Ultisil® Series HPLC Column

Ultisil Plus series column is based on new high-purity fully porous silica and it adpots Welch's unique bonding process and end-capping technique to ensure higher inertness on the silica surface, resulting in more symmetrical peak shape, higher column efficiency, and more stable separation performance annd better batch reproducibility. It has better performance especially for the analysis of multi-impurity components. The high standard and strict quality control conditions of the column ensure that each column is "survival of the fittest" after strict quality screening before leaving the factory. Ultisil Plus series columns are extremely resistant to contamination, which enables the column to have a long service life while analyzing complex matrix samples.

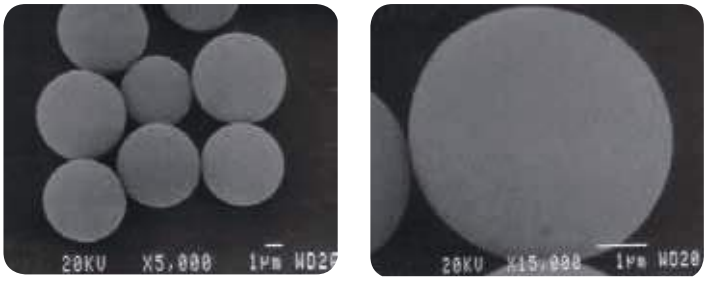
Features

- Super anti-pollution ability
- Excellent longevity
- Excellent batch-to-batch reproducibility
- The first choice for herbal medicine testing

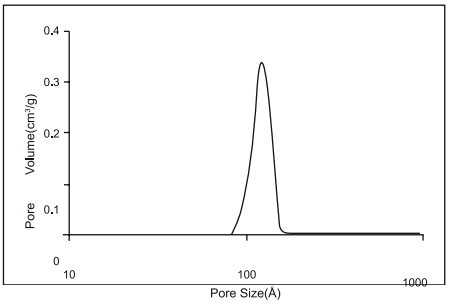
Ultisil® HPLC Column Packing Materials

Pictures below show size uniformity and surface smoothness of the packing particles, characteristics that enable more uniform packing with less channeling effect, resulting in lower back pressure and higher column efficiency.

SEM Pictures of Ultisil® Particles

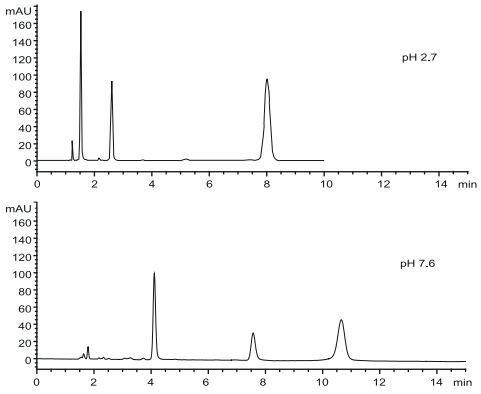


Ultisil® Pore Size Distribution



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 a neutral chelating reagent, 1,2-dihydroxylnaphthalene. 4,4′-dipyridyl, which cannot form chelating complex with metal, is used as a reference. 2,2′-dipyridyl and 1,2-dihydroxylnaphthalene, which are chelating reagents, are sensitive to trace amount metal in silica. When a C18 column based on type A silica or other so-called type B silica with higher metal content is used, the peaks of 2,2′-dipyridyl and 1,2-dihydroxylnaphthalene would tail or even totally disappear.



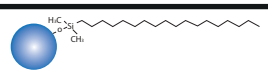
Column:	Ultisil® XB-C18, 4.6 ×150 mm, 5 μm
Mobile Phase:	20 mM phosphate(pH 7.6) / methanol=55/45
Flow rate:	1.0 mL/min
Detector:	215 nm
Temperature:	25℃
Injection Volume:	1 μL
Samples:	1) 4,4′-Dipyridyl 2) 2,2′-Dipyridyl 3) 1,2-Dihydroxylnaphthalene

Ultisil® XB-C18 provides good peak shapes in the separation of these three compounds under pH 7.6, which indicates Ultisil silica contains

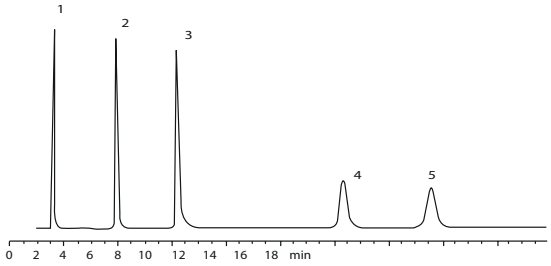
Ultisil® XB-C18—Universal HPLC Analytical Column

Ultisil® XB-C18 is the most commonly used column in the market. It can substitute Waters Symmetry 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.

Ultisil® XB-C18

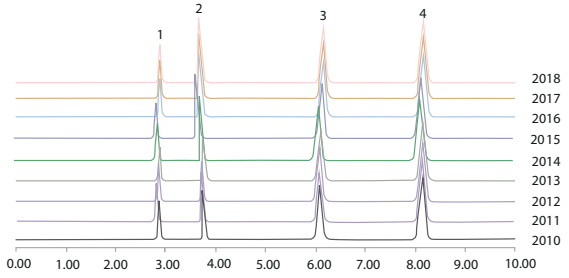
Structural Formula	
pH Range	1.5-10.0
Particle Size	3 μm, 5 μm, 10 μm
Surface Area(m^2/g)	320(120 Å), 90(300 Å)
Carbon Loading(%)	17(120 Å), 8(300 Å)
USP List	L1
Endcapped	Yes

Separation of Basic Compounds Antidepressant at pH 7.0



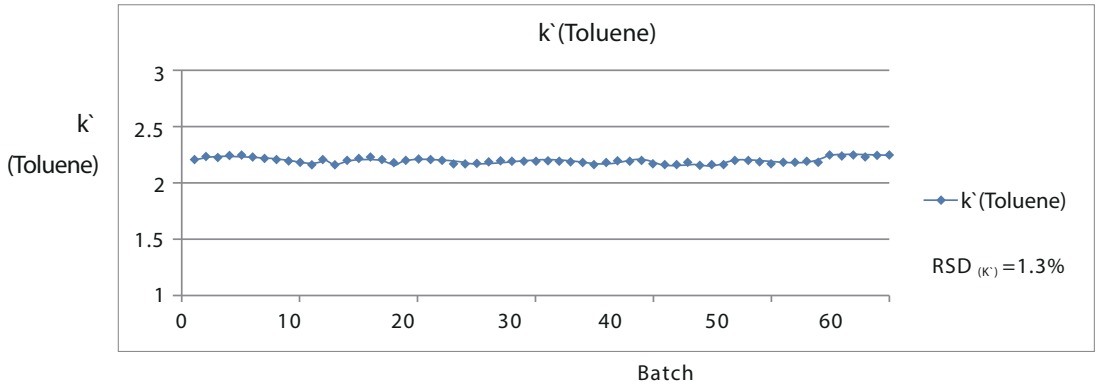
Column:	Ultisil® XB-C18, 4.6 ×150 mm, 5 μm	
Mobile Phase:	20 mM phosphate(pH 7.0) / methanol=20 / 80	
Flow rate:	1.0 mL/min	
Detector:	215 nm	
Temperature:	25°C	
Samples:	1) Uracil 3) Ortriptyline 5) Trimipramine	2) Ropranolol 4) Amitryptyline

Comparison of Peak Shape between Batch to Batch

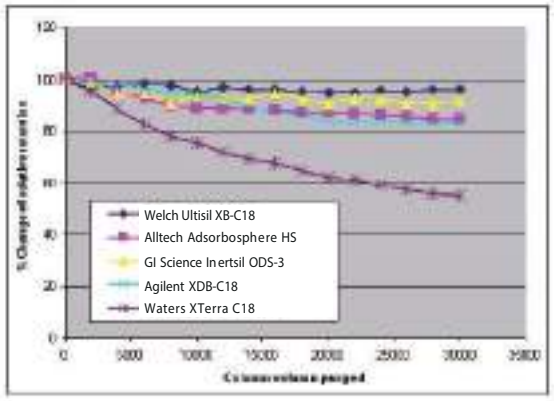


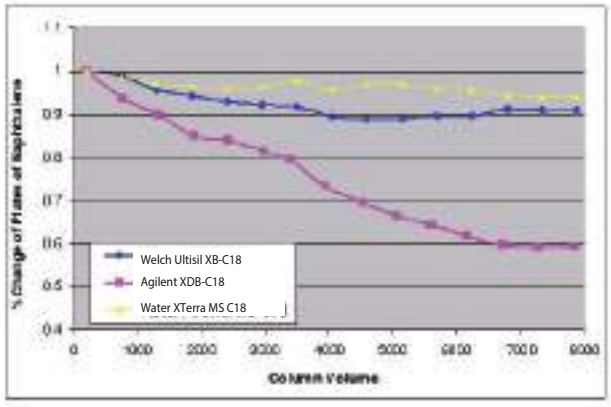
Column:	Ultisil® XB-C18, 4.6 ×250 mm, 5 μm	
Mobile Phase:	Methanol / water=75 / 25	
Flow rate:	1.0 mL/min	
Detector:	254 nm	
Temperature:	25°C	
Samples:	1) Uracil 3) 4-chloronitrobenzen	2) Phenol 4) Methylbenzene

Capacity Factor(K') of Batch to Batch Reproducibility



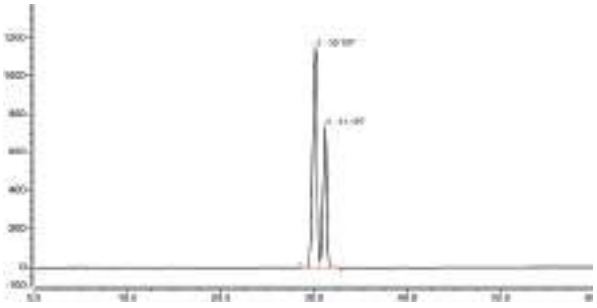
Excellent Stability at Low pH and High pH





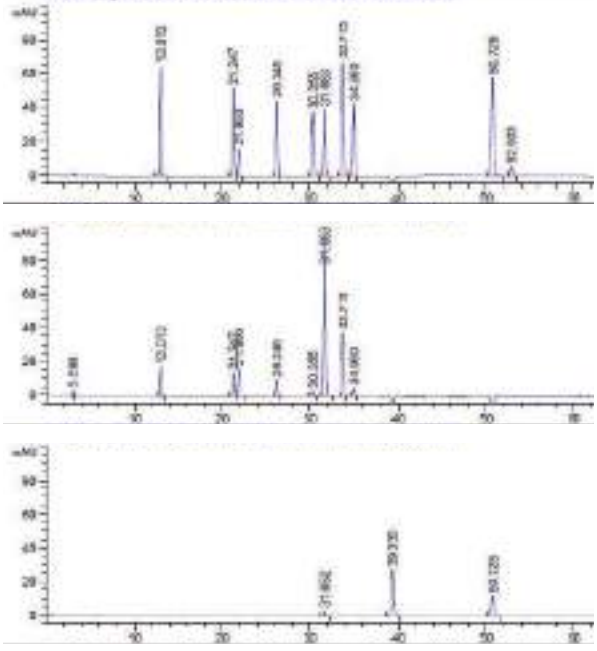
The stability of XB-C18 is better than other brand columns under pH 1.3 or under pH 10.

Argatroban



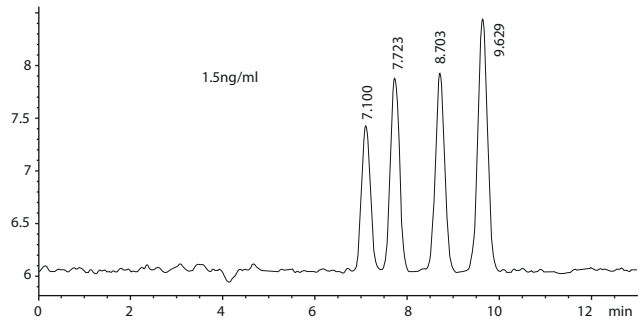
Column:	Ultisil® XB-C18, 4.6 ×250 mm, 3 µm
Mobile Phase:	Mobile Phase A: 10 mmol/L ammonium acetate Mobile Phase B: acetonitrile/methanol=50/30
Gradient Program:	Time(min) A% B% 0 60 40 20 60 40 35 50 50 50 20 80 60 20 80 60.1 60 40 80 60 40
Flow Rate:	0.6 mL/min
Detector:	259 nm
Temperature:	50 °C
Injection Volume:	10 µL
Reference Sample:	S-argatroban, R-argatroban,

Paracetamol Injection USP 36



Column:	Ultisil® XB-C18, 4.6 ×250 mm, 5 µm
Mobile Phase:	A: methanol / water / acetic acid =50/950/1 B: methanol / water / acetic acid =50/500/1
Gradient Program:	Time(min) A% B% 0 82 18 8 82 18 53 0 100 58 0 100 59 82 18 73 82 18
Flow Rate:	0.9 mL/min
Detector:	254 nm, 275 nm, 317 nm
Temperature:	40°C
Injection Volume:	20 µL
Reference Sample:	L-hydroxyproline, glycine, alanine, L-proline

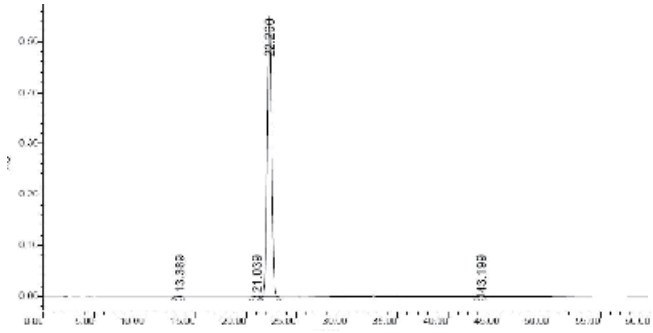
Aflatoxin



Column:	Ultisil® XB-C18, 4.6 ×250 mm, 5 µm
Mobile Phase:	Water / methanol / acetonitrile=46/40/14
Flow Rate:	1.0 mL/min
Detector:	Excitation wavelength: 360 nm Emission wavelength: 450 nm Gain:17
Temperature:	30°C
Injection Volume:	Post -column photo chemical derivation (254 nm)

Aflatoxin B1, B2, G1, G2 mixed standards, meets separation requirements

Progesterone(EP 5.0)



Column:	Ultisil® XB-C18, 4.6 ×150 mm, 5 µm
Mobile Phase:	A: water B: acetonitrile
Gradient Program:	Time(min) A% B% 0-20 50 50 20-27 50-20 50-80 27-45 20 80 45-50 50 50
Flow Rate:	0.9 mL/min
Detector:	254 nm, 275 nm, 317 nm
Temperature:	40°C
Injection Volume:	20 µL
Reference Sample:	L-hydroxyproline, glycine, alanine, L-proline

Ordering Information

Ultisil® XB-C18

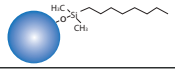
Particle size	Column ID (mm)	Column Length (mm)										Guard Cartridge	Cartridge holder
		30	33	50	75	100	125	150	200	250	300	10mm length	
3 µm 120 Å	2.1	H00201-21009	H00201-21068	H00201-21010	H00201-21011	H00201-21012	H00201-21013	H00201-21014	H00201-21015	H00201-21016	-	H00808-23001	00808-01107
	3.0	H00201-21018	H00201-21069	H00201-21019	H00201-21020	H00201-21021	H00201-21022	H00201-21023	H00201-21024	H00201-21025	-	H00808-23001	00808-01107
	4.0	H00201-21027	H00201-21070	H00201-21028	H00201-21029	H00201-21030	H00201-21031	H00201-21032	H00201-21033	H00201-21034	-	H00808-03001	00808-01101
	4.6	H00201-21036	H00201-21071	H00201-21037	H00201-21038	H00201-21039	H00201-21040	H00201-21041	H00201-21042	H00201-21043	-	H00808-03001	00808-01101
5 µm 120 Å	2.1	H00201-31009	H00201-31068	H00201-31010	H00201-31011	H00201-31012	H00201-31013	H00201-31014	H00201-31015	H00201-31016	-	H00808-24001	00808-01107
	3.0	H00201-31018	H00201-31069	H00201-31019	H00201-31020	H00201-31021	H00201-31022	H00201-31023	H00201-31024	H00201-31025	-	H00808-24001	00808-01107
	4.0	H00201-31027	H00201-31070	H00201-31028	H00201-31029	H00201-31030	H00201-31031	H00201-31032	H00201-31033	H00201-31034	H00201-31035	H00808-04001	00808-01101
	4.6	H00201-31036	H00201-31071	H00201-31037	H00201-31038	H00201-31039	H00201-31040	H00201-31041	H00201-31042	H00201-31043	H00201-31044	H00808-04001	00808-01101
10 µm 120 Å	4.0	-		-	-	H00201-41030	H00201-41031	H00201-41032	H00201-41033	H00201-41034	H00201-41035	H00808-05001	00808-01101
	4.6	-		-	-	H00201-41039	H00201-41040	H00201-41041	H00201-41042	H00201-41043	H00201-41044	H00808-05001	00808-01101

300 Å pore size column provided. Please contact Welch or your local distributor for other dimensions.

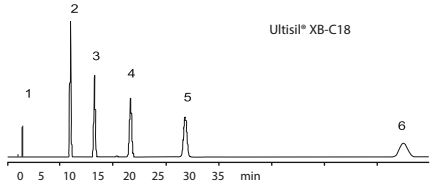
Ultisil® XB-C8--Less retentive than XB-C18

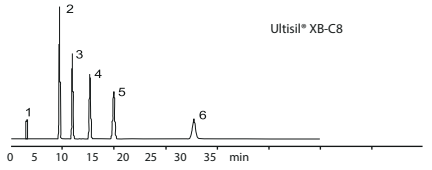
The XB-C8 phase is less retentive than XB-C18 phase, useful for strong hydrophobic compounds that are too strongly retained on C18 phase, and for LC/MS applications, where long retention is not desired. When separating neutral or other highly retained compounds, XB-C8 can save analytical time. However,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

Ultisil® XB-C8

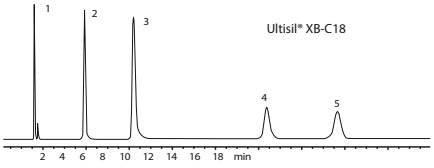
Structural Formula	
pH Range	1.5-10.0
Particle Size	3 μm, 5 μm, 10 μm
Surface Area(m^2/g)	320(120 Å), 90(300 Å)
Carbon Loading(%)	12(120 Å), 4(300 Å)
USP List	L7
Endcapped	Yes

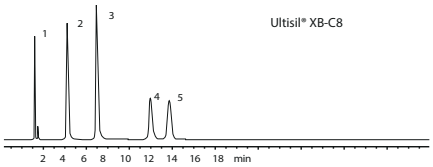
Comparison of Retention of XB-C18 and XB-C8





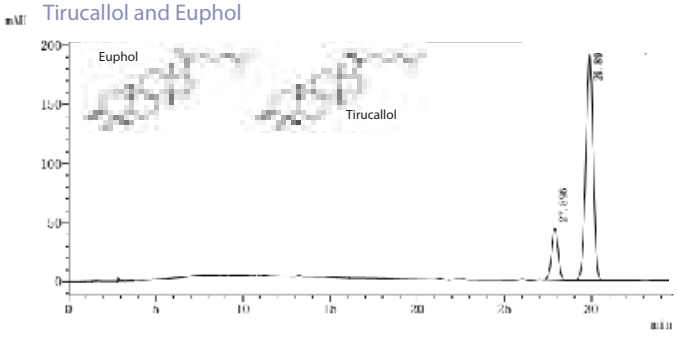
Column:	4.6 ×150 mm, 5 μm	
Mobile Phase:	Water / acetonitrile=30/70	
Flow rate:	1.0 mL/min	
Detector:	344 nm	
Temperature:	25°C	
Samples:	1) Uracil	4) Butylbenzene
	2) Ethylbenzene	5) Amylbezene
	3) Propylbenzene	6) Heptylbenzene





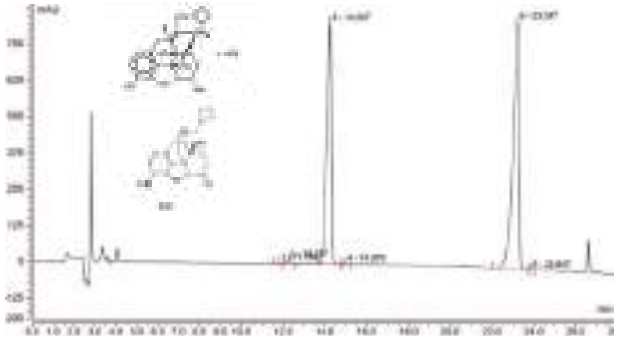
Column:	4.6 ×150 mm, 5 μm	
Mobile Phase:	20 mM phosphate(pH 7.0) / methanol=20 / 80	
Flow rate:	1.0 mL/min	
Detector:	215 nm	
Temperature:	25°C	
Samples:	1) Uracil	4) Amitryptyline
	2) Ropranolol	5) Trimipramine
	3) Ortriptyline	

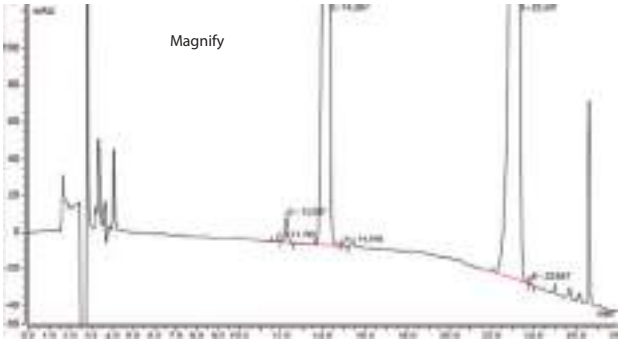
Tirucallol and Euphol



Column:	Ultisil® XB-C8, 4.6 ×250 mm, 5 μm
Mobile Phase:	Acetonitrile/water=90/10
Flow Rate:	1.0 mL/min
Detector:	210 nm
Temperature:	30°C
Injection Volume:	10 μL

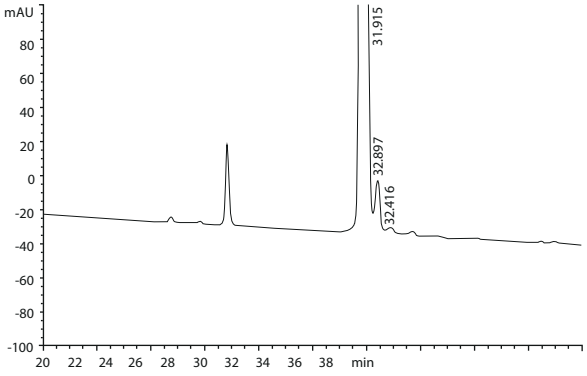
Nalbuphine HCl





Column:	Ultisil® XB-C8, 4.6 ×250 mm, 5 µm
Mobile Phase:	A: 0.02 mol/L KH_2PO_4 buffer(pH 6.5)(%) B: acetonitrile
Gradient Program:	Time(min) A% B% 0 80 20 15 70 30 25 40 60 28 40 60 30 80 20 45 80 20
Flow Rate:	1.0 mL/min
Detector:	220 nm
Temperature:	30°C
Injection Volume:	10 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, 100 mL acetonitrile, adjust pH 2.3 B: acetonitrile/water=80/20; %B=0(0 min) , 30(9 min), 60(40 min)
Flow Rate:	1.0 mL/min
Detector:	214 nm
Temperature:	30 °C
Injection Volume:	20 µL

Ordering Information

Ultisil® XB-C8

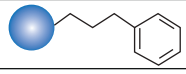
Particle size	Column ID (mm)	Column Length (mm)										Guard Cartridge	Cartridge holder
		30	33	50	75	100	125	150	200	250	300	10mm length	
3 µm 120 Å	2.1	H00202-21009	H00202-21068	H00202-21010	H00202-21011	H00202-21012	H00202-21013	H00202-21014	H00202-21015	H00202-21016	-	H00808-23002	00808-01107
	3.0	H00202-21018	H00202-21069	H00202-21019	H00202-21020	H00202-21021	H00202-21022	H00202-21023	H00202-21024	H00202-21025	-	H00808-23002	00808-01107
	4.0	H00202-21027	H00202-21070	H00202-21028	H00202-21029	H00202-21030	H00202-21031	H00202-21032	00202-21033	H00202-21034	-	H00808-03002	00808-01101
	4.6	H00202-21036	H00202-21071	H00202-21037	H00202-21038	H00202-21039	H00202-21040	H00202-21041	H00202-21042	H00202-21043	-	H00808-03002	00808-01101
5 µm 120 Å	2.1	H00202-31009	H00202-31068	H00202-31010	H00202-31011	H00202-31012	H00202-31013	H00202-31014	H00202-31015	H00202-31016	-	H00808-24002	00808-01107
	3.0	H00202-31018	H00202-31069	H00202-31019	H00202-31020	H00202-31021	H00202-31022	H00202-31023	H00202-31024	H00202-31025	-	H00808-24002	00808-01107
	4.0	H00202-31027	H00202-31070	H00202-31028	H00202-31029	H00202-31030	00202-31031	H00202-31032	H00202-31033	H00202-31034	H00202-31035	H00808-04002	00808-01101
	4.6	H00202-31036	H00202-31071	H00202-31037	H00202-31038	H00202-31039	00202-31040	H00202-31041	H00202-31042	H00202-31043	H00202-31044	H00808-04002	00808-01101
10 µm 120 Å	4.0	-	-	-	-	-	-	H00202-41032	H00202-41033	H00202-41034	H00202-41035	H00808-05002	00808-01101
	4.6	-	-	-	-	-	-	H00202-41041	H00202-41042	H00202-41043	H00202-41044	H00808-05002	00808-01101

300 Å HPLC column provided. Please contact Welch or your local distributor for other dimensions.

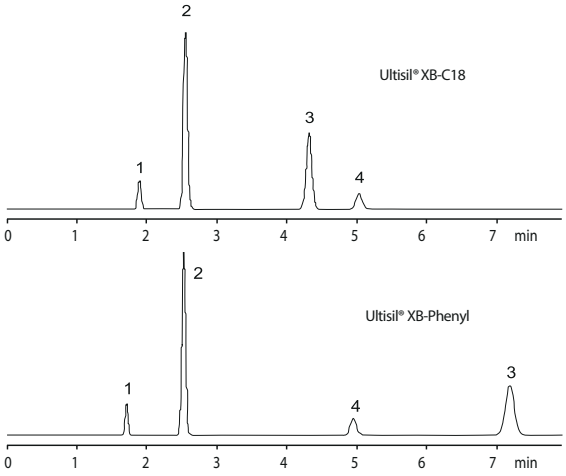
Ultisil® XB-Phenyl--Different Selectivity to Alkyl Phase

Ultisil® XB-Phenyl phase is less retentive than conventional C18 or C8 phases, but more retentive than standard cyano phase. Due to their ability to participate in π-π interactions, XB-Phenyl columns may actually be 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, together with reduced retentivity towards non-polar compounds, make XB-Phenyl an excellent choice for the analysis of complex mixtures of polar and non-polar analytes. Additionally, this bonding phase boasts high surface coverage and exhaustive double end-capping, leading to better performance.

Ultisil® XB-Phenyl

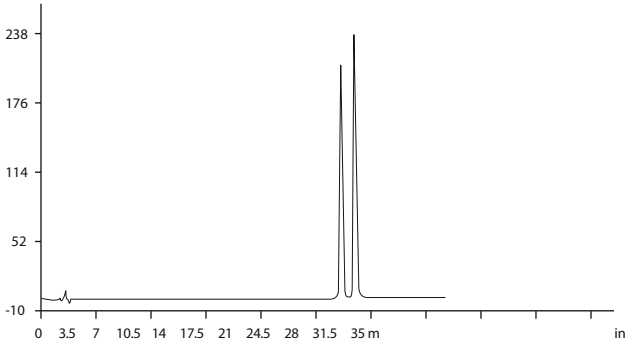
Structural Formula	
pH Range	1.5-10.0
Particle Size	3 µm, 5 µm, 10 µm
Surface Area(m^2/g)	320(120 Å), 90(300 Å)
Carbon Loading(%)	12(120 Å), 4(300 Å)
USP List	L11
Endcapped	Yes

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



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

Montelukast Sodium Isomers



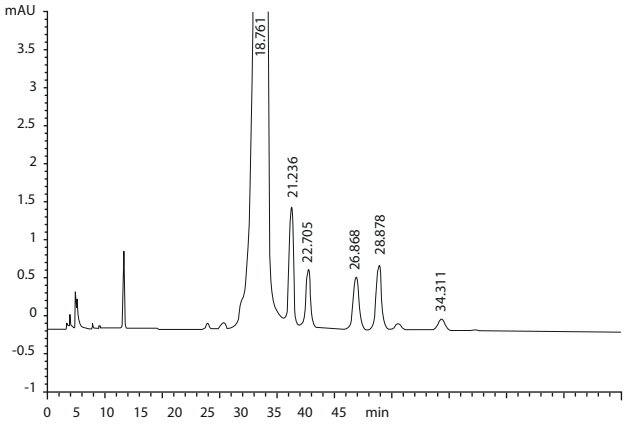
Column:	Ultisil® XB-Phenyl, 4.6 ×150 mm, 3 µm
Mobile Phase:	A: 0.2% TFA B: methanol / acetonitrile=60/40

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:	255 nm
Temperature:	30°C
Injection Volume:	10 µL

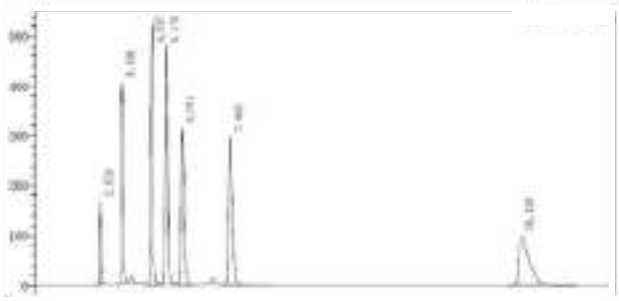
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Moxifloxacin Hydrochloride



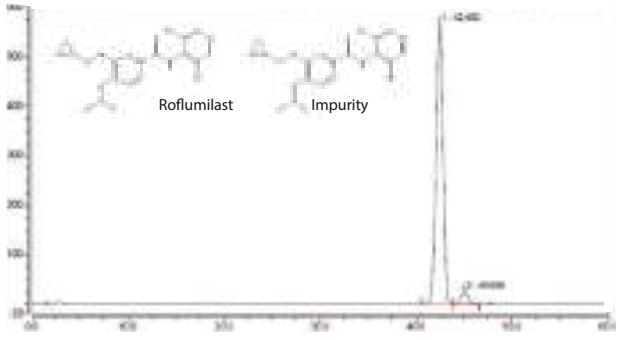
Column:	Ultisil® XB-Phenyl, 4.6 ×250 mm, 5 µm
Mobile Phase:	(0.5g TBAHS, 1g KH_2PO_4, 3.4 g(2 mL) H_3PO_4, 1000 mL water) / methanol=72/28
Flow Rate:	1.3 mL/min
Detector:	293 nm
Temperature:	45°C
Samples:	10 µL

Fenticonazole Nitrate



Column:	Ultisil® XB-Phenyl, 4.6 ×250 mm, 5 µm
Mobile Phase:	KH_2PO_4 buffer solution*/acetonitrile=30/70 *Dissolve 3.4 g of KH_2PO_4 in 900 mL water, adjust pH 3.3 with H_3PO_4, then add water to 1000 mL.
Flow Rate:	1.0 mL/min
Detector:	229nm
Temperature:	30°C
Injection Volume:	20 µL

Roflumilast



Column:	Ultisil® XB-Phenyl, 4.6 ×250 mm, 5 µm
Mobile Phase:	Acetonitrile/water=40/60
Flow Rate:	1.0 mL/min
Detector:	215 nm
Temperature:	30 °C
Samples:	10 µL

Ordering Information

Ultisil® XB-Phenyl

Particle size	Column ID (mm)	Column Length (mm)										Guard Cartridge	Cartridge holder
		30	33	50	75	100	125	150	200	250	300	10mm length	
3 µm	2.1	H00203-21009	H00203-21068	H00203-21010	H00203-21011	H00203-21012	H00203-21013	H00203-21014	H00203-21015	H00203-21016	-	H00808-23006	00808-01107
120 Å	3.0	H00203-21018	H00203-21069	H00203-21019	H00203-21020	H00203-21021	H00203-21022	H00203-21023	H00203-21024	H00203-21025	-	H00808-23006	00808-01107
	4.0	H00203-21027	H00203-21070	H00203-21028	H00203-21029	H00203-21030	H00203-21031	H00203-21032	H00203-21033	H00203-21034	-	H00808-03006	00808-01101
	4.6	H00203-21036	H00203-21071	H00203-21037	H00203-21038	H00203-21039	H00203-21040	H00203-21041	H00203-21042	H00203-21043	-	H00808-03006	00808-01101
5 µm	2.1	H00203-31009	H00203-31068	H00203-31010	H00203-31011	H00203-31012	H00203-31013	H00203-31014	H00203-31015	H00203-31016	-	H00808-24006	00808-01107
120 Å	3.0	H00203-31018	H00203-31069	H00203-31019	H00203-31020	H00203-31021	H00203-31022	H00203-31023	H00203-31024	H00203-31025	-	H00808-24006	00808-01107
	4.0	H00203-31027	H00203-31070	H00203-31028	H00203-31029	H00203-31030	H00203-31031	H00203-31032	H00203-31033	H00203-31034	H00203-31035	H00808-04006	00808-01101
	4.6	H00203-31036	H00203-31071	H00203-31037	H00203-31038	H00203-31039	H00203-31040	H00203-31041	H00203-31042	H00203-31043	H00203-31044	H00808-04006	00808-01101
10 µm	4.0	-	-	-	-	-	-	H00203-41032	H00203-41033	H00203-41034	H00203-41035	H00808-05006	00808-01101
120 Å	4.6	-	-	-	-	-	-	H00203-41041	H00203-41042	H00203-41043	H00203-41044	H00808-05006	00808-01101

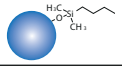
300 Å HPLC column provided. Please contact Welch or your local distributor for other dimensions.

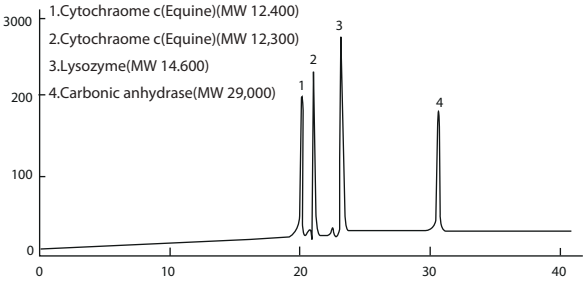
Ultisil® XB-C4--suitable for separation of bio-samples

Features

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

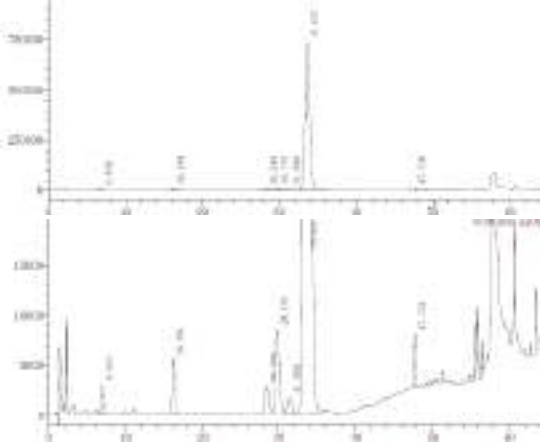
Ultisil® XB-C4

Structural Formula			
pH Range	1.5-10.0	Carbon Loading(%)	8(120 Å), 3(300 Å)
Particle Size	3 µm, 5 µm, 10 µm	USP List	L26
Surface Area(m^2/g)	320(120 Å), 90(300 Å)	Endcapped	Yes



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

Ethinyloestradiol



Column:	Ultisil® XB-C4, 4.6 ×250 mm, 5 µm
Mobile Phase:	Mobile phase A: acetonitrile/water=30/70 Mobile phase B: acetonitrile/water=75/25

Time(min)	A(%)	B(%)
0	100	0
35	100	0
65	0	100

Flow Rate:	1.5 mL/min
Detector:	220 nm
Temperature:	30°C
Injection Volume:	30 µL

Ordering Information

Particle size	Column ID (mm)	Column Length (mm)									Guard Cartridge	Cartridge holder
		30	33	50	75	100	125	150	200	250	10mm length	
3 µm	2.1	H00216-21009	H00216-21068	H00216-21010	H00216-21011	H00216-21012	H00216-21013	H00216-21014	H00216-21015	H00216-21016	H00808-23011	00808-01107
120 Å	3.0	H00216-21018	H00216-21069	H00216-21019	H00216-21020	H00216-21021	H00216-21022	H00216-21023	H00216-21024	H00216-21025	H00808-23011	00808-01107
	4.0	H00216-21027	H00216-21070	H00216-21028	H00216-21029	H00216-21030	H00216-21031	H00216-21032	H00216-21033	H00216-21034	H00808-03030	00808-01101
	4.6	H00216-21036	H00216-21071	H00216-21037	H00216-21038	H00216-21039	H00216-21040	H00216-21041	H00216-21042	H00216-21043	H00808-03030	00808-01101
5 µm	2.1	H00216-31009	H00216-31068	H00216-31010	H00216-31011	H00216-31012	H00216-31013	H00216-31014	H00216-31015	H00216-31016	H00808-24008	00808-01107
120 Å	3.0	H00216-31018	H00216-31069	H00216-31019	H00216-31020	H00216-31021	H00216-31022	H00216-31023	H00216-31024	H00216-31025	H00808-24008	00808-01107
	4.0	H00216-31027	H00216-31070	H00216-31028	H00216-31029	H00216-31030	H00216-31031	H00216-31032	H00216-31033	H00216-31034	H00808-04008	00808-01101
	4.6	H00216-31036	H00216-31071	H00216-31037	H00216-31038	H00216-31039	H00216-31040	H00216-31041	H00216-31042	H00216-31043	H00808-04008	00808-01101
10 µm	4.0	-	-	-	-	-	-	H00216-41032	H00216-41033	H00216-41034	H00808-05008	00808-01101
120 Å	4.6	-	-	-	-	-	-	H00216-41041	H00216-41042	H00216-41043	H00808-05008	00808-01101

300 Å HPLC column provided. Please contact Welch or your local distributor for other dimensions.

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Ultisil® XB-C1

Features

- Lowest hydrophobicity among reversed phases
- Intermediate polarity between normal phase silica and other alkyl bonded reversed phase
- Alternative selectivity to C18 phase

Ultisil® XB-C1

Structural Formula	
pH Range	1.5-10.0
Particle Size	5 µm
Surface Area(m^2/g)	320(120 Å)
Carbon Loading(%)	4(120 Å)
USP List	L13
Endcapped	Yes

Ordering Information

Particle size	Column ID (mm)	Column Length (mm)										Guard Cartridge	Cartridge holder
		30	33	50	75	100	125	150	200	250	300	10mm length	
5 µm 120 Å	2.1	H00217-31009	H00217-31068	H00217-31010	H00217-31011	H00217-31012	H00217-31013	H00217-31014	H00217-31015	H00217-31016	-	H00808-24023	00808-01107
	3.0	H00217-31018	H00217-31069	H00217-31019	H00217-31020	H00217-31021	H00217-31022	H00217-31023	H00217-31024	H00217-31025	-	H00808-24023	00808-01107
	4.0	H00217-31027	H00217-31070	H00217-31028	H00217-31029	H00217-31030	H00217-31031	H00217-31032	H00217-31033	H00217-31034	H00217-31035	H00808-04026	00808-01101
	4.6	H00217-31036	H00217-31071	H00217-31037	H00217-31038	H00217-31039	H00217-31040	H00217-31041	H00217-31042	H00217-31043	H00217-31044	H00808-04026	00808-01101

Don't see your needed size or format? Contact Welch or your local distributor for other dimensions.



Ultisil® XB-CN--unique selectivity for polar compounds

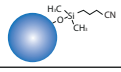
Ultisil® XB-CN column can be used in either reversed or normal phase. Reversed phase CN column has special selectivity for polar compounds, and due to its low hydrophobicity, elution of hydrophobic molecules is fast. Furthermore, XB-CN column shows perfect peak shape for strong basic analytes (including quaternary ammonium salts). Polarity of XB-CN column is the strongest among all reversed columns. It is a good choice for compounds that are strongly retained 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 that of silica column. To prolong column life time, alternation between reversed phase and normal phase uses should be avoided. While XB-CN column can be used in either reversed or normal phase, elution sequence is different in different separation mode.

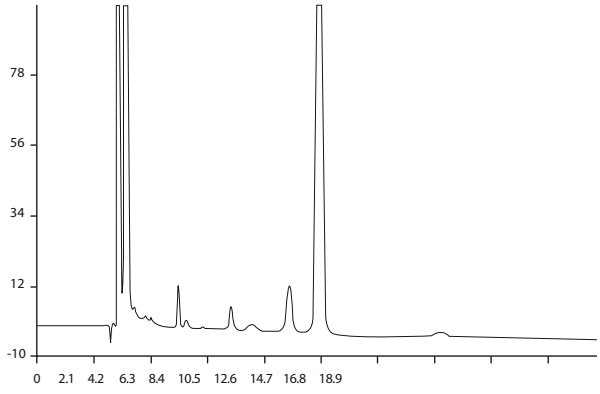
Features

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

Ultisil® XB-CN

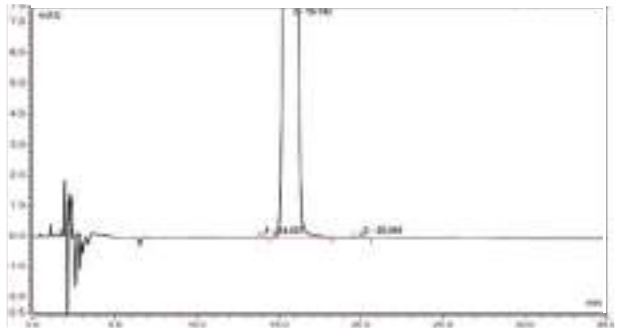
Structural Formula	
pH Range	1.5-9.0
Particle Size	3 µm, 5 µm, 10 µm
Surface Area(m^2/g)	320(120 Å)
Carbon Loading(%)	7(120 Å)
USP List	L10
Endcapped	Yes

Rifampicin Isoniazid and Pyrazinamide



Column:	Ultisil® XB-CN, 4.6 ×250 mm, 5 µm
Mobile Phase:	0.01 mol/L sodium heptanesulfonate solution* / acetonitrile=54/46 * Dissolve 2.0225 g of sodium heptanesulfonate in 1000 mL water, adjust pH 1.85 with H_3PO_4
Flow Rate:	0.6 mL/min
Detector:	254 nm
Temperature:	30°C
Injection Volume:	20 µL

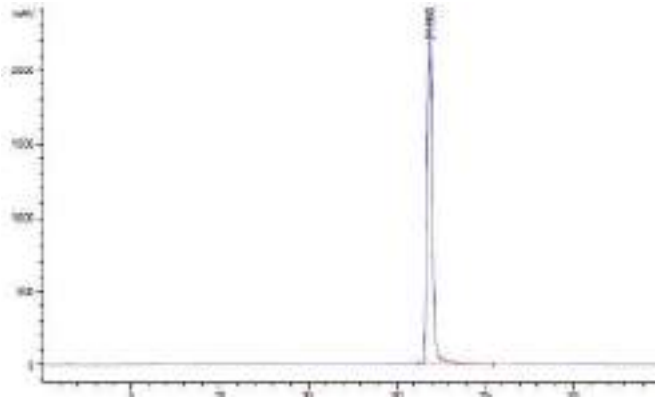
Carbamazepine



Column:	Ultisil® XB-CN, 4.6 ×250 mm, 5 µm
Mobile Phase:	Water/methanol/tetrahydrofuran = 850/120/30 Add 0.2ml formic acid and 0.5ml triethylamine for every 1000ml
Flow Rate:	1.5 mL/min
Detector:	230 nm
Temperature:	40°C
Injection Volume:	20 µL

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Cetilistat

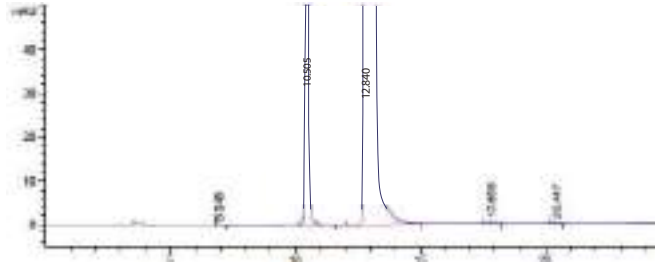


Column:	Ultisil® XB-CN, 4.6 ×250 mm, 5 µm
Mobile Phase:	Mobile phase A: water Mobile Phase B: acetonitrile

Time(min)	A(%)	B(%)
0	60	40
30	20	80
40	20	80

Flow Rate:	1.0 ml/min
Detector:	221 nm
Temperature:	35°C
Injection Volume:	10 µL

Alogliptin Benzoate



Column:	Ultisil® XB-CN, 4.6 ×250 mm, 5 µm
Mobile Phase:	Mobile phase A: acetonitrile/water/TFA=100/1900/1 Mobile Phase B: acetonitrile/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:	20 µL

Ordering Information

Ultisil® XB-CN

Particle size	Column ID (mm)	Column Length (mm)										Guard Cartridge	Cartridge holder
		30	33	50	75	100	125	150	200	250	300	10mm length	
3 µm	2.1	H00205-21009	H00205-21068	H00205-21010	H00205-21011	H00205-21012	H00205-21013	H00205-21014	H00205-21015	H00205-21016	-	H00808-23005	00808-01107
120 Å	3.0	H00205-21018	H00205-21069	H00205-21019	H00205-21020	H00205-21021	H00205-21022	H00205-21023	H00205-21024	H00205-21025	-	H00808-23005	00808-01107
	4.0	H00205-21027	H00205-21070	H00205-21028	H00205-21029	H00205-21030	H00205-21031	H00205-21032	H00205-21033	H00205-21034	-	H00808-03005	00808-01101
	4.6	H00205-21036	H00205-21071	H00205-21037	H00205-21038	H00205-21039	H00205-21040	H00205-21041	H00205-21042	H00205-21043	-	H00808-03005	00808-01101
5 µm	2.1	H00205-31009	H00205-31068	H00205-31010	H00205-31011	H00205-31012	H00205-31013	H00205-31014	H00205-31015	H00205-31016	-	H00808-24005	00808-01107
120 Å	3.0	H00205-31018	H00205-31069	H00205-31019	H00205-31020	H00205-31021	H00205-31022	H00205-31023	H00205-31024	H00205-31025	-	H00808-24005	00808-01107
	4.0	H00205-31027	H00205-31070	H00205-31028	H00205-31029	H00205-31030	H00205-31031	H00205-31032	H00205-31033	H00205-31034	H00205-31035	H00808-04005	00808-01101
	4.6	H00205-31036	H00205-31071	H00205-31037	H00205-31038	H00205-31039	H00205-31040	H00205-31041	H00205-31042	H00205-31043	H00205-31044	H00808-04005	00808-01101
10 µm	4.0	-	-	-	-	-	-	H00205-41032	H00205-41033	H00205-41034	H00205-41035	H00808-05005	00808-01101
120 Å	4.6	-	-	-	-	-	-	H00205-41041	H00205-41042	H00205-41043	H00205-41044	H00808-05005	00808-01101

Don't see your needed size or format? Contact Welch or your local distributor for other dimensions.

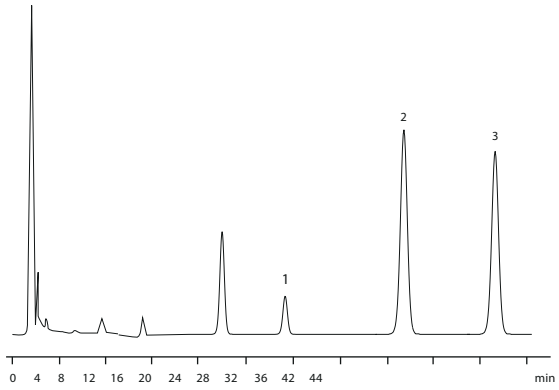
Ultisil® SiO_2

Ultisil SiO_2 column uses ultra-high purity type B silica particles with no metal contents. SiO_2 column can separate strong hydrophilic compounds in high concentration organic solvent in reversed phase. Good result can be obtained for the analysis of polar compounds which are prone to peak tailing in reversed phase.

Ultisil® SiO_2

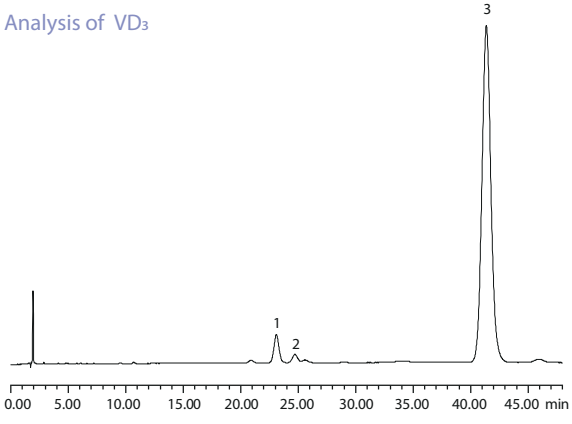
Structural Formula	
pH Range	2.0-8.0
Particle Size	3 μm, 5 μm, 10 μm
Surface Area(m^2/g)	320(120 Å), 90(300Å)
Carbon Loading(%)	N/A
USP List	L3
Endcapped	No

Analysis of VD_2



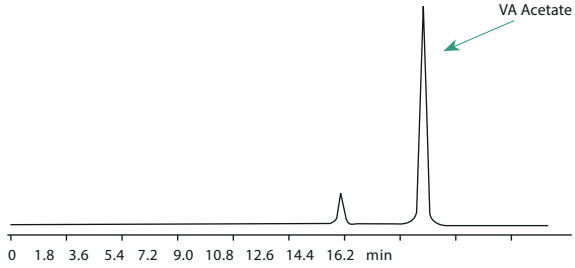
Column:	Ultisil® SiO_2, 4.6 ×250 mm, 5 μm
Mobile Phase:	Hexane / isopropanol＝997/3
Flow Rate:	2.0 mL/min
Detector:	254 nm
Temperature:	30°C
Injection Volume:	1. Facade VD_2 2. Internal Standard 3. VD_2

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
Injection Volume:	1. Facade VD_3 2. trans VD_3 3. VD_2

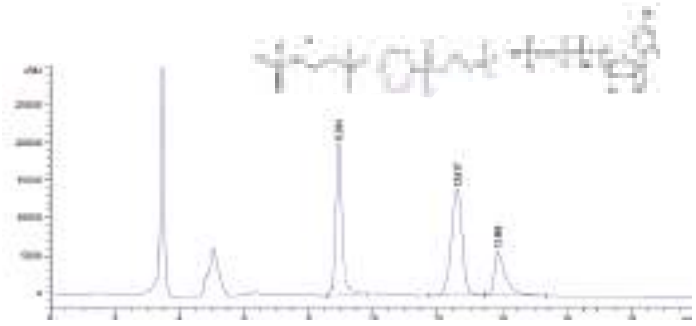
Analysis of VA Acetate



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

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Separation of chlorophosphorylcholine, Phosphorylcholine morpholine and Citicoline Sodium



Column:	Ultisil® SiO_2, 4.6 ×250 mm, 5 µm
Mobile Phase:	Acetonitrile / water/ glacial acetic acid = 60/40/2
Detector:	RID
Temperature:	35°C
Flow rate:	1.0 mL/min
Injection Volume:	10 µL

Ordering Information

Particle size	Column ID (mm)	Column Length (mm)										Guard Cartridge	Cartridge holder
		30	33	50	75	100	125	150	200	250	300	10mm length	
3 µm	2.1	H00200-21009	H00200-21068	H00200-21010	H00200-21011	H00200-21012	H00200-21013	H00200-21014	H00200-21015	H00200-21016	-	H00808-23007	00808-01107
120 Å	3.0	H00200-21018	H00200-21069	H00200-21019	H00200-21020	H00200-21021	H00200-21022	H00200-21023	H00200-21024	H00200-21025	-	H00808-23007	00808-01107
	4.0	H00200-21027	H00200-21070	H00200-21028	H00200-21029	H00200-21030	H00200-21031	H00200-21032	H00200-21033	H00200-21034	-	H00808-03007	00808-01101
	4.6	H00200-21036	H00200-21071	H00200-21037	H00200-21038	H00200-21039	H00200-21040	H00200-21041	H00200-21042	H00200-21043	-	H00808-03007	00808-01101
5 µm	2.1	H00200-31009	H00200-31068	H00200-31010	H00200-31011	H00200-31012	H00200-31013	H00200-31014	H00200-31015	H00200-31016	-	H00808-24007	00808-01107
120 Å	3.0	H00200-31018	H00200-31069	H00200-31019	H00200-31020	H00200-31021	H00200-31022	H00200-31023	H00200-31024	H00200-31025	-	H00808-24007	00808-01107
	4.0	H00200-31027	H00200-31070	H00200-31028	H00200-31029	H00200-31030	H00200-31031	H00200-31032	H00200-31033	H00200-31034	H00200-31035	H00808-04007	00808-01101
	4.6	H00200-31036	H00200-31071	H00200-31037	H00200-31038	H00200-31039	H00200-31040	H00200-31041	H00200-31042	H00200-31043	H00200-31044	H00808-04007	00808-01101
10 µm	4.0	-	-	-	-	-	-	H00200-41032	H00200-41033	H00200-41034	H00200-41035	H00808-05007	00808-01101
120 Å	4.6	-	-	-	-	-	-	H00200-41041	H00200-41042	H00200-41043	H00200-41044	H00808-05007	00808-01101

300 Å HPLC column provided Please contact Welch or your local distributor for other dimensions.



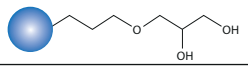
Ultisil® Diol

Ultisil® Diol Column is based on ultra-pure porous spherical silica bonded with 1,2-dihydroxypropyl functional group silica Ultisil® Diol is used in normal phase mostly, suitable 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 is capable of separating structure isomers. Since most of its surface is covered with organic functions, Ultisil® Diol absorbs less water, which leads to 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.
Ultisil® Diol column is more stable than traditional normal phase columns, such as NH_2, SiO_2. Compared with NH_2/SiO_2 column, Diol column is not sensitive to water. Ultisil® Diol column can also be used in reversed phase analysis.

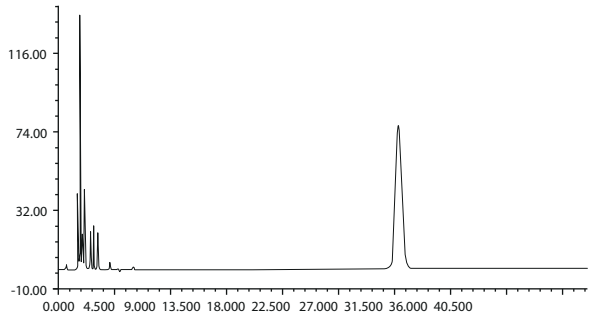
Features

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

Ultisil® Diol

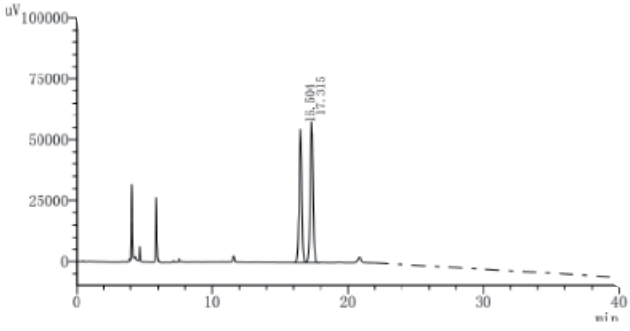
Structural Formula	
pH Range	2.0-8.0
Particle Size	3 µm, 5 µm, 10 µm
Surface Area(m^2/g)	320(120 Å)
Carbon Loading(%)	2.5(120 Å)
USP List	L20
Endcapped	No

Tacrolimus



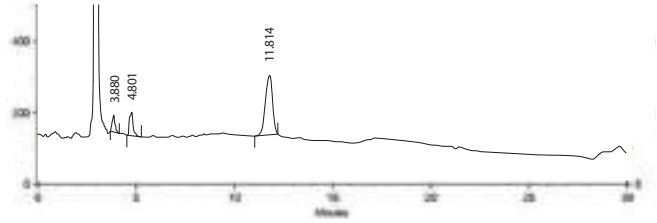
Column:	Ultisil® Diol, 4.6 ×250 mm, 5 µm
Mobile Phase:	N-hexane/ butyl chloride/ acetonitrile=7/2/1
Detector:	225 nm
Temperature:	Ambient
Flow Rate:	1.7 mL/min
Injection Volume:	5 µL

Cloprostenol Sodium



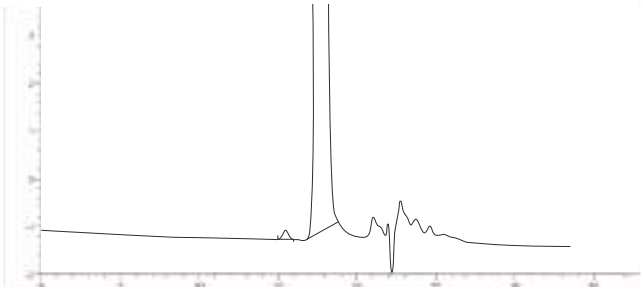
Column:	Ultisil® Diol, 4.6 ×300 mm, 3 µm
Mobile Phase:	N-hexane/isopropanol =99.5/0.5 (volume ratio)
Detector:	220 nm
Temperature:	Ambient
Flow Rate:	1.0 mL/min
Injection Volume:	10 µL

Propofol



Column:	Ultisil® Diol, 4.6 ×250 mm, 5 µm
Mobile Phase:	Mobile phase A: methanol/water/glacial acetic acid/triethylamine=85/15/0.5/0.05 Mobile Phase B: n-hexane/isopropanol/ mobile phase A=20/48/32
Gradient Program:	Time(min) A(%) B(%) 0 5 95 10 22 78 22 22 78 23 90 10 27 5 95
Flow Rate:	1.0 mL/min
Detector:	ELSD: gas flow rate=2.5 L/min, drift tube temperature: 70°C
Temperature:	40°C
Injection Volume:	20 µL

Insulin



Column:	Ultisil® Diol, 7.8 ×300 mm, 5 µm
Mobile Phase:	1 mg/mL L-arginine solution/acetonitrile/ glacial acetic acid=65/20/15
Detector:	276 nm
Temperature:	30°C
Flow Rate:	0.5 mL/min
Injection Volume:	20 µL

Ordering Information

Particle size	Column ID (mm)	Column Length (mm)										Guard Cartridge	Cartridge holder
		30	33	50	75	100	125	150	200	250	300	10mm length	
3 µm	2.1	H00206-21009	H00206-21068	H00206-21010	H00206-21011	H00206-21012	H00206-21013	H00206-21014	H00206-21015	H00206-21016	-	H00808-23020	00808-01107
120 Å	3.0	H00206-21018	H00206-21069	H00206-21019	H00206-21020	H00206-21021	H00206-21022	H00206-21023	H00206-21024	H00206-21025	-	H00808-23020	00808-01107
	4.0	H00206-21027	H00206-21070	H00206-21028	H00206-21029	H00206-21030	H00206-21031	H00206-21032	H00206-21033	H00206-21034	-	H00808-03020	00808-01101
	4.6	H00206-21036	H00206-21071	H00206-21037	H00206-21038	H00206-21039	H00206-21040	H00206-21041	H00206-21042	H00206-21043	-	H00808-03020	00808-01101
5 µm	2.1	H00206-31009	H00206-31068	H00206-31010	H00206-31011	H00206-31012	H00206-31013	H00206-31014	H00206-31015	H00206-31016	-	H00808-24020	00808-01107
120 Å	3.0	H00206-31018	H00206-31069	H00206-31019	H00206-31020	H00206-31021	H00206-31022	H00206-31023	H00206-31024	H00206-31025	-	H00808-24020	00808-01107
	4.0	H00206-31027	H00206-31070	H00206-31028	H00206-31029	H00206-31030	H00206-31031	H00206-31032	H00206-31033	H00206-31034	H00206-31035	H00808-04020	00808-01101
	4.6	H00206-31036	H00206-31071	H00206-31037	H00206-31038	H00206-31039	H00206-31040	H00206-31041	H00206-31042	H00206-31043	H00206-31044	H00808-04020	00808-01101
10 µm	4.0	-	-	-	-	-	-	H00206-41032	H00206-41033	H00206-41034	H00206-41035	H00808-05020	00808-01101
120 Å	4.6	-	-	-	-	-	-	H00206-41041	H00206-41042	H00206-41043	H00206-41044	H00808-05020	00808-01101

Don't see your needed size or format? Contact Welch or your local distributor for other dimensions.

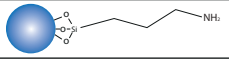
Ultisil® XB-NH₂

Ultisil® XB-NH₂ column is based on propyl-amino silane, mostly used in normal phase, but can also be used in reversed phase.

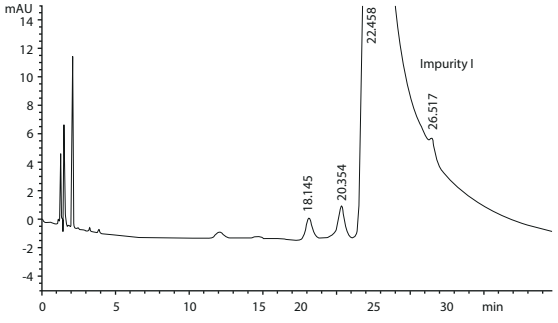
Features

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

Ultisil® XB-NH₂

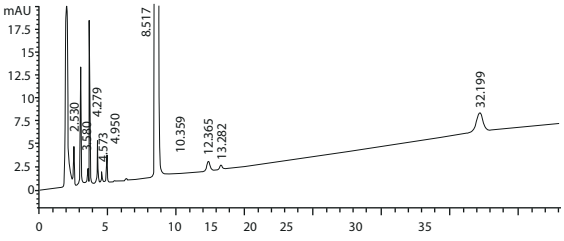
Structural Formula	
pH Range	2.0-8.0
Particle Size	3 µm, 5 µm, 10 µm
Surface Area(m^2/g)	320(120 Å)
Carbon Loading(%)	4(120 Å)
USP List	L8
Endcapped	No

Acarbose



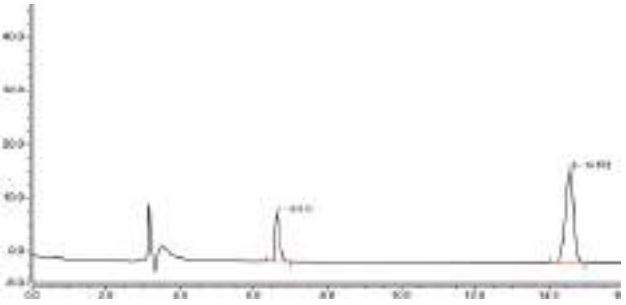
Column:	Ultisil® XB-NH₂, 4.6 ×250 mm, 5 µm
Mobile Phase:	Phosphate buffer */ acetonitrile=28/72 * Dissolve 600 mg of s KH_2PO_4 and 279 mg of ADSP in 100 mL water, add water to make 1000 mL
Detector:	210 nm
Temperature:	35°C
Flow Rate:	2.0 mL/min
Injection Volume:	10 µL

Acetyl-L-carnitine



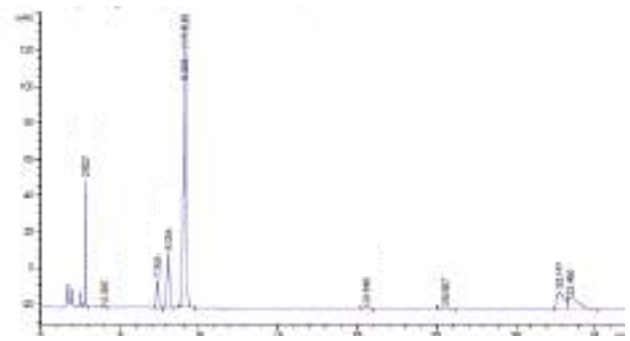
Column:	Ultisil® XB-NH₂, 4.6 ×250 mm, 5µm
Mobile Phase:	Buffer/acetonitrile=30/70
Detector:	205 nm, 210 nm
Temperature:	20°C
Flow Rate:	1.0 mL/min
Injection Volume:	10 µL

Separation of N-tert-butylglycine hydrochloride and N-tert-butylglycine acid chloride hydrochloride



Column:	Ultisil® XB-NH₂, 4.6 ×250 mm, 5 µm
Mobile Phase:	Methanol/isopropanol=80/20
Detector:	210 nm
Temperature:	30°C
Flow Rate:	1.0 mL/min
Injection Volume:	5 µL

Ornithine Aspartate



Column:	Ultisil® XB-NH_2, 4.6 ×250 mm, 5μm
Mobile Phase:	KH_2PO_4 buffer solution*/acetonitrile=40/60 * Dissolve 2.72 g of KH_2PO_4 in 500 mL water, add 5 mL of concentrated ammonia solution, addwater to 1000 mL, adjust pH 5.60±0.05 with H_3PO_4
Detector:	205 nm
Temperature:	30°C
Flow Rate:	1.0 mL/min
Injection Volume:	20 μL

Ordering Information
Ultisil® XB-NH_2

Particle size	Column ID (mm)	Column Length (mm)										Guard Cartridge	Cartridge holder
		30	33	50	75	100	125	150	200	250	300	10mm length	
3μm	2.1	H00204-21009	H00204-21068	H00204-21010	H00204-21011	H00204-21012	H00204-21013	H00204-21014	H00204-21015	H00204-21016	-	H00808-23004	00808-01107
	3.0	H00204-21018	H00204-21069	H00204-21019	H00204-21020	H00204-21021	H00204-21022	H00204-21023	H00204-21024	H00204-21025	-	H00808-23004	00808-01107
	4.0	H00204-21027	H00204-21070	H00204-21028	H00204-21029	H00204-21030	H00204-21031	H00204-21032	H00204-21033	H00204-21034	-	H00808-03004	00808-01101
	4.6	H00204-21036	H00204-21071	H00204-21037	H00204-21038	H00204-21039	H00204-21040	H00204-21041	H00204-21042	H00204-21043	-	H00808-03004	00808-01101
5μm	2.1	H00204-31009	H00204-31068	H00204-31010	H00204-31011	H00204-31012	H00204-31013	H00204-31014	H00204-31015	H00204-31016	-	H00808-24004	00808-01107
	3.0	H00204-31018	H00204-31069	H00204-31019	H00204-31020	H00204-31021	H00204-31022	H00204-31023	H00204-31024	H00204-31025	-	H00808-24004	00808-01107
	4.0	H00204-31027	H00204-31070	H00204-31028	H00204-31029	H00204-31030	H00204-31031	H00204-31032	H00204-31033	H00204-31034	H00204-31035	H00808-04004	00808-01101
	4.6	H00204-31036	H00204-31071	H00204-31037	H00204-31038	H00204-31039	H00204-31040	H00204-31041	H00204-31042	H00204-31043	H00204-31044	H00808-04004	00808-01101
10μm	4.0	-	-	-	-	-	-	H00204-41032	H00204-41033	H00204-41034	H00204-41035	H00808-05004	00808-01101
	4.6	-	-	-	-	-	-	H00204-41041	H00204-41042	H00204-41043	H00204-41044	H00808-05004	00808-01101

Don't see your needed size or format? Contact Welch or your local distributor for other dimensions.



Ultisil® Ion Exchange Column (XB-SAX & XB-SCX)

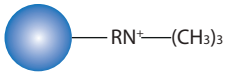
Ultisil® ion exchange columns are available for both Strong Anion Exchange (SAX) and Strong Cation Exchange (SCX) columns. The SCX/SAX columns are silica based with high resolution and high efficiency.

Ultisil® SAX is a polar bonded phase, consisting of an ammonium-functionalized silane, while Ultisil® SCX is a classical strong cation

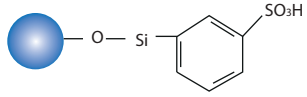
Features

- 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.

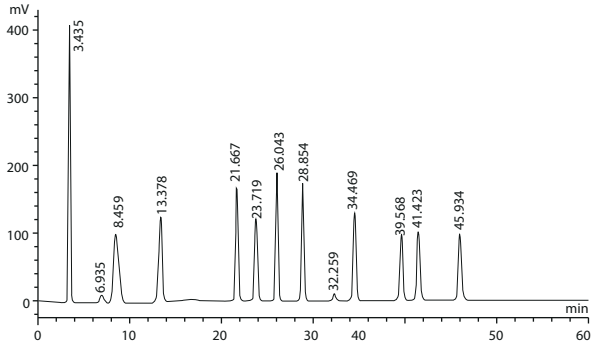
Ultisil® XB-SAX

Structural Formula	
pH Range	2.0-8.0
Particle Size	3 µm, 5 µm, 10 µm
Surface Area(m^2/g)	320(120 Å), 90(300 Å)
Carbon Loading(%)	7.5(120 Å), 1.5(300 Å)
USP List	L14
Endcapped	No

Ultisil® XB-SCX

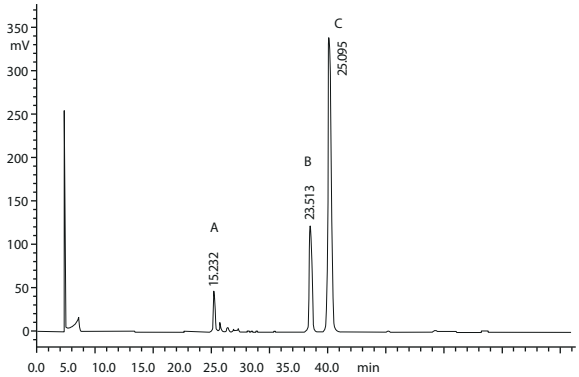
Structural Formula	
pH Range	2.0-8.0
Particle Size	3 µm, 5 µm, 10 µm
Surface Area(m^2/g)	320(120 Å), 90(300 Å)
Carbon Loading(%)	12(120 Å), 5(300 Å)
USP List	L9
Endcapped	No

13 Heparin Disaccharides



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

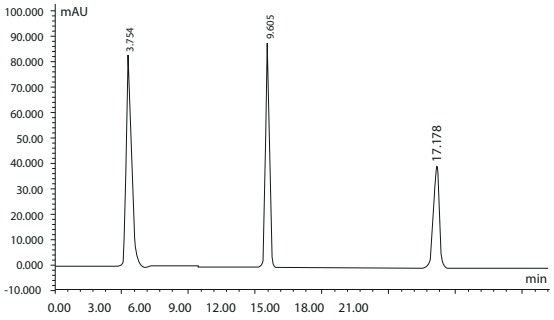
Chondroitin Sulfate



Column:	Ultisil® XB-SAX, 4.6 ×250 mm, 5 µm
Mobile Phase:	A: water, adjust pH 3.5 with diluted HCl B: 2 mol/L NaCl, adjust pH 3.5 with diluted HCl
Detector:	232 nm
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)

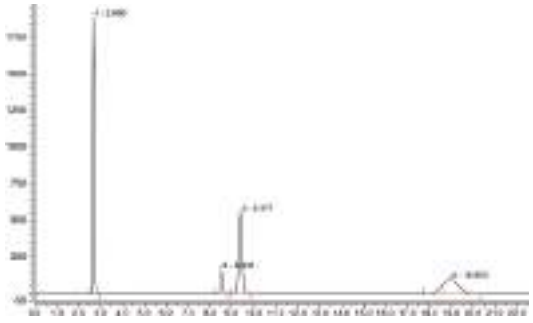
ROC ANALİTİK LAB. CİH. SAN. ve DIŞ TİC. LTD. ŞTİ.
www.roc.com.tr

Metformin HCL



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

Orazamide



Column:	Ultisil® XB-SCX, 4.6 ×250 mm, 5 µm
Mobile Phase:	1.0% $NH_4H_2PO_4$(pH 3.0 adjusted by H_3PO_4)
Detector:	215 nm
Temperature:	30 °C
Flow Rate:	1.0 mL/min
Injection Volume:	10 µL
Samples In Order:	Orotic acid, Pyridinepropanimidamide, 4-Amino-5-imidazolecarboxamide hydrochloride and AZO

Ordering Information

Ultisil® XB-SAX

Particle size	Column ID (mm)	Column Length (mm)					Guard Cartridge	Cartridge holder
		50	100	150	200	250	10mm length	
3 µm 120 Å	2.1	H00213-21010	H00213-21012	H00213-21014	H00213-21015	H00213-21016	H00808-23008	00808-01107
	3.0	H00213-21019	H00213-21021	H00213-21023	H00213-21024	H00213-21025	H00808-23008	00808-01107
	4.0	H00213-21028	H00213-21030	H00213-21032	H00213-21033	H00213-21034	H00808-03008	00808-01101
	4.6	H00213-21037	H00213-21039	H00213-21041	H00213-21042	H00213-21043	H00808-03008	00808-01101
5 µm 120 Å	2.1	H00213-31010	H00213-31012	H00213-31014	H00213-31015	H00213-31016	H00808-24009	00808-01107
	3.0	H00213-31019	H00213-31021	H00213-31023	H00213-31024	H00213-31025	H00808-24009	00808-01107
	4.0	H00213-31028	H00213-31030	H00213-31032	H00213-31033	H00213-31034	H00808-04009	00808-01101
	4.6	H00213-31037	H00213-31039	H00213-31041	H00213-31042	H00213-31043	H00808-04009	00808-01101
10 µm 120 Å	4.6	-	-	H00213-41041	H00213-41042	H00213-41043	H00808-05009	00808-01101

Ultisil® XB-SCX

Particle size	Column ID (mm)	Column Length (mm)					Guard Cartridge	Cartridge holder
		50	100	150	200	250	10mm length	
3 µm 120 Å	2.1	H00212-21010	H00212-21012	H00212-21014	H00212-21015	H00212-21016	H00808-23012	00808-01107
	3.0	H00212-21019	H00212-21021	H00212-21023	H00212-21024	H00212-21025	H00808-23012	00808-01107
	4.0	H00212-21028	H00212-21030	H00212-21032	H00212-21033	H00212-21034	H00808-03033	00808-01101
	4.6	H00212-21037	H00212-21039	H00212-21041	H00212-21042	H00212-21043	H00808-03033	00808-01101
5 µm 120 Å	2.1	H00212-31010	H00212-31012	H00212-31014	H00212-31015	H00212-31016	H00808-24011	00808-01107
	3.0	H00212-31019	H00212-31021	H00212-31023	H00212-31024	H00212-31025	H00808-24011	00808-01107
	4.0	H00212-31028	H00212-31030	H00212-31032	H00212-31033	H00212-31034	H00808-04011	00808-01101
	4.6	H00212-31037	H00212-31039	H00212-31041	H00212-31042	H00212-31043	H00808-04011	00808-01101
10 µm 120 Å	4.6	-	-	H00212-41041	H00212-41042	H00212-41043	H00808-05011	00808-01101

300 Å HPLC column provided. Please contact welch or your local distributor for other dimensions.

Ultisil® XB-C30

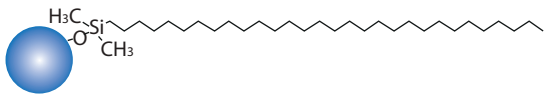
Carotenoids is a broad class of natural products, of which over 600 types have been found so far, including compounds of different carbon chain length, such as C40, C50 and C30 etc. They are well known to have many biological functions, including cancer prevention and treatment functions.

Compared to classical C18 stationary phases, the C30 phase is much more hydrophobic and retaining. Even when pure organic eluent is applied, many sample solutes, such as carotenoids, are able to retain. Ultisil® C30 is designed for the separation of geometric isomers,

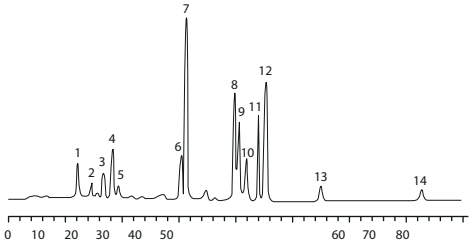
Features

- Polymeric C30 alkyl chains
- Very lipophilic
- Exceptional selectivity pattern for geometric isomers

Ultisil® XB-C30

Structural Formula	
pH Range	1.5-10.0
Particle Size	3 µm, 5 µm, 10 µm
Surface Area(m^2/g)	320(120 Å)
Carbon Loading(%)	22(120 Å)
USP List	L62
Endcapped	Yes

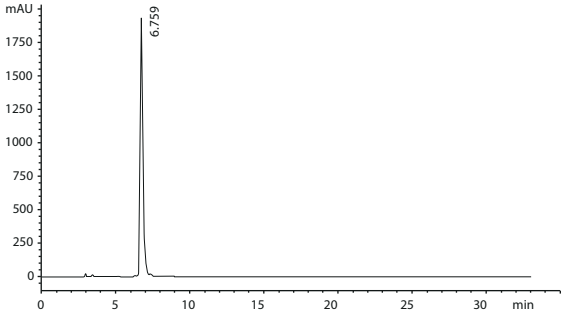
Separation of Carotenoids



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® XB-C30, 4.6 ×250 mm, 5 µm
Mobile Phase:	A: methanol / MTBE / water=81/15/4 B: methanol/ MTBE=10/90
Gradient Program:	0-90 min (0%B-100%B)
Detector:	450 nm
Temperature:	Ambient
Flow Rate:	1.0 mL/min

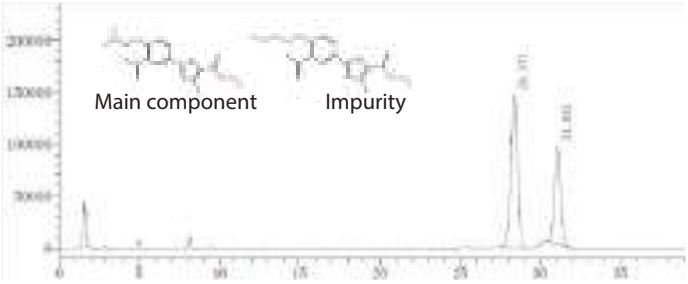
Analysis of All-trans Astaxanthin



Column:	Ultisil® XB-C30, 4.6 ×250 mm, 5 µm		
Mobile Phase:	A: methanol / 1%H_3PO_4=94/6 B: methanol / 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:	474 nm		
Temperature:	30 °C		
Injection Volume:	20 µL		

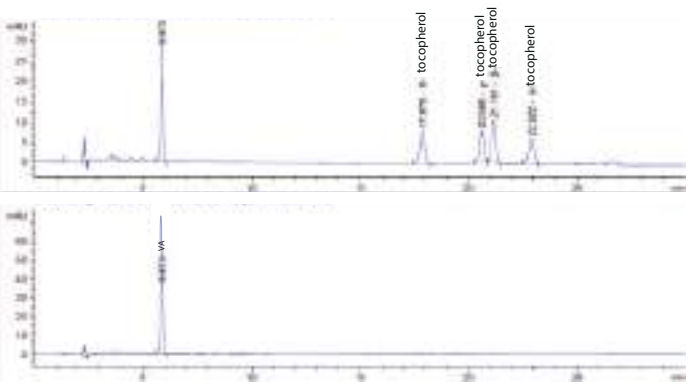
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Febuxostat Intermediate



Column:	Ultisil® XB-C30, 4.6 ×250 mm, 5 µm
Mobile Phase:	Acetonitrile/ water=70/30
Detector :	230 nm
Temperature :	30°C
Flow Rate :	1.0 mL/min
Injection Volume	20 µL

VE(α,β,γ,δ-tocopherol) and VA



Column:	Ultisil® XB-C30, 4.6 ×250 mm, 5 µm		
Mobile Phase:	A: water B: methanol		
Gradient Program:	Time(min)	A(%)	B(%)
	0	4	96
	13	4	96
	20	0	100
	24.5	4	96
	30	4	96
Flow Rate:	0.8 mL/min		
Detector:	294/325 nm		
Temperature:	20°C		
Injection Volume:	10 µL		

Ordering Information

Ultisil® XB-C30

Particle size	Column ID (mm)	Column Length (mm)										Guard Cartridge	Cartridge holder
		30	33	50	75	100	125	200	150	250	300		
3 µm 120 Å	2.1	H00223-21009	H00223-21068	H00223-21010	H00223-21011	H00223-21012	H00223-21013	H00223-21015	H00223-21014	H00223-21016	-	H00808-23013	00808-01107
	3.0	H00223-21018	H00223-21069	H00223-21019	H00223-21020	H00223-21021	H00223-21022	H00223-21024	H00223-21023	H00223-21025	-	H00808-23013	00808-01107
	4.0	H00223-21027	H00223-21070	H00223-21028	H00223-21029	H00223-21030	H00223-21031	H00223-21033	H00223-21032	H00223-21034	-	H00808-03035	00808-01101
	4.6	H00223-21036	H00223-21071	H00223-21037	H00223-21038	H00223-21039	H00223-21040	H00223-21042	H00223-21041	H00223-21043	-	H00808-03035	00808-01101
5 µm 120 Å	2.1	H00223-31009	H00223-31068	H00223-31010	H00223-31011	H00223-31012	H00223-31013	H00223-31015	H00223-31014	H00223-31016	-	H00808-24024	00808-01107
	3.0	H00223-31018	H00223-31069	H00223-31019	H00223-31020	H00223-31021	H00223-31022	H00223-31024	H00223-31023	H00223-31025	-	H00808-24024	00808-01107
	4.0	H00223-31027	H00223-31070	H00223-31028	H00223-31029	H00223-31030	H00223-31031	H00223-31033	H00223-31032	H00223-31034	H00223-31035	H00808-04035	00808-01101
	4.6	H00223-31036	H00223-31071	H00223-31037	H00223-31038	H00223-31039	H00223-31040	H00223-31042	H00223-31041	H00223-31043	H00223-31044	H00808-04035	00808-01101
10 µm 120 Å	4.6	-	-	-	-	-	-	H00223-41042	H00223-41041	H00223-41043	H00223-41044	H00808-05013	00808-01101

Don't see your needed size or format? Contact Welch or your local distributor for other dimensions.

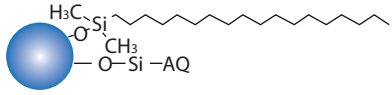
Ultisil® AQ-C18
--The most widely used column in food industry

Ultisil® AQ-C18 columns are designed to have extended retention and selectivity for hydrophilic and polar compounds, which are poorly or not at all retained on other phases. A proprietary bonding chemistry, Ultisil® AQ-C18 avoids so-called “phase collapse”, even when 100% water is used, a phenomenon that conventional C18 columns typically exhibit at high water content in the mobile phase. Ultisil® 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,

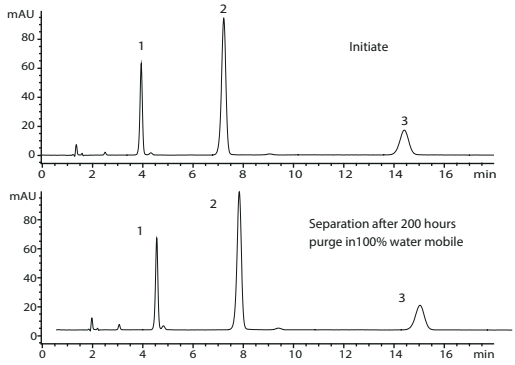
Features

- 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

Ultisil® AQ-C18

Structural Formula	
pH Range	1.5-10.0
Particle Size	3 μm, 5 μm, 10 μm
Surface Area(m^2/g)	320(120 Å)
Carbon Loading(%)	12(120 Å)
USP List	L1/L96
Endcapped	Yes

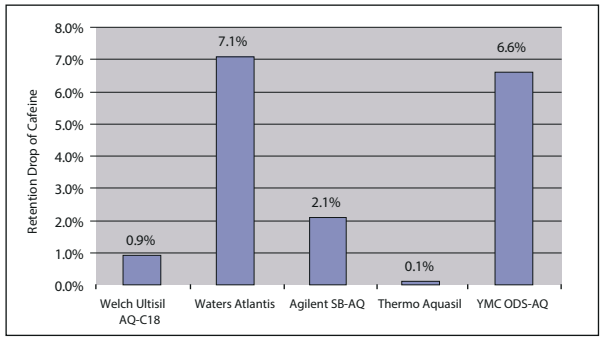
Phase collapse research



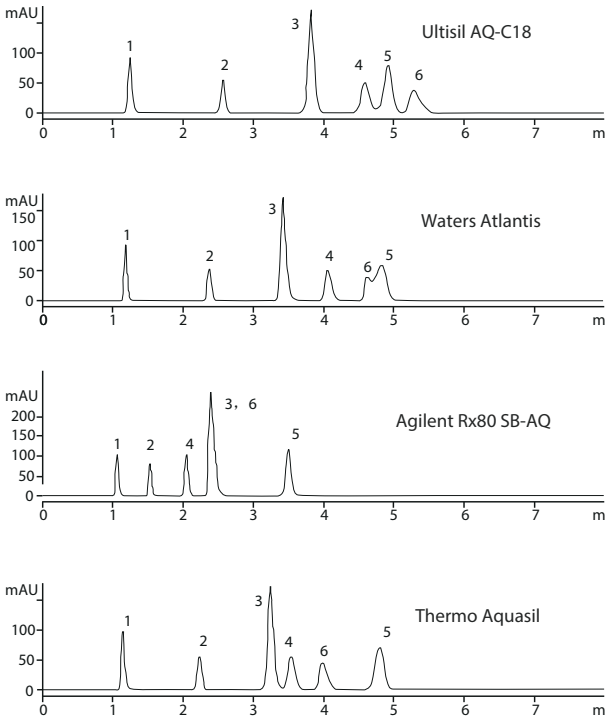
Column:	Ultisil® AQ-C18, 4.6 ×100 mm, 5 μm
Mobile Phase:	Acetonitrile/50 mM phosphate(pH 3.5)=10/90
Detector:	215nm
Temperature:	25°C
Flow Rate:	1.0 mL/min
Samples:	1.Theophylline 2.Caffeine 3.Phenol

Phase Collapse Comparison with Other Brands

Peak shape is excellent for acid, basic and neutral samples on AQ-C18. When in 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 in highly aqueous mobile phase, Ultisil® AQ-C18 shows excellent resistance to phase collapse.



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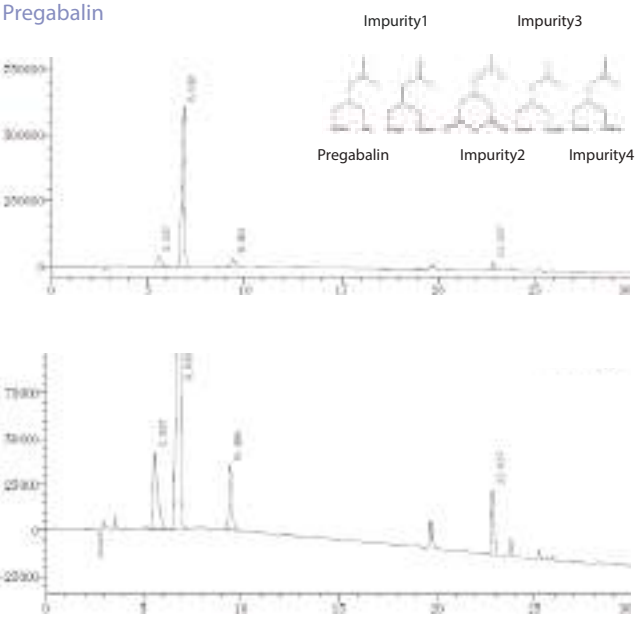


Column:	Ultisil® AQ-C18, 4.6 ×100 mm, 5 µm
Mobile Phase:	50 mM phosphate, pH2.5
Detector:	210 nm
Temperature:	25°C
Flow Rate:	1.0 mL/min
Samples:	1. Oxalic acid 2. Lactic acid 3. Maleic acid 4. Citric acid 5. Fumaric acid 6. Succinic acid

How to choose XB-C18 and AQ-C18?

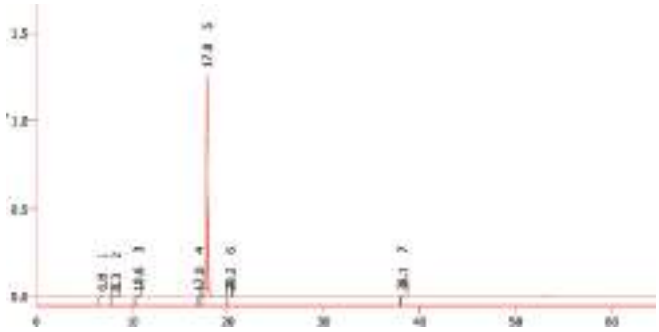
XB-C18	AQ-C18
• Suitable for separation of most pharmaceuticals, environment and chemical compounds • Excellent peak shape for basic and polar samples	• Suitable for water soluble strong polar samples, such as traditional Chinese medicine ingredients, food, beverage, organic acids, peptides, nucleosides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

Pregabalin



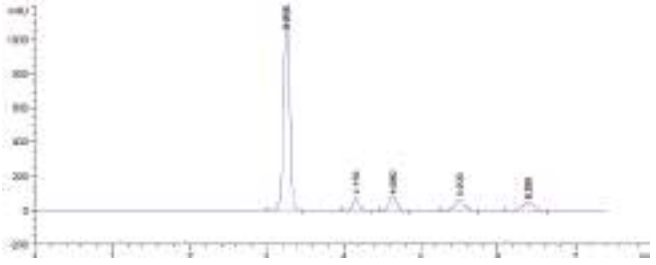
Column:	Ultisil® AQ-C18, 4.6 ×250 mm, 5 µm
Mobile Phase:	A: 40 mm $(NH_4)_2HPO_4$/methanol=80/20 B: acetonitrile/methanol=90/10
Gradient Program:	Time(min) A% B% 0 98 2 5 98 2 30 50 50 31 50 2
Flow Rate:	1.0 mL/min
Detector:	210 nm
Temperature:	35°C
Injection Volume:	20 µL

Vilazodone hydrochloride



Column:	Ultisil® AQ-C18, 4.6 ×250 mm, 5 µm
Mobile Phase:	Mobile phase A: 0.025 mol/L K_2HPO_4, adjust pH 6.0 with H_3PO_4 Mobile Phase B: acetonitrile
Gradient Program:	Time(min) A% B% 0 75 25 3 75 25 25 60 40 40 35 65 50 35 65 50.1 75 25 65 75 25
Flow Rate:	1.0 mL/min
Detector:	240 nm
Temperature:	40°C
Injection Volume:	20 µL

NMN(nicotinamide mononucleotide)



Column:	Ultisil® AQ-C18, 4.6 ×250 mm, 5 µm
Mobile Phase:	40mM KH_2PO_4 solution*/methanol=68/32 * Dissolve 2.72 g of KH_2PO_4 and 0.85 g of TBAHS in 500 mL water, adjust pH 6.2 with 1 mol/L KOH
Detector :	259 nm
Temperature :	25 ℃
Flow Rate :	1.0 mL/min
Injection Volume	10 µL
Samples:	1. NMN 2. nicotinamide 3. AMP 4. ADP 5. ATP

Ordering Information

Ultisil® AQ-C18

Particle size	Column ID (mm)	Column Length (mm)										Guard Cartridge	Cartridge holder
		30	33	50	75	100	125	150	200	250	300	10mm length	
3 µm 120 Å	2.1	H00207-21009	H00207-21068	H00207-21010	H00207-21011	H00207-21012	H00207-21013	H00207-21014	H00207-21015	H00207-21016	-	H00808-23003	00808-01107
	3.0	H00207-21018	H00207-21069	H00207-21019	H00207-21020	H00207-21021	H00207-21022	H00207-21023	H00207-21024	H00207-21025	-	H00808-23003	00808-01107
	4.0	H00207-21027	H00207-21070	H00207-21028	H00207-21029	H00207-21030	H00207-21031	H00207-21032	H00207-21033	H00207-21034	-	H00808-03003	00808-01101
	4.6	H00207-21036	H00207-21071	H00207-21037	H00207-21038	H00207-21039	H00207-21040	H00207-21041	H00207-21042	H00207-21043	-	H00808-03003	00808-01101
5µm 120Å	2.1	H00207-31009	H00207-31068	H00207-31010	H00207-31011	H00207-31012	H00207-31013	H00207-31014	H00207-31015	H00207-31016	-	H00808-24003	00808-01107
	3.0	H00207-31018	H00207-31069	H00207-31019	H00207-31020	H00207-31021	H00207-31022	H00207-31023	H00207-31024	H00207-31025	-	H00808-24003	00808-01107
	4.0	H00207-31027	H00207-31070	H00207-31028	H00207-31029	H00207-31030	H00207-31031	H00207-31032	H00207-31033	H00207-31034	H00207-31035	H00808-04003	00808-01101
	4.6	H00207-31036	H00207-31071	H00207-31037	H00207-31038	H00207-31039	H00207-31040	H00207-31041	H00207-31042	H00207-31043	H00207-31044	H00808-04003	00808-01101
10 µm 120Å	4.0	-	-	-	-	-	-	H00207-41032	H00207-41033	H00207-41034	H00207-41035	H00808-05003	00808-01101
	4.6	-	-	-	-	-	-	H00207-41041	H00207-41042	H00207-41043	H00207-41044	H00808-05003	00808-01101

Don't see your needed size or format? Contact Welch or your local distributor for other dimensions.

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Ultisil® LP Series HPLC Column

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

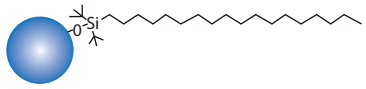
Features

- Not endcapped, prevents siloxane bond from hydrolysis at low pH condition.
- Compatible with 100% water as the mobile phase, more polar than "AQ", better peak shape and resolution
- Best peak shape for polar compounds
- Exceptional lifetime at low pH (0.5-8.0) and high temperature

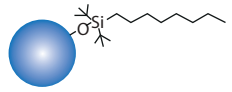
How to choose XB-C18 and LP-C18

When pH<5.0, based on your separation conditions, you may choose either LP-C18 or XB-C18;
When pH<2.0 (such as 0.1%TFA), LP-C18, which provides exceptional stability, longer lifetime, perfect peak shape and superior selectivity, is your best choice

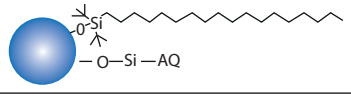
Ultisil® LP-C18

Structural Formula	
pH Range	0.5-8.0
Particle Size	3 µm, 5 µm, 10 µm
Surface Area(m^2/g)	320(120 Å), 90(300 Å)
Carbon Loading(%)	10(120 Å), 5(300 Å)
USP List	L1
Endcapped	No

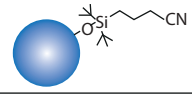
Ultisil® LP-C8

Structural Formula	
pH Range	1.0-8.0
Particle Size	3 µm, 5 µm
Surface Area(m^2/g)	320(120 Å), 90(300 Å)
Carbon Loading(%)	5.5(120 Å), 3(300 Å)
USP List	L7
Endcapped	No

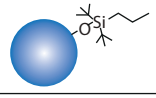
Ultisil® LP-AQ

Structural Formula	
pH Range	1.0-8.0
Particle Size	5 µm
Surface Area(m^2/g)	320(120 Å)
Carbon Loading(%)	5(120 Å)
USP List	L1/L96
Endcapped	No

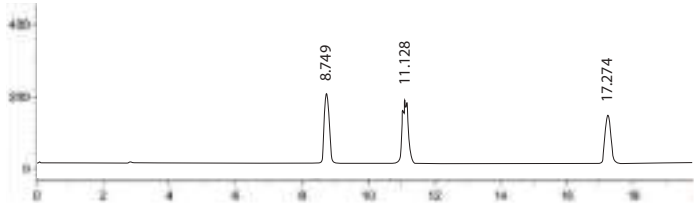
Ultisil® LP-CN

Structural Formula	
pH Range	1.0-8.0
Particle Size	5 µm
Surface Area(m^2/g)	320(120 Å)
Carbon Loading(%)	6(120 Å)
USP List	L10
Endcapped	No

Ultisil® LP-C3

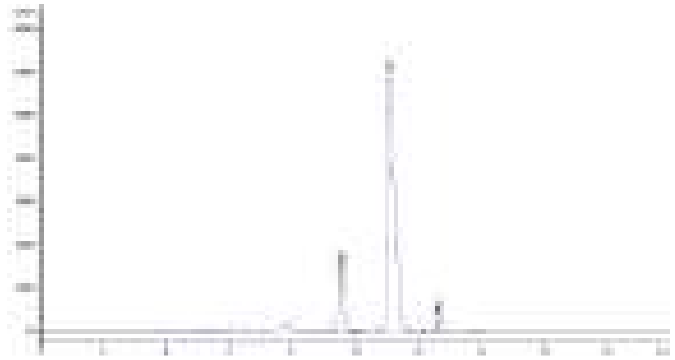
Structural Formula	
pH Range	1.0-8.0
Particle Size	5 µm
Surface Area(m^2/g)	320(120 Å)
Carbon Loading(%)	4(120 Å)
USP List	L56
Endcapped	No

4-aminocyclohexanone HCl, cis-4-Aminocyclohexanol and trans-4-Aminocyclohexanol



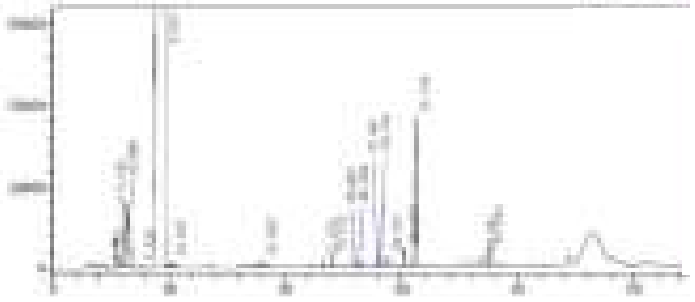
Column:	Ultisil® LP-C18, 4.6 ×250 mm, 5 µm
Mobile Phase:	A: 0.1% heptafluorobutyric acid B: methanol
Gradient Program:	Time(min) A(%) B(%) 0 95 5 10 95 5 20 60 40 21 95 5 30 95 5
Flow Rate:	1.0 mL/min
Detector:	ELSD, 115°C, gas: 3.2 L/min
Temperature:	30°C
Injection Volume:	20 µL
Samples in order:	1. trans-4-Aminocyclohexanol 2. 4-aminocyclohexanone HCl 3. cis-4-Aminocyclohexanol

Cefuroxime Sodium



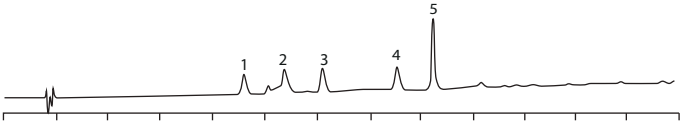
Column:	Ultisil® LP-C8, 4.6 ×250 mm, 5 µm
Mobile Phase:	Acetate buffer*/acetonitrile=85/15 *Dissolve 0.68 g of anhydrous sodium acetate, 5.8 g of glacial acetic acid in 1000 mL water, adjust pH 3.4 with glacial acetic acid
Detector:	273 nm
Temperature:	30°C
Flow Rate:	1.0 mL/min
Injection Volume:	20 µL

Ampicillin Capsules



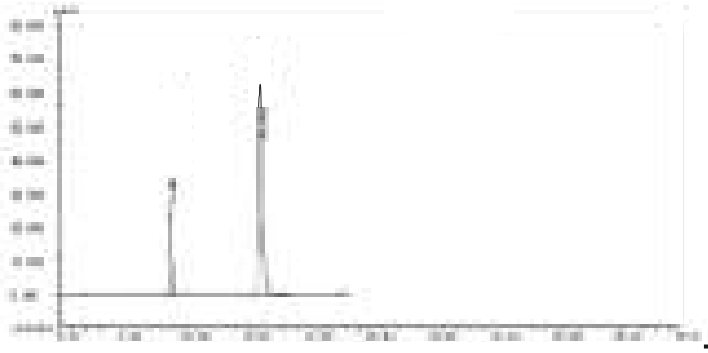
Column:	Ultisil® LP-AQ, 4.6 ×250 mm, 5 µm
Mobile Phase:	A: 12% acetum/0.2 mol/L KH_2PO_4/ acetonitrile/water=0.5/50/50/900 B: 12% acetum/0.2 mol/L KH_2PO_4/ acetonitrile/water=0.5/50/400/550
Gradient Program:	Time(min) A(%) B(%) 0 85 15 10 85 15 40 0 100 55 0 100 60 85 15 70 85 15
Flow Rate:	1.0 mL/min
Detector:	254 nm
Temperature:	30°C
Injection Volume:	20 µL

Peptides



Column:	Ultisil® LP-AQ, 4.6 ×150 mm, 5 µm, 300 Å
Mobile Phase:	A: 0.1% TFA/water B: 0.1% TFA/acetonitrile
Gradient Program:	Linear gradient, 0-30% B
Flow Rate:	1.0 mL/min
Detector:	254 nm
Temperature:	30°C
Samples in order:	LeuGlyLeu,LeuArgLeu,LeuLeu-amide, leuLealeu,LeuLeaLeu,LeuLeuValtyr

Hydralazine Hydrochloride



Column:	Ultisil® LP-CN, 4.6 ×250 mm, 5 µm
Mobile Phase:	Acetonitrile/buffer*=22/78 *Dissolve 1.44 g of lauryl sodium sulfate, 0.75 g of tetrabutylammonium bromide in 1000 mL water, adjust pH 3.0 with 0.05 mol/L sulfuric acid solution
Detector:	230 nm
Temperature:	35°C
Flow Rate:	1.0 mL/min
Injection Volume:	20 µL

Ordering Information

Ultisil® LP-C18

Particle size	Column ID (mm)	Column Length (mm)										Guard Cartridge	Cartridge holder
		30	33	50	75	100	125	150	200	250	300	10mm length	
3 µm 120 Å	2.1	H00208-21009	H00207-21068	H00208-21010	H00208-21011	H00208-21012	H00208-21013	H00208-21014	H00208-21015	H00208-21016	-	H00808-23014	00808-01107
	3.0	H00208-21018	H00207-21069	H00208-21019	H00208-21020	H00208-21021	H00208-21022	H00208-21023	H00208-21024	H00208-21025	-	H00808-23014	00808-01107
	4.0	H00208-21027	H00207-21070	H00208-21028	H00208-21029	H00208-21030	H00208-21031	H00208-21032	H00208-21033	H00208-21034	-	H00808-03010	00808-01101
	4.6	H00208-21036	H00207-21071	H00208-21037	H00208-21038	H00208-21039	H00208-21040	H00208-21041	H00208-21042	H00208-21043	-	H00808-03010	00808-01101
5 µm 120 Å	2.1	H00208-31009	H00207-31068	H00208-31010	H00208-31011	H00208-31012	H00208-31013	H00208-31014	H00208-31015	H00208-31016	-	H00808-24015	00808-01107
	3.0	H00208-31018	H00207-31069	H00208-31019	H00208-31020	H00208-31021	H00208-31022	H00208-31023	H00208-31024	H00208-31025	-	H00808-24015	00808-01107
	4.0	H00208-31027	H00207-31070	H00208-31028	H00208-31029	H00208-31030	H00208-31031	H00208-31032	H00208-31033	H00208-31034	H00208-31035	H00808-04015	00808-01101
	4.6	H00208-31036	H00207-31071	H00208-31037	H00208-31038	H00208-31039	H00208-31040	H00208-31041	H00208-31042	H00208-31043	H00208-31044	H00808-04015	00808-01101
10 µm 120 Å	4.6	-	-	-	-	-	-	H00208-41041	H00208-41042	H00208-41043	H00208-41044	H00808-05014	00808-01101

Ultisil® LP-C8

Particle size	Column ID (mm)	Column Length (mm)										Guard Cartridge	Cartridge holder
		30	33	50	75	100	125	150	200	250	300	10mm length	
3 µm 120 Å	2.1	H00209-21009	H00209-21068	H00209-21010	H00209-21011	H00209-21012	H00209-21013	H00209-21014	H00209-21015	H00209-21016	-	H00808-23015	00808-01107
	3.0	H00209-21018	H00209-21069	H00209-21019	H00209-21020	H00209-21021	H00209-21022	H00209-21023	H00209-21024	H00209-21025	-	H00808-23015	00808-01107
	4.0	H00209-21027	H00209-21070	H00209-21028	H00209-21029	H00209-21030	H00209-21031	H00209-21032	H00209-21033	H00209-21034	-	H00808-03011	00808-01101
	4.6	H00209-21036	H00209-21071	H00209-21037	H00209-21038	H00209-21039	H00209-21040	H00209-21041	H00209-21042	H00209-21043	-	H00808-03011	00808-01101
5 µm 120 Å	2.1	H00209-31009	H00209-31068	H00209-31010	H00209-31011	H00209-31012	H00209-31013	H00209-31014	H00209-31015	H00209-31016	-	H00808-24012	00808-01107
	3.0	H00209-31018	H00209-31069	H00209-31019	H00209-31020	H00209-31021	H00209-31022	H00209-31023	H00209-31024	H00209-31025	-	H00808-24012	00808-01107
	4.0	H00209-31027	H00209-31070	H00209-31028	H00209-31029	H00209-31030	H00209-31031	H00209-31032	H00209-31033	H00209-31034	H00209-31035	H00808-04012	00808-01101
	4.6	H00209-31036	H00209-31071	H00209-31037	H00209-31038	H00209-31039	H00209-31040	H00209-31041	H00209-31042	H00209-31043	H00209-31044	H00808-04012	00808-01101

5µm Ultisil® LP-CN, LP-C3, LP-AQ

Bonded phase	Column ID (mm)	Column Length (mm)			Guard Cartridge	Cartridge holder
		150	200	250	10mm length	
LP-CN	4.6	H00247-31041	H00247-31042	H00247-31043	H00808-04049	00808-01101
LP-C3	4.6	H00265-31041	H00265-31042	H00265-31043	H00808-04050	00808-01101
LP-AQ	4.6	H00259-31041	H00259-31042	H00259-31043	H00808-04042	00808-01101

300 Å HPLC column provided. Please contact Welch or your local distributor for other dimensions.

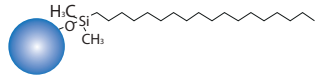
Ultisil® Plus Series HPLC Column

Ultisil Plus series column is based on new high-purity fully porous silica and it adpots Welch's unique bonding process and end-capping technique to ensure higher inertness on the silica surface, resulting in more symmetrical peak shape, higher column efficiency, and more stable separation performance annd better batch reproducibility. It has better performance especially for the analysis of multi-impurity components. The high standard and strict quality control conditions of the column ensure that each column is "survival of the fittest" after strict quality screening before leaving the factory. Ultisil Plus series columns are extremely resistant to contamination, which enables the column to have a long service life while analyzing complex matrix samples.

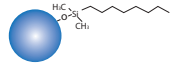
Features

- Super anti-pollution ability
- Excellent longevity
- Excellent batch-to-batch reproducibility
- The first choice for herbal medicine testing

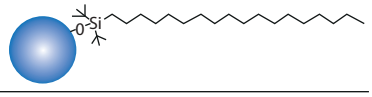
Ultisil® Plus C18

Structural Formula	
pH Range	2.0-8.0
Particle Size	5 μm
Surface Area(m^2/g)	160(130 Å)
Carbon Loading(%)	10(130 Å)
USP List	L1
Endcapped	Yes

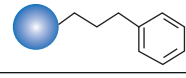
Ultisil® Plus C8

Structural Formula	
pH Range	1.0-10.0
Particle Size	5 μm
Surface Area(m^2/g)	160(130 Å)
Carbon Loading(%)	7(130 Å)
USP List	L7
Endcapped	Yes

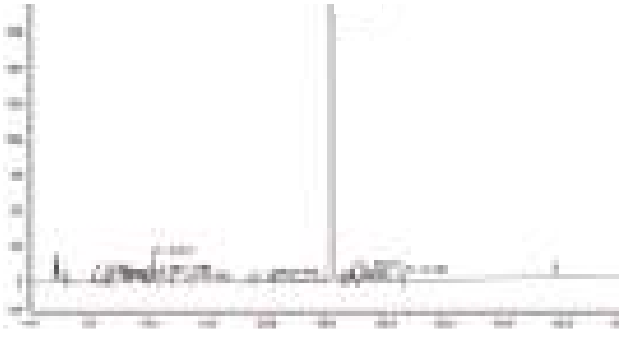
Ultisil® Plus LP-C18

Structural Formula	
pH Range	0.5-8.0
Particle Size	5 μm
Surface Area(m^2/g)	160(130 Å)
Carbon Loading(%)	9(130 Å)
USP List	L1
Endcapped	No

Ultisil® Plus Phenyl

Structural Formula	
pH Range	1.5-10.0
Particle Size	5 μm
Surface Area(m^2/g)	160(130 Å)
Carbon Loading(%)	8(130 Å)
USP List	L11
Endcapped	Yes

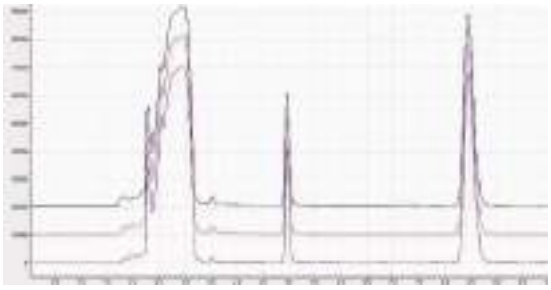
Lansoprazole



Column:	Ultisil® Plus C18, 4.6×150 mm, 5 μm
Mobile Phase:	A: water B: acetonitrile/water/ triethylamine=160 /40/1(%)(adjust pH 7.0 with H_3PO_4)
Gradient Program:	Time(min) A(%) B(%) 0 90 10 40 20 80 50 20 80 51 90 10 65 90 10
Flow Rate:	0.8 mL/min
Detector:	285 nm
Temperature:	25°C
Injection Volume:	40 μL

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Morphine in Poppy Shells

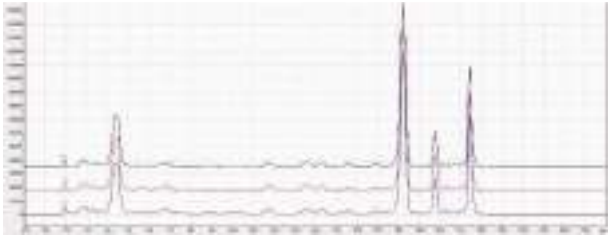


Overlag of morphine samples from different batches

Column:	Welch Ultisil® Plus C8, 4.6×250mm , 5μm
Mobile Phase:	0.01mol/L dipotassium hydrogen phosphate solution: 0.005mol/L heptane sulfonate sodium solution: acetonitrile (40:40:20)
Flow Rate:	1.0 mL/min
Detector:	220 nm
Temperature:	30°C
Injection Volume:	10 μL

Num	Retention time	Area	Peak height	Plates	Tailing factor
1	8.293	2690998	192221	7416	1.413

Rutin in Mulberry Leaves



Overlag of Rutin samples from different batches

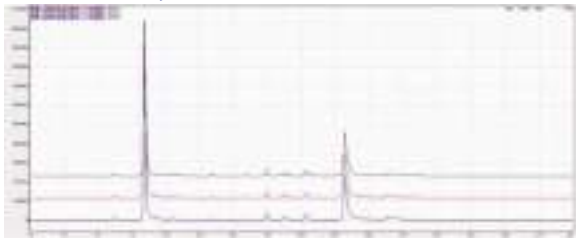
Peak num	Retention time	Area	Degree of separation	Plates	Tailing factor	S/N
1	18.238	2030877	-	27300	0.914	34.93

Column:	Welch Ultisil® Plus LP-C18, 4.6×150mm, 5μm
Mobile Phase:	0.5% phosphoric acid water/methanol

Time(min)	Mobile phase A (%)	Mobile phase A (%)
0	70	30
5	70	30
10	65	35
15	60	40
18	50	50

Flow Rate:	1.0 mL/min
Detector:	358 nm
Temperature:	30°C
Injection Volume:	10 μL

Luteolin in Honeysackle



Overlag of Luteolin samples from different batches

Peak num	Name	Retention time	Area	Resolution(EP)	Plates	Tailing factor	S/N
1	Galuteolin	20.359	349086	-	68166	1.251	1.52

Column:	Welch Ultisil® Plus Phenyl, 4.6×250mm, 5μm
Mobile Phase:	Mobile phase A: 0.5% acetic acid solution: accurately pipette 5 mL of acetic acid, add water and make up to 1 L. Mobile phase B: acetonitrile.

Time(min)	Mobile phase A (%)	Mobile phase A (%)
0-25	10-20	90-80
15-30	20	80
30-40	20-30	80-70

Flow Rate:	1.0 mL/min
Detector:	350 nm
Temperature:	30°C
Injection Volume:	5 μL

Order information

Particle size	Column ID (mm)	Column Length (mm)										Guard Cartridge	Cartridge holder
		30	33	50	75	100	125	150	200	250	300	10mm length	
3.5 μm 120 Å	2.1	H00260-20009	H00260-20068	H00260-20010	H00260-20011	H00260-20012	H00260-20013	H00260-20014	H00260-20015	H00260-20016	-	H00808-23024	00808-01107
	3.0	H00260-20018	H00260-20069	H00260-20019	H00260-20020	H00260-20021	H00260-20022	H00260-20023	H00260-20024	H00260-20025	-	H00808-23024	00808-01107
	4.0	H00260-20027	H00260-20070	H00260-20028	H00260-20029	H00260-20030	H00260-20031	H00260-20032	H00260-20033	H00260-20034	-	H00808-03036	00808-01101
	4.6	H00260-20036	H00260-20071	H00260-20037	H00260-20038	H00260-20039	H00260-20040	H00260-20041	H00260-20042	H00260-20043	-	H00808-03036	00808-01101
5 μm 120 Å	2.1	H00260-31009	H00260-31068	H00260-31010	H00260-31011	H00260-31012	H00260-31013	H00260-31014	H00260-31015	H00260-31016	-	H00808-24029	00808-01107
	3.0	H00260-31018	H00260-31068	H00260-31019	H00260-31020	H00260-31021	H00260-31022	H00260-31023	H00260-31024	H00260-31025	-	H00808-24029	00808-01107
	4.0	H00260-31027	H00260-31068	H00260-31028	H00260-31029	H00260-31030	H00260-31031	H00260-31032	H00260-31033	H00260-31034	H00260-31035	H00808-04036	00808-01101
	4.6	H00260-31036	H00260-31068	H00260-31037	H00260-31038	H00260-31039	H00260-31040	H00260-31041	H00260-31042	H00260-31043	H00260-31044	H00808-04036	00808-01101

Ultisil® Plus C8, Plus phenyl, Plus LP-C18

Bonded phase	4.6×150, 5μm	4.6×250, 5μm
Plus C8	H00283-31041	H00283-31043
Plus phenyl	H00284-31041	H00284-31043
Plus LP- C18	H00285-31041	H00285-31043

Don't see your needed size or format? Contact Welch or your local distributor for other dimensions.

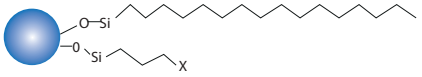
Ultisil® ALK-C18

Ultisil® ALK-C18 is a new generation of C18 column introduced by Welch. In this column, hydrophilic groups are bonded into the silica surface, where large number of silanol groups are replaced, reducing the interactions between basic samples and the silanol groups. As a consequence, the selectivity of ALK-C18 is different from that of traditional C18.

Features:

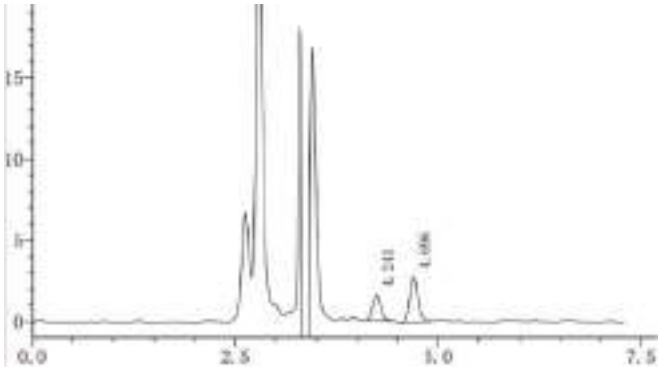
- Mixed solid phase with both hydrophobic and electrostatic interactions
- Excellent peak shape for basic compounds
- Fast separation of similar samples on a column

Ultisil® ALK-C18

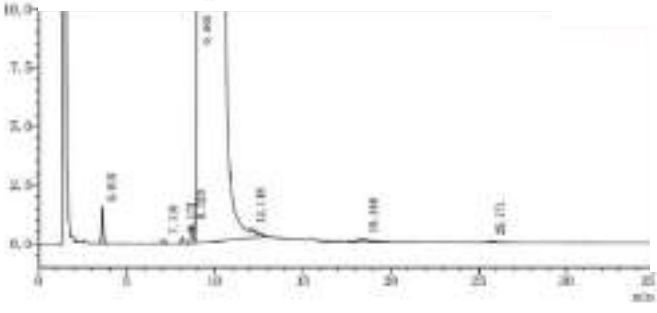
Structural Formula	
pH Range	1.5-10.0
Particle Size	5 µm
Surface Area(m^2/g)	320(120 Å)
Carbon Loading(%)	12(120 Å)
USP List	L1
Endcapped	Yes

AspartanL-aspartyl-L-phenylalanine

Column:	Ultisil® ALK-C18, 4.6 ×250 mm, 5 µm
Mobile Phase:	Citrate buffer/methanol=67/33
Flow Rate:	1.0 mL/min
Detector:	254 nm
Temperature:	30°C
Injection Volume:	20 µl



Trimebutine maleate related substance



Column:	Ultisil® ALK-C18, 4.6 ×150 mm, 5 µm
Mobile Phase:	Perchloric acid buffer/acetonitrile=66/35
Flow Rate:	1.1 mL/min
Detector:	254 nm
Temperature:	40°C
Injection Volume:	20 µl

Ordering Information

Particle size	Column ID (mm)	Column Length (mm)			Guard Cartridge	Cartridge holder
		150	200	250	10mm length	
5 µm	4.6	H00253-31041	H00253-31042	H00253-31043	H00808-04033	00808-01101

Don't see your needed size or format? Contact Welch or your local distributor for other dimensions.

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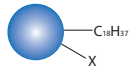
Ultisil® ODS-3
-- High Water-resistance Octadecyl HPLC Column

Ultisil® ODS-3 column is packed with high water-resistance octadecyl reversed-phase packing material. The hydrophilic end group of the octadecyl functional group is strictly endcapped, which brings perfect peaks and low adsorption for both alkaline and acid compounds. The 100% water-resistance packing material avoids the collapse of stationary phase and applies to the separation and determination of most compounds.

Features:

- 100% water resistance
- High efficiency and resolution
- High sample loading
- Easy preparative magnifying
- Different selectivity from common C18

Ultisil® ODS-3

Structural Formula	
pH Range	2.0-8.0
Particle Size	3 μm, 5 μm
Surface Area(m^2/g)	380(100 Å)
Carbon Loading(%)	15(100 Å)
USP List	L1
Endcapped	Yes

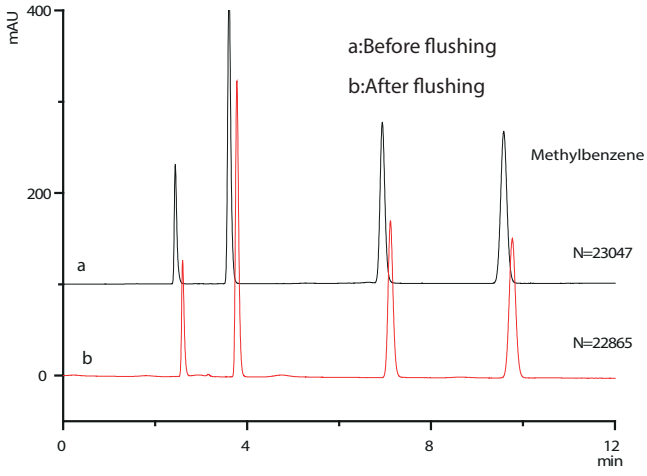
Tests of 48-hour Pure Water Resistance

Mobile Phase: 20 mM K_2HPO_4, adjust pH 7.0 with phosphate

Temperature： 30°C

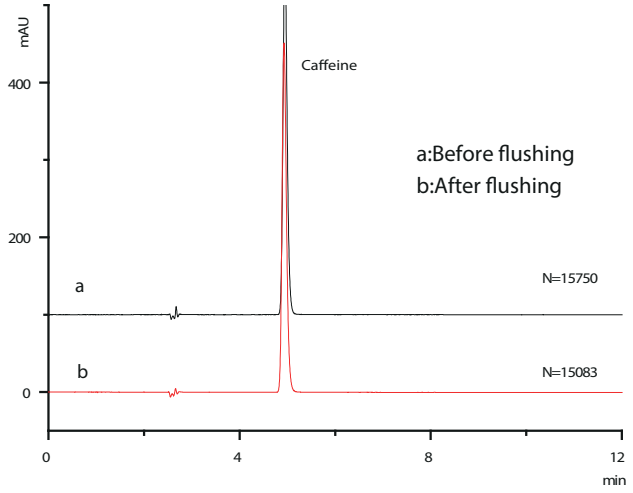
Flow Rate： 1.0 mL/min

Operation: Flush the column with mobile phase for 24 h. Then test the column efficiency and tailing factor. Control the pressure and change the mobile phase every 24 h.



Column:	Ultisil® ODS-3, 4.6 ×250 mm, 5 μm
Mobile Phase:	Methanol/Water =75/25
Flow Rate:	1.0 mL/min
Detector:	254 nm
Temperature:	30 °C
Injection Volume:	20 μL
Test Requirement：	N>20000，T（0.90-1.10）

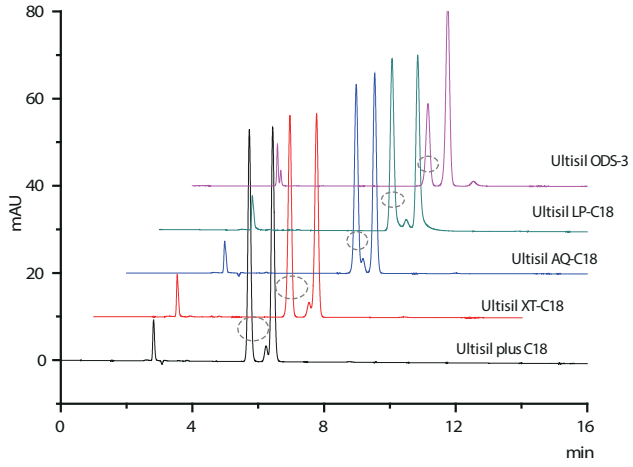
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Column:	Ultisil® ODS-3, 4.6 ×250 mm, 5 µm
Mobile Phase:	Methanol/Water =45/55
Flow Rate:	1.0 mL/min
Detector:	280 nm
Temperature:	30 °C
Injection Volume:	20 µL
Sample Solution :	Caffeine solution（50 µg/ml）

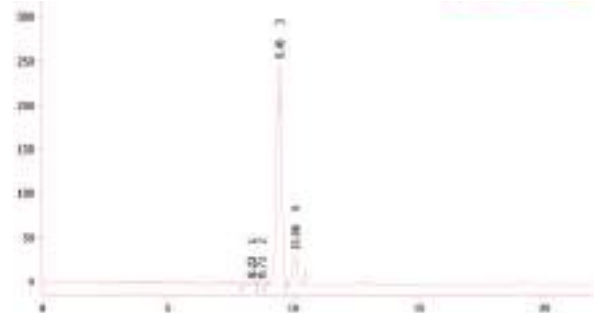
Cefprozil Capsule

Unique selectivity



Column:	Welch C18, 4.6×250 mm, 5 µm
Mobile Phase:	0.05 mol/L $NH_4H_2PO_4$/acetonitrile=95/5 adjust pH 4 with H_3PO_4
Flow Rate:	1.0 mL/min
Detector:	225 nm
Temperature:	35 °C
Injection Volume:	20 µL

Prostaglandin sample



Column:	Ultisil® ODS-3, 4.6 ×250 mm, 5 µm
Mobile Phase:	Acetonitrile/water/H_3PO_4=35/65/0/1
Flow Rate:	1.0 mL/min
Detector:	200 nm
Temperature:	25 °C
Injection Volume:	10 µL

Ordering Information

Ultisil® ODS-3

Particle size	Column ID (mm)	Column Length (mm)			Guard Cartridge	Cartridge holder
		150	200	250	10mm length	
3 µm	4.6	H00275-21041	H00275-21042	H00275-21043	H00808-03031	00808-01101
5 µm	4.6	H00275-31041	H00275-31042	H00275-31043	H00808-04043	00808-01101

Don't see your needed size or format? Contact Welch or your local distributor for other dimensions.

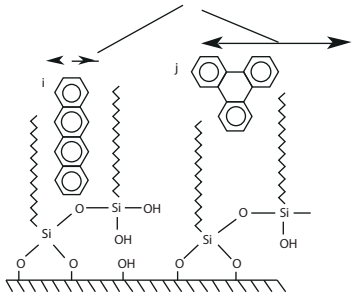
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Ultisil® XS-C18

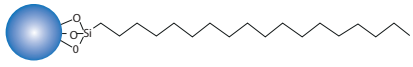
Ultisil® XS-C18 is developed with high column efficiency, high loading and high capacity. It has excellent steric hindrance selectivity, especially shape selectivity.

There are two patterns of Steric Hindrance: Steric Exclusion and Shape Selectivity. Ultisil® XS-C18 uses unique multi-bonding technique, with high bonding density and short distance between ligands, providing better shape selectivity.

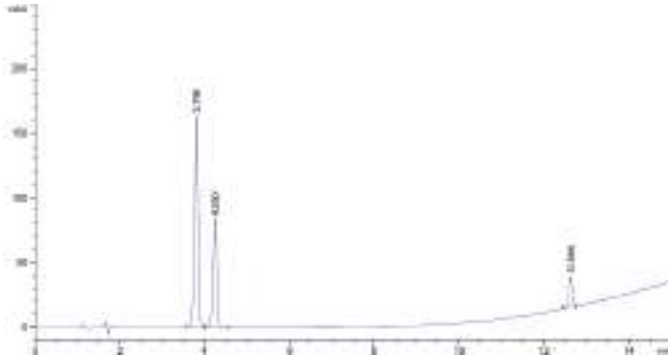
Minimum cross- Section of Solute



Compound i has more narrow size, with smaller cross-sectional area, which allows it go into the ligands and provids better retention. Compound j has wider size, with bigger cross-sectional area, which makes it rejected out by stationary phase, providing shorter retention time. Thus are two compouds separated. Normal bonded columns have bigger interstices btween ligands, which allows both compounds through and results in poor resolution.

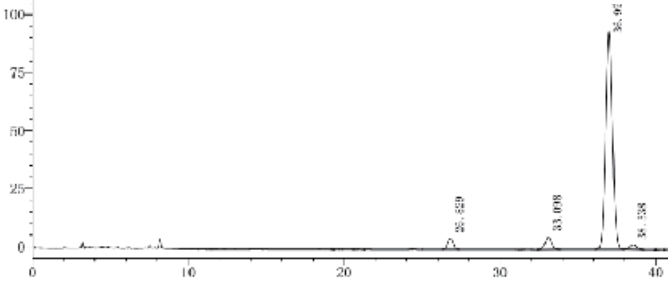
Structural Formula	
pH Range	2.0-10.0
Particle Size	3 µm, 5 µm
Surface Area(m^2/g)	320(120 Å)
Carbon Loading(%)	23(120 Å)
USP List	L1
Endcapped	Yes

Isocyanate mononitrate



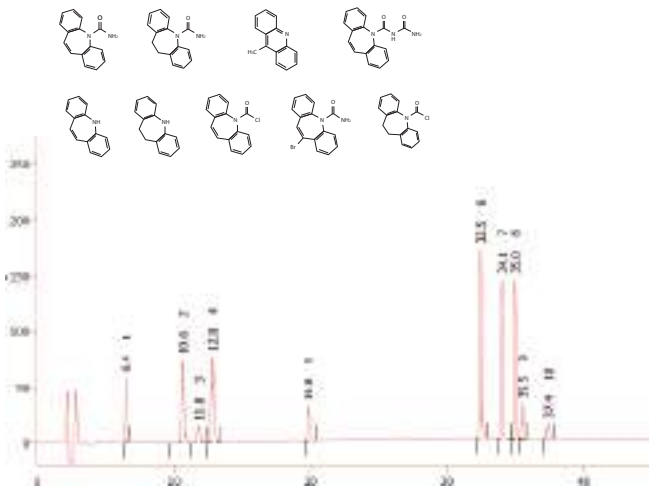
Column:	Ultisil® XS-C18, 4.6 ×150 mm, 5 µm
Mobile Phase:	A: water B: methanol
Gradient Program:	Time(min) A(%) B(%) 0 75 25 5 75 25 15 30 70 15.1 75 25
Flow Rate:	1.0 mL/min
Injection Volume:	210 nm
Temperature:	35°C
Injection Volume:	10 µL
Samples in order:	2-isosorbide mononitrate, isocyanate mononitrate, isocyanate nitrate

Vitamin D_3 and isomers



Column:	Ultisil® XS-C18, 4.6 ×250 mm, 3 µm
Mobile Phase:	Water/methanol=5/95
Flow Rate:	1.0 mL/min
Detector:	264 nm
Temperature:	30°C
Injection Volume:	20 µL
Samples:	Previtamin D_3, Trans vitamin D_3, vitamin D_3, tachysterol D_3

Carbamazepine



Column:	Ultisil® XS-C18, 4.6 ×250 mm, 5 µm
Mobile Phase:	A: water/triethylamine/formic acid=1000/0/5/0/5 B: methanol/formic acid=1000/0.25
Gradient Program:	Time(min) A(%) B(%) 0 65 35 10 65 35 30 40 60 45 40 60 46 65 35
Flow Rate:	1.0 mL/min
Injection Volume:	230 nm
Temperature:	30°C
Injection Volume:	10 µL
Samples in order:	Impurity B, Carbamazepine, impurity A, impurity C, impurity G, impurity D, impurity F, iminodibenzylcarbonyl chloride, impurity F, impurity E

Ordering Information

Ultisil® XS-C18

Particle size	Column ID (mm)	Column Length (mm)			Guard Cartridge	Cartridge holder
		150	200	250	10mm length	
3 µm	4.6	H00277-21041	H00277-21042	H00277-21043	H00808-03034	00808-01101
5 µm	4.6	H00277-31041	H00277-31042	H00277-31043	H00808-04046	00808-01101

Don't see your needed size or format? Contact Welch or your local distributor for other dimensions.



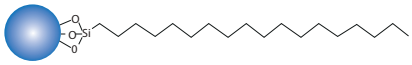
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Ultisil® PAH

Ultisil® PAH Column is a special column recently designed by Welch for the separation of PAHs in EPA method 610.

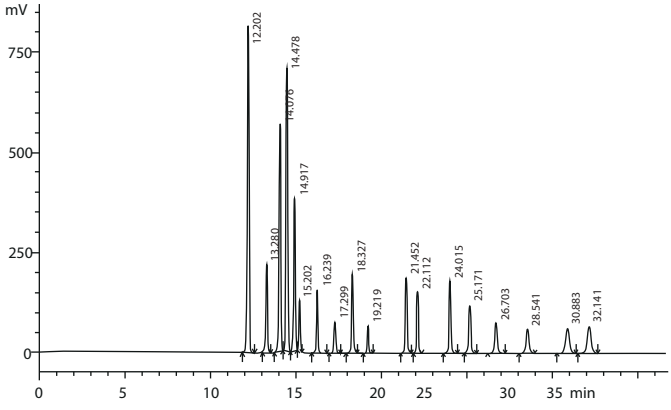
PAHs (Polycyclic Aromatic Hydrocarbon) are hydrocarbons with two or more benzene rings, and considered major pollutants. Therefore, the analysis of these potentially carcinogenic compounds in water, air, soil and food takes high priority. Most of PAHs do not exist alone. Substances that may contain PAHs include charcoal, crude oil, creosote, tar, drugs, dyes, plastic, rubber, pesticide, lube, release agent, electrolyte, mineral oil, pitch, insecticide, and bactericide, etc.

Ultisil® PAH

Structural Formula	
pH Range	1.5-10.0
Particle Size	3 µm, 5 µm
Surface Area(m^2/g)	320(120 Å)
Carbon Loading(%)	22(120 Å)
USP List	L1/L118
Endcapped	No

Ultisil® PAH columns can separate all 18 PAHS in EPA method 610 rapidly with high resolution. Ultisil® PAH columns are silica based columns for PAH analysis with the best peak shape.

Separation of 18 PAHs in EPA method 610



Column:	Ultisil® PAH, 4.6 ×250 mm, 5 µm
Mobile Phase:	A:water B: acetonitrile
	Time(min) A(%) B(%) 0 60 40 20 0 100 33 0 100 34 60 40
Flow Rate:	1.5 mL/min
Detector:	220 nm
Temperature:	25°C
Injection Volume:	10 µL
Mixed Standards:	1. Naphthalene 2. Acenaphthylene 3. 1- Methyl benzene 4. 2- Methyl benzene 5. Acenaphthene 6. Fluorene 7. Phenanthrene 8. Anthracene 9.Fluoranthene 10. Pyrene 11.Benzo(a)anthracene 12. Chrysene 13. Benzo(b)fluoranthene 14. Benzo(k)fluoranthene 15. Benzo(a)pyrene 16. Indeno(1,2,3-cd)pyrene 17. Dibenzo(a,h)anthracene 18. Benzo(g,hi)perylene

Ordering Information

Ultisil® PAH

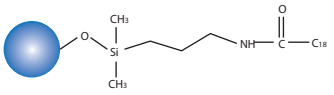
Particle size	Column ID (mm)	Column Length (mm)			Guard Cartridge	Cartridge holder
		150	200	250	10mm length	
3 µm 120Å	2.1	H00210-21014	H00210-21015	H00210-21016	H00808-23018	00808-01107
	3.0	H00210-21023	H00210-21024	H00210-21025	H00808-23018	00808-01107
	4.6	H00210-21041	H00210-21042	H00210-21043	H00808-03012	00808-01101
5 µm 120 Å	2.1	H00210-31014	H00210-31015	H00210-31016	H00808-24010	00808-01107
	3.0	H00210-31023	H00210-31024	H00210-31025	H00808-24010	00808-01107
	4.6	H00210-31041	H00210-31042	H00210-31043	H00808-04010	00808-01101

Don't see your needed size or format? Contact Welch or your local distributor for other dimensions.

Ultisil® Polar Embedded HPLC Column (polar-RP&Phenyl-Ether)

Ultisil® polar embedded phases have been developed for more than 10 years. Earlier polar embedded phase is developed with amide phase. The polar functional group close to the surface increases the wet ability of this phase, thus decreasing phase collapse, making this phase compatible with mobile phase of up to 95% water content. The polar functional group 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. Welch provides two kinds of packing materials - Ultisil® Polar-RP and Ultisil® Phenyl-Ether.

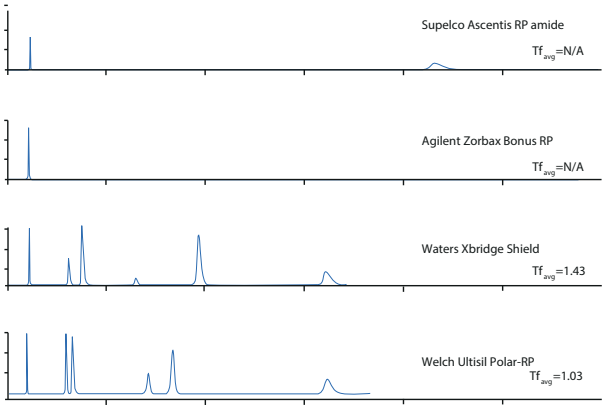
Ultisil® Polar-RP

Structural Formula	
pH Range	1.5-10.0
Particle Size	3 µm, 5 µm, 10 µm
Surface Area(m^2/g)	320(120 Å)
Carbon Loading(%)	18(120 Å)
USP List	L1
Endcapped	Yes

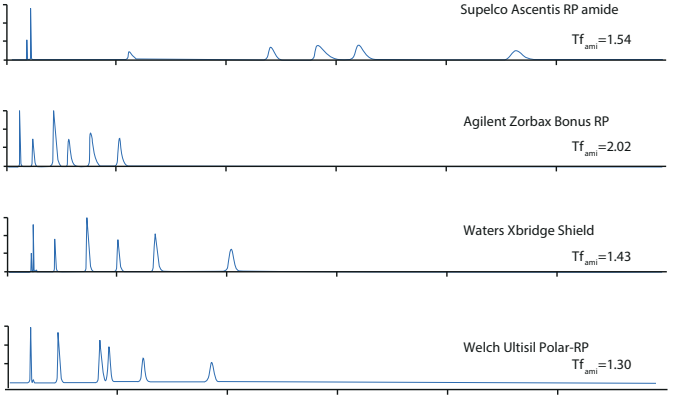
Ultisil® Polar-RP HPLC Column

- Excellent at 100% water content in mobile phase, even better than AQ-C18
- Different selectivity to AQ-C18
- Excellent peak shape for acidic and basic compounds owing to the “shield” effect of polar linkage to silanol activity by forming hydrogen bonding
- Be retentive for polar compounds. Uracil, which can’t be retained on most reversed phase columns at 100% water, can be retained on this column, and eluted after 5-fluorocytosine and cytosine. Analysis of purine, pyrimidine, small molecular acids, catecholamine and water soluble vitamins, requires high water phase content mobile phase

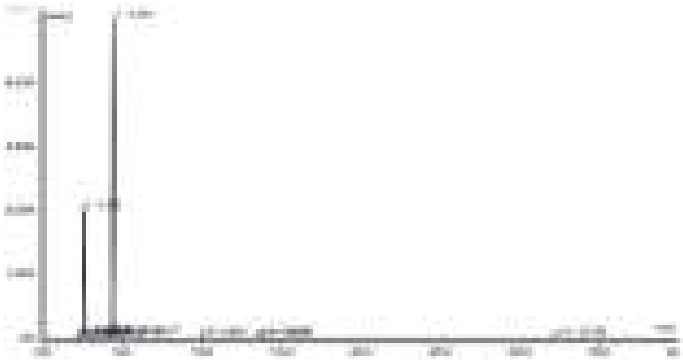
Comparison of separation of acid compounds



Comparison of separation of base compounds

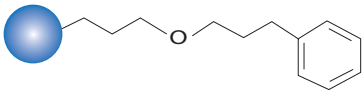


Amoxicillin and clavulanate potassium



Column:	Ultisil® Polar RP, 4.6 ×150 mm, 5 µm
Mobile Phase:	A: phosphate buffer * B: phosphate buffer/acetonitrile=20/80 *Dissolve 1.36 g KH_2PO_3 in 900 mL water, adjust pH 6.0±0.1 with KOH, add water to 1000 mL
Gradient Program:	Time(min) A(%) B(%) 0 95 5 0.5 95 5 30.5 59 41 32 95 5 40 95 5
Flow Rate:	1.0 mL/min
Injection Volume:	215 nm
Temperature:	30°C
Injection Volume:	20 µL

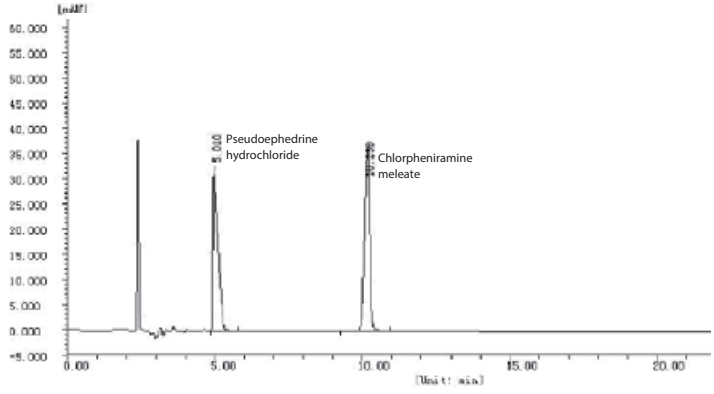
Ultisil® Phenyl-Ether

Structural Formula	
pH Range	1.5-10.0
Particle Size	5 µm
Surface Area(m^2/g)	320(120 Å)
Carbon Loading(%)	12(120 Å)
USP List	L11
Endcapped	Yes

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 highly acidic polar compounds, and different selectivity from other polar phases such as polar embedded phase
- Compatible with 100% water mobile phase

Chlorphenamine Maleate Pseudoephedrine Hydrochloride Capsules



Column:	Ultisil® Phenyl-Ether, 4.6 ×250 mm, 5 µm
Mobile Phase:	Acetonitrile/methanol/tetrahydrofuran/ H_3PO_4/water=320/80/50/1/550 Add 0.43 g lauryl sodium sulfate, adjust pH 3.5 with concentrated ammonia solution
Flow Rate:	1.0 mL/min
Detector:	254 nm
Temperature:	25°C
Injection Volume:	10 µL

Mitiglinide Calcium



Column:	Ultisil® Phenyl-Ether, 4.6 ×250 mm, 5 µm
Mobile Phase:	0.02 mol/L KH_2PO_3 buffer*/methanol=38/62 *Dissolve 2.72 g KH_2PO_3 in water, add 5mL oftriethylamine, add water to 1000 mL, adjust pH 2.5 with H_3PO_4
Flow Rate:	1.0mL/min
Detector:	210 nm
Temperature:	Ambient
Injection Volume:	10 µL

Ordering Information

Ultisil® Polar RP

Particle size	Column ID (mm)	Column Length (mm)										Guard Cartridge	Cartridge holder
		30	33	50	75	100	125	150	200	250	300	10mm length	
3 µm 120 Å	2.1	H00215-21009	H00215-21068	H00215-21010	H00215-21011	H00215-21012	H00215-21013	H00215-21014	H00215-21015	H00215-21016	-	H00808-23009	00808-01107
	3.0	H00215-21018	H00215-21069	H00215-21019	H00215-21020	H00215-21021	H00215-21022	H00215-21023	H00215-21024	H00215-21025	-	H00808-23009	00808-01107
	4.0	H00215-21027	H00215-21070	H00215-21028	H00215-21029	H00215-21030	H00215-21031	H00215-21032	H00215-21033	H00215-21034	-	H00808-03009	00808-01101
	4.6	H00215-21036	H00215-21071	H00215-21037	H00215-21038	H00215-21039	H00215-21040	H00215-21041	H00215-21042	H00215-21043	-	H00808-03009	00808-01101
5 µm 120 Å	2.1	H00215-31009	H00215-31068	H00215-31010	H00215-31011	H00215-31012	H00215-31013	H00215-31014	H00215-31015	H00215-31016	-	H00808-24017	00808-01107
	3.0	H00215-31018	H00215-31069	H00215-31019	H00215-31020	H00215-31021	H00215-31022	H00215-31023	H00215-31024	H00215-31025	-	H00808-24017	00808-01107
	4.0	H00215-31027	H00215-31070	H00215-31028	H00215-31029	H00215-31030	H00215-31031	H00215-31032	H00215-31033	H00215-31034	H00215-31035	H00808-04017	00808-01101
	4.6	H00215-31036	H00215-31071	H00215-31037	H00215-31038	H00215-31039	H00215-31040	H00215-31041	H00215-31042	H00215-31043	H00215-31044	H00808-04017	00808-01101
10 µm 120 Å	4.6	-	-	-	-	-	-	H00215-41041	H00215-41042	H00215-41043	H00215-41044	H00808-05015	00808-01101

Ultisil® Phenyl-Ether

Particle size	Column ID (mm)	Column Length (mm)										Guard Cartridge	Cartridge holder
		30	33	50	75	100	125	150	200	250	300	10mm length	
5 µm 120 Å	2.1	H00214-31009	H00214-31068	H00214-31010	H00214-31011	H00214-31012	H00214-31013	H00214-31014	H00214-31015	H00214-31016	-	H00808-24034	00808-01107
	3.0	H00214-31018	H00214-31069	H00214-31019	H00214-31020	H00214-31021	H00214-31022	H00214-31023	H00214-31024	H00214-31025	-	H00808-24034	00808-01107
	4.0	H00214-31027	H00214-31070	H00214-31028	H00214-31029	H00214-31030	H00214-31031	H00214-31032	H00214-31033	H00214-31034	H00214-31035	H00808-04028	00808-01101
	4.6	H00214-31036	H00214-31071	H00214-31037	H00214-31038	H00214-31039	H00214-31040	H00214-31041	H00214-31042	H00214-31043	H00214-31044	H00808-04028	00808-01101

Don't see your needed size or format? Contact Welch or your local distributor for other dimensions.

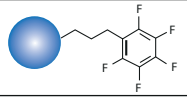


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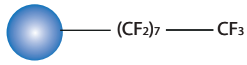
Ultisil® Fluorinated Phase(PFP & F-C8)

Ultisil® Fluorinated Phase has high selectivity and increased retention toward closely related compounds, including both aromatic fluorinated compounds and other nonaromatic halogenated compounds. It can be used in reversed phase and provides an alternative and complementary separation to that performed on C8 or C18 columns for many analytes. Fluorinated phase has better separation for ionic and polar compounds than do alkyl phases. Fluorinated phase can provide different elution orders, leading to enhanced selectivity for compounds that are difficult to separate.

Ultisil® PFP

Structural Formula	
pH Range	1.5-10.0
Particle Size	3 µm, 5 µm
Surface Area(m^2/g)	320(120 Å)
Carbon Loading(%)	12(120 Å)
USP List	L43
Endcapped	Yes

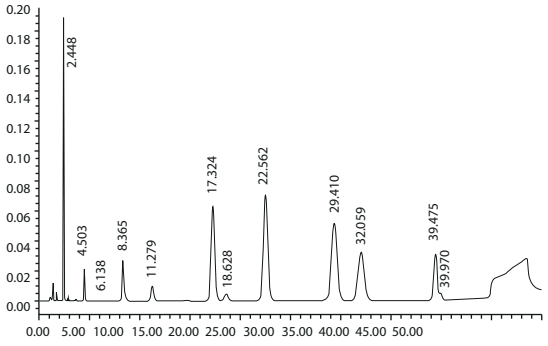
Ultisil® F-C8

Structural Formula	
pH Range	1.5-10.0
Particle Size	3 µm, 5 µm
Surface Area(m^2/g)	320(120 Å)
Carbon Loading(%)	12(120 Å)
USP List	L7
Endcapped	Yes

Ultisil® PFP

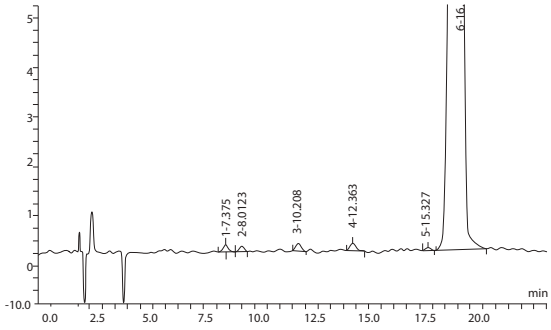
Ultisil® PF-Phenyl is a phase primarily used in the separation of molecules bearing fluorine atoms, but may also be in the separation of non-fluorinated compounds such as Taxol and its derivatives. Because of its phenyl ring, it has a higher selectivity for aromatic molecules than for other alkyl-fluorinated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

Analysis of Taxol



Column:	Ultisil® PFP, 4.6 ×250 mm, 5 µm		
Mobile Phase:	A: acetonitrile 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		
Injection Volume:	227 nm		
Temperature:	30°C		
Injection Volume:	10 µL		

Parecoxib Sodium

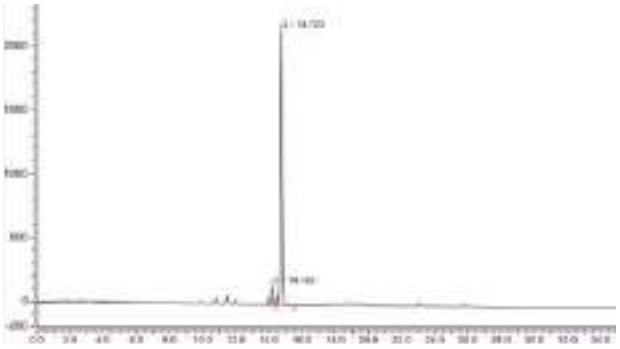


Column:	Ultisil® PFP, 4.6 ×250 mm, 5 µm		
Mobile Phase:	A: 0.1% TFA water solution B: methanol		
Gradient Program:	Time(min)	A(%)	B(%)
	0	55	45
	20	45	55
	40	10	90
Flow Rate:	1.0 mL/min		
Injection Volume:	225 nm		
Temperature:	40°C		
Injection Volume:	10 µL		

Ultisil® F-C8

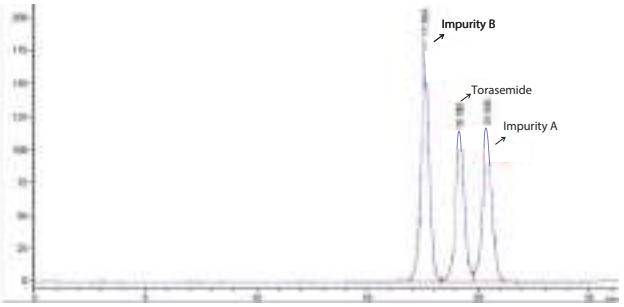
Ultisil® F-C8 column has high selectivity and increased retention toward halogenated aromatic and alkyl compounds, but different from octal alkyl phase.

Dolasetron Mesylate



Column:	Ultisil® F-C8, 4.6 ×250 mm, 5 µm
Mobile Phase:	A: diammonium hydrogen phosphate/ acetonitrile=1000/53 B: diammonium hydrogen phosphate/ acetonitrile=295/795
Gradient Program:	Time(min) A(%) B(%) 0 100 0 28 0 100 38 0 100 40 100 0 50 100 0
Flow Rate:	1.5 mL/min
Injection Volume:	210 nm
Temperature:	30°C
Injection Volume:	20 µL

Torasemide



Column:	Ultisil® F-C8, 4.6 ×250 mm, 5 µm
Mobile Phase:	0.02 mol/L diammonium hydrogen phosphate (pH 7.0)/methanol=65/35
Flow Rate:	1.0 mL/min
Injection Volume:	288 nm
Temperature:	30 ℃
Injection Volume:	20 µL

Ordering Information

Ultisil® PFP

Particle size	Column ID (mm)	Column Length (mm)										Guard Cartridge	Cartridge holder
		30	33	50	75	100	125	150	200	250	300	10mm length	
3 µm 120 Å	2.1	H00224-21009	H00224-21068	H00224-21010	H00224-21011	H00224-21012	H00224-21013	H00224-21014	H00224-21015	H00224-21016	-	H00808-23019	00808-01107
	3.0	H00224-21018	H00224-21069	H00224-21019	H00224-21020	H00224-21021	H00224-21022	H00224-21023	H00224-21024	H00224-21025	-	H00808-23019	00808-01107
	4.0	H00224-21027	H00224-21070	H00224-21028	H00224-21029	H00224-21030	H00224-21031	H00224-21032	H00224-21033	H00224-21034	-	H00808-03024	00808-01101
	4.6	H00224-21036	H00224-21071	H00224-21037	H00224-21038	H00224-21039	H00224-21040	H00224-21041	H00224-21042	H00224-21043	-	H00808-03024	00808-01101
5 µm 120 Å	2.1	H00224-31009	H00224-31068	H00224-31010	H00224-31011	H00224-31012	H00224-31013	H00224-31014	H00224-31015	H00224-31016	-	H00808-24035	00808-01107
	3.0	H00224-31018	H00224-31069	H00224-31019	H00224-31020	H00224-31021	H00224-31022	H00224-31023	H00224-31024	H00224-31025	-	H00808-24035	00808-01107
	4.0	H00224-31027	H00224-31070	H00224-31028	H00224-31029	H00224-31030	H00224-31031	H00224-31032	H00224-31033	H00224-31034	H00224-31035	H00808-04024	00808-01101
	4.6	H00224-31036	H00224-31071	H00224-31037	H00224-31038	H00224-31039	H00224-31040	H00224-31041	H00224-31042	H00224-31043	H00224-31044	H00808-04024	00808-01101

Ultisil® F-C8

Particle size	Column ID (mm)	Column Length (mm)										Guard Cartridge	Cartridge holder
		30	33	50	75	100	125	150	200	250	300	10mm length	
3 µm 120Å	2.1	H00222-21009	H00222-21068	H00222-21010	H00222-21011	H00222-21012	H00222-21013	H00222-21014	H00222-21015	H00222-21016	-	H00808-23021	00808-01107
	3.0	H00222-21018	H00222-21069	H00222-21019	H00222-21020	H00222-21021	H00222-21022	H00222-21023	H00222-21024	H00222-21025	-	H00808-23021	00808-01107
	4.0	H00222-21027	H00222-21070	H00222-21028	H00222-21029	H00222-21030	H00222-21031	H00222-21032	H00222-21033	H00222-21034	-	H00808-03023	00808-01101
	4.6	H00222-21036	H00222-21071	H00222-21037	H00222-21038	H00222-21039	H00222-21040	H00222-21041	H00222-21042	H00222-21043	-	H00808-03023	00808-01101
5 µm 120Å	2.1	H00222-31009	H00222-31068	H00222-31010	H00222-31011	H00222-31012	H00222-31013	H00222-31014	H00222-31015	H00222-31016	-	H00808-24036	00808-01107
	3.0	H00222-31018	H00222-31069	H00222-31019	H00222-31020	H00222-31021	H00222-31022	H00222-31023	H00222-31024	H00222-31025	-	H00808-24036	00808-01107
	4.0	H00222-31027	H00222-31070	H00222-31028	H00222-31029	H00222-31030	H00222-31031	H00222-31032	H00222-31033	H00222-31034	H00222-31035	H00808-04038	00808-01101
	4.6	H00222-31036	H00222-31071	H00222-31037	H00222-31038	H00222-31039	H00222-31040	H00222-31041	H00222-31042	H00222-31043	H00222-31044	H00808-04038	00808-01101

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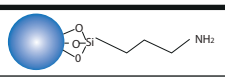
Ultisil® HILIC Column (HILIC Silica & HILIC NH_2)

HILIC (Hydrophilic Interaction Liquid Chromatography) is a separation mode achieved through the partitioning of polar solutes from high concentration, water-miscible, organic mobile phase into hydrophilic surface environment.

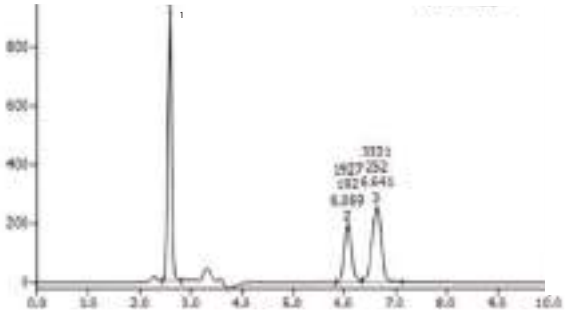
Ultisil® Hilic Silica

Structural Formula	
pH Range	2.0-8.0
Particle Size	3 µm, 5 µm, 10 µm
Surface Area(m^2/g)	320(120 Å)
Carbon Loading(%)	N/A
USP List	L3
Endcapped	No

Ultisil® HILIC-NH_2

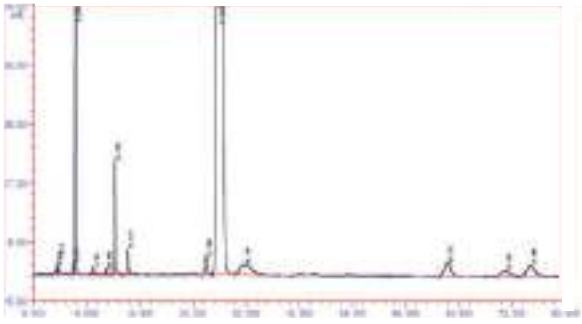
Structural Formula	
pH Range	2.0-8.0
Particle Size	3 µm, 5 µm,10 µm
Surface Area(m^2/g)	320(120 Å)
Carbon Loading(%)	4(120 Å)
USP List	L8
Endcapped	No

Glutamine (Gln)



Column:	Ultisil® HILIC Silica, 4.6 ×250 mm, 5 µm
Mobile Phase:	Acetonitrile/0.01mol/L ammonium acetate =65/35
Flow Rate:	1.0 mL/min
Detector:	215 nm
Temperature:	Ambient
Injection Volume:	20 µL
Samples:	Glutamine, chloropropylamine glutamine, dipeptiven

Alanyl Glutamine Injection



Column:	Ultisil® HILIC-NH_2, 4.6 ×250 mm, 5µm
Mobile Phase:	Acetonitrile/0.05 mol/L kH_2PO_3(adjust pH 4.0 with H_3PO_4) =65/35
Flow Rate:	0.7 mL/min
Detector:	215 nm
Temperature:	30°C
Injection Volume:	20 µL
Note:	Use the mobile phase to fully activate the column before testing the sample on the column

Ordering Information

Ultisil® HILIC Silica

Particle size	Column ID (mm)	Column Length (mm)			Guard Cartridge	Cartridge holder
		150	200	250	10mm length	
3 µm 120 Å	4.6	H00228-21041	H00228-21042	H00228-21043	H00808-03026	00808-01101
5 µm 120 Å	4.6	H00228-31041	H00228-31042	H00228-31043	H00808-04044	00808-01101
10 µm 120 Å	4.6	H00228-41041	H00228-41042	H00228-41043	H00808-05016	00808-01101

Ultisil® HILIC NH_2

Particle size	Column ID (mm)	Column Length (mm)			Guard Cartridge	Cartridge holder
		150	250	300	10mm length	
3 µm120 Å	4.6	H00231-21041	H00231-21042	H00231-21043	H00808-03025	00808-01101
5 µm 120 Å	4.6	H00231-31041	H00231-31042	H00231-31043	H00808-04047	00808-01101
10 µm 120 Å	4.6	H00231-41041	H00231-41042	H00231-41043	H00808-05017	00808-01101

Don't see your needed size or format? Contact Welch or your local distributor for other dimensions.

Ultisil® HILIC Amide

Ultisil® HILIC Amide column is a special column designed for HILIC mode. As amide group has strong hydrophilicity, stability and electrically neutral, Ultisil® Amide has longer life, better separation repeatability and peak shape than NH_2 phase does.

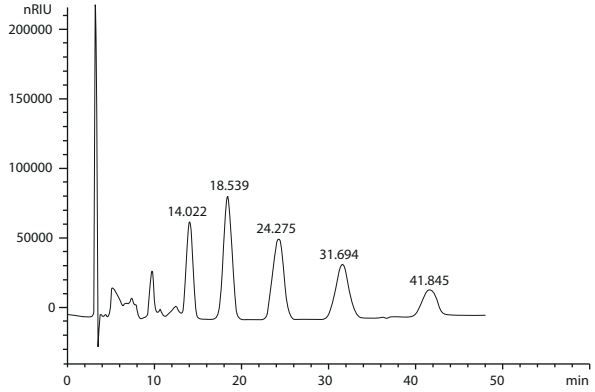
Features

- Based on silica bonded with amide groups, appropriate for the separation of hydrophilic samples
- Multiple actions such as hydrogen bond, molecular and electrostatic interactions
- Good compatibility with many kinds of detectors, such as MS detector
- Stable in organic mobile phase that contains water

Ultisil® HILIC Amide

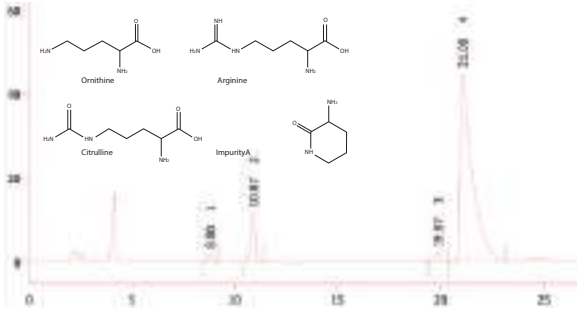
pH Range	2.0-8.0	Carbon Loading(%)	7(120 Å)
Particle Size	3 µm, 5 µm,10 µm	USP List	L68
Surface Area(m^2/g)	320(120 Å)	Endcapped	N/A

Fructo-oligose



Column:	Ultisil® HILIC Amide, 4.6×250 mm, 5 µm
Mobile Phase:	Acetonitrile/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)

Ornithine hydrochloride



Column:	Ultisil® HILIC Amide, 4.6×250 mm, 5 µm
Mobile Phase:	20 mmol/L KH_2PO_4（pH5.6）/acetonitrile =38/62
Detector:	205 nm
Temperature:	30°C
Flow Rate:	1.0mL/min
Injection Volume:	20µL
Samples in order:	1．Citrulline 2．Impurity A 3．Arginine 4．Ornithine

Ordering Information

Ultisil® HILIC Amide

Particle size	Column ID (mm)	Column Length (mm)										Guard Cartridge	Cartridge holder
		30	33	50	75	100	125	150	200	250	300	10mm length	
3 µm 120 Å	2.1	H00240-21009	H00240-21068	H00240-21010	H00240-21011	H00240-21012	H00240-21013	H00240-21014	H00240-21015	H00240-21016	-	H00808-23010	00808-01107
	3.0	H00240-21018	H00240-21069	H00240-21019	H00240-21020	H00240-21021	H00240-21022	H00240-21023	H00240-21024	H00240-21025	-	H00808-23010	00808-01107
	4.0	H00240-21027	H00240-21070	H00240-21028	H00240-21029	H00240-21030	H00240-21031	H00240-21032	H00240-21033	H00240-21034	-	H00808-03021	00808-01101
	4.6	H00240-21036	H00240-21071	H00240-21037	H00240-21038	H00240-21039	H00240-21040	H00240-21041	H00240-21042	H00240-21043	-	H00808-03021	00808-01101
5 µm 120 Å	2.1	H00240-31009	H00240-31068	H00240-31010	H00240-31011	H00240-31012	H00240-31013	H00240-31014	H00240-31015	H00240-31016	-	H00808-24025	00808-01107
	3.0	H00240-31018	H00240-31069	H00240-31019	H00240-31020	H00240-31021	H00240-31022	H00240-31023	H00240-31024	H00240-31025	-	H00808-24025	00808-01107
	4.0	H00240-31027	H00240-31070	H00240-31028	H00240-31029	H00240-31030	H00240-31031	H00240-31032	H00240-31033	H00240-31034	H00240-31035	H00808-04025	00808-01101
	4.6	H00240-31036	H00240-31071	H00240-31037	H00240-31038	H00240-31039	H00240-31040	H00240-31041	H00240-31042	H00240-31043	H00240-31044	H00808-04025	00808-01101
10 µm 120 Å	4.6	-	-	-	-	-	-	H00240-41041	H00240-41042	H00240-41043	H00240-41044	H00808-05018	00808-01101

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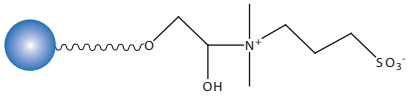
Ultisil® HILIC Amphion II

Ultisil® HILIC Amphion II is a newly developed HILIC column, using amphion-bonded silica as packing material. It applies to the separation of most polar compounds, using acetonitrile or Water other than ion-pairing reagents as mobile phase. The Amphion, containing both Positive Charge Centre and Negative Charge Centre, brings high retention for acid and alkaline compounds through ion-exchange mechanism. Compared with common HILIC packing materials like silica and amino groups, the Amphion-bonded packing material provides better reproducibility and stability.

Features

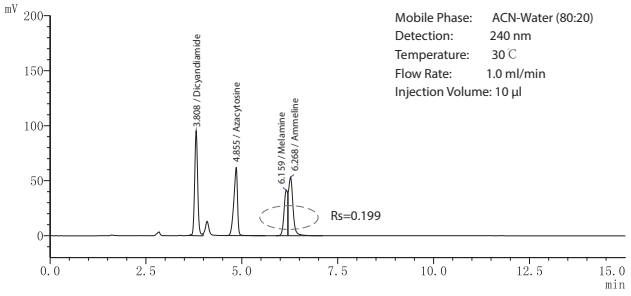
- Amphion-bonded silica stationary phase
- Enhanced hydrophilic interaction brings higher retention for polar and hydrophilic compounds
- Different selectivity from common HILIC packing materials
- Simple mobile phase used for the separation of polar compounds

Ultisil® HILIC Amphion

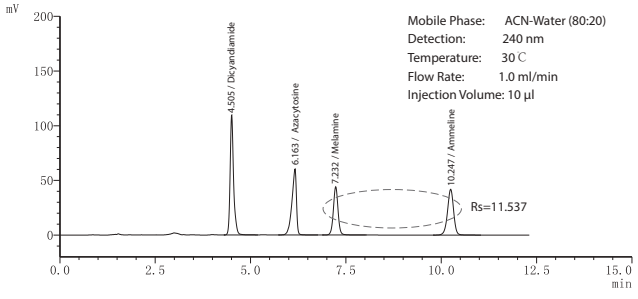
Structural Formula	
pH Range	2.0-8.0
Particle Size	5 μm
Surface Area(m^2/g)	320(120 Å)
Carbon Loading(%)	6(120 Å)
USP List	L114
Endcapped	N/A

Comparison

Separation of 4 Polar Compounds (Dicyandiamide, Azacytosine, Melamine, Ammeline)

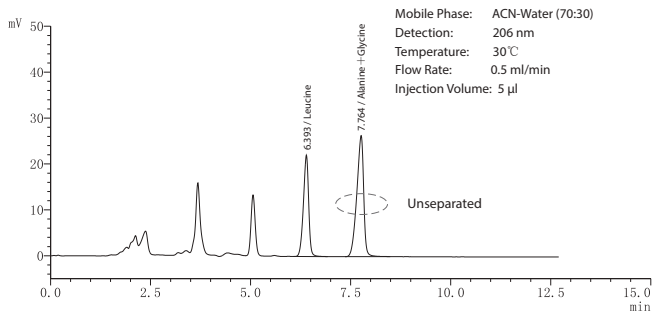


Ultisil® Hilic SiO_2, 5 μm, 4.6×250 mm

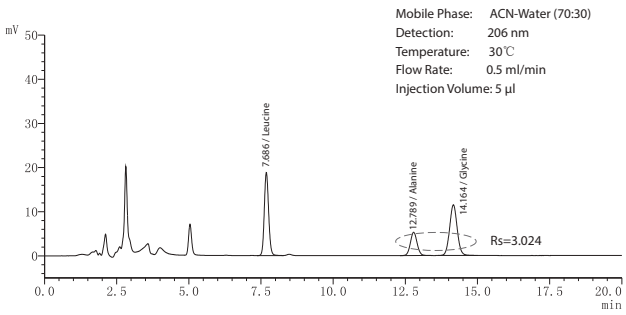


Ultisil® Amphion Ⅱ, 5 μm, 4.6×150 mm

Separation of 3 Aliphatic Amino Acids (Leucine, Alanine, Glycine)



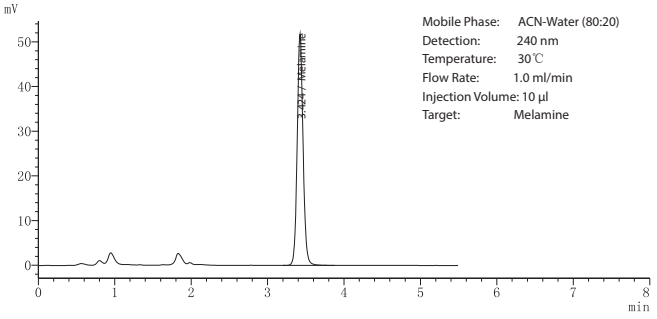
Ultisil® Hilic SiO_2, 5 μm, 4.6×150 mm



Ultisil® Amphion Ⅱ, 5 μm, 4.6×150 mm

Determination of Melamine

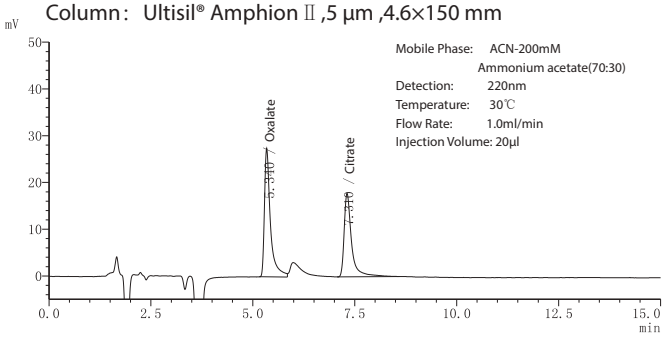
Column： Ultisil® Amphion Ⅱ ,5 μm ,4.6×150 mm



Rt	Plates	Tailing Factor
3.424	8087	1.094

Separation of Citrate and Oxalate

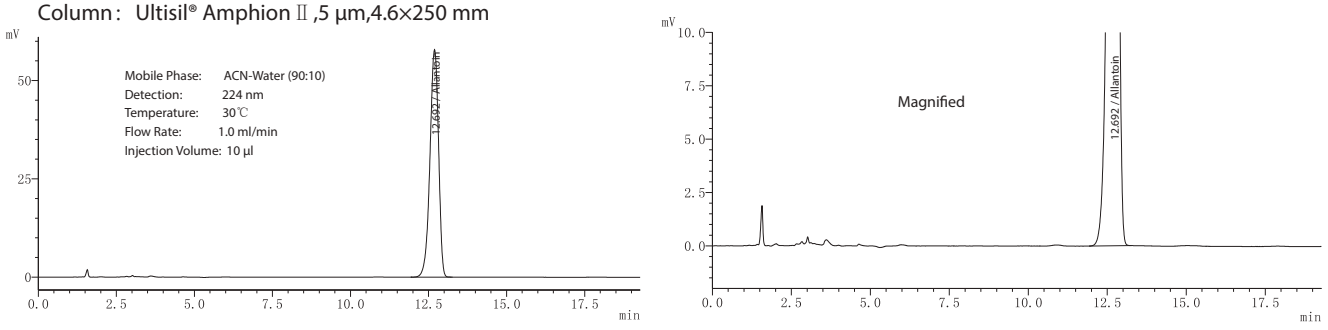
Column： Ultisil® Amphion Ⅱ ,5 μm ,4.6×150 mm



Compound	Rt	Plates	Resolution
Oxalate	5.340	7540	--
Citrate	7.310	9487	7.214

Determation of Allantoin

Column： Ultisil® Amphion Ⅱ ,5 μm,4.6×250 mm



Rt	Plates	Tailing
12.692	10196	Factor0.8

Before use, flush with 50 column volumes of mobile phase (acetonitrile/water, 80:20) to equilibrate. Before injection, flush with 20 column volumes of mobile phase to equilibrate. For gradient analysis, flush with 10 column volumes of original mobile phase between

Note:

1) Shifts of retention time may occur, if not sufficiently equilibrated.

2) Acetonitrile is the most common mobile phase solvent in HILIC mode. Other water-soluble polar organic solvents can also be used as mobile phases. The comparison of elution strength is:THF<Acetone<Acetonitrile<Isopropanol<Ethanol<Methanol<Water.

3) Long-period equilibration required, after using buffer salt mobile phase (like ammonium formate, ammonium acetate etc.) and buffer salt being flushed off.

4) After use, flush off the buffer salt in the column and store in 100% acetonitrile solvent.

Ultisil® HILIC Amphion II

Particle size	Column ID (mm)	Column Length (mm)										Guard Cartridge	Cartridge holder
		30	33	50	75	100	125	150	200	250	300	10mm length	
5 μm 120 Å	2.1	H00274-31009	H00274-31068	H00274-31010	H00274-31011	H00274-31012	H00274-31013	H00274-31014	H00274-31015	H00274-31016		H00808-24039	00808-01107
	3.0	H00274-31018	H00274-31069	H00274-31019	H00274-31020	H00274-31021	H00274-31022	H00274-31023	H00274-31024	H00274-31025	-	H00808-24039	00808-01107
	4.0	H00274-31027	H00274-31070	H00274-31028	H00274-31029	H00274-31030	H00274-31031	H00274-31032	H00274-31033	H00274-31034	H00274-31035	H00808-04029	00808-01101
	4.6	H00274-31036	H00274-31071	H00274-31037	H00274-31038	H00274-31039	H00274-31040	H00274-31041	H00274-31042	H00274-31043	H00274-31044	H00808-04029	00808-01101

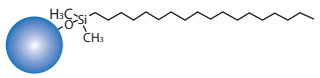
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Ultisil® Amino Acid

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. Complete sample preparation can be achieved in as short as 30 min.

Ultisil® AA(Amino Acid)

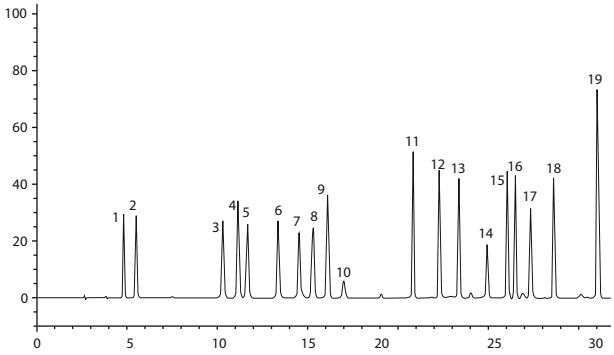
Structural Formula	
pH Range	1.5-10.0
Particle Size	5 µm
Surface Area(m^2/g)	320(120 Å)
Carbon Loading(%)	17(120 Å)
USP List	L1
Endcapped	Yes

Ultisil® Amino Acid Method Package

Ultisil® Amino Acid Method Package

- Ultisil® Amino Acid Column (5 µm, 4.6×250 mm), 1 pk
- Amino Acid Standards, 2 bottles. 1 mL/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

	P/N	Description
Ultisil® Amino Acid Method Package (P/N 00840-01000)	H00211-31043	Ultisil® Amino Acid Column (4.6×250 mm, 5 µm), 1 pk
	00814-01027 (A)	Derivatization reagent A, 1 bottle, 10 mL/bottle
	00814-01027 (B)	Derivatization reagent B, 1 bottle, 10 mL/bottle
	00814-01030	Derivatization reagent diluent, 6 bottles, 20 mL/bottle
	00815-01001	Amino Acid Standards, 2 bottles. 1 mL/bottle
		Welch Ultisil® AA method brochure

Don't see your needed size or format? Contact Welch or your local distributor for other dimensions.

Ultisil® Amino Acid Plus

Ultisil® Amino Acid Plus column is a dedicated column which through further optimizing the analysis method on the basis of the original column for amino acid analysis. It uses an evaporative light scattering detector to detect more kinds of amino acids with higher stability without derivation of amino acid.

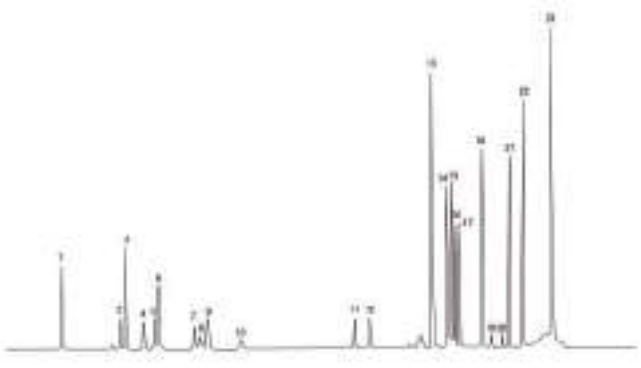
Ultisil® Amino Acid Plus

pH Range	1.0-7.0
Particle Size	5 µm
Surface Area(m^2/g)	320(120 Å)
Carbon Loading(%)	10(120 Å)
USP List	L1
Endcapped	Yes

Features

- Separate 23 amino acids by reverse-phase chromatographic analysis without the need of derivation, which makes amino acid analysis more convenient and flexible
- Amino acids which separated and derived from proteolytic products, cell culture medium, food and feed have better resolution
- The special column for amino acid analysis has superb reproducibility and stability, ensuring the stability and reliability of quantitative and qualitative analysis results
- Excellent selectivity and separation, allowing you to get more accurate analysis results
- Multiple interference factors such as reagents, by-products and solvents can be removed by fast extraction
- Adhere to strict quality control standards, each column had been tested with 23 amino acids before sold, ensuring the reliability of the results

Separation of 23 Amino Acids



1. Taurine	2. Glycine
3. Serine	4. Aspartic acid
5. Hydroxyproline	6. Glutamine
7. Threonine	8. Alanine
9. Glutamic acid	10. Cysteine
11. Proline	12. Cystine
13. Valine	14. Lysine
15. Histidine	16. Methionine
17. Tyrosine	18. Arginine
19. Isoleucine	20. Leucine
21. Norleucine	22. Phenylalanine
23. Tryptophan	

Ordering Information

P/N	Description
H00279-31044	Ultisil® Amino Acid Plus Column (4.6×300 mm, 5 µm)

Don't see your needed size or format? Contact Welch or your local distributor for other dimensions.

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Ultisil® OAA(Organic Acids)

Ultisil® OAA is a dedicated reversed-phase column developed by Welch Materials for the detection of water-soluble organic acids. It is designed for efficient and high-throughput organic acid analysis. Compared with the conventional reversed- phase C18 column, OAA column has better performance and higher resolution with more uniform peaks through improvement of the unique bonding technology.

For water-soluble organic acids with larger polarity, if the proportion of organic phase reduces to 5% on C18 column, effective retention may not be achieved. Further reduction of the organic phase or even 100% of the aqueous phase, is prone to cause phase collapse. With optimized bonding technology and the surface hydrophilic treatment of packing materials, Ultisil® OAA column can greatly improve the column's resistance to aqueous phase and the peak shape of organic acid compounds.

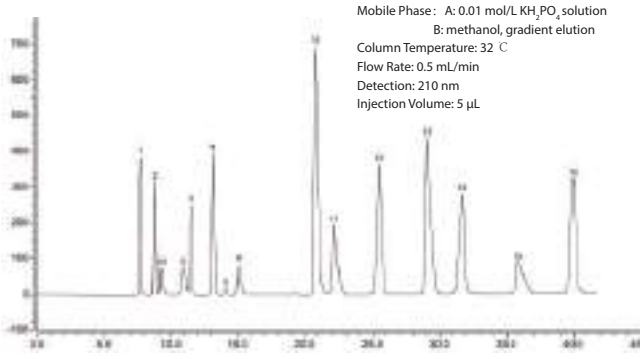
Ultisil® OAA

pH Range	2.0-8.0
Particle Size	5 μm
Surface Area(m^2/g)	320(120 Å)
Carbon Loading(%)	10(120 Å)
USP List	L1
Endcapped	Yes

Features

- Excellent separation ability for hydrophilic organic acids
- Each column has been tested to ensure excellent hydrolysis stability for hydrophilic organic acid analysis
- Compatible with 100% aqueous phase, having good retention for polar compounds
- Ideal selectivity for a variety of organic acids, with high column efficiency and excellent peak shape
- Excellent in separating hydroxyl fatty acids and aromatic organic acids, optimal choice for organic acid analysis in the pharmaceutical industry, food and beverage detection industry

Separation of 16 kinds of organic acids



1. Oxalic acid	2. Tartaric acid
3. Quinic acid	4. Methanoic acid
5. Pyruvic acid	6. Malic acid
7. Ascorbic acid	8. Lactic acid
9. Acetic acid	10. Maleic acid
11. Citric acid	12. Fumaric acid
13. Cis-aconitic acid	14. Acrylic acid
15. Propionic acid	16. Citraconic acid

Ordering Information

P/N	Description
H00278-31044	Ultisil® OAA Column (4.6×300 mm, 5 μm)

Don't see your needed size or format? Contact Welch or your local distributor for other dimensions.

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Ultisil® Mixed Mode Phase(MM C18/SCX & MM NH_2/CN)

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

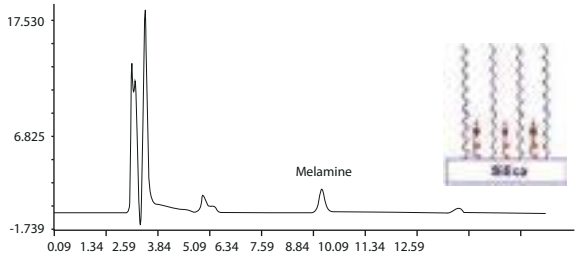
Ultisil® MM C18/SCX

pH Range	2.0-8.0
Particle Size	5 µm
Surface Area(m^2/g)	320(120 Å)
Carbon Loading(%)	N/A
USP List	/
Endcapped	N/A

Ultisil® MM NH_2/CN

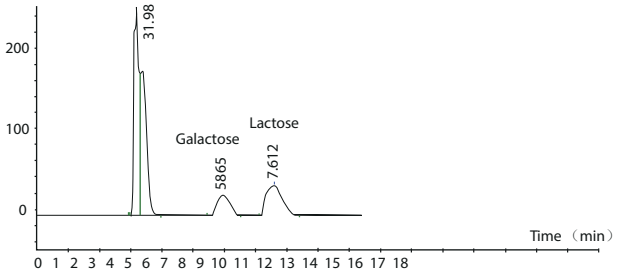
pH Range	2.0-8.0
Particle Size	5 µm
Surface Area(m^2/g)	320(120 Å)
Carbon Loading(%)	N/A
USP List	/
Endcapped	N/A

Analysis of Melamine



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

Separation of Lactose and Galactose



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

Ultisil® MM C18/SCX

Particle size	Column ID (mm)	Column Length (mm)										Guard Cartridge	Cartridge holder
		30	33	50	75	100	125	150	200	250	300	10mm length	
5 µm 120 Å	2.1	H00235-31009	H00235-31068	H00235-31010	H00235-31011	H00235-31012	H00235-31013	H00235-31014	H00235-31015	H00235-31016	-	H00808-24032	00808-01107
	3.0	H00235-31018	H00235-31069	H00235-31019	H00235-31020	H00235-31021	H00235-31022	H00235-31023	H00235-31024	H00235-31025	-	H00808-24032	00808-01107
	4.0	H00235-31027	H00235-31070	H00235-31028	H00235-31029	H00235-31030	H00235-31031	H00235-31032	H00235-31033	H00235-31034	H00235-31035	H00808-04032	00808-01101
	4.6	H00235-31036	H00235-31071	H00235-31037	H00235-31038	H00235-31039	H00235-31040	H00235-31041	H00235-31042	H00235-31043	H00235-31044	H00808-04032	00808-01101

Ultisil® MM NH_2/CN

Particle size	Column ID (mm)	Column Length (mm)										Guard Cartridge	Cartridge holder
		30	33	50	75	100	125	150	200	250	300	10mm length	
5 µm 120 Å	2.1	H00243-31009	H00243-31068	H00243-31010	H00243-31011	H00243-31012	H00243-31013	H00243-31014	H00243-31015	H00243-31016	-	H00808-24041	00808-01107
	3.0	H00243-31018	H00243-31069	H00243-31019	H00243-31020	H00243-31021	H00243-31022	H00243-31023	H00243-31024	H00243-31025	-	H00808-24041	00808-01107
	4.0	H00243-31027	H00243-31070	H00243-31028	H00243-31029	H00243-31030	H00243-31031	H00243-31032	H00243-31033	H00243-31034	H00243-31035	H00808-04037	00808-01101
	4.6	H00243-31036	H00243-31071	H00243-31037	H00243-31038	H00243-31039	H00243-31040	H00243-31041	H00243-31042	H00243-31043	H00243-31044	H00808-04037	00808-01101

Don't see your needed size or format? Contact Welch or your local distributor for other dimensions.

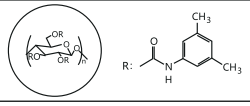
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Ultisil® Chiral Column

Ultisil® Chiral Columns are based on spherical silica particles coated with chiral polymers (amylose derivatives or cellulose derivatives). Welch offers 5 μm and 10 μm particles, and four types of chiral columns: Cellu-D, Cellu-J, Amy-D and Amy-s. 80% of all racemic compounds can be separated by these four chiral columns.

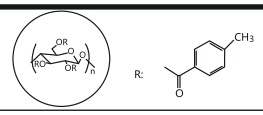
Ultisil® Cellu-D/Cellu-DR

Cellulose tris (3,5-dimethylphenylcarbamate) coated silica

Structural Formula	
pH Range	2.0-9.0
Particle Size	5 μm, 10 μm
Surface Area(m^2/g)	320(120 Å)
Carbon Loading(%)	N/A
USP List	L40(Cellu-D), L93(Cellu-DR)
Endcapped	N/A

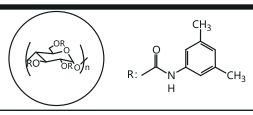
Ultisil® Cellu-J/Cellu-JR

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

Structural Formula	
pH Range	2.0-9.0
Particle Size	5 μm, 10 μm
Surface Area(m^2/g)	320(120 Å)
Carbon Loading(%)	N/A
USP List	L80(Cellu-J), L107(Cellu-JR)
Endcapped	N/A

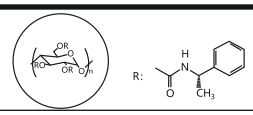
Ultisil® AMY-D/AMY-DR

Amylose tris (3,5-dimethylphenylcarbamate) coated silica

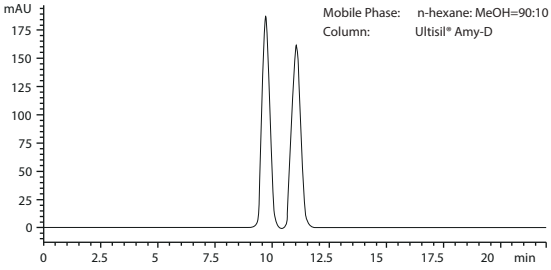
Structural Formula	
pH Range	2.0-9.0
Particle Size	5 μm, 10 μm
Surface Area(m^2/g)	320(120 Å)
Carbon Loading(%)	N/A
USP List	L51
Endcapped	N/A

Ultisil® Amy-S/Amy-SR

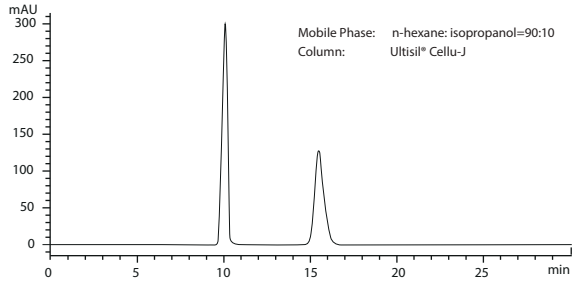
Amylose tris [(S)-α-methylphenyl carbamate] coated Silica

Structural Formula	
pH Range	2.0-9.0
Particle Size	5 μm, 10 μm
Surface Area(m^2/g)	320(120 Å)
Carbon Loading(%)	N/A
USP List	L90
Endcapped	N/A

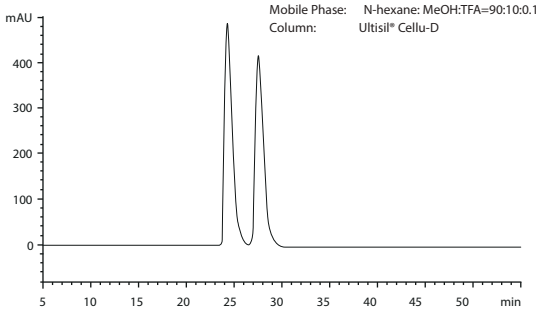
Fenamiphos



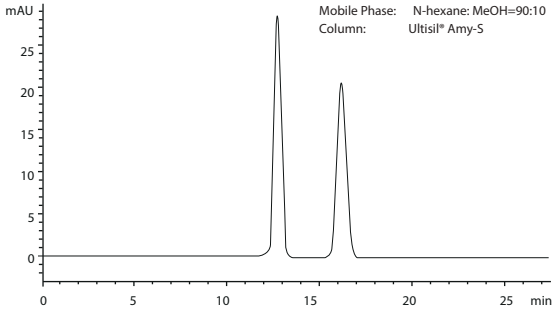
Tr ŏger's Base



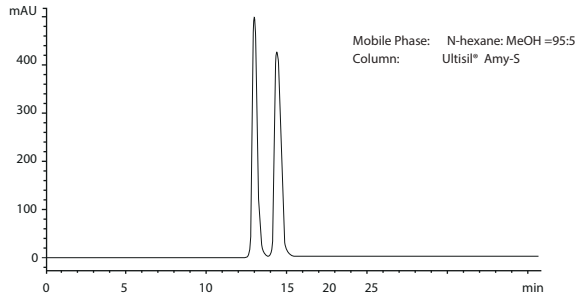
DL-Repaglinide



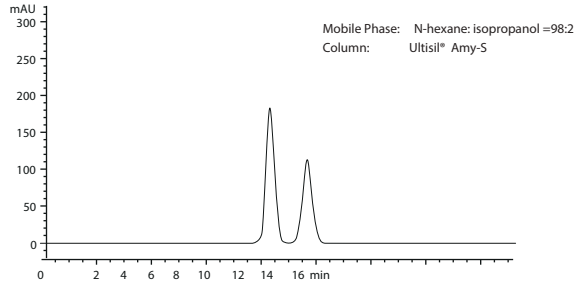
Myclobutanil



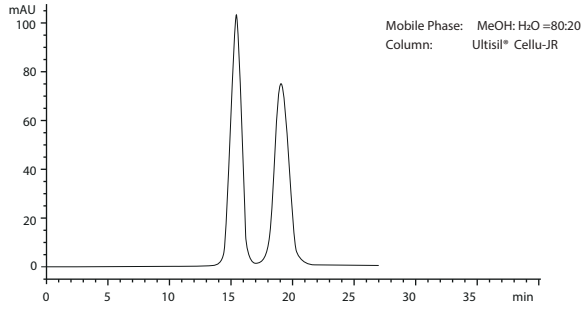
Quizalofop-ethyl



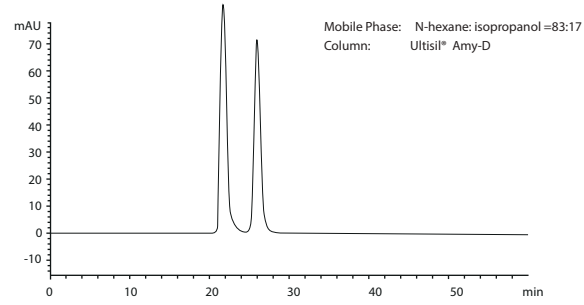
Oxirane,2-[(phenylmethoxy)methyl]-



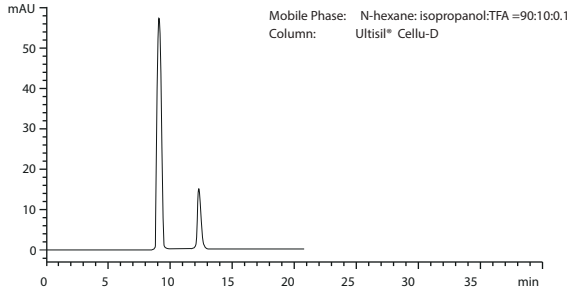
Llaprazole



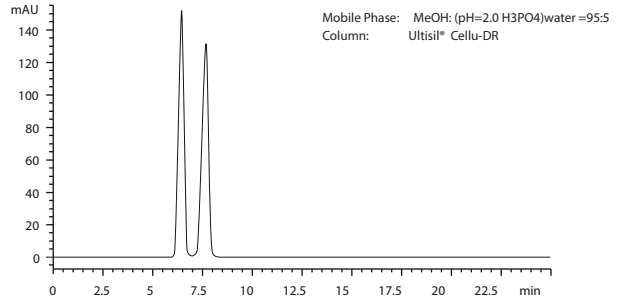
Omeprazole



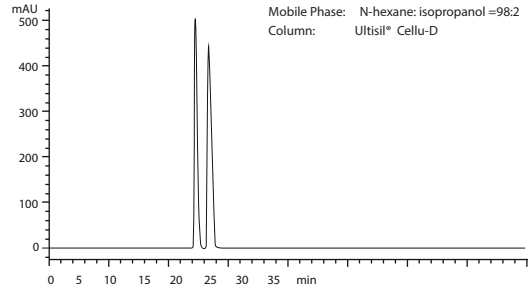
Alkannin



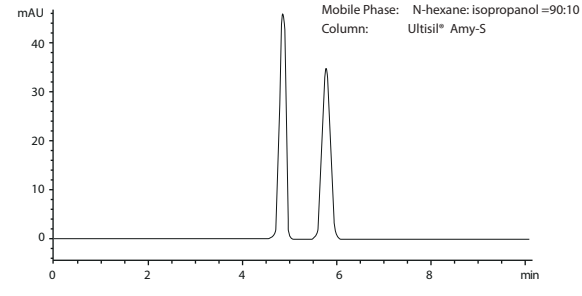
Fmoc-Leu-OH



Butylphthalide



Hexaconazole



Ordering Information

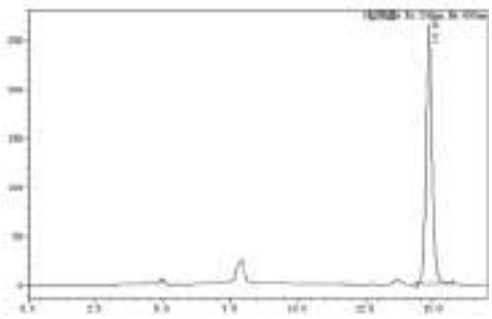
	Particle size	Column ID(mm)	Column Length (mm)		Guard Cartridge	Cartridge holder
			150	250	10mm length	
Cellu-D	5 µm	4.6	H00219-31041	H00219-31043	H00808-04014	00808-01101
	10 µm	4.6	H00219-41041	H00219-41043	H00808-05021	00808-01101
Cellu-DR	5 µm	4.6	H00262-31041	H00262-31043	H00808-04014-R	00808-01101
	10 µm	4.6	H00262-41041	H00262-41043	H00808-05021-R	00808-01101
Amy-D	5 µm	4.6	H00221-31041	H00221-31043	H00808-04040	00808-01101
	10 µm	4.6	H00221-41041	H00221-41043	H00808-05022	00808-01101
Amy-DR	5 µm	4.6	H00264-31041	H00264-31043	H00808-04040-R	00808-01101
	10 µm	4.6	H00264-41041	H00264-41043	H00808-05022-R	00808-01101

	Particle size	Column ID(mm)	Column Length (mm)		Guard Cartridge	Cartridge holder
			150	250	10mm length	
Cellu-J	5 µm	4.6	H00218-31041	H00218-31043	H00808-04039	00808-01101
	10 µm	4.6	H00218-41041	H00218-41043	H00808-05023	00808-01101
Cellu-JR	5 µm	4.6	H00261-31041	H00261-31043	H00808-04039-R	00808-01101
	10 µm	4.6	H00261-41041	H00261-41043	H00808-05023-R	00808-01101
Amy-S	5 µm	4.6	H00220-31041	H00220-31043	H00808-04041	00808-01101
	10 µm	4.6	H00220-41041	H00220-41043	H00808-05024	00808-01101
Amy-SR	5 µm	4.6	H00263-31041	H00263-31043	H00808-04041-R	00808-01101
	10 µm	4.6	H00263-41041	H00263-41043	H00808-05024-R	00808-01101

Ultisil® Zn Column

As a zinc powder reduction column designed for the detection of vitamin K1 or similar substances, Ultisil® Zn column uses zinc powder as packing materials with specifications of 4.6 mm×50 mm and particle size of 50-70μm.

Determination of vitamin K1 in spinach



Column:	Ultisil® AQ-C18 4.6×250mm, 5μm Ultisil® Zn 4.6×50mm
Mobile Phase:	900 mL methanol, 100 mL tetrahydrofuran, 0.3 mL peracetic acid. Add 1.5 g zinc oxide and 0.5 g anhydrous sodium acetate after mixing.
Flow Rate:	1 mL/min
Detector:	243 nm/430nm
Temperature:	30°C
Injection Volume:	10 μL

Ordering Information

P/N	Description
H00225-51037	Ultisil® Zn (4.6×50mm)

Ultisil® Lead Oxide Column

Ultisil® Lead oxide column was specially designed for the detection of malachite green and colorless malachite green in aquatic products by HPLC methods in SC/3021-2004 standard. Because the colorless malachite green fails to absorb in the visible, it is necessary to use this column to oxidize colorless malachite green to malachite green, which solves the difficulty of UV detection of colorless malachite green.

Ordering Information

Specification	Ultisil® Lead Oxide	
	25%PbO_2	50%PbO_2
4.6×35 mm	H00238-51036	H00239-51036
4.6×50 mm	H00238-51037	H00239-51037
4.0×50 mm	H00238-51028	H00239-51028

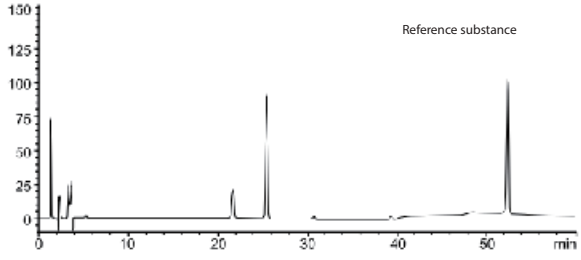
Don't see your needed size or format? Contact Welch or your local distributor for other dimensions.

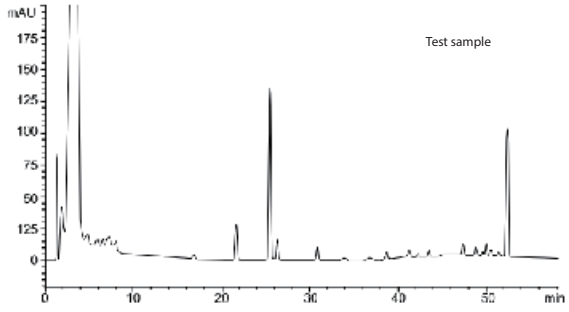
Ultisil® PG-C18

Ultisil® PG-C18 column is a new generation of dedicated column which has unique selectivity for the analysis of ginsenoside with good peak symmetry and high column efficiency. As active ingredients in panax notoginseng, ginseng, red ginseng and American ginseng, Ginsenosides Rg1 and Re also have similar chromatographic properties. It is usually difficult to achieve a resolution of 1.5 on conventional C18 columns (i.e., baseline separation) for that they are very sensitive to the proportion of acetonitrile in the mobile phase. Even a 1% nuance in that will cause a great change in their appearing time, so they can only be seen and separated on the C18 column at about 20% of acetonitrile. Due to this special property, the choice of adjusting the mobile phase to increase the resolution is restricted.

pH Range	2.0-8.0
Particle Size	5 µm
Surface Area(m^2/g)	260(150 Å)
Carbon Loading(%)	10(150 Å)
USP List	L1
Endcapped	No

Panax Notoginseng Saponins





Column:	Ultisil® PG-C18, 4.6 ×250 mm, 5 µm
Mobile Phase:	A: water B: acetonitrile
Gradient Program:	Time(min) A(%) B(%) 0 81 19 12 81 19 60 64 36
Flow Rate:	1.0 mL/min
Injection Volume:	203 nm
Temperature:	25°C

Ordering Information

P/N	Description
H00276-31743	Ultisil® PG-C18 (4.6×250mm)

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