

# ASAHIPAK®

by Showa Denko K.K.

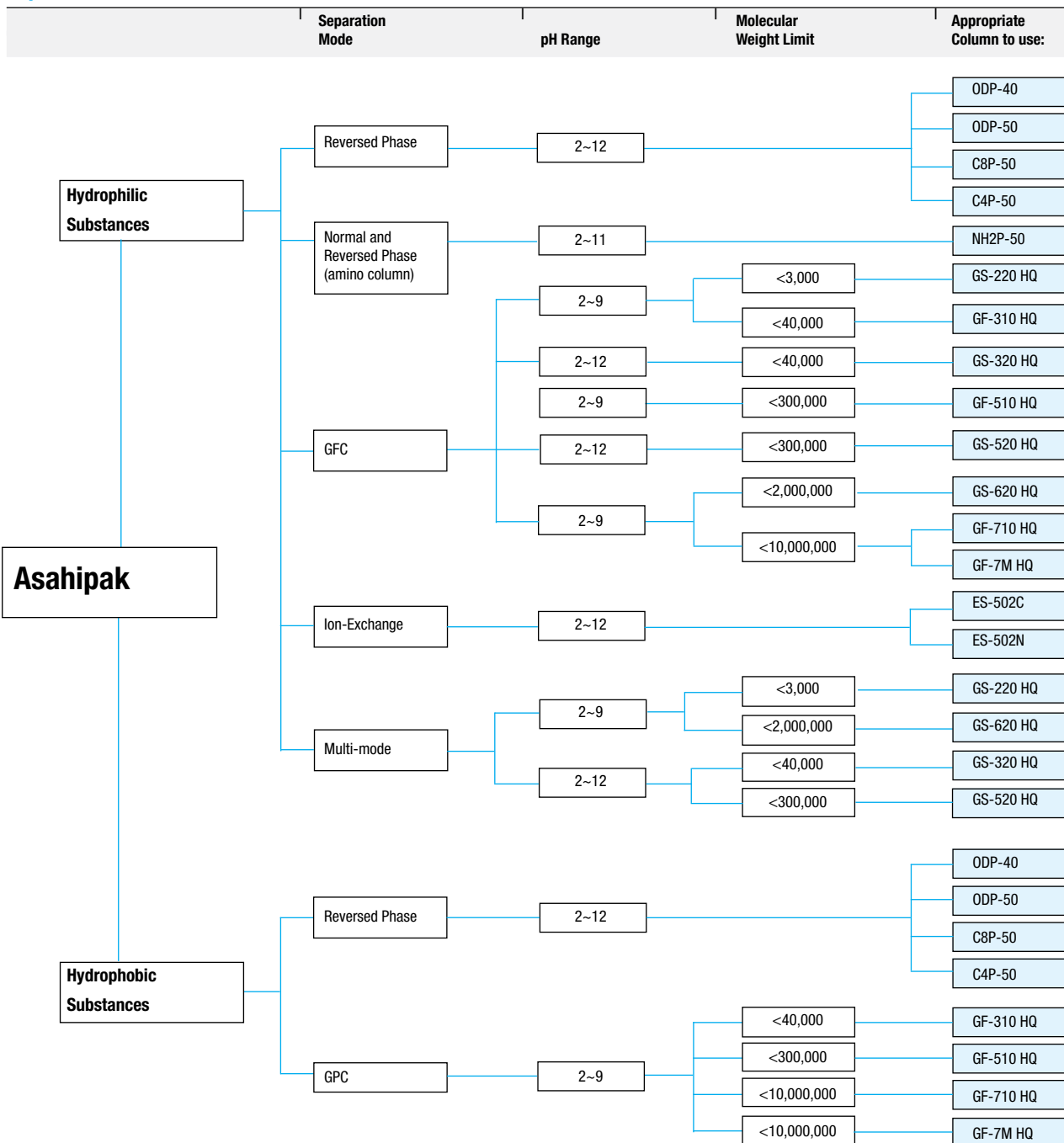
- High efficiency polymer-based columns
- Wide range of pH stability
- Wide variety of separation modes

Shodex manufactures a wide variety of HPLC supports under the Asahipak name that are all based upon a backbone of vinyl alcohol copolymers. From this hard gel polymer base, Asahipak columns are manufactured for reversed phase, normal phase, ion-

exchange, aqueous (GFC) and non-aqueous (GPC) size-exclusion, and multi-mode applications.

These gels provide reproducible results for a wide variety of applications, especially for pharmaceuticals and biomolecules. Additionally, they are able to perform some separations not usually possible on other HPLC columns.

## Separation Modes and Column Selection Process



HPLC

Asahipak

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## Asahipak ODP Series (Polymer Reversed Phase)

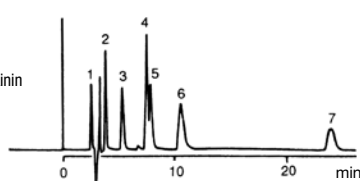
These columns for reversed phase chromatography have alkyl chains bonded to the vinyl alcohol porous polymer beads. They offer similar selectivity to alkyl chain silica-based packings, yet provide great pH stability (2-12), durability and resistance to harsh alkaline and buffered mobile phase conditions. The different alkyl chain lengths provide varying degrees of hydrophobic character.

### Basic Peptides

**App ID 5167**

**Column:** ODP-50 6D  
**Dimensions:** 150 x 6.0 mm  
**Part No.:** CHO-2615  
**Flow Rate:** 1.0 mL/min  
**Eluent:** 0.05 % TFA, pH 2.3/Acetonitrile (80:20)  
**Temperature:** 30 °C  
**Detection:** UV @ 220 nm  
**Sample:**

1. Sub. P Frg. 1-4
2. Glu-Gly-Phe
3. Neuro. Frg. 8-13
4. Met-Enkephalin
5.  $\alpha$ -Endorphin
6. Des-Arg<sup>9</sup>-Bradykinin
7. Substance P



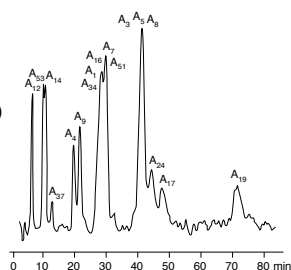
## Asahipak ES Series (Ion-Exchange Columns)

The ES series is designed for high-speed ion-exchange chromatography and is especially effective for the analysis of proteins, peptides, nucleic acids and related biomolecules. (pH 2-12)

### Gibberellin Homologues

**App ID 5170**

**Column:** ES-502N 7C  
**Dimensions:** 100 x 7.6 mm  
**Part No.:** CHO-2610  
**Flow Rate:** 1.5 mL/min  
**Eluent:** Acetic Acid/Water/  
Methanol, (0.1:0.4:99.5)  
**Detection:** UV @ 210 nm  
**Temperature:** 50 °C  
**Sample:** Gibberellin



## Asahipak GF-HQ Series (Multi-Solvent GPC columns)

The GF-HQ Series is designed to perform both GPC (organic GPC) and GFC (aqueous GPC) with one column. When standard GPC columns do not offer the efficiency and resolution necessary to achieve your separation due to adsorption, the GF-HQ is an excellent choice. It allows various solvents as eluents, such as water, THF or solvent mixtures, is pH stable from pH 2-9, can separate molecules up to 10 million daltons, and is available in both analytical and preparative sizes.

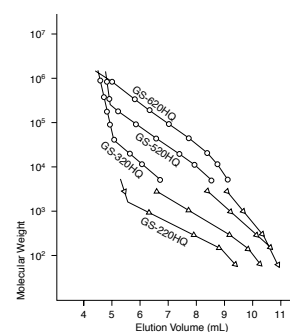
## Asahipak GS-HQ Series (Multi-Mode Columns)

Although usable as general purpose SEC columns, the GS-HQ series are best suited for multi-mode analysis (size-exclusion, ion-exchange, adsorption and partition) of proteins, enzymes, nucleic acids, peptides, polysaccharides, oligosaccharides, water-soluble polymers, and oligomers. These columns provide excellent SEC separations for molecules up to 1 million daltons, allow for direct injection of body fluids, can be used at high flow rates, and with organic solvents. These columns also allow freedom for optimization of your SEC separations, especially those with basic polymers and proteins.

### Calibration Curves for GS-HQ Series

**App ID 5175**

**Column:** Shodex Asahipak GS-HQ series  
**Dimensions:** 300 x 7.6 mm  
**Eluent:** Water  
**Sample:** ○ Pullulan  
 △ Polyethylene glycol

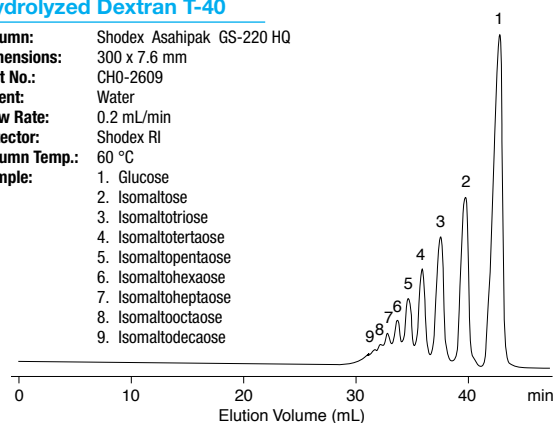


### Hydrolyzed Dextran T-40

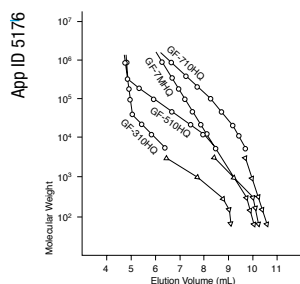
**App ID 5174**

**Column:** Shodex Asahipak GS-220 HQ  
**Dimensions:** 300 x 7.6 mm  
**Part No.:** CHO-2609  
**Eluent:** Water  
**Flow Rate:** 0.2 mL/min  
**Detector:** Shodex RI  
**Column Temp.:** 60 °C  
**Sample:**

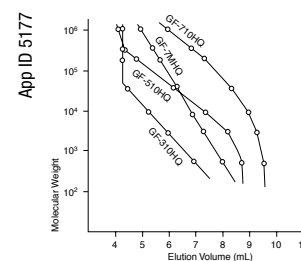
1. Glucose
2. Isomaltose
3. Isomaltotriose
4. Isomaltotetraose
5. Isomaltopentaose
6. Isomaltohexaose
7. Isomaltoheptaose
8. Isomaltooctaose
9. Isomaltodecaose



### Calibration Curves for GF-HQ Series with Different Eluents



**Column:** Shodex Asahipak GF-HQ series  
**Eluent:** Water  
**Sample:** ○ Pullulan  
 △ Polyethylene glycol



**Column:** Shodex Asahipak GF-HQ series  
**Eluent:** Chloroform  
**Sample:** Polystyrene

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## ORDERING INFORMATION

### SEC COLUMNS (GF AND GS-HQ SERIES)

#### Semi-Standard Type (300 x 7.6 mm)

Eluents	Mfr. No.	Part No.	Particle Size (µm)	Exclusive M.W. (Pullulan)	NTP* (per 500 mm)	Flow Rate Normal	Flow Rate Max.	pH Range	Price
Multi-Solvent	GF-310 HQ	CHO-2905	5	40,000	>16,000	0.4 - 0.6	1.0	2 - 9	
Multi-Solvent	GF-510 HQ	CHO-2906	5	300,000	>16,000	0.4 - 0.6	1.0	2 - 9	
Multi-Solvent	GF-710 HQ	CHO-2907	9	10,000,000	>10,000	0.4 - 0.6	1.0	2 - 9	
Multi-Solvent	GF-7M HQ	CHO-2908	7	10,000,000	>11,000	0.4 - 0.6	1.0	2 - 9	
Multi-Mode	GS-220 HQ	CHO-2909	6	3,000	>16,000	0.4 - 0.6	1.0	2 - 9	
Multi-Mode	GS-320 HQ	CHO-2910	6	40,000	>16,000	0.4 - 0.6	1.0	2 - 12	
Multi-Mode	GS-520 HQ	CHO-2911	7	300,000	>15,000	0.4 - 0.6	1.0	2 - 12	
Multi-Mode	GS-620 HQ	CHO-2912	7	2,000,000	>15,000	0.4 - 0.6	1.0	2 - 9	

\*Number of Theoretical Plates

#### Guard Columns (50 x 7.6 mm)

Eluents	Mfr. No.	Part No.	Price
Multi-Solvent	GF-1G 7B	CHO-2917	
Multi-Mode	GS-2G 7B	CHO-3909	



See p. 343 for full line of Calibration Standards.

### ION-EXCHANGE CHROMATOGRAPHY COLUMNS

#### Analytical (100 x 7.6 mm)

Mfr. No.	Part No.	Particle Size (µm)	Ion Exchange Group	Exchange Capacity (meq/g)	NTP* (per 100 mm)	Flow Rate Normal	Flow Rate Max.	pH Range	Price
ES-502C 7C	CHO-2609	9	-COOH	0.55	>3,000	1.0	1.5	2 - 12	
ES-502N 7C	CHO-2610	9	-N(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub>	0.55	>3,000	1.0	1.5	2 - 12	

\*Number of Theoretical Plates.

### AMINO COLUMNS

#### Analytical

Mfr. No.	Part No.	Column Size (mm)	Particle Size (µm)	Flow Rate Normal	Flow Rate Max.	pH Range	Price
NH2P-50 2D	CHO-5582	150 x 2.0	5	0.05 - 0.2	0.4	2 - 11	
NH2P-50G 2A**	CHO-5583	10 x 2.0	5	0.05 - 0.2	0.4	2 - 11	
NH2P-50 4E	CHO-2628	250 x 4.6	5	0.5 - 1.0	1.5	2 - 11	
NH2P-50 4D	CHO-3374	150 x 4.6	5	0.5 - 1.0	1.5	2 - 11	
NH2P-50G 4A**	CHO-2904	10 x 4.6	5	0.5 - 1.0	1.5	2 - 11	

\*\*Guard column

### REVERSED-PHASE COLUMNS

#### Analytical

Mfr. No.	Part No.	Column Size (mm)	Particle Size (µm)	Alkyl Group	C %	Flow Rate Normal	Flow Rate Max.	pH Range	Price
ODP-40 4D	CHO-7163	150 x 4.6	4	C18	17	0.3 - 0.6	0.8	2 - 12	
ODP-40 4E	CHO-7164	250 x 4.6	4	C18	17	0.3 - 0.6	0.8	2 - 12	
ODP-50 2D	CHO-5584	150 x 2.0	5	C18	17	0.05 - 0.2	0.4	2 - 12	
ODP-50 4B	CHO-5585	50 x 4.6	5	C18	17	0.5 - 0.8	1.5	2 - 12	
ODP-50 4D	CHO-2613	150 x 4.6	5	C18	17	0.5 - 0.8	1.5	2 - 12	
ODP-50 4E	CHO-2614	250 x 4.6	5	C18	17	0.5 - 0.8	1.5	2 - 12	
ODP-50 6D	CHO-2615	150 x 6.0	5	C18	17	0.5 - 1.0	2.5	2 - 12	
C8P-50 4D	CHO-2617	150 x 4.6	5	C8	10	0.5 - 0.8	1.0	2 - 12	
C8P-50 4E	CHO-2618	250 x 4.6	5	C8	10	0.5 - 0.8	1.0	2 - 12	
C4P-50 4D	CHO-2619	150 x 4.6	5	C4	6	0.5 - 0.8	1.0	2 - 12	
C4P-50 4E	CHO-2620	250 x 4.6	5	C4	6	0.5 - 0.8	1.0	2 - 12	

#### Guard Columns

Mfr. No.	Part No.	Column Size (mm)	Particle Size (µm)	Alkyl Group	C %	Flow Rate Normal	Flow Rate Max.	pH Range	Price
ODP-50G 2A	CHO-5586	10 x 2.0	5	C18	17	0.05 - 0.2	0.4	2 - 12	
ODP-50G 4A	CHO-2914	10 x 4.6	5	C18	17	0.5 - 0.8	1.5	2 - 12	
ODP-50G 6A	CHO-2913	10 x 6.0	5	C18	17	0.5 - 1.0	2.5	2 - 12	
C8P-50G 4A	CHO-2916	10 x 4.6	5	C8	10	0.5 - 0.8	1.0	2 - 12	



Other column dimensions and preparative columns available upon request.