Tofflon 千纯



Chromatography Resins

Product Catalogue and Selection Guide

Development History

2015

Jiangsu Qianchun Biotechnology Co., Ltd. officially founded.

2016

Purose series of core products launched into market.

2018

Zhejiang Pinghu Production Base commences operation with 500 liters single batch capacity, 20,000 liters annual capacity; Renamed as "Jiaxing Qianchun Biotechnology Co., Ltd."

2019

Achieved ISO 9001 quality management system certification.

2020

Completed green process improvements, environmentally friendly and stable performance; Rigose Series launched into market.

2021

Joined Tofflon Technology Group and obtained High-tech Enterprise designation.

2022

Shanghai Production Base construction begins, Planned single batch capacity of 5,000 liters and annual capacity of 200,000 liters.



International Organization for Standardization ISO 9001

高新技术企业 国家高新技术企业





Tofflon Qianchun Biotechnology (Shanghai) Co., Ltd. which belongs to Shanghai Tofflon Group, is a High Technology Enterprise, focusing on the production of chromatography resins and the research and development of new purification technologies for biomacromolecules, Relying on the technical strength of the Bioseparation Technology Laboratory of the National Engineering Center of Jiangnan University, our team has developed a complete product line of biomacromolecule chromatography resins with a high standard international perspective. Our products mainly include Purose and Rigose series agarose gel resins, Pudex series dextran gel resins, Finedex series agarose-dextran mixed resins, Magose series agarose magnetic beads resins, etc. They cover ion exchange chromatography, mixed-mode chromatography, hydrophobic chromatography, affinity chromatography, gel filtration chromatography and other technical applications. We are committed to providing companies and R&D institutions in the field of bioengineering and biopharmaceutical (vaccines, antibodies, recombinant proteins, blood products) with a full range of bioseparation resins, chromatographic columns, the development of purification processes and other technical services.

We have passed ISO9001 quality management system certification and high technology enterprise identification, and we are a safe and environmentally friendly, more promising biological separation resins manufacturer in the industry. Our products have undergone DMF filing in FDA at the end of 2022, meeting the dual declaration of biological drugs in China and the United States.

The company currently has a clean production workshop with a single batch output of 500 liters of biological separation resins and an annual output of 20,000 liters of biological separation resins. With a number of technology patents and professional customization capabilities, we can provide customers with various solutions for research and development, pilot test and industrial production in the downstream purification sections. The new site under construction in Shanghai Chemical Industry Park will begin production in the first half of 2026 with a total capacity of over 200,000 liters per year to meet the demand for high-quality chromatography resins products of key domestic and foreign customers.



Common Abbreviation in This Product Catalog

Common abbreviations of chromatographic column types:

GL: Glass column with thermostatic jacket

ST: Column of settlement

Common abbreviations in product names:

pg: prep grade

FF: Fast Flow, the average particle size is about 90 μm

HP: High Performance, High Resolution, the average particle size is about 34 μm

XL: High capacity

BB: Big Bead, the particle size is in the range of 100~300 μm

HS: High Substitution, high ligand density

LS: Low Substitution, low ligand density

HiRes: High Resolution

Pudex series: C, Coarse; M, Medium; F, Fine; SF, Superfine; the finer the particle, the higher the resolution









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Gel Filtration Chromatography

Gel filtration chromatography (GFC) is a chromatography method that uses the effect of the molecular sieve of gel with a three-dimensional mesh structure to separate according to the different molecular sizes of each component in the separated sample. Therefore, it is also known as molecular sieve chromatography or size exclusion chromatography.

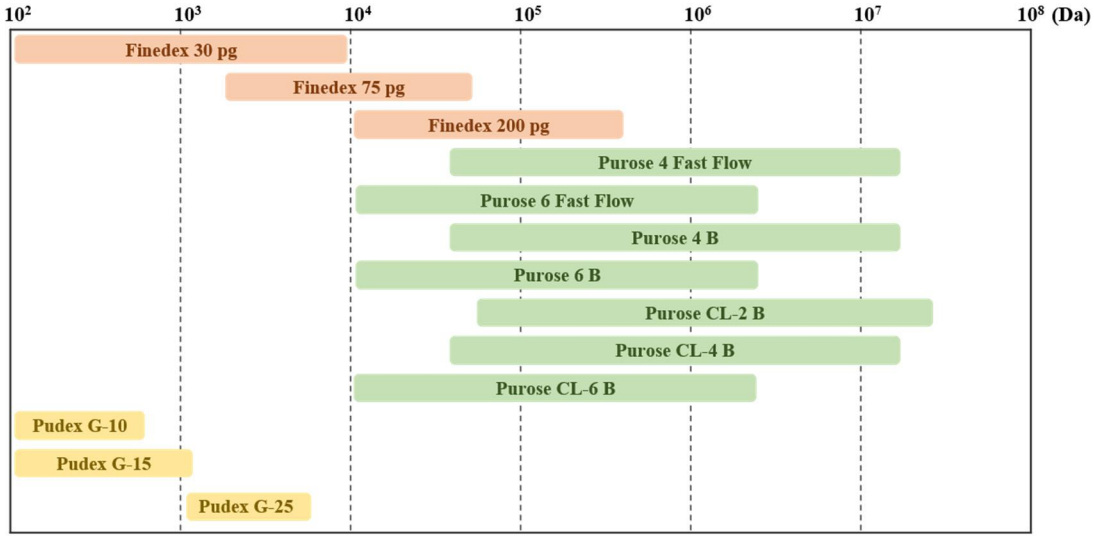
Main characteristics

- The GFC resin does not combine with the substance to be separated, and the separation conditions are mild, the operation is simple, and the recovery rate is high
- Separation can be performed in the presence of stain remover, surfactant, or protein denaturants such as urea or guanidine hydrochloride
- The chromatography resins tolerate a wide range of pH, ionic strength, and temperature

Main application

- Desalting and buffer exchange. Target molecules and salts differ greatly in molecular weight size, belonging to group separation, loading volume up to 25% of the column volume.
- Fractionation of mixture. Polishing and purification, such as separation of proteins with different molecular weight or removal of aggregates. The sample volume is usually 0.5%~4% of the column volume, and the column bed height is greater than 60 cm.

Fractionation range of GFC resin (globular proteins)







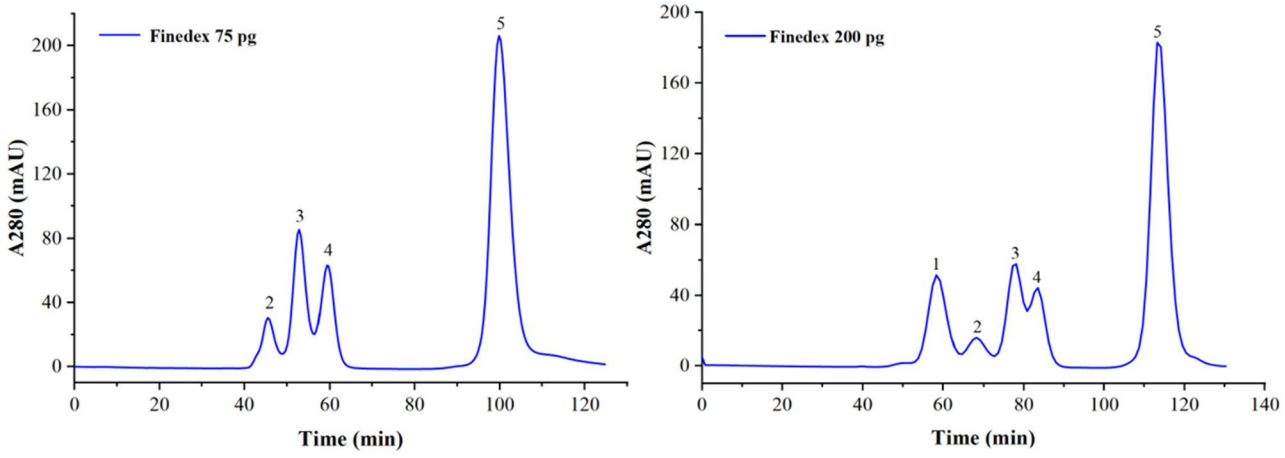
Finedex prep grade series

High resolution GFC resins, the first choice for polishing

Finedex 30 pg, Finedex 75 pg and Finedex 200 pg produced by Tofflon Qianchun Biotechnology (Shanghai) Co., Ltd. are the new generation GFC resins. They are formed by dextran and high crosslinked agarose. The high crosslinking agarose gives the resin high-pressure resistance, and the dextran distributed in the resin realizes its high separation of proteins and peptides of different sizes, which can achieve high-resolution polishing at a high flow velocity. Finedex series has the following advantages:

- Fast flow
- High-resolution separation of biomolecules
- Low non-specific adsorption, and high recovery
- High chemical stability, resistant to a certain concentration of sodium hydroxide and hydrochloric acid cleaning
- Wide range of applications

Product	Fractionation range (Da)	Average particle size (μm)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
Finedex 30 pg	Globular protein: $0\sim1\times10^4$	34	10~50	3~12(work) 2~14(CIP)	100 mL	G60127-06
					200 mL	G60127-22
					500 mL	G60127-07
					1 L	G60127-08
					5 L	G60127-09
					10 L	G60127-10
					25 L	G60127-11
Finedex 75 pg	Globular protein: $3000\sim7\times10^4$ Dextran: $500\sim3\times10^4$	34	10~50	3~12(work) 2~14(CIP)	100 mL	G60129-06
					200 mL	G60129-22
					500 mL	G60129-07
					1 L	G60129-08
					5 L	G60129-09
					10 L	G60129-10
					25 L	G60129-11
Finedex 200 pg	Globular protein: $1\times10^4\sim6\times10^5$ Dextran: $1\times10^3\sim1\times10^5$	34	10~50	3~12(work) 2~14(CIP)	100 mL	G60131-06
					200 mL	G60131-22
					500 mL	G60131-07
					1 L	G60131-08
					5 L	G60131-09
					10 L	G60131-10
					25 L	G60131-11



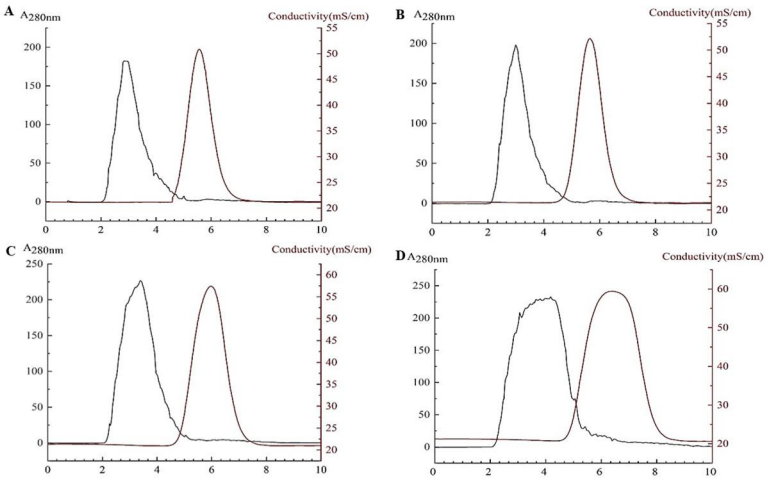
Samples: 1. Ferritin, 440 kDa, 0.24 mg/mL; 2. IgG, 150 kDa, 0.2 mg/mL; 3. BSA, 67 kDa, 5 mg/mL; 4. OVA, 43 kDa, 4 mg/mL; 5. Lysozyme, 14 kDa, 3 mg/mL
Column: QCXKC 16/700
Bed heigh: 60 cm
Sample volume: 0.5 mL
Buffer: 20 mM PB, 0.15 M NaCl, pH7.0
Flow velocity: 30 cm/h

Pudex series

The first choice for cost-effective and fast desalting or replacement solutions

The Pudex series is a GFC resins based on cross-linked dextran, which has good chemical stability and high resolution, and is widely used in protein separation and protein desalting/solutions exchange. Among them, Pudex LH-20 has unique chromatographic selectivity and extremely high resolution to separate closely related molecule species, and has both hydrophilic and lipophilic properties, and can be used to purify natural products in organic solvents, such as steroids, terpenoids, lipids and low molecular weight peptides.

Product	Fractionation range (Da)	Average particle size (μm, wet)	Swell factor (mL/g)	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
Pudex G-10	Globular protein: ＜700 Dextran: ＜700	120	2~3	＜0.5	50~250	2~13(Work) 2~13(CIP)	25 g 100 g 200 g 500 g 1 kg	F60111-27 F60111-28 F60111-23 F60111-29 F60111-30
Pudex G-15	Globular protein: <1500 Dextran: <1500	125	2.5~3.5	＜0.5	50~250	2~13(Work) 2~13(CIP)	25 g 100 g 200 g 500 g 1 kg	F60112-27 F60112-28 F60112-23 F60112-29 F60112-30
Pudex G-25 Coarse	Globular protein: 1000~5000 Dextran: 100~5000	290	4~6	＜0.3	≤500	2~13(Work) 2~13(CIP)	25 g 100 g 200 g 500 g 1 kg	F60113-27 F60113-28 F60113-23 F60113-29 F60113-30
Pudex G-25 Medium	Globular protein: 1000~5000 Dextran: 100~5000	135	4~6	＜0.3	≤300	2~13(Work) 2~13(CIP)	25 g 100 g 200 g 500 g 1 kg	F60114-27 F60114-28 F60114-23 F60114-29 F60114-30
Pudex G-25 Fine	Globular protein: 1000~5000 Dextran: 100~5000	75	4~6	＜0.3	≤100	2~13(Work) 2~13(CIP)	25 g 100 g 200 g 500 g 1 kg	F60115-27 F60115-28 F60115-23 F60115-29 F60115-30
Pudex G-25 Superfine	Globular protein: 1000~5000 Dextran: 100~5000	50	4~6	＜0.3	≤60	2~13(Work) 2~13(CIP)	25 g 100 g 200 g 500 g 1 kg	F60116-27 F60116-28 F60116-23 F60116-29 F60116-30
Pudex LH-20	4000 - 5000 (depends on solvent)	120(water)	4~5 (methanol) 4.5~5.5 (water)	＜0.3	≤720	2~13(Work) 2~13(CIP)	25 g 100 g 200 g 500 g 1 kg	F35314-27 F35314-28 F35314-23 F35314-29 F35314-30



Column: PrePack Desalting Column 5 mL
Sample: 2 mg/mL BSA, 0.5 M NaCl
Binding solution: 0.15 M NaCl
Sample volume: 16~44% CV
(A) 0.8 mL
(B) 1.3 mL
(C) 1.7 mL
(D) 2.2 mL

Purose/Purose CL series

The agarose concentrations of Purose 4 B and Purose 6 B products are 4% and 6%, respectively. They are all blank microspheres without any modification, and they can be used for purification or detection of biomolecules such as polysaccharides, peptides and proteins. Purose CL-2B, CL-4B and CL-6B are blank microspheres obtained by further crosslinking based on 2B, 4B and 6B. These products retain the excellent hydrophilicity and large grid structure of natural polysaccharide compounds. They have good compatibility with bioactive macromolecules, and they have characteristics of high strength, no non-specific adsorption, and fast flow. These products can be used for gel filtration of biological macromolecular components such as viral particles, macromolecular proteins and supercoiled DNA.

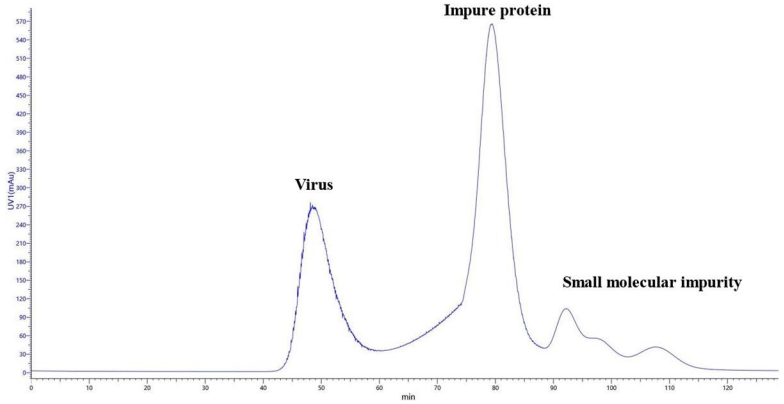
Product	Fractionation range (Globular protein, Da)	Average particle size (μm)	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
Purose 4 B	6×10^4~2×10^7	90	/	≤11.5	4~9 (Work) 4~9 (CIP)	25 mL	A10105-05
						100 mL	A10105-06
						200 mL	A10105-22
						500 mL	A10105-07
						1 L	A10105-08
						5 L	A10105-09
						10 L	A10105-10
						25 L	A10105-11
Purose 6 B	1×10^4~4×10^6	90	/	≤14	4~9 (Work) 4~9 (CIP)	25 mL	A10106-05
						100 mL	A10106-06
						200 mL	A10106-22
						500 mL	A10106-07
						1 L	A10106-08
						5 L	A10106-09
						10 L	A10106-10
						25 L	A10106-11
Purose CL-2B	7×10^4~4×10^7	120	＜5 kPa	≤15	3~13(Work) 3~14(CIP)	25 mL	A10144-05
						100 mL	A10144-06
						200 mL	A10144-22
						500 mL	A10144-07
						1 L	A10144-08
						5 L	A10144-09
						10 L	A10144-10
						25 L	A10144-11
Purose CL-4B	6×10^4~2×10^7	90	＜12 kPa	≤26	3~13(Work) 3~14(CIP)	25 mL	A10145-05
						100 mL	A10145-06
						200 mL	A10145-22
						500 mL	A10145-07
						1 L	A10145-08
						5 L	A10145-09
						10 L	A10145-10
						25 L	A10145-11
Purose CL-6B	1×10^4~4×10^6	90	＜20 kPa	≤30	3~13(Work) 3~14(CIP)	25 mL	A10146-05
						100 mL	A10146-06
						200 mL	A10146-22
						500 mL	A10146-07
						1 L	A10146-08
						5 L	A10146-09
						10 L	A10146-10
						25 L	A10146-11

Purose Fast Flow series

The first choice for macromolecular gel filtration

Purose 4 Fast Flow and Purose 6 Fast Flow are blank microspheres obtained by crosslink based on 4 B and 6 B. Purose Fast Flow series retain the excellent hydrophilicity and large grid structure of natural polysaccharide compounds. They have good compatibility with bioactive macromolecules, and they have the characteristics of high strength, no non-specific adsorption and fast operation flow velocity, etc. These products are widely used in laboratory-scale preparation of virus, protein, nucleic acid, polypeptide, polysaccharide, or other biological macromolecules, as well as in large-scale industrial production of biopharmaceutical and biological engineering field.

Product	Fractionation range (Globular protein, Da)	Average particle size (μm)	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
Purose 4 Fast Flow	6×10^4~2×10^7	90	＜0.3	≤500	3~13 (Work) 2~14 (CIP)	25 mL	A10101-05
						100 mL	A10101-06
						200 mL	A10101-22
						500 mL	A10101-07
						1 L	A10101-08
						5 L	A10101-09
						10 L	A10101-10
						25 L	A10101-11
Purose 6 Fast Flow	1×10^4~4×10^6	90	＜0.3	≤600	3~13 (Work) 2~14 (CIP)	25 mL	A10102-05
						100 mL	A10102-06
						200 mL	A10102-22
						500 mL	A10102-07
						1 L	A10102-08
						5 L	A10102-09
						10 L	A10102-10
						25 L	A10102-11



Column: QCXKC 50/600
Resin: Purose 4 Fast Flow
Column volume: 1.1775 L
Sample volume: 60 mL Virus concentrate (~5% CV)
Flow velocity: 30 cm/h
Buffer: 20 mM Tris, 0.15 M NaCl, pH 7.5
Virus activity yield: 98%
Removal rate of impure protein: 98%

Purose High Performance series

Purose 6 High Performance resin particles are small size agarose-base blank microspheres with an average diameter of 34 μm obtained by crosslink.

Product	Fractionation range (Globular protein, Da)	Average particle size (μm)	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
Purose 6 High Performance	1×10^4~4×10^6	34	＜0.3	≤150	3~13 (Work) 2~14 (CIP)	25 mL	A10104-05
						100 mL	A10104-06
						200 mL	A10104-22
						500 mL	A10104-07
						1 L	A10104-08
						5 L	A10104-09
						10 L	A10104-10
						25 L	A10104-11

GFC resins prepacked column

Resins prepacked column is a ready-to-use chromatography column in which the resin is prepacked into an empty chromatography column, which can be directly connected to the purification system, avoiding the problems such as complex operation, low column efficiency and resins loss caused by the self-packing column. We can provide different sizes of glass columns with thermostatic jackets (GL), plastic prepacked columns, or settling columns (ST), they are easy to operate and used for the separation and preparation of small/pilot products.

GFC resins prepacked column can be widely used in laboratory-scale process development, sample preparation and it is suitable for the desalting/solution exchange, of polysaccharide, nucleic acid, protein and it is also suitable for the purification of polypeptide, and protein.

	Product	I.D./bed height(mm)	Quantity	Code No.
Finedex 30 pg	PrePack-GL 16/600 Finedex 30 pg	16/600	1×120 mL	ZG60127-16/600-GL
	PrePack-GL 26/600 Finedex 30 pg	26/600	1×318 mL	ZG60127-26/600-GL
	PrePack-GL 50/600 Finedex 30 pg	50/600	1×1178 mL	ZG60127-50/600-GL
	PrePack 16/600 Finedex 30 pg	16/600	1×120 mL	ZG60127-16/600
	PrePack-GL 16/900 Finedex 30 pg	16/900	1×180 mL	ZG60127-16/900-GL
	PrePack-GL 26/900 Finedex 30 pg	26/900	1×478 mL	ZG60127-26/900-GL
	PrePack-GL 50/900 Finedex 30 pg	50/900	1×1766 mL	ZG60127-50/900-GL
Finedex 75 pg	PrePack-GL 16/600 Finedex 75 pg	16/600	1×120 mL	ZG60129-16/600-GL
	PrePack-GL 26/600 Finedex 75 pg	26/600	1×318 mL	ZG60129-26/600-GL
	PrePack-GL 50/600 Finedex 75 pg	50/600	1×1178 mL	ZG60129-50/600-GL
	PrePack 16/600 Finedex 75 pg	16/600	1×120 mL	ZG60129-16/600
	PrePack-GL 16/900 Finedex 75 pg	16/900	1×180 mL	ZG60129-16/900-GL
	PrePack-GL 26/900 Finedex 75 pg	26/900	1×478 mL	ZG60129-26/900-GL
	PrePack-GL 50/900 Finedex 75 pg	50/900	1×1766 mL	ZG60129-50/900-GL
Finedex 200 pg	PrePack-GL 16/600 Finedex 200 pg	16/600	1×120 mL	ZG60131-16/600-GL
	PrePack-GL 26/600 Finedex 200 pg	26/600	1×318 mL	ZG60131-26/600-GL
	PrePack-GL 50/600 Finedex 200 pg	50/600	1×1178 mL	ZG60131-50/600-GL
	PrePack 16/600 Finedex 200 pg	16/600	1×120 mL	ZG60131-16/600
	PrePack-GL 16/900 Finedex 200 pg	16/900	1×180 mL	ZG60131-16/900-GL
	PrePack-GL 26/900 Finedex 200 pg	26/900	1×478 mL	ZG60131-26/900-GL
	PrePack-GL 50/900 Finedex 200 pg	50/900	1×1766 mL	ZG60131-50/900-GL
Purose 4 Fast Flow	PrePack-GL 16/600 Purose 4 Fast Flow	16/600	1×120 mL	ZA10101-16/600-GL
	PrePack-GL 26/600 Purose 4 Fast Flow	26/600	1×318 mL	ZA10101-26/600-GL
	PrePack-GL 50/600 Purose 4 Fast Flow	50/600	1×1178 mL	ZA10101-50/600-GL
	PrePack 16/600 Purose 4 Fast Flow	16/600	1×120 mL	ZA10101-16/600
	PrePack-GL 16/900 Purose 4 Fast Flow	16/900	1×180 mL	ZA10101-16/900-GL
	PrePack-GL 26/900 Purose 4 Fast Flow	26/900	1×478 mL	ZA10101-26/900-GL
	PrePack-GL 50/900 Purose 4 Fast Flow	50/900	1×1766 mL	ZA10101-50/900-GL
Purose 6 Fast Flow	PrePack-GL 16/600 Purose 6 Fast Flow	16/600	1×120 mL	ZA10102-16/600-GL
	PrePack-GL 26/600 Purose 6 Fast Flow	26/600	1×318 mL	ZA10102-26/600-GL
	PrePack-GL 50/600 Purose 6 Fast Flow	50/600	1×1178 mL	ZA10102-50/600-GL
	PrePack 16/600 Purose 6 Fast Flow	16/600	1×120 mL	ZA10102-16/600
	PrePack-GL 16/900 Purose 6 Fast Flow	16/900	1×180 mL	ZA10102-16/900-GL
	PrePack-GL 26/900 Purose 6 Fast Flow	26/900	1×478 mL	ZA10102-26/900-GL
	PrePack-GL 50/900 Purose 6 Fast Flow	50/900	1×1766 mL	ZA10102-50/900-GL
Pudex	PrePack Desalting Column	16/25	5×5 mL	ZF60116-02
		16/25	1×5 mL	ZF60116-16
		8/100	1×5 mL	ZF60115-72
		16/100	1×20 mL	ZF60115-03
		16/200	1×40 mL	ZF60114-04
	PrePack-ST Desalting Column	16/50	1×10 mL	ZF60114-19
		16/50	10×10 mL	ZF60114-20
		16/50	30×10 mL	ZF60114-21

Ion-Exchange Chromatography

Ion exchange chromatography (IEX) separates biomolecules according to the differences of their net surface charge.

Main characteristics

- High selectivity and resolution
- High binding capacity, beneficial to scale-up
- High physical and chemical stability
- Simple operation
- The separation principle is clear and it is easy to optimize the experimental process

Common functional groups

Kind	Common functional group		
	Name	Abbreviation	Group
Strong anion exchanger	Quaternary amine	Q	$-OCH_2N^+(CH_3)_3$
Weak anion exchanger	Diethylaminoethyl	DEAE	$-OCH_2CH_2N^+H(C_2H_5)_2$
Strong cation exchanger	Sulfopropyl	SP	$-OCH_2CH_2CH_2SO_3^-$
Weak cation exchanger	Carboxymethyl	CM	$-OCH_2COO^-$







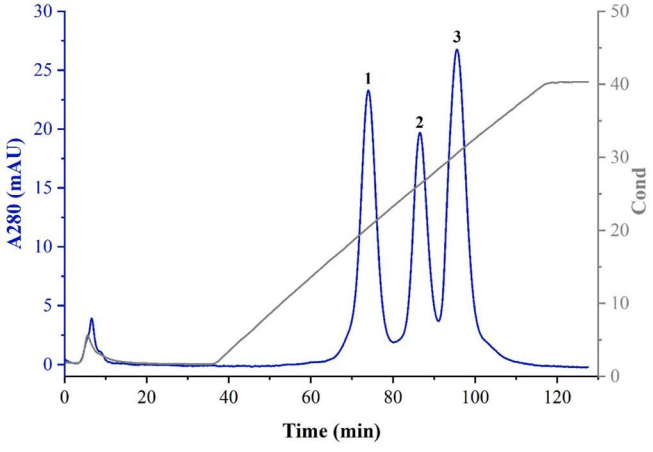


IEX Purose 6 Fast Flow series

The first choice for sample capture

IEX Purose 6 Fast Flow series is based on 6% highly crosslinked agarose matrix and it is the first generation traditional IEX resin of Tofflon Qianchun Bio, which can capture samples quickly and has the characteristics of high capacity and resolution. It is the most popular protein capture resin in IEX resins on the market, and it can also be used for polishing in a few cases. The resin is uniform in particle size, with an average size of 90 μm. It has excellent chemical stability, and can still maintain the original dynamic binding capacity after hundreds of CIP cycles.

Product	Type	Total ionic capacity (mmol/mL)	Dynamic binding capacity (/mL)	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
Q Purose 6 FF	strong anion	0.20~0.26	60 mg BSA	＜0.3	≤600	2~12(Work) 1~14 (CIP)	25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	A20302-05 A20302-06 A20302-22 A20302-07 A20302-08 A20302-09 A20302-10 A20302-11
DEAE Purose 6 FF	weak anion	0.14~0.18	50 mg BSA	＜0.3	≤600	3~12(Work) 1~14 (CIP)	25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	A20202-05 A20202-06 A20202-22 A20202-07 A20202-08 A20202-09 A20202-10 A20202-11
SP Purose 6 FF	strong cation	0.20~0.26	110 mg lysozyme	＜0.3	≤600	4~13(Work) 3~14(CIP)	25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	A20502-05 A20502-06 A20502-22 A20502-07 A20502-08 A20502-09 A20502-10 A20502-11
CM Purose 6 FF	weak cation	0.14~0.18	90 mg lysozyme	＜0.3	≤600	4~13(Work) 2~14(CIP)	25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	A20402-05 A20402-06 A20402-22 A20402-07 A20402-08 A20402-09 A20402-10 A20402-11



Column: QCXKC 16/100
Resin: CM Purose 6 Fast Flow
Samples: 1. Chymotrypsinogen, 4 mg/mL
2. Cytochrome C, 4 mg/mL
3. Lysozyme, 4 mg/mL
Sample volume: 0.25 mL
Flow velocity: 75 cm/h
Binding buffer: 20 mM PB，pH 6.0
Elution buffer: 20 mM PB，1 M NaCl，pH 6.0
Elution gradient: 0~45% elution buffer，10 CV

IEX Purose 6 High Performance series

IEX Purose 6 High Performance series is a high-resolution ion exchange chromatographic resin for the separation and purification of biological macromolecules. This resin is based on 6% highly crosslinked agarose matrix, which has stable performance and is easy to scale up in production. The resin is uniform in particle size which has an average particle size of 34 μm.

Product	Type	Total ionic capacity (mmol/mL)	Dynamic binding capacity (/mL)	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
Q Purose 6 HP	strong anion	0.18~0.24	60 mg BSA	<0.3	≤150	2~12 (Work) 1~14 (CIP)	25 mL	A20304-05
							100 mL	A20304-06
							200 mL	A20304-22
							500 mL	A20304-07
							1 L	A20304-08
							5 L	A20304-09
							10 L	A20304-10
							25 L	A20304-11
DEAE Purose 6 HP	weak anion	0.14~0.18	50 mg BSA	<0.3	≤150	3~12 (Work) 1~14 (CIP)	25 mL	A20204-05
							100 mL	A20204-06
							200 mL	A20204-22
							500 mL	A20204-07
							1 L	A20204-08
							5 L	A20204-09
							10 L	A20204-10
							25 L	A20204-11
SP Purose 6 HP	strong cation	0.18~0.24	110 mg lysozyme	<0.3	≤150	4~13(Work) 3~14(CIP)	25 mL	A20504-05
							100 mL	A20504-06
							200 mL	A20504-22
							500 mL	A20504-07
							1 L	A20504-08
							5 L	A20504-09
							10 L	A20504-10
							25 L	A20504-11
CM Purose 6 HP	weak cation	0.14~0.18	90 mg lysozyme	<0.3	≤150	4~13(Work) 2~14(CIP)	25 mL	A20404-05
							100 mL	A20404-06
							200 mL	A20404-22
							500 mL	A20404-07
							1 L	A20404-08
							5 L	A20404-09
							10 L	A20404-10
							25 L	A20404-11

IEX Purose 6 XL series

IEX Purose 6 XL series is an ion exchange chromatographic resin that is based on 6% highly crosslinked agarose grafted with dextran, and it is specially designed to lower the manufacturing cost of biopharmaceuticals by raising the throughput of production scale chromatography processes. Their extremely high loading capacities, combined with high throughput, increase the productivity of manufacturing operations. The resin is uniform in particle size and has an average particle size of 90 μm.

Product	Type	Total ionic capacity (mmol/mL)	Dynamic binding capacity (/mL)	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
Q Purose 6 XL	strong anion	0.18~0.25	160 mg BSA	<0.3	≤600	2~12(Work) 1~14 (CIP)	25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	A20308-05 A20308-06 A20308-22 A20308-07 A20308-08 A20308-09 A20308-10 A20308-11
DEAE Purose 6 XL	weak anion	0.21~0.27	130 mg BSA	<0.3	≤600	3~12(Work) 1~14 (CIP)	25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	A20208-05 A20208-06 A20208-22 A20208-07 A20208-08 A20208-09 A20208-10 A20208-11
SP Purose 6 XL	strong cation	0.18~0.25	170 mg lysozyme	<0.3	≤600	4~13(Work) 3~14(CIP)	25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	A20508-05 A20508-06 A20508-22 A20508-07 A20508-08 A20508-09 A20508-10 A20508-11

IEX Purose 6 Big Beads series

IEX Purose 6 Big Beads series is ion exchange chromatographic resin that is based on 6% highly crosslinked agarose matrix, and the particle size range of this resin is from 100 to 300 μm. The large particle size and excellent physical stability of the base matrix can maintain the flow rate even when dealing with viscous samples. It is widely used in the industry for the purification of proteins, nucleic acid, polypeptides, polysaccharides and other biological macromolecules at the initial stage.

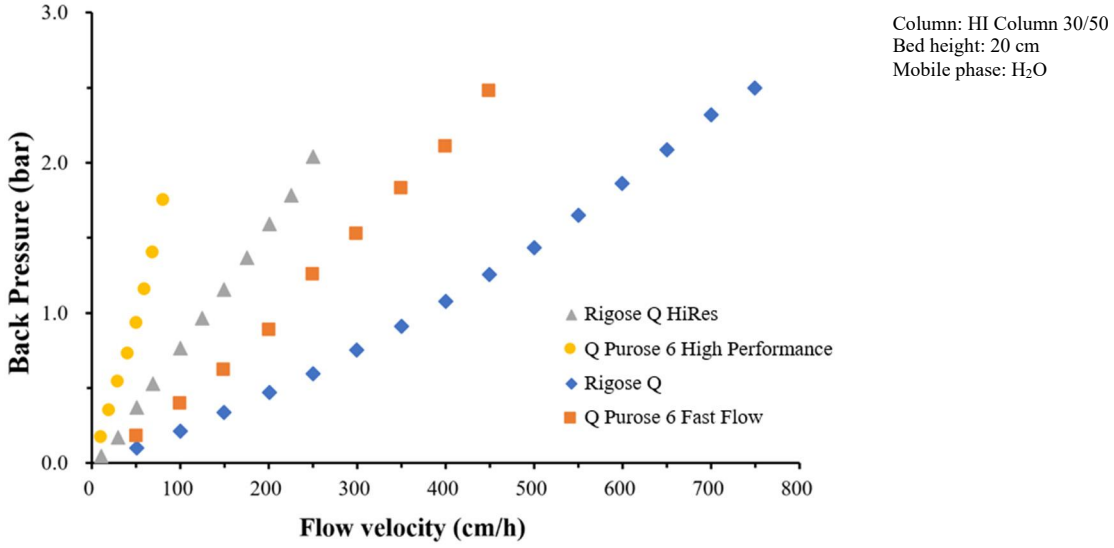
Product	Type	Total ionic capacity (mmol/mL)	Dynamic binding capacity (/mL)	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
Q Purose 6 BB	strong anion	0.18~0.25	50 mg BSA	<0.3	≤1800	2~12(Work) 1~14 (CIP)	25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	A20338-05 A20338-06 A20338-22 A20338-07 A20338-08 A20338-09 A20338-10 A20338-11
SP Purose 6 BB	strong cation	0.18~0.25	110 mg lysozyme	<0.3	≤1800	4~13(Work) 3~14(CIP)	25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	A20538-05 A20538-06 A20538-22 A20538-07 A20538-08 A20538-09 A20538-10 A20538-11

Rigose IEX series

Rigose IEX series is IEX resin which was developed based on a new generation matrix of macroporous agarose grafted with dextran, it has an average particle size of 90 μm. The rigid, high flow cross-linked agarose matrix has the characteristics of low back pressure, excellent flow properties and high binding capacity, so this series is widely used in laboratory-scale preparation of virus, protein, nucleic acid, polypeptide, polysaccharide or other biological macromolecules. And this series is also widely used in the large-scale industrial production process of biopharmaceutical and biological engineering field.

Product	Type	Total ionic capacity (mmol/mL)	Dynamic binding capacity (/mL)	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
Rigose Q	strong anion	0.16~0.22	140 mg BSA	＜0.5	≤700	2~12(Work) 2~14 (CIP)	25 mL	D20335-05
							100 mL	D20335-06
							200 mL	D20335-22
							500 mL	D20335-07
							1 L	D20335-08
							5 L	D20335-09
							10 L	D20335-10
							25 L	D20335-11
Rigose DEAE	weak anion	0.27~0.33	100 mg BSA	＜0.5	≤700	2~12(Work) 2~14 (CIP)	25 mL	D20235-05
							100 mL	D20235-06
							200 mL	D20235-22
							500 mL	D20235-07
							1 L	D20235-08
							5 L	D20235-09
							10 L	D20235-10
							25 L	D20235-11
Rigose SP	strong cation	0.16~0.20	150 mg lysozyme	＜0.5	≤700	4~12(Work) 3~14(CIP)	25 mL	D20535-05
							100 mL	D20535-06
							200 mL	D20535-22
							500 mL	D20535-07
							1 L	D20535-08
							5 L	D20535-09
							10 L	D20535-10
							25 L	D20535-11

Flow velocity and back pressure curves of different series matrix of ion-exchange chromatography resins



Column: HI Column 30/50
Bed height: 20 cm
Mobile phase: H_2O

Rigose IEX Plus series

Rigose SP Plus is a strong cation exchanger with an average particle size of 50 µm. This resin is designed for polishing of monoclonal antibodies (mAbs) and a wide range of other biomolecules. The polymeric ligandin combination with the attributes of the base matrix enable Rigose SP Plus delivers both good pressure/flow properties, high binding capacity and good resolution even at high sample load.

Product	Type	Total ionic capacity (mmol/mL)	Dynamic binding capacity (/mL)	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
Rigose SP Plus	strong cation	0.09~0.13	100 mg IgG	＜0.5	≤400	4~12(Work) 3~14(CIP)	25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	D24963 -05 D24963 -06 D24963 -22 D24963 -07 D24963 -08 D24963 -09 D24963 -10 D24963 -11

Rigose IEX HiRes series

High resolution IEX resins, the first choice for polishing

Rigose IEX HiRes series is a series of high-resolution IEX resins based on the Rigose matrix with an average particle size of approximately 40 µm. This resin has higher specific surface area, higher binding capacity and higher resolution.

Product	Type	Total ionic capacity (mmol/mL)	Dynamic binding capacity (/mL)	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
Rigose Q HiRes	strong anion	0.18~0.23	45 mg BSA	＜0.5	≤300	2~12 (Work) 2~14 (CIP)	25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	D20336-05 D20336-06 D20336-22 D20336-07 D20336-08 D20336-09 D20336-10 D20336-11
Rigose DEAE HiRes	weak anion	0.16~0.23	35 mg BSA	＜0.5	≤300	2~12 (Work) 2~14 (CIP)	25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	D20236-05 D20236-06 D20236-22 D20236-07 D20236-08 D20236-09 D20236-10 D20236-11
Rigose SP HiRes	strong cation	0.18~0.23	80 mg lysozyme	＜0.5	≤300	4~12(Work) 3~14(CIP)	25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	D20536-05 D20536-06 D20536-22 D20536-07 D20536-08 D20536-09 D20536-10 D20536-11
Rigose CM HiRes	weak cation	0.15~0.19	65 mg lysozyme	＜0.5	≤300	4~13(Work) 2~14(CIP)	25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	D20436-05 D20436-06 D20436-22 D20436-07 D20436-08 D20436-09 D20436-10 D20436-11

IEX resins prepacked column

IEX resins prepacked column is a ready-to-use chromatography column in which the IEX resin is prepacked into an empty chromatography column. IEX resins prepacked column is used for the preparation and separation of proteins and other biomolecules based on charge.

Product	I.D./bed height(mm)	Quantity	Code No.	Product	I.D./bed height(mm)	Quantity	Code No.
PrePack DEAE Purose 6 FF	7/25	5×1 mL	ZA20202-01	PrePack Q Purose XL	7/25	5×1 mL	ZA20308-01
	16/25	5×5 mL	ZA20202-02		16/25	5×5 mL	ZA20308-02
	7/25	1×1 mL	ZA20202-15		7/25	1×1 mL	ZA20308-15
	16/25	1×5 mL	ZA20202-16		16/25	1×5 mL	ZA20308-16
	8/100	1×5 mL	ZA20202-72		8/100	1×5 mL	ZA20308-72
	16/100	1×20 mL	ZA20202-03		16/100	1×20 mL	ZA20308-03
	16/200	1×40 mL	ZA20202-04		16/200	1×40 mL	ZA20308-04
PrePack Q Purose 6 FF	7/25	5×1 mL	ZA20302-01	PrePack DEAE Purose XL	7/25	5×1 mL	ZA20208-01
	16/25	5×5 mL	ZA20302-02		16/25	5×5 mL	ZA20208-02
	7/25	1×1 mL	ZA20302-15		7/25	1×1 mL	ZA20208-15
	16/25	1×5 mL	ZA20302-16		16/25	1×5 mL	ZA20208-16
	8/100	1×5 mL	ZA20304-72		8/100	1×5 mL	ZA20208-72
	16/100	1×20 mL	ZA20302-03		16/100	1×20 mL	ZA20208-03
	16/200	1×40 mL	ZA20302-04		16/200	1×40 mL	ZA20208-04
PrePack CM Purose 6 FF	7/25	5×1 mL	ZA20402-01	PrePack SP Purose XL	7/25	5×1 mL	ZA20508-01
	16/25	5×5 mL	ZA20402-02		16/25	5×5 mL	ZA20508-02
	7/25	1×1 mL	ZA20402-15		7/25	1×1 mL	ZA20508-15
	16/25	1×5 mL	ZA20402-16		16/25	1×5 mL	ZA20508-16
	8/100	1×5 mL	ZA20402-72		8/100	1×5 mL	ZA20508-72
	16/100	1×20 mL	ZA20402-03		16/100	1×20 mL	ZA20508-03
	16/200	1×40 mL	ZA20402-04		16/200	1×40 mL	ZA20508-04
PrePack SP Purose 6 FF	7/25	5×1 mL	ZA20502-01	PrePack Rigose DEAE	7/25	5×1 mL	ZD20235-01
	16/25	5×5 mL	ZA20502-02		16/25	5×5 mL	ZD20235-02
	7/25	1×1 mL	ZA20502-15		7/25	1×1 mL	ZD20235-15
	16/25	1×5 mL	ZA20502-16		16/25	1×5 mL	ZD20235-16
	8/100	1×5 mL	ZA20502-72		8/100	1×5 mL	ZD20235-72
	16/100	1×20 mL	ZA20502-03		16/100	1×20 mL	ZD20235-03
	16/200	1×40 mL	ZA20502-04		16/200	1×40 mL	ZD20235-04
PrePack Q Purose 6 HP	7/25	5×1 mL	ZA20304-01	PrePack Rigose Q	7/25	5×1 mL	ZD20335-01
	16/25	5×5 mL	ZA20304-02		16/25	5×5 mL	ZD20335-02
	7/25	1×1 mL	ZA20304-15		7/25	1×1 mL	ZD20335-15
	16/25	1×5 mL	ZA20304-16		16/25	1×5 mL	ZD20335-16
	8/100	1×5 mL	ZA20304-72		8/100	1×5 mL	ZD20335-72
	16/100	1×20 mL	ZA20304-03		16/100	1×20 mL	ZD20335-03
	16/200	1×40 mL	ZA20304-04		16/200	1×40 mL	ZD20335-04
PrePack DEAE Purose 6 HP	7/25	5×1 mL	ZA20204-01	PrePack Rigose SP	7/25	5×1 mL	ZD20535-01
	16/25	5×5 mL	ZA20204-02		16/25	5×5 mL	ZD20535-02
	7/25	1×1 mL	ZA20204-15		7/25	1×1 mL	ZD20535-15
	16/25	1×5 mL	ZA20204-16		16/25	1×5 mL	ZD20535-16
	8/100	1×5 mL	ZA20204-72		8/100	1×5 mL	ZD20535-72
	16/100	1×20 mL	ZA20204-03		16/100	1×20 mL	ZD20535-03
	16/200	1×40 mL	ZA20204-04		16/200	1×40 mL	ZD20535-04
PrePack SP Purose 6 HP	7/25	5×1 mL	ZA20504-01	PrePack Rigose DEAE HiRes	7/25	5×1 mL	ZD20236-01
	16/25	5×5 mL	ZA20504-02		16/25	5×5 mL	ZD20236-02
	7/25	1×1 mL	ZA20504-15		7/25	1×1 mL	ZD20236-15
	16/25	1×5 mL	ZA20504-16		16/25	1×5 mL	ZD20236-16
	8/100	1×5 mL	ZA20504-72		8/100	1×5 mL	ZD20236-72
	16/100	1×20 mL	ZA20504-03		16/100	1×20 mL	ZD20236-03
	16/200	1×40 mL	ZA20504-04		16/200	1×40 mL	ZD20236-04
PrePack CM Purose 6 HP	7/25	5×1 mL	ZA20404-01	PrePack Rigose Q HiRes	7/25	5×1 mL	ZD20336-01
	16/25	5×5 mL	ZA20404-02		16/25	5×5 mL	ZD20336-02
	7/25	1×1 mL	ZA20404-15		7/25	1×1 mL	ZD20336-15
	16/25	1×5 mL	ZA20404-16		16/25	1×5 mL	ZD20336-16
	8/100	1×5 mL	ZA20404-72		8/100	1×5 mL	ZD20336-72
	16/100	1×20 mL	ZA20404-03		16/100	1×20 mL	ZD20336-03
	16/200	1×40 mL	ZA20404-04		16/200	1×40 mL	ZD20336-04
PrePack Rigose SP HiRes	7/25	5×1 mL	ZD20536-01	PrePack Rigose CM HiRes	7/25	5×1 mL	ZD20436-01
	16/25	5×5 mL	ZD20536-02		16/25	5×5 mL	ZD20436-02
	7/25	1×1 mL	ZD20536-15		7/25	1×1 mL	ZD20436-15
	16/25	1×5 mL	ZD20536-16		16/25	1×5 mL	ZD20436-16
	8/100	1×5 mL	ZD20536-72		8/100	1×5 mL	ZD20436-72
	16/100	1×20 mL	ZD20536-03		16/100	1×20 mL	ZD20436-03
	16/200	1×40 mL	ZD20536-04		16/200	1×40 mL	ZD20436-04

Hydrophobic Interaction Chromatography

Hydrophobic interaction chromatography (HIC) is a chromatography method according to differences in proteins surface hydrophobicity by utilizing a reversible interaction between these proteins and the hydrophobic surface of a HIC resin.

Main characteristics

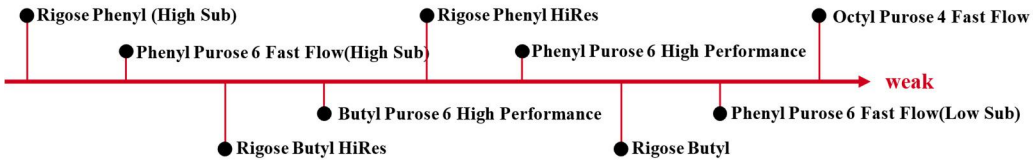
- Easy to use in combination with other chromatography methods to purify complex biological samples
- Low sample pretreatment requirements, suitable for the early stages of the entire purification protocol
- High dynamic binding capacity, low non-specific adsorption

Factors affecting HIC

1. Solid phase

The selection of HIC chromatography resin is mainly based on the hydrophobic strength of the target molecule, and the chromatography resin with strong hydrophobicity is selected when separating the molecules with weak hydrophobicity, and the chromatography resin with weak hydrophobicity is selected when separating the molecules with strong hydrophobicity.

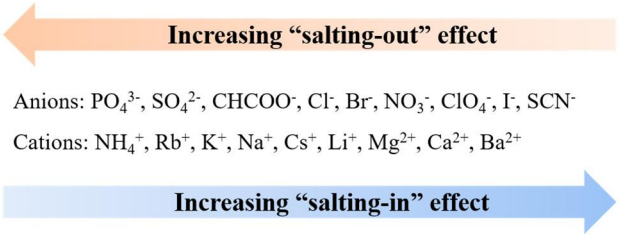
The hydrophobicity of common functional groups in hydrophobic chromatography resins is: Phenyl > Octyl > Butyl > Butyl-S. In addition to the type of functional group, the type of matrix and the degree of substitution of functional group will also affect the sample separation effect.



Hydrophobicity of Tofflon Qianchun Bio HIC resin

2. Mobile phase

The addition of "salting-out" salts to the sample promotes ligand-protein interactions in HIC. As the concentration of salt is increased, the amount of bound protein increases up to the precipitation point for the protein. The most commonly used salts are $(NH_4)_2SO_4$, $CHCOONH_4$, Na_2SO_4 and NaCl. At a given concentration, ammonium sulfate often gives the best resolution of a mixture of standard proteins compared to other salts. Elution of bound solutes can be achieved simply by stepwise or gradient elution with buffers which have low salt content. Low recovery can be remedied by adding some organic modifiers in the elution buffers, such as 30% isopropanol.



The Hofmeister series of some anions and cations arranged according to their effects on the solubility of protein in aqueous solutions.

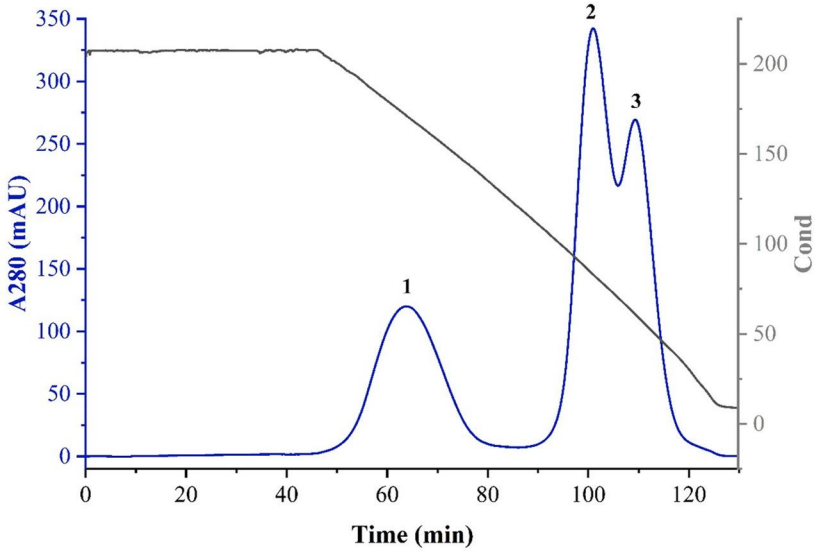
3. Purification condition

In addition to the solid phase and the mobile phase, other chromatographic conditions such as temperature and flow velocity will also have a certain effect on the chromatography. Usually with the increasing of temperature, the hydrophobic interaction will enhance. However, too high temperature will affect the conformation and solubility of the protein, so it is recommended to maintain a constant temperature during the separation and purification process. HIC is less sensitive to the flow velocity, so the flow velocity is mainly selected according to the separation time and the degree of resin tolerance.

HIC Purose Fast Flow series

HIC Purose Fast Flow series HIC resins are based on 4% or 6% high cross-linked agarose. They have no charged groups, no ion exchange and other interactions. They have the advantages of high dynamic binding capacity, high chemical stability and fast flow, etc. They are often used for protein capture, and in a few cases, they can also be used for polishing.

Product	Average particle size (μm)	Dynamic binding capacity (/mL)	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
Phenyl Purose 6 FF (HS)	90	35 mg BSA	＜0.3	≤600	3~13 (Work) 2~14 (CIP)	25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	A30702-05 A30702-06 A30702-22 A30702-07 A30702-08 A30702-09 A30702-10 A30702-11
Phenyl Purose 6 FF (LS)	90	20 mg BSA	＜0.3	≤600	3~13 (Work) 2~14 (CIP)	25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	A31902-05 A31902-06 A31902-22 A31902-07 A31902-08 A31902-09 A31902-10 A31902-11
Butyl Purose 4 FF	90	20 mg BSA	＜0.3	≤500	3~13 (Work) 2~14 (CIP)	25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	A30601-05 A30601-06 A30601-22 A30601-07 A30601-08 A30601-09 A30601-10 A30601-11
Octyl Purose 4 FF	90	22 mg BSA	＜0.3	≤500	3~13 (Work) 2~14 (CIP)	25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	A30801-05 A30801-06 A30801-22 A30801-07 A30801-08 A30801-09 A30801-10 A30801-11



Resin: Phenyl Purose 6 FF (High Sub)
Column: QCXKC 16/100
Samples: 1. Ribonuclease A, 30 mg/mL
2. Lysozyme, 10 mg/mL
3. Chymotrypsinogen, 10 mg/mL
Binding buffer: 0.1 M PB, 1.5 M $(NH)_4SO_3$, pH 7.0
Elution buffer: 0.1 M PB, pH 7.0
Sample volume: 2 mL
Flow velocity: 75 cm/h
Elution gradient: 0~100% elution buffer, 10 CV

HIC Purose 6 High Performance series

The best choice for high resolution

HIC Purose 6 High Performance series is based on 6% high cross-linked agarose matrix which has high resolution to biological macromolecules. This chromatography resin has stable performance, and is easy to scale up.

Product	Average particle size (μm)	Dynamic binding capacity (/mL)	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
Phenyl Purose 6 HP	34	30 mg BSA	<0.3	≤150	3~13 (Work) 2~14 (CIP)	25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	A31904-05 A31904-06 A31904-22 A31904-07 A31904-08 A31904-09 A31904-10 A31904-11
Butyl Purose 6 HP	34	30 mg BSA	<0.3	≤150	3~13 (Work) 2~14 (CIP)	25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	A30604-05 A30604-06 A30604-22 A30604-07 A30604-08 A30604-09 A30604-10 A30604-11
Octyl Purose 6 HP	34	28 mg BSA	<0.3	≤150	3~13 (Work) 2~14 (CIP)	25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	A30804-05 A30804-06 A30804-22 A30804-07 A30804-08 A30804-09 A30804-10 A30804-11

Rigose HIC series

Rigose HIC series is biological macromolecular purification chromatography resins. Rigose HIC series is based on a new generation matrix of macroporous agarose, which is used for the capture and intermediate purification. Rigose HIC has the features of high capacity, fast flow velocity and low backpressure to reduce process cycles and increase productivity.

Product	Average particle size (μm)	Dynamic binding capacity (/mL)	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
Rigose Phenyl (HS)	75	30 mg BSA	<0.5	≤600	3~13 (Work) 2~14 (CIP)	25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	D30735-05 D30735-06 D30735-22 D30735-07 D30735-08 D30735-09 D30735-10 D30735-11
Rigose Butyl	75	27 mg BSA	<0.5	≤600	3~13 (Work) 2~14 (CIP)	25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	D30635-05 D30635-06 D30635-22 D30635-07 D30635-08 D30635-09 D30635-10 D30635-11
Rigose Octyl	75	23 mg BSA	<0.5	≤600	3~13 (Work) 2~14 (CIP)	25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	D30835-05 D30835-06 D30835-22 D30835-07 D30835-08 D30835-09 D30835-10 D30835-11

Rigose HIC HiRes series

Rigose HIC HiRes series is a series of high-resolution IEX resins that is based on the Rigose matrix with an average particle size of approximately 40 μm. This series resin is used for the intermediate purification and polishing of proteins.

Product	Average particle size (μm)	Dynamic binding capacity (/mL)	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
Rigose Phenyl HiRes	40	27 mg BSA	＜0.5	≤300	3~13 (Work) 2~14 (CIP)	25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	D31936-05 D31936-06 D31936-22 D31936-07 D31936-08 D31936-09 D31936-10 D31936-11
Rigose Butyl HiRes	40	30 mg BSA	＜0.5	≤300	3~13 (Work) 2~14 (CIP)	25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	D30636-05 D30636-06 D30636-22 D30636-07 D30636-08 D30636-09 D30636-10 D30636-11

HIC resins prepacked column

HIC resins prepacked column is a ready-to-use chromatography column in which the HIC resin is prepacked into an empty chromatography column.

Product	I.D./bed height(mm)	Quantity	Code No.	Product	I.D./bed height(mm)	Quantity	Code No.
PrePack Butyl Purose 4 FF	7/25	5×1 mL	ZA30601-01	PrePack Butyl Purose 6 HP	7/25	5×1 mL	ZA30604-01
	16/25	5×5 mL	ZA30601-02		16/25	5×5 mL	ZA30604-02
	7/25	1×1 mL	ZA30601-15		7/25	1×1 mL	ZA30604-15
	16/25	1×5 mL	ZA30601-16		16/25	1×5 mL	ZA30604-16
	8/100	1×5 mL	ZA30601-72		8/100	1×5 mL	ZA30604-72
	16/100	1×20 mL	ZA30601-03		16/100	1×20 mL	ZA30604-03
	16/200	1×40 mL	ZA30601-04		16/200	1×40 mL	ZA30604-04
PrePack Phenyl Purose 6 FF (HS)	7/25	5×1 mL	ZA30702-01	PrePack Phenyl Purose 6 HP	7/25	5×1 mL	ZA31904-01
	16/25	5×5 mL	ZA30702-02		16/25	5×5 mL	ZA31904-02
	7/25	1×1 mL	ZA30702-15		7/25	1×1 mL	ZA31904-15
	16/25	1×5 mL	ZA30702-16		16/25	1×5 mL	ZA31904-16
	8/100	1×5 mL	ZA30702-72		8/100	1×5 mL	ZA31904-72
	16/100	1×20 mL	ZA30702-03		16/100	1×20 mL	ZA31904-03
	16/200	1×40 mL	ZA30702-04		16/200	1×40 mL	ZA31904-04
PrePack Phenyl Purose 6 FF (LS)	7/25	5×1 mL	ZA31902-01	PrePack Octyl Purose 6 HP	7/25	5×1 mL	ZA30804-01
	16/25	5×5 mL	ZA31902-02		16/25	5×5 mL	ZA30804-02
	7/25	1×1 mL	ZA31902-15		7/25	1×1 mL	ZA30804-15
	16/25	1×5 mL	ZA31902-16		16/25	1×5 mL	ZA30804-16
	8/100	1×5 mL	ZA31902-72		8/100	1×5 mL	ZA30804-72
	16/100	1×20 mL	ZA31902-03		16/100	1×20 mL	ZA30804-03
	16/200	1×40 mL	ZA31902-04		16/200	1×40 mL	ZA30804-04
PrePack Octyl Purose 4 FF	7/25	5×1 mL	ZA30801-01	PrePack Rigose Phenyl (HS)	7/25	5×1 mL	ZD30735-01
	16/25	5×5 mL	ZA30801-02		16/25	5×5 mL	ZD30735-02
	7/25	1×1 mL	ZA30801-15		7/25	1×1 mL	ZD30735-15
	16/25	1×5 mL	ZA30801-16		16/25	1×5 mL	ZD30735-16
	8/100	1×5 mL	ZA30801-72		8/100	1×5 mL	ZD30735-72
	16/100	1×20 mL	ZA30801-03		16/100	1×20 mL	ZD30735-03
	16/200	1×40 mL	ZA30801-04		16/200	1×40 mL	ZD30735-03
PrePack Rigose Phenyl HiRes	7/25	5×1 mL	ZD31936-01	PrePack Rigose Butyl	7/25	5×1 mL	ZD30635-01
	16/25	5×5 mL	ZD31936-02		16/25	5×5 mL	ZD30635-02
	7/25	1×1 mL	ZD31936-15		7/25	1×1 mL	ZD30635-15
	16/25	1×5 mL	ZD31936-16		16/25	1×5 mL	ZD30635-16
	8/100	1×5 mL	ZD31936-72		8/100	1×5 mL	ZD30635-72
	16/100	1×20 mL	ZD31936-03		16/100	1×20 mL	ZD30635-03
	16/200	1×40 mL	ZD31936-04		16/200	1×40 mL	ZD30635-04
PrePack Rigose Butyl HiRes	7/25	5×1 mL	ZD30636-01	PrePack Rigose Octyl	7/25	5×1 mL	ZD30835-01
	16/25	5×5 mL	ZD30636-02		16/25	5×5 mL	ZD30835-02
	7/25	1×1 mL	ZD30636-15		7/25	1×1 mL	ZD30835-15
	16/25	1×5 mL	ZD30636-16		16/25	1×5 mL	ZD30835-16
	8/100	1×5 mL	ZD30636-72		8/100	1×5 mL	ZD30835-72
	16/100	1×20 mL	ZD30636-03		16/100	1×20 mL	ZD30835-03
	16/200	1×40 mL	ZD30636-04		16/200	1×40 mL	ZD30835-04

Affinity Chromatography

Affinity chromatography (AC) is a chromatography method that uses specific biological affinities between biomolecules and AC resins to separate samples. For example, the specific binding of enzymes to substrates, antibodies to their antigens, nucleic acids to their complementary chains, etc. The binding between different biological pairs is specific and reversible, so the separation and purification of proteins, polysaccharides, nucleic acids or cells can be carried out.

Main characteristics

- High selectivity and resolution, high purification folds
- Rapid separation, usually one-step operation can realize the separation that other method cannot achieve
- Simple operation and high recovery

Kinds of common affinity chromatography resins

The affinity chromatography resin consists of matrix, linker arm and ligand. Among them, the affinity ligand needs to have a specific interaction with the target molecule and can form a reversible complex, and the ligand-target molecular complex can be stable for a period of time in order to play a role in separation during chromatography. Common AC resins can be classified according to target molecules and affinity ligands in the following table.

Kind	Target	Ligand	Product
Antibody purification	IgG or antigen corresponding to IgG	Protein A	Rigose MabPureA LX Rigose MabPureA Rigose MabPureA Max Rigose MabPureA Ultra Rigose ExcellentA Rigose ExcellentA Extra
		Protein G	iProtein G Purose 4 FF
		Protein L	Rigose iProtein L
Tagged-protein purification	Polypeptide or protein containing histidine	Nickel ion	Ni Purose 6 FF Rigose Ni-NTA Ni-TED Purose 6 FF/HP
	Polypeptide or protein containing glutathione	Glutathione	GSH Purose 4 FF
Other	Albumin, interferon, lipoproteins, blood coagulation factors and several enzymes, such as kinases, dehydrogenases, and most enzymes requiring adenyl-containing cofactors.	Reactive Blue 5	Blue Purose 6 FF (RB5) Rigose Blue (RB5)
	Antithrombin III and other coagulation factors, lipoproteins, lipases, protein synthesis factors, hormones, steroid receptors, nucleic acid binding enzymes and interferon.	Heparin	Heparin Purose 6 FF/HP Rigose Heparin
	Serine proteases	Benzamidine	Benzamidine Purose 4 FF
	Plasmid DNA	2-mercaptopyridine	Rigose PlasmidPure

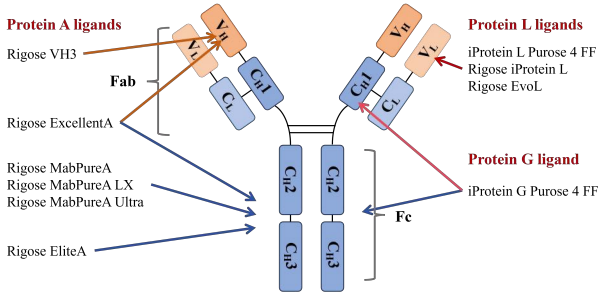






Guidelines for selection of AC resins for antibody purification

The antibody drugs have developed rapidly in recent years, and have been widely used in the diagnosis and treatment of diseases. Affinity chromatography technology has always been the most important step in the purification process of antibody drugs, which can effectively enrich and obtain high-purity antibody proteins through one step purification. Different affinity ligands can be selected for purification based on the differences in the source and structural form of antibody species, as well as the different expression methods.



- Chimeric antibodies, humanized antibodies, and total antibodies generally use Protein A or Protein G chromatography resins as capture steps;
- The Fc fusion protein generally uses Protein A chromatography resin as the capture step;
- Fab fragments or scFv single chain variable fragment are generally captured using Protein L chromatography resin, which has specific adsorption on light chain kappa fragments.

The relative binding strengths of antibodies from various species to protein A and protein G

Species	Subclass	Protein A binding	Protein G binding
Hunan	IgA	variable	-
	IgD	-	-
	IgE	-	-
	IgG_1	++++	++++
	IgG_2	++++	++++
	IgG_3	-	++++
	IgG_4	++++	++++
	IgM	variable	-
Egg yolk	IgY	-	-
Cow		++	++++
Dog		++	+
Goat		-	++
Guinea pig	IgG_1	+++	++
	IgG_2	+++	++
Hamster		+	++
Horse		++	++++
Llama		-	+
Koala		-	+
Monkey (rhesus)		++++	++++
Sheep		+/-	++
Mouse	IgG_1	+	++++
	IgG_{2a}	++++	++++
	IgG_{2b}	+++	+++
	IgG_3	++	+++
	IgM	variable	-
Rat	IgG_1	-	+
	IgG_{2b}	-	++
	IgG_3	-	++
Pig		+++	+++
Rabbit		++++	+++

*++++ means strong binding

++ means resin binding

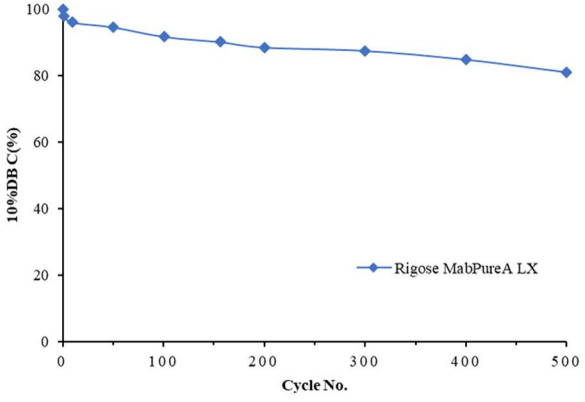
- means weak or no binding

Alkali-tolerant Protein A series antibody purification resins and prepacked column

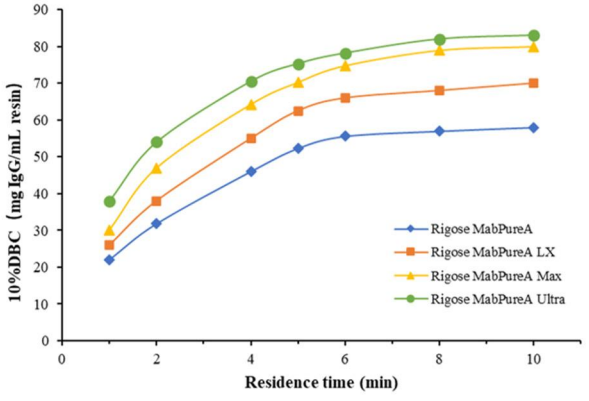
Alkali-tolerant Protein A series are AC resins formed on high flow cross-linked agarose matrix and alkali-tolerant protein A-derived ligand. The resins are designed for purification of monoclonal and polyclonal antibodies from cell culture supernatants, serum, ascites fluid, and other feeds. The ligand is the alkali-resistant modified protein A recombined and expressed by *E. coli*, which allows the use of 0.1-0.5 M sodium hydroxide for CIP. And the modified protein A has enhanced resistance to protease which can achieve lower ligand leakage. So, it is more suitable for the production and application in the downstream purification of antibody.

After long-term using of the resin, too many contaminants may increase the backpressure of the column which can decrease the column efficiency and the binding capacity, even damage the life-time of the resin. Regular CIP cleaning can effectively protect resin. We have a study to verify the work life of the resin by using 0.1 M NaOH with 15 min contact time, combined with binding buffer and low pH elution buffer. Approximately 80% of the initial dynamic binding capacity of Rigose MabPureA LX is retained after 500 cycles with sodium hydroxide.

The binding capacity is one of the important indicators for evaluating purification ability of the resin. Higher binding capacity can improve production efficiency and save production costs. The dynamic binding capacity is a function of the sample residence time and must therefore be defined over a range of different sample residence times. The below figure shows the relation between dynamic binding capacity and residence time for Alkali-tolerant Protein A series resins.



Each cycle in Figure consisted of:
a) 5 CV Binding buffer, pH 7.4
b) 5 CV 0.1 M acetic acid, pH 3.0
c) 2.2 CV 0.1 M NaOH, Contact time15 min
d) 5 CV Binding buffer, pH 7.4



Determination of dynamic binding capacity:
Column: 5/100
Sample: 1 mg/mL IgG
Binding buffer: 20 mM PB, 0.15 M NaCl, pH 7.4

Product	Average particle size (μm)	Dynamic binding capacity (/mL)	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
Rigose MabPureA	85	50 mg IgG	＜0.5	≤500	3~12(Work)	5 mL	D41235-13
						10 mL	D41235-14
						25 mL	D41235-05
						100 mL	D41235-06
						200 mL	D41235-22
						500 mL	D41235-07
						1 L	D41235-08
						5 L	D41235-09
						10 L	D41235-10
Rigose MabPureA LX	85	60 mg IgG	＜0.5	≤500	3~12 (Work)	5 mL	D41260-13
						10 mL	D41260-14
						25 mL	D41260-05
						100 mL	D41260-06
						200 mL	D41260-22
						500 mL	D41260-07
						1 L	D41260-08
						5 L	D41260-09
						10 L	D41260-10

Product	Average particle size (μm)	Dynamic binding capacity (/mL)	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
Rigose MabPureA Max	70	75 mg IgG	＜0.5	≤400	3~12 (Work)	5 mL	D45959-13
						10 mL	D45959-14
						25 mL	D45959-05
						100 mL	D45959-06
						200 mL	D45959-22
						500 mL	D45959-07
						1 L	D45959-08
						5 L	D45959-09
						10 L	D45959-10
Rigose MabPureA Ultra	60	80 mg IgG	＜0.5	≤300	3~12 (Work)	5 mL	D45961-13
						10 mL	D45961-14
						25 mL	D45961-05
						100 mL	D45961-06
						200 mL	D45961-22
						500 mL	D45961-07
						1 L	D45961-08
						5 L	D45961-09
						10 L	D45961-10
iProtein A Purose 4 FF	90	50 mg IgG	＜0.3	≤500	3~12 (Work)	5 mL	A41201-13
						10 mL	A41201-14
						25 mL	A41201-05
						100 mL	A41201-06
						200 mL	A41201-22
						500 mL	A41201-07
						1 L	A41201-08
						5 L	A41201-09
						10 L	A41201-10
iProtein A Purose LX	90	60 mg IgG	＜0.3	≤500	3~12 (Work)	5 mL	A41266-13
						10 mL	A41266-14
						25 mL	A41266-05
						100 mL	A41266-06
						200 mL	A41266-22
						500 mL	A41266-07
						1 L	A41266-08
						5 L	A41266-09
						10 L	A41266-10

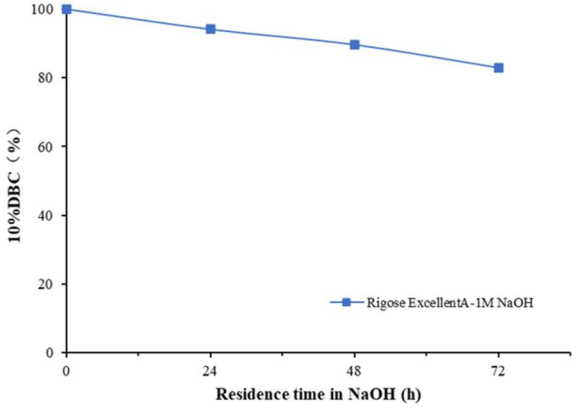
Prepacked column

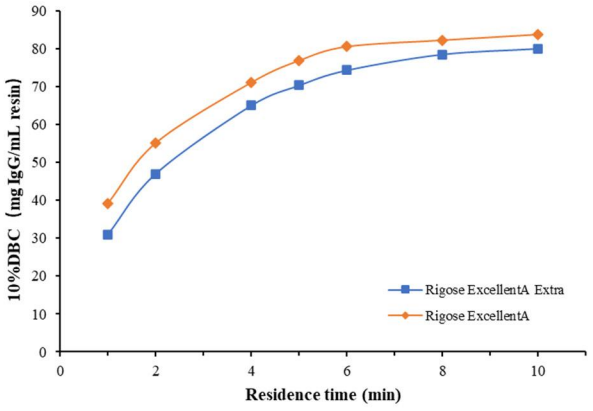
Product	I.D./bed height(mm)	Quantity	Code No.	Product	I.D./bed height(mm)	Quantity	Code No.
PrePack Rigose MabPureA	7/25	5×1 mL	ZD41235-01	PrePack Rigose MabPureA LX	7/25	5×1 mL	ZD41260-01
	16/25	5×5 mL	ZD41235-02		16/25	5×5 mL	ZD41260-02
	7/25	1×1 mL	ZD41235-15		7/25	1×1 mL	ZD41260-15
	16/25	1×5 mL	ZD41235-16		16/25	1×5 mL	ZD41260-16
	8/100	1×5 mL	ZD41235-72		8/100	1×5 mL	ZD41260-72
	16/100	1×20 mL	ZD41235-03		16/100	1×20 mL	ZD41260-03
	16/100	1×20 mL	ZD41235-04		16/200	1×40 mL	ZD41260-04
PrePack Rigose MabPureA Max	7/25	5×1 mL	ZD45959-01	PrePack Rigose MabPureA Ultra	7/25	5×1 mL	ZD45961-01
	16/25	5×5 mL	ZD45959-02		16/25	5×5 mL	ZD45961-02
	7/25	1×1 mL	ZD45959-15		7/25	1×1 mL	ZD45961-15
	16/25	1×5 mL	ZD45959-16		16/25	1×5 mL	ZD45961-16
	8/100	1×5 mL	ZD45959-72		8/100	1×5 mL	ZD45961-72
	16/100	1×20 mL	ZD45959-03		16/100	1×20 mL	ZD45961-03
	16/100	1×20 mL	ZD45959-04		16/200	1×40 mL	ZD45961-04
PrePack iProtein A Purose 4 FF	7/25	5×1 mL	ZA41201-01	PrePack iProtein A Purose LX	7/25	5×1 mL	ZA41266-01
	16/25	5×5 mL	ZA41201-02		16/25	5×5 mL	ZA41266-02
	7/25	1×1 mL	ZA41201-15		7/25	1×1 mL	ZA41266-15
	16/25	1×5 mL	ZA41201-16		16/25	1×5 mL	ZA41266-16
	8/100	1×5 mL	ZA41201-72		8/100	1×5 mL	ZA41266-72
	16/100	1×20 mL	ZA41201-03		16/100	1×20 mL	ZA41266-03
	16/200	1×40 mL	ZA41201-04		16/200	1×40 mL	ZA41266-04

Next-generation Alkali-tolerant Protein A series antibody purification resins and prepacked column

Rigose ExcellentA and Rigose ExcellentA Extra are next-generation alkali-resistant protein A affinity chromatography resins for capturing monoclonal antibodies and Fc-containing recombinant proteins from large feed volumes. The resin provides greater stability than MabPureA series in the alkaline conditions used in cleaning-in-place (CIP) and sanitization protocols. Excellent alkaline stability enables efficient cleaning and sanitization using 0.5 - 1 M NaOH for improved bioburden control. At the same time, it has a higher dynamic binding capacity, which allows high mass throughput of processed mAb per resin volume unit, helping to reduce production cost and improve process economy.

The figure on the left shows the tolerance of Rigose ExcellentA in 1 M NaOH solution, and the figure on the right shows the relation between dynamic binding capacity and residence time for Rigose ExcellentA and Rigose ExcellentA Extra. Dynamic binding capacity measured in a 5/100 column with 10 cm bed height, 20 mM PB and 150 mM NaCl, pH 7.4.





Product	Average particle size (μm)	Dynamic binding capacity (/mL)	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
Rigose ExcellentA	60	80 mg IgG	＜0.5	≤300	3~12 (工作) 2~14（CIP）	5 mL 10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L	D47561-13 D47561-14 D47561-05 D47561-06 D47561-22 D47561-07 D47561-08 D47561-09 D47561-10
Rigose ExcellentA Extra	70	75 mg IgG	＜0.5	≤400	3~12 (工作) 2~14（CIP）	5 mL 10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L	D47559-13 D47559-14 D47559-05 D47559-06 D47559-22 D47559-07 D47559-08 D47559-09 D47559-10

Prepacked column

Product	I.D./bed height(mm)	Quantity	Code No.	Product	I.D./bed height(mm)	Quantity	Code No.
PrePack Rigose ExcellentA	7/25	5×1 mL	ZD47561-01	PrePack Rigose ExcellentA Extra	7/25	5×1 mL	ZD47559-01
	16/25	5×5 mL	ZD47561-02		16/25	5×5 mL	ZD47559-02
	7/25	1×1 mL	ZD47561-15		7/25	1×1 mL	ZD47559-15
	16/25	1×5 mL	ZD47561-16		16/25	1×5 mL	ZD47559-16
	8/100	1×5 mL	ZD47561-72		8/100	1×5 mL	ZD47559-72
	16/100	1×20 mL	ZD47561-03		16/100	1×20 mL	ZD47559-03
	16/100	1×20 mL	ZD47561-04		16/200	1×40 mL	ZD47559-04

Protein G series antibody purification resins and prepacked column

iProtein G Purose 4 Fast Flow combines Purose 4 Fast Flow with the immunoglobulin-binding recombinant protein G ligand, which was removed the albumin binding region of native protein G to improve the purity of purification. Besides, we add more IgG-binding regions to improve the binding capacity of this resin. Recombinant Protein G can be used to purify mammalian monoclonal antibodies and polyclonal antibodies that do not bind well to protein A. Usually protein G has a greater affinity than protein A for most mammalian IgG, especially for the subclass of IgG, such as human IgG3, mouse IgG1 and mouse IgG2a.

Product	Average particle size (μm)	Dynamic binding capacity (/mL)	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
iProtein G Purose 4 FF	90	35 mg IgG	＜0.3	≤500	2~9	5 mL	A42501-13
						10 mL	A42501-14
						25 mL	A42501-05
						100 mL	A42501-06
						200 mL	A42501-22
						500 mL	A42501-07
						1 L	A42501-08
						5 L	A42501-09
						10 L	A42501-10

Prepacked column

Product	I.D./bed height(mm)	Quantity	Code No.
PrePack iProtein G Purose 4 FF	7/25	5×1 mL	ZA42501-01
	16/25	5×5 mL	ZA42501-02
	7/25	1×1 mL	ZA42501-15
	16/25	1×5 mL	ZA42501-16
	8/100	1×5 mL	ZA42501-72
	16/100	1×20 mL	ZA42501-03
	16/200	1×40 mL	ZA42501-04

Protein L series antibody purification resins and prepacked column

iProtein L Purose 4 Fast Flow, Rigose iProtein L and Rigose EvoL are affinity chromatography resins for the capture of antibodies and antibody fragments. Rigose EvoL has substantially improved dynamic binding capacity and alkaline stability compared to its predecessor, making it well suited for cost-efficient capture of antibody variants. The iProtein L ligand is produced in *Escherichia coli*, which has a strong affinity for the variable region of an antibody's kappa light chain. Protein L series resins are therefore suitable for the capture of a wide range of antibody fragments such as Fabs, single-chain variable fragments (scFv), and domain antibodies (Dabs).

Product	Average particle size (μm)	Dynamic binding capacity (/mL)	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
iProtein L Purose 4 FF	90	30 mg IgG	＜0.3	≤500	2~10 (Work) 15 mM NaOH (CIP)	5 mL 10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L	A45001-13 A45001-14 A45001-05 A45001-06 A45001-22 A45001-07 A45001-08 A45001-09 A45001-10
Rigose iProtein L	85	50 mg IgG	＜0.5	≤500	2~10 (Work) 15 mM NaOH (CIP)	5 mL 10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L	D45035-13 D45035-14 D45035-05 D45035-06 D45035-22 D45035-07 D45035-08 D45035-09 D45035-10
Rigose EvoL	60	60 mg IgG	＜0.5	≤300	2~10 (工作) 2~13 (CIP)	5 mL 10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L	D45261-13 D45261-14 D45261-05 D45261-06 D45261-22 D45261-07 D45261-08 D45261-09 D45261-10

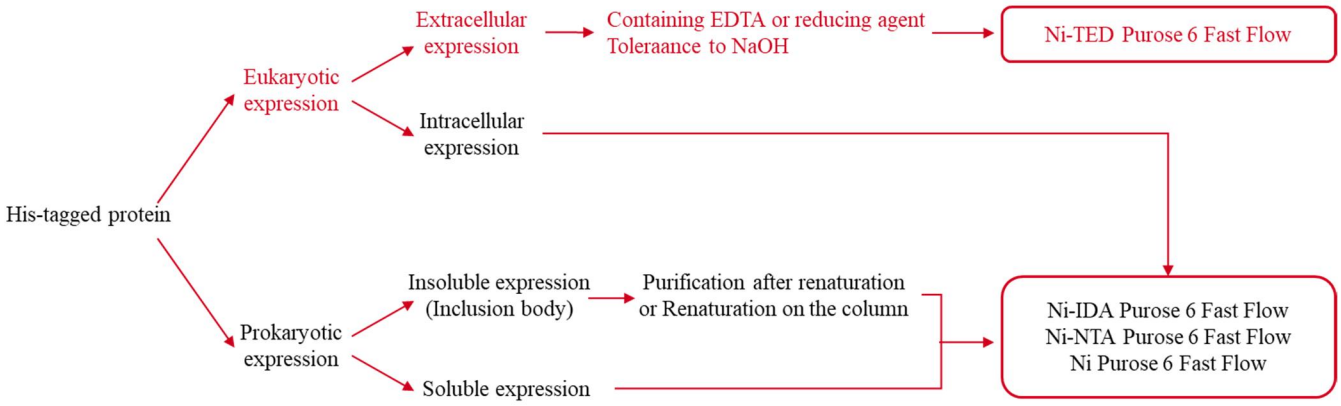
Prepacked column

Product	I.D./bed height(mm)	Quantity	Code No.	Product	I.D./bed height(mm)	Quantity	Code No.
PrePack iProtein L Purose 4 FF	7/25	5×1 mL	ZA45001-01	PrePack Rigose iProtein L	7/25	5×1 mL	ZD45035-01
	16/25	5×5 mL	ZA45001-02		16/25	5×5 mL	ZD45035-02
	7/25	1×1 mL	ZA45001-15		7/25	1×1 mL	ZD45035-15
	16/25	1×5 mL	ZA45001-16		16/25	1×5 mL	ZD45035-16
	8/100	1×5 mL	ZA45001-72		8/100	1×5 mL	ZD45035-72
	16/100	1×20 mL	ZA45001-03		16/100	1×20 mL	ZD45035-03
	16/200	1×40 mL	ZA45001-04		16/200	1×40 mL	ZD45035-04
PrePack Rigose EvoL	7/25	5×1 mL	ZD45261-01	PrePack Rigose EvoL	16/25	1×5 mL	ZD45261-16
	16/25	5×5 mL	ZD45261-02		8/100	1×5 mL	ZD45261-72
	7/25	1×1 mL	ZD45261-15		16/100	1×20 mL	ZD45261-03

His-tagged protein purification resins and prepacked column

His-tagged protein purification resins is a kind of metal chelating affinity chromatography resin formed by bonding the ligands chelated Ni^{2+} on agarose matrix, capable of reversibly binding with histidine-tagged proteins or other proteins that can specifically bind to Ni^{2+}, so as to obtain target proteins by one-step purification. Among them, TED's strong chelating ability to nickel ions enables Ni-TED Purose 6 Fast Flow to tolerate high concentrations of chelating agents (such as EDTA) and reducing agents (such as DTT), making it the best choice for eukaryotic cells to express and secrete His-tag proteins.

Guidelines for the selection of His-tagged protein purification media

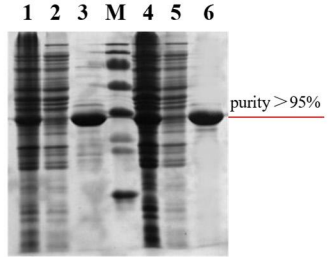


Product	Ligand density (/mL)	Dynamic binding capacity (/mL)	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
Ni-IDA Purose 6 FF	~35 μmol	40 mg $(histidine)_6$-tagged protein	<0.3	≤600	3~12 (Work) 2~14 (CIP) (Without Ni^{2+})	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L	A40902-14 A40902-05 A40902-06 A40902-22 A40902-07 A40902-08 A40902-09 A40902-10
Ni-NTA Purose 6 FF	~35 μmol	40 mg $(histidine)_6$-tagged protein	<0.3	≤600	3~12 (Work) 2~14 (CIP) (Without Ni^{2+})	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L	A41002-14 A41002-05 A41002-06 A41002-22 A41002-07 A41002-08 A41002-09 A41002-10
Ni Purose 6 FF	~ 25μmol	50 mg $(histidine)_6$-tagged protein	<0.3	≤600	3~12 (Work) 2~14 (CIP) (Without Ni^{2+})	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L	A46302-14 A46302-05 A46302-06 A46302-22 A46302-07 A46302-08 A46302-09 A46302-10
Ni-TED Purose 6 FF	90~130 μmol	20 mg $(histidine)_6$-tagged protein	<0.3	≤600	2~12 (Work) 2~14 (CIP)	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L	A42302-14 A42302-05 A42302-06 A42302-22 A42302-07 A42302-08 A42302-09 A42302-10

Product	Ligand density (/mL)	Dynamic binding capacity (/mL)	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
Ni-IDA Purose 6 HP	~40 μmol	60 mg (histidine)6-tagged protein	<0.3	≤150	3~12 (Work) 2~14 (CIP) (Without Ni^{2+})	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L	A40904-14 A40904-05 A40904-06 A40904-22 A40904-07 A40904-08 A40904-09 A40904-10
Ni-NTA Purose 6 HP	~40 μmol	85 mg (histidine)6-tagged protein	<0.3	≤150	3~12 (Work) 2~14 (CIP) (Without Ni^{2+})	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L	A41004-14 A41004-05 A41004-06 A41004-22 A41004-07 A41004-08 A41004-09 A41004-10
Ni Purose 6 HP	~ 25 μmol	85 mg $(histidine)_6$-tagged protein	<0.3	≤600	3~12 (Work) 2~14 (CIP) (Without Ni^{2+})	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L	A46304-14 A46304-05 A46304-06 A46304-22 A46304-07 A46304-08 A46304-09 A46304-10
Ni-TED Purose 6 HP	90~130 μmol	50 mg $(histidine)_6$-tagged protein	<0.3	≤150	2~12 (Work) 2~14 (CIP)	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L	A42304-14 A42304-05 A42304-06 A42304-22 A42304-07 A42304-08 A42304-09 A42304-10
Rigose Ni-IDA	~35 μmol	35 mg $(histidine)_6$-tagged protein	<0.5	≤600	3~12 (Work) 2~14 (CIP) (Without Ni^{2+})	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L	D40935-14 D40935-05 D40935-06 D40935-22 D40935-07 D40935-08 D40935-09 D40935-10
Rigose Ni-NTA	~35 μmol	35 mg $(histidine)_6$-tagged protein	<0.5	≤600	3~12 (Work) 2~14 (CIP) (Without Ni^{2+})	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L	D41035-14 D41035-05 D41035-06 D41035-22 D41035-07 D41035-08 D41035-09 D41035-10
Rigose Ni	~25 μmol Ni^{2+}	45 mg $(histidine)_6$-tagged protein	<0.5	≤600	3~12 (Work) 2~14 (CIP) (Without Ni^{2+})	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L	D46335-14 D46335-05 D46335-06 D46335-22 D46335-07 D46335-08 D46335-09 D46335-10
Rigose Ni-TED	~80 μmol	25 mg $(histidine)_6$-tagged protein	<0.5	≤600	2~12 (Work) 2~14 (CIP)	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L	D42335-14 D42335-05 D42335-06 D42335-22 D42335-07 D42335-08 D42335-09 D42335-10

Ni-TED Purose 6 Fast Flow

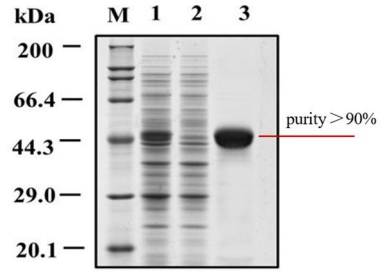
Sample: CHO cell culture supernatants
Medium: Ni-TED Purose 6 FF
Column: Prepack Ni-TED Purose 6 FF 7/25
Column volume: 1 mL
Binding buffer: 20 mM PB, 0.5 M NaCl, 50 mM imidazole
Elution buffer: 20 mM PB, 0.5 M NaCl, 300 mM imidazole
Flow velocity: 1 mL/min



1: sample; 2: flow through; 3: eluent; M: Marker; 4: sample; 5: flow through; 6: eluent

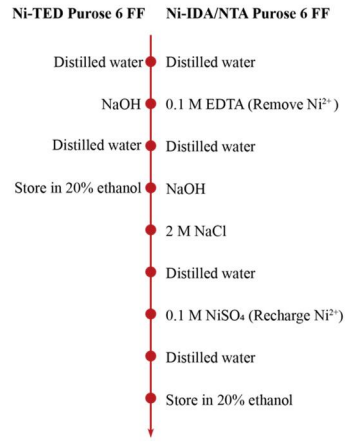
Ni-NTA Purose 6 FF

Sample: *E. coli* lysate
Medium: Ni-NTA Purose 6 FF
Column: Prepack Ni-NTA Purose 6 FF 7/25
Column volume: 1 mL
Binding buffer: 2 0mM PB, 0.5 M NaCl, 50 mM imidazole
Elution buffer: 20 mM PB, 0.5 M NaCl, 350 mM imidazole
Flow velocity: 1 mL/min



M: Marker; 1: sample; 2: flow through; 3: eluent

Cleaning of His-tagged protein purification media



Ni-TED Purose 6 FF tolerates NaOH cleaning, thus saving at least 60% of cleaning time.

Prepacked column

Product	I.D./bed height(mm)	Quantity	Code No.	Product	I.D./bed height(mm)	Quantity	Code No.
PrePack Ni-IDA Purose 6 FF	7/25	5×1 mL	ZA40902-01	PrePack Ni-IDA Purose 6 HP	7/25	5×1 mL	ZA40904-01
	16/25	5×5 mL	ZA40902-02		16/25	5×5 mL	ZA40904-02
	7/25	1×1 mL	ZA40902-15		7/25	1×1 mL	ZA40904-15
	16/25	1×5 mL	ZA40902-16		16/25	1×5 mL	ZA40904-16
	8/100	1×5 mL	ZA40902-72		8/100	1×5 mL	ZA40904-72
	16/100	1×20 mL	ZA40902-03		16/100	1×20 mL	ZA40904-03
	16/200	1×40 mL	ZA40902-04		16/200	1×40 mL	ZA40904-04
PrePack Ni-NTA Purose 6 FF	7/25	5×1 mL	ZA41002-01	PrePack Ni-NTA Purose 6 HP	7/25	5×1 mL	ZA41004-01
	16/25	5×5 mL	ZA41002-02		16/25	5×5 mL	ZA41004-02
	7/25	1×1 mL	ZA41002-15		7/25	1×1 mL	ZA41004-15
	16/25	1×5 mL	ZA41002-16		16/25	1×5 mL	ZA41004-16
	8/100	1×5 mL	ZA41002-72		8/100	1×5 mL	ZA41004-72
	16/100	1×20 mL	ZA41002-03		16/100	1×20 mL	ZA41004-03
	16/200	1×40 mL	ZA41002-04		16/200	1×40 mL	ZA41004-04
PrePack Ni Purose 6 FF	7/25	5×1 mL	ZA46302-01	PrePack Ni Purose 6 HP	7/25	5×1 mL	ZA46304-01
	16/25	5×5 mL	ZA46302-02		16/25	5×5 mL	ZA46304-02
	7/25	1×1 mL	ZA46302-15		7/25	1×1 mL	ZA46304-15
	16/25	1×5 mL	ZA46302-16		16/25	1×5 mL	ZA46304-16
	8/100	1×5 mL	ZA46302-72		8/100	1×5 mL	ZA46304-72
	16/100	1×20 mL	ZA46302-03		16/100	1×20 mL	ZA46304-03
	16/200	1×40 mL	ZA46302-04		16/200	1×40 mL	ZA46304-04
PrePack Ni-TED Purose 6 FF	7/25	5×1 mL	ZA42302-01	PrePack Ni-TED Purose 6 HP	7/25	5×1 mL	ZA42304-01
	16/25	5×5 mL	ZA42302-02		16/25	5×5 mL	ZA42304-02
	7/25	1×1 mL	ZA42302-15		7/25	1×1 mL	ZA42304-15
	16/25	1×5 mL	ZA42302-16		16/25	1×5 mL	ZA42304-16
	8/100	1×5 mL	ZA42302-72		8/100	1×5 mL	ZA42304-72
	16/100	1×20 mL	ZA42302-03		16/100	1×20 mL	ZA42304-03
	16/200	1×40 mL	ZA42302-04		16/200	1×40 mL	ZA42304-04
PrePack Rigose Ni-IDA	7/25	5×1 mL	ZD40935-01	PrePack Rigose Ni	7/25	5×1 mL	ZD46335-01
	16/25	5×5 mL	ZD40935-02		16/25	5×5 mL	ZD46335-02
	7/25	1×1 mL	ZD40935-15		7/25	1×1 mL	ZD46335-15
	16/25	1×5 mL	ZD40935-16		16/25	1×5 mL	ZD46335-16
	8/100	1×5 mL	ZD40935-72		8/100	1×5 mL	ZD46335-72
	16/100	1×20 mL	ZD40935-03		16/100	1×20 mL	ZD46335-03
	16/200	1×40 mL	ZD40935-04		16/200	1×40 mL	ZD46335-04
PrePack Rigose Ni-NTA	7/25	5×1 mL	ZD41035-01	PrePack Rigose Ni-TED	7/25	5×1 mL	ZD23335-01
	16/25	5×5 mL	ZD41035-02		16/25	5×5 mL	ZD23335-02
	7/25	1×1 mL	ZD41035-15		7/25	1×1 mL	ZD23335-15
	16/25	1×5 mL	ZD41035-16		16/25	1×5 mL	ZD23335-16
	8/100	1×5 mL	ZD41035-72		8/100	1×5 mL	ZD23335-72
	16/100	1×20 mL	ZD41035-03		16/100	1×20 mL	ZD23335-03
	16/200	1×40 mL	ZD41035-04		16/200	1×40 mL	ZD23335-04

IMAC metal chelate affinity chromatography resins and prepacked column

Immobilized metal affinity chromatography (IMAC) resin is designed to purify a wide range of proteins. It is supplied free of metal ions (uncharged), allowing the user to charge it with the most appropriate metal ion for optimized selectivity. The resin selectively retains proteins based on the specific interaction between certain amino acid side chains exposed on the surface of proteins (mainly histidine and to a lesser extent cysteine and tryptophan) and transition metal ions, most often Zn^{2+}, Ni^{2+}, Cu^{2+} or Co^{2+}.

Product	Ligand	Ligand density (/mL)	Dynamic binding capacity (/mL, Ni^{2+})	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
IMAC Purose 6 FF	/	~25 μmol	50 mg $(histidine)_6$-tagged protein	＜0.3	≤600	3~12 (work) 2~14 (CIP，metal ion-stripped resin)	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L	A46402-14 A46402-05 A46402-06 A46402-22 A46402-07 A46402-08 A46402-09 A46402-10
IMAC-IDA Purose 6 FF	-IDA	~35 μmol	40 mg $(histidine)_6$-tagged protein	＜0.3	≤600	3~12 (work) 2~14 (CIP，metal ion-stripped resin)	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L	A42102-14 A42102-05 A42102-06 A42102-22 A42102-07 A42102-08 A42102-09 A42102-10
IMAC-IDA Purose 6 HP	-IDA	~40 μmol	60 mg $(histidine)_6$-tagged protein	＜0.3	≤150	3~12 (work) 2~14 (CIP，metal ion-stripped resin)	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L	A42104-14 A42104-05 A42104-06 A42104-22 A42104-07 A42104-08 A42104-09 A42104-10
IMAC-NTA Purose 6 FF	-NTA	~35 μmol	40 mg $(histidine)_6$-tagged protein	＜0.3	≤600	3~12 (work) 2~14 (CIP，metal ion-stripped resin)	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L	A42202-14 A42202-05 A42202-06 A42202-22 A42202-07 A42202-08 A42202-09 A42202-10
IMAC-NTA Purose 6 HP	- NTA	~40 μmol	85 mg $(histidine)_6$-tagged protein	＜0.3	≤150	3~12 (work) 2~14 (CIP，metal ion-stripped resin)	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L	A42204-14 A42204-05 A42204-06 A42204-22 A42204-07 A42204-08 A42204-09 A42204-10

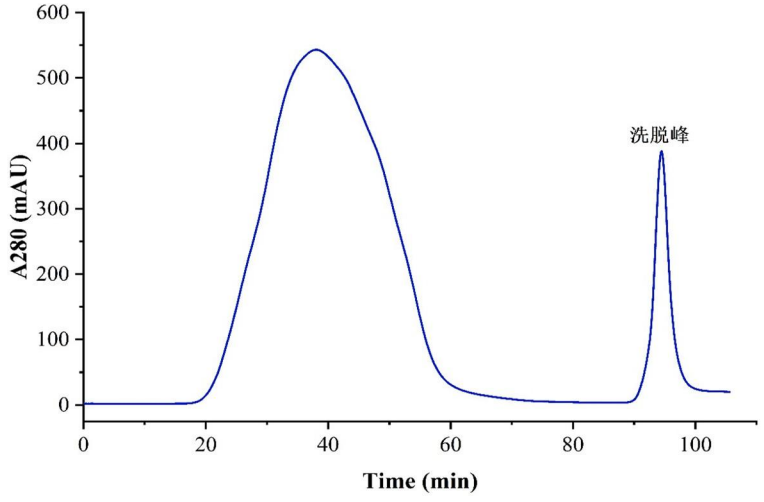
GST-tagged protein purification resins and prepacked column

GST is a commonly used tag to purify recombinant proteins which provides a high purity in one-step purification. Sometimes, GST-tag can improve the solubility and stability of target proteins. However, the tag is often cleavage after purification. Because GST is a large protein tag and easily forms a dimer under normal purification conditions. GSH Purose 4 Fast Flow is design to purify glutathione S-transferase (GST)-tagged proteins. The purification process is mild which is important to keep protein function and antigenicity stable.

Product	Average particle size (μm)	Dynamic binding capacity (/mL)	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
GSH Purose 4 FF	90	10 mg GST-tagged protein	＜0.3	≤500	3~12	5 mL	A41301-13
						10 mL	A41301-14
						25 mL	A41301-05
						100 mL	A41301-06
						200 mL	A41301-22
						500 mL	A41301-07
						1 L	A41301-08
						5 L	A41301-09
						10 L	A41301-10

Prepacked column

Product	I.D./bed height(mm)	Quantity	Code No.
PrePack GSH Purose 4 FF	7/25	5×1 mL	ZA41301-01
	16/25	5×5 mL	ZA41301-02
	7/25	1×1 mL	ZA41301-15
	16/25	1×5 mL	ZA41301-16
	8/100	1×5 mL	ZA41301-72
	16/100	1×20 mL	ZA41301-03
	16/200	1×40 mL	ZA41301-04



Resin: PrePack GSH Purose 4 Fast Flow 8/100
Sample: *E. coli* lysate containing GAT-tagged protein
Sample volume: 8 mL
Binding buffer: 20 mM PB, 0.15 M NaCl, pH 7.4
Elution buffer: 50 mM Tris, 10 mM reduced glutathione, pH 8

Blue series AC resins and prepacked column

Blue Purose 6 Fast Flow (RB5) and Rigose Blue (RB5) are affinity resins whose ligand is Reactive Blue 5. These resins can be used to purify many proteins including albumin, interferon, lipoproteins, blood coagulation factors and several enzymes, such as kinases, dehydrogenases and most enzymes requiring adenyl-containing cofactors.

Product	Average particle size (μm)	Dynamic binding capacity (/mL)	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
Blue Purose 6 FF (RB5)	90	30 mg HSA	＜0.3	≤600	4~12 (Work) 3~13 (CIP)	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	A46502-14 A46502-05 A46502-06 A46502-22 A46502-07 A46502-08 A46502-09 A46502-10 A46502-11
Rigose Blue (RB5)	75	25 mg HSA	＜0.5	≤600	4~12 (Work) 3~13 (CIP)	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	D46535-14 D46535-05 D46535-06 D46535-22 D46535-07 D46535-08 D46535-09 D46535-10 D46535-11

Prepacked column

Product	I.D./bed height(mm)	Quantity	Code No.	Product	I.D./bed height(mm)	Quantity	Code No.
PrePack Blue Purose 6 FF (RB5)	7/25	5×1 mL	ZA46502-01	PrePack Rigose Blue (RB5)	7/25	5×1 mL	ZD46535-01
	16/25	5×5 mL	ZA46502-02		16/25	5×5 mL	ZD46535-02
	7/25	1×1 mL	ZA46502-15		7/25	1×1 mL	ZD46535-15
	16/25	1×5 mL	ZA46502-16		16/25	1×5 mL	ZD46535-16
	8/100	1×5 mL	ZA46502-72		8/100	1×5 mL	ZD46535-72
	16/100	1×20 mL	ZA46502-03		16/100	1×20 mL	ZD46535-03
	16/200	1×40 mL	ZA46502-04		16/200	1×40 mL	ZD46535-04

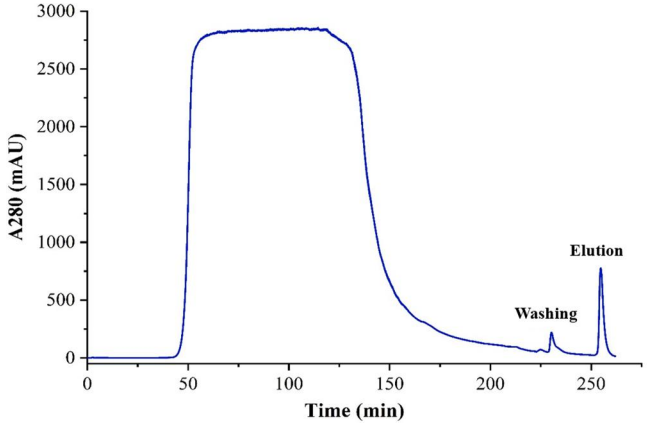
Heparin series AC resins and prepacked column

Heparin Purose 6 Fast Flow, Heparin Purose 6 High Performance and Rigose Heparin are a kind of affinity chromatography resins which use heparin as their ligands, and they are suitable for the isolation and purification of antithrombin III and other coagulation factors, lipoproteins, lipases, protein synthesis factors, hormones, steroid receptors, nucleic acid binding enzymes and interferon.

Product	Average particle size (μm)	Dynamic binding capacity (/mL)	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
Heparin Purose 6 FF	90	2 mg antithrombin III	＜0.3	≤600	4~12 (Work) 4~13 (CIP)	5 mL	A41502-13
						10 mL	A41502-14
						25 mL	A41502-05
						100 mL	A41502-06
						200 mL	A41502-22
						500 mL	A41502-07
						1 L	A41502-08
						5 L	A41502-09
						10 L	A41502-10
Heparin Purose 6 HP	34	3 mg antithrombin III	＜0.3	≤150	4~12 (Work) 4~13 (CIP)	5 mL	A41504-13
						10 mL	A41504-14
						25 mL	A41504-05
						100 mL	A41504-06
						200 mL	A41504-22
						500 mL	A41504-07
						1 L	A41504-08
						5 L	A41504-09
						10 L	A41504-10
Rigose Heparin	75	1.5 mg antithrombin III	＜0.5	≤600	4~12 (Work) 4~13 (CIP)	10 mL	D41535-14
						25 mL	D41535-05
						100 mL	D41535-06
						200 mL	D41535-22
						500 mL	D41535-07
						1 L	D41535-08
						5 L	D41535-09
						10 L	D41535-10
						25 L	D41535-11

Prepacked column

Product	I.D./bed height(mm)	Quantity	Code No.	Product	I.D./bed height(mm)	Quantity	Code No.
PrePack Heparin Purose 6 FF	7/25	5×1 mL	ZA41502-01	PrePack Rigose Heparin	7/25	5×1 mL	ZD41535-01
	16/25	5×5 mL	ZA41502-02		16/25	5×5 mL	ZD41535-02
	7/25	1×1 mL	ZA41502-15		7/25	1×1 mL	ZD41535-15
	16/25	1×5 mL	ZA41502-16		16/25	1×5 mL	ZD41535-16
	8/100	1×5 mL	ZA41502-72		8/100	1×5 mL	ZD41535-72
	16/100	1×20 mL	ZA41502-03		16/100	1×20 mL	ZD41535-03
	16/200	1×40 mL	ZA41502-04		16/200	1×40 mL	ZD41535-04
PrePack Heparin Purose 6 HP	7/25	5×1 mL	ZA41504-01	PrePack Heparin Purose 6 HP	16/25	1×5 mL	ZA41504-16
	16/25	5×5 mL	ZA41504-02		8/100	1×5 mL	ZA41504-72
	7/25	1×1 mL	ZA41504-15		16/100	1×20 mL	ZA41504-03



Resin: Heparin Purose 6 FF
Column: 1 mL kit
Sample volume: 15 mL
Residence time: 6 min
Sample: Porcine Serum, containing 0.15 M NaCl, pH 7.0
Binding buffer: 10 mM citric acid, 0.15 M NaCl, pH 7.0
Washing buffer: 10 mM citric acid, 0.3 M NaCl, pH 7.0
Elution buffer: 10 mM citric acid, 2.0 M NaCl, pH 7.0

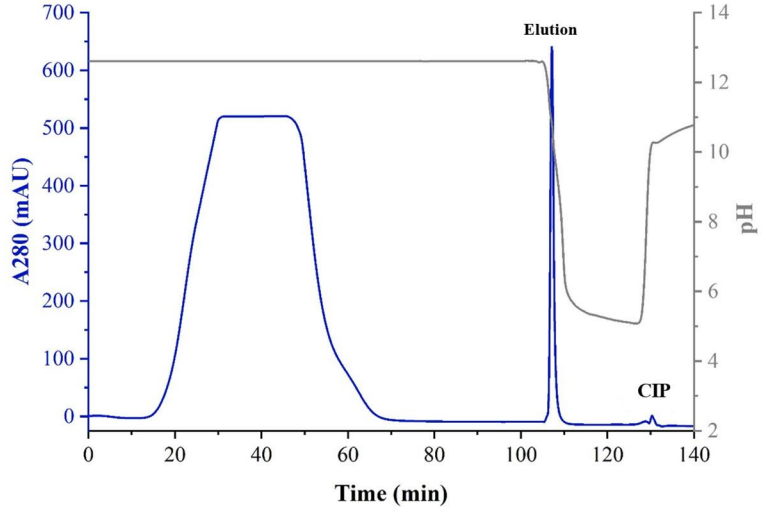
Benzamidine series AC resins and prepacked column

Benzamidine Purose 4 Fast Flow (High Sub) and Benzamidine Purose 4 Fast Flow (Low Sub) are a kind of affinity chromatography resins that use p-aminobenzamidine (pABA) as their ligands, and they were designed to purify or remove trypsin and serine-containing trypsin-like enzymes, and they are also used to purify zymogens including urokinase and prekallikrein. These resins can purify proteins directly from serum, monoclonal cell supernatants and bacterial lysates. We offer two types products, one of them has high ligand density (High Sub) and the other one has low ligand density (Low Sub), so as to meet the needs of different binding capacity.

Product	Average particle size (μm)	Dynamic binding capacity (/mL)	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
Benzamidine Purose 4 FF (HS)	90	40 mg trypsin	＜0.3	≤500	2~8 (Work) 1~9 (CIP)	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	A42001-14 A42001-05 A42001-06 A42001-22 A42001-07 A42001-08 A42001-09 A42001-10 A42001-11
Benzamidine Purose 4 FF (LS)	90	20 mg trypsin	＜0.3	≤500	2~8 (Work) 1~9 (CIP)	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	A45701-14 A45701-05 A45701-06 A45701-22 A45701-07 A45701-08 A45701-09 A45701-10 A45701-11

Prepacked column

Product	I.D./bed height(mm)	Quantity	Code No.	Product	I.D./bed height(mm)	Quantity	Code No.
PrePack Benzamidine Purose 4 FF (HS)	7/25	5×1 mL	ZA42001-01	PrePack Benzamidine Purose 4 FF (LS)	7/25	5×1 mL	ZA45701-01
	16/25	5×5 mL	ZA42001-02		16/25	5×5 mL	ZA45701-02
	7/25	1×1 mL	ZA42001-15		7/25	1×1 mL	ZA45701-15
	16/25	1×5 mL	ZA42001-16		16/25	1×5 mL	ZA45701-16
	8/100	1×5 mL	ZA42001-72		8/100	1×5 mL	ZA45701-72
	16/100	1×20 mL	ZA42001-03		16/100	1×20 mL	ZA45701-03
	16/200	1×40 mL	ZA42001-04		16/200	1×40 mL	ZA45701-04



Resin: Benzamidine Purose 4 Fast Flow (High Sub)
Sample: Chymotrypsin
Binding buffer: 50 mM PB, 0.5 M NaCl, pH 7
Elution buffer: 100 mM glycine, pH 2.7
CIP solution: 6 M guanidine hydrochloride

Plasmid purification resins and prepacked column

Rigose PlasmidPure is a kind of thiophilic aromatic adsorption chromatography resins which use 2-mercaptopyridine as their ligands. And these resins have the selectivity that allows supercoiled covalently closed circular forms of plasmid DNA to be separated from open circular forms. The resins were designed for purification and obtaining of high-quality supercoiled DNA which are used for gene therapy and DNA vaccine applications.

Product	Average particle size (μm)	Dynamic binding capacity (/mL)	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
Rigose PlasmidPure	40	3 mg pDNA	＜0.5	≤300	3~13 (Work) 2~14 (CIP)	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	D73736-14 D73736-05 D73736-06 D73736-22 D73736-07 D73736-08 D73736-09 D73736-10 D73736-11

Prepacked column

Product	I.D./bed height(mm)	Quantity	Code No.
PrePack Rigose PlasmidPure	7/25	5×1 mL	ZD73736-01
	16/25	5×5 mL	ZD73736-02
	7/25	1×1 mL	ZD73736-15
	16/25	1×5 mL	ZD73736-16
	8/100	1×5 mL	ZD73736-72
	16/100	1×20 mL	ZD73736-03
	16/200	1×40 mL	ZD73736-04

Other AC resins

Product	Average particle size (μm)	Ligand density (/mL)	Dynamic binding capacity (/mL)	Max. operating pressure (MPa)	Flow velocity (cm/h)	Characteristic	Quantity	Code No.
Purose Endotoxin-Removal	90	/	>10^6 EU	＜0.3	≤600	Mainly used to remove endotoxins from protein solutions	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L	A43201-14 A43201-05 A43201-06 A43201-22 A43201-07 A43201-08 A43201-09 A43201-10
Rigose DVS	75	100~150 μmol SO_3^-	/	＜0.5	≤600	Mainly used for virus capture from fermentation broth	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L	D46735-14 D46735-05 D46735-06 D46735-22 D46735-07 D46735-08 D46735-09 D46735-10
Rigose AAVPure	60	/	10^{12} Viral Capsid	＜0.5	≤300	Mainly used for AAV capture from clarified cell lysates	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L	D47861-14 D47861-05 D47861-06 D47861-22 D47861-07 D47861-08 D47861-09 D47861-10

Preactivated resins

Kind and application of preactivated resins

- NHS Purose 4 Fast Flow is an NHS (N-hydroxy succinimide) preactivated resin. NHS coupling forms a chemically stable amide bond with ligands containing primary amino groups.
- ECH Purose 4 Fast Flow is a preactivated c resin formed by coupling 6-aminocaproic acid to highly crosslinked agarose matrix. ECH Purose 4 Fast Flow has free carboxyl groups, which are used to couple ligands containing primary amino groups.
- EAH Purose 4 Fast Flow is a preactivated resin formed by coupling 1,6-diaminohexane to highly crosslinked agarose matrix. EAH Purose 4 Fast Flow has free amino groups, which are used to couple ligands containing carboxyl groups.
- Epoxy Purose 4 Fast Flow is an epoxy pre-activated resin that can be coupled to proteins, peptides, nucleic acids and other biomolecules containing hydroxyl, amino or sulfhydryl groups.
- Bromohydrin Purose 4 Fast Flow is a preactivated resin, its active group can react with amino groups, sulfhydryl groups, hydroxyl groups, etc., and is therefore particularly suitable for immobilizing small protein and peptide ligands.
- SulfoLink Purose 4 Fast Flow and Rigose SulfoLink are preactivated resins capable of rapidly binding sulfhydryl-containing peptides, proteins and other ligands to form stable thiol-ether bonds with free sulfhydryl groups, thereby immobilizing the ligand to the resin.

Product	Ligand	Ligand density (μmol/mL)	Coupled group (mg/mL)	Max. operating pressure (MPa)	Flow velocity (cm/h)	Quantity	Code No.
NHS Purose 4 FF	N-hydroxy succinimide	/	3~20	<0.3	≤500	10 mL 25 mL 100 mL 200 mL 500 mL 1 L	A51801-14 A51801-05 A51801-06 A51801-22 A51801-07 A51801-08
ECH Purose 4 FF	Carboxyl	~40	/	<0.3	≤500	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L	A52901-14 A52901-05 A52901-06 A52901-22 A52901-07 A52901-08 A52901-09
EAH Purose 4 FF	Amino	~45	/	<0.3	≤500	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L	A52801-14 A52801-05 A52801-06 A52801-22 A52801-07 A52801-08 A52801-09
Epoxy Purose 4 FF	Epoxy	~25	2~10	<0.3	≤500	10 mL 25 mL 100 mL 200 mL 500 mL 1 L	A51701-14 A51701-05 A51701-06 A51701-22 A51701-07 A51701-08
Bromohydrin Purose 4 FF	-Br	~180	5~20	<0.3	≤500	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L	A53101-14 A53101-05 A53101-06 A53101-22 A53101-07 A53101-08 A53101-09
Sulfolink Purose 4 FF	-I	/	3~20	<0.3	≤500	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L	A56801-14 A56801-05 A56801-06 A56801-22 A56801-07 A56801-08 A56801-09
Rigose SulfoLink	/	/	3~20	<0.3	≤500	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L	D56860-14 D56860-05 D56860-06 D56860-22 D56860-07 D56860-08 D56860-09

Multimodal Chromatography

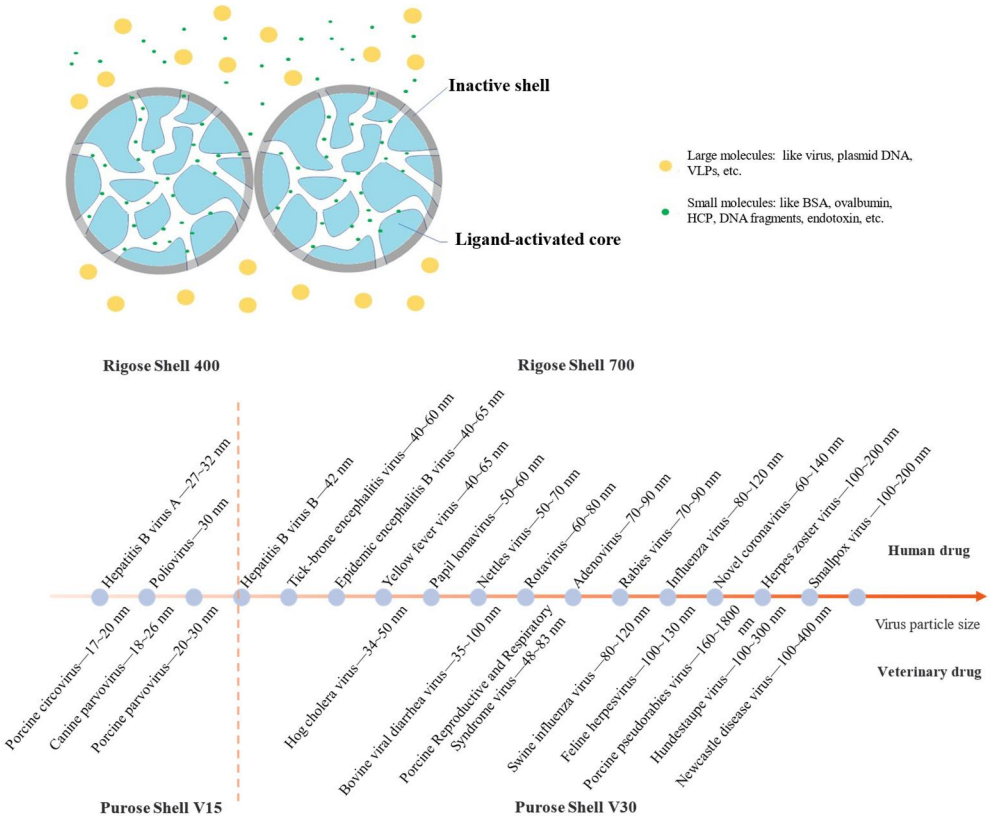
Shell series

The first choice for purifying viral vaccines

Rigose Shell 700, Rigose Shell 400, Purose Shell V30 and Purose Shell V15 are multimodal resins which are used for purification of virus, plasmid DNA and other large molecules. The beads of the resins are made of inactive shell and ligand-activated core. All these resins exclude large molecules (like virus, plasmid DNA, VLPs, etc.) from entering the inactive shell. But small molecules (like BSA, ovalbumin, HCP, DNA fragments, endotoxin, etc.) can enter the pores of the beads and bind to the internalized ligands. The ligand is also a multimodal ligand which owns hydrophobic and positively charged binding ability. Due to the unique separation mechanism of these resins, productivity can be significantly improved compared with GFC. They are widely used in the one-step purification of large size totivirus such as COVID-19 novel coronavirus, influenza virus, adenovirus, rotavirus, herpes zoster virus, rabies virus, porcine reproductive and respiratory syndrome virus, pseudorabies virus, avian influenza virus, etc.

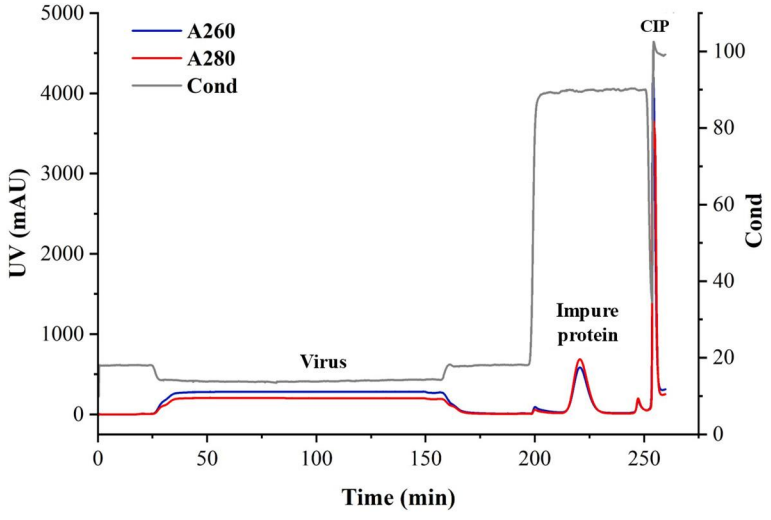
Main characteristics

- The size average cut-off: ~700 kDa for Rigose Shell 700, ~400 kDa for Rigose Shell 400, Rigose Shell series is more suitable for the production of human biological drugs
- The size average cut-off: ~30 nm for Purose Shell V30, ~15 nm for Purose Shell V15, Purose Shell series is more suitable for the production of veterinary biological drugs
- Unique bead structure, composed of inactive shell and ligand-activated core
- High binding capacity, up to 100-fold higher sample load than traditional GFC
- Reduce equipment, site, buffer, time and labor costs compare with traditional GFC
- Suitable for process scale



Multimodal Chromatography

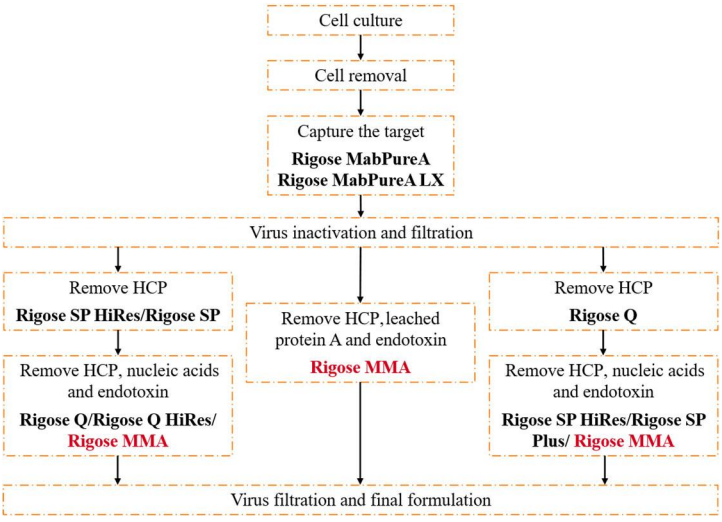
Product	Average particle size (μm)	Ionic capacity (mmol/mL)	Dynamic binding capacity (/mL)	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
Rigose Shell 700	85	0.10~0.14	15 mg BSA	＜0.5	≤500	3~13 (Work) 2~14 (CIP)	25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	D75535-05 D75535-06 D75535-22 D75535-07 D75535-08 D75535-09 D75535-10 D75535-11
Rigose Shell 400	90	0.10~0.14	22 mg BSA	＜0.5	≤700	3~13 (Work) 2~14 (CIP)	25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	D75635-05 D75635-06 D75635-22 D75635-07 D75635-08 D75635-09 D75635-10 D75635-11
Purose Shell V30	90	0.11~0.15	30 mg BSA	/	≤600	3~13 (Work) 2~14 (CIP)	25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	A76002-05 A76002-06 A76002-22 A76002-07 A76002-08 A76002-09 A76002-10 A76002-11
Purose Shell V15	90	0.12~0.18	30 mg BSA	/	≤600	3~13 (Work) 2~14 (CIP)	25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	A76154-05 A76154-06 A76154-22 A76154-07 A76154-08 A76154-09 A76154-10 A76154-11



Resin: Purose Shell V30
Binding buffer: 20 mM PB, 0.15 M NaCl, pH 7.2
Elution buffer: 20 mM PB, 1 M NaCl, pH 7.2
CIP solution: 1 M NaOH, 30% isopropanol
Yield: 95%

MMA/MMC series

Rigose MMA and Rigose MMA HiRes are multimodal resins designed for post-protein A purification of monoclonal antibodies (mAbs) at process scale. The strong ion exchange multimodal ligand gives a different selectivity compared with traditional ion exchange resins. MMA series can remove key impurities such as DNA, host cell proteins (HCP), leached protein A, aggregatesand viruses in a single step, allowing the design of a two-step process together with protein A resin. If necessary, MMA series can be used in combination with anion or cation exchange chromatography for polishing, as a second or third step in any mAb purification platform (As shown in the right Figure).



The example of antibody purification with Rigose MMA

Rigose MMC and Rigose MMC HiRes are multimodal cation exchange resins that are both cationic and hydrophobic and can be used for a direct load of clarified feedstocks, without prior dilution to reduce the conductivity of the starting material.

Rigose MPA is a strong anion multimodal chromatography resin designed for the purification of both established therapeutic proteins and diverse monoclonal antibodies. Its ligand density is designed to facilitate selective and readily reversible binding of target molecules for high purity and yield. The resin is suitable for a wide range of conductivity and pH levels, providing a broad design space and straightforward method development for purifying even the most complex molecules.

Product	Average particle size (μm)	Ionic capacity (mmol/mL)	Dynamic binding capacity (/mL)	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
Rigose MMA	75	0.13~0.18	20 mg BSA	＜0.5	≤600	3~12 (Work) 2~14 (CIP)	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	D73335-14 D73335-05 D73335-06 D73335-22 D73335-07 D73335-08 D73335-09 D73335-10 D73335-11
Rigose MMC	75	0.13~0.18	45 mg BSA	＜0.5	≤600	3~12 (Work) 3~14 (CIP)	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	D73435-14 D73435-05 D73435-06 D73435-22 D73435-07 D73435-08 D73435-09 D73435-10 D73435-11
Rigose MMA HiRes	40	0.13~0.18	20 mg BSA	＜0.5	≤300	3~12 (Work) 2~14 (CIP)	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	D73336-14 D73336-05 D73336-06 D73336-22 D73336-07 D73336-08 D73336-09 D73336-10 D73336-11

Product	Average particle size (μm)	Ionic capacity (mmol/mL)	Dynamic binding capacity (/mL)	Max. operating pressure (MPa)	Flow velocity (cm/h)	pH stability	Quantity	Code No.
Rigose MMC HiRes (HS)	40	0.13~0.18	50 mg BSA	＜0.5	≤300	3~12 (Work) 2~14 (CIP)	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	D73436-14 D73436-05 D73436-06 D73436-22 D73436-07 D73436-08 D73436-09 D73436-10 D73436-11
Rigose MMC HiRes	40	0.12~0.16	35 mg BSA	＜0.5	≤300	3~12 (Work) 2~14 (CIP)	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	D77136-14 D77136-05 D77136-06 D77136-22 D77136-07 D77136-08 D77136-09 D77136-10 D77136-11
Rigose MPA	50	0.07~0.13	50 mg mAb	＜0.5	≤400	3~12 (工作) 2~14 (CIP)	10 mL 25 mL 100 mL 200 mL 500 mL 1 L 5 L 10 L 25 L	D76963-14 D76963-05 D76963-06 D76963-22 D76963-07 D76963-08 D76963-09 D76963-10 D76963-11

Multimodal chromatography resins prepacked column

Product	I.D./bed height(mm)	Quantity	Code No.	Product	I.D./bed height(mm)	Quantity	Code No.
PrePack Rigose Shell 700	7/25	5×1 mL	ZD75535-01	Purose Shell V30	7/25	5×1 mL	ZA76002-01
	16/25	5×5 mL	ZD75535-02		16/25	5×5 mL	ZA76002-02
	7/25	1×1 mL	ZD75535-15		7/25	1×1 mL	ZA76002-15
	16/25	1×5 mL	ZD75535-16		16/25	1×5 mL	ZA76002-16
	8/100	1×5 mL	ZD75535-72		8/100	1×5 mL	ZA76002-72
	16/100	1×20 mL	ZD75535-03		16/100	1×20 mL	ZA76002-03
	16/200	1×40 mL	ZD75535-04		16/200	1×40 mL	ZA76002-04
PrePack Rigose Shell 400	7/25	5×1 mL	ZD75635-01	Purose Shell V15	7/25	5×1 mL	ZA76154-01
	16/25	5×5 mL	ZD75635-02		16/25	5×5 mL	ZA76154-02
	7/25	1×1 mL	ZD75635-15		7/25	1×1 mL	ZA76154-15
	16/25	1×5 mL	ZD75635-16		16/25	1×5 mL	ZA76154-16
	8/100	1×5 mL	ZD75635-72		8/100	1×5 mL	ZA76154-72
	16/100	1×20 mL	ZD75635-03		16/100	1×20 mL	ZA76154-03
	16/200	1×40 mL	ZD75635-04		16/200	1×40 mL	ZA76154-04
PrePack Rigose MMA	7/25	5×1 mL	ZD73335-01	PrePack Rigose MMA HiRes	7/25	5×1 mL	ZD73336-01
	16/25	5×5 mL	ZD73335-02		16/25	5×5 mL	ZD73336-02
	7/25	1×1 mL	ZD73335-15		7/25	1×1 mL	ZD73336-15
	16/25	1×5 mL	ZD73335-16		16/25	1×5 mL	ZD73336-16
	8/100	1×5 mL	ZD73335-72		8/100	1×5 mL	ZD73336-72
	16/100	1×20 mL	ZD73335-03		16/100	1×20 mL	ZD73336-03
	16/200	1×40 mL	ZD73335-04		16/200	1×40 mL	ZD73336-04
PrePack Rigose MMC	7/25	5×1 mL	ZD73435-01	PrePack Rigose MMC HiRes (HS)	7/25	5×1 mL	ZD73436-01
	16/25	5×5 mL	ZD73435-02		16/25	5×5 mL	ZD73436-02
	7/25	1×1 mL	ZD73435-15		7/25	1×1 mL	ZD73436-15
	16/25	1×5 mL	ZD73435-16		16/25	1×5 mL	ZD73436-16
	8/100	1×5 mL	ZD73435-72		8/100	1×5 mL	ZD73436-72
	16/100	1×20 mL	ZD73435-03		16/100	1×20 mL	ZD73436-03
	16/200	1×40 mL	ZD73435-04		16/200	1×40 mL	ZD73436-04
PrePack Rigose MMC HiRes	7/25	5×1 mL	ZD77136-01	PrePack Rigose MPA	7/25	5×1 mL	ZD76963-01
	16/25	5×5 mL	ZD77136-02		16/25	5×5 mL	ZD76963-02
	7/25	1×1 mL	ZD77136-15		7/25	1×1 mL	ZD76963-15
	16/25	1×5 mL	ZD77136-16		16/25	1×5 mL	ZD76963-16
	8/100	1×5 mL	ZD77136-72		8/100	1×5 mL	ZD76963-72
	16/100	1×20 mL	ZD77136-03		16/100	1×20 mL	ZD76963-03
	16/200	1×40 mL	ZD77136-04		16/200	1×40 mL	ZD76963-04

Magose Series Agarose Magnetic Beads

Magose series agarose magnetic bead resins is a new generation of high-performance chromatography resins launched by Tofflon Qianchun Bio for scientific research and industrial production. Agarose magnetic bead is a magnetic separation resin composed of high-purity agarose and superparamagnetic particles. They can move directionally under magnetic field forces and directly separate target molecules from complex components through the interaction between ligands and target molecules. They have wide applications in rapid and large-scale protein purification, high-throughput protein screening, and other fields.

Advantages of Magose series agarose magnetic beads resins

The advantages of magnetic beads resins are that magnetic beads resins can not only reduce the steps of sample centrifugation and clarification before column chromatography process, but also save column installation time and reduce the difficulty of purification operation. While greatly simplifying the purification process, they also solve the problems of degradation and deactivation of target molecules caused by changes in biological environment or through a long period of processing.

Antibody purification magnetic beads

Product	Ligand	Average particle size (μm)	Binding capacity (/mL)	Quantity	Code No.
Magose iProtein A	Alkali-tolerant Protein A	45	50 mg IgG	1 mL 2 mL 5 mL 10 mL 25 mL 100 mL 200 mL 500 mL 1 L	J412-17 J412-18 J412-13 J412-14 J412-05 J412-06 J412-22 J412-07 J412-08
Magose iProtein G	Improved protein G	45	30 mg IgG	1 mL 2 mL 5 mL 10 mL 25 mL 100 mL 200 mL 500 mL 1 L	J425-17 J425-18 J425-13 J425-14 J425-05 J425-06 J425-22 J425-07 J425-08
Magose iProtein L	Recombinant protein L (*E. coli*)	45	40 mg IgG	1 mL 2 mL 5 mL 10 mL 25 mL 100 mL 200 mL 500 mL 1 L	J450-17 J450-18 J450-13 J450-14 J450-05 J450-06 J450-22 J450-07 J450-08

His-tag protein purification magnetic beads

Product	Ligand	Average particle size (μm)	Binding capacity (/mL)	Quantity	Code No.
Magose Ni-IDA	Ni^{2+}	45	45 mg $(histidine)_6$-tagged protein	1 mL 2 mL 5 mL 10 mL 25 mL 100 mL 200 mL 500 mL 1 L	J409-17 J409-18 J409-13 J409-14 J409-05 J409-06 J409-22 J409-07 J409-08

Magose Series Agarose Magnetic Beads

Product	Ligand	Average particle size (μm)	Binding capacity (/mL)	Quantity	Code No.
Magose Ni-NTA	Ni^{2+}	45	45 mg $(histidine)_6$-tagged protein	1 mL	J410-17
				2 mL	J410-18
				5 mL	J410-13
				10 mL	J410-14
				25 mL	J410-05
				100 mL	J410-06
				200 mL	J410-22
				500 mL	J410-07
				1 L	J410-08
Magose Ni	Ni^{2+}	45	45 mg $(histidine)_6$-tagged protein	1 mL	J463-17
				2 mL	J463-18
				5 mL	J463-13
				10 mL	J463-14
				25 mL	J463-05
				100 mL	J463-06
				200 mL	J463-22
				500 mL	J463-07
				1 L	J463-08
Magose Ni-TED	Ni^{2+}	45	40 mg $(histidine)_6$-tagged protein	1 mL	J423-17
				2 mL	J423-18
				5 mL	J423-13
				10 mL	J423-14
				25 mL	J423-05
				100 mL	J423-06
				200 mL	J423-22
				500 mL	J423-07
				1 L	J423-08

Preactivated magnetic beads

Product	Ligand	Average particle size (μm)	Ligand density (/mL)	Coupled group (mg/mL)	Quantity	Code No.
Magose NHS	N-hydroxy succinimide	45	/	3~20	1 mL	J518-17
					2 mL	J518-18
					5 mL	J518-13
					10 mL	J518-14
					25 mL	J518-05
					100 mL	J518-06
					200 mL	J518-22
					500 mL	J518-07
					1 L	J518-08





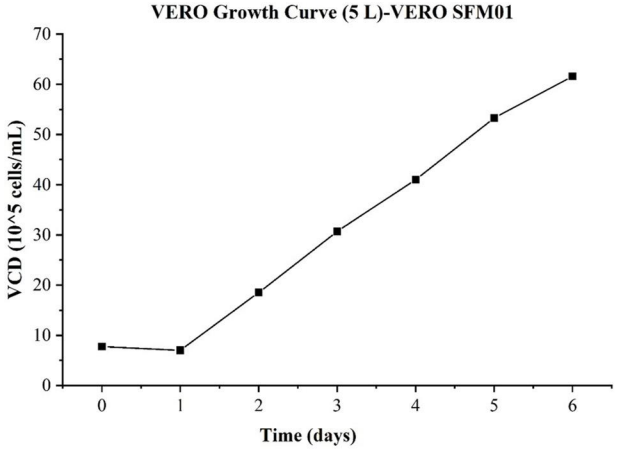
Pucarrier Series Cell Culture Microcarriers

Pucarrier 1 is a microcarrier product which was specifically designed for cell culture. Microcarriers provide a large number of adherent surfaces for cells, which can be used in suspension culture systems or to increase production in monolayer culture containers and tanks. The application of microcarrier technology includes the production of a large number of cells, viruses and recombinant cell products (such as interferon, enzyme, nucleic acid and hormone), research on cell adhesion, differentiation, cell function, perfusion culture system, microscopic research, harvesting of Mitosis cells, cell separation, membrane research, cell storage and transportation which includes the determination of cell transfer and the uptake of marker compounds.

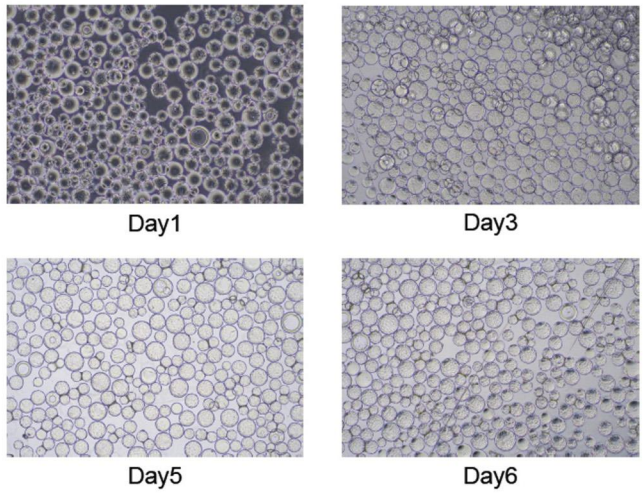
Advantages of cell culture microcarriers

- The size and density are optimized to give good growth and high yields for a wide variety of cells.
- The matrix is biologically inert and provides a strong but nonrigid substrate for stirred microcarrier cultures.
- The microcarriers are transparent, allowing easy microscopic examination of the attached cells.
- Increase the production of cell fermentation, improve the production capacity of pharmaceutical enterprises.
- Easy to remove impurities such as cells and cell fragments from the final fermentation solution.
- Simple to operate, easy to control, and reduce the risk of contamination.
- Saving equipment costs, site costs, personnel costs, and achieving cost reduction and efficiency improvement.

Product	Matrix	Average particle size (μm, wet)	Ligand density (mM/g dry weight)	Specific surface area (cm^2/g)	Swelling factor (mL/g)	Thermo-stability (PBS, pH7)	No. microcarriers /g dry weight	Quantity	Code No.
Pucarrier 1	DEAE coupled Cross-linked dextran	140	1.2~1.6	3000	15~25	115℃, 15 min	4×10^6	100 g	L851-28
								200 g	L851-23
								500 g	L851-29
								1 kg	L851-30
								5 kg	L851-41
								10 kg	L851-42
								25 kg	L851-43



Medium	VERO SFM01
Carrier Model	Pucarrier 1
Culture Volume	2 L
Carrier Concentration	10 g/L
Seeded Cells	1.55*10^9



Chromatographic Column and Chromatographic System

Laboratory chromatography column and fitting

QCXKC columns are designed for standard liquid chromatography of macromolecules. The chromatographic column tube consists of the high-precision borosilicate glass tube, thermostatic acrylic plastic jacket, a certain temperature can be maintained during the purification process. They are available in the following dimensions.







Length/mm	I.D./mm		
	16	26	50
200	QCXKC-16/20	QCXKC-26/20	QCXKC-50/20
300	QCXKC-16/30	QCXKC-26/30	QCXKC-50/30
400	QCXKC-16/40	QCXKC-26/40	QCXKC-50/40
600	——	——	QCXKC-50/60
700	QCXKC-16/70	QCXKC-26/70	QCXKC-50/70
1000	QCXKC-16/100	QCXKC-26/100	QCXKC-50/100

Product	I.D./bed height(mm)	Quantity	Code No.	Product	I.D./bed height(mm)	Quantity	Code No.
QCXKC column (with one adapter)	16/200	1	QCXKC-16/20	QCXKC-SZT column (with two adapters)	16/300	1	QCXKC-16/30-SZT
	16/300	1	QCXKC-16/30		16/400	1	QCXKC-16/40-SZT
	16/400	1	QCXKC-16/40		16/700	1	QCXKC-16/70-SZT
	16/700	1	QCXKC-16/70		16/1000	1	QCXKC-16/100-SZT
	16/1000	1	QCXKC-16/100		26/300	1	QCXKC-26/30-SZT
	26/200	1	QCXKC-26/20		26/400	1	QCXKC-26/40-SZT
	26/300	1	QCXKC-26/30		26/700	1	QCXKC-26/70-SZT
	26/400	1	QCXKC-26/40		26/1000	1	QCXKC-26/100-SZT
	26/700	1	QCXKC-26/70		50/300	1	QCXKC-50/30-SZT
	26/1000	1	QCXKC-26/100		50/400	1	QCXKC-50/40-SZT
	50/200	1	QCXKC-50/20		50/600	1	QCXKC-50/60-SZT
	50/300	1	QCXKC-50/30		50/700	1	QCXKC-50/70-SZT
	50/400	1	QCXKC-50/40		50/1000	1	QCXKC-50/100-SZT
	50/600	1	QCXKC-50/60	QCXKC column loader	16	1	QCXKC-Z16
	50/700	1	QCXKC-50/70		26	1	QCXKC-Z26
	50/1000	1	QCXKC-50/100		50	1	QCXKC-Z50

Laboratory chromatographic system

HI Biopure chromatography system is designed by Tofflon HaiWei for purification and preparation design of protein, antibody, vaccine and other biological samples. Intelligent design is easy to operate.



- The self-cleaning function of packed plunger can avoid the salt-outing effect of pump head, this action can make sure the accuracy of gradient function and flow velocity.
- High sensitivity online detector has been used, different type of pH detector can be selected. This sensor can be directly calibrated on the device.
- A UV detector is configured to realize signal monitoring and output at multiple wavelengths simultaneously.
- Humanized software design can implement with manual and automatic control, automatic control include collection, real-time data collection, preservation and

management functions.

- A variety of data interfaces are used for data collection and transmission, the system with security interlocking visual and sound alarm to ensure data security.
- This system adopts the client-server architecture and supports the application scenarios of remote monitoring, multi-client and multi-device co-server.

Industrial chromatographic column





HI Column is developed and produced by HaiWei Bio. The columns are widely used in the purification of bio-pharmaceutical, chemical-pharmaceutical and natural products, support in laboratory, small, pilot and production stage.

- The unique distribution design makes the fluid fully diffused, evenly distributed and symmetrical.
- This product used tri-clamp connection mode and accord to ASME-BPE guidelines for meet the sanitary requirements.
- The column has high dimensional accuracy, simple and safe sealing ring is used between the column head and the column, and therefore the sealing is reliable.
- Materials such as EPDM, PTFE has been used for non-metallic materials contact with the feed liquid, which meet the requirements of FDA or USP Class VI.

Industrial chromatographic system

HI Process automatic chromatography system is a customizable equipment developed and produced by HaiWei Bio. The system is widely used in the purification of bio-pharmaceutical, chemical-pharmaceutical and natural products, supports in pilot and production stage.



- The smooth-flowing quattroflow pump has been used in this system. The accuracy of flow rate is ± 2%, gradient linearity ± 2%.
- The pipeline layout is designed according to ASME BPE guidelines, with very low dead volume. This design avoided the diffusion of collected components and improve the performance of the chromatography process.
- Modular design, supporting equipment customization.
- Used digital control technology to improve system response speed and control accuracy.
- Open interface design for easy networking and access to centralized control system.

Single use prepacked column



HI Ready Column is single use biological downstream product. The product is widely used in separation and purification, suitable for the pilot and production stages. The product reduces the work and risk of hardware cleaning and verification, and increase production efficiency.

- High production efficiency: HI Ready Column can reduce the workload and risk related to hardware cleaning and cleaning verification which increase the efficiency of production.
- Cost saving: Compared with the traditional chromatography column, HI Ready Column has lower cost, and no supporting hardware investment required so that saves the investment cost.
- Process stabilization: Batch prepacking techniques are used to make the overall process level more stable.
- High product security: HI Ready Column can be used as a single-use product with higher flexibility, fast rotation, lower total cost, smaller factory floor area, lower water and electricity consumption and higher product safety.
- Suitable for decentralized multi-site commercial production: HI Ready
- Column reduces the investment in public facilities, simplifies the process, and eliminates the need to find and train staff to perform column packing.
- Easy to turnover: Current clinical manufacturing plants usually have to manage multiple products of different sizes in different clinical stage. HI Ready Column can save scheduling time and have higher equipment turnover rate.

Appendix

Appendix I: Technical support and quality management system

We always uphold the purpose and concept of "serving biomedicine, quality casting win-win", and put customer service in the first place. We have a high-quality research team and technical support team, can provide biopharmaceutical customers with large-scale filler products, personalized customized products and complete technical support. Whether it is the performance verification of the docking customer process or the stability verification of the product, the relevant technical personnel will provide customers with a full range of services.

Customized product

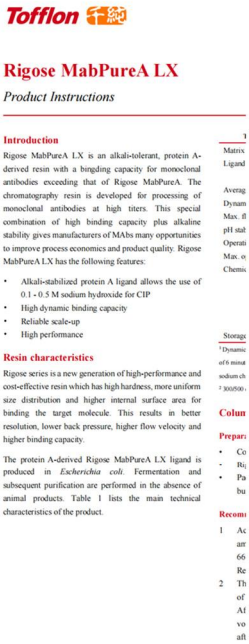
We have rich research and production experience. The chromatography resin and prepacked column are not limited to this manual, but can undertake personalized customization and prepacked column services for all aspects of the performance of the chromatographic resins, such as the base matrix crosslinking degree, particle size, ligand type and substitution degree.

Technical services for purification process research

While providing excellent products, we also provide customers with a complete set of separation and purification process development, including process exploration, process amplification, equipment selection, etc., so as to solve the actual needs of customers, to do a good job in the downstream separation link, to quickly achieve customer product separation and output and to achieve industrial goals win-win.

Perfect quality management system

We have a perfect quality management system which has passed the ISO9001 quality management system certification. All our company products can be provided with a series of quality assurance documents such as product manuals, Certification of Analysis, (COA), Material Safety Data Sheet (MSDS), TSE/BSE and regulatory support files (RSF). Some products have undergone DMF filing in FDA, providing favorable support for the validation and approval of biopharmaceuticals.



Tofflon 千納

Rigose MabPureA LX

Product Instructions

Introduction

Rigose MabPureA LX is an alkali-tolerant, protein A-derived resin with a bingding capacity for monoclonal antibodies exceeding that of Rigose MabPureA. The chromatography resin is developed for processing of monoclonal antibodies at high titers. This special combination of high binding capacity plus alkaline stability gives manufacturers of MAbs many opportunities to improve process economics and product quality. Rigose MabPureA LX has the following features:

- Alkali-stabilized protein A ligand allows the use of 0.1 - 0.5 M sodium hydroxide for CIP
- High dynamic binding capacity
- Reliable scale-up
- High performance

Resin characteristics

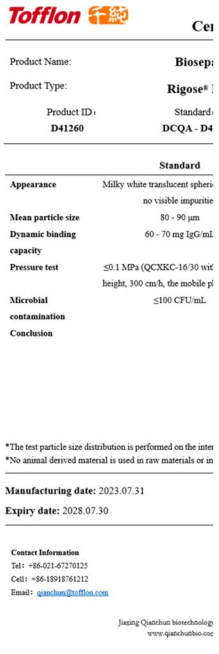
Rigose series is a new generation of high-performance and cost-effective resin which has high hardness, more uniform size distribution and higher internal surface area for binding the target molecule. This results in better resolution, lower back pressure, higher flow velocity and higher binding capacity.

The protein A-derived Rigose MabPureA LX ligand is produced in *Escherichia coli*. Fermentation and subsequent purification are performed in the absence of animal products. Table 1 lists the main technical characteristics of the product.



Tofflon 千納

Regulatory Support F
Rigose® MabPureA LX



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Product Name: **Biosep**

Product Type: **Rigose®**

Product ID: **D41260**

Standard: **DCQA - D4**

	Standard
Appearance	Milky white translucent spheri no visible impuritie
Mean particle size	80 - 90 μm
Dynamic binding capacity	60 - 70 mg IgG/mL
Pressure test	≤0.1 MPa (QCXKC-16/30 wit height, 300 cm/h, the mobile p
Microbial contamination	≤100 CFU/mL
Conclusion	

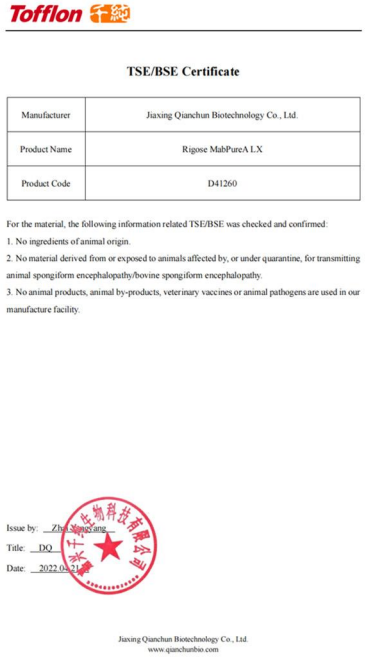
*The test particle size distribution is performed on the inte
*No animal derived material is used in raw materials or in

Manufacturing date: 2023.07.31

Expiry date: 2028.07.30

Contact Information
Tel: +86-021-67270125
Cell: +86-18918761212
Email: qianchun@tofflon.com

Jiaxing Qianchun biotechnolog
www.qianchunbio.coc



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TSE/BSE Certificate

Manufacturer	Jiaxing Qianchun Biotechnology Co., Ltd.
Product Name	Rigose MabPureA LX
Product Code	D41260

For the material, the following information related TSE/BSE was checked and confirmed:
1. No ingredients of animal origin.
2. No material derived from or exposed to animals affected by, or under quarantine, for transmitting animal spongiform encephalopathy/bovine spongiform encephalopathy.
3. No animal products, animal by-products, veterinary vaccines or animal pathogens are used in our manufacture facility.

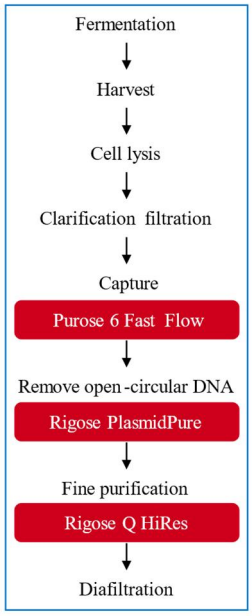
Issue by: Zhu Xiaofang
Title: DQ
Date: 2022.04.21

Jiaxing Qianchun Biotechnology Co., Ltd.
www.qianchunbio.com

Appendix II: Purification process of plasmid

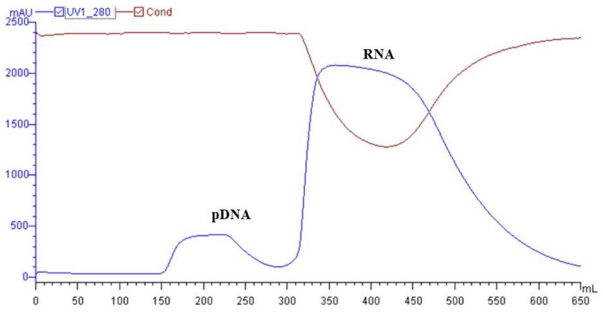
Gene/cell therapy technology has become a new hotspot in the field of biomedicine in recent years, and it has also driven the vigorous development of related biotechnology and industries. Plasmids, as terminal or intermediate products of genetic technology, have played an increasingly important role in biopharmaceuticals. Plasmid is a type of DNA molecule that can replicate independently outside the DNA of a cell's chromosome or nuclear region. Plasmids can not only be used as a vector tool to deliver gene information for proliferation and expression in genetic engineering, but also can be used in the field of pharmaceutical products, for example high-purity Superhelix plasmid DNA can be used alone as a vaccine and it can also be used as packaging and auxiliary materials for AAV/LV virus vectors. At the same time, the linearized plasmid DNA is also a template for in vitro transcription of mRNA vaccines. Therefore, the preparation of high-purity and high-quality superhelix DNA has always been an important goal of gene/cell therapy drugs and DNA/mRNA vaccine companies.

Purification Process of Plasmid

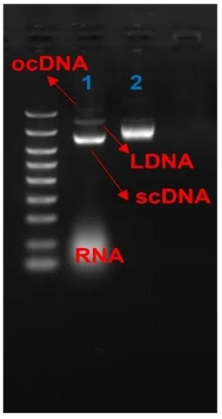


At present, there has been some research on the preparation process of plasmids, among which the classical three-step chromatography method has been proven to be an efficient, robust and platform-based process method, which has the characteristics of simple operation, high purity, easy scale-up and wide applicability. So it is a widely used and mature plasmid preparation method.

✔Step one: Gel filtration chromatography



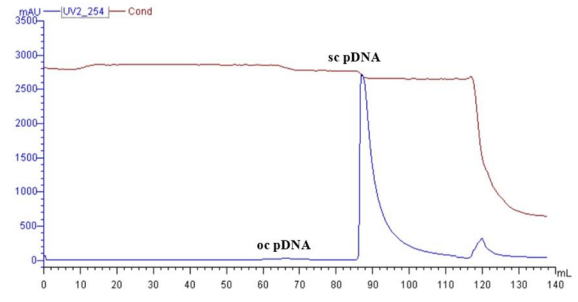
Column: QCXKC 26/200
Medium: Purose 6 Fast Flow
Sample: Concentrated 20 times clarified alkaline cracking solution
Sample volume: 0.3 CV
Buffer: 2.1 M $(NH_4)_2SO_4$, 10 mM EDTA, 100 mM Tris-HCl, pH 7.5
Flow velocity: 150 cm/h



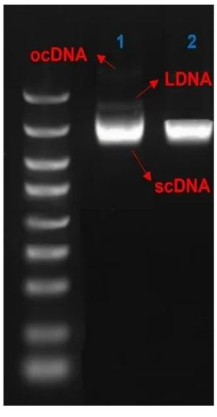
1: sample
2: Flow through Purose 6 Fast Flow

The first step is gel filtration chromatography, which mainly removes a large number of small molecular impurities such as RNA and host proteins. The yield of reached 92.5%, and the results of agarose gel electrophoresis showed that RNA was basically removed.

✔Step two: Affinity chromatography



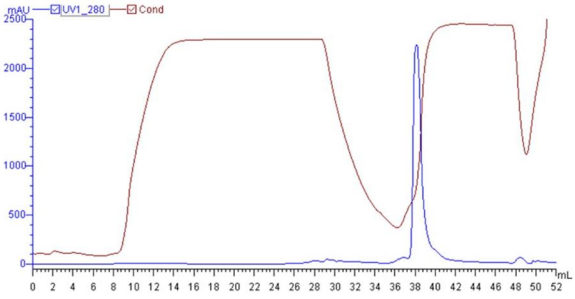
Column: QCXKC 8/100
Medium: Rigose PlasmidPure
Sample: Flow through Purose 6 Fast Flow
Sample volume: 6 mg
Binding buffer: 2 M $(NH_4)_2SO_4$, 10 mM EDTA, 100 mM Tris-HCl, pH 7.5
Elution buffer: 0.3 M NaCl, 1.7 M $(NH_4)_2SO_4$, 10 mM EDTA, 100 mM Tris-HCl, pH 7.5
Flow velocity: 100 cm/h



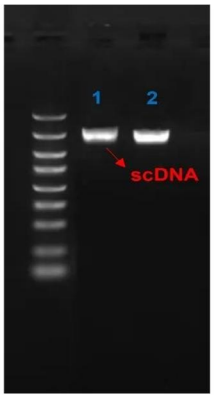
1: Sample
2: Elution

Affinity chromatography is mainly used to remove Open circular DNA and obtain high purity supercoil DNA. The yield of superhelix DNA can reach 88.95%. It can be seen from agarose gel electrophoresis that the open circular DNA in the sample can be basically removed by this chromatography, and high purity superhelix DNA can be obtained.

✔Step three: Anion exchange chromatography



Sample: Plasmid DNA was diluted 3-fold after Rigose PlasmidPure
Column: QCXKC 8/100
Medium: Rigose Q HiRes
Binding buffer: 0.4 M NaCl, 10 mM EDTA, 100 mM Tris-HCl, pH7.5
Elution buffer: 1 M NaCl, 10 mM EDTA, 100 mM TrisHC, pH7.5
Flow velocity: 100 cm/h



1: Sample
2: Elution

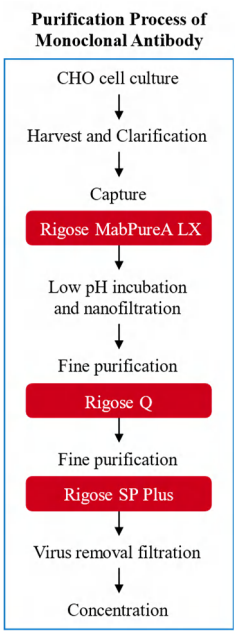
The third step has entered the stage of polishing, mainly based on the principle of endotoxin does not combine with the resin under high salt conditions, to remove endotoxin in the sample, The yield can be reach 77.5%.

Ordering information



Product	Quantity	Code No.	Comment
Purose 6 Fast Flow	25 mL	A10102-05	See page 5 for details
	100 mL	A10102-06	
	200 mL	A10102-22	
Rigose PlasmidPure	25 mL	D73736-05	See page 33 for details
	100 mL	D73736-06	
	200 mL	D73736-22	
Rigose Q HiRes	25 mL	D20336-05	See page 12 for details
	100 mL	D20336-06	
	200 mL	D20336-22	

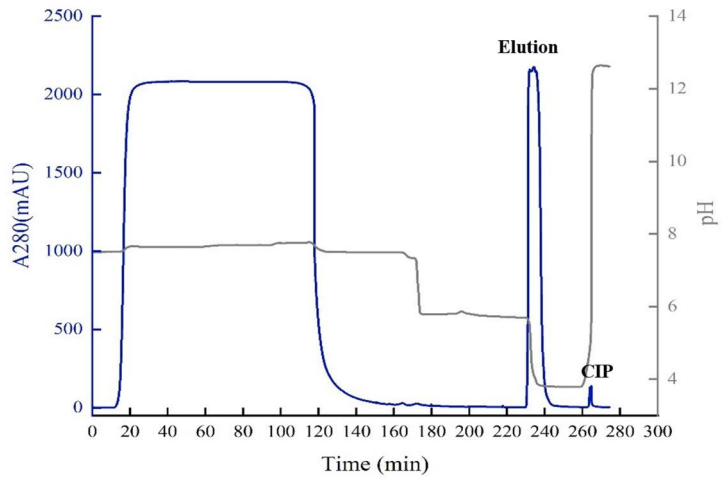
Appendix III: Classical downstream purification process of monoclonal antibody



Antibodies are immunoglobulins produced by Plasma cell differentiated from B lymphocytes under the stimulation of antigens by the immune system of the body, which can specifically bind to corresponding antigens, and can assist the immune system in identifying and neutralizing antigens or other foreign substances. The diversity of antibody antigen interactions has created many applications for antibodies and antibody fragments, both for immunochemical techniques in general research and for therapeutic and diagnostic applications.

Monoclonal antibodies (MAbs) are highly specific antibodies produced from hybridoma cells. These hybridoma cells are created by isolating plasma cell precursors, which are then fused with immortal cells. The hybridoma cells can be single-cell cloned and expanded as individual clones that secrete only one antibody type, a monoclonal antibody. The high specificity of a monoclonal antibody is a significant advantage, particularly in tumor therapy and immunotherapy. Downstream purification is the final stage of antibody production and the key process step of monoclonal antibody production. It is directly related to the effect of impurity removal of monoclonal antibody, the content of Active ingredient, and then affects the yield, production cost, and profitability of the product.

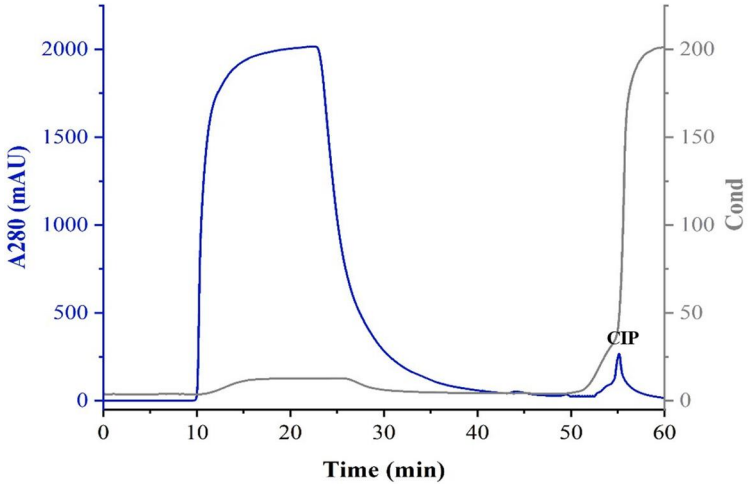
✔Step one: Affinity chromatography



Medium: Rigose MabPureA LX
Binding buffer: 50 mM Tris-HAC, 0.15 M NaCl, pH 7.4
Washing buffer I: 50 mM NaAC, 0.3 M NaCl, pH 5.5
Washing buffer II: 50 mM NaAC, pH 5.5
Elution buffer: 50 mM NaAC, pH 3.6
CIP solution: 0.2 M NaOH

The main function of Rigose MabPureA LX affinity chromatography is to capture the target protein and remove most HCPs, viruses, HC-DNA, and other impurities.

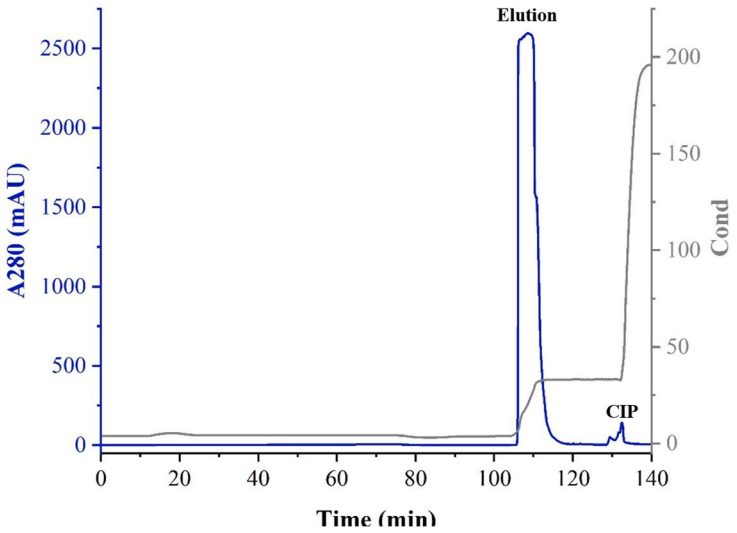
✔Step two: Anion exchange chromatography (Flow through)



Medium: Rigose Q
Binding buffer: 50 mM NaAC pH 5.5
CIP solution: 1 M NaOH

Rigose Q anion exchange chromatography is flow through mode to remove HCP, HC-DNA, HC-RNA, endotoxin, and protein A that leaked by affinity chromatography.

✔Step three: Cation exchange chromatography



Medium: Rigose SP Plus
Binding buffer: 50 mM NaAC, pH 5.5
Elution buffer: 50 mM NaAC, 0.3 M NaCl, pH 5.5
CIP solution: 1 M NaOH

The purpose of Rigose SP Plus cation exchange chromatography is to further remove polymers, HCP, HC-DNA, etc. The sequence of anion and cation exchange chromatography steps can also be interchanged.

Conclusion

	Affinity chromatography	Anion exchange chromatography	Cation exchange chromatography
Resin	Rigose MabPureA LX	Rigose Q	Rigose SP Plus
Yield (%)	98.55	92.47	95.36
Purity (SEC-HPLC%)	95.76	100	100
Residual host protein (ppm)	115.498	36.45	13.3
Residual protein A (ppm)	0.025	0.093	0.043
Residual endotoxin (EU/mL)	0.068	0.049	0.034

Order information



Product	Quantity	Code No.	Comment
Rigose MabPureA LX	25 mL	D41260-05	See page 20 for details
	100 mL	D41260-06	
	200 mL	D41260-22	
Rigose Q	25 mL	D20335-05	See page 11 for details
	100 mL	D20335-06	
	200 mL	D20335-22	
Rigose SP Plus	25 mL	D24963-05	See page 12 for details
	100 mL	D24963-06	
	200 mL	D24963-22	

Appendix IV: Purification process of virus vector

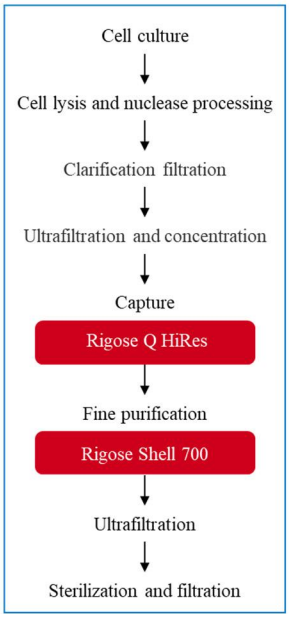
Gene therapy refers to the treatment method of replacing pathogenic genes with normal or wild genes. This process requires the use of vectors to introduce therapeutic genes into target cells, integrate them with host chromosomes, or express them in host cells to achieve therapeutic effects. Virus vectors are commonly used as delivery vectors in the fields of cell therapy and gene therapy, and are currently receiving increasing attention. Common viral vectors include adenovirus vector, Adeno-associated virus vector, lentivirus vector, etc.

Adenovirus (AdV) is an unenveloped double-stranded DNA virus, with a diameter of 70-90 nm. It consists of 252 shell particles arranged in a 20-hedral structure and contains 13% DNA and 87% protein. AdV as a tool carrier has many advantages such as high titer, low pathogenicity, high transduction efficiency, wide infected tissue, no host cell genome integration, stable physicochemical properties, etc. Adv has been widely used in experimental and clinical studies.

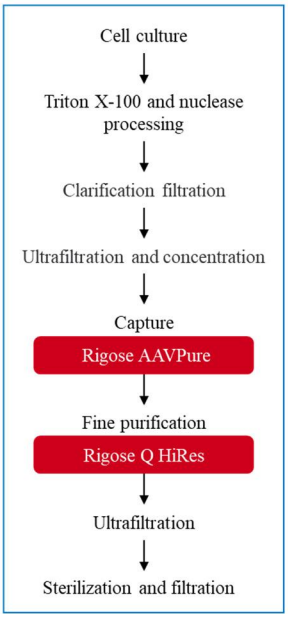
Adeno-associated virus (AAV) is a kind of single strand DNA deficient virus with simple structure and no envelope. It belongs to Parvoviridae family, with a diameter of 20~26 nm and a 20-hedral structure. Cap gene encodes three kinds of capsid proteins. AAV for gene therapy has advantages such as safety, wide host range, specific integration of host genes, long-term expression of exogenous genes, and reduced dosage of repeated use.

Lentivirus (LV) is a viral vector derived from human immunodeficiency virus-1 (HIV-1), with a diameter of about 100 nm, has the ability to infect both dividing and non-dividing cells, and is widely used in cell therapy.

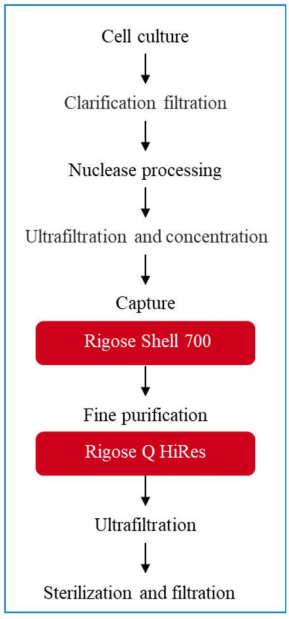
Purification process of AV



Purification process of AAV



Purification process of LV



Order information

Product	Quantity	Code No.	Comment
Rigose Q HiRes	25 mL 100 mL 500 mL	D20336-05 D20336-06 D20336-07	See page 12 for details
Rigose AAVPure	25 mL 100 mL 500 mL	D47860-05 D47860-06 D47860-07	See page 33 for details
Rigose Shell 700	25 mL 100 mL 500 mL	D75535-05 D75535-06 D75535-07	See page 36 for details

With the mission of biological macromolecular separation and purification, we provide more and more efficient biological separation media products and various solutions in the development and production stages.

Tofflon Life Science

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Linkedin

PC-01-A08-20260708