HPLC Column Selection by USP Listing

For each United States Pharmacopeia (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 or non-porous silica or ceramic microparticles, 1.5 to 10 µm in diameter, or a monolithic rod.	Gemini NX-C18	Spherical	184
		Kinetex XB-C18	Core-shell	196
		Kinetex C18	Core-shell	196
		Luna C18(2)	Spherical	209
		Gemini C18	Spherical	184
		Synergi Hydro-RP	Spherical	264
		Synergi Fusion-RP	Spherical	264
		Onyx C18	Monolith	227
		Jupiter C18	Spherical	307
		Clarity Oligo-RP	Spherical	315
		Clarity Oligo-MS	Core-shell	315
		Aeris WIDEPORE XB-C18	Core-shell	296
		Aeris PEPTIDE XB-C18	Core-shell	296
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, 1.5 to 10 µm in diameter, or a monolithic silica rod.	Kinetex HILIC	Core-shell	196
		Luna Silica(2)	Spherical	209
		Onyx Silica	Monolith	227
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, or a monolithic silica rod.	Kinetex C8	Core-shell	196
		Luna C8(2)	Spherical	209
		Onyx C8	Monolith	227
		Aeris WIDEPORE XB-C8	Core-shell	296
L8	An essentially monomolecular layer of aminopropyl-silane chemically bonded to totally porous silica gel support, 1.5 to 10 µm in diameter.	Luna NH_2	Spherical	209
L9	Irregular or spherical, totally porous silica gel having a chemically bonded, strongly acidic cation-exchange coating, 3 to 10 µm in diameter.	Luna 10 µm SCX	Spherical	209
L10	Nitrile groups chemically bonded to porous silica particles, 1.5 to 10 µm in diameter.	Luna CN 100 Å	Spherical	209
		Capcell CN UG	Spherical	178
L11	Phenyl groups chemically bonded to porous silica particles, 1.5 to 10 µm in diameter.	Synergi Polar-RP	Spherical	264
		Luna Phenyl-Hexyl	Spherical	209
		Gemini C6-Phenyl	Spherical	184
		Prodigy PH-3	Spherical	241
		Kinetex Phenyl-Hexyl	Core-shell	196
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	181
L14	Silica gel having a chemically bonded, strongly basic quaternary ammonium anion-exchange coating, 5 to 10 µm in diameter.	PhenoSphere SAX	Spherical	237
L15	Hexyl silane chemically bonded to totally porous silica particles, 3 to 10 µm in diameter.	PhenoSphere C6	Spherical	237
L16	Dimethyl silane chemically bonded to totally porous silica particles, 5 to 10 µm in diameter.	Maxsil RP2 60 Å	Irregular	224
L17	Strong cation-exchange resin consisting of sulfonated cross-linked styrene-divinylbenzene copolymer in the hydrogen form, 6 to 12 µm in diameter.	Rezex RHM Monosaccharide	Spherical	243
		Rezex ROA	Spherical	243
L18	Amino and cyano groups chemically bonded to porous silica particles, 3 to 10 µm in diameter.			
L19	Strong cation-exchange resin consisting of sulfonated cross-linked styrene-divinylbenzene copolymer in the calcium form, about 9 µm in diameter.	Rezex RCM	Spherical	243
		Rezex RCU	Spherical	243
L20	Dihydroxypropane groups chemically bonded to porous silica or hybrid particles, 1.5 to 10 µm in diameter.	Luna HILIC	Spherical	209
		BioSep-SEC-S	Spherical	305
		Yarra SEC	Spherical	310
L21	A rigid, spherical styrene-divinylbenzene copolymer, 3 to 30 µm in diameter.	PolymerX RP-1	Spherical	239
		Phenogel 100 Å	Spherical	231
L22	A cation-exchange resin made of porous polystyrene gel with sulfonic acid groups, about 10 µm in size.	Rezex ROA	Spherical	243
L23	An anion-exchange resin made of porous polymethacrylate or polyacrylate gel with quaternary ammonium groups, 7-12 µm in size.	Shodex IEC QA-825	Spherical	260
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	240
		Shodex OHpak SB-802.5HQ	Spherical	258
L26	Butyl silane chemically bonded to totally porous silica particles, 1.5 to 10 µm in diameter.	Jupiter 300 C4	Spherical	307
		Aeris WIDEPORE C4	Core-shell	296
L27	Porous silica particles, 30 to 50 µm in diameter.	Sepra Silica	Irregular	362
L28	A multifunctional support, which consists of a high purity, 100 Å, spherical silica substrate that has been bonded with anionic exchanger, 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	244
L31	A hydroxide-selective, 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.			

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L32	A chiral ligand-exchange resin packing- L-proline copper complex covalently bonded to irregularly shaped silica particles, 5 to 10 µm in diameter.			
L33	Packing having the capacity to separate dextrans of 4,000 to 500,000 daltons. It is spherical, silica-based and processed to provide pH stability.	Yarra SEC-2000 BioSep-SEC-S2000 Yarra SEC-3000 BioSep-SEC-S3000	Spherical Spherical Spherical Spherical	310 305 310 305
L34	Strong cation-exchange resin consisting of sulfonated cross-linked styrene-divinylbenzene copolymer in the lead form, about 7 to 9 µm in diameter.	Rezex RPM Monosaccharide	Spherical	243
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 or Yarra SEC-2000 may be used)	Spherical Spherical	305 310
L36	3,5-dinitrobenzoyl derivative of L-phenylglycine covalently bonded to 5 µm aminopropyl silica.			
L37	Polymethacrylate gel packing having the capacity to separate proteins by molecular size over a range of 2,000 to 40,000 daltons.	PolySep-GFC-P3000 Shodex OHpak SB-803HQ	Spherical Spherical	240 258
L38	Methacrylate-based size-exclusion packing for water-soluble samples.	PolySep-GFC-P1000 Shodex OHpak SB-800HQ	Spherical Spherical	240 258
L39	Hydrophilic polyhydroxymethacrylate gel of totally porous spherical resin.	PolySep-GFC-P series Shodex OHpak SB-802HQ series Shodex RSpak DM-614	Spherical Spherical Spherical	240 258 260
L40	Cellulose tris-3,5-dimethylphenylcarbamate coated porous silica particles, 5 µm to 20 µm in diameter.	Lux Cellulose-1	Spherical	332
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 by a propyl spacer, 1.5 to 10 µm in diameter.	Kinetex PFP Luna PFP(2)	Core-shell Spherical	196 209
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, R, S-hydroxypropyl ether derivative, bonded to porous silica particles, 5 to 10 µm in diameter	Shiseido Chiral CD-Ph	Spherical	327
L46	Polystyrene/divinylbenzene substrate agglomerated with quaternary amine functionalized latex beads, about 9 to 11 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, 5 to 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 m²/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.			
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 µEq/column.			
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	Propyl silane chemically bonded to totally porous silica particles, 3 to 10 µm in diameter.			
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	338
L58	Strong cation-exchange resin consisting of sulfonated cross-linked styrene-divinylbenzene copolymer in the sodium form, about 6 to 30 µm in diameter.	Rezex RNM-Carbohydrate	Spherical	243
L59	Size-exclusion separations of proteins (separation by molecular weight) over the range of 5 to 7000 kDa. Spherical (1.5 to 10 µm), silica or hybrid packing with a hydrophilic coating.	Yarra SEC-2000 BioSep-SEC-S2000 Yarra SEC-3000 BioSep-SEC-S3000	Spherical Spherical Spherical Spherical	310 305 310 305
L60	Spherical, porous silica gel, 10 µm or less in diameter, surface has been covalently modified with alkyl amide 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 quaternary ammonium ions (6 %).			
L62	C30 silane bonded phase on a fully porous spherical silica, 3 to 15 µm in diameter.	Develosil Combi-RP Develosil RP-Aqueous Develosil RP-Aqueous-AR	Spherical Spherical Spherical	181 181 181
L63	Glycopeptide teicoplanin linked through multiple covalent bonds to a 100 Å spherical silica.			
L64	Strongly basic anion-exchange resin consisting of 8 % crosslinked styrene divinylibenzene copolymer with a quaternary ammonium group in the chloride form, 45 to 180 µm in diameter.			
L65	Strongly acidic cation-exchange resin consisting of 8 % sulfonated crosslinked styrene divinylbenzene copolymer with a sulfonic acid group in the hydrogen form, 63 to 250 µm in diameter.			
L66	A crown ether coated on a 5 µm particle size silica gel substrate. The active site is (S)-18-crown-6-ether.			
L67	Porous vinyl alcohol copolymer with a C18 alkyl group attached to the hydroxyl group of the polymer, 2 to 10 µm in diameter.	Asahipak ODP-40 Asahipak ODP-50	Spherical Spherical	176 176
L68	Spherical, porous silica, 10 µm or less in diameter, the surface of which has been covalently modified with alkyl amide groups and not endcapped.			
L69	Ethylvinylbenzene/divinylbenzene substrate agglomerated with quaternary amine functionalized 130 nm latex beads, about 6.5 µm in diameter.			
L70	Cellulose tris (phenyl carbamate) coated on 5 µm silica.			
L71	A rigid, spherical polymethacrylate 4 to 6 µm in diameter.	Shodex RSpak DE-413 Shodex RSpak DE-613	Spherical Spherical	260 260
L72	(R)-phenylglycine and 3,5-dinitroaniline urea linkage covalently bonded to silica.	Chirex 3012	Spherical	328
L73	A rigid, spherical polydivinylbenzene particle 5 to 10 µm in diameter.			
L74	A strong anion-exchange resin consisting of a highly cross-linked core of 7 µm macroporous particles having a 100 Å average pore size and consisting of ethylvinylbenzene cross-linked with 55 % divinylbenzene and an anion-exchange layer grafted to the surface, which is functionalized with alkyl quaternary ammonium ions.			
L75	A chiral-recognition protein, bovine serum albumin (BSA), chemically bonded to silica particles, about 7 µm in diameter, with a pore size of 300 Å.			
L76	Silica-based weak cation-exchange material, 5 µm in diameter. Substrate is surface polymerized polybutadiene-maleic acid to provide carboxylic acid functionalities. Capacity not less than 29 µEq/column.			