HPLC COLUMN IMTAKT

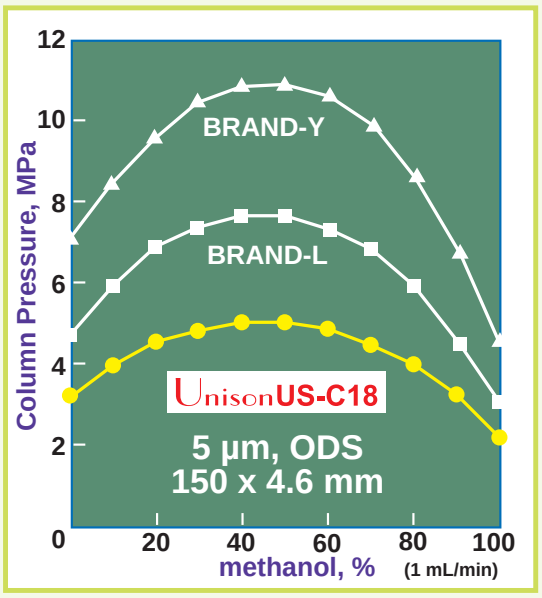
Revolutionary Separation with Aqueous Eluents

Unison™ Family

Amazing separation balance from high- to low-polarity
High-resolution and high-throughput...the next generation 3um ODS column

LOW PRESSURE HIGH RESOUTION

5um Product
US-C18



3um Products
UK-C18
UK-C8
UK-Phenyl

Specifications

Base Material	Pure Porous Silica
Particle Size	3um : UK-C18, UK-C8, UK-Phenyl, 5um : US-C18
Pore Size	13nm
Ligand	Polyfunctional Octadecyl : UK-C18, US-C18
	Polyfunctional Octyl : UK-C8
	Polyfunctional Phenyl : UK-Phenyl
End-Capping	Polymeric End-capping (Methylsilyl)

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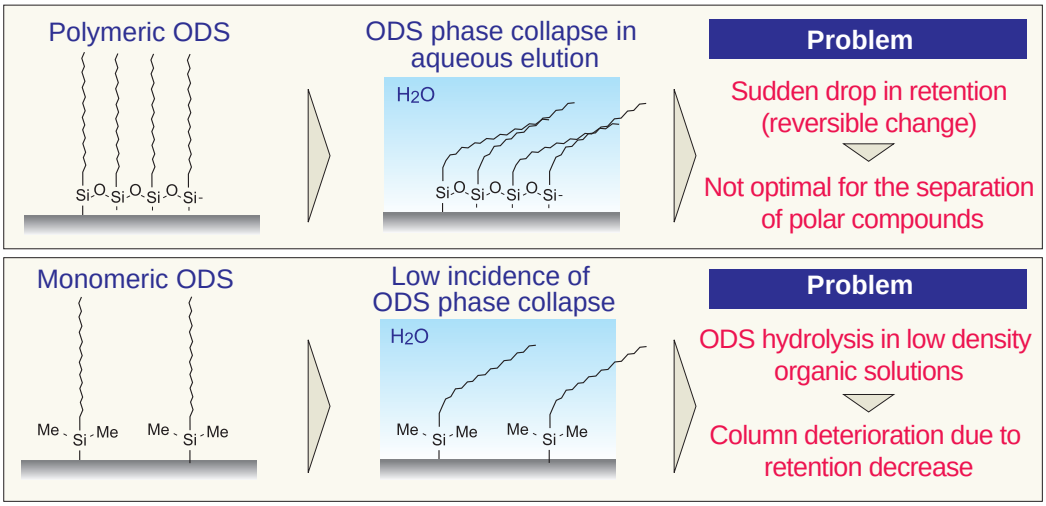
Unison's fundamental design concept

Pushing the envelope beyond today's common sense



Ligand density is high and there is good resistance in acids in polymeric ODS but there is a sudden drop in retention for aqueous elutions due to ligand collapse. This due to the misguided belief that polyfunctional ODS equals polymeric ODS.

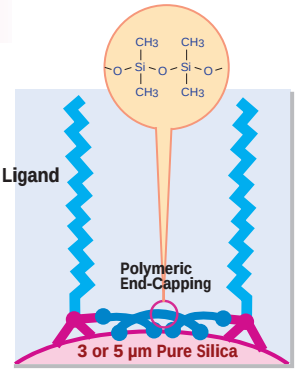
Monomeric ODS has low ODS phase collapse and superiority but ligand hydrolysis occurs easily in 100% aqueous elution and the column deteriorates quickly due an unreversible drop in retention.

New ODS stationary phase

Our columns prove wrong the conventional belief that polyfunctional ODS are acid resistant but cannot be used in 100% aqueous elutions.

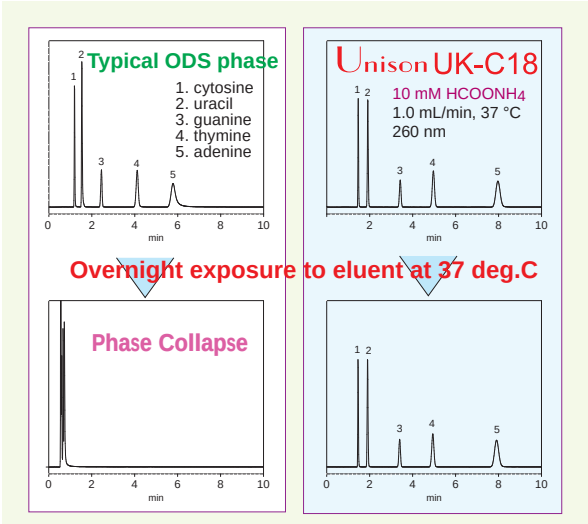
The columns are designed with an optimized ligand density in polyfunctional ODS. For the first time, a column offers a "stable separation of highly polar compounds" and "acid resistance" simultaneously. This is all due to the application of our proprietary polymeric end-capping developed with the Cadenza columns.

By optimizing ligand density, our columns offer a separation balance for not only highly polar compounds but a wide range of polarities.



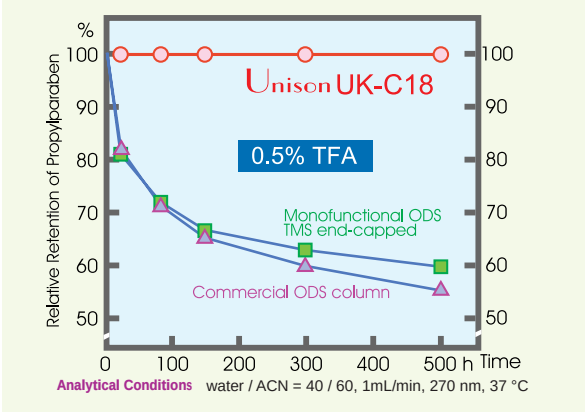
Unison Stationary Phase

Unison ODS features



With conventional ODS, retention drops sharply when a 100% aqueous elution is injected. The phase collapse of an alkyl base causes a sudden drop in surface area necessary to retain compound. It is possible to reverse the ligand phase collapse and it recovers by increasing the density of organic eluents. However, this does not suit the lengthy stable analysis time necessary in today's laboratories. In particular, retention is an important topic if we conduct analysis without attaching ionic reagents (e.g. water-soluble vitamins, organic acids, catecholamine, oligosaccharide, nucleic acid, etc).

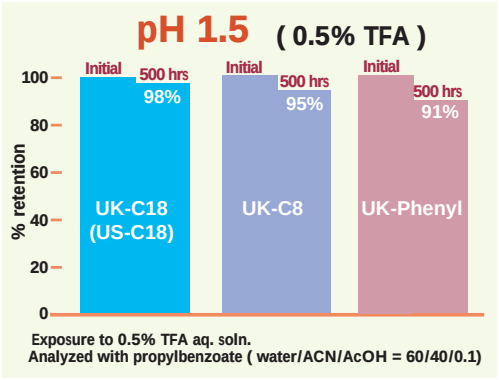
Unison UK (US)-C18's optimal ODS ligand density prevents sudden changes in retention. Our column makes possible stable retention in an 100% aqueous elution. Furthermore, the ligand structure (alkyl base, methyl base) does not change from conventional reverse and stationary phases. The separation quality remains the same as conventional reversed-phase columns due to our unique surface design that facilates easy separations.

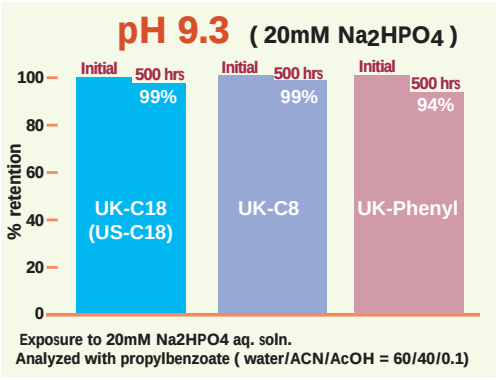


Conventional ODS is a so-called "monomeric ODS" that has problems with acid resistance. As the left chromatogram illustrates, there is a slight drop in retention when 0.5% TFA is exposed. This phenomenon is a result of irreversible column deterioration brought on by hydrolysis of ODS ligands. Convention high-polarity ODS columns cannot avoid this deterioration because of the drop in the density of ligands. In particular, polar compounds forces users to set the organic solvent levels low and this hydrolysis still occurs.

The Unison series optimizes the polyfunctional ligand density while employing the polymeric end-capping technology so successful with our Cadenza series. Our columns offer you stable separation due to its strength against hydrolysis even with strong acids.

Basic Properties of Unison Column Family





pH Durability

Unison stationary phase posseses high durability, with not only acidic, but alkali elution.

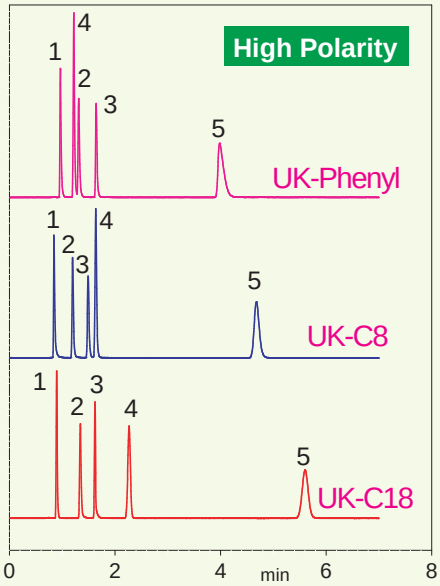
Our unique end-capping provides C8 and Phenyl as well as ODS stationary phases with improved durability for a wide pH range.

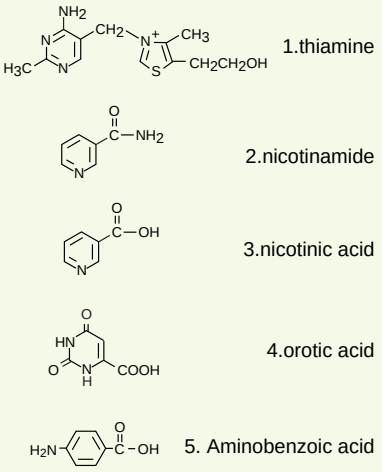
Separation Characteristics

Acidic eluents are typically used to analyze water soluble vitamins, the prototypical high polarity compounds, without an ion pairing reagent. By using Unison series, high speed separation is possible with all Unison separation phases.

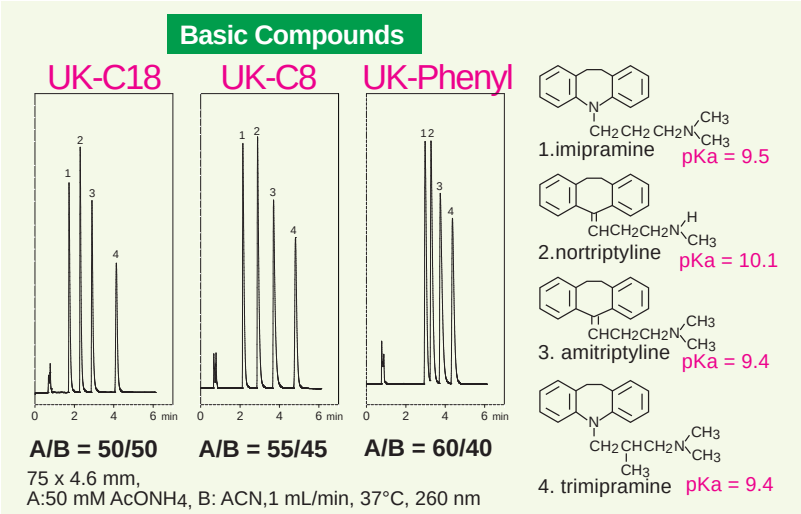
Unison C18, C8, and Phenyl phases each possess their own separation strength, which provide users a wealth of choices to suit their complex separation needs.

C8 and Phenyl columns usually exhibit lower hydrophobicity and shorter retention than C18 phase. But in the case of aqueous elution, an optimal retention and separation is achieved by the interaction of the stationary phase with dipole or pi-electron interactions.





75 x 4.6 mm
20 mM H3PO4, 1 mL/min,
37 °C, 260 nm

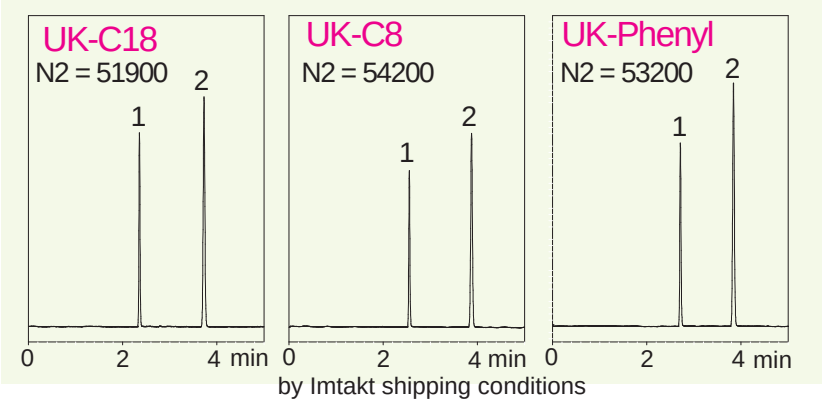


Unique End-capping

Unison employs a unique end-capping technology. As a result, the column provides excellent elution characteristics for difficult separations such as basic compounds. This applies not only for ODS, but also C8 and Phenyl columns.

For basic anti-depressant drugs which exhibit a high pKa value, all stationary phases show excellent peak shape, even with the use of ammonium acetate which is a volatile pH modifier for LC-MS. This means that even without using the phosphoric acid eluent usually applied to LC operation with UV detection, separation is possible and you can avoid the trouble of using inorganic salts.

High Resolution with 3um Particles

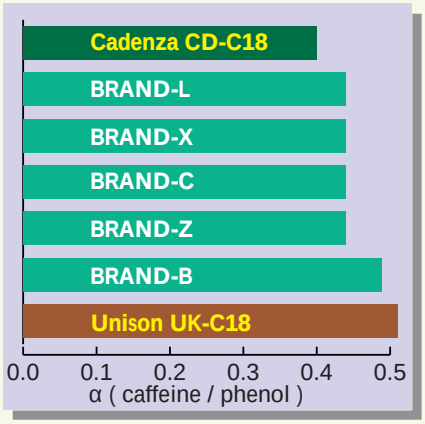


250 x 4.6 mm columns Amazing high performance by unique 3um technology

The key products of Unison column family consist of 3um silica particles providing 50,000 plate count for 250 x 4.6 mm columns. This amazing high performance is showed shows not only C18 columns, but also C8 and Phenyl columns.

Separation Characteristics

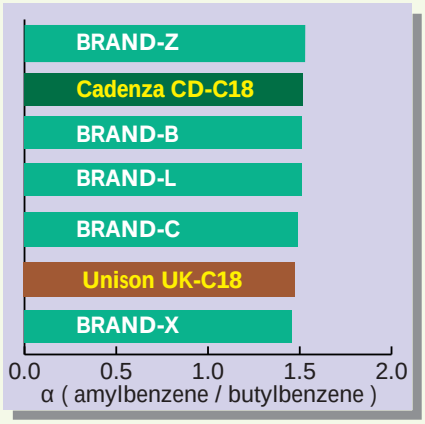
Hydrogen Bonding Capacity



water / methanol = 70 / 30

This interaction is essential to the retention and separation of high-polarity compounds. The Unison stationary phase is designed with this knowledge in mind. In short, we enlarged the hydrogen bonding capacity of this column to lengthen the retention of high-polarity compounds and improve the separation dramatically. Of course, Unison provides stable elution behavior even in 100% aqueous eluent.

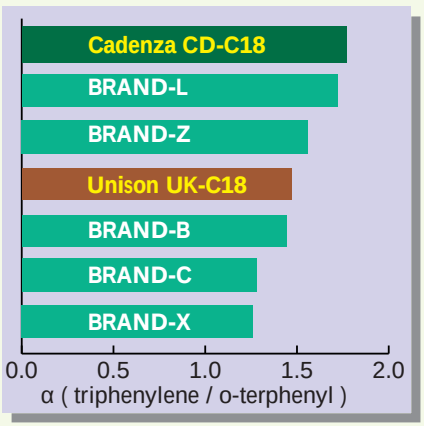
Hydrophobicity



water / methanol = 20 / 80

Hydrophobicity is the key interaction in the reversed-phase columns and is evaluated by methylene selectivity for alkyl-benzenes. Unison offers slightly lower hydrophobicity than Cadenza but there is no material change compared with conventional ODS columns. Unison's ODS is designed to provide the same degree of hydrophobicity as conventional columns.

Steric Selectivity



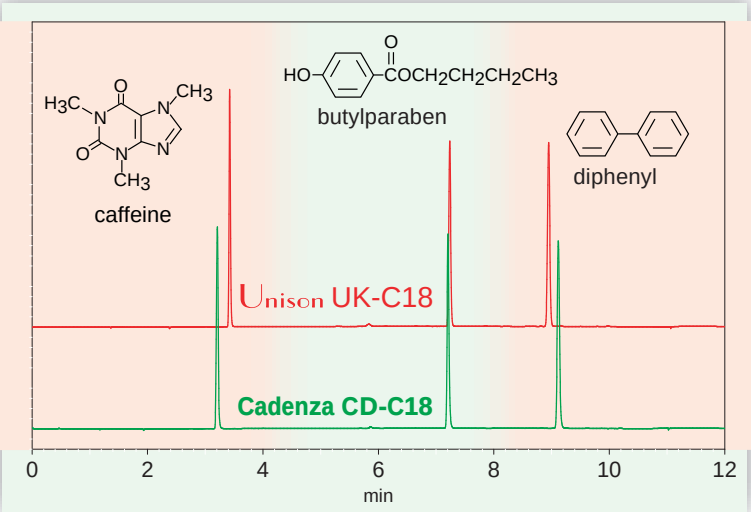
water / methanol = 20 / 80

The ability to differentiate a compound's tertiary structure is important in the separation of structurally similar compounds. This key insight serves as the foundation for the Cadenza columns' design. Typically, ODS columns designed for high-polarity compounds have a problem of poor ability to recognize the structural difference of similar compounds. Uniison ODS phase contains an exceptional surface structure that provides steric selectivity in additional to handling high-polarity compounds.

Exceptional Separation Balance

HIGH-POLARITY

Unison UK-C18 offers long retention of high-polarity compounds where organic solvent concentration is up to 10% of high-polarity range.



A: water, B: ACN, 0-100%B (0-10 min), 1 mL/min, 37 °C, 260 nm

LOW-POLARITY

Unison UK-C18 offers short retention of low-polarity compounds such as diphenyl
under a high-concentration of organic solvent.

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