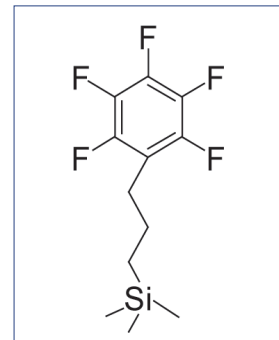




COSMOSIL

High Performance Liquid Chromatography Column **COSMOSIL 5PFP**

- *Pentafluorophenyl-bonded stationary phase*
- *Alternative selectivity to C₁₈ columns*
- *Available in analytical and preparative columns*
- *Suitable for structural isomers and halogenated compounds*



Pentafluorophenyl Group

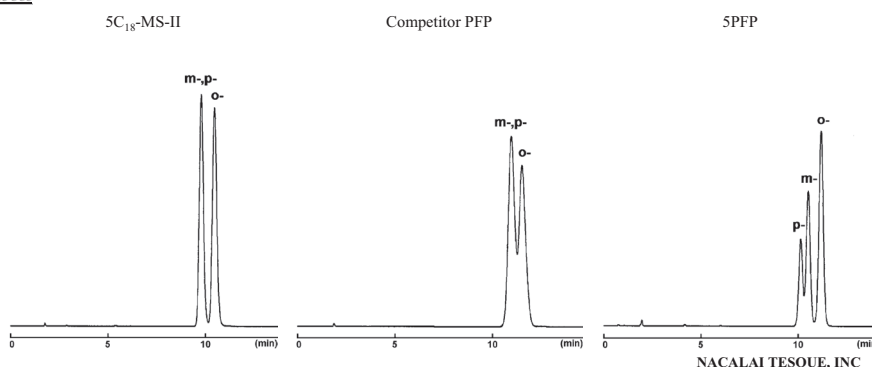
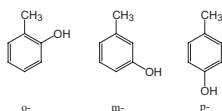
Alternative Selectivity to C₁₈ Columns

COSMOSIL PFP provides different selectivity from C₁₈ Columns. Furthermore it offers improved separation compared to other companies' PFP columns.

COSMOSIL Application Data

Column: 4.6mm I.D. - 150mm
Mobile phase: Methanol/ H₂O = 40/60
Flow rate: 1.0 ml/min
Temperature: 30°C
Detection: UV254nm

Sample: *o*-Cresol (3.0mg/ml)
m-Cresol (3.0mg/ml)
p-Cresol (3.0mg/ml)
Inj. Vol.: 1.0μl



Reasonably Priced Preparative Columns

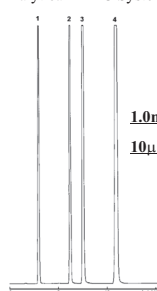
We can offer preparative columns at a reasonable price because we synthesize our own silylating agents.

COSMOSIL Application Data

Column: 5PFP
Column size: 4.6mm I.D. - 250mm
Mobile phase: Methanol/ H₂O = 70/30
Flow rate: 1.0 ml/min
Temperature: 30°C
Detection: UV254nm

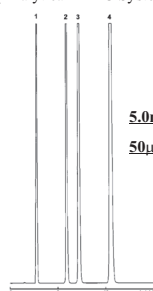
Sample: 1; Uracil
2; Methyl Benzoate
3; Toluene
4; Naphthalene

4.6mm I.D. - 250mm
(Analytical HPLC System)



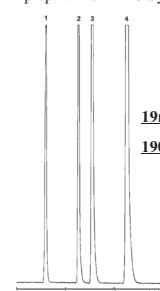
**1.0ml/min,
10μl Injection**

10mm I.D. - 250mm
(Analytical HPLC System)



**5.0ml/min,
50μl Injection**

20mm I.D. - 250mm
(Semi-preparative HPLC System)

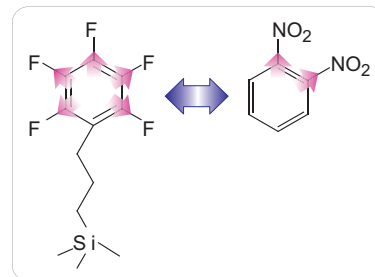


**19ml/min,
190μl Injection**

NACAL TESQUE, INC

Separation Properties of PFP

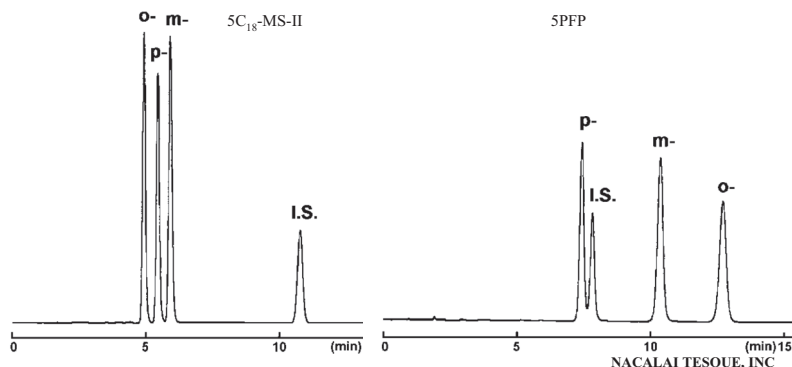
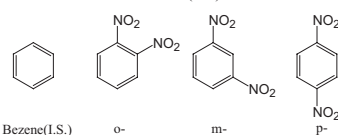
COSMOSIL PFP uses dipole-dipole and π - π interactions. It offers strong retention for compounds with strong dipole moments, e.g. cationic or halogenated compounds. It also has high steric selectivity for structural isomer separations.



COSMOSIL Application Data

Column: 5C₁₈-MS-II
 Column size: 4.6mm I.D.-150mm
 Mobile phase: Methanol/ H₂O = 50/50
 Flow rate: 1.0 ml/min
 Temperature: 30°C
 Detection: UV254nm

Sample: *o*-Dinitrobenzene
m-Dinitrobenzene
p-Dinitrobenzene
 Benzene (I.S.)



5PFP

NACALAI TESQUE, INC

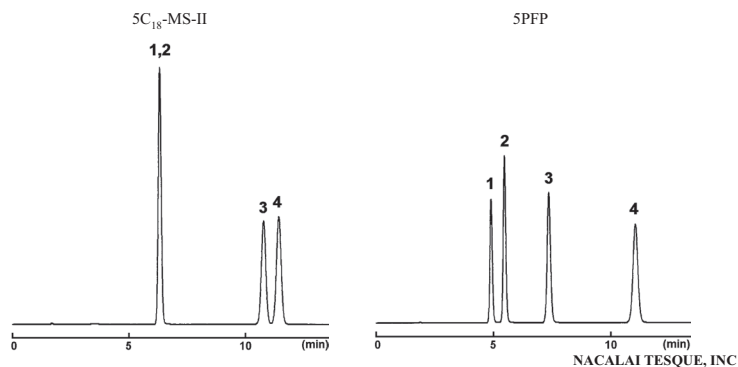
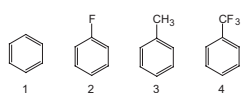
Applications

Fluorinated compounds

COSMOSIL Application Data

Column: 5C₁₈-MS-II
 Column size: 4.6mm I.D.-150mm
 Mobile phase: Methanol/ H₂O = 60/40
 Flow rate: 1.0 ml/min
 Temperature: 30°C
 Detection: UV254nm

Sample: 1; Benzene (2.5mg/ml)
 2; Fluorobenzene (1.0mg/ml)
 3; Toluene (2.5mg/ml)
 4; α, α, α -Trifluorotoluene [Benzotrifluoride] (0.25mg/ml)
 Inj. Vol.: 1.0 μ l



5PFP

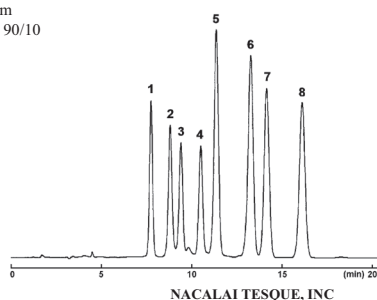
NACALAI TESQUE, INC

Vitamin E

COSMOSIL Application Data

Column: 5PFP
 Column size: 4.6mm I.D.-250mm
 Mobile phase: Methanol/ H₂O = 90/10
 Flow rate: 1.0 ml/min
 Temperature: 30°C
 Detection: UV295nm

Sample: 1; δ -Tocotrienol
 2; β -Tocotrienol
 3; γ -Tocotrienol
 4; α -Tocotrienol
 5; δ -Tocopherol
 6; β -Tocopherol
 7; γ -Tocopherol
 8; α -Tocopherol



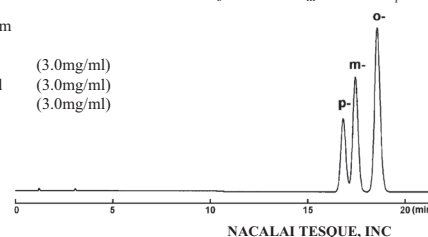
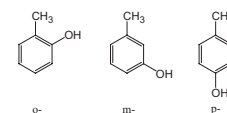
NACALAI TESQUE, INC

Cresol Isomers

COSMOSIL Application Data

Column: 5PFP
 Column size: 4.6mm I.D.-250mm
 Mobile phase: Methanol/ H₂O = 40/60
 Flow rate: 1.0 ml/min
 Temperature: 30°C
 Detection: UV254nm

Sample: *o*-Cresol (3.0mg/ml)
m-Cresol (3.0mg/ml)
p-Cresol (3.0mg/ml)
 Inj. Vol.: 1.0 μ l



NACALAI TESQUE, INC

Specialty Columns with Alternative Selectivity to C₁₈

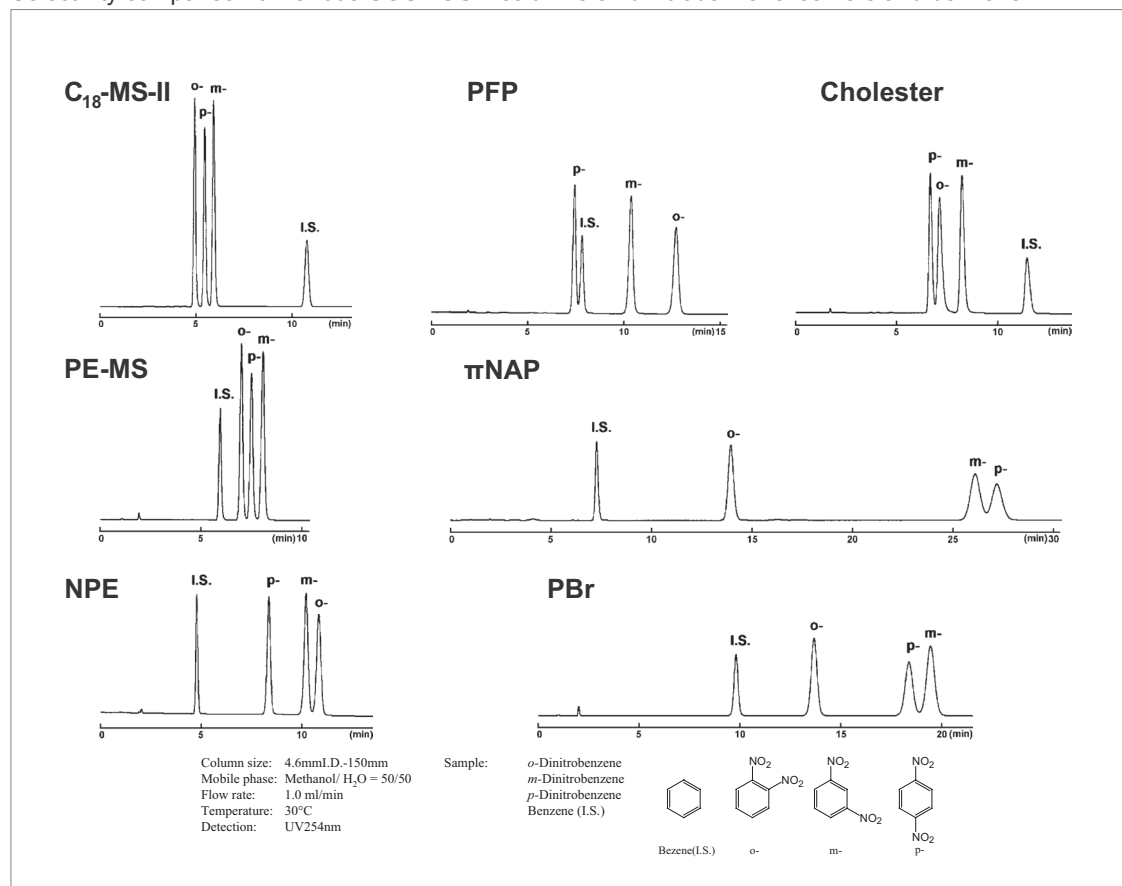
Nacalai Tesque offers the following specialty columns with alternative selectivity to C₁₈ columns.

Reversed Phase Specialty Columns

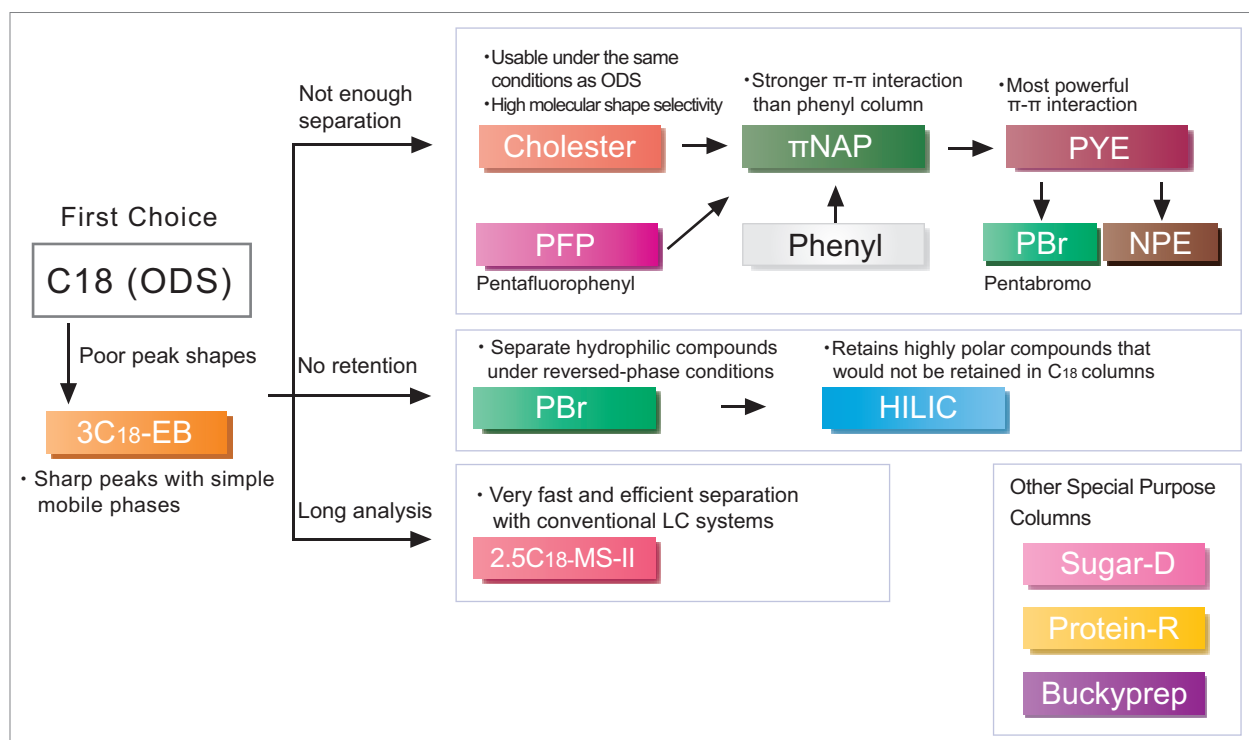
Product Name	PFP	Cholester	PE-MS	πNAP	PYE	NPE	PBr
Stationary phase structure							
Stationary phase	Pentafluorophenyl group	Cholesteryl group	Phenylethyl group	Naphthylethyl group	Pyrenylethyl group	Nitrophenylethyl group	Pentabromobenzyl group
Main interactions	Hydrophobic interaction π-π interaction Dipole-dipole interaction	Hydrophobic interaction Molecular shape selectivity	Hydrophobic interaction π-π interaction	Hydrophobic interaction π-π interaction	Hydrophobic interaction π-π interaction Dispersion force Molecular shape selectivity	Hydrophobic interaction π-π interaction Dipole-dipole interaction	Hydrophobic interaction Dispersion force
Features	Separation by dipole-dipole interactions.	- Usable under the same conditions as C₁₈ - High molecular shape selectivity	Weak π-π interaction	Stronger π-π interaction than phenyl column	Strongest π-π interaction	Strong dipole-dipole Interaction	- Separation by dispersion force - Separate hydrophilic compounds in reversed phase conditions.

Selectivity to Dinitrobenzene Isomers

Selectivity comparison of various COSMOSIL columns on dinitrobenzene isomers and benzene



COSMOSIL Column Selection Guide



Specifications

Packing Material		5PFP
Silica gel	High-purity porous spherical silica	
Average particle size	5 μm	
Average pore size	approx. 120 Å	
Specific surface area	approx. 300 m ² /g	
Stationary phase	Pentafluorophenyl group	
USP category	L43	
Bonding type	Monomeric	
Endcapping treatment	Yes	
Carbon load	approx. 10%	
Usable pH range	2–7.5	

Ordering Information

COSMOSIL 5PFP

Column Size I.D. x Length (mm)	Product Number	Column Size I.D. x Length (mm)	Product Number	Column Size I.D. x Length (mm)	Product Number
2.0 x 50	13263-41	10 x 50	13272-21	4.6 mm I.D. x 10 mm cartridge*	12443-24
2.0 x 100	13264-31	10 x 100	13273-11	10 x 20	12385-81
2.0 x 150	12381-21	10 x 150	13274-01	20 x 20	13275-91
2.0 x 250	13265-21	10 x 250	12386-71	4.6 mm I.D. Cartridge Holder	38009-79
3.0 x 50	13266-11	20 x 50	13276-81	*Cartridge Holder is required.	
3.0 x 100	13267-01	20 x 100	13277-71		
3.0 x 150	13268-91	20 x 150	13278-61		
3.0 x 250	13269-81	20 x 250	12387-61		
4.6 x 50	13270-41	28 x 100	13280-11		
4.6 x 100	13271-31	28 x 150	13281-01		
4.6 x 150	12383-01	28 x 250	13282-91		
4.6 x 250	12384-91				

For research use only, not intended for diagnostic or drug use.