

strength in technology

Fortis[®] HPLC Columns

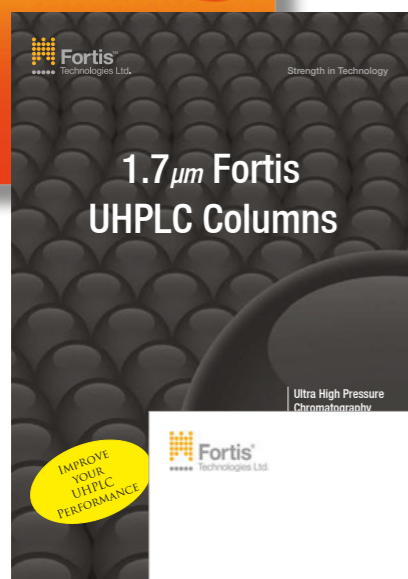


Other Product Guides Available



Fortis SpeedCore

- Modern Core-Shell technology
- High speed separations



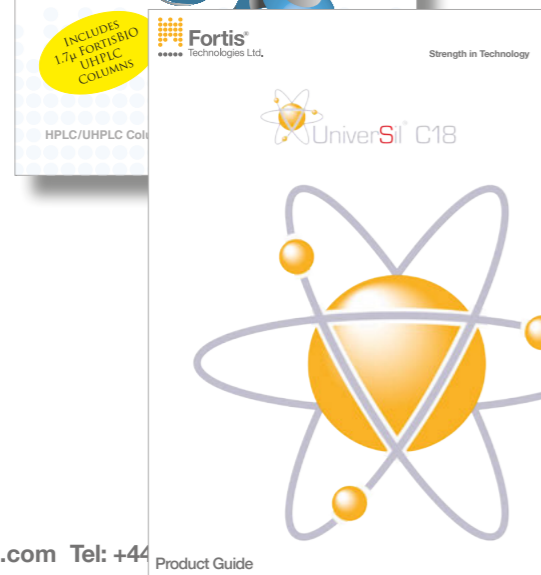
1.7µ Fortis UHPLC columns

- High Efficiency UHPLC particles
- 8 Stationary phases for high resolution



FortisBIO


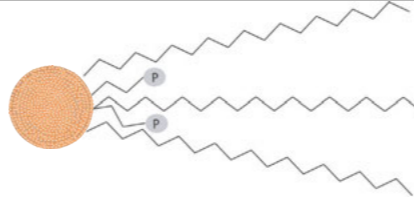
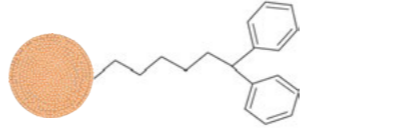


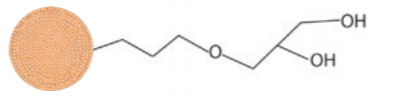
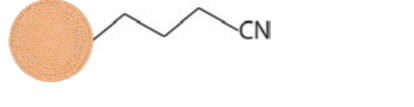
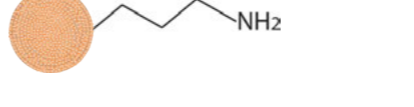
- Peptide and Protein columns (300Å pore size)
- 1.7µ for ultra high resolution separations



UniverSil

- Economical alternative to older type 'B' silicas
- Excellent reproducibility

Fortis Phase Chemistry Selectivity

| | | |
|---|---|---|
|  | Fortis C18 <ul style="list-style-type: none"> - General UHPLC use - Method Development from pH 1-12 | Acids Bases Neutrals |
|  | Fortis H2o <ul style="list-style-type: none"> - Polar endcapped - Increased polar retention | Hydrophilic analytes Organic acids Catecholamines |
|  | Fortis Diphenyl <ul style="list-style-type: none"> - Unique di-phenyl structure - Metabolite profiling - Separate positional isomers | Metabolites Positional Isomers Hydrophilic / Hydrophobic analytes |
|  | Fortis C8 <ul style="list-style-type: none"> - General UHPLC use - Method Development | Lipids Steroids Highly Hydrophobic analytes |
|  | Fortis HILIC <ul style="list-style-type: none"> - High polar retention - Homogenous silanol concentration - Improve MS sensitivity | Carboxylic acids Nucleotides Vitamins |
|  | Fortis HILIC Diol <ul style="list-style-type: none"> - Alternate selectivity to bare silica - Stable bonding - HILIC or Normal phase mode | Steroids Proteins Metabolites |
|  | Fortis Cyano <ul style="list-style-type: none"> - Cyano functionality - Reversed phase or Normal phase | Explosives Pesticides Steroids |
|  | Fortis Amino <ul style="list-style-type: none"> - Reproducible, Robust bonding - Reversed phase, Normal phase or Ion exchange mode | Saccharides Oligonucleotides Steroids |

Fortis Method Development Options

- Choice of Stationary phase functionality
- Based on Ultra pure silica
- Reversed Phase (RP) and Normal Phase (NP) options

Fortis® H2o

- Polar endcapped C18
- Increased polar retention
- Organic acids
- Catecholamines

Fortis® Diphenyl

- Unique di-phenyl structure
- Separate Positional Isomers
- Metabolite profiling

Fortis® C18

- General HPLC use
- Method dev. from pH 1-12
- Acids, Bases and Neutral

Fortis® HILIC DIOL

- High Polar Retention
- Highly Pure Silica
- Nucleotides

Fortis® C8

- Reduced Hydrophobicity
- Lipids
- Steroids

Fortis® Amino

- High Polar Retention
- Highly Pure Silica
- Carbohydrates

Fortis® Cyano

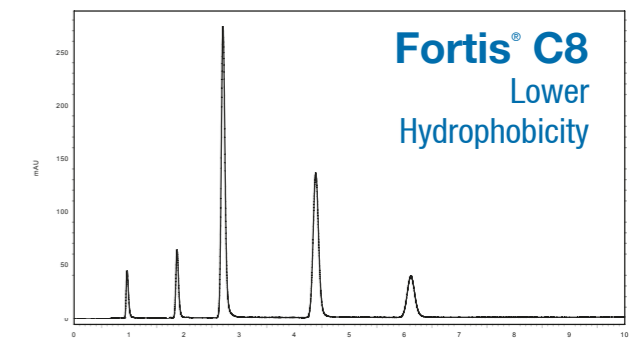
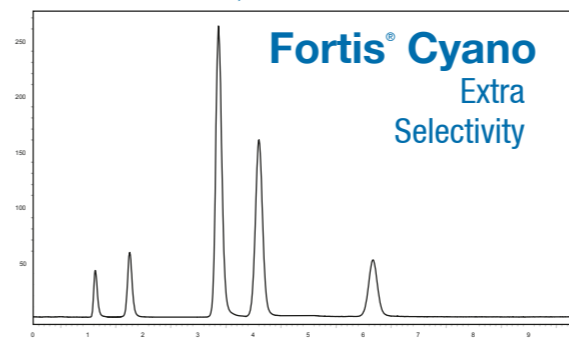
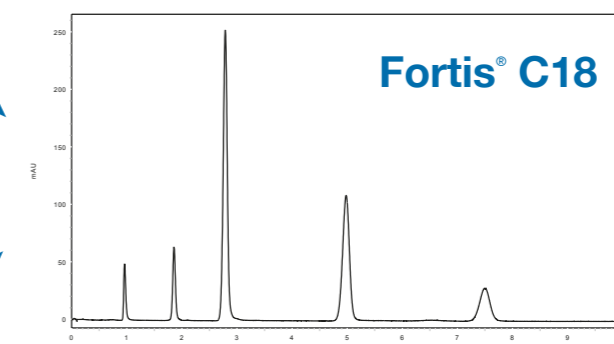
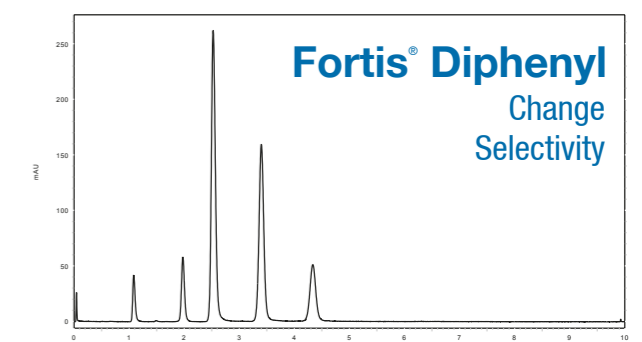
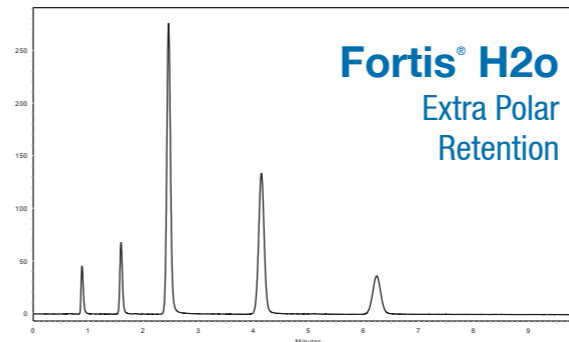
- Cyano functionality
- RP or NP use
- Explosives
- Pesticides

Getting Started :

Method development typically starts with a C18 or C8 column, both provide Hydrophobic retention with good peak shapes for neutral, acidic and basic analytes. Generally if retention of polar molecules is also needed then a polar endcapped stationary phase such as Fortis H2o is a good starting choice.

If selectivity is insufficient then Diphenyl or Cyano stationary phases are a good alternative, they will change selectivity and even elution order since they work on dipole characteristics as opposed to just hydrophobicity.

Fortis Cyano is good in normal phase (NP) conditions for polar analytes with COOH, NH2, NHR2 or NR2 groups. If small polar molecules still do not retain then HILIC chromatography is a suitable alternative.



Acidic, Neutral & basic analytes

- Fortis C18
- Fortis C8
- Fortis Diphenyl

Polar acidic molecules

- Fortis H2o
- Fortis HILIC
- Fortis Cyano in NP mode

Polar basic molecules

- Fortis C18 operated at high pH
- Fortis Diphenyl
- Fortis H2o

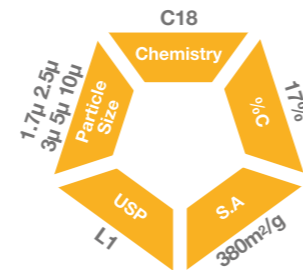
Alternate Selectivity

- Fortis Diphenyl
- Fortis Cyano

Fortis® C18

- Superior Peak Shapes
- pH Range 1-12
- Based on Ultra Pure Silica
- Fully Scalable - UHPLC to Prep

Fortis C18 is a pure silica based stationary phase with unique high and low pH performance. Whether carrying out simple compound screens or complex metabolite identification Fortis C18 will provide the best in peak shape, resolution and extended pH range for method development flexibility.



Optimised Peak Shape

Whatever the compound functionality the optimised hydrophobic bonding of Fortis C18 leads to peak symmetries being near perfect whatever the analyte type.

Basic, Acidic and Neutral analyte performance is first class across the pH spectrum.

- Superior Peak Shapes
- Higher Efficiencies
- Excellent Reproducibility

Column: Fortis™ C18 150x4.6mm 5µ
Luna® C18(2) 150x4.6mm 5µ

Mobile Phase: A - H₂O + 0.1% Formic acid
B - ACN + 0.1% Formic acid

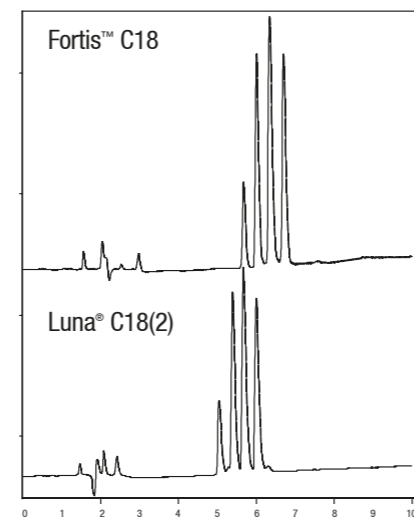
Gradient: 25 - 40% in 10min

Flow: 1ml/min

Temp: 20°C

Wavelength: 254nm

1. Protriptyline
2. Nortriptyline
3. Amitriptyline
4. Trimipramine

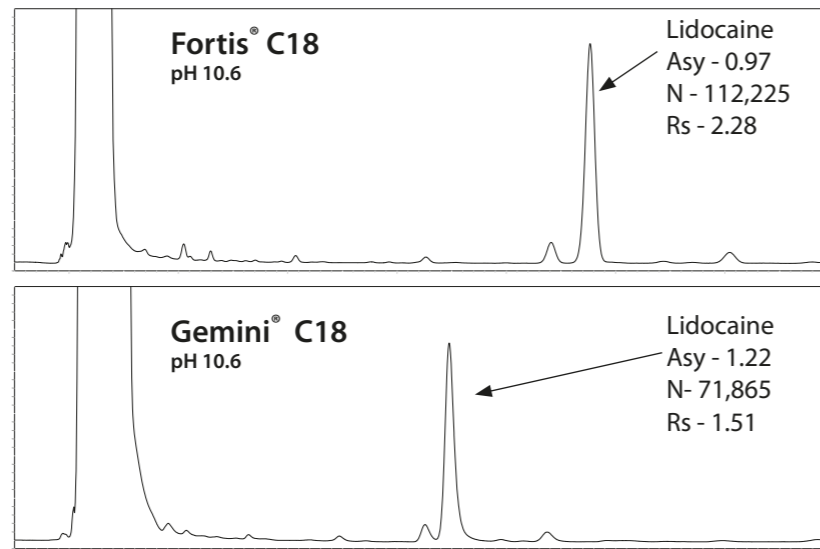


Extreme pH range

Fortis C18 has the ability to not only operate at low pH like other silica based phases, but also to operate at high pH like hybrid phases to aid with basic analyte retention and performance.

The ability to quickly equilibrate from formic acid or TFA into ammonia or bicarbonate aids in method development. Mass transfer, loadability and precision of a silica matrix are all maintained.

- Higher Efficiency than Hybrids
- Excellent Reproducibility
- Retain Polar Basic Analytes

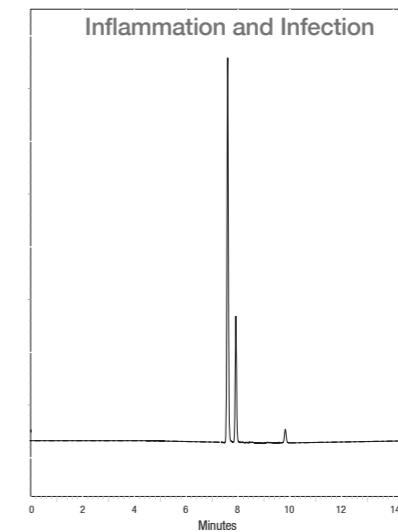


Columns: 150x4.6mm 3µ Mobile Phase: 50:50 0.1% NH₃ : MeCN Flow: 1.0ml/min Temp: 25°C Wavelength: 230nm

Extended operating pH range

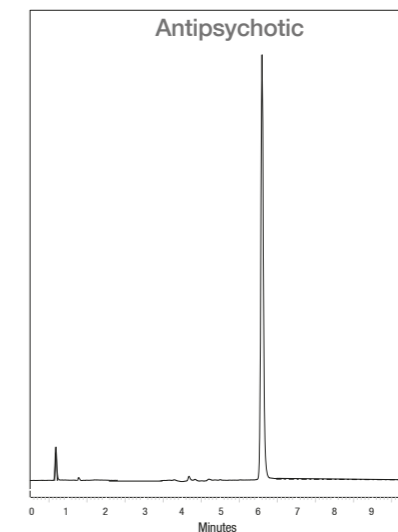
Column: Fortis C18 100x4.6mm 3µ
p/n: F18-050503
Mobile Phase: A - H₂O + 0.1% Formic acid
B - ACN + 0.1% Formic acid
Gradient: 10 - 50% in 10min
Flow: 1ml/min
Temp: 20°C
Wavelength: 254nm

1. Dexamethasone
2. Neomycin Sulphate
3. Acetic acid



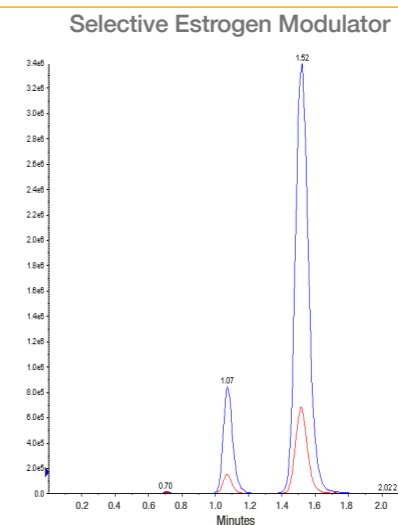
Column: Fortis C18 50x4.6mm 5µ
p/n: F18-050305
Mobile Phase: A - 50mM NH₄OAc
B - ACN
Gradient: 10 - 40% in 10min
Flow: 1ml/min
Temp: 20°C
Wavelength: 254nm

1. Quetiapine



Column: Fortis C18 50x3.0mm 3µ
p/n: F18-030303
Mobile Phase: 30:70 H₂O + 10mM ammonium bicarbonate : MeOH
Flow: 0.4ml/min
Temp: 25°C
Wavelength: MS Detection

- Raloxifene Glucuronides



Data Courtesy of : Pharmaceutical company, USA

pH 1

pH 6

pH 12

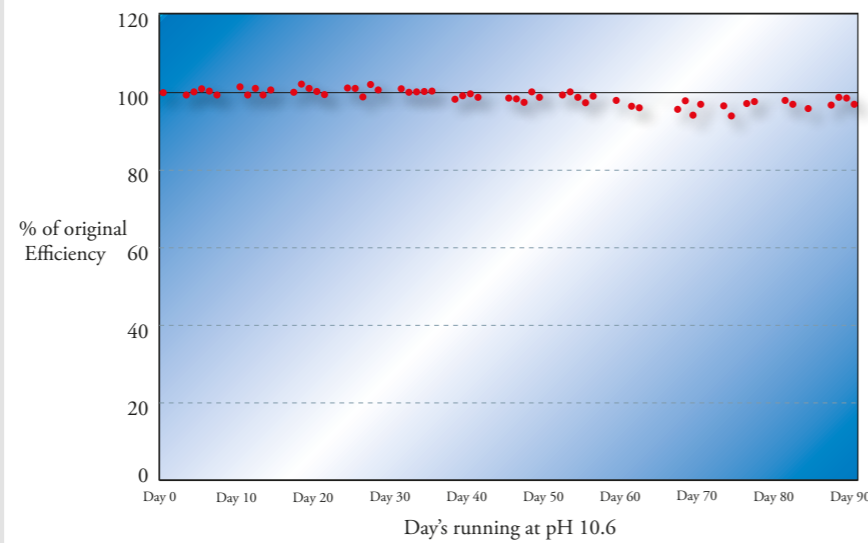
Fortis C18

Fortis® C18

High pH Stability

The unique bonding of Fortis C18 enables stability at extremes of pH to be maintained.

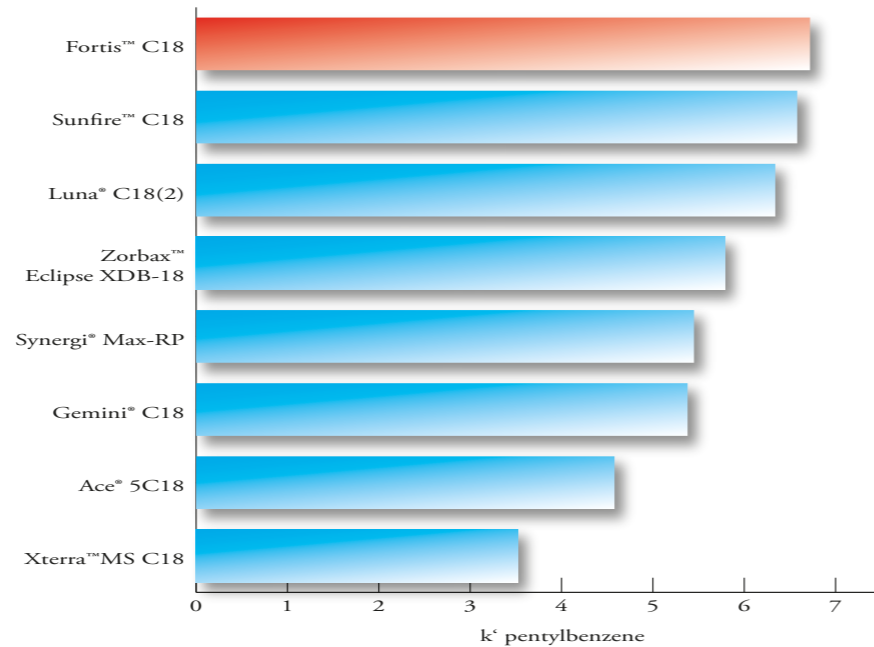
Run continuously in 0.1% ammonia Fortis C18 shows no deterioration in efficiency over a 90 day period.



Advantages of Hydrophobicity

Fortis C18 high surface area combined with the optimised C18 ligand bonding provides high retention for compounds. This is advantageous in a number of ways:

- Higher retention of analytes, more organic modifier can be used to elute, therefore greater MS sensitivity.
- Higher retention of analytes, more organic leads to shorter 'dry-down' in fraction collection.
- Higher retention of analytes, more chance of resolution



Fortis® C18

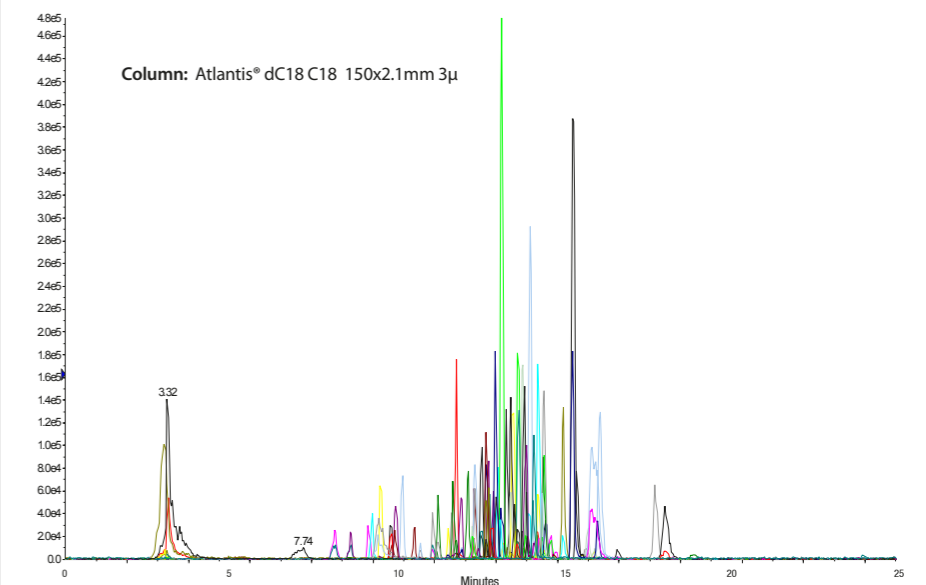
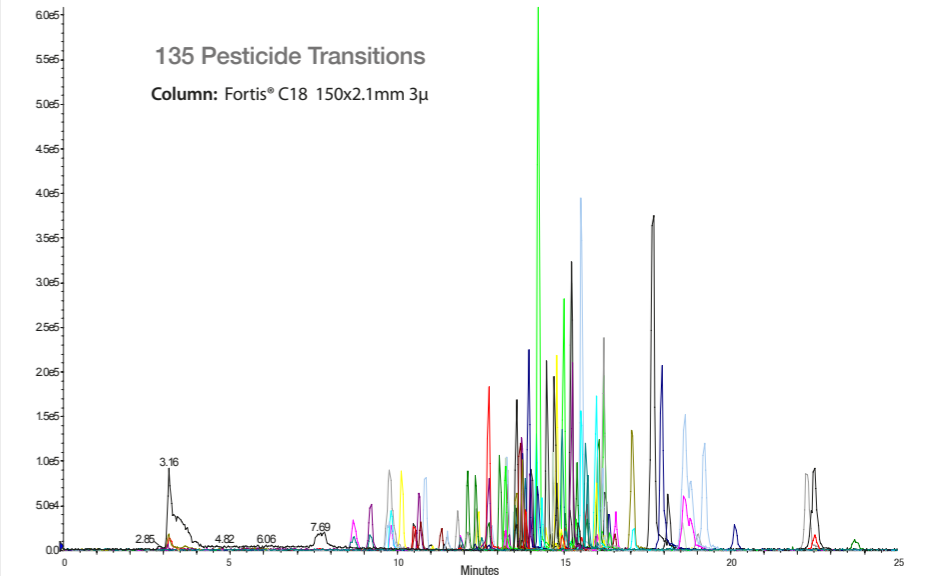
Optimised Resolution

Only by optimising all factors of stationary phase design can the analyst be assured of the best possible chromatography.

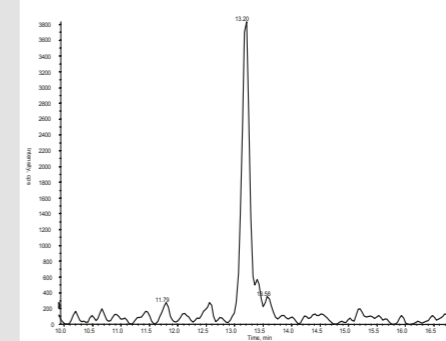
Fortis C18's unique bonded character ensures that not only is reproducibility and robustness assured, but also that resolution is of the highest level. Only by obtaining sharp peak shapes for many analyte types both polar and non polar can this sort of resolution be achieved.

Analysed here are 135 transitions of pesticide residue from an apple matrix. Good LC resolution leads to excellent sensitivity in MS detection.

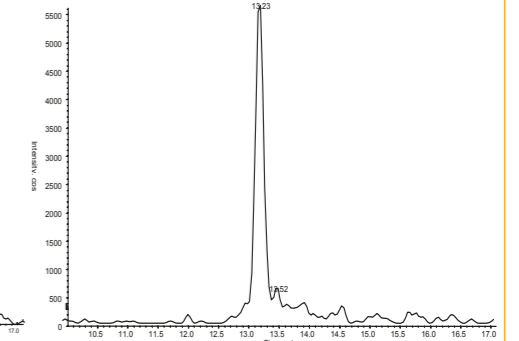
Polar organophosphates such as Acephate and Methamidophos are retained well due to the high surface area of the Fortis C18 phase.



Thiabendazole
0.9% Column Carryover
Fortis® C18



Thiabendazole
1.9% Column Carryover
Atlantis® dC18



Thiabendazole can be bound on the column from one gradient cycle to the next, the optimised hydrophobicity of Fortis C18 means that carryover on column is greatly reduced since there is no secondary silanol activity to bind with analytes.

Data Courtesy of : Central Science Laboratories, UK

Fortis® C18

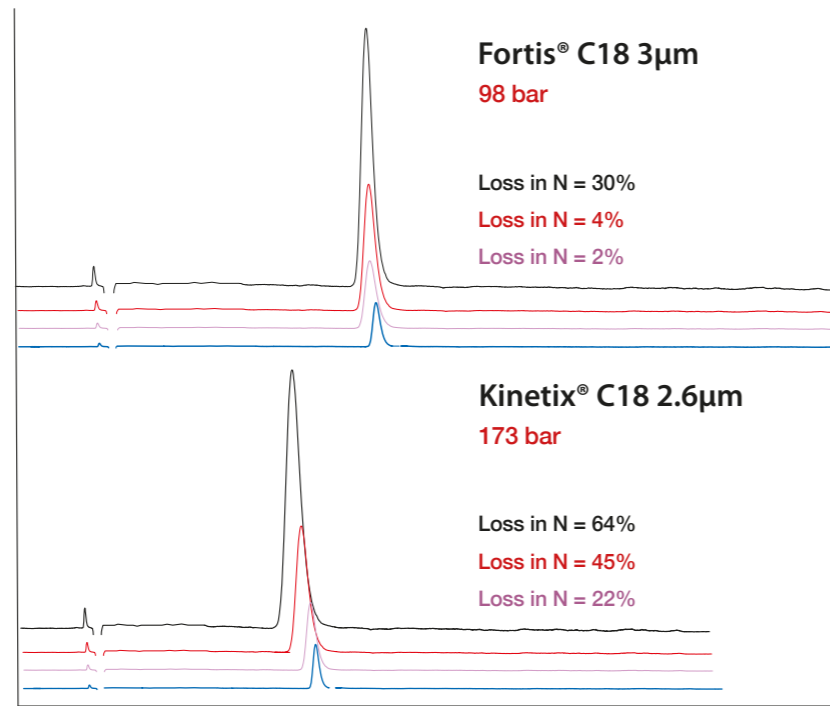
Analyte Loading

Based on a silica template Fortis C18 has high loading capability for those wishing either scale up to preparative separation or needing to load in order to correctly identify low level components.

Having a 380m²/g surface area means that the phase chemistry will not overload causing poor peak shapes. This can be especially important in biological work where a high concentration of matrix interference is also often present

Smaller surface area phases and solid-core-shell particles can suffer from lower loading capability and potentially higher backpressure. Overload can be viewed as loss of efficiency and/or peak shape.

Column: 50x3.0mm
Mobile Phase: H₂O + 0.01% formic acid : ACN
Flow: 0.6ml/min
Temp: 30°C
Diphenhydramine 0.02, 0.2, 0.5 & 1mg/ml



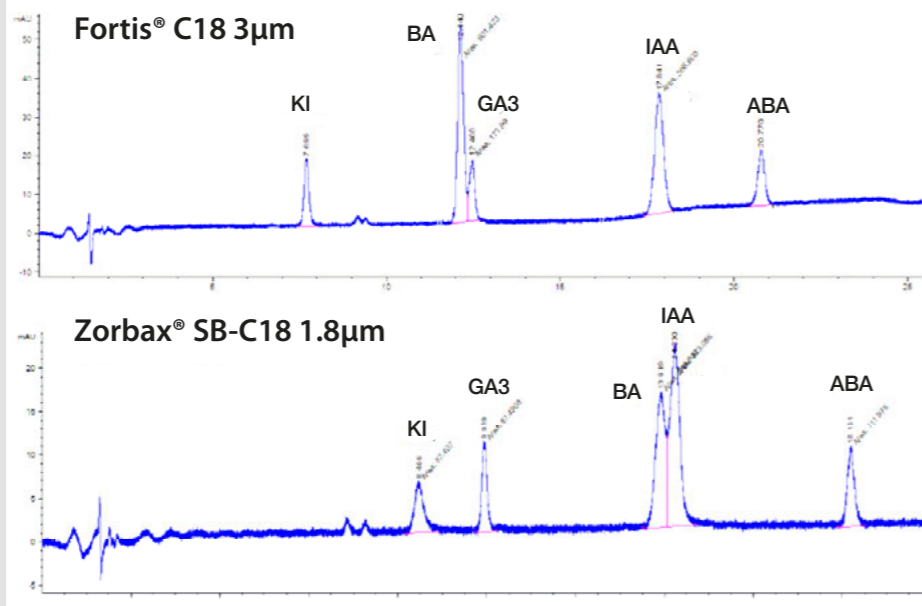
Loss in efficiency figures are in relation to 0.02mg/ml injection (Blue Trace).

Selectivity of C18 - Plant Hormones

All C18 chemistries are capable of providing different selectivity. Selectivity can be just as important as efficiency, here we see radically different peak shapes and resolution regardless of C18 particle size for some plant hormones.

Column: 50x2.1mm
Mobile Phase: A - H₂O + 0.01% formic acid
 B - MeOH + 0.1% formic acid
Gradient: 10-40% in 30min
Flow:
Temp: 30°C
Wavelength: MS Detection

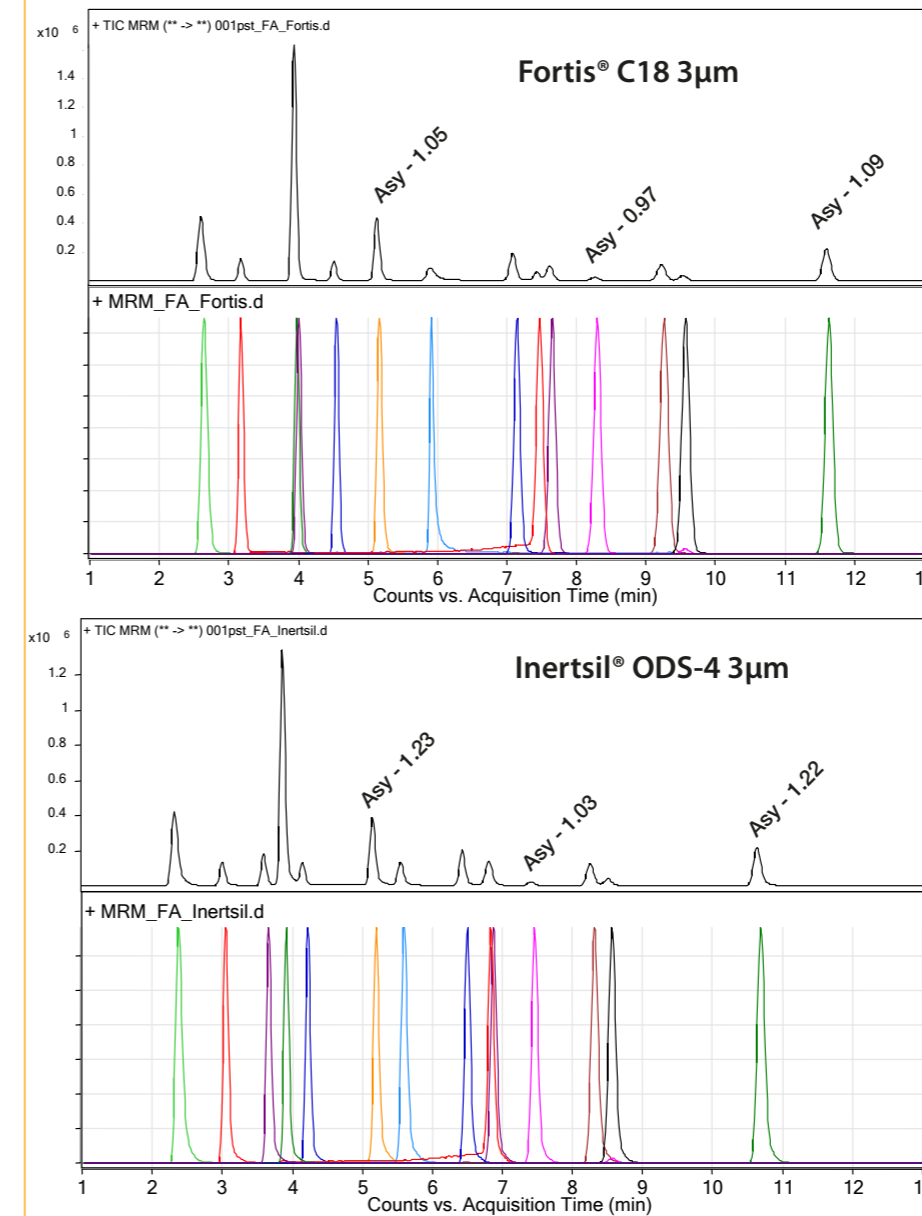
KI = Kinetin
 BA = Benzyladenine
 IAA = Indol-3-yl acetate
 ABA = Abscisic acid
 GA3 = Gibberellin acid



Data Courtesy of : Kings College, UK

Fortis® C18

Selectivity and Peak Shape Comparison



Data Courtesy of : Major Pharmaceutical, Norway

Column: 100x2.1mm 3µ
Mobile Phase: A - H₂O + 0.1% formic acid
 B - ACN
Gradient: 20-35%B in 2min
 35-40% in 5min
 40-50% in 3min
 50-90% in 1min
Flow:
Temp: 30°C
Wavelength: MS Detection

1. Zopiclone
2. Diazepam
3. 7-Aminoflunitrazepam
4. Nitrazepam
5. Desmethyldiazepam
6. 7-Aminonitrazepam
7. 1-Hydroxy-midazolam
8. Midazolam
9. Clonazepam
10. Flunitrazepam
11. Alprazolam
12. Zolpidem
13. Oxazepam
14. 7-Aminoclonazepam

| Fortis C18 | Column Length | | | |
|------------|---------------|------------|------------|------------|
| | 50 | 100 | 150 | 250 |
| 2.1 | F18-0203xx | F18-0205xx | F18-0207xx | - |
| 3.0 | F18-0303xx | F18-0305xx | F18-0307xx | - |
| 4.6 | F18-0503xx | F18-0505xx | F18-0507xx | F18-0509xx |

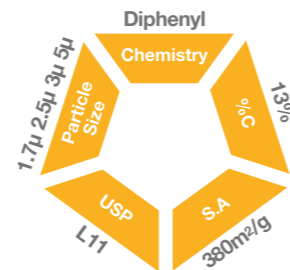
Replace xx -01 for 1.7µm - 02 for 2.5µm - 03 for 3µm - 05 for 5µm - 10 for 10µm

| Fortis C18 Guards | Length | |
|-------------------|--------------|--------------|
| | 2.1 | 4.6 |
| Column Diameter | DC18-0200xxG | DC18-0500xxG |

Fortis® Diphenyl

- **Unique Selectivity**
- **Separate Positional Isomers**
- **No "MS bleed", Stable Hydrophobic Ligand**
- **Enhanced Polar Retention**

Fortis Diphenyl is designed to provide characteristics which will enhance selectivity. It provides the analyst with extra retention of compounds containing aromatic functionality. Extra selectivity and retention can be found for polar substrates, along with metabolite profiling. Fortis Diphenyl is now available in 1.7µm particle size for UHPLC.

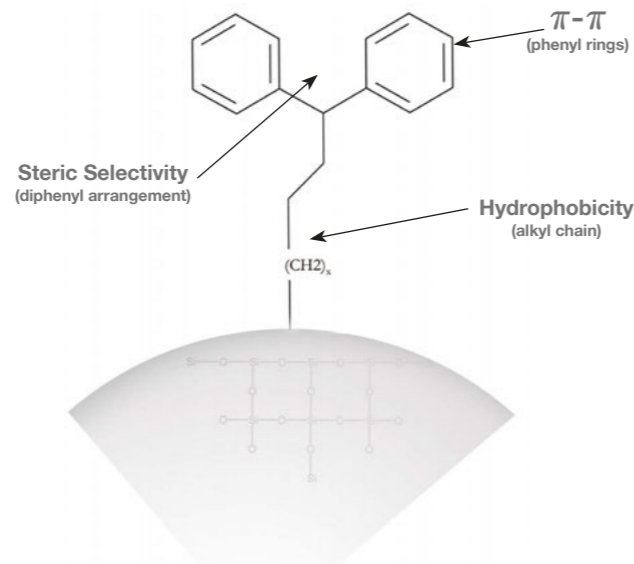


Unique Functionality

Fortis Diphenyl is based upon a unique di-phenyl functionality. Three controlled mechanisms of interaction can occur.

This allows for unique resolution of closely related species, and metabolites. No complex mobile phases are necessary simplifying method development.

- $\pi-\pi$
- **High Selectivity**
- **Resolution Enhanced**
- **Sharp Peak Shapes**
- **Highly Stable Diphenyl Ligand**

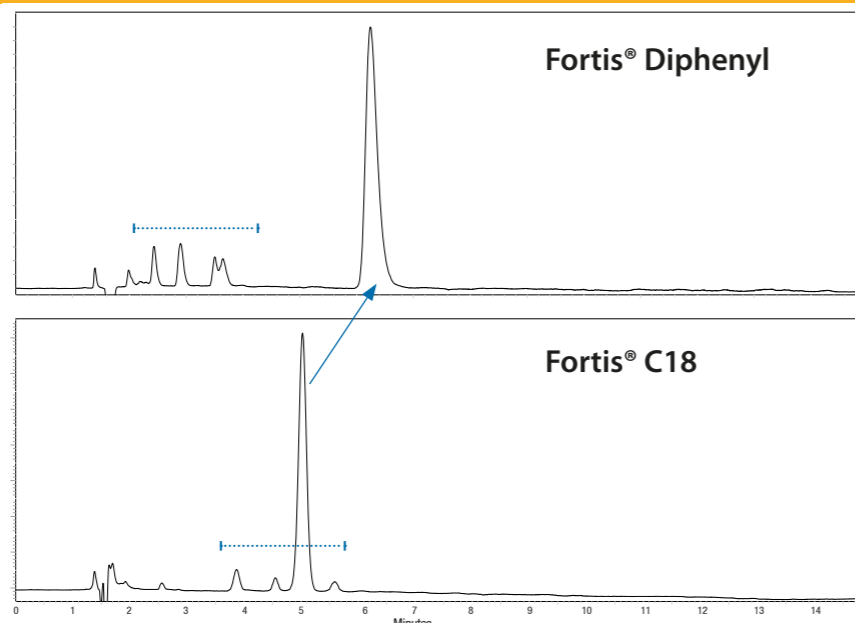


Diphenyl vs C18 Selectivity

Selectivity of the Fortis Diphenyl is radically different to that of a C18 stationary phase.

In this pharmaceutical mixture we can see an increase in retention of the parent drug, whilst the degradents are all eluted quickly, removing them from co-elution with the parent.

Selectivity such as this can be extremely useful, combined with the ability to separate closely related species such as metabolites and positional isomers.



Data Courtesy of : Major Pharmaceutical company, USA

Metabolite Profiling

Fortis Diphenyl's extended selectivity leads to its ability to discriminate between very closely related species, such as those often associated as metabolites or excipients. The stationary phase's three modes of interaction allow subtle changes in positional spacing, loss or gain of an atom or functional group to be differentiated and separation to be achieved.

Separate Positional Isomers

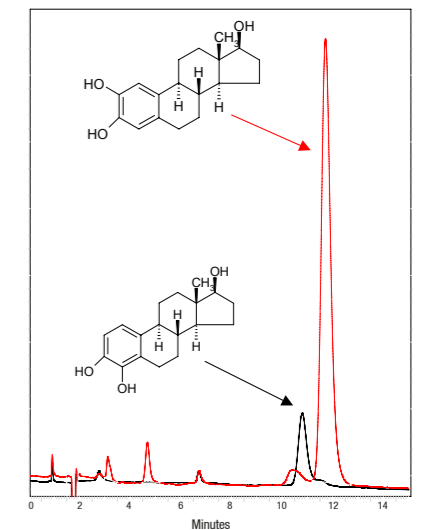
Selectivity of compounds normally difficult to resolve on a hydrophobic alkyl chain stationary phase is simplified by the $\pi-\pi$ interactions provided by the phenyl functionality.

In this application two hydroxyestradiol steroids exhibit resolution from each other, which is not achievable on alkyl chain phases. No complex mobile phases are necessary.

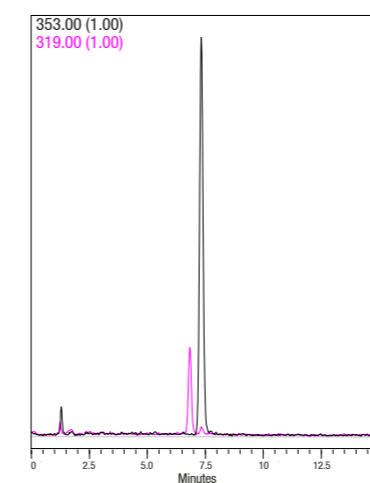
- **Isomer Selectivity**
- **Metabolite Resolution**
- **Alternate Selectivity**

Column: Fortis Diphenyl 150x4.6mm 5µ
p/n: FPH-050705
Mobile Phase: 40:60 H₂O : MeOH
Flow: 1ml/min
Temp: 20°C
Wavelength: 210nm

1. 4-Hydroxyestradiol (mw=288.38)
2. 2-Hydroxyestradiol (mw=288.38)



PET Tracer - PK11195

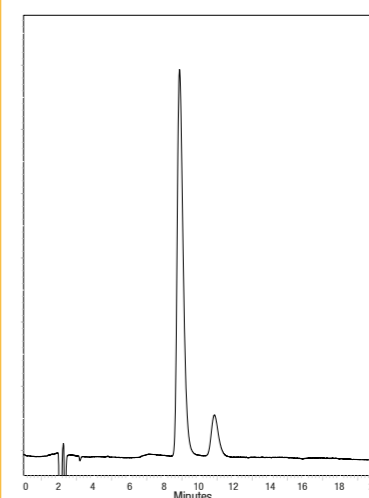


1. Dechlorinated PK11195
2. PK11195

Column: Fortis Diphenyl 150x4.6mm 5µ
p/n: FPH-050705
Mobile Phase: 40 : 60 H₂O : ACN
Flow: 1ml/min
Temp: 25°C
Wavelength: MS Detection

Data Courtesy of : Wolfson Molecular Imaging Centre

Antiarrhythmic



1. Quinidine
2. Dihydroquinidine

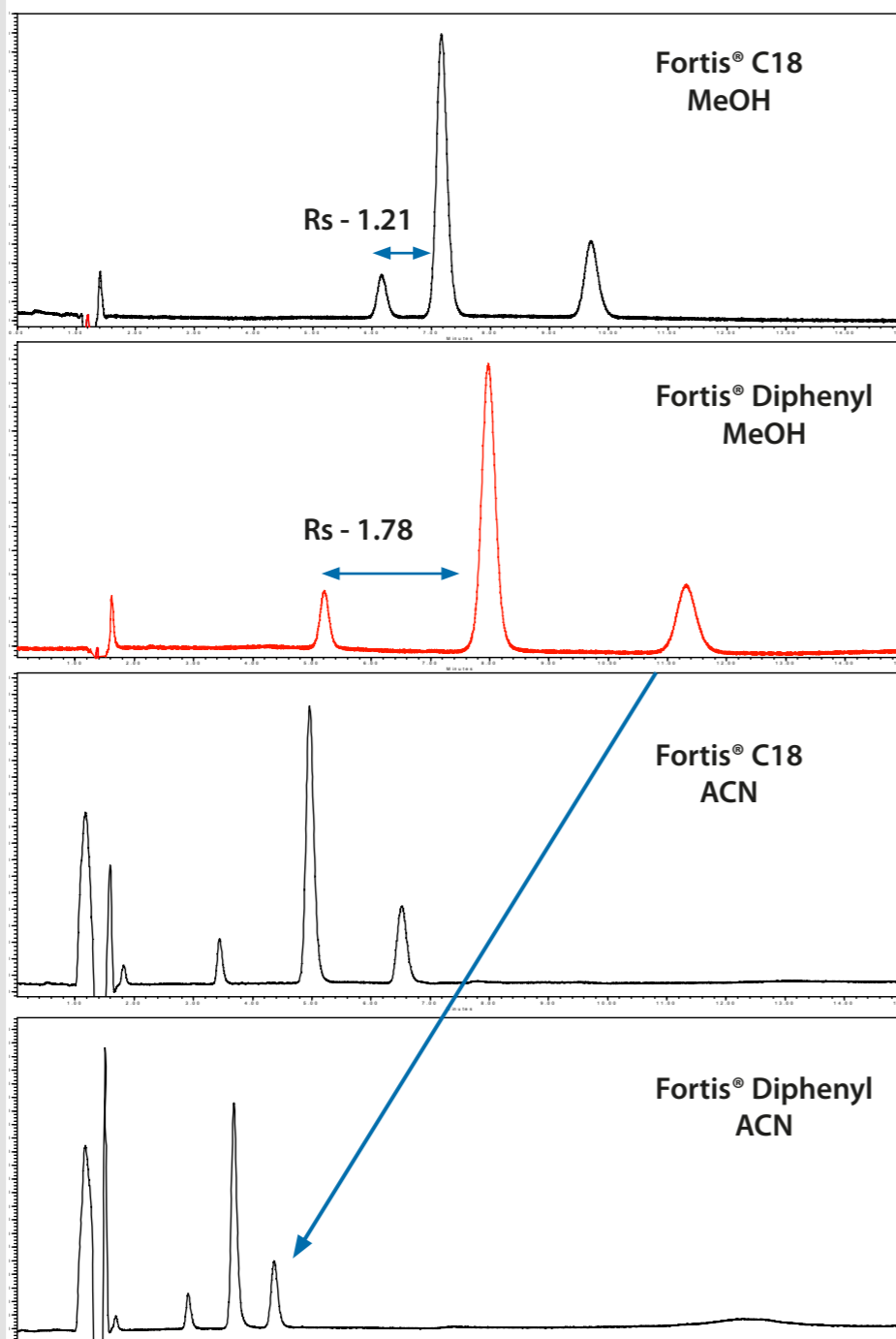
Column: Fortis Diphenyl 150x4.6mm 5µ
p/n: FPH-050705
Mobile Phase: 70 : 30 H₂O + 0.1% formic acid MeOH
Flow: 1ml/min
Temp: 25°C
Wavelength: 235nm

Fortis® Diphenyl

Effect of Mobile phase choice

Choice of mobile phase can be very important in a running a phenyl column. Whilst many people have standardised upon ACN as the organic modifier of choice, MeOH is a better choice in order to let the π - π interactions occur on the phenyl rings. Using ACN can not only suppress retention but also selectivity.

It can be seen how maximum retention and resolution is obtained on Fortis Diphenyl in MeOH mobile phase, even greater than C18. Once the organic modifier is substituted for ACN not only is resolution reduced but also a large amount of retention is lost in relation to that lost on a C18.



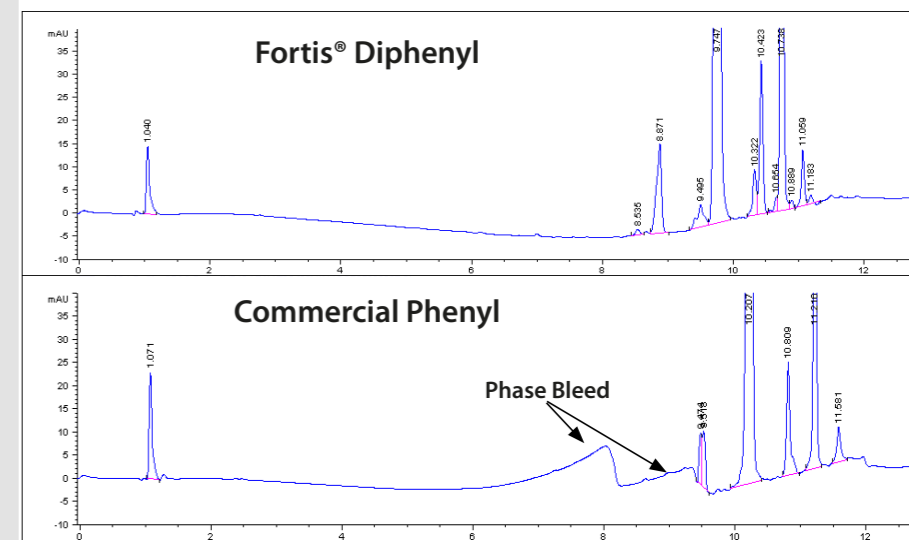
Fortis® Diphenyl

Phenyl phase "bleed"

Due to the chemical nature of the charge on a phenyl ring, when placed in close proximity to a silica surface it does not tend to be a very stable bond. As the phenyl ring contains a chromophore, UV baselines could be seriously affected if the bonding is not stable.

Fortis Diphenyl is a more stable bonding process since the alkyl chain ligand removes the dipolar phenol/silica interactions.

- No observable "MS-bleed"
- Clean baselines
- No sample contamination



Data Courtesy of : Major Pharmaceutical company, UK

| Fortis Diphenyl | Column Length | | | |
|-----------------|---------------|------------|------------|------------|
| | 50 | 100 | 150 | 250 |
| 2.1 | FPH-0203xx | FPH-0205xx | FPH-0207xx | - |
| 3.0 | FPH-0303xx | FPH-0305xx | FPH-0307xx | - |
| 4.6 | FPH-0503xx | FPH-0505xx | FPH-0507xx | FPH-0509xx |

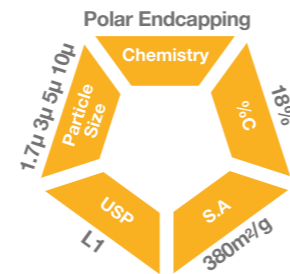
Replace xx - 01 for 1.7 μ m - 02 for 2.5 μ m - 03 for 3 μ m - 05 for 5 μ m - 10 for 10 μ m

| Fortis Diphenyl Guards | Length |
|------------------------|------------------|
| Column Diameter | 10 |
| | 2.1 DCPH-0200xxG |
| | 4.6 DCPH-0500xxG |

Fortis® H2o

- Retention of Polars by Polar Endcapping Group
- Enhanced Resolution
- 100% Aqueous Compatible
- Fully Scalable

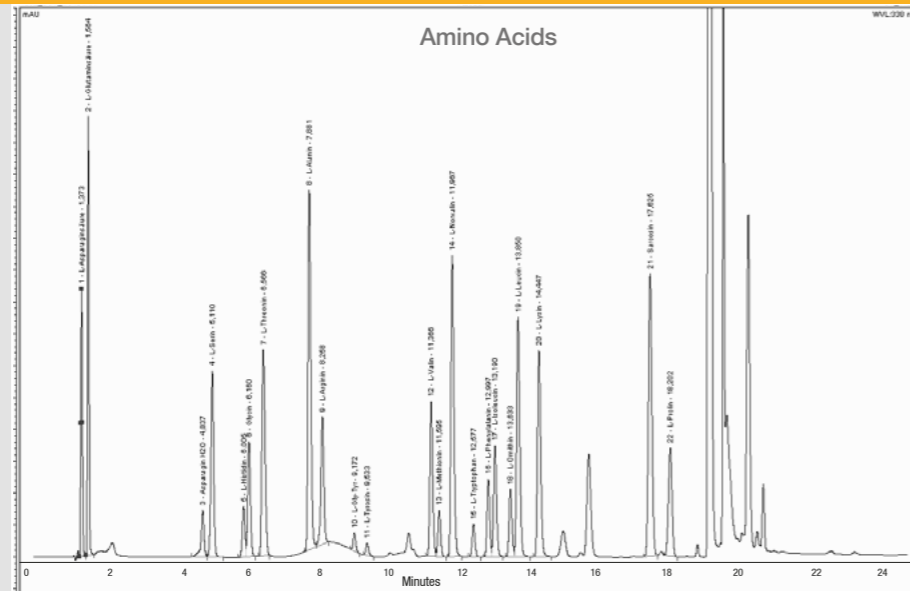
Fortis H2o is designed to aid in the separation and retention of polar analytes. Complex mobile phase systems can be bypassed if sufficient retention can be provided by the stationary phase chemistry. Fortis H2o is designed to supply additional interaction with polar molecules which allows their successful retention.



Retention of Polar analytes - Amino Acids

Column : Fortis H2o 150x2.1mm 5µ
p/n : FH0-020705

- | | |
|--------------------|---------------------|
| 1. L-Aspartic acid | 12. L-Valine |
| 2. L-Glutamic acid | 13. L-Methionine |
| 3. Asparagine | 14. L-Norvalin |
| 4. L-Serine | 15. L-Tryptophan |
| 5. L-Histidine | 16. L-Phenylalanine |
| 6. Glycine | 17. L-Isoleucine |
| 7. L-Threonine | 18. L-Ornithine |
| 8. L-Alanine | 19. L-Leucine |
| 9. L-Arginine | 20. L-Lysine |
| 10. L-Gly-Tyr | 21. Sarcosin |
| 11. L-Tyrosin | 22. L-Proline |

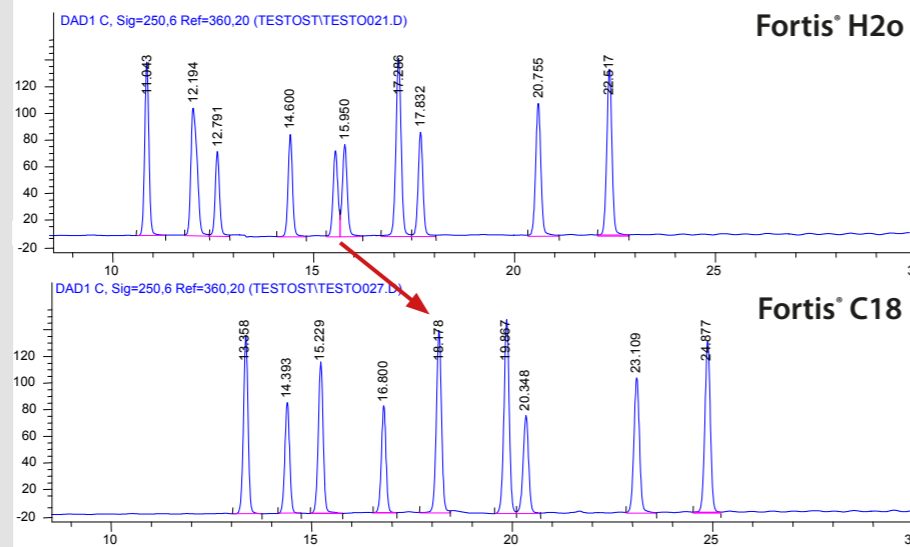


Alternative Selectivity - Steroids

Fortis H2o's unique bonded character ensures that not only is reproducibility and robustness assured, but also that resolution is of the highest level. Different selectivity can also be achieved from that of our Fortis C18 stationary phase.

Column: Fortis H2o 150x2.1mm 3µ
p/n: FH0-020703

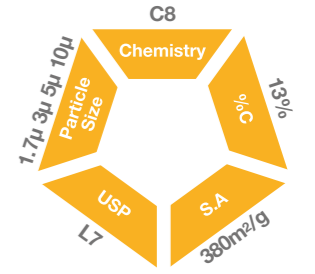
Mobile Phase:
Flow: 0.2ml/min
Temp: 25°C
Wavelength: DAD 250



Fortis® C8

- Reduced Hydrophobicity over C18
- Excellent Peak Shapes
- Fully Scalable

Fortis C8 is designed to provide characteristics similar to Fortis C18 but specifically for situations where less hydrophobicity is required. The same gains in peak shape, efficiency, resolution and scalability are available providing increased productivity to the analyst.



Optimised Peak Shape

Fortis C8 is optimised to provide the best possible peak shapes and efficiency.

Basic, Acidic and Neutral analyte performance is first class.

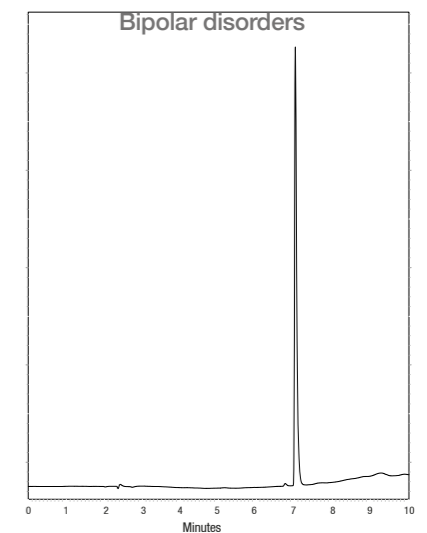
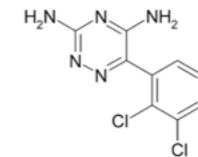
- Higher Efficiencies
- Greater Reproducibility
- Symmetrical peak shapes
- Lower Hydrophobicity

Column: Fortis C8 150x4.6mm 5µ
p/n: F08-050705

Mobile Phase: A - H₂O + 0.1% Formic acid
B - MeOH + 0.1% Formic acid

Gradient: 10 - 90% in 10min
Flow: 1ml/min
Temp: 25°C
Wavelength: 254nm

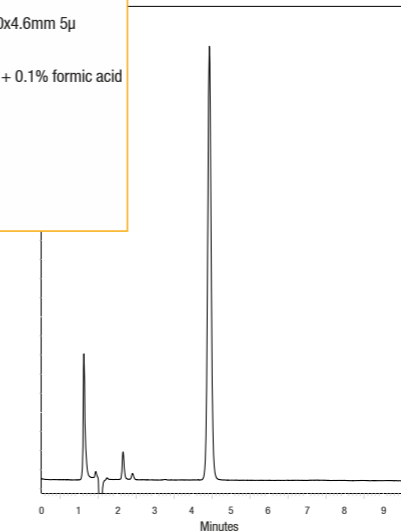
1. Lamotrigine



Anticonvulsant

Column: Fortis C8 150x4.6mm 5µ
p/n: F08-050705
Mobile Phase: 40 : 60 H₂O + 0.1% formic acid ACN
Flow: 1ml/min
Temp: 25°C
Wavelength: 220nm

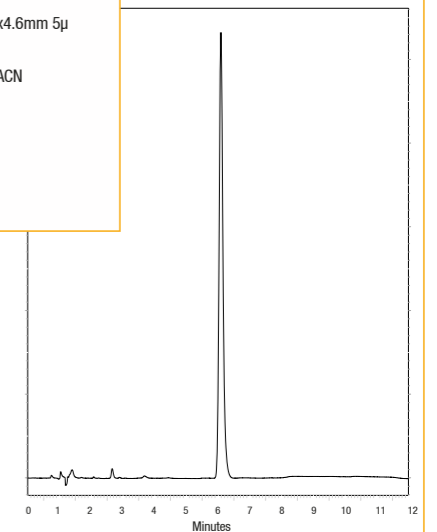
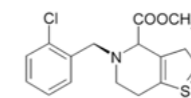
1. Valproate Semisodium



Antiplatelet

Column: Fortis C8 150x4.6mm 5µ
p/n: F08-050705
Mobile Phase: 25 : 75 H₂O : ACN
Flow: 1ml/min
Temp: 25°C
Wavelength: 254nm

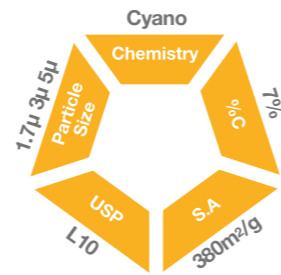
1. Clopidogrel



Fortis[®] Cyano

- Retention of Polars
- Alternative Selectivity
- Normal Phase or Reverse Phase system
- Rapid Equilibration

Fortis Cyano allows the use of aqueous reversed phase conditions to provide less retention for compounds too heavily retained on C18 functionality. However, it can also be used in normal phase solvent systems to retain and separate polar analyte species. Cyano columns are particularly useful for polar species. Fortis Cyano is now also available in 1.7µm particle size for UHPLC work.



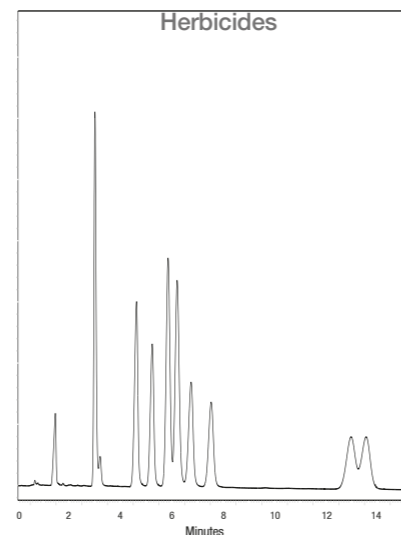
Herbicides

Fortis Cyano is optimised not only to help retain and resolve polar analytes, but also to be complimentary in resolution to other Fortis phases.

- Normal phase as well as Reversed phase use
- Alternative Selectivity
- Rapid Equilibration

Column : Fortis Cyano 50x2.1mm 3µ
p/n : FCN-020303
Mobile Phase: 80:20 H₂O : ACN + 0.2% Acetic acid
Flow : 0.2ml/min
Temp : 20°C
Wavelength: 280nm

1. Barvel
2. Internal Std
3. 2,4-D
4. MCPA
5. PCOC
6. 2,4-DCP
7. 2,4-DP
8. CMPP
9. 2,4-DB
10. MCPB



| Fortis Cyano | Column Length | | | |
|--------------|---------------|------------|------------|------------|
| | 50 | 100 | 150 | 250 |
| 2.1 | FCN-0203xx | FCN-0205xx | FCN-0207xx | - |
| 3.0 | FCN-0303xx | FCN-0305xx | FCN-0307xx | - |
| 4.6 | FCN-0503xx | FCN-0505xx | FCN-0507xx | FCN-0509xx |

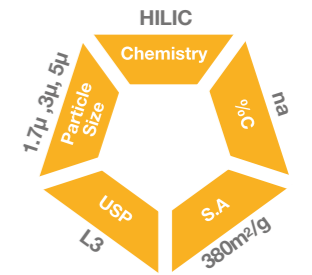
Replace xx - 01 for 1.7µm - 03 for 3µm - 05 for 5µm

| Fortis Cyano Guards | Length |
|---------------------|--------------|
| | 10 |
| Column Diameter 2.1 | DCCN-0200xxG |
| 4.6 | DCCN-0500xxG |

Fortis[®] HILIC

- Retention of Polar Compounds
- Increased MS Sensitivity
- Alternate Selectivity
- Reduced Extraction (SPE) and Dry Down Times.

Fortis HILIC (Hydrophilic Interaction Chromatography) is designed to aid in the separation and retention of very polar analytes. Extended retention is afforded by the partitioning, ion-exchange and hydrogen bonding that can occur on a HILIC stationary phase. Fortis HILIC can increase sensitivity in MS analysis and provide alternate selectivity to that achieved with reversed phase C18. Fortis HILIC is now also available in 1.7µm particle size for UHPLC work.



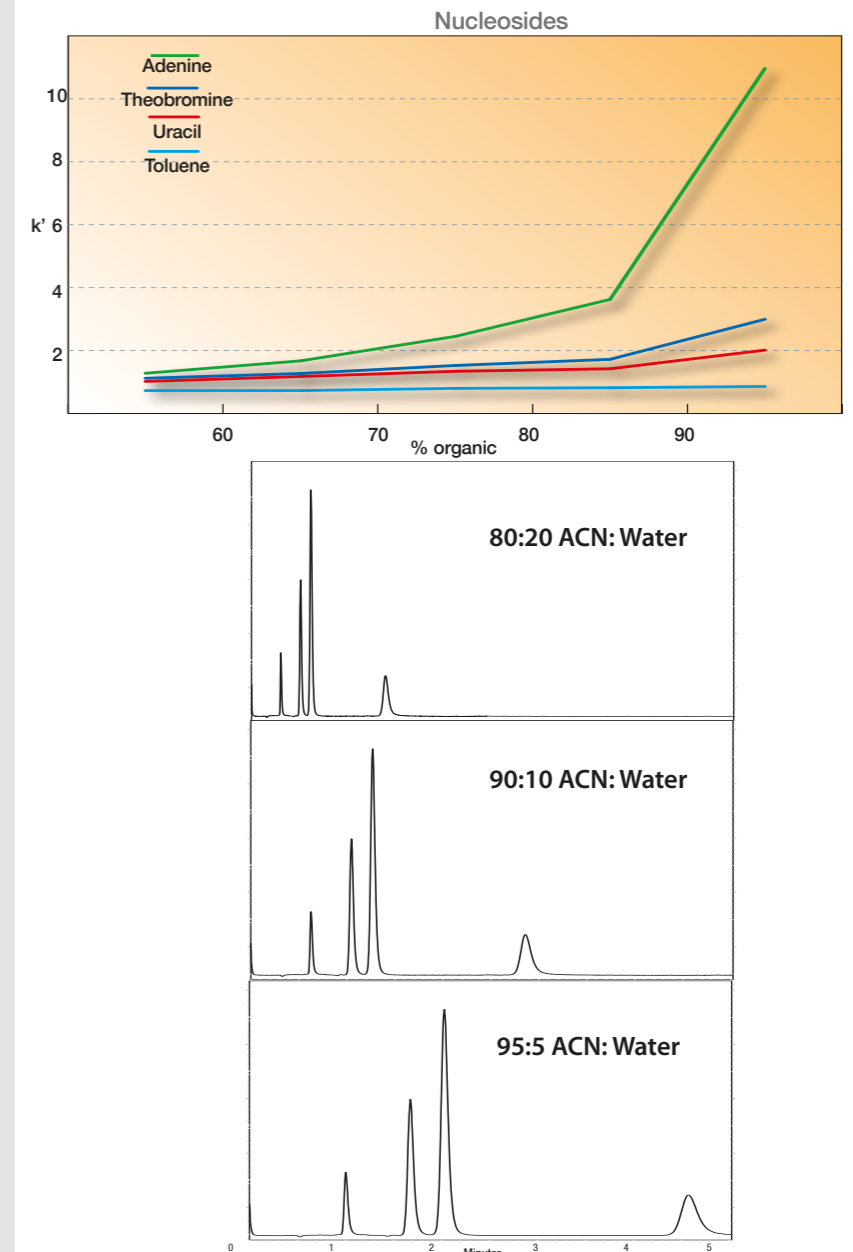
Polar retention in HILIC mode

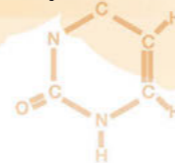
Fortis HILIC is optimised to help retain and resolve polar analytes. By use of high concentrations of organic solvent polar analytes partition with the stationary phase.

- Polar Retention
- Alternative Selectivity
- Rapid Equilibration

Hydrophilic Interaction Chromatography (HILIC) works in a similar way to normal phase chromatography. A polar surface combined with a non-polar mobile phase, typically ACN, allows for partition of the polar analytes and hence retention and separation. Water is used in low concentration as the strong solvent in order to elute the compounds.

Usually no more than 20%-30% water is needed in order to elute most analyte species.

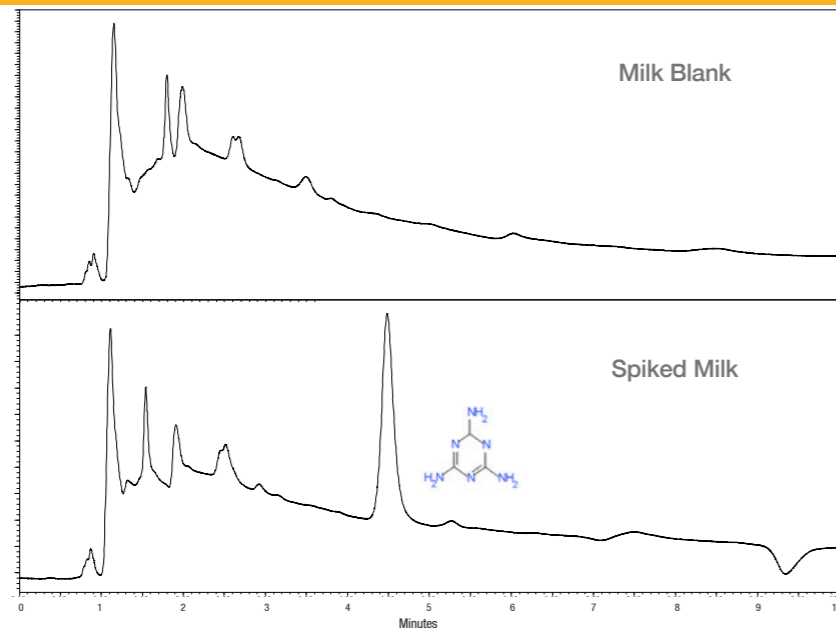




Melamine Contamination

Melamine has been adulterated into many products, but most importantly into baby milk in order to increase the apparent protein content. Due to its highly polar organic nature, 1,3,5-Triazine structure, it can be very difficult to retain in HPLC. HILIC provides a simple method in order to quickly quantitate melamine.

Column : Fortis HILIC 100x2.1mm 3µ
p/n : FHI-020503
Mobile Phase: 90:10 ACN : 20mM NH₃OAc
Flow : 0.2ml/min
Temp : 20°C
Wavelength: 210nm

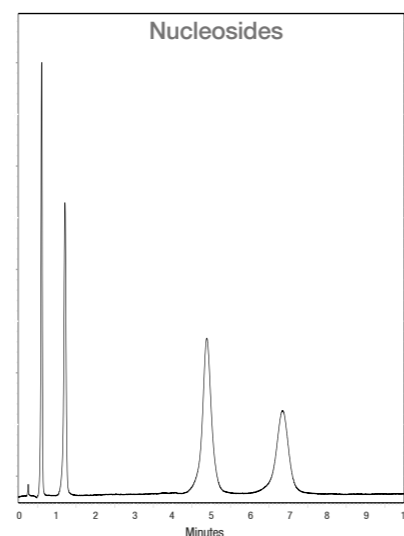


Nucleosides

Nucleosides are typically difficult to retain due to the ribose or deoxyribose sugar that forms part of their structure. Fortis HILIC provides a good tool to retain and separate these polar analytes in simple mobile phase conditions.

Column : Fortis HILIC 50x4.6mm 5µ
p/n : FHI-050305
Mobile Phase: 95:5 ACN : 100mM NH₃OAc
Flow : 1ml/min
Temp : 20°C
Wavelength: 254nm

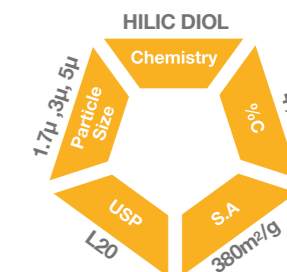
1. Uracil
2. Uridine
3. Cytosine
4. Guanosine



Fortis® HILIC DIOL

- Retention of Polar Compounds
- Increased MS Sensitivity
- Alternate Selectivity
- Reduced Extraction (SPE) and Dry Down Times.

Fortis HILIC DIOL (Hydrophilic Interaction Chromatography) is designed to aid in the separation and retention of very polar analytes. Extended retention is afforded by the partitioning, ion-exchange and hydrogen bonding that can occur on a HILIC stationary phase. Fortis HILIC DIOL can increase sensitivity in MS analysis and provide alternate selectivity to that achieved with reversed phase chemistries. Fortis HILIC DIOL is also available in 1.7µm particle size for UHPLC work.

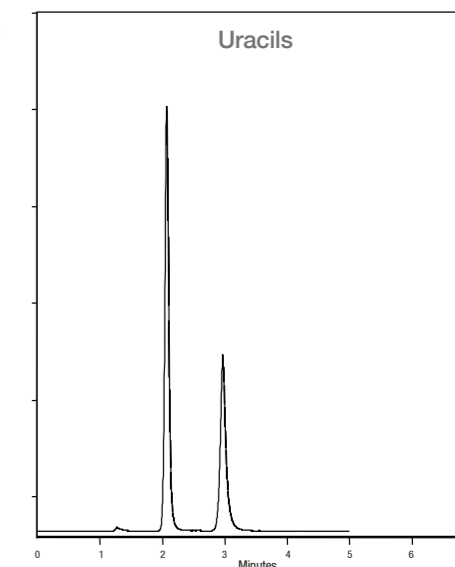
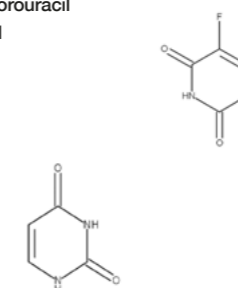


5-Fluorouracil / Uracil

Fortis HILIC DIOL is optimised not only to help retain and resolve polar analytes, but also to be complimentary in resolution to other Fortis phases.

Column : Fortis HILIC DIOL 100x2.1mm 5µ
p/n : FDI-020505
Mobile Phase: 99:1 ACN : H₂O
Flow : 0.2ml/min
Temp : 20°C
Wavelength: 254nm

- Hydrophilic Interaction Mode
- Strong Polar retention
- Rapid Equilibration



| Fortis HILIC DIOL | Column Length | | | |
|-------------------|---------------|------------|------------|------------|
| | 50 | 100 | 150 | 250 |
| 2.1 | FDI-0203xx | FDI-0205xx | FDI-0207xx | - |
| 3.0 | FDI-0303xx | FDI-0305xx | FDI-0307xx | - |
| 4.6 | FDI-0503xx | FDI-0505xx | FDI-0507xx | FDI-0509xx |

| Fortis Amino Guards | Length | |
|---------------------|--------------|--------------|
| | 2.1 | 4.6 |
| Column Diameter | DCDI-0200xxG | DCDI-0500xxG |

Replace xx - 01 for 1.7µm - 03 for 3µm - 05 for 5µm

| Fortis HILIC | Column Length | | | |
|--------------|---------------|------------|------------|------------|
| | 50 | 100 | 150 | 250 |
| 2.1 | FHI-0203xx | FHI-0205xx | FHI-0207xx | - |
| 3.0 | FHI-0303xx | FHI-0305xx | FHI-0307xx | - |
| 4.6 | FHI-0503xx | FHI-0505xx | FHI-0507xx | FHI-0509xx |

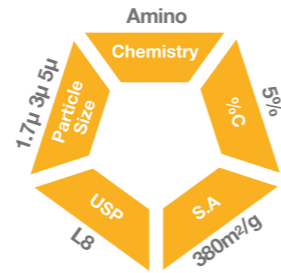
Replace xx - 01 for 1.7µm - 03 for 3µm - 05 for 5µm - 10 for 10µm

| Fortis HILIC Guards | Length | |
|---------------------|--------------|--------------|
| | 2.1 | 4.6 |
| Column Diameter | DCHI-0200xxG | DCHI-0500xxG |

Fortis® Amino

- Retention of Polars
- Alternative Selectivity
- Highly stable ligand density
- Rapid Equilibration

Fortis Amino allows the separation of compounds with reversed phase, normal phase or ion-exchange mechanisms. The Amino bonding is extremely rugged and reproducible to give stable baselines, retention times and selectivity. Amino columns are particularly suited for carbohydrate species. Fortis Amino is now also available in 1.7µm particle size for UHPLC work.



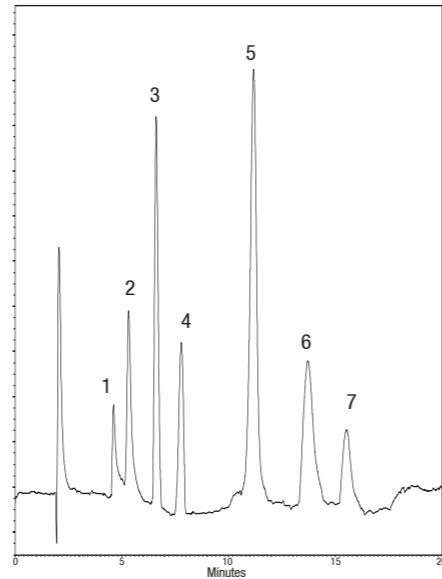
Carbohydrates

Fortis Amino is optimised not only to help retain and resolve hydrogen bonding compounds, but to also be complimentary in resolution to other Fortis phases.

- Exceptional for Carbohydrate
- Alternative Selectivity
- Rapid Equilibration

Column : Fortis Amino 150x4.6mm 5µ
p/n : FNH-050705
Mobile Phase: 75 : 25 ACN : H₂O
Flow : 1.0ml/min
Temp : 30°C
Wavelength: RI

1. Ribose
2. Xylose
3. Fructose
4. Glucose
5. Sucrose
6. Maltose
7. Lactose



| Fortis Amino | Column Length | | | |
|--------------|---------------|------------|------------|------------|
| | 50 | 100 | 150 | 250 |
| 2.1 | FNH-0203xx | FNH-0205xx | FNH-0207xx | - |
| 3.0 | FNH-0303xx | FNH-0305xx | FNH-0307xx | - |
| 4.6 | FNH-0503xx | FNH-0505xx | FNH-0507xx | FNH-0509xx |

Replace xx - 01 for 1.7µm - 03 for 3µm - 05 for 5µm

| Fortis Amino Guards | Length |
|---------------------|--------------|
| | 10 |
| Column Diameter 2.1 | DCNH-0200xxG |
| 4.6 | DCNH-0500xxG |

Column Reproducibility

- Robust Column Bondings
- Assured Peak Shapes
- 20% Lower Asymmetry Specification
- 10% Higher Efficiency

Each Fortis HPLC column is tested using the industries most rigorous QC test, utilising basic analyte probes as well as neutral efficiency markers ensures that the column reproducibility is first class. Fortis columns are also subject to a 20% lower peak shape specification than other manufacturers columns.

QC Test

Fortis stationary phases have been proven to exhibit excellent peak shapes and efficiency for the full range of analyte species.

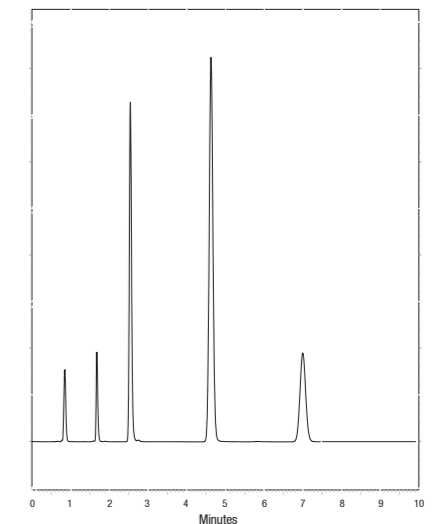
By employing a QC mix that accurately probes silanol activity (the measure of good peak shape) the analyst can be assured of quality time and time again.

Gains are also made in:

- Sample carry over
- Increased Resolution
- Increased Sensitivity

Column: Fortis C18 100x4.6mm 5µ
p/n: F18-050505
Mobile Phase: 60:40 ACN:H₂O
Flow: 1.0ml/min
Temp: 25°C
Wavelength: 254nm

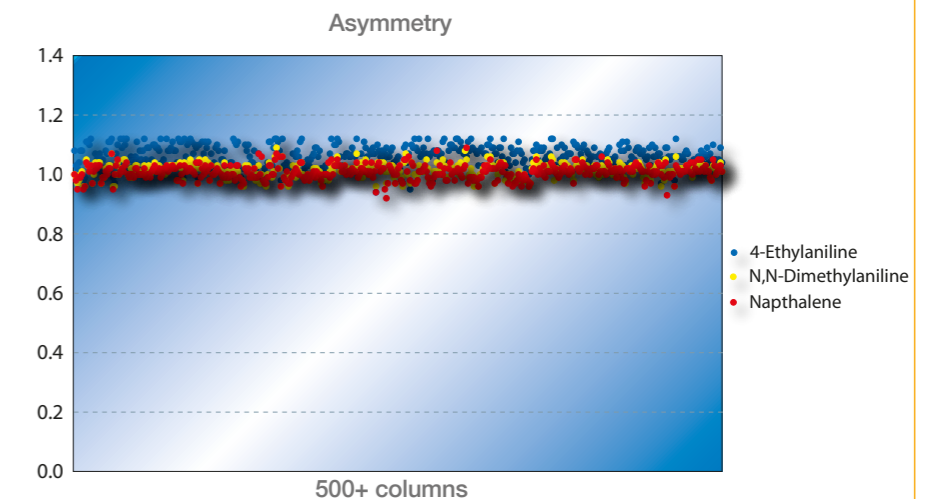
1. Uracil
2. Phenol
3. 4-Ethylaniline
4. N,N-Dimethylaniline
5. Napthalene



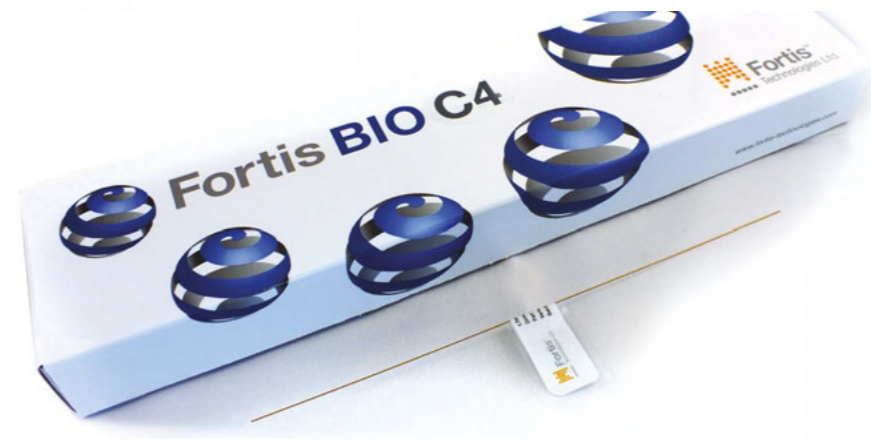
Column Reproducibility

Fortis columns are subject to tight specification using basic analytes in an unbuffered mobile phase system. If there were residual uncovered hydroxyl groups present then these basic probes would highlight this fact.

Fortis Technologies unique bondings combined with the ultra pure silica matrix ensure that peak shapes and lifetime achieved are first class.



Fortis Capillaries



Fortis capillaries are available in 75µm and 200µm i.d. with any phase chemistry and any particle size from the Fortis range.

To find out more about the phase chemistry characteristics please refer to the full Product brochure:

| Fortis C18 | Column Length | Column Length | | | |
|-----------------|---------------|-----------------|-----------------|-----------------|-----------------|
| | | 50 | 100 | 150 | 250 |
| Column Diameter | 75µm | C075-050-xx-F18 | C075-100-xx-F18 | C075-150-xx-F18 | C075-250-xx-F18 |
| | 200µm | C200-050-xx-F18 | C200-100-xx-F18 | C200-150-xx-F18 | C200-250-xx-F18 |

Replace xx - 01 for 1.7µm - 03 for 3µm - 05 for 5µm

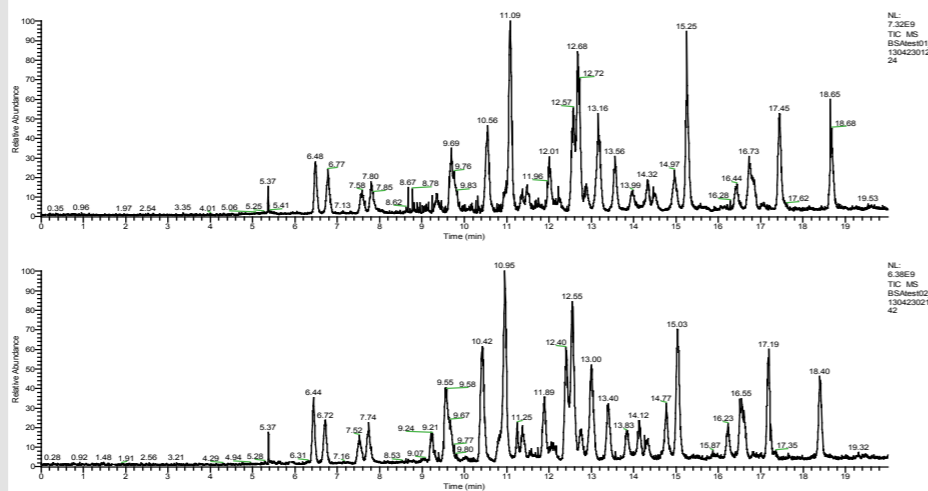
BSA testing capillary

Fortis stationary phases have been proven to provide sharp peaks shapes, critical for high resolution separations in small low dose formats.

10 fmol/microlitre BSA
3µ Fortis C18 75µm x 150mm
40min gradient
300nl/min

Improvements are made in:

- Reduced sample carry over
- Increased Resolution
- Increased Sensitivity



Fortis® Prep

- 5µm and 10µm particles
- High Loadability
- Optimised Packing Efficiency
- Narrow peak profile, High Efficiency and Resolution

Fortis 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.



Columns & Bulk

Fortis Prep columns come in sizes from 30mm to 250mm in length and from 10mm in diameter all the way up to 50mm (2" i.d.).

Pre-packed columns are advised for < 2" i.d. after this Bulk material can be supplied for those wishing to pack DAC (Dynamic Axial Compression) columns.

If preparative columns are packed with the identical media to their analytical counterpart then the ability to scale up with the theoretical calculations will be accurate.

- 10mm, 21.2mm and 30mm i.d.
- 5µm and 10µm particles
- 100g to multi Kg bulk available

Contact us for more information on availability of prep options/bulk packings, or to discuss your application and the ability to scale up. Our technical experts will be happy to discuss your needs with you.



Filter & Guard Options

- Guard system for all 3µm, 5µm and 10µm phases
- Low volume in-line filters for LC and UHPLC
- Maintain chromatographic integrity

Fortis Guards and filters are designed to ensure that erroneous materials do not find their way onto the more important and expensive analytical column. Guards are available in sizes to match all analytical and preparative column dimensions. Filters are particularly suitable for short fast LC/MS (Pace™) columns and UHPLC columns.



- Direct connect guard system for all 3µm, 5µm and 10µm phases
- Quick replacement cartridges
- Highly Cost Effective

| 5µm Fortis Guard Cartridges | |
|-----------------------------|------------------------------|
| DCGUA-1 | Guard Cartridge Holder |
| DCxx-040005G/2 | 10x4mm Fortis 5µm Guard pk 2 |
| DCxx-040005G/4 | 10x4mm Fortis 5µm Guard pk 4 |
| DCxx-020005G/2 | 10x2mm Fortis 5µm Guard pk 2 |
| DCxx-020005G/4 | 10x2mm Fortis 5µm Guard pk 4 |

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

Replace xx 18 for Fortis C18 PH for Fortis Diphenyl H0 for Fortis H2o 08 for Fortis C8 CN for Fortis Cyano HI for Fortis HILIC



- Preparative guard system 10mm & 21.2mm
- Quick replacement cartridges
- Highly Cost Effective
- Reduced volume coupler available



- In-line Filter for all LC columns
- Low volume in-line filters
- Change over time is seconds not minutes

Fortis in-line filters are fingertight direct connect design, fitting in between the column and the conventional peek fitting to filter out particulate matter, it contains low dead volume and pressure. In-line filters are ideal for very short fast columns such as Fortis Pace™ LC/MS columns where extra packed bed from a guard would be detrimental.

In-line filters are also available in UHPLC format, capable of withstanding the elevated pressures involved.



- Filter for all UHPLC columns
- No backpressure increase
- Increase lifetime of UHPLC columns
- Low volume in-line filter
- Change over time is seconds not minutes

| Analytical In-line Filters | |
|----------------------------|--------------------------|
| 2-SAV5 | 2µm In-line filter pk 5 |
| 2-SAV10 | 2µm In-line filter pk 10 |

| UHPLC In-line Filters | |
|-----------------------|---------------------------|
| UHPSAV2 | UHPLC In-line filter pk 2 |
| UHPSAV4 | UHPLC In-line filter pk 4 |

Part number tables

| Fortis C18 | | Column Length | | | | | |
|-----------------|-----|---------------|------------|------------|------------|------------|------------|
| | | 20 | 30 | 50 | 100 | 150 | 250 |
| | 2.1 | F18-0201xx | F18-0202xx | F18-0203xx | F18-0205xx | F18-0207xx | - |
| Column Diameter | 3.0 | - | F18-0302xx | F18-0303xx | F18-0305xx | F18-0307xx | - |
| | 4.6 | - | F18-0502xx | F18-0503xx | F18-0505xx | F18-0507xx | F18-0509xx |

Replace xx -01 for 1.7µm -02 for 2.5µm -03 for 3µm -05 for 5µm -10 for 10µm

| Fortis Diphenyl | | Column Length | | | | | |
|-----------------|-----|---------------|------------|------------|------------|------------|------------|
| | | 20 | 30 | 50 | 100 | 150 | 250 |
| | 2.1 | FPH-0201xx | FPH-0202xx | FPH-0203xx | FPH-0205xx | FPH-0207xx | - |
| Column Diameter | 3.0 | - | FPH-0302xx | FPH-0303xx | FPH-0305xx | FPH-0307xx | - |
| | 4.6 | - | FPH-0502xx | FPH-0503xx | FPH-0505xx | FPH-0507xx | FPH-0509xx |

Replace xx -01 for 1.7µm -02 for 2.5µm -03 for 3µm -05 for 5µm -10 for 10µm

| Fortis H2o | | Column Length | | | | | |
|-----------------|-----|---------------|------------|------------|------------|------------|------------|
| | | 20 | 30 | 50 | 100 | 150 | 250 |
| | 2.1 | FHO-0201xx | FHO-0202xx | FHO-0203xx | FHO-0205xx | FHO-0207xx | - |
| Column Diameter | 3.0 | - | FHO-0302xx | FHO-0303xx | FHO-0305xx | FHO-0307xx | - |
| | 4.6 | - | FHO-0502xx | FHO-0503xx | FHO-0505xx | FHO-0507xx | FHO-0509xx |

Replace xx -01 for 1.7µm -03 for 3µm -05 for 5µm

| Fortis C8 | | Column Length | | | | | |
|-----------------|-----|---------------|------------|------------|------------|------------|------------|
| | | 20 | 30 | 50 | 100 | 150 | 250 |
| | 2.1 | F08-0201xx | F08-0202xx | F08-0203xx | F08-0205xx | F08-0207xx | - |
| Column Diameter | 3.0 | - | F08-0302xx | F08-0303xx | F08-0305xx | F08-0307xx | - |
| | 4.6 | - | F08-0502xx | F08-0503xx | F08-0505xx | F08-0507xx | F08-0509xx |

Replace xx -01 for 1.7µm -03 for 3µm -05 for 5µm

| Fortis Cyano | | Column Length | | | | | |
|-----------------|-----|---------------|------------|------------|------------|------------|------------|
| | | 20 | 30 | 50 | 100 | 150 | 250 |
| | 2.1 | FCN-0201xx | FCN-0202xx | FCN-0203xx | FCN-0205xx | FCN-0207xx | - |
| Column Diameter | 3.0 | - | FCN-0302xx | FCN-0303xx | FCN-0305xx | FCN-0307xx | - |
| | 4.6 | - | FCN-0502xx | FCN-0503xx | FCN-0505xx | FCN-0507xx | FCN-0509xx |

Replace xx -01 for 1.7µm -03 for 3µm -05 for 5µm

| Fortis HILIC | | Column Length | | | | | |
|-----------------|-----|---------------|------------|------------|------------|------------|------------|
| | | 20 | 30 | 50 | 100 | 150 | 250 |
| | 2.1 | FHI-0201xx | FHI-0202xx | FHI-0203xx | FHI-0205xx | FHI-0207xx | - |
| Column Diameter | 3.0 | - | FHI-0302xx | FHI-0303xx | FHI-0305xx | FHI-0307xx | - |
| | 4.6 | - | FHI-0502xx | FHI-0503xx | FHI-0505xx | FHI-0507xx | FHI-0509xx |

Replace xx -01 for 1.7µm -03 for 3µm -05 for 5µm -10 for 10µm

| Fortis HILIC DIOL | | Column Length | | | | | |
|-------------------|-----|---------------|------------|------------|------------|------------|------------|
| | | 20 | 30 | 50 | 100 | 150 | 250 |
| | 2.1 | FDI-0201xx | FDI-0202xx | FDI-0203xx | FDI-0205xx | FDI-0207xx | - |
| Column Diameter | 3.0 | - | FDI-0302xx | FDI-0303xx | FDI-0305xx | FDI-0307xx | - |
| | 4.6 | - | FDI-0502xx | FDI-0503xx | FDI-0505xx | FDI-0507xx | FDI-0509xx |

Replace xx -01 for 1.7µm -03 for 3µm -05 for 5µm -10 for 10µm

| Fortis Amino | | Column Length | | | | | |
|-----------------|-----|---------------|------------|------------|------------|------------|------------|
| | | 20 | 30 | 50 | 100 | 150 | 250 |
| | 2.1 | FNH-0201xx | FNH-0202xx | FNH-0203xx | FNH-0205xx | FNH-0207xx | - |
| Column Diameter | 3.0 | - | FNH-0302xx | FNH-0303xx | FNH-0305xx | FNH-0307xx | - |
| | 4.6 | - | FNH-0502xx | FNH-0503xx | FNH-0505xx | FNH-0507xx | FNH-0509xx |

Replace xx -01 for 1.7µm -03 for 3µm -05 for 5µm -10 for 10µm

Applications

| Compound | Use | Column |
|--------------------------|------------------------|--------------------|
| 1,3-Dimethyluric acid | | SpeedCore Diphenyl |
| 11a-Hydroxyprogesterone | Steroid | Fortis H2o |
| 11a-Hydroxyprogesterone | Steroid | Fortis Cyano |
| 17 a-Hydroxyprogesterone | Steroid | Fortis H2o |
| 17-Hydroxyprogesterone | Hormone | Fortis C18 |
| 1-Hydroxy-midazolam | Anxiolytic | Fortis C18 |
| 2,4-D | Herbicide | Fortis Cyano |
| 2,4-DB | Herbicide | Fortis Cyano |
| 2,4-DCP | Herbicide | Fortis C18 |
| 2,4-DP | Herbicide | Fortis Cyano |
| 2,6-Dimethylphenol | | SpeedCore C18 |
| 2,6-Dinitrotoluene | Explosives | Fortis Cyano |
| 2-Hydroxybenzoic acid | Positional Isomers | Fortis Diphenyl |
| 2-Hydroxyestradiol | Positional Isomers | Fortis Diphenyl |
| 2-Nitroaniline | Explosives | Fortis Cyano |
| 3,4-Dimethylphenol | | SpeedCore C18 |
| 3,5-Dimethylphenol | | SpeedCore C18 |
| 3-hydroxyanabsinthin | Sesquiterpene Lactones | Fortis C18 |
| 3-Hydroxybenzoic acid | Positional Isomers | Fortis Diphenyl |
| 3-Methoxytyramine | catecholamine | Fortis HILIC |
| 3-Nitrobenzoic acid | | Fortis C18 |
| 3-Octanon | Fragrance | Fortis C18 |
| 4-Ethylaniline | | Fortis C18 |
| 4-Hydroxybenzoic acid | Positional Isomers | Fortis Diphenyl |
| 4-Hydroxyestradiol | Positional Isomers | Fortis Diphenyl |
| 4-Nitroaniline | Explosives | Fortis Cyano |
| 5-Fluorouracil | anticarcinogen | SpeedCore HILIC |
| 5-HIAA | Catecholamines | Fortis H2o |
| 6-monacetylmorphine | Drugs of Abuse | Fortis C18 |
| 7-Aminoclonazepam | Hypnotic | Fortis C18 |
| 7-Aminoflunitrazepam | Benzodiazepines | Fortis C18 |
| 7-Aminonitrazepam | Anxiolytic | Fortis C18 |
| Absinthin | Sesquiterpene Lactones | Fortis C18 |
| Acetaminophen | Flu Relief | Fortis C18 |
| Acetic acid | Ear Infections | Fortis C18 |
| Adenine | Polars | Fortis HILIC |
| ALA | Amino Acids | Fortis C18 |
| Aldehydes | Aldehydes | Fortis C18 |
| Aliskiren | Renin Inhibitor | SpeedCore C18 |
| Terpineol | Plant Hormone | Fortis C18 |
| Alprazolam | Anxiolytic | Fortis C18 |
| Amiloride | Diuretic | Fortis C18 |
| Amitriptyline | Antidepressant | Fortis C18 |
| Amoxicillin | Antibiotic | Fortis C18 |
| Amphetamine | Drugs of Abuse | Fortis C18 |
| Amprenavir | HIV Drugs | Fortis C18 |

| | | |
|--------------------------------------|------------------------|--------------------|
| Anabsin | Sesquiterpene Lactones | Fortis C18 |
| Anabsinthin | Sesquiterpene Lactones | Fortis C18 |
| Angiotensin I | Peptide | FortisBIO C4 |
| Angiotensin II | Peptide | FortisBIO C18 |
| Apigenin | Natural Dyes | Fortis C18 |
| Apomyoglobin | Protein | FortisBIO C18 |
| ARG | Amino Acids | Fortis C18 |
| Artemisetin | Sesquiterpene Lactones | Fortis C18 |
| Ascorbic acid | Plant Hormone | Fortis C18 |
| Ascorbic acid | Vitamins | Fortis HILIC |
| ASP | Amino Acids | Fortis C18 |
| Atazanavir | HIV Drugs | Fortis C18 |
| Atenolol | Beta Blocker | Fortis H2o |
| Atorvastatin | Statins | Fortis C18 |
| Azithromycin | Antibiotic | Fortis C18 |
| Banvel | Herbicide | Fortis C18 |
| Bendroflumethiazide | Thiazide Diuretic | Fortis H2o |
| Benoquinone acetic acid | | Fortis H2o |
| Benzene | Alkyl Benzenes | Fortis C18 |
| Benzoylcgonine | Drugs of Abuse | Fortis C18 |
| Benzyladenine | Plant Hormone | Fortis C18 |
| Bromazepam | Benzodiazepines | Fortis C18 |
| Butylbenzene | Alkyl Benzenes | Fortis C18 |
| Caffeine | Alkaloid | SpeedCore Diphenyl |
| Campher | Fragrance | Fortis C18 |
| candesartan cilexetil | Hypertension | Fortis C18 |
| Casein | Protein | FortisBIO C18 |
| Casein Tryptic Digest | | FortisBIO C18 |
| Catechol | | SpeedCore C18 |
| Cefachlor | Antibiotic | Fortis C18 |
| Cefadroxil | Antibiotic | Fortis C18 |
| Cefalexin | Antibiotic | Fortis C18 |
| Cefradine | Antibiotic | Fortis C18 |
| Chloramphenicol | Antibiotic | Fortis H2o |
| Cineol | Fragrance | Fortis C18 |
| Ciprofloxacin | Antibiotic | Fortis Diphenyl |
| Citalopram | Antidepressant | Fortis C18 |
| Clonazepam | Hypnotic | Fortis C18 |
| Clopidogrel Hydrogen SO ₄ | Antiplatelet | Fortis C8 |
| Clozapine | Drugs of Abuse | Fortis C18 |
| CMPP | Herbicide | Fortis Cyano |
| co-amoxiclav | Antibiotic | Fortis C18 |
| co-codamol | Pain Relief | Fortis C18 |
| Cortisone | Anti-Inflammatory | Fortis C18 |
| CYS-CYS | Amino Acids | Fortis C18 |
| Cytochrome C | Protein | FortisBIO C18 |
| Cytosine | Nucleosides | Fortis HILIC |

Applications

| | | |
|--------------------------|------------------------|--------------------|
| D3-Digitoxin | Cardiac glycosides | Fortis C18 |
| Dalbavancin | Antibiotic | Fortis Diphenyl |
| Demoxepam | Benzodiazepines | Fortis C18 |
| Desmethyldiazepam | Anxiolytic | Fortis C18 |
| Dexamethasone | Ear Infections | Fortis C18 |
| Diamorphine | opioid analgesic | Fortis H2o |
| Dianette | Alkaloid | Fortis C18 |
| Diazepam | Anti Anxiety | Fortis C18 |
| Diclofenac Sodium | Painkiller | Fortis C18 |
| Diethylaniline | | Fortis C18 |
| Digitoxin | Cardiac glycosides | Fortis C18 |
| Dihydroquinidine | antiarrhythmic | Fortis Diphenyl |
| Diltiazem | High Blood Pressure | Fortis H2o |
| Dimethylaniline | | Fortis C18 |
| Diphenhydramine | Antihistamine | Fortis C18 |
| d-metfetamine | Drugs of Abuse | Fortis C18 |
| DOPAC | Catecholamines | Fortis H2o |
| Dopamine | catecholamine | Fortis HILIC |
| Doxazosin | alpha-blocker | Fortis Diphenyl |
| Entecavir | Antiviral | Fortis Diphenyl |
| Epinephrine | catecholamine | Fortis HILIC |
| Epiyangambin | Sesquiterpene Lactones | Fortis C18 |
| Erythromycin | Erythromycin | Fortis HILIC |
| Estradiol Valerate | | SpeedCore Diphenyl |
| Estradiols | Estradiols | Fortis C18 |
| Fenuron | | Fortis C18 |
| Flucloxacillin | Antibiotic | Fortis C18 |
| Flunitrazepam | Anxiolytic | Fortis C18 |
| Fluoruracil | Polars | Fortis HILIC |
| Fluoxetine | Antidepressant | Fortis C18 |
| Folic Acid | Vitamin | Fortis H2o |
| Fructose | monosaccharide | Fortis Amino |
| Gabapentin | Epilepsy | Fortis C18 |
| Gibberellin acid | Plant Hormone | Fortis C18 |
| Gliclazide | Diabetes | Fortis C18 |
| GLU | Amino Acids | Fortis C18 |
| Glucose | monosaccharide | Fortis Amino |
| GLY | Amino Acids | Fortis C18 |
| GLY-TYR | Peptide | FortisBIO C18 |
| Guanosine | Nucleosides | Fortis HILIC |
| Haloperidol | Antipsychotic | Fortis C18 |
| Heptylbenzene | Alkyl Benzenes | Fortis C18 |
| Hexylbenzene | Alkyl Benzenes | Fortis C18 |
| HIS | Amino Acids | Fortis C18 |
| Holo-Transferrin | Protein | FortisBIO C18 |
| Homogentisic acid | | Fortis H2o |
| Human Growth Hormone | Peptide Hormone | FortisBIO C18 |
| Hydroxy-21-acetate | Steroid | Fortis Cyano |
| Hydroxyphenylacetic acid | | Fortis H2o |

| | | |
|----------------------------|---------------------------|-----------------|
| Hydroxyphenylpyruvic acid | | Fortis H2o |
| Hydroxytisonone-21-acetate | Steroid | Fortis H2o |
| Ibuprofen | Painkiller | Fortis C18 |
| ILE | Amino Acids | Fortis C18 |
| Indol-3-yl-acetate | Plant Hormone | Fortis C18 |
| Insulin | Peptide | FortisBIO C4 |
| Irbesartan | Angiotensin II antagonist | Fortis C18 |
| Isoascorbic acid | Vitamins | Fortis HILIC |
| Isonicotinamide | Positional Isomers | Fortis Diphenyl |
| Ketopelenolide | Sesquiterpene Lactones | Fortis C18 |
| Kinetin | Plant Hormone | Fortis C18 |
| Lactose | disaccharide | Fortis Amino |
| Lamotrigine | Epilepsy | Fortis C8 |
| Lanalool | Fragrance | Fortis C18 |
| Lanandulyl acetate | | Fortis C18 |
| Lansoprazole | Stomach Ulcers | Fortis C18 |
| Lavandulol | | Fortis C18 |
| LEU | Amino Acids | Fortis C18 |
| LEU-Enkephalin | Peptide | FortisBIO C18 |
| Levocetirizine | Antihistamine | Fortis H2o |
| Lidocaine | Irregular Heartbeats | Fortis C18 |
| Limonen | Fragrance | Fortis C18 |
| Linalyl Acetate | Fragrance | Fortis C18 |
| Lopinavir | HIV Drugs | Fortis C18 |
| Loratadine | Antihistamine | Fortis C18 |
| Lorazepam | Anti Anxiety | Fortis Diphenyl |
| LSD | Drugs of Abuse | Fortis C18 |
| Luteolin | Natural Dyes | Fortis C18 |
| LYS | Amino Acids | Fortis C18 |
| Maltose | disaccharide | Fortis Amino |
| MCPA | Agrochemicals | Fortis C18 |
| MCPB | Weed Control | Fortis Cyano |
| m-Cresol | | SpeedCore C18 |
| MDA | Drugs of Abuse | Fortis C18 |
| MDEA | Drugs of Abuse | Fortis C18 |
| MDMA (Ecstasy) | Drugs of Abuse | Fortis C18 |
| Melamine | | Fortis HILIC |
| MET | Amino Acids | Fortis C18 |
| Metanephrine | catecholamine | Fortis HILIC |
| MET-Enkephalin | Peptide | FortisBIO C18 |
| Methamphetamine | Drugs of Abuse | Fortis C18 |
| Methyl Melonic acid | Organic acids | Fortis H2o |
| Methylbenzoate | | Fortis C18 |
| Midazolam | Anxiolytic | Fortis C18 |
| Mirtazapine | Antidepressant | Fortis C18 |
| Morphine | Drugs of Abuse | Fortis C18 |
| N,N-Dimethylaniline | QC Test | Fortis C18 |
| Naphthalene | QC Test | Fortis C18 |
| Nelfinavir | HIV Drugs | Fortis C18 |

Applications

| | | |
|--------------------------|------------------------------|--------------------|
| Neomycin Sulphate | Ear Infections | Fortis C18 |
| Nicotinamide | Positional Isomers | Fortis Diphenyl |
| Nicotinic acid | Vitamins | Fortis HILIC |
| Nitrosinone | | Fortis H2o |
| Nitrazepam | Anxiolytic | Fortis C18 |
| Nitrobenzene | Explosives | Fortis Cyano |
| Nogestrel | | SpeedCore Diphenyl |
| Nordiazepam | Drugs of Abuse | Fortis C18 |
| Normetanephrine | catecholamine | Fortis HILIC |
| Norpinephrine | catecholamine | Fortis HILIC |
| Nortriptyline | Tricyclic Antidepressants | Fortis C18 |
| o-Cresol | | SpeedCore C18 |
| OH-Dalbavancin | Antibiotic | Fortis Diphenyl |
| Olanzapine | antipsychotic | SpeedCore C18 |
| Omeprazole | Stomach Ulcers | Fortis C18 |
| Oseltamivir | Antiviral | Fortis C18 |
| Oxazepam | Hypnotic | Fortis C18 |
| PAH | 16 PAH EPA | Fortis C18 |
| Paracetamol | Flu Relief | Fortis C18 |
| Paroxetine | Antidepressant | Fortis H2o |
| PCOC | Weed Control | Fortis Cyano |
| p-Cresol | | SpeedCore C18 |
| Pentylbenzene | Alkyl Benzenes | Fortis C18 |
| Pesticides | KFDA83 - 59 Pesticides | Fortis C18 |
| PHE | Amino Acids | Fortis C18 |
| Phenol | | SpeedCore C18 |
| Phenoxymethylpenicillin | Antibiotic | Fortis C18 |
| Phenylephrine | Flu Relief | Fortis C18 |
| Pheophorbide | | Fortis C18 |
| Pheophytin | | Fortis C18 |
| PK11195 | PET Tracer | Fortis Diphenyl |
| PK11195 Dechlorinated | PET Tracer | Fortis Diphenyl |
| Prednisolone | Steroid | Fortis H2o |
| Prednisone | Steroid | Fortis H2o |
| Premarin | Estrogens | SpeedCore HILIC |
| PRO | Amino Acids | Fortis C18 |
| Procaine | Anesthetic | Fortis C18 |
| Prochlorperazine Maleate | phenothiazine antipsychotics | Fortis Diphenyl |
| Progesterone | Steroid | Fortis H2o |
| Proguanil | Anti Malarial | Fortis Diphenyl |
| Promethazine theoclate | Nausea | Fortis C18 |
| Propylbenzene | Alkyl Benzenes | Fortis C18 |
| Protriptyline | Antidepressant | Fortis C18 |
| Pyrazoline | | Fortis C18 |
| Pyridine | | Fortis C18 |
| Pyridoxine | Polars | Fortis HILIC |
| Pyropheophytin | | Fortis C18 |
| Quetiapine | antipsychotic | SpeedCore C18 |
| Quinidine | antiarrhythmic | Fortis Diphenyl |

| | | |
|-------------------------|------------------------|--------------------|
| Raloxifene Glucuronides | treat osteoporosis | Fortis C18 |
| Rasagiline | Parkinsons | SpeedCore C18 |
| Resorcinol | | SpeedCore C18 |
| Riboflavin | Vitamins | Fortis HILIC |
| Ribonuclease A | Protein | FortisBIO C18 |
| Ribose | monosaccharide | Fortis Amino |
| Ritonavir | HIV Drugs | Fortis C18 |
| Rosuvastatin | Statins | Fortis C18 |
| Sequinavir | HIV Drugs | Fortis C18 |
| SER | Amino Acids | Fortis C18 |
| Serotonin | Catecholamines | Fortis H2o |
| Sesartemin | Sesquiterpene Lactones | Fortis C18 |
| Simvastatin | High Blood Pressure | Fortis H2o |
| Sotalol | Beta Blocker | Fortis C18 |
| Succinic acid | Organic acids | Fortis H2o |
| Sucrose | disaccharide | Fortis Amino |
| Sulfamerazine | Sulfa Drugs | Fortis C18 |
| Sulfamethoxazole | Sulfa Drugs | Fortis C18 |
| Sulfathiazole | Sulfa Drugs | Fortis C18 |
| Sumatriptan | | UniverSil HS C18 |
| Telmisartan | Hypertension | Fortis C8 |
| Temazepam | Anti Anxiety | Fortis C18 |
| Tenofovir | HIV Drugs | Fortis H2o |
| Terpinen 4 ol | Fragrance | Fortis C18 |
| Testosterone | Hormone | Fortis C18 |
| Theobromine | | SpeedCore Diphenyl |
| Theophylline | Alkaloid | Fortis C18 |
| THR | Amino Acids | Fortis C18 |
| Thymidine (IS) | HIV Drugs | Fortis H2o |
| Tiotropium bromide | bronchodilator | Fortis C18 |
| Toluene | Polars | Fortis HILIC |
| Tramadol | Opioid Painkiller | Fortis C18 |
| Trimipramine | Antidepressant | Fortis C18 |
| TYR | Amino Acids | Fortis C18 |
| Tyrosine | Amino Acids | Fortis H2o |
| Uracil | Nucleosides | Fortis HILIC |
| Uridine | Nucleosides | Fortis HILIC |
| VAL | Amino Acids | Fortis C18 |
| Valproate Semisodium | Manic Depression | Fortis C8 |
| VAL-TYR-VAL | Peptide | FortisBIO C18 |
| Verapamil | Irregular Heartbeats | Fortis C18 |
| Vitamin C | Vitamins | Fortis HILIC |
| Warfarin | anticoagulant | Fortis H2o |
| Xylose | monosaccharide | Fortis Amino |
| Zolpidem | Hypnotic | Fortis C18 |
| Zopiclone | Hypnotic | Fortis C18 |

Fortis Phase Characteristics

| | Particle Size | Surface Area (m ² /g) | %C | Pore Size | pH range | USP |
|--------------------------|----------------|----------------------------------|-----|-----------|----------|-----|
| Fortis C18 | 1.7µ 3µ 5µ 10µ | 380 | 17 | 100 | 1-12 | L1 |
| Fortis H2o | 1.7µ 3µ 5µ | 380 | 18 | 100 | 2-10 | L1 |
| Fortis Diphenyl | 1.7µ 3µ 5µ 10µ | 380 | 13 | 100 | 2-9 | L11 |
| Fortis C8 | 1.7µ 3µ 5µ 10µ | 380 | 13 | 100 | 2-10 | L7 |
| Fortis HILIC | 1.7µ 3µ 5µ 10µ | 380 | N/A | 100 | 2-8 | L3 |
| Fortis HILIC Diol | 1.7µ 3µ 5µ | 380 | 4 | 100 | 2-8 | L20 |
| Fortis Cyano | 1.7µ 3µ 5µ | 380 | 7 | 100 | 2-7 | L10 |
| Fortis Amino | 1.7µ 3µ 5µ | 380 | 5 | 100 | 2-8 | L8 |

| | Particle Size | Surface Area (m ² /g) | %C | Pore Size | pH range | USP |
|----------------------|---------------|----------------------------------|----|-----------|----------|-----|
| FortisBIO C18 | 1.7µ 5µ | 150 | 11 | 300 | 1-10 | L1 |
| FortisBIO C4 | 1.7µ 5µ | 150 | 5 | 300 | 1-10 | L26 |

| | Particle Size | Surface Area (m ² /g) | %C | Pore Size | pH range | USP |
|--|---------------|----------------------------------|-----|-----------|----------|-----|
| SpeedCore C18 | 2.6µ | 140 | 10 | 80 | 2-9 | L1 |
| SpeedCore Diphenyl | 2.6µ | 140 | 7 | 80 | 2-9 | L11 |
| SpeedCore PFP (PentaFluoroPhenyl) | 2.6µ | 140 | 6 | 80 | 2-9 | L43 |
| SpeedCore HILIC | 2.6µ | 140 | N/A | 80 | 2-9 | L3 |

WORLDWIDE AVAILABILITY



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