# HPLC COLUMN SELECTION BY USP LISTING

For each USP column specification, you will find listed the most suitable Phenomenex column.

It is widely understood that all HPLC packings are not alike, and no single column can perform a myriad of desired separations. HPLC packings differ in hydrophobicity, surface coverage, surface area, pore size and particle shape.

*The USP does give chromatographers the flexibility to make adjustments to Monographs. As you can read below, column manufacturers or sources and materials stated in USP Monographs are only recommendations. Chromatographers can and should change and adapt the Monograph's specifications to yield the most satisfactory analytical results.*

| USP Column Classification | | Recommended Phenomenex Column | Particle Shape | Page |
|---|---|---|---|---|
| **L1** | Octadecyl silane chemically bonded to porous silica or ceramic microparticles, 1.5 to 10 µm in diameter, or a monolithic rod. | Luna C18(2) | Spherical | 158 |
| | | Luna C18(2)-HST | Spherical | 277 |
| | | Gemini C18 | Spherical | 126 |
| | | Synergi Hydro-RP | Spherical | 237 |
| | | Onyx C18 | Monolith | 185 |
| **L2** | Octadecyl silane chemically bonded to silica gel of a controlled surface porosity that has been bonded to a solid spherical core, 30 to 50 µm in diameter. | | | |
| **L3** | Porous silica particles, 5 to 10 µm in diameter. | Luna Silica(2) | Spherical | 158 |
| | | Onyx Si | Monolith | 185 |
| **L4** | Silica gel of controlled surface porosity bonded to a solid spherical core, 30 to 50 µm in diameter. | | | |
| **L5** | Alumina of controlled surface porosity bonded to a solid spherical core, 30 to 50 µm in diameter. | | | |
| **L6** | Strong cation-exchange packing: sulfonated fluorocarbon polymer coated on a solid spherical core, 30 to 50 µm in diameter. | | | |
| **L7** | Octyl silane chemically bonded to totally porous silica particles, 1.5 to 10 µm in diameter. | Luna C8(2) | Spherical | 158 |
| | | Onyx C8 | Monolith | 185 |
| **L8** | An essentially monomolecular layer of aminopropyl-silane chemically bonded to totally porous silica gel support, 3 to 10 µm in diameter. | Luna 10 µm $NH_2$ | Spherical | 158 |
| **L9** | Irregular or spherical, totally porous silica gel having a chemically bonded, strongly acidic cation-exchange coating, 3 to 10 µm in diameter. | Partisil 10 µm SCX | Irregular | 191, 266 |
| | | Luna 10 µm SCX | Spherical | 158 |
| **L10** | Nitrile groups chemically bonded to porous silica particles, 3 to 10 µm in diameter. | Luna CN 100 Å | Spherical | 158 |
| | | Capcell CN UG | Spherical | 102 |
| **L11** | Phenyl groups chemically bonded to porous silica particles, 1.5 to 10 µm in diameter. | Synergi Polar-RP | Spherical | 237 |
| | | Luna Phenyl-Hexyl | Spherical | 158 |
| | | Gemini C6-Phenyl | Spherical | 126 |
| | | Prodigy PH-3 | Spherical | 206 |
| **L12** | Strong anion-exchange packing made by chemically bonding a quaternary amine to a solid silica spherical core, 30 to 50 µm in diameter | | | |
| **L13** | Trimethylsilane chemically bonded to porous silica particles, 3 to 10 µm in diameter. | Develosil TMS-UG (C1) 130 Å | Spherical | 120 |
| | | TSKgel TMS-250 | Spherical | 250 |
| **L14** | Silica gel having a chemically bonded, strongly basic quaternary ammonium anion-exchange coating, 5 to 10 µm in diameter. | Partisil 10 µm SAX | Irregular | 191, 266 |
| | | PartiSphere 5 µm SAX | Spherical | 267 |
| **L15** | Hexyl silane chemically bonded to totally porous silica particles, 3 to 10 µm in diameter. | PhenoSphere C6 | Spherical | 200 |
| **L16** | Dimethyl silane chemically bonded to totally porous silica particles, 5 to 10 µm in diameter. | Maxsil RP2 60 Å | Irregular | 176 |
| **L17** | Strong cation-exchange resin consisting of sulfonated cross-linked styrene-divinylbenzene copolymer in the hydrogen form, 7 to 11 µm in diameter. | Rezex RHM Monosaccharide | Spherical | 210 |
| | | Rezex ROA | Spherical | 210 |
| **L18** | Amino and cyano groups chemically bonded to porous silica particles, 3 to 10 µm in diameter. | Partisil PAC | Irregular | 191, 266 |
| **L19** | Strong cation-exchange resin consisting of sulfonated cross-linked styrene-divinylbenzene copolymer in the calcium form, 9 µm in diameter. | Rezex RCM | Spherical | 210 |
| | | Rezex RCU | Spherical | 210 |
| **L20** | Dihydroxypropane groups chemically bonded to porous silica particles, 5 to 10 µm in diameter. | Shodex PROTEIN KW-800 series | Spherical | 224 |
| | | TSKgel QC-PAK 200 and 300 | Spherical | 254 |
| **L21** | A rigid, spherical styrene-divinylbenzene copolymer, 5 to 10 µm in diameter. | PolymerX RP-1 | Spherical | 203 |
| | | Phenogel 100 Å | Spherical | 192 |
| **L22** | A cation exchange resin made of porous polystyrene gel with sulfonic acid groups, about 10 µm in size. | Rezex ROA | Spherical | 210 |
| **L23** | An anion exchange resin made of porous polymethacrylate or polyacrylate gel with quaternary ammonium groups, about 10 µm in size. | Shodex IEC QA-825 | Spherical | 225 |
| | | TSKgel BioAssist Q | Spherical | 257 |
| | | TSKgel SuperQ-5PW | Spherical | 257 |
| **L24** | A semi-rigid hydrophilic gel consisting of vinyl polymers with numerous hydroxyl groups on the matrix surface, 32 to 63 µm in diameter. | | | |
| **L25** | Packing having the capacity to separate compounds with a MW range from 100 to 5000 daltons (as determined by polyethylene oxide), applied to neutral, anionic, and cationic water-soluble polymers. A polymethacrylate resin base, crosslinked with poly-hydroxylated ether (surface contained some residual carboxyl functional groups) was found suitable. | PolySep-GFC-P2000 | Spherical | 204 |
| | | Shodex OHpak SB-802.5HQ | Spherical | 224 |
| **L26** | Butyl silane chemically bonded to totally porous silica particles, 5 to 10 µm in diameter. | Jupiter 300 C4 | Spherical | 143 |
| **L27** | Porous silica particles, 30 to 50 µm in diameter. | Sepra | Irregular | 297 |
| **L28** | A multifunctional support, which consists of a high purity, 100 Å, spherical silica substrate that has been bonded with anionic (amine) functionality in addition to a conventional reversed phase C8 functionality. | | | |
| **L29** | Gamma alumina, reversed phase, low carbon percentage by weight, alumina-based polybutadiene spherical particles, 5 µm diameter with a pore diameter of 80 Å. | | | |
| **L30** | Ethyl silane chemically bonded to a totally porous silica particle, 3 to 10 µm in diameter. | Maxsil RP2 60 Å | Irregular | 176 |

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| **L31** | A strong anion-exchange resin-quaternary amine bonded on latex particles attached to a core of 8.5 µm macroporous particles having a pore size of 2000 Å and consisting of ethylvinylbenzene cross-linked with 55 % divinyl benzene. | | | |
| **L32** | A chiral ligand-exchange packing- L-proline copper complex covalently bonded to irregularly shaped silica particles, 5 to 10 µm in diameter. | Nucleosil Chiral-1 | Spherical | 184 |
| **L33** | Packing having the capacity to separate proteins of 4,000 to 400,000 daltons. It is spherical, silica-based and processed to provide pH stability. | BioSep-SEC-S2000<br>BioSep-SEC-S3000 | Spherical<br>Spherical | 95<br>95 |
| **L34** | Strong cation-exchange resin consisting of sulfonated cross-linked styrene-divinylbenzene copolymer in the lead form, about 9 µm in diameter. | Rezex RPM Monosaccharide | Spherical | 210 |
| **L35** | A zirconium-stabilized spherical silica packing with a hydrophilic (diol-type) molecular monolayer bonded phase having a pore size of 150 Å. | (BioSep-SEC-S2000 may be used) | Spherical | 95 |
| **L36** | 3,5-dinitrobenzoyl derivative of L-phenylglycine covalently bonded to 5 µm aminopropyl silica. | Nucleosil Chiral-3 | Spherical | 184 |
| **L37** | Polymethacrylate gel packing having the capacity to separate proteins by molecular size over a range of 2,000 to 40,000D. | PolySep-GFC-P3000<br>Shodex OHpak SB-803HQ | Spherical<br>Spherical | 204<br>224 |
| **L38** | Methacrylate-based size-exclusion packing for water-soluble samples. | PolySep-GFC-P1000<br>Shodex OHpak SB-802HQ | Spherical<br>Spherical | 204<br>224 |
| **L39** | Hydrophilic polyhydroxymethacrylate gel of totally porous spherical resin. | PolySep-GFC-P Series<br>Shodex OHpak SB-800HQ series<br>Shodex RSpak DM-614 | Spherical<br>Spherical<br>Spherical | 204<br>224<br>227 |
| **L40** | Cellulose tris-3,5-dimethylphenylcarbamate coated porous silica particles, 5 µm to 20 µm in diameter. | | | |
| **L41** | Immobilized α-acid glycoprotein on spherical silica particles, 5 µm in diameter. | | | |
| **L42** | Octylsilane and octadecylsilane groups chemically bonded to porous silica particles, 5 µm in diameter. | | | |
| **L43** | Pentafluorophenyl groups chemically bonded to silica particles, 5 to 10 µm in diameter. | Curosil-PFP | Spherical | 119 |
| **L44** | A multifunctional support, which consists of a high purity, 60 Å, spherical silica substrate that has been bonded with a cationic exchanger, sulfonic acid functionality in addition to a conventional reversed phase C8 functionality. | | | |
| **L45** | Beta cyclodextrin bonded to porous silica particles, 5 to 10 µm in diameter | Shiseido Chiral CD-Ph<br>Nucleodex Beta-PM | Spherical<br>Spherical | 107<br>184 |
| **L46** | Polystyrene/divinylbenzene substrate agglomerated with quaternary amine functionalized latex beads, 10 µm in diameter. | | | |
| **L47** | High capacity anion-exchange microporous substrate, fully functionalized with a trimethylamine group, 8 µm in diameter. | | | |
| **L48** | Sulfonated, cross-linked polystyrene with an outer layer of submicron, porous, anion-exchange microbeads, 15 µm in diameter. | | | |
| **L49** | A reversed-phase packing made by coating a thin layer of polybutadiene on to spherical porous zirconia particles, 3 to 10 µm in diameter. | | | |
| **L50** | Multifunction resin with reversed-phase retention and strong anion-exchange functionalities. The resin consists of ethylvinylbenzene, 55 % cross-linked with divinylbenzene copolymer, 3 to 15 µm in diameter, and a surface area of not less than 350 $m^2/g$, substrate is coated with quaternary ammonium functionalized latex particles consisting of styrene cross-linked with divinylbenzene. | | | |
| **L51** | Amylose tris-3,5-dimethylphenylcarbamate-coated, porous, spherical, silica particles, 5 to 10 µm in diameter. | | | |
| **L52** | A strong cation exchange resin made of porous silica with sulfopropyl groups, 5 to 10 µm in diameter. | TSKgel SP-2SW | Spherical | 257 |
| **L53** | Weak cation-exchange resin consisting of ethylvinylbenzene, 55 % cross-linked with divinylbenzene copolymer, 3 to 15 µm diameter. Substrate is surface grafted with carboxylic acid and/or phosphoric acid functionalized monomers. Capacity not less than 500 µm in diameter. | | | |
| **L54** | A size exclusion medium made of covalent bonding of dextran to highly cross-linked porous agarose beads, about 13 µm in diameter. | | | |
| **L55** | A strong cation exchange resin made of porous silica coated with polybutadiene-maleic acid copolymer, about 5 µm in diameter. | | | |
| **L56** | Isopropyl silane chemically bonded to totally porous silica particles, 3 to 10 µm in diameter. | Zorbax SB C3 | Spherical | 270 |
| **L57** | A chiral-recognition protein, ovomucoid, chemically bonded to silica particles, about 5 µm in diameter, with a pore size of 120 angstroms. | Ultron ES-OVM | Spherical | 272 |
| **L58** | Strong cation-exchange resin consisting of sulfonated cross-linked styrene-divinylbenzene copolymer in the sodium form, about 7 to 11 µm diameter. | Rezex RNM-Carbohydrate | Spherical | 210 |
| **L59** | To separate proteins by molecular weight over the range of 10 to 500 kDa. Spherical 10 µm, silica-based, and processed to provide hydrophilic characteristics and pH stability. | BioSep-SEC-S3000 | Spherical | 95 |
| **L60** | Spherical, porous silica gel, 3 to 10 µm in diameter, surface has been covalently modified with palmitamidopropyl groups and endcapped. | | | |
| **L61** | Hydroxide-selective, strong anion-exchange resin consisting of a highly cross-linked core of 13 µm microporous particles, pore size less than 10 Å, and consisting of ethylvinylbenzene cross-linked with 55 % divinylbenzene with a latex coating composed of 85 nm diameter microbeads bonded with alkanol quarternary ammonium ions (6 %). | | | |
| **L62** | C30 silane bonded phase on a fully porous spherical silica, 3 to 15 µm in diameter. | Develosil Combi-RP<br>Develosil RP-Aqueous<br>Develosil RP-Aqueous-AR | Spherical<br>Spherical<br>Spherical | 120<br>120<br>120 |