


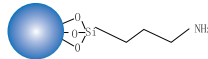
Ultisil™ HILIC Column (HILIC Silica&HILIC NH₂)

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.

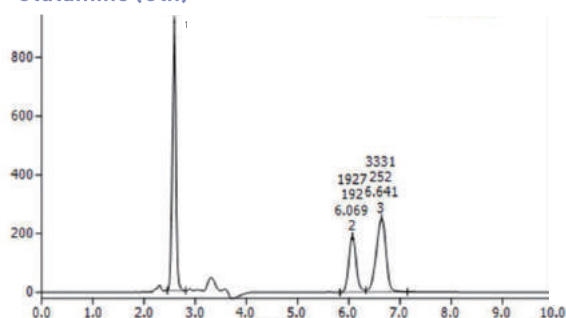
Ultisil™ HILIC Silica

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-NH₂

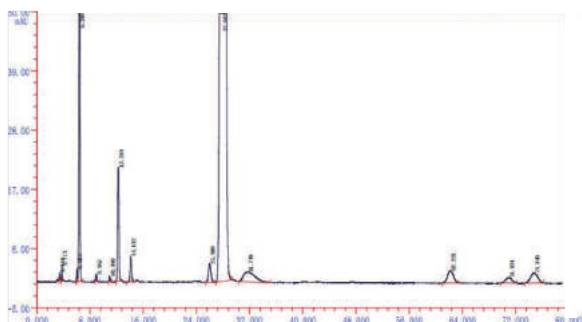
Structural Formula	
pH Range	2.0-8.0
Particle Size	3 μm, 5 μm, 10 μm
Surface Area(m ² /g)	320(120 Å)
Carbon Loading(%)	4(120 Å)
USP List	L8
Endcapped	No

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 ₂ PO ₄ {adjust pH 4.0 with H ₃ PO 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	Guard Column Holder
		150	200	250		
3 μm 120 Å	4.6	00228-21041	00228-21042	00228-21043	00808-03026	00808-01101
5 μm 120 Å	4.6	00228-31041	00228-31042	00228-31043	00808-04044	00808-01101
10 μm 120 Å	4.6	00228-41041	00228-41042	00228-41043	00808-05016	00808-01101

Ultisil™ HILIC NH₂

Particle size	Column ID (mm)	Column Length (mm)			Guard Cartridge	Guard Column Holder
		150	250	300		
3 μm 120 Å	4.6	00231-21041	00231-21042	00231-21043	00808-03025	00808-01101
5 μm 120 Å	4.6	00231-31041	00231-31042	00231-31043	00808-04047	00808-01101
10 μm 120 Å	4.6	00231-41041	00231-41042	00231-41043	00808-05017	00808-01101

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

Ultisil™ HILIC Amide

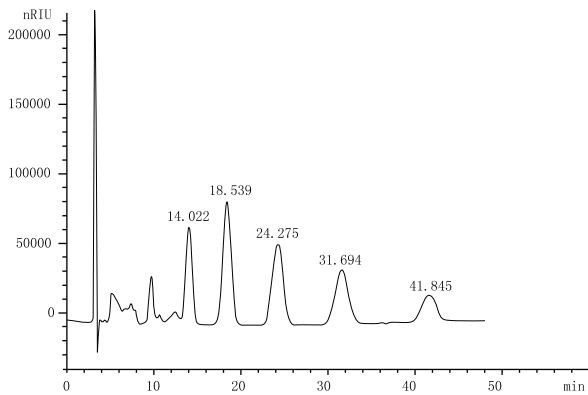
Ultisil™ HILIC Amide column is a special column designed for HILIC mode. As amide group has strong hydrophilicity, stability and electrically neutral, Ultisil™ Amide has longer life, better separation repeatability and peak shape than NH₂ phase does.

- 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

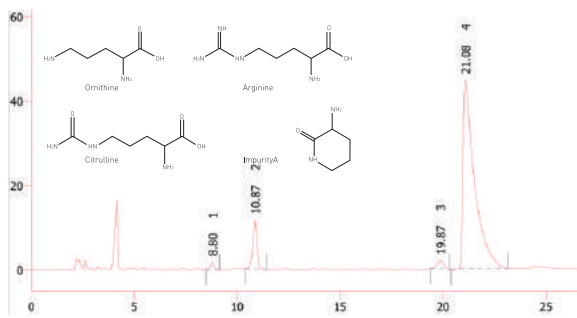
pH Range	2.0-8.0	Carbon Loading(%)	7(120 Å)
Particle Size	3 μm, 5 μm, 10 μm	USP List	/
Surface Area(m ² /g)	320(120 Å)	Endcapped	N/A

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 ₂ PO 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	Guard Column Holder
		30	33	50	75	100	125	150	200	250	300		
3 μm 120 Å	2.1	00240-21009	09240-21009	00240-21010	00240-21011	00240-21012	00240-21013	00240-21014	00240-21015	00240-21016	-	00808-23010	00808-01107
	3.0	00240-21018	-	00240-21019	00240-21020	00240-21021	00240-21022	00240-21023	00240-21024	00240-21025	-	00808-23010	00808-01107
	4.0	00240-21027	-	00240-21028	00240-21029	00240-21030	00240-21031	00240-21032	00240-21033	00240-21034	-	00808-03021	00808-01101
	4.6	00240-21036	11240-21036	00240-21037	00240-21038	00240-21039	00240-21040	00240-21041	00240-21042	00240-21043	-	00808-03021	00808-01101
5 μm 120 Å	2.1	00240-31009	09240-31009	00240-31010	00240-31011	00240-31012	00240-31013	00240-31014	00240-31015	00240-31016	-	00808-24025	00808-01107
	3.0	00240-31018	-	00240-31019	00240-31020	00240-31021	00240-31022	00240-31023	00240-31024	00240-31025	-	00808-24025	00808-01107
	4.0	00240-31027	-	00240-31028	00240-31029	00240-31030	00240-31031	00240-31032	00240-31033	00240-31034	00240-31035	00808-04025	00808-01101
	4.6	00240-31036	11240-31036	00240-31037	00240-31038	00240-31039	00240-31040	00240-31041	00240-31042	00240-31043	00240-31044	00808-04025	00808-01101
10 μm 120 Å	4.6	-	-	-	-	-	-	00240-41041	00240-41042	00240-41043	00240-41044	00808-05018	00808-01101

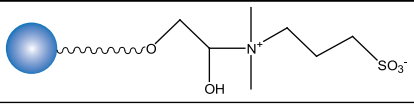
Don't see your needed size or format? Contact Welch or your local distributor for other dimensions.

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.

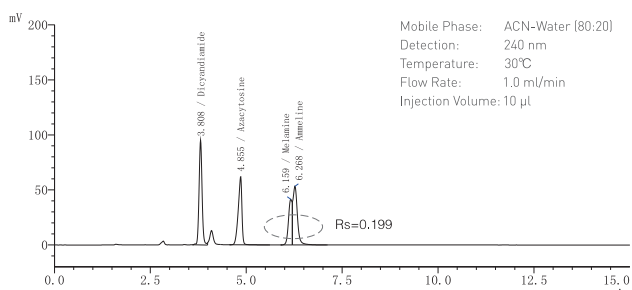
- Amphion-bonded silica stationary phase
- Enhanced hydrophilic interaction brings higher retention for polar and hydrophilic compounds
- Different selectivity from common HILIC packing materials
- Simple mobile phase used for the separation of polar compounds

Ultisil™ HILIC Amphion

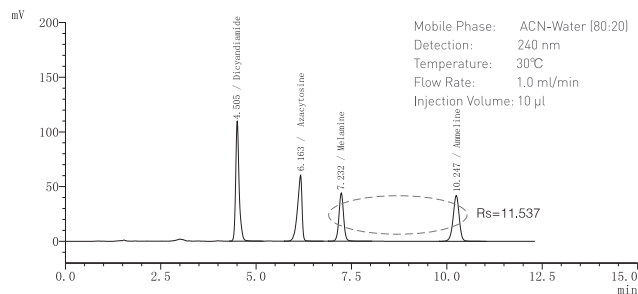
Structural Formula	
pH Range	2.0-8.0
Particle Size	5 µm
Surface Area(m ² /g)	320(120 Å)
Carbon Loading(%)	6(120 Å)
USP List	/
Endcapped	N/A

Comparison

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

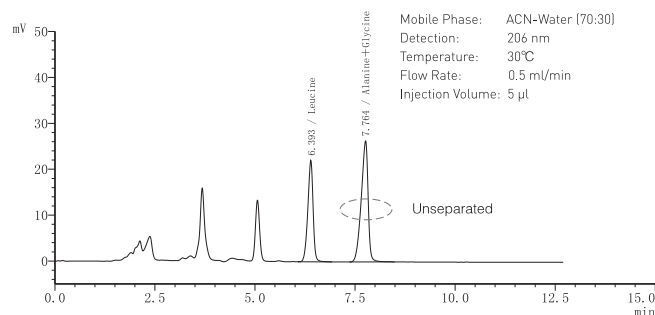


Ultisil™ HILIC SiO₂ 5 µm, 4.6×250 mm

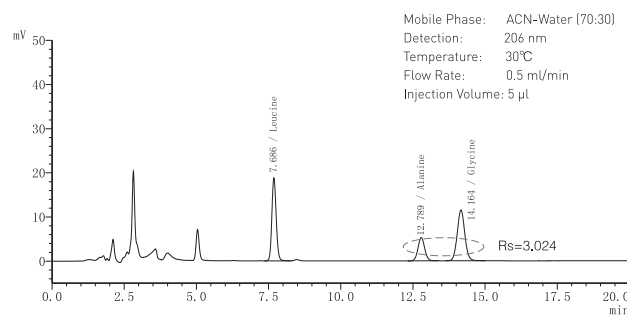


Ultisil™ Amphion II, 5 µm, 4.6×150 mm

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



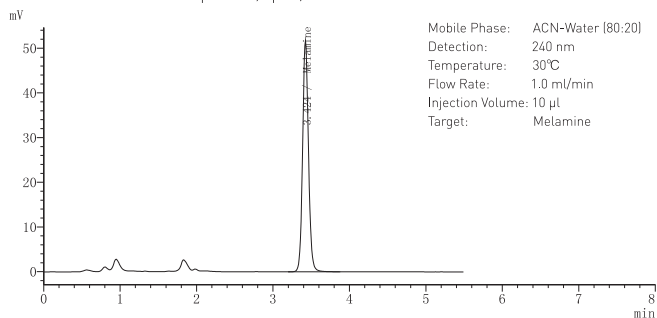
Ultisil™ HILIC SiO₂ 5 µm, 4.6×150 mm



Ultisil™ Amphion II, 5 µm, 4.6×150 mm

Determination of Melamine

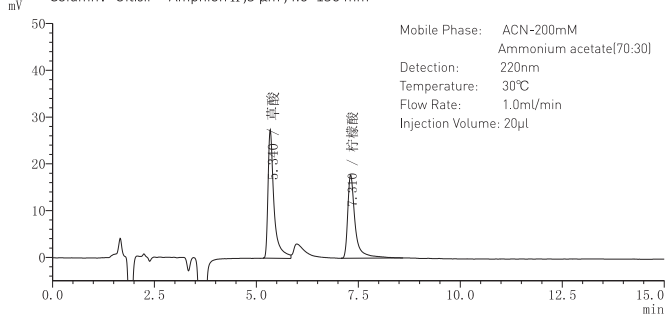
Column: Ultisil™ Amphion II, 5 μm, 4.6×150 mm



Rt	Plates	Tailing Factor
3.424	8087	1.094

Separation of Citrate and Oxalate

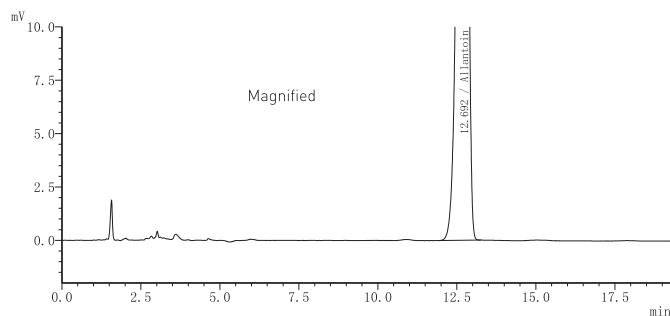
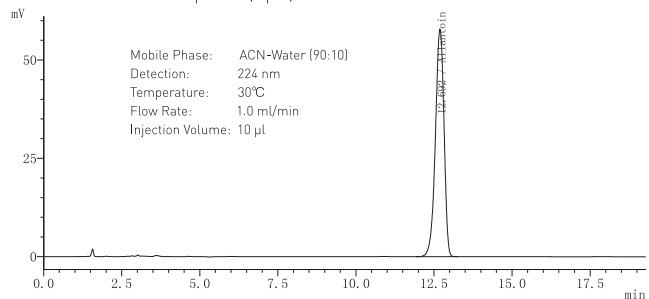
Column: Ultisil™ Amphion II, 5 μm, 4.6×150 mm



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

Determination of Allantoin

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



Rt	Plates	Tailing Factor
12.692	10196	0.892

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 injections.

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	Guard Column Holder
		30	33	50	75	100	125	150	200	250	300		
5 μm 120 Å	2.1	00274-31009	09274-31009	00274-31010	00274-31011	00274-31012	00274-31013	00274-31014	00274-31015	00274-31016		00808-24039	00808-01107
	3.0	00274-31018	-	00274-31019	00274-31020	00274-31021	00274-31022	00274-31023	00274-31024	00274-31025	-	00808-24039	00808-01107
	4.0	00274-31027	-	00274-31028	00274-31029	00274-31030	00274-31031	00274-31032	00274-31033	00274-31034	00274-31035	00808-04029	00808-01101
	4.6	00274-31036	11274-31036	00274-31037	00274-31038	00274-31039	00274-31040	00274-31041	00274-31042	00274-31043	00274-31044	00808-04029	00808-01101

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