



AGAROSE BEAD
TECHNOLOGIES

**Your agarose beads for separation,
purification, and conjugation of biomolecules**

AGAROSE BEAD TECHNOLOGIES

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All products are for laboratory research purposes. Preparation and purification of recombinant proteins/peptides containing neighboring His residues may require a license under US pat 5,284,933 and US pat. 5,310,663, including corresponding patents (assignee: Hoffman La Roche.Inc).

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ABT AGAROSE BEAD TECHNOLOGIES

COMPANY

The purification of recombinant proteins, monoclonal antibodies and other biomolecules needs a proven chromatographic resin matrix such as agarose beads. Whether the purification is bench scale or cGMP manufacturing scale, agarose beads are ideal for every unit operation of the purification process.

Agarose Bead Technologies (ABT) is an ISO 9001:2015 certified company, dedicated to the research and development of agarose and dextran based products for separation and purification of biomolecules. We are well experienced in agarose bead production and have perfected the science since our founding in 1999. Our beaded agarose resins are used for size exclusion, ion exchange, affinity and other types of chromatography. We offer pre-activated agarose beads as well for coupling or immobilizing affinity ligands. Our product portfolio for separation media includes Low Pressure products for R&D scale, and High Pressure media (Rapid Run™ beads) for industrial scale separations.

Agarose Bead Technologies has worldwide presence with distribution partners throughout the globe and has sales offices in the U.S. and Europe. Our products are supported by excellent technical services, and are known for reproducibility, quality, reliability and delivery accuracy, and come with regulatory support files. We are strongly committed to quality and are performance driven, and have the capacity to provide resins in large scale to ensure security of supply - a factor critical to manufacturing.

Our mission is to use our manufacturing capability to produce and offer the widest range of highly specialized products, and position Agarose Bead Technologies as “The Separation and Purification Company” in this growing healthcare market segment.

solutions
to fit

evaluation
of samples

optimal
performance



CUSTOMIZED AGAROSE RESINS

Production of agarose resins requires the precise control of many parameters, and the product range is based on the most common research and production requirements. However, there are many specialized applications which are not currently served, and many separations which could be improved by a more appropriate bead. ABT can work with you to offer a customized resin tailored to your applications.

Parameters that can be specified are:

- Size of beads
- Degree of crosslinking
- Concentration of agarose
- Pore size
- Type of activation
- Spacer arm length
- Density of active groups

ABT's Customized Resins are now available to cover all different types of orders, making it possible for you to choose specifications for your resin at an affordable price. In order to produce exactly what you require, we will work closely with you and share technical details as appropriate. Monodispersed agarose beads are an example of this type of customized bead availability.

If your company is interested in the preparation of Customized Agarose Resins, and you would like more information, contact us at customized@abtbeads.com

SIZE EXCLUSION CHROMATOGRAPHY

LOW PRESSURE: Plain & Crosslinked Agarose Beads

Agarose is a very inert polysaccharide which forms hydrophilic and high gel strength gels at low concentrations.

Agarose beads are microspheres of agarose gels with different particle diameters and concentrations. Small spherical particles of agarose act as a porous gel to filter or separate a mixture of molecules according to their individual sizes. Due to the composition (easy to activate), the agarose beads may be prepared to bind biomolecules in a reversible or irreversible manner.

Plain and crosslinked agarose beads are used in Gel Filtration Chromatography.

Plain and crosslinked agarose beads can be activated for ligand attachment due to its unique internal surface area and composition (inert polysaccharide). These beads are the basis for affinity chromatography beads such as Protein A & G, Glutathione, etc.

ABT offers a wide range of plain and crosslinked agarose beads with different agarose concentrations (2, 4, 6, 8 & 10%) in different particle size distributions: Macro⁽¹⁾ (~150 - 350 μm), Standard (~50 - 150 μm) and Fine (~20 - 50 μm).

- The widest range of different agarose concentrations
- Different pore sizes
- Broad fractionation range
- Excellent chemical and physical stability
- Negligible non specific adsorption
- For batch or column procedures
- Three different particle sizes

TECHNICAL SPECIFICATIONS

Plain Agarose Beads Standard

PRODUCT	2% B Agarose Bead Standard	4% B Agarose Bead Standard	6% B Agarose Bead Standard	8% B Agarose Bead Standard	10% B Agarose Bead Standard
CAT. No.	A-1020S-X	A-1040S-X	A-1060S-X	A-1080S-X	A-1100S-X
BEAD GEOMETRY & SIZE	Spherical, Standard: ~50 - 150 μm				
BEAD MEAN DIAMETER (d_{50})	~90 μm				
CROSSLINKED	No				
AGAROSE %	2%	4%	6%	8%	10%
CHEMICAL STABILITY	Stable in moderate acid and basic solutions				
pH STABILITY WORKING RANGE	4 - 9				
pH STABILITY CLEANING IN PLACE (CIP)	4 - 9				
LINEAR RECOMMENDED FLOW RATE	<10 cm/h	<11.5 cm/h	<14 cm/h	<18 cm/h	<24 cm/h
FRACTIONATION (Mr) GLOBULAR PROTEINS Da	$7 \times 10^4 - 4 \times 10^7$	$7 \times 10^4 - 2 \times 10^7$	$1 \times 10^4 - 4 \times 10^6$	$1 \times 10^4 - 1.5 \times 10^6$	$1 \times 10^4 - 1 \times 10^6$
EXCLUSION LIMIT (Mr) GLOBULAR PROTEINS Da	$>4 \times 10^7$	$>2 \times 10^7$	$>4 \times 10^6$	$>1.5 \times 10^6$	$>1 \times 10^6$
ANTIMICROBIAL AGENT	20% ethanol				
STORAGE TEMPERATURE	2 - 30°C				

X: Product quantity. 500 ml, 1 L or 10 L.

TECHNICAL SPECIFICATIONS

Crosslinked Agarose Beads Standard

PRODUCT	2% BCL Agarose Bead Standard	4% BCL Agarose Bead Standard	6% BCL Agarose Bead Standard	8% BCL Agarose Bead Standard	10% BCL Agarose Bead Standard
CAT. No.	A-1021S-X	A-1041S-X	A-1061S-X	A-1081S-X	A-1101S-X
BEAD GEOMETRY & SIZE	Spherical, Standard: ~50 - 150 µm				
BEAD MEAN DIAMETER (d _{50v})	~90 µm				
CROSSLINKED	Yes				
AGAROSE %	2%	4%	6%	8%	10%
CHEMICAL STABILITY	Stable in all solutions commonly used in gel filtration, 2 M NaOH, 8 M urea, 6 M guanidine hydrochloride, 30% isopropanol, 70% ethanol and commonly used detergents				
pH STABILITY WORKING RANGE	3 - 13				
pH STABILITY CLEANING IN PLACE (CIP)	2 - 14				
LINEAR RECOMMENDED FLOW RATE	<15 cm/h	<26 cm/h	<30 cm/h	<36 cm/h	<40 cm/h
FRACTIONATION (Mr) GLOBULAR PROTEINS Da	7x10 ⁴ - 4x10 ⁷	7x10 ⁴ - 2x10 ⁷	1x10 ⁴ - 4x10 ⁶	1x10 ⁴ - 1x10 ⁶	1x10 ⁴ - 5x10 ⁵
EXCLUSION LIMIT (Mr) GLOBULAR PROTEINS Da	>4x10 ⁷	>2x10 ⁷	>4x10 ⁶	>1x10 ⁶	>5x10 ⁵
ANTIMICROBIAL AGENT	20% ethanol				
STORAGE TEMPERATURE	2 - 30°C				

X: Product quantity. 500 ml, 1 L or 10 L.

TECHNICAL SPECIFICATIONS

Plain & Crosslinked Agarose Beads Fine

PRODUCT	4% B Agarose Bead Fine	6% B Agarose Bead Fine	4% BCL Agarose Bead Fine	6% BCL Agarose Bead Fine
CAT. No.	A-1040F-X	A-1060F-X	A-1041F-X	A-1061F-X
BEAD GEOMETRY & SIZE	Spherical, Standard: ~20 - 50 µm			
BEAD MEAN DIAMETER (d _{50v})	~90 µm			
CROSSLINKED	No		Yes	
AGAROSE %	4%	6%	4%	6%
CHEMICAL STABILITY	Stable in moderate acid and basic solutions		Stable in all solutions commonly used in gel filtration, 2 M NaOH, 8 M urea, 6 M guanidine hydrochloride, 30% isopropanol, 70% ethanol and commonly used detergents	
pH STABILITY WORKING RANGE	4 - 9		3 - 13	
pH STABILITY CLEANING IN PLACE (CIP)	4 - 9		2 - 14	
FRACTIONATION (Mr) GLOBULAR PROTEINS Da	7x10 ⁴ - 2x10 ⁷	1x10 ⁴ - 4x10 ⁶	7x10 ⁴ - 2x10 ⁷	1x10 ⁴ - 4x10 ⁶
EXCLUSION LIMIT (Mr) GLOBULAR PROTEINS Da	>2x10 ⁷	>4x10 ⁶	>2x10 ⁷	>4x10 ⁶
ANTIMICROBIAL AGENT	20% ethanol			
STORAGE TEMPERATURE	2 - 30°C			

X: Product quantity. Fine: 250ml, 500 ml or 1 L.

SIZE EXCLUSION CHROMATOGRAPHY

HIGH PRESSURE: Rapid Run™ Agarose Beads

ABT has developed Rapid Run™ high throughput beads to meet the demands of industrial process chromatography market. Their rigidity and mechanical resistance permits high flow rates with good resolution in a minimum time, making these beads ideal for process-scale use.

Rapid Run™ beads are based on highly crosslinked 4% and 6% agarose matrices, respectively, which give excellent physical and chromatographic properties.

Rapid Run™ beads are an ideal support for the immobilization of ligands for Affinity Chromatography and base media support for producing IEX and Hydrophobic interaction chromatography resins. These media are the accepted standard for laboratory as well as large scale applications.

Rapid Run™ beads exhibit the following main characteristics:

- High mechanical resistance
- High flow/pressure properties
- High physical and chemical stability
- Scalable
- Good binding capacity
- Low non specific adsorption
- Thermally stable
- Good reproducibility

TECHNICAL SPECIFICATIONS

Rapid Run™ Agarose Beads

PRODUCT	4% Rapid Run™ Agarose Bead Standard	6% Rapid Run™ Agarose Bead Standard
CAT. No.	4RRS-X	6RRS-X
BEAD GEOMETRY & SIZE	Spherical, Standard: ~50 - 150 µm	
BEAD MEAN DIAMETER (d _{50V})	~90 µm	
CROSSLINKED	Highly crosslinked	
AGAROSE %	4%	6%
CHEMICAL STABILITY		
pH STABILITY WORKING RANGE	3 - 13	
pH STABILITY CLEANING IN PLACE (CIP)	2 - 14	
MAXIMUM FLOW RATES ⁽¹⁾	≥900 cm/h	≥1,800 cm/h
FRACTIONATION (Mr) GLOBULAR PROTEINS Da	6x10 ⁴ - 3x10 ⁷	1x10 ⁴ - 4x10 ⁶
EXCLUSION LIMIT (Mr) GLOBULAR PROTEINS Da	~3x10 ⁷	~4x10 ⁶
ANTIMICROBIAL AGENT	20% ethanol	
STORAGE TEMPERATURE	2 - 30°C	

(1): Column: XK 16/40 bed height 15 cm. System: Äkta Purifier UPC 100. Maximum flow rates: The highest flow that beads withstood for 1 minute without collapsing and the pressure reaching 1 MPa.
X: Product quantity. 500 ml, 1 L or 10 L.



SIZE EXCLUSION CHROMATOGRAPHY

LOW PRESSURE: Prepacked Sepadextrans™

Prepacked Columns Sepadexran™-25 Medium SC are hydrated gel filtration columns designed for rapid and efficient removal of small molecules (salts, dyes, ammonia, etc.) from proteins, enzymes or antibody samples.

These columns contain Sepadexran™-25 Medium and can be used for protein and nucleic acid purifications with exclusion limit of 5 kDa.



TECHNICAL SPECIFICATIONS

PRODUCT	Prepacked Columns Sepadexran™-25 Medium SC
CAT. No.	SCSD25M-50
MATRIX	Prepacked Sepadexran™ - 25 Medium in columns (50 columns) Sample Volume per column: 150 µl - 300 µl
FLOW RATE (0.2 ml water)	50 to 70 seconds
SALT REMOVAL <i>Conductivity of 350 µl eluate from a 200 µl 0.8 M NaCl application (150 µl forerun)</i>	<1,000 µS/cm (1%)
DEXTRAN BLUE RECOVERY YIELD	>85%
ANTIMICROBIAL AGENT	ProCLin150
STORAGE CONDITIONS	Ambient

SIZE EXCLUSION CHROMATOGRAPHY

LOW PRESSURE: Sepadextran™

Sepadextran™ is a beaded gel filtration medium prepared by crosslinking dextran and is supplied in its dry form.

ABT offers two types of Sepadextran™ that differ in their degree of crosslinking and hence in their degree of swelling and molecular fractionation range. Both types

are available in three different particle sizes (Medium, Fine and Superfine). Medium grade is suitable for separations at high flow rates and low operating pressures. Fine and Superfine grades are for preparative separations and routine laboratory work.

TECHNICAL SPECIFICATIONS

PRODUCT	Sepadextran™-25		
	Medium	Fine	Superfine
CAT. No.	SD25M-X	SD25F-X	SD25SF-X
MATRIX	Crosslinked dextran		
WATER REGAIN	2.15 - 2.25 ml/g		
SWELLING	4 - 6 ml/g		
DRY PARTICLE SIZE	50 - 150 µm (>80%)	20 - 80 µm (>80%)	20 - 50 µm (>80%)
WET PARTICLE SIZE	85 - 260 µm	35 - 140 µm	35 - 90 µm
MAXIMUM OPERATING PRESSURE	Generally obeys Darcy's Law: $U=K_o \Delta P/L$ Where: U=linear flow rate (cm/h). ΔP = pressure drop over gel bed (cm H ₂ O). L= bed high (cm)		
	Ko=80	Ko=30	Ko=9
CHEMICAL STABILITY	All commonly used buffers, including: 0.1 M NaOH, 0.01 M HCl, 1 M acetic acid, 8 M urea, 6 M guanidine HCl, 1% SDS, 24% ethanol, 30% propanol, 30% acetonitrile		
FRACTIONATION RANGE	1 - 5 kDa for globular proteins, 100 - 5,000 Da for dextrans		
pH STABILITY	2 - 13		
AUTOCLAVABLE	121°C, pH 7 (30 minutes)		
STORAGE TEMPERATURE	Ambient		

X: Product quantity. Medium & Fine 100 g or 500 g. Superfine 100 g.

Sepadextran™-25 can be used for protein and nucleic acid purifications with the exclusion limit of 5 kDa for proteins and 10 bases for nucleic acids. Desalting (before IEX and after HIC or Affinity Chromatography) and buffer exchange (between different chromatography steps) are other common applications.

Sepadextran™-50 can be used for protein and nucleic acid purifications with exclusion limit of 25 kDa for proteins and 20 bases for nucleic acids.

TECHNICAL SPECIFICATIONS

PRODUCT	Sepadextran™-50		
	Medium	Fine	Superfine
CAT. No.	SD50M-X	SD50F-X	SD50SF-X
MATRIX	Crosslinked dextran		
WATER REGAIN	4.80 - 5.20 ml/g		
SWELLING	9 - 11 ml/g		
DRY PARTICLE SIZE	50 - 150 µm (>80%)	20 - 80 µm (>80%)	20 - 50 µm (>80%)
WET PARTICLE SIZE	100 -300 µm	40 - 160 µm	40 - 100 µm
MAXIMUM OPERATING PRESSURE	Generally obeys Darcy's Law: $U=K_o \Delta P/L$ Where: U=linear flow rate (cm/h). ΔP = pressure drop over gel bed (cm H ₂ O). L= bed high (cm)		
	Ko=145	Ko=36	Ko=13.5
CHEMICAL STABILITY	All commonly used buffers, including: 0.1 M NaOH, 0.01 M HCl, 1 M acetic acid, 8 M urea, 6 M guanidine HCl, 1% SDS, 24% ethanol, 30% propanol, 30% acetonitrile		
FRACTIONATION RANGE	1.5 - 30 kDa for globular proteins, 0.5 -10 kDa for dextrans		
pH STABILITY	2 - 13		
AUTOCLAVABLE	121°C, pH 7 (30 minutes)		
STORAGE TEMPERATURE	Ambient		

X: Product quantity. Medium & Fine 100 g or 500 g. Superfine 100 g.

ION EXCHANGE CHROMATOGRAPHY

HIGH PRESSURE: IEX Rapid Run™ Agarose Beads

Ion Exchange Chromatography (IEX) separates biomolecules on the basis of their net surface charge. Biomolecules will provide different interaction properties depending on the net charge, density and surface charge distribution.

Biomolecules without net charge at a pH equivalent to their isoelectric point (pI) will not interact with the resin. Depending on the working pH, the biomolecule will exhibit interaction to anion or cation exchanger media. Therefore, at a pH above its pI, the biomolecule will interact with a positively charged resin (anion exchanger) and at a pH below its pI, the biomolecule will show affinity to a negatively charged resin (cation exchanger).

- **Anion Exchanger Resins:**

ABT offers two different Anion Exchangers. Q Rapid Run™ Agarose Beads manufactured with a highly crosslinked beads activated with quaternary ammonium and DEAE Rapid Run™ Agarose Beads in which the highly crosslinked beads have been activated with diethylaminoethyl.

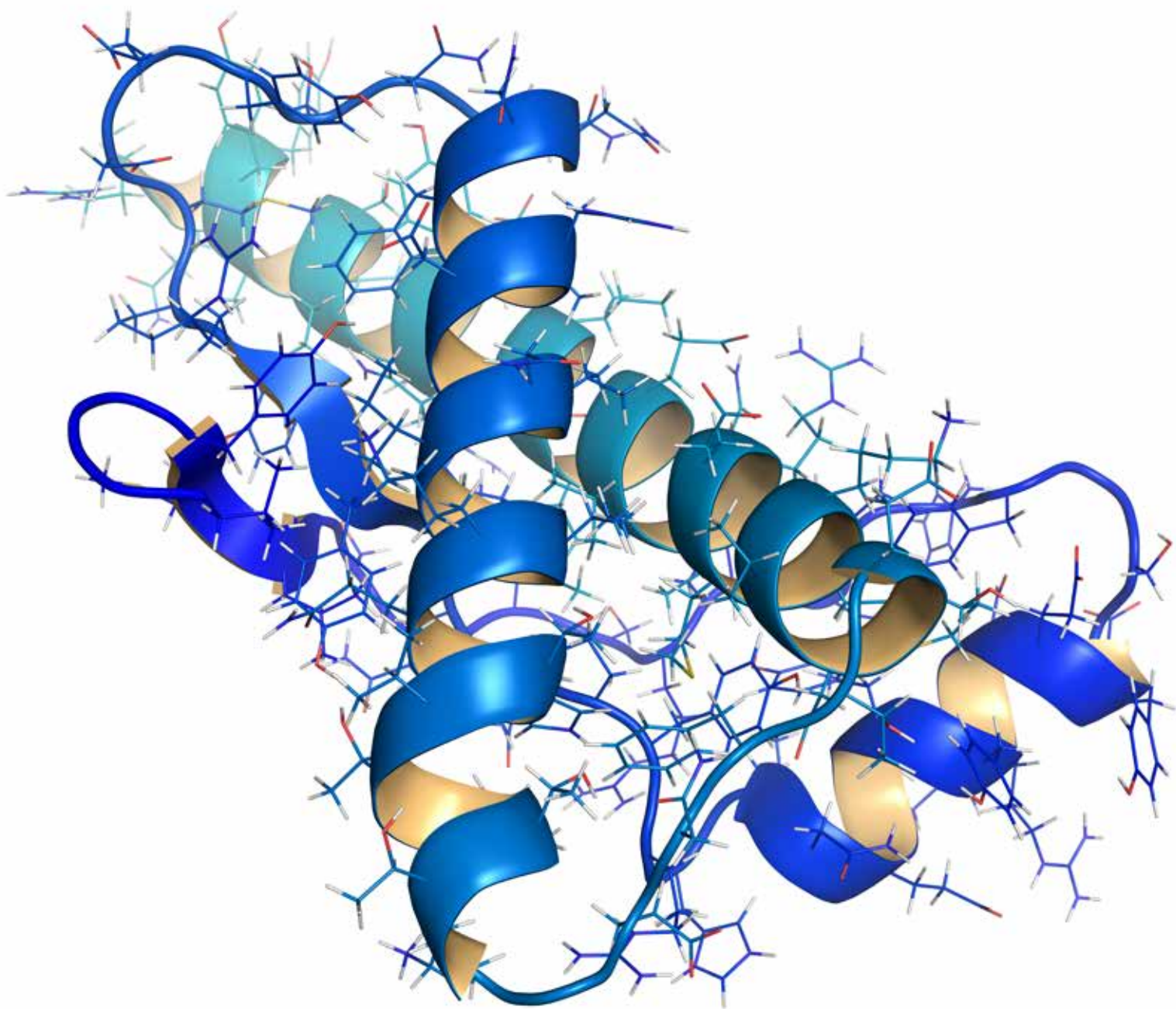
- **Cation Exchanger Resins:**

ABT offers two different Cation Exchangers. SP Rapid Run™ Agarose Beads manufactured with highly crosslinked beads activated with sulfopropyl and CM Rapid Run™ Agarose Beads in which the highly crosslinked beads have been activated with carboxymethyl.

TECHNICAL SPECIFICATIONS

PRODUCT	Q Rapid Run™ Agarose Bead	DEAE Rapid Run™ Agarose Bead	SP Rapid Run™ Agarose Bead	CM Rapid Run™ Agarose Bead
CAT. No.	QRR-X	DEAERR-X	SPRR-X	CMRR-X
BEAD GEOMETRY & SIZE	Spherical, Standard: ~50 - 150 µm			
CROSSLINKED	Highly crosslinked			
BEAD MEAN DIAMETER (d _{50v})	~90 µm			
LIGAND	Quaternary amine	Diethylaminoethyl	Sulfopropyl	Carboxymethyl
ION EXCHANGER TYPE	Strong Anion Exchanger	Weak Anion Exchanger	Strong Cation Exchanger	Weak Cation Exchanger
FLOW VELOCITY ⁽¹⁾	≥900 cm/h			
EXCLUSION LIMIT (Mr) GLOBULAR PROTEINS Da	~4x10 ⁶			
IONIC CAPACITY	0.15 - 0.22 mmol Cl ⁻ /ml resin	0.10 - 0.15 mmol Cl ⁻ /ml resin	0.11 - 0.16 mmol H ⁺ /ml resin	0.09 - 0.13 mmol H ⁺ /ml resin
STATIC BINDING CAPACITY	>60 mg BSA/ml resin		>60 mg IgG/ml resin	
DYNAMIC BINDING CAPACITY 10% breakthrough	>50 mg BSA/ml packed resin		>30 mg IgG/ml packed resin	
pH STABILITY	Short term: 3 - 14. Long Term: 2 - 12		Short term: 3 - 14. Long Term: 4 - 13	
CHEMICAL STABILITY ⁽²⁾	Most commonly used aqueous and organic solutions including: 1 M NaOH, 8 M urea, 30% isopropanol & 70% ethanol			
WORKING TEMPERATURE	4 - 30°C			
ANTIMICROBIAL AGENT	20% ethanol, 0.2 M sodium acetate			
STORAGE TEMPERATURE	4 - 30°C			

(1) Column: XK 16/40 bed height 15 cm. System: ÄKTA Purifier UPC 100. Flow Velocity at 3 bar.
 (2)(CM & SP) Avoid oxidizing agent and cationic detergents. (DEAE & Q) Avoid oxidizing agent and anionic detergents.
 X: Product Quantity 25 or 300 ml.



AFFINITY CHROMATOGRAPHY

Purification of proteins is a vital part of modern research. Impure extracts generally contain a wide range of proteins with diverse biological functions and different chemistry which need to be separated.

Affinity Chromatography is a technique that separates tagged proteins and other biomolecules using biological interactions. This technique has high selectivity and is widely used to obtain proteins with high purity at high yields.

His-tag Purification

- Low Pressure: Chelating Agarose Beads
NTA Agarose Beads and Cartridges
- High Pressure: Chelating Rapid Run™ Agarose Beads and Cartridges
Nickel Rapid Run™
Nickel Agarose Extrachel™

Antibody Purification

- Low Pressure: Protein A Agarose Beads
Protein L Agarose Beads
- High Pressure: Protein A Rapid Run™ Agarose Beads
Protein G Rapid Run™ Agarose Beads
Protein A/G Rapid Run™ Agarose Beads

Biotin/Avidin Binding Purification

- Low Pressure: Biotin Agarose Beads
- High Pressure: Streptavidin HC Agarose Beads

GST Purification

- Low Pressure: Glutathione Agarose Beads and Cartridges

AFFINITY CHROMATOGRAPHY

HIS-TAG PURIFICATION

Affinity Chromatography (IMAC) is the most widely used purification technique. It is based on the interaction between certain superficial protein residues (histidines, cysteines and to a lesser extent tryptophans), with transition metal cations, forming chelates. The transition metal/protein complex is then bound to chelating groups attached to the agarose beads. Elution is usually by lowering pH or by adding imidazole.

LOW PRESSURE

ABT offers two types of chelating beads using standard crosslinked beads and two different ligands iminodiacetic acid (IDA) and nitrilotriacetic acid (NTA).

IDA crosslinked agarose resin consists of iminodiacetic acid groups ligated by stable ether linkages via a spacer arm. IDA is a tridentate chelating agent, covalently coupled to crosslinked agarose beads. This resin is loaded with a divalent metal (Ni^{2+} , Cu^{2+} , Zn^{2+} or Co^{2+}). The resulting resin (ready to use) is ideal for rapid purifications of His-tagged proteins.

In comparison with other chelating resins such as NTA agarose, the IDA has three sites available for the interaction with metal ions, instead of four with NTA. IDA resins are usually more easily regenerated, allowing a better elution of the bound fused proteins with lower concentrations of imidazole.

The product range covers four different types of metal and two different densities of groups on the beads.

- Nickel chelates recognize two exposed target residues (usually histidines) for an efficient protein binding and it is recommended for the majority of His-tagged protein purifications.
- Zinc chelates seem to recognize two exposed target residues in vicinal position and it is recommended to work with proteins that are difficult to separate.
- Cobalt chelates recognize two exposed target vicinal residues. This resin provides very good selectivity.
- Copper chelates recognize one single exposed target residue. This resin is recommended for proteins that are difficult to separate.

The choice of resin depends on the objectives/priorities for each purification (binding capacity/selectivity) and the type of protein to be purified (easy or difficult to separate).

NTA crosslinked Agarose Resin consists of agarose derivatized with Nitrilotriacetic acid (NTA) and loaded with divalent nickel ions. NTA is a tetradentate chelator which occupies four of six binding sites in the coordination sphere of nickel ion. The other two coordination sites are usually occupied by water molecules that can interact with histidine residues of the recombinant protein. This binding minimizes metal leaching during purification.

HIGH PRESSURE

Nickel & Cobalt are the most commonly used metal ions for IMAC purifications. Nickel/Cobalt Rapid Run™ beads combine the advantages of the metal with the high flow rates of the Rapid Run™ resin. These products are excellent for large scale His-tagged protein purifications.

Nickel Agarose Extrachel™ is an IMAC resin precharged with nickel that is strongly bound to a ligand. Nickel remains bound to the chelating ligand after incubation in 20 mM EDTA.



AFFINITY CHROMATOGRAPHY

HIS-TAG PURIFICATION

LOW PRESSURE: Chelating Agarose Beads

Bulk Resins

ABT offers resins for purifications of histidine-tagged proteins by Immobilized Metal Affinity Chromatography (IMAC).

- Different grades of activation to optimize the relationship between binding capacity and purification selectivity
- Resins charged with Ni, Cu, Zn, or Co as well as metal free
- For batch or column purifications

TECHNICAL SPECIFICATIONS

PRODUCT	High Density	Low Density
	Metal Free/Nickel/Zinc/Cobalt	Metal Free/Nickel/Zinc/Copper
BEAD GEOMETRY & SIZE	Spherical, Standard: ~50 - 150 µm	
CROSSLINKED	Yes	
AGAROSE %	6%	
MATRIX	Stable in all commonly used reagents	
BINDING/LOADING CAPACITY (µmol Me ²⁺ /ml gel)	20 - 40	5 - 19
ANTIMICROBIAL AGENT	20% ethanol	
STORAGE TEMPERATURE	2 - 8°C	

PRODUCT	CAT. No.
High Density Metal Free	6BCL-QH-X
Low Density Metal Free	6BCL-QL-X
High Density Nickel	6BCL-QHNi-X
Low Density Nickel	6BCL-QLNi-X
High Density Zinc	6BCL-QHZn-X
Low Density Zinc	6BCL-QLZn-X
High Density Cobalt	6BCL-QHCo-X
Low Density Copper	6BCL-QLCu-X

X: Product quantity 25, 100 or 500 ml.

Pre-Packed Columns

ABT offers Pre-Packed ready to use columns for purifications of histidine-tagged proteins by Immobilized Metal Affinity Chromatography (IMAC).

- Fast and simple purification
- For gravity flow
- No need of purification systems
- Available for Ni and Co chelating resins
- Contains 1 or 5 ml of gel



TECHNICAL SPECIFICATIONS

PRODUCT	His-Column High Density		His-XL Column High Density	
	Nickel	Cobalt	Nickel	Cobalt
CAT. No.	6BCL-QHNI-C8	6BCL-QHCo-C8	6BCL-QHNI-C5	6BCL-QHCo-C5
BEAD GEOMETRY & SIZE	Spherical, Standard: ~50 - 150 µm			
CROSSLINKED	Yes			
AGAROSE %	6%			
COLUMN MATERIAL	Polypropylene column and polyethylene frit			
BED VOLUME	1 ml		5 ml	
QUANTITY OF COLUMNS	8 Gravity Pre-Packed columns		5 Gravity Pre-Packed columns	
LOADING CAPACITY (µmol Me²⁺/ml gel)	20 - 40			
ANTIMICROBIAL AGENT	20% ethanol			
STORAGE TEMPERATURE	2 - 8°C			

AFFINITY CHROMATOGRAPHY

HIS-TAG PURIFICATION

LOW PRESSURE: Nickel NTA Agarose Beads

Bulk Resins

Nickel NTA Agarose Resin consists of crosslinked agarose derivatized with Nitrilotriacetic acid (NTA) and loaded with divalent nickel ions. This resin is the most common IMAC resin for working in reducing conditions because of the four metal-binding sites on the chelate, which enables high-protein binding and minimal metal leaching.

- One step purification
- High capacity
- Purification under native or denaturing conditions
- Minimum metal leaching

TECHNICAL SPECIFICATIONS

PRODUCT	Nickel NTA Agarose Resin
CAT. No.	6BCL-NTANi-X
BEAD GEOMETRY & SIZE	Spherical, Standard: ~50 - 150 µm
CROSSLINKED	Yes
AGAROSE %	6%
LIGAND	Nitrilotriacetic acid (NTA)
STATIC BINDING CAPACITY	≥50 mg/ ml gel ⁽¹⁾
ANTIMICROBIAL AGENT	15% ethanol of total volume
STORAGE TEMPERATURE	4 - 8°C

(1) Static binding capacity will differ for each target protein.
X: Product quantity 25, 100 or 500 ml.

LOW PRESSURE: Nickel NTA Agarose Cartridges

Cartridges

Nickel NTA Agarose Cartridges 5 ml are Pre-Packed ready to use products for fitting into the MPLC, FPLC and ÄKTA™ design devices. ABT offers units of 1 or 5 cartridges packed with 5 ml of Nickel NTA Agarose Resin.



TECHNICAL SPECIFICATIONS

PRODUCT	Nickel NTA Agarose Cartridges 5 ml
CAT. No.	6BCL-NTANICTG5-X
BEAD GEOMETRY & SIZE	Spherical, Standard: ~50 - 150 µm
DESCRIPTION	Cartridges 5 ml resin
CROSSLINKED	Yes
AGAROSE %	6%
LIGAND	Nitrilotriacetic acid (NTA)
STATIC BINDING CAPACITY	≥50 mg/ml gel ⁽¹⁾
RECOMMENDED FLOW RATE	5 ml/min
APPLICATION	Automated liquid chromatography (MPLC, FPLC, ÄKTA™ design) peristaltic pump & syringe
CARTRIDGE PORTS	Standard 10 - 32 fitting without additional connectors
ANTIMICROBIAL AGENT	15% ethanol of total volume
STORAGE TEMPERATURE	4 - 8°C

(1) Static binding capacity will modify for each target protein.
X: Quantity of cartridges 1 or 5.

AFFINITY CHROMATOGRAPHY

HIS-TAG PURIFICATION

HIGH PRESSURE: Chelating Rapid Run™ Agarose Beads

Bulk Resins

Nickel, Cobalt, and Metal Free Rapid Run™ agarose beads are designed for large scale downstream purification of His-tagged proteins using IMAC technology and support 70% higher flow rates than other commercially available products.

- Easy scale up and robust function
- High chemical and physical stabilities
- Good resolution in minimal time

TECHNICAL SPECIFICATIONS

PRODUCT	Metal Free Rapid Run™	Nickel Rapid Run™	Cobalt Rapid Run™
CAT. No.	6RR-QH-X	6NiRR-X	6CoRR-X
BEAD GEOMETRY & SIZE	Spherical, Standard: ~50 - 150 µm		
EXCLUSION LIMIT	~4x10 ⁶		
CROSSLINKED	Highly crosslinked		
AGAROSE %	6%		
BINDING / LOADING CAPACITY (µmol Me ²⁺ /ml gel)	~20		
LIGAND	Iminodiacetic acid		
ANTIMICROBIAL AGENT	20% ethanol		
STORAGE TEMPERATURE	2 - 8°C		

X: Product quantity 25, 100 or 500 ml.

Cartridges

Nickel Affinity Cartridges 5 ml are used for purification of histidine-tagged proteins.

- No need for optimization or protocol change
- Great adaptability: Cartridges suitable for MPLC, FPLC, ÄKTA™ design devices
- High purity achieved in one purification step, comparable to market standards



TECHNICAL SPECIFICATIONS

PRODUCT	Nickel Affinity Cartridges 5ml
CAT. No.	AF6Ni-Ctg5-X
BEAD GEOMETRY & SIZE	Spherical, Fine: ~20 - 50 µm
DESCRIPTION	Cartridges 5 ml resin
CROSSLINKED	Highly crosslinked
AGAROSE %	6%
LIGAND	Iminodiacetic acid
MATRIX	Stable in all commonly used reagents ⁽¹⁾
RECOMMENDED FLOW RATE	5 ml/min
APPLICATION	Automated liquid chromatography (MPLC, FPLC, ÄKTA™ design) peristaltic pump & syringe
CARTRIDGE PORTS	Standard 10 - 32 fitting without additional connectors
ANTIMICROBIAL AGENT	20% ethanol
STORAGE TEMPERATURE	2 - 8°C

(1) See stability table in Procedure for Use. Note: Binding capacity was tested using purified Dehydroxyacetone Kinase (6x His) and the result was 110 mg DHAK-(6x His) purified/ml medium.
X: Quantity of cartridges 1 or 5.

AFFINITY CHROMATOGRAPHY

HIS-TAG PURIFICATION

HIGH PRESSURE: Nickel NTA Rapid Run™

Bulk Resins

This resin consists of highly crosslinked agarose with Nitrilotriacetic acid (NTA) ligand. The resin provides good properties working in the presence of reducing agents and is designed for large scale downstream purification of His-tagged proteins.

TECHNICAL SPECIFICATIONS

PRODUCT	Nickel NTA Rapid Run™
CAT. No.	6RR-NTANi-X
BEAD GEOMETRY & SIZE	Spherical, Standard: ~50 - 150 µm
CROSSLINKED	Highly crosslinked
AGAROSE %	6%
LIGAND	Nitrilotriacetic acid (NTA)
LOADING CAPACITY (µmol Me ²⁺ /ml gel)	≥15
PROTEIN BINDING CAPACITY (mg /ml gel)	≥60
ANTIMICROBIAL AGENT	20% ethanol
STORAGE TEMPERATURE	2 - 8°C

X: Product quantity 25, 100 or 500 ml

HIGH PRESSURE: Nickel Agarose Extrachel™

Bulk Resins

Nickel Agarose Extrachel™ is a high capacity resin manufactured with a polychelator ligand. The product is developed to work in the presence of EDTA and DTT without any loss of performance. Its specificity and stability allows a one-step purification eliminating the need of pretreatment of samples that cause nickel stripping.

TECHNICAL SPECIFICATIONS

PRODUCT	Nickel Agarose Extrachel™
CAT. No.	6RREXCH-X
BEAD GEOMETRY & SIZE	Spherical, Standard: ~50 - 150 µm
CROSSLINKED	Highly crosslinked
AGAROSE %	6%
CHEMICAL STABILITY	20 mM DTT, 20 mM EDTA, 8 M urea, 6 M guanidinium hydrochloride, 30% acetonitrile, 100% methanol, 100% ethanol, and buffer solutions at pH 4 - 9
LOADING CAPACITY (µmol Me ²⁺ /ml gel)	>60
STATIC BINDING CAPACITY (mg/ml gel)	>80 ⁽¹⁾
ANTIMICROBIAL AGENT	20% ethanol
STORAGE TEMPERATURE	2 - 8°C

X: Product Quantity 25, 100 or 500 ml.

⁽¹⁾ Static Binding capacity will modify for each target protein.

AFFINITY CHROMATOGRAPHY

ANTIBODY PURIFICATION

Protein A Agarose Beads

Protein A is a cell wall component of *Staphylococcus aureus*. It consists of a single polypeptide chain, which contains five antibody-binding domains. These high affinity regions are specifically bonded to the Fc region of the immunoglobulin G (IgG). Other types like IgA and IgM might bind to Protein A via Fab interaction.

Protein A is temperature stable and it retains its native conformation even in the presence of denaturing agents. Protein A resins have been widely used to purify a wide range of immunoglobulins of different mammalian species and also to purify certain IgG subclasses that have no affinity.

ABT offers Protein A products with competitive advantages compared to market standards:

- High IgG-binding capacity resin (~25 mg human IgG/ml)
- High stability binding of Protein A: resin is reusable with no significant loss of binding capacity

ABT offers Protein A Agarose Resin for working in both Low and High Pressure conditions



RELATIVE AFFINITY OF IMMOBILIZED PROTEIN A FOR VARIOUS SPECIES AND SUBCLASSES OF POLYCLONAL AND MONOCLONAL IgGs⁽¹⁾

SPECIES / SUBCLASS	PROTEIN A
<i>Monoclonal</i>	
Human	
IgG ₁	++++
IgG ₂	++++
IgG ₃	----
IgG ₄	++++
Mouse	
IgG ₁	+
IgG _{2a}	++++
IgG _{2b}	+++
IgG ₃	++
Rat	
IgG ₁	---
IgG _{2a}	---
IgG _{2b}	---
IgG _{2c}	+

SPECIES / SUBCLASS	PROTEIN A
<i>Polyclonal</i>	
Rabbit	++++
Cow	++
Horse	++
Goat	-
Guinea Pig	++++
Sheep	+/-
Pig	+++
Rat	+/-
Mouse	++
Chicken	---
Human IgG	++++
Human IgM	---
Human IgD	---
Human IgA	---

¹Harlow, E. And Lane, D. eds. (1988). Antibodies, A. Laboratory Manual. Cold Spring Harbor Laboratory, N.Y., 617-618.

AFFINITY CHROMATOGRAPHY

ANTIBODY PURIFICATION

LOW PRESSURE: Protein A Agarose Beads

Bulk Resins

ABT offers Γ Protein A resins for purifications of a wide range of immunoglobulins of different mammalian species and also to purify certain IgG subclasses that have no affinity.

- Get more of your antibody: higher IgG binding capacity
- Get better purification: higher stability binding of the Γ Protein A
- Save time and money: reusable. Low leakage levels due to very stable immobilization

TECHNICAL SPECIFICATIONS

PRODUCT	Protein A Agarose Resin	Protein A Test Kit
CAT. No.	PA09-X	PA09-K-01
BEAD GEOMETRY & SIZE	Spherical, Standard: ~50 - 150 μ m	
CROSSLINKED	Yes	
AGAROSE %	4%	
COUPLING METHOD	Covalent binding by reductive amination.	
STATIC BINDING CAPACITY	~25 mg human IgG/ml resin	
ANTIMICROBIAL AGENT	20% ethanol	
STORAGE TEMPERATURE	2 - 8°C	

X: Product quantity 5, 25 or 100 ml.

Protein A Test Kit is a Pre-Packed ready to use product for gravity flow purification and includes 100 μ l of resin. This format allows the user to pretest the resin before large scale use.



HIGH PRESSURE: Protein A Rapid Run™ Agarose Beads

Bulk Resins

Protein A Agarose Resin 4 Rapid Run™ can be used in batch or column purifications and it is specially recommended for high flow rates.



TECHNICAL SPECIFICATIONS

PRODUCT	Protein A Agarose Resin 4 Rapid Run™
CAT. No.	4RRPA-X
BEAD GEOMETRY & SIZE	Spherical, Standard: ~50 - 150 µm
CROSSLINKED	Highly crosslinked
AGAROSE %	4%
COUPLING METHOD	Covalent binding by reductive amination
STATIC BINDING CAPACITY	~25 mg human IgG/ml resin
ANTIMICROBIAL AGENT	20% ethanol
STORAGE TEMPERATURE	2 - 8°C

X: Product quantity 5, 25 or 100ml.

AFFINITY CHROMATOGRAPHY

ANTIBODY PURIFICATION

HIGH PRESSURE: Protein G Rapid Run™ Agarose Beads

Recombinant Protein G contains only IgG binding domains. The albumin-binding domain as well as cell wall and cell membrane binding domains of native Protein G have been removed to ensure the maximum specific IgG binding capacity.

Protein G products (Test Kit and Bulk Resins) have competitive advantages compared to market standards:

- High stability binding of Protein G
- Resin is reusable with no significant loss of binding capacity

ABT offers Protein G resins to isolate and purify classes, subclasses, and fragments of immunoglobulins from cell culture media and biological fluids. Rapid purifications and high yield of purified immunoglobulin are obtainable by this method. Protein G is

immobilized by means of covalent binding that minimizes protein G leakage and allows for column re-use.

Protein G Test Kit is a Pre-Packed ready to use product for gravity flow purification and includes 100 µl of resin. This format allows the user to pretest the resin before large scale use.

TECHNICAL SPECIFICATIONS

PRODUCT	Protein G Agarose Resin 4 Rapid Run™	Protein G Test Kit
CAT. No.	4RRPG-X	4RRPG-K-01
BEAD GEOMETRY & SIZE	Spherical, Standard: ~50 - 150 µm	
CROSSLINKED	Highly crosslinked	
AGAROSE %	4%	
COUPLING METHOD	Coupling binding by reductive amination	
STATIC BINDING CAPACITY	~20 mg human IgG/ml resin	
ANTIMICROBIAL AGENT	20% ethanol	
STORAGE TEMPERATURE	2 - 8°C	

X: Product quantity 5, 25 or 100 ml.

RELATIVE AFFINITY OF IMMOBILIZED PROTEIN G FOR VARIOUS SPECIES AND SUBCLASSES OF POLYCLONAL AND MONOCLONAL IgGs ⁽¹⁾

SPECIES / SUBCLASS	PROTEIN G
<i>Monoclonal</i>	
Human	
IgG ₁	++++
IgG ₂	++++
IgG ₃	++++
IgG ₄	++++
Mouse	
IgG ₁	++++
IgG _{2a}	++++
IgG _{2b}	+++
IgG ₃	+++
Rat	
IgG ₁	+
IgG _{2a}	++++
IgG _{2b}	++
IgG _{2c}	++

SPECIES / SUBCLASS	PROTEIN G
<i>Polyclonal</i>	
Rabbit	+++
Cow	++++
Horse	++++
Goat	++
Guinea Pig	++
Sheep	++
Pig	+++
Rat	++
Mouse	++
Chicken	+
Human IgG	++++
Human IgM	+
Human IgD	+
Human IgA	+

¹Harlow, E. And Lane, D. eds. (1988). Antibodies, A. Laboratory Manual. Cold Spring Harbor Laboratory, N.Y., 617-618.

AFFINITY CHROMATOGRAPHY

ANTIBODY PURIFICATION

LOW PRESSURE: Protein L Agarose Beads

Protein L is an immunoglobulin binding protein. It is isolated from the bacteria *Peptostreptococcus magnus* and provides a convenient way to separate immunoglobulins from a variety of sources.

Protein L contains four immunoglobulin binding domains of the native protein and may be used for the purification of IgG, IgM, IgA and IgD containing kappa light chains from various species without interfering with the antigen binding site.

Other antibodies, Protein L is also suitable for binding of a wide range of antibody fragments such as Fabs, single-chain variable fragments (scFv), and domain antibodies (Dabs).

Protein L is immobilized by means of covalent binding that minimizes protein L leakage and allows for column re-use.

Protein L Agarose Resin are products for batch or column purifications.

Protein L Test Kit is in ready-to-use format that contains 100 µl of resin packed in a column that works by gravity. This format allows the user to pretest the resin before larger scale use.

TECHNICAL SPECIFICATIONS

PRODUCT	Protein L Agarose Resin	Protein L Test Kit
CAT. No.	4BCLPL-X	4BCLPL-K-01
BEAD GEOMETRY & SIZE	Spherical, Standard: ~50 - 150 µm	
CROSSLINKED	Yes	
AGAROSE %	4%	
COUPLING METHOD	Covalent binding by reductive amination	
STATIC BINDING CAPACITY	~10 mg human IgG/ml resin	
ANTIMICROBIAL AGENT	20% ethanol	
STORAGE TEMPERATURE	2 - 8°C	

X: Product quantity 2,5 or 10 ml.

BINDING OF IMMUNOGLOBULINS TO PROTEIN L

SPECIES / SUBCLASS	PROTEIN L
Human	
Total IgG	+++
IgG ₁	++++
IgG ₂	++++
IgG ₃	+++
IgG ₄	++++
IgA	+++
IgA ₁	+++
IgA ₂	+++
IgD	+++
IgE	+++
IgM	+++
Cow	
Total IgG	-
IgG ₁	-
IgG ₂	-
Horse	ND
Cat	ND
Dog	ND
Chicken	
IgY	+

ND: Not Determined.

SPECIES / SUBCLASS	PROTEIN L
Mouse	
Total IgG	+++
IgG ₁	+++
IgG _{2a}	+++
IgG _{2b}	+++
IgG ₃	+++
IgM	+++
Rat	
Total IgG	+++
IgG ₁	+++
IgG _{2a}	+++
IgG _{2b}	+++
IgG _{2c}	+++
IgG ₃	ND
Hamster	+++
Rabbit	+
Pig	+++
Guinea-pig	
IgG ₁	ND
IgG ₂	ND

AFFINITY CHROMATOGRAPHY

ANTIBODY PURIFICATION

HIGH PRESSURE: Protein A/G Rapid Run™ Agarose Beads

Protein A/G Agarose Resin 4 Rapid Run™ contains a mixture of 50% Protein G Agarose Resin 4 Rapid Run™ and 50% of Protein A Agarose Resin 4 Rapid Run™ in 20% ethanol. This resin is used to isolate mouse IgG₁, IgG_{2a}, IgG_{2b}, IgG₃ and IgA, rat IgG₁, IgG_{2a}, IgG_{2b}, IgG_{2c}, rabbit and goat polyclonal and human IgG₁, IgG₂, IgG₃ and IgG₄.

Protein G and Protein A are immobilized by means of covalent binding that minimizes protein loss and allows for column re-use.

This product is supplied as a suspension in 20% ethanol 50:50 (Mixture of Resins: Preservative).

TECHNICAL SPECIFICATIONS

PRODUCT	Protein A/G Agarose Resin 4 Rapid Run™	Protein A/G Test Kit
CAT. No.	4RRPAG-X	4RRPAG-K-01
BEAD GEOMETRY & SIZE	Spherical, Standard: ~50 - 150 µm	
CROSSLINKED	Highly crosslinked	
AGAROSE %	4%	
CHEMICAL STABILITY	Covalent binding	
STATIC BINDING CAPACITY	~25 mg human IgG/ml resin	
ANTIMICROBIAL AGENT	20% ethanol	
STORAGE TEMPERATURE	2 - 8°C	

X: Product quantity 0,5, 1 ml or 2 ml.

Protein A/G Test Kit is a Pre-Packed ready to use product for gravity flow purification and includes 100 µl of resin. This format allows the user to pretest the resin before large scale use.

AFFINITY CHROMATOGRAPHY

BIOTIN/AVIDIN BINDING PURIFICATION

LOW PRESSURE: Biotin Agarose Beads

Biotin Agarose Resin is used for purification or removal of avidin or streptavidin samples. Biotin is immobilized through a spacer arm by means of covalent binding that minimizes leakage.

The binding is very strong, making it suitable for non-reversible binding applications (e.g. removal of avidin components from a sample).

TECHNICAL SPECIFICATIONS

PRODUCT	Biotin Agarose Resin
CAT. No.	4BCL-BI-X
BEAD GEOMETRY & SIZE	Spherical, Standard: ~50 - 150 µm
CROSSLINKED	Yes
AGAROSE %	4%
COUPLING CHEMISTRY	Carboxy (amide linkage)
AVIDIN BINDING CAPACITY	>30 mg/ml gel
ANTIMICROBIAL AGENT	0.02% sodium azide
STORAGE TEMPERATURE	2 - 8°C

X: Product Quantity 5 or 10 ml.

HIGH PRESSURE: Streptavidin HC Agarose Beads

ABT Streptavidin 6HC is used for the immobilization of biotinylated biomolecules. Recombinant streptavidin is immobilized on 6% highly crosslinked agarose beads.

TECHNICAL SPECIFICATIONS

PRODUCT	Streptavidin 6HC Agarose Resin
CAT. No.	STV6HC-X
BEAD GEOMETRY & SIZE	Spherical, Standard: ~50 - 150 µm
CROSSLINKED	Highly crosslinked
AGAROSE %	6%
FREE BIOTIN BINDING CAPACITY	>120 nmol/ml gel
ANTIMICROBIAL AGENT	20% ethanol
STORAGE TEMPERATURE	2 - 8°C

X: Product Quantity 5,10 or 20 ml.

AFFINITY CHROMATOGRAPHY

GST PURIFICATION

LOW PRESSURE: Glutathione Agarose Beads

Bulk Resins

Glutathione Agarose Resin provides a one step purification method and permits rapid, mild and highly selective purifications of proteins containing glutathione binding sequences. Bound GST-fusion proteins are easily displaced from the resin by elution with buffers containing reduced glutathione.

This resin is used to purify of Glutathione-S-transferase (GST) and GST-tagged fusion proteins.

- For all kind of proteins: small and large protein complex
- Simple protocol, and no need for optimization
- Great adaptability: Bulk format suitable for batch & column purifications
- High purity achieved in one purification step, comparable to market standards

TECHNICAL SPECIFICATIONS

PRODUCT	Glutathione Agarose Resin
CAT. No.	4B-GLU-X
BEAD GEOMETRY & SIZE	Spherical, Standard: ~50 - 150 µm
CROSSLINKED	No
AGAROSE %	4%
LIGAND	Glutathione, linked via sulphur atom
STATIC BINDING CAPACITY	≥8 mg recombinant GST/ml gel
ANTIMICROBIAL AGENT	20% ethanol
STORAGE TEMPERATURE	4 - 8°C

X: Product quantity 10 or 100 ml.

Cartridges

Glutathione Agarose Cartridges 5 ml are used for affinity purification of Glutathione-S-transferase (GST) and GST tagged fusion proteins.

- Great adaptability: suitable for MPLC, FPLC, ÄKTA™ design, peristaltic pump and syringe.

TECHNICAL SPECIFICATIONS

PRODUCT	Glutathione Agarose Cartridges 5 ml
CAT. No.	4B-GLUCTG5-X
BEAD GEOMETRY & SIZE	Spherical, Standard: ~50 - 150 µm
DESCRIPTION	5 ml resin
CROSSLINKED	No
AGAROSE %	4%
LIGAND	Glutathione, linked via sulphur atom
STATIC BINDING CAPACITY	≥50 mg ⁽¹⁾
RECOMMENDED FLOW RATE	5 ml/min
APPLICATION	Automated liquid chromatography (MPLC, FPLC, ÄKTA™ design) peristaltic pump & syringe
CARTRIDGE PORTS	Standard 10 - 32 fitting without additional connectors
ANTIMICROBIAL AGENT	20% ethanol
STORAGE TEMPERATURE	4 - 8°C

(1) Static binding capacity will modify for each target protein.
X: Quantity of cartridges 1 or 5.



AGAROSE BEAD
TECHNOLOGIES

AFFINITY COUPLING

Immobilization is a technique in which a ligand (enzyme, antibody, affinity proteins, etc.) is coupled to a support structure such as agarose beads that provides high stability and easy re-use of the immobilized molecule. The conjugation of affinity ligands and their use in chromatography have extended applications in many fields, including purification procedures, removal of contaminating substances, and biocatalysis.

ABT offers a great range of pre-activated resins that are designed to couple ligands via stable & uncharged covalent linkages that minimize leakage of the affinity ligand and reduce non-specific binding. Two different chemistries of pre-activated beads are provided:

- Glyoxal beads
- Aminoethyl beads

ABT also provides resins with different concentrations of agarose (4 - 6%) and different densities/concentrations of both Glyoxal and Aminoethyl activated groups:

High activated resins for high yields:

- High binding capacity
- High immobilized enzyme stability
- Possibility of multiple binding points

Low and Very Low activated resins for less distortion:

- Good binding capacity
- Immobilized enzyme stability
- Minimum distortion of immobilized enzyme

These resins are excellent options for work in research and industrial scale, conferring a qualitative advantage compared to CNBr agarose resins. The choice of Glyoxal or Aminoethyl will depend on the ligand to be immobilized, the accessibility of the reactive groups and the direction/orientation required for the binding to the support.

AFFINITY COUPLING

AMINO GROUPS

LOW PRESSURE: Glyoxal Agarose Beads

Bulk Resins

Glyoxal beads are pre-activated resins that allow a covalent binding of agarose to lysine amino groups of the target ligand (similar to CNBr orientation). ABT has a wide range of products activated with different degree of aldehyde groups and using two different backbones,

4% and 6%, beads and different particle sizes. These resins give adequate options to work in batch or column purifications for low pressure applications and large scale process Rapid Run™ for High Pressure applications.

TECHNICAL SPECIFICATIONS

PRODUCT	High Density Gyoxal		Low Density Gyoxal	
	4BCL	6BCL	4BCL	6BCL
CAT. No.	4BCL-GH1-X	6BCL-GM3-X	4BCL-GLO-X	6BCL-GLO-X
BEAD GEOMETRY & SIZE	Spherical, Standard: ~50 -150 µm			
CROSSLINKED	Yes			
MATRIX ACTIVE GROUPS	Agarose with some diols oxidized to aldehydes			
AGAROSE %	4%	6%	4%	6%
ACTIVATION DEGREE (µmol Glyoxyl/ml gel)	40 - 60	40 - 60	15 - 25	15 - 25
COUPLING CAPACITY ⁽¹⁾ (mg BSA/ml gel)	~15	~20	~10	~10
ANTIMICROBIAL AGENT	20% ethanol			
STORAGE TEMPERATURE	2 - 8°C			

(1) Orientative values for coupling capacity using BSA. X: Product quantity 25 or 100 ml.

HIGH PRESSURE: Glyoxal Rapid Run™ Agarose Beads

TECHNICAL SPECIFICATIONS

PRODUCT	Low Density Glyoxal 6 Rapid Run™	High Density Glyoxal 6 Rapid Run™	Low Density Glyoxal 4 Rapid Run™	High Density Glyoxal 4 Rapid Run™	Low Density Glyoxal 6 Rapid Run™ Fine	Low Density Glyoxal 4 Rapid Run™ Fine
CAT. No.	6RR-GLO-X	6RR-GM3-X	4RR-GLO-X	4RR-GH1-X	6RRF-GLO-X ⁽¹⁾	4RRF-GLO-X ⁽¹⁾
ADDITIONAL INFORMATION	Minimum distortion	High stability	Minimum distortion	High stability	Minimum distortion	Minimum distortion
EXCLUSION LIMIT (Mr) GLOBULAR PROTEINS Da	~4x10 ⁶	~4x10 ⁶	~3x10 ⁷	~3x10 ⁷	~4x10 ⁶	~3x10 ⁷
BEAD GEOMETRY & SIZE	Spherical, Standard: ~50 - 150 µm				Spherical, Fine: ~20 - 50 µm	
CROSSLINKED	Highly crosslinked					
AGAROSE %	6%		4%		6%	4%
ACTIVATION DEGREE (µmol Glyoxyl/ml gel)	15 - 25	40 - 60	15 - 25	40 - 60	15 - 25	15 - 25
ANTIMICROBIAL AGENT	20% ethanol					
STORAGE TEMPERATURE	2 - 8°C					

(1) Recommended for packing cartridges.
X: Product quantity 25 or 100 ml.

AFFINITY COUPLING

CARBOXYL GROUPS

LOW PRESSURE: Aminoethyl Agarose Beads

Aminoethyl beads allow for a covalent binding of agarose to carboxy group amino acids of the target ligand. ABT offers a wide range of products activated with different degree of amino groups and using two different backbo-

nes, 4% and 6% beads and different particle sizes. These options allows for work in batch or column purifications for low pressure applications and large scale process Rapid Run™ for High Pressure applications.

TECHNICAL SPECIFICATIONS

PRODUCT	Low Density Aminoethyl 6 BCL	Very Low Density Aminoethyl 4 BCL	High Density Aminoethyl 6 BCL	High Density Aminoethyl 4 BCL
CAT. No.	6BCL-AL0-X	4BCL-AVL4-X	6BCL-AM3-X	4BCL-AH1-X
BEAD GEOMETRY & SIZE	Spherical, Standard: ~50 - 150 µm			
CROSSLINKED	Yes			
AGAROSE %	6%	4%	6%	4%
MATRIX ACTIVE GROUPS	Amino Groups			
ACTIVATION DEGREE (µmol diaminoethyl/ml gel)	15 - 25	3 - 6	40 - 60	40 - 60
ANTIMICROBIAL AGENT	20% ethanol			
STORAGE TEMPERATURE	2 - 8°C			

X: Product quantity 25 or 100 ml.

HIGH PRESSURE: Aminoethyl Rapid Run™ Agarose Beads

TECHNICAL SPECIFICATIONS

PRODUCT	Low Density Aminoethyl 6 Rapid Run™	High Density Aminoethyl 6 Rapid Run™	Very Low Density Aminoethyl 4 Rapid Run™	High Density Aminoethyl 4 Rapid Run™	Very Low Density Aminoethyl 6 Rapid Run™ Fine
CAT. No.	6RR-ALO-X	6RR-AM3-X	4RR-AVL4-X	4RR-AH1-X	6RRF-AVL4-X
ADDITIONAL INFORMATION	Minimum distortion	High stability	Minimum distortion	High stability	Minimum distortion
EXCLUSION LIMIT (Mr) GLOBULAR PROTEINS Da	~4x10 ⁶	~4x10 ⁶	~3x10 ⁷	~3x10 ⁷	~4x10 ⁶
BEAD GEOMETRY & SIZE	Spherical, Standard: ~50 - 150 µm				Spherical, Fine: ~20 - 50 µm
CROSSLINKED	Highly crosslinked				
AGAROSE %	6%		4%		6%
MATRIX ACTIVE GROUPS	Amino groups				
ACTIVATION DEGREE (µmol diaminoethyl/ml gel)	15 - 25	40 - 60	3 - 6	40 - 60	3 - 6
ANTIMICROBIAL AGENT	20% ethanol				
STORAGE TEMPERATURE	2 - 8°C				

X: Product quantity 25 or 100 ml.

MAGNETIC BEADS

Nickel NTA Magnetic Agarose Beads

Magnetic Agarose Beads provide a convenient, easy and quick method for purification or coupling with no need of pipetting or centrifugation. The magnetic core has been covered with agarose providing uniform particles that would be the basis for affinity purification. Washing, binding, and elution steps are very simple and require a magnetic separator.

NICKEL NTA MAGNETIC AGAROSE BEADS (5%)

A resin that allows rapid and easy small scale purification of histidine-tagged proteins. This resin consists of magnetic agarose derivatized with Nitrilotriacetic (NTA) and provides good properties working in native or denaturing conditions.

TECHNICAL SPECIFICATIONS

PRODUCT	Nickel NTA Magnetic Agarose Beads (5%)
CAT. No.	MAGNTANI5-X
BEAD GEOMETRY & SIZE (d ₅₀)	Spherical, 10 - 40 µm
LIGAND	Nitrilotriacetic acid (NTA)
LOADING CAPACITY (µmol Me ²⁺ /ml gel)	>20 µmol/ml gel
BINDING CAPACITY ⁽¹⁾	>75 mg His-tagged protein/ml gel
CONCENTRATION	5% slurry
ANTIMICROBIAL AGENT	20% ethanol
STORAGE TEMPERATURE	2 - 8°C

X: Volume of total slurry 2, 5 or 10 ml. Beads volume would be 5% of the total slurry.
Each 1 ml of slurry will contain 50 µl of magnetic beads
(1) Binding Capacity was tested with his-GFP.



PRODUCT	Magnetic Separator
CAT. No.	MagSep1

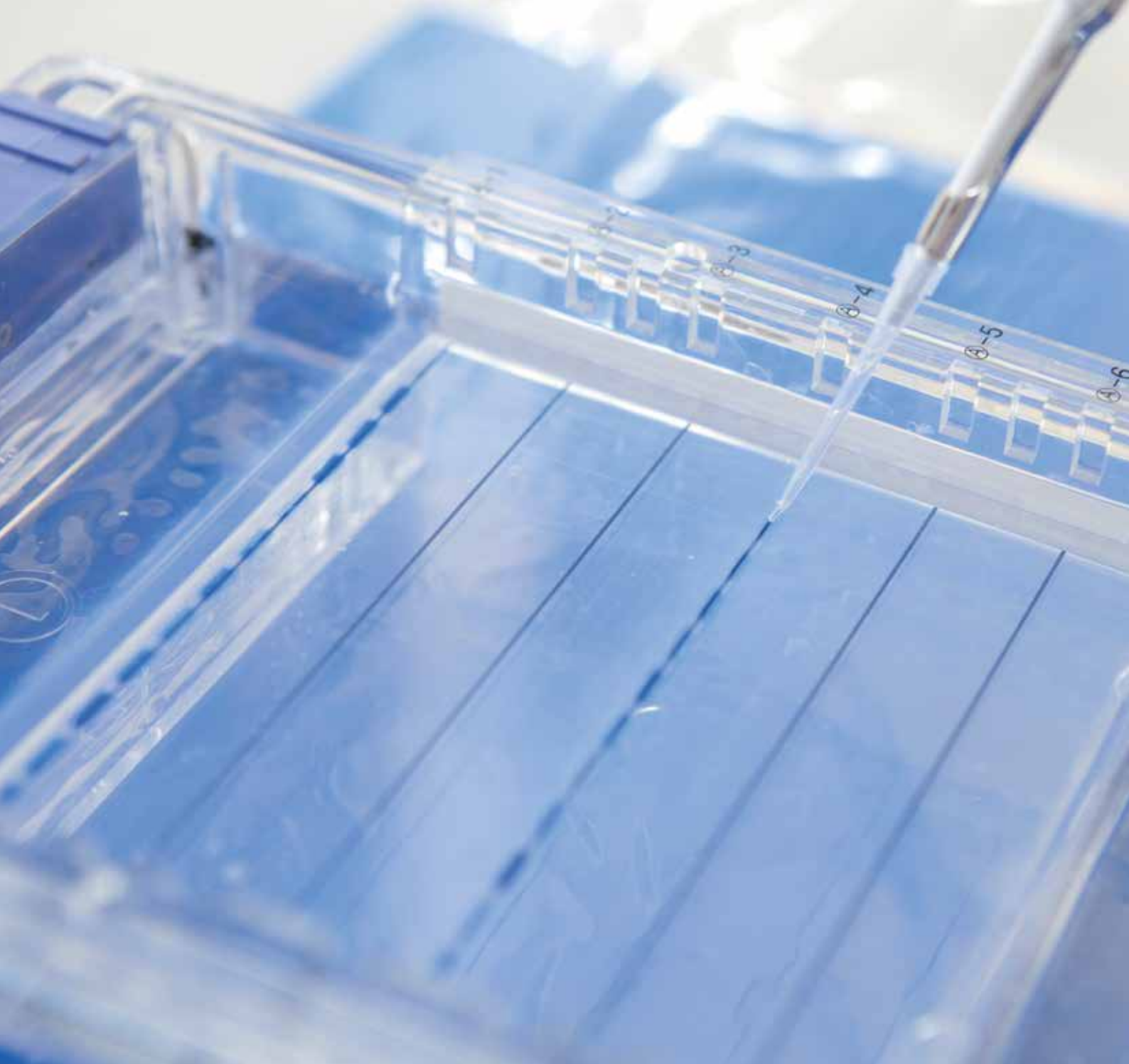
Protein A and G Magnetic Agarose Beads

This magnetic beads are designed for antibody purification of monoclonal and polyclonal antibodies from various species. Antibodies are bound to the magnetic resin in which recombinant Protein A or Protein G has been conjugated covalently. Washing, binding, and elution steps are very simple and require a magnetic device.

TECHNICAL SPECIFICATIONS

PRODUCT	Protein A Magnetic Agarose Bead (25%)	Protein G Magnetic Agarose Bead (25%)
CAT. No.	MAGPA25-X	MAGPG25-X
BEAD GEOMETRY & SIZE	Spherical, 30 - 100 µm	
CROSSLINKED	Yes	
AGAROSE %	4%	
MATRIX	Superparamagnetic agarose	
STATIC BINDING CAPACITY	>30 mg human IgG/ml gel	
CONCENTRATION	25% slurry	
ANTIMICROBIAL AGENT	20% ethanol	
STORAGE TEMPERATURE	2 - 8°C	

X: Volume of total slurry 500 µl or 4x500 µl. Beads volume would be 25% of the total slurry.
Each 500 µl of slurry will contain 125 µl of magnetic beads.
For laboratory use only. Not for use in diagnostic or therapeutic procedures.



ELECTROPHORESIS

AGAROSE POWDER

Agarose powder is an essential component of the general lab technique known as gel electrophoresis. Due to its ionic neutrality, agarose serves as a support gel through which charged hydrophilic micro and macromolecule particles, such as DNA and proteins, can migrate and be separated by their molecular weight.

- Standard Low Endosmosis agarose (Agarose LE and GA) for analytical separations greater than 1,000 bp
- Low Melting agarose (Agarose LM) for recovery of undamaged nucleic acids greater than 1,000 bp below their denaturation temperature
- High Resolution agarose (Agarose HR) for molecular screening resolution of DNA fragments and PCR products less than 1,000 bp

TECHNICAL SPECIFICATIONS

PRODUCT	Agarose LE	Agarose GA	Agarose LM	Agarose HR
CAT. No.	A-1270-X	A-1290-X	A-1300-X	A-1280-X
EEO (Electroendosmosis)	≤0.12	-	≤0.12	≤0.12
SULFATE	≤0.1%	≤0.1%	≤0.12%	≤0.11%
GEL STRENGTH %	1%	1%	1.5%	3%
	≥1,200 g/cm ²	≥1,000 g/cm ²	≥500 g/cm ²	≥1,500 g/cm ²
GELLING TEMPERATURE	36±1.5 °C	36±1.5 °C	24 - 28 °C	≤35.5 °C
MELTING TEMPERATURE	88±1.5 °C	88±1.5 °C	≤65.5 °C	≤80°C
DNase/RNase ACTIVITY	None detected			
DNA RESOLUTION ≥1,000 bp	Finely resolved			
GEL BACKGROUND	Very low			
DNA BINDING	Very low			

X: Product quantity 100 or 500 g. Agarose LM 25 or 100 g.



AGAROSE BEAD
TECHNOLOGY



Agarose

50 ml

www.abtbeads.es



ACCESSORIES

Empty Cartridges

ABT offers single-use Empty Cartridges 1 ml compatible with common chromatography instruments.

- Easy to pack
- Reduced cost
- Reproducible packing

The user can utilize any type of chromatography media (>20 µm) including the ABT range of products for packing the cartridges. We recommend packing using the bulk resins available from ABT.



TECHNICAL SPECIFICATIONS

PRODUCT	Empty Cartridges 1ml
CAT. No.	EB-Ctg1-5
CONTAINS	5 Empty Cartridges (5 Cartridge Bodies, and 10 End Plugs)
COLUMN MATERIAL	Polypropylene
FRIT MATERIAL	Polyethylene
FRIT PORE SIZE AVERAGE	12 µm
INNER COLUMN DIAMETER	6.2 mm
CONNECTIONS	Standard connection compatible to the common chromatography instruments (such as ÄKTA™)
CHEMICAL STABILITY	Stable in all commonly used reagents
CAPACITY	1 ml packed resin ⁽¹⁾

(1) The packed volume depends on the type of resin. As a guide, the packed volume should be 1.2 - 1.4 ml of settled beads. The recommended packed volume is 1.3 ml for ABT Rapid Run™ Fine Resins.

CARTRIDGE ACCESSORIES

PRODUCT	Stop Plug	Syringe Connector
CAT. No.	SEB-10	SCEB-1
CONTAINS	10/pack	1
REMARKS	For storage of the packed cartridge. Stop Plugs need to be ordered separately.	10 - 32 male/female luer connector. This adapter is used to connect syringes.

ACCESSORIES

ABT offers single-use chromatography tools that simplify the use of the resins and make the purification process a simple and rapid one.

Empty Mini Columns

Serves as a tool for purification using small quantities of resin (100 - 250 μ l). It is a single-use format for centrifuge purifications.



Empty Spin Columns

Allows working with a small quantities of resin around 50 to 100 μ l. Adequate for purifications with syringe (luer lock system) or by centrifugation.



Empty Columns

Adequate for working with gel volumes:

- Plastic Small Columns 100 - 200 μ l
- Plastic Columns 0.5 - 2 ml
- Plastic XL Columns 2 - 6 ml



TECHNICAL SPECIFICATIONS

PRODUCT	Plastic Mini Columns includes 100 columns	Plastic Spin Columns includes 25 columns	Plastic Small Columns ⁽¹⁾ includes 20 columns	Plastic Columns ⁽¹⁾ includes 50 columns	Plastic XL Columns ⁽¹⁾ includes 50 columns
CAT. No.	MC-100	SP-25	CS-20	C-50	CXL-50
FRIT PORE SIZE	20 µm	35 µm	20 µm	20 µm	20 µm
COLUMN/SPIN MATERIAL	Polypropylene				
FRIT MATERIAL	Polyethylene				
CHEMICAL STABILITY	Stable in all commonly used reagents				
CAPS	Top caps included	Top caps: Luer lock, screw cap & end cap included	Top & end caps included	Top & end caps included	Top & end caps included
TOTAL CAPACITY	1.5 ml	0.8 ml	1 ml	12 ml	35 ml

(1) Plastic Columns include one frit. ABT supplies additional frits for all sizes of Plastic Columns.

EMPTY COLUMN ACCESSORIES

PRODUCT	PLASTIC SMALL COLUMN FRITS	PLASTIC COLUMN FRITS	PLASTIC XL COLUMN FRITS
CAT. No.	FCS-20	FC-50	FCXL-50
CONTAINS	20 units	50 units	50 units

ACCESSORIES

Empty FPLC Columns

ABT offers four different sizes of single-use columns suitable for FPLC and ÄKTA design™ chromatography systems. Empty FPLC Columns have the functionality of a small column but provide other advantages: disposable, easy to pack, identical designs for different sizes, accurate for reproducible packing, robust construction allowing moderate back pressure, and easy to store.



TECHNICAL SPECIFICATIONS

PRODUCT	Empty FPLC 8 ml	Empty FPLC 30 ml	Empty FPLC 45 ml	Empty FPLC 80 ml
CAT. No.	FPLC8-3	FPLC30-2	FPLC45-2	FPLC80-1
CONTAINS	3 columns, 9 frits & 6 caps	2 columns, 6 frits & 4 caps	2 columns, 6 frits & 4 caps	1 column, 3 frits & 2 caps
CAPACITY (ml of packed resin) ⁽¹⁾	8	30	45	80
DIMENSIONS diameter x height (mm)	~12x70	~21x87	~21x137	~26x144
COLUMN MATERIAL	Polypropylene			
FRICT MATERIAL	Polyethylene			
FRICT PORE SIZE	10 µm			
MAX PRESSURE (psi/bar/MPa)	200/14/1.38			
CHEMICAL STABILITY	Stable in all commonly used reagents			
CONNECTIONS⁽²⁾	Standard connection usually supplied with the common FPLC instruments (such as ÄKTA™)			
ACCESSORIES	Male FPLC connector/CAT. No. MFC-1 Female FPLC connector/CAT. No. FFC-1			

(1) Packed volume depends on the type of resin – only use as a guide.

(2) For fitting the column to the FPLC equipment, if the user does not have standard connections, ABT supplies them CAT. No. MFC-1/FFC-1.

Empty Acrylic Columns

Empty Acrylic Columns are a good alternative to glass column users who need to purify different types of proteins and want to avoid cross-contamination problems that can happen if the column is reused. It is suitable for FPLC and ÄKTA design™ chromatography systems. The packed volume is approximately 8 ml of gel.

This disposable column is a low cost and flexible alternative with an identical design to scale up columns and permits precise and reproducible packing allowing moderate back pressure and avoiding cross-contamination. Therefore, due to its low cost, the user can afford to assign individual columns for the purification of each target molecule.

TECHNICAL SPECIFICATIONS

PRODUCT	Empty Acrylic Columns
CAT. No.	AC8-3
CONTAINS	3 Empty Acrylic Columns: 3 column bodies, 6 end plugs, and 6 stop plugs
COLUMN MATERIAL	Acrylic resin
FRIT MATERIAL	Two layers of mesh (coarse and fine) ⁽¹⁾
END PLUGS	Polypropylene (10 - 32 UNF female thread)
MAX. PRESSURE (bar/psi)	3 bar (42 psi)
CHEMICAL STABILITY	Stable in all commonly used reagents
CAPACITY (ml of packed resin)	~8 ml packed resin

(1) This column can be used for any type of chromatography media with a particle size larger than 20µm.



ACCESSORIES

Flexi-column™

ABT offers a type of FPLC column that fits into ÄKTA™ devices with no need for special adaptors. These columns have the functionality and flexibility of other small columns and are designed to work with three different gel volumes (4, 6, and 8 ml). Each Flexi84-2 product unit contains 2 columns with 12 frits (6 small and 6 large) that can be used in different combinations to maximize your desired packing volume. Once you know the optimal packing volume, you can choose the appropriate frit to accommodate your gel volume. The Flexi-column™ is a tool that provides a variety of choices to suit your needs.

Advantages:

- No need for adaptors to fit into the ÄKTA™ devices
- Robust polypropylene construction allowing for moderate back pressure
- Excellent chemical resistance to most of the commonly used cleaning reagents
- Easy to pack resin
- Three different packing volume options
- Suitable for scale up purifications
- Can be used multiple times once resin is packed
- Standard connectors are compatible with other common chromatography instruments



TECHNICAL SPECIFICATIONS

PRODUCT	Flexi-column™
CAT. No.	FLEC84-2
CONTAINS	Includes: 2 columns, 6 small frits, 6 large frits, and 4 caps
CAPACITY (ml of packed resin) ⁽¹⁾	~8 ml (packing the gel between two small frits) ~6 ml (packing the gel between one small frit at the bottom and one large frit at the top) ~4 ml (packing the gel between two large frits)
DIMENSIONS (diamter x height)	~12x59 (mm)
COLUMN MATERIAL	Polypropylene
FRIT MATERIAL	Polyethylene
FRIT PORE SIZE	10 µm
MAX LINEAR FLOW RATE	Depends on the type of chromatography resin
MAX PRESSURE (psi/bar)	100/7
CHEMICAL STABILITY	Stable in all commonly used reagents
CONNECTIONS	No need of special connections with the common chromatography instruments (such as ÄKTA™)

(1) Packed volume depends on the type of resin – only use as a guide.

After optimization, individual columns with the desired number of frit sizes are available.

PRODUCT	CAT. No.	CAPACITY (ml of packed resin)	CONTAINS
4 ml FLEXI-COLUMN™	FLEC4-2	~4	2 columns, 6 large frits, and 4 caps
6 ml FLEXI-COLUMN™	FLEC6-2	~6	2 columns, 4 large frits, 2 small frits, and 4 caps
8 ml FLEXI-COLUMN™	FLEC8-2	~8	2 columns, 6 small frits, and 4 caps



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