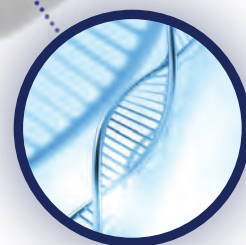
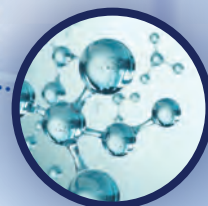


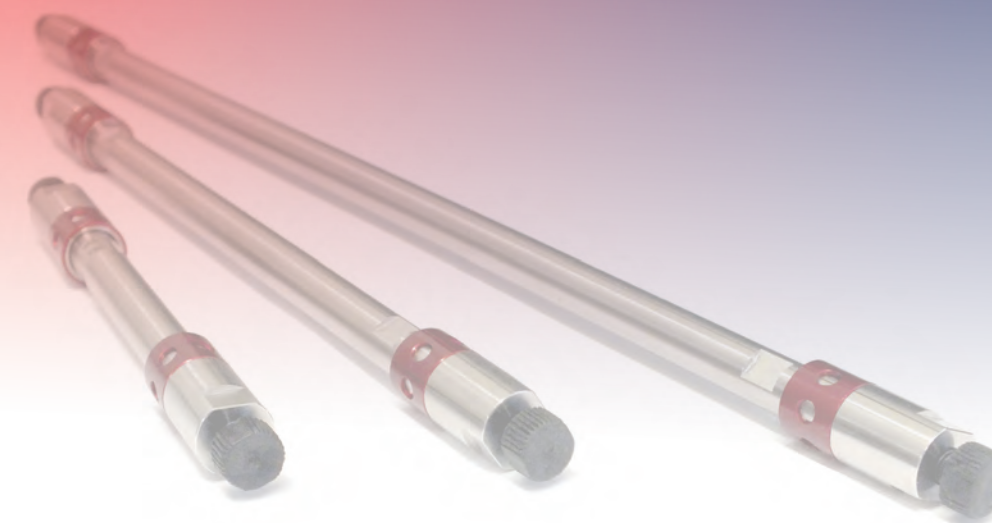
# Monodisperse HPLC Particles



The Evolution of HPLC Columns



EVO SPHERE



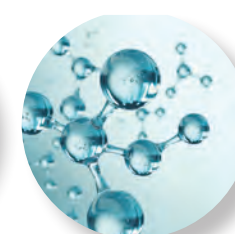
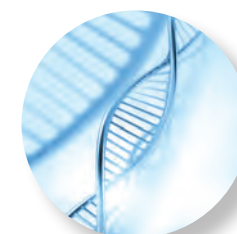
# Monodisperse HPLC Columns

Fortis Technologies has designed a new fully porous monodisperse particle for use in HPLC columns. Combining this with a new range of selectivities gives the analyst the ability for high resolution, high efficiency separations.

Based upon a fully porous silica monodisperse particle, Evosphere® is the evolution of particle technology. more compounds in less time with greater sensitivity.

Combine a high efficiency particle with low backpressure, high loadability, scalability and reproducibility and you have the ultimate combination. By building on a pure silica substrate method development and method transfer become more robust and reproducible across platforms as you scale from capillary to preparative.

Then add in novel selectivity options to provide enhanced resolution and selectivity and you have the capability to separate





# Monodisperse Particles



## Particle size distribution (D90/10)

When assigning a measurement to characterise a particle size distribution the ratio of D90/10 is often quoted, and as such can be used to gauge the degree of size uniformity of the particles.

The parameter D90 signifies the point in the size distribution, up to and including which, 90% of the total volume of material in the sample is 'contained'. For example; if the D90 is 6µm, this means that 90% of the sample has size of 6µm or smaller. The definition for D50, is then the size point below which 50% of the material is contained. Similarly, the D10 is the size below which 10% of the material is contained. This description has long been used in size distribution measurements.

As the particle size distribution for chromatographic silica moves towards monodisperse then the D90 and D10 values become closer together and the D90/10 value tends towards a value of 1.

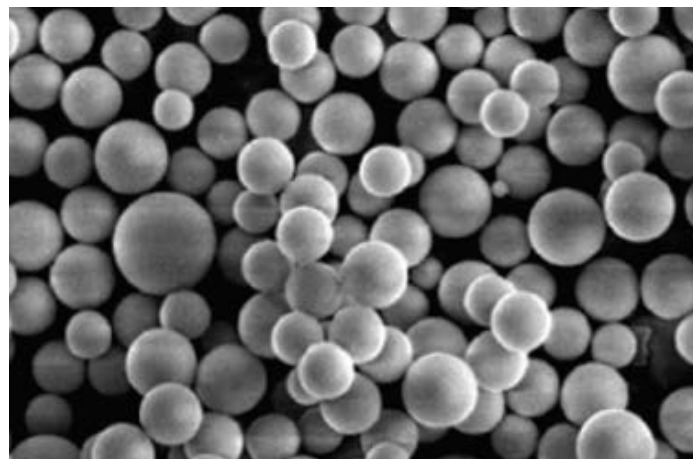
## Particle Morphology

Evosphere silica particles are manufactured to provide a high degree of monodispersity with a uniform smooth surface. Monodispersity generates high efficiency HPLC columns due to the reduced flow path dispersion (Eddy diffusion)

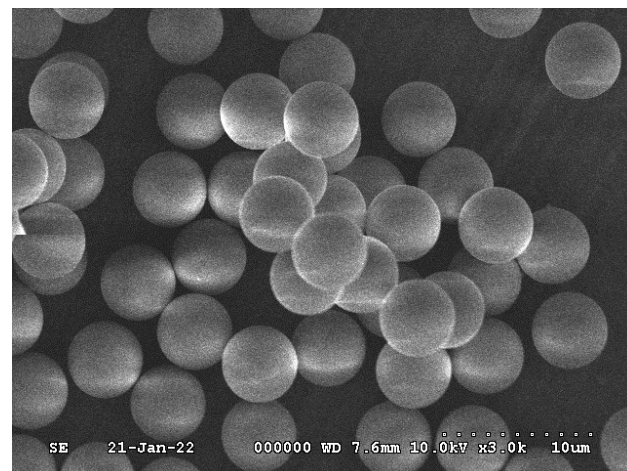
SEM imagery of the Evosphere in comparison with traditional particles highlights the much narrower size distribution.

Monodisperse Evosphere particles are available in 1.7µm, 3µm and 5µm particle sizes.

- Unique silica particle nature
- Monodisperse
- High efficiency
- Scaling of particle sizes

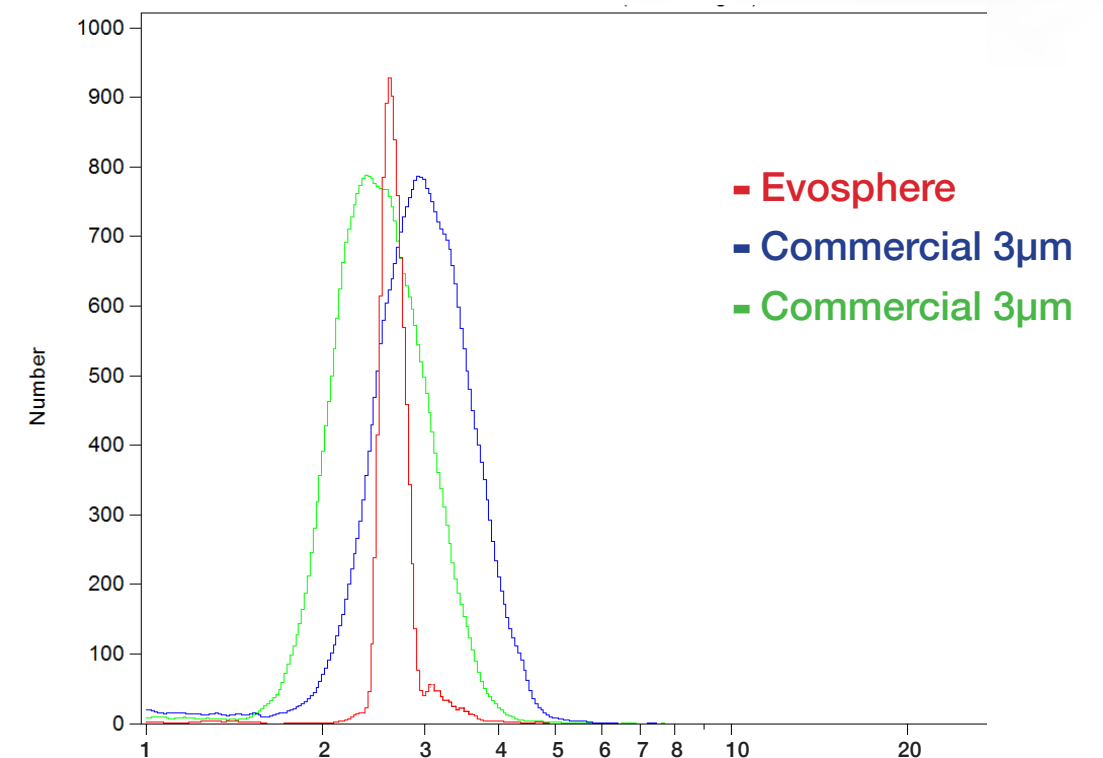


Traditional porous particles



Monodisperse porous particles

## Particle Size Distribution



|                             | Monodisperse Silica | Commercial 3µ Silica-A | Commercial 3µ Silica-B |
|-----------------------------|---------------------|------------------------|------------------------|
| Median Particle size (d50)* | 2.66µm *            | 2.48µm                 | 2.97µm                 |
| SEM Particle Size           | 3.0µm               | 2.8µm                  | 3.3µm                  |
| D90/10                      | <b>1.12</b>         | <b>1.58</b>            | <b>1.61</b>            |
| Pore Volume                 | 0.89                | 0.88                   | 0.89                   |

\* Measured by Coulter Counter

# Monodisperse Particles



## Loading Capacity

Fortis Evosphere has a high surface area ( $350\text{m}^2/\text{g}$ ) as per many modern Type B porous silica's, this allows loadability of compounds to be high for purification purposes.

Evosphere is available from capillary scale dimensions all the way up to preparative columns.

If you compare this to core-shell particles which typically have a surface area in the region of  $130\text{m}^2/\text{g}$  you will quickly see overload and compromised peak shapes, meaning scale up of methods can be difficult.

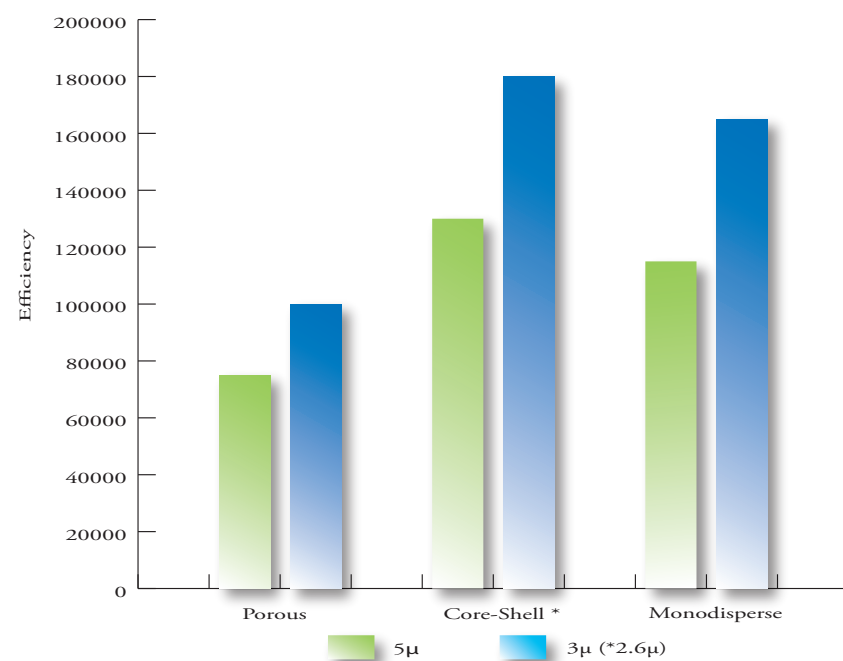
## Efficiency of Monodisperse particles

Analyst have had two ways of improving efficiency in the past. Move to a smaller particle with associated high backpressure and the need to buy a UHPLC instrument, or move to core-shell particles but with a compromise in loading and scalability.

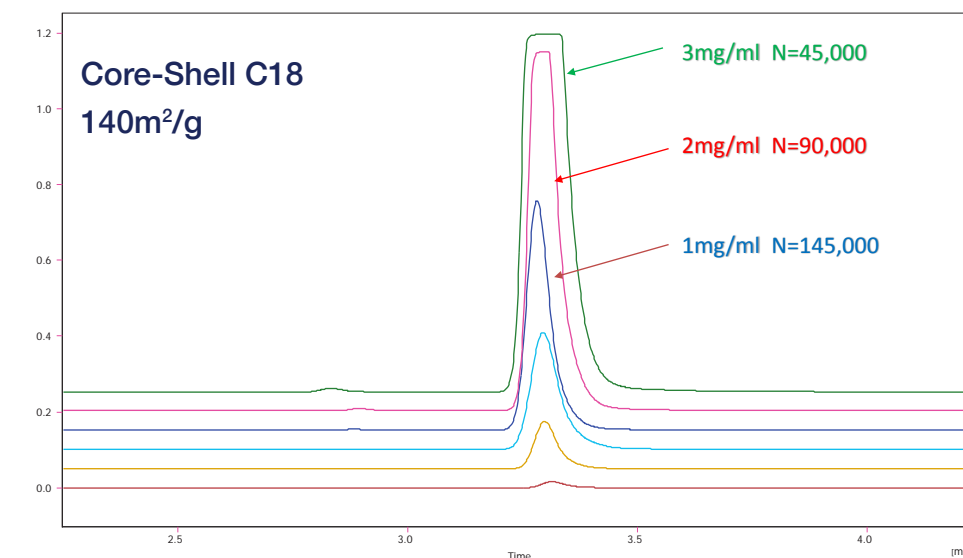
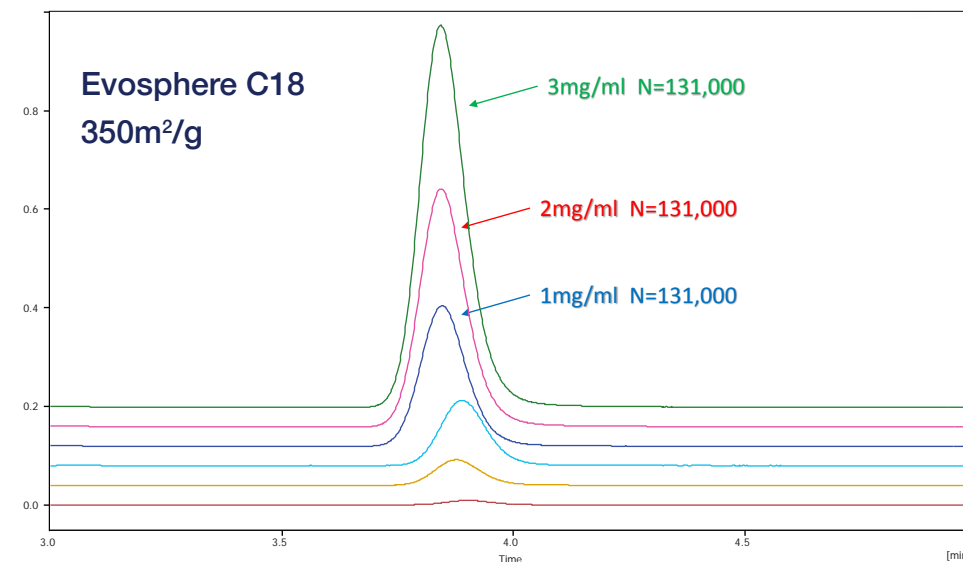
- High Efficiency
- High Loading
- Scalable - capillary to Prep
- Robust
- Reproducible

Evosphere fully porous monodisperse particles have vastly increased efficiency over equivalent porous particle sizes. Due to maintaining high surface area, loading and retention time are not compromised as seen with core-shell particles.

## Typical Efficiencies of HPLC particles



## Comparison of loading capacity

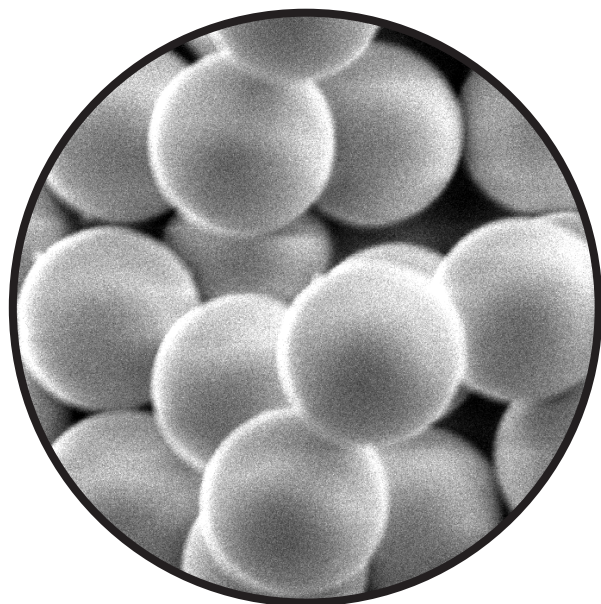




# Selectivity Choices



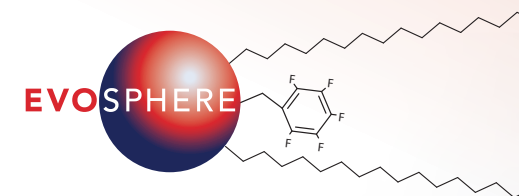
Fortis Evosphere® columns are the very latest in HPLC particle technology. Incorporating our optimised bonding and packing practices with a fully porous monodisperse particle provides the analyst with the ability to speed up analysis, increase efficiency and improve resolution over 'traditional' 3µ & 5µ particles even on normal 400bar HPLC systems.



## Evosphere Monodisperse Particles

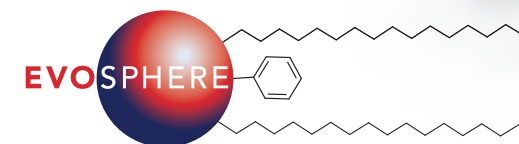
|                        | Particle Size | Surface Area         | Pore Size | % C | pH range | USP |
|------------------------|---------------|----------------------|-----------|-----|----------|-----|
| Evosphere C12          | 1.7µm 3µm 5µm | 350m <sup>2</sup> /g | 100Å      | 17  | 1-9      | L87 |
| Evosphere C18/AR       | 1.7µm 3µm 5µm | 350m <sup>2</sup> /g | 100Å      | 17  | 2-9      | L1  |
| Evosphere C18/PFP      | 1.7µm 3µm 5µm | 350m <sup>2</sup> /g | 100Å      | 17  | 2-9      | L1  |
| Evosphere RP18-Amide   | 1.7µm 3µm 5µm | 350m <sup>2</sup> /g | 100Å      | 20  | 2-9      | L60 |
| Evosphere Phenyl-Hexyl | 1.7µm 3µm 5µm | 350m <sup>2</sup> /g | 100Å      | 14  | 2-9      | L11 |
| Evosphere Diphenyl     | 1.7µm 3µm 5µm | 350m <sup>2</sup> /g | 100Å      | 15  | 2-9      | L11 |
| Evosphere PFP          | 1.7µm 3µm 5µm | 350m <sup>2</sup> /g | 100Å      | 13  | 2-9      | L43 |
| Evosphere AQUA         | 1.7µm 3µm 5µm | 350m <sup>2</sup> /g | 100Å      | 18  | 2-9      | L96 |

## Stationary Phase Choice



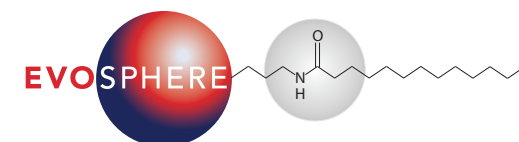
- Evosphere C18/PFP
- Orthogonal Selectivity
- Method development starting point

Evosphere C18/PFP is designed to provide characteristics which will enhance method development. It provides the ability to obtain sharp peak shapes whilst retaining and separating a wide variety of compounds both hydrophobic and hydrophilic.



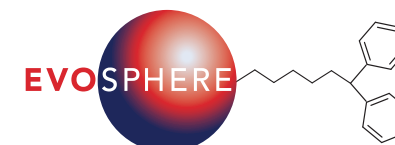
- Evosphere C18/AR
- Orthogonal Selectivity
- Method development starting point

Evosphere C18/AR is designed to provide increased resolution between compounds, having a combination of hydrophobicity and aromatic selectivity will lead to enhanced resolution. USP L1 column.



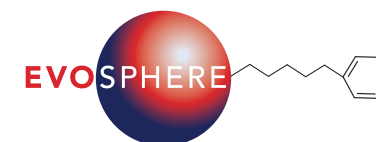
- Evosphere RP18-Amide
- Orthogonal Selectivity
- Excellent method development option

Evosphere RP18-Amide is designed to provide polar characteristics which will enhance resolution in method development. It provides orthogonal selectivity to alkyl chain phases due to its polar-embedded group. Sharp peak shapes, extra selectivity and increased retention can all be obtained.



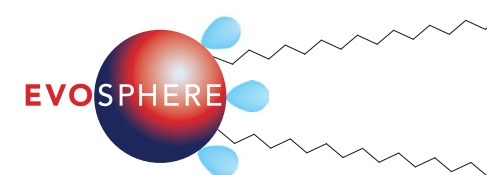
- Evosphere Diphenyl
- Separate positional isomers
- Stable ligand, No "MS" bleed

Evosphere Diphenyl is designed to provide pi-pi, steric and hydrophobic characteristics which will enhance selectivity and the ability to develop methods. Particularly suited to positional isomers and other closely related species such as metabolites.



- Evosphere Phenyl-Hexyl
- Separate metabolites
- Excellent resolution

Evosphere Phenyl-Hexyl is designed to provide characteristics which will enhance selectivity. It provides alternate selectivity to a pure hydrophobic stationary phase whilst still maintaining the key attributes of robustness and reproducibility.



- Evosphere AQUA
- Separate polar species
- Excellent stability

Evosphere AQUA is designed to provide characteristics which will enhance retention of highly polar analytes. Reproducible surface characteristics provide robust separations. Combination of hydrophobic and hydrophilic nature.

# Selectivity Choices



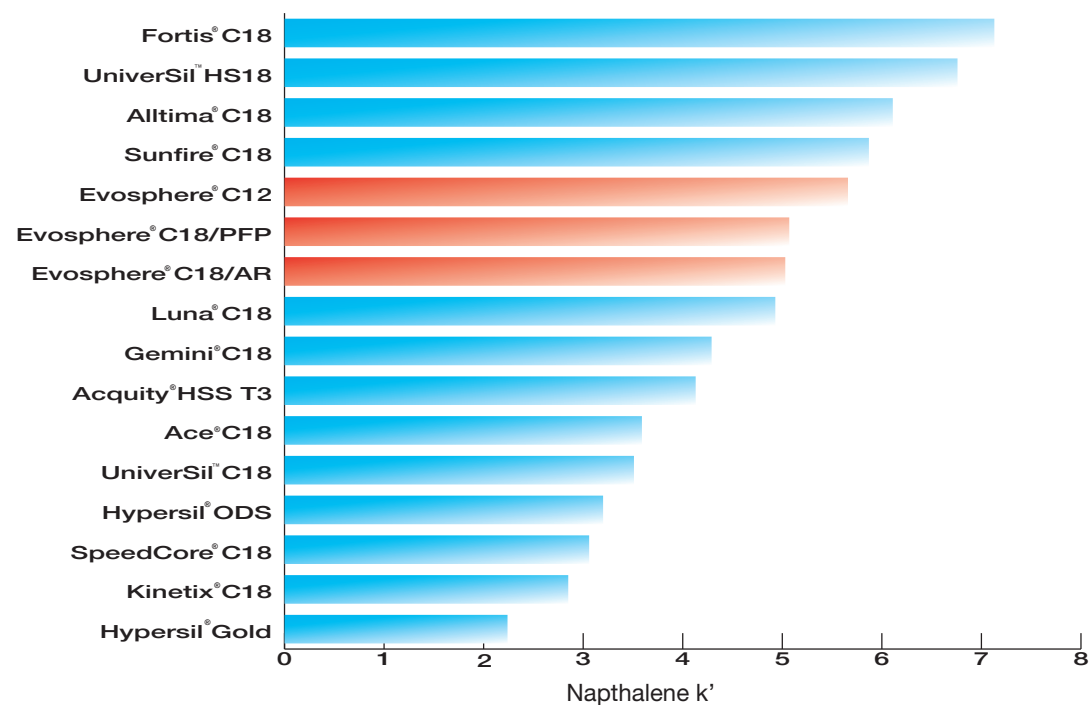
- **Evosphere C12**
- **Ultra High Efficiency**
- **Method development starting point**

Evosphere C12 is designed to provide characteristics which will enhance method development. The dense C12 ligand provides the ability to obtain sharp peak shapes whilst retaining and separating a wide variety of acid, base and neutral compounds with excellent robustness.

- **Evosphere PFP**
- **Orthogonal Selectivity**
- **Combined with Ultra High Efficiency particles**

Evosphere PFP (PentaFluoroPhenyl) is designed to provide characteristics which will enhance selectivity. It provides alternate selectivity to a hydrophobic stationary phase whilst still maintaining the key attributes of robustness and reproducibility.

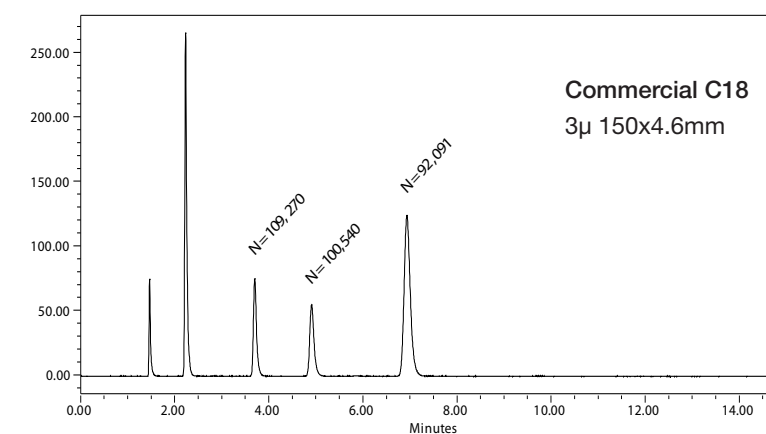
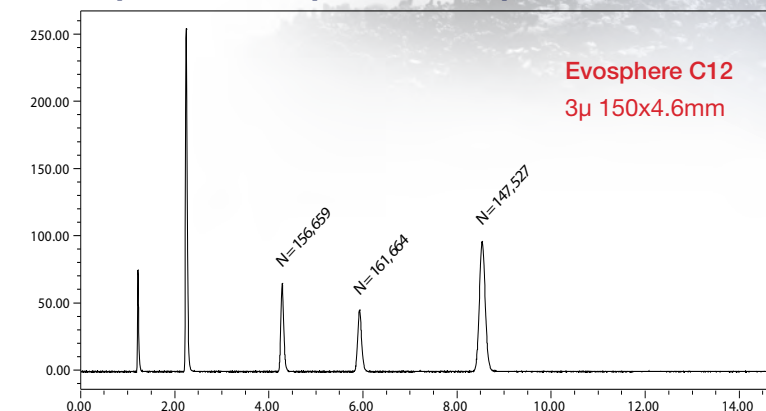
## Hydrophobicity



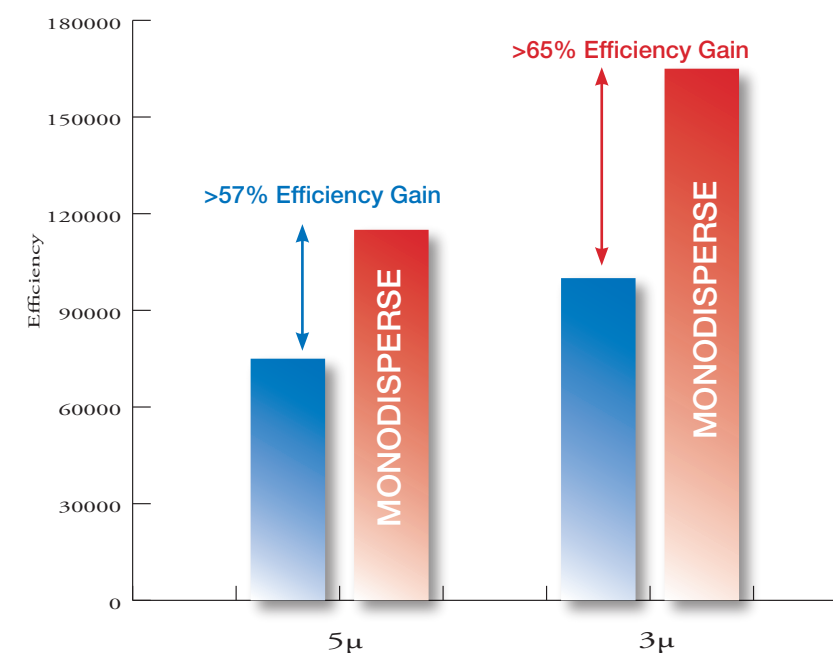
# Efficiency Gains

The monodisperse nature of Evosphere coupled with our ability to pack the column more efficiently allows for a significant increase in efficiency and therefore resolution over traditional silica particles.

## 3µ Monodisperse vs 3µ Traditional



## Efficiency



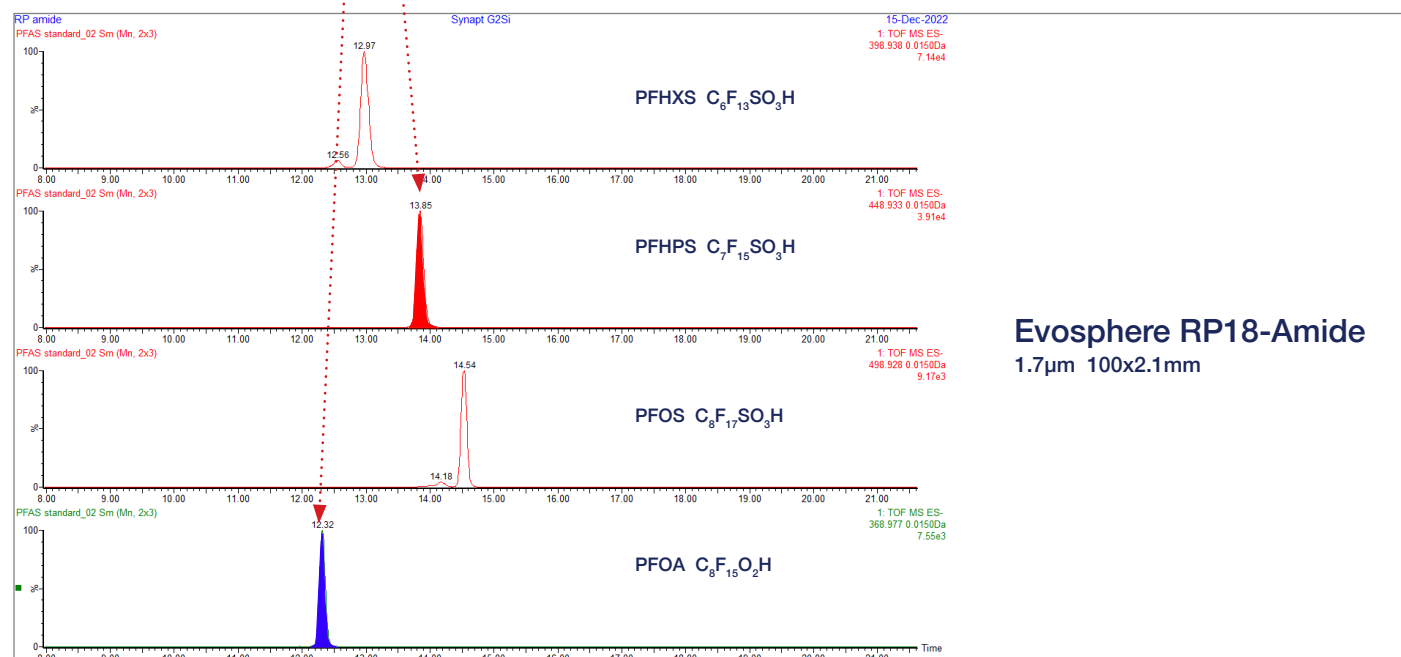
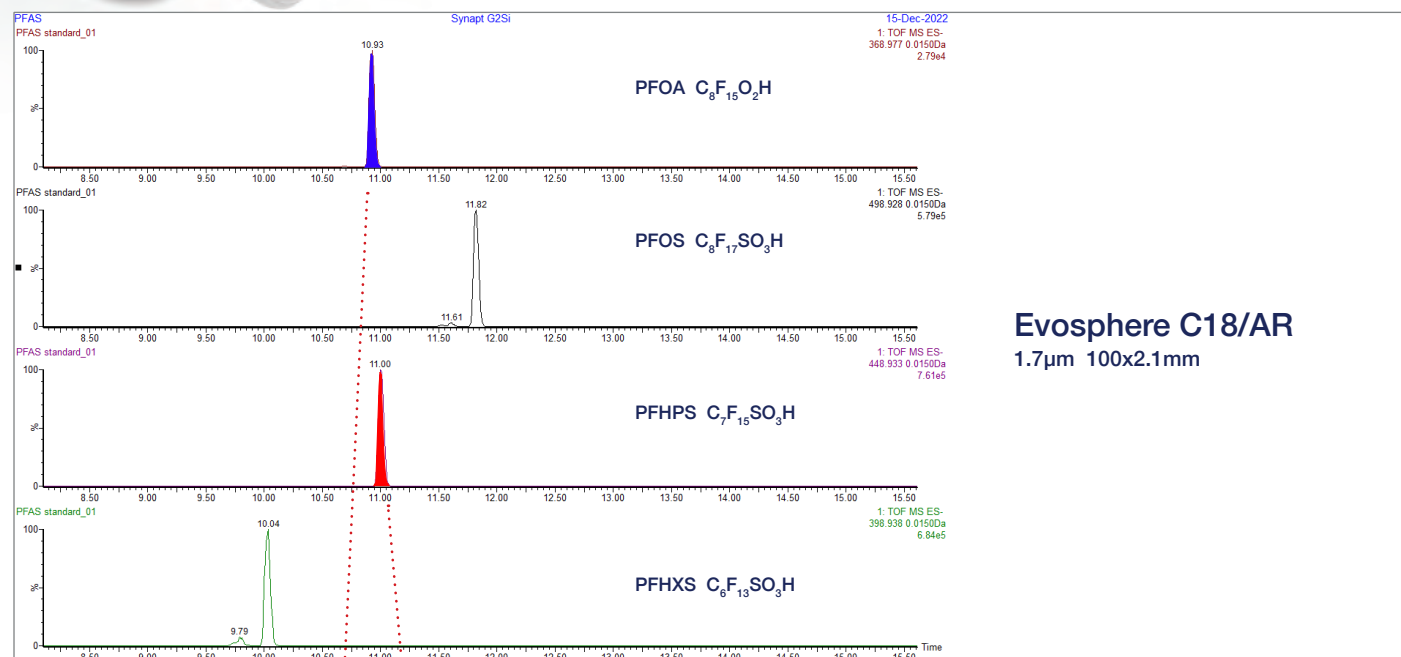




# Polyfluoroalkyl substances (PFAS)

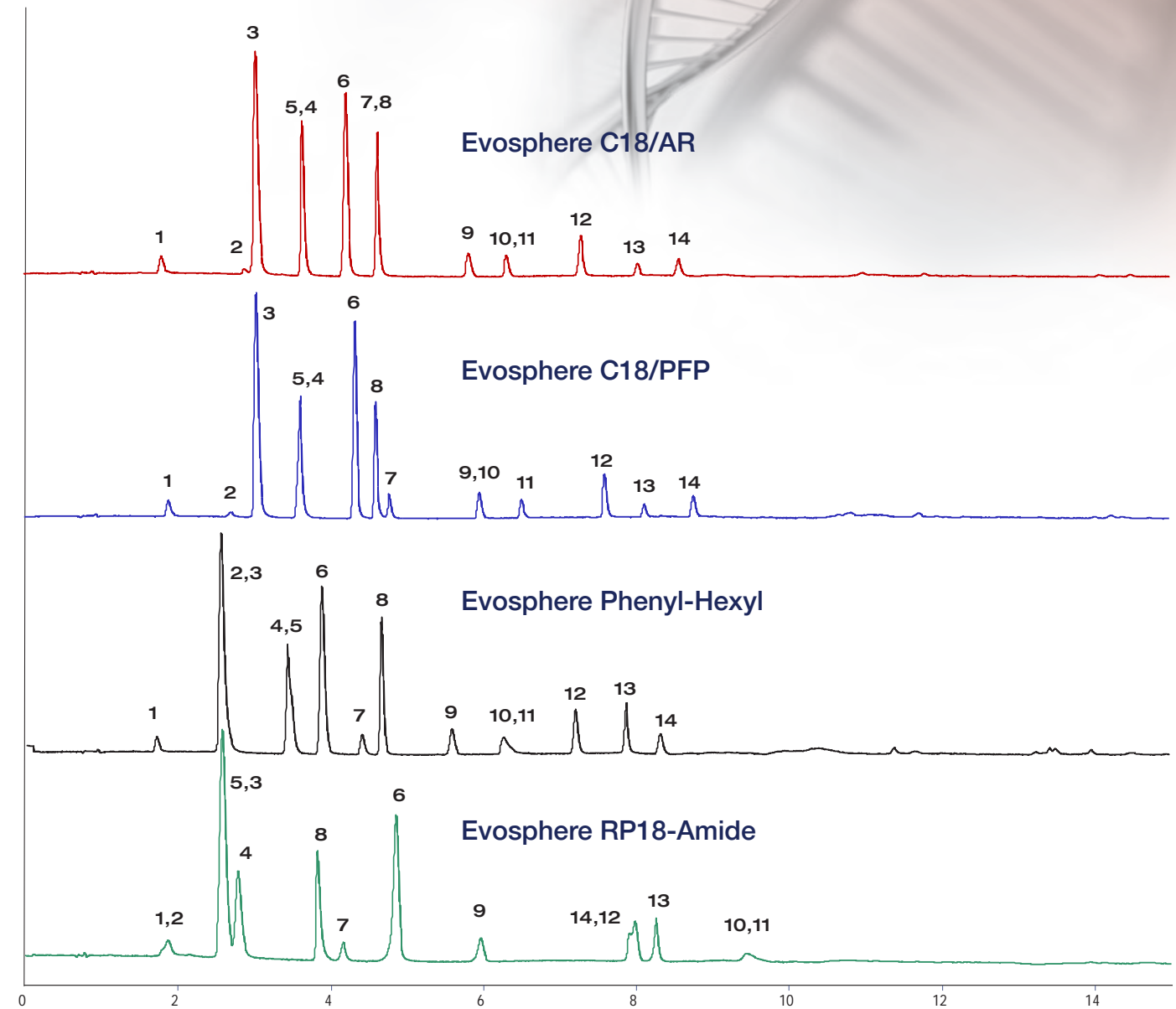
## EVO SPHERE

There is a lot of interest in PFAS analysis, if diverse selectivity of stationary phase's can be employed then closely related analytes can be separated with ease, leading to better quantitatively and qualitatively confirmation.



# Evosphere Selectivity

When developing a new method in chromatography having a diverse range of selectivities to choose from can help in deciding how peaks resolve and which is the best starting point. In this example a gradient run across several stationary phase shows orthogonal selectivity for many of the peaks.



1. Hydroquinone
2. Theobromine
3. Paracetamol
4. Theophylline
5. Paraxanthine
6. 4-Hydroxybenzoic acid
7. 2-Acetamidophenol
8. Caffeine
9. Phenol
10. Aspirin
11. 2-hydroxybenzoic acid
12. 4-nitrophenol
13. 4-Chloracetanilide
14. 2-nitrophenol

Mobile phase A:  
10mM ammonium formate pH3.0

Mobile phase B:  
10mM ammonium formate pH3.0 in ACN

Flow rate : 0.4ml/min

Wavelength : 254nm

Temperature : 40°C

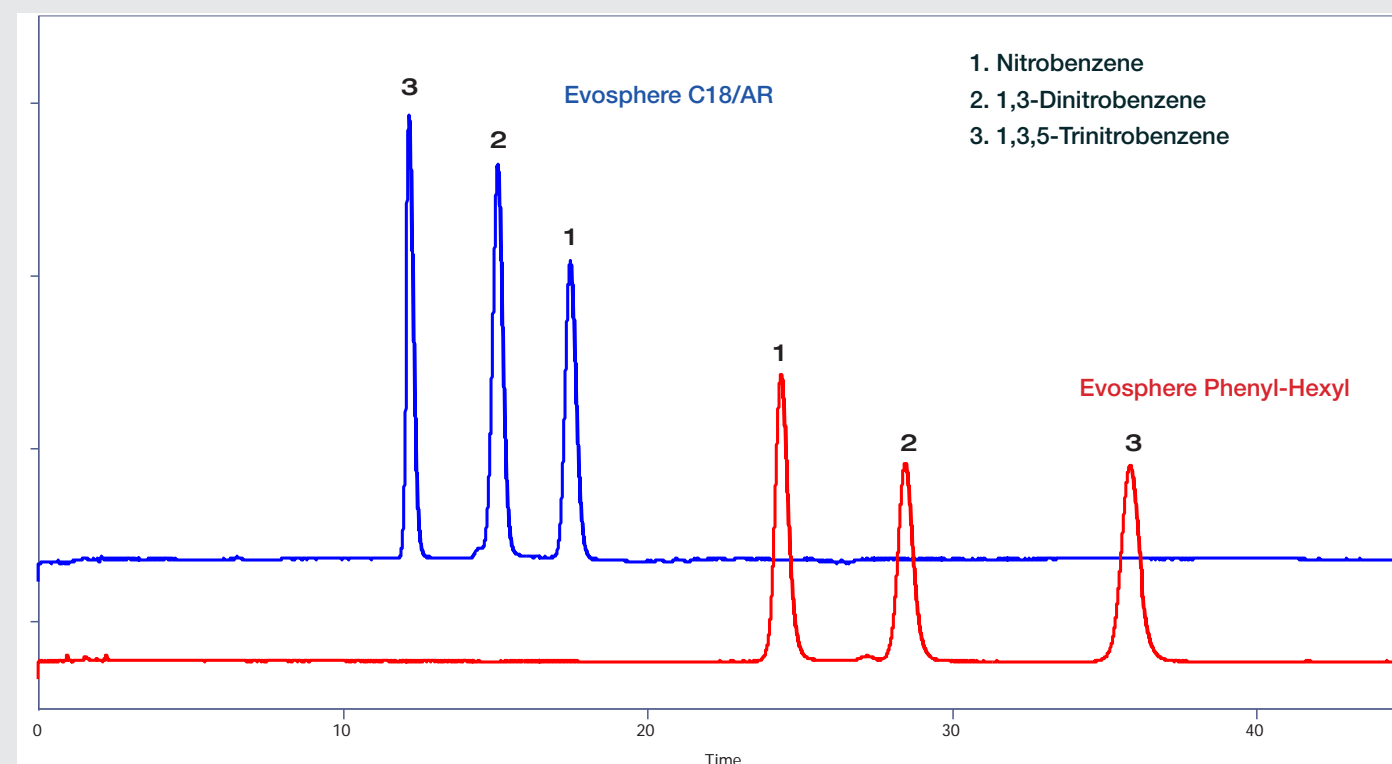
\* All columns 3µm 100x2.1mm



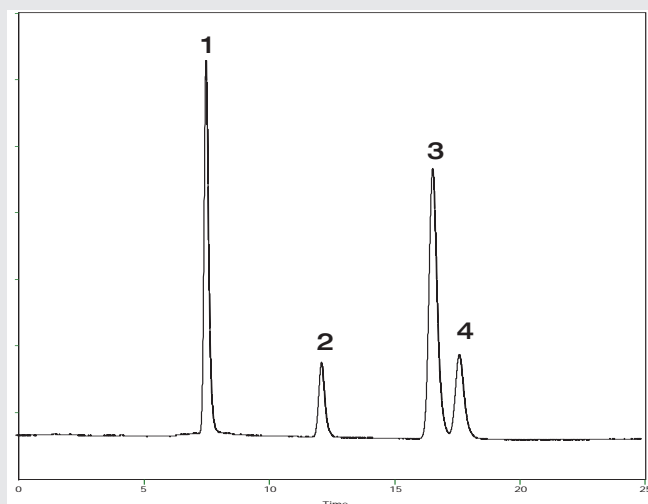
# Applications

# EVOSPHERE

## SELECTIVITY COMPARISON - EXPLOSIVES



## HALOGENATED POSITIONAL ISOMERS

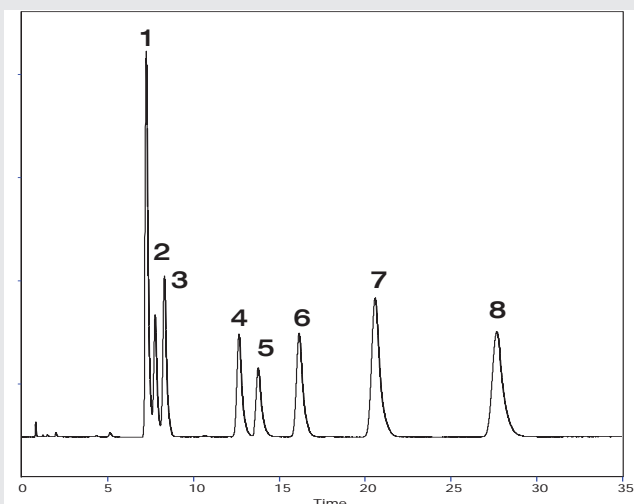


Column: 5µm Evosphere C18/PPF 150x4.6mm

Mobile Phase: 50:50 Water:MeOH  
Flow: 1.0ml/min  
Temp: 20°C  
Wavelength: 254nm

1. Acetophenone
2. 2-Chloroacetophenone
3. 4-Chloroacetophenone
4. 3-Chloroacetophenone

## SUBSTITUTED BENZENES

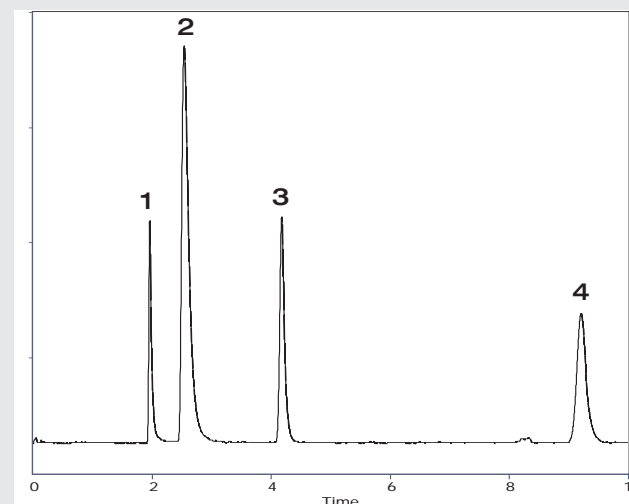


Column: 5µm Evosphere C18/PPF 150x4.6mm

Mobile Phase: 50:50 Water:MeOH  
Flow: 1.0ml/min  
Temp: 20°C  
Wavelength: 210nm

- |                            |                            |
|----------------------------|----------------------------|
| 1. 1,2,3-Trimethoxybenzene | 5. Anisole                 |
| 2. 1,2-Dimethoxybenzene    | 6. 1,3-Dimethoxybenzene    |
| 3. 1,2,4-Trimethoxybenzene | 7. 1,3,5-Trimethoxybenzene |
| 4. 1,4-Dimethoxybenzene    | 8. Toluene                 |

## NUCLEOSIDES

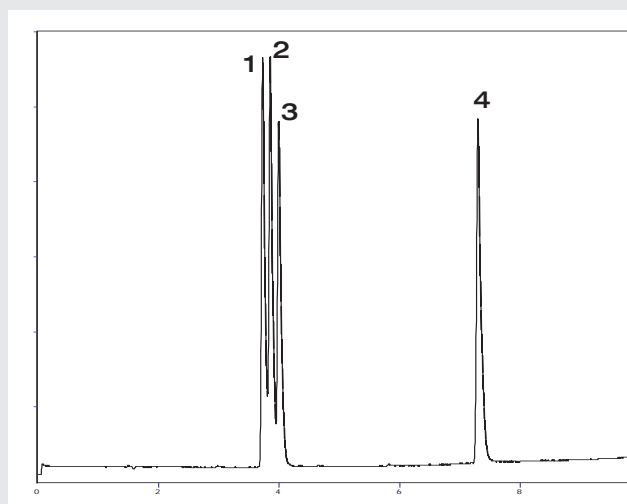


Column: 3µm Evosphere AQUA 150x4.6mm

Mobile Phase: 98:2 25mM NH4OAc : ACN  
Flow: 1.0ml/min  
Temp: 20°C  
Wavelength : 254nm

1. Uracil
2. Uridine
3. Cytosine
4. Guanosine

## STERIODS



Column: 3µm Evosphere AQUA 150x4.6mm

Mobile Phase: 30-100%B in 10mins  
A: 0.1% Formic acid in Water  
B: 0.1% Formic acid in ACN  
Flow: 1.0ml/min  
Wavelength : 254nm

1. Prednisolone
2. Prednisone
3. Cortisone
4. 17α Hydroxyprogesterone

# Capillaries & Prep Scaling



Evosphere capillaries are available in 75µm, 200µm, 0.5mm, 1mm i.d. with any phase chemistry and any particle size from the Evosphere range. Request a quote from your local distributor.

## EVOSPHERE Evosphere Prep

- 10mm and 21.2mm
- High Loadability
- Optimised Packing Efficiency
- Narrow peak profile, High Efficiency and Resolution

Evosphere Prep columns are designed for high sample loading, high throughput applications. The optimised packed bed (OPB) process ensures excellent peak shapes and efficiency, whilst the lifetime of the column is increased.



## 1.7µm EVOSPHERE® part numbers

| 1.7µm EVOSPHERE C12 |     | Column Length |              |              |              |
|---------------------|-----|---------------|--------------|--------------|--------------|
|                     |     | 30            | 50           | 100          | 150          |
| Column Diameter     | 2.1 | EV012-020201  | EV012-020301 | EV012-020501 | EV012-020701 |
|                     | 3.0 | EV012-030201  | EV012-030301 | EV012-030501 | EV012-030701 |
|                     | 4.6 | EV012-050201  | EV012-050301 | EV012-050501 | EV012-050701 |

| 1.7µm EVOSPHERE C18/AR |     | Column Length  |                |                |                |
|------------------------|-----|----------------|----------------|----------------|----------------|
|                        |     | 30             | 50             | 100            | 150            |
| Column Diameter        | 2.1 | EV018AR-020201 | EV018AR-020301 | EV018AR-020501 | EV018AR-020701 |
|                        | 3.0 | EV018AR-030201 | EV018AR-030301 | EV018AR-030501 | EV018AR-030701 |
|                        | 4.6 | EV018AR-050201 | EV018AR-050301 | EV018AR-050501 | EV018AR-050701 |

| 1.7µm EVOSPHERE C18/PFP |     | Column Length  |                |                |                |
|-------------------------|-----|----------------|----------------|----------------|----------------|
|                         |     | 30             | 50             | 100            | 150            |
| Column Diameter         | 2.1 | EV018FP-020201 | EV018FP-020301 | EV018FP-020501 | EV018FP-020701 |
|                         | 3.0 | EV018FP-030201 | EV018FP-030301 | EV018FP-030501 | EV018FP-030701 |
|                         | 4.6 | EV018FP-050201 | EV018FP-050301 | EV018FP-050501 | EV018FP-050701 |

| 1.7µm EVOSPHERE RP18-AMIDE |     | Column Length  |                |                |                |
|----------------------------|-----|----------------|----------------|----------------|----------------|
|                            |     | 30             | 50             | 100            | 150            |
| Column Diameter            | 2.1 | EVORP18-020201 | EVORP18-020301 | EVORP18-020501 | EVORP18-020701 |
|                            | 3.0 | EVORP18-030201 | EVORP18-030301 | EVORP18-030501 | EVORP18-030701 |
|                            | 4.6 | EVORP18-050201 | EVORP18-050301 | EVORP18-050501 | EVORP18-050701 |

| 1.7µm EVOSPHERE PHENYL-HEXYL |     | Column Length |               |               |               |
|------------------------------|-----|---------------|---------------|---------------|---------------|
|                              |     | 30            | 50            | 100           | 150           |
| Column Diameter              | 2.1 | EVOHEX-020201 | EVOHEX-020301 | EVOHEX-020501 | EVOHEX-020701 |
|                              | 3.0 | EVOHEX-030201 | EVOHEX-030301 | EVOHEX-030501 | EVOHEX-030701 |
|                              | 4.6 | EVOHEX-050201 | EVOHEX-050301 | EVOHEX-050501 | EVOHEX-050701 |

| 1.7µm EVOSPHERE DIPHENYL |     | Column Length |              |              |              |
|--------------------------|-----|---------------|--------------|--------------|--------------|
|                          |     | 30            | 50           | 100          | 150          |
| Column Diameter          | 2.1 | EVOPH-020201  | EVOPH-020301 | EVOPH-020501 | EVOPH-020701 |
|                          | 3.0 | EVOPH-030201  | EVOPH-030301 | EVOPH-030501 | EVOPH-030701 |
|                          | 4.6 | EVOPH-050201  | EVOPH-050301 | EVOPH-050501 | EVOPH-050701 |

| 1.7µm EVOSPHERE PFP |     | Column Length |               |               |               |
|---------------------|-----|---------------|---------------|---------------|---------------|
|                     |     | 30            | 50            | 100           | 150           |
| Column Diameter     | 2.1 | EVOPFP-020201 | EVOPFP-020301 | EVOPFP-020501 | EVOPFP-020701 |
|                     | 3.0 | EVOPFP-030201 | EVOPFP-030301 | EVOPFP-030501 | EVOPFP-030701 |
|                     | 4.6 | EVOPFP-050201 | EVOPFP-050301 | EVOPFP-050501 | EVOPFP-050701 |

| 1.7µm EVOSPHERE AQUA |     | Column Length |              |              |              |
|----------------------|-----|---------------|--------------|--------------|--------------|
|                      |     | 30            | 50           | 100          | 150          |
| Column Diameter      | 2.1 | EVOAQ-020201  | EVOAQ-020301 | EVOAQ-020501 | EVOAQ-020701 |
|                      | 3.0 | EVOAQ-030201  | EVOAQ-030301 | EVOAQ-030501 | EVOAQ-030701 |
|                      | 4.6 | EVOAQ-050201  | EVOAQ-050301 | EVOAQ-050501 | EVOAQ-050701 |

## Evosphere Sample Filters



- Low volume in-line filter for all core-shell/UHPLC columns
- Increase lifetime of columns
- Change over time seconds not minutes
- Pressure rated to 1000bar

| High pressure In-line Filters |   |
|-------------------------------|---|
| UHPSAV2                       | UHPLC In-line filter pk 2                     |
| UHPSAV4                       | UHPLC In-line filter pk 4                     |
| UHPSAV2-w                     | UHPLC In-line filter pk 2 Acquity® Compatible |
| UHPSAV4-w                     | UHPLC In-line filter pk 4 Acquity® Compatible |



## 3µm EVOSPHERE® part numbers

| 3µm EVOSPHERE C12 |     | Column Length |              |              |              |
|-------------------|-----|---------------|--------------|--------------|--------------|
|                   |     | 30            | 50           | 100          | 150          |
| Column Diameter   | 2.1 | EV012-020203  | EV012-020303 | EV012-020503 | EV012-020703 |
|                   | 3.0 | EV012-030203  | EV012-030303 | EV012-030503 | EV012-030703 |
|                   | 4.6 | EV012-050203  | EV012-050303 | EV012-050503 | EV012-050703 |

| 3µm EVOSPHERE C18/AR |     | Column Length  |                |                |                |
|----------------------|-----|----------------|----------------|----------------|----------------|
|                      |     | 30             | 50             | 100            | 150            |
| Column Diameter      | 2.1 | EV018AR-020203 | EV018AR-020303 | EV018AR-020503 | EV018AR-020703 |
|                      | 3.0 | EV018AR-030203 | EV018AR-030303 | EV018AR-030503 | EV018AR-030703 |
|                      | 4.6 | EV018AR-050203 | EV018AR-050303 | EV018AR-050503 | EV018AR-050703 |

| 3µm EVOSPHERE C18/PFP |     | Column Length  |                |                |                |
|-----------------------|-----|----------------|----------------|----------------|----------------|
|                       |     | 30             | 50             | 100            | 150            |
| Column Diameter       | 2.1 | EV018FP-020203 | EV018FP-020303 | EV018FP-020503 | EV018FP-020703 |
|                       | 3.0 | EV018FP-030203 | EV018FP-030303 | EV018FP-030503 | EV018FP-030703 |
|                       | 4.6 | EV018FP-050203 | EV018FP-050303 | EV018FP-050503 | EV018FP-050703 |

| 3µm EVOSPHERE RP18-AMIDE |     | Column Length  |                |                |                |
|--------------------------|-----|----------------|----------------|----------------|----------------|
|                          |     | 30             | 50             | 100            | 150            |
| Column Diameter          | 2.1 | EVORP18-020203 | EVORP18-020303 | EVORP18-020503 | EVORP18-020703 |
|                          | 3.0 | EVORP18-030203 | EVORP18-030303 | EVORP18-030503 | EVORP18-030703 |
|                          | 4.6 | EVORP18-050203 | EVORP18-050303 | EVORP18-050503 | EVORP18-050703 |

| 3µm EVOSPHERE PHENYL-HEXYL |     | Column Length |               |               |               |
|----------------------------|-----|---------------|---------------|---------------|---------------|
|                            |     | 30            | 50            | 100           | 150           |
| Column Diameter            | 2.1 | EVOHEX-020203 | EVOHEX-020303 | EVOHEX-020503 | EVOHEX-020703 |
|                            | 3.0 | EVOHEX-030203 | EVOHEX-030303 | EVOHEX-030503 | EVOHEX-030703 |
|                            | 4.6 | EVOHEX-050203 | EVOHEX-050303 | EVOHEX-050503 | EVOHEX-050703 |

| 3µm EVOSPHERE DIPHENYL |     | Column Length |              |              |              |
|------------------------|-----|---------------|--------------|--------------|--------------|
|                        |     | 30            | 50           | 100          | 150          |
| Column Diameter        | 2.1 | EVOPH-020203  | EVOPH-020303 | EVOPH-020503 | EVOPH-020703 |
|                        | 3.0 | EVOPH-030203  | EVOPH-030303 | EVOPH-030503 | EVOPH-030703 |
|                        | 4.6 | EVOPH-050203  | EVOPH-050303 | EVOPH-050503 | EVOPH-050703 |

| 3µm EVOSPHERE PFP |     | Column Length |               |               |               |
|-------------------|-----|---------------|---------------|---------------|---------------|
|                   |     | 30            | 50            | 100           | 150           |
| Column Diameter   | 2.1 | EVOPFP-020203 | EVOPFP-020303 | EVOPFP-020503 | EVOPFP-020703 |
|                   | 3.0 | EVOPFP-030203 | EVOPFP-030303 | EVOPFP-030503 | EVOPFP-030703 |
|                   | 4.6 | EVOPFP-050203 | EVOPFP-050303 | EVOPFP-050503 | EVOPFP-050703 |

| 3µm EVOSPHERE AQUA |     | Column Length |              |              |              |
|--------------------|-----|---------------|--------------|--------------|--------------|
|                    |     | 30            | 50           | 100          | 150          |
| Column Diameter    | 2.1 | EVOAQ-020203  | EVOAQ-020303 | EVOAQ-020503 | EVOAQ-020703 |
|                    | 3.0 | EVOAQ-030203  | EVOAQ-030303 | EVOAQ-030503 | EVOAQ-030703 |
|                    | 4.6 | EVOAQ-050203  | EVOAQ-050303 | EVOAQ-050503 | EVOAQ-050703 |



- Direct connect guard system for all 3µm and 5µm phases
- Quick replacement cartridges
- Highly Cost Effective

| 3µm Evosphere Guard Cartridges |                                 |
|--------------------------------|---------------------------------|
| DCGUA-1                        | Guard Cartridge Holder          |
| DCxx-040003G/2                 | 10x4mm Evosphere 3µm Guard pk 2 |
| DCxx-040003G/4                 | 10x4mm Evosphere 3µm Guard pk 4 |
| DCxx-020003G/2                 | 10x2mm Evosphere 3µm Guard pk 2 |
| DCxx-020003G/4                 | 10x2mm Evosphere 3µm Guard pk 4 |

Replace xx 12 for Evosphere C12 EPH for Evosphere Diphenyl AQ for Evosphere AQUA HEX for Evosphere Phenyl-Hexyl PFP for Evosphere PFP RP18 for Evosphere RP18-Amide 18AR for Evosphere C18/AR 18FP for Evosphere C18/PFP

## 5µm EVOSPHERE® part numbers

| 5µm EVOSPHERE C12 |     | Column Length |              |              |              |
|-------------------|-----|---------------|--------------|--------------|--------------|
|                   |     | 30            | 50           | 100          | 150          |
| Column Diameter   | 2.1 | EV012-020205  | EV012-020305 | EV012-020505 | EV012-020705 |
|                   | 3.0 | EV012-030205  | EV012-030305 | EV012-030505 | EV012-030705 |
|                   | 4.6 | EV012-050205  | EV012-050305 | EV012-050505 | EV012-050705 |

| 5µm EVOSPHERE C18/AR |     | Column Length  |                |                |                |
|----------------------|-----|----------------|----------------|----------------|----------------|
|                      |     | 30             | 50             | 100            | 150            |
| Column Diameter      | 2.1 | EV018AR-020205 | EV018AR-020305 | EV018AR-020505 | EV018AR-020705 |
|                      | 3.0 | EV018AR-030205 | EV018AR-030305 | EV018AR-030505 | EV018AR-030705 |
|                      | 4.6 | EV018AR-050205 | EV018AR-050305 | EV018AR-050505 | EV018AR-050705 |

| 5µm EVOSPHERE C18/PFP |     | Column Length  |                |                |                |
|-----------------------|-----|----------------|----------------|----------------|----------------|
|                       |     | 30             | 50             | 100            | 150            |
| Column Diameter       | 2.1 | EV018FP-020205 | EV018FP-020305 | EV018FP-020505 | EV018FP-020705 |
|                       | 3.0 | EV018FP-030205 | EV018FP-030305 | EV018FP-030505 | EV018FP-030705 |
|                       | 4.6 | EV018FP-050205 | EV018FP-050305 | EV018FP-050505 | EV018FP-050705 |

| 5µm EVOSPHERE RP18-AMIDE |     | Column Length  |                |                |                |
|--------------------------|-----|----------------|----------------|----------------|----------------|
|                          |     | 30             | 50             | 100            | 150            |
| Column Diameter          | 2.1 | EVORP18-020205 | EVORP18-020305 | EVORP18-020505 | EVORP18-020705 |
|                          | 3.0 | EVORP18-030205 | EVORP18-030305 | EVORP18-030505 | EVORP18-030705 |
|                          | 4.6 | EVORP18-050205 | EVORP18-050305 | EVORP18-050505 | EVORP18-050705 |

| 5µm EVOSPHERE PHENYL-HEXYL |     | Column Length |               |               |               |
|----------------------------|-----|---------------|---------------|---------------|---------------|
|                            |     | 30            | 50            | 100           | 150           |
| Column Diameter            | 2.1 | EVOHEX-020205 | EVOHEX-020305 | EVOHEX-020505 | EVOHEX-020705 |
|                            | 3.0 | EVOHEX-030205 | EVOHEX-030305 | EVOHEX-030505 | EVOHEX-030705 |
|                            | 4.6 | EVOHEX-050205 | EVOHEX-050305 | EVOHEX-050505 | EVOHEX-050705 |

| 5µm EVOSPHERE DIPHENYL |     | Column Length |              |              |              |
|------------------------|-----|---------------|--------------|--------------|--------------|
|                        |     | 30            | 50           | 100          | 150          |
| Column Diameter        | 2.1 | EVOPH-020205  | EVOPH-020305 | EVOPH-020505 | EVOPH-020705 |
|                        | 3.0 | EVOPH-030205  | EVOPH-030305 | EVOPH-030505 | EVOPH-030705 |
|                        | 4.6 | EVOPH-050205  | EVOPH-050305 | EVOPH-050505 | EVOPH-050705 |

| 5µm EVOSPHERE PFP |     | Column Length |               |               |               |
|-------------------|-----|---------------|---------------|---------------|---------------|
|                   |     | 30            | 50            | 100           | 150           |
| Column Diameter   | 2.1 | EVOPFP-020205 | EVOPFP-020305 | EVOPFP-020505 | EVOPFP-020705 |
|                   | 3.0 | EVOPFP-030205 | EVOPFP-030305 | EVOPFP-030505 | EVOPFP-030705 |
|                   | 4.6 | EVOPFP-050205 | EVOPFP-050305 | EVOPFP-050505 | EVOPFP-050705 |

| 5µm EVOSPHERE AQUA |     | Column Length |              |              |              |
|--------------------|-----|---------------|--------------|--------------|--------------|
|                    |     | 30            | 50           | 100          | 150          |
| Column Diameter    | 2.1 | EVOAQ-020205  | EVOAQ-020305 | EVOAQ-020505 | EVOAQ-020705 |
|                    | 3.0 | EVOAQ-030205  | EVOAQ-030305 | EVOAQ-030505 | EVOAQ-030705 |
|                    | 4.6 | EVOAQ-050205  | EVOAQ-050305 | EVOAQ-050505 | EVOAQ-050705 |

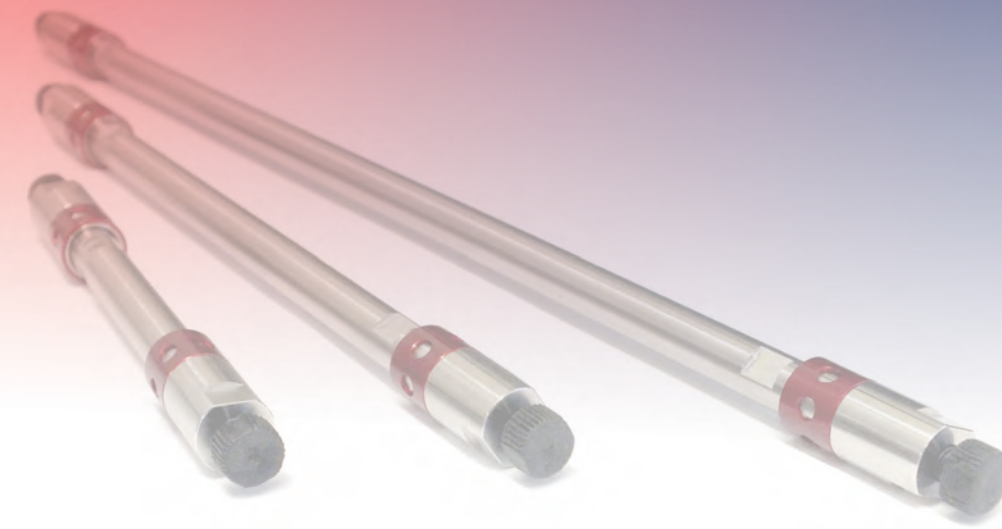


- Direct connect guard system for all 3µm and 5µm phases
- Quick replacement cartridges
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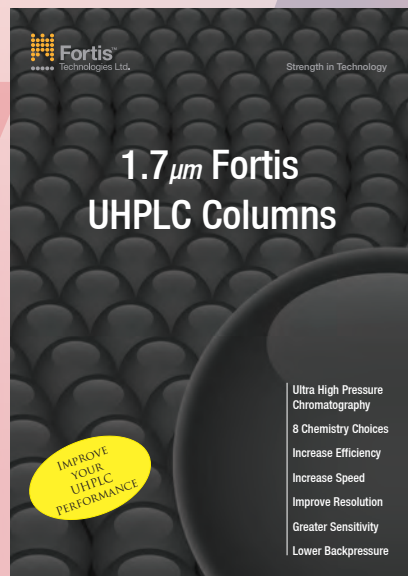
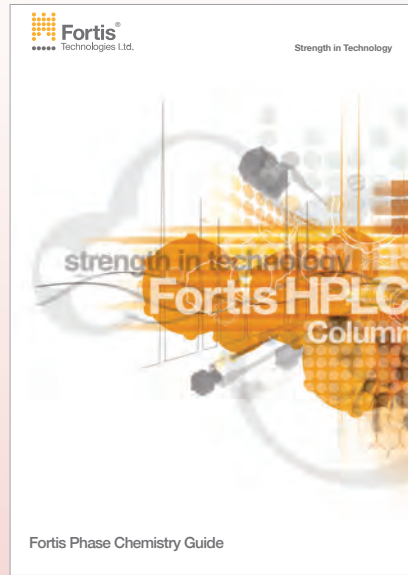
| 5µm Evosphere Guard Cartridges |                                 |
|--------------------------------|---------------------------------|
| DCGUA-1                        | Guard Cartridge Holder          |
| DCxx-040005G/2                 | 10x4mm Evosphere 5µm Guard pk 2 |
| DCxx-040005G/4                 | 10x4mm Evosphere 5µm Guard pk 4 |
| DCxx-020005G/2                 | 10x2mm Evosphere 5µm Guard pk 2 |
| DCxx-020005G/4                 | 10x2mm Evosphere 5µm Guard pk 4 |

Replace xx 12 for Evosphere C12 EPH for Evosphere Diphenyl AQ for Evosphere AQUA HEX for Evosphere Phenyl-Hexyl PFP for Evosphere PFP RP18 for Evosphere RP18-Amide 18AR for Evosphere C18/AR 18FP for Evosphere C18/PFP

## Other Product Guides Available



# Monodisperse HPLC Columns





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