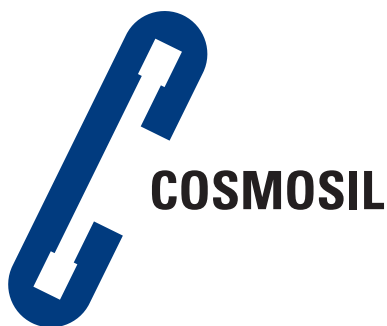


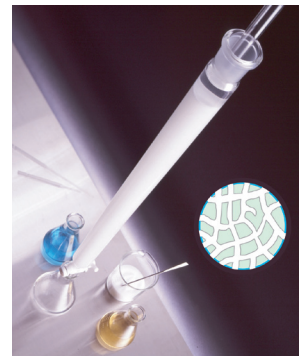


Packing Materials for Column Chromatography

Open column chromatography is an excellent and easy technique for large-scale preparation and purification at low cost. COSMOSIL offers both normal and reversed phase packing materials based on totally porous spherical silica, which provides higher separation, less pressure and higher reproducibility than irregular silica.

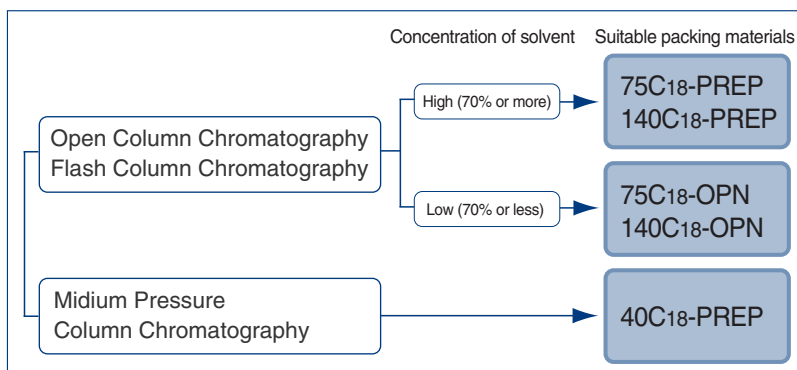
Material Characteristics

Packing Material	C ₁₈ -OPN	C ₁₈ -PREP	SL-II-PREP	Silica Gel 60 (neutral)
Silica Gel	High Purity Porous Spherical Silica			
Average Particle Size	75, 140 μm	40, 75, 140 μm	75, 140 μm	
Average Pore Size	approx. 120 Å			approx. 60 Å
Specific Surface Area	approx. 300 m ² /g			approx. 500 m ² /g
Stationary phase	Octadecyl Group		None	
Carbon content	-	approx. 19%	approx. 0%	
End-capping treatment	None	Treated	-	
Useful range	Open column chromatography / Flash column chromatography			
	Reversed phase chromatography		Normal phase chromatography	

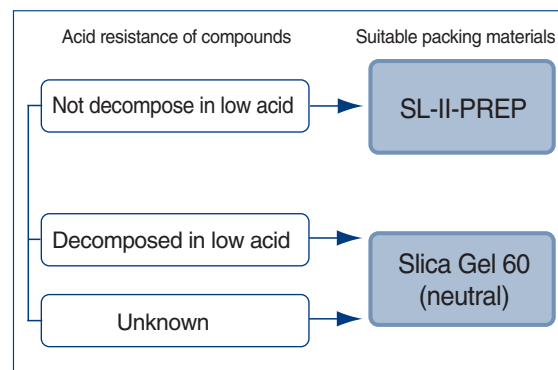


Selection Guide

• Reversed Phase



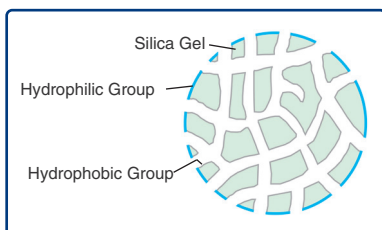
• Normal Phase



COSMOSIL C₁₈-OPN

- A new “Water-Wet” C₁₈ packing material for reversed phase open column chromatography
- Enables large-scale preparation and purification at low cost

Characteristic



The external surface of the C₁₈-OPN gel is coated with hydrophilic groups.



Packing materials in water

Left : C₁₈ OPN provides good resolution

Right : Conventional product float up

Conventional reversed phase C₁₈ packing materials are restricted to about 30-50% water in the mobile phase. The COSMOSIL C₁₈-OPN is a new “Water-Wet” C₁₈ packing material developed for reversed phase open column chromatography. The C₁₈-OPN material can be used in 100% aqueous eluents.

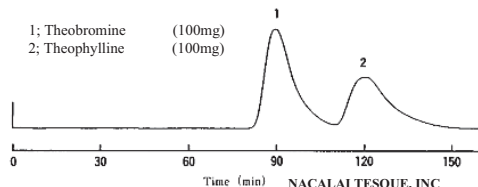
Application Data

• Separation of hydrophilic compounds in aqueous solution

COSMOSIL Application Data

Column: 75C₁₈-OPN
 Column size: 20mm I.D.-250mm
 Mobile phase: Methanol/ H₂O = 30/70
 Flow rate: 0.2 ml/min
 Temperature: Room temperature
 Detection: UV254nm

Sample: 1; Theobromine (100mg)
 2; Theophylline (100mg)



In reversed phase chromatography, hydrophilic compounds such as Theobromine and Theophylline could be separated under low concentration of organic solvent. The figure shows they are clearly separated by reversed open column chromatography with 70% of water.

• Separation of *p*-Cresol and *p*-Ethylphenol by normal and reversed phase mode

Since the structural difference between *p*-Cresol and *p*-Ethylphenol is only one methylene group. It is difficult to separate such samples under normal phase condition. On the other hand, the samples are clearly separated under reversed phase condition with COSMOSIL C₁₈-OPN packing material.

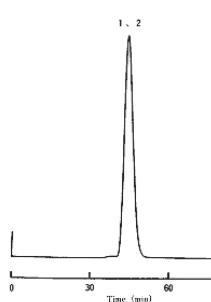
COSMOSIL Application Data

Normal Phase

Packing media: Silica Gel 120 (150 ~ 325mesh)
 Column size: 10mm I.D.-180mm
 Mobile phase: Hexane/Ethyl Acetate = 90/10
 Flow rate: 0.7 ml/min
 Temperature: room temperature
 Detection: UV254nm

Sample: 1; *p*-Cresol
 2; *p*-Ethylphenol

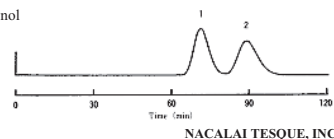
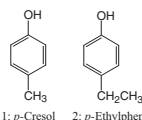
Normal Phase



Reversed Phase

Packing media: 75C₁₈-OPN
 Column size: 10mm I.D.-180mm
 Mobile phase: Methanol/H₂O = 60/40
 Flow rate: 0.2ml/min
 Temperature: room temperature
 Detection: UV254nm

Sample: 1; *p*-Cresol
 2; *p*-Ethylphenol



COSMOSIL C₁₈-PREP

- Standard reversed phase packing material for open chromatography
- Enables large-scale preparation and purification at low cost

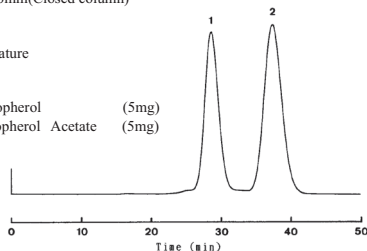
Application Data

• Vitamin E

COSMOSIL Application Data

Column: 40C₁₈-PREP
 Column size: 20mm I.D.-300mm (Closed column)
 Mobile phase: Methanol
 Flow rate: 9.9 ml/min
 Temperature: Room temperature
 Detection: UV280nm

Sample: 1; *DL*- α -Tocopherol (5mg)
 2; *DL*- α -Tocopherol Acetate (5mg)

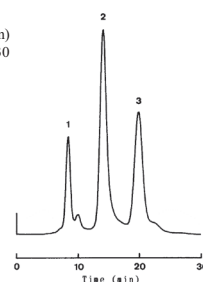


• Natural Compounds

COSMOSIL Application Data

Column: 40C₁₈-PREP
 Column size: 20mm I.D.-300mm (Closed column)
 Mobile phase: Methanol/ 0.05%TFA-H₂O = 70/30
 Flow rate: 9.9 ml/min
 Temperature: Room temperature
 Detection: UV254nm

Sample: 1; Baicalin (40μg)
 2; Baicalein (120μg)
 3; Wogonin (40μg)

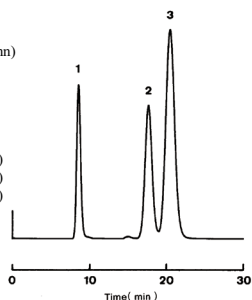


• Basic Compounds

COSMOSIL Application Data

Column: 40C₁₈-PREP
 Column size: 20mmI.D.-300mm(Closed column)
 Mobile phase: Methanol/ H₂O = 80/20
 Flow rate: 9.9 ml/min
 Temperature: Room temperature
 Detection: UV254nm

Sample: 1; Quinoline (200 μg)
 2; Naphthalene (200 μg)
 3; N,N-Diethylaniline (100 μg)

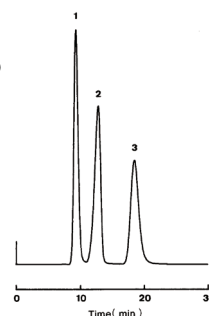


• Highly Polar Compounds

COSMOSIL Application Data

Column: 40C₁₈-PREP
 Column size: 20mmI.D.-300mm(Closed column)
 Mobile phase: Methanol/ H₂O = 30/70
 Flow rate: 9.9 ml/min
 Temperature: Room temperature
 Detection: UV254nm

Sample: 1; Theobromine (250 μg)
 2; Theophylline (250 μg)
 3; Caffeine (250 μg)



• Reproducibility and washing methods

Wash the COSMOSIL C₁₈-OPN packing material with tetrahydrofuran, chloroform or other solvents to remove the impurities. This packing material has excellent reproducibility and can be used repeatedly.

“CAUTION”

Do not wash with basic solvents of pH 7 or more which will dissolve the silica gel or pH 2 or less which will cleave the C₁₈ stationary phase. Dry the packing material at 50°C or less. See end of this chapter for packing method.

COSMOSIL SL-II-PREP

- *Standard packing materials for normal phase chromatography*
- *Ultra pure silica gel packing material more than 99.99% purity*

Comparison

Highly purified silica gel of COSMOSIL SL-II-PREP enables separation of metal coordination compounds without adsorption.

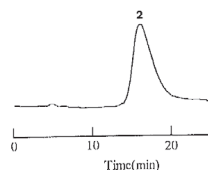
• Metal Coordination Compounds

COSMOSIL Application Data

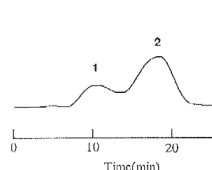
Column: 10mmI.D.-250mm
 Mobile phase: Hexane/Ethanol = 95/5
 Flow rate: 5.0 ml/min
 Temperature: 30°C
 Detection: UV254nm

Sample: 1; Quinizarin
 2; p-Nitrobenzyl Alcohol

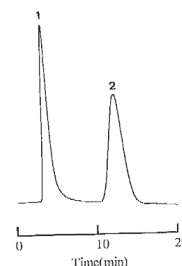
Our conventional product



Silica gel -M comany



75SL-II-PREP



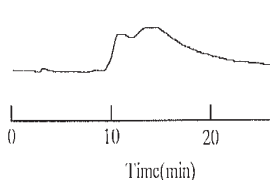
• Organic Acid and Amide

COSMOSIL Application Data

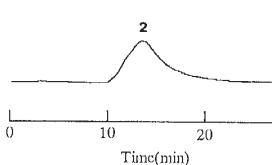
Column: 10mmI.D.-250mm
 Mobile phase: Hexane/Ethanol = 90/10
 Flow rate: 5.0 ml/min
 Temperature: 30°C
 Detection: UV254nm

Sample: 1; Salicylic Acid
 2; Salicylamide

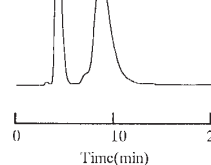
Our conventional product



Silica gel -M comany



75SL-II-PREP



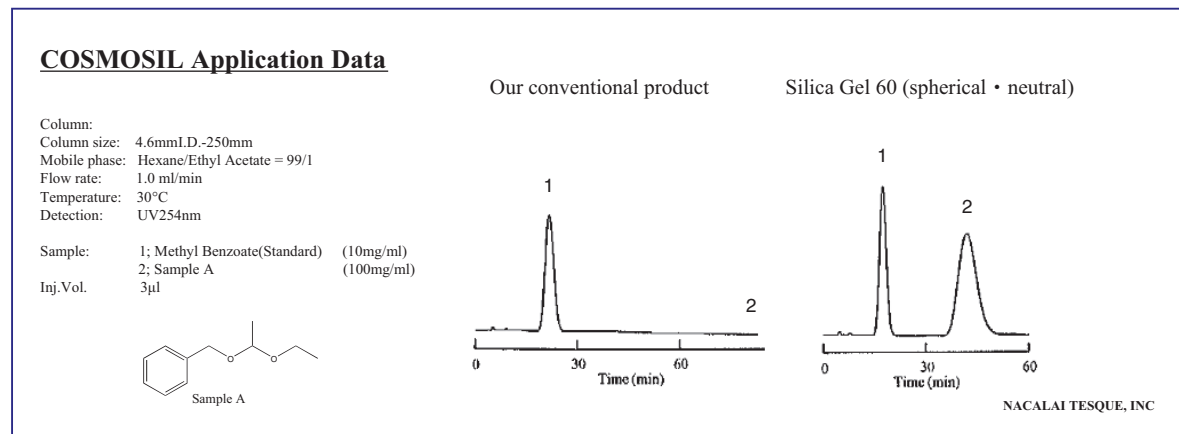
Silica Gel 60 (spherical • neutral)

- The pH of Silica Gel is adjusted to neutral
- Suitable for the separation of pH sensitive compounds

Comparison with conventional silica gel

Since conventional silica gels are weakly acidic, some pH sensitive compounds may be decomposed during the purification by column chromatography with the acidic silica gels. The pH of Silica Gel 60 (spherical • neutral) is adjusted to nearly neutral for the separation of not only pH sensitive compounds but also new compounds that the physical properties are still unknown.

• Purification of Acetal



Ordering Information

• COSMOSIL C₁₈-OPN

Product Name	Particle Size	PKG Size	Product Number
COSMOSIL 75C ₁₈ -OPN	75 µm	100 g	37842-66
		500 g	37842-95
		1 kg	37842-11
COSMOSIL 140C ₁₈ -OPN	140 µm	100 g	37878-16
		500 g	37878-45
		1 kg	37878-61

• COSMOSIL C₁₈-PREP

Product Name	Particle Size	PKG Size	Product Number
COSMOSIL 40C ₁₈ -PREP	40 µm	100 g	37932-86
		500 g	37932-15
		1 kg	37932-31
COSMOSIL 75C ₁₈ -PREP	75 µm	100 g	37933-76
		500 g	37933-05
		1 kg	37933-21
COSMOSIL 140C ₁₈ -PREP	140 µm	100 g	37934-66
		500 g	37934-95
		1 kg	37934-11

• COSMOSIL SL-II PREP

Product Name	Particle Size	PKG Size	Product Number
COSMOSIL 75SL-II-PREP	75 µm	100 g	38012-64
		500 g	38012-35
		1 kg	38012-51
COSMOSIL 140SL-II-PREP	140 µm	100 g	38013-54
		1 kg	38013-41

• Silica Gel (spherical • neutral)

Product Name	Particle Size	PKG Size	Product Number
Silica Gel 60 (spherical • neutral) for column chromatograph	75 µm	500 g	30511-35
		1 kg	30511-51
	140 µm	500 g	30518-65
		1 kg	30518-81

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