Service & Support

One-year warranty, lifetime maintenance;

Holding training classes irregularly depending on the customer' s requirements;

Supply accessories & consumables with favorable price in long term.

Develop analytical methods and offer technical supports & services.

Offer technical and troubleshooting guide services 24 hours a day.

Unimicro Technologies

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Website: www.unimicrotech.com
Address: 23046 Avenida de la Carlota Suite 600 Laguna Hills CA92653,USA

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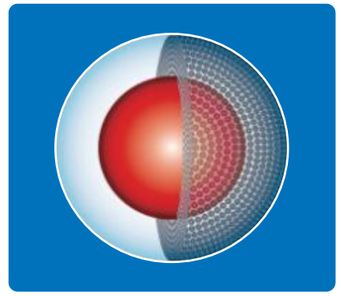
通 微
UNIMICRO



UNIMICRO

HPLC COLUMN

About Unimicro

Unimicro Technologies, Inc. was founded in 1996 in California, USA and its main office is in Pleasanton, California. As a high-tech US company located in the Silicon Valley, since its inception, Unimicro has focused its efforts on chromatographic separation and analysis and has made great success, especially on micro-separation filed. Unimicro has successfully developed the electrokinetic High Performance Liquid Chromatography (eHPLC or pCEC) and the fully automated quantitative Capillary Electrophoresis（qCE）, which leads the world in micro separation field.

Unimicro has 3 solely owned subsidiaries in China and has made great achievements in China market. Unimicro offers a wide range of products in liquid phase separation, including eHPLC, qCE, CE, HPLC and prep-HPLC instruments and HPLC columns, along with several kinds of detectors such as Evaporative Light Scattering Detector (ELSD), Fluorescence Detector (FLD), Diode Array Detector (DAD) and Laser Induced Fluorescence Detector (LIF).

The mission of Unimicro is to provide excellent service to its customers. Meeting and exceeding customer expectations is the ultimate goal and the company will not tolerate anything less than the total satisfaction of its customers.

CATALOGUE

UNIMICRO

Overview of Unimicro HPLC column

Model	Bonded Phase	Features and Benefits
Globalsil®	C18	**C18-AP** Standard type: Having a maximum surface coverage and is an ideal choice for separation of a variety of organic compounds. **C18-BP** Hydrophilic: Especially suitable for aqueous mobile phase with low organic solvent. **C18-BIO** Stable over wide pH (1-11): Having advance resistance to acid and alkali, especially suitable for separation of alkali compounds and peptides. **C18-ST** Stable over wide pH, Hydrophilic: Great resistance to acid, alkali and high proportion water phase.
	C8	**C8-P:** Standard type: Mainly used for separation of medium polar compounds, small peptides and proteins **C8-BIO:** Having better resistance to acid and alkali and have longer lifetime.
	C4	**C4-P:** Standard type: suitable for biological separation. **C4-BIO:** Having better resistance to acid and alkali and have longer lifetime.
	Phenyl	π electron acceptors, which can provide special selectivity separation for some compounds.
	CN	Commonly used for separation of polar compound with normal phase mode.
	APS	Packing is bonded with amino-propyl silane, which can be used under normal and reversed phase mode.
	SIL	Suitable for separation of strong polar compounds.
HOLOWA core-shell	C18	Multiple types of C18 are available, such as C18, AQ-C18, C18+PFP, Protein C18, Peptide C18, which can meet different requirements.
	C8	Mainly used for separation of medium polar compounds, small peptides and proteins.
	C4	Show excellent properties for the separation of large biomolecules like proteins and peptides.
	C30	Suitable separation of isomers of carotenoids and other long alkyl chain solutes which can not be separated on C18.
	Bi-Phenyl	Combined the selectivity of hydrophobicity, aromatic and polar, which especially suitable for separation of polar compounds, and having better resistance to high proportion aqueous mobile phase with low organic solvent.
	PFP	Enhanced selectivity for stereoisomers, and suitable for separation of electron-rich compounds, aromatics, unsaturated compounds with double or triple bonds.
	HILIC	Can be used in HILIC and normal-phase modes, and can be used for separation of polar and very polar bases, acids and neutrals.
	Other type of bonded phase	Customized according to the requirement.
ElectroPak®	**Customized according to the requirement.**	Used for capillary electrochromatography, capillary liquid chromatography and nano-LC-MS.

Globalsil® HPLC Column

Based on an ultra-pure silica, and packed with high porous particles of different boned phase.

+

Optimal column hardware, such as column tubing, fitting adapters and frits.

+

Strict column packing technology

Globalsil® HPLC Column

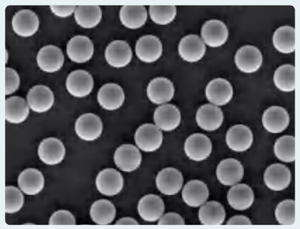
Fast separation UPLC columns

+

Analytical HPLC columns

+

Preparative HPLC columns

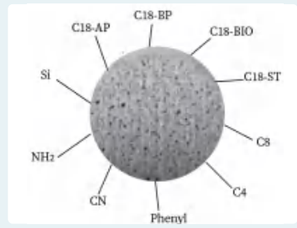


HPLC Column- Globalsil®, this support is based on an ultra-pure silica.

The wide pore supports show excellent properties for the separation of biomolecules such as proteins and peptides.

With wide product line, Globalsil® product line, from analytical to preparative, which can meet different requirements of different customers.

Different types of boned phase are available in several particle and pore sizes.



Globalsil® C18-AP

Globalsil® C18-AP has a maximum surface coverage and is an ideal choice for separation of a variety of organic compounds. Strict control over the end capping enables the columns excellent performance in the separation of acidic, alkaline and organic compounds.

- Excellent performance with reasonable price!
- 10+ years' experience on column packing!
- Stringent packing condition and quality control to ensure batch repeatability!

Technical Specification:

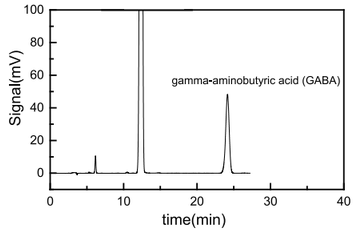
Globalsil® C18-AP				
Packing code	Particle Size(μm)	Porosity (Å)	Surface Area (m^2/g)	% C
GS-120-5-C18-AP	5	120	300	17
GS-200-5-C18-AP	5	200	200	12
GS-300-5-C18-AP	5	300	100	7
GS-120-10-C18-AP	10	120	300	17
GS-200-10-C18-AP	10	200	200	12
GS-300-10-C18-AP	19	300	100	9

Note: Other type of packing materials can be customized according to the requirement.

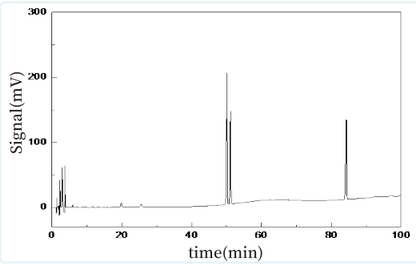
Applications

Analysis of GABA in the food

Test Conditions:
Column: Globalsil® GS-120-5-C18-AP, 250 mm × 4.6mm, 5μm
Mobile Phase: ACN / NaAc(aq) = 30/70
Flow Rate: 1mL/min
Detection: UV 436nm



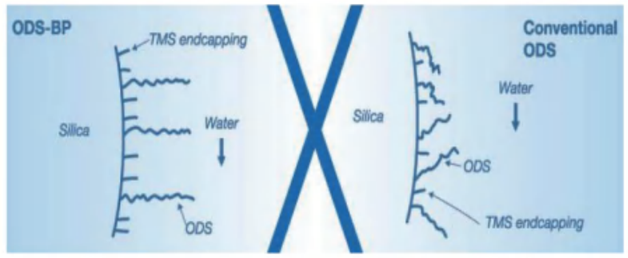
Analysis of Chinese medicine ginseng

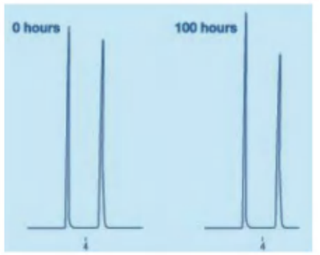


Test Conditions:
Column: Globalsil® GS-120-5-C18-AP, 250 mm × 4.6mm, 5μm
Mobile Phase: A: ACN, B: H_2O; Gradient
Flow Rate: 1mL/min
Detection: UV 436nm

Globalsil® C18-BP

The unique bonding technology enables Globalsil® C18-BP columns especially suitable for aqueous mobile phase with low organic solvent. With traditional bonding technology, C18-chain will collapse in high aqueous system, resulting in deterioration of peak shape, while Globalsil® C18-BP can maintain good peak shape. This advantage improves the column selectivity in aqueous mobile phase and enables Globalsil® C18-BP better performance in the analysis of hydrophilic substances and polar substances. Typical application is to separate biological molecules and metabolites, such as oligosaccharides, amino acids, small peptides, nucleotides and organic acids.





The functional group of Globalsil® C18-BP will not collapse even in the 100% aqueous mobile phase. When separating the pyrimidine and phenol, the selectivity and resolution remains the same after the column was rushed by pure water for 100 hours.

Technical specification:

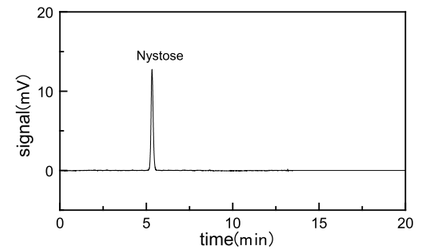
Globalsil® C18-BP				
Packing code	Particle Size(μm)	Porosity (Å)	Surface Area (m^2/g)	% C
GS-5-120-C18-BP	5	120	300	15
GS-5-200-C18-BP	5	200	200	10
GS-10-120-C18-BP	10	120	300	15
GS-10-200-C18-BP	10	200	200	10

Note: Other type of packing materials can be customized according to the requirement.

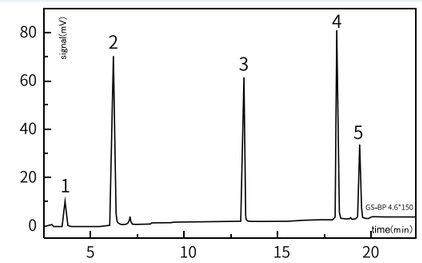
Applications

Analysis of Chinese medicine Morinda officinalis

Test Conditions:
Column: Globalsil® GS-120-5-C18-BP, 250 mm × 4.6mm, 5μm
Mobile Phase: Methanol / H_2O = 65/35
Flow Rate: 1mL/min
Detection: ELSD (T=75℃, F=2.5L/min)



Analysis of mixed vitamins



Note: 1. Niacin 2. Vitamin B6 3. Folic acid 4. Vitamin B1 5.Vitamin B2

Test Conditions:
Column: Globalsil® GS-120-5-C18-BP, 150 mm × 4.6mm, 5μm
Mobile Phase: A: 20mM $NH_4H_2PO_4$, B: H_2O; Gradient
Flow Rate: 1mL/min; Column Oven: 35℃
Detection: UV 280nm

Globalsil® C18-BIO

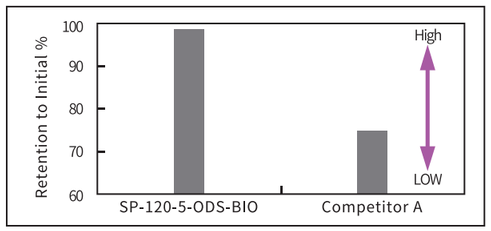
- Narrow particle size distribution.
- Ultra-high mechanical strength.
- Acid and alkali resistance stability.

- Bonded phase: C18, C8, C4, Bore diameter: 120 Å,200 Å, 300 Å
- GS-120-BIO: Suitable for separation of small peptides.
- GS-200-BIO: Suitable for separation of peptides with medium molecular .
- GS-300-BIO: Special for separation and purification of protein.

We enhanced the resistance to acid and alkali of Globalsil® BIO Column to prolong its lifetime and improve its performance..

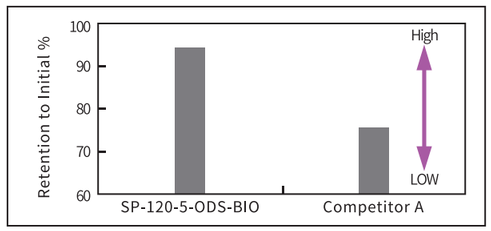
Improvement in phase stability

Alkalic resistance



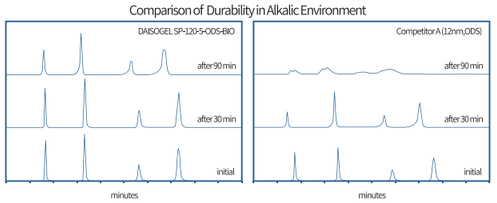
Column dimension: 4.6 mm I.D.x150 mm Length
Mobile phase: CH_3CN/NaOH=70/30;
Temperature:40 °C: Flow: 1.0 mL/min: Time for purge: 1.5 h.

Acidic resistance



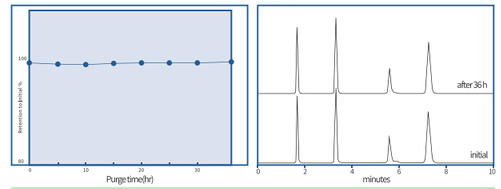
Column dimension: 4.6 mm I.D.x150 mm Length
Mobile phase: CH_3CH/H_2O/TFA=10/90/1;
Temperature:70 °C: Flow: 1.0 mL/min: Time for purge: 100 h.

Comparison of Durability in Alkalic Environment



Size: 4.6 mm I.D.x150 mm
Accelerated Alkalic Duration Test Condition
Mobile phase: CH_3CN/0.1N N_aOH aq.(pH=13)=70/30; Flow Rate:1.0 mL/min;Temp.:40 °C
Chromatographic Test Condition
Mobile phase: CH_3OH/H_2O=70/30;Flow Rate:1.0 mL/min;Temperature: 40 °C;Detector UV @ 254 nm
1.Uracil, 2.Methyl Benzoate, 3.Toluene, 4.Naphthalene

Acidic Resistance



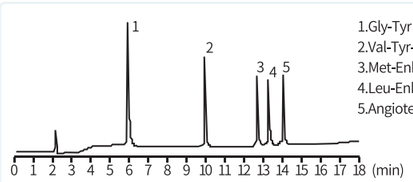
Size: 4.6 mm I.D.x150 mm
Accelerated Acidic Duration Test Condition
Mobile phase: CH_3CN/H_2O/TFA=70/30/1; Flow Rate:1.0 mL/min;Temp.:70 °C
Chromatographic Test Condition
Mobile phase: CH_3OH/H_2O=70/30;Flow Rate:1.0 mL/min;Temperature: 40 °C;Detector UV @ 254 nm
1.Uracil, 2.Methyl Benzoate, 3.Toluene, 4.Naphthalene

Technical specification:

Globalsil® C18-BIO				
Packing code	Particle Size(μm)	Porosity (Å)	Surface Area (m^2/g)	% C
GS-5-120-C18-BIO	5	120	300	20
GS-5-200-C18-BIO	5	200	200	15
GS-5-300-C18-BIO	5	300	100	8
GS-10-120-C18-BIO	10	120	300	20
GS-10-200-C18-BIO	10	200	200	15
GS-10-300-C18-BIO	10	300	100	8

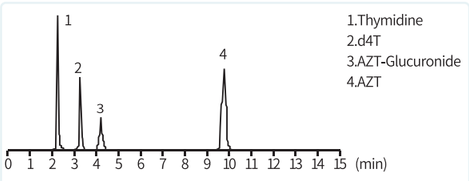
Note: Other type of packing materials can be customized according to the requirement.

Applications



Peptide standard
Column: Globalsil GS-120-5-C18-BIO(150*4.6 mm I.D.)
Mobile phase: A)CH_3CN/TFA=1000/1,B)H_2O/TFA=1000/1
A/B=5/95→A/B=50/50(0-18 min).
Flow rate: 1.0 mL/min
Temp: 30 °C
Detector: UV@200 nm

Peptide standard



Anti HIV agents
Column: Globalsil GS-120-5-C18-BIO(150*4.6 mm I.D.)
Mobile phase: 20mM $NH_4H_2PO_4$/CH_3OH=90/10
Flow rate: 1.0 mL/min
Temp: 35 °C
Detector: UV@260 nm

Anti-HIV agents

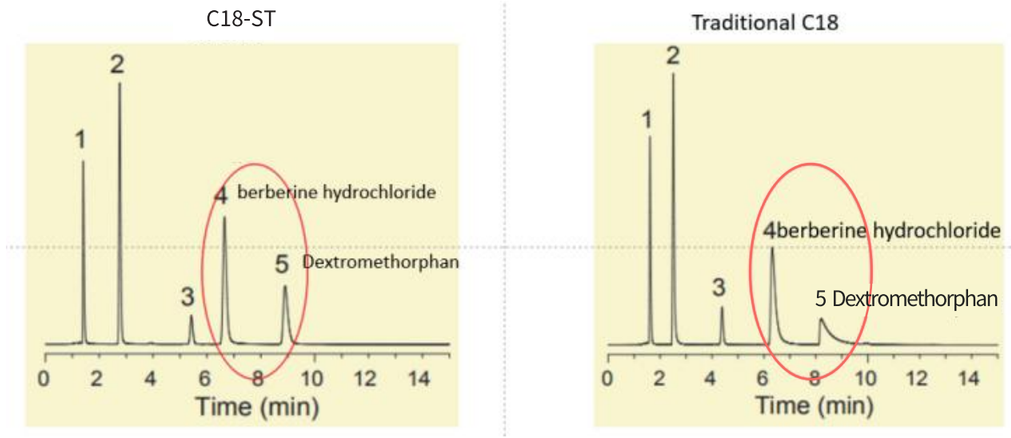
Globalsil® C18-ST

Globalsil® C18-ST belongs to the new group of stationary RP-supports with polar embedded groups. The packing is very stable over a wide pH range. In addition, it offers a maximum of hydrophobicity combined with a maximum of polar selectivity. The silanophilic activity of the support is very low. Ultra-strong basic compounds such as amitriptyline can be eluted from the column at neutral pH values with excellent symmetrical peak shapes.

Technical specification:

Globalsil® C18-ST				
Packing code	Particle Size(μm)	Porosity (Å)	Surface Area (m^2/g)	% C
Globalsil® C18-ST	5	100	340	15

Basic compounds can be eluted from the column with excellent symmetrical peak shapes.



Globalsil® C8

C8 is bonded to the stationary phase in the same bonding mode as C18, which can be used to shorten analysis time when the retention time of C18 is too long. This column is mainly used for separation of medium polar compounds, small peptides and proteins, aromatic compounds and environmental samples.
C8 column mainly includes C8 - P series and C8 - BIO series. For the separation of unknown compounds, it is recommended to use C8 - BIO series column, which have better resistance to acid and alkali and have longer lifetime.

Technical specification:

Globalsil® C8				
Packing code	Particle Size(μm)	Porosity (Å)	Surface Area (m^2/g)	% C
GS-5-120-C8-BIO	5	120	300	12
GS-5-200-C8-BIO	5	200	200	8
GS-10-120-C18-BIO	10	120	300	12
GS-10-200-C18-BIO	10	200	200	8

Note: Other type of packing materials can be customized according to the requirement.

Globalsil® C4

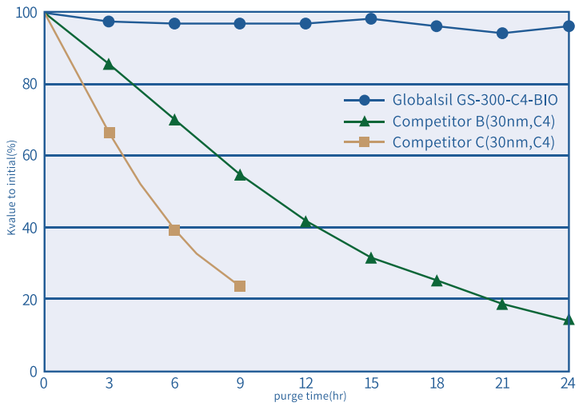
Globalsil® C4 packing is bonded with butyl and shows moderate hydrophobicity. It is recommended for biological separation. C4 column mainly includes C4 - P series and C4 - BIO series. Use column of 300Å to separate peptide and protein to get a much less retention time than C8 and C18.

Technical specification:

Globalsil® C4				
Packing code	Particle Size(μm)	Porosity (Å)	Surface Area (m^2/g)	% C
GS-120-5-C4-BIO	5	120	300	9
GS-300-5-C4-BIO	5	300	100	3
GS-120-10-C4-BIO	10	120	300	9
GS-200-10-C4-BIO	10	300	100	3

Note: Other type of packing materials can be customized according to the requirement.

Applications



Comparison:Durability in Acidic Environment

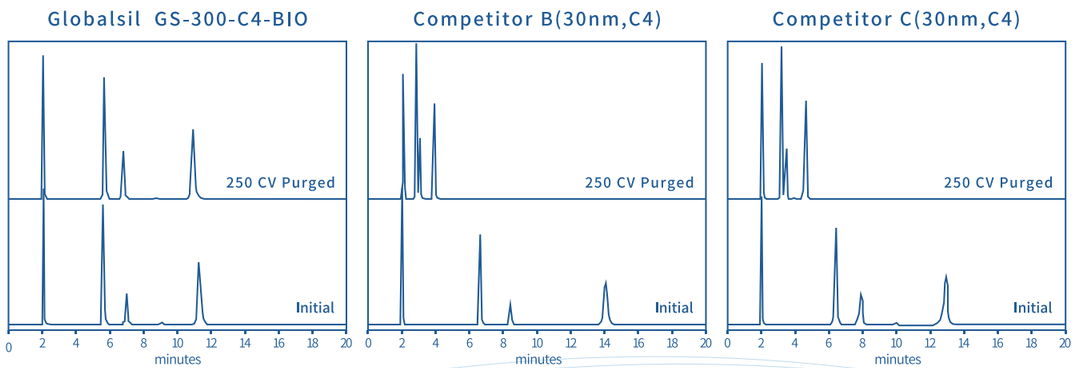
Cloumn Size ： 4.6 mm I.D. X 150 mm Length

Accelerated acidic Duration Test Condition

Mobile Phase： CH_3CN/1.0% TFA aq.(pH=1.0)=10/90
Flow Rate ： 1.0 mL/min
Temperature： 70 °C
Purge time ： 3 h

Chromatographic Test Condition

Mobile Phase： CH_3OH/H_2O=35/65
Flow Rate ： 1.0 mL/min
Temperature： 40 °C
Detector ： UV @254 nm
Analyst ： 1.Uracil
2.Methyl Benzoate
3.Toluene
4.Naphthalene



Globalsil® NH_2

Globalsil® NH_2 packing is bonded with amino-propyl silane using ultra pure spherical silica gel as base material. Depending on the choice of eluent, it can both be used under normal and reversed phase mode.

Especially, it is useful for saccharide separation using acetonitrile/water or methanol/water.

And It is also recommended for the separation of basic compounds under normal phase conditions using simple eluents such as hexane/ethyl acetate, isopropanol/ ethyl alcohol.

The amine functionality provides higher reactivity and is an ideal choice formany SFC applications.

When one Globalsil®NH_2 column is used under both normal and reversed phases, pay attention to use isopropanol for transition.

Technical specification:

Globalsil® NH_2				
Packing code	Particle Size(μm)	Porosity (Å)	Surface Area (m^2/g)	% C
GS-120-5-NH2	5	120	200	4
GS-200-5- NH2	5	200	200	3
GS-120-10- NH2	10	120	300	4
GS-200-5- NH2	10	200	200	3

Note: Other type of packing materials can be customized according to the requirement.

Globalsil® SIL

- Manufactured under very stringent conditions and resulting silica has a high purity.
- Excellent stability at wide mobile phase pH range 1.5-8.5.
- Narrow particle size distribution.
- Ultra-high mechanical strength.
- Ultra-high load capacity.

Technical specification:

Globalsil® SIL			
Packing code	Particle Size(μm)	Porosity (Å)	Surface Area (m^2/g)
GS-120-5-SIL	5	120	300
GS-200-5- SIL	5	200	200
GS-300-5- SIL	5	300	100
GS-120-10- SIL	10	120	300
GS-200-10- SIL	10	200	200
GS-300-10- SIL	10	300	100

Note: Other type of packing materials can be customized according to the requirement.

Globalsil® series preparative HPLC column

Globaisil® series includes not only analytical columns but also preparation columns. Unimicro can offer many different kinds of pre-HPLC columns to meet customer’ s requirement. Unimcro not only provide good product quality, but also lay stress on Service & Support. We can provide service to reassemble and repair your prep-HPLC column

Advantages of Globalsil® packing materials:

- Ultra-high purity sillca.
- Narrow particle size distribution.
- Chemical stability.
- Higher loading capacity.
- Enhanced mechanical stability.

- The ID. is between 10-100 mm while the length is between 50-500 mm.
- Particular specifications can be customized.

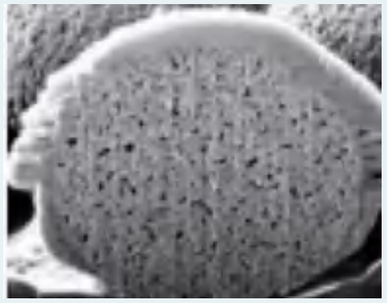
- Reassemble your Globaisil® prep-HPLC column.
- Reassemble your other bands prep-HPLC column.
- Repair your prep-HPLC column.

Technical specification:

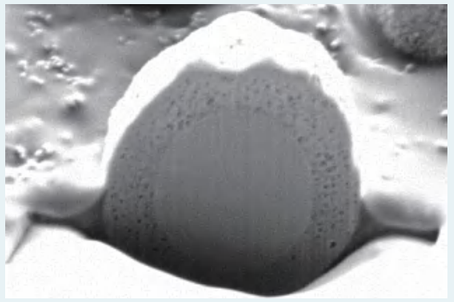
Globalsil® preparative HPLC column				
Packing code	Particle Size(μm)	Porosity (Å)	Surface Area (m^2/g)	% C
GS-120-10-C18-AP	10	120	300	17
GS-120-10- C18-BP	10	120	300	15
GS-120-10- C18-BIO	10	120	300	20
GS-120-10- C8-BIO	10	120	300	12
GS-200-10- C8-BIO	10	200	200	8
GS-200-10- C4-BIO	10	120	300	9
GS-300-10- C4-BIO	10	300	100	3
GS-120-10- NH_2	10	120	300	4
GS-120-30/50- C18-AP	40	120	300	17
GS-120-30/50- C18-BP	40	120	300	15

HOLOWA core-shell HPLC column

What’ s core-shell column?



Totally Porous Particle (TPP)



Superficially Porous Particle (SPP)

Holowa core-shell HPLC column use superficially porous particle technology, as opposed to a fully porous particle of bonded phase chemistry, the SPP has a bonded phase shell fused to a solid support (core).

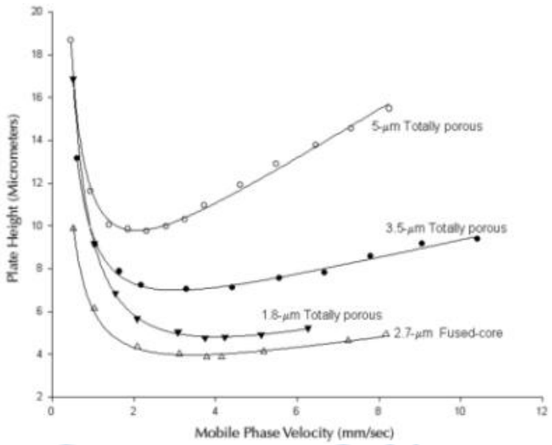
HOLOWA core-shell particles are unique high-purity silica particles for stable high efficiency packed columns that are capable of very fast separations with modest back pressures.

Why use core-shell Particles?

Van Deemter Equation

$$H = A + \frac{B}{u} + C^{*}u$$

- **H** = height equivalent to theoretical plate
- **A** = eddy diffusion term
- **B** = longitudinal diffusion term
- **C** = resistance to mass transfer term
- **u** = mobile phase linear velocity

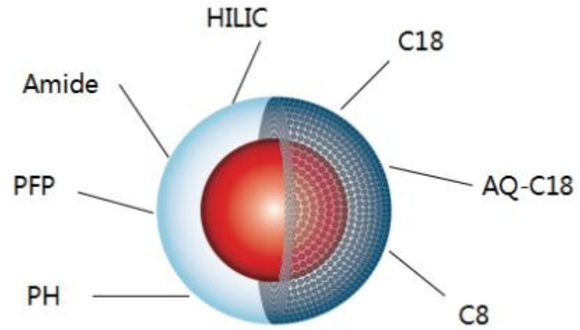


The advantage the fused core particle offers in comparison to its fully porous counterparts is its ability to deliver high efficiency in terms of speed and resolution at pressures (up to ½) of non-core columns.

Shown as the Van Deemter equation:

Due to the uniform analyte flow through the column bed, A term is significantly reduced. Because of the solid core, there is much lower longitudinal broadening. Together these smaller A and B terms yield reduced plate height. The short diffusion path of the “thin” shell (compared to a fully porous particle) yields a smaller C term.

Key Advantage of HOLOWA core-shell HPLC column



- SPP columns are the preferred choice for high efficiency & high-speed separations.
- The advantage of SPP phases comes from the intrinsic properties of SPP particle configurations.
- It’ s easy to adapt the existing method from a TPP column to a SPP column.
- It’ s important to select right particle size, pore size & bonding.
- Unimicro offers the most comprehensive SPP offerings for both large & small molecule analysis.
- Super-fast speed, high efficiency and durability, which can make your HPLC system achieve UPLC results and make your UPLC more stable.
- Different kinds of bonded phases are available (C18, AQ-C18, C4, C8, NH_2, CN, PH, HILIC); Different particle size of packing material (1.9μm, 2.7 μm, 5 μm) and different ID (2.1 mm, 3.0 mm, 4.6 mm) are available. Besides, special dimensions can be customized.

Column	Pore Size (Å)	Particle Size(μm)	Stationary Phases	Application Examples
HOLOWA	90	1.9 2.7 5	C18 AQ-C18 C8 RP-Amide Phenyl-Hexyl PFP ES-CN Penta-HILIC HILIC (silica) Biphenyl (NEW)	Small molecules
HOLOWA Peptide	150	2.7	ES-C18 ES-CN Phenyl-Hexyl	Peptides & polypeptides
HOLOWA Protein	300 / 1000	2.7	C4, C8, C18	Peptides, Polypeptides, Small proteins, Large proteins, mAbs

HOLOWA C18

- Universal phase for acids, bases and neutral solutes.
- Excellent stability at wide mobile phase pH range.
- Perfect endcapped technology, very low residual negative charger and ultra-low metal ion residue, which can improve the peak type of alkalic compounds.

HOLOWA AQ-C18

- Compatible with 100% aqueous mobile phases.
- Different selectivity compared with classic C18, offering another option to resolve difficult separation, especially the alkali compounds.
- Retains polar molecules more than classic C18 phases under most mobile phase conditions. Ideal for mixture of polar and non-polar solutes.

HOLOWA Peptide C18

- Ideal for peptides separation.
- Excellent stability at wide mobile phase pH range 1.5-10.
- Alternate selectivity with C4 or C8.

HOLOWA Protein C18

- Ideal for peptides and proteins analysis.
- Large porosity is more conducive to large molecule compounds' separation.

Technical Specification

Boned Phase	Particle Size (μm)	Porosity (Å)	Surface Area (m^2/g)	% C	End-capped	pH Range	Maximum Temperature(℃)	Maximum Pressure (psi)	USP
C18	1.9	90	120	7.3	YES	1.5-10	80①	14500	L1
C18	2.7	90	130	7.5	YES	1.5-10	80①	8700	L1
C18	5	90	90	5.8	YES	1.5-10	80①	7250	L1
AQ-C18	2.7	150	80	4	YES	1.5-9	60	8700	L1
Peptide C18	2.7	150	90	5	YES	1.5-10	80①	8700	L1
Protein C18①	2.7	300	45	1.5	YES	1.5-9	60	8700	L1

Note: ①Maximum temperature is 80℃ while the pH between 2-7, and maximum temperature is 60℃ if pH beyond the above range.

HOLOWA C8

- Classic C8 bonded phase, which belongs to USP L7.
- Improving peak symmetry of alkaline compounds.

HOLOWA Protein C8

- Ideal for separation of proteins and peptides.
- Compatible with less organic mobile phases to separate large molecule protein, thus can avoid protein denaturation.

Technical Specification

Boned Phase	Particle Size (μm)	Porosity (Å)	Surface Area (m^2/g)	% C	End-capped	pH Range	Maximum Temperature(℃)	Maximum Pressure (psi)	USP
C8	2.7	90	130	4.3	YES	1.5-9	60	8700	L7
Protein C8	2.7	300	40	1.3	YES	1.5-9	60	8700	L7

HOLOWA Protein C4

- Ideal for large protein analysis.
- Well suited for high-speed protein separations.

Boned Phase	Particle Size (μm)	Porosity (Å)	Surface Area (m^2/g)	% C	End-capped	pH Range	Maximum Temperature(℃)	Maximum Pressure (psi)	USP
Protein C4	2.7	1000	22	0.5	YES	1.5-8	60	8700	L26

HOLOWA C30

- Ideal for hydrophobic, long chain, structurally related isomers.
- Alternate alkyl phase with high shape selectivity.
- Suitable for isomer separations, fat/water soluble vitamins, carotenoids, lipids, anti-inflammatory, anti-lymphatic and anti-allergy steroids.

Boned Phase	Particle Size (μm)	Porosity (Å)	Surface Area (m^2/g)	% C	End-capped	pH Range	Maximum Temperature(℃)	Maximum Pressure (psi)	USP
C30	2.7	90	100	7.2	YES	1.5-9	60	8700	L62

HOLOWA HILIC

- Idea for polar analytes.
- Alternate mode to reversed phase modes.
- Can be used in HILIC and normal-phase modes.
- Improving peak symmetry of acid compounds.

Boned Phase	Particle Size (μm)	Porosity (Å)	Surface Area (m^2/g)	% C	End-capped	pH Range	Maximum Temperature(℃)	Maximum Pressure (psi)	USP
HILIC	2.7	90	130	0	NO	2-7	60	8700	L3

HOLOWA PFP

- Ideal for aromatics and electron-rich compounds.
- Alternate selectivity to alkyl phases.
- Useful in RPLC and HILIC modes.
- Suitable for the separation of basic drugs, mycotoxin screening, tranquilizers.

Technical Specification

Boned Phase	Particle Size (μm)	Porosity (Å)	Surface Area (m^2/g)	% C	End-capped	pH Range	Maximum Temperature(℃)	Maximum Pressure (psi)	USP
PFP	2.7	90	130	4.2	YES	2-8	60	8700	L43

HOLOWA Bi-Phenyl

- Ideal for aromatic (pi-pi) compounds.
- Alternate selectivity to alkyl phases.
- Suitable for the separation of opiates, polar and non-polar pesticides.

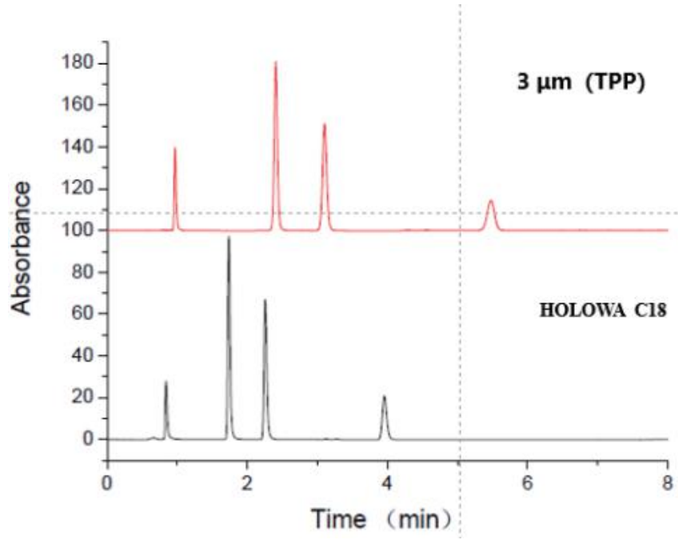
Boned Phase	Particle Size (μm)	Porosity (Å)	Surface Area (m^2/g)	% C	End-capped	pH Range	Maximum Temperature(℃)	Maximum Pressure (psi)	USP
Bi-Phenyl	2.7	90	130	4.8	YES	1.5-9	60	8700	—

HOLOWA C6-Phenyl

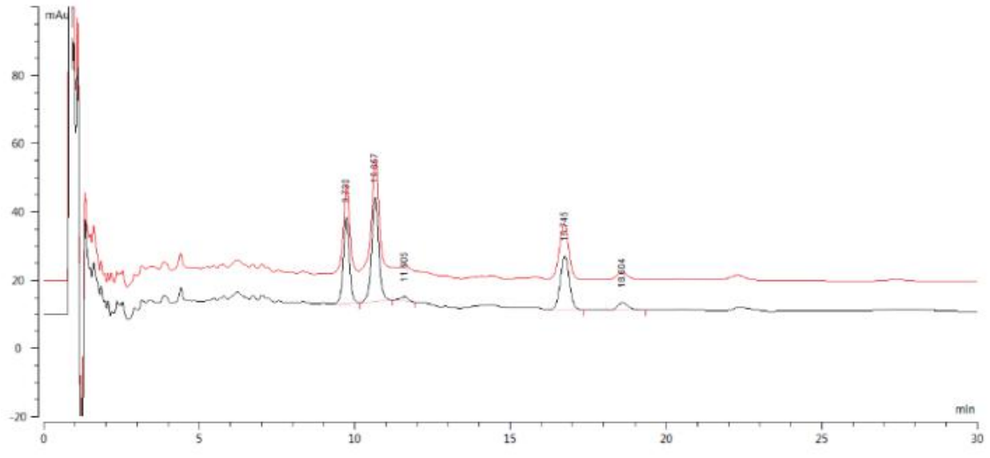
- Classic phenyl boned phase.
- Moderate hydrophobicity and ideal for aromatic compounds analysis.
- Enhanced retention of polar compounds.

Boned Phase	Particle Size (μm)	Porosi-ty (Å)	Surface Area (m^2 /g)	% C	End-capped	pH Range	Maximum Tempera-ture(℃)	Maximum Pressure (psi)	USP
C6-Phe-nyl	2.7	90	130	4.8	YES	1.5-9	60	8700	L11

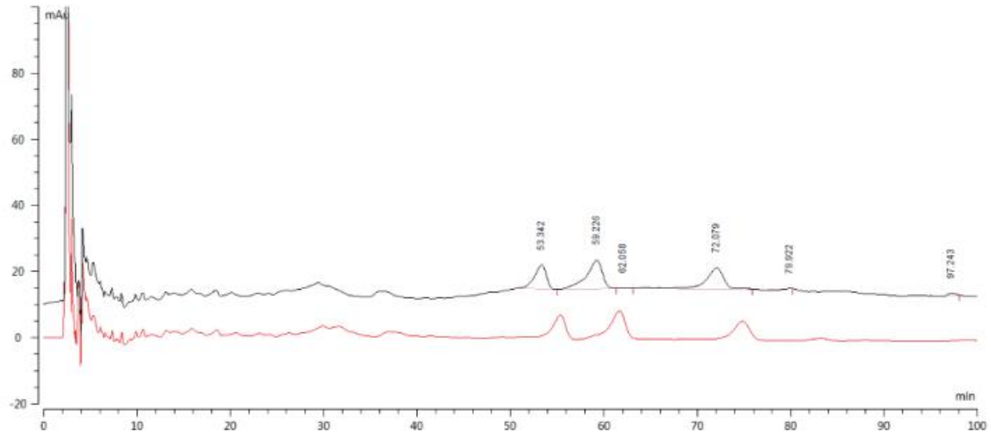
High Speed Separation & High Resolution Separation



High Speed Separations & High Resolution Separa-tions& High Column Efficiency



HOLOWA （2.7μm 4.6×100mm）



TPP C18 （5μm 4.6×250mm）

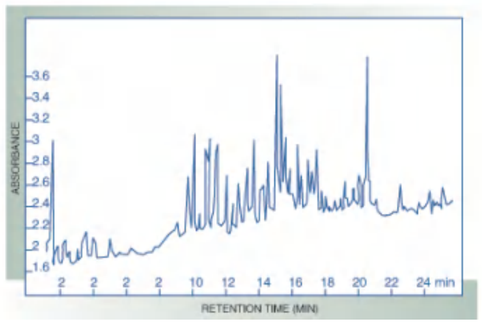
ElectroPak® capillary column

ElecrtoPak® capillary column is the patented product, which is suitable for nano-LC, micro-LC, CE, eHPLC and LC-MS. The patented electrokinetic packing technique endows ElecrtoPak® high column efficiency and high resolution.
Various types of bonded phases: C18, C8, Phenyl, CN, Si, Ion exchange, Chiral materials.
Particle sizes of 1.5 μm～ 5.0 μm, ID: 50, 75, 100, 320 μm, and the length is 20 cm～50 cm.

Stationary Phase & Specification

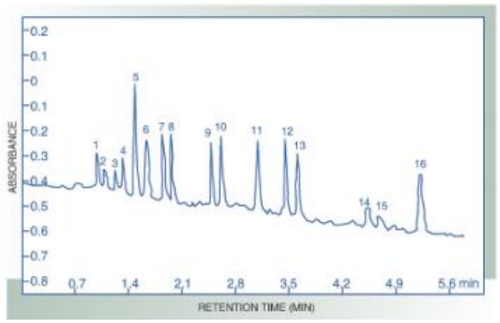
Boned Phase	Part NO.	Description
C18	EP-50-20-3-C18	50μm ID.×20cmpacked(35cmtotal) Length, 3μm, C18
	EP-75-20-3-C18	75μm ID.×20cmpacked(35cmtotal) Length, 3μm, C18
	EP-100-20-3-C18	100μm ID.×20cmpacked(35cmtotal) Length, 3μm, C18
	EP-50-20-5-C18	50μm ID.×20cmpacked(35cmtotal) Length, 5μm, C18
	EP-75-20-5-C18	75μm ID.×20cmpacked(35cmtotal) Length, 5μm, C18
	EP-100-20-5-C18	100μm ID.×20cmpacked(35cmtotal) Length, 5μm, C18
C8	EP-100-20-3-C8	100μm ID.×20cmpacked(35cmtotal) Length, 3μm, C8
C4	EP-100-20-3-C4	100μm ID.×20cmpacked(35cmtotal) Length, 3μm, C4
Phenyl	EP-100-20-3-PH	100μm ID.×20cmpacked(35cmtotal) Length, 3μm, phenyl
CN	EP-100-20-3-CN	100μm ID.×20cmpacked(35cmtotal) Length, 3μm, CN
Amino	EP-100-20-3-NH_2	100μm ID.×20cmpacked(35cmtotal) Length, 3μm, amino
Si	EP-100-20-3-Si	100μm ID.×20cmpacked(35cmtotal) Length, 3μm, silica
Strong cation exchanger	EP-100-20-3-SCX	100μm ID.×20cmpacked(35cmtotal) Length, 3μm, SCX
Strong anion exchanger	EP-100-20-3-SAX	100μm ID.×20cmpacked(35cmtotal) Length, 3μm, SAX
Weak cation exchanger	EP-100-20-3-WAX	100μm ID.×20cmpacked(35cmtotal) Length, 3μm, WAX
CHIRAL	EP-100-20-3-CHIRAL	100μm ID.×20cmpacked(35cmtotal) Length, 3μm, CHIRAL

Applications



Analysis of trypsin degraded BSA

Test Conditions:
- Column: EP-150-30/45-5-C18
- Mobile Phase: A:H_2O (2% ACN & 0.01%TFA); B: ACN (0.01%TFA); Gradient
- System Pressure: 2000 psi
- Voltage: 5kV
- Detection: UV 254nm
- Sample: Trypsin degraded BSA



Analysis of 16 kinds of PAHs

Test Conditions:
- Column: EP-100-10-1.5-C18-NPS
- Mobile Phase: A: ACN, B: 2mM Tris, Gradient
- System Pressure: 2000 psi
- Voltage: 30kV
- Detection: UV 254nm
- Sample: 16 kinds of PAHs