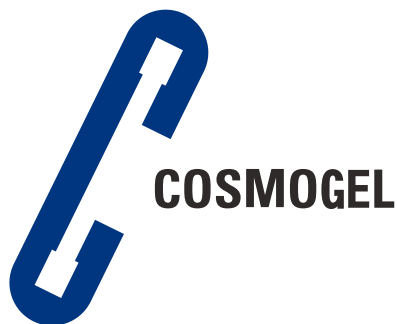




Ion Exchange Chromatography

COSMOGEL IEX Series Columns

- **Available in 3 different ion-exchange modes**
Anion-exchange type, Cation-exchange type, Amphoteric ion-exchange type
- **Available for 3 different application areas**
for Purification, for Ultra-fast analysis, for Precise analysis
- **For separation of biopolymers such as proteins or nucleic acids**



COSMOGEL IEX Series

COSMOGEL IEX Series are available in amphoteric ion-exchange type in which two kinds of packing materials are mixed, as well as in widely used anion-exchange type and cation-exchange type.

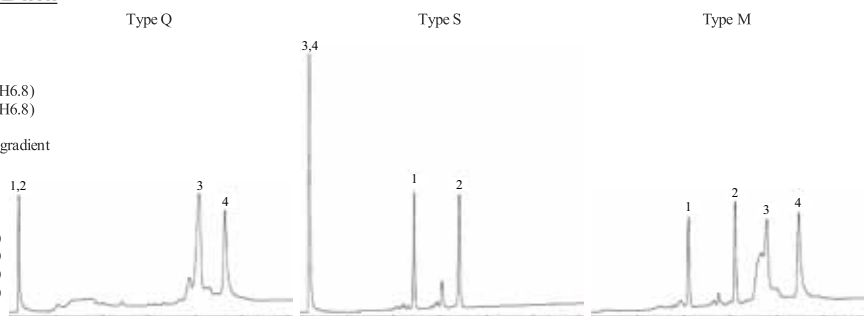
Ion Exchange Mode	Anion-exchange Type			Cation-exchange Type			Amphoteric ion-exchange Type	
Packing Material	Type Q	Type Q-N		Type S	Type S-N		Type M	Type M-N
Gel / Average Particle Size	Hydrophilic Polymer / 5 μm							
Average Pore Size	1000 Å	Non-porous		1000 Å	Non-porous		1000 Å	Non-porous
Functional Group	-CH ₃ N ⁺ (CH ₃) ₃			-(CH ₂) ₃ SO ₃ ⁻			-CH ₃ N ⁺ (CH ₃) ₃ + -(CH ₂) ₃ SO ₃ ⁻	
Protein Binding Capacity	110-150 mg	12-20 mg		70-100 mg	10-18 mg		55-75 mg(BSA)/ml	6-10 mg(BSA)/ml
	BSA/ml-resin			human IgG/ml-resin			35-50 mg(IgG)/ml	5-9 mg(IgG)/ml
Target Sample	Acidic Proteins / DNA			Basic Proteins			All Proteins	
Application	For Purification	For Ultra-fast Analysis	For Precise Analysis	For Purification	For Ultra-fast Analysis	For Precise Analysis	For Purification	For Precise Analysis
Column Size I.D. x Length(mm)	4.6 x 50	4.6 x 30	4.6 x 100	4.6 x 50	4.6 x 30	4.6 x 100	4.6 x 50	4.6 x 100

• Comprehensive isolation of proteins by Amphoteric ion-exchange type (Type M)

The amphoteric ion-exchange type enables the simultaneous separation of both acidic and basic proteins in one application.

COSMOSIL Application Data

Column: COSMOGEL IEX
 Column size: 4.6mm I.D. x 50mm
 Mobile phase: A: 20mmol/l Phosphate buffer(pH6.8)
 B: 20mmol/l Phosphate buffer(pH6.8) + 0.5mol/l NaCl
 B conc. 0→100% 30min Linear gradient
 Flow rate: 0.5 ml/min
 Temperature: 30°C
 Detection: UV220nm
 Sample:
 1. Ribonuclease A (1.5 μ g)
 2. Cytochrome C (1.5 μ g)
 3. Trypsin Inhibitor (6.0 μ g)
 4. β -Galactosidase (6.0 μ g)

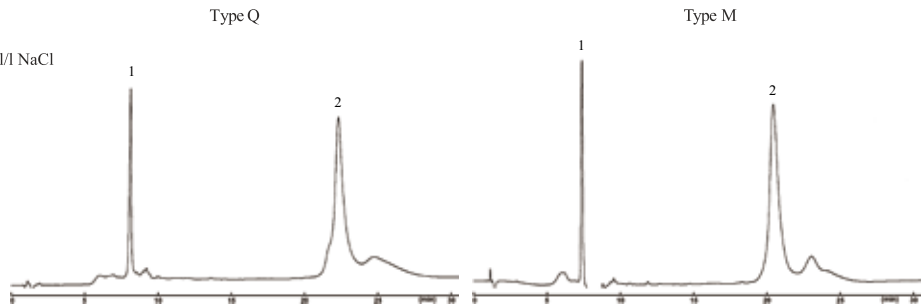


• Separation by different ion-exchange mode of amphoteric ion-exchange type (Type M)

Amphoteric ion-exchange type can be used as anion-exchange type or cation-exchange type.

COSMOSIL Application Data

Column: COSMOGEL IEX
 Column size: 4.6mm I.D. x 50mm
 Mobile phase: A: 20mmol/l Tris buffer(pH8.3)
 B: 20mmol/l Tris buffer(pH8.3) + 0.5mol/l NaCl
 B conc. 0→100% 30min Linear gradient
 Flow rate: 0.5 ml/min
 Temperature: 30°C
 Detection: UV220nm
 Sample: 1. Carbonic Anhydrase (0.8 μg)
 2. BSA (6.3 μg)



◆ Application Types

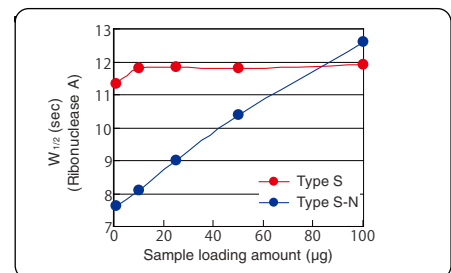
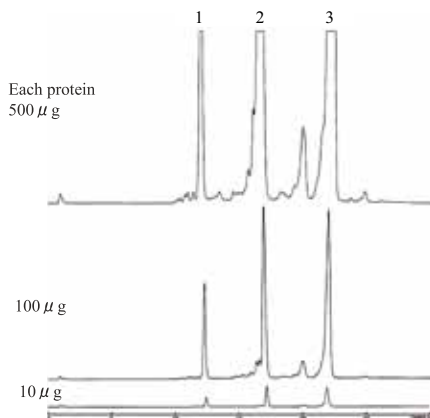
COSMOGEL IEX Series are available for 3 types of applications: purification, ultra-fast analysis and precise analysis.

• For Purification: Type Q, Type S, Type M (Packing Material: Porous, Column Size: 4.6 mm I.D. x 50 mm)

Type Q, Type S and Type M with porous packing materials have higher binding capacity of proteins than the respective non-porous type, which means that peak shape does not spread even with injection of a large volume of sample. Therefore they are highly suitable for purification of large sample.

COSMOSIL Application Data

Column: COSMOGEL IEX Type S
 Column size: 4.6mm I.D. x 50mm
 Mobile phase: A: 20mmol/l Phosphate buffer(pH6.8)
 B: 20mmol/l Phosphate buffer(pH6.8) + 0.5mol/l NaCl
 B conc. 0→100% 30min Linear gradient
 Flow rate: 0.5 ml/min
 Temperature: 30°C
 Detection: UV280nm
 Sample: 1. Ribonuclease A
 2. Cytochrome C
 3. Lysozyme

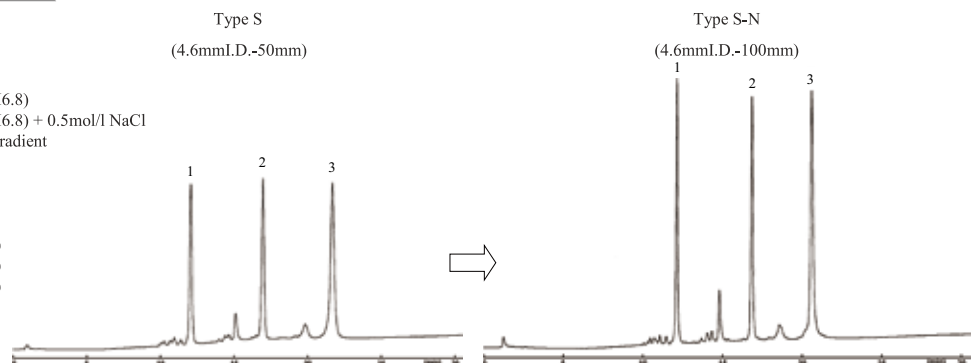


• For Precise Analysis: Type Q-N, Type S-N, Type M-N (Packing Material: Non-porous, Column Size: 4.6 mm I.D. x 100 mm)

Type Q-N, Type S-N, Type M-N with non-porous packing materials reduce spreading of samples in packing materials, result in high resolution separation for precise analysis such as quality control of antibody drugs. The longer column length also contributes to the sharper peaks.

COSMOSIL Application Data

Column: COSMOGEL IEX
 Column size: 4.6mm I.D. x 50mm
 Mobile phase: A: 20mmol/l Phosphate buffer(pH6.8)
 B: 20mmol/l Phosphate buffer(pH6.8) + 0.5mol/l NaCl
 B conc. 0→100% 30min Linear gradient
 Flow rate: 0.5 ml/min
 Temperature: 30°C
 Detection: UV220nm
 Sample: 1. Ribonuclease A (1.65 μg)
 2. Cytochrome C (1.65 μg)
 3. Lysozyme (1.65 μg)

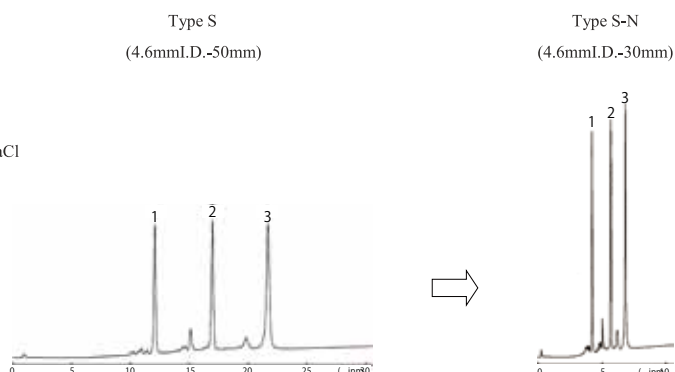


• **For Ultra-fast Analysis: Type Q-N, Type S-N, Type M-N (Packing Material: Non-porous, Column Size: 4.6 mm I.D. x 30 mm)**

The resolution with non-porous packing materials is not much affected by high flow rate and thus the materials are suitable for fast analysis. The shorter column length contributes to the fast analysis.

COSMOSIL Application Data

Column: COSMOGEL IEX
 Column size: 4.6mmI.D.x50mm
 Mobile phase: A: 20mmol/l Phosphate buffer(pH6.8)
 B: 20mmol/l Phosphate buffer(pH6.8) + 0.5mol/l NaCl
 B conc. 0→100% Linear gradient
 Type S: 30min Type S-N: 10min
 Flow rate: Type S: 0.5 ml/min Type S-N: 1.0 ml/min
 Temperature: 30°C
 Detection: UV220nm
 Sample: 1. Ribonuclease A (1.65 μg)
 2. Cytochrome C (1.65 μg)
 3. Lysozyme (1.65 μg)

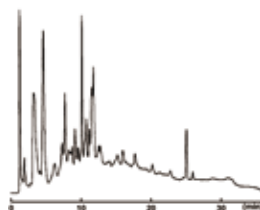


Application Data

• **Urease by Type M**

COSMOSIL Application Data

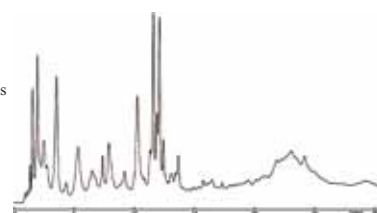
Column: COSMOGEL IEX Type M
 Column size: 4.6mmI.D.x50mm
 Mobile phase: A: 20mmol/l Tris buffer(pH8.3)
 B: 20mmol/l Tris buffer(pH8.3) + 0.5mol/l NaCl
 B conc. 0→100% 30min Linear gradient
 Flow rate: 0.5 ml/min
 Temperature: 30°C
 Detection: UV280nm
 Sample: Urease (100 μg)



• **E.coli Proteins**

COSMOSIL Application Data

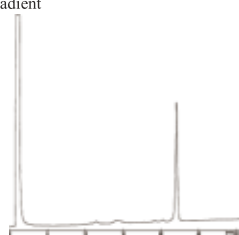
Column: COSMOGEL IEX Type Q
 Column size: 4.6mmI.D.x50mm
 Mobile phase: A: 20mmol/l Tris buffer(pH8.3)
 B: 20mmol/l Tris buffer(pH8.3) + 0.5mol/l NaCl
 B conc. 0→100% 30min Linear gradient
 Flow rate: 0.5 ml/min
 Temperature: 30°C
 Detection: UV220nm
 Sample: E.coli Proteins



• **Purification of Lysozyme from Egg White**

COSMOSIL Application Data

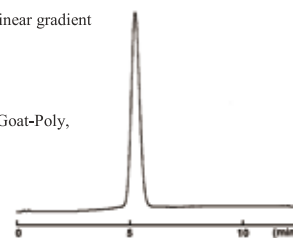
Column: COSMOGEL IEX Type S
 Column size: 4.6mmI.D.x50mm
 Mobile phase: A: 20mmol/l Phosphate buffer(pH6.8)
 B: 20mmol/l Phosphate buffer(pH6.8) + 0.5mol/l NaCl
 B conc. 0→100% 30min Linear gradient
 Flow rate: 0.5 ml/min
 Temperature: 30°C
 Detection: UV220nm
 Sample: Egg White



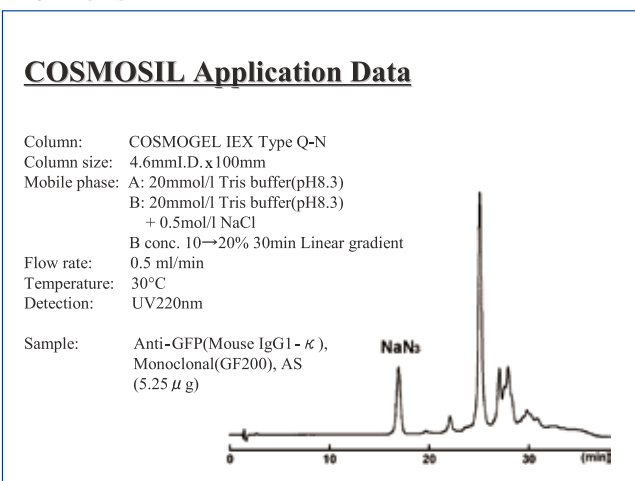
• **Ultra-fast Analysis of IgG**

COSMOSIL Application Data

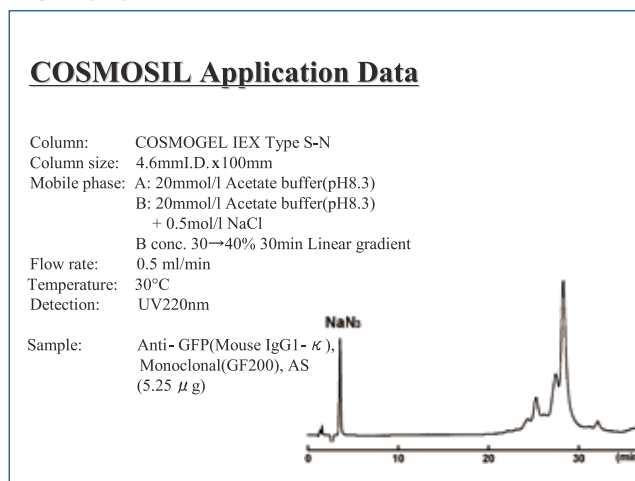
Column: COSMOGEL IEX Type Q-N
 Column size: 4.6mmI.D.x30mm
 Mobile phase: A: 20mmol/l Tris buffer(pH8.3)
 B: 20mmol/l Tris buffer(pH8.3) + 0.5mol/l NaCl
 B conc. 10→60% 10min Linear gradient
 Flow rate: 1.0 ml/min
 Temperature: 30°C
 Detection: UV220nm
 Sample: Anti-IgG(H+L), Mouse, Goat-Poly,
 Affinity purification



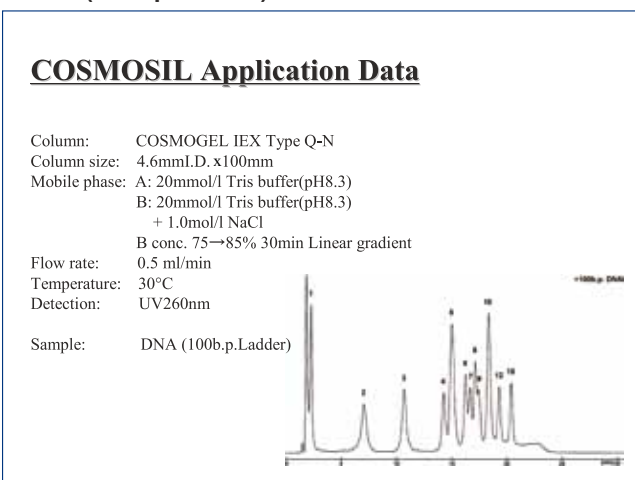
• IgG by TypeQ-N



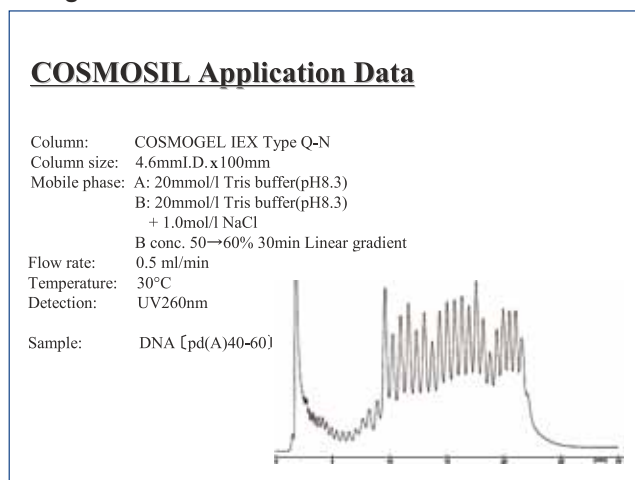
• IgG by TypeS-N



• DNA (100b.p. Ladder)



• Oligonucleotide



Ordering Information

Ion Exchange Mode	Product Name	Application	Column Size	Product Number
Anion-exchange Type	COSMOGEL IEX Type Q	For Purification	4.6 mm I.D. x 50 mm	06266-31
	COSMOGEL IEX Type Q-N	For Ultra-fast Analysis	4.6 mm I.D. x 30 mm	06264-51
	COSMOGEL IEX Type Q-N	For Precise Analysis	4.6 mm I.D. x 100 mm	06258-41
Cation-exchange Type	COSMOGEL IEX Type S	For Purification	4.6 mm I.D. x 50 mm	06252-01
	COSMOGEL IEX Type S-N	For Ultra-fast Analysis	4.6 mm I.D. x 30 mm	06251-11
	COSMOGEL IEX Type S-N	For Precise Analysis	4.6 mm I.D. x 100 mm	06250-21
Amphoteric ion-exchange Type	COSMOGEL IEX Type M	For Purification	4.6 mm I.D. x 50 mm	06248-71
	COSMOGEL IEX Type M-N	For Precise Analysis	4.6 mm I.D. x 100 mm	06244-11

Column Material : PEEK
 Connection : Waters Type

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