

# COSMOSIL PYE

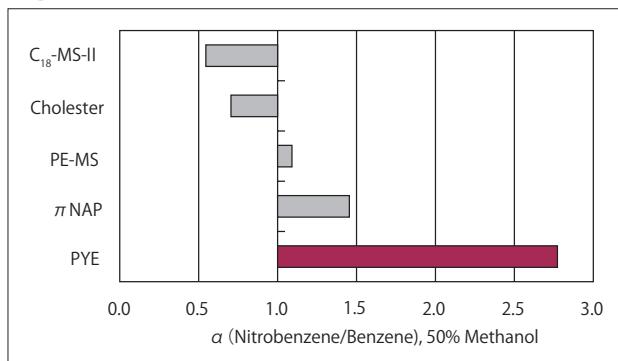


- Pyrenylethyl-bonded stationary phase
- Stronger  $\pi$ - $\pi$  interactions

## Suitable Samples

- Aromatic compounds, positional isomers, dioxins and PCBs

## Comparison of $\pi$ - $\pi$ Interactions



COSMOSIL PYE provides much stronger  $\pi$ - $\pi$  interactions than  $\pi$  NAP on page 18.

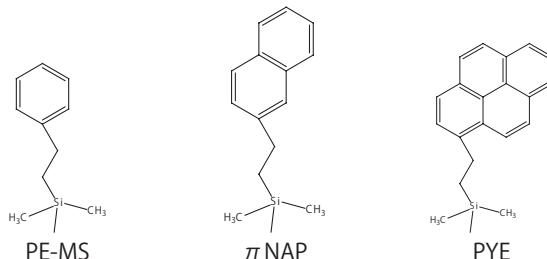


Figure. Comparison  $\pi$ - $\pi$  Interactions

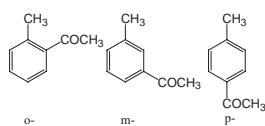
## Comparison with C<sub>18</sub> and Phenyl Columns

- Methylacetophenone

### COSMOSIL Application Data

Column: COSMOSIL \*\*  
Column size: 4.6mmL.D.-150mm  
Mobile phase: Methanol / H<sub>2</sub>O = \*/\*/  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254nm

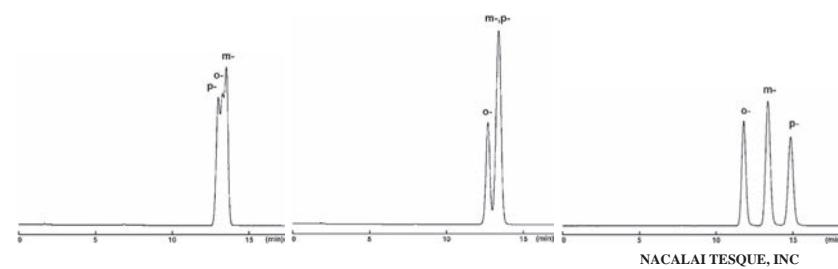
Sample: o-Methylacetophenone (0.15mg/ml)  
m-Methylacetophenone (0.125mg/ml)  
p-Methylacetophenone (0.075mg/ml)  
Inj. Vol: 1.0 $\mu$ l



COSMOSIL 5C<sub>18</sub>-MS-II  
(Methanol / H<sub>2</sub>O = 45/55)

COSMOSIL  $\pi$ NAP  
(Methanol / H<sub>2</sub>O = 50/50)

COSMOSIL 5PYE  
(Methanol / H<sub>2</sub>O = 55/45)

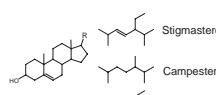


- Sterols

### COSMOSIL Application Data

Column: COSMOSIL \*\*  
Column size: 4.6mmL.D.-150mm  
Mobile phase: Methanol / H<sub>2</sub>O = \*\*\*/\*\*  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210nm

Sample: 1; Cholesterol (3.0 $\mu$ g)  
2; Stigmasterol (3.0 $\mu$ g)  
3; Campesterol (3.0 $\mu$ g)  
4; Sitosterol (3.0 $\mu$ g)

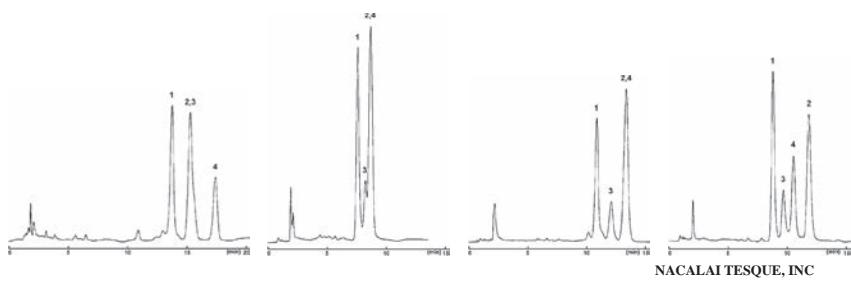


COSMOSIL 5C<sub>18</sub>-MS-II  
(Methanol / H<sub>2</sub>O = 98/2)

Competitor Biphenyl  
(Methanol / H<sub>2</sub>O = 95/5)

COSMOSIL  $\pi$ NAP  
(Methanol / H<sub>2</sub>O = 90/10)

COSMOSIL 5PYE  
(Methanol / H<sub>2</sub>O = 95/5)



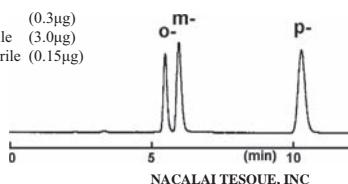
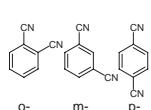
## Applications

### ● Phthalonitrile Isomers

#### COSMOSIL Application Data

Column: COSMOSIL 5PYE  
Column size: 4.6mmI.D.-150mm  
Mobile phase: Methanol/ H<sub>2</sub>O = 80/20  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254nm

Sample: o-; Phthalonitrile (0.3μg)  
m-; Isophthalonitrile (3.0μg)  
p-; Terephthalonitrile (0.15μg)

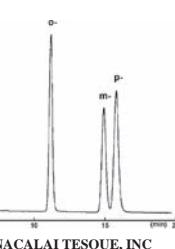
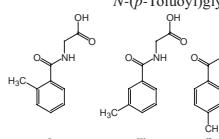


### ● Methylhippuric Acids

#### COSMOSIL Application Data

Column: COSMOSIL 5PYE  
Column size: 4.6mmI.D.-250mm  
Mobile phase: Methanol/ 20mmol/l Phosphate buffer(pH2.5) = 40/60  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254nm

Sample: N-(o-Toluoyl)glycine (3.06μg)  
N-(m-Toluoyl)glycine (0.65μg)  
N-(p-Toluoyl)glycine (0.33μg)



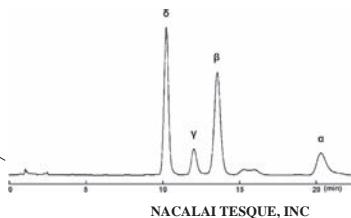
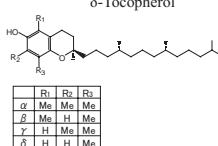
AP-0289

### ● Tocopherols

#### COSMOSIL Application Data

Column: COSMOSIL 5PYE  
Column size: 4.6mmI.D.-150mm  
Mobile phase: Methanol/ H<sub>2</sub>O = 90/10  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV295nm

Sample: α-Tocopherol  
β-Tocopherol  
γ-Tocopherol  
δ-Tocopherol

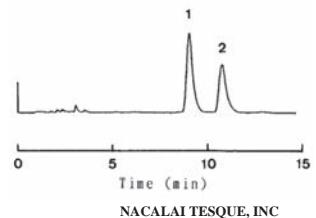
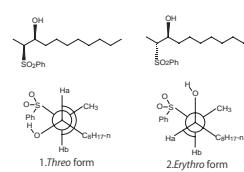


### ● Diastereomers

#### COSMOSIL Application Data

Column: COSMOSIL 5PYE  
Column size: 4.6mmI.D.-150mm  
Mobile phase: Methanol / H<sub>2</sub>O = 80/20  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254nm

Sample: 1; Threo form  
2; Erythro form



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AP-0186

## Caution

- Methanol is the recommended mobile phase for COSMOSIL PYE. Acetonitrile is not recommended because it has many  $\pi$ - $\pi$  electrons and interferes with  $\pi$ - $\pi$  interactions between the sample and the stationary phase.
- The stationary phase of COSMOSIL PYE, pyrenylethyl group, has a large UV absorption. When the stationary phase detaches from silica gel and elutes, even a slight quantity can be detected and causes baseline noise. In such cases, wash the column with tetrahydrofuran. Detachment of a small amount of the stationary phase does not deteriorate a column's separation ability.
- COSMOSIL PYE is not suitable for gradient analysis.

## Ordering Information

### ● COSMOSIL 5PYE Analytical / Preparative Columns (Particle Size: 5 μm)

#### Packed Column

I.D. x Length (mm)	Product Number
1.0×150	02851-71
2.0×150	38042-61
2.0×250	34450-31

I.D. x Length (mm)	Product Number
4.6×150	37837-91
4.6×250	37989-11
10×250	37996-11
20×250	38044-41

#### Guard Column

I.D. x Length (mm)	Product Number
4.6×10	37903-11
10×20	38041-71
20×20	05867-91
20×50	34475-21

# COSMOSIL NPE



- Nitrophenylethyl-bonded stationary phase
- Separation with dipole-dipole and  $\pi$ - $\pi$  interactions

Suitable Samples  
• Isomers and nitro compounds

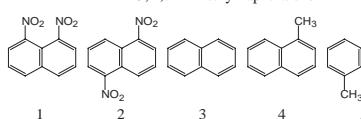
## Selectivity for dipole-dipole interactions

COSMOSIL NPE strongly retains 1,8-dinitronaphthalene because of the strong dipole formed by the two nitro groups positioned on the same side of naphthalene.

### Comparison of Separation Property

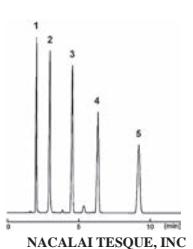
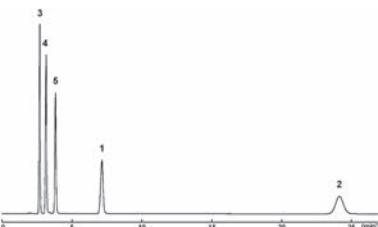
Column size: 4.6mmI.D.-150mm  
Mobile phase: NPE Methanol / H<sub>2</sub>O = 70/30  
PYE Methanol / H<sub>2</sub>O = 90/10  
C<sub>18</sub>-MS-II Methanol / H<sub>2</sub>O = 80/20  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254nm  
Sample:

- 1; 1,8-Dinitronaphthalene  
2; 1,5-Dinitronaphthalene  
3; Naphthalene  
4; 1-Methylnaphthalene  
5; 1,5-Dimethylnaphthalene



5NPE

5PYE

5C<sub>18</sub>-MS-II

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AP-1074

### Attention

1. Methanol is the recommended mobile phase for COSMOSIL NPE. Acetonitrile is not recommended because it has many  $\pi$ - $\pi$  electrons and interferes with  $\pi$ - $\pi$  interactions between the sample and the stationary phase.
2. The stationary phase of COSMOSIL NPE, nitrophenyl group, has a large UV absorption. When the stationary phase detaches from silica gel and elutes, even a slight quantity can be detected and causes baseline noise. In such cases, wash the column with tetrahydrofuran. Detachment of a small amount of the stationary phase does not deteriorate a column's separation ability.
3. COSMOSIL NPE is not suitable for gradient analysis.

## Ordering Information

### ● COSMOSIL 5NPE Analytical / Preparative Columns (Particle Size: 5 $\mu$ m)

#### Packed Column

I.D. x Length (mm)	Product Number
1.0×150	05897-01
2.0×150	34328-51
2.0×250	34379-91

I.D. x Length (mm)	Product Number
4.6×150	37902-21
4.6×250	37990-71
10×250	05469-11
20×250	38046-21

#### Guard Column

I.D. x Length (mm)	Product Number
4.6×10	37904-01
10×20	38045-31
20×20	05868-81
20×50	05869-71