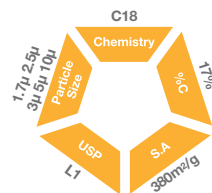


# Fortis™ C18

- 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<sub>2</sub>O + 0.1% Formic acid  
B - ACN + 0.1% Formic acid

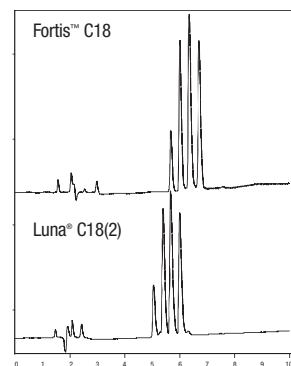
**Gradient:** 25 - 40% in 10min

**Flow:** 1ml/min

**Temp:** 20°C

**Wavelength:** 254nm

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

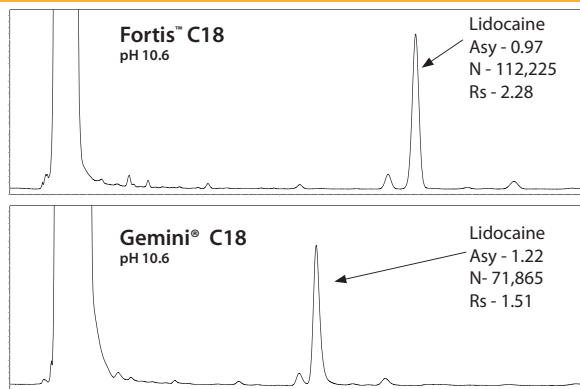


## Extreme pH range

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

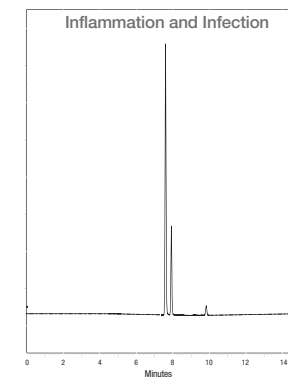


Columns: 150x4.6mm 3µ Mobile Phase: 50:50 0.1% NH<sub>3</sub> : MeCN Flow: 1.0ml/min Temp: 25°C Wavelength: 230nm

## Extended operating pH range

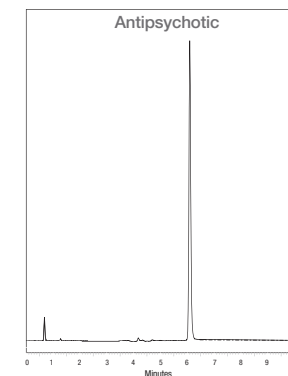
**Column:** Fortis C18 100x4.6mm 3µ  
**p/n:** F18-050503  
**Mobile Phase:** A - H<sub>2</sub>O + 0.1% Formic acid  
B - ACN + 0.1% Formic acid  
**Gradient:** 10 - 50% in 10min  
**Flow:** 1ml/min  
**Temp:** 20°C  
**Wavelength:** 254nm

1. Dexamethasone
2. Neomycin Sulphate
3. Acetic acid



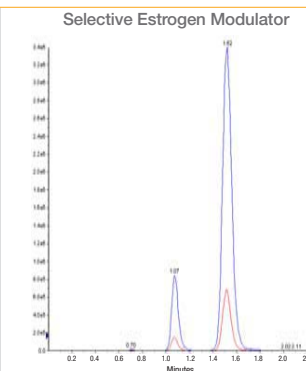
**Column:** Fortis C18 50x4.6mm 5µ  
**p/n:** F18-050305  
**Mobile Phase:** A - 50mM NH<sub>4</sub>OAc  
B - ACN  
**Gradient:** 10 - 40% in 10min  
**Flow:** 1ml/min  
**Temp:** 20°C  
**Wavelength:** 254nm

1. Quetiapine



**Column:** Fortis C18 50x3.0mm 3µ  
**p/n:** F18-030303  
**Mobile Phase:** 30:70 H<sub>2</sub>O + 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

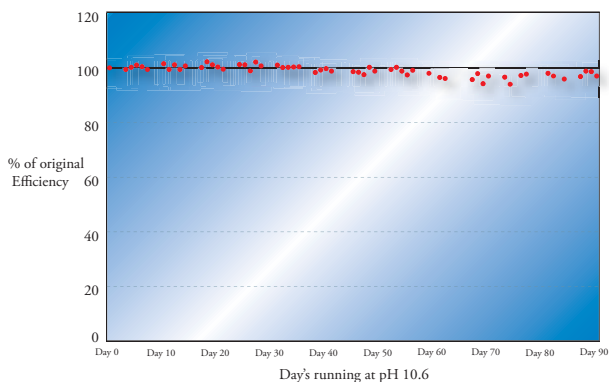
Fortis C18

# 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.

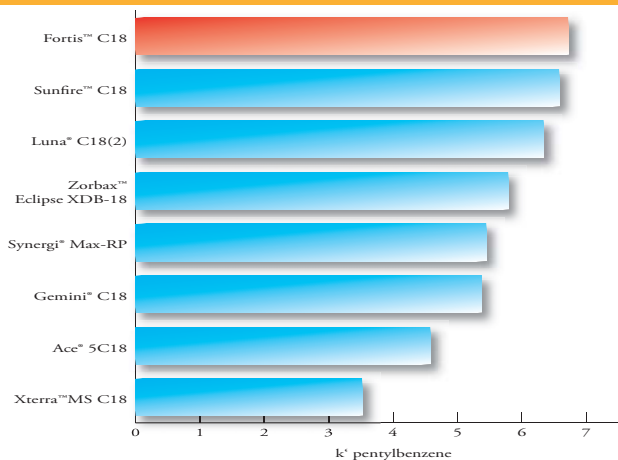


## Advantages of Hydrophobicity

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

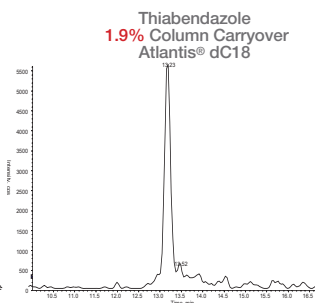
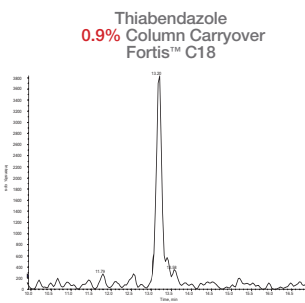
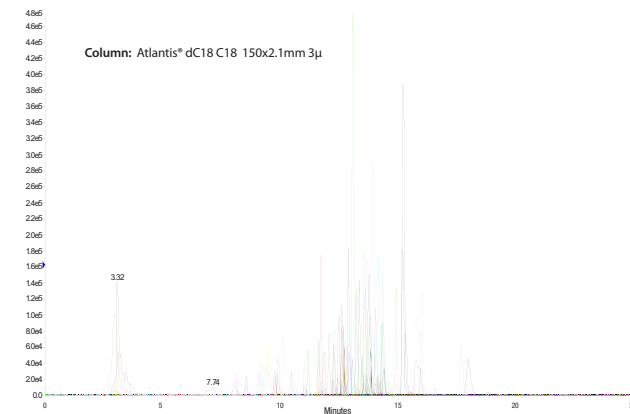
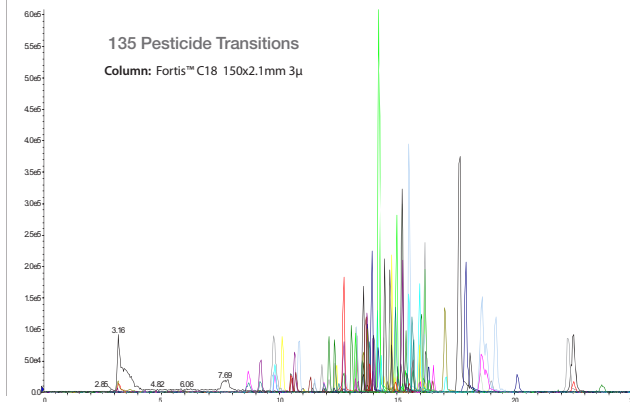
## Optimised Resolution

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 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

# Fortis™ C18



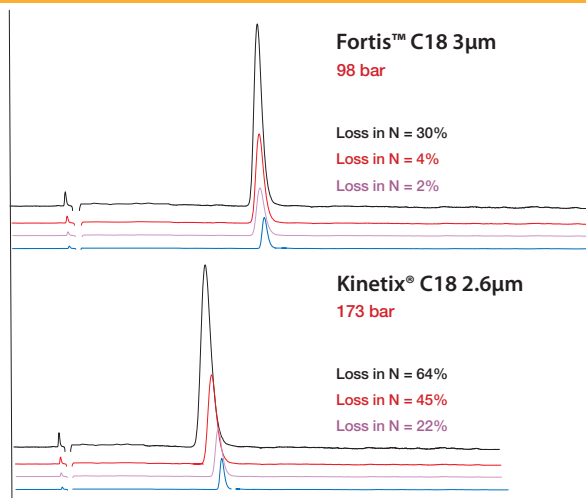
## Analyte Loading

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 380m<sup>2</sup>/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<sub>2</sub>O + 0.01% formic acid : ACN  
**Flow:** 0.6ml/min  
**Temp:** 30°C  
**Diphenhydramine** 0.02, 0.2, 0.5 & 1mg/ml



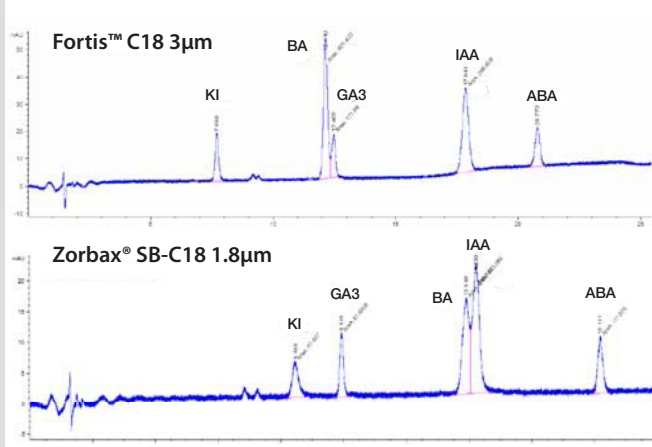
Loss in efficiency figures are in relation to 0.02mg/ml injection (Blue Trace).

## 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<sub>2</sub>O + 0.01% formic acid  
 B - MeOH + 0.1% formic acid  
**Gradient:** 10-40% in 30min  
**Flow:** 10-40% in 30min  
**Temp:** 30°C  
**Wavelength:** MS Detection

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

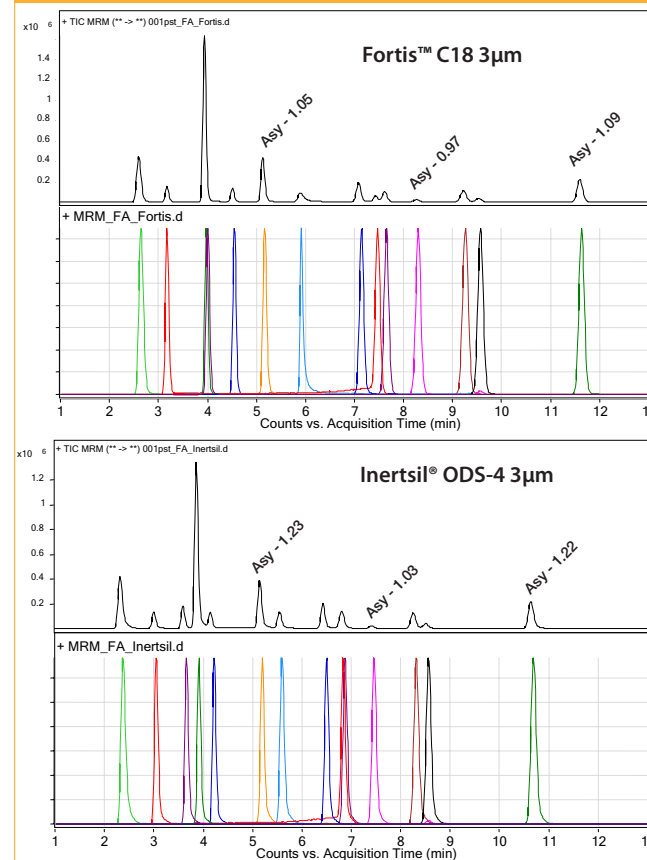


Data Courtesy of: Kings College, UK

# Fortis™ C18



## Selectivity and Peak Shape Comparison



Data Courtesy of: Major Pharmaceutical, Norway

**Column:** 100x2.1mm 3µ  
**Mobile Phase:** A - H<sub>2</sub>O + 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	-
Column Diameter	3.0	F18-0303xx	F18-0305xx	F18-0307xx
	4.6	F18-0503xx	F18-0505xx	F18-0507xx

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 C18