Fortis®
Technologies Ltd.

Strength in Technology

Fortis Phase Chemistry Guide

Other Product Guides Available

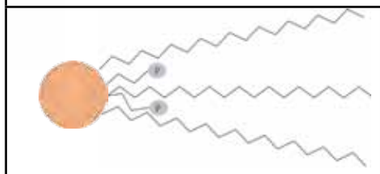
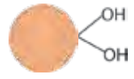
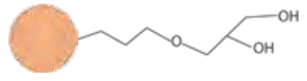
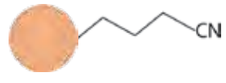
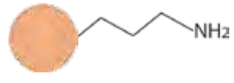
Fortis SpeedCore
- Modern Core-Shell technology
- High speed separations

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

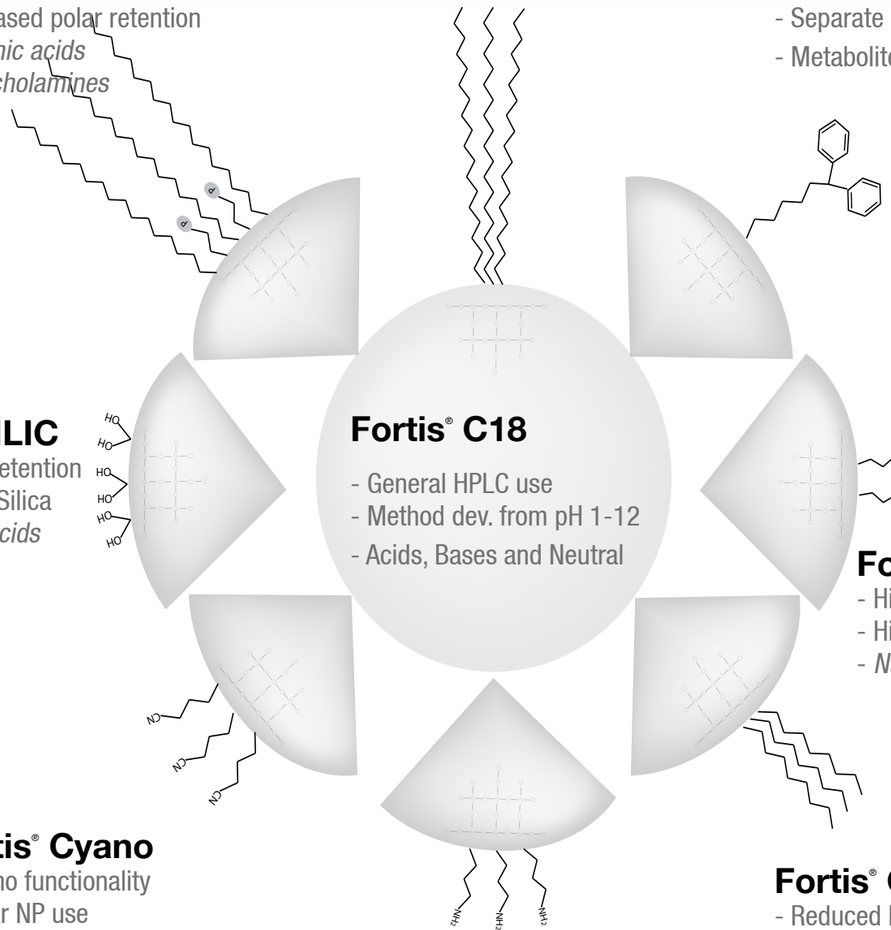
	**Fortis C18** – General UHPLC use – Method Development from pH 1-12	Acids Bases Neutrals
	**Fortis H2o** – Polar endcapped – Increased polar retention	Hydrophilic analytes Organic acids Catecholamines
	**Fortis Diphenyl** – Unique di-phenyl structure – Metabolite profiling – Separate positional isomers	Metabolites Positional Isomers Hydrophilic / Hydrophobic analytes
	**Fortis C8** – General UHPLC use – Method Development	Lipids Steroids Highly Hydrophobic analytes
	**Fortis HILIC** – High polar retention – Homogenous silanol concentration – Improve MS sensitivity	Carboxylic acids Nucleotides Vitamins
	**Fortis HILIC Diol** – Alternate selectivity to bare silica – Stable bonding – HILIC or Normal phase mode	Steroids Proteins Metabolites
	**Fortis Cyano** – Cyano functionality – Reversed phase or Normal phase	Explosives Pesticides Steroids
	**Fortis Amino** – Reproducible, Robust bonding – Reversed phase, Normal phase or Ion exchange mode	Saccarides 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® HILIC
- High Polar Retention
- Highly Pure Silica
- *Carboxylic acids*
- *Nucleotides*

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

Fortis® Amino
- High Polar Retention
- Highly Pure Silica
- *Carbohydrates*

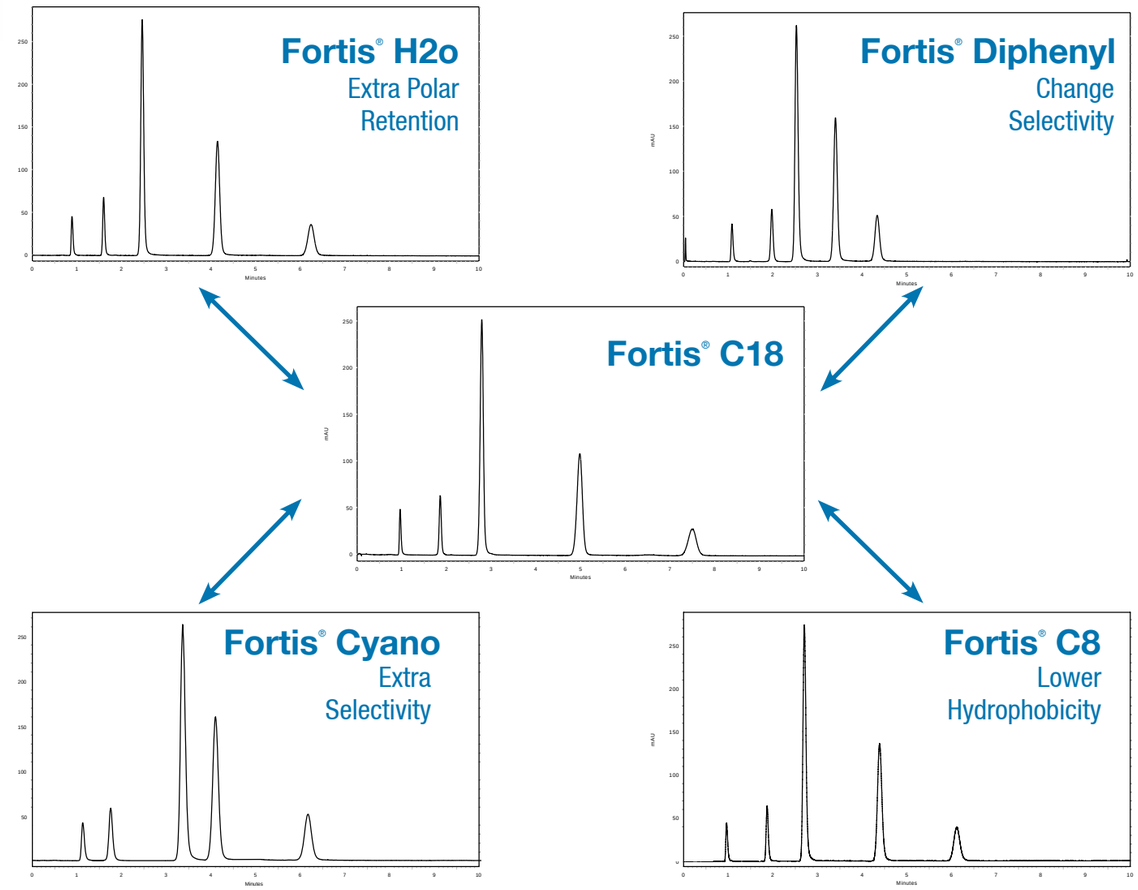
Fortis® C8
- Reduced Hydrophobicity
- *Lipids*
- *Steroids*

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

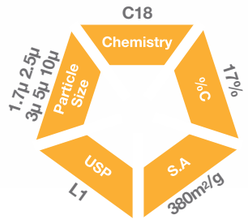
Polar acidic molecules
- Fortis H2o
- Fortis HILIC
- Fortis Cyano in NP mode

Alternate Selectivity
- Fortis Diphenyl
- Fortis Cyano

Method Dev

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 - H_2O + 0.1% Formic acid
B - ACN + 0.1% Formic acid

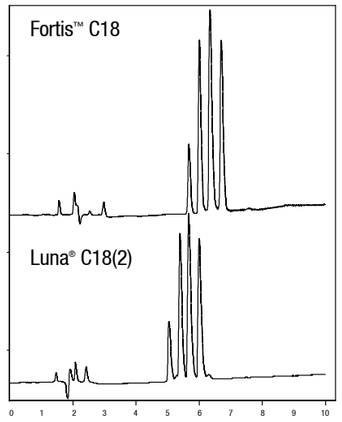
Gradient: 25 - 40% in 10min

Flow: 1ml/min

Temp: 20°C

Wavelength: 254nm

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

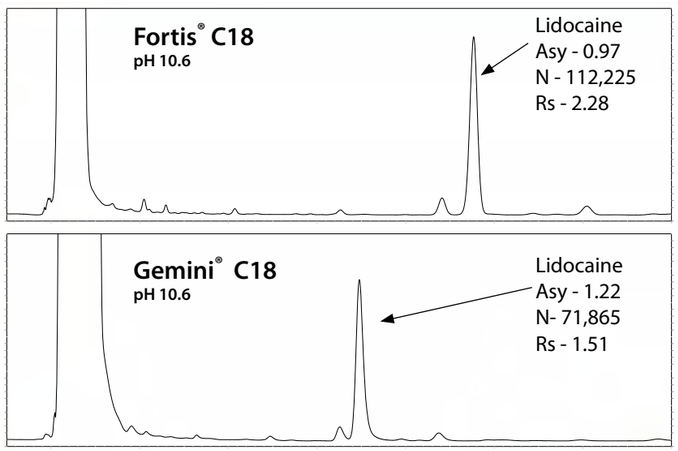


Extreme pH range

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

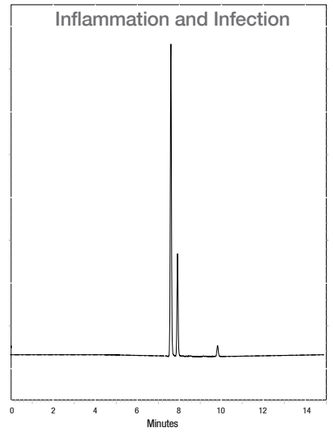


Columns: 150x4.6mm 3µ **Mobile Phase:** 50:50 0.1% NH_3 : MeCN **Flow:** 1.0ml/min **Temp:** 25°C **Wavelength:** 230nm

Extended operating pH range

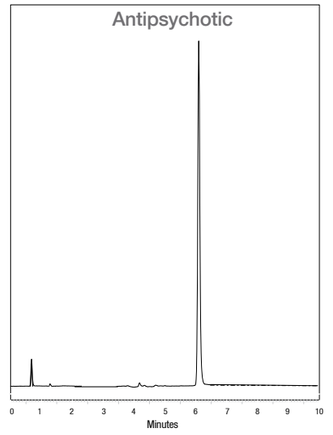
Column: Fortis C18 100x4.6mm 3µ
p/n: F18-050503
Mobile Phase: A - H_2O + 0.1% Formic acid
B - ACN + 0.1% Formic acid
Gradient: 10 - 50% in 10min
Flow: 1ml/min
Temp: 20°C
Wavelength: 254nm

1. Dexamethasone
2. Neomycin Sulphate
3. Acetic acid



Column: Fortis C18 50x4.6mm 5µ
p/n: F18-050305
Mobile Phase: A - 50mM NH_4OAc
B - ACN
Gradient: 10 - 40% in 10min
Flow: 1ml/min
Temp: 20°C
Wavelength: 254nm

1. Quetiapine

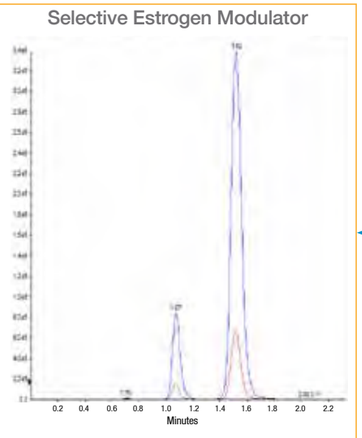


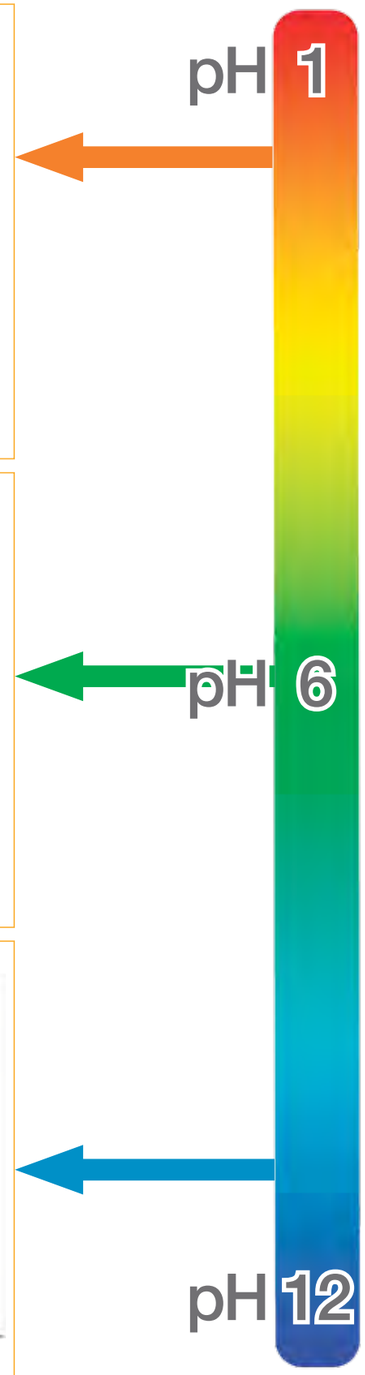
Column: Fortis C18 50x3.0mm 3µ
p/n: F18-030303
Mobile Phase: 30:70 H_2O + 10mM ammonium bicarbonate : MeOH

Flow: 0.4ml/min
Temp: 25°C
Wavelength: MS Detection

Raloxifene Glucuronides

Data Courtesy of : Pharmaceutical company, USA



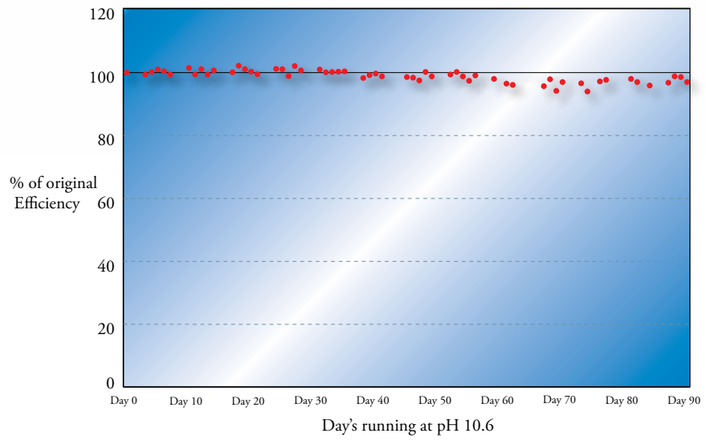


Fortis® C18

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.



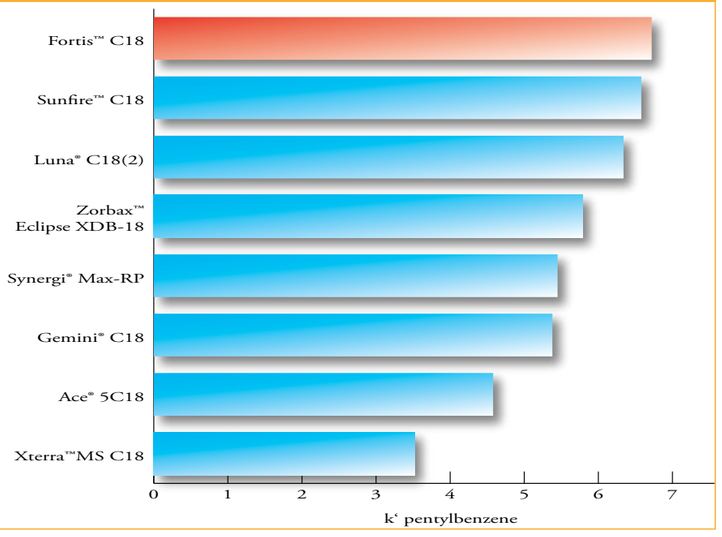
Advantages of Hydrophobicity

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

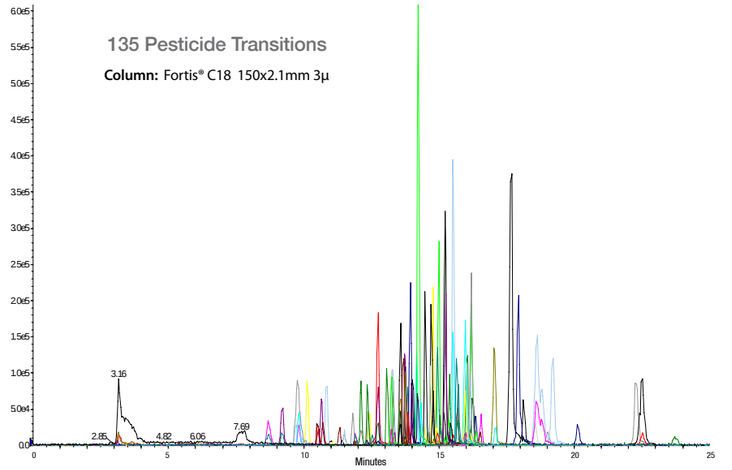
Optimised Resolution

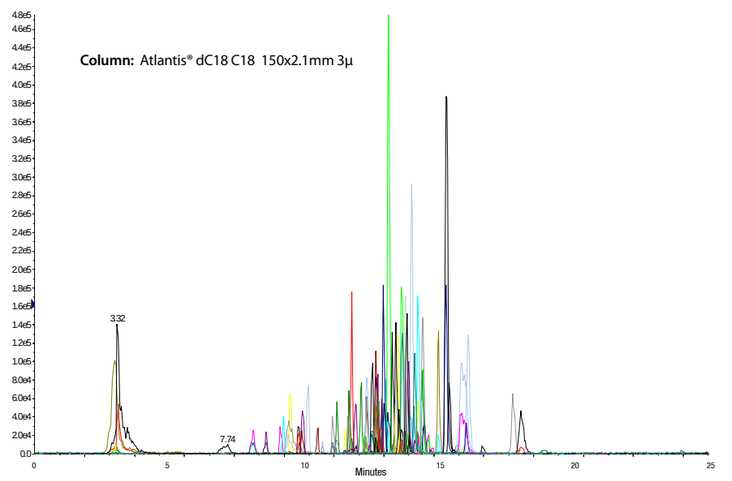
Only by optimising all factors of stationary phase design can the analyst be assured of the best possible chromatography.

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.

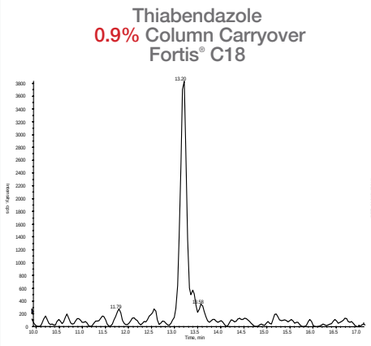
Analysed here are 135 transitions of pesticide residue from an apple matrix. Good LC resolution leads to excellent sensitivity in MS detection.

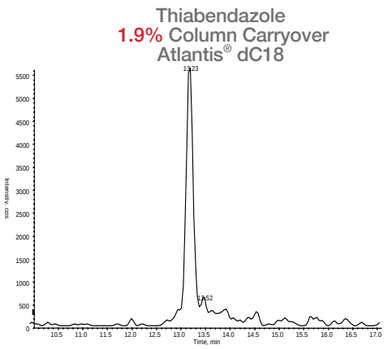
Polar organophosphates such as Acephate and Methamidophos are retained well due to the high surface area of the Fortis C18 phase.





Thiabendazole 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

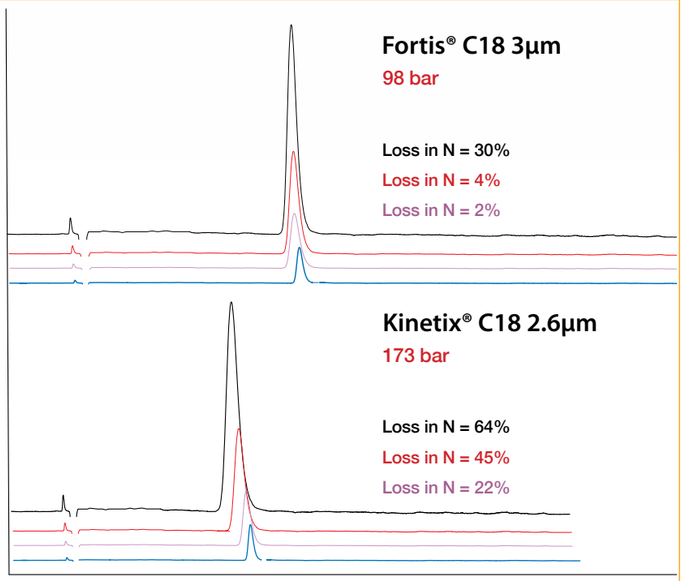
Analyte Loading

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 identity 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: H_2O + 0.01% formic acid : ACN
Flow: 0.6ml/min
Temp: 30°C
Diphenhydramine 0.02, 0.2, 0.5 & 1mg/ml



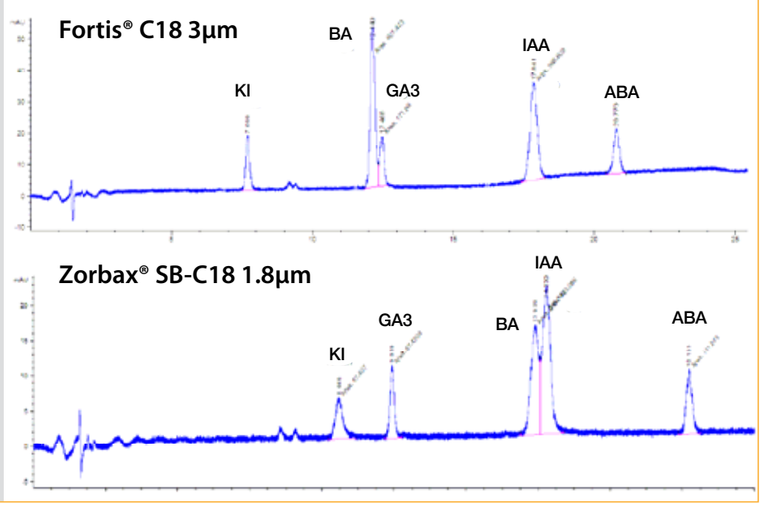
Loss in efficiency figures are in relation to 0.02mg/ml injection (Blue Trace).

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 - H_2O + 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

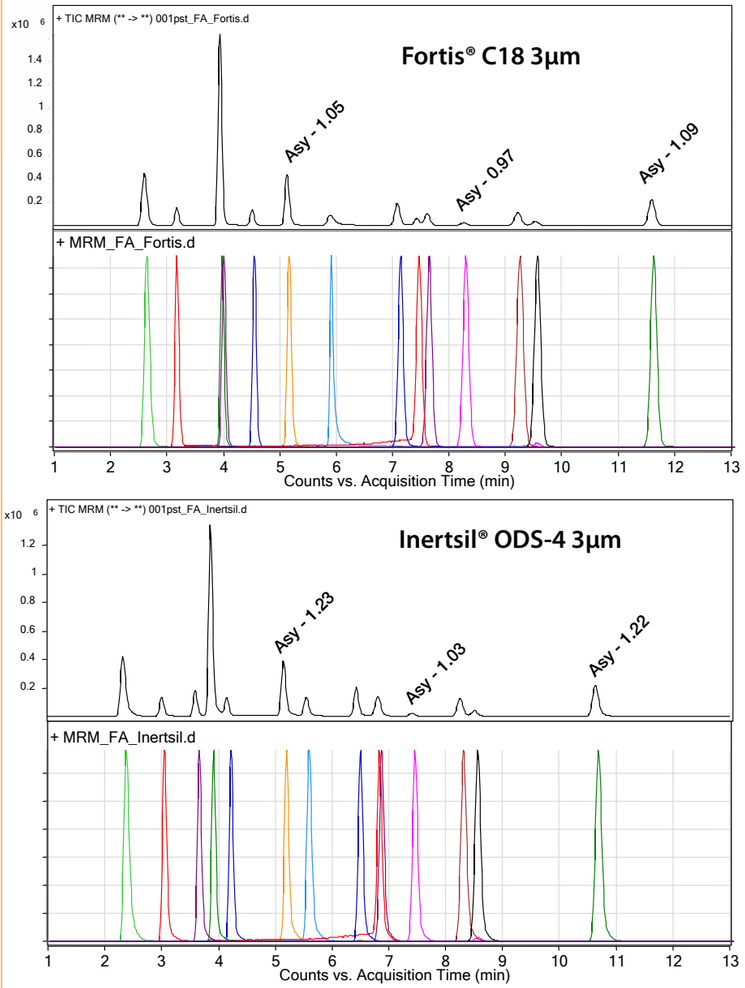


Data Courtesy of : Kings College, UK

Fortis C18

Fortis® C18

Selectivity and Peak Shape Comparison



Column: 100x2.1mm 3µ
Mobile Phase: A - H_2O + 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

Data Courtesy of : Major Pharmaceutical, Norway

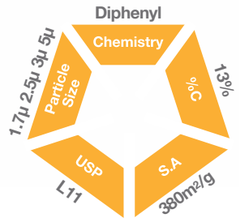
Fortis C18		Column Length			
		50	100	150	250
Column Diameter	2.1	F18-0203xx	F18-0205xx	F18-0207xx	-
	3.0	F18-0303xx	F18-0305xx	F18-0307xx	-
	4.6	F18-0503xx	F18-0505xx	F18-0507xx	F18-0509xx

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

Fortis C18 Guards		Length
		10
Column Diameter	2.1	DC18-0200xxG
	4.6	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.

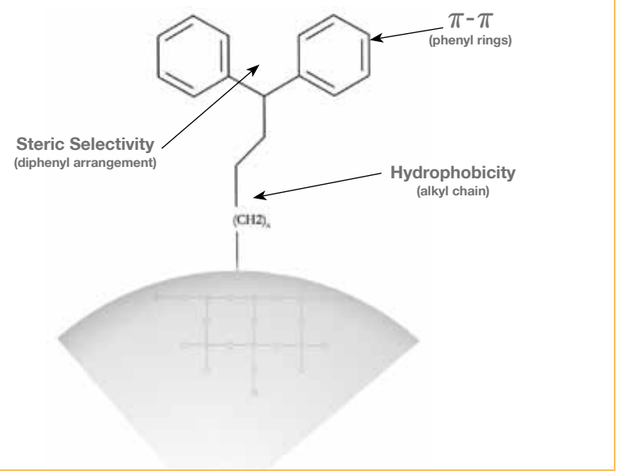
Unique Functionality

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.

– π-π

High Selectivity
– Resolution Enhanced
– Sharp Peak Shapes
- Highly Stable Diphenyl Ligand



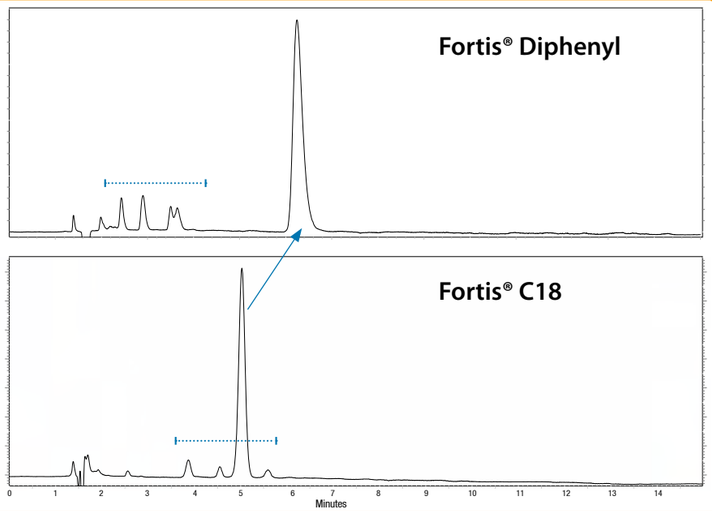
Diphenyl vs C18 Selectivity

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 excipiants. 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 π-π interactions provided by the phenyl functionality.

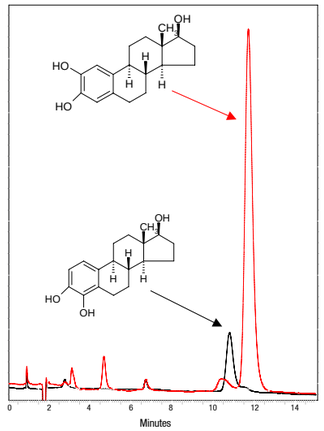
In this application two hydroxyestradiol steroids exhibit resolution from each other, which is not achievable on alkyl chain phases. No complex mobile phases are necessary.

– **Isomer Selectivity**
– **Metabolite Resolution**
– **Alternate Selectivity**

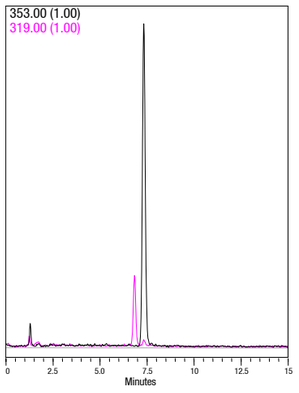
Column: Fortis Diphenyl 150x4.6mm 5µ
p/n: FPH-050705
Mobile Phase: 40:60 H_2O : MeOH

Flow: 1ml/min
Temp: 20°C
Wavelength: 210nm

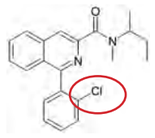
1. 4-Hydroxyestradiol (mw=288.38)
2. 2-Hydroxyestradiol (mw=288.38)



PET Tracer - PK11195



1. Dechlorinated PK11195
2. PK11195

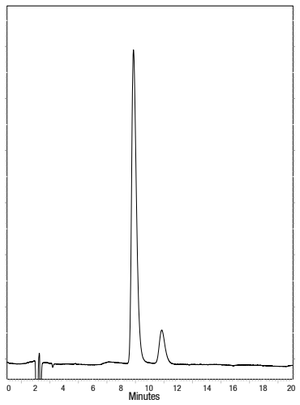


Column: Fortis Diphenyl 150x4.6mm 5µ
p/n: FPH-050705
Mobile Phase: 40 : 60 H_2O : ACN

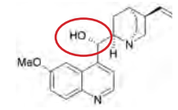
Flow: 1ml/min
Temp: 25°C
Wavelength: MS Detection

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 H_2O + 0.1% formic acid MeOH

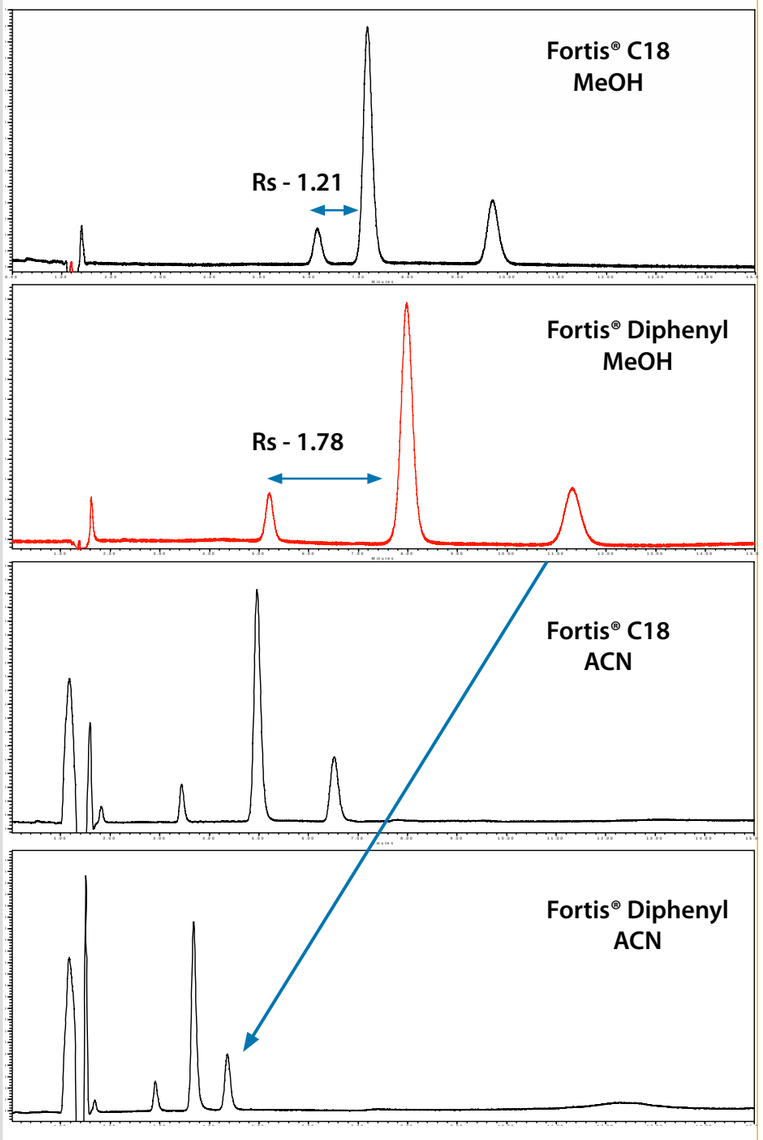
Flow: 1ml/min
Temp: 25°C
Wavelength: 235nm

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.



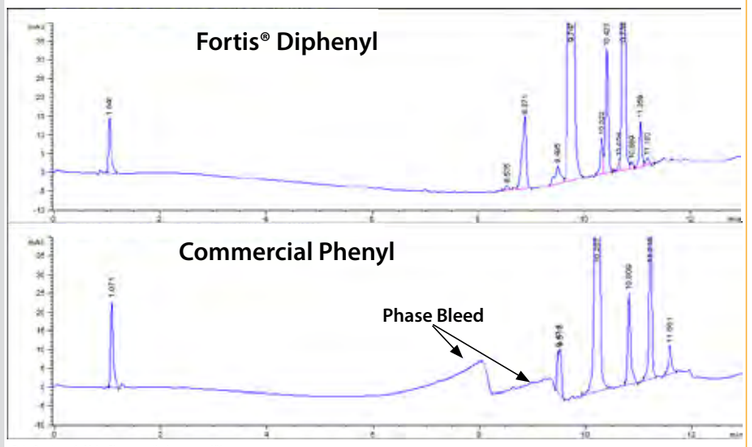
Fortis® Diphenyl

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 chromaphore, 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

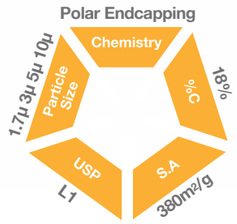
Fortis Diphenyl		Column Length			
		50	100	150	250
Column Diameter	2.1	FPH-0203xx	FPH-0205xx	FPH-0207xx	-
	3.0	FPH-0303xx	FPH-0305xx	FPH-0307xx	-
	4.6	FPH-0503xx	FPH-0505xx	FPH-0507xx	FPH-0509xx

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

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

Fortis® H2o

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

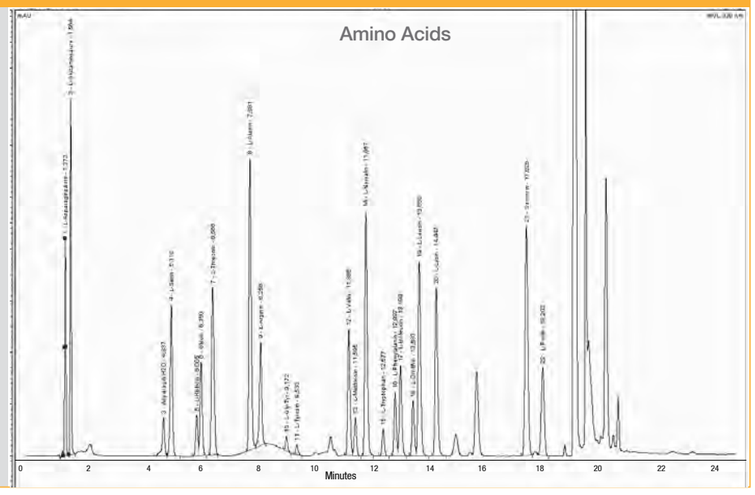


Fortis H2o is designed to aid in the separation and retention of polar analytes. Complex mobile phase systems can be bypassed if sufficient retention can be provided by the stationary phase chemistry. Fortis H2o is designed to supply additional interaction with polar molecules which allows their successful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

Retention of Polar analytes - Amino Acids

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

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



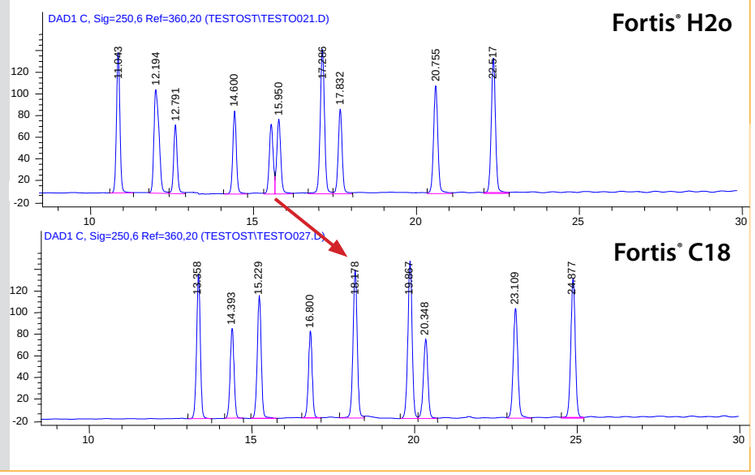
Data Courtesy of : Major Pharmaceutical Company, Austria

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:

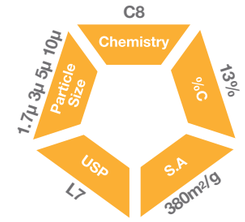
Flow: 0.2ml/min
Temp: 25°C
Wavelength: DAD 250



Data Courtesy of : AstraZeneca, UK

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 scaleability are available providing increased productivity to the analyst.

Optimised Peak Shape

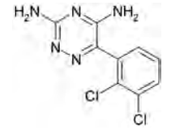
Fortis C8 is optimised to provide the best possible peak shapes and efficiency.

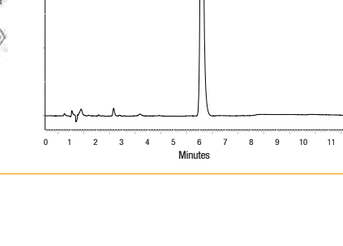
Basic, Acidic and Neutral analyte performance is first class.

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

Column: Fortis C8 150x4.6mm 5µ
p/n: F08-050705
Mobile Phase: A - H_2O + 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



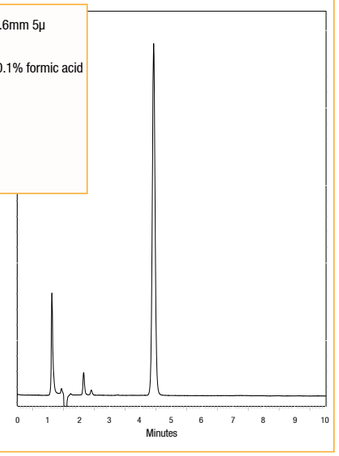


Anticonvulsant

Column: Fortis C8 150x4.6mm 5µ
p/n: F08-050705
Mobile Phase: 40 : 60 H_2O + 0.1% formic acid ACN

Flow: 1ml/min
Temp: 25°C
Wavelength: 220nm

1. Valproate Semisodium



Antiplatelet

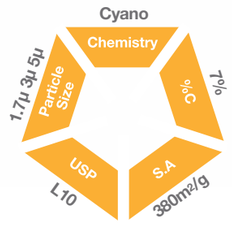
Column: Fortis C8 150x4.6mm 5µ
p/n: F08-050705
Mobile Phase: 25 : 75 H_2O : ACN

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.

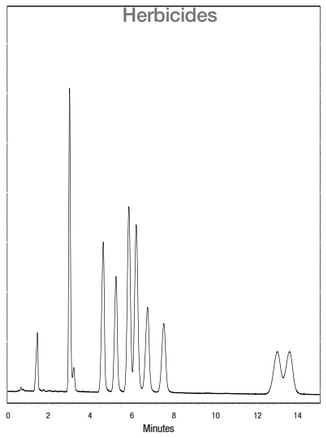
Herbicides

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 H_2O : ACN + 0.2% Acetic acid
Flow : 0.2ml/min
Temp : 20°C
Wavelength: 280nm

1. Banvel
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



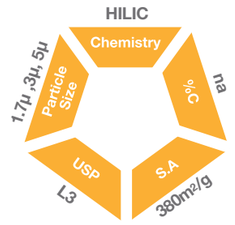
Fortis Cyano		Column Length			
		50	100	150	250
Column Diameter	2.1	FCN-0203xx	FCN-0205xx	FCN-0207xx	-
	3.0	FCN-0303xx	FCN-0305xx	FCN-0307xx	-
	4.6	FCN-0503xx	FCN-0505xx	FCN-0507xx	FCN-0509xx

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.**

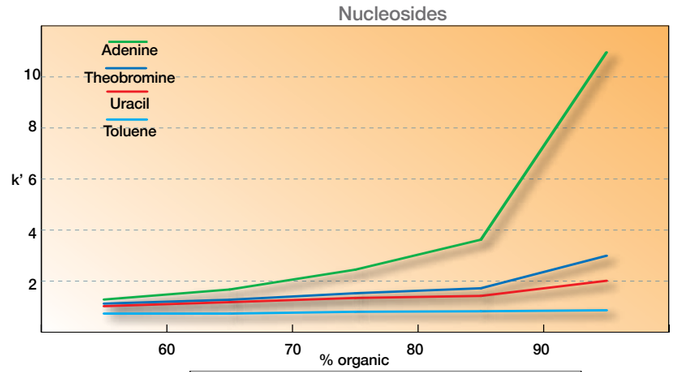


Fortis HILIC (Hydrophilic Interaction Chromatography) is designed to aid in the separation and retention of very polar analytes. Extended retention is afforded by the partitioning, ion-exchange and hydrogen bonding that can occur on a HILIC stationary phase. Fortis HILIC can increase sensitivity in MS 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

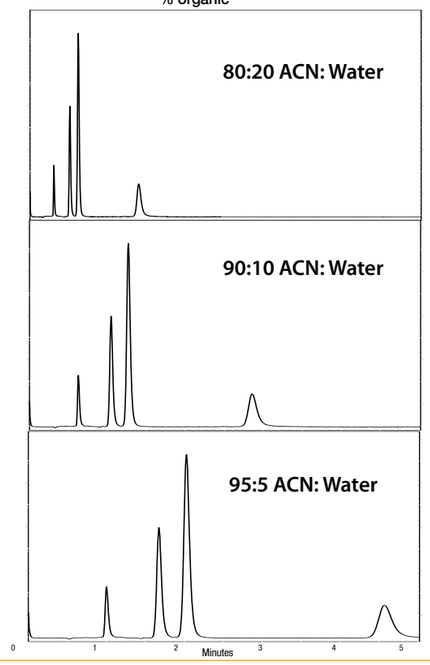
Fortis HILIC is optimised to help retain and resolve polar analytes. By use of high concentrations of organic solvent polar analytes partition with the stationary phase.

- 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.

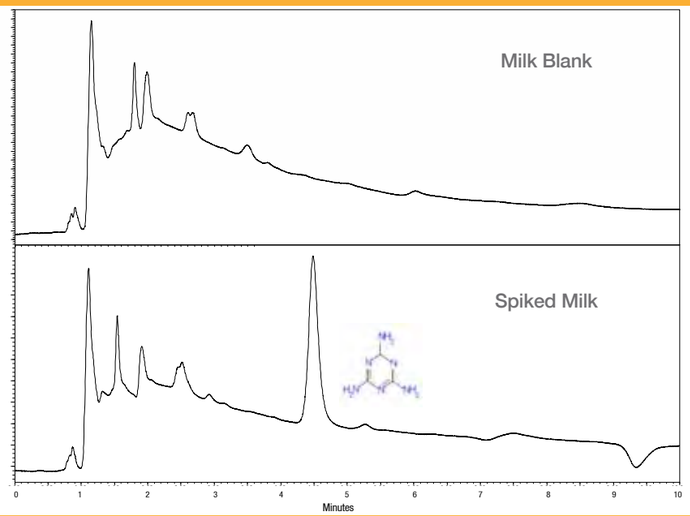
Usually no more than 20%-30% water is needed in order to elute most analyte species.



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 NH_3OAc
Flow : 0.2ml/min
Temp : 20°C
Wavelength: 210nm

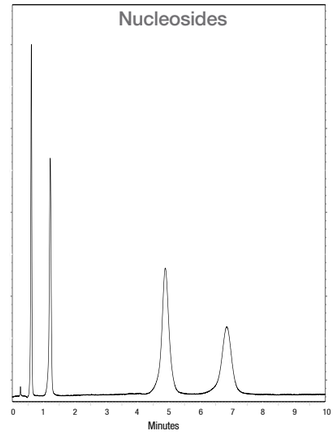


Nucleosides

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 NH_3OAc
Flow : 1ml/min
Temp : 20°C
Wavelength: 254nm

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



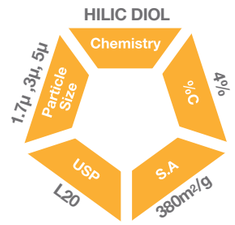
Fortis HILIC		Column Length			
		50	100	150	250
Column Diameter	2.1	FHI-0203xx	FHI-0205xx	FHI-0207xx	-
	3.0	FHI-0303xx	FHI-0305xx	FHI-0307xx	-
	4.6	FHI-0503xx	FHI-0505xx	FHI-0507xx	FHI-0509xx

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

Fortis HILIC Guards		Length
		10
Column Diameter	2.1	DCHI-0200xxG
	4.6	DCHI-0500xxG

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.

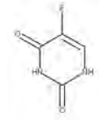
5-Fluorouracil / Uracil

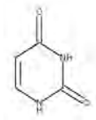
Fortis HILIC DIOL is optimised not only to help retain and resolve polar analytes, but also to be complimentary in resolution to other Fortis phases.

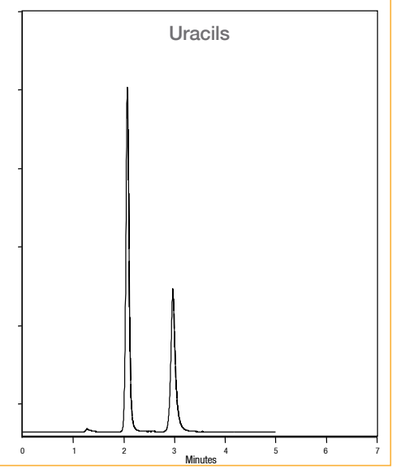
- **Hydrophilic Interaction Mode**
- **Strong Polar retention**
- **Rapid Equilibration**

Column : Fortis HILIC DIOL 100x2.1mm 5µ
p/n : FDI-020505
Mobile Phase: 99:1 ACN : H_2O
Flow : 0.2ml/min
Temp : 20°C
Wavelength: 254nm

1. 5-Fluorouracil
2. Uracil







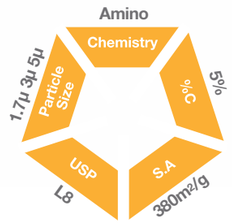
Fortis HILIC DIOL		Column Length			
		50	100	150	250
Column Diameter	2.1	FDI-0203xx	FDI-0205xx	FDI-0207xx	-
	3.0	FDI-0303xx	FDI-0305xx	FDI-0307xx	-
	4.6	FDI-0503xx	FDI-0505xx	FDI-0507xx	FDI-0509xx

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

Fortis Amino Guards		Length
		10
Column Diameter	2.1	DCDI-0200xxG
	4.6	DCDI-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.

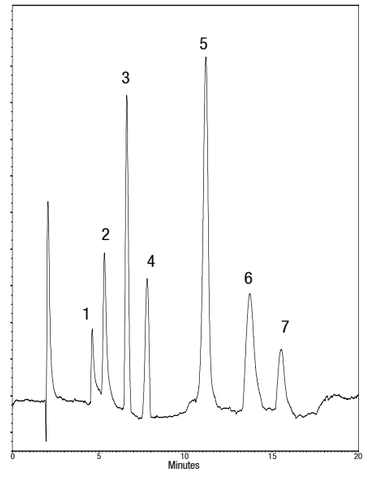
Carbohydrates

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 : H_2O
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
Column Diameter	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.

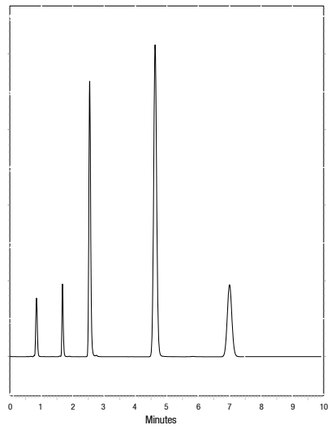
By employing a QC mix that accurately probes silanol activity (the measure of good peak shape) the analyst can be assured of quality time and time again.

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:H_2O
Flow: 1.0ml/min
Temp: 25°C
Wavelength: 254nm

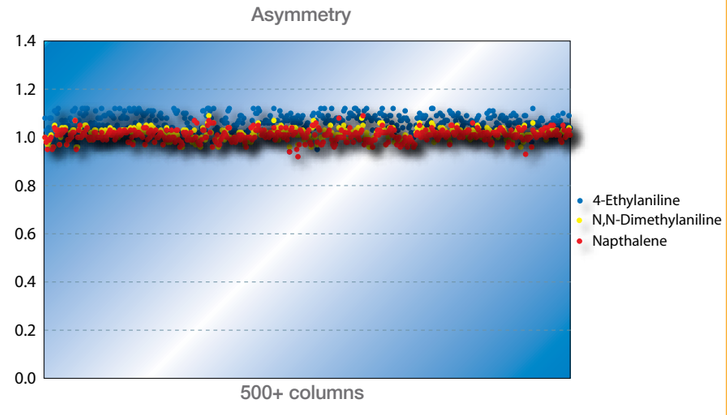
1. Uracil
2. Phenol
3. 4-Ethylaniline
4. N,N-Dimethylaniline
5. Napthalene



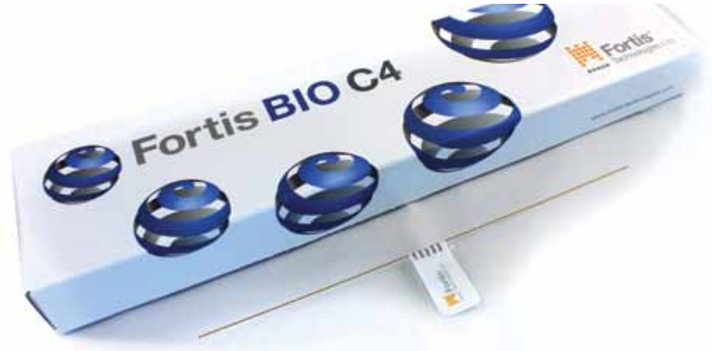
Column Reproducibility

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			
		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

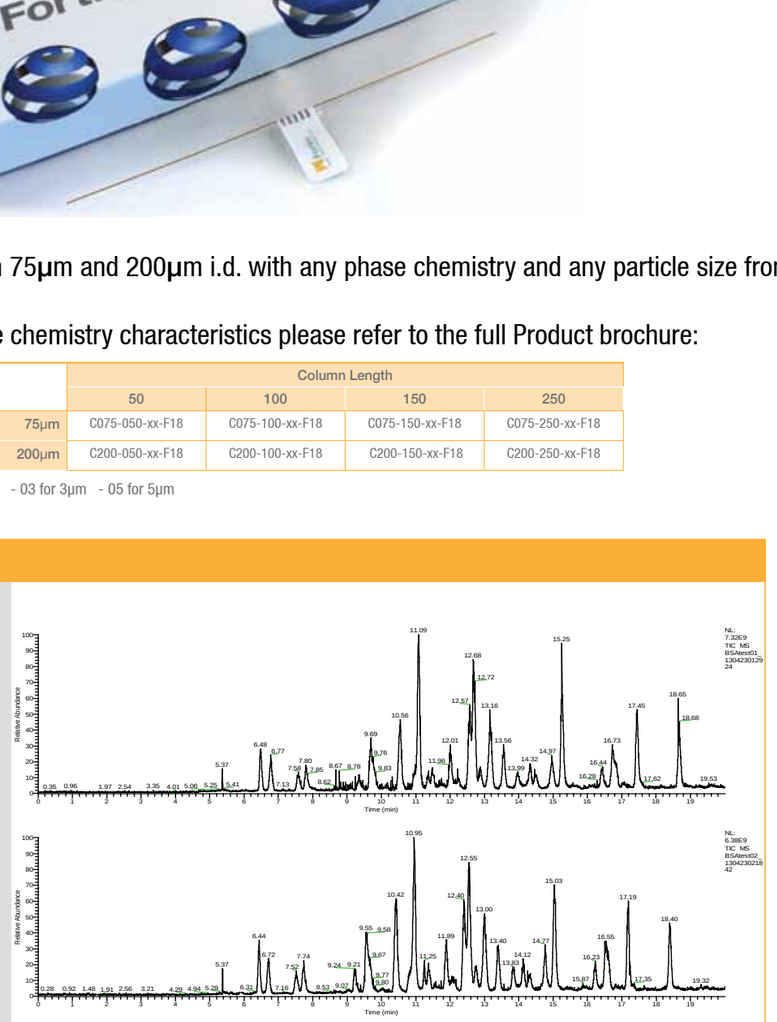
BSA testing capillary

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 there 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 HO 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	Fragrence	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
Ascisic 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
Benzoylecgonine	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
Clonaepam	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	Nuclosides	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-metafetamine	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	Nuclosides	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
Hydroxytisone-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
Isonicatinamide	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
Nitosininone		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	Anestetic	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 Glucoronides	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	Nuclosides	Fortis HILIC
Uridine	Nuclosides	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

Fortis products are available worldwide. For the distributor in your country, contact Fortis international Sales Office, UK by telephone, fax or email: info@fortis-technologies.com

- Austria
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- China
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