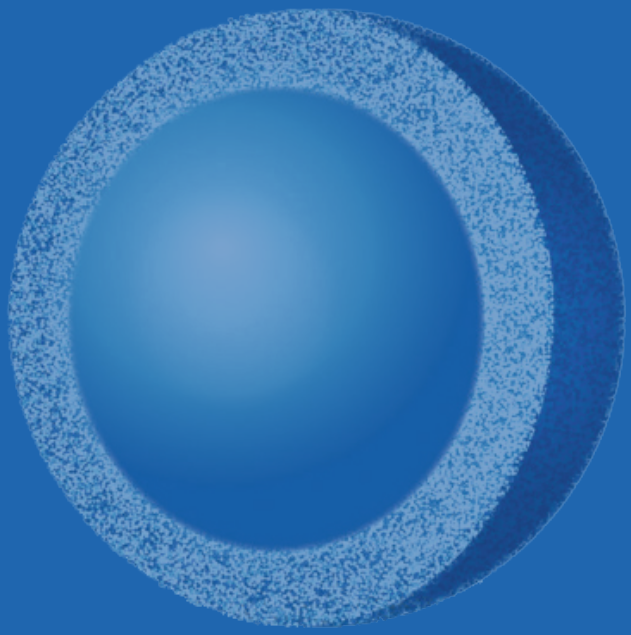
BISCHOFF
CHROMATOGRAPHY

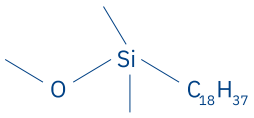
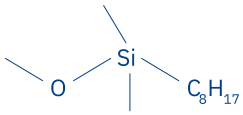
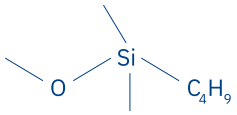
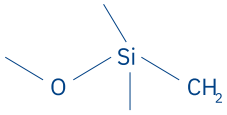
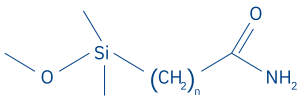
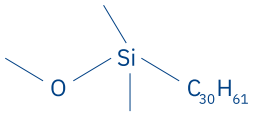
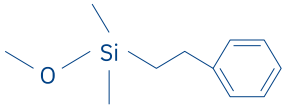


ProntoCore

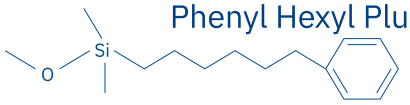
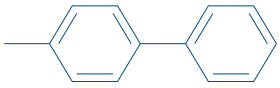
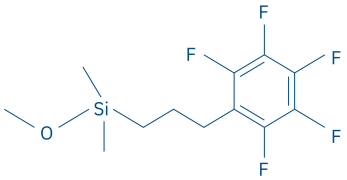
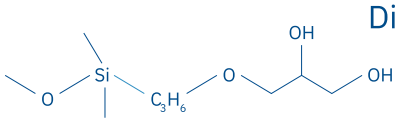
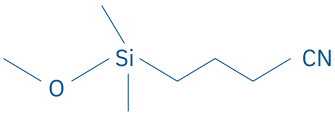
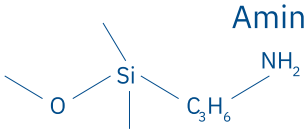
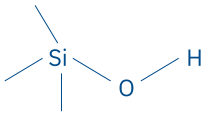
New Generation Coreshell HPLC Column

With CSP Technology

ProntoCore

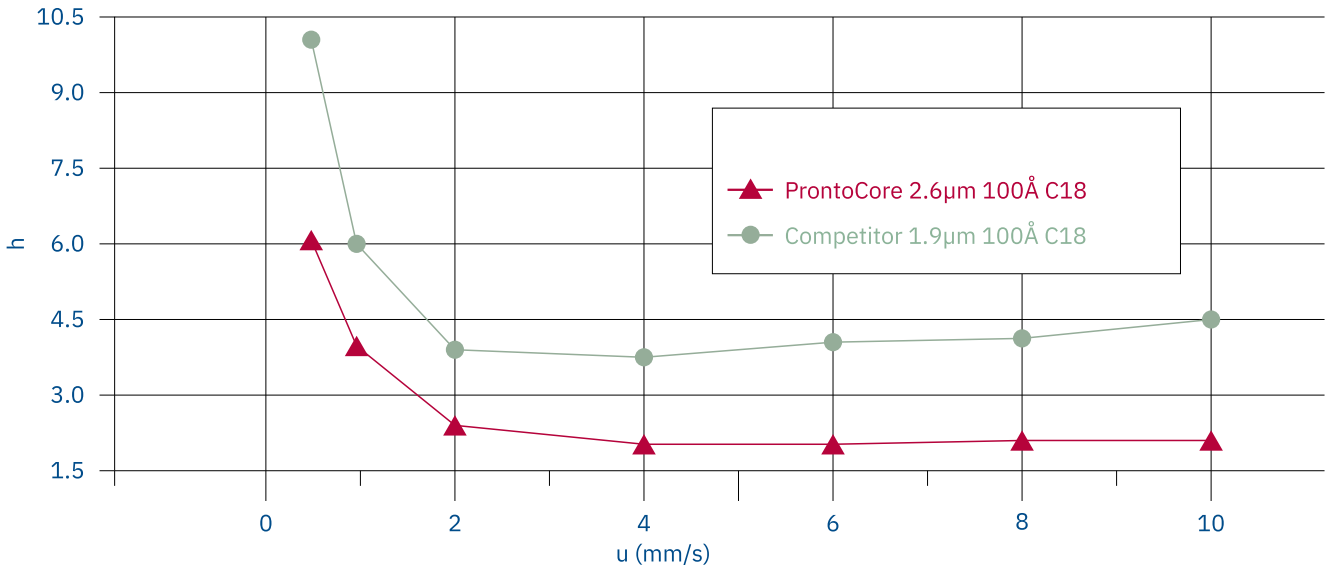
Stationary Phase	Description	Recommended Uses	USP
C18  C18 Plus	• High hydrophobic retention • pH range 2-10 • Wide Applicability • Proprietary bonded coating yielding Higher hydrophobic retentions • Extended pH range 1-12 • Wide Applicability	• Acids • Bases • Neutrals	L1
C8 	• General UHPLC/HPLC use • Different selectivity and retention to C18 and C18 plus • More hydrophilic phase	• Highly Hydrophobic compounds • Moderately polar compounds • Steroids • Lipids	L7
C4 	• Unique selectivity and increased retention for highly polar/hydrophilic compounds • Useful for HILIC and Ion-Pairing Chromatography • Less Retention than C8 and C18 for	• Ideal for Proteins, Peptides, Amino Acids, Hormones and Macromolecule Separations, when combined with large pore size like 1000 A and 300 A, • Polar acids and bases, Nucleosides, Oligonucleotides, Vitamins	L26
C1 (S) 	• Unique Selectivity for multifunctional compounds • Intermediate polarity • Can be used in NP and RPLC modes • Less hydrophobicity than C18 and C8	• Multifunctional compounds, Non-polar compounds in NP mode, Vitamins, Large Proteins	L13
Aqua 	• Orthogonal selectivity to C18 and C8 phase • RP separation mode with proprietary bonding to prevent hydrophobic collapse 100% Aqueous compatibility	• Acidic, Bases, Phenolic and highly polar solutes and metabolites	
C30 	• Highest hydrophobic retention • High shape selectivity for hydrophobic, long-chain, structurally related isomers • Alternative to normal phase for lipid analysis • Endcapped	• Fat-soluble vitamins, • Hydrophobic analytes • Lipids, Carotenoids • Fatty acids	L62
Phenyl 	• Unique selectivity than alkyl phases, based on pi-pi interactions • High aromaticity • High hydrophobic retention	• Aromatic and moderately polar compounds	L11

ProntoCore

Stationary Phase	Description	Recommended Uses	USP
Phenyl Hexyl Plus 	• Proprietary bonded coating yielding Higher hydrophobic retentions • Extended pH range 1-12	• Polar aromatic compounds • Can be used in aqueous conditions	L11
BiPhenyl 	• Heightened selectivity and retention for compounds that are hard to resolve or elute early on C18 and other phenyl chemistries.	• Aromatic and moderately polar analytes • Drugs of abuse • Steroids	L11
PFP 	• Alternative retention and selectivity to alkyl phases. • Enhanced selectivity for stereoisomers • Can be used in RPLC and HILIC modes • Interactions such as π-π, dipole, hydrogen bonding, and ionic interactions	• Very polar compounds. • Can be used in aqueous conditions • Steroids, Isomeric compounds, Substituted aromatics	L43
Diol 	• Can be used in RPLC, NP and HILIC modes • Increased retentivity and reproducibility than bare silica	• Non-polar, moderately polar and multifunctional compounds like pesticides, herbicides, polar natural products, pharmaceutical metabolites	L20
Cyano 	• Very polar stationary phase • Can be used in reversed or normal phase conditions	• Recommended for compounds having too high retention on an traditional alkyl phases, as well as mixtures of very polar and analytes. • Explosives, aromatics, polar compounds, pharmaceuticals	L10
Amino (NH2) 	• Can be used in RPLC, NP and HILIC modes • Wide pH and temperature range	• Polar compounds like Sugars, Sugar Alcohols and other hydroxy compounds, DNA bases in RPLC • Vitamins and Petroleum hydrocarbons in NPLC	L8
Silica 	• Can be used in Normal phase and HILIC modes • Ultra pure metal-free silica with reduced silanol activity for better peak symmetry and high column lifetime • Excellent Reproducibility	• Polar and very polar bases, acids and neutrals, with log P lesser than 0.5 • Pharmaceuticals • Food additives	L3

Fast

Conclusion: the below graph demonstrates that our ProntoCore columns can be run at faster flow rates and still maintain superior eficiency as demonstrated by the reduced plate height.



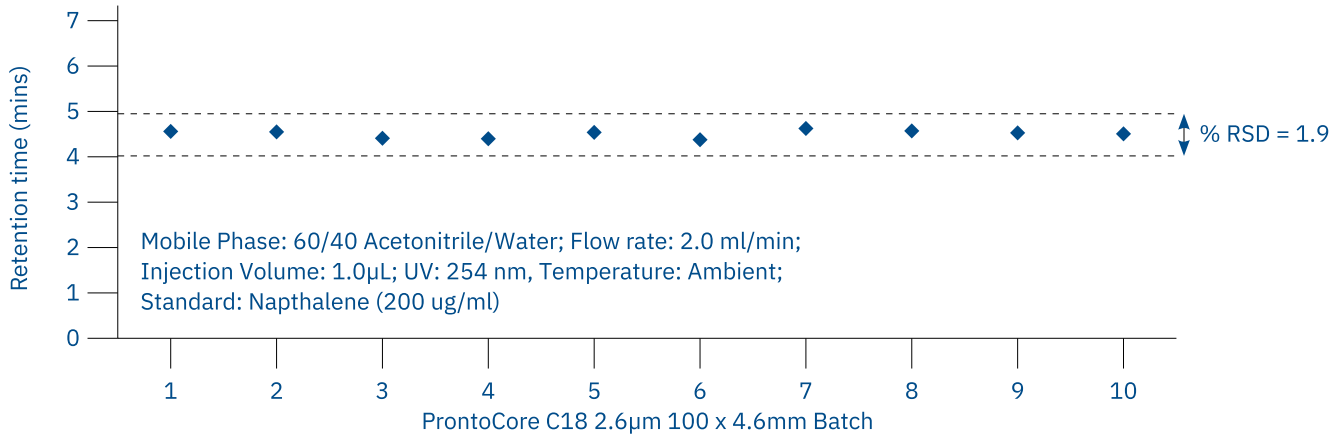
Kinetic plots (h-u) for 2.6µm ProntoCore C18 Plus columns demonstrating comparable, high performance for the two monodisperse particles; a broader-distribution 1.9µm C18 column (Competitor) with lower performance is shown for comparison.

Sample: uracil, diazepam, toluene, naphthalene, biphenyl; columns: 50 × 3.0 mm; mobile phase: 60% acetonitrile/40% water; temp: 35 °C, flow rate: variable; detection: 254 nm.

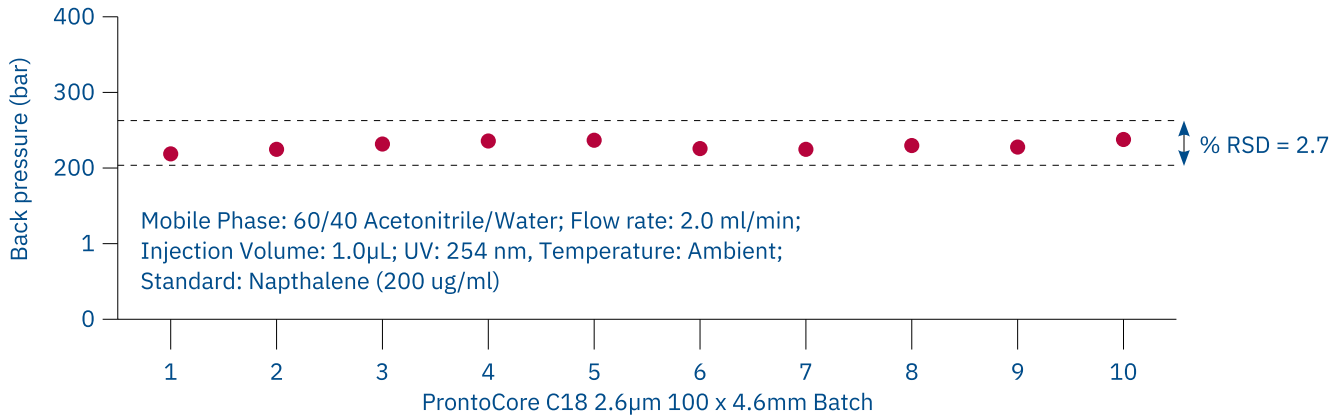
Reproducible

Conclusion: the below graphs demonstrate the batch to batch reproducibility of our columns and also the reproducibility of a column over its enhanced lifetime.

Reproducibility: Retention Time (Napthalene)



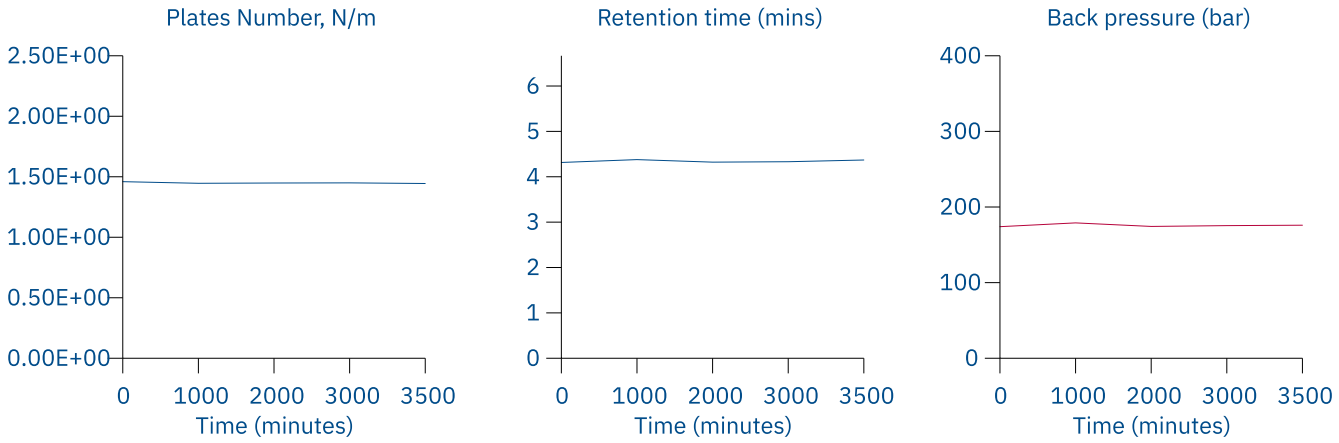
Reproducibility: Back Pressure



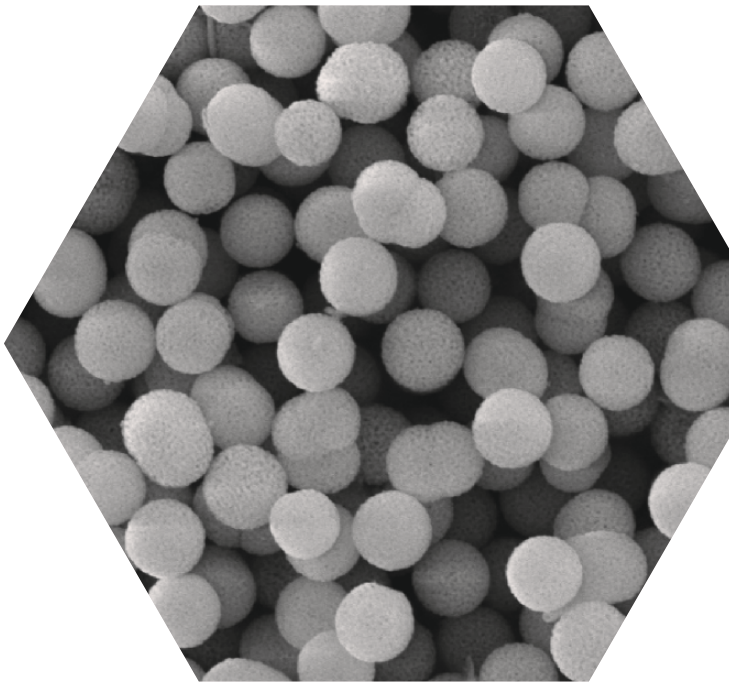
Reproducibility: Over Time

ProntoCore 2.6µm C18, 100x4.6mm

Mobile Phase: 60/40 Acetonitrile/Water; Flow rate: 1.0 ml/min; Injection Volume: 1.0µl;
UV: 254 nm; Temperature: Ambient; Standard: Napthalene (166 ug/ml)



ProntoCore

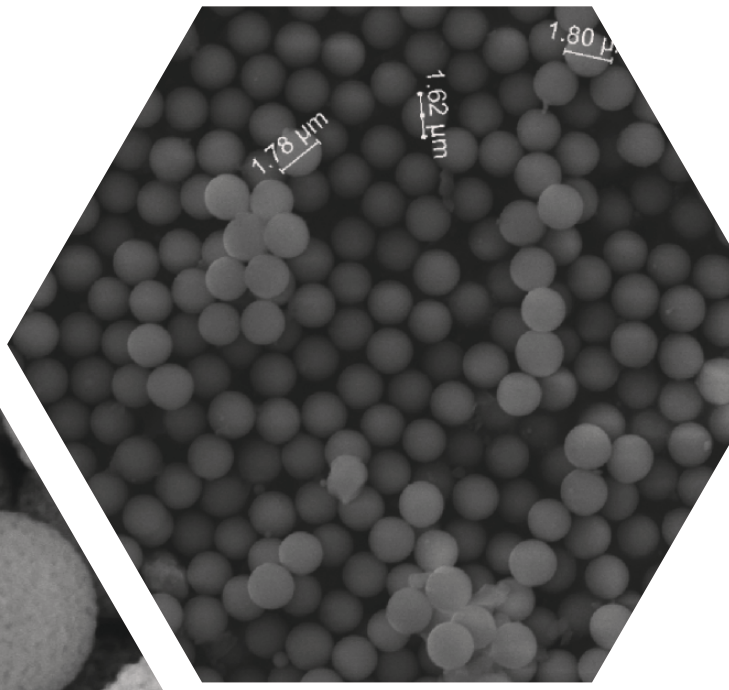


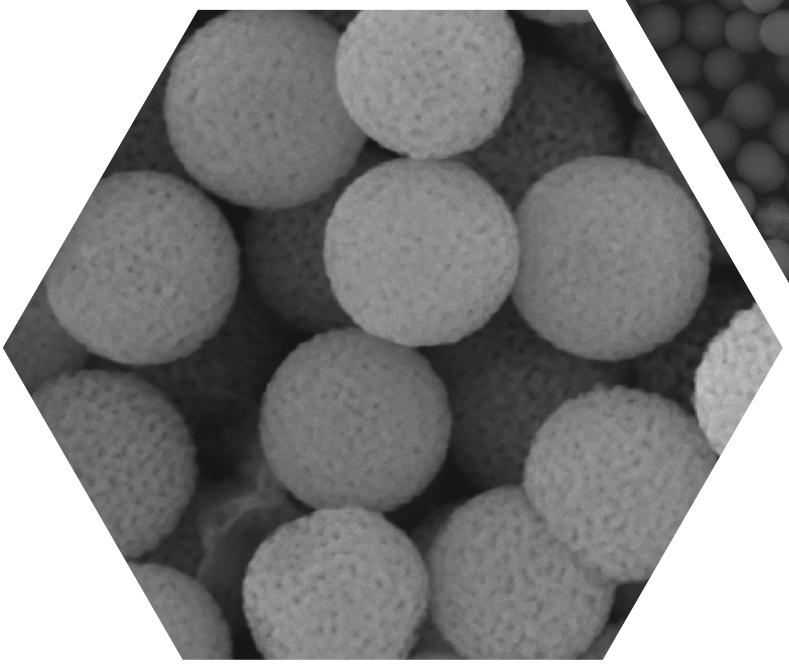
For all our silica particles we have full and optimised control over physical properties and surface chemistry.

This includes

- pore size,
- particles size,
- pore volume,
- particle size distribution
- density
- core : porosity ratio for SPP

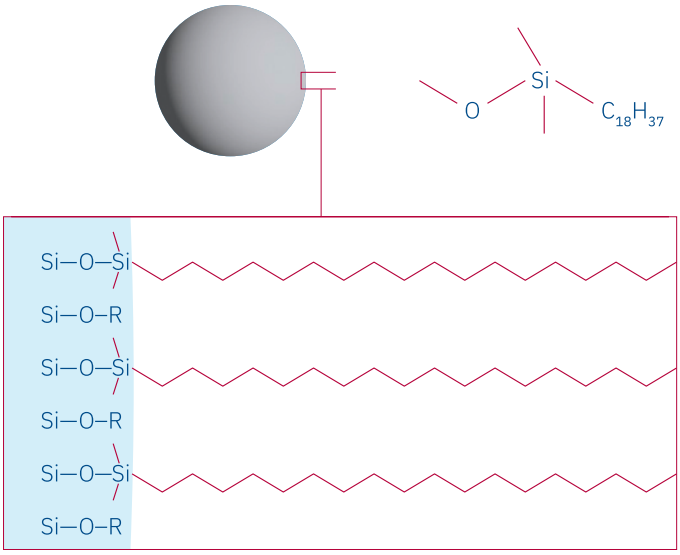
This allows us to provide columns with exceptional separation properties. The SEM (Scanning Electron Microscope) images highlight the ine particle size distribution, with identical spherical shapes. Further magniication features perfectly smooth silica surfaces with no irregularities.





BISCHOFF CHROMATOGRAPHY

C18
– USP L1



First choice stationary phase
– excellent results for a wide range of analytes

Superior peak shape, eficiency, resolution
and lifetime for acids, bases, and neutrals

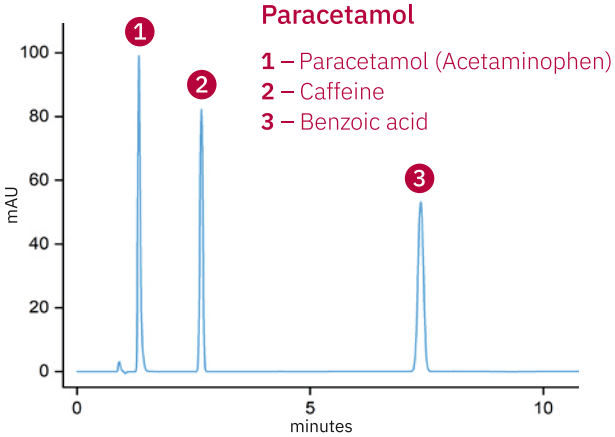
Key Properties

Separation Mechanism:	**Hydrophobic Interaction**
pH Range:	**2 to 10**
Carbon Load (100Å Pore Size) :	**ProntoCore C18 : 8 – 10%**
Endcapping:	**Yes 100%**

Recommended Application Areas

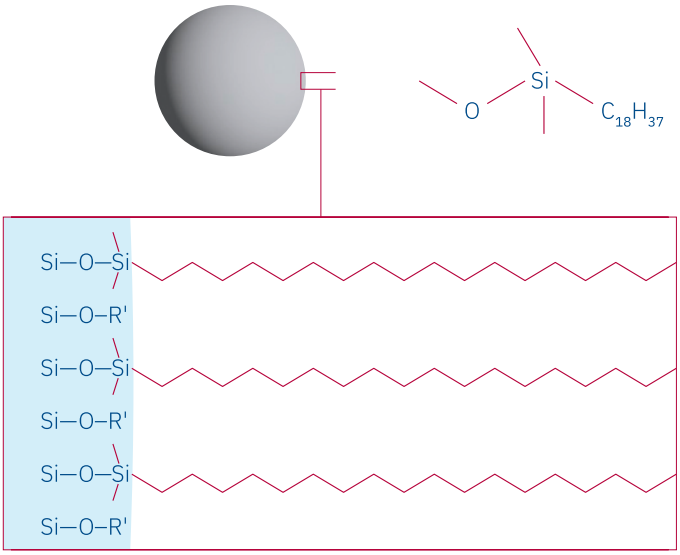
- **Pharmaceuticals**
- **Steroids**
- **Fatty acids**
- **Vitamins**
- **Proteins**

ProntoCore 2.6µm C18 100 x 4.6mm



Mobile Phase: 69/28/3 Water/Methanol/Acetic Acid;
Flow rate: 1.0ml/Minute; Injection Volume: 1.0µl;
UV: 275nm; Column Temperature: Ambient

C18 plus
– USP L1



Coated with proprietary bonding technology which ensures higher hydrophobic interactions and exceptionally low bleeding

Extended pH range from 1 – 12 for a wide range of applications

High pH stability and chemical resistance for long column lifetime, reliability, and reproducibility

Hydrophobic Interaction

Key Properties

Separation Mechanism: **Hydrophobic Interaction**

pH Range: **1 to 12**

Carbon Load (100Å Pore Size) : **ProntoCore C18 plus: 8 – 10%**

Endcapping: **Yes, proprietary**

Recommended Application Areas

Acids, Bases, and Neutrals across a wide pH range

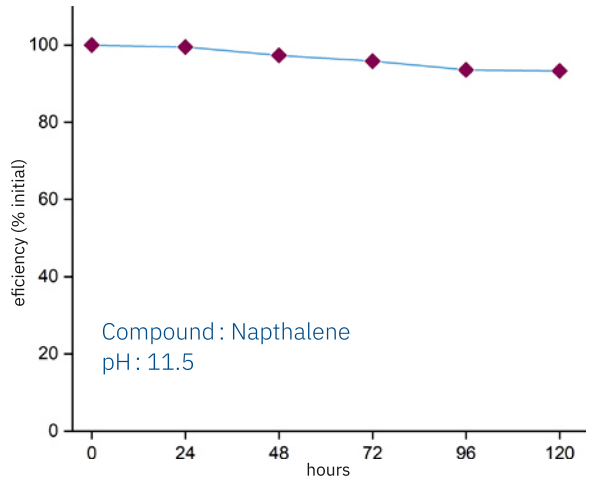
Pharmaceuticals

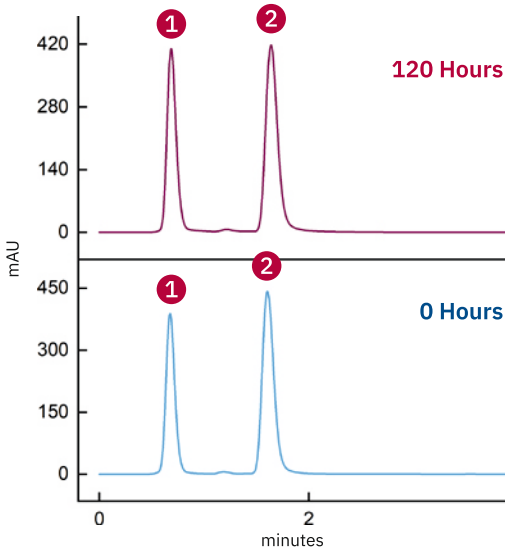
Biomolecules – Proteins, Peptides, Oligonucleotides, Glycans

Vitamins

C18 Plus Applications 1/2

1. High pH Stability ProntoCore 2.6µm C18 Plus 50 x 2.1mm





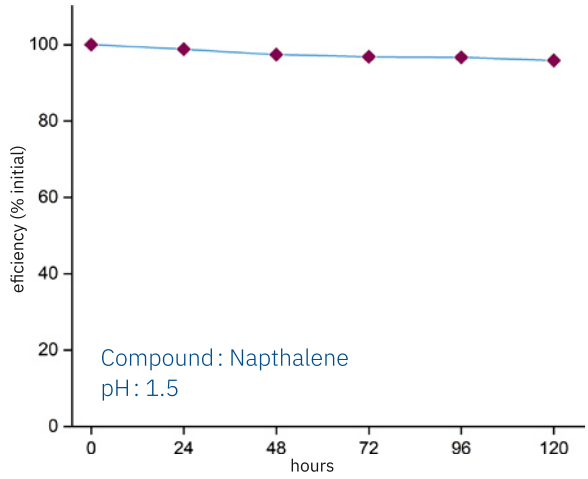
1 – Uracil
2 – Napthalene

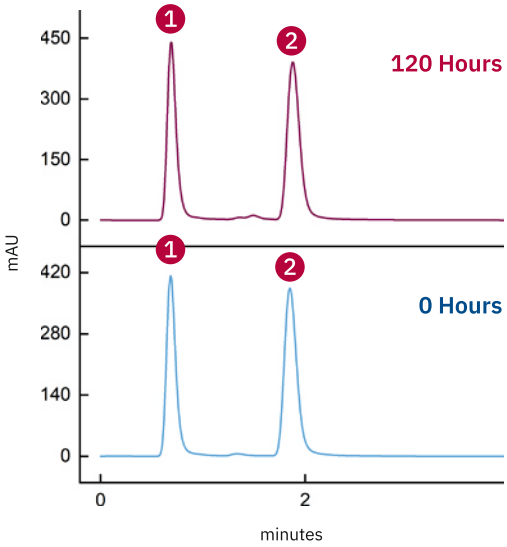
Mobile Phase: 0.1% TEA in 50/50 Acetonitrile/Water;
Mobile phase pH – 11.5; Flow rate: 0.2ml/Min;
Injection Volume: 5.0µL; UV: 254nm;
Column Temperature: 25°C

Stationary Phase

C18 Plus Applications 2/2

2. Low pH Stability ProntoCore 2.6µm C18 Plus 50 x 2.1mm





1 – Uracil
2 – Napthalene

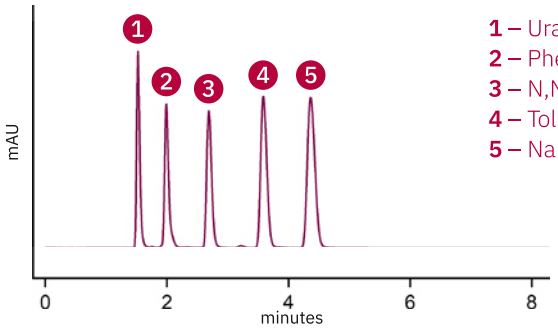
Mobile Phase: 0.1% TEA in 50/50 Acetonitrile/Water; Mobile phase pH – 1.5; Flow rate: 0.2mL/Min; Injection Volume: 5.0uL; UV: 254nm; Column Temperature: 25°C

3. Comparison between C18 Plus and C18

Conclusion: ProntoCore C18 Plus offers similar elution order and eficiency as ProntoCore C18. This is achieved at lower flow rates...a greener alternative with reduced running costs.

ProntoCore 2.6 µm **C18 Plus,** 50 x 2.1mm

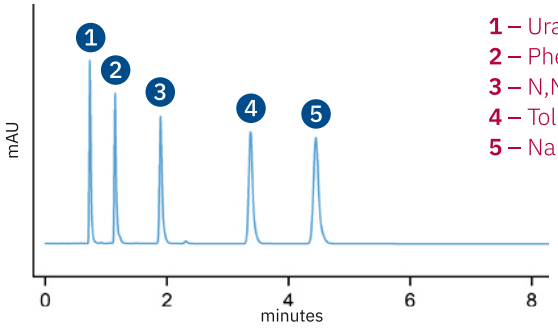
Mobile Phase: 60/40 Acetonitrile/Water; Flow rate: 0.5ml/Min; Injection Volume: 1.0µl; UV: 254nm; Column Temperature: Ambient



1 – Uracil
2 – Phenol
3 – N,N – Diethyltoluamide
4 – Toluene
5 – Napthalene

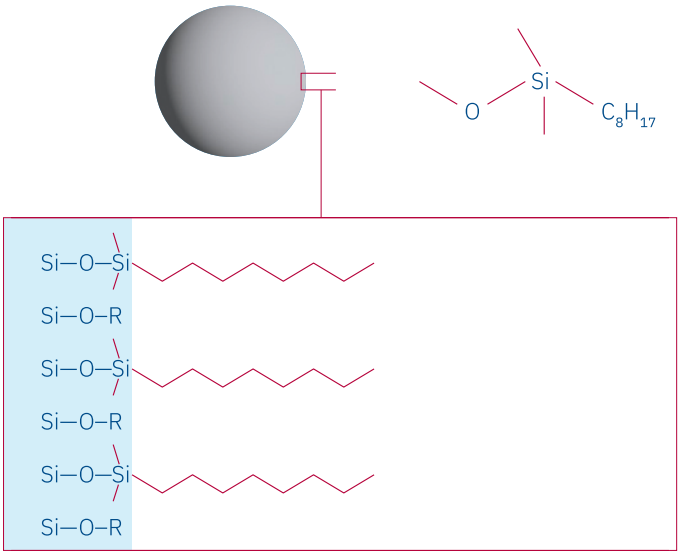
ProntoCore 2.6 µm **C18**, 50 x 2.1mm

Mobile Phase: 60/40 Acetonitrile/Water; Flow rate: 1.0ml/Min; Injection Volume: 1.0µl; UV: 254nm; Column Temperature: Ambient



1 – Uracil
2 – Phenol
3 – N,N – Diethyltoluamide
4 – Toluene
5 – Napthalene

C8
– USP L7



- Classical C8 phase, ideal for non-polar compounds that are retained too strongly on a traditional C18 column
- Outstanding chemical and mechanical stability, with excellent peak shapes, efficiency, reproducibility and reliability

Key Properties

Separation Mechanism:	**Hydrophobic Interaction**
pH Range:	**2 to 10**
Carbon Load (100Å Pore Size) :	**ProntoCore C8 : 6 – 8%**
Endcapping:	**Yes 100%**

Recommended Application Areas

Pharmaceuticals

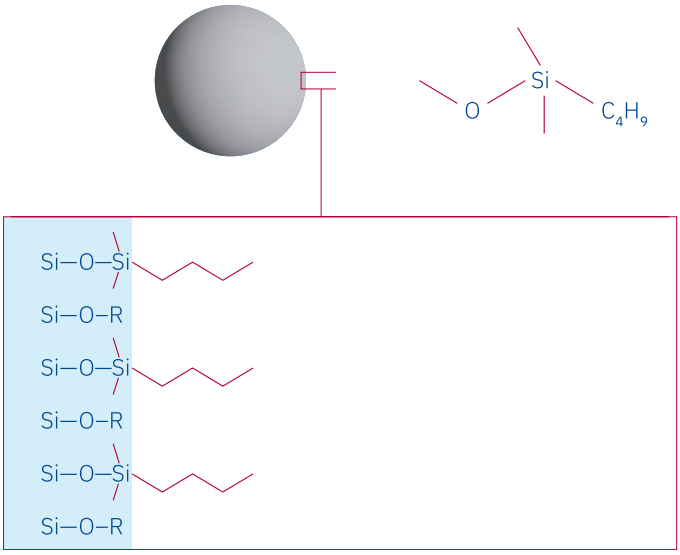
Steroids

Vitamins

Environmental

C4

– USP L26



Unique selectivity and increased retention for highly polar/hydrophilic compounds. Can be used in Reversed-phase, HILIC, Ion-pairing modes.

Lower hydrophobicity than C8 and C18, leading to faster separations for very hydrophobic compounds with outstanding eficiency and sensitivity.

Key Properties

Separation Mechanism:	**Hydrophobic Interaction**
pH Range:	**2 to 10**
Carbon Load (1000Å Pore Size):	**ProntoCore C4 : < 1%**
Carbon Load (300Å Pore Size):	**ProntoCore C4: 4 – 6%**
Carbon Load (100Å Pore Size):	**ProntoCore C4: 4 – 6%**
Endcapping:	**Yes 100%**

Recommended Application Areas

Proteins, Peptides, Amino Acids

Hormones

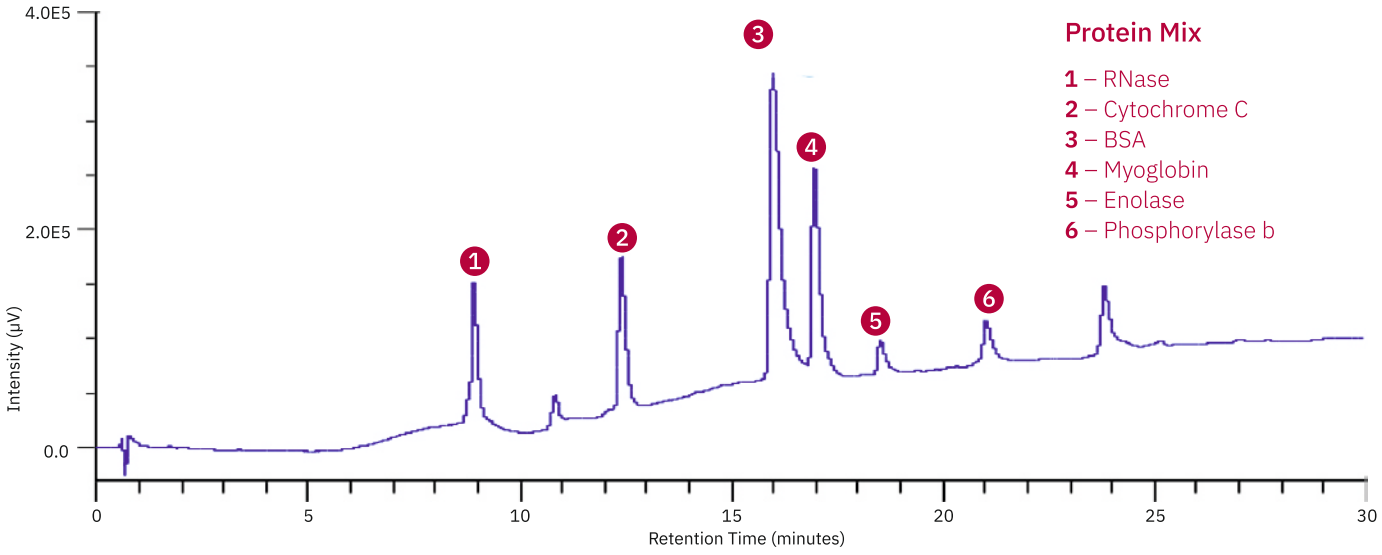
Polar Acids and Bases

Nucleosides, Oligonucleotides

Vitamins

100Å Pore Size – up to 5000 Da
300Å Pore Size – up to 50 kDa
1000Å Pore Size – up to 150 kDa

C4 Applications 1/2



Protein Mix

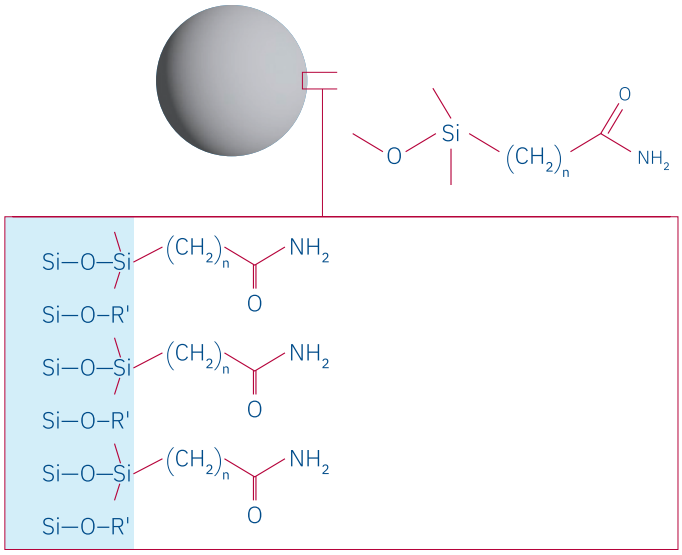
1 – RNase
2 – Cytochrome C
3 – BSA
4 – Myoglobin
5 – Enolase
6 – Phosphorylase b

Mobile Phase: A- 0.1% TFA in Water B- 0.075% TFA in Acetonitrile Gradient- %B 18-70% in 0-25 minutes; Flow rate: 0.2ml/minute; injection volume: 5.0µL; UV: 220nm; Column Oven Temperature: 60°C

Aqua

Orthogonal selectivity to alkyl phases, with enhanced separation and resolution for samples containing polar, acidic, and basic compounds

Superior stability and durability even under highly aqueous mobile phase



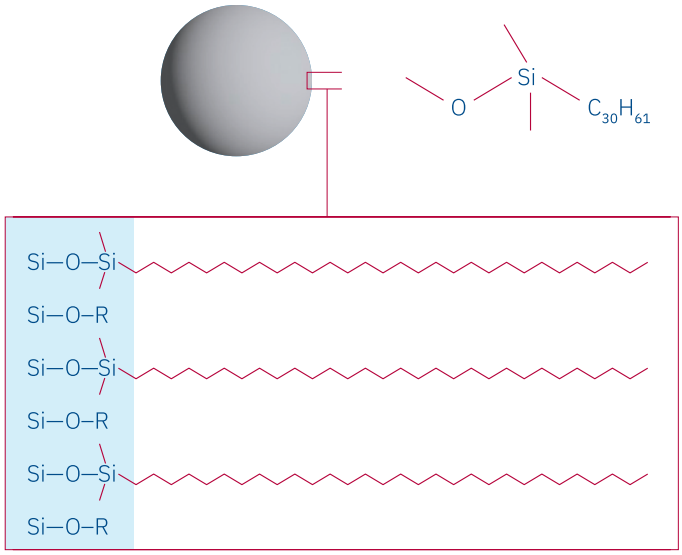
Key Properties

Separation Mechanism:	**Hydrophobic and hydrophilic interactions**
pH Range:	**2 to 10**
Carbon Load (100Å Pore Size):	**ProntoCore Aqua : 8 – 10%**
Endcapping:	**Yes**

Recommended Application Areas

- **Biomolecules**
- **Alcohols, Phenols and Catechins**
- **Polar Acids and Bases**
- **Sugars and carbohydrates**

C30
– USP L62



Higher hydrophobic retention than C18 column

High shape selectivity for hydrophobic, long-chain, structurally related isomers

Key Properties

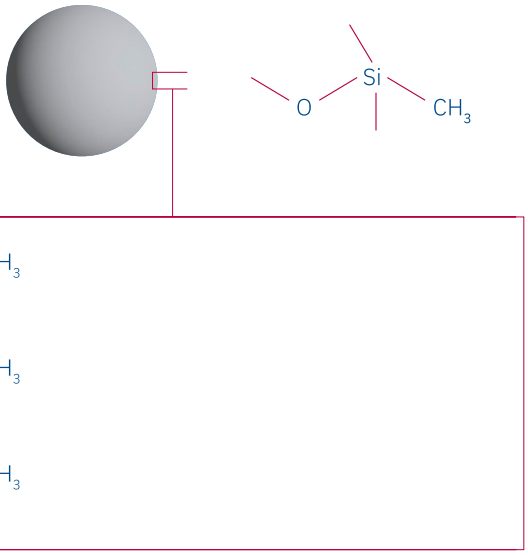
Separation Mechanism:	**Strong Hydrophobic Interaction**
pH Range:	**2 to 10**
Carbon Load (100Å Pore Size) :	**ProntoCore C30: 12 – 15%**
Endcapping:	**Yes 100%**

Recommended Application Areas

- Fat-soluble vitamins
- Isomers
- Lipids, Carotenoids
- Steroids

C1(TMS)

–USP L13



Unique selectivity for multifunctional compounds, can be used in both Normal-phase and reversed phase modes

Suitable for hydrophilic, highly polar compounds which are dificult to separate with general reversed-phase or normal-phase columns.

Unique stationary bonding technology, providing high eficiency and excellent peak shape symmetry

Key Properties

Separation Mechanism:	**Weak Hydrophobic and Hydrophilic interactions**
pH Range:	**2 to 10**
Carbon Load (100Å Pore Size):	**ProntoCore C1 (S) : <1%**
Endcapping:	**Yes 100%**

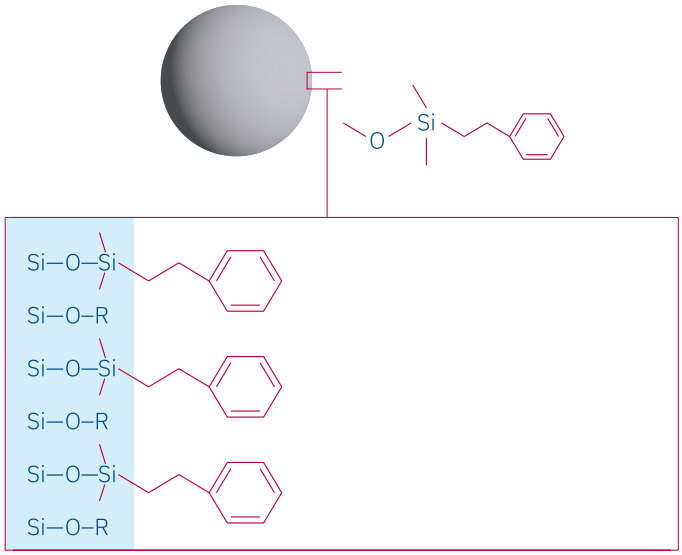
Recommended Application Areas

Multifunctional compounds

Hydrophobic proteins, peptides, vitamins in reversed-phase mode

Polar compounds in normal-phase mode

Phenyl
– USP L11



Complementary selectivity to alkyl phases, with preferential retention of aromatic compounds

Excellent choice for analysing complex mixtures of polar and non-polar analytes, especially mixtures containing aromatic compounds

Key Properties

Separation Mechanism:	**Hydrophobic Interaction, Aromatic and π-π Interaction**
pH Range:	**2 to 10**
Carbon Load (100Å Pore Size) :	**ProntoCore Phenyl: 2 – 3%**
Endcapping:	**Yes 100%**

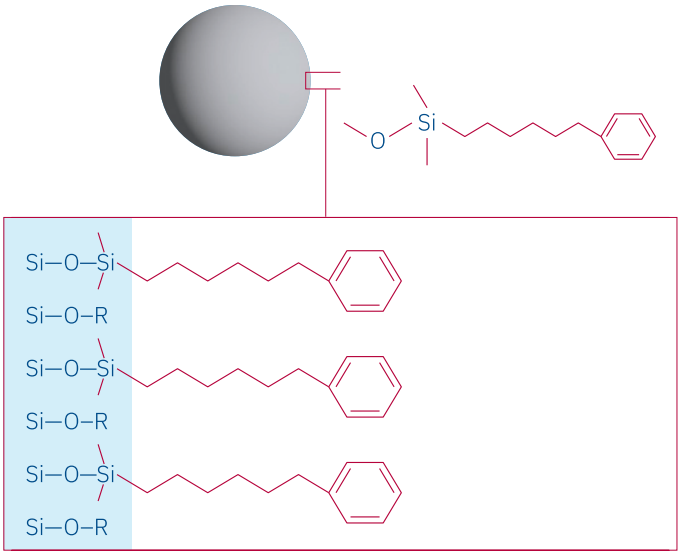
Recommended Application Areas

- Proteins and peptides
- Pharmaceuticals
- Structural isomers
- Nucleosides, Oligonucleotides

Phenyl Hexyl

–USP L11

Complementary selectivity to alkyl phases, offering balanced hydrophobic and aromatic selectivity



Key Properties

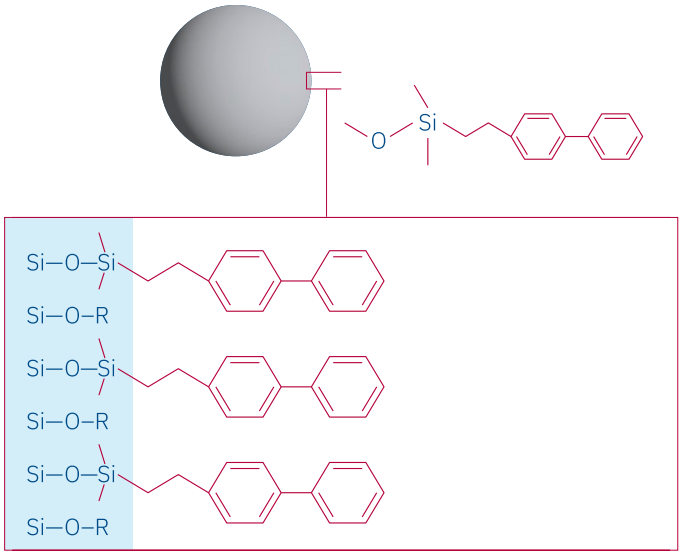
Separation Mechanism:	**Hydrophobic Interaction, Aromatic and π-π Interaction**
pH Range:	**2 to 10**
Carbon Load (100Å Pore Size):	**ProntoCore Phenyl Hexyl : 5–6 %**
Endcapping:	**Yes**

Recommended Application Areas

- Proteins, Peptides, Amino Acids
- Hormones
- Polar Acids and Bases
- Nucleosides, Oligonucleotides
- Vitamins

BiPhenyl
–USP L11

Complementary selectivity to alkyl phases



Key Properties

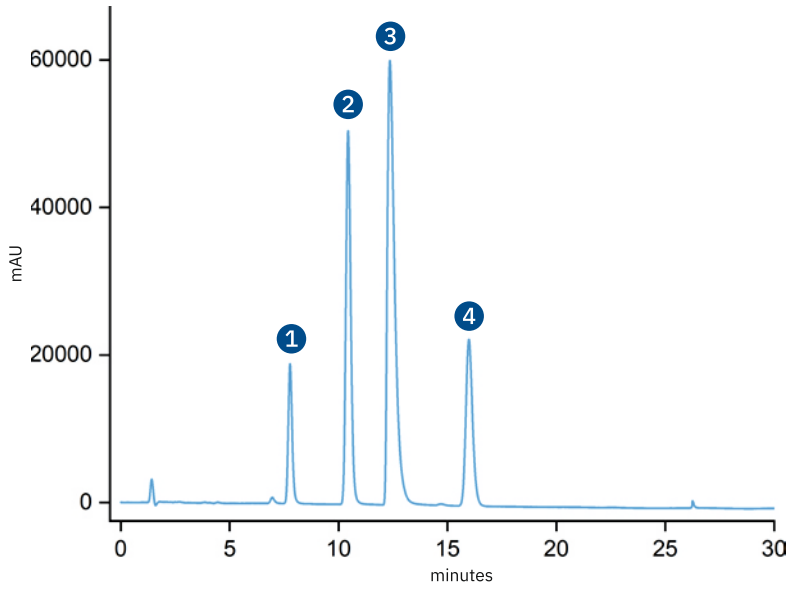
Separation Mechanism:	**Hydrophobic Interaction, Aromatic and π-π Interaction**
pH Range:	**2 to 10**
Carbon Load (100Å Pore Size):	**ProntoCore BiPhenyl : 5–6%**
Endcapping:	**Yes**

Recommended Application Areas

- **Drugs of Abuse**
- **Bioanalysis**
- **Clinical, forensics and toxicology**
- **Explosives**
- **Steroids, tetracyclines**

Biphenyl Application

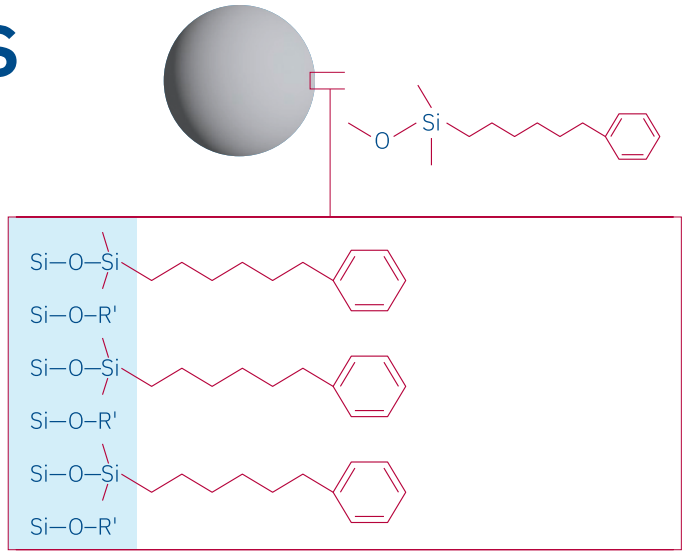
ProntoCore 2.6µm CYANO, 150x4.6mm



1 – Benzene
2 – p-Tolunitrile
3 – N,N-Dimethylaniline
4 – 1,3,5-Trinitrobenzene

Mobile Phase: 80/20 Acetonitrile/Water;
Flow rate: 0.2 ml/min;
Injection Volume: 1.0µL; UV: 254 and 214 nm;
Column Temperature: 40°C

Phenyl Hexyl Plus
– USP L11



Complementary selectivity to alkyl phases, offering balanced hydrophobic and aromatic selectivity

Extended pH range from 1-12 for a wide range of applications

High pH stability and chemical resistance for high column lifetime, reliability, and reproducibility

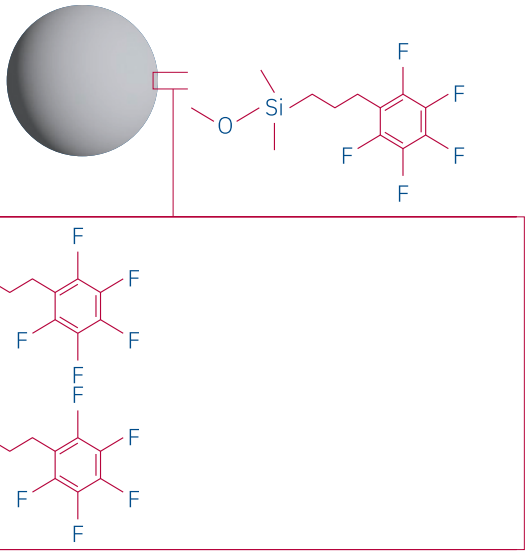
Key Properties

Separation Mechanism:	**Hydrophobic Interaction, Aromatic and π-π Interaction**
pH Range:	**1 to 12**
Carbon Load (100Å Pore Size) :	**ProntoCore Phenyl Hexyl Plus : 5 – 6%**
Endcapping:	**Yes**

Recommended Application Areas

- Proteins, Peptides, Amino Acids
- Hormones
- Polar Acids and Bases
- Nucleosides, Oligonucleotides
- Vitamins

PFP
– USP L43



Unique orthogonal selectivity to alkyl, phenyl and phenyl-hexyl phases with superior steric selectivity

Can be used in reversed phase and HILIC modes

Key Properties

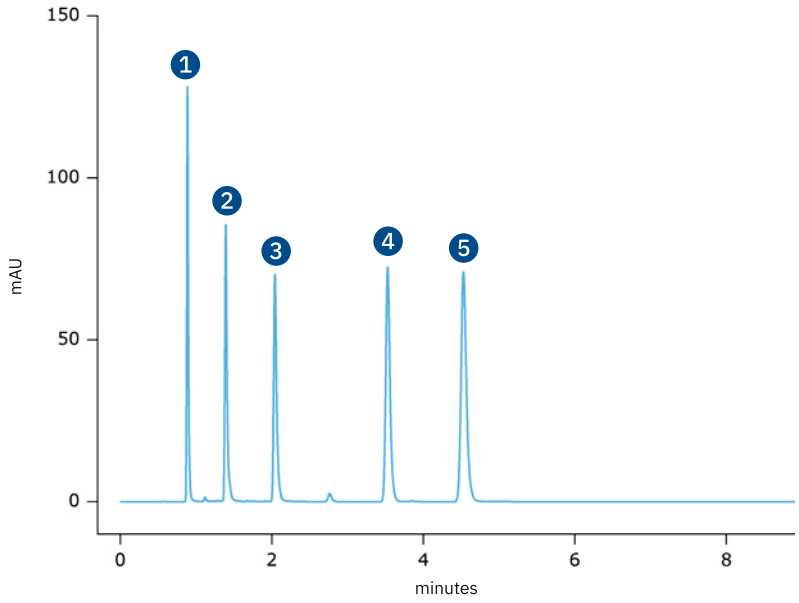
Separation Mechanism:	**Hydrophobic Interaction, Aromatic and π-π Interaction, Dipole-dipole Interaction, Hydrogen Bonding**
pH Range:	**2 to 10**
Carbon Load (100Å Pore Size) :	**ProntoCore PFP : 4 – 6%**
Endcapping:	**Yes**

Recommended Application Areas

- **Complex natural products**
- **Steroids and highly polar pharmaceuticals**
- **Amines, esters and ketones**
- **Substituted aromatics**
- **Isomeric compounds**

PFP Applications

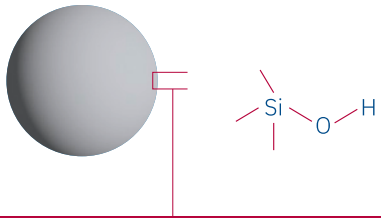
ProntoCore 2.6µm PFP, 50x4.6mm



1 – Malic Acid
2 – Doxylamine
3 – Chlorpheniramine
4 – Bromopheniramine
5 – Diphenhydramine

Mobile Phase: (A) 20 mM Potassium Phosphate, pH 2.5 (B) Acetonitrile; Gradient: A/B (90:10) to (20:80) in 15 mins; Flow rate: 1ml/min; Injection Volume: 1.0µL; UV: 220nm; Column Temperature: 22°C

Silica
–USP L3



Ultra-pure, unbonded deactivated silica phase which offers excellent peak shape and selectivity for non-polar and moderately polar compounds

Traditional normal phase for use in 100% organic mobile phases. Can also be used in HILIC mode

Key Properties

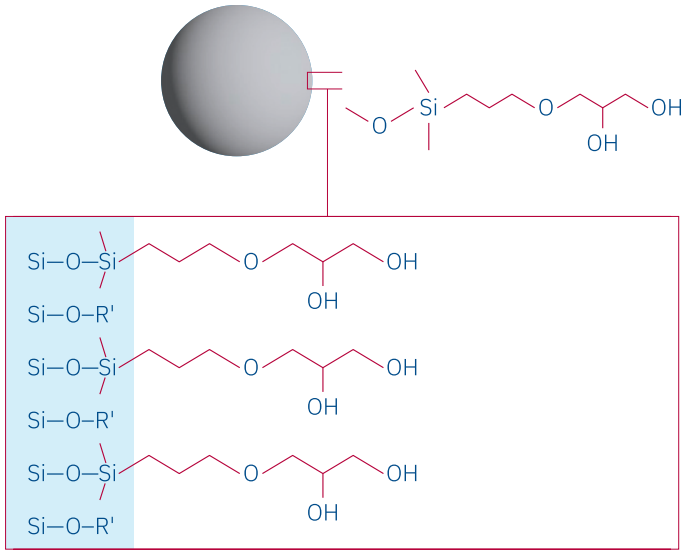
Separation Mechanism: **Hydrophobic Interaction**

pH Range: **2 to 10**

Recommended Application Areas

- Small pharmaceutical compounds
- Positional isomers
- Fat soluble compounds
- Food additives
- Polar compounds

Diol
– USP L20



Unique HILIC phase offering increased retentivity and reproducibility. Also offers alternate selectivity to reversed-phase and normal-phase modes

Intermediate polarity between C18 and silica, ideal for separation of low to mid-polar analytes which are difficult to resolve in other phases
Can be used with a wide range of solvents

Key Properties

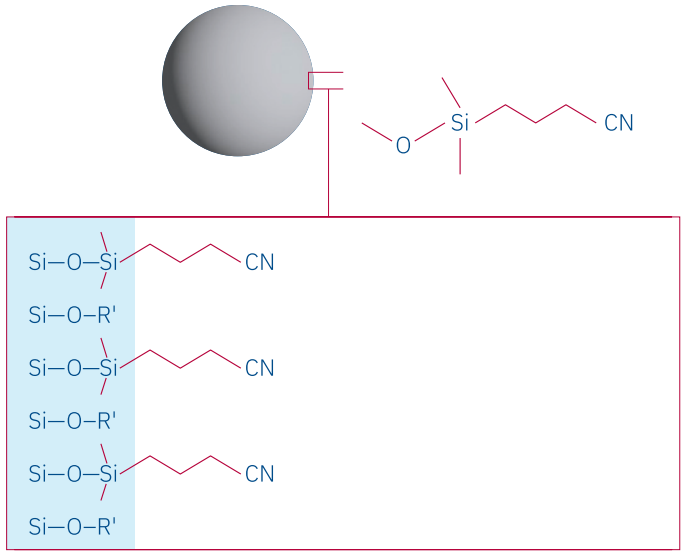
Separation Mechanism:	**Hydrophobic Interaction**
pH Range:	**2 to 10**
Carbon Load (1000Å Pore Size) :	**ProntoCore Diol : 1 – 2%**
Endcapping:	**Yes**

Recommended Application Areas

- Sugars
- Amino acids and water-soluble vitamins
- Polar biomolecules
- Pharmaceutical Metabolites
- Pesticides and Herbicides
- Polar natural products

Cyano

– USP L10



Complementary selectivity to alkyl phases, and can be used for a wide range of applications in both reversed-phase and normal-phase modes.

Offers strong retention for highly polar and mid-polar compounds, and faster separation of non-polar compounds than alkyl phas

Key Properties

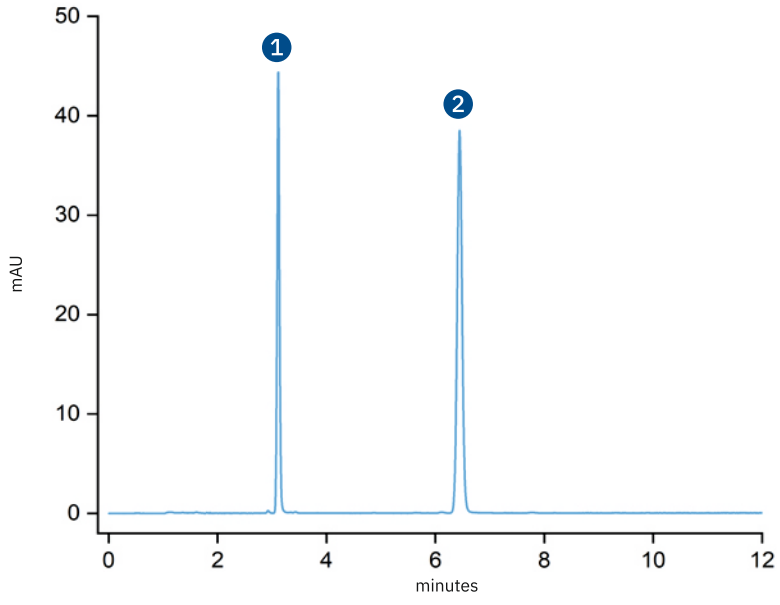
Separation Mechanism:	**Hydrophobic and hydrophilic interactions**
pH Range:	**2 to 10**
Carbon Load (100Å Pore Size):	**ProntoCore Cyano : 2 – 3%**
Endcapping:	**Yes**

Recommended Application Areas

- **Polar and very polar bases, acids, and neutrals**
- **Explosives**
- **Pharmaceuticals**
- **Steroids**

Cyano Application

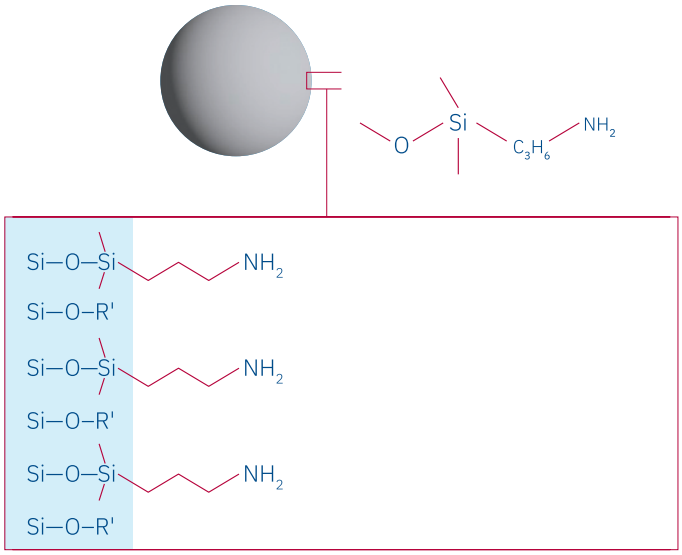
ProntoCore 2.6µm Cyano, 150x4.6mm



1 – Acetophenone
2 – Heptanophenone

Mobile Phase: 50/50/1 Acetonitrile/Water/75 mM Ammonium Acetate;
Flow rate: 1 ml/min; Injection Volume: 1.0µL;
UV: 254nm; Column Temperature: 25°C

Amino
–USP L8



Versatile stationary phase which can be used in normal phase, reversed-phase, weak anion-exchange and HILIC modes

Proprietary bonding technology with ultra-inert, high-eficiency particles for high robustness and reproducibility

Key Properties

Separation Mechanism:	**Hydrophilic and Ionic interactions**
pH Range:	**2 to 10**
Carbon Load (100Å Pore Size):	**ProntoCore Amino : 2–3%**
Endcapping:	**Yes**

Recommended Application Areas

- Sugars and sugar alcohols
- Nucleosides, nucleotides, and oligonucleotides
- Carbohydrates and vitamins
- Anions and organic acids

BISCHOFF
CHROMATOGRAPHY

ProntoCore

New Generation Coreshell HPLC Column

With CSP Technology

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