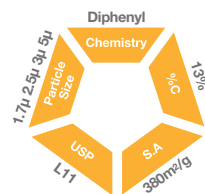


# Fortis™ Diphenyl

- **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.

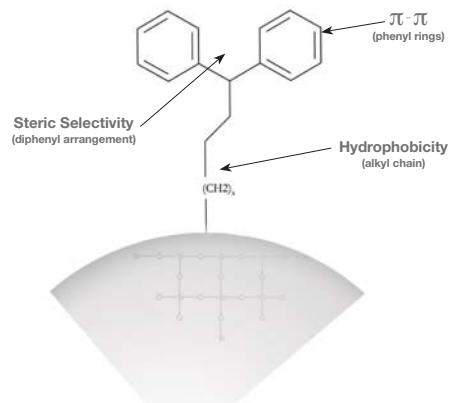


## Unique Functionality

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**

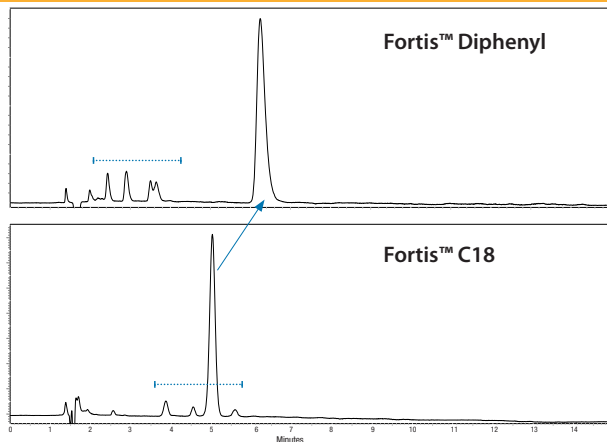


## Diphenyl vs C18 Selectivity

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 degradants 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

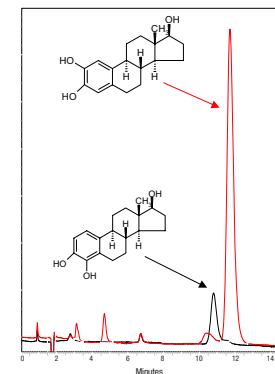
Selectivity of compounds normally difficult to resolve on a hydrophobic alkyl chain stationary phase is simplified by the  $\pi-\pi$  interactions provided by the phenyl functionality.

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.

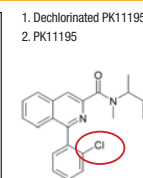
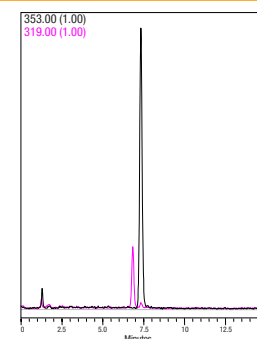
- **Isomer Selectivity**
- **Metabolite Resolution**
- **Alternate Selectivity**

**Column:** Fortis Diphenyl 150x4.6mm 5µ  
**p/n:** FPH-050705  
**Mobile Phase:** 40:60 H<sub>2</sub>O : MeOH  
**Flow:** 1ml/min  
**Temp:** 20°C  
**Wavelength:** 210nm

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



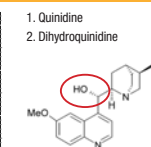
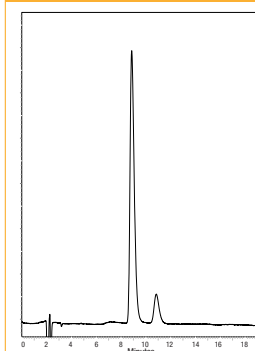
## PET Tracer - PK11195



**Column:** Fortis Diphenyl 150x4.6mm 5µ  
**p/n:** FPH-050705  
**Mobile Phase:** 40 : 60 H<sub>2</sub>O : ACN  
**Flow:** 1ml/min  
**Temp:** 25°C  
**Wavelength:** MS Detection

Data Courtesy of : Wolfson Molecular Imaging Centre

## Antiarrhythmic



**Column:** Fortis Diphenyl 150x4.6mm 5µ  
**p/n:** FPH-050705  
**Mobile Phase:** 70 : 30 H<sub>2</sub>O + 0.1% formic acid MeOH  
**Flow:** 1ml/min  
**Temp:** 25°C  
**Wavelength:** 235nm

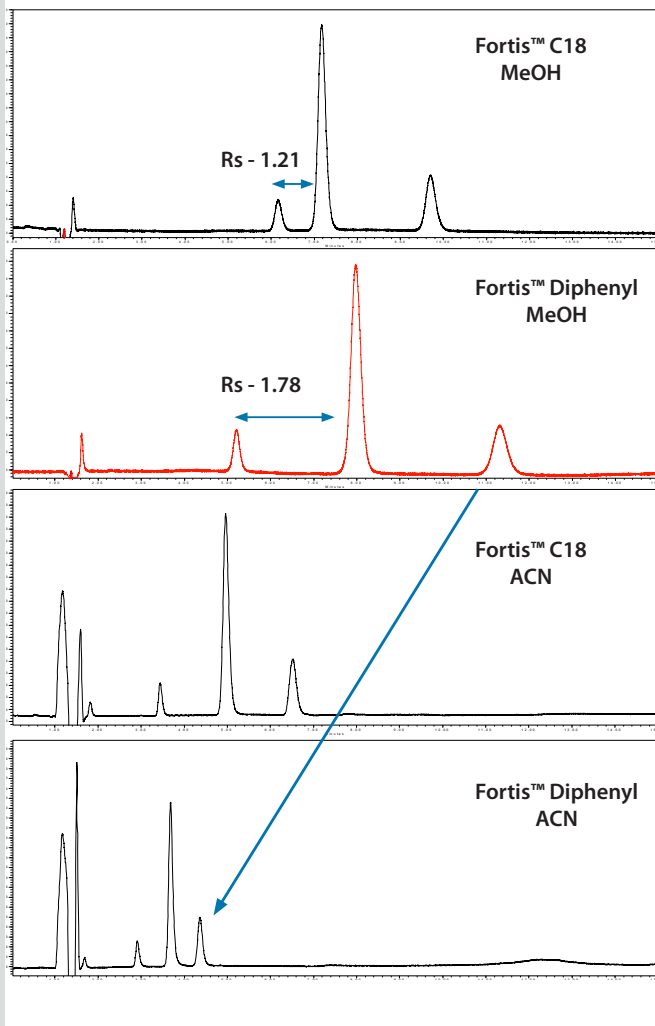




## Effect of Mobile phase choice

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  $\pi$ - $\pi$  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.

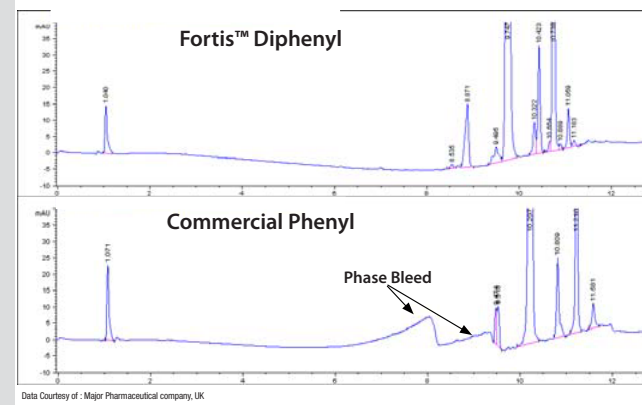


## Phenyl phase "bleed"

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 $\mu$ m - 02 for 2.5 $\mu$ m - 03 for 3 $\mu$ m - 05 for 5 $\mu$ m - 10 for 10 $\mu$ m

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