CelloPure^{+} SP

Ion Exchange Chromatography Media

Technical Datasheet

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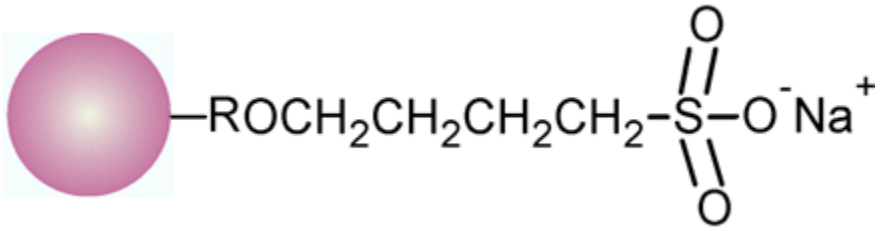
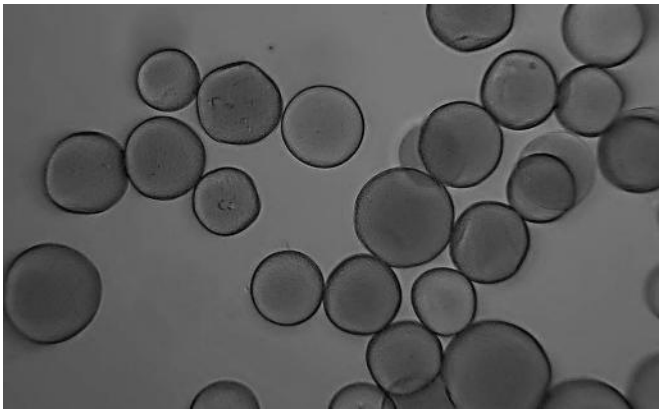
CelloPure^{+} SP

CelloPure^{+} SP is a strong cation exchanger chromatography media based on spherical particles manufactured from crosslinked cellulose. Each offers excellent flow properties, mechanical stability, and chemical resistance. In this ion exchange resin, the sulphopropyl (SP) functional group is attached to the cellulose beads, which remains charged and maintains consistently high capacity over the entire working range, pH 3 to 11. These ion exchangers are ideally suited for both laboratory and process scale chromatography of proteins, peptides, and other biomolecules.

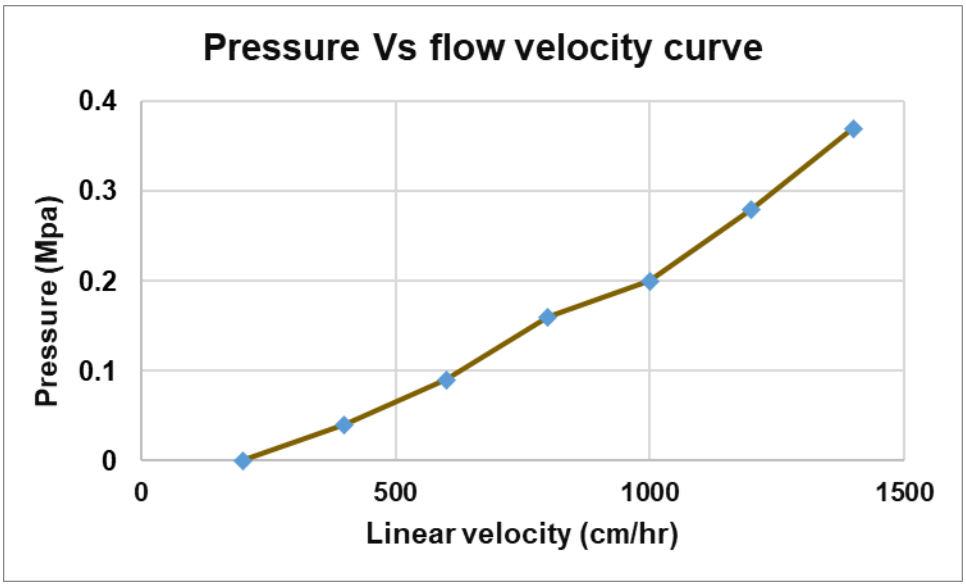




CelloPure+ SP base resin

Cellulose is a natural polysaccharide with a unique crystalline structure, unlike non-crystalline polysaccharides like agarose. This gives cellulose a special pore structure, which plays an important role in chromatography. CelloPure^{+} SP, made from crosslinked cellulose with dextran scaffold, benefits from this structure by offering good mechanical strength and efficient flow of large biomolecules. This helps improve

performance when purifying large proteins and other biological substances.



Pressure-flow and Characteristics of CelloPure+ SP

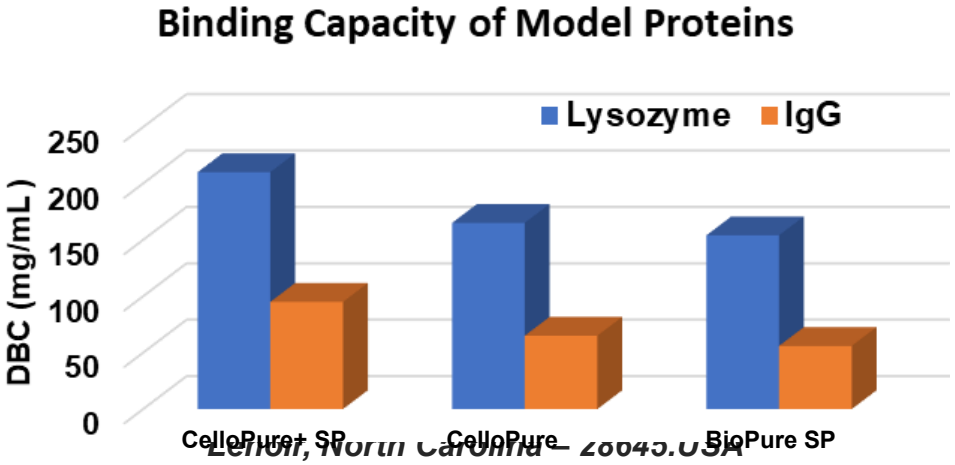
CelloPure+ SP is made from strong, cross-linked spherical cellulose with excellent flow characteristics and high binding capacity. It allows flow rates of 400 to 500 cm/h at 1 bar (14.5 psi, 0.1 MPa), enabling quick separation steps—especially useful in the early stages of purification when fast processing is important. During washing and equilibration, the flow rate can be increased up to 750 cm/h for even faster operation. The basic characteristics of CelloPure+ SP strong cation exchange chromatography media are shown in Table 1.

Properties		
Ion Exchange Type		Strong cationin
Functional Group		Sulphopropyl group
Base Matrix		Spherical, Cross-linked Cellulose Beads wirh dextran scaffold
Particle Size (µm)		40-130 µm
Exclusion Limit (Da)		360,000
pH working range		2-12
Operating Pressure		Up to 2 bar (0.2 Mpa)
Ion Exchange Capacity (meq / ml-gel)		0.11-0.20
Binding capacity (mg/mL)	Human IgG	93
	Lysozyme	195
Supplied		Suspension in 20% Ethanol

Table 1. Basic characteristics of CelloPure+ SP strong cation exchange chromatography media

Dynamic Binding Capacities of CelloPure+ SP

CelloPure+ SP have high efficiency in mass transfer and excellent Dynamic Binding Capacities, particularly for large biomolecules like Immunoglobulins (IgG) also for HSA (Human Albumin) and Lysozyme, Ribonuclease.



Because of these special qualities, CelloPure+ SP media can be used in downstream processes in the purification of biopharmaceuticals. With good reliability, protein separation has been scaled up using CelloPure+ SP from laboratory size and no discernible variations were seen in the purity of single peak at the time of protein separation.

Column: HiScale 16/20, 5 cm bed height, 10 ml bed volume

Flow rate: 1ml/min

Sample: 7mg/ml

Start Buffer: 0.25M Sodium Acetate (pH 5.6) for IgG

50mM Tris-HCL + 150 mM Nacl (pH 9.5) for Lysozyme

Elution Buffer: 0.25M Sodium Acetate + 0.5M Nacl (pH 5.6) for IgG

50mM Tris-HCL + 1M Nacl (pH 9.5) for Lysozyme

Chemical Stability and Cleaning-In-Place

CelloPure+ SP, a cross-linked spherical cellulose beads, offer strong chemical and physical stability, enabling effective clean-in-place (CIP) and sanitization protocols. This ensures high protein recovery over multiple cycles, prevents microbial growth, and supports hygienic, cost-effective purification which is the key considerations for preparative applications.

Cleaning-In-Place of CelloPure+ SP done with 0.5N NaOH. Most of the contaminated material should be removed from CIP with routine washing with 5 CV of 0.25N to 0.5N sodium hydroxide; however, extremely hydrophobic molecules may bind so firmly that they must be eluted using powerful detergents or organic solvents, such as 70% ethanol or 30% isopropyl alcohol.

After use of chromatographic media, it should be stored in 20% ethanol at room temperature.