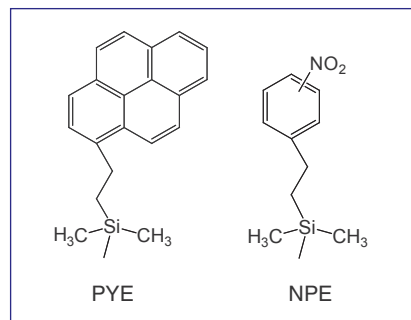


COSMOSIL

HPLC Column for Structural Isomers

COSMOSIL PYE COSMOSIL NPE

	COSMOSIL PYE	COSMOSIL NPE
Silica Gel	High Purity Porous Spherical Silica	
Average Particle Size	5 μm	
Average Pore Size	approx. 120 \AA	
Stationary Phase	2-(1-Pyrenyl)ethyl Group	Nitrophenylethyl Group
Main Interaction	Hydrophobic Interaction π - π Interaction Charge Transfer Interaction Stereoselectivity	Hydrophobic Interaction π - π Interaction Dipole-Dipole Interaction
Carbon Content	approx. 18%	approx. 9%



COSMOSIL PYE (Pyrenylethyl group bonded) and COSMOSIL NPE (Nitrophenylethyl group bonded) column show unique retention characteristics based on multiple separation modes such as hydrophobic, charge transfer and π - π interactions. These columns are recommended for the separation of structural isomers.

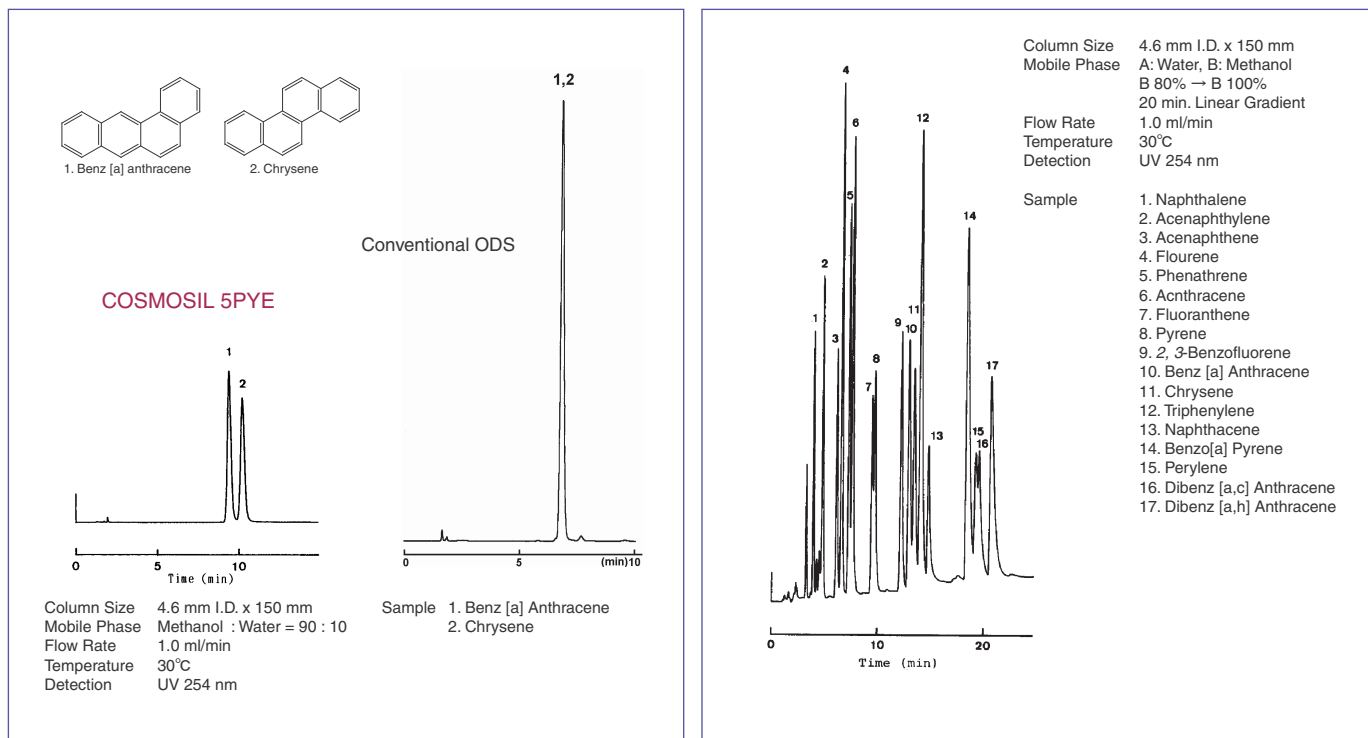
COSMOSIL PYE

- *Pyrenylethyl group bonded stationary phase*
- *Separation with high molecular shape selectivity or π - π interactions*
- *Excellent separation for structural isomers*

COSMOSIL PYE column is a reversed phase column with 2-(1-Pyrenyl) ethyl groups bonded silica packing material. This column utilizes π - π interactions originating from the planar pyrene ring structure to separate structural isomers.

Separation of PAHs

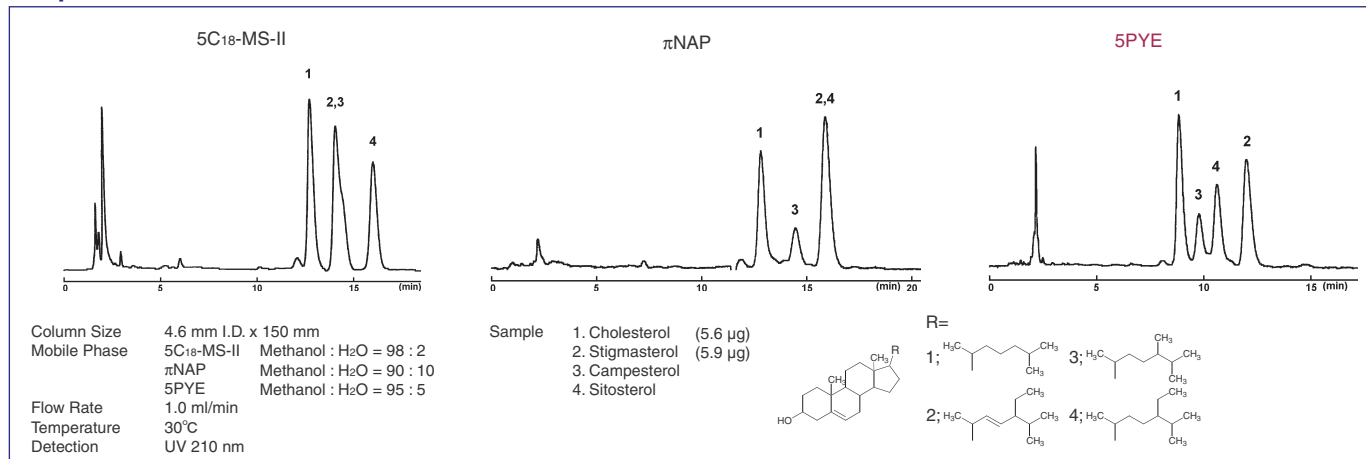
Due to the planar pyrene ring structure and strong π - π interactions, COSMOSIL PYE achieves excellent separation of aromatic isomers.



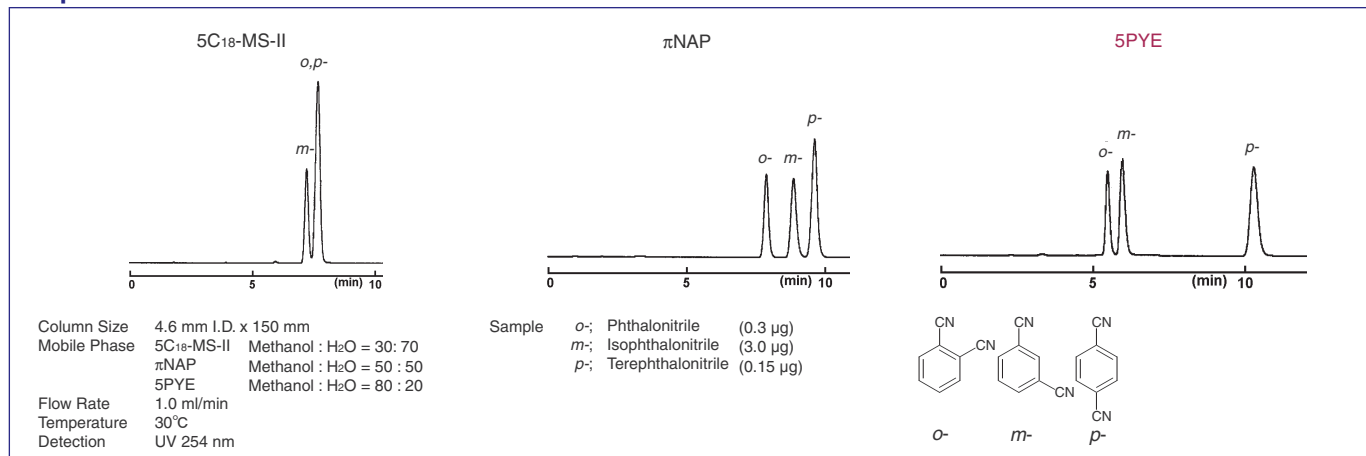
COSMOSIL PYE (continued)

Application Data

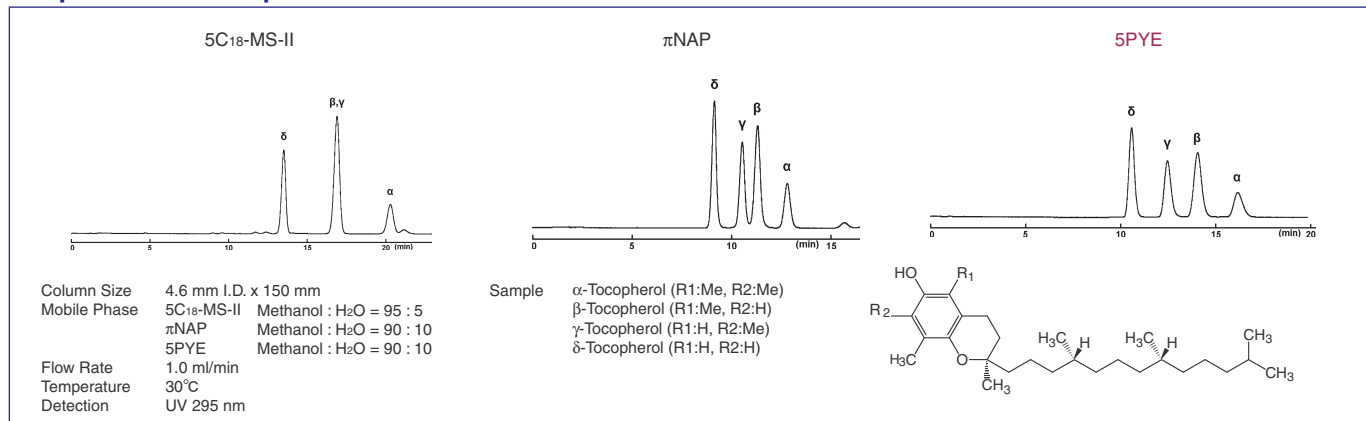
Separation of Sterols



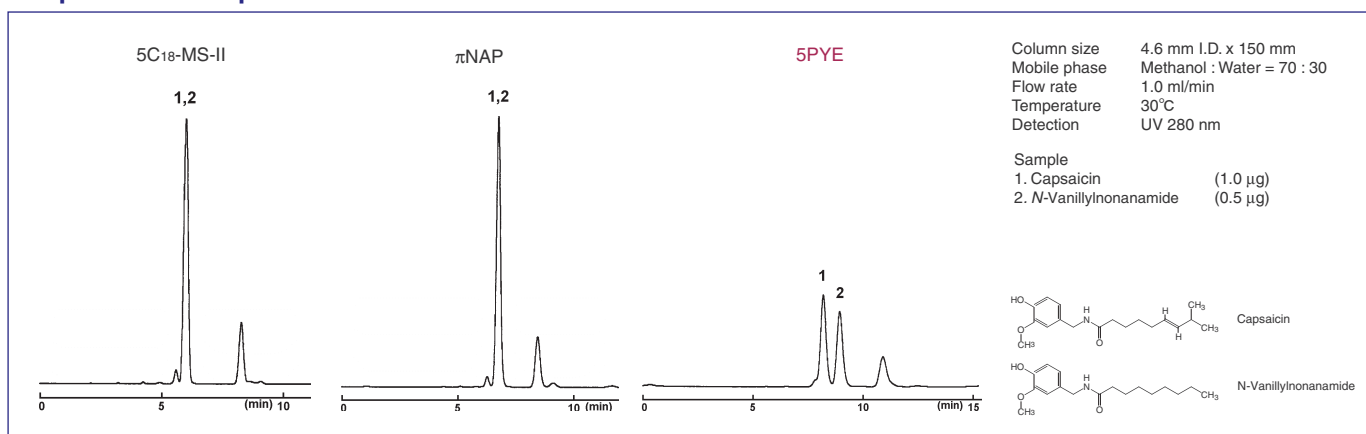
Separation of Phthalonitriles



Separation of Tocopherols



Separation of Capsaicin



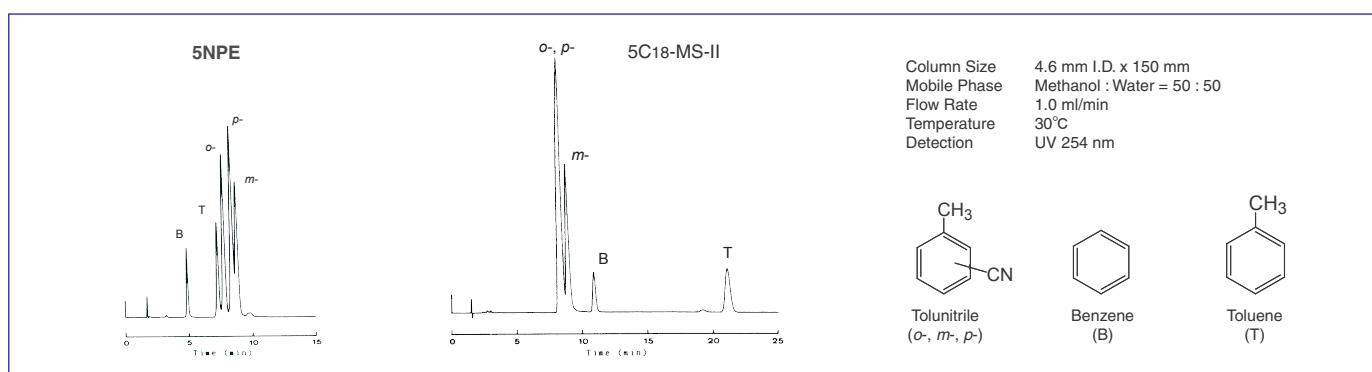
COSMOSIL NPE

COSMOSIL NPE column is a reversed phase column with Nitrophenylethyl groups bonded silica packing material. This column provides unique retention characteristics, slightly different from the COSMOSIL PYE column, utilizing both dipole-dipole and π - π interactions.

- Nitrophenylethyl group bonded stationary phase
- Separation with dipole-dipole and π - π interactions
- Excellent separation for structural isomers

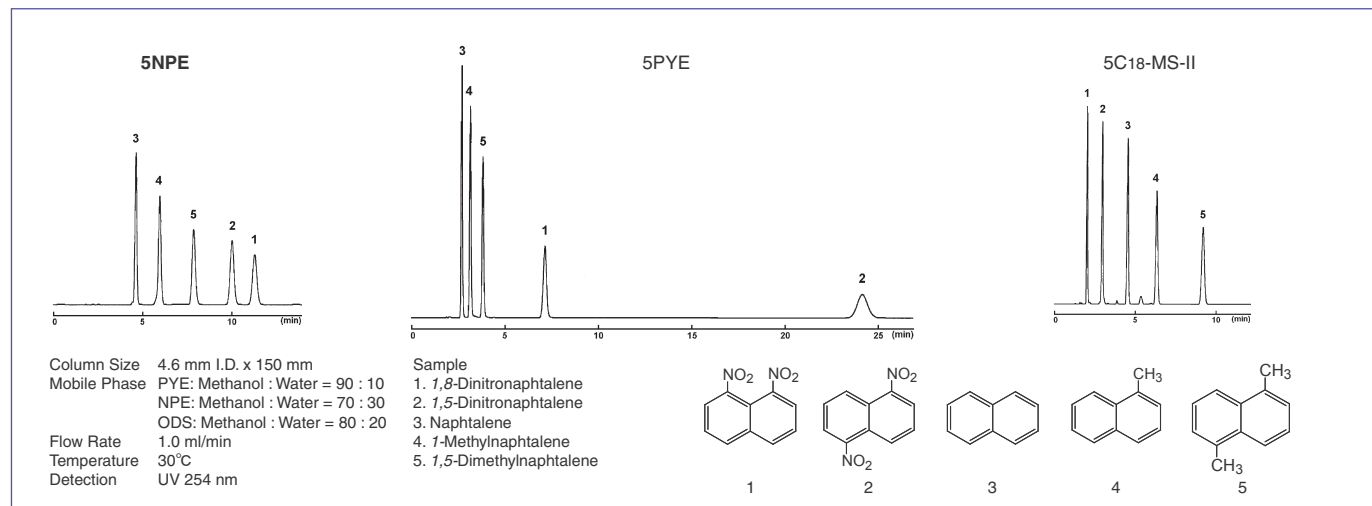
Advantage of Dipole-Dipole Interactions

The chromatogram below illustrates the separation of *o*-, *m*-, *p*-tolunitrile. Since hydrophobic interaction is dominant in the separation by a ODS column, tolunitrile elutes first. In COSMOSIL NPE, tolunitrile elutes later. This suggests that COSMOSIL NPE utilizes the interaction between π -electron of the nitrophenyl group and CN- for retention in addition to hydrophobic interaction.



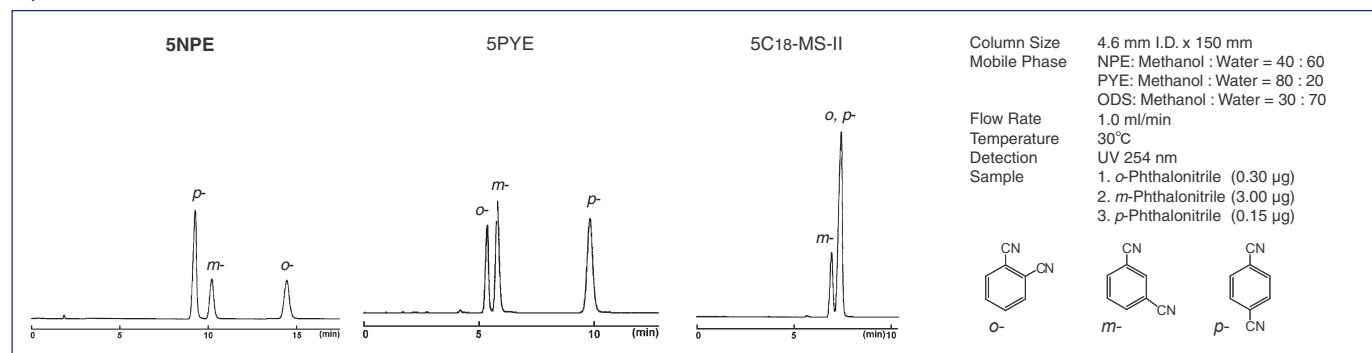
Application of Disubstituted Naphthalenes

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.



Effect of Dipole-Dipole Interaction

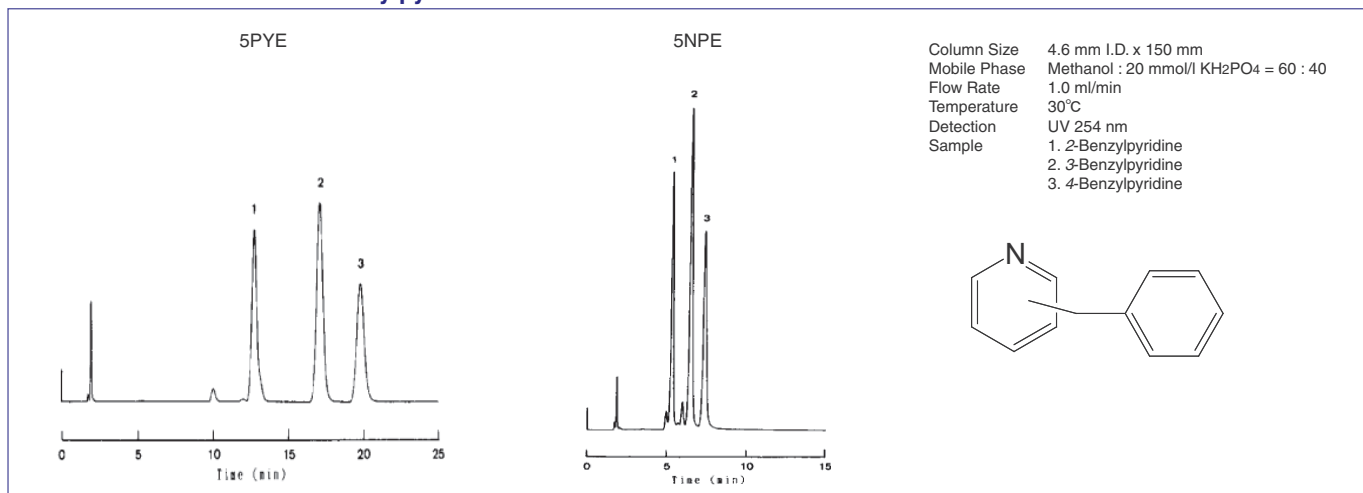
The ODS column cannot sharply separate the positional isomers like phthalonitriles. In contrast, COSMOSIL PYE and NPE can separate them very well by π - π interaction. Furthermore, COSMOSIL NPE strongly retains ortho compound which has a big dipole moment.



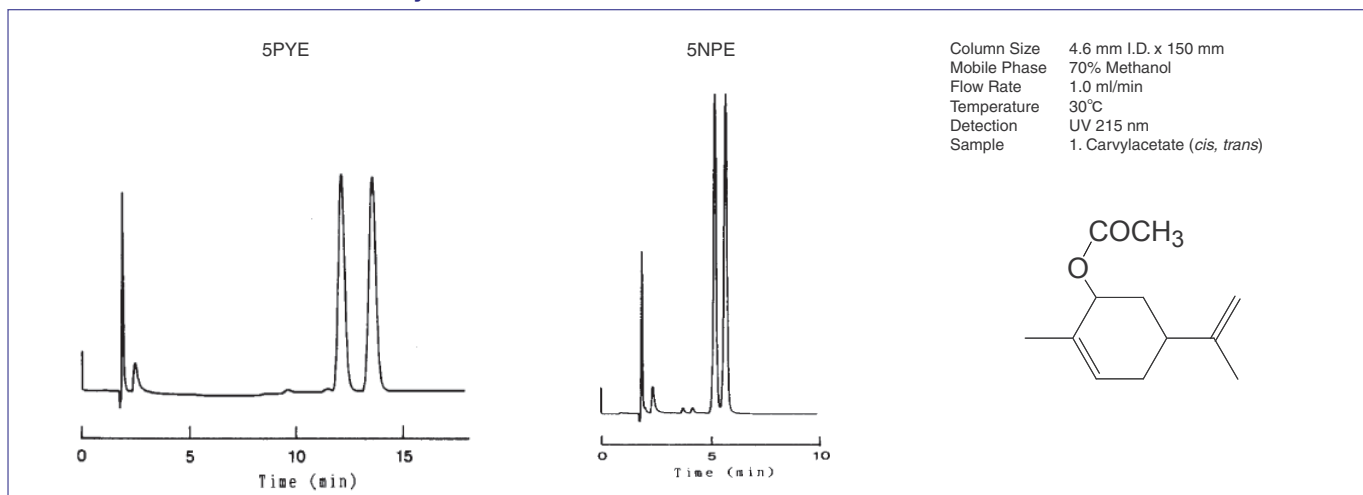
COSMOSIL NPE (continued)

Application Data

Positional Isomers like Benzylpyridines



Geometrical Isomers like Carvylacetates



Ordering Information

Product Name	Column Size	Product Number	Product Name	Column Size	Product Number
COSMOSIL 5PYE	1.0 mm I.D. x 150 mm	02851-71	COSMOSIL 5PYE	4.6 mm I.D. x 10 mm	37903-11
Packed Column	2.0 mm I.D. x 150 mm	38042-61	Guard Column	10.0 mm I.D. x 20 mm	38041-71
	2.0 mm I.D. x 250 mm	34450-31		20.0 mm I.D. x 20 mm	05867-91
	4.6 mm I.D. x 150 mm	37837-91		20.0 mm I.D. x 50 mm	34475-21
	4.6 mm I.D. x 250 mm	37989-11		COSMOSIL 5NPE	4.6 mm I.D. x 10 mm
	10.0 mm I.D. x 250 mm	37996-11	Guard Column	10.0 mm I.D. x 20 mm	38045-31
	20.0 mm I.D. x 250 mm	38044-41		20.0 mm I.D. x 20 mm	05868-81
COSMOSIL 5NPE	1.0 mm I.D. x 150 mm	05897-01		20.0 mm I.D. x 50 mm	05869-71
Packed Column	2.0 mm I.D. x 150 mm	34328-51			
	2.0 mm I.D. x 250 mm	34379-91			
	4.6 mm I.D. x 150 mm	37902-21			
	4.6 mm I.D. x 250 mm	37990-71			
	10.0 mm I.D. x 250 mm	05469-11			
	20.0 mm I.D. x 250 mm	38046-21			

Other size may be available. Please enquire.

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