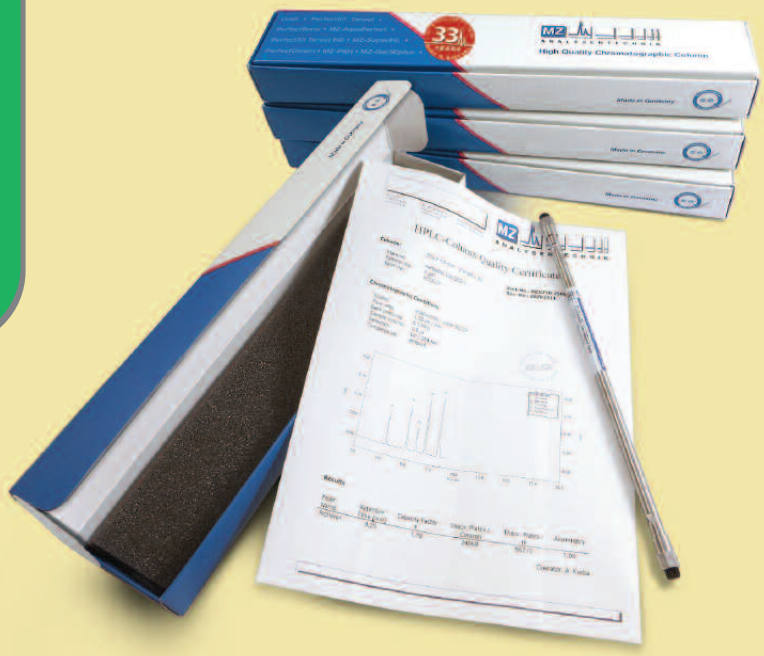
MZ ANALYSENTECHNIK

Customer Service

USP “L” Packings for HPLC Columns

according to USP <621>

2020



Qualitätsmanagement GZQ CERTIFICATION ISO 9001:2015

Introduction

This listing of HPLC packing media according to US Pharmacopoeia (USP) 621 is intended to assist our customers in finding an adequate, commercially available column for implementing a desired USP method. All columns in this list can directly be ordered via MZ-Analysentechnik. We are proud of being able to provide at least one adequate column for nearly each definition given in the USP list. Our focus is to provide information about easily and consistently obtainable HPLC-columns, rather than presenting all exotic materials – regardless of their availability. This ensures an uninterrupted, smooth workflow for our customers in case a replacement is needed.

Tolerances within USP-Specification

USP Chapter 621 names tolerable variations of method parameters for establishing a method from a monograph tha might be neccesary to meet system suitability testing (SST)-criteria, while still being still being conform within this method. Those so-called adjustments are variations of parameters in the specification, which can be made without need for revalidation of the method. Possible variations of parameters, which are still regarded as adjustment are presented in the following table. In any case, SST must be passed before using a desired method in your lab routine.

Parameter	Range for Adjustment*
Particle size:	- 50 %
Packing media:	free choice from the same category (Lxxx)
Column length:	± 70 %
Column inner diameter**:	± 25 %
Flow rate**:	± 50 %
Injection volume:	any
Column temperature:	± 10 °C
pH-value of mobile phase:	± 0,2 pH
Salt concentration of buffer/ buffer strength:	± 10 %

*changes in establishing a method out of this range are called „changes“ and require revalidation of the whole method additionally to SST

** according to USP 32-NF 27 column length and flow rate may be adjusted to the specific equipment as long as the linear flow rate is kept constant: „*Column Inner Diameter (HPLC): can be adjusted provided that the linear velocity is kept constant...*“

Use of guard columns

USP 621 enables the use of a guard column for direct implementation of a method without the need for revalidation – unless otherwise mentioned in the monograph and as long as the guard column follows the rules listed beside and as long as SST-critera are met.

Guard: Parameter	Requirement
Length:	≤ 15 % of the length of the analytical column
Inner diameter:	≤ inner diameter of the analytical column
Packing media:	same base material and bonded phase as analytical column

L1 - L5

L1

Octadecyl silane chemically bonded to porous or non-porous silica or ceramic micro-particles, 1.5 to 10 µm in diameter, or a monolithic rod.

suggested packing	manufacturer	properties / variations
MZ-Aqua Perfect C18	*MZ-Analysentechnik*	120 Å, 310 m^2/g, 15% C, 3, 5, 7 & 10 µm, Endcapping, Si 99.999%, pH 2–8 200 Å, 220 m^2/g, 11% C, 3 & 5 µm, Endcapping, Si 99.999%, pH 2–8
Orbit 100 C18	*MZ-Analysentechnik*	100 Å, 340 m^2/g, 19% C, 3.5, 4, 5 & 10 µm, Endcapping, Si 99.999%, pH 2–8
PerfectBond ODS-H	*MZ-Analysentechnik*	120 Å, 170 m^2/g, 10% C, 3 & 5 µm, Endcapping, Si 99.999%, pH 2–8
PerfectBond ODS-HD	*MZ-Analysentechnik*	150 Å, 320 m^2/g, 18.5% C, 3 & 5 µm, Endcapping, Si 99.999%, pH 2–8
PerfectBond C18 ODS	*MZ-Analysentechnik*	125 Å, 300 m^2/g, 10% C, 5 µm, Endcapping, Si 99.999%, pH 2–8
PerfectBond C18	*MZ-Analysentechnik*	125 Å, 300 m^2/g, 10% C, 10 µm, Endcapping, Si 99.999%, pH 2–8
PerfectChrom 100 C18	*MZ-Analysentechnik*	100 Å, 350 m^2/g, 17% C, 3, 5, 10 & 15 µm, Endcapping, pH 2–8
PerfectChrom 100 C18L	*MZ-Analysentechnik*	100 Å, 350 m^2/g, 8.5% C, 5 & 10 µm, Endcapping, pH 2–8
PerfectChrom 100 C18M	*MZ-Analysentechnik*	100 Å, 350 m^2/g, 12% C, 5 µm, Endcapping, pH 2–8
PerfectChrom 100 C18AB	*MZ-Analysentechnik*	100 Å, 350 m^2/g, 5 µm, Endcapping
PerfectSil ODS-3	*MZ-Analysentechnik*	100 Å, 450 m^2/g, 15% C, 3, 4 & 5 µm, Endcapping, Si 99.999%, pH 2–8
PerfectSil 120 ODS	*MZ-Analysentechnik*	120 Å, 300 m^2/g, 15% C, 3, 5, 7 & 10 µm, Endcapping, Si 99.999%, pH 2–8
PerfectSil 120 ODS-L	*MZ-Analysentechnik*	120 Å, 300 m^2/g, 13% C, 3 & 5 µm, Endcapping, Si 99.999%, pH 2–8
PerfectSil 120 ODS-2	*MZ-Analysentechnik*	120 Å, 300 m^2/g, 17% C, 3 & 5 µm, Endcapping, Si 99.999%, pH 2–8
PerfectSil 300 ODS C18	*MZ-Analysentechnik*	300 Å, 100 m^2/g, 9% C, 5, 10 & 15-20 µm, Endcapping, Si 99.999%, pH 2–8
PerfectSil Target ODS-3	*MZ-Analysentechnik*	100 Å, 450 m^2/g, 17% C, 3, 5, 10 µm, Endcapping, Si 99.999%, pH 2–8
PerfectSil Target ODS-3 HD	*MZ-Analysentechnik*	100 Å, 450 m^2/g, 25% C, 3, 5, 10 µm, Endcapping, Si 99.999%, pH 2–11

L2

Octadecylsilane 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.

suggested packing	manufacturer	properties / variations
- none available -		

L3

Porous silica particles, 1.5 to 10 µm in diameter, or a monolithic silica rod..

suggested packing	manufacturer	properties / variations
PerfectChrom 60 Sil	*MZ-Analysentechnik*	60 Å, 550 m^2/g, 5 & 10 µm
PerfectChrom 100 Sil	*MZ-Analysentechnik*	100 Å, 350 m^2/g, 5 & 10 µm
PerfectSil 100 Sil	*MZ-Analysentechnik*	100 Å, 450 m^2/g, 5 µm, Si 99.999%
PerfectSil 120 Sil	*MZ-Analysentechnik*	120 Å, 300 m^2/g, 5 & 10 µm, Si 99.999%
PerfectSil 300 Sil	*MZ-Analysentechnik*	300 Å, 100 m^2/g, 5, 10 & 15–20 µm, Si 99.999%
PerfectSil 1000 Sil	*MZ-Analysentechnik*	1000 Å, 5 µm, Si 99.999%
PerfectSil Target Sil 100	*MZ-Analysentechnik*	100 Å, 450 m^2/g, 3 & 5 µm, Si 99.999%

L4

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

suggested packing	manufacturer	properties / variations
Pellicular Silica	*Agilent Technologies*	*direct suggestion from USP - not available anymore*

L5

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

suggested packing	manufacturer	properties / variations
- none available -		

L6 ...

L6 *Strong cation-exchange packing-sulfonated fluorocarbon polymer coated on a solid spherical core, 30 to 50 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
Partisil SCX	*Hichrom*	-

L7 *Octylsilane chemically bonded to totally or superficially porous silica particles, 1.5 to 10 µm in diameter, or a monolithic silica rod.*

suggested packing	*manufacturer*	*properties / variations*
Orbit 100 C8	*MZ-Analysentechnik*	100 Å, 340 m^2/g, 12% C, 3.5, 5, 7 & 10 µm, Endcapping, Si 99.999%, pH 2–8
PerfectBond C8	*MZ-Analysentechnik*	125 Å, 300 m^2/g, 7% C, 5 µm, Endcapping, Si 99.999%, pH 2–8
PerfectBond C8-H	*MZ-Analysentechnik*	120 Å, 170 m^2/g, 6.5% C, 3 & 5 µm, Endcapping, Si 99.999%, pH 2–8
PerfectBond C8-HD	*MZ-Analysentechnik*	150 Å, 320 m^2/g, 10.5% C, 3 & 5 µm, Endcapping, Si 99.999%, pH 2–8
PerfectChrom 100 C8	*MZ-Analysentechnik*	100 Å, 350 m^2/g, 8% C, 3, 5 & 10 µm, Endcapping, Si 99.999%, pH 2–8
PerfectChrom 100 C8M	*MZ-Analysentechnik*	100 Å, 350 m^2/g, 6% C, 5 µm, Endcapping, Si 99.999%, pH 2–8
PerfectSil 100 C8-3	*MZ-Analysentechnik*	100 Å, 450 m^2/g, 9% C, 5 µm, Endcapping, Si 99.999%, pH 2–8
PerfectSil 120 C8	*MZ-Analysentechnik*	120 Å, 300 m^2/g, 11% C, 3, 5 & 10 µm, Endcapping, Si 99.999%, pH 2–8
PerfectSil 300 C8	*MZ-Analysentechnik*	300 Å, 100 m^2/g, 5% C, 5, 10 & 15–20 µm, Endcapping, Si 99.999%, pH 2–8
PerfectSil Target C8-3	*MZ-Analysentechnik*	100 Å, 450 m^2/g, 9% C, 3 & 5 µm, Endcapping, Si 99.999%, pH 2–8
PerfectSil Target C8 HD	*MZ-Analysentechnik*	100 Å, 450 m^2/g, 15% C, 3 & 5 µm, Endcapping, Si 99.999%, pH 2–11

L8 *An essentially monomolecular layer of aminopropylsilane chemically bonded to totally porous silica gel support, 1.5 to 10 µm in diameter, or a monolithic silica rod.*

suggested packing	*manufacturer*	*properties / variations*
PerfectChrom 100 NH2	*MZ-Analysentechnik*	100 Å, 350 m^2/g, 3.5% C, 5 & 10 µm
PerfectSil 100 NH2	*MZ-Analysentechnik*	100 Å, 450 m^2/g, 8% C, 5 µm, Si 99.999%, pH 2–8
PerfectSil 120 NH2	*MZ-Analysentechnik*	120 Å, 300 m^2/g, 4% C, 3, 4 & 5 µm, Si 99.999%, pH 2–8

L9 *Irregular or spherical, totally porous silica gel having a chemically bonded, strongly acidic cation-exchange coating, 3 to 10 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
Capcell Pak SCX UG 80	*Shiseido*	80 Å, 450 m^2/g, 9% C, 5 µm, Polymer coating, high purity silica, pH 2–7
Chromegabond RP-SCX	*ES Industries*	60 Å, 5 µm
HP-SCX	*Sepax Techonologies*	120 Å, 300 m^2/g, 11% C, 1.8, 2.2, 3, 4, 5, 7 & 10 µm, Endcapping, high purity silica, pH 1.5–8
Partisil SCX	*Hichrom*	85 Å, 350 m^2/g, 10% C, 5 & 10 µm, pH 1.5–7
Partisphere SCX	*Hichrom*	120 Å, 160 m^2/g, 5 µm, pH 1.5–7
Spherisorb SCX	*Waters*	80 Å, 220 m^2/g, 4% C, 5 & 10 µm, pH 2–8
Nucleosil SA	*Macherey-Nagel*	100 Å, 6.5% C, 5 & 10 µm, pH 2–8, capacity ~ 1 meq/g
Inertsil CX	*GL Sciences*	100 Å, 450 m^2/g, 14% C, 5 µm, pH 2–7.5

L10 *Nitrile groups chemically bonded to porous silica particles, 1.5 to 10 µm in diameter, or a monolithic silica rod.*

suggested packing	*manufacturer*	*properties / variations*
Orbit 100 CN	*MZ-Analysentechnik*	100 Å, 340 m^2/g, 6.5% C, 3.5 & 5 µm, Si 99.999%, pH 2–8
PerfectChrom 100 CN	*MZ-Analysentechnik*	100 Å, 350 m^2/g, 6% C, 5, 7 & 10 µm, pH 2–8
PerfectSil 100 CN-3	*MZ-Analysentechnik*	100 Å, 450 m^2/g, 4% C, 5 µm, Si 99.999%, pH 2–8
PerfectSil 120 CN	*MZ-Analysentechnik*	120 Å, 300 m^2/g, 7.5% C, 3 & 5 µm, Si 99.999%, pH 2–8
PerfectSil Target CN-3	*MZ-Analysentechnik*	100 Å, 450 m^2/g, 7% C, 5 µm, Si 99.999%, pH 2–8

... L16

L11 *Phenyl groups chemically bonded to porous silica particles, 1.5 to 10 µm in diameter, or a monolithic silica rod.*

suggested packing	manufacturer	properties / variations
PerfectBond Ph	*MZ-Analysentechnik*	120 Å, 200 m^2/g, 6% C, 5 µm, Endcapping, Si 99.999%, pH 2–8
PerfectBond Ph-H	*MZ-Analysentechnik*	120 Å, 170 m^2/g, 5% C, 5 µm, Endcapping, Si 99.999%, pH 2–8
PerfectChrom 100 Phenyl	*MZ-Analysentechnik*	100 Å, 350 m^2/g, 8.5% C, 5 & 10 µm, pH 2–8
PerfectChrom 100 Phenyl-M	*MZ-Analysentechnik*	100 Å, 350 m^2/g, 8.5% C, 5 & 10 µm, pH 2–8
PerfectSil 100 Phenyl-3	*MZ-Analysentechnik*	100 Å, 450 m^2/g, 9.5% C, 5 µm, Endcapping, Si 99.999%, pH 2–8
PerfectSil 120 Phenyl	*MZ-Analysentechnik*	120 Å, 300 m^2/g, 9.5% C, 3 & 5 µm, Endcapping, Si 99.999%, pH 2–8
PerfectSil 120 Phenyl-M	*MZ-Analysentechnik*	120 Å, 300 m^2/g, 6% C, 5 µm, Endcapping, Si 99.999%, pH 2–8

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

suggested packing	manufacturer	properties / variations
Accell Plus QMA	*Waters*	300 Å, 37–55 µm, pH 2–8 (only available for SPE)
Anex	*Transgenomic*	-
BAKER-10 spe™ Quaternary Amine	*J.T.Baker Chemical*	37–55 µm
Guard SAX	*Agilent Technologies*	-
Generik SAX	*Sepax Technologies*	-
SMT SAX	*Separation Methods Tech.*	-

L13 *Trimethylsilane chemically bonded to porous silica particles, 3 to 10 µm in diameter.*

suggested packing	manufacturer	properties / variations
PerfectBond C1	*MZ-Analysentechnik*	120 Å, 170 m^2/g, 5.0% C, 3 & 5 µm, Si 99.999%, pH 2–8
PerfectChrom 100 C1	*MZ-Analysentechnik*	100 Å, 350 m^2/g, 4% C, 5 µm, pH 2–8
PerfectSil 120 C1	*MZ-Analysentechnik*	120 Å, 300 m^2/g, 5.0% C, 3 & 5 µm, Si 99.999%, pH 2–8

L14 *Silica gel having a chemicallly bonded strongly basic quaternary ammonium anion-exchange coating, 5 to 10 µm in diameter.*

suggested packing	manufacturer	properties / variations
Chromegabond SAX	*ES Industries*	60 Å, 5 µm
Partisil SAX	*Hichrom*	85 Å, 350 m^2/g, 10% C, 5 & 10 µm, pH 1.5–7.5
Partisphere SAX	*Hichrom*	120 Å, 160 m^2/g, 5 µm, pH 1.5–7.5
Spherisorb SAX	*Waters*	80 Å, 220 m^2/g, 4% C, 5 & 10 µm, pH 2–8
SUPELCOSIL SAX1	*Supelco*	120 Å, 170 m^2/g, 12% C, 5 µm
TSKgel QAE-2SW	*Tosoh Bioscience*	125 Å, 5 µm, pH 2–7.5
Nucleosil SB	*Macherey-Nagel*	100 Å, 10% C, 5 & 10 µm, pH 2–8, capacity ~ 1 meq/g
Inertsil AX	*GL Sciences*	100 Å, 450 m^2/g, 17% C, 5 µm, pH 2–7.5

L15 *Hexylsilane chemically bonded to totally porous silica particles, 3 to 10 µm in diameter.*

suggested packing	manufacturer	properties / variations
PerfectChrom 100 C6	*MZ-Analysentechnik*	100 Å, 350 m^2/g, 7% C, 5 µm, Endcapping, pH 2–8

L16 *Dimethylsilane chemically bonded to porous silica particles, 5 to 10 µm in diameter.*

suggested packing	manufacturer	properties / variations
Chromegabond C2	*ES Industries*	60 Å, 480 m^2/g, 5 & 10 µm, No Endcapping
Nucleosil C2	*Macherey-Nagel*	100 Å, 350 m^2/g, 3.5% C, 7 µm, pH 2–8

L17 ...

L17 *Strong cation-exchange resin consisting of sulfonated cross-linked styrene-divinylbenzene copolymer in the hydrogen form, 6 to 12 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
Carbomix H-NP5	*Sepax*	5 µm, cross linkage 8%, pH 1–3, T_{max} = 85 °C
Carbomix H-NP10	*Sepax*	10 µm, cross linkage 5, 8 & 10%, pH 1–3, T_{max} = 85 °C
Hi-Plex H	*Agilent Technologies*	8 µm, cross linkage 8%, T_{max} = 60–70 °C
IC-Pak Cation	*Waters*	10 µm, pH 1–12, T_{max} = 50 °C
IC-Pak Ion Exclusion	*Waters*	7 µm
ICSep COREGEL 64H	*Transgenomic*	10 µm, cross linkage 6.4%, pH 0–14, T_{max} = 90 °C
ICSep COREGEL 87H1	*Transgenomic*	9 µm, cross linkage 8%, pH 0–14, T_{max} = 90 °C
ICSep COREGEL 87H3	*Transgenomic*	9 µm, cross linkage 8%, pH 0–14, T_{max} = 90 °C
ICSep COREGEL 107H	*Transgenomic*	8 µm, cross linkage 10%, pH 0–14, T_{max} = 90 °C
ICSep ION300	*Transgenomic*	7 µm, cross linkage 6%, pH 0–14, T_{max} = 90 °C
ICSep ORH-801	*Transgenomic*	9 µm, cross linkage 7%, pH 0–14, T_{max} = 90 °C
MCI GEL CK08EH	*Mitsubishi Chemical*	9 µm, cross linkage 8%, pH 1–7
Shim-pack SCR-101H	*Shimadzu*	10 µm
IC Y-521	*Shodex*	12 µm, T_{max} = 70 °C
RSpak KC-811	*Shodex*	6 µm, T_{max} = 85 °C
SUGAR SH1011	*Shodex*	6 µm, pH 2–7, T_{max} = 95 °C
SUGAR SH1821	*Shodex*	6 µm, pH 2–7, T_{max} = 95 °C

L18 *Amino and cyano groups chemically bonded to porous silica particles, 3 to 10 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
Chromegabond A/CN	*ES Industries*	60 Å, 375 m^2/g, 5 & 10 µm
Partisil 10 PAC	*Hichrom*	85 Å, 350 m^2/g, 5 & 10 µm
Partisphere PAC	*Hichrom*	120 Å, 160 m^2/g, 5 µm

L19 *Strong cation-exchange resin consisting of sulfonated cross-linked styrene-divinylbenzene copolymer in the calcium form, 5–15 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
Carbomix Ca-NP5	*Sepax*	5 µm, cross linkage 8%, pH 5–9, T_{max} = 85 °C
Carbomix Ca-NP10	*Sepax*	10 µm, cross linkage 5, 8 & 10%, pH 5–9, T_{max} = 85 °C
CarboSep CHO-620	*Transgenomic*	10 µm, cross linkage 6%, T_{max} = 95 °C
CarboSep CHO-820	*Transgenomic*	9 µm, cross linkage 8%, T_{max} = 95 °C
CarboSep COREGEL-87C	*Transgenomic*	9 µm, cross linkage 8%, T_{max} = 95 °C
CarboSep L19	*Transgenomic*	8 µm, cross linkage 8%, T_{max} = 95 °C
Hi-Plex Ca	*Agilent Technologies*	8 µm, cross linkage 8%, T_{max} = 80–90 °C
MCI GEL CK08EC	*Mitsubishi Chemical*	9 µm, cross linkage 8%, pH 1–7
SUGAR SC1011	*Shodex*	6 µm, pH 3–7, T_{max} = 95 °C
SUGAR SC1211	*Shodex*	6 µm, pH 3–7, T_{max} = 95 °C
SUGAR SC1821	*Shodex*	6 µm, pH 3–7, T_{max} = 95 °C
USPpak MN-431	*Shodex*	8 µm, T_{max} = 85 °C

L20 *Dihydroxypropane groups chemically bonded to porous silica or hybrid particles, 1.5 to 10 µm in diameter, or a monolithic silica rod.*

suggested packing	*manufacturer*	*properties / variations*
PerfectChrom 100 Diol	*MZ-Analysentechnik*	100 Å, 350 m^2/g, 5% C, 5 & 10 µm, pH 2–8
PerfectSil 100 Diol	*MZ-Analysentechnik*	100 Å, 450 m^2/g, 5 µm, Si 99.999%, pH 2–8
PerfectSil 300 Diol	*MZ-Analysentechnik*	300 Å, 100 m^2/g, 5% C, 5 µm, Si 99.999%, pH 2–8

L21 *A rigid, spherical styrene-divinylbenzene copolymer, 3 to 30 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
MCI GEL CHP20/C04	*Mitsubishi Chemical*	4 µm, pH 1–14
MCI GEL CHP20/C10	*Mitsubishi Chemical*	10 µm, pH 1–14
PLRP-S 100A	*Agilent Technologies*	100 Å, 3, 5, 8, 10, 10–15, 15–20, 30 & 50 µm, pH 1–14, T_{max} = 200 °C
PLRP-S 1000A	*Agilent Technologies*	1000 Å, 5, 8, 10, 30 & 50 µm, pH 1–14, T_{max} = 200 °C
PLRP-S 300A	*Agilent Technologies*	300 Å, 3, 5, 8, 10, 10–15, 15–20 & 50 µm, pH 1–14, T_{max} = 200 °C
PLRP-S 4000A	*Agilent Technologies*	4000 Å, 5, 8, 10 & 30 µm, pH 1–14, T_{max} = 200 °C
PolyRP	*Sepax*	100, 300, 500 & 1000 Å, 5 & 10 µm, pH 1–14, T_{max} = 200 °C
RSpak DS-413	*Shodex*	200 Å, 3.5 µm, pH 1–13, T_{max} = 50 °C
RSpak DS-613	*Shodex*	200 Å, 6 µm, pH 1–12, T_{max} = 80 °C
RSpak RP18-415	*Shodex*	450 Å, 6 µm, pH 1–13, T_{max} = 50 °C
TSKgel Hxl and Hhr	*Tosoh Bioscience*	15 – >650 Å and mixed bed, 5, 9 &13 µm, pH 1–14, T_{max} = 60–220 °C
TSKgel SuperH	*Tosoh Bioscience*	15 – >650 Å and mixed bed, 3 & 5 µm, pH 1–14, T_{max} = 140 °C
TSKgel SuperHZ	*Tosoh Bioscience*	15–200 Å and mixed bed, 3, 5 & 10 µm, pH 1–14, T_{max} = 60–80 °C
TSKgel SuperMultiporeHZ.	*Tosoh Bioscience*	80 – >140 Å, 3, 4 & 6 µm, pH 1–14, T_{max} = 60 °C

L22 *A cation-exchange resin made of porous polystyrene gel with sulfonic acid groups, 5–15 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
CarboSep CH0-620	*Transgenomic*	10 µm, cross linkage 6%, T_{max} = 95 °C
CarboSep COREGEL 87C	*Transgenomic*	9 µm, cross linkage 8%, T_{max} = 95 °C
Hi-Plex H	*Agilent Technologies*	8 µm, cross linkage 8%, T_{max} = 60–70 °C
ICSep COREGEL 64H	*Transgenomic*	10 µm, cross linkage 6.4%, pH 0–14, T_{max} = 90 °C
ICSep COREGEL 87H1	*Transgenomic*	9 µm, cross linkage 8%, pH 0–14, T_{max} = 90 °C
ICSep COREGEL 87H3	*Transgenomic*	9 µm, cross linkage 8%, pH 0–14, T_{max} = 90 °C
ICSep COREGEL 107H	*Transgenomic*	8 µm, cross linkage 10%, pH 0–14, T_{max} = 90 °C
ICSep ORH801	*Transgenomic*	9 µm, cross linkage 7%, pH 0–14, T_{max} = 90 °C
Proteomix SCX-POR	*Sepax*	10 µm, 500 Å, pH 2–12, T_{max} = 80 °C
SUGAR SC1011	*Shodex*	6 µm, pH 3–7, T_{max} = 95 °C
TSKgel SCX	*Tosoh Bioscience*	5 µm, 60 Å, pH 1–14

L23 *An anion-exchange resin made of porous polymethacrylate or polyacrylate gel with quartenary ammonium groups, 7–12 µm in size.*

suggested packing	*manufacturer*	*properties / variations*
MCI GEL CQA31S	*Mitsubishi Chemical*	600 Å, 10 µm, pH 2–12
IEC QA-825	*Shodex*	5000 Å, 12 µm, pH 2–12, T_{max} = 50 °C
TSKgel Q-STAT	*Tosoh Bioscience*	Non-porous, 7 & 10 µm, pH 3–10
TSKgel DNA-STAT	*Tosoh Bioscience*	Non-porous, 5 µm, pH 3–10
TSKgel SuperQ-5PW	*Tosoh Bioscience*	1000 Å, 10 & 13 µm, pH 2–12
TSKgel BioAssist Q	*Tosoh Bioscience*	4000 Å, 10 & 13 µm, pH 2–12
TSKgel IC-Anion-PW	*Tosoh Bioscience*	10 µm, pH 2–12

L24 *Polyvinylalcohol chemically bonded to porous silica particles, 5 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
YMC-Pack PVA-Sil	*YMC*	120 Å, 5 µm, pH 2–9.5, T_{max} = 50 °C

L25 ...

L25 *Packing having the capacity to separate compounds with a molecular weight range from 100-5000 (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 functional groups) was found suitable.*

suggested packing	*manufacturer*	*properties / variations*
MCI GEL CQP06	*Mitsubishei Chemical*	120 Å, 10 µm, pH 2–12
OHpak SB-802HQ	*Shodex*	100 Å, 8 µm, pH 3–10, T_{max} = 70 °C
OHpak SB-802.5HQ	*Shodex*	200 Å, 9 µm, pH 3–10, T_{max} = 70 °C
TSKgel G2000PW	*Tosoh Bioscience*	25 Å, 12 µm, 1pH 2–12, T_{max} = 80 °C
TSKgel G2500PW	*Tosoh Bioscience*	< 200 Å, 12 & 17 µm, pH 2–12, T_{max} = 80 °C
TSKgel G2500PWxl	*Tosoh Bioscience*	< 200 Å, 7 µm, pH 2–12, T_{max} = 80 °C
Ultrahydrogel DP, +120	*Waters*	120 Å, 6 µm, pH 2–12, T_{max} = 80 °C

L26 *Butyl silane chemically bonded to totally porous or superficially porous silica particles, 1.5 to 10 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
Orbit 100 C4	*MZ-Analysentechnik*	100 Å, 340 m^2/g, 7% C, 3.5, 5 & 10 µm, Endcapping, Si 99.999%, pH 2–8
PerfectChrom 100 C4	*MZ-Analysentechnik*	100 Å, 350 m^2/g, 6% C, 5 µm, Endcapping, pH 2–8
PerfectSil 120 C4	*MZ-Analysentechnik*	120 Å, 300 m^2/g, 8% C, 3 & 5 µm, Endcapping, Si 99.999%, pH 2–8
PerfectSil 300 C4	*MZ-Analysentechnik*	300 Å, 100 m^2/g, 3% C, 5, 10 & 15–20 µm, Endcapping, Si 99.999%, pH 2–8

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

suggested packing	*manufacturer*	*properties / variations*
PerfectBond Si	*MZ-Analysentechnik*	100 Å, 320 m^2/g, 30–50 µm, Si 99.999%

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.*

suggested packing	*manufacturer*	*properties / variations*
Generik C8/Amino	*Sepax*	60 Å, 550 m^2/g, 20–40 & 40–60 µm, high purity silica
ProTec C8	*ES Industries*	100 Å, 250 m^2/g, 5% C, 5 µm, pH 2–8

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

suggested packing	*manufacturer*	*properties / variations*
GammaBond ARP1	*ES Industries*	80 Å, 5 µm, pH 1.3–12

L30 *Ethyl silane chemically bonded to totally porous silica particles, 3 to 10 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
Chromegabond C2-E	*ES Industries*	60 Å, 220 m^2/g, 5 & 10 µm
GP-C2	*Sepax*	120 Å, 300 m^2/g, 3, 4, 5, 7 & 10 µm

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 units and consisting of ethylvinylbenzene cross-linked with 55% divinylbenzene.*

suggested packing	*manufacturer*	*properties / variations*
MCI Gel SCA04	*Mitsubishi Chemical*	5 µm, pH 3–7

... L36

L32 *A chiral ligand-exchange resin packing-L-proline copper complex covalently bonded to irregularly shaped silica particles, 5 to 10 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
CHIRALPAK WH	*Chiral Technologies*	10 µm, T_{max} = 50 °C

L33 *Packing having the capacity to separate dextrans by molecular size over a range of 4,000–500,000 Da. It is spherical, silica-based, and processed to provide pH stability.*

suggested packing	*manufacturer*	*properties / variations*
BioBasic SEC 120	*Thermo Scientific*	120 Å, 5 µm, pH 2–8
BioBasic SEC 300	*Thermo Scientific*	300 Å, 5 µm, pH 2–8
BioBasic SEC 1000	*Thermo Scientific*	1000 Å, 5 µm, pH 2–8
Nanofilm SEC-150	*Sepax*	150 Å, 5 µm, pH 2–8.5, T_{max} = 80 °C
Nanofilm SEC-250	*Sepax*	250 Å, 5 µm, pH 2–8.5, T_{max} = 80 °C
Nanofilm SEC-500	*Sepax*	450 Å, 5 µm, pH 2–8.5, T_{max} = 80 °C
SRT SEC-100	*Sepax*	100 Å, 5 µm, pH 2–8.5, T_{max} = 80 °C
SRT SEC-150	*Sepax*	150 Å, 5 µm, pH 2–8.5, T_{max} = 80 °C
SRT SEC-300	*Sepax*	300 Å, 5 µm, pH 2–8.5, T_{max} = 80 °C
SRT SEC-500	*Sepax*	500 Å, 5 µm, pH 2–8.5, T_{max} = 80 °C
SRT SEC-1000	*Sepax*	1000 Å, 5 µm, pH 2–8.5, T_{max} = 80 °C
PROTEIN KW-800	*Shodex*	400, 1000 & 1500 Å, 5 & 7 µm, pH 3–7.5, T_{max} = 45 °C
KW400	*Shodex*	400, 800, 1500 & 2000 Å, 3 & 5 µm, pH 3–7.5, T_{max} = 45 °C
TSKgel UP-SW	*Tosoh Bioscience*	250 Å, 2 µm, pH 2.5–7.5, T_{max} = 30 °C
TSKgel SuperSW	*Tosoh Bioscience*	125 & 250 Å, 3 & 4 µm, pH 2.5–7.5, T_{max} = 30 °C
TSKgel SWxl	*Tosoh Bioscience*	125, 250 & 450 Å, 5 & 8 µm, pH 2.5–7.5, T_{max} = 30 °C
TSKgel QC-PAK GFC	*Tosoh Bioscience*	125 & 250 Å, 5 µm, pH 2.5–7.5, T_{max} = 30 °C
TSKgel SW	*Tosoh Bioscience*	125, 250 & 450 Å, 10, 13 & 17 µm, pH 2.5–7.5, T_{max} = 30 °C

L34 *Strong cation-exchange resin consisting of sulfonated cross-linked styrene-divinylbenzene copolymer in the lead form, 7 to 9 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
CARBOSep COREGEL-87P	*Transgenomic*	9 µm, cross linkage 8%, T_{max} = 95 °C
CARBOSep CHO682	*Transgenomic*	7 µm, cross linkage 6%, T_{max} = 95 °C
Hi-Plex Pb	*Agilent Technologies*	8 µm, cross linkage 8%, T_{max} = 70–90 °C
SUGAR SP0810	*Shodex*	7 µm, pH 3–7, T_{max} = 95 °C

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

suggested packing	*manufacturer*	*properties / variations*
Zorbax GF-250	*Agilent Technologies*	150 Å, 140 m^2/g, 4 µm, pH 3–8, T_{max} = 40 °C
Zorbax GF-450	*Agilent Technologies*	300 Å, 50 m^2/g, 6 µm, pH 3–8, T_{max} = 40 °C

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

suggested packing	*manufacturer*	*properties / variations*
Nucleosil Chiral-3	*Macherey-Nagel*	100 Å, 350 m^2/g, 5 µm

L37 ...

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

suggested packing	manufacturer	properties / variations
MCI GEL CQP30	*Mitsubishi Chemical*	600 Å, 10 µm, pH 2–12
Ultrahydrogel 250	*Waters*	250 Å, 6 µm, pH 2–12, T_{max} = 80 °C
OHpak SB-803 HQ	*Shodex*	800 Å, 9 µm, pH 3–10, T_{max} = 70 °C
TSKgel G3000PWxl-CP	*Tosoh Bioscience*	200 Å, 7 µm, pH 2–12, T_{max} = 80 °C
TSKgel G3000PWxl	*Tosoh Bioscience*	200 Å, 7 µm, pH 2–12, T_{max} = 80 °C
TSKgel G3000PW	*Tosoh Bioscience*	200 Å, 12 & 17 µm, pH 2–12, T_{max} = 80 °C

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

suggested packing	manufacturer	properties / variations
MCI GEL CQP10	*Mitsubishi Chemical*	200 Å, 10 µm, pH 2–12
MCI GEL CQP30	*Mitsubishi Chemical*	600 Å, 10 µm, pH 2–12
OHpak SB-800HQ	*Shodex*	100, 200, 800, 2.000, 7.000, 15.000 & 30.000 Å, 8, 9, 10, 13 & 35 µm, pH 3–10, T_{max} = 60–70 °C
TSKgel PW	*Tosoh Bioscience*	125, 200, 500, 1.000 & >1.000 Å, 12 & 17 µm, pH 2–12, T_{max} = 50–80 °C
TSKgel PWxl	*Tosoh Bioscience*	200, 500, 1.000 & >1.000 Å, 3, 7, 10 & 13 µm, pH 2–12, T_{max} = 50–80 °C
TSKgel PWxl-CP	*Tosoh Bioscience*	200, 1.000 & >1.000 Å, 7, 10 & 13 µm, pH 2–12, T_{max} = 50–80 °C
TSKgel SuperMultiporePW	*Tosoh Bioscience*	200, 1.000 & >1.000 Å, 4, 5 & 8 µm, pH 2–12, T_{max} = 80 °C
TSKgel Alpha	*Tosoh Bioscience*	25, 150, 450, 1.000 & >1.000 Å, 7, 10 & 13 µm, pH 2–12, T_{max} = 80 °C
TSKgel SuperAW	*Tosoh Bioscience*	25, 150, 450, 1.000 & >1.000 Å, 4, 6, 7 & 9 µm, pH 2–12, T_{max} = 80 °C

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

suggested packing	manufacturer	properties / variations
MCI GEL CMG20/C04	*Mitsubishi Chemical*	4 µm, pH 2–12
MCI GEL CMG20/C10	*Mitsubishi Chemical*	10 µm, pH 2–12
OHpak SB-800HQ	*Shodex*	100, 200, 800, 2.000, 7.000, 15.000 & 30.000 Å, 8, 9, 10, 13 & 35 µm, pH 3–10, T_{max} = 60–70 °C
ODP2 HP	*Shodex*	40 Å, 5 µm, pH 3–12, T_{max} = 60 °C
RSpak DM-614	*Shodex*	200 Å, 10 µm, pH 2–10, T_{max} = 60 °C
TSKgel PW	*Tosoh Bioscience*	125, 200, 500, 1000 & >1000 Å, 12 & 17 µm, pH 2–12, T_{max} = 50–80 °C
TSKgel PWxl	*Tosoh Bioscience*	200, 500, 1000 & >1000 Å, 3, 7, 10 & 13 µm, pH 2–12, T_{max} = 50–80 °C
TSKgel PWxl-C	*Tosoh Bioscience*	200, 1000 & >1000 Å, 7, 10 & 13 µm, pH 2–12, T_{max} = 50–80 °C
TSKgel Alpha	*Tosoh Bioscience*	25, 150, 450, 1000 & >1000 Å, 7, 10 & 13 µm, pH 2–12, T_{max} = 80 °C
TSKgel SuperAW series	*Tosoh Bioscience*	25, 150, 450, 1000 & >1000 Å, 4, 6, 7 & 9 µm, pH 2–12, T_{max} = 80 °C

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

suggested packing	manufacturer	properties / variations
CHIRALCEL OD	*Daicel/Chiral Technologies*	10 µm, pH 2–9, T_{max} = 40 °C
CHIRALCEL OD-H	*Daicel/Chiral Technologies*	5 µm, pH 2–9, T_{max} = 40 °C
Kromasil CelluCoat	*Akzo Nobel Separations*	3, 5, 10 & 25 µm

L41 *Immobilized α_1-acid glycoprotein on spherical silica particles, 5 µm in diameter.*

suggested packing	manufacturer	properties / variations
CHIRAL-AGP	*Daicel/Chiral Technologies*	5 µm, pH 4–7, T_{max} = 30 °C

... L47

L42 *Octylsilane and octadecylsilane groups chemically bonded to porous silica particles, 5 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
Chromegabond PSC	*ES Industries*	100 Å, 350 m^2/g, 14% C, 3 & 5 µm, pH 2–8
Hichrom RPB	*HiChrom*	110 Å, 340 m^2/g, 14% C, 3.5, 5 & 10 µm, Endcapping, high purity silica

L43 *Pentafluorophenyl groups chemically bonded to silica particles by a propyl spacer, 1.5 to 10 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
Discovery HS F5	*Supelco*	120 Å, 300 m^2/g, 3, 5 & 10 µm, 12% C, pH 2–8
HALO PFP	*Advanced Materials Tech.*	90 Å, 120 m^2/g, 5.3% C, 2 µm, pH 2–9
		90 Å, 135 m^2/g, 5.5% C, 2.7 µm, pH 2–9
		90 Å, 90 m^2/g, 3.9% C, 5 µm, pH 2–9
Sunniest PFP	*ChromaNik Technologies*	120 Å, 340 m^2/g, 10% C, 5 µm, pH 2–8
SunShell PFP	*ChromaNik Technologies*	90 Å, 150 m^2/g, 4.5% C, 2.6 µm, pH 2–8

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 convention reversed phase C8 functionality.*

suggested packing	*manufacturer*	*properties / variations*
Chromegabond RP-SCX	*ES Industries*	5 µm, 60 Å
Generik C8/SCX	*Sepax Technologies.*	60 Å, 550 m^2/g, 20–40 & 40–60 µm, high purity silica

L45 *Beta cyclodextrin, R,S-hydroxypropyl ether derivative, bonded to porous silica particles, 3 to 10 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
ChiraDex	*Merck*	100 Å, 300–360 m^2/g, 5 µm, pH 3–7.5
Ultron ES-CD	*Shinwa*	5 µm
Ultron ES-PhCD	*Shinwa*	5 µm

L46 *Polystyrene/divinylbenzene substrate agglomerated with quaternary amine funcionalized latex beads, about 9 µm to 11 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
ICSep AN1	*Transgenomic*	pH 0–14

L47 *High capacity anion-exchange microporous substrate, fully functionalized with a trimethylamine group, 8 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
CarboPac MA1	*Dionex*	7.5 µm, cross linkage 15%, pH 0–14, T_{max} = 60 °C
Hamilton PRP-X100	*Hamilton*	100 Å, 5 & 10 µm, pH 1–13, T_{max} = 30–60 °C
Hamilton PRP-X110	*Hamilton*	100 Å, 7 µm, pH 1–13, T_{max} = 30–60 °C
Hamilton RCX-10	*Hamilton*	100 Å, 7 µm
Hamilton RCX-30	*Hamilton*	100 Å, 7 µm
MCI GEL CQA35S	*Mitsubishi Chemical*	10 µm, pH 2–12

L48 ...

L48 *Sulfonated, cross-linked polystyrene with an outer layer of submicron, porous, anion-exchange microbeads, 5 to 15 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
Dionex IonPac AG5	*Thermo Scientific*	Guard Column for IonPac AS5 (50 mm length)
Dionex IonPac AG7	*Thermo Scientific*	Guard Column for IonPac AS7 (50 mm length)
Dionex IonPac AS5	*Thermo Scientific*	15 µm, cross linkage 2%, pH 0–14
Dionex IonPac AS7	*Thermo Scientific*	10 µm, cross linkage 2%, pH 0–14

L49 *A reversed-phase packing made by coating a thin layer of polybutadiene onto spherical porous zirconia particles, 3 to 10 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
ZirChrom PBD	*ZirChrom*	1.9, 3 & 5 µm, T_{max}=150 °C, pH = 1–14
Discovery Zr-PBD	*Supelco*	300 Å, 3 & 5 µm, pH = 1–13

L50 *Multifunction resin with reverse-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 are of not less than 350 m^2 per g. Substrate is coated with quartenary ammonium functionalized latex particles consisting of styrene cross-linked with divinylbenzene.*

suggested packing	*manufacturer*	*properties / variations*
OmniPac PAX-500	*Thermo Scientific*	60 Å, 300 m^2/g, 8.5 µm, pH 0–14
Proteomix SAX-POR	*Sepax Technologies*	500 Å, 10 µm, pH 2–12, T_{max} = 80 °C

L51 *Amylose tris-3,5-dimethylphenylcarbamate-coated, porous, spherical, silica particles, 3 to 10 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
CHIRALPAK AD	*Daicel/Chiral Technologies*	10 µm, pH 2–9, T_{max} = 40 °C
CHIRALPAK AD-H	*Daicel/Chiral Technologies*	5 µm, pH 2–9, T_{max} = 40 °C
CHIRALPAK AD-3	*Daicel/Chiral Technologies*	3 µm, pH 2–9, T_{max} = 40 °C
Kromasil AmyCoat	*Nouryon*	3, 5, 10 & 25 µm

L52 *A strong cation exchange resin made of porous silica with sulfopropyl groups, 5 to 10 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
BioBasic SCX	*Thermo Scientific*	300 Å, 100 m^2/g, 3% C, 5 µm, pH 2–8, T_{max} = 60 °C
SUPELCOSIL LC-SCX	*Supelco*	120 Å, 170 m^2/g, 5 µm, pH 2–7.5, T_{max} = 70 °C
TSKgel SP-2SW	*Tosoh Bioscience*	125 Å, 5 µm, pH 2–7.5
TSKgel IC-Cation SW	*Tosoh Bioscience*	5 µm, pH 2–7.5, T_{max} = 45 °C

L53 *Weak cation-exchange resin consisting of ethylvinylbenzene, 55% cross-linked with divinylbenzene copolymer, 3 to 15 µm in diameter. Substrate is surface grafted with carboxylic acid and/or phosphoric acid functionalized monomers. Capacity not less than 500 µEq/column.*

suggested packing	*manufacturer*	*properties / variations*
Dionex IonPac CS14	*Thermo Scientific*	8 µm, cross linkage 55%, pH 0–14

... L58

L54 *A size exclusion medium made of covalent bonding of dextran to highly cross-linked porous agarose beads, 5–15 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
SUPERDEX 75 10/300 GL	*GE Healthcare*	13 µm, pH 3–12, T_{max} = 40 °C
Superdex 200 Increase 10/300 GL	*GE Healthcare*	8.6 µm, pH 3–12, T_{max} = 40 °C
Superdex 200 Increase 5/150 GL	*GE Healthcare*	8.6 µm, pH 3–12, T_{max} = 40 °C
Superdex 200 Increase 3.2/300	*GE Healthcare*	8.6 µm, pH 3–12, T_{max} = 40 °C

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

suggested packing	*manufacturer*	*properties / variations*
IC-Pak C M/D	*Waters*	5 µm, pH 2–7, T_{max} = 50 °C

L56 *Propyl silane chemically bonded to totally or superficially porous silica particles, 3 to 10 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
Poroshell 300 SB-C3	*Agilent Technologies*	300 Å, 4.5 m^2/g, 5 µm, pH 1–8, T_{max} = 90 °C
Zorbax StableBond C3	*Agilent Technologies*	80 Å, 180 m^2/g, 4% C, 1.8, 3.5 & 5 µm, pH 1–8, T_{max} = 80 °C

L57 *A chiral-recognition protein, ovomucoid, chemically bonded to silica particles, about 5 µm in diameter, with a pore size of 120 Å.*

suggested packing	*manufacturer*	*properties / variations*
Ultron ES-OVM	*Shinwa Chemical Industries*	120 Å, 5 µm, pH = 3,0-7,5
Ultron ES-OVM	*Agilent Technologies*	120 Å, 5 µm, pH = 3,0-7,5

L58 *Strong cation-exchange resin consisting of sulfonated cross-linked styrene-divinylbenzene copolymer in the sodium form, about 6–30 µm diameter.*

suggested packing	*manufacturer*	*properties / variations*
Carbomix Na-NP5	*Sepax*	5 µm, cross linkage 8%, pH 5–9, T_{max} = 85 °C
Carbomix Na-NP10	*Sepax*	10 µm, cross linkage 5, 8 & 10%, pH 5–9, T_{max} = 85 °C
CARBOSep Coregel 87N	*Transgenomic*	9 µm, cross linkage 8%, T_{max} = 95 °C
CARBOSep CHO611	*Transgenomic*	10 µm, cross linkage 6%, T_{max} = 95 °C
CARBOSep CHO611OH	*Transgenomic*	10 µm, cross linkage 6%, T_{max} = 95 °C
Hi-Plex Na	*Agilent Technologies*	10 µm, cross linkage 4%, T_{max} = 80–90 °C
MCI GEL CK08S	*Mitsubishi Chemical*	11 µm, cross linkage 8%, pH 1–7
MCI GEL CK08E	*Mitsubishi Chemical*	9 µm, cross linkage 8%, pH 1–7
MCI GEL CK04S	*Mitsubishi Chemical*	11 µm, cross linkage 4%, pH 6–7
MCI GEL CK02A	*Mitsubishi Chemical*	20 µm, cross linkage 2%, pH 6–7
SUGAR KS-801	*Shodex*	6 µm, pH 3–7, T_{max} = 85 °C
SUGAR KS-802	*Shodex*	6 µm, pH 3–7, T_{max} = 85 °C
TSKgel SCX(Na+)	*Tosoh Bioscience*	60 Å, 5 µm, pH 1–14, T_{max} = 45 °C

L59 ...

L59 *Packing for the size-exclusion separations of proteins (separation by molecular weight) over the range of 5 to 7000 kDa. The packing is spherical 1.5–10 µm, silica or hybrid packing with a hydrophilic coating.*

suggested packing	manufacturer	properties / variations
Nanofilm SEC-150	*Sepax*	150 Å, 5 µm, pH 2–8.5, T_{max} = 80 °C
Nanofilm SEC-250	*Sepax*	250 Å, 5 µm, pH 2–8.5, T_{max} = 80 °C
Nanofilm SEC-500	*Sepax*	450 Å, 5 µm, pH 2–8.5, T_{max} = 80 °C
PROTEIN KW-800	*Shodex*	0, 1000 & 1500 Å, 5 & 7 µm, 40pH 3–7.5, T_{max} = 45 °C
KW400	*Shodex*	400, 800, 1500 & 2000 Å, 3 & 5 µm, pH 3–7.5, T_{max} = 45 °C
SRT SEC-100	*Sepax*	100 Å, 5 µm, pH 2–8.5, T_{max} = 80 °C
SRT SEC-150	*Sepax*	150 Å, 5 µm, pH 2–8.5, T_{max} = 80 °C
SRT SEC-300	*Sepax*	300 Å, 5 µm, pH 2–8.5, T_{max} = 80 °C
SRT SEC-500	*Sepax*	500 Å, 5 µm, pH 2–8.5, T_{max} = 80 °C
SRT SEC-1000	*Sepax*	1000 Å, 5 µm, pH 2–8.5, T_{max} = 80 °C
TSKgel SuperSW	*Tosoh Bioscience*	125 & 250 Å, 3 & 4 µm, pH 2.5–7.5, T_{max} = 30 °C
TSKgel SWxl	*Tosoh Bioscience*	125, 250 & 450 Å, 5 & 8 µm, pH 2.5–7.5, T_{max} = 30 °C
TSKgel SW	*Tosoh Bioscience*	125 & 250 Å, 5 µm, pH 2.5–7.5, T_{max} = 30 °C
TSKgel SW mAb	*Tosoh Bioscience*	250 & 300 Å, 3 & 4 µm, pH 2.5–7.5, T_{max} = 30 °C
TSKgel UP-SW	*Tosoh Bioscience*	250 Å, 2 µm, pH 2.5–7.5, T_{max} = 30 °C

L60 *Spherical, porous silica gel, 10 µm or less in diameter, the surface of which has been covalently modified with alkyl amide groups and endcapped.*

suggested packing	manufacturer	properties / variations
Discovery RP-Amide C16	*Supelco*	180 Å, 200 m^2/g, 11% C, 5 µm, pH 2–8, T_{max} = 70 °C
Halo RP-Amide	*Advanced Materials Tech.*	90 Å, 120 m^2/g, 7.3% C, 2 µm, pH 2–9
		90 Å, 135 m^2/g, 8.2% C, 2.7 µm, pH 2–9
		90 Å, 90 m^2/g, 5.5% C, 5 µm, pH 2–9

L61 *A hydroxide-selective, strong anion-exchange resin consisting of a highly cross-linked core of 13 µm microporous particles having a pore size less than 10 Å units 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%).*

suggested packing	manufacturer	properties / variations
Dionex IonPac AG-11	*Thermo Scientific*	Guard Column for IonPac AS11 (50 mm length)
Dionex IonPac AS-11	*Thermo Scientific*	140 Å, 13 µm, cross linkage 55%, pH 0–14

L62 *C30 silane bonded phase on a fully porous spherical silica, 3 to 15 µm in diameter.*

suggested packing	manufacturer	properties / variations
Acclaim C30	*Thermo Scientific*	200 Å, 200 m^2/g, 13% C, 3 & 5 µm, pH 2–8, T_{max} = 60 °C
Develosil XG-C30	*Nomura Chemicals*	140 Å, 300 m^2/g, 19.5% C, 3 & 5 µm, pH 1–8
Develosil RP-Aqueous	*Nomura Chemicals*	140 Å, 300 m^2/g, 18% C, 3 & 5 µm, pH 2–8
ProntoSIL C30	*Bischoff*	120 Å, 300 m^2/g, 25% C, 3 µm
		200 Å, 200 m^2/g, 20% C, 3, 5 & 10 µm
		300 Å, 100 m^2/g, 13% C, 3 & 5 µm
SMT C30	*Separation Methods Tech*	100 Å, 340 m^2/g, 28% C, 5 µm

... L70

L63 *Glycopeptide teicoplanin linked through multiple covalent bonds to a 100 Å units spherical silica.*

suggested packing	*manufacturer*	*properties / variations*
Astec Chirobiotic T	*Supelco*	100 Å, 5 & 10 µm, pH 3.8–6.8
Astec Chirobiotic T2	*Supelco*	200 Å, 5 & 10 µm, pH 3.8–6.8

L64 *Strongly basic anion-exchange resin consisting of 8% crosslinked styrene-divinylbenzene copolymer with a quarternary ammonium group in the chloride form, 45 to 180 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
AG1-X8	*BioRad*	45–106 & 106–180 µm

L65 *Strongly acidic cation exchange resin consisting of 2% sulfonated crosslinked styrene divinylbenzene copolymer with a sulfonic acid group in the hydrogen form, 63 to 250 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
AG50W-X2	*BioRad*	75–180 µm

L66 *A crown ether coated on a 5 µm particle size silica gel substrate. The active site is (S) -18-crown-6-ether.*

suggested packing	*manufacturer*	*properties / variations*
Crownpak CR (+)	*Daicel/Chiral Technologies*	5 µm, pH 1–9, T_{max} = 50 °C

L67 *Porous vinyl alcohol copolymer with a C18 alkyl group attached to the hydroxyl group of the polymer, 2 to 10 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
apHera C18	*Supelco*	300 Å, 5, 9 & 13 µm, pH 2–12
Asahipak ODP-40	*Shodex*	250 Å, 17 % C, 4 µm, pH 2–13, T_{max} = 60 °C
Asahipak ODP-50	*Shodex*	250 Å, 17 % C, 5 µm, pH 2–13, T_{max} = 60 °C

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.*

suggested packing	*manufacturer*	*properties / variations*
Cogent Amide	*MicroSolv*	100 Å, 390 m^2/g, 2–3 % C, 4 µm, pH 2.5–7.5, T_{max} = 80 °C
SUPLEX pKb-100	*Supelco*	120 Å, 170 m^2/g, 12.5 % C, 5 µm, pH 2–7.5, T_{max} = 70 °C
TSKgel Amide-8	*Tosoh Bioscience*	100 Å, 450 m^2/g, 2, 3, 5 & 10 µm, pH 2–7.5, T_{max} = 50–80 °C

L69 *Ethylvinylbenzene/divinylbenzene substrate agglomerated with quaternary amine functionalized 130 nm latex beads, about 6.5 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
Dionex CarboPac PA20	*Thermo Scientific*	6.5 µm, cross linkage 55%, pH 0–14, T_{max} = 60 °C

L70 *Cellulose tris(phenyl carbamate) coated on 5 µm silica.*

suggested packing	*manufacturer*	*properties / variations*
Chiralcel OC-H	*Daicel/Chiral Technologies*	5 µm, T_{max} = 40 °C

L71 ...

L71
A rigid, spherical polymet[h]acrylate, 4 to 6 µm in diameter.

suggested packing	manufacturer	properties / variations
MCI GEL CMG20/C04	*Mitsubishi Chemical*	4 µm, pH 2–12
RSpak DE-213	*Shodex*	25 Å, 4 µm, pH 2–12, T_{max} = 60 °C
RSpak DE-413	*Shodex*	25 Å, 4 µm, pH 2–12, T_{max} = 60 °C
RSpak DE-613	*Shodex*	25 Å, 6 µm, pH 2–12, T_{max} = 70 °C

L72
(S)-phenylglycine and 3,5-dinitroana[i]line urea linkage covalently bonded to silica.

suggested packing	manufacturer	properties / variations
Sumichiral OA-3300 S	*Sumika*	5 µm

L73
A rigid, spherical polydivinylbenzene particle, 5 to 10 µm in diameter.

suggested packing	manufacturer	properties / variations
MCI GEL CDR10	*Mitsubishi Chemical*	7 µm, pH 1–13

L74
A strong anion-exchange resin consisting of a highly cross-linked core of 7-µm macroporous particles having a 100 Angstroms 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 quartenary ammonium ions.

suggested packing	manufacturer	properties / variations
Dionex IonPac AS14A	*Thermo Scientific*	100 Å, 5 & 7 µm, cross linkage 55%, pH 2–11

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 Angstroms.

suggested packing	manufacturer	properties / variations
Resolvosil BSA	*Macherey-Nagel*	300 Å, 7 µm

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.

suggested packing	manufacturer	properties / variations
Metrosep C4	*Metrohm*	5 µm, pH 2–7, T_{max} = 60 °C
Metrosep C6	*Metrohm*	5 µm, pH 2–7, T_{max} = 60 °C
IC YK-421	*Shodex*	5 µm, T_{max} = 60 °C

L77
Weak cation-exchange resin consisting of ethylvinylbenzene, 55% cross-linked with divinylbenzene copolymer, 6 to 9 µm diameter. Substrate is surface grafted with carboxylic acid functionalized groups. Capacity not less than 500 µEq/column (4 mm x 25 cm)

suggested packing	manufacturer	properties / variations
Dionex IonPac CS17	*Thermo Scientific*	6.5 & 7 µm, cross linkage 55 %

... L83

L78 *A silane ligand that consists of both reversed-phase (an alkyl chain longer than C8) and anion-exchange (primary, secondary, or tertiary amino groups) functional groups chemically bonded to porous or non-porous or ceramic micro-particles, 1.0 to 50 µm in diameter or a monolithic rod.*

suggested packing	*manufacturer*	*properties / variations*
Acclaim Mixed-Mode WAX-1	*Thermo Scientific*	120 Å, 300 m^2/g, 3 & 5 µm, pH 2.5–7.5, T_{max} = 50 °C
Primesep B2	*SIELC Technologies*	100 Å, 5 & 10 µm

L79 *A chiral-recognition protein, human serum albumin (HSA), chemically bondend to silica particles, about 5 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
CHIRALPAK HSA	*Daicel/Chiral Technologies*	5 µm, pH 5–7, T_{max} = 30 °C

L80 *Cellulose tris(4-methylbenzoate)-coated, porous, spherical, silica particles, 5 - 20 µ in diameter.*

suggested packing	*manufacturer*	*properties / variations*
Chiralcel OJ	*Daicel/Chiral Technologies*	10 µm, pH 2–9, T_{max} = 40 °C
Chiralcel OJ-H	*Daicel/Chiral Technologies*	5 µm, pH 2–9, T_{max} = 40 °C
Chiralcel OJ-3	*Daicel/Chiral Technologies*	3 µm, pH 2–9, T_{max} = 40 °C

L81 *A hydroxide-selective, strong anion-exchange resin consisting of a highly cross-linked core of 9 µm porous particles having a pore size of 2000 Angstroms units and consisting of ethylvinylbenzene cross-linked with 55% divinylbenzene with a latex coating composed of 70 nm diameter microbeads (6% crosslinked) bonded with alkanol quartenary ammonium ions.*

suggested packing	*manufacturer*	*properties / variations*
Dionex IonPac AS11-HC	*Thermo Scientific*	9 µm, cross linkage 55%, pH 0–14

L82 *Polyamine chemically bonded to cross-linked polyvinyl alcohol polymer, 4–5 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
apHera NH2 Amino	*Supelco*	300 Å, 5, 9 & 13 µm, pH 2–12
Asahipak NH2P-40	*Shodex*	100 Å, 4 µm, pH 2–13, T_{max} = 50 °C
Asahipak NH2P-50	*Shodex*	100 Å, 5 µm, pH 2–13, T_{max} = 50 °C

L83 *A hydroxide-selective, strong anion-exchange resin-quartenary amine bonded on latex particles attached to a core of 10.5 µm microporous particles having a pore size of 10 Angstroms and consisting of ethylvinylbenzene cross-linked with 55% divinylbenzene.*

suggested packing	*manufacturer*	*properties / variations*
Dionex IonPac AG17-C	*Thermo Scientific*	Guard Column for IonPac AS17-C (50 mm length)
Dionex IonPac AS17-C	*Thermo Scientific*	10.5 µm, cross linkage 55%, pH 0–14

L84...

L84

Weak cation-exchange resin consisting of ethylvinylbenzene, 55% cross-linked with divinylbenzene copolymer, 5 µm diameter. Substrate is surface grafted with carboxylic acid functionalized groups. Capacity not less than 8400 µEq/column (5 mm x 25 cm).

suggested packing	manufacturer	properties / variations
Dionex IonPac CG16	*Thermo Scientific*	Guard Column for IonPac CS16 (50 mm length)
Dionex IonPac CS16	*Thermo Scientific*	5.5 µm, cross linkage 55%

L85

A silane ligand that consists of both reversed-phase (an alkyl chain longer than C8) and weak cation-exchange (carboxyl groups) functional groups chemically bonded to porous or non-porous particles, 1.0 - 50 µm in diameter.

suggested packing	manufacturer	properties / variations
Acclaim Mixed-Mode WCX-1	*Thermo Scientific*	120 Å, 300 m^2/g, 3 & 5 µm, pH 2.5–7.5, Tmax = 50 °C
Cogent UDA	*MicroSolv Techn. Corp.*	100 Å, 390 m^2/g, 4 µm, 14–15% C, pH 2–8, Tmax = 80 °C
Cogent UDA 2.ō	*MicroSolv Techn. Corp.*	120 Å, 340 m^2/g, 2.2 µm, 14–15% C, pH 2–8, Tmax = 80 °C
Primesep 100	*SIELC Technologies*	100 Å, 5 & 10 µm
Primesep 200	*SIELC Technologies*	100 Å, 5 & 10 µm

L86

A 5 µm fused core particle with a highly polar ligand possessing 5 hydroxyl groups tethered to the silica gel outer layer.

suggested packing	manufacturer	properties / variations
Ascentis Express OH5	*Supelco*	90 Å, 2.7 µm, pH 2–9, T_{max} = 60 °C
Poroshell HILIC-OH5	*Agilent Technologies*	120 Å, 2.7 µm, pH 1–7, T_{max} = 45 °C

L87

Dodecyl silane chemically bonded to porous silica particles, 1.5 to 10 µm in diameter.

suggested packing	manufacturer	properties / variations
Accucore RP-MS	*Thermo Scientific*	80 Å, 130 m^2/g, 7% C, 2.6 µm, pH 2–9, T_{max} = 60 °C

L88

Glycopeptide vancomycin linked through multiple covalent bonds to 100 Angstroms spherical silica.

suggested packing	manufacturer	properties / variations
Astec Chirobiotic-V	*Supelco*	100 Å, 5 µm, pH 3.5–7
Astec Chirobiotic-V2	*Supelco*	200 Å, 5 & 10 µm, pH 3.5–7
Poroshell Chiral-V	*Agilent Technologies*	120 Å, 130 m^2/g, 2.7 µm, pH 2.5–7, T_{max} = 45 °C

L89

Packing having the capacity to separate compounds with a molecular weight range from 100–3000 (as determined by polyethylene oxide), applied to neutral and anionic water-soluble polymers. A polymethacrylate resin base, cross-linked with polyhydroxylate ether (surface contains some residual cationic functional groups).

suggested packing	manufacturer	properties / variations
TSKgel G-Oligo-PW	*Tosoh Bioscience*	125 Å, 7 µm, pH 2–12, T_{max} = 80 °C
TSKgel SuperOligoPW	*Tosoh Bioscience*	125 Å, 3 µm, pH 2–12, T_{max} = 80 °C

... L95

L90 *Amylose tris-[(S)-alpha-methylbenzylcarbamate] coated on porous, spherical silica particles, 3 to 10 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
CHIRALPAK AS	*Daicel/Chiral Technologies*	10 µm, pH 2–9, T_{max} = 40 °C
CHIRALPAK AS-H	*Daicel/Chiral Technologies*	5 µm, pH 2–9, T_{max} = 40 °C
CHIRALPAK AS-3	*Daicel/Chiral Technologies*	3 µm, pH 2–9, T_{max} = 40 °C

L91 *Strong anion-exchange resin consisting of monodisperse porous polystyrene/divinyl benzene beads coupled with quartenary amine. Bead size is 10 µm.*

suggested packing	*manufacturer*	*properties / variations*
Metrosep A Supp 1	*Metrohm*	7 µm, pH 1–13
Metrosep A Supp 10	*Metrohm*	4.6 µm, pH 0–14, T_{max} = 70 °C
Metrosep A Supp 16	*Metrohm*	4.6 µm, pH 0–14, T_{max} = 70 °C
Metrosep A Supp 17	*Metrohm*	5 µm, pH 0–14, T_{max} = 70 °C
Mono Q 5/50 GL	*GE Healthcare*	10 µm
Mono Q 4.6/100 PE	*GE Healthcare*	10 µm
Mono Q PC 1.6/5	*GE Healthcare*	10 µm
Mono Q 10/100 GL	*GE Healthcare*	10 µm
Mono Q HR 16/10	*GE Healthcare*	10 µm

L92 *A strong anion-exchange resin consisting of a highly cross-linked core of 5–9 µm macroporous particles having a 100 Angstroms 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 alkanol quartenary ammonium ions.*

suggested packing	*manufacturer*	*properties / variations*
Dionex IonPac AS15	*Thermo Scientific*	100 Å, 5 & 9 µm, pH 0–14

L93 *Cellulose tris(3,5-dimethylphenylcarbamate) reversed phase chiral stationary phase coated on 3 or 5 µm silica gel particles.*

suggested packing	*manufacturer*	*properties / variations*
CHIRACEL OD-RH	*Daicel/Chiral Technologies*	5 µm, pH 2–9, T_{max} = 40 °C
CHIRACEL OD-3R	*Daicel/Chiral Technologies*	3 µm, pH 2–9, T_{max} = 40 °C

L94 *A strong anion-exchange resin consisting of a highly crosslinked 15 µm microporous particles functionalized with very low crosslinked latex (0.5%) to provide alkanol quartenary ammonium ion exchange sites.*

suggested packing	*manufacturer*	*properties / variations*
Dionex IonPac AG4A	*Thermo Scientific*	Guard Column for IonPac AS4A (50 mm length)
Dionex IonPac AS4A	*Thermo Scientific*	15 µm, pH 0–14

L95 *Highly polar alkyl ligand comprising five hydroxyl groups that are chemically bonded to totally porous or superficially porous silica or a monolithic silica rod.*

suggested packing	*manufacturer*	*properties / variations*
Halo Penta-HILIC	*Advanced Materials Technology*	90 Å, 120 m^2/g, 2.8% C, 2 µm, pH 2–9
		90 Å, 135 m^2/g, 3.2% C, 2.7 µm
		90 Å, 90 m^2/g, 3.1% C, 5 µm

L96 ...

L96
Alkyl chain, reversed-phase bonded totally or superficially porous silica designed to retain hydrophilic and other polar compounds when using highly aqueous mobile phases, including 100% aqueous, 1.5 µm to 10 µm in diameter.

suggested packing	manufacturer	properties / variations
Poroshell SB-Aq	*Agilent Technologies*	120 Å, 130 m^2/g, 2.7 µm, pH 1–8, T_{max} = 80 °C
Zorbax SB-Aq	*Agilent Technologies*	80 Å, 180 m^2/g, 1.8, 3.5 & 5 µm, pH 1–8, T_{max} = 80 °C

L97
Weak cation-exchange resin consisting of a highly cross-linked core of 5.5 µm porous particles having a pore size of 2000 Angstroms units and consisting of ethylvinylbenzene cross-linked with 55% divinylbenzene. Substrate is surface grafted with carboxylic acid functionalized groups. Capacity not less than 2400 µEq/column (4 mm x 25 cm).

suggested packing	manufacturer	properties / variations
Dionex IonPac CS19	*Thermo Scientific*	2000 Å, 5.5 µm, pH 0–7, T_{max} = 30 °C

L98
Weak cation-exchange resin consisting of a highly cross-linked core of 8 µm microporous particles having an average pore size of 10 Angstroms units and consisting of ethylvinylbenzene cross-linked with 55% divinylbenzene. Substrate is surface grafted with carboxylic acid functionalized groups. Capacity not less than 46 µEq/column (4 mm x 5 cm).

suggested packing	manufacturer	properties / variations
Dionex IonPac CG19	*Thermo Scientific*	8 µm

L99
Amylose tris-(3,5-dimethylphenylcarbamate), immobilized on porous, spherical, silica particles, 3 to 5 µm in diameter.

suggested packing	manufacturer	properties / variations
CHIRALPAK IA	*Daicel/Chiral Technologies*	5 µm, pH 2–9, T_{max} = 40 °C
CHIRALPAK IA-3	*Daicel/Chiral Technologies*	3 µm, pH 2–9, T_{max} = 40 °C

L100
A 55% crosslinked, microporous, hydrophobic resin core (9 µm microporous particles having a pore size of 10 Angstroms units) that consists of a bilayer of anion and cation exchange latex. The first layer is fully sulfonated (140 nm) and the second layer is fully aminated (76 nm).

suggested packing	manufacturer	properties / variations
Dionex IonPac CG5A	*Thermo Scientific*	Guard Column for IonPac CS5A (50 mm length)
Dionex IonPac CS5A	*Thermo Scientific*	9 µm

L101
Cholesteryl groups chemically bonded to porous or non-porous silica or ceramic micro-particles, 1.5 to 10 µm in diameter, or a monolithic rod.

suggested packing	manufacturer	properties / variations
Cogent UDC-Cholesterol	*MicroSolv*	100 Å, 390 m^2/g, 13–14% C, 4 µm, pH 2–8, T_{max} = 80 °C
Cogent UDC-Cholesterol 2.o	*MicroSolv*	120 Å, 340 m^2/g, 13–14% C, 2.2 µm, pH 2–8, T_{max} = 80 °C

... L108

L102 *1-(3,5-dinitrobenzamido)-1,2,3,4-tetrahydrophenanthrene covalently bonded to porous spherical silica particles, 5 to 10 µm in diameter.*

suggested packing	manufacturer	properties / variations
(S,S) Whelk-O 1	*Regis Technologies*	100 Å, 1.8, 3.5, 5 & 10 µm, pH 2.5–7.5

L103 *A hydroxide-selective, strong anion-exchange resin consisting of a highly cross-linked core of 7.5 µm porous particles having a pore size of 2000 Angstroms units and consisting of ethylvinylbenzene cross-linked with 55% divinylbenzene electrostatically bonded with hyperbranched alkanol quaternary ammonium ions.*

suggested packing	manufacturer	properties / variations
Dionex IonPac AS19	*Thermo Scientific*	2000 Å, 7.5 µm, pH 0–14

L104 *Triazole groups chemically bonded to porous silica particles, 1.5 to 10 µm in diameter.*

suggested packing	manufacturer	properties / variations
Cosmosil HILIC	*Nacalai Tesque*	120 Å, 300 m^2/g, 5 µm

L105 *A strong anion-exchange resin consisting of a highly cross-linked 9 µm supermacroporous (2000 Angstroms) particles functionalized with very low cross-linked latex (0.2%) to provide alkyl quaternary ammonium ion sites.*

suggested packing	manufacturer	properties / variations
Dionex IonPac AS12A	*Thermo Scientific*	2000 Å, 9 µm, pH 0–14

L106 *Weak cation-exchange resin consisting of ethylvinylbenzene, 55% cross-linked with divinylbenzene copolymer, 5-8 µm diameter, macroporous particles having an average pore size of 100 Å units. Substrate is surface grafted with carboxylic acid and phosphonic acid functional groups. Capacity not less than 2800 µEq/column (4 mm x 25 cm).*

suggested packing	manufacturer	properties / variations
Dionex IonPac CG12A	*Thermo Scientific*	Guard Column for IonPac CS12A (50 mm length)
Dionex IonPac CS12A	*Thermo Scientific*	5.5 & 8.5 µm

L107 *Cellulose tris(4-methylbenzoate)-coated porous spherical particles, 3 to 5 µm in diameter, for use with reversed phase mobile phases.*

suggested packing	manufacturer	properties / variations
CHIRALCEL OJ-RH	*Daicel/Chiral Technologies*	5 µm, pH 2–9, T_{max} = 40 °C

L108 *A chiral-recognition protein, cellobiohydrolase (CBH), chemically bonded to silica particles, about 5 µm in diameter.*

suggested packing	manufacturer	properties / variations
Chiralpak CBH	*Daicel/Chiral Technologies*	5 µm, pH 4–7, T_{max} = 30 °C

L109 ...

L109
Spherical particles of porous graphitic carbon, 3 to 30 µm in diameter.

suggested packing	manufacturer	properties / variations
Hypercarb	*Thermo Scientific*	250 Å, 120 m^2/g, 100% C, 3 & 5 µm, pH 0–14, T_{max} = 200 °C

L110
A strong anion-exchange resin consisting of a highly cross-linked 13 µm microporous (less than 10 Angstroms) particles coated with very low cross-linked latex (0.5%) to provide alkanol quaternary ammonium ion exchange sites.

suggested packing	manufacturer	properties / variations
Dionex IonPac AG12A	*Thermo Scientific*	13 µm

L111
Polyamine chemically bonded to porous spherical silica particles, 5 µm in diameter.

suggested packing	manufacturer	properties / variations
YMC-Pack Polyamine II	*YMC*	120 Å, 5 µm, pH 2–7.5, T_{max} = 50 °C

L112
A hydroxide-selective, strong anion-exchange resin consisting of a highly cross-linked core of 8.5 µm porous particles having a pore size of 2000 Angstroms units and consisting of ethylvinylbenzene cross-linked with 55% divinylbenzene with a latex coating composed of 65 nm diameter microbeads (5% crosslinked) bonded with alkanol quaternary ammonium ions.

suggested packing	manufacturer	properties / variations
Dionex IonPac AG10	*Thermo Scientific*	8.5 µm, pH 0–14

L113
A hydroxide-selective, strong anion-exchange resin consisting of a highly cross-linked core of 7.5 µm porous particles having a pore size of 2000 Angstroms units and consisting of ethylvinylbenzene cross-linked with 55% divinylbenzene with a latex coating composed of 65 nm diameter microbeads (5%) crosslinked bonded with alkanol quaternary ammonium ions.

suggested packing	manufacturer	properties / variations
Dionex IonPac AS18	*Thermo Scientific*	2000 Å, 7.5 µm, pH 0–14

L114
Sulfobetaine graft-polymerized to totally or superficially porous silica, 1.5 to 10 µm in diameter, or a monolithic rod. Packing having densely bonded zwitterionic groups with 1:1 charge balance.

suggested packing	manufacturer	properties / variations
SeQuant ZIC-HILIC	*Merck KgaA*	100 & 200 Å, 3.5 & 5 µm, pH 3–8, T_{max} = 70 °C

L115
Ethylvinylbenzene/divinylbenzene substrate (55% cross-linked) agglomerated with quaternary amine functionalized 275 nm latex microbeads (6% cross-linked), about 8.5 µm in diameter.

suggested packing	manufacturer	properties / variations
Dionex CarboPac PA100	*Thermo Scientific*	8.5 µm, pH 0–14, T_{max} = 60 °C

... L118

L116 *Sulfonated ethylvinylbenzene/divinylbenzene substrate approximately 12 to 14 µm in diameter agglomerated with hydrophilic quaternary amine functionalized glycidyl-derivative methacrylate microbeads.*

suggested packing	*manufacturer*	*properties / variations*
Dionex DNAPac PA100	*Thermo Scientific*	13.5 µm, pH 2–12, T_{max} = 90 °C

L117 *A crown ether coated on a 5 µm particle size silica gel substrate. The active site is (R)-18-crown-6-ether.*

suggested packing	*manufacturer*	*properties / variations*
CROWNPAK CR(-)	*Daicel/Chiral Technologies*	5 µm, pH 1–9, T_{max} = 50 °C

L118 *Aqueous polymerized C18 groups on silica particles, 2 to 5 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
MZ-PAH	*MZ-Analysentechnik*	3 & 5 µm
ChromSpher PAH	*Agilent Technologies*	120 Å, 5 µm
Pursuit PAH	*Agilent Technologies*	200 Å, 200 m^2/g, 3 & 5 µm, pH 1.5–10

L## ...

L## *(Ethylhexyl triazone, FluoFix) – Fluorocarbon chains chemically bonded to 5 µm spherical silica particles.*

suggested packing	*manufacturer*	*properties / variations*
Wakopak FluoFix-II 120E	*Wako Pure Chemical Ind.*	120 Å, 300 m^2/g, 5 µm, Endcapping
Wakopak Fluofix 120E	*Wako Pure Chemical Ind.*	120 Å, 300 m^2/g, 5 µm, Endcapping
Wakopak Fluofix 120N	*Wako Pure Chemical Ind.*	120 Å, 300 m^2/g, 5 µm, No Endcapping

L## *(Lanatoprost, Chiracel OD-R) – Cellulose tris(3,5-dimethylphenylcarbamate) coated on 10 µm silica gel particles.*

suggested packing	*manufacturer*	*properties / variations*
CHIRALCEL OD-R	*Daicel/Chiral Technologies*	10 µm, pH 2–9, T_{max} = 40 °C

L## *(Polyethylene Glycol 3350, Aquagel OH 40) – Packing having the capacity to separate compounds with a molecular weight range from 10,000 to 200,000 g/mol (as determined by polyethylene oxide), applied to neutral, anionic, and cationic water-soluble polymers, composed of a rigid macroporous material with a hydrophilic surface.*

suggested packing	*manufacturer*	*properties / variations*
Aquagel OH 40	*Agilent Technologies*	8 & 15 µm, pH 2–10, T_{max} = 90 °C, p_{max} = 140 bar

L## *(Felodipine Extended-release Tablets, COSMOSIL PYE) – Pyrenyl groups chemically bonded to porous silica particles, 1.5 to 10 µm in diameter, or a monolithic rod.*

suggested packing	*manufacturer*	*properties / variations*
COSMOSIL PYE	*Nacalai Tesque*	120 Å, 300 m^2/g, 18% C, 5 µm, pH 2–7.5

L## *(Atomoxetine Hydrochloride, Chiralpak IC) – Cellulose tris-(3,5-dichlorophenylcarbamate), immobilized on porous, spherical, silica particles, 3 to 5 µm in diameter.*

suggested packing	*manufacturer*	*properties / variations*
CHIRALPAK IC	*Daicel/Chiral Technologies*	5 µm, pH 2–9, T_{max} = 40 °C
CHIRALPAK IC-3	*Daicel/Chiral Technologies*	3 µm, pH 2–9, T_{max} = 40 °C

... L##

L## *(Liquid Glucose, Aminex HPX-42A) – Strong cation-exchange resin consisting of sulfonated cross-linked styrene-divinylbenzene co-polymer in the silver form, average 9 µm in diameter.*

suggested packing	manufacturer	properties / variations
Aminex HPX-42A	*Bio-rad*	25 µm, 4% Cross-linkage, pH 6–8

L## *(Palonosetron Hydrochloride, Chirobiotic-V) – Glycopeptide vancomycin linked through multiple covalent bonds to 100 Ansgtroms spherical silica.*

suggested packing	manufacturer	properties / variations
Astec Chirobiotic-V	*Supelco*	100 Å, 5 µm, pH 3.5–7
Astec Chirobiotic-V2	*Supelco*	200 Å, 5 & 10 µm, pH 3.5–7

L## *(Adenosine, Dionex IonPac AG18) - A hydroxide-selective, strong anion-exchange resin consisting of a highly cross-linked core of 13 µm microporous particles having a pore size of <10 Angstroms units and consisting of ethylvinylbenzene cross-linked with 55% divinylbenzene with a latex coating composed of 65 nm diameter microbeads (8% crosslinked) bonded with alkanol quaternary ammonium ions. Capacity not less than 10 µEq/column (4 mm x 5 cm).*

suggested packing	manufacturer	properties / variations
Dionex IonPac AG18	*Thermo Scientific*	13 µm

L## *(Adenosine, Dionex IonPac AS18) - A hydroxide-selective, strong anion-exchange resin consisting of a highly cross-linked core of 7.5 µm macroporous particles having an average pore size of 2000 Angstroms units and consisting of ethylvinylbenzene cross-linked with 55% divinylbenzene with a latex coating composed of 65 nm diameter microbeads (8% crosslinked) bonded with alkanol quaternary ammonium ions. Capacity not less than 285 µEq/column (4 mm x 25 cm).*

suggested packing	manufacturer	properties / variations
Dionex IonPac AS18	*Thermo Scientific*	2000 Å, 7.5 µm, pH 0–14

MZ: AVAILABLE HPLC-PACKINGS

2020

All listed packing media are also available in prep- and semi-prep-HPLC-columns with 8 - 50 mm ID, prices upon request.
Also available: column-sets for validation (3 of same batch / 3 of different batch etc.)

PerfectSil™		USP	CODE	price group
PerfectSil 100 Sil	5 µm	L3	**0705**	**D**
PerfectSil 100 ODS-3	3 µm	L1	**0708**	**F**
PerfectSil 100 ODS-3	5 µm	L1	**0710**	**D**
PerfectSil 100 C8-3	5 µm	L7	**0715**	**D**
PerfectSil 100 Phenyl-3	5 µm	L11	**0735**	**D**
PerfectSil 100 NH2	5 µm	L8	**0720**	**D**
PerfectSil 100 CN-3	5 µm	L10	**0725**	**D**
PerfectSil 100 Diol	5 µm		**0730**	**D**
PerfectSil 120 Sil	5 µm	L3	**1410**	**D**
PerfectSil 120 ODS	3 µm	L1	**1421**	**F**
PerfectSil 120 ODS	5 µm	L1	**1420**	**D**
PerfectSil 120 ODS	7 µm	L1	**1398**	**D**
PerfectSil 120 ODS	10 µm	L1	**1400**	**D**
PerfectSil 120 ODS-L	3 µm	L1	**1675**	**F**
PerfectSil 120 ODS-L	5 µm	L1	**1680**	**E**
PerfectSil 120 ODS-2	3 µm	L1	**1424**	**F**
PerfectSil 120 ODS-2	5 µm	L1	**1425**	**D**
PerfectSil 120 C1	3 µm	L13	**1429**	**F**
PerfectSil 120 C1	5 µm	L13	**1430**	**D**
PerfectSil 120 C4	3 µm	L26	**1433**	**F**
PerfectSil 120 C4	5 µm	L26	**1435**	**D**
PerfectSil 120 C8	3 µm	L7	**1441**	**F**
PerfectSil 120 C8	5 µm	L7	**1440**	**D**
PerfectSil 120 C8	10 µm	L7	**1442**	**D**
PerfectSil 120 CN	3 µm	L10	**1379**	**F**
PerfectSil 120 CN	5 µm	L10	**1380**	**D**
PerfectSil 120 NH2	3 µm	L8	**1446**	**F**
PerfectSil 120 NH2	5 µm	L8	**1445**	**D**
PerfectSil 120 Phenyl	3 µm	L11	**1447**	**F**
PerfectSil 120 Phenyl	5 µm	L11	**1448**	**D**
PerfectSil 120 Phenyl-M	5 µm	L11	**1449**	**D**
PerfectSil 300 Sil	5 µm	L3	**1450**	**E**
PerfectSil 300 Sil	10 µm	L3	**1840**	**D**
PerfectSil 300 Sil	15-20 µm		**1845**	**D**
PerfectSil 300 ODS C18	5 µm	L1	**1455**	**E**
PerfectSil 300 ODS C18	10 µm	L1	**1805**	**D**
PerfectSil 300 ODS C18	15-20 µm		**1810**	**D**
PerfectSil 300 C4	5 µm	L26	**1460**	**E**
PerfectSil 300 C4	10 µm	L26	**1830**	**D**
PerfectSil 300 C4	15-20 µm		**1835**	**D**
PerfectSil 300 C8	5 µm	L7	**1465**	**E**
PerfectSil 300 C8	10 µm	L7	**1820**	**D**
PerfectSil 300 C8	15-20 µm		**1825**	**D**
PerfectSil 300 Diol	5 µm		**1858**	**E**
PerfectSil 1000 Sil	5 µm	L3	**1475**	**D**

PerfectSil™ Target		USP	CODE	price group
PerfectSil Target Sil 100	3 µm	L3	**0803**	**F**
PerfectSil Target Sil 100	5 µm	L3	**0800**	**E**
PerfectSil Target ODS-3	3 µm	L1	**0802**	**F**
PerfectSil Target ODS-3	5 µm	L1	**0801**	**E**
PerfectSil Target ODS-3	10 µm	L1	**0806**	**D**
PerfectSil Target C8-3	3 µm	L7	**0812**	**F**
PerfectSil Target C8-3	5 µm	L7	**0811**	**E**
PerfectSil Target CN-3	5 µm	L10	**0818**	**E**

PerfectSil™ Target HD		USP	CODE	price group
PerfectSil Target ODS-3 HD	3 µm	L1	**0833**	**F**
PerfectSil Target ODS-3 HD	5 µm	L1	**0831**	**E**
PerfectSil Target ODS-3 HD	10 µm	L1	**0830**	**E**
PerfectSil Target C8 HD	3 µm	L7	**0843**	**F**
PerfectSil Target C8 HD	5 µm	L7	**0845**	**E**

MZ-Aqua Perfect™		USP	CODE	price group
MZ-Aqua Perfect C18	3 µm	L1	**0610**	**F**
MZ-Aqua Perfect C18	5 µm	L1	**0612**	**D**
MZ-Aqua Perfect C18	7 µm	L1	**0613**	**D**
MZ-Aqua Perfect C18	10 µm	L1	**0614**	**D**

Orbit™ 100		USP	CODE	price group
Orbit 100 C18	3,5 µm	L1	**0902**	**E**
Orbit 100 C18	5 µm	L1	**0901**	**C**
Orbit 100 C18	10 µm	L1	**0906**	**C**
Orbit 100 C8	3,5 µm	L7	**0912**	**E**
Orbit 100 C8	5 µm	L7	**0911**	**C**
Orbit 100 C8	10 µm	L7	**0916**	**C**
Orbit 100 C4	3,5 µm	L26	**0922**	**E**
Orbit 100 C4	5 µm	L26	**0921**	**C**
Orbit 100 C4	10 µm	L26	**0926**	**C**
Orbit 100 CN	5 µm	L10	**0875**	**C**

PerfectBond™		USP	CODE	price group
PerfectBond ODS-H	5 µm	L1	**1195**	**E**
PerfectBond ODS-HD	3 µm	L1	**1200**	**F**
PerfectBond ODS-HD	5 µm	L1	**1198**	**E**
PerfectBond C18 ODS	5 µm	L1	**1190**	**E**
PerfectBond C18*	10 µm	L1	**1011**	**E**
PerfectBond C8-HD	3 µm	L7	**1202**	**F**
PerfectBond C8-HD	5 µm	L7	**1204**	**E**
PerfectBond C8-H	5 µm	L7	**1192**	**E**
PerfectBond C8	5 µm	L7	**1018**	**E**
PerfectBond C1	3 µm	L13	**1180**	**F**
PerfectBond C1	5 µm	L13	**1182**	**E**
PerfectBond Ph	5 µm	L11	**1220**	**E**
PerfectBond Ph-H	5 µm	L11	**1222**	**E**
PerfectBond Si	30-50 µm	L27	**1027**	**C**

PerfectChrom™		USP	CODE	price group
PerfectChrom 60 Sil	5 µm	L3	**1575**	**C**
PerfectChrom 60 Sil	10 µm	L3	**1577**	**C**
PerfectChrom 100 Sil	5 µm	L3	**1525**	**C**
PerfectChrom 100 Sil	10 µm	L3	**1527**	**C**
PerfectChrom 100 C18	3 µm	L1	**1503**	**F**
PerfectChrom 100 C18	5 µm	L1	**1505**	**C**
PerfectChrom 100 C18	10 µm	L1	**1500**	**C**
PerfectChrom 100 C18	15 µm	L1	**1506**	**C**
PerfectChrom 100 C18L	5 µm	L1	**1494**	**C**
PerfectChrom 100 C18L	10 µm	L1	**1496**	**C**
PerfectChrom 100 C18M	5 µm	L1	**1504**	**C**
PerfectChrom 100 C8	3 µm	L7	**1513**	**F**
PerfectChrom 100 C8	5 µm	L7	**1515**	**C**
PerfectChrom 100 C8M	5 µm	L7	**1514**	**C**
PerfectChrom 100 C8	10 µm	L7	**1510**	**C**
PerfectChrom 100 C1	5 µm	L13	**1535**	**C**
PerfectChrom 100 C4	5 µm	L26	**1539**	**C**
PerfectChrom 100 C6	5 µm	L15	**1543**	**C**
PerfectChrom 100 CN	5 µm	L10	**1555**	**C**
PerfectChrom 100 CN	10 µm	L10	**1557**	**C**
PerfectChrom 100 Diol	5 µm	L20	**1559**	**C**
PerfectChrom 100 Diol	10 µm	L20	**1560**	**C**
PerfectChrom 100 NH2	5 µm	L8	**1551**	**C**
PerfectChrom 100 NH2	10 µm	L8	**1552**	**C**
PerfectChrom 100 Phenyl	3 µm	L11	**1545**	**F**
PerfectChrom 100 Phenyl	5 µm	L11	**1547**	**C**
PerfectChrom 100 Phenyl	10 µm	L11	**1549**	**C**
PerfectChrom 100 Phenyl M	10 µm	L11	**1550**	**C**
PerfectChrom 100 SAX	5 µm	L14	**1563**	**E**
PerfectChrom 100 SAX	10 µm	L14	**1565**	**E**
PerfectChrom 100 SCX	5 µm	L9	**1567**	**E**
PerfectChrom 100 SCX	10 µm	L9	**1569**	**E**

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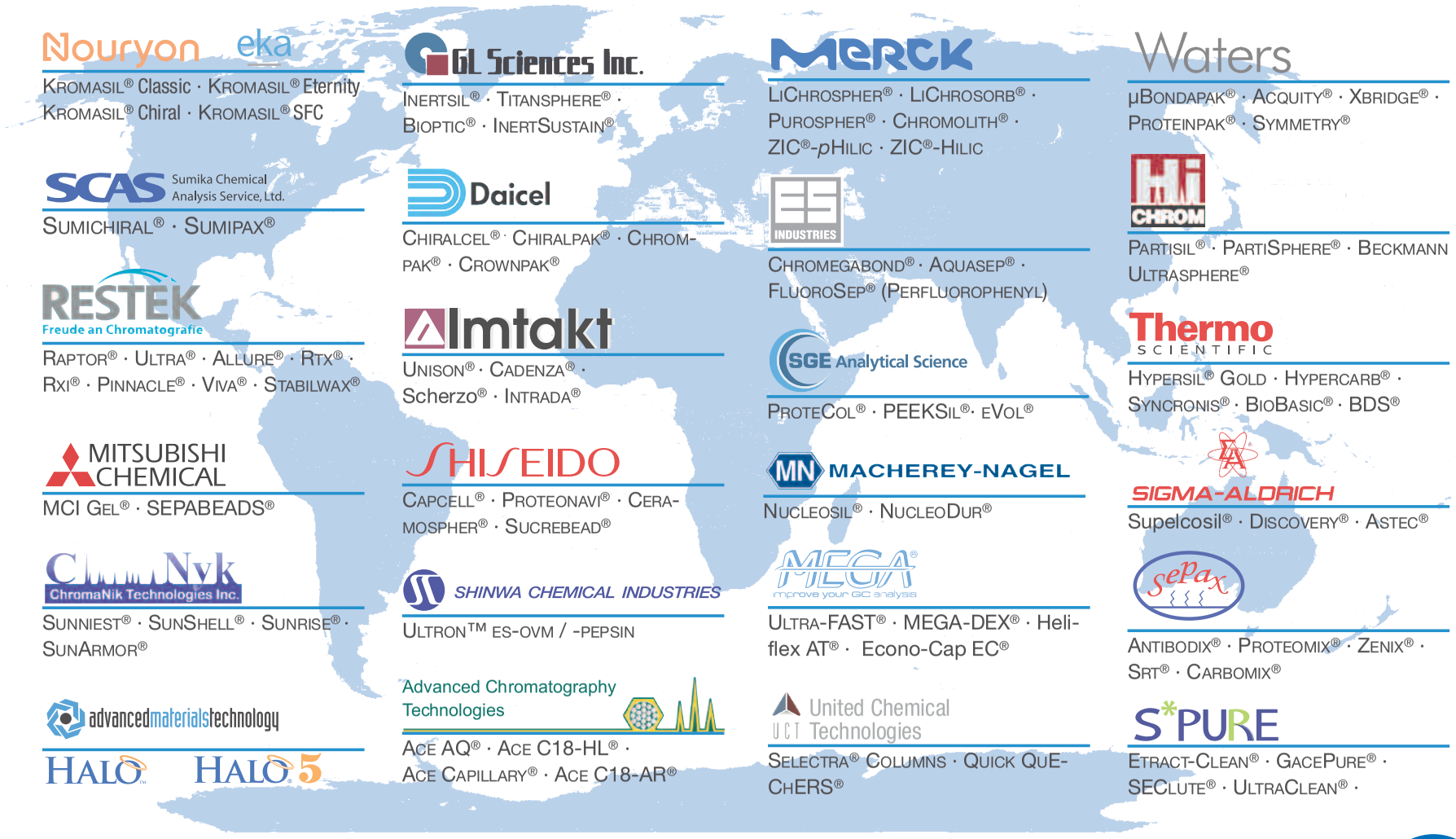

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