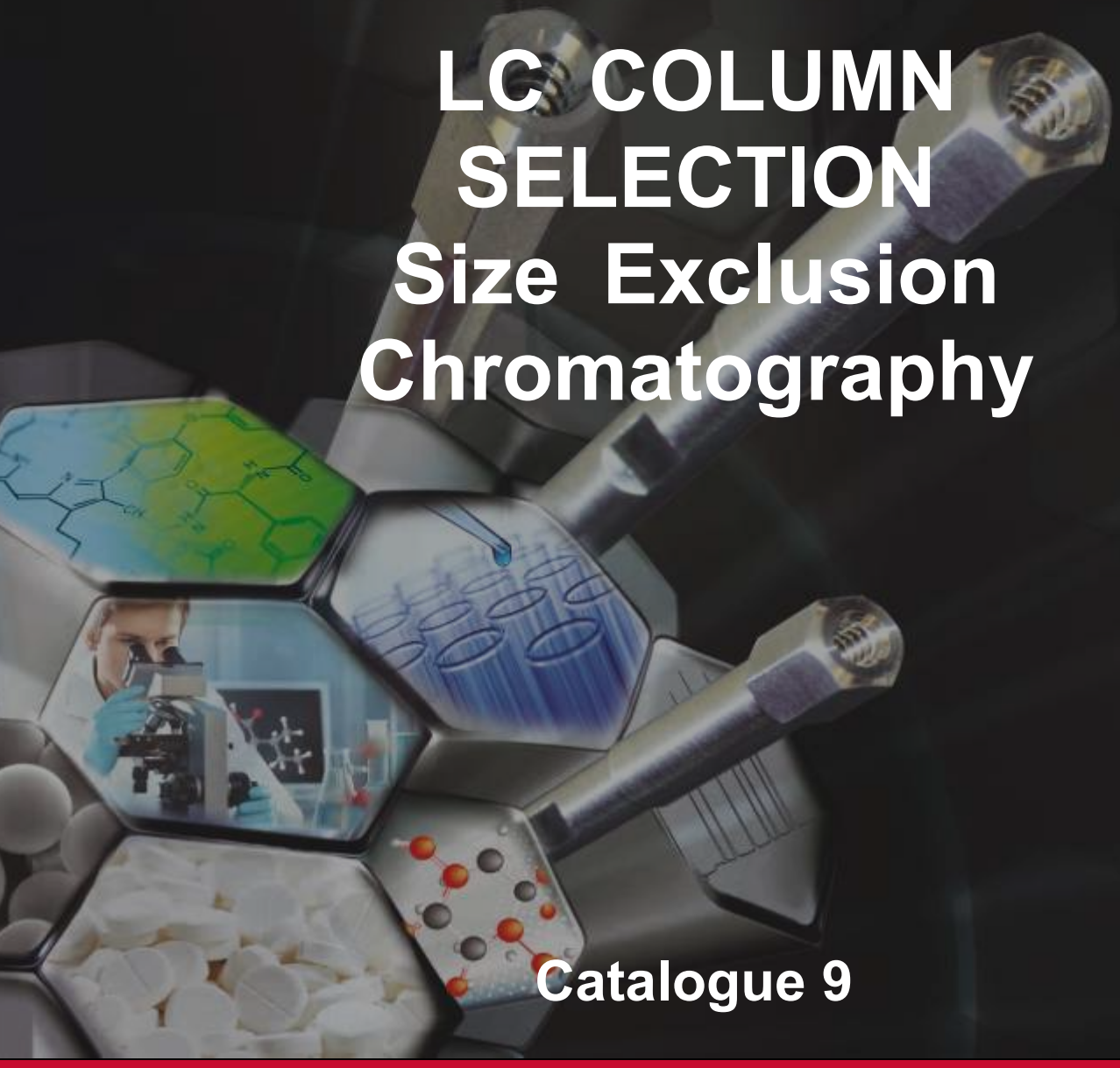
# HICHROM

Chromatography Columns and Supplies

# LC COLUMN SELECTION Size Exclusion Chromatography



Catalogue 9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# SIZE EXCLUSION CHROMATOGRAPHY (SEC) PHASES



## Introduction

SEC columns separate components according to their molecular size in solution, larger molecules eluting first. Separation is achieved by the differential exclusion or inclusion of components within the packing material particles. In addition to the separation of discrete components, the technique is used for characterising the molecular weight distribution of polymers.

## Base Material

Silica based SEC materials generally exhibit higher resolving power than polymer based materials. However, polymer based materials show greater stability for use with high pH eluents. Polymeric packing materials are generally available in larger particle sizes, which may be more practical for large-scale preparative separations.

## Modes of Operation

Gel permeation chromatography (GPC) refers to the SEC separation of organic soluble polymers using an organic solvent as the eluent. Gel filtration chromatography (GFC) refers to the SEC separation of water soluble polymers in aqueous eluents. SEC separations exhibit lower resolving power and capacity compared with adsorptive HPLC techniques.

## Applications

SEC analyses do not normally result in the denaturation of samples, making the technique a suitable choice for biological samples where activity must be retained. A wide range of biomolecules and organic polymers are separated by SEC. For samples of wide molecular weight distribution, it can be useful to use a mixed pore size phase or to couple columns of one or more pore sizes in series.

## Size Exclusion Chromatography Phases

| Phase / Series | Manufacturer | Base Material / Bonding | Mode | Pore Sizes (Å) | Typical Applications | Page |
|---|---|---|---|---|---|---|
| GPC PEPTIDE | Eprogen | Glycerol bonded silica | GFC | 50 | Small peptides | 99 |
| GPC100, 300, 500, 1000, 4000 | | | GFC | 100, 300, 500, 1000, 4000 | Proteins, carbohydrates, nucleic acids, water soluble polymers | 99 |
| GPC LINEAR | | | GFC | 100-1000 | Organic polymers, denatured proteins | 99 |
| CATSEC | | Silica with polymerised polyamine coating | GFC | 100, 300, 1000 | Cationic polymers | 99 |
| MCI GEL CQP | Mitsubishi Chemical Corp. | Polyhydroxymethacrylate | GFC | 120, 200, 600 | Proteins, peptides, enzymes and other biomolecules | 172 |
| PLgel | Agilent Technologies | Polystyrene-divinylbenzene | GPC | 50, 100, 500, 1000, 10,000, 100,000, MIXED | Oils, oligomers, high MW synthetic polymers, starches, polystyrenes, resins | 201 |
| PL aquagel-OH 30, 40, 50, 60, MIXED | | Polystyrene-divinylbenzene with polyhydroxyl functionality | GFC | - | Surfactants, polysaccharides, polyacrylamides, starches, gum | 201 |
| PolyHYDROXYETHYL A | PolyLC | Silica with hydroxyethylaspartamide coating | GFC | 60, 100, 200, 300, 500, 1000, 1500 | Peptides, proteins, carbohydrates, small molecules | 196, 199 |
| Asahipak GF | Showa Denko | Polyvinyl alcohol | GFC/ GPC | 400, 2000, 10000 | Hydrophilic and hydrophobic compounds | 214 |
| Shodex GPC | | Styrene-divinylbenzene | GPC | Various | Polymers, plastics | 214 |
| Shodex OHpak SB | | Polyhydroxymethacrylate | GFC | Various | Water soluble samples | 213 |
| Shodex PROTEIN KW | | Silica | GFC | 400, 1000, 1500 | Proteins | 213 |
| Acclaim SEC | Thermo Scientific | Hydrophilic polymethacrylate | GFC | 300, 1000 | Water soluble polymers | 7 |
| BioBasic SEC | | Silica | GFC | 60, 120, 300, 1000 | Peptides and proteins | 240, 242 |
| MAbPac SEC-1 | | Silica | GFC | 300 | Monoclonal antibodies and aggregates | 240, 242 |
| TSKgel SW | Tosoh Bioscience | Silica | GFC | 125, 250, 450 | Proteins, antibodies, enzymes, nucleic acids | 243 |
| TSKgel PW | | Polymethacrylate | GFC | <100, 125, <200, 200, 500, 1000, >1000 | Water soluble organic polymers, polysaccharides, DNA | 244, 245 |
| TSKgel H | | Polystyrene-divinylbenzene | GPC | - | Oligomers, polymers and polymer additives | 246 |
| TSKgel Alpha and SuperAW | | Hydrophilic polyvinyl | GFC/ GPC | - | Organic and water soluble polymers | 246 |
| ZORBAX GF Series | Agilent Technologies | Zirconia-clad silica | GFC | 150, 300 | Proteins, peptides | 283 |