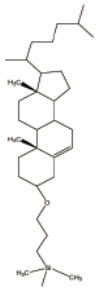
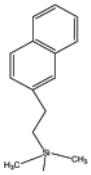
COSMOSIL

# COSMOSIL UFLC Columns

COSMOSIL UFLC Columns with 2.5 µm particles are a powerful tool for very fast and efficient separation. Furthermore they can be used under 1/2 pressure of competitiors' 2 µm columns.

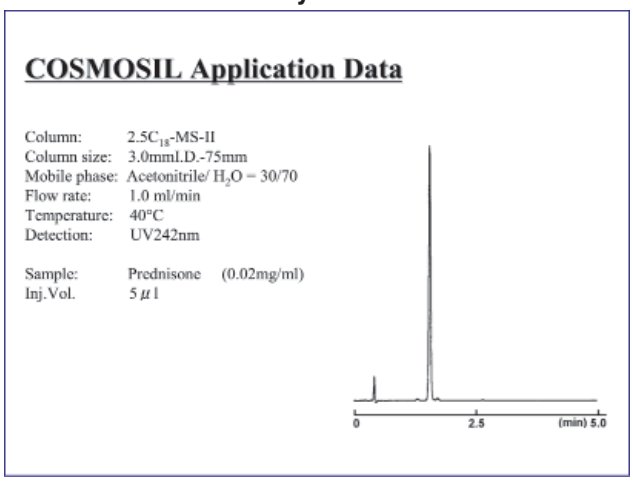
| Packing Material | 2.5$C_{18}$-MS-II | 2.5Cholester | 2.5πNAP |
|---|---|---|---|
| Silica Gel | High Purity Porous Spherical Silica | | |
| Average Particle Size | 2.5 µm | | |
| Average Pore Size | approx. 130 Å | | |
| Specific Surface Area | approx. 330$m^2$/g | | |
| Stationary Phase |  Octadecyl Group |  Cholesteryl Group |  Naphtylethyl Group |
| Bonding Type | Monomeric | | |
| Main Interaction | Hydrophobic Interaction | Hydrophobic Interaction<br>Molecular Shape Selectivity | Hydrophobic Interaction<br>π -π Interaction |
| End Capping Treatment | Near-perfect Treatment | | |
| Features | - Multi-purpose $C_{18}$ column<br>- Suitable for basic compounds. | - Usable under the same condition as $C_{18}$.<br>- High molecular shape selectivity | - Stronger π-π interaction than Phenyl columns. |

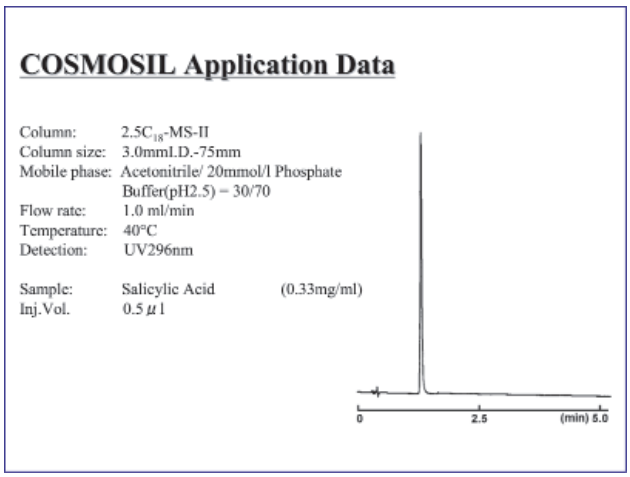
## COSMOSIL 2.5$C_{18}$-MS-II

### Application Data

COSMOSIL 2.5$C_{18}$-MS-II (3.0 mm I.D. x 75 mm) enables the saparation only in 2 minutes.

- **Prednisone and Salicylic Acid**



## Pressure comparison with competitors' 2 µm columns

COSMOSIL 2.5$C_{18}$-MS-II can be used under 1/2 pressure of competitors' 2 µm columns.

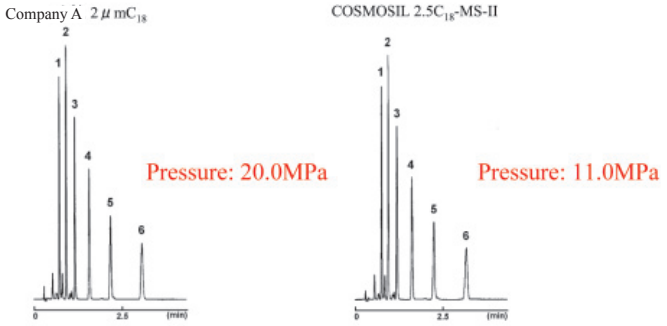
• 3.0 mm I.D. x 75 mm

**COSMOSIL Application Data**

Column:
Column size: 3.0mmI.D.-75mm
Mobile phase: Acetonitrile/ $H_2O$ = 70/30
Flow rate: 1.0 ml/min
Temperature: 40°C
Detection: UV254nm

| Sample: | | |
|---|---|---|
| | 1; Benzene | (1.67mg/ml) |
| | 2; Toluene | (1.67mg/ml) |
| | 3; Ethylbenzene | (1.67mg/ml) |
| | 4; Propylbenzene | (1.67mg/ml) |
| | 5; Butylbenzene | (1.67mg/ml) |
| | 6; Amylbenzene | (1.67mg/ml) |

Injection Vol. 1.0 µl



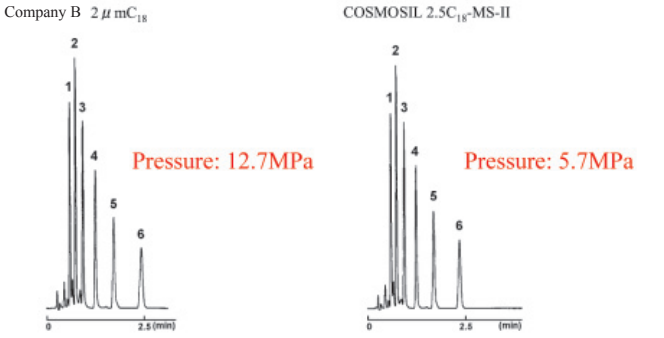

• 2.0 mm I.D. x 50 mm

**COSMOSIL Application Data**

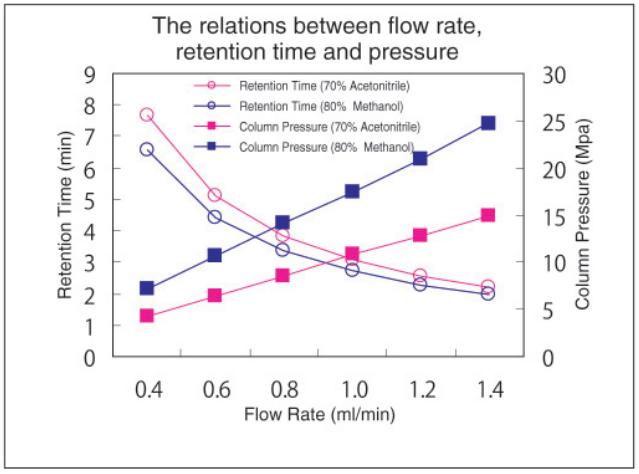
Column:
Column size: 2.0mmI.D.-50mm
Mobile phase: Acetonitrile/ $H_2O$ = 70/30
Flow rate: 0.4 ml/min
Temperature: 40°C
Detection: UV254nm

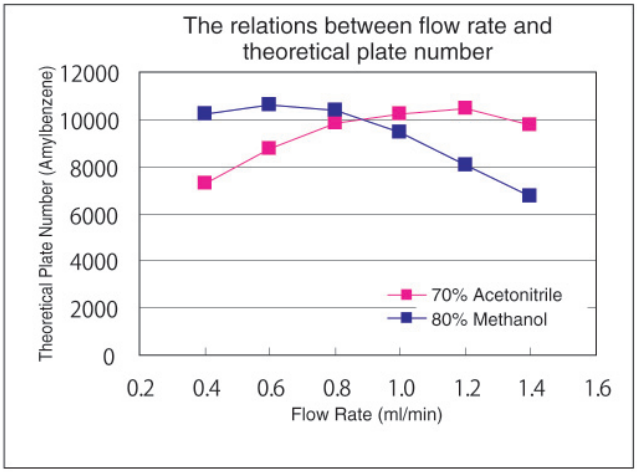
| Sample: | | |
|---|---|---|
| | 1; Benzene | (1.67mg/ml) |
| | 2; Toluene | (1.67mg/ml) |
| | 3; Ethylbenzene | (1.67mg/ml) |
| | 4; Propylbenzene | (1.67mg/ml) |
| | 5; Butylbenzene | (1.67mg/ml) |
| | 6; Amylbenzene | (1.67mg/ml) |

Injection Vol. 0.5 µl




## The relations between flow rate, retention time, pressure and theoretical plate number




**Condition** Column Size: 3.0 mmI.D. x 75 mm Temperature: 40°C Detection: UV254 nm Sample: Amylbenzene

# COSMOSIL 2.5Cholester

- **Low back pressure (2.5 µm silica gel)**
- **Excellent molecular shape selectivity**
- **Usable under the same condition as ODS**

## Improved Separation

COSMOSIL 2.5Cholester offers improved resolution for compounds difficult to analyze with $C_{18}$ without changing analytical condition.

**・Catechins**

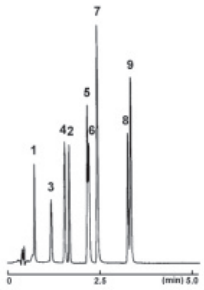
### COSMOSIL Application Data

Column size: 3.0mmI.D.-75mm
Mobile phase: A: Acetonitrile/ 20mmol/l Phosphate Buffer(pH2.5) = 10/90
B: Acetonitrile/ 20mmol/l Phosphate Buffer(pH2.5) = 30/70
B conc. 0→100% 5min Linear gradient
Mixer 0.5ml
Flow rate: 1.0 ml/min
Temperature: 40°C
Detection: UV280nm
Sample:

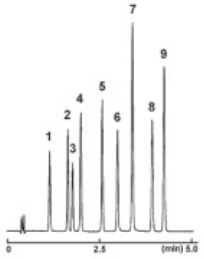
| | |
|---|---|
| 1; Gallocatechin(GC) | (0.40mg/ml) |
| 2; Caffeine | (0.04mg/ml) |
| 3; Epigallocatechin(EGC) | (0.40mg/ml) |
| 4; Catechin (C) | (0.20mg/ml) |
| 5; Epicatechin(EC) | (0.20mg/ml) |
| 6; Epigallocatechin gallate(EGCG) | (0.10mg/ml) |
| 7; Gallocatechin gallate(GCG) | (0.20mg/ml) |
| 8; Epicatechin gallate(ECG) | (0.10mg/ml) |
| 9; Catechin gallate(CG) | (0.10mg/ml) |

Injection Vol. 1.0 µl

Company A 2 µ $mC_{18}$




COSMOSIL 2.5Cholester

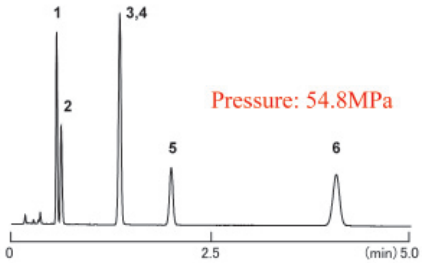



**・Saikosaponins**

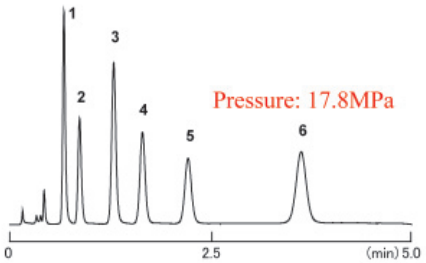
### COSMOSIL Application Data

Mobile phase: Acetonitrile/ 0.05%$NaH_2PO_4$aq. = 3/5
Flow rate: 0.7 ml/min
Temperature: 50°C
Detection: UV206nm
Sample:
1; Saikosaponin c
2; Saikosaponin h
3; Saikosaponin a
4; Saikosaponin b2
5; Saikosaponin b1
6; Saikosaponin d
Injection Vol. 1.0 µl

Company C 1.7 µ $mC_{18}$
(2.1mmI.D.-50mm)




COSMOSIL 2.5Cholester
(2.0mmI.D.-50mm)




**・Stilbene (Geometrical Isomers)**

### COSMOSIL Application Data

Column:
Column size: 3.0mmI.D.-75mm
Mobile phase: Acetonitrile/ $H_2O$ = 70/30
Flow rate: 1.0 ml/min
Temperature: 40°C
Detection: UV254nm

Sample:

| | |
|---|---|
| 1; *cis*-Stilbene | (0.10mg/ml) |
| 2; *trans*-Stilbene | (0.20mg/ml) |

Injection Vol. 1.0 µl

Company A 2 µ $mC_{18}$


COSMOSIL 2.5Cholester

# COSMOSIL 2.5πNAP

- **Low back pressure (2.5 µm silica gel)**
- **Naphthalene bonded stationary phase**
- **Stronger π-π interactions than Phenyl columns**

## Improved Separation

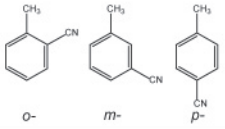
COSMOSIL 2.5πNAP provides greater performance in separating positional isomers and other closely related compounds which are difficult to analyze with $C_{18}$.

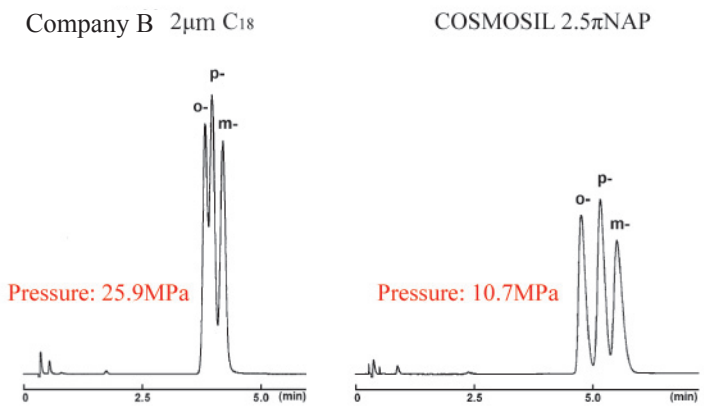
**• Tolunitriles (Positional Isomers)**

**COSMOSIL Application Data**

Column:
Column size: 2.0mmI.D.-50mm
Mobile phase: Methanol / $H_2O$ = 35/65
Flow rate: 0.4 ml/min
Temperature: 40℃
Detection: UV254nm

Sample: *o*-Tolunitrile (2.0µg)
*m*-Tolunitrile (2.0µg)
*p*-Tolunitrile (1.0µg)



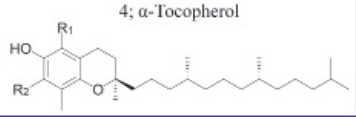




**• Tocopherols (Positional Isomers)**

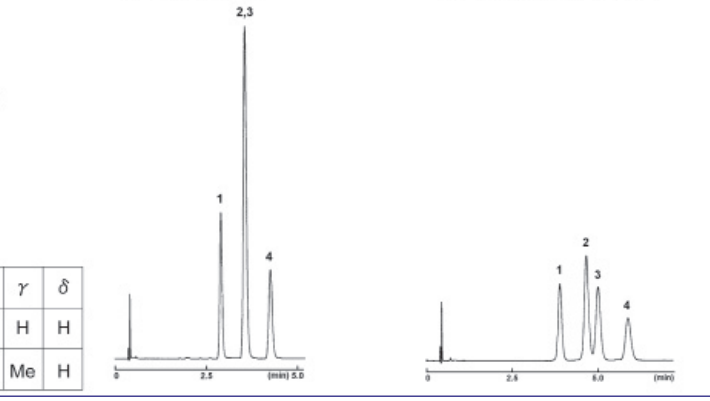
**COSMOSIL Application Data**

Column:
Column size: 3.0mmI.D.-75mm
Mobile phase: Company A 2um $C_{18}$ Methanol / $H_2O$ = 95/5
2.5πNAP Methanol / $H_2O$ = 85/15
Flow rate: 1.0 ml/min
Temperature: 40℃
Detection: UV295nm

Sample: 1; δ-Tocopherol
2; γ-Tocopherol
3; β-Tocopherol
4; α-Tocopherol




| | α | β | γ | δ |
|---|---|---|---|---|
| $R_1$ | Me | Me | H | H |
| $R_2$ | Me | H | Me | H |




## Ordering Information

| Size I.D.×Length (mm) | COSMOSIL 2.5$C_{18}$-MS-II Product Number | COSMOSIL 2.5Cholester Product Number | COSMOSIL 2.5πNAP Product Number |
|---|---|---|---|
| 2.0×50 | 08994-31 | 09000-01 | 06062-91 |
| 2.0×75 | 08995-21 | 09047-11 | 06051-31 |
| 2.0×100 | 08996-11 | 09048-01 | 06052-21 |
| 3.0×50 | 08997-01 | 09049-91 | 06054-01 |
| 3.0×75 | 08998-91 | 09050-51 | 06055-91 |
| 3.0×100 | 08999-81 | 09051-41 | 06057-71 |

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