

# Shim-pack™ Bio series

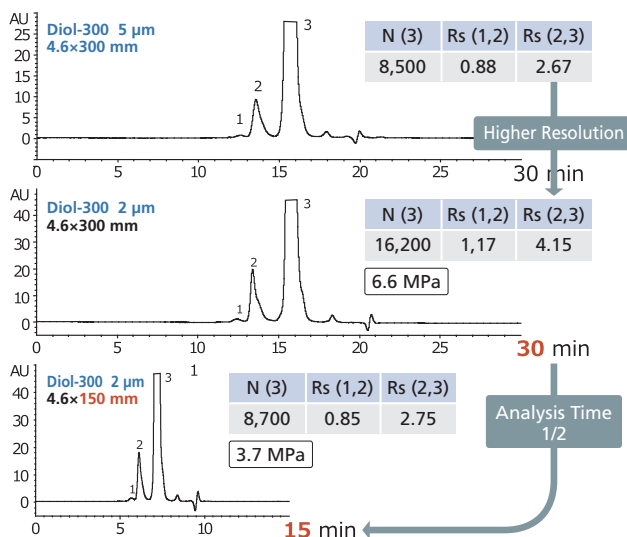
## Solution for Analysis of Peptides, Oligonucleotides and Biopharmaceuticals

The accurate analysis of biopharmaceuticals compounds is required for developing higher quality biopharmaceuticals. Shim-pack Bio series will improve the accuracy of the characterization of peptides, oligonucleotide and biopharmaceuticals.

### Shim-pack Bio Diol : Size Exclusion Chromatography Columns

With different pore sizes, Shim-pack Bio Diol LC columns are effective for analysis of aggregates and fragments of mAb, oligonucleotides and carbohydrates.

Rapid mAb Aggregate Analysis using 2µm Shim-pack Diol-300 column



Shim-pack Bio Diol	Diol-60	Diol-120	Diol-200	Diol-300
Particle	Silica			
Ligand	Dihydroxypropyl(Diol)			
Particle Size	3 µm, 5 µm		2 µm, 3 µm, 5 µm	
Pore Size	6 nm	12 nm	20 nm	30 nm
pH Range	5.0 - 7.5			
Molecular Weight Range	below 10,000	1,000 - 100,000	5,000 - 300,000	20,000 - 1,000,000

By reducing the particle size from 5 µm to 2 µm, the resolution between aggregates and monomers was greatly improved. Furthermore, by reducing the column length from 300 mm to 150 mm using a 2 µm particle, 50% less run time was achieved, while maintaining resolution as compared to the original method with a 5 µm, 4.6x300 mm column.

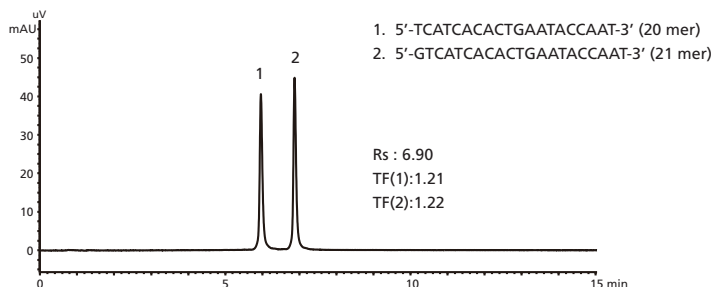
Column	: Shim-pack Bio Diol-300
Eluent	: 0.1 M KH <sub>2</sub> PO <sub>4</sub> -K <sub>2</sub> HPO <sub>4</sub> (pH 7.0) with 0.2 M NaCl
Flow rate	: 0.2 mL/min
Column Temp.	: Ambient
Detection	: UV 280 nm
Sample	: Humanized monoclonal IgG1

### Shim-pack Bio IEX : Ion Exchange Chromatography Columns

Shim-pack Bio IEX Columns are available in Q (quaternary ammonium) and SP (sulfopropyl) chemistries and are based on porous (Q and SP columns) and non-porous (Q-NP and SP-NP columns) hydrophilic polymers with low nonspecific adsorption. The porous particles offer excellent binding capacity with exceptionally high efficiency and the non-porous particles offer high efficiency and exceptional resolution.

Shim-pack Bio IEX	Q-NP	SP-NP	Q	SP
Particle	hydrophilic non-porous polymer		hydrophilic porous polymer	
Particle Size	3 µm, 5 µm		5 µm	
Ligand	- CH <sub>2</sub> N <sup>+</sup> (CH <sub>3</sub> ) <sub>3</sub>	-(CH <sub>2</sub> ) <sub>3</sub> SO <sub>3</sub> <sup>-</sup>	- CH <sub>2</sub> N <sup>+</sup> (CH <sub>3</sub> ) <sub>3</sub>	-(CH <sub>2</sub> ) <sub>3</sub> SO <sub>3</sub> <sup>-</sup>
pH Range	2 - 12			

Analysis of Synthesized Oligonucleotide (Single Strand DNA) using Shim-pack BIO IEX Q-NP



Column	: Shim-pack Bio IEX Q-NP 5 µm, 4.6x100 mm (P/N : 227-31003-03)
Mobile Phase A	: 10 mM NaOH
Mobile Phase B	: 10 mM NaOH with 1.0 M NaClO <sub>4</sub>
Gradient	: 25→55%B (0-15 min), 100%B (15-20 min)
Flow Rate	: 1.0 mL/min
Column Temp.	: 25 °C
Detection	: UV 260 nm
Inj. Volume	: 4 µL (5 nmol/mL)

## Shim-pack Bio HIC: Hydrophobic Interaction Chromatography

Shim-pack Bio HIC Column is a hydrophobic interaction chromatography (HIC) column packed with butyl bonded hydrophilic nonporous polymer particles (4  $\mu\text{m}$ ). HIC is suitable for the separation of analytes with slightly different hydrophobicity, such as antibody-drug conjugate (ADC) with different drug-antibody ratios (DAR). Shim-pack Bio HIC can be used for the analysis of DAR of ADC with relatively low pressure and high resolution.

## Ordering Information

### Shim-pack Bio Diol Columns

Particle Size	2 $\mu\text{m}$		3 $\mu\text{m}$			
Column Dimension \ Particle size	Diol-200	Diol-300	Diol-60	Diol-120	Diol-200	Diol-300
4.6x150 mm	227-31009-01	227-31010-01				
4.6x300 mm	227-31009-02	227-31010-02	227-31007-01	227-31008-01	227-31009-03	227-31010-03
Max. Pressure	45 MPa		20 MPa			

Particle Size	5 $\mu\text{m}$			
Column Dimension \ Chemistry	Diol-60	Diol-120	Diol-200	Diol-300
4.6x300 mm	227-31007-02	227-31008-02	227-31009-04	227-31010-04
8.0x300 mm	227-31007-03	227-31008-03	227-31009-05	227-31010-05
8.0x30 mm (Guard Column)	227-31007-04	227-31008-04	227-31009-06	227-31010-06
Max. Pressure	20 MPa			
20x300 mm	227-31097-01	227-31098-01	227-31099-01	227-31100-01
20x500 mm	227-31097-02	227-31098-02	227-31099-02	227-31100-02
20x50 mm (Guard Column)	227-31116-01	227-31117-01	227-31118-01	227-31119-01
Max. Pressure	10 MPa			

### Shim-pack Bio IEX Columns

Shim-pack Bio IEX	Q-NP		SP-NP		Q	SP
Porality	Non-Porous				Porous	
Column Dimension \ Chemistry	3 $\mu\text{m}$	5 $\mu\text{m}$	3 $\mu\text{m}$	5 $\mu\text{m}$	5 $\mu\text{m}$	
4.6x30 mm	227-31002-01	227-31003-01	227-31005-01	227-31006-01	227-31001-01	227-31004-01
4.6x50 mm	227-31002-02	227-31003-02	227-31005-02	227-31006-02	227-31001-02	227-31004-02
4.6x100 mm	227-31002-03	227-31003-03	227-31005-03	227-31006-03	227-31001-03	227-31004-03

### Shim-pack Bio HIC Column

Column Dimension \ Particle size	4 $\mu\text{m}$
4.6x100 mm	227-31117-01

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