CelloPure CM

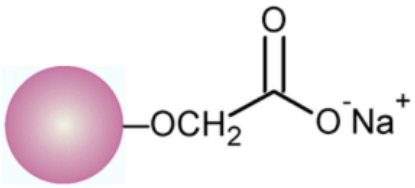
Ion Exchange Chromatography Media

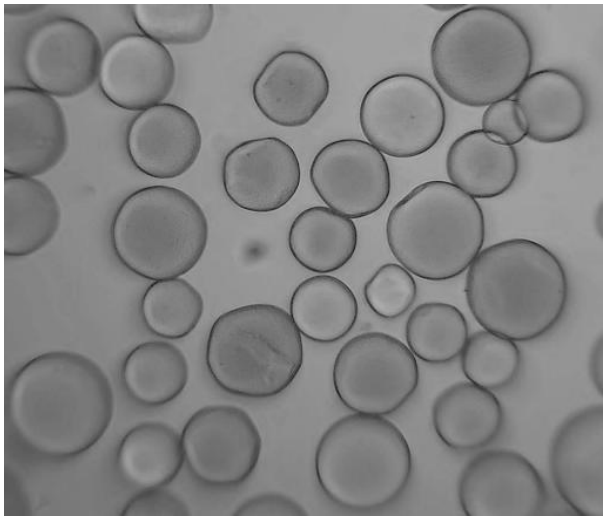
Technical Datasheet

2464 Norwood street SW,
Lenoir, North Carolina – 28645.USA

Introduction

CelloPure CM is a weak 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 Carboxymethyl (CM) functional group is attached to the cellulose beads, which remains charged and maintains consistently high capacity over the entire working range, pH 2 to 12. These ion exchangers are ideally suited for both laboratory and process scale





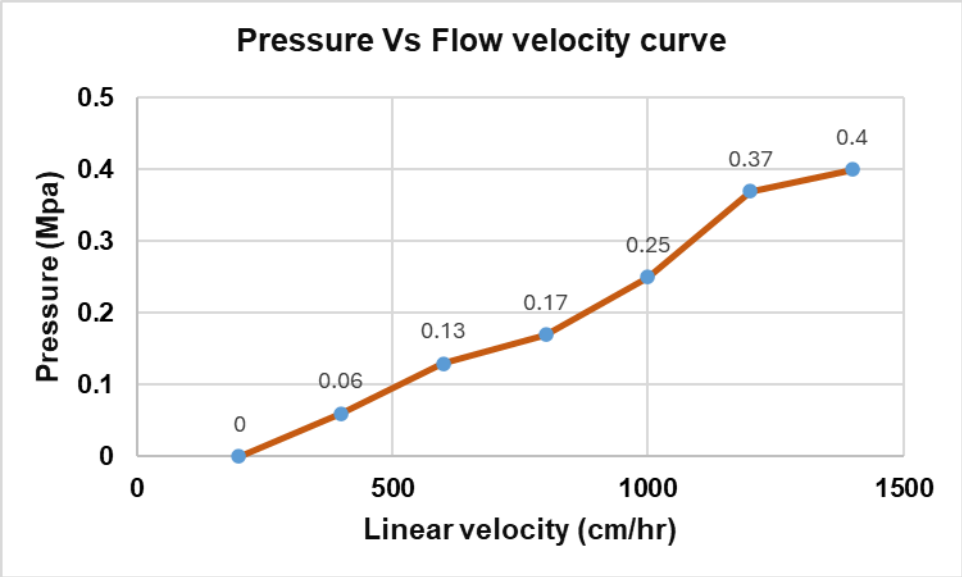
Optical micrograph of CelloPure CM

chromatography of proteins, peptides, and other biomolecules.

2464 Norwood street SW,
Lenoir, North Carolina – 28645.USA

CelloPure CM base resin

Cross-linked spherical Cellulose beads are prepared by unique process from crystalline natural polysaccharides, differing the physical characteristics from non-crystalline polysaccharides such as agarose. Thus, CelloPure resins are highly porous in nature (Fig.). Due to that porous nature of the highly cross-linked spherical cellulose bead, resins have unique mechanical strength. CelloPure CM, made from highly crosslinked cellulose beads, benefits from this structure by offering unique mechanical strength and efficient flow velocity for large biomolecules. This helps improve performance when purifying large proteins and other biological substances.



Pressure-flow and Characteristics of CelloPure CM

CelloPure CM is made from strong, cross-linked spherical cellulose with excellent flow characteristics and high binding capacity. It allows flow rates of 300 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 CM weak cation exchange chromatography media are shown in Table 1.

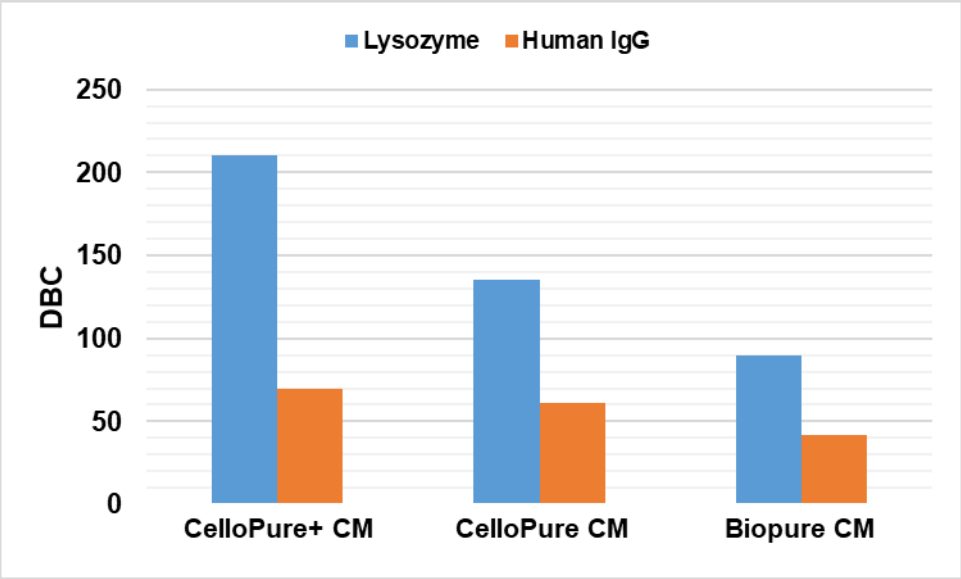
Characteristics		
Ion Exchange Type (Functional Group)		Carboxymethyl group
Base Matrix		Spherical, Cross-linked Cellulose Beads
Particle Size		40- 130 µm
pH Working Range		2 to 11
Operating Pressure		Up to 2 bar (0.2 Mpa)
Ion Exchange Capacity (meq / ml-gel)		0.09-0.14
	Human IgG	60
	Lysozyme	145
Supplied		Suspension in 20% Ethanol

Table 1. Basic characteristics of CelloPure CM weak cation exchange chromatography media

Dynamic Binding Capacities of CelloPure CM

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

Because of these special qualities, CelloPure CM media can be used in downstream processes in the purification of biopharmaceuticals. With good reliability,



protein separation has been scaled up using CelloPure CM from laboratory size and no discernible variations were seen in the purity of single peak at the time of protein separation.

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

Flow rate: 1ml/min

Sample: 1-2mg/ml

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

50mM Tris-HCL (pH 8.5) for Lysozyme

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

50mM Tris-HCL + 1M Nacl (pH 8.5) for Lysozyme

Chemical Stability and Cleaning-In-Place

CelloPure CM, 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 CM 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.