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Certificate of Registration

This is to Certify that
Quality Management System of

CHROMATOGRAPHY WORLD

217, 2ND FLOOR, CHAMPAKLAL INDUSTRIAL AREA NEAR SION
TELEPHONE EXCHANGE, SION EAST, MUMBAI- 400022, INDIA.

has been assessed and found to conform to the requirements of
ISO 9001:2015
for the following scope :

SALES & MANUFACTURING OF ITEMS FOR ANALYTICAL AND RESEARCH DEVELOPMENT
ASBELOW-

1. CHROMATOGRAPHY COLUMNS & CONSUMABLES
2. SCIENTIFIC AND ANALYTICAL INSTRUMENTS
3. PERIPHERAL LAB INSTRUMENTS & FURNITURE
4. GAS GENERATOR AND GAS MANAGEMENT ACCESSORIES AND CONSUMIBLES
5. ANY AND ALL CONSUMABLES REQUIRED FOR LABORATORIES

Certificate No	: 21IQHY01		
Initial Registration Date	: 09/06/2021	Issuance Date	: 09/06/2021
Date of Expiry*	: 08/06/2024		
1st Surve. Due	: 09/05/2022	2nd Surve. Due	: 09/05/2023



Director



ACCREDITED
Management Systems
Certification Body
MSCB-119



AQC MIDDLE EAST LLC

Head Office: Office No. 02, Ground Floor, Sharjah Media City, Sharjah, UAE. e-mail: info@aqcworld.com.

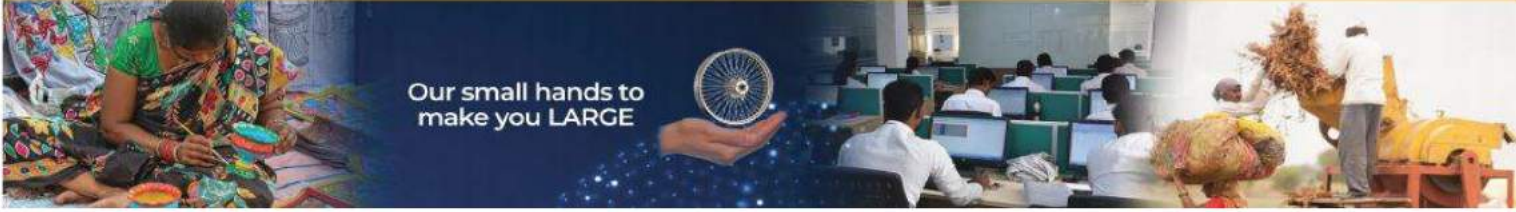
Key Location: A-60, Sector - 2, Noida, Uttar Pradesh, 201301, India.

*Validity of the Certificate is subject to successful completion of surveillance audit on or before of due date. (in case surveillance audit is not allowed to be conducted, this certificate shall be suspended/withdrawal).

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UDYAM REGISTRATION CERTIFICATE



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UDYAM REGISTRATION NUMBER	UDYAM-MH-19-0078510				
NAME OF ENTERPRISE	CHROMATOGRAPHY WORLD				
TYPE OF ENTERPRISE *	MICRO (Based on FY 2020-21) (MICRO During FY 2019-20)				
MAJOR ACTIVITY	MANUFACTURING				
SOCIAL CATEGORY OF ENTREPRENEUR	GENERAL				
NAME OF UNIT(S)	S.No. Name of Unit(s)				
OFFICIAL ADDRESS OF ENTERPRISE	1 217, CHAMPAKLAL INDUSTRIAL ESTATE, 2ND FLOOR, SION EAST, MUMBAI 400022				
	Flat/Door/Block No.	217	Name of Premises/ Building	CHAMPAKLAL INDUSTRIAL EST	
	Village/Town	MUMBAI	Block	2nd floor	
	Road/Street/Lane	217, CHAMPAKLAL INDUSTRIA	City	MUMBAI	
	State	MAHARASHTRA	District	MUMBAI , Pin 400022	
	Mobile	9594931999	Email:	dhiren@chromatographyworld.com	
DATE OF INCORPORATION / REGISTRATION OF ENTERPRISE	01/02/2009				
DATE OF COMMENCEMENT OF PRODUCTION/BUSINESS	01/02/2009				
NATIONAL INDUSTRY CLASSIFICATION CODE(S)	SNo.	NIC 2 Digit	NIC 4 Digit	NIC 5 Digit	Activity
	1	25 - Manufacture of fabricated metal products, except machinery and equipment	2599 - Manufacture of other fabricated metal products n.e.c.	25999 - Manufacture of other fabricated metal products n.e.c.	Manufacturing
	2	26 - Manufacture of computer, electronic and optical products	2651 - Manufacture of measuring, testing, navigating and control equipment	26516 - Manufacture of laboratory analytical instruments and miscellaneous laboratory apparatus for measuring and testing such as scales, balances, incubators etc.	Manufacturing
	3	32 - Other manufacturing	3250 - Manufacture of medical and dental instruments and supplies	32502 - Manufacture of laboratory apparatus (laboratory ultrasonic cleaning machinery, laboratory sterilizers, laboratory type distilling apparatus, laboratory centrifuges etc.)	Manufacturing
	4	33 - Repair and installation of machinery and equipment	3319 - Repair of other equipment	33190 - Repair of other equipment	Manufacturing
	5	71 - Architecture and engineering activities; technical testing and analysis	7120 - Technical testing and analysis	71200 - Technical testing and analysis	Services
DATE OF UDYAM REGISTRATION	10/08/2021				

* In case of graduation (upward/reverse) of status of an enterprise, the benefit of the Government Schemes will be availed as per the provisions of Notification No. S.O. 2119(E) dated 26.06.2020 issued by the M/o MSME.

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For any assistance, you may contact:

1. District Industries Centre: MUMBAI CITY (MAHARASHTRA)
2. MSME-DFO: MUMBAI (MAHARASHTRA)

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- ▶ Nucleodur
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- ▶ Nucleogel
- ▶ Nucleodex
- ▶ Nucleocel

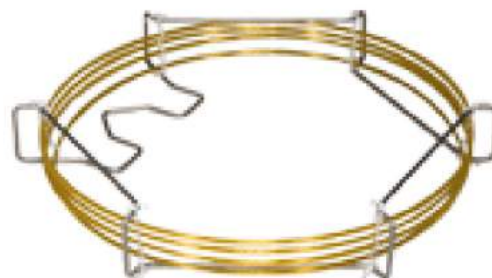


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SPE AND OTHER CONSUMABLES

CHROMABOND QuEChERS



CHROMABOND[®] phases for SPE

CHROMABOND[®] HILIC

CHROMABOND[®] HLB



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High purity silica

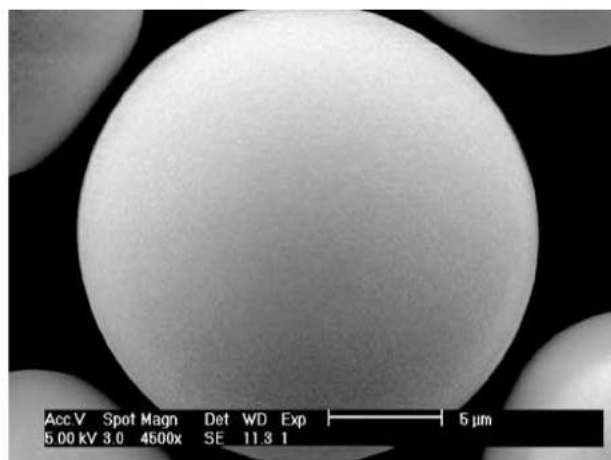
NUCLEODUR®

NUCLEODUR® is a fully synthetic type B silica (silica of 3rd generation) offering highly advanced physical properties like **totally spherical** particle shape, outstanding **surface smoothness**, high pressure stability and **low metal content**.

NUCLEODUR® as a state-of-the-art silica is the ideal base material for modern HPLC phases. It is the result of MACHEREY-NAGEL's pioneering research in chromatography for more than 40 years and worthy successor of MN's world famous NUCLEOSIL® silica.

In RP liquid chromatography the efficiency of the packing is strongly affected by the quality of the base silica itself. Shortcomings in the surface geometry of the particles or metal contaminants are the main reasons for inadequate coverage with the covalently bonded alkylsilanes in the subsequent derivatization steps. It is well known, that poor surface coverage and, in consequence, high activity of residual free silanols often results in peak tailing or adsorption, particularly with basic compounds.

Particle shape and surface symmetry



NUCLEODUR® silicas are synthesized in a unique and carefully controlled manufacturing process which provides silica particles, which are totally spherical. The picture shows the outstanding smoothness of the NUCLEODUR® surface.

Purity

As already mentioned above, a highly pure silica is required for achieving symmetric peak shapes and maximum resolution.

Inclusions of, e.g., iron or alkaline earth metal ions on the silica surface are largely responsible for the unwanted interactions with ionizable analytes, e.g., amines or phenolic compounds (see appl. 118630 on page 63).

NUCLEODUR® is virtually free of metal impurities and low acidic surface silanols. Elemental analysis data of NUCLEODUR® 5 µm measured by AAS are listed below.

Elementary analysis (metal ions) of NUCLEODUR® 100-5

Aluminium	<	5	ppm
Iron	<	5	ppm
Sodium	<	5	ppm
Calcium	<	10	ppm
Titanium	<	1	ppm
Zirconium	<	1	ppm
Arsenic	<	0.5	ppm
Mercury	<	0.05	ppm

Pressure stability

The totally spherical and 100 % synthetic silica gel exhibits an outstanding mechanical stability, even at high pressures and elevated eluent flow rates. In addition, after several cycles of repeated packing, no significant drop in pressure can be observed. The latter is of prime importance for preparative and process-scale applications.

Physical data of NUCLEODUR®

Surface area (BET)	340 m ² /g
Pore size	110 Å
Pore volume	0.9 mL/g


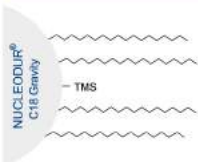

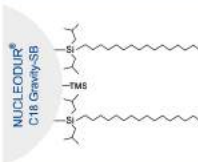

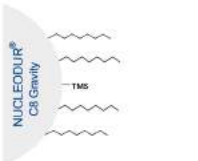

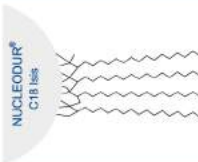

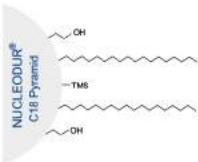

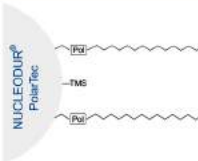

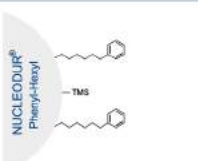

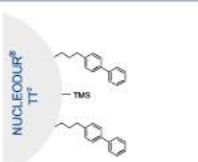

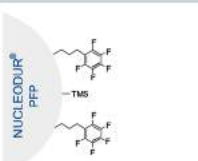
NUCLEODUR® modifications

Several different surface modifications based on NUCLEODUR® silica have been developed over the last years providing a full range of specified HPLC phases and an ideal tool for every separation:

- NUCLEODUR® C₁₈ Gravity and C₈ Gravity
- NUCLEODUR® C₁₈ Isis
- NUCLEODUR® C₁₈ Pyramid
- NUCLEODUR® PolarTec
- NUCLEODUR® PFP
- NUCLEODUR® Sphinx RP
- NUCLEODUR® C₁₈ HTec
- NUCLEODUR® C₁₈ ec and C₈ ec
- NUCLEODUR® HILIC
- NUCLEODUR® CN and CN-RP
- NUCLEODUR® NH₂ and NH₂-RP
- unmodified NUCLEODUR®

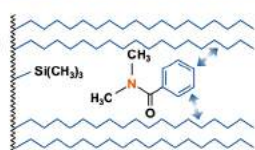

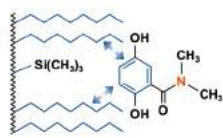

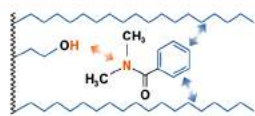
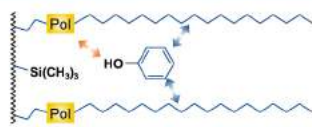
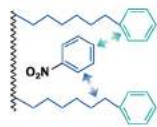
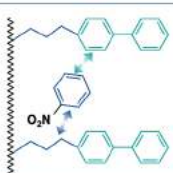

All phases are described in detail on the following pages.

NUCLEODUR® phase overview
Your Partner in HPLC & GC

Phase	Specification	Page	Characteristic*	Stability	Structure
 C18 Gravity	octadecyl, high density coating, multi-endcapping 18 % C USP L1	18	A ●●●●● B ● C ●●●	pH 1–11, suitable for LC/MS	NUCLEODUR® (Si-O ₂) _h 
 C18 Gravity-SB	octadecyl (monomeric), extensive endcapping 13 % C USP L1	22	A ●●●●● B ●●●● C -	pH 1–9, suitable for LC/MS	NUCLEODUR® (Si-O ₂) _h 
 C8 Gravity	octyl, high density coating, multi-endcapping 11 % C USP L7	18	A ●●●●● B ●●● C ●●●	pH 1–11, suitable for LC/MS	NUCLEODUR® (Si-O ₂) _h 
 C18 Isis	octadecyl phase with specially crosslinked surface modification, endcapping 20 % C USP L1	24	A ●●●●● B ●●●● C ●●●●●	pH 1–10, suitable for LC/MS	NUCLEODUR® (Si-O ₂) _h 
 C18 Pyramid	octadecyl with polar endcapping 14 % C USP L1	26	A ●●●●● B ●●●● C ●●●	stable in 100 % aqueous eluent, pH 1–9, suitable for LC/MS	NUCLEODUR® (Si-O ₂) _h 
 PolarTec	octadecyl with embedded polar group, endcapping 17 % C USP L1 and L60	28	A ●●●●● B ●●●● C ●●●●●	stable in 100 % aqueous eluent, pH 1–9, suitable for LC/MS	NUCLEODUR® (Si-O ₂) _h 
 Phenyl-Hexyl	phenylhexyl, multi-endcapping 10 % C USP L11	30	A ●●●●● B ●●●● C ●●●	pH 1–10, suitable for LC/MS	NUCLEODUR® (Si-O ₂) _h 
 π ²	biphenylpropyl, multi-endcapping 17 % C USP L11	34	A ●●●●● B ●●●●● C ●●●●●	pH 3–10	NUCLEODUR® (Si-O ₂) _h 
 PFP	pentafluorophenylpropyl, multi-endcapping 8 % C USP L43	32	A ●●●●● B ●●●●● C ●●●●●	pH 1–9, suitable for LC/MS	NUCLEODUR® (Si-O ₂) _h 


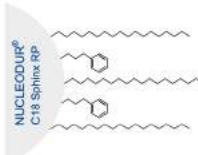

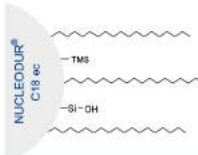

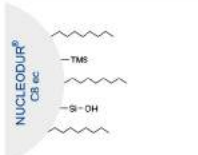

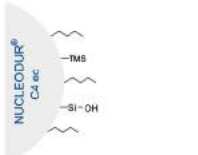

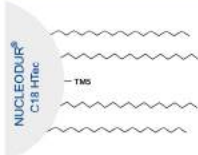

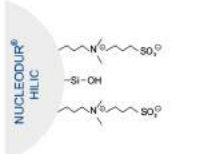

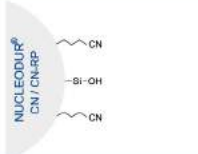

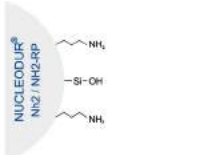


* A = ● hydrophobic selectivity, B = ● polar / ionic selectivity, C = ● steric selectivity
 ** phases which provide a similar selectivity based on chemical and physical properties

NUCLEODUR[®] phase overview
Your Partner in HPLC & GC

Application	Similar phases**	Interactions · retention mechanism
in general compounds with ionizable functional groups such as basic pharmaceuticals and pesticides	NUCLEOSIL [®] C18 HD Xterra [®] RP18 / MS C18; Luna [®] C18(2); Gemini [®] ; Synergi [®] Max RP; Zorbax [®] Extend-C18; Inertsil [®] ODS III; Purospher [®] STAR RP-18; Hypersil [™] BDS	hydrophobic (van der Waals interactions) 
overall sophisticated analytical separations, especially for polar compounds, e.g., antibiotics, water-soluble vitamins, organic acids	–	hydrophobic (van der Waals interactions) with additional polar interactions 
like C ₁₈ Gravity, however, generally shorter retention times for nonpolar compounds	NUCLEOSIL [®] C8 HD Xterra [®] RP8 / MS C ₈ ; Luna [®] C ₈ ; Zorbax [®] Eclipse XDB-C ₈	hydrophobic (van der Waals interactions) 
high steric selectivity, thus suited for separation of positional and structural isomers, planar / nonplanar molecules	NUCLEOSIL [®] C18 AB Inertsil [®] ODS-P; Pro C18 RS	steric and hydrophobic 
basic pharmaceuticals, very polar compounds, organic acids	Aqua, Synergi [®] Hydro-RP; AQ; Atlantis [®] dC18; Polaris [®] C18-A	hydrophobic and polar (H bonds) 
basic pharmaceuticals, organic acids, pesticides, amino acids, water-soluble vitamins	NUCLEOSIL [®] C18 Nautilus ProntoSIL [®] C18 AQ, Zorbax [®] Bonus-RP, Polaris [®] Amide-C18; Ascentis [®] RP Amide, SymmetryShield [™] RP18; SUPELCOSIL [™] LC-ABZ+; HyPURITY [™] ADVANCE; ACCLAIM Polar AD.II	hydrophobic and polar (H bonds) 
aromatic and unsaturated compounds, polar compounds like pharmaceuticals, antibiotics	Luna [®] Phenyl-Hexyl; Zorbax [®] Eclipse Plus Phenyl-Hexyl; Kromasil [®] Phenyl-Hexyl	π-π and hydrophobic 
aromatic and unsaturated compounds, polar compounds like pharmaceuticals, antibiotics	Pinnacle [®] DB Biphenyl; Ultra Biphenyl	π-π and hydrophobic 
aromatic and unsaturated compounds, halogen compounds, phenols, isomers, polar pharmaceuticals, antibiotics	ACQUITY [®] CSH Fluoro-Phenyl; Hypersil [™] GOLD PFP; Luna [®] PFP(2); Discovery [®] HS F5; Allure [®] PFP Propyl; Ultra II PFP Propyl	polar (H bond), dipole-dipole, π-π and hydrophobic 

NUCLEODUR® phase overview

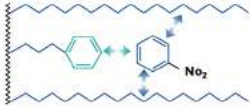
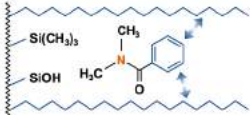
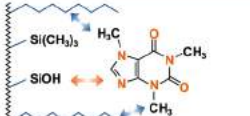

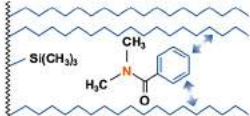
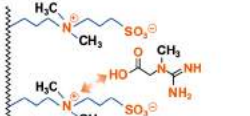

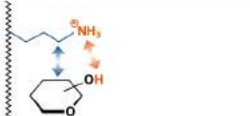
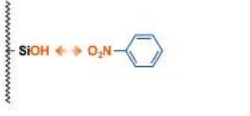
Your Partner in HPLC & GC

Phase	Specification	Page	Characteristic*	Stability	Structure
 Sphinx RP	bifunctional, balanced ratio of propylphenyl and octadecyl, endcapping 15% C USP L1 and L11	36	A ●●● B ●●● C ●	pH 1–10, suitable for LC/MS	NUCLEODUR® (Si-O ₂) _h 
 C18 ec	octadecyl, medium density, endcapping, available in 110 Å and 300 Å pore size 17.5% / 4% C USP L1	38	A ●●●●● B ● C ●●●●	pH 1–9	NUCLEODUR® (Si-O ₂) _h 
 C8 ec	octyl, medium density, endcapping 10.5% C USP L7	38	A ●●● B ●●● C ●●●●	pH 1–9	NUCLEODUR® (Si-O ₂) _h 
 C4 ec	butyl, medium density, endcapping, 300 Å pore size 2.5% C USP L26	38	A ● B ●●● C ●●●	pH 1–9	NUCLEODUR® (Si-O ₂) _h 
 C18 HTec	octadecyl, high density coating, high capacity, multi-endcapping 18% C USP L1	45	A ●●●●●● B ● C ●●●●	pH 1–11, suitable for LC/MS	NUCLEODUR® (Si-O ₂) _h 
 HILIC	zwitterionic ammonium-sulfonic acid phase, no endcapping 7% C	48	A ● B ●●●●●● C -	pH 2–8.5	NUCLEODUR® (Si-O ₂) _h 
 CN / CN-RP	cyano (nitrile) for NP and RP separations, endcapping 7% C USP L10	50	A ● B ●●●●● C -	pH 1–8, stable towards highly aqueous mobile phases	NUCLEODUR® (Si-O ₂) _h 
 NH ₂ / NH ₂ -RP	aminopropyl for NP and RP separations, no endcapping 2.5% C USP L8	52	A ● B ●●●●● C -	pH 2–8, stable towards highly aqueous mobile phases	NUCLEODUR® (Si-O ₂) _h 
 SiOH	unmodified high purity silica, no endcapping USP L3	54	A - B - C -	pH 2–8	NUCLEODUR® (Si-O ₂) _h 




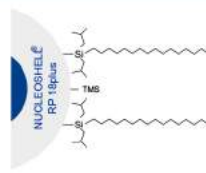

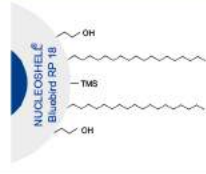





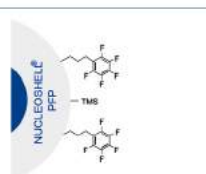

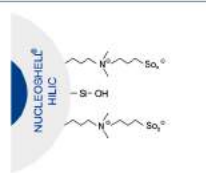
* A = ● hydrophobic selectivity, B = ● polar / ionic selectivity, C = ● steric selectivity
 ** phases which provide a similar selectivity based on chemical and physical properties

NUCLEODUR[®] phase overview

Your Partner in HPLC & GC

Application	Similar phases**	Interactions · retention mechanism
compounds with aromatic and multiple bond systems	no similar phases	π - π and hydrophobic 
robust C ₁₈ phase for routine analyses	NUCLEOSIL [®] C18 Spherisorb [®] ODS II; Symmetry [®] C18; Hypersil [®] ODS; Inertsil [®] ODS II; Kromasil [®] C18; LiChrospher [®] RP-18	hydrophobic (van der Waals interactions) some residual silanol interactions 
robust C ₈ phase for routine analyses	NUCLEOSIL [®] C8 ec / C8 Spherisorb [®] C ₈ ; Symmetry [®] C ₈ ; Hypersil [®] MOS; Kromasil [®] C ₈ ; LiChrospher [®] RP-8	hydrophobic (van der Waals interactions) some residual silanol interactions 
biological macromolecules like proteins or peptides	Jupiter [®] C ₄ ; ACE [®] C ₄	hydrophobic (van der Waals interactions) some residual silanol interactions 
robust and well base deactivated C ₁₈ phase; all separation tasks with preparative potential	Xterra [®] RP18 / MS C18 / SunFire [™] C18; Luna [®] C18(2), Gemini [®] , Synergi [®] Max RP; Zorbax [®] Extend-C18; Inertsil [®] ODS III; Purospher [®] STAR RP-18; Hypersil [®] BDS	hydrophobic (van der Waals interactions) 
hydrophilic compounds such as polar organic acids and bases, polar natural compounds	Sequant [™] ZIC [®] -HILIC; Obelisc [™]	ionic / hydrophilic and electrostatic 
polar organic compounds (basic drugs), molecules containing π -electron systems	NUCLEOSIL [®] CN / CN-RP	π - π and polar (H bond), hydrophobic 
sugars, sugar alcohols and other hydroxy compounds, DNA bases, polar compounds in general	NUCLEOSIL [®] NH ₂ / NH ₂ -RP	polar / ionic and hydrophobic 
polar compounds in general	NUCLEOSIL [®] SiOH	polar / ionic 

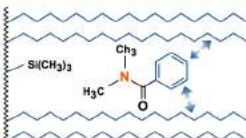
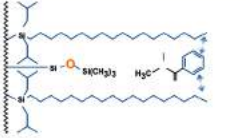
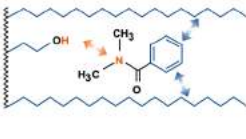


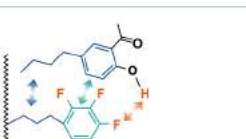
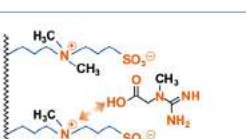
NUCLEOSHELL[®] phase overview

Phase	Specification	Page	Characteristic*	Stability	Structure
 RP 18	octadecyl, multi-encapping 7.8 % C (2.7 µm particles) 6.1 % C (5 µm particles) USP L1	70	A ●●●●● B ●●● C ●●●	pH 1–11, suitable for LC/MS	NUCLEOSHELL [®] (Si-O) ₂ H 
 RP 18plus	octadecyl (monomeric), multi-encapping 5.7 % C (2.7 µm particles) 4.4 % C (5 µm particles) USP L1	72	A ●●●●● B ●●●● C -	pH 2–9, suitable for LC/MS	NUCLEOSHELL [®] (Si-O) ₂ H 
 Bluebird RP18	octadecyl, hydrophilic encapping 5 % C (2.7 µm particles) USP L1	75	A ●●●●● B ●●●● C ●●●	stable in 100 % aqueous eluent, pH 1–8, suitable for LC/MS	NUCLEOSHELL [®] (Si-O) ₂ H 
 Phenyl-Hexyl	phenylhexyl, multi-encapping 4.5 % C (2.7 µm particles) USP L11	78	A ●●●●● B ●●●●● C ●●●	pH 1–10, suitable for LC/MS	NUCLEOSHELL [®] (Si-O) ₂ H 
 Biphenyl	biphenylpropyl, multi-encapping 5.2 % C (2.7 µm particles) USP L11	81	A ●●●●● B ●●●●● C ●●●●●	stable in 100 % aqueous eluent, pH 1.5–8.5, suitable for LC/MS	NUCLEOSHELL [®] (Si-O) ₂ H 
 PFP	pentafluorophenyl, multi-encapping ~ 3 % C (2.7 µm particles) USP L43	84	A ●●●●● B ●●●●● C ●●●●●	pH 1–9, suitable for LC/MS	NUCLEOSHELL [®] (Si-O) ₂ H 
 HILIC	zwitterionic ammonium-sulfonic acid, no encapping 1.3 % C (2.7 µm particles)	86	A ●●●●● B ●●●●● C -	pH 2–8.5, suitable for LC/MS	NUCLEOSHELL [®] (Si-O) ₂ H 

* A = ● hydrophobic selectivity, B = ● polar / ionic selectivity, C = ● steric selectivity

** phases which provide a similar selectivity based on chemical and physical properties

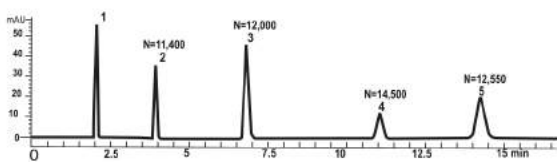
NUCLEOSHELL® phase overview

Application	Similar phases**	Interactions · retention mechanism
overall sophisticated analytical separations, e.g., analgesics, anti-inflammatory drugs, antidepressants; herbicides; phytopharmaceuticals; immunosuppressants	Kinetex® C18; Cortecs® C18; Raptor® C18; Accucore® C18; Ascentis® Express C18; HALO® C18; Shim-pack Velox® C18	hydrophobic (van der Waals interactions) 
overall sophisticated analytical separations, especially for polar compounds, e.g., pharmaceuticals like antibiotics, water-soluble vitamins, organic acids	Kinetex® XB-C18; Bonshell® ASB-C18; Raptor® ARC-C18; Shim-pack Velox® SP-18	hydrophobic (van der Waals interactions) 
overall sophisticated analytical separations, especially for very polar compounds, e.g., pesticides, sweeteners, nitrosamines, water soluble vitamins, organic acids, pharmaceuticals	Kinetex® Polar C18	hydrophobic and polar (H bonds) 
aromatic and unsaturated compounds, polar compounds like pharmaceuticals, antibiotics	Ascentis® Express Phenyl-Hexyl; Kinetex® Phenyl-Hexyl; Accucore® Phenyl-Hexyl; Ultracore® Phenyl-Hexyl; Poroshell® Phenyl-Hexyl; HALO® Phenyl-Hexyl	π - π and hydrophobic 
aromatic and unsaturated compounds, mycotoxins, phthalates, hormones, polar compounds like pharmaceuticals, antibiotics, pesticides	Kinetex® Biphenyl, Raptor® Biphenyl, HALO® Biphenyl; Shim-pack Velox® Biphenyl	π - π and hydrophobic 
aromatic and unsaturated compounds, phenols, halogenated hydrocarbons, isomers, polar compounds like pharmaceuticals, antibiotics	Kinetex® PFP; Ascentis® Express F5; Accucore® PFP; Shim-pack Velox® PFP; HALO® PFP; Raptor® PFP	polar (H bond), dipole-dipole, π - π and hydrophobic 
hydrophilic compounds such as organic polar acids and bases, polar natural compounds	—	ionic / hydrophilic and electrostatic 

Qualisil HPLC Column

Qualisil® BDS-C18 & BDS-C8 Columns with improved base deactivation. Qualisil® BDS is manufactured in USA under stringent process & strict quality control. Qualisil® BDS make use of high purity silica & purest reagents. Qualisil® BDS offers excellent peak shape & resolution not only for Basic Compounds but also for Acidic & Neutral Compounds.

Better Separation Performance



Qualisil® BDS C18

Carbon Load	12%
Pore Size	130Å
Surface Area	300 m ² /g
Particle Size	5µm
Temp Limits	60°C
pH range	pH [2-8]
Endcapped	Yes

LC Conditions

Column Dimensions : Qualisil® BDS C18 4.6 X 150 , 5µm
 Mobile Phase : 90% 50 mM KH₂PO₄ / 10% ACN
 Flow Rate : 1.0ml/min
 Detector : UV,254-nm
 Injection : 1.0µL

Sample Components :

Concentration : 0.2mg/ml

1. Uracil
2. Procainamide
3. N-acetyl procainamide
4. N-Propionyl procainamide
5. Caffeine

Excellent Peak Shape
Better Resolution

Excellent Performance

Unbelievable Price

Improved Base Deactivation

Improved Tailing

Ultra Pure Silica

pH Stability

Longer Life

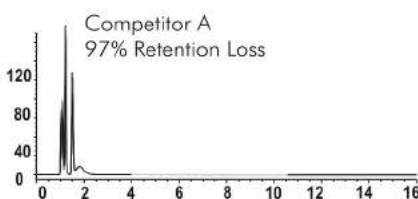
Better Resolution

Qualisil® HPLC Column Ordering Information



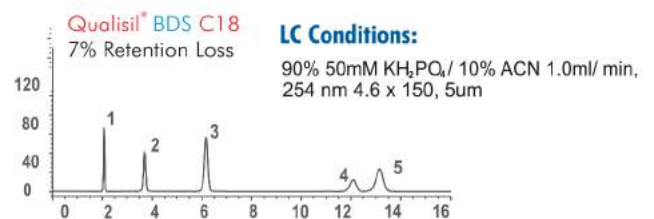
Brand Name	Specification						
	Carbon Load	Pore Size	Surface Area	Partical Size	Temp Limits	pH Range	Endcapped
Qualisil C18 BDS	12%	170Å	290m ² /g	5µm	60°C	pH (2-8)	Yes
Qualisil C18 Gold	17%	170Å	290m ² /g	5µm	60°C	pH (2-9)	Yes
Qualisil C8	12%	130Å	300m ² /g	5µm	60°C	pH (2 to 8)	Yes

Better Retention For Polar Compounds in High Aqueous Mobile Phases



Sample:

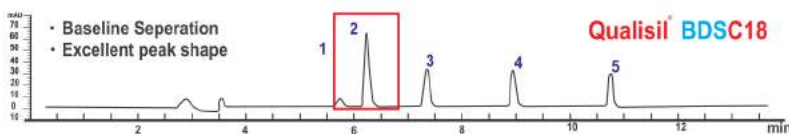
1. Uracil
2. Procainamide
3. N-acetyl Procainamide
4. N-propionyl Procainamide
5. Caffeine



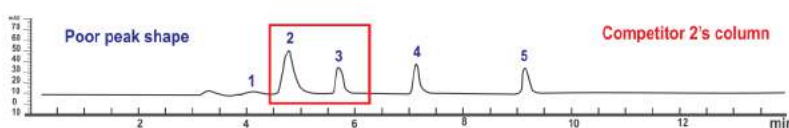
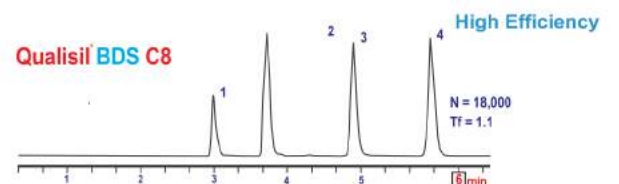
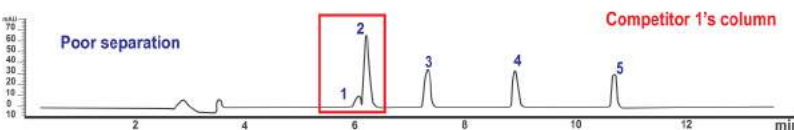
LC Conditions:

90% 50mM KH₂PO₄ / 10% ACN 1.0ml/ min,
254 nm 4.6 x 150, 5µm

Dual Benefits



1. Benzoic acid
2. Sorbic acid
3. Methyl p-hydroxybenzoate
4. Ethyl p-hydroxybenzoate
5. Propylparaben



Sample:
 1. Uracil
 2. Phenol
 3. 4-Chloronitrobenzene
 4. Toluene

Column : 4.6 x 250mm, 5µm
 Mobile Phase : 80% / 20% Methanol/ Water
 Flow Rate : 1ml/min
 Injection : 5µL
 Temperature : Ambient
 Detector : VWD, 254 nm

Develosil®



Reverse Phase Method Development

Small Organic Molecules (M.W.<5,000)

First Selection:

- Develosil HSR C18
- Develosil HSR AQ C18

Accelerated Elusion:

- Develosil HSR C8
- Develosil HSR C1

Large Organic Molecules (M.W.>5,000)

First Selection:

- Develosil HSR C18 peptide
- Develosil HSR AQ C18protein
- Develosil 300 ODS-HG
- Develosil 300 ODS-UG

High Recovery:

- Develosil 300 C8-HG
- Develosil 300 C4-HG

Normal Phase Method Development

Small Organic Molecules (M.W.<5,000)

Silica Phase Chemistry:

- Develosil Silica 30
- Develosil Silica 60
- Develosil Silica 100

Amino Phase Chemistry:

- Develosil NH₂
- Develosil ANIDIUS

Diol Phase Chemistry:

- Develosil 100 Diol

Large Organic Molecules
(M.W.>5,000)

Diol Phase Chemistry:

- Develosil 300 Diol

SEC Method Development

Small Organic Molecules (M.W.<5,000)

Diol Phase Chemistry:

- Develosil 100 Diol

Large Organic Molecules (M.W.>5,000)

Diol Phase Chemistry:

- Develosil 300 Diol

Develosil Silica Gel

	Particle size	Surface area (m ² /g)	Pore volume (mL/g)	Pore diameter (nm)
Develosil 30	3 um, 5 um, 15/30 um	700	0.5	3
Develosil 60	3 um, 5 um, 15/30 um	500	0.75	6
Develosil 100	3 um, 5 um, 15/30 um	350	1.0	12
Develosil SILICA-HILIC (ρ)	3 um, 5 um	300	1.15	14

Develosil 30, 60 and 100 silica gels are type A silica.

Develosil SILICA-HILIC(I) is type B and also for HILIC mode.

Expression of Stationary Phases

“Develosil” + stationary phase name (ODS-UG or C8-UG) + particle size (um)

e.g. Develosil C8-UG-5, Develosil ODS-HG-3, Develosil ODS-UG-5, Develosil C30-UG-5

Dimension of Develosil Columns

Available inner diameters are shown as follows:

Semi-micro column: 1.0 mm i.d., 1.5 mm i.d., 2.0 mm i.d.

Conventional column: 3.0 mm i.d., 4.0 mm i.d., 4.6 mm i.d., 6.0 mm i.d.

Preparative column: 8.0 mm i.d., 10 mm i.d., 20 mm i.d., 28 mm i.d.

Large scale preparative column: 50 mm i.d. (for >10 or 15/30 um particle)

Develosil HPLC Columns

- Columns in 3 kinds of mode such as Reversed, Gel filtration and Normal phase are commercially available.
- We have 5 kinds of C30 phase
- 6 kinds of C18 (ODS) phase
- 2 kinds of C8 phase
- 300 ODS-HG, 300C8-HG and 300C4-HG phase have pores with 25 nm diameter and are for separation of proteins or polypeptides.
- 4 kinds of silica gel. Especially, Develosil 30 (silica gel) has 3 nm pores. Its pore size is the smallest, and it has very large surface area and shows large retention.

MODE	Ligand	PACKING MATERIAL	PARTICLE SIZE
Reversed phase	C30	Develosil C30-UG	3 um, 5 um
		Develosil PRPAQUEOUS	3 um, 5 um
		Develosil Combi-RP	3 um, 5 um
		Develosil RPFULLERENE	3 um, 5 um
		Develosil RPAQUEOUS-AR	3 um, 5 um
		Develosil ERP20	15/30 um
	C18	Develosil ODS-UG	3 um, 5 um and 15/30 um
		Develosil ODS-HG	3 um, 5 um and 15/30 um
		Develosil ODS-MG	3 um, 5 um and 15/30 um
		Develosil ODS-SR	3 um, 5 um and 15/30 um
		Develosil PAHS	3 um, 5 um
		Develosil 300ODS-HG	5 um
	C8	Develosil C8-UG	3 um, 5 um
Develosil 300C8-HG		5 um	
C4	Develosil 300C4-HG	5 um	
	Develosil TMS-UG	3 um, 5 um	
Phenyl	Develosil Ph-UG	3 um, 5 um	
	Cyano	Develosil CN-UG	5 um
Gel filtration phase	Diol	Develosil 300Diol	5 um
		Develosil 100Diol	5 um
Normal phase	Cyano	Develosil CN-UG	5 um
		Develosil NH2	5 um
	None (Silica)	Develosil 30	3 um, 5 um and 15/30 um
		Develosil 60	3 um, 5 um and 15/30 um
		Develosil 100	3 um, 5 um and 15/30 um
	Develosil SILICA-HILIC(I) and (II)	3 um, 5 um	

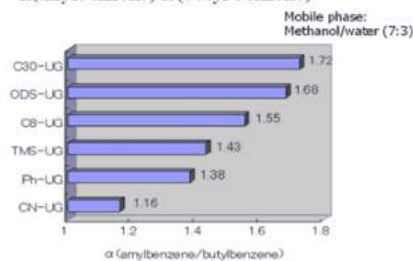
UG Series Phases

All phase are monomerically bonded and fully endcapped on the same silica base material. Therefore, UG phases can be compared concerning the difference of separation between each ligand.

	Particle size	Ligand	End-capping (TMS)	Carbon content (%)	Silica		
					Surface area (m ² /g)	Pore volume (mL/g)	Pore diameter (nm)
Develosil C30-UG	3 um, 5 um	-Si (CH ₃) ₂ C ₃₀ H ₆₁	Double	18	300	1.15	14
Develosil ODS-UG	3 um, 5 um	-Si (CH ₃) ₂ C ₁₈ H ₃₇	Double	18	300	1.15	14
Develosil C8-UG	3 um, 5 um	-Si (CH ₃) ₂ C ₈ H ₁₇	Double	11	300	1.15	14
Develosil TMS-UG	3 um, 5 um	-Si (CH ₃) ₃	Double	4.5	300	1.15	14
Develosil Ph-UG	3 um, 5 um	-Si (CH ₃) ₂ C ₆ H ₅	Double	8	300	1.15	14
Develosil CN-UG	5 um	-Si (CH ₃) ₂ C ₇ H ₆ CN	Double	7	300	1.15	14

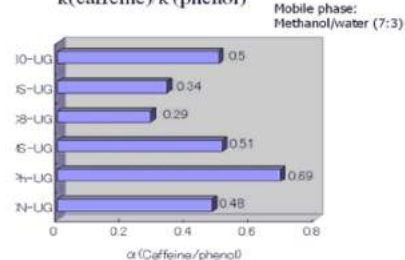
Hydrophobic consistency

k(amylobenzene)/k(butyl benzene)



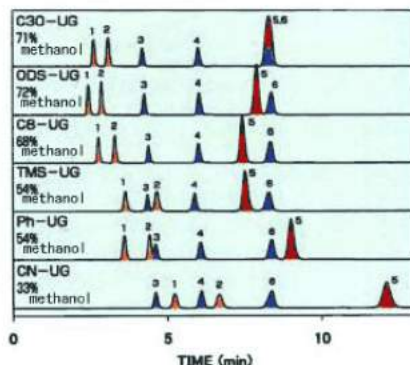
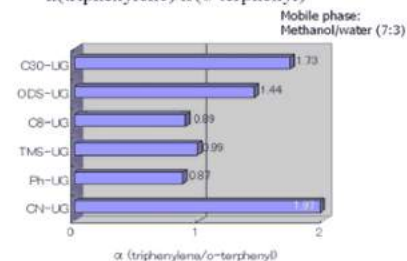
Hydrogen bonding capacity

k(caffeine)/k(phenol)



Steric selectivity

k(triphenylene)/k(o-terphenyl)



Comparison of chromatograms for standard samples

Conditions
Column size: 150 x 4.6 mm i.d.
Mobile phase: Methanol/ water (methanol ratio is described in figure) (Retention time of peak No. 6 was adjusted at 8.5 min.)

Flow rate: 1.0 mL/min
Temperature: 30 °C
Detection: UV at 254 nm

Sample
1 = Methyl parabene
2 = Ethyl parabene
3 = Benzene
4 = Toluene
5 = Naphthalene
6 = Ethylbenzene

Comparison of Develosil ODS (C18) Columns

	ODS-UG	ODS-HG	ODS-MG	ODS-SR	PAHS
Functionality of C18	Monofunctional	Trifunctional	Difunctional	Difunctional	Trifunctional and polymeric
Ligand density (umol/g)	3.2	3.4	1.6	—	4.5
Carboncontent (%)	18	18	15	18	23
Endcapping (TMS)	Yes	Yes	Yes	Yes	No
Pore diameter of silica (nm)	14	14	10	8	12
Surface area of silica (m ² /g)	300	300	450	—	350
Hydrogen bonding capacity k(caffeine)/k(phenol)	0.38	0.38	0.48	0.48	0.40
Hydrophobic consistency k(amylobenzene)/k(butyl benzene)	1.59	1.58	1.60	1.66	1.58
Steric selectivity k(triphenylene)/k(o-terphenyl)	1.50	1.58	1.20	1.21	2.72
Stability	Very good (pH2-10)	Very good (pH1-9)	Good (pH2-7.5)	Good (pH2-7.5)	Good (pH2-7.5)
Retention	Moderate	Moderate	Long (1.3 folds)	Very long (2 folds)	Moderate

The characteristic of each ODS phase is showed in the above table.

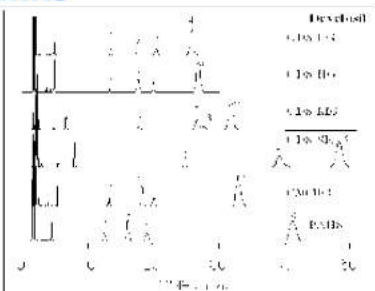
Develosil ODS-UG is the most stable under alkaline conditions, and can be used under pH2 - 10.

Develosil ODS-HG is the most stable under acidic conditions (pH1 - 9), and can be used even under 0.5% TFA.

Develosil ODS-MG shows medium performance and suitable for all samples and time to equilibrate is very quick.

Develosil ODS-SR shows the longest retention in our ODS phases, and suitable for LC/MS because much organic solvent obtain high sensitivity.

Develosil PAHS is a real polymeric ODS, and has the highest steric selectivity.



Analytical Conditions

Column dimension: 150 x 4.6 mm i.d.
Mobile phase: Methanol/ water = 75 / 25
Temperature: 30 °C
Detection: UV at 254 nm
Sample: 1 = Butylbenzene
2 = o - Terphenyl
3 = Amylobenzene
4 = Triphenylene

Poly LC

- Spherical silica, 60 - 1500Å pore size
- Polypeptide covalently bound coating
- High recovery for sensitive, labile proteins



PolyLC of Maryland, USA manufactures a range of unique columns for the more challenging HPLC biochemical applications. Their phases are characterised by the attachment of a polypeptide coating to wide pore silica.

PolyLC Phase

PolyLC Phase ¹	Particle Size (µm)	Pore Size (Å)	Functional Group	Chromatography Mode	Applications
PolyHYDROXYETHYL A™	3, 5, 12	60, 100, 200, 300, 500, 1000, 1500	Hydroxyethylaspartamide	1. Hydrophilic Interaction (HILIC) 2. Size Exclusion	Peptides, proteins, carbohydrates, polar small molecules
PolyCAT A™	3, 5, 12	300, 1000, 1500	Aspartic acid	Weak cation-exchange	Proteins with isoelectric point >6.0
PolyWAX LP™	3, 5, 12	100, 300, 1000, 1500	Linear polyethyleneimine	Weak anion-exchange	Proteins with isoelectric points <6.0, nucleic acids and oligonucleotide analogues
PolyGLYCOPLEX™	5, 12	–	–	Hydrophilic Interaction (HILIC)	Complex carbohydrates
PolySULFOETHYL A™	3, 5, 12	200, 300, 1000	Sulphoethylaspartamide	Strong cation-exchange	Peptides
PolyPROPYL A™	3, 5, 12	300, 1000, 1500	Propylaspartamide	Hydrophobic Interaction (HIC)	Proteins and peptides

¹ PolyMETHYL A™ and PolyETHYL A™ materials are also available

PolyHYDROXYETHYL ATM

PolyHYDROXYETHYL ATM is a neutral polar material designed specifically for HILIC. Peptides and proteins are typically eluted with a decreasing gradient of acetonitrile or propanol for peptide mapping or multidimensional purification of synthetic and natural peptides. PolyHYDROXYETHYL A is also used for eliminating detergents, lipids and salts from samples and for the HPLC of solutes that are insoluble in aqueous media, such as membrane proteins. Figure 1 shows a typical chromatogram for the isolation of pure pathogenic prion protein from the brain of a sheep with scrapie.

Table 1.
PolyHYDROXYETHYL A - SEC fractionation ranges (Daltons)

Pore Diameter (Å)	Denaturing Eluent (e.g. 50mM formic acid)	Conventional Eluent (phosphate/sulphate buffer)
60	40-600	40-10,000
200	40-1600	200-25,000
300	40-40,000	300-100,000
500	40-150,000	400-300,000
1000	40-1,000,000	1000-2,000,000
1500	40-1,000,000	5000-2,000,000

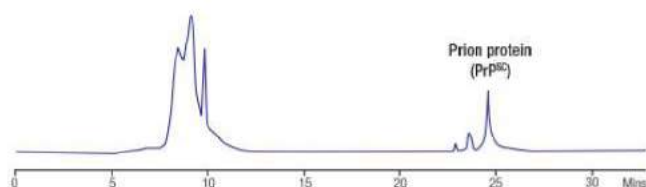


Figure 1. Extract of brain from sheep with scrapie (Proteinase K-treated)

In the absence of organic solvent, PolyHYDROXYETHYL A functions in the SEC mode. Using conventional salt buffers, the fractionation range is determined by the pore size of the packing (see Table 1). However, if the eluent contains a denaturing agent (eg. 50mM formic acid), smaller solutes can be separated by size. The 60Å pore size material permits the separation of peptides and other small solutes by SEC (Figure 2).

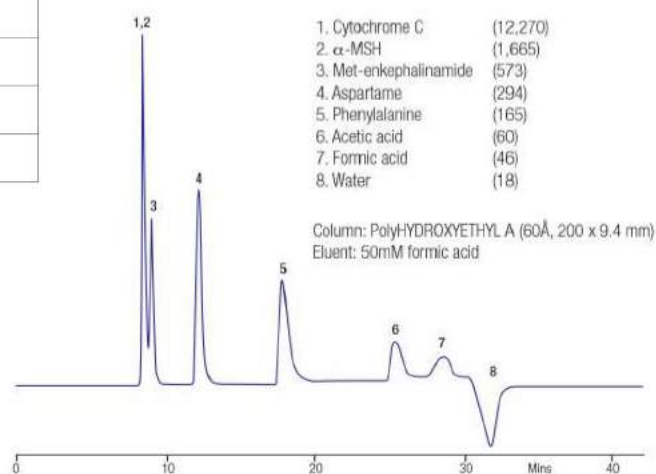


Figure 2. Size exclusion separation of small molecules

Poly LC

PolyPROPYL ATM, PolyETHYL ATM and PolyMETHYL A™

These materials separate proteins on the basis of hydrophobicity, using totally aqueous buffers and retaining tertiary structure and biological activity. Elution is typically with a decreasing salt gradient of sulphate or phosphate. The relative hydrophobic character of PolyPROPYL ATM, PolyETHYL ATM and PolyMETHYL ATM is 100, 60 and 15 respectively.

Sodium Dodecyl Sulphate (SDS) Removal

SDS is sometimes used to solubilise proteins. However, its presence interferes with subsequent bioanalysis. It can be removed by either:

1. Use of PolyHYDROXYETHYL A in HILIC mode
2. Use of specific PolyLC SPE cartridges in reversed-phase mode

Ordering Information – PolyLC Phases

Formulating Catalogue Numbers

Select column dimensions and phase from the table, then complete the catalogue number by adding a suffix to specify pore diameter as follows:

Pore Diameter (Å)	60	100	200	300	500	1000	1500
Catalogue No. Suffix	-006	-01	-02	-03	-05	-10	-15

Example:

PolyCAT A column (200 x 4.6mm) with 300Å pores would be 204CT0503

Please note that not all phases are available in all pore sizes.

For bulk material part numbers, specify pore diameter with the same suffixes as for column materials.

Example: Bulk material of PolyCAT A with 300Å pores and 5µm particle size would be BMCT0503.

Columns

PolyLC 5µm Phase ²	Column Dimensions ¹ (mm)							
	100 x 2.1	200 x 2.1	35 x 4.6	100 x 4.6	200 x 4.6	200 x 9.4	250 x 9.4	250 x 21.0
PolyCAT A	102CT05- -	202CT05- -	3.54CT05- -	104CT05- -	204CT05- -	209CT05- -	259CT05- -	2521CT05- -
PolyPROPYL A	102PR05- -	202PR05- -	3.54PR05- -	104PR05- -	204PR05- -	209PR05- -	259PR05- -	2521PR05- -
PolyETHYL A	102ET05- -	202ET05- -	3.54ET05- -	104ET05- -	204ET05- -	209ET05- -	259ET05- -	2521ET05- -
PolyMETHYL A	102ME05- -	202ME05- -	3.54ME05- -	104ME05- -	204ME05- -	209ME05- -	259ME05- -	2521ME05- -
PolyWAX LP	102WX05- -	202WX05- -	3.54WX05- -	104WX05- -	204WX05- -	209WX05- -	259WX05- -	2521WX05- -
PolyHYDROXYETHYL A	102HY05- -	202HY05- -	3.54HY05- -	104HY05- -	204HY05- -	209HY05- -	259HY05- -	2521HY05- -
PolyGLYCOPLEX	102GL0500	202GL0500	3.54GL0500	104GL0500	204GL0500	209GL0500	259GL0500	2521GL0500
PolySULFOETHYL A	102SE05- -	202SE05- -	3.54SE05- -	104SE05- -	204SE05- -	209SE05- -	259SE05- -	2521SE05- -

Guard Cartridges³, Solid Phase Extraction Cartridges and Bulk Material

PolyLC 5µm Phase ²	Guard Cartridge Dimensions ⁴ (mm)		Solid Phase Extraction Cartridges (10/pk)	Bulk Material/g
	10 x 2.1	10 x 4.0		
PolyCAT A	J22GCCT05- -	JGCCT05- -	SPECT1203	BMCT05- -
PolyPROPYL A	J22GCPR05- -	JGCPR05- -	SPEPR1203	BMPR05- -
PolyETHYL A	J22GCET05- -	JGCET05- -	SPEET1203	BMET05- -
PolyMETHYL A	J22GCME05- -	JGCME05- -	SPEME1203	BMME05- -
PolyWAX LP	J22GCWX05- -	JGCWX05- -	SPEWX1203	BMWX05- -
SDS Removal	J2SDS	J4SDS	SPESDS1203	BMSDS05- -
PolyHYDROXYETHYL A	J22GCHY05- -	JGCHY05- -	SPEHY1203	BMHY05- -
PolyGLYCOPLEX	J22GCGL0500	JGCGL0500	SPEGL1200	BMGL0500
PolySULFOETHYL A	J22GCSE05- -	JGCSE05- -	SPESE1203	BMSE05- -

1) Packed capillaries and 1mm i.d. columns also available
2) 3 and 12µm particle size material also available

3) Disposable Javelin design. No additional holder required
4) 20 x 4.0 and 10 x 1.0mm cartridges also available

5) Waters compatible cartridges available

New Alternative to Ion Chromatography

Primesep® Separation of Ions

- ➔ Primesep mixed mode columns are a powerful separation tool for analysis of polar compounds and complex mixtures with compounds of different polarity
- ➔ Combination of Primesep columns with ELSD offers simple alternative to ion-chromatography
- ➔ Anions and cations can be analyzed at the same time with the same mobile phase
- ➔ Ion-chromatography with concentration of organic modifier from 0 to 100% can be performed with possibilities to adjust resolution and peaks elution order
- ➔ Inorganic and organic compounds can be analyzed at the same time using ELSD alone or in combination with UV detector



A Guide for HPLC Separation of Small Molecules

SIELC

Before you start... become familiar with the terms used in this guide:

Hydrophilic compounds - compounds with a better solubility in water than in organic solvents, or completely non-soluble in organic solvents (e.g. acetone, ethanol). Examples of such compounds are amino acids, sugars, peptides, nucleotides, protonated amines and any other molecules with one or several polar groups (Fig. 1). The presence of some functional groups does not make a molecule significantly polar in terms of LC hydrophobic interaction (Fig. 2).

Ionizable compounds - molecules which have at least one charged functional group in a solution within a pH range from 2 to 7. Under these conditions, basic compounds are positively charged and acidic compounds are negatively charged.

Weak basic compounds - compounds that go through a transition state from positively charged to neutral within a pH range from 2 to 7 (pKa < 6).

Weak acidic - compounds that go through the transition from a negatively charged state to a neutral state within a pH range from 2 to 7 (pKa > 3). **Strong acids** - compounds which are significantly ionized in solutions at a pH of 3 (pKa < 3).

Strong bases - compounds which are significantly ionized in solutions at a pH of 6 (pKa > 6).

Zwitterionic compounds - compounds that bear an equal number of positively charged and negatively charged functional groups in solutions at a pH within the range of 2 to 7.

Complex mixtures: each compound type can be analyzed on different Primesep columns. If you are dealing with complex mixtures that contain several different compounds types, please check out additional method development resources at <http://www.hplcdet.com/Development.com>

Fig. 1 Polar functional groups

- Hydroxyl (-OH)
- Amino (-NH₂)
- Carboxyl (-COOH)
- Sulfhydryl (-SH)
- Phenol (-OH)

Fig. 2 Non-polar functional groups

- Ether (-O-)
- Alkyl (-CH₂-)
- Alkene (=C=C-)
- Alkyne (-C≡C-)
- Aldehyde (-CHO)
- Ketone (-C(=O)-)
- Amide (-CONH₂)
- Urea (-NH-CO-NH₂)
- Imine (-C=N-)
- Nitrile (-C≡N)
- Acid chloride (-COCl)
- Acid anhydride (-CO-O-CO-)
- Carbonyl (-C=O)

Strong acid examples: H₂SO₄, HCl, H₃PO₄, HNO₃

Weak base examples: AN, COOH, H₂N, Ph-SOH

Weak acid examples: HCOOH, HNO₂, Ph-SOH

Zwitterion examples: Asp, Arg, Val, Tyr, Val-His-Pro-Ile

Hydrophilic Weak Acids

- 1. Acetic Acid
- 2. Methacrylic Acid
- 3. Glucuronic Acid

Hydrophilic Strong Acid

- 1. Sulfonic acid
- 2. Phosphonic acid

Hydrophilic Compounds with Several Strong Basic Groups

- 1. Dopamine
- 2. Tyramine
- 3. Phenylethylamine
- 4. Amphetamine
- 5. Cocaine
- 6. Dopamine

Hydrophobic Compounds with Several Strong Basic Groups

- 1. Risperidone (Zwitterion)
- 2. Risperidone (Zwitterion)

Hydrophobic Strong Acid

- 1. Sodium
- 2. Hexafluoroantonic Acid
- 3. Heptafluoroantonic Acid
- 4. Chloroheptafluoroantonic Acid

Hydrophobic Weak Acids

- 1. Guanifant
- 2. Rapifen

Hydrophobic Weak Bases

- 1. Aniline
- 2. Methylaniline

Hydrophobic Strong Bases

- 1. Bu₃N⁺
- 2. Bu₄N⁺

Hydrophobic Compounds with Several Strong Basic Groups

- 1. Anilindole
- 2. Methylanilindole
- 3. Trifluoroamine

Hydrophobic Neutral Compounds

- 1. Phthalazine
- 2. D-Glucose
- 3. D-Glucose

Hydrophobic Zwitterions

- 1. Aspartate
- 2. Aspartate
- 3. Aspartate

Hydrophilic Neutral Compounds

- 1. DOPA
- 2. Tyrosine
- 3. Phenylethylamine

Hydrophilic Zwitterionic Compounds

- 1. DOPA
- 2. Tyrosine
- 3. Phenylethylamine

Hydrophilic Weak Bases

- 1. Ala
- 2. Val
- 3. Ile
- 4. Phe
- 5. His
- 6. Tyr
- 7. Pro
- 8. Ile
- 9. Val
- 10. Met
- 11. Asp
- 12. Arg
- 13. Glu

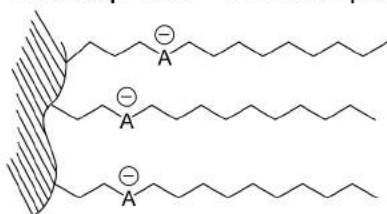
Hydrophilic Strong Bases

- 1. Monobutylamine
- 2. Dibutylamine
- 3. Triethylamine

Mixed-Mode Primesep Columns

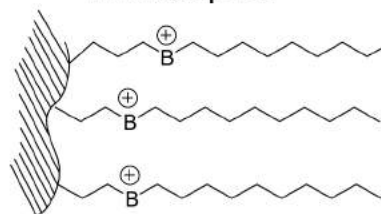
With an embedded ion-pairing group, a Primesep column requires no ion-pairing reagent in the mobile phase to retain and separate ionizable polar compounds.

Primesep A
Primesep 100



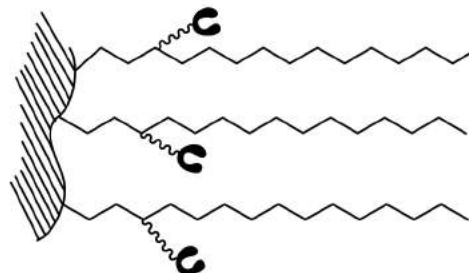
Primesep 200
Primesep 300

Primesep B
Primesep B2



- A newly developed Primesep C column (C Stand for "complex") forms a weak complex with amino compounds and metal ions.
- The column offers a typical RP retention profile for neutral compounds.
- In addition, embedded hosting groups interact with amines and other ions, and form a unique retention pattern.
- Amines with equal hydrophobicity retain on Primesep C in the following order.
- Tertiary < secondary < primary. Alkali metals are retained in order $K^+ < Na^+ < Li^+$, which is a reverse order compared to the classical ion-exchange.

Primesep C Column



SWITCH Phase™ Technology

Columns based on SWITCH Phase™ technology change their properties depending on pH of the mobile phase. Embedded carboxylic acid is fully ionized at pH above transition point and loses charge when mobile phase pH goes below transition point. By controlling pH of the mobile phase, the polar properties of the stationary phase can be altered to tune your separation needs.

Primesep 300

Transition @ pH=3

Primesep 200

Transition @ pH=2

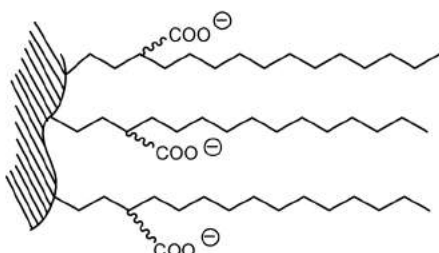
Primesep 100

Transition @ pH=1

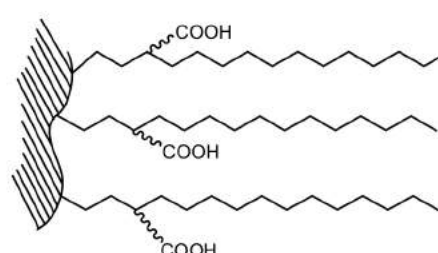
Primesep A

Transition @ pH=0

Primesep 300 at pH > 3.5



Primesep 300 at pH < 2.5



Sumichiral Columns from S.A.S. Corporation -Japan

SCAS

SUMICHIRAL OA columns are high-performance chiral columns for enantiomer separation by HPLC. On SUMICHIRAL OA columns direct separation of various enantiomers can be realized effectively

Below Range available in various dimensions:

OA-5000 Series

OA-5000
OA-5000L
OA-6000
OA-6000R
OA-6100
OA-6100R

OA-2000 Series

OA-2000
OA-2000S
OA-2000I
OA-2000S

OA-3000 Series

OA-3100
OA-3100R
OA-3200
OA-3200R
OA-3300
OA-3300S

OA-4000 Series

OA-4000
OA-4000R
OA-4100
OA-4100R
OA-4400
OA-4400R
OA-4500

OA-4000 Series

OA-4500R
OA-4600
OA-4600R
OA-4700
OA-4700R
OA-4800
OA-4900

OA-7000 Series

OA-7000
OA-7100 and OA-7500
OA-7000
OA-7100 and OA-7500
OA-7000
OA-7100 and OA-7500
OA-8000



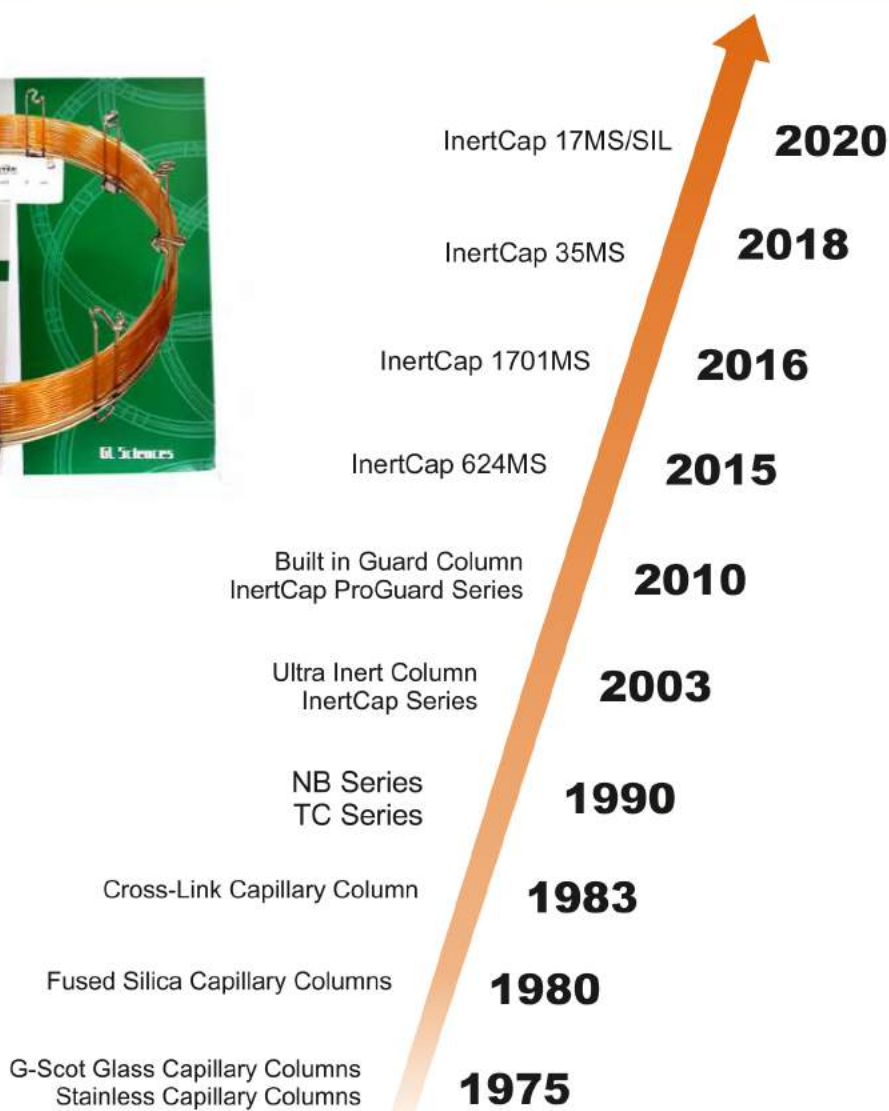
Multi-Functional Pyrolysis System



FRONTIER LAB

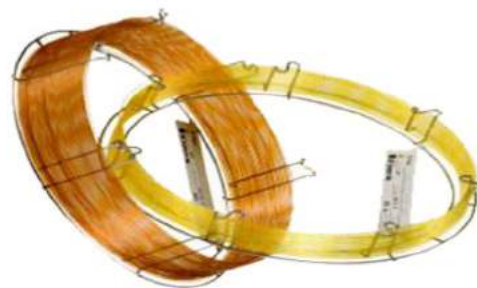
The Multi-Functional Pyrolysis System consists of the Multi-Shot Pyrolyzer (EGA/PY-3030D) and its accessories. This system is able to rapidly characterize virtually any material.

Inertcap Capillary Columns



Features of Inertcap

- High Inertness
- Low Bleed
- Product Stability
- Inspection Report
- Built-in Guard Column InertCap ProGuard
- Build-in Transfer Line InertCap T.L.
- Rigorous Quality Control Tests
- Excellent Reproducibility
- High Separation Efficiency
- Low GC/MS Bleed
- Bonded and Cross-linked



Exclusive Distributors in India

Capillary Column Phase Cross References

GL Sciences	Phase Composition	Similar Phases
InertCap 1MS	100 % Methylpolysiloxane	DB-1ms, HP-1ms, Rxi-1ms, VF-1ms, CP-Sil 5 CB Low Bleed/MS, ZB-1ms, TR-1MS, BPX1, Equity-1, 007-1
InertCap 1	100 % Methylpolysiloxane	DB-1, HP-1, ULTRA-1, Rtx-1, CP-Sil 5 CB, ZB-1, TR-1, BP1
InertCap 5MS/Sil	Phenyl Arylene polymer equivalent to a 5 % Phenyl - 95 % Methylpolysiloxane	DB-5ms, Rxi-5Sil MS, Rtx-5Sil MS, VF-5ms, ZB-5ms, TR-5MS, BPX5, SLB-5, 007-5MS, Optima-5ms, AT-5ms
InertCap 5MS/NP	5 % Phenyl 95 % Methylpolysiloxane	HP-5ms, Rxi-5ms, CP-Sil 8 CB Low Bleed/MS, ZB-5MSi, TR-5, BPX5, Equity-5, 007-5, AT-5ms
InertCap 5	5 % Phenyl 95 % Methylpolysiloxane	DB-5, HP-5, ULTRA-2, Rtx-5, CP-Sil 8 CB, ZB-5, TR-5, BP5, SPB-5, 007-5, Optima-5, AT-5
InertCap Pesticides	Phenyl Arylene polymer equivalent to a 5 % Phenyl - 95 % Methylpolysiloxane	—
InertCap 624	6 % Cyanopropylphenyl 94 % Methylpolysiloxane	DB-624, Rtx-624, VF-624ms, CP-Select 624 CB, ZB-624, BP624, 007-624, Optima-624, AT-624
InertCap 1301	6 % Cyanopropylphenyl 94 % Methylpolysiloxane	HP-1301, Rtx-1301, VF-1301ms, CP-1301, SPB-1301, 007-1301, Optima-1301, AT-1301
InertCap 25	25 % Phenyl 75 % Methylpolysiloxane	—
InertCap 35	35 % Phenyl 65 % Methylpolysiloxane	HP-35, DB-35, Rtx-35, VF-35ms, ZB-35, TR-35MS, BPX35, SPB-35, 007-11, AT-35
InertCap 1701	14 % Cyanopropylphenyl 86 % Methylpolysiloxane	DB-1701, Rtx-1701, VF-1701ms, CP-Sil 19 CB, ZB-1701, TR-1701, BP10 (1701), SPB-1701, 007-1701, Optima-1701, AT-1701
InertCap 17MS	50 % Phenyl 50 % Methylpolysiloxane	HP-17, DB-17ms, Rxi-17, VF-17ms, CP-Sil 24 CB Low Bleed/MS, ZB-50, TR-50MS, BPX50, AT-50
InertCap 17	50 % Phenyl 50 % Methylpolysiloxane	DB-17, HP-50, Rtx-50, CP-Sil 24 CB, ZB-50, SPB-50, 007-17, Optima-17, AT-50ms
InertCap 210	50 % Trifluoropropyl 50 % Methylpolysiloxane	DB-210, DB-200, Rtx-200, VF-200ms, 007-210, Optima-210, AT-210
InertCap 225	50 % Cyanopropylmethyl 50 % Phenylmethylpolysiloxane	DB-225, Rtx-225, CP-Sil 43 CB, BP225, 007-225, Optima-225, AT-225
InertCap Pure-WAX	Polyethylene Glycol (PEG)	DB-WAX, HP-INNOWAX, Rtx-Wax, Stabilwax, CP-Wax 52 CB, ZB-Wax, TR-WAX, BP20 (WAX), Supelcowax-10, 007-CW, Optima Wax, AT-Wax
InertCap WAX	Polyethylene Glycol (PEG)	DB-WAX, HP-INNOWAX, Rtx-Wax, Stabilwax, CP-Wax 52 CB, ZB-Wax, TR-WAX, BP20 (WAX), Supelcowax-10, 007-CW, Optima Wax, AT-Wax
InertCap WAX-HT	Polyethylene Glycol (PEG)	DB-WAX, HP-INNOWAX, Rtx-Wax, Stabilwax, CP-Wax 52 CB, ZB-Wax, TR-WAX, Solgel WAX, Supelcowax-10, 007-CW, Optima Wax, AT-Wax
InertCap FFAP	Nitroterephthalic acid modified Polyethylene Glycol	DB-FFAP, HP-FFAP, Stabilwax-DA, CP-WAX 58 CB, ZB-FFAP, BP21 (FFAP), 007-FFAP, Optima FFAP, Permabond FFAP, AT-AQUAWAX-DA, AT-1000, EC-1000
InertCap for Amines	GL Sciences original	CP-Volamine
InertCap CHIRAMIX	GL Sciences original	—
AQUATIC	25 % Phenyl 75 % Methylpolysiloxane	—
AQUATIC-2	25 % Phenyl 75 % Methylpolysiloxane	—

USP (US Pharmacopeia) / JP (Japanese Pharmacopeia)

USP (US Pharmacopeia)

USP Code	Phase Composition	Phase		
G1	Dimethylpolysiloxane oil	InertCap 1MS	InertCap 1	
G2	Dimethylpolysiloxane gum	InertCap 1MS	InertCap 1	
G3	50% Phenyl - 50% methylpolysiloxane	InertCap 17MS	InertCap 17	
G6	Trifluoropropylmethylpolysiloxane	InertCap 210		
G7	50% 3-Cyanopropyl - 50% phenylmethylsilicone	InertCap 225		
G14	Polyethylene glycol (av. mot. wt. of 950 to 1050)	InertCap Pure-WAX	InertCap WAX	InertCap WAX-HT
G15	Polyethylene glycol (av. mot. wt. of 3000 to 3700)	InertCap Pure-WAX	InertCap WAX	InertCap WAX-HT
G16	Polyethylene glycol compound (av. mot. wt. about 15,000). A high molecular weight compound of polyethylene glycol with a diepoxide linker	InertCap Pure-WAX	InertCap WAX	InertCap WAX-HT
G19	25% Phenyl - 25% cyanopropyl - 50% methylsilicone	InertCap 225		
G20	Polyethylene glycol (av. mot. wt. of 380 to 420)	InertCap Pure-WAX	InertCap WAX	InertCap WAX-HT
G25	Polyethylene glycol compound TPA. A high molecular weight compound of polyethylene glycol and diepoxide that is esterified with terephthalic acid.	InertCap FFAP		
G27	5% Phenyl - 95% methylpolysiloxane	InertCap 5MS/Sil	InertCap 5MS/NP	InertCap 5
G28	25% Phenyl - 75% methylpolysiloxane	InertCap 25	AQUATIC	AQUATIC-2
G35	A high molecular weight compound of a polyethylene glycol and a diepoxide that is esterified with nitroterephthalic acid.	InertCap FFAP		
G36	1% Vinyl - 5% phenylmethylpolysiloxane	InertCap 5MS/Sil	InertCap 5MS/NP	InertCap 5
G38	Phase G1 containing a small percentage of a tailing inhibitor	InertCap 1MS	InertCap 1	
G39	Polyethylene glycol (av. mol. wt. of about 1500)	InertCap Pure-WAX	InertCap WAX	InertCap WAX-HT
G42	35% phenyl-65% dimethylpolysiloxane (percentage refer to molar substitution)	InertCap 35		
G43	6% cyanopropylphenyl-94% dimethylpolysiloxane (percentage refer to molar substitution)	InertCap 624	InertCap 1301	
G46	14% Cyanopropylphenyl - 86% methylpolysiloxane	InertCap 1701		
G47	Polyethylene glycol (av. mol. wt. of about 8000)	InertCap Pure-WAX	InertCap WAX	InertCap WAX-HT

JP (Japanese Pharmacopeia)

Target Compounds	Phase	Column Size	Cat.No.
Magnesium Stearate	InertCap Pure-WAX InertCap WAX InertCap WAX-HT	0.32 mm I.D. × 30 m df = 0.50 μm	GC68244 GC67244 GC68644
Senna Leaf	InertCap 1701	0.32 mm I.D. × 30 m df = 0.25 μm	GC61242
Powdered Senna Leaf	InertCap 1701	0.32 mm I.D. × 30 m df = 0.25 μm	GC61242
Red Ginseng	InertCap 1701	0.32 mm I.D. × 30 m df = 0.25 μm	GC61242
Ginseng	InertCap 1701	0.32 mm I.D. × 30 m df = 0.25 μm	GC61242
Powdered Ginseng	InertCap 1701	0.32 mm I.D. × 30 m df = 0.25 μm	GC61242
Ethanol	InertCap 624	0.32 mm I.D. × 30 m df = 1.80 μm	GC14747
Anhydrous Ethanol	InertCap 624	0.32 mm I.D. × 30 m df = 1.80 μm	GC14747
Ethanol for Disinfection	InertCap 624	0.32 mm I.D. × 30 m df = 1.80 μm	GC14747
Epirubicin Hydrochloride	InertCap Pure-WAX InertCap WAX	0.53 mm I.D. × 30 m df = 1.00 μm	GC68445 GC67445
Colchicine	InertCap Pure-WAX InertCap WAX	0.53 mm I.D. × 30 m df = 1.00 μm	GC68445 GC67445
Benzyl Alcohol	InertCap Pure-WAX InertCap WAX	0.32 mm I.D. × 30 m df = 0.50 μm	GC68244 GC67244
Glycerin	InertCap 1701	0.32 mm I.D. × 30 m df = 1.00 μm	GC61245
Wood Creosote	InertCap 1 InertCap 5MS/Sil InertCap 5MS/NP	0.25 mm I.D. × 60 m df = 0.25 μm 0.25 mm I.D. × 30 m df = 0.25 μm 0.25 mm I.D. × 30 m df = 0.25 μm	GC11162 GC15142 GC18642
Sevoflurane	InertCap 624	0.32 mm I.D. × 30 m df = 1.80 μm	GC14747
Labetalol Hydrochloride	InertCap 1	0.53 mm I.D. × 25 m df = 5.00 μm	Contact us

Capillary columns for enantiomer separation

LIPODEX[®] cyclodextrin phases for enantiomer separation

Key features :

- Base material: cyclic oligosaccharides consisting of six (α -cyclodextrin), seven (β -cyclodextrin) or eight (γ -cyclodextrin) glucose units bonded through 1,4-linkages
- Regioselective alkylation and / or acylation of the hydroxyl groups leads to lipophilic phases with varying enantioselectivity, which are well suited for GC enantiomer analysis
- Important advantage: many compounds can be analyzed without derivatization (however, for certain substances enantioselectivity can be favorably influenced by formation of derivatives)

Phase	Cyclodextrin derivate	T _{max} [°C]	Recommended application
LIPODEX [®] A	hexakis-(2,3,6-tri-O-pentyl)- α -CD	200 / 220	carbohydrates, polyols, diols, hydroxycarboxylic acid esters, (epoxy-) alcohols, glycerol derivatives, spiroacetals, ketones, alkyl halides
LIPODEX [®] B	hexakis-(2,6-di-O-pentyl-3-O-acetyl)- α -CD	200 / 220	lactones, diols (cyclic carbonates), aminols, aldols (O-TFA), glycerol derivatives (cyclic carbonates)
LIPODEX [®] C	heptakis-(2,3,6-tri-O-pentyl)- β -CD	200 / 220	Alcohols, cyanhydrins, olefins, hydroxycarboxylic acid esters, alkyl halides
LIPODEX [®] D	heptakis-(2,6-di-O-pentyl-3-O-acetyl)- β -CD	200 / 220	aminols (TFA), β -amino acid esters, trans-cycloalkane-1,2-diols, trans-cycloalkane-1,2-diols, trans-cycloalkane-1,3-diols (TFA)
LIPODEX [®] E	octakis-(2,6-di-O-pentyl-3-O-butyryl)- γ -CD	200 / 220	α -amino acids, α - and β -hydroxycarboxylic acid esters, alcohols (TFA), diols (TFA), ketones, pheromones (cyclic acetals), amines, alkyl halides, lactones
LIPODEX [®] G	octakis-(2,3-di-O-pentyl-6-O-methyl)- γ -CD	220 / 240	menthol isomers, ketones, alcohols, carboxylic acid esters, terpenes

HYDRODEX[®] cyclodextrin phases for enantiomer separation

Cyclodextrin derivatives with high melting point: for GC enantiomer separation diluted with polysiloxanes

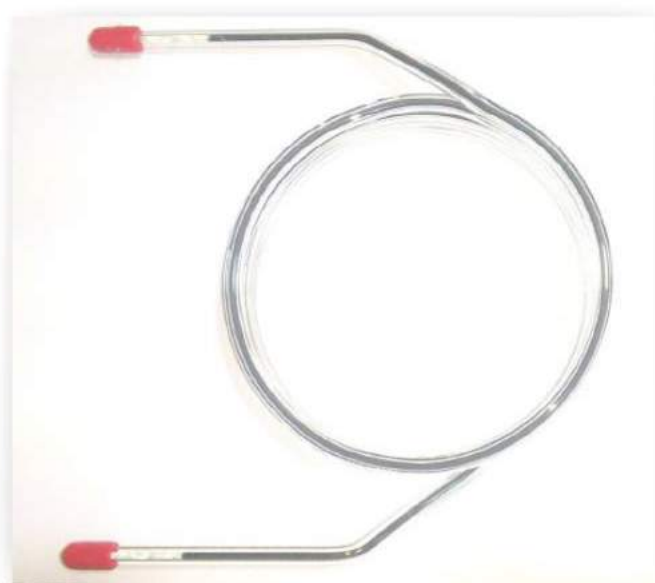
Phase	Cyclodextrin derivative (diluted with optimized polysiloxane)	T _{max} [°C]	Recommended application
HYDRODEX β -PM	heptakis-(2,3,6-tri-O-methyl)- β -CD	230 / 250	hydroxycarboxylic acid esters, alcohols, diols, olefins, lactones, acetals
HYDRODEX β -3P	heptakis-(2,6-di-O-methyl-3-O-pentyl)- β -CD	230 / 250	terpenes, dienes, allenes, terpene alcohols, 1,2-epoxy alkanes, carboxylic acids (esters), hydroxycarboxylic acid esters, pharmaceuticals, pesticides
HYDRODEX β -6TBDM	heptakis-(2,3-di-O-methyl-6-O-t-butyldimethyl-silyl)- β -CD	230 / 250	γ -lactones, cyclopentanones, terpenes, esters, tartrates
HYDRODEX β -6TBDE	heptakis-(2,3-di-O-ethyl-6-O-t-butyldimethyl-silyl)- β -CD	230 / 250	essential oils
HYDRODEX β -TBDAC	heptakis-(2,3-di-O-acetyl-6-O-t-butyldimethyl-silyl)- β -CD	220 / 240	alcohols, esters, ketones, aldehydes, δ -lactones
HYDRODEX γ -TBDAC	octakis-(2,3-di-O-acetyl-6-O-t-butyldimethyl-silyl)- γ -CD	220 / 240	cyclic ketones, aromatic ketones, oxiranes, aromatic esters, aromatic amides
HYDRODEX γ -DIMOM	octakis-(2,3-di-O-methoxymethyl-6-O-t-butyldimethyl-silyl)- γ -CD	220 / 240	ketones, terpenes, cyclic ethers, alcohols, amines

We also provide :

Qualisil S.S. Packed GC Column & Qualisil Glass Column

Packing material List

- ▶ Apizon -L
- ▶ Carbowax Series
- ▶ Carbowaxs 20M + KOH
- ▶ Dc Series
- ▶ QF-1
- ▶ DEGS
- ▶ DEGS-PS
- ▶ Reoplex-400
- ▶ Porapak-Q/QS/P/PS/N
- ▶ Haysep-Q/QS/P/Ps/N
- ▶ Haysep-A
- ▶ Chromosorb-101 to 108
- ▶ Chromosorb-102 (S6)
- ▶ FFAP
- ▶ OV-Series
- ▶ SE-30
- ▶ SE-54/SE-52
- ▶ SF-96
- ▶ 3%OV-225
- ▶ 10%OV-225
- ▶ Sorbitol

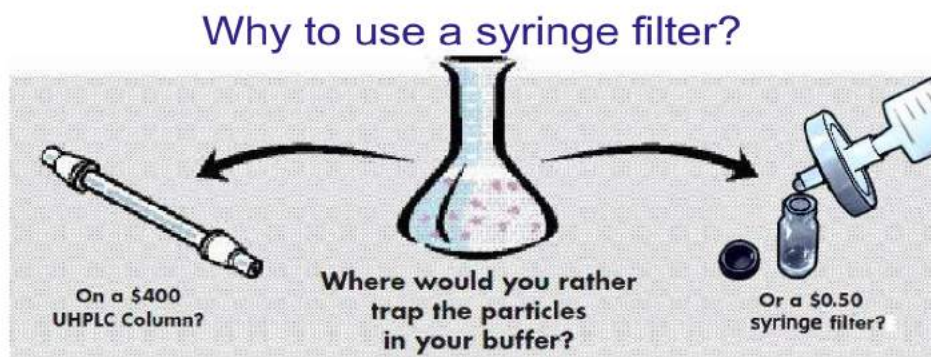


Other phases and customised columns are also available

Syringe Filter

Features

- Color coding of each unit for easy identification
- Added sample distribution ring
- Resistance high pressure
- Only Layer Membrane Structure, less dissolution content
- Passed HPLC Test



Step :1 Choose the suitable membrane filtration medium Characteristics of samples

Solutions	Recommended
Solvent Mixtures	Nylon, Hydrophilic PTFE,
Tissue culture Media, Buffers, Protein Analysis/Biological Samples	CA, PES, MCE, Hydrophilic PVDF
High Particulate Loads	PP, GF, Filter with pre-filter
Aggressive or Pure Organic Solvents	Hydrophobic PTFE, PVDF

Step :2 Choose the suitable diameter

Volume of samples	Recommended
<10ml	13mm
<100ml	25mm

Step :3 Choose the suitable pore size based on the nature of your sample

- Removal of high particulate matter with a pre filter is critical before any drug, toxic, or dirty environmental sample is filtered to ensure the highest syringe filter membrane performance.
- Generally, 0.45um porosity filters are used to remove particulates from samples and mobile phase solutions. For Sterile-filtration, a 0.20um porosity filter can be used.

Parameters	13 m m		25 m m	
Filtration area (cm ²)	0.92		2.98	
Normal Pore Size (µm)	0.22	0.45	0.22	0.45
Holdup volume (µl)	<10		<100	
Sample volume (ml)	<10		<120	
Inlet /Outlet	Female luer lock/Male luer slip			
Maximum Operating Temperature	50°C		50°C	
Maximum Operating Pressure (psi)	>87		>87	

Chemical Compatibility Table

Note +: Resistant o: Limited Resistant -:Not Resistant

Solvent	MCE	CA	NY	PTE	H-PTF	PVDF	PES	GF	PP
Acetaldehyde	-	-	o	+	+	+		+	o
Acetic acid, 100%	-	-	-	+	+	+	+	+	+
Acetone	-	-	+	+	+			+	+
Acetonitrile	-	-	+	+	+	+	+	+	+
Ammonia, 25%	-	-	-	+	+	+	+	+	+
Benzene	+	+	+	+	+	o		+	o
n-Butanol	+	+	o	+	+	+	+	+	+
Cyclohexane	+	+	o	+	+	+	+	+	+
Dichloromethane	+	-	-	+	+	+	-	+	-
Diethyl ether	o	o	+	+	+	+	+	+	o
Dimethylformamide	-	-	+	+	+	-	-	+	+
1,4-Dioxane	-	-	+	+	+	o	-	+	o
Ethanol	-	+	+	+	+	+	+	+	+
Ethyl acetate	-	-	+	+	+	+	+	+	o
Ethylene glycol	o	o	+	+	+	+	+	+	+
Formic acid, 100%	+	-	-	+	+	+	+	+	+
Hydrochloric acid, 30%	-	-	-	+	+	+	+	+	+
Methanol	-	-	+	+	+	+	+	+	+
Nitric acid, 65%	-	-	-	o	o	o		+	-
Oxalic acid, 10% aqueous	+	-	-	+	+	+		+	+
Petroleum ether	+	+	+	+	+	+	+	+	+
Phosphoric acid, 80%	-	-	-	+	+	o		+	+
Potassium hydroxyde,	-	-	+	+	+	o	+	+	+
2-Propanol	+	+	+	+	+	+	+	+	+
Sodium hydroxyde, 1 mol/L	-	-	+	+	+	o	o	o	+
Tetrachloromethane	+	-	+	+	+	o		+	o
Tetrahydrofuran	-	-	o	+	+	+	-	+	o
Toluene	+	-	+	+	+	+	+	+	o
Trichloroethene	+	+	o	+	+	+		+	o
Trichloromethane	+	-	-	+	+	+	-	+	-
Urea	+	+	+	+	+	+		+	+
Water	+	+	+	+	+	+	+	+	+
Xylene	+	+	+	+	+	o		+	o

PES Syringe Filter



- ➔ Hydrophilic property
- ➔ High flow rate and high Throughputs
- ➔ Low protein binding
- ➔ Low in extractables
- ➔ Suitable for removing small particles, bacteria, viruses
- ➔ And fungi aqueous phase.
- ➔ Normally used with PH 3-12.

Part No	Diameter	Pore Size	Package
QPES1345	13mm	0.45um	Pk/100
QPES1322	13mm	0.22um	Pk/100
QPES2545	25mm	0.45um	Pk/100
QPES2522	25mm	0.22um	Pk/100

MCE Syringe Filter



- ➔ Better hydrophilic property
- ➔ Low protein binding
- ➔ Great water flux and better cutoff effect
- ➔ Ideal for aqueous based samples, tissue culture and sensitive biological samples
- ➔ Has a lower chemical resistance
- ➔ Autoclave: sterilized by dry heat at 121°C for 15mins

Part No	Diameter	Pore Size	Package
QMCE1345	13mm	0.45um	Pk/100
QMCE1322	13mm	0.22um	Pk/100
QMCE2545	25mm	0.45um	Pk/100
QMCE2522	25mm	0.22um	Pk/100

CA Syringe Filter



- ➔ Hydrophilic property
- ➔ Low protein binding: suitable for aqueous protein solutions
- ➔ Nitrate free: suitable for groundwater filtration
- ➔ Quiet uniform pore size structure
- ➔ Extensive pore size specification
- ➔ Cell retention and particle collection

Part No	Diameter	Pore Size	Package
Q13CA022E	13mm	0.22um	Pk/100
Q13CA045E	13mm	0.45um	Pk/100
Q25CA022E	25mm	0.22um	Pk/100
Q25CA045E	25mm	0.45um	Pk/100

Order Information :

Nylon Syringe Filter



- ➔ Hydrophilic property
- ➔ Uniform aperture
- ➔ Excellent chemical stability and flexibility, durable
- ➔ Suitable for filtration of aqueous and most organic solvent
- ➔ Compatibility with various sterilizing methods

Part No	Diameter	Pore Size	Package
QN1345	13 mm	0.45 μm	Pk/100
QN1322	13 mm	0.22 μm	Pk/100
QN2545	25 mm	0.45 μm	Pk/100
QN2522	25 mm	0.22 μm	Pk/100

PTFE Syringe Filter (Hydrophilic)



- ➔ Special treated PTFE with Hydrophilic property
- ➔ Broad chemical resistance
- ➔ Excellent particle retention
- ➔ Compatibility with various sterilizing methods
- ➔ Suitable for filtration all solutions, even for acetone, DMSO, THF, etc.
- ➔ Normally used with pH range 1-14

Part No	Diameter	Pore Size	Package
Q13PTL022E	13mm	0.22 μm	Pk/100
Q13PTL045E	13mm	0.45 μm	Pk/100
Q25PTL022E	25mm	0.22 μm	Pk/100
Q25PTL045E	25mm	0.45 μm	Pk/100

PVDF Syringe Filter Hydrophilic



- ➔ Hydrophobic property
- ➔ 100% polypropylene construction
- ➔ Excellent for difficult-to-filter dissolution samples
- ➔ Acid and base resistant
- ➔ Wide Chemical compatibility with solvents
- ➔ High throughput for viscous samples

Part No	Diameter	Pore Size	Package
Q13PVL022E	13mm	0.22 μm	Pk/100
Q13PVL045E	13mm	0.45 μm	Pk/100
Q25PVL022E	25mm	0.22 μm	Pk/100
Q25PVL045E	25mm	0.45 μm	Pk/100

Vials, Caps, Septas


TEST	PARAMETER	RESULT
1. Glass	Type - 1 Borosilicate Glass	✓
	Outer Diameter	✓
2. Dimensional	Wall Thickness	✓
	Total Height	✓

Qualisil 9mm Short Screw Thread Vials are manufactured from type 1 hydrolic glass in an ISO 9001 Certified conditions. Dimensions are inspected and confirmed. Random samples are checked for cosmetic defects and finish. Glass used is compliant to European & US Pharmacopeia.

These are suitable to most leading brand Instruments incl. Agilent, Waters, Shimadzu, Dionex Thermo, Beckman, Leap Technologies, Merck/Hitachi, Perkin Elmer, Varian.

2ml Screw type Vials Caps Septa


QV002C

 2ml Clear Screw Top Vials Certified,
9-425 - Qualisil (PK-100)

QV002CW

 2ml Clear Screw Top Write-on Vials
Certified 9-425 - Qualisil (PK-100)

QV002P

2ml PP Screw Type Vial - (Pk-100)

QV222CSS-B

 Blue Screw Cap + Red PTFE/Sil Septa,
Pre-slit - Bonded Qualisil (PK-100)

QV102CSS-B

 Blue Screw Cap + Red PTFE/Silicon Bonded
Septa for 2ml Vials Qualisil (PK-100)


GC-HS Vials :

Q201-500F	Qualisil Top Clear Vials, 20ml Flat Bottom 23 x 75mm USP Type 1 (Pk/100)
Q201-500R	Qualisil Crimp Top Clear Vials, 20ml Round Bottom 23 x 75mm USP Type 1 (Pk/100)
Q202-500R	Qualisil 10ml HS Crimp Clear, 23x75 mm, Round Bottom (Pk/100)
Q2002	20mm x 3mm White PTFE /Silicone Septa with Aluminum Crimp Caps USP Type 1 (Pk/100)
Q2002-M	20mm x 3mm White PTFE/Silicone Septa with Magnetic Crimp Caps USP Type 1 (Pk/100)
Q202-500	Qualisil Crimp Top Clear Vials, 10ml Flat Bottom 23 x 75mm USP Type 1 (Pk/100)


HPLC & GC VIALS :


QV002C	Qualisil 2ml Screw Top Clear 9-425 Certified Vials USP Type 1 (Pk/100)
QV002CW	Qualisil 2ml Screw Top Clear 9-425 Certified Write-on Vials USP Type 1 (Pk/100)
QV003CW	Qualisil 2ml Screw Type Clear Write-on Vials with 33 Expansion Certified Pk/100
QV002A W	Qualisil 2ml Screw Top Amber Vials Write-on 9-425 - Qualisil (Pk/100)
QV102CSS-B	Qualisil Red PTFE Silicon Bonded Septa for 2ml Vials + Blue Screw Cap USP Type 1 (Pk/100)
QV222CSS-B	Qualisil Blue Screw Caps + Red PTFE Silicon Septa, Pre-Slit - Bonded USP Type 1 (Pk/100)
QV002CW + QV102CSS-B	Qualisil 2ml Screw Top Clear 9-425 Certified Write - on Vials + Blue Screw Cap With Red PTFE/ Silicon Septa Bonded USP Type 1 (Pk/100)
QV002CW+ QV222CSS-B	Qualisil 2ml Screw Top Clear 9-425 Certified Write-on Vials + Blue Screw Cap + Red PTFE/ Silicon Septa, Pre-Slit + Bonded Qualisil USP Type 1 (Pk/100)
QV003CW+ QV102CSS-B	Qualisil 2ml Screw Type Clear Write-on Vials with 33 Expansion Certified P + Red PTFE Silicon Bonded Septa for 2ml Vials +Blue Screw Cap(Qualisil) Pk/100
QV003CW+ QV222CSS-B	Qualisil 2ml Screw Type Clear Write-on Vials 33 Expansion – Certified Pk/100 + Blue Screw Cap + Red PTFE/ Silicon Septa, Pre-Slit - Bonded (Qualisil) (Pk/100)

QC-110A	2ml Crimp Neck Clear Vials 12 x 32mm, 1st Hydrol Glass, Wide Opening USP Type 1 (Pk/100)
QC-110B	2ml Crimp Neck Clear Vials with Patch 12 x 32mm, 1st Hydrol Glass, Wide Opening USP Type 1 (Pk/100)
QC-110C	2ml Crimp Neck Amber Vials 12 x 32mm, 1st Hydrol Glass, Wide Opening USP Type 1 (Pk/100)
QC-110D	2ml Crimp Neck Amber Vials with Patch 12 x 32mm, 1st Hydrol Glass, Wide Opening USP Type 1 (Pk/100)
QC-117A	Aluminum Crimp Cap Clear 5.5mm centre hole with PTFE/Silicon Septa USP Type 1 (Pk/100)
QC-117G	Aluminum Crimp Cap Clear 5.5mm centre hole with Pre-Slit PTFE/Silicone Septa USP Type 1 (Pk/100)



QC-110SA	2ml Snap Type Clear Vials 12 X 32mm, 1st Hydrol Glass, Wide Opening USP Type 1 (Pk/100)
QC-110SB	2ml Snap Type Clear Vials with Patch 12 X 32mm, 1st Hydrol Glass, Wide Opening USP Type 1 (Pk/100)
QC-110SC	2ml Snap Type Amber Vials 12 X 32mm, 1st Hydrol Glass, Wide Opening USP Type 1 (Pk/100)
QC-110SD	2ml Snap Type Clear Vials with Patch 12 X 32mm, 1st Hydrol Glass, Wide Opening USP Type 1 (Pk/100)
QC-112SA	11mm Snap Clear Caps with Silicon White / PTFE Red Septa USP Type 1 (Pk/100)
QC-112SG	11mm Snap Clear Caps with Silicon White / PTFE Red Pre-Slit Septa USP Type 1 (Pk/100)
QC2420C	20ml Screw Storage Vial 27.5 x 57mm Amber Glass Plain
QC2404L	Polypropylene Screw Cap Black with Closed Top, Silicone White and PTFE Red 3mm
QC2440A	40ml Storage Screw Neck Clear Vial, 27.5 x 95mm, 1st hydrol class Packing: 100pcs per box
QC2440C	40ml Screw Neck Amber Vial 27.5 x 95mm 1st hydro
QC2420A	20ml Screw Storage Vial, 27.5x57mm, Clear Glass Plain



CP-SV1F 1ml clear Shell Vials 8 x 32 with Star burst Plugs USP Type 1 (Pk/100)



TC-60A 0.2ml Micro-Insert, 31x6mm, Clear Glass, 1st Hydrol Type, Flat Bottom, Fill Vol. 0.35 USP Type 1

TC-60D 0.1ml Micro-Insert, 29x5.7mm, Clear Glass, 1st Hydrol Type, Mandrel Point with assembled Plastic Spring, Fill Vol. 0.20 USP Type 1



We can provide other size of Vials & Sample Bottles.

International Quality & Design

Long Life with MS Build/ Frame

Sturdy Unit

Qualisil Columnsafe

This Column storage unit is an ideal and safe place for all HPLC columns used in a lab. It is compact unit with aesthetic look offering defined place for new and used columns. This is helpful in avoiding columns getting exposed to various environmental conditions or mishandling Columnsafe is available in 3 popular sizes of 50 No' s, 100 No' s and 200 Columns or more.

Salient Features:

- International Quality Design with Sturdy Unit
- Pleasant Dual Colour Mode
- Long Life with MS Frame / SS Frame
- Extra Drawer for Document and COAs
- Central Locking System with single Push button for lock
- Keeping HPLC Columns Safe and Secured with possible sorting & Storage as per convenience
- Easy to clean and maintain
- More Column can be accommodated with shorter length
- Columns upto 300mm length and 7.8mm can also be accommodated comfortably
- Complimentary value additions with folder, pen, Keychain and Writing Pad
- Customised columnsafe as per your requirement is possible





* Table Top Model

Model : QCS050

Qualisil MS make Columnsafe for 50 or more columns with Powder Coating & Central Locking Facility
(5 Drawers x 10 Columns + 1 Drawer for Document)

Dimensions : L x W x D
In Inches : 12" 11" 13"
Weight : 13.30 Kg Approx



* Table Top Model

Model : QCS050-SS304

Qualisil SS-304 make Columnsafe with 50 Columns (With Central Locking Facility)
(5 Drawers x 10 Columns + 1 Drawer for Documents)

Dimensions : L x W x D
In Inches : 12" 11" 13"
Weight : 13.30 Kg Approx

Model : QCS100

Qualisil MS make Columnsafe for 100 or more columns with Powder Coating & Central Locking Facility
(10 Drawers x 10 Columns + 1 Drawer for Document)

Dimensions : L x W x D
In Inches : 21" 11" 18"
Weight : 21.700 Kg Approx

Model : QCS100-SS304

Qualisil SS-304 Make Columnsafe with 100 Columns With Central Locking Facility
(10 Drawers x 10 Columns + 1 Drawer for Documents)

Dimensions : L x W x D
In Inches : 21" 11" 18"
Weight : 21.700 Kg Approx

* This Model also has Wheels for having ease in moving from one location to other

Model : QCS200

Qualisil MS make Columnsafe for 200 or more columns with Powder Coating & Central Locking Facility
(10 Drawers x 20 Columns + 1 Drawer for Document)

Dimensions : L x W x D
In Inches : 21" 20" 18"
Weight : 38 Kg Approx

Model : QCS200-SS304

Qualisil SS-304 Make Columnsafe for 200 or more Columns With Powder Coating & Central Locking Facility
(10 Drawers x 20 Columns + 1 Drawer for Documents)

Dimensions : L x W x D
In Inches : 21" 20" 18"
Weight : 38 Kg Approx

* This Model also has Wheels for having ease in moving from one location to other

Column Flushing Pump

Single Head - QCFP - 01-01

- ➔ Plug & Play Modular Pump
- ➔ High Precision & Accurate Flow Rate
- ➔ 5 column washing station as standard
- ➔ Upgradable to Low Pressure Quaternary Gradient
- ➔ Upgradable to 5 column station with oven facility
- ➔ Continuous & timed operation
- ➔ Cut-off pressure setting
- ➔ Password Protected



Double Head - QCFP - 02-01



Specifications

	Single Head	Double Head
Operating Temperature	4 to 38 °C (39.3 - 100.4 °F)	
Storage Temperature	0 to 50 °C (32-112 °F)	
Humidity	0-90%, non-condensing	
Power Requirements	190-270 VAC.	
Material of Wetted Surfaces	316 Stainless Steel, Ruby, Sapphire, FEP, PTFE	
Flow Rate Range	0.05 to 10 ml/min, 0.01 ml/min increments	
Flow Rate Precision	±2%	±1%
Flow Rate Accuracy	±2%	±2%
Operating Pressure Limit	6000 PSI (4.14 BAR)	
Compact Size (WxHxD)	W200 x L300 x H205 mm (Approx Weight 9 Kg)	
Make	Qualisil	

Lab-Instruments



Ultra Sonic



Ultra Sonic
With Chiller



Hot Air Oven



Muffle Furnance
(GMP)



vacuum oven



Bod Incubator /
Cooling Incubator



Autoclave (Fully Automatic)



Water Bath



Hot Plate



Liquid Flowmeter



Gas Flowmeter



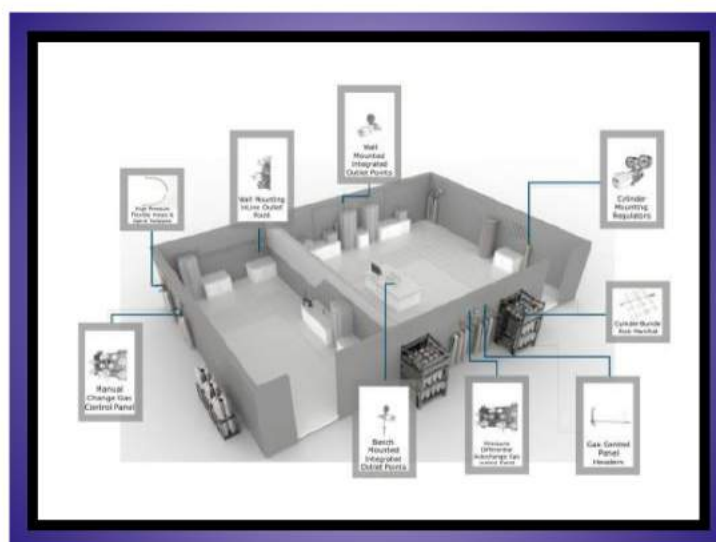
Portable LD

Complete Gas Management Solution

“Gas World” products and service:

- Laboratory Gas Solutions
- Cylinder Holding Brackets
- Cylinder Pressure Regulators
- Panel & Line Regulators

■ Pressure Control Panels



- ▶ **Gas World** provides complete Gas Management Solution.
- ▶ **Gas Management** – Gas Purification & Control Panels, Traps, Gas Control Box, Cylinder Regulators, Auto Gas Change over, Selector Box, Cylinder Manifold, SS Pigtaills, Cylinder Holding Bracket, SS Tube, Casing Capping, Inline Micron Filters, Gas Piping Fittings, etc.
- ▶ **Gas Generation** - Hydrogen, Nitrogen, Zero Air for Laboratory use, & Industrial Gas Generators for use at Plant level. Dedicated Nitrogen Generator for ELSD.
- ▶ **Air Compressor** - Air Compressor, Air Dryer, Moisture Filter etc...
- ▶ **Gas Detection System** - We provide Single & Multi Channel Gas Detection System.
- ▶ We provide both Online & Portable Gas Detection System.
- ▶ We also provide Fume Hood, Fume Cabinet, Fume Duct, Spot Extractor, Dust Extractors and similar equipments.

AMC / CMC - Gas Management & Gas Generators

Services for Gas / Utility

Hydrogen, Nitrogen, Zero Air, Helium, Compressed Air, Vacuum, Argon, Oxygen, Carbon Dioxide, Acetylene, Propane, Nitrous Oxide, Ammonia, HCl, Methane, LPG etc...

Application Industry

- | | |
|--|---|
| ❖ Pharmaceuticals | ❖ Food & Beverages |
| ❖ Life Science Industries | ❖ Cosmetic and Personal Care / Cleaning products |
| ❖ Forensic Industries | ❖ Petroleum |
| ❖ Clinical / Hygiene Industries | ❖ Oil & Gases |
| ❖ Agriculture | ❖ Biofuel |
| ❖ Environmental Testing | ❖ Chemical |
| ❖ Flavor & Fragrance | ❖ Universities / Institutes |

Gas Purification & Control System

The Gas Purification System is available for the following applications.

1. Low pressure gas flow application where complete internal tubing in the Gas Purification System is of 1/8" ss.
2. High pressure gas flow Application where complete internal tubing in the Gas Purification System is of 1/4" ss.
3. Main body: M/s Powder Coated.
4. Internal Tubing : 1/8", 1/4", ss tubing.
5. We can also supply customized panels.



Gas Cylinder Regulator

Main body : Stainless Steel, Brass Chromplated, Monel.
 Inlet pressure : 280 kg/cm².
 Outlet pressure : As per requirement.
 High Pressure : Inlet - 20 bar , Outlet - As per requirement.
 Service : N₂, H₂, He, Air, Acetylene, Nitrous Oxide, Argon, HCl etc;

Double Stage Regulator



High Pressure Regulator



Line Regulator



Mechanical Changeover System

- ▶ It is modified version of Manifold. Here a low pressure limit is set and when cylinder 1 reaches to the low pressure limit it automatically switches to cylinder 2.
- ▶ MOC- SS 316, SS 304.
- ▶ Optional Auto Changeover System with built-in alarm system.



MULTICHANNEL GAS MONITORING SYSTEM

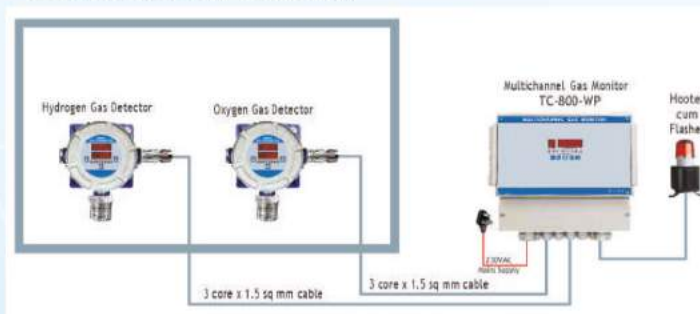
Sailent Features:

- ▶ User Friendly Operation by front keys.
- ▶ Scan Each Channel with Gas Concentration PPM, PPB, %V/V.
- ▶ Open Loop Transmitter Sensor Break, 'open' Indication.
- ▶ Reading Offset Facility to Compensate the Field Error.
- ▶ High & Low Alarm Output with Programmable Latch & Non-Latch Facility for common Relay & Relay Indication.
- ▶ Optional: Data Logging/ Printer Interface/ PC Software.
- ▶ Optional Relay Output for Each Channel.
- ▶ Suitable in Hazardous Area CCOE, PESO, CMRI, & IP-65 Approved.



General specification:

- ▶ Input : 8 Channel, 4 to 20mA output from Oxygen / Toxic / Combustible Gas Transmitter of 2 wire / 3wire.
- ▶ Range : 0 to 9999 programmable by user, read % LEL, PPM, or % V/V.
- ▶ Resolution : 0.01, 0.1, 1 programmable by users.
- ▶ Channel Capacity : Available 2Ch./4Ch./6Ch./8Ch.
- ▶ LED Indication : 8 No. RED LED for Alarm Indications of both set points AL1, AL2
- ▶ Set Point : 2 Independent set point individual for each channel with 2 common relay output.



Generator & Accessories



H2 Generator



N2 Generator



Zero Air Generator



N2-ZA Gas Generator



Compressor Unit



Oil Free Compressor



Air Dryer



Air Filter



O2 Analyser

Gas Management Accessories / Fittings

Union



Tee



Cross Tee



Bulkhead



Ferrule



Quick release Valve



Inline Micron Filter



Pressure Gauge



Non-Return Valve



Flash Back Arrester



Needle Valve



Toggle Valve



Square type Female
Ball Valve



Manifold Valve



Square type
OD Ball Valve



CHROMATOGRAPHY WORLD

217,2nd Floor, Champaklal Industrial Area
Near Sion Telephone Exchange,
Sion East, Mumbai-400022.
Call : 022- 24082098/24082099/43159100
Email : sales@chromatographyworld.com
speed@chromatographyworld.com

**VENDOR CREATION / AMENDMENT (ADDRESS / BANK ACCOUNT NO)**

Name of Vendor*	CHROMATOGRAPHY WORLD
Address* (Please Update New Address)	217, CHAMPAKLAL INDUSTRIAL ESTATE, 2 ND FLOOR, SION EAST
Postal Code*	400 022
City*	MUMBAI
Telephone*	Ph: 022-24082098/24082099/43159100
E-mail*	dhiren@chromatographyworld.com / geeta@chromatographyworld.com
Structure of firm * (please tick where applicable)	LIMITED/ PRIVATE LIMITED /PARTNERSHIP/ PROPRIETORSHIP/ INDIVIDUAL

Statutory Details:

PAN Number*#	AAGFC1217K
GSTN	27AAGFC1217K1ZM
Registered Under Micro, Small And Medium Enterprises Development Act 2006#	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Micro -Scale Industry Regn Number	UDYAM-MH-19-0078510
MODE OF PAYMENT:	<input type="checkbox"/> Cheque <input checked="" type="checkbox"/> Direct Transfer to Bank Through NEFT
If You opt for direct payment to bank through NEFT, please provide declaration as per Annex-I attached herewith	

SUB: Bank Details Confirmation**Dear Sir,****Bank Account Details for crediting the amount:**

Bank Name	Kotak Mahindra Bank
Bank Branch	Matunga Branch
Bank Branch Address	Raj Niketan, Bhandarkar Road, Mumbai - 400 019
Bank Account Number	4611234274
Bank Account Name	CHROMATOGRAPHY WORLD
Bank Account Type	<input checked="" type="checkbox"/> CURRENT <input type="checkbox"/> SAVINGS <input type="checkbox"/> CASH CREDIT
Bank IFSCCode(Attested by Banker)	KKBK0000644
Bank MICR Code	400485049
Bank AD Code	01802616000009

I hear by declare that the particular furnished above are Correct and Complete.**For Kotak Mahindra Bank**

Without any risk or responsibility on the part of the Bank or any of its Signing Officials We Confirm that this signature agrees with the Specimen held on our records.
For Kotak Mahindra Bank Ltd.



Authorized Signatory
Matunga (E) Branch,
Mumbai-400 019, Maharashtra

NDHI PHULWANEY
Emp.: 92985

**For Chromatography World**

M. J. J. J.

Partner

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