

## USP "L" Column Listing

L1

Octadecyl silane (ODS or C<sub>18</sub>) chemically bonded to porous silica or ceramic particles - 1.5 to 10 µm in diameter. See new subclassification table on previous page.

Brand	Particle Size	Type	Page
AccQ•Tag Ultra	1.7	Spherical	240
ACQUITY UPLC CSH C <sub>18</sub>	1.7	Spherical	91
ACQUITY UPLC BEH C <sub>18</sub>	1.7	Spherical	93
ACQUITY UPLC Shield RP18	1.7	Spherical	93
nanoACQUITY UPLC BEH130	1.7	Spherical	262
nanoACQUITY UPLC BEH300	1.7	Spherical	262
ACQUITY UPLC OST C <sub>18</sub>	1.7	Spherical	246
ACQUITY UPLC HSS C <sub>18</sub>	1.8	Spherical	95
ACQUITY UPLC HSS C <sub>18</sub> SB	1.8	Spherical	95
ACQUITY UPLC HSS T3	1.8	Spherical	95
Atlantis T3	3, 5, 10	Spherical	133
Atlantis dC <sub>18</sub>	3, 5, 10	Spherical	133
BioSuite PA-B	3	Spherical	212
BioSuite PA-A	3	Spherical	212
µBondapak C <sub>18</sub>	10	Irregular	158
µBondapak C <sub>18</sub> Radial-Pak	10	Irregular	194
HSS C <sub>18</sub>	3.5, 5,	Spherical	138
HSS C <sub>18</sub> SB	3.5, 5,	Spherical	138
HSS T3	3.5, 5	Spherical	138
Delta-Pak C <sub>18</sub>	5	Spherical	159
Nova-Pak C <sub>18</sub>	4, 6	Spherical	156
Prep Nova-Pak HR C <sub>18</sub>	6	Spherical	191
Resolve C <sub>18</sub>	5, 10	Spherical	161
SunFire C <sub>18</sub>	3.5, 5, 10	Spherical	131
Symmetry C <sub>18</sub>	3.5, 5, 7	Spherical	146
SymmetryPrep C <sub>18</sub>	3.5, 5, 7	Spherical	190
Symmetry300 C <sub>18</sub>	3.5, 5	Spherical	150
SymmetryShield RP18	3.5, 5	Spherical	148
Waters Spherisorb ODS1	3, 5, 10	Spherical	153
Waters Spherisorb ODS2	3, 5, 10	Spherical	153
Waters Spherisorb ODSB	3, 5, 10	Spherical	153
XBridge C <sub>18</sub>	2.5, 3.5, 5, 10	Spherical	127
XBridge Shield RP18	2.5, 3.5, 5, 10	Spherical	127
XBridge BEH130	3.5, 5, 10	Spherical	208
XBridge BEH300	3.5, 5, 10	Spherical	208
XBridge OST C <sub>18</sub>	2.5	Spherical	246
XSelect CSH C <sub>18</sub>	3.5, 5	Spherical	121
XTerra MS C <sub>18</sub>	2.5, 3.5, 5, 10	Spherical	142
XTerra RP18	3.5, 5, 10	Spherical	142

L2

Octadecyl silane (ODS or C<sub>18</sub>) chemically bonded to silica gel of a controlled surface porosity bonded to a solid spherical core - 30 to 50 µm in diameter.

Brand	Particle Size	Type	Page
Bondapak Prep C <sub>18</sub>	50	Irregular	191

L3

Porous silica particles - 1.5 to 10 µm in diameter.

Brand	Particle Size	Type	Page
ACQUITY UPLC BEH HILIC	1.7	Spherical	93
Atlantis HILIC Silica	3, 5	Spherical	137
BioSuite UHR SEC	5, 8	Spherical	233
BioSuite SEC	7.5	Spherical	233
Nova-Pak	6, 4	Spherical	156
µPorasil	10	Irregular	160
Resolve	5, 10	Spherical	161
SunFire Silica	5, 10	Spherical	186
Waters Spherisorb	5, 10	Spherical	153
XBridge HILIC	2.5, 3.5, 5	Spherical	127

L4

Silica gel of a controlled surface porosity bonded to a solid spherical core - 30 to 50 µm in diameter.

Brand	Particle Size	Type	Page
Porasil Prep Silica	50	Irregular	192

L5

Alumina of controlled surface porosity bonded to a solid spherical core - 30 to 50 µm in diameter.

L6

Strong cation exchanger packing - sulfonated fluorocarbon polymer coated on a solid spherical core - 30 to 50 µm in diameter.

L7

Octyl silane (C<sub>8</sub>) chemically bonded to porous silica particles - 1.5 to 10 µm in diameter.

Brand	Particle Size	Type	Page
ACQUITY UPLC BEH C <sub>8</sub>	1.7	Spherical	93
Nova-Pak C <sub>8</sub>	4, 6	Spherical	156
Resolve C <sub>8</sub>	5, 10	Spherical	161
Waters Spherisorb C <sub>8</sub>	3, 5, 10	Spherical	153
SunFire C <sub>8</sub>	3.5, 5, 10	Spherical	186
Symmetry C <sub>8</sub>	3.5, 5, 7	Spherical	146
SymmetryShield RP8	3.5, 5	Spherical	148
SymmetryPrep C <sub>8</sub>	7	Spherical	190
XBridge C <sub>8</sub>	2.5, 3.5, 5, 10	Spherical	127
XTerra MS C <sub>8</sub>	2.5, 3.5, 5, 10	Spherical	142
XTerra RP8	3.5, 5, 10	Spherical	142

L8

An essentially monomolecular layer of aminopropylsilane (NH<sub>2</sub>) chemically bonded to totally porous silica gel support - 3 to 10 µm in diameter.

Brand	Particle Size	Type	Page
µBondapak NH <sub>2</sub>	10	Irregular	158
High Performance Carbohydrate Analysis	3, 5		170
Waters Spherisorb NH <sub>2</sub>	3, 5, 10	Spherical	153

L9

3 to 10 µm irregular, totally porous silica gel having a chemically bonded strongly acidic cation exchanger coating (SCX).

Brand	Particle Size	Type	Page
Spherisorb SCX	5, 10	Spherical	153

(-) - Denotes particle sizes available outside of L class.

**L10** Nitrile groups (CN) chemically bonded to porous silica particles - 3 to 10 µm in diameter.

Brand	Particle Size	Type	Page
µBondapak CN	10	Irregular	158
Nova-Pak CN HP	4	Spherical	156
Resolve CN	5, 10	Spherical	161
Waters Spherisorb CN	3, 5, 10	Spherical	153

**L11** Phenyl groups chemically bonded to porous silica particles - 1.5 to 10 µm in diameter.

Brand	Particle Size	Type	Page
ACQUITY UPLC CSH Phenyl-Hexyl	1.7	Spherical	99
ACQUITY UPLC BEH Phenyl	1.7	Spherical	99
µBondapak Phenyl	10	Irregular	158
Nova-Pak Phenyl	4	Spherical	156
XBridge Phenyl	2.5, 3.5, 5	Spherical	127
Waters Spherisorb Phenyl	3, 5, 10	Spherical	153
XSelect CSH Phenyl-Hexyl	3.5, 5	Spherical	121
XTerra Phenyl	3.5, 5	Spherical	141

**L12** A strong anion exchanger packing made by chemically bonding a quaternary amine to a solid silica spherical core - 30 to 50 µm in diameter.

Brand	Particle Size	Type	Page
AccelPlus QMA	50	Irregular	230

**L13** Trimethylsilane (C1) chemically bonded to porous silica particles - 3 to 10 µm in diameter.

Brand	Particle Size	Type	Page
Waters Spherisorb C <sub>1</sub>	3, 5, 10	Spherical	154

**L14** Silica gel, 5 to 10 µm in diameter having a chemically bonded, strongly basic quaternary ammonium anion exchanger (SAX) coating.

Brand	Particle Size	Type	Page
Waters Spherisorb SAX	5, 10	Spherical	154

**L15** Hexylsilane (C<sub>6</sub>) chemically bonded to a totally porous silica particle - 3 to 10 µm in diameter.

Brand	Particle Size	Type	Page
Waters Spherisorb C <sub>6</sub>	3, 5, 10	Spherical	154

**L16** Dimethylsilane (C<sub>2</sub>) chemically bonded to a totally porous silica particles - 5 to 10 µm in diameter.**L17** Strong cation exchange resin consisting of sulfonated, cross-linked styrene divinylbenzene copolymer in the hydrogen form, 7 to 11 µm in diameter.

Brand	Particle Size	Type	Page
Fast Fruit Juice	N/A	N/A	173
IC-Pak Ion Exclusion	7	Spherical	174
IC-Pak Cation	10	Spherical	175
Shodex RSpak DC-613	(6)	Spherical	162

**L18** Amino (NH<sub>2</sub>) and Cyano (CN) 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.

Brand	Particle Size	Type	Page
Sugar-Pak 1	9	Spherical	170
Shodex SC-1011	(7)	Spherical	170

**L20** Dihydroxypropane groups chemically bonded to porous silica particles - 3 to 10 µm in diameter.

Brand	Particle Size	Type	Page
BioSuite 125, 250, 450	4, 5, 8, 10, 13, 17	Spherical	233
Insulin HMWP		N/A	213
Protein-Pak 60	10	Irregular	234
Protein-Pak 125	10	Irregular	234
Protein-Pak 300SW	10	Irregular	234
Protein-Pak KW -802.5	7	Irregular	234
Protein-Pak KW -803	7	Irregular	234
Protein-Pak KW -804	7	Irregular	234

**L21** A rigid, spherical styrene-divinylbenzene copolymer - 5 to 10 µm in diameter.

Brand	Particle Size	Type	Page
Shodex RSpak 613	6	Spherical	162
Styragel HR 0.5, 1, 2, 3, and 4		Spherical	272
Styragel HR 4E		Spherical	272
Styragel 5E		Spherical	272

**L22** A cation-exchange resin made of porous polystyrene with sulfonic acid groups - about 10 µm in size.

Brand	Particle Size	Type	Page
IC-Pak Ion Exclusion	7	Spherical	175
Shodex RSpak DC 613	6	Spherical	162
Shodex SP-0810	8	Spherical	170

**L23** An anion exchange resin made of porous polymethacrylate or polyacrylate gel with quaternary ammonium groups - about 10 µm in size.

Brand	Particle Size	Type	Page
BioSuite Q AXC	10, 13	Spherical	226
BioSuite DEAE	2.5, 10, 13	Spherical	226
BioSuite Q-PEEK	10	Spherical	226
IC-Pak Anion	10	Spherical	174
Protein-Pak Q 8HR	8	Spherical	227

**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 molecular weight range from 100 to 5,000 (as determined by polyethylene oxide), applied to neutral, anionic and cationic water-soluble polymers. A polymethacrylate resin base, cross-linked with polyhydroxylated ether, (surface contained some residual carboxyl groups) was found suitable.

Brand	Particle Size	Type	Page
Ultrahydrogel DP, + 120	10	Spherical	279

( ) - Denotes particle sizes available outside of L class.

**L26** Butyl silane (C<sub>4</sub>) chemically bonded to porous silica particles - 3 to 10 µm in diameter.

Brand	Particle Size	Type	Page
ACQUITY UPLC BEH300 C <sub>4</sub>	1.7	Spherical	222
Delta-Pak C <sub>4</sub>	5	Spherical [100+300Å]	160
Symmetry300 C <sub>4</sub>	3.5	Spherical	150
XBridge BEH300 C <sub>4</sub>	3.5	Spherical	222

**L27** Porous silica particles, 30 to 50 µm in diameter.

Brand	Particle Size	Type	Page
Porasil	37-55	Irregular	160

**L28** A multifunctional support which consists of a high purity, 100Å, spherical silica substrate that has been bonded with anionic (amine) functionality in addition to a conventional reversed-phase C<sub>8</sub> functionality.

**L29** Gamma alumina, reversed-phase, low carbon percentage by weight alumina-based polybutadiene spherical particles - 5 µm in diameter with a pore diameter of 80Å.

**L30** Ethyl silane chemically bonded to a totally porous silica particle - 3 to 10 µm in diameter.

**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 2,000Å 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.

**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.

Brand	Particle Size	Type	Page
BEH200 SEC	1.7	Spherical	217

**L34** Strong cation-exchange resin consisting of sulfonated cross-linked styrene-divinylbenzene copolymer in the lead form, about 9 µm in diameter.

Brand	Particle Size	Type	Page
Shodex SP0810	N/A	Spherical	170

**L35** Zirconium-stabilized spherical silica packing with a hydrophilic (diol-type) molecular mono layer bonded phase having a pore size of 150Å.

**L36** 3,5-dinitrobenzoyl derivative of L-phenylglycine covalently bonded to a 5 µm aminopropyl silica.

**L37** Packing having the capacity to separate proteins by molecular size over a range of 2,000 to 40,000 daltons. It is a polymethacrylate gel.

Brand	Particle Size	Type	Page
Ultrasphere 250	N/A	Spherical	170

**L38** A methacrylate-based size-exclusion packing for water soluble samples.

Brand	Particle Size	Type	Page
Ultrasphere	N/A	Spherical	170

**L39** A hydrophilic-polyhydroxymethacrylate gel of totally porous spherical resin.

Brand	Particle Size	Type	Page
Ultrasphere	N/A	Spherical	170

**L40** Cellulose tris-3,5-dimethylphenylcarbamate coated porous silica particles, 5 to 20 µm in diameter.

**L41** Immobilized α<sub>1</sub>-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.

Brand	Particle Size	Type	Page
ACQUITY UPLC CSH Fluoro-Phenyl	1.7	Spherical	99
XSelect CSH Fluoro-Phenyl	3.5, 5	Spherical	99

**L44** A multifunctional support, which consists of a high purity, 60Å, spherical silica substrate that has been bonded with a cationic exchanger, sulfonic acid functionality in addition to a conventional reversed-phase C<sub>8</sub> functionality.

**L45** Beta cyclodextrin bonded to porous silica particles, 5 to 10 µm in diameter.

**L46** Polystyrene/divinylbenzene substrate agglomerated with quaternary amine functionalized latex beads, 10 µm in diameter.

**L55** A strong cation-exchange resin made of porous silica coated with polybutadiene-maleic acid copolymer, about 5 µm in diameter.

Brand	Particle Size	Type	Page
IC-Pak C M/D			175

**L59** Packing having the capacity to separate proteins by molecular weight over the range of 10 to 500 kDa. It is spherical (10 µm), silica-based, and processed to provide hydrophilic characteristics and pH stability.

Brand	Particle Size	Type	Page
Biosuite 125, 250, 450 Series	4-17	Spherical	233

Source: United States Pharmacopeia

( ) - Denotes particle sizes available outside of L class.

