SHIMADZU
Excellence in Science

S-UTM-B24

Shim-pack HPLC Column Selection Guide

Shim-pack Scepter

Wide usable pH range, Higher versatility for various applications, effective for method scouting

- Next-generation organosilica hybrid based columns with excellent chemical resistance to acids and alkalis at high temperatures.
- Strict column packing procedure that ensures robust and reproducible column performance.
- Available in a wide range of bonded chemistries and column dimensions.
- Shim-pack Scepter (metal-free) is an inert column with a PEEK-lined stainless steel body, ideal for analysis of metal-coordinating and ion-adsorbing compounds such as phosphate-containing and basic analytes.
- Shim-pack Scepter Claris features a column body with a newly-developed bioinert coating applied to the column body and stainless steel frit. Ideal for analysis of metal-coordinating and hydrophobically adsorbing compounds such as nucleic acids, proteins, and lipids.

Shim-pack Scepter C18-120

Bonded Phase	Octadecyl
Carbon Loading	20%
Surface Area	360m²/g
Pore Size	120Å
Particle Size	1.9, 3, 5µm
pH Range	1~12
End-cap	Yes
USP Classification	L1

General C18 Column:
- Ideal for method development over a wide pH range of 1-12
- Excellent chemical stability under a wide variety of acids, alkalis, and salts at temperatures up to 90 °C
- High carbon load, higher separation power for complex samples

Pharmaceutical Analysis
- Macrolides antibiotics, -sartan drugs, -tidine drugs
- Peptide therapeutics, oligonucleotides, ASO, siRNA
- Natural products or TCM (e.g., alkaloids)

Bioanalysis
- Generic drugs bioequivalence studies
- Drugs and metabolites
- TCM metabolites

Food / Cosmetic / Environmental Analysis
- Food preservatives, food dyes
- Pesticides and veterinary drug residues
- Cosmetic products (preservatives, steroids, etc)

Shim-pack Scepter C18-300

Bonded Phase	Octadecyl
Carbon Loading	N.D.
Surface Area	N.D.
Pore Size	300Å
Particle Size	1.9, 3, 5µm
pH Range	1~12
End-cap	Yes
USP Classification	L1

Wide pore C18 Column:
- Ideal for method development over a wide pH range of 1-12
- Excellent chemical stability under a wide variety of acids, alkalis, and salts at temperatures up to 90 °C
- Large pore size suitable for analysis of medium to high molecular weight substances

Pharmaceutical Analysis
- Proteins, peptides, mAb, ADC
- Oligonucleotides, mRNA

Bioanalysis
- Generic drugs bioequivalence studies
- Nucleic acid
- Drugs and metabolites

Shim-pack Scepter HD-C18

Bonded Phase	Octadecyl
Carbon Loading	25%
Surface Area	430m²/g
Pore Size	80Å
Particle Size	1.9, 3, 5µm
pH Range	1~12
End-cap	Yes
USP Classification	L1

High Density C18 Column:
- Superior stereoselectivity, effective in separation of structural isomers and analogs
- Ultra-inert, use of adsorptive ion-pairing reagent (e.g. trifluoroacetic acid, triethylamine) should be avoided in mobile phase

Pharmaceutical Analysis
- Drug products, API, intermediates and impurities
- Natural products or TCM, especially those containing alkaloids

Bioanalysis
- Structural isomers and analogs

Food / Cosmetic / Environmental Analysis
- Food preservatives, food dyes
- Cosmetic products (preservatives, steroids, etc)

Shim-pack Scepter C8

Bonded Phase	Octyl
Carbon Loading	17%
Surface Area	360m²/g
Pore Size	120Å
Particle Size	1.9, 3, 5µm
pH Range	1~12
End-cap	Yes
USP Classification	L7

General C8 Column:
- Rapid separation for weakly polar compounds
- Higher bonded density than C18 column, more effective in separation of structural isomers and analogs

Pharmaceutical Analysis
- Regular analysis with C8 column
- Impurities in drug intermediates
- Natural products or TCM, especially those containing alkaloids

Bioanalysis
- Generic drugs bioequivalence studies
- Drugs and metabolites
- TCM metabolites

Food / Cosmetic / Environmental Analysis
- Regular analysis with C8 column

Shim-pack Scepter Phenyl

Bonded Phase	Phenylbutyl
Carbon Loading	17%
Surface Area	360m²/g
Pore Size	120Å
Particle Size	1.9, 3, 5µm
pH Range	1~10
End-cap	Yes
USP Classification	L11

Phenyl Column:
- Powerful hydrophobic and π-π interactions
- Unique selectivity for aromatic and conjugated compounds

Pharmaceutical Analysis
- Drugs and intermediates with benzene or heterocyclic rings

Bioanalysis
- Drugs and metabolites
- TCM metabolites

Food / Cosmetic / Environmental Analysis
- Plasticizer
- Polymer additives (e.g. antioxidants)
- Carcinogenic aromatic amines

Shim-pack Scepter PFPP

Bonded Phase	Pentafluoro-phenylpropyl
Carbon Loading	15%
Surface Area	360m²/g
Pore Size	120Å
Particle Size	1.9, 3, 5µm
pH Range	1~8
End-cap	No
USP Classification	L43

Pentafluoropenylpropyl (PFPP) Column:
- Powerful hydrophobic, π-π, dipole-dipole and hydrogen bonding interactions
- Effective in separation of polar compounds (e.g., aromatics and halogen-containing compounds)
- Trifunctional bonded stationary phases enable high reproducibility and low column bleed
- High durability and stability under 100% aqueous condition

Pharmaceutical Analysis
- Highly polar compounds
- Genotoxic impurities

Bioanalysis
- Drugs and metabolites
- TCM metabolites

Food / Cosmetic / Environmental Analysis
- Water-soluble vitamins

Shim-pack Scepter Diol-HILIC

Bonded Phase	Diol-HILIC
Carbon Loading	12%
Surface Area	360n²/g
Pore Size	120Å
Particle Size	1.9, 3, 5µm
pH Range	2~10
End-cap	No
USP Classification	L20

High Density C18 Column:
- Superior stereoselectivity, effective in separation of structural isomers and analogs
- Ultra-inert, use of adsorptive ion-pairing reagent (e.g. trifluoroacetic acid, triethylamine) should be avoided in mobile phase

Pharmaceutical Analysis
- Drug products, API, intermediates and impurities
- Natural products or TCM, especially those containing alkaloids

Bioanalysis
- Structural isomers and analogs

Food / Cosmetic / Environmental Analysis
- Food preservatives, food dyes
- Cosmetic products (preservatives, steroids, etc)

Shim-pack Scepter C4

Bonded Phase	Butyl
Carbon Loading	N.D.
Surface Area	N.D.
Pore Size	300Å
Particle Size	1.9, 3, 5µm
pH Range	1~10
End-cap	Yes
USP Classification	L26

Butyl Column:
- Designed for separation of biomolecules such as proteins, peptides, antibodies and oligonucleotides
- Excellent durablity and stability even at high temperatures up to 90 °C
- Good peak shapes with MS-friendly mobile phase

Pharmaceutical Analysis
- Proteins, peptides, antibodies, oligonucleotide
- Therapeutic peptides

Bioanalysis
- Biomarkers

Food / Cosmetic / Environmental Analysis
- Regular analysis with C4 column

Shim-pack Velox Series

Core shell particle technology enables fast analysis and high throughput

- Stable, consistent, narrow pore size distribution reduces eddy diffusion significantly, giving sharper peaks and higher sensitivity.
- Lower column backpressure, with a 2.7μm particle size column on HPLC system can achieve an UHPLC separation efficiency.
- Available in C18, SP-C18, Biphenyl, PFPP and HILIC for wide range of applications.

Shim-pack Velox C18

Bonded Phase	Octadecyl
Carbon Loading	7% (2.7μm)
Surface Area	130m²/g (2.7μm)
Pore Size	90Å
Particle Size	1.8, 2.7, 5μm
pH Range	2~8
End-cap	Yes
USP Classification	L1

C18 Column:
- Strong hydrophobic retention of the Shim-pack Velox phases
- Ideal for analysis of complex samples
- High resolution and high durability

Pharmaceutical Analysis	• Drug intermediates • Dissolution test
Bioanalysis	• Acid and basic drugs and metabolites • TCM metabolites
Food / Cosmetic / Environmental Analysis	• Food preservatives, food dyes • Pesticides and veterinary drug residues • Aldehydes and ketones

Shim-pack Velox SP-C18

Bonded Phase	Octadecyl
Carbon Loading	7% (2.7μm)
Surface Area	130m²/g (2.7μm)
Pore Size	90Å
Particle Size	1.8, 2.7, 5μm
pH Range	1~8
End-cap	No
USP Classification	L1

Sterically Protected C18 Column:
- Sterically protected ligand provides extended low pH (1-3) stability, giving well-balanced retention profile and long life time
- Non-endcapped column, the presence of silanol group enhances hydrogen bonding, improving retention and resolution for strong acidic and basic compounds
- Sharper peak shape and higher sensitivity

Pharmaceutical Analysis	• Organic synthetic process impurities • Impurities of polar drugs
Bioanalysis	• Drugs and metabolites • TCM metabolites
Food / Cosmetic / Environmental Analysis	• Organic acids, nucleotides • Amino acids • PFAS

Shim-pack Velox Biphenyl

Bonded Phase	Biphenyl
Carbon Loading	7% (2.7μm)
Surface Area	130m²/g (2.7μm)
Pore Size	90Å
Particle Size	1.8, 2.7, 5μm
pH Range	1.5~8
End-cap	Yes
USP Classification	L11

Biphenyl Column:
- Enhanced retention of hydrophobic compounds
- High selectivity for aromatic and polar compounds
- Ideal for analysis of isomers and positional analogs
- High durability and stability under 100% aqueous condition

Pharmaceutical Analysis	• Genotoxic impurities • Positional isomers
Bioanalysis	• Positional isomers • Acid and basic drugs and metabolites • Biomarker • Metabolomics
Food / Cosmetic / Environmental Analysis	• Plasticizer • Polymer additives (e.g. antioxidants) • Veterinary drugs

Shim-pack Velox PFPP

Bonded Phase	Pentafluoro-phenylpropyl
Carbon Loading	4% (2.7μm)
Surface Area	130m²/g (2.7μm)
Pore Size	90Å
Particle Size	1.8, 2.7, 5μm
pH Range	2~8
End-cap	No
USP Classification	L43

Pentafluoropenylpropyl (PFPP) Column:
- Powerful hydrophobic, π-π, dipole-dipole and hydrogen bonding interactions
- Ideal for analysis of aromatics and halogen-contaning compounds, stronger retention for polar compounds than ODS column
- High durability and stability under 100% aqueous condition

Pharmaceutical Analysis	• Highly polar drugs • Genotoxic impurities
Bioanalysis	• Acid and basic drugs and metabolites • Isomers
Food / Cosmetic / Environmental Analysis	• Mycotoxins • Carcinogenic aromatic amines and phenols

Shim-pack Velox HILIC

Bonded Phase	None
Carbon Loading	-
Surface Area	130m²/g
Pore Size	90Å
Particle Size	2.7μm
pH Range	2~8
End-cap	No
USP Classification	L3

HILIC Column:
- Unbonded stationary phase
- Effective in separation of highly polar compounds
- Excellent durability, stability and reproducibility

Pharmaceutical Analysis	• Highly polar drugs
Bioanalysis	• Highly polar drugs and metabolites
Food / Cosmetic / Environmental Analysis	• Melamine, dicyandiamide • Choline, acetylcholine

Shim-pack Bio Series

Solution for analysis of peptides, oligonucleotides and biopharmaceuticals

- Silica-based diol column, excellent for SEC (GFC) analysis.
- Ion-exchange column packed with low nonspecific binding hydrophilic polymer beads, wide usable pH range.
- High chemical stability HIC column, wide usable pH range.

Shim-pack Bio Diol	Particle	Silica	**Size Exclusion Column:** • Silica-based column with high mechanical stability • Suitable for analysis of mAb, oligonucleotides, carbohydrates • High resolution, fast analysis with 2µm and 3µm particles	Pharmaceutical Analysis	• Therapeutic peptides • Proteins, mAb • Oligonucleotides
	Ligand	Dihydroxypropyl (Diol)			
	Particle Size	2, 3, 5µm			
	Pore Size	60Å, 120Å, 200Å, 250Å, 300Å		Food / Cosmetic	• Carbohydrates • Water-soluble polymer
	pH Range	5~7.5			
Shim-pack Bio IEX Q-NP / Q	Particle	Hydrophilic polymer	**Ion Exchange Column:** • Suitable for anion-exchange analysis • Non-porous particles offer high resolution and throughput • Porous particles offer excellent binding capacity with exceptional high efficiency, suitable for lab-scale purification	Pharmaceutical Analysis	• Therapeutic peptides • Proteins • Oligonucleotides
	Ligand	$-CH_2N^+(CH_3)_3$			
	Particle Size	3, 5µm			
	pH Range	2~12			
	Temp. Range	4-60°C			
Shim-pack Bio IEX SP-NP / SP	Particle	Hydrophilic polymer	**Ion Exchange Column:** • Suitable for cation-exchange analysis • Non-porous particles offer high resolution and throughput • Porous particles offer excellent binding capacity with exceptional high efficiency, suitable for lab-scale purification	Pharmaceutical Analysis	• Therapeutic peptides • Proteins • Oligonucleotides
	Ligand	$-(CH_2)_3SO_3^-$			
	Particle Size	3, 5µm			
	pH Range	2~12			
	Temp. Range	4-60°C			
Shim-pack Bio-HIC Butyl	Particle	Hydrophilic non-porous polymer	**Hydrophobic interaction chromatography (HIC) Column:** • Ideal for characteristic analysis of proteins and biopharmaceuticals including analysis of drug-to-antibody ratio (DAR) of antibody-drug conjugates (ADCs) • High separation capacity with low backpressure	Pharmaceutical Analysis	• Antibody-Drug Conjugates (ADCs) • Proteins • Antibodies, mAb
	Ligand	Butyl			
	Particle Size	4µm			
	pH Range	2~12			
	Temp. Range	10-60°C			

Shim-pack VP/FC/XR/ Arata Series

Classic high purity silica based HPLC columns, high carbon loading and high resolution column

- High carbon loading, stronger retention, better resolution, higher durability.
- Uniform particle size distribution, high column-to-column reproducibility.
- Available in a wide range of different particle sizes and dimensions.

Shim-pack VP-ODS

Bonded Phase	Octadecyl
Carbon Loading	20%
Surface Area	410m²/g
Pore Size	120Å
Particle Size	5μm
pH Range	2~7.5
End-cap	Yes
USP Classification	L1

- High-purity silica gel matrix with good reproducibility
- Certificate of Compliance and Column Performance Report
- Suitable for analysis of complex samples such as drug impurities, TCM and compound analysis

Pharmaceutical Analysis

- API, drug products
- Natural products, TCM, combination drugs

Food

- Mycotoxin

Shim-pack FC-ODS

Bonded Phase	Octadecyl
Carbon Loading	18%
Surface Area	315m²/g
Pore Size	120Å
Particle Size	3μm
pH Range	1.5~9
End-cap	Yes
USP Classification	L1

- Polymeric-bonded C18, high steric selectivity
- Short column enables faster analysis

Pharmaceutical Analysis

- API, drug products
- Natural products, TCM

Food

- Mycotoxin
- Azo dyes

Shim-pack XR-ODS II

Bonded Phase	Octadecyl
Carbon Loading	20%
Surface Area	470m²/g
Pore Size	80Å
Particle Size	2.2μm
pH Range	2~7.5
End-cap	Yes
USP Classification	L1

- High carbon load, high surface area, high resolution
- Maximum pressure 60 MPa, suitable for UFLC analysis

Pharmaceutical Analysis

- Fast analysis of API, intermediates and formulated drugs
- Fast TCM analysis

Shim-pack XR-ODS III

Bonded Phase	Octadecyl
Carbon Loading	22%
Surface Area	500m²/g (1.6μm)
Pore Size	75Å
Particle Size	1.6, 2.2μm
pH Range	2~7.5
End-cap	Yes
USP Classification	L1

- High carbon load, high surface area, high resolution
- Maximum pressure 100 MPa, suitable for UHPLC analysis

Pharmaceutical Analysis

- Fast analysis of drug products, API and intermediates
- Fast TCM analysis

Food

- Mycotoxin

Shim-pack Arata C18

Bonded Phase	Octadecyl
Carbon Loading	17%
Surface Area	340m²/g
Pore Size	120Å
Particle Size	2.2μm
pH Range	2~7.5
End-cap	Yes
USP Classification	L1

- Specifically designed to give unmatched peak shape for basic compounds, increased sensitivity
- Ideal for basic compound analysis under low ionic strength mobile phase conditions, suitable for LC-MS analysis
- Rapid column equilibrium and stable under 100% aqueous condition

Pharmaceutical Analysis

- Basic drugs and impurities
- Therapeutic peptides

Bioanalysis

- Basic drugs and their metabolites
- Peptides

Shim-pack GIST/GISS/GIS /GWS series

High purity porous spherical silica packed column, wide variety of selectivity scalable from UHPLC to preparative

- Ultra-high inertness, improve peak shapes of acidic and basic compounds.
- Uniform particle size, low backpressure, relieving load on HPLC instrument.
- Available in C18, C8, Phenyl, NH2 and other chemistries, effective over a wide range of applications.

Shim-pack GIST C18

Bonded Phase	Octadecyl
Carbon Loading	14%
Surface Area	350m²/g
Pore Size	100Å
Particle Size	2, 3, 5μm
pH Range	1~10
End-cap	Yes
USP Classification	L1

General GIST C18 Column:
- Superior inertness, provides symmetric peak shapes for strong ionic compounds
- Wide selection of column dimension from analytical to preparative

Pharmaceutical Analysis	• API, drug products (content / related compounds) • Drug dissolution test
Bioanalysis	• Generic drugs bioequivalence studies • Drugs (acidic and basic) and metabolites
Food & Environmental Analysis	• Food preservatives, food dyes • Pesticides and veterinary drug residues • PFAS

Shim-pack GIST C18-AQ

Bonded Phase	Octadecyl
Carbon Loading	13%
Surface Area	350m²/g
Pore Size	100Å
Particle Size	1.9, 3, 5μm
pH Range	1~10
End-cap	Yes
USP Classification	L1

Optimized GIST C18 Column:
- Optimization of C18 bonding group increases contact area with aqueous mobile phase, improving retention and resolution of polar compounds
- Maintain high inertness and durability under 100% aqueous condition

Pharmaceutical Analysis	• API, drug products (content / related compounds) (e.g. Amoxicillin)
Bioanalysis	• Generic drugs bioequivalence studies • Drugs (acidic and basic) and metabolites

Shim-pack GISS C18

Bonded Phase	Octadecyl
Carbon Loading	9%
Surface Area	200m²/g
Pore Size	200Å
Particle Size	1.9, 3, 5μm
pH Range	1~10
End-cap	Yes
USP Classification	L1

GISS C18 Column:
- Low carbon load, low surface area, rapid separation with symmetrical peaks
- Ideal for high speed LC/MS/MS analysis

Pharmaceutical Analysis	• API, drug products (content / related compounds)
Bioanalysis	• Biological samples

Shim-pack GIST C8

Bonded Phase	Octyl
Carbon Loading	8%
Surface Area	350m²/g
Pore Size	100Å
Particle Size	2, 3, 5μm
pH Range	1~10
End-cap	Yes
USP Classification	L7

GIST C8 Column:
- High inertness, effective in separation of acidic and basic compounds with symmetrical peaks

Pharmaceutical Analysis	• API, drug products (content / related compounds)
Bioanalysis	• Generic drugs bioequivalence studies • Drugs (acidic and basic) and metabolites

Shim-pack GIST Phenyl

Bonded Phase	Phenyl
Carbon Loading	10%
Surface Area	350m²/g
Pore Size	100Å
Particle Size	2, 3, 5μm
pH Range	2~7.5
End-cap	No
USP Classification	L11

Phenyl Column:
- Phenyl group directly bonded to silica, providing stronger π-π interactions
- Suitable for aromatics or heterocyclic and electronegative compounds
- Non-endcapped column, the presence of silanol group provides hydrogen bonding, improving retention and resolution of acidic and basic compounds

Pharmaceutical Analysis	• Electronegative and benzene / heterocyclic ring containing drug and drug impurities
Bioanalysis	• Drugs (acidic and basic) and metabolites

Shim-pack GIST Phenyl-Hexyl

Bonded Phase	Phenylhexyl
Carbon Loading	9%
Surface Area	350m²/g
Pore Size	100Å
Particle Size	3, 5μm
pH Range	1~10
End-cap	Yes
USP Classification	L11

Phenyl-Hexyl Column:
- Phenylhexyl-bonded column, provides π-π and hydrophobic interactions
- Ideal for analysis of aromatics, heterocyclic and other electronegative compounds

Pharmaceutical Analysis	• Electronegative and benzene / heterocyclic ring containing drug and drug impurities
Bioanalysis	• Benzene or heterocyclic ring containing drugs and its metabolites
Food & Environmental Analysis	• Plasticizer • PAHs • Phenols

Shim-pack GIST NH2

Bonded Phase	Aminopropyl
Carbon Loading	7%
Surface Area	350m²/g
Pore Size	100Å
Particle Size	3, 5μm
pH Range	2~7.5
End-cap	No
USP Classification	L8

NH2 Column:
- Highly versatile column bonded with aminopropyl group
- Effective in separation of sugars, amino acids and polar compounds under HILIC mode
- Superior stability, reduced column bleed under weakly acidic eluent

Pharmaceutical Analysis	• Carbohydrates (mono- and disaccharides), amino acids
Bioanalysis	• Polar compounds and metabolites
Food & Environmental Analysis	• Monosaccharides and disaccharides

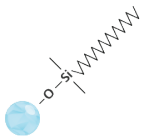
Shim-pack GIS C18

Bonded Phase	Octadecyl
Carbon Loading	15%
Surface Area	450m²/g
Pore Size	100Å
Particle Size	2, 3, 4, 5,10μm
pH Range	2~7.5
End-cap	Yes
USP Classification	L1

GIS C18 Column:
- High-purity fully porous silica matrix, high surface area, high loading capacity
- Ideal for analysis of synthetic drugs and natural products

Pharmaceutical Analysis	• API, drug products (content / related compounds) • Chinese herbal medicine (raw material and prescriptions) • Preparative isolation and purification of synthetic drugs and natural products

Shim-pack GWS C18



Bonded Phase	Octadecyl
Carbon Loading	9.5%
Surface Area	450m²/g
Pore Size	100Å
Particle Size	5µm
pH Range	2~7.5
End-cap	Yes
USP Classification	L1

GWS C18 Column:
- High-purity fully porous silica matrix, low carbon load, improved retention of polar compounds, faster elution of hydrophobic compounds
- Ideal for analysis of multi-component samples with wide range of polarities

Pharmaceutical Analysis
- API, drug products (content / related compounds)

Shim-pack GIS C18-P

Bonded Phase	Octadecyl
Carbon Loading	29%
Surface Area	450m²/g
Pore Size	100Å
Particle Size	3, 5µm
pH Range	2~7.5
End-cap	No
USP Classification	L1

Polymeric C18 Column:
- High steric selectivity for separation of planar and non-planar compounds
- High carbon load, high surface area, strong retention force

Pharmaceutical Analysis
- Drug products, API, intermediates and impurities
- Natural products or TCM, especially those containing alkaloids

Bioanalysis
- Structural isomers and analogs

Food & Environmental Analysis
- Food preservatives, food dyes, PAHs
- Pesticides and veterinary drug residues

Shim-pack GIS RP-Shield

Bonded Phase	Octadecyl
Carbon Loading	9%
Surface Area	450m²/g
Pore Size	100Å
Particle Size	5µm
pH Range	2~7.5
End-cap	No
USP Classification	L1

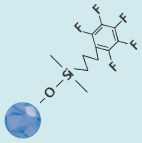
Polar embedded C18 Column:
- Extreme base deactivation enables superior peak shape for acids
- Unique selectivity through hydrogen bonding interactions
- Maintain high inertness and durability under 100% aqueous condition

Pharmaceutical Analysis
- API, drug products (content / related compounds)

Bioanalysis
- Drugs (acidic and basic) and metabolites

Food & Environmental Analysis
- Food preservatives, food dyes
- Organic acids

Shim-pack GIST PFPP



Bonded Phase	Pentafluorophenylpropyl
Carbon Loading	10%
Surface Area	350m²/g
Pore Size	100Å
Particle Size	3, 5µm
pH Range	2~7.5
End-cap	Yes
USP Classification	L43

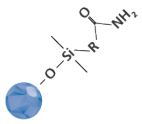
Pentafluoropenylpropyl (PFPP) Column:
- End-capped column, better selectivity than non-endcapped column
- Provides hydrophobic, π-π, dipole-dipole and hydrogen bonding interactions
- Ideal for analysis of polar compounds, aromatics and halogen-contaning compounds

Pharmaceutical Analysis
- Highly polar drugs
- Genotoxic impurities

Bioanalysis
- Drugs and metabolites analysis
- Isomers

Food & Environmental Analysis
- Mycotoxins
- Carcinogenic aromatic amines and phenols

Shim-pack GIST Amide



Bonded Phase	Amide (carbamoyl)
Carbon Loading	15%
Surface Area	350m²/g
Pore Size	100Å
Particle Size	3, 5µm
pH Range	2~8.5
End-cap	No
USP Classification	L68

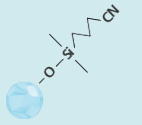
Amide-type HILIC Column:
- Stronger retention for polar compounds
- High stability and durability, short column equilibration time

Pharmaceutical Analysis
- Polar compounds
- Carbohydrates, amino acids

Bioanalysis
- Polar compounds and metabolites
- Glycans

Food & Environmental Analysis
- Melamine, cyanuric acid
- Amino acids, water-soluble vitamins

Shim-pack GIS CN



Bonded Phase	Cyanopropyl
Carbon Loading	14%
Surface Area	450m²/g
Pore Size	100Å
Particle Size	3, 5µm
pH Range	2~7.5
End-cap	No
USP Classification	L10

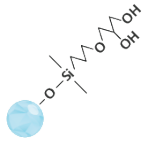
Cyanopropyl Column:
- Provides π-π and hydrogen bonding interactions
- Compatible with both reversed phase and normal phase conditions
- Applicable in 100% aqueous condition

Pharmaceutical Analysis
- Highly polar drugs

Bioanalysis
- Highly polar drugs and metabolites

Food & Environmental Analysis
- Amino acids, organic acids
- Water-soluble vitamins

Shim-pack GIS HILIC



Bonded Phase	Diol
Carbon Loading	20%
Surface Area	450m²/g
Pore Size	100Å
Particle Size	3, 5µm
pH Range	2~7.5
End-cap	No
USP Classification	L20

HILIC Column:
- Dihydroxypropyl (Diol) bonded stationary phase
- Excellent peak shape for basic and neutral polar compounds

Pharmaceutical Analysis
- Highly polar drugs

Bioanalysis
- Highly polar drugs and metabolites

Food / Cosmetic / Environmental Analysis
- Allantoin, melamine, cyanoguanidine
- Taurine, inositol

GIS SIL

Bonded Phase	None
Carbon Loading	-
Surface Area	450m²/g
Pore Size	100Å
Particle Size	3, 5µm
pH Range	2~7.5
End-cap	No
USP Classification	L3

Silica Column:
- High quality pure silica gel compatible with normal phase condition
- Strongly retain basic compounds due to the silanol groups of the silica gel

Pharmaceutical Analysis
- API, drug products (content / related compounds)
- Drug dissolution test

Bioanalysis
- Steriod hormones

Food / Cosmetic / Environmental Analysis
- Biofuel, FAME
- Fat-soluble vitamins
- Cosmetic preservatives

Shim-pack NovaCore

Core shell organosilica hybrid particle technology enables fast analysis with wide pH range

- Stable, consistent, narrow pore size distribution reduces eddy diffusion significantly, giving sharper peaks and higher sensitivity.
- Lower column backpressure, with a 2.6µm particle size column on HPLC system can achieve an UHPLC separation efficiency.
- Organosilica hybrid base material offer wide pH tolerance range (pH 1 to 12).

Shim-pack NovaCore C18-HB

Bonded Phase	Octadecyl
Carbon Loading	11%
Surface Area	200m²/g
Pore Size	100Å
Particle Size	1.7, 2.6, 5µm
pH Range	1~12
End-cap	Yes
USP Classification	L1

C18 Column:
- Ideal for method development over wide pH range
- High resolution and high durability

Pharmaceutical Analysis
- Drug intermediates
- Acid and basic drugs and metabolites

Food / Cosmetic / Environmental Analysis
- Food preservatives, food dyes
- Synthetic dye
- Cosmetic products (preservatives, steroids, etc.)
- Pesticides and veterinary drug residues

Mobile Phase Cleaner

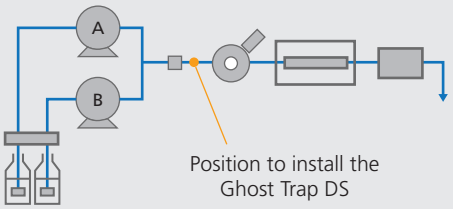
Mobile phase cleaner for UHPLC/HPLC

- Consistently traps impurities in mobile phases, effectively removes ghost peaks.
- Ultra high surface area activated charcoal beads, large adsorption capacity and long lifetime.

Ghost Trap DS

Ghost Trap DS Handling and Precautions

- Ghost Trap DS is installed between the gradient mixer and the autosampler.
- Cleans up impurities from piping and gradient mixer in addition to those from the mobile phase.
- Not recommended for analysis with ion-pairing reagent (e.g. triethylamine, trifluoroacetic acid, sodium alkyl sulfonate).
- Suitable for LC-UV analysis, not recommend to use with MS detector.
- Thoroughly rinse the system and Ghost Trap DS with 100% acetonitrile before loading the column.
- Product lifetime varies according to LC analysis conditions and mobile phase used.
- Note that some impurities may not be removed.



GLC Suction Filter 3

HPLC Suction filter with mobile phase cleaning function

- Removes contaminants from the mobile phase and prevents airborne contaminants from entering the mobile phase.
- Does not affect gradient delay to install this product in front of the pump.
- Can be used immediately by replacing the existing suction filter, as conditioning before first use is generally unnecessary.

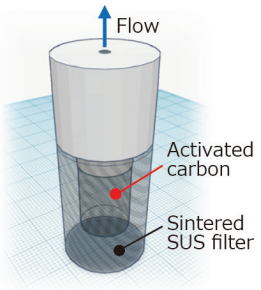


Fig. 1. Structure of the GLC Suction Filter 3

GLC Suction Filter 3 Handling and Precautions

- These products do not guarantee compatibility with all instruments. Please confirm the outer diameter of the suction tube before use.
- When using ion-pair reagents in the mobile phase, the ion-pair reagents may be adsorbed to these products and may affect the retention time and peak shape.
- Bleeding may occur during the use of mass spectrometers, depending on the conditions of the mobile phase. In addition, bleeding originating from this product may occur during initial use. In such cases, please condition the product.
- These products do not remove all contaminants.
- When the activated carbon reaches breakthrough, "ghost peaks" derived from mobile phase contaminants may be detected. In this case, replace the product.
- The recommended replacement period is after passing 60 L of mobile phase or 1 year after use.

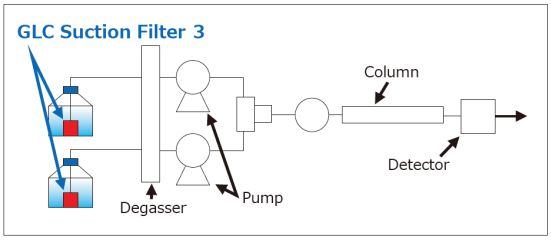


Fig. 2. Attachment position

Column Selection Guide
for Different LC Platforms

- Column configuration should be optimise according to the LC system used. Smaller column particle size, or reduced column volume (ID and/or length of column) increases the necessity for a lower dispersion system.
- Choosing the optimal column configuration for your LC system allows you to achieve improved chromatography. The following table summarizes the starting recommendations of column configuration for each LC system.

Nexera Lite

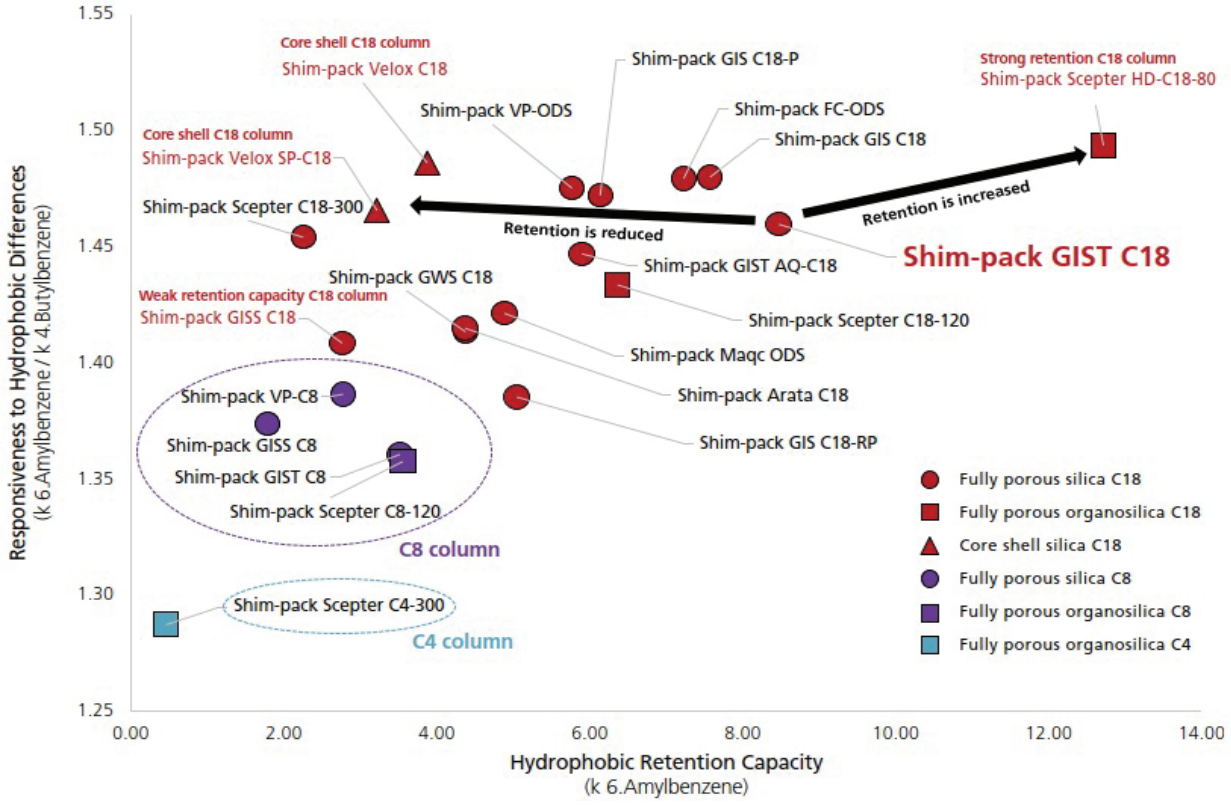
LC-2070

LC-2080

Nexera XS

Nexera X4

LC System	HPLC	UHPLC-like	UHPLC
Particle Size	2.7, 3, 5μm	2.7, 3μm	1.6, 1.8, 1.9, 2, 2.2μm
Column I.D.	4.6mm (3.0mm)	3.0mm (2.1mm)	2.1mm
Column Length	100 - 250mm	50 - 100mm	≤ 150mm



Method Development Column Selection Flowchart

First Choice Columns

- Scepter C18-120 (Operating pH range: 1 to 12)
- GIST C18 (Operating pH range: 1 to 10)

Red: Fully porous silica columns
Green: Fully porous organic silica hybrid columns
Blue: Surface porous silica columns (Core-shell silica columns)

When satisfactory analysis is not possible even if the analysis conditions (including mobile phase solvent, solvent ratio, mobile phase pH conditions, and temperature) are changed

Improvement Retention Time

Retention is small (polar coumpounds)

When retention is difficult with a reversed phase column

- Consider HILIC columns

Increasing the aqueous ratio of the mobile phase for analysis

GIST C18-AQ

- Other reversed phase columns that can be used with a 100% aqueous mobile phase

To retain basic compounds in particular

- PFPP columns

Retention is small (hydrophobic coumpounds)

To strengthen the retention of all hydrophobic compounds

- Shim-pack Arata C18

Retention is large

To hasten the elution of all hydrophobic compounds

- Velox C18, SP-C18
- GIS C18
- Scepter C18-300
- C8 columns
- Scepter C4-300

Note:
If you are using instruments with high pressure resistant specifications, one method of increasing the flow rate is to select a column with a smaller size and particle size from the same series.

Improvement Peak Shapes

To prevent peak tailing, which occurs particularly in the analysis of basic compounds

- Shim-pack Arata C18

Improvement Separation

To increase the separation

- Phenyl columns
- PFPP columns

To prevent peak tailing, which occurs particularly in the analysis of basic compounds

- Scepter HD-C18-80
- Scepter C18-300
- GIS C18-P

If no improvements are expected with C18 columns

- Phenyl columns: Aromatic compounds
- PFPP columns: Aromatic compounds and cis-trans isomers

Other

When column equilibrium is unstable

- Shim-pack Arata C18
- Other weakly hydrophobic reversed phase columns

When metal absorption by the column SUS body is a concern

- Shim-pack Scepter Claris series
- Shim-pack Scepter [metal free]
- Shim-pack GIST/GISS [metal free]

*1 This is not a description of all of the Shim-pack columns.

*2 The separation selectivity differs significantly even for columns in the same group. Actual column selection will be more complicated than shown in this chart depending on the analytes and conditions.

The analysis results in this column selection chart are not guaranteed, so use this only as a reference.

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