

# Controlled Pore Glass (CPG<sup>®</sup>) Media

## *Inorganic support for liquid chromatography and related applications*

Produced from borosilicate glass, Millipore's CPG medium is an inorganic support for use in liquid chromatography and associated processes. The CPG matrix is effective in the chromatographic separation of a variety of biological molecules, including proteins, enzymes, carbohydrates and nucleic acids. In addition, the chemical and biochemical industries use the solid phase for the separation of viruses, cellular components and other large particles as well as for enzyme immobilization. Available in a broad range of pore diameters, Millipore's CPG product can be customized for the size of the molecule to be purified as well as the ligand to be used.

### **Characteristics**

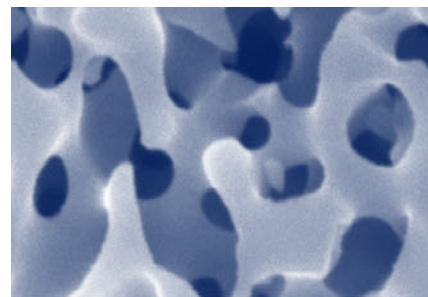
In comparison to many organic solid supports, CPG media are rigid, nonabsorptive matrices unaffected by changes in a solvent system or pressure. Both organic and aqueous solvents can be used without altering pore sizes. This chromatography support is impervious to degradation caused by solutions, such as guanidine, corrosive solvents and concentrated acids. In addition, due to a lack of compaction, chromatography columns packed with CPG material can be operated at high flow rates, which are linear with pressure.

In addition to packed columns, CPG matrices can be used in fluidized (expanded) bed and stirred tank modes. In fluidized bed operations, the media may be used with a feed-stock containing particulate matter to eliminate pre-filtration.

### **Pore Size**

CPG particles are manufactured from a borosilicate base material that is heated to separate the borates and the silicates. The borates are leached from the material to create a silica

glass with uniform and controlled pore sizes. This proprietary process creates a very narrow pore size distribution with at least 80% of the pores within  $\pm 10\%$  of the mean pore diameter. In chromatography applications, a narrow pore size distribution assures clean separations with high resolution and excellent reproducibility.



### **Particle Size**

CPG media are available in a range of particle sizes with a narrow particle size distribution. At least 80% of the particles, by weight, are within the specified mesh range. Resolution is minimally affected by particle size, however smaller particle size can present greater flow resistance and higher back pressure.

- ▶ *Rigid glass structure for a durable, incompressible and inert media*
- ▶ *Narrow pore size distribution for efficient purification*
- ▶ *Large internal surface area for high binding capacity*

## Recommended Handling

CPG matrices can be cleaned with hot concentrated nitric acid solution or regenerated by heating up to 600 °C for at least 4 hours in a porcelain or Pyrex® dish. Most contaminants of a biological origin can be removed by flushing the CPG particles with concentrated solutions of sodium chloride or 1% sodium dodecyl sulfate. A mixture of chaotropic substances such as potassium thiocyanate, lithium bromide or isopropyl alcohol may be used. Due to the inherent solubility of glass, Millipore recommends an operating pH range of 1 to 9. For specific considerations, please contact Millipore's technical service team.

## Manufacturing Standards and Quality Assurance

Millipore recognizes the importance of providing regulatory support and meeting industry quality standards. All CPG products are manufactured in a dedicated facility certified to internationally recognized standards, BS EN ISO9001. The facility is subject to routine independent surveillance audit.

### A CPG particle's internal surface area relationship to pore diameter

Pore Diameter (Å)	Surface Area (m <sup>2</sup> /g)
75	340
120	210
170	150
240	110
350	75
500	50
700	36
1000	25
1400	18
2000	13
3000	9

Millipore offers the broadest selection of pore diameters to meet the needs of common chromatography applications.

**Specifications for each pore size are available upon request.**

## Ordering Information

Description	Grade	Pack Size	Catalogue No.
CPG, 3000 Å	A	20 g	CPG3000A
CPG, 3000 Å	B	20 g	CPG3000B
CPG, 3000 Å	B	1 Kg	CPG3000BKG
CPG, 3000 Å	C	20 g	CPG3000C
CPG, 1000 Å	A	20 g	CPG1000A
CPG, 1000 Å	A	500 g	CPG1000A500G
CPG, 1000 Å	A	1 Kg	CPG1000AKG
CPG, 1000 Å	A	1 L	CPG1000AL
CPG, 1000 Å	B	20 g	CPG1000B
CPG, 1000 Å	B	500 g	CPG1000B500G
CPG, 1000 Å	B	1 Kg	CPG1000BKG
CPG, 1000 Å	B	1 L	CPG1000BL
CPG, 1000 Å	C	20 g	CPG1000C
CPG, 1000 Å	C	1 L	CPG1000CL
CPG, 700 Å	A	20 g	CPG700A
CPG, 700 Å	B	20 g	CPG700B
CPG, 700 Å	B	1 L	CPG700BL
CPG, 700 Å	C	20 g	CPG700C
CPG, 700 Å	C	1 L	CPG700CL
CPG, 500 Å	A	20 g	CPG500A
CPG, 500 Å	A	500 g	CPG500A500G
CPG, 500 Å	A	1 Kg	CPG500AKG
CPG, 500 Å	A	1 L	CPG500AL
CPG, 500 Å	B	20 g	CPG500B
CPG, 500 Å	B	500 g	CPG500B500G
CPG, 500 Å	B	1 Kg	CPG500BKG
CPG, 500 Å	B	1 L	CPG500BL

Available in standard pore sizes, CPG material is also offered in 75Å, 120 Å, 170Å, 240 Å, 350 Å, 1400 Å and 2000 Å. Contact Millipore for customized orders.

### Particle Size Range

Grade A: 80/120 mesh size with 125–177 µm grain sizes  
 Grade B: 120/200 mesh size with 74 – 125 µm grain sizes  
 Grade C: 200/400 mesh size with 37 – 74 µm grain sizes

## Contact Millipore for Technical Assistance and Ordering Information

In the U.S. and Canada, call toll-free 1-800-MILLIPORE (1-800-645-5476)

Tech Service Team: [www.millipore.com/techservice](http://www.millipore.com/techservice)

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Visit Millipore's OEM group: [www.millipore.com/oem](http://www.millipore.com/oem)

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Lit. No. DS1007EN00 Rev. B Printer in U.S.A. 06/06 06-242

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