Allowable Adjustments to European Pharmacopoeia (Ph. Eur.) Methods

LC – Isocratic Elution

Component	European Pharmacopoeia (Ph. Eur.)
Stationary Phase	No change of the identity of the substituent permitted. • No replacement of C18 by C8 • Other physico chemical characteristics must be similar • Change from totally porous (TPP) to superficially porous particles (SPP) is allowed
Particle Size and Column Length	Particle size (dp) and/or column length (L) can be adjusted, if the L/dp ratio remains constant or in the range between -25 % and +50 %. When switching to Core-Shell particles, other combinations of L and dp can be used, if the number of theoretical plates (N) is between -25 % and +50 % of the original column.
Column Internal Diameter	Can be adjusted as wanted. • If a smaller internal diameter (ID) or particle size is used, extra column band broadening may need to be minimized by factors such as instrument connection, detector cell volume, sampling rate and injection volume.
Flow Rate	± 50 % (after the adjustment due to changes in column ID and particle size). • When particle size or column internal diameter is changed (e.g. from 4.6 mm ID and 5 µm at 1.0 mL/min to 3.0 mm ID and 3 µm), the flow rate is adjusted using the following equation: $F_2 = F_1 \times \frac{dc_2^2 \times dp_1}{dc_1^2 \times dp_2} = 1.0 \times \frac{3.0^2 \times 5}{4.6^2 \times 3} = 0.71\ mL/min$ F: flow, dc: internal diameter, dp: particle size 1: column in the monograph, 2: new column
Column Temperature	± 10 °C (where the operating temperature is specified).
Composition of the Mobile Phase	± 30 % (relative) for minor components, but no component is altered by more than ± 10 % absolute. A minor component comprises less or equal than (100/n) %, where n being the total number of components.
Mobile Phase pH	± 0.2
Concentration of Salts in the Buffer	± 10 %
Detector Wavelength	No adjustment permitted.
Injection Volume	When column dimensions are changed, it may be adjusted with the equation: $V_{Inj2} = V_{Inj1} \times \frac{L_2 \times dc_2^2}{L_1 \times dc_1^2}$ V_{inj}: injection volume, L: length, dc: internal diameter 1: column in the monograph, 2: new column Even in the absence of any column dimension change, it may be varied if the system suitability criteria remain within their established acceptability limits.

Source: European Pharmacopeia 11.0, Chapter 2.2.46. Chromatographic separation techniques, p. 86 - 96 and USP-NF 2022, General Chapter <621> Chromatography.

Allowable Adjustments to European Pharmacopoeia (Ph. Eur.) Methods

LC – Gradient Elution

Component	European Pharmacopoeia (Ph. Eur.)
Stationary Phase	No change of the identity of the substituent permitted.
Particle Size and Column Length	Particle size (dp) and/or column length (L) can be adjusted, if the L/dp ratio remains constant or in the range between -25 % and +50 %. When switching to Core-Shell particles, other combinations of L and dp can be used, if the ratio $(t_R/W_h)^2$ is between -25 % and +50 % of the original column, for each peak used to test the system suitability.
Column Internal Diameter	Can be adjusted as wanted.
Flow Rate	Is adjusted if column internal diameter and particle size is changed. • When changing the column from 4.6 mm ID with 5 µm particle size at 2.0 mL/min to 2.1 mm ID with 3 µm particle size, the flow rate is adjusted using the following equation: $F_2 = F_1 \times \frac{dc_2^2 \times dp_1}{dc_1^2 \times dp_2} = 2.0 \times \frac{2.1^2 \times 5}{4.6^2 \times 3} = 0.7\ mL/min$ F: flow, dc: internal diameter, dp: particle size 1: column in the monograph, 2: new column
Gradient Volume	When changing the column dimension, each gradient segment volume is adjusted by means of the gradient time using the following equation: $t_{G2} = t_{G1} \times \frac{F_1}{F_2} \times \frac{L_2 \times dc_2^2}{L_1 \times dc_1^2} = 3\ min \times \frac{2.0}{0.7} \times \frac{100 \times 2.1^2}{150 \times 4.6^2} = 3\ min \times 0.4 = 1.2\ min$ t_G = gradient time F: flow, dc: internal diameter, dp: particle size 1: column in the monograph, 2: new column
Column Temperature	± 5 °C (where the operating temperature is specified).
Composition of the Mobile Phase + Gradient	Adjustments of the composition of the mobile phase and the gradient are acceptable, if: • The system suitability criteria are fulfilled • The principal peak(s) elute(s) within ± 15 % of the indicated retention time(s). This requirement does not apply when the column dimensions are changed • The first peaks are sufficiently retained and the last peaks are eluted
Mobile Phase pH	± 0.2
Concentration of Salts in the Buffer	± 10 %
Dwell Volume	Gradient time points (t in min) can be adapted to compensate differences in dwell volume between the system used for method development (D_0 in mL) and that actually used (D in mL). The adapted time points (t_c in min) at the current flow rate (F in mL/min) can be calculated using the following equation: $t_c = t - \frac{(D - D_0)}{F} = 1\ min - \frac{(1.0\ mL - 0.5\ mL)}{1\ mL/min} = 0.5\ min$ D: dwell volume F: flow D_0: dwell volume used during development
Detector Wavelength	No adjustment permitted.
Injection Volume	When the column dimensions are changed, the following equation may be used for adjusting the injection volume: $V_{Inj2} = V_{Inj1} \times \frac{L_2 \times dc_2^2}{L_1 \times dc_1^2}$ V_{inj}: injection volume, L: length, dc: internal diameter 1: column in the monograph, 2: new column • Even in the absence of any column dimension change, injection volume may be varied if the system suitability criteria remain within their established acceptability limits • When the injection volume is decreased, special attention is given to (limit of) detection and repeatability of the peak response(s) • An increase is permitted, if the linearity and resolution of the peak(s) to be determined remain satisfactory

Source: European Pharmacopeia 11.0, Chapter 2.2.46. Chromatographic separation techniques, p. 86 - 96 and USP-NF 2022, General Chapter <621> Chromatography.

HPLC Column Selection by Ph. Eur. Listing

The European Pharmacopoeia (*Ph. Eur.*), of the Council of Europe is a pharmacopoeia, listing a wide range of active substances and excipients used to prepare pharmaceutical products in Europe. It includes general and specific monographs that give quality standards for all the main medicines used in Europe. All medicines sold in the 38 Member States of the European Pharmacopoeia must comply with these quality standards so that consumers have a guarantee for products obtained from pharmacies and other legal suppliers.

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.

For each European Pharmacopoeia (*Ph. Eur.*) description of the HPLC stationary phase, you will find listed the most suitable Phenomenex HPLC column. Other possible columns can also be used for these analyses. Please contact Phenomenex for your specific LC column needs.

Description According Pharm. Eur. 11 - 4.1.1. Reagents 2023	Number	Recommended Phenomenex Column
Silica gel ∏-acceptor / ∏-Donor for chiral separations (1-(3,5-dinitrobenzamide)-1,2,3,4-tetrahydrophenanthrene).	1160100	
Silica gel AGP for chiral chromatography. (alpha 1-acid glycoprotein).	1148700	
Silica gel BC for chiral chromatography. (Beta-Cyclodextrin).	1161300	Sumichiral OA-7000
Silica gel for chiral chromatography, urea type derivative: (R)-phenylglycin and 3, 5-dinitroaniline; 5 µm.	1181000	Chirex 3012
Silica gel for chiral separation, amylose derivative of substituted amylose coated on very finely divided silica gel.	1171700	Lux Amylose-1
Silica gel for chiral separation, cellulose derivative of substituted cellulose coated on very finely divided silica gel.	1110300	Lux Cellulose-1, -2, -3 and -4
Silica gel for chromatography, human albumin coated.	1138500	
Silica gel for chiral separation, protein derivative of	1196300	
Silica gel for chiral separation, vancomycin-bonded	1205300	
Silica gel for CR+ for chiral chromatography (crown-ether)	1192400	Sumichiral OA-8000
Silica gel for chiral separation, L-Penicillamine coated silica gel.	1200050	Sumichiral OA-5000L
Silica gel for chromatography.	1076900	Kinetex HILIC Luna Silica(2)
Silica gel for chromatography, alkyl bonded for use with highly aqueous mobile phases.	1160200	Luna Omega Polar C18 Luna Omega PS C18 Synergi Hydro-RP Synergi Fusion-RP Gemini C18 Gemini NX-C18 Kinetex C18 Kinetex EVO C18 Kinetex XB-C18 Kinetex Polar C18 Kinetex PS C18
Silica gel for chromatography, alkyl bonded for use with highly aqueous mobile phases, endcapped. To minimize any interaction with basic compounds it is carefully endcapped to cover most of the remaining silanol groups.	1176900	Luna Omega Polar C18 Luna Omega PS C18 Synergi Hydro-RP Synergi Fusion-RP Gemini C18 Gemini NX-C18 Kinetex C18 Kinetex EVO C18 Kinetex XB-C18 Kinetex Polar C18 Kinetex PS C18
Silica gel for chromatography, alkysilyl, solid core, endcapped. Spherical silica particles containing a non-porous solid silica core surrounded by a thinner outer porous silica coating with alkysilyl groups. To minimize any interaction with basic compounds it is carefully endcapped to cover most of the remaining silanol groups.	1194300	Kinetex C18 Kinetex XB-C18 Kinetex EVO C18 Kinetex C8 Kinetex Polar C18
Silica gel for chromatography, amidoalkylsilyl	1205400	
Silica gel for chromatography, amidohexadecylsilyl.	1170400	
Silica gel for chromatography, amidohexadecylsilyl, endcapped	1201100	
Silica gel for chromatography, aminopropylmethylsilyl.	1102400	SphereClone NH_2 (Amino) PhenoSphere NH_2 (Amino)
Silica gel for chromatography, aminopropylsilyl.	1077000	SphereClone NH_2 (Amino) PhenoSphere NH_2 (Amino)
Silica gel for chromatography, aminopropylsilyl R1 particle size of ~55 µm.	1077001	Strata NH_2
Silica gel for chromatography, amylose derivative of chemically modified at the surface by the bonding of an amylose derivative	1109800	Lux i-Amylose-1 Lux i-Amylose-3
Silica gel for chromatography, butylsilyl. Spheroidal 300 Å; pore volume: 0.6 cm^3/g; area: 80 m^2/g.	1076200	Biozen Intact C4 Aeris WIDEPORE C4
Silica gel for chromatography, butylsilyl, endcapped.	1170500	Biozen WidePore C4 Aeris WIDEPORE C4 Jupiter 300 C4

HPLC Column Selection by Ph. Eur. Listing

Description According Pharm. Eur. 11 - 4.1.1. Reagents 2023	Number	Recommended Phenomenex Column
Silica gel for chromatography, carbamoylsilyl. Chemically modified at the surface by the bonding of carbamoylsilyl groups.	1210400	
Silica gel for chromatography compatible with 100 % aqueous mobile phase, octadecylsilyl, endcapped.	1188400	Luna Omega Polar C18 Synergi Hydro-RP Synergi Fusion-RP Kinetex EVO C18 Kinetex Polar C18
Silica gel for chromatography compatible with 100 % aqueous mobile phase, octadecylsilyl.	1203900	Luna Omega PS C18 Luna Omega Polar C18 Synergi Hydro-RP Synergi Fusion-RP Kinetex EVO C18 Kinetex Polar C18 Kinetex PS C18
Silica gel for chromatography compatible with highly aqueous mobile phase, octadecylsilyl diol, endcapped.	1207500	
Silica gel for chromatography, crown-ether.	1178000	Sumichiral OA-8000
Silica gel for chromatography, cyanopropylsilyl, endcapped, base-deactivated pre-treated by various techniques before the bonding of cyanopropyl-silyl groups. To minimize any interaction with basic compounds, it's carefully endcapped to cover most of the remaining silanol groups.	1194200	Luna CN (Cyano)
Silica gel for chromatography, cyanosilyl.	1109900	Luna CN (Cyano) HyperClone CN (Cyano) PhenoSphere CN (Cyano)
Silica gel for chromatography, cyanopropylsilyl, endcapped.	1195000	Luna CN (Cyano)
Silica gel for chromatography, cyanolsilyl, endcapped, base-deactivated.	1211200	Luna CN (Cyano)
Silica gel for chromatography, di-isobutyloctadecylsilyl.	1140000	Kinetex XB-C18
Silica gel for chromatography, diisopropylcyanopropylsilyl.	1168100	
Silica gel for chromatography, 4-dimethylaminobenzylcarbamidesilyl. Chemically modified at the surface by bonding of 4-dimethylaminobenzylcarbamidesilyl groups.	1204000	
Silica gel for chromatography, dimethyloctadecylsilyl. irregular; area: 300 m^2/g.	1115100	Bondclone C18
Silica gel for chromatography, diol dihydroxypropyl, 100 Å; 10 µm.	1110000	Spherex OH (Diol)
Silica gel for chromatography, dodecylsilyl, endcapped.	1179700	Synergi Max-RP
Silica gel for chromatography, hexadecylamidylsilyl with hexadecylcarboxamidopropyldimethylsilyl groups; 5 µm.	1162500	
Silica gel for chromatography, hexadecylamidylsilyl, endcapped with hexadecylcarboxamidopropyldimethylsilyl groups; 5 µm.	1172400	
Silica gel for chromatography, hexylsilyl.	1077100	SphereClone C6 PhenoSphere C6
Silica gel for chromatography, hexylsilyl, endcapped.	1174400	SphereClone C6 PhenoSphere C6
Silica gel for chromatography, (hybrid material), octadecylsilyl, ethylene-bridged, charged surface, endcapped. Synthetic, spherical ethylene-bridged hybrid particles with a charged surface, containing both inorganic (silica) and organic (organosiloxanes) components, chemically modified at the surface by bonding of octadecylsilyl groups. To minimize any interaction with basic compounds it is carefully endcapped to cover most of the remaining silanol groups.	1202800	Kinetex EVO C18
Silica gel for chromatography, octadecylsilyl, ethylene-bridged (hybrid material), endcapped. Synthetic, spherical ethylene-bridged hybrid particles, containing both organic (organosiloxanes) and inorganic (silica) components.	1190500	Kinetex EVO C18 Gemini NX-C18
Silica gel for chromatography, octylsilyl (hybrid material), ethylene-bridged (hybrid material) endcapped. Synthetic, spherical ethylene-bridged hybrid particles with a charged surface, containing both inorganic (silica) and organic (organosiloxanes) components, chemically modified at the surface by bonding of octadecyl-silyl groups. To minimize any interaction with basic compounds it is carefully endcapped to cover most of the remaining silanol groups.	1208800	
Silica gel for chromatography, (hybrid material) octylsilyl, ethylen-bridged, endcapped. Synthetic, spherical ethylene-bridged hybrid particles with a charged surface, containing both inorganic (silica) and organic (organosiloxanes) components, chemically modified at the surface by bonding of octadecyl-silyl groups. To minimize any interaction with basic compounds it is carefully endcapped to cover most of the remaining silanol groups.	1204100	
Silica gel for chromatography, (hybrid material), phenylsilyl, ethylene-bridged, endcapped. Synthetic, spherical ethylene-bridged hybrid particles containing both organic (organosiloxanes) and inorganic (silica) components, chemically modified at the surface by bonding of phenylsilyl groups. To minimize the interaction with basic compounds it's carefully endcapped to cover most of the remaining silanol groups.	1200700	Gemini C6-Phenyl
Silica gel for chromatography, (hybrid material), polar-embedded, octadecylsilyl, ethylene-bridged, endcapped. Synthetic, spherical ethylene-bridged hybrid particles, containing both inorganic (silica) and organic (organosiloxanes) components, chemically modified at the surface by bonding of polar embedded octadecylsilyl groups. To minimize any interaction with basic compounds it is carefully endcapped to cover most of the remaining silanol groups.	1200800	
Silica gel for chromatography, hydrophilic surface has been modified to provide hydrophilic characteristics.	1077200	Luna HILIC Kinetex HILIC
Silica gel for chromatography, hydroxypropylsilyl chemically modified at the surface by bonding of hydroxypropylsilyl groups.	1210500	
Silica gel for chromatography, nitrile cyanopropylsilyl.	1077300	Luna CN (Cyano) HyperClone CN (Cyano) PhenoSphere CN (Cyano)
Silica gel for chromatography, nitrile R1 chemically bonded nitrile groups.	1077400	Luna CN (Cyano) HyperClone CN (Cyano) PhenoSphere CN (Cyano)

HPLC Column Selection by Ph. Eur. Listing

Description According Pharm. Eur. 11 - 4.1.1. Reagents 2023	Number	Recommended Phenomenex Column
Silica gel for chromatography, nitrile R2 ultrapure silica (<20 ppm metal) with cyanopropylsilyl groups.	1119500	Luna CN (Cyano) HyperClone CN (Cyano) PhenoSphere CN (Cyano)
Silica gel for chromatography, nitrile, endcapped with cyanopropylsilyl groups.	1174500	Luna CN (Cyano)
Silica gel for chromatography, 4-nitrophenylcarbamidesilyl. A very finely divided silica gel, chemically modified at the surface by bonding with 4-nitrophenylcarbamide groups.	1185200	
Silica gel for chromatography, octadecanoylaminopropylsilyl aminopropylsilyl groups which are acylated with octadecanoyl groups.	1115200	
Silica gel for chromatography, octadecylsilyl, endcapped. A very finely divided silica gel, chemically modified at the surface by bonding of octadecylphenylsilyl groups. To minimize any interaction with basic compounds it is carefully endcapped to cover most of the remaining silanol groups.	1199300	
Silica gel for chromatography, octadecylsilyl.	1077500	Luna C18(2) Luna Omega C18 Luna Omega PS C18 Luna Omega Polar C18 Synergi Hydro-RP Synergi Fusion-RP Gemini C18 Gemini NX-C18 HyperClone C18 Kinetex C18 Kinetex EVO C18 Kinetex XB-C18 Kinetex Polar C18 Kinetex PS C18 SphereClone C18 ODS(1) or (2)
Silica gel for chromatography, octadecylsilyl R1. A very finely divided ultrapure silica gel, chemically modified at the surface by the bonding of octadecylsilyl groups.	1110100	Luna C18(2) Luna Omega C18 Luna Omega PS C18 Luna Omega Polar C18 Synergi Hydro-RP Synergi Fusion-RP Gemini C18 Gemini NX-C18 Jupiter C18 Kinetex C18 Kinetex EVO C18 Kinetex XB-C18 Kinetex Polar C18 Kinetex PS C18
Silica gel for chromatography, octadecylsilyl R2 ultrapure silica; 150 Å pore size; 20 % C-load; optimized for the analysis of PAHs.	1115300	EnviroSep-PP Prodigy ODS-2
Silica gel for chromatography, octadecylsilyl, base-deactivated pretreated by various techniques before the bonding of octadecylsilyl groups to minimize the interaction with basic components.	1077600	Luna C18(2) Luna Omega C18 Luna Omega Polar C18 Luna Omega PS C18 Gemini C18 Gemini NX-C18 Kinetex C18 Kinetex XB-C18 Kinetex EVO C18 Kinetex Polar C18 Kinetex PS C18
Silica gel for chromatography, octadecylsilyl, cross-linked, endcapped. Chemically modified at the surface by cross-linking and bonding of octadecylsilyl groups. To minimize any interaction with basic compounds it's carefully endcapped to cover most of the remaining silanol groups.	1204200	Kinetex PAH
Silica gel for chromatography, octadecylsilyl, endcapped. To minimize any interaction with basic compounds it's carefully endcapped to cover most of the remaining silanol groups.	1115400	Luna C18(2) Luna Omega C18 Luna Omega PS C18 Luna Omega Polar C18 Gemini C18 Gemini NX-C18 Kinetex C18 Kinetex EVO C18 Kinetex XB-C18 Kinetex Polar C18 Kinetex PS C18
Silica gel for chromatography, octadecylsilyl, endcapped R1 ultrapure silica, chemically modified by the bonding of octadecylsilyl groups. To minimize any interaction with basic compounds it's carefully endcapped to cover most of the remaining silanol groups.	1115401	Luna C18(2) Gemini C18 Gemini NX C18 Kinetex C18 Kinetex XB C18 Kinetex EVO C18 Kinetex Polar C18 Kinetex PS C18 Luna Omega C18 Luna Omega Polar C18 Luna Omega PS C18

HPLC Column Selection by Ph. Eur. Listing

Description According Pharm. Eur. 11 - 4.1.1. Reagents 2023	Number	Recommended Phenomenex Column
Silica gel for chromatography, octadecylsilyl, endcapped, base-deactivated; pretreated by various techniques before the bonding of octadecylsilyl groups. To further minimize any interaction with basic compounds it's carefully endcapped to cover most of the remaining silanol groups.	1108600	Luna C18(2) Gemini C18 Gemini NX C18 Kinetex C18 Kinetex XB C18 Kinetex EVO C18 Kinetex Polar C18 Kinetex PS C18 Luna Omega C18 Luna Omega Polar C18 Luna Omega PS C18
Silica gel for chromatography, octadecylsilyl, extra-dense bonded, endcapped.	1188500	Luna C18(2) Luna Omega C18 Luna Omega PS C18 Luna Omega Polar C18 Gemini C18 Gemini NX-C18 Kinetex C18 Kinetex EVO C18 Kinetex XB-C18 Kinetex Polar C18 Kinetex PS C18
Silica gel for chromatography, octadecylsilyl, for separation of polycyclic aromatic hydrocarbons. A very finely divided ultrapure silica gel, chemically modified at the surface by the bonding of octadecylsilyl groups, optimized for the analysis of polycyclic aromatic hydrocarbons.	1202900	Kinetex PAH
Silica gel for chromatography, octadecylsilyl, monolithic.	1154500	Onyx C18
Silica gel for chromatography, octadecylsilyl, endcapped, base-deactivated R1; pretreated before the bonding by careful washing and hydrolyzing most of the superficial siloxane bridges. To further minimize any interaction with basic compounds it's carefully endcapped to cover most of the remaining silanol groups.	1162600	Luna C18(2) Luna Omega C18 Luna Omega PS C18 Luna Omega Polar C18 Gemini C18 Gemini NX-C18 Kinetex C18 Kinetex EVO C18 Kinetex XB-C18 Kinetex Polar C18 Kinetex PS C18
Silica gel for chromatography, octadecylsilyl, polar embeded, encapsulated silica gel chemically modified at the surface by the bonding of polar embedded octadecylsilyl groups.To minimise any interaction with basic compounds it's carefully encapsulated to cover most of the remaining silanol groups.	1206600	
Silica gel for chromatography, octadecylsilyl, polar endcapped.	1205500	Synergi Hydro RP Luna Omega Polar C18
Silica gel for chromatography, octadecylsilyl, solid core.	1205600	Kinetex C18 Kinetex XB-C18 Kinetex EVO C18 Kinetex Polar C18 Kinetex PS C18 Aeris PEPTIDE XB-C18 Aeris WIDEPORE XB-C18
Silica gel for chromatography, octadecylsilyl, solid core, endcapped with spherical silica particles containing a non-porous solid silica core surrounded by a thin outer porous silica coating with octadecylsilyl groups. To minimize any interaction with basic compounds it is carefully endcapped to cover most of the remaining silanol groups.	1193900	Biozen Peptide XB C18 Kinetex C18 Kinetex XB-C18 Kinetex EVO C18 Kinetex Polar C18 Kinetex PS C18 Aeris PEPTIDE XB-C18 Aeris WIDEPORE XB-C18
Silica gel for chromatography, octadecylsilyl, with polar embedded groups, endcapped; a very finely divided silica gel, chemically modified at the surface by the bonding of polar-embedded octadecylsilyl groups. To minimize any interaction with basic compounds, it is carefully endcapped to cover most of the remaining silanol groups.	1177900	Synergi Fusion-RP
Silica gel for chromatography, octadecylsilyl, with extended pH range, endcapped (resistant to bases up to pH 11)	1196700	Gemini C18 Gemini NX-C18 Kinetex EVO C18
Silica gel for chromatography, octadecylsilyl, with polar incorporated groups, endcapped; the particles are based on silica, chemically modified with a reagent providing a surface with chains having polar incorporated groups and terminating octadecyl groups.	1165100	Synergi Fusion-RP
Silica gel for chromatography, octylsilyl.	1077700	Kinetex C8 Luna C8(2) Prodigy C8 HyperClone C8 (MOS) SphereClone C8
Silica gel for chromatography, octylsilyl R1. Bonding of octylsilyl and methyl groups (double bonded phase).	1077701	Kinetex C8 Luna C8(2) Prodigy C8 HyperClone C8 (MOS) SphereClone C8
Silica gel for chromatography, octylsilyl R2 ultrapure silica (<20 ppm metal); pore size 100 Å; C-load: 19 %.	1077702	

HPLC Column Selection by Ph. Eur. Listing

Description According Pharm. Eur. 11 - 4.1.1. Reagents 2023	Number	Recommended Phenomenex Column
Silica gel for chromatography, octylsilyl R3 ultrapure silica, bonding of octasilyl groups and sterically protected with branched hydrocarbons at the silanes.	1155200	Biozen Intact XB-C8
Silica gel for chromatography, octylsilyl, base-deactivated pretreated by various techniques before the bonding of octylsily groups to minimize the interaction with basic components.	1131600	Luna C8(2) Prodigy C8 HyperClone C8 (BDS) Kinetex C8
Silica gel for chromatography, octylsilyl, endcapped. To minimize any interaction with basic compounds it's carefully endcapped to cover most of the remaining silanol groups.	1119600	Kinetex C8 Luna C8(2) Prodigy C8 HyperClone C8 (BDS)
Silica gel for chromatography, octylsilyl, endcapped, base-deactivated pretreated by various techniques before the bonding with octylsilyl groups. To further minimize any interaction with basic compounds it's carefully endcapped to cover most of the remaining silanol groups.	1148800	Luna C8(2) Prodigy C8 Kinetex C8 HyperClone C8 (BDS)
Silica gel for chromatography, octylsilyl, with embedded polar groups, endcapped; a very finely divided silica gel, chemically modified at the surface by the bonding of polar-embedded octylsilyl groups. To minimize any interaction with basic compounds, it is carefully endcapped to cover most of the remaining silanol groups.	1152600	
Silica gel for chromatography, octylsilyl, extra-dense bonded, endcapped.	1200900	Luna C8(2) Kinetex C8
Silica gel for chromatography, octylsilyl, solid core, endcapped. Silica gel with spherical silica particles containing a non-porous solid silica core surrounded by a thin outer porous silica coating with octyl-silyl groups. To minimize any interaction with basic compounds it's carefully endcapped to cover most of the remaining silanol groups.	1208600	Biozen Intact XB-C8 Kinetex C8 Aeris WIDEPORE XB-C8
Silica gel for chromatography, octylsilyl, solid core. Silica gel with spherical silica particles containing a non-porous solid silica core surrounded by a thin outer porous silica coating with octylsilyl groups.	1209900	Biozen Intact XB-C8 Kinetex C8 Aeris WIDEPORE XB-C8
Silica gel for chromatography, oxypropionitrilsilyl	1184700	
Silica gel for chromatography, palmitamidopropylsilyl, endcapped bonding with palmitamidopropyl groups and endcapped with acetamidopropyl groups.	1161900	
Silica gel for chromatography, pentafluorophenylpropylsilyl, solid core, endcapped.	1207600	Kinetex F5 Kinetex PFP
Silica gel for chromatography, phenylhexylsilyl.	1153900	Kinetex Phenyl-Hexyl Luna Phenyl-Hexyl Gemini C6-Phenyl
Silica gel for chromatography, phenylhexylsilyl, endcapped. To minimize any interaction with basic compounds it's carefully endcapped to cover most of the remaining silanol groups.	1170600	Kinetex Phenyl-Hexyl Luna Phenyl-Hexyl Gemini C6-Phenyl
Silica gel for chromatography, phenylhexylsilyl, solid core, endcapped. Silica gel with spherical silica particles containing a non-porous solid core surrounded by a thin outer porous silica coating with phenylhexylsilyl groups. To minimize any interaction with basic compounds it is carefully endcapped to cover most of the remaining silanol groups.	1198900	Kinetex Phenyl-Hexyl
Silica gel for chromatography, phenylsilyl.	1110200	Synergi Polar-RP Luna Phenyl-Hexyl Gemini C6-Phenyl Prodigy Phenyl-3 (PH3) Kinetex Biphenyl Kinetex Phenyl-Hexyl
Silica gel for chromatography, phenylsilyl, endcapped. To minimize any interaction with basic compounds it's carefully endcapped to cover most of the remaining silanol groups.	1154900	Synergi Polar-RP Luna Phenyl-Hexyl Gemini C6-Phenyl Prodigy Phenyl-3 (PH3) Kinetex Biphenyl Kinetex Phenyl-Hexyl
Silica gel for chromatography, phenylsilyl, endcapped, base-deactivated.	1197900	Synergi Polar-RP Luna Phenyl-Hexyl Gemini C6-Phenyl Prodigy Phenyl-3 (PH3) Kinetex Biphenyl Kinetex Phenyl-Hexyl
Silica gel for chromatography, phenylsilyl, extra-dense bonded, endcapped.	1207700	Synergi Polar-RP Luna Phenyl-Hexyl Gemini C6 Phenyl Prodigy Phenyl PH3 Kinetex Phenyl-Hexyl Kinetex Biphenyl
Silica gel for chromatography, propoxybenzene, endcapped.	1174600	Synergi Polar-RP
Silica gel for chromatography, propylsilyl.	1170700	
Silica gel for chromatography, strong anion-exchange bonding of quaternary ammonium groups; pH limit of use: 2 to 8.	1077800	PhenoSphere SAX
Silica gel for chromatography, strong cation-exchange bonding of sulfonic acid groups.	1161400	Luna SCX
Silica gel for chromatography, trimethylsilyl.	1115500	Develosil TMS-UG (C1) Capcell Pak C1 UG PhenoSphere C1

HPLC Column Selection by Ph. Eur. Listing

Description According Pharm. Eur. 11 - 4.1.1. Reagents 2023	Number	Recommended Phenomenex Column
Silica for size-exclusion chromatography. 10 µm silica with a very hydrophilic surface. Pore size average: 30 nm; pH stability 2 to 8; exclusion range for proteins: 1 x 10^3 to 3 x 10^5 ; 10 µm.	1077900	BioSep-SEC-S3000 Yarra SEC-3000
Silica gel OC for chiral separations. Coated with cellulose tris (phenylcarbamate); 5 µm.	1146800	
Silica gel OD for chiral separations.	1110300	Lux Cellulose-1
Silica gel OJ for chiral separations. Coated with cellulose tris (4-methylbenzoate).	1179800	Lux Cellulose-3
Organosilica polymer, amorphous, octadecylsilyl. Synthetic, spherical hybrid particles containing both inorganic (silica) and organic (organosiloxanes) components, chemically modified at the surface by trifunctionally bonded octadecylsilyl groups.	1144200	Kinetex EVO C18 Gemini C18 Gemini NX-C18
Organosilica polymer, amorphous, octadecylsilyl, endcapped. Synthetic, spherical hybrid particles containing both inorganic (silica) and organic (organosiloxanes) components, chemically modified at the surface by trifunctionally bonded octadecylsilyl groups. To minimize any interaction with basic compounds, it is carefully endcapped to cover most of the remaining silanol groups.	1178600	Kinetex EVO C18 Gemini C18 Gemini NX-C18
Organosilica polymer, amorphous, polar embedded, octadecylsilyl, endcapped. Synthetic, spherical hybrid particles containing both inorganic (silica) and organic (organosiloxanes) components, chemically modified at the surface by the bonding of polar embedded octadecylsilyl groups. To minimize any interaction with basic compounds, it is carefully endcapped to cover most of the remaining silanol groups.	1150600	
Organosilica polymer, amorphous, polar embedded propyl-2-phenylsilyl, endcapped. Synthetic, spherical hybrid particles containing both inorganic (silica) and organic (organosiloxanes) components, chemically modified at the surface by the bonding of polar embedded propyl-2-phenylsilyl groups. To minimize any interaction with basic compounds, it is carefully endcapped to cover most of the remaining silanol groups.	1178100	
Organosilica polymer for mass spectrometry, amorphous, octadecylsilyl, endcapped. Synthetic, spherical hybrid particles containing both inorganic (silica) and organic (organosiloxanes) components. To minimize any interaction with basic compounds, it is carefully endcapped to cover most of the remaining silanol groups.	1164900	Kinetex EVO C18 Gemini C18 Gemini NX-C18
Organosilica polymer compatible with 100 % aqueous mobile phases, octadecylsilyl, solid core, endcapped.	1201700	Kinetex EVO C18
Organosilica polymer, multi-layered, octadecylsilyl, endcapped. Synthetic, spherical hybrid particles, multi-layered, containing both inorganic (silica) and organic (organosiloxanes) components, chemically modified at the surface by the bonding of octadecylsilyl groups. To minimize any interaction with basic compounds, it is carefully endcapped to cover most of the remaining silanol groups.	1202500	Kinetex EVO C18 Gemini C18 Gemini NX-C18
Vinyl polymer for chromatography, amino alkyl. Spherical particles (5 µm) of a vinyl alcohol copolymer, bonding of amino alkyl groups.	1191500	Asahipak NH_2-P
Vinyl polymer for chromatography, octadecyl. Spherical particles (5 µm) of a vinyl alcohol copolymer, bonding of octadecyl groups on the hydroxyl groups.	1155400	Asahipak ODP-50
Vinyl polymer for chromatography, octadecylsilyl. Spherical particles (5 µm) of a vinyl alcohol copolymer bonded to an octadecylsilane. C-load: 17 %.	1121600	Asahipak ODP-50
Ion-exclusion resin for chromatography. A resin with sulfonic acid groups attached to a polymer lattice consisting of polystyrene cross-linked with divinylbenzene.	1131000	Rezex ROA-Organic Acid Rezex RHM-Monosaccharide
Cation-exchange resin, strong. Strong cation-exchange resin in protonated form with sulfonic acid groups attached to a polymer lattice consisting of polystyrene cross-linked with divinylbenzene.	1156800	Rezex ROA-Organic Acid Rezex RHM-Monosaccharide
Cation-exchange resin. A resin in protonated form with sulfonic acid groups attached to a polymer lattice consisting of polystyrene cross-linked with 8 % divinylbenzene. Available as spherical beads.	1016700	Rezex ROA-Organic Acid Rezex RHM-Monosaccharide
Cation-exchange resin R1. A resin in protonated form with sulfonic acid groups attached to a polymer lattice consisting of polystyrene cross-linked with 4 % divinylbenzene. Available as spherical beads.	1121900	
Cation-exchange resin R2. Resin containing strongly acidic propylensulfonic acid groups.	1195400	
Cation-exchange resin (Calcium form), strong. Resin in calcium form with sulfonic acid groups attached to a polymer lattice consisting of polystyrene cross-linked with 8 % divinylbenzene	1104600	Rezex RCM-Monosaccharide Rezex RCU-USP Sugar Alcohols
Cation-exchange resin (Sodium form), strong. Resin in sodium form with sulfonic acid groups attached to a polymer lattice consisting of polystyrene cross-linked with divinylbenzene.	1176100	Rezex RNM-Carbohydrate
Cation-exchange resin, weak. Weak cation-exchange resin in pronated form with carboxylate functional groups attached to a polymer lattice consisting of polystyrene cross-linked with divinylbenzene.	1203200	Biozen WCX
Anion-exchange resin. Resin in chlorinated form containing quaternary ammonium groups [$CH_2N+(CH_3)3$] attached to a polymer lattice consisting of polystyrene cross-linked with 2 % of divinylbenzene. Available as spherical beads.	1007200	
Anion-exchange resin R1. Resin containing quaternary ammonium groups [$CH_2N+(CH_3)3$] attached to a lattice consisting of methacrylate.	1123400	
Anion-exchange resin R2. Conjugate of homogeneous 10 µm hydrophilic polyether particles, and a quaternary ammonium salt, providing a matrix suitable for strong anion-exchange chromatography of proteins.	1141900	
Anion-exchange resin R3. Resin with quaternary ammonium groups attached to a lattice of ethylvinyl-benzene crosslinked with 55 % of divinylbenzene.	1180900	
Anion-exchange resin for chromatography, strongly basic with quaternary ammonium groups attached to a lattice of latex cross-linked divinylbenzene.	1112700	
Anion-exchange resin for chromatography, strongly basic R1. Non-porous resin agglomerated with a 100 nm alkyl quaternary ammonium functionalized latex.	1187400	
Anion-exchange resin, weak resin with diethylaminoethyl groups attached to lattice consisting of poly(methyl methacrylate).	1146700	

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