mobile Phase:	A: ACN/water/TFA=100/1900/1 B: ACN/water/TFA=1900:100:1		
	Time(min)	A(%)	B(%)
	0	99	1
	30	80	20
	50	10	90
	51	99	1
Flow Rate:	1.0 ml/min		
Detector:	278 nm		
Temperature:	35 °C		
Injection Volume:	20μl		

Analysis of Rifampicin Isoniazidand Pyrazinamide



Column:	Ultisil™ XB-CN, 4.6 ×250 mm, 5 μm
Mobile Phase:	0.01 mol/L Sodium Heptanesulfonate(Sodium Heptanesulfonate 2.0225g, 1000mL water, adjust pH to 1.85 with H_3PO_4):ACN=54:46
Flow Rate:	0.6 ml/min
Detector:	254nm
Temperature:	30 °C
Injection Volume:	20 μl

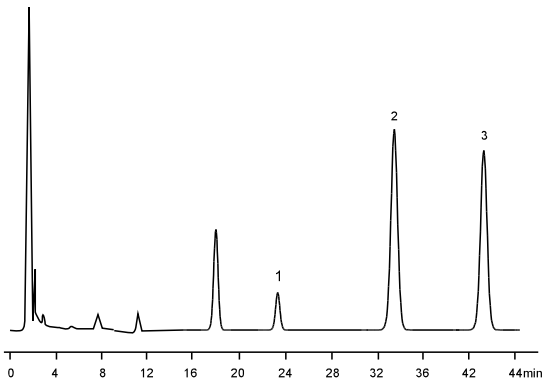
Ultisil™ XB Series Normal Phase Column

Ultisil™ XB series normal phase columns contain XB-NH_2, XB-CN, SiO_2 and Diol columns.

Ultisil™ SiO_2 column

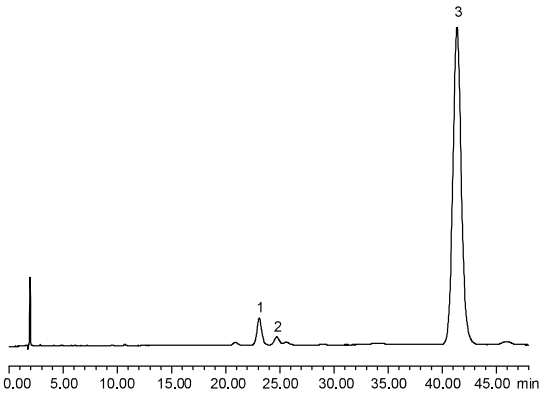
Ultisil SiO_2 column is applied with ultra high purity type B silica particles with no metal contents. SiO_2 column can separate strong hydrophilic compounds with high organic solvent at normal phase. We can get good result for the analysis of polar compounds which always leads to peak tailing.

Analysis of VD_2



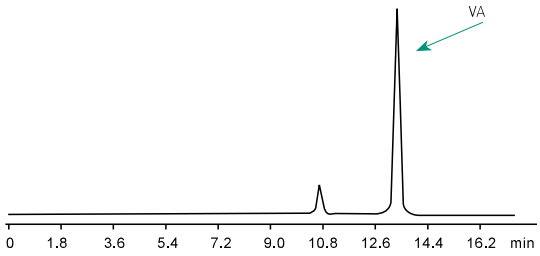
Column:	Ultisil™ SiO_2, 4.6 ×250 mm, 5 μm
Mobile Phase:	Hexane/ IPA = 997/ 3
Flow Rate:	2.0 ml/min
Detector:	254nm
Temperature:	30 °C
Samples:	1. Facade VD_2 2. Internal Standerd 3. VD_2

Analysis of VD_3



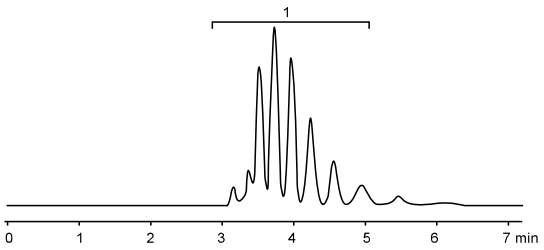
Column:	Ultisil™ SiO_2, 4.6 ×250 mm, 5 μm
Mobile Phase:	N-hexane:n-amyl alcohol=99.7:0.3
Detector:	254 nm
Temperature:	30 °C
Flow Rate:	2.0 ml/min
Samples:	1. Facade VD_3 2. Trans VD3 3. VD_2

Analysis of VA Acetate



Column:	Ultisil™ SiO_2, 4.6 ×250 mm, 5 μm
Mobile Phase:	N-hexane:isopropanol=99.8:0.2
Detector:	326nm
Temperature:	16 °C
Flow Rate:	1.0 ml/min
Sample is dissolved with n-hexane.	

Analysis of Pesticide Emulsifier Triton-X100



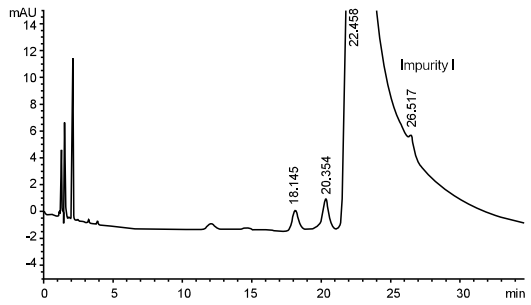
Column:	Ultisil™ SiO_2, 4.6 ×250 mm, 5 μm
Mobile Phase:	Ethyl Acetate:EtOH=80:20
Detector:	254nm
Temperature:	30 °C
Flow Rate:	1.0 ml/min

Ultisil™ XB-NH_2 column

Ultisil™ XB-NH_2 column is based on propyl-amino silane, mostly used in normal phase, also can used in HILIC mode and reversed phase.

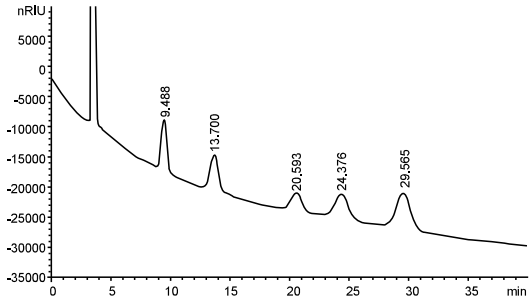
- Used for normal phase and weak anion-exchange, and for reversed-phase HPLC of polar compounds
- For applications in aggressive normal phase mode with aqueous eluent
- Vitamins A and D are separated in the normal-phase mode
- Carbohydrates and sugars are separated in the reversed-phase mode on XB-NH_2

Acarbose



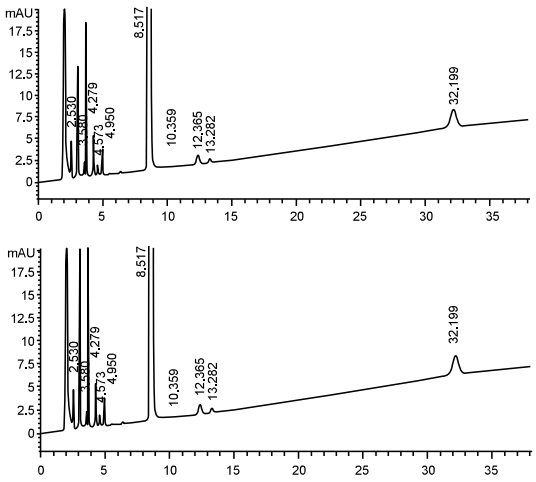
Column:	Ultisil™ XB-NH_2, 4.6 ×250 mm, 5 μm
Mobile Phase:	Phosphate buffer(KH_2PO_4 600 mg, ADSP 279 mg, dissolve in 100 mL water and dilute to 1000 mL): ACN=28:72
Detector:	210nm
Temperature:	35 °C
Flow Rate:	2.0 ml/min
Injection Volume:	10 μl

Sugars



Column:	Ultisil™ XB-NH_2, 4.6 ×250 mm, 5 μm
Mobile Phase:	70% ACN-water solution
Detector:	RID
Temperature:	35 °C
Flow Rate:	0.9 ml/min
Injection Volume:	10 μl
Samples:	Fructose, glucose, maltose, maltotriose, maltopentaose in order

Acetyl-L-carnitine



Column:	Ultisil™ XB-NH_2, 4.6 ×250 mm, 5 μm
Mobile Phase:	Buffer:ACN=30:70
Detector:	205nm 210nm
Temperature:	20 °C
Flow Rate:	1.0ml/min
Injection Volume:	10 μl

Ordering Information

3μm Minibore Column

	XB-C18	XB-C8	XB-C4	XB-C1	XB-Phenyl	XB-CN	XB-NH_2	SiO_2
2.1×30	00201-21009	00202-21009	00216-21009	00217-21009	00203-21009	00205-21009	00204-21009	00200-21009
2.1×50	00201-21010	00202-21010	00216-21010	00217-21010	00203-21010	00205-21010	00204-21010	00200-21010
2.1×100	00201-21012	00202-21012	00216-21012	00217-21012	00203-21012	00205-21012	00204-21012	00200-21012
2.1×150	00201-21041	00202-21041	00216-21041	00217-21041	00203-21041	00205-21041	00204-21041	00200-21041

5μm Minibore Column

	XB-C18	XB-C8	XB-C4	XB-C1	XB-Phenyl	XB-CN	XB-NH_2	SiO_2
2.1×30	00201-31009	00202-31009	00216-31009	00217-31009	00203-31009	00205-31009	00204-31009	00200-31009
2.1×50	00201-31010	00202-31010	00216-31010	00217-31010	00203-31010	00205-31010	00204-31010	00200-31010
2.1×100	00201-31012	00202-31012	00216-31012	00217-31012	00203-31012	00205-31012	00204-31012	00200-31012
2.1×150	00201-31041	00202-31041	00216-31041	00217-31041	00203-31041	00205-31041	00204-31041	00200-31041

3μm Analytical Column

	XB-C18	XB-C8	XB-C4	XB-C1	XB-Phenyl	XB-CN	XB-NH_2	SiO_2
3.0×30	00201-21018	00202-21018	00216-21018	00217-21018	00203-21018	00205-21018	00204-21018	00200-21018
3.0×50	00201-21019	00202-21019	00216-21019	00217-21019	00203-21019	00205-21019	00204-21019	00200-21019
4.6×50	00201-21037	00202-21037	00216-21037	00217-21037	00203-21037	00205-21037	00204-21037	00200-21037
4.6×150	00201-21041	00202-21041	00216-21041	00217-21041	00203-21041	00205-21041	00204-21041	00200-21041

5μm Analytical Column

	XB-C18	XB-C8	XB-C4	XB-C1	XB-Phenyl	XB-CN	XB-NH_2	SiO_2
4.6×50	00201-31037	00202-31037	00216-31037	00217-31037	00203-31037	00205-31037	00204-31037	00200-31037
4.6×100	00201-31039	00202-31039	00216-31039	00217-31039	00203-31039	00205-31039	00204-31039	00200-31039
4.6×150	00201-31041	00202-31041	00216-31041	00217-31041	00203-31041	00205-31041	00204-31041	00200-31041
4.6×250	00201-31043	00202-31043	00216-31043	00217-31043	00203-31043	00205-31043	00204-31043	00200-31043

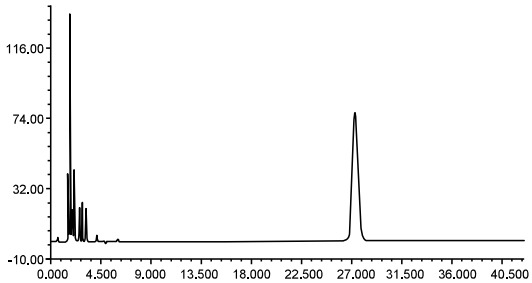
Welch provides 120Å and 300Å pore size packing materials. Please contact Welch or your local distributor for other dimensions.

Ultisil™ Diol Column

Ultisil™ Diol Column is based on ultra pure porous spherical silica which bonded with 1,2-dihydroxypropyl functional group silina. Ultisil™ Diol is used in normal phase mostly, also can be used in HILIC mode, suits for separation of peptides, proteins, polar molecules and organic acids and its polymers.
Like bare silica, Ultisil™ Diol has the ability to form hydrogen bonds and has the capacity to separate structure isomers. Since most of its surface is covered with organic functions, the Ultisil™ Diol absorbs less water, which leads to a more reproducible activity. It is also the sorbent of choice when working in normal phase in the presence of water. It has a different selectivity than bare silica gel, and slight modification in the composition of solvent mixture may be necessary to obtain a similar retention.
The Ultisil™ Diol column is more stable than the traditional normal phase columns, such as NH_2, SiO_2. Compared with NH_2/SiO_2 column, the Diol column is not sensitive with water. The Ultisil™ Diol column could also be used in reversed phase analysis.

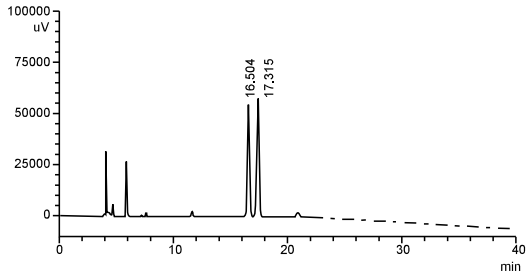
- More stable than the traditional normal phase columns, such as Silica, Amine
- Could be used in reversed phase analysis
- Similar polarity to Amine
- Good selectivity without excessive retention
- Improved peak shape versus bare silica

Tacrolimus



Column:	Ultisil™ Diol, 4.6 ×250 mm, 5 μm
Mobile Phase:	N-hexane:butyl chloride:ACN=7:2:1
Detector:	225nm
Temperature:	Ambient
Flow Rate:	1.7 ml/min
Injection Volume:	5 μl

Cloprostenol Sodium α, β



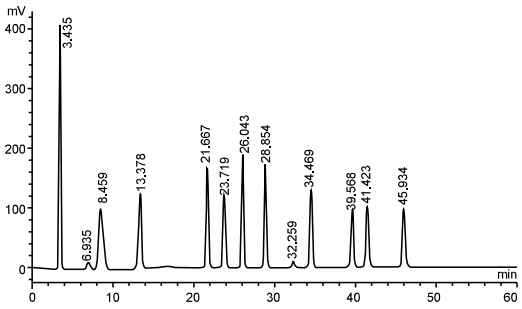
Column:	Ultisil™ Diol, 4.6 ×300 mm, 3μm
Mobile Phase:	N-hexane/isopropanol(v/v)=99.5/0.5
Flow Rate:	1.0 ml/min
Detector:	220 nm
Temperature:	25 °C
Injection Volume:	10μl

Ultisil™ XB-SAX and XB-SCX Ion Exchange Column

Ultisil™ ion exchange columns are available for both Strong Anion Exchange (SAX) and Strong Cation Exchange (SCX) columns. The SCX/SAX columns are silica based with high resolution and high efficiency.
Ultisil™ SAX is a polar bonded phase, consisting of an ammonium-functionalized silane, while Ultisil™ SCX is a classical strong cation exchange, consisting of a covalently bonded aromatic sulfonic acid moiety.

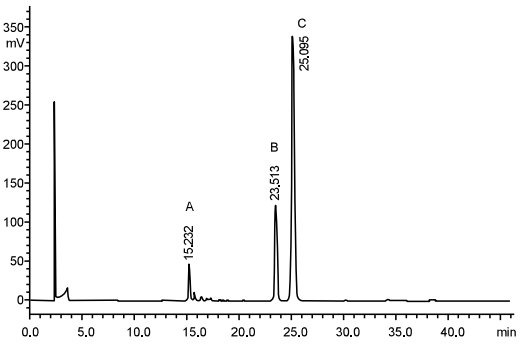
- Organic modifiers such as acetonitrile and methanol may be used with SAX and SCX columns, within organic/buffer solubility constraints
- Retention can be controlled by varying pH, ionic strength and organic modifier content
- Stable pH range from 2.0 to 7.0

13 Heparin Disaccharides



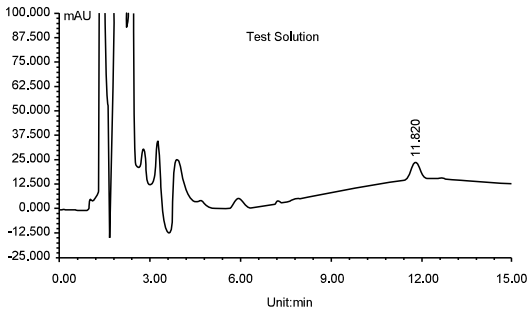
Column:	Ultisil™ XB-SAX, 3.0 ×250 mm, 5 µm
Mobile Phase:	A: weight 0.308g NaH_2PO_4 to 1000 ml volumetric flask, add 950mL water to dissolve it, adjust pH with $H_3PO_4$to 2.9, then add water to scale mark. B: weight 122g $NaClO_4$ to 1000 ml volumetric flask, add 950ml mobile phase A to dissolve, adjust pH to 3.0 with H_3PO_4, then add mobile phase A to scale mark.
Detector:	234nm, 202nm
Temperature:	50 °C
Flow Rate:	0.45 ml/min
Injection Volume:	10 µl

Chondroitin Sulfate



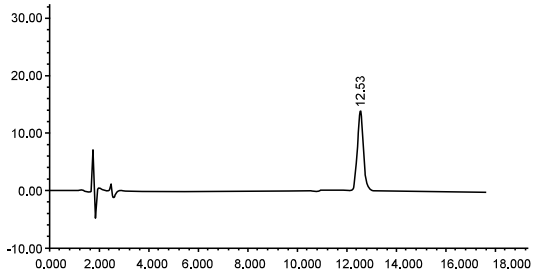
Column:	Ultisil™ XB-SAX, 4.6 ×250 mm, 5 µm
Mobile Phase:	A: water, adjust pH to 3.5 with diluted HCl B: 2mol/L NaCl, adjust pH to 3.5 with diluted HCl
Detector:	232nm
Temperature:	Ambient
Flow Rate:	1.0 ml/min
Injection Volume:	20 µl
Mixed Standards:	Chondroitin disaccharide(B) 6- sulfated chondroitin disaccharide(C) 4- sulfated chondroitin disaccharide(A)

Leonurus Granule



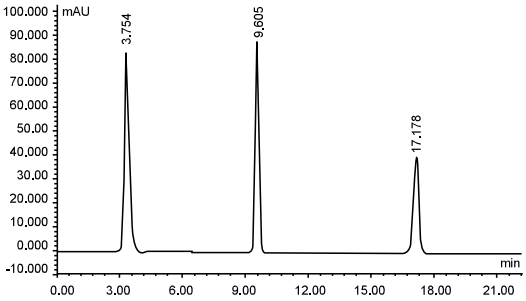
Column:	Ultisil™ XB-SCX, 4.6 ×150 mm, 5 µm
Mobile Phase:	ACN:0.05mol/LKH_2PO_4:H_3PO_4=15:85:0.15
Detector:	192nm
Temperature:	Ambient
Flow Rate:	1.0 ml/min
Injection Volume:	10 µl

Melamine



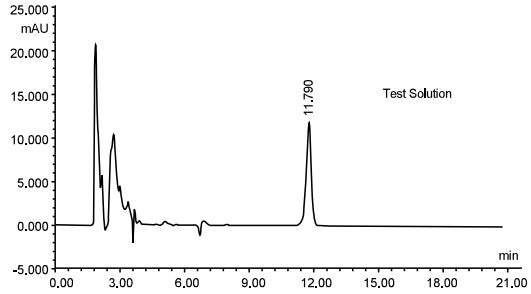
Column:	Ultisil™ XB-SCX, 4.6 ×250 mm, 5 μm
Mobile Phase:	0.05M KH_2PO_4(adjust pH to 4.7 with H_3PO_4):ACN=70:30
Detector:	240nm
Temperature:	25 °C
Flow Rate:	1.5 ml/min
Injection Volume:	20 μl

Metformin HCL



Column:	Ultisil™ XB-SCX, 4.6 ×250 mm, 5 μm
Mobile Phase:	1.7% $NH_4H_2PO_4$(adjust pH to 3.0 with H_3PO_4)
Detector:	218nm
Temperature:	Ambient
Flow Rate:	1.0 ml/min
Injection Volume:	10 μl
Samples In Order:	Icyandiamide, melamine, metformin HCL

Domiphen Bromide Buccal Tablets



Column:	Ultisil™ XB-SCX, 4.6 ×250 mm, 5 μm
Mobile Phase:	MeOH:0.05mol/L NaAC=80:20
Detector:	274nm
Temperature:	Ambient
Flow Rate:	1.0 ml/min
Injection Volume:	100 μl

Ordering information

Dimensions	XB-SCX	XB-SAX	Diol
3μm, 2.1×150mm	00212-21014	00213-21014	00206-21014
3μm, 4.6×150mm	00212-21041	00213-21041	00206-21041
3μm, 4.6×250mm	00212-21043	00213-21043	00206-21043
3μm, 4.6×300mm	00212-21044	00213-21044	00206-21044
3μm, 7.8×300mm	00212-21052	00213-21052	00206-21052
5μm, 2.1×150mm	00212-31014	00213-31014	00206-31014
5μm, 4.6×150mm	00212-31041	00213-31041	00206-31041
5μm, 4.6×250mm	00212-31043	00213-31043	00206-31043
5μm, 4.6×300mm	00212-31044	00213-31044	00206-31044
5μm, 7.8×300mm	00212-31052	00213-31052	00206-31052

Welch provides 120Å, 300Å pore size packing materials. Please contact Welch or your local distributor for other dimensions.

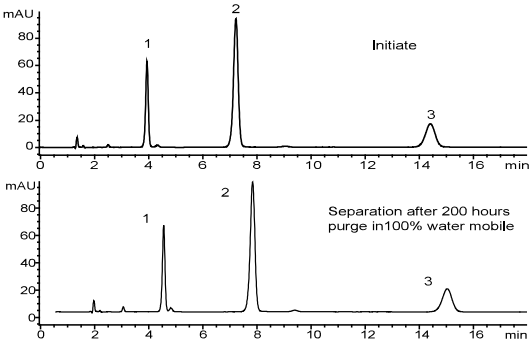
Ultisil™ AQ-C18----The most widely used column in food industry

Ultisil™ AQ-C18 columns are designed to show extended retention and selectivity for hydrophilic and polar compounds, which are either not or poorly retained on other phases. A proprietary bonding chemistry avoids so-called "phase collapse", even if 100% water is used, which conventional C18 columns exhibit at high water contents in the mobile phase. The AQ-C18 phase is fully end-capped to ensure the best peak shapes of polar and basic compounds and longer lifetime. Typical applications are separations of water soluble compounds that cannot be retained on traditional C18 phase. Examples include biomolecules, metabolites, and pharmaceutical degradants such as organic acids, water-soluble vitamins, oligosaccharides, amino acids, and small peptides and nucleotides.

Features:

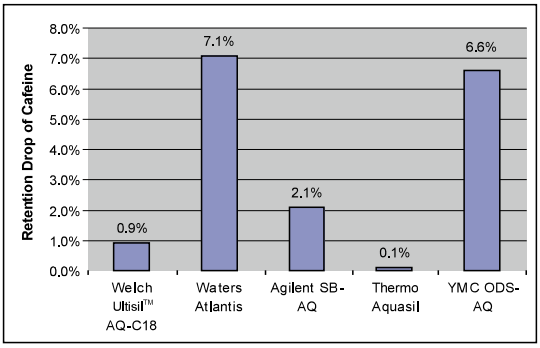
- No phase collapse, suitable for high aqueous mobile phase
- Less retentive than XB-C18 for non-polar compounds
- Increased retention for polar and water soluble compounds
- Carbon loading: 12%, pore size: 120Å, particle size: 3μm, 5μm, 10μm

Phase Collapse Research

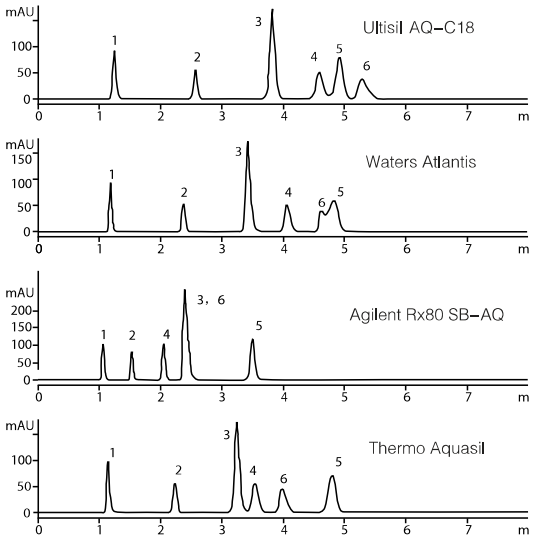


Column:	Ultisil™ AQ-C18, 4.6 ×100 mm, 5 μm
Mobile Phase:	10% ACN/90% 50 mM phosphate, pH 3.5
Detector:	215nm
Temperature:	25 °C
Flow Rate:	1.0 ml/min
Samples:	1. Theophylline 2. Caffeine 3. Phenol

Phase Collapse Comparison with Other Brands



Peak shape is excellent when analysis for acid, basic and neutral samples on AQ-C18. When at highly aqueous mobile phase, retention for polar compounds such as organic acids, peptides, nucleosides and water soluble vitamins is strong.
Under the same condition, when compared with other brands at highly aqueous mobile phase, Ultisil™ AQ-C18 shows excellent resistant to phase collapse.



Column:	Ultisil™ AQ-C18, 4.6 ×100 mm, 5 μm
Mobile Phase:	50mM phosphate, pH2.5
Detector:	210nm
Temperature:	25 °C
Flow Rate:	1.0 ml/min
Samples:	1. Oxalic acid 2. Lactic acid 3. Maleic acid 4.Citric acid 5.Fumaric acid 6.Succinic acid

How to choose XB-C18 or AQ-C18?

XB-C18	AQ-C18
• Suitable for separation of most pharmaceuticals, environment and chemical compounds • Excellent peak shape for basic and polar samples	• Suitable for water soluble strong polar samples, such as traditional Chinese medicine, food, beverage, organic acids, peptides, nucleosides and water solution vitamins • Best choice for the mobile phase that contains <20% organic phase

Ordering Information

Dimensions	AQ-C18	
	3μm	5μm
2.1×30mm	00207-21009	00207-31009
2.1×50mm	00207-21010	00207-31010
2.1×100mm	00207-21012	00207-31012
2.1×150mm	00207-21014	00207-31014
2.1×200mm	00207-21015	00207-31015
2.1×250mm	00207-21016	00207-31016
4.6×50mm	00207-21037	00207-31037
4.6×100mm	00207-21039	00207-31039
4.6×150mm	00207-21041	00207-31041
4.6×200mm	00207-21042	00207-31042
4.6×250mm	00207-21043	00207-31043
4.6×300mm	00207-21044	00207-31044

Welch provides 120Å and 300Å pore size packing materials. Please contact Welch or your local distributor for other dimensions.

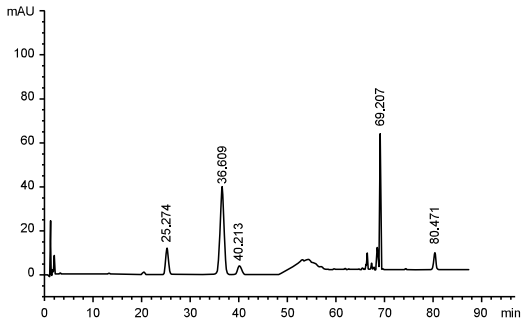
Ultisil™ LP Series HPLC Column

LP is abbreviation for Low pH. LP phases are designed for use at low pH condition. LP phase consists of two very bulky hydrophobic protective groups to prevent siloxane bond from hydrolysis at low pH condition. So the LP column is extremely stable in very low pH mobile phase and at high temperature, even at the lowest pH 1.0, making it the most stable C18 for low pH application in the market. Because LP phase is not endcapped and has more surface silanols, LP phase has more retention for some early eluted polar compounds, and provides some different selectivity than traditional C18. LP-C18 is the most polar C18 among all the C18 products of Welch.

- Not end-capped, prevent siloxane bond from hydrolysis at low pH condition
- Endure 100% water as the mobile phase, more polar than "AQ", better peak shape and resolution
- Best peak shape for polar compounds analysis
- Exceptional lifetime at low pH (0.5-8.0) and high temperature
- 300Å LP-C18 is exclusively used for separation of polypeptide and protein

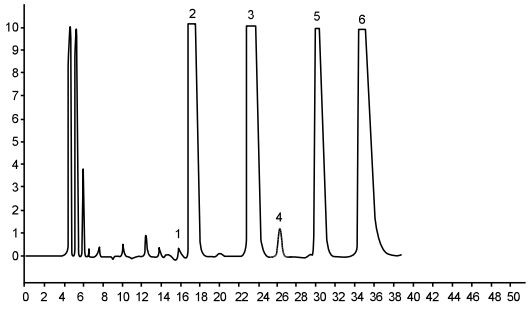
When pH<5.0, according to your separate condition, you may freely choose LP-C18 or XB-C18;
When pH<2.0 (such as 0.1%TFA), LP-C18 , which provide you exceptional stability, longer lifetime, perfect peak shape and superior selectivity, is your best choice

PNS (Panax Notoginseng Saponins) Finger-print



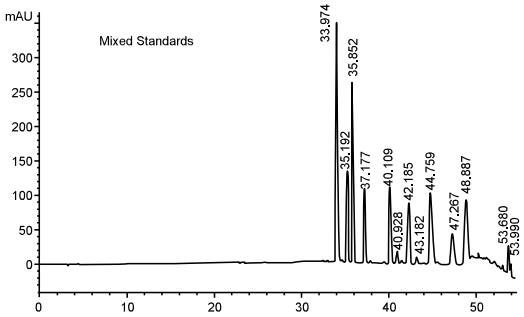
Column:	Ultisil™ LP-C18, 4.6 ×150 mm, 5 μm		
Mobile Phase:	A:ACN B:H_2O		
Gradient Program:	Time(min)	A(%)	B(%)
	0	20	80
	45	20	80
	65	34	66
	85	34	66
	86	90	10
	96	90	10
	97	20	80
Flow Rate:	1.0 ml/min		
Detector:	203nm		
Temperature:	30 °C		
Injection Volume:	10 μl		

Analysis of Gentamicin Sulphate



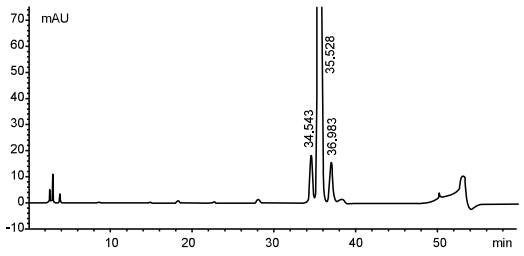
Column:	Ultisil™ LP-C18, 4.6 ×250 mm, 5 μm
Mobile Phase:	0.2mol/L TFA:methanol=92:8
Detector:	ELSD
Temperature:	110 °C
Gas Flow Rate:	2.8L/min
Flow Rate:	0.6ml/min
Injection Volume:	20 μl
Samples:	1. Sisomicin 2. Gentamicin C1a 3. C2 4.Micronomicin 5.C2a 6.C1

Analysis of Isoquinoline Alkaloid



Column:	Ultisil™ LP-C18, 4.6 ×250 mm, 5 μm		
Mobile Phase:	A:0.2% HAC,pH 4.0, adjust with triethylamine B:MeOH		
Gradient Program:	Time(min)	A(%)	B(%)
	0	85	15
	5	85	15
	25	75	35
	30	65	35
	35	60	40
	45	60	40
	50	0	100
	60	0	100
Flow Rate:	1.0 ml/min		
Detector:	240nm		
Temperature:	30 °C		
Injection Volume:	20 μl		

Analysis of Thymalfasin



Column:	Ultisil™ LP-C18, 4.6 ×250 mm, 5 μm		
Mobile Phase:	$(NH_4)_2SO_4$ buffer: $(NH_4)_2SO_4$ 26.4g, H_3PO_4 25mL, dissolved in water to 2000mL A:$(NH_4)_2SO_4$ buffer:ACN=90:10 B:$(NH_4)_2SO_4$ buffer:ACN=50:50		
Gradient Program:	Time(min)	A(%)	B(%)
	0	88	12
	45	82	20
	50	50	50
	51	88	12
	60	88	12
Flow Rate:	1.0 ml/min		
Detector:	210nm		
Temperature:	50 °C		
Injection Volume:	20 μl		

Ordering Information

Minibore Column

Dimensions	3 μm		5 μm	
	LP-C18	LP-C8	LP-C18	LP-C8
2.1×30mm	00208-21009	00209-21009	00208-31009	00209-31009
2.1×50mm	00208-21010	00209-21010	00208-31010	00209-31010
2.1×100mm	00208-21012	00209-21012	00208-31012	00209-31012
2.1×150mm	00208-21014	00209-21014	00208-31014	00209-31014
2.1×200mm	00208-21015	00209-21015	00208-31015	00209-31015
2.1×250mm	00208-21016	00209-21016	00208-31016	00209-31016

Analytical Column

Dimensions	3 μm		5 μm	
	LP-C18	LP-C8	LP-C18	LP-C8
4.6×50mm	00208-21037	00209-21037	00208-31037	00209-31037
4.6×100mm	00208-21039	00209-21039	00208-31039	00209-31039
4.6×150mm	00208-21041	00209-21041	00208-31041	00209-31041
4.6×200mm	00208-21042	00209-21042	00208-31042	00209-31042
4.6×250mm	00208-21043	00209-21043	00208-31043	00209-31043
4.6×300mm	00208-21044	00209-21044	00208-31044	00209-31044

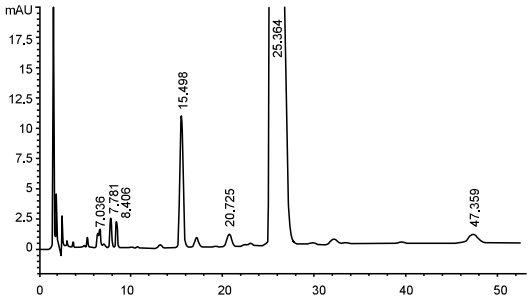
Welch provides 120Å, 300Å pore size packing materials. Please contact Welch or your local distributor for other dimensions.

Ultisil™ Plus C18 HPLC Column

Ultisil™ Plus C18 HPLC Column is a new generation of C18 column that introduced by Welch. Plus C18 is adopted unique bonding technique and double endcapping technique, it shows excellent peak shape, separation efficiency, stability and reproducibility.

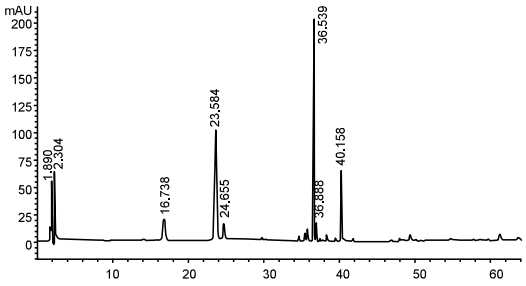
- USP listing: L1
- pH Range: 2.0-8.0
- Surface Area: 160m^2/g
- Pore Size: 130Å
- Carbon Loading: 10%

Analysis of ROX (roxithromycin)



Column:	Ultisil™ Plus C18, 4.6 ×150 mm, 5 μm		
Mobile Phase:	A:Buffer:ACN=74:26 B:water:ACN=30:70		
Gradient Program:	Time(min)	A(%)	B(%)
	0	100	0
	50	100	0
	51	90	10
	80	90	10
	81	100	0
	100	100	0
Flow Rate:	1.0 ml/min		
Detector:	205nm		
Temperature:	15 °C		
Injection Volume:	20 μl		

Analysis of PNS (Panax Notoginseng Saponins)



Column:	Ultisil™ Plus C18, 4.6 ×250 mm, 5 μm		
Mobile Phase:	A:ACN B:water		
Gradient Program:	Time(min)	A(%)	B(%)
	0~20	20	80
	20~45	20~46	80~54
	45~55	46~55	54~45
	55~60	55	45
Flow Rate:	1.5 ml/min		
Detector:	203nm		
Temperature:	25 °C		
Injection Volume:	20 μl		

Ordering Information

Dimensions	P/N
5μm, 4.6×150mm	00260-31041
5μm, 4.6×250mm	00260-31043

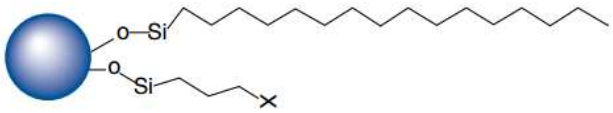
Ultisil™ ALK-C18 HPLC Column

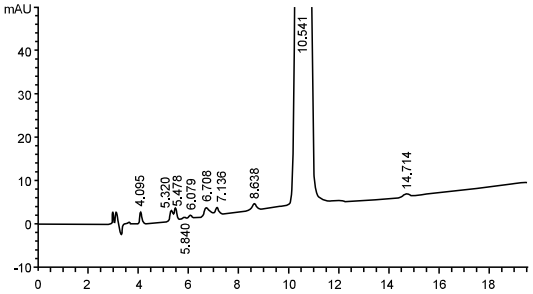
Ultisil™ ALK-C18 is a new generation of C18 column that introduced by Welch. Hydrophilic group is bonded into the silica surface, thus a lot of silanol groups are replaced, preventing the interaction between basic samples and silanol groups. Selectivity of ALK-C18 is obviously different from traditional C18 as existence of hydrophilic groups.

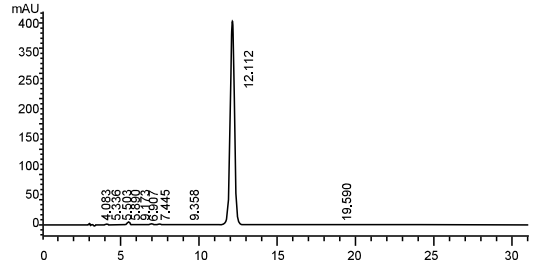
Features:

- Mixed solid phase, have both hydrophobic force and electrostatic force
- Excellent peak shape for basic compounds
- Fast separation of similar samples on a column

USP listing: L1
pH Range: 1.5-10.0
Surface Area: 320m^2/g
Pore Size: 120Å
Carbon Loading: 12%







Column:	Ultisil™ ALK-C18, 4.6 ×250 mm, 5 µm		
Mobile Phase:	A:0.5 mol/L KH_2PO_3(adjust pH to 3.5 with H_3PO_4):MeOH:water=10:30:60 B:0.5 mol/L KH_2PO_3(adjust pH to 3.5 with H_3PO_4):MeOH:water=10:50:40		
Gradient Program:	Time(min)	A(%)	B(%)
	0	70	30
	20	0	100
	35	0	100
	50	70	30
Flow Rate:	1.0 ml/min		
Detector:	225nm		
Temperature:	30 °C		
Injection Volume:	20 µl		

Ordering Information

Dimensions	P/N
5µm, 4.6×150mm	00253-31041
5µm, 4.6×250mm	00253-31043

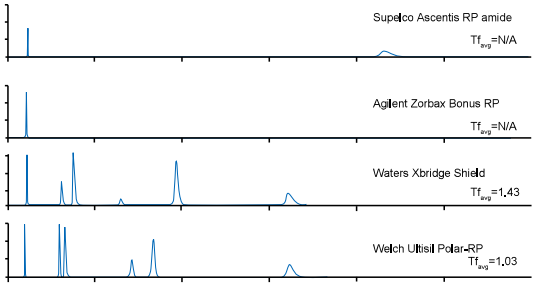
Ultisil™ Polar Embedded HPLC Column

Polar embedded phases have been developed for more than 10 years. The earlier development of polar embedded phase is on amide phase. The polar functional group close to the surface increases the wettability of phase, thus decreasing phase collapse, so that up to 95% water phase could be applied in the mobile phase. It also shields the effects of unreacted silanol groups, providing excellent peak shape for very polar and strong basic compounds and different selectivity than C18 phase. We provide two kinds of packing materials - Ultisil™ Polar-RP and Ultisil™ Phenyl-Ether.

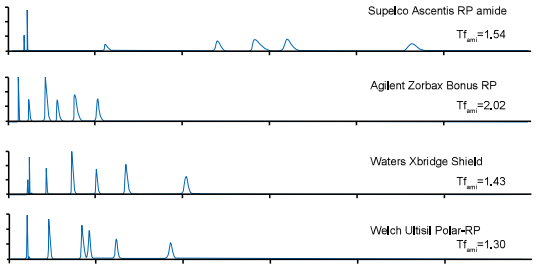
Ultisil™ Polar RP HPLC Column

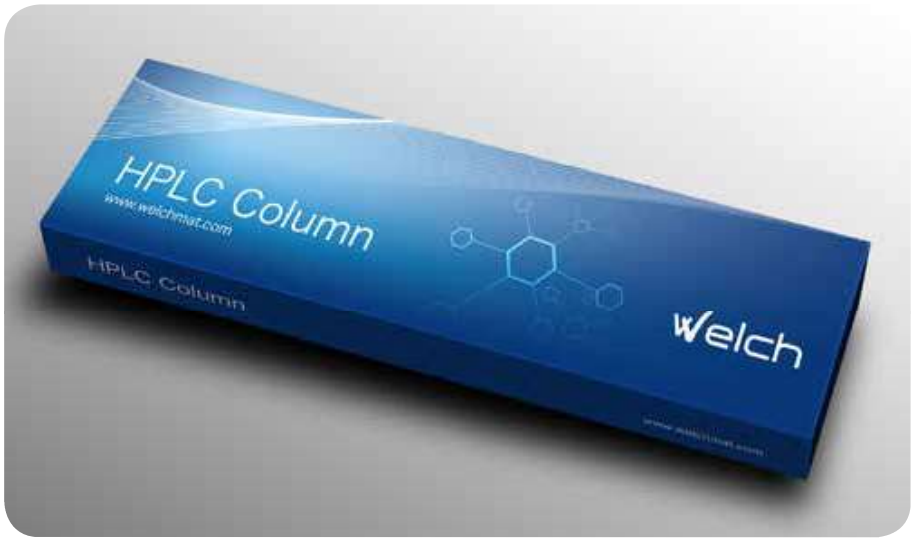
- Exhibit at 100% water contents in mobile phase, even better than AQ-C18
- Different selectivity to AQ-C18
- Excellent peak shape for acid and basic compounds due to the "shield" effect of polar linkage to silanol activity by forming hydrogenbonding
- Be retentive for polar compounds. Uracil, which can't be retained on most reversed phase columns, when at 100% water, can be retained on this column, even be eluted after 5-fluorocytosine and cytosine. Analysis of purine, pyrimidine, small molecular acid, catecholamine and water soluble vitamins, require high water phase content mobile phase
- Fast separation of similar samples on a column

Comparison of separation of acid compounds

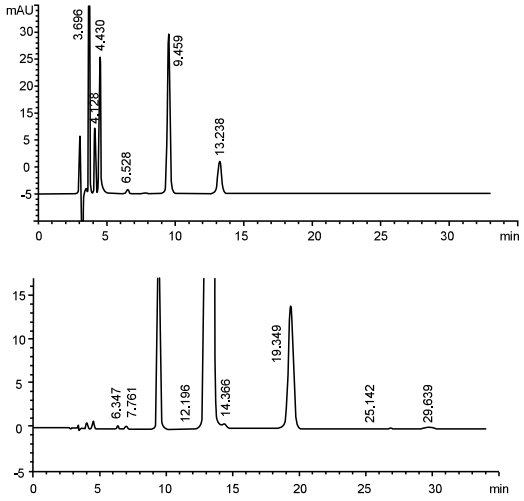


Comparison of separation of base compound





Analysis of Cefradine

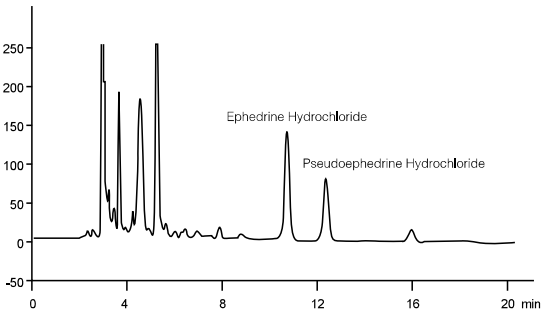


Column:	Ultisil™ Polar RP, 4.6 ×250 mm, 5 μm
Mobile Phase:	MeOH:water:3.86% NaAC:4%HAC=400:1564:30:6
Detector:	254nm 220nm
Temperature:	Ambient
Flow Rate:	0.9ml/min
Injection Volume:	20 μl
Samples:	Impurity reference solution 220nm 7-ADCA: 3.696min Dihydrophenlglycine: 4.128min Cefalexin: 9.495min Cefradine: 13.238min

Ultisil™ Phenyl-Ether HPLC Column

- Improved polar & aromatic reversed phases selectivity that complements the more conventional C18 column chemistries
- Better selectivity than phenyl phase for separation of nitrobenzene isomers
- Improved peak shape of the highly acidic polar compound, and an alternative selectivity compared to other polar phases such as polar embedded phase
- Compatible with 100% water mobile phase

Analysis of Ephedra



Column:	Ultisil™ Phenyl-Ether, 4.6 ×250 mm, 5 μm
Mobile Phase:	MeOH:0.092%H_3PO_4 solution(contain 0.04% trimethylamine and 0.02% n-butylamine)=1.5:98.5
Detector:	210nm
Temperature:	Ambient
Flow Rate:	1.0ml/min
Injection Volume:	10 μl

Ordering Information

Dimensions	Ultisil™ Polar RP	Ultisil™ Phenyl-Ether
5μm, 4.6×150mm	00215-31041	00214-31041
5μm, 4.6×250mm	00215-31043	00214-31043

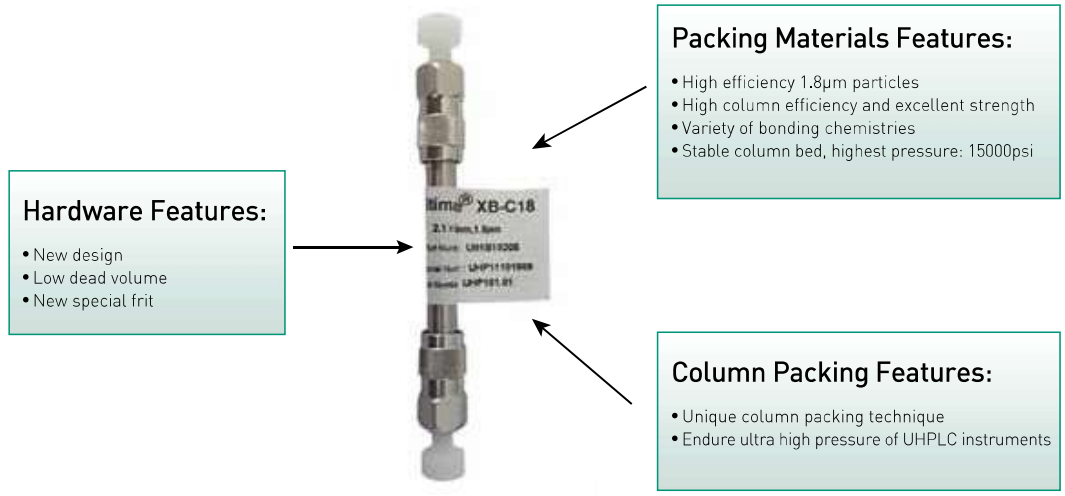
Ultisil™ UHPLC Column

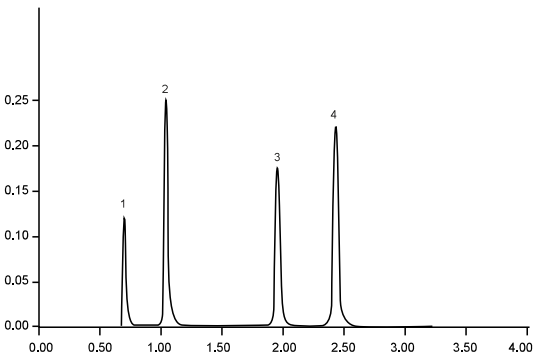
Welch also provide Ultisil™ UHPLC (1.8 μm) columns. Due to the high column efficiency and good lot-to-lot reproducibility, Ultisil™ UHPLC could get high quality data, decreases the probability of repeated analysis sample and reduces the consumption of solvents at the same time. Ultisil™ UHPLC series include different kinds of bonded phase, specified guard column and pre-column for you to select and realize faster, higher resolution and more environmental chromatography applications.

Ultra Resolution: the same or better resolution than normal column which is longer and has more packing materials than UHPLC.

Ultra speed: UHPLC offer more information in unit time and higher speed due to its small particles.

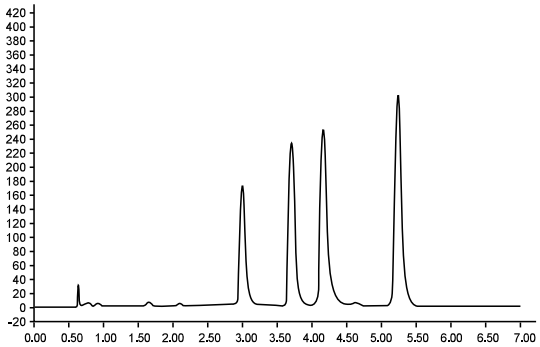
Sensitivity:higher N, narrower peak width (W), higher peak height. The system sensitivity of 1.8 μm UHPLC is 70% and 40% higher than the system sensitivity of 5μm and 3.5μm.





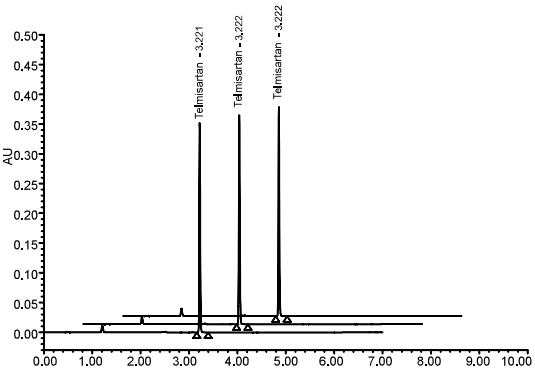
Column:	Ultisil™ UHPLC XB-C18, 2.1 ×100 mm, 1.8 μm
Mobile Phase:	ACN:water=65:35
Detector:	254nm
Temperature:	Ambient
Flow Rate:	0.35ml/min
Injection Volume:	2 μl
Back Pressure:	5000psi
Instrument:	Waters Acquity UPLC
Samples in Order:	Uracil Phenol 4-chloronitrobenzene Toluene

Analysis of Aflatoxin



Column:	Ultisil™ UHPLC XB-C18, 2.1 ×100 mm, 1.8 µm
Mobile Phase:	MeOH:ACN:water=18:18:64
Detector:	FLD Excitation:365 nm Emission:450nm
Temperature:	35°C
Flow Rate:	0.35ml/min
Injection Volume:	2 µl
Instrument:	Waters UPLC
Samples in Order:	G2, G1, B2, B1

Analysis of Telmisartan Tablets



	Sample Name	Retention Time	Area	USP Theoretical Plate Number
1	Telmisartan	3.222	487938	126585
2	Telmisartan	3.222	487646	126607
3	Telmisartan	3.221	488317	126791

Ordering Information

1.8µm Analytical Column

Dimensions	XB-C18	XB-C8	XB-Phenyl	LP-C18	SiO_2	Polar RP
2.1×30	00201-11009	00202-11009	00203-11009	00208-11009	00200-11009	00215-11009
2.1×50	00201-11010	00202-11010	00203-11010	00208-11010	00200-11010	00215-11010
2.1×100	00201-11012	00202-11012	00203-11012	00208-11012	00200-11012	00215-11012
2.1×150	00201-11014	00202-11014	00203-11014	00208-11014	00200-11014	00215-11014
4.6×30	00201-11036	00202-11036	00203-11036	00208-11036	00200-11036	00215-11036
4.6×50	00201-11037	00202-11037	00203-11037	00208-11037	00200-11037	00215-11037

Not find the size you want? Contact Welch or your local distributor for other dimensions.

Ultisil™ PAH Column

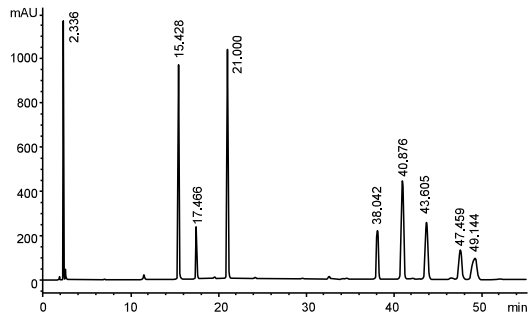
Ultisil™ PAH Column is the special column which just designed for separation of PAHs in EPA method 610 by welch. PAHs (Polycyclic Aromatic Hydrocarbon) are the hydrocarbons which contain two or more benzene rings, considered priority pollutants and the analysis of these potentially carcinogenic compounds in water, air, soil and food. Most of the PAHs do not exist alone, they always come together. The materials may contain PAHs: charcoal, crude oil, creosote, tar, drugs, dyes, plastic, rubber, pesticide, lube, release agent, electrolyte, mineral oil, pitch, insecticide, bactericide etc.

16 PAHs:

Naphthalene	Benzo(a)anthracene
Acenaphthylene	Chrysene
Acenaphthene	Benzo(b)fluoranthene
Fluorene	Benzo(k)fluoranthene
Phenanthrene	Benzo(a)pyrene
Anthracene	Indeno(1,2,3-cd)pyrene
Fluoranthene	Dibenzo(a,h)anthracene
Pyrene	Benzo(g,hi)perylene

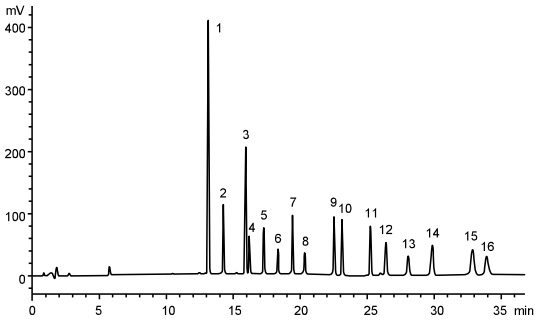
The Ultisil™ PAH columns separate all of the 16 PAHs in EPA method 610 quickly (less than 30 min) with high resolution. The Ultisil™ PAH columns is silica based columns for PAHs analysis with best peak shape.

Analysis of 9 Pesticide Residues in Water



Column:	Ultisil™ PAH, 4.6 ×250 mm, 5 μm
Mobile Phase:	Water:ACN=70:30(0min) 30:70(30min)
Detector:	220nm
Temperature:	30°C
Flow Rate:	1.0ml/min
Injection Volume:	10μl
Mixed Standards:	Melbine, uracil, atrazine, terbuthylazine, estradiol, pendimethalin, fondantone, pyrene, cypermethrin

Separation of 16 PAHs in EPA method 610



Column:	Ultisil™ PAH, 4.6 ×250 mm, 5 μm
Mobile Phase:	A:water B:ACN Gradient
Detector:	220nm
Temperature:	Ambient
Flow Rate:	1.5ml/min
Injection Volume:	10μl
Mixed Standards:	1. Naphthalene 2. Acenaphthylene 3. Acenaphthene 4. Fluorene 5. Phenanthrene 6. Anthracene 7.Fluoranthene 8. Pyrene 9.Benzo(a)anthracene 10.Chrysene 11. Benzo(b)fluoranthene 12. Benzo(k)fluoranthene 13. Benzo(a)pyrene 14. Dibenzo(a,h)anthracene 15. Benzo(g,hi)perylene 16. Indeno(1,2,3-cd)pyrene

Ordering Information

Dimensions	P/N
3μm, 4.6×150mm	00210-21041
3μm, 4.6×250mm	00210-21043
5μm, 4.6×150mm	00210-31041
5μm, 4.6×250mm	00210-31043

Welch provides 120Å and 300Å pore size packing materials. Please contact Welch or your local distributor for other dimensions.

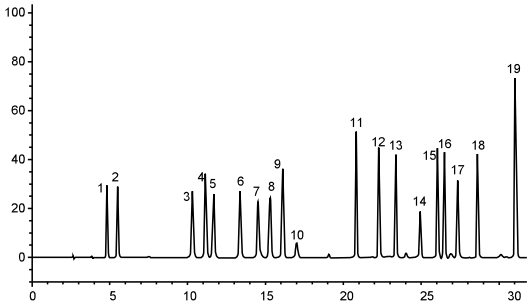
Ultisil™ Amino Acid HPLC Column

Ultisil™ Amino Acid HPLC columns are made from spherical, totally porous, and ultra high purity (>99.999%) type B silica particles. Our proprietary surface modification before bonding generates a very smooth and uniform surface with less acidic surface silanol. Ultisil™ Amino Acid columns provide the best performance in peak shape, efficiency and resolution for the analysis of 18 amino acids. Total sample preparing time can be achieved in as little as 30 min.

Ultisil™ Amino Acid Mthod Package

- Ultisil Amino Acid Column (5μm, 4.6×250mm), 1pk
- Amino Acid Standards, 2 bottles. 1mL/bottle
- Derivatization reagent A
- Derivatization reagent B
- Ultisil™ AA method brochure

Separation of 18 Amino Acids



1. Aspartic Acid	2. Glutamic acid
3. Serine	4. Glycine
5. Histidine	6. Arginine
7. Threonine	8. Alanine
9. Proline	10. Ammonium chloride
11. Tyrosine	12. Valine
13. Methionine	14. Cystine
15. Isoleucine	16. Leucine
17. Norleucine	18. phenylalanine
19. Lysine	

Ordering Information

Dimensions	P/N
3μm, 4.6×150mm	00211-21041
3μm, 4.6×250mm	00211-21043
5μm, 4.6×150mm	00211-31041
5μm, 4.6×250mm	00211-31043

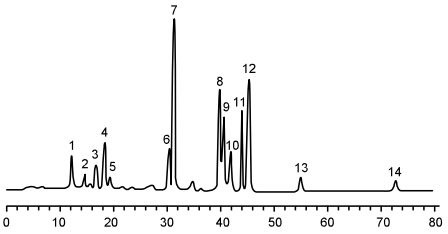
Not find the size you want? Contact Welch or your local distributor for other dimensions.

Ultisil™ C30 HPLC Column

Compared to classical C18 stationary phase, C30 is much more hydrophobic and retainable. Ultisil™ C30 is designed for the separation of geometric isomer recognition, polar carotenes, polar and nonpolar xanthophylls, steroids, retinols and fat-soluble vitamins (A, D, K and E).

- Polymeric C30 alkyl chains
- High lipophilic
- Exceptional selectivity pattern for geometric isomers
- pH range: 1.5-10

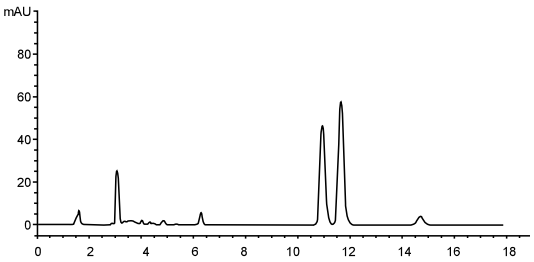
Separation of Carotenoids



1:Astaxanthin
2:Capsanthin
3:Lutein
4:Zeaxanthin
5:Canthaxanthin
6:β-Cryptoxanthin
7:Echinenone
8:15-cis β-Carotene
9:13-cis β-Carotene
10:α-Carotene
11:trans β-Canotene
12:9-cistrans β-Carotene
13:8β-Carotene
14:Lycopene

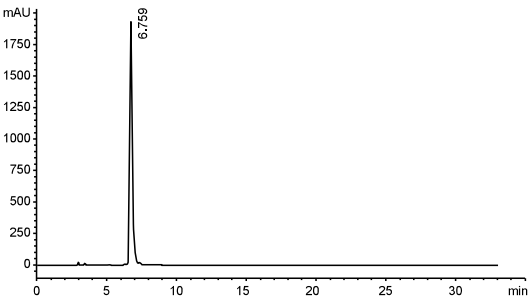
Column:	Ultisil™ C30, 4.6 ×250 mm, 5 μm
Mobile Phase:	A:MeOH:MTBE:H_2O=81:15:4 B: MeOH:MTBE=10:90
Gradient Program:	0-90min (0%B-100%B)
Detector:	450nm
Temperature:	Ambient
Flow Rate:	1.0ml/min

Separation of Ursolic Acid and Oleanolic Acid



Column:	Ultisil™ C30, 4.6 ×250 mm, 5 μm
Mobile Phase:	ACN:water=93:7
Detector:	210nm
Temperature:	20°C
Flow Rate:	1.0ml/min
Injection Volume:	10μl

Analysis of All-trans Astaxanthin



Column:	Ultisil™ C30, 4.6 ×250 mm, 5 μm		
Mobile Phase:	A: MeOH:1%H_3PO_4=94:4 B: MeOH:TBME:1% H_3PO_4=16:80:4		
Gradient Program:	Time(min)	A(%)	B(%)
	0	67	23
	15	52	48
	23	0	100
	27	67	33
	30	67	33
Flow Rate:	1.0 ml/min		
Detector:	474nm		
Temperature:	30 °C		
Injection Volume:	20 μl		

Ordering Information

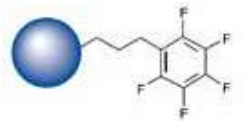
Dimensions	P/N
3μm, 4.6×150mm	00223-21041
3μm, 4.6×250mm	00223-21043
5μm, 4.6×150mm	00223-31041
5μm, 4.6×250mm	00223-31043

Not find the size you want? Contact Welch or your local distributor for other dimensions.

Ultisil™ Fluorinated Phase HPLC Column

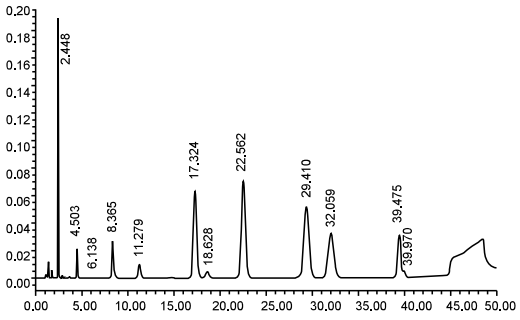
Ultisil™ Fluorinated Phase has high selectivity and increased retention toward closely related compounds, not just for aromatic fluorinated compounds, but also for other nonaromatic halogenated compounds. It could be used as usual reversed phase and provide an alternative and complementary separation for many analytes performed on C8 or C18 columns. Fluorinated phase has better separation for the ion exchange and polar compounds than alkyl phase. Fluorinated phases can provide different elution orders, leading to enhance selectivity for difficult-to-separate compounds.

Ultisil™ PFP HPLC Column



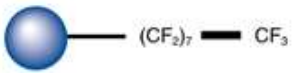
Ultisil™ PF-Phenyl is a phase primarily used in the separation of molecules bearing fluorine atoms, but may also be in the separation of non-fluorous compounds such as Taxol and its derivatives. Because of its phenyl ring, it has a higher selectivity for aromatics containing molecules compared to the other alkyl-fluorinated phase. Ultisil™ PF-Phenyl can separate nitro-benzene isomers (para vs. ortho), which cannot be separated by traditional phenyl phase.

Analysis of Taxol



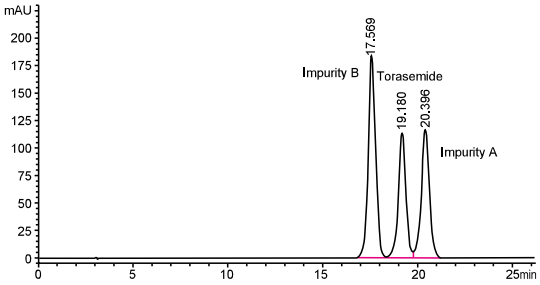
Column:	Ultisil™ PFP, 4.6 ×250 mm, 5 μm		
Mobile Phase:	A: ACN B: water		
Gradient Program:	Time(min)	A(%)	B(%)
	0	35	65
	35	35	65
	60	80	20
	70	85	15
	80	85	65
Flow Rate:	2.6 ml/min		
Detector:	227nm		
Temperature:	30 °C		
Injection Volume:	10 μl		

Ultisil™ F-C8 HPLC Column



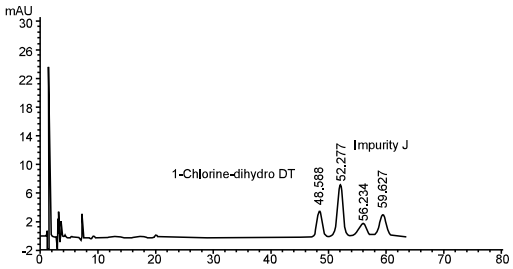
Ultisil™ F-C8 column has high selectivity and increased retention toward halogenated aromatic and alkyl compounds, just different from octal alkyl phase.

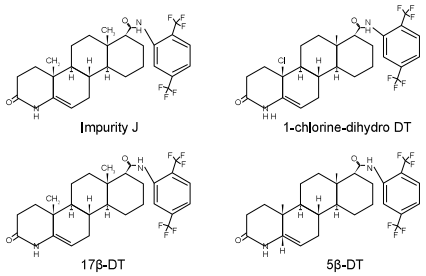
Torasemide



Column:	Ultisil™ F-C8, 4.6 ×250 mm, 3μm
Mobile Phase:	0.02mol/L KH_2PO_4(pH 7.0)/ MeOH=65/35
Flow Rate:	1.0 ml/min
Detector:	288 nm
Temperature:	30 °C
Injection Volume:	20μl
Notes:	Be sensitive to mobile phase pH

Analysis of DT Impurities





Column:	Ultisil™ F-C8, 4.6 ×250 mm, 3μm
Mobile Phase:	MeOH/ACN/water=54/6/40
Flow Rate:	1.0 ml/min
Detector:	288 nm
Temperature:	Ambient
Injection Volume:	10μl

Ordering Information

Dimensions	Ultisil™ PFP	Ultisil™ F-C8
5μm, 4.6×150mm	00224-31041	00222-31041
5μm, 4.6×250mm	00224-31043	00222-31043

Ultisil™ Mixed Mode Phase

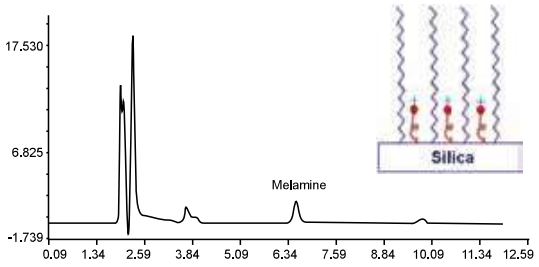
Uitisil™ Mixed mode phase, whose selectivity is totally different from traditional reversed phase, is a new packing material which is the development trend of liquid chromatography. There are three mode of mixed mode phase: reversed phase/anion exchange, reversed phase/cation exchange, reversed phase/amphoteric compound.

- Different selectivity from reversed phase/anion exchange column
- Can separate strong polar compounds without using ion-pair agent
- Separate positive compounds, negative compounds and neutral compounds simultaneously
- Appropriate for MS analysis

Ultisil™ MM C18/SCX

- Ultra pure spherical porous silica
- Can be used for separation of hydrophobic and ion compounds
- The best choice for analysis of unknown samples, especially metabolites
- The first mixed column in China

Analysis of Melamine

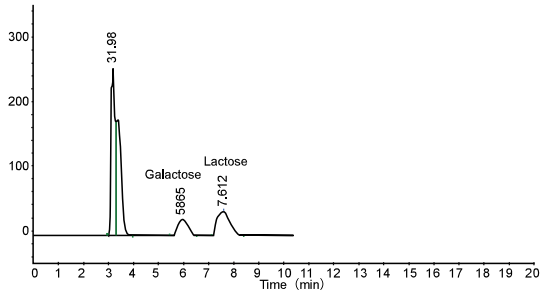


Column:	Ultisil™ MM C18/SCX, 4.6 ×250 mm, 5 μm
Mobile Phase:	0.01 M NH_4AC(pH3.0):ACN=62:38
Detector:	240 nm
Temperature:	40 °C
Flow Rate:	1.0 ml/min
Injection Volume:	20 μl

Ultisil™ MM NH_2/CN

- Hilic mode
- Base on ultra pure spherical porous silica
- Appropriate for analysis of sugars which are hard to separate

Separation of Lactose and Galactose



Column:	Ultisil™ MM NH_2/CN, 4.6 ×250 mm, 5μm
Mobile Phase:	ACN:water =70:30
Detector:	RID (40°C)
Temperature:	45°C
Flow Rate:	1.0ml/min
Injection Volume:	20μl

Ordering Information

5μm Analytical Column

Dimensions	MM C18/SCX	MM NH_2/CN
2.1×50	00235-31010	00243-31010
2.1×100	00235-31012	00243-31012
2.1×150	00235-31014	00243-31014
4.6×150	00235-31041	00243-31041
4.6×250	00235-31043	00243-31043

Ultisil™ HILIC Column

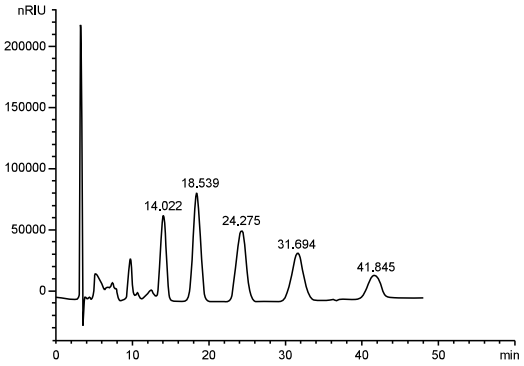
Hilic(Hydrophilic interaction liquid chromatography) is a separation mode which is achieved through the partitioning of polar solutes from high concentration, water-miscible, organic mobile phase into hydrophilic surface environment.

Ultisil™ HILIC Amide

Ultisil™ HILIC Amide column is a special column designed for HILIC mode. As amide group has strong hydrophilicity and stability and it is also an electrically neutral group, so Ultisil™ Amide has a longer life, better separate repeatability and peak shape than NH_2.

- Based on the silica bonded with amide groups, appropriate for the separation of hydrophilic samples
- Multiple action like hydrogen bond, molecular and electrostatic force
- Good compatible with kinds of detectors, such as MS detector
- Stable on organic mobile phase which contains water

Fructo-oligose

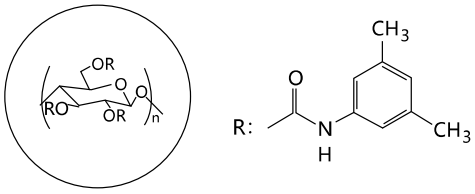


Column:	Ultisil™ HILIC Amide, 4.6 ×250 mm, 5μm
Mobile Phase:	ACN:water =70:30
Detector:	RID (40°C)
Temperature:	40°C
Flow Rate:	1.0ml/min
Injection Volume:	20μl
Mixed Standards:	Sucrose, kestose, nystose, megazyme, 1F-Fructofuranosyl nystose)

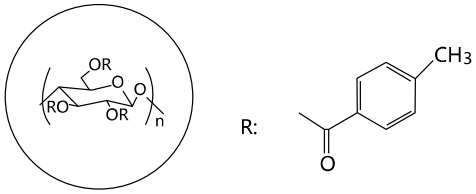
Ultisil™ Chiral Column

Ultisil™ Chiral columns are based on chrial polymer (amylose derivatives or cellulose derivatives) coated spherical silica. We have 5μm and 10μm two dimensions, and four kinds of chiral columns, including Cellu-D, Cellu-J, Amy-D and Amy-s. 80% of all racemic compounds could be separated by those four chiral columns.

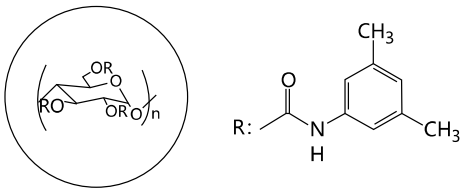
Cellu-D/Cellu-DR:
Cellulose tris (3,5-dimethylphenylcarbamate) coated silica



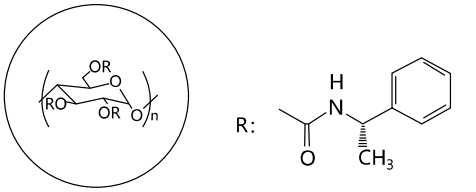
Cellu-J/Cellu-JR:
Cellu-J/Cellu-JR: Cellulose tris (4-methyl benzoate) coated silica



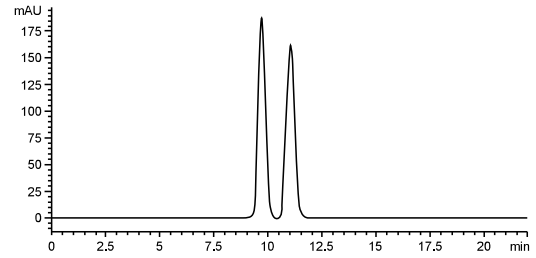
Amy-D/Amy-DR:
Amylose tris (3,5-dimethylphenylcarbamate) coated silica



Amy-S/Amy-SR:
Amylose tris [(S)-α-methylphenyl carbamate] coated Silica

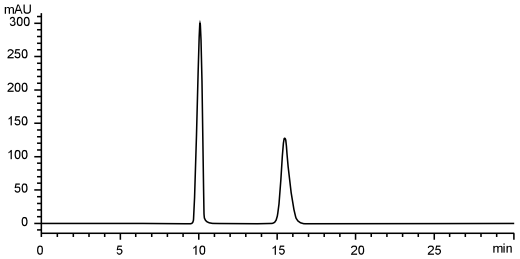


Fenamiphos



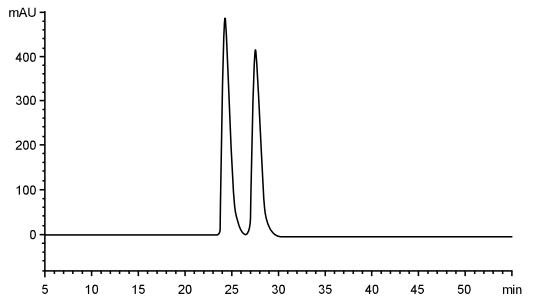
Column:	Ultisil™ Amy-D
Mobile Phase:	N-hexane: ethanol=90:10

Trŏger's Base



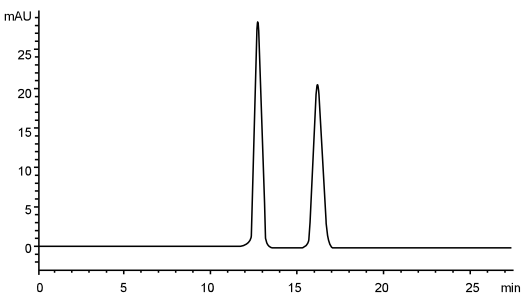
Column:	Ultisil™ Cellu-J
Mobile Phase:	N-hexane: isopropanol=90:10

DL-Repaglinide



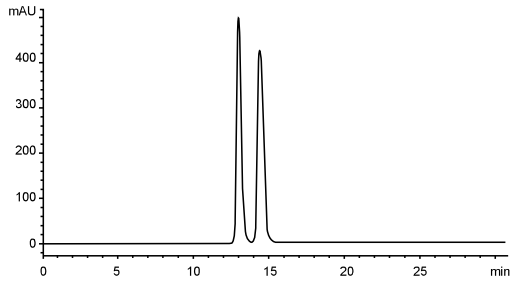
Column:	Ultisil™ Cellu-D
Mobile Phase:	N-hexane: ethanol :TFA=90:10:0.1

Myclobutanil



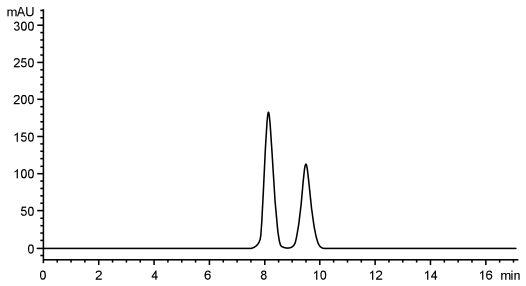
Column:	Ultisil™ Amy-S
Mobile Phase:	N-hexane: ethanol=90:10

Quizalofop-ethyl



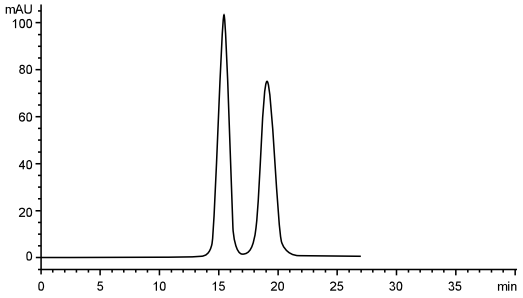
Column:	Ultisil™ Amy-D
Mobile Phase:	N-hexane: ethanol =95:5

Oxirane,2-[(phenylmethoxy)methyl]-



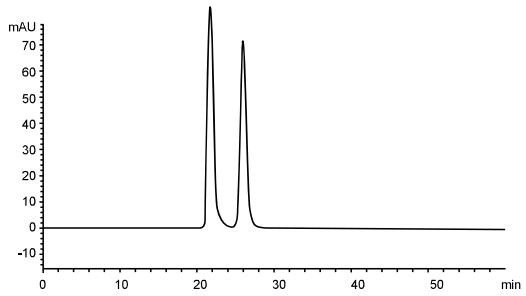
Column:	Ultisil™ Amy-S
Mobile Phase:	N-hexane: isopropanol =98:2

Llaprazole



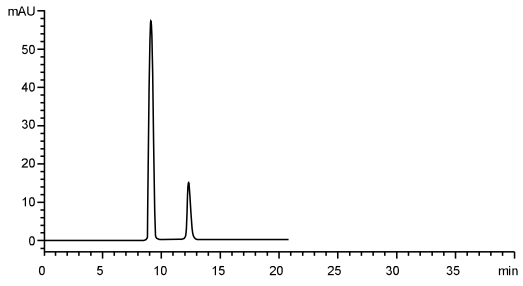
Column:	Ultisil™ Cellu-JR
Mobile Phase:	MeOH: H_2O =80:20

Omeprazole



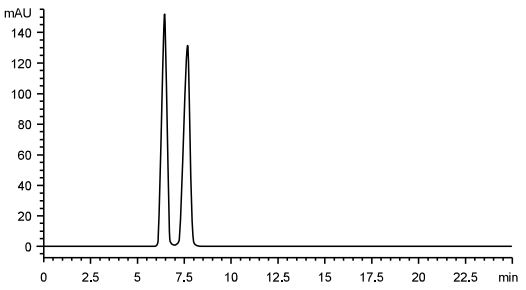
Column:	Ultisil™ Amy-D
Mobile Phase:	N-hexane: isopropanol =83:17

Alkannin



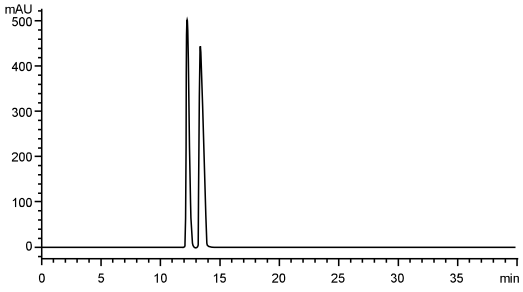
Column:	Ultisil™ Cellu-D
Mobile Phase:	N-hexane: isopropanol:TFA =90:10:0.1

Fmoc-Leu-OH



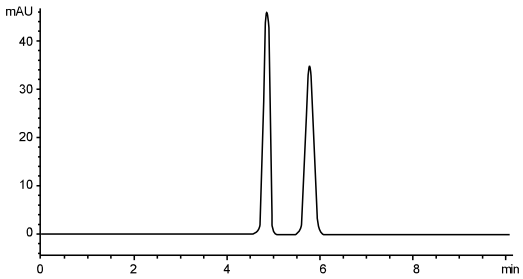
Column:	Ultisil™ Cellu-DR
Mobile Phase:	MeOH: (pH=2.0 H_3PO_4)water =95:5

Butylphthalide



Column:	Ultisil™ Cellu-D
Mobile Phase:	N-hexane: isopropanol =98:2

Hexaconazole



Column:	Ultisil™ Amy-S
Mobile Phase:	N-hexane: isopropanol =90:10

Ordering Information

Dimensions	Cellu-D	Amy-D	Cellu-J	Amy-S	Cellu-DR	Amy-DR	Cellu-JR	Amy-SR
5μm, 4.6×150mm	00219-31041	00221-31041	00218-31041	00220-31041	00262-31041	00264-31041	00261-31041	00263-31041
5μm, 4.6×250mm	00219-31043	00221-31043	00218-31043	00220-31043	00262-31043	00264-31043	00261-31043	00263-31043
10μm, 4.6×150mm	00219-41041	00221-41041	00218-41041	00220-41041	00262-41041	00264-41041	00261-41041	00263-41041
10μm, 4.6×250mm	00219-41043	00221-41043	00218-41043	00220-41043	00262-41043	00264-41043	00261-41043	00263-41043
5μm, 10×150mm	02682-21101	02684-21101	02681-21101	02683-21101	02686-21101	02688-21101	02685-21101	02687-21101
5μm, 10×250mm	02682-21102	02684-21102	02681-21102	02683-21102	02686-21102	02688-21102	02685-21102	02687-21102
10μm, 10×150mm	02682-31101	02684-31101	02681-31101	02683-31101	02686-31101	02688-31101	02685-31101	02687-31101
10μm, 10×250mm	02682-31102	02684-31102	02681-31102	02683-31102	02686-31102	02688-31102	02685-31102	02687-31102
5μm, 20×150mm	02682-21131	02684-21131	02681-21131	02683-21131	02686-21131	02688-21131	02685-21131	02687-21131
5μm, 20×250mm	02682-21132	02684-21132	02681-21132	02683-21132	02686-21132	02688-21132	02685-21132	02687-21132
10μm, 20×150mm	02682-31131	02684-31131	02681-31131	02683-31131	02686-31131	02688-31131	02685-31131	02687-31131
10μm, 20×250mm	02682-31132	02684-31132	02681-31132	02683-31132	02686-31132	02688-31132	02685-31132	02687-31132