

FAST FACTS

At-a-Glance
Product
Information
from Restek

Figure 1

The Ultra Aqueous C18 phase provides a hydrophilic environment that prevents chain folding.

Peak List:	Conc. (mg/mL)	Column:	Ultra Aqueous C18
1. glycolic acid	5.4	Catalog#:	9178565
2. malonic acid	4.2	Dimensions:	150x4.6mm
3. acetic acid	7.8	Particle Size:	5µm
4. maleic acid	0.06	Pore Size:	100Å

Sample:	Conditions:
Sample dissolved in mobile phase.	Mobile Phase: 50mM potassium phosphate, pH 2.5
	Flow Rate: 1.0mL/min.
	Temp.: 25°C
	Det.: UV@210nm
	Inj.: 10µL

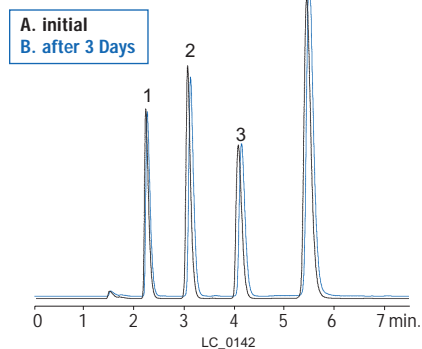
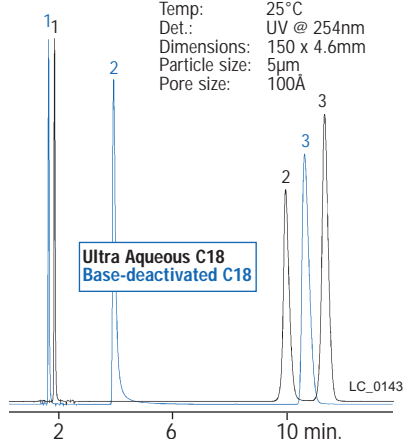


Figure 2

The Ultra Aqueous C18 column has enhanced retention and unique selectivity for polar and basic compounds.

Peak List:	Conditions:
1. uracil	Mobile phase: 20mM potassium phosphate, pH 7.0; acetonitrile (80:20)
2. pyridine	Flow: 1.0mL/min.
3. phenol	Temp: 25°C
	Det.: UV @ 254nm
	Dimensions: 150 x 4.6mm
	Particle size: 5µm
	Pore size: 100Å



Ultra Aqueous C18 HPLC Columns

*Achieve Stable Retention in 100%
Aqueous Mobile Phase*

The Ultra Aqueous C18 HPLC column provides reproducible retention times and can be used with highly aqueous mobile phases, which may eliminate the need for sample derivitization or ion pairing reagents. This column features a true C18 alkyl bonded phase, meeting the requirements of a US Pharmacopoeia (USP) L1 stationary phase.

Many traditional C18 alkyl stationary phases exhibit a loss in retention over time when exposed to highly aqueous mobile phases. This retention time loss is even more pronounced if the mobile phase flow is stopped and restarted. One theory explaining this loss in retention is “chain folding,” where extremely hydrophobic alkyl chains of a traditional C18 phase fold down upon the surface of the silica to avoid the hydrophilic aqueous mobile phase environment. In turn, the folded C18 chains diminish the amount of hydrophobic interaction that occurs between sample analytes and the stationary phase, resulting in a loss of analyte retention.

Restek scientists however, use a novel bonding chemistry for the Ultra Aqueous C18 column that results in polar groups at the silica surface. These surface polar groups keep the alkyl stationary phase extended, and thus wetted by the mobile phase—even when using up to 100% aqueous mobile phases (Figure 1). Additionally, although the Ultra Aqueous C18 column behaves similarly to a traditional base-deactivated C18 column when analyzing neutral hydrophobic compounds, it has enhanced retention and unique selectivity for polar and basic compounds (Figure 2).

Features & Benefits

Feature	Benefit
Analyzes polar compounds by reversed phase.	Retains compounds such as amino acids and water soluble vitamins using simple mobile phases and without derivitization.
Analyzes polar, hydrophilic materials without retention time loss. Stable retention in 100% aqueous mobile phases.	Can analyze compounds that are sparingly soluble in organic solvents.
True C18 alkyl bonded phase.	Meets requirements of USP L1.
High-density C18 ligand coverage.	Similar selectivity as traditional C18 phases for neutral hydrophobic compounds.
Unique secondary polar characteristics.	End-capping diminishes peak tailing observed from exposed silanol sites on the silica surface.

Ultra Aqueous C18

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*Restek is your free
technical literature source!*

Application Notes:

(#59177) Analyze Polar Compounds by
Reversed Phase HPLC Using Ultra Aqueous
C18 Column

(#59314) Trident™ Direct Guard Cartridge
System Fast Facts

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Lit. Cat. # 59371

Commonly Asked Questions

• How is the Ultra Aqueous C18 column different from traditional C18 columns?

The Ultra Aqueous C18 column has a true C18 alkyl linkage to a high-surface-area Type B silica support. This is different from traditional C18 phases because Restek uses a novel bonding process that results in a polar group attached to the silica surface. It is this secondary process with the polar functional groups that makes the Ultra Aqueous C18 column unique and allows it to be used in highly aqueous mobile phases.

• How is Restek's Ultra Aqueous C18 column different from other brands of highly aqueous stationary phases?

There are several approaches to designing aqueous stationary phases. Some of the older types of highly aqueous stationary phases used a low-density bonding of the C18 ligand, unintentionally leaving exposed silanol sites. These silanol sites helped to create a hydrophilic surface that kept the alkyl chains suspended. However, the very reactive silanol sites could cause severe peak tailing of basic analytes. Another avenue manufacturers have taken is to cross-link the C18 chains, creating a physical hindrance that would prevent the alkyl chains from collapse. This process has been successful, but creates problems in trying to perform a secondary end-capping procedure, so many reactive silanol sites may remain. The Restek process successfully achieves secondary polar end-capping that provides a hydrophilic environment that prevents the hydrophobic alkyl chain from folding.

• What are the particle and pore sizes of the silica used for the Ultra Aqueous C18 column?

The Ultra Aqueous C18 is available in 3µm or 5µm spherical, Type B silica with a 100Å pore size.

• What are the temperature and pH ranges of the Ultra Aqueous C18 column?

Temp. limits: Up to 80°C pH limits: 2.5 -7.5

• Are guard cartridges available for the Ultra Aqueous C18 column?

Yes. The Ultra Aqueous C18 column is available as part of the Restek **Integral Trident™ guard system**, which is one of the most efficient guard systems on the market. Or it is available as part of our **Trident™ Direct guard system**, Restek's efficient, universal guard cartridge and holder system.

Also available in 3µm.
Call for details.

■ Ultra Aqueous C18 5µm Columns

Column Length	1.0mm ID cat.#	2.1mm ID cat.#	3.2mm ID cat.#	4.6mm ID cat.#
30mm	9178531	9178532	9178533	9178535
50mm	9178551	9178552	9178553	9178555
100mm	9178511	9178512	9178513	9178515
150mm	9178561	9178562	9178563	9178565
200mm	9178521	9178522	9178523	9178525
250mm	9178571	9178572	9178573	9178575

■ Ultra Aqueous C18 5µm Columns with Trident™ Inlet Fitting

Column Length	2.1mm ID cat.#	3.2mm ID cat.#	4.6mm ID cat.#
30mm	9178532-700	9178533-700	9178535-700
50mm	9178552-700	9178553-700	9178555-700
100mm	9178512-700	9178513-700	9178515-700
150mm	9178562-700	9178563-700	9178565-700
200mm	9178522-700	9178523-700	9178525-700
250mm	9178572-700	9178573-700	9178575-700

■ Ultra Aqueous C18 Guard Cartridges

Dimensions	cat.#	qty.
10 x 2.1mm	917850212	3
10 x 4.0mm	917850210	3
20 x 4.0mm	917850220	2

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