Introducing Synergi FUSION-RP Polar Embedded C18 Column

Still seeing peak tailing on your C18?

synergi

Ultra-Performance LC Columns[™]

Is resolving polar compounds difficult?

Having trouble with metabolite retention?





SIMPLIFIED

COLUMN SELECTION BY COMPOUND POLARITY AND MOBILE PHASE CONDITIONS

Much like a carpenter needs a good set of tools, analytical chemists need a column toolbox to resolve closely related analytes. The Synergi column line eliminates the guesswork, simplifying HPLC column selection. Each column phase provides optimized performance over a specific polarity range. Whether you are looking to develop a new method or improve an existing one, try it first on a Synergi column.



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COLUMN SELECTION

COLUMN CHARACTERISTICS FOR SIMPLIFIED SELECTION



Maximum Reversed Phase Performance for the Synergi Line



SYNERGI[™] HYDRO-RP

Polar Endcapped C18 Column

Hydro-phobic/philic Reversed Phase Retention



Each Synergi Phase has a unique "fingerprint" composed of multiple characteristics. By understanding the different selectivities of each phase, you can easily identify the best column for your needs.

SYNERGI[™] FUSION-RP Polar Embedded C18 Columi

Improved Polar Selectivity with Reduced Run Times



SYNERGI[™] POLAR-RP®

Ether-Linked Phenyl Column

Maximum Polar and Aromatic Reversed Phase Selectivity





HIGH EFFICIENCY 2

4µ SILICA - HIGH EFFICIENCY WITH LOW BACKPRESSURE

Synergi utilizes a 4μ 80Å silica to provide efficiencies closer to a 3μ silica, while providing backpressures closer to a 5μ silica. Ultra-high purity silica (99.99% metal free) ensures minimal surface metal sites available for chelation and reduces silanol acidity, even under neutral mobile phase conditions. With such a superior silica providing the support for the Synergi phases, it is no wonder why they are called ultra-performance LC columnsSM.

HIGH EFFICIENCY



Columns: Synergi 4μ Max-RP Luna® 5μ C18 Luna® 3μ C18 Dimensions: 50 x 4.6mm Mobile Phase: Water / Acetonitrile (35:65) Detection: UV @ 254nm Injection: 1μL Temperature: 30°C Sample: Naphthalene (1μg)





Columns: Synergi 4µ Max-RP Luna® 5µ C18 Luna® 3µ C18 Dimensions: 50 x 4.6mm Mobile Phase: Water / Acetonitrile (35:65) Detection: UV @ 254nm Injection: 1µL Temperature: 30°C Sample: Naphthalene (1µg)

	Synergi	Synergi Silica Characteristics								
	Particle	Particle	Surface	Pore	Pore	Metal				
4µ 80Å	Size	Size	Area	Size	Volume	Content				
SILICA	(μ)	Distribution	(m²/g)	(Å)	(mL/g)	(ppm)				
	4.00 ± 0.10	1.80	475 ± 25	80 ± 10	1.00 ± 0.05	< 55				

4µ Max-RP

▼ 3µ C18

LOWER COLUMN BACKPRESSURE COMPARED TO 3.5µ COMPETITORS



AND 4µ SILICA

2µ SILICA - EXCELLENT EFFICIENCY FOR HIGH THROUGHOUT

MercuryMS[™] cartridges are engineered to provide superior performance to meet the demands of today's high-throughput environment. Synergi 2µ silica provides efficiencies required when shortening run times. Utilizing the unique phase characteristics of Synergi Fusion-RP, Max-RP, and Hydro-RP provides ultimate compound selectivity with up to 60% reduction in analysis time. Synergi 2µ materials are slurry packed into the MercuryMS[™] cartridges, providing resolution & peak shapes equivalent to what was once only found in analytical columns.



PERFORMANCE COMPARISON OF LC/MS CARTRIDGES

Synergi™ 2µ Max-RP 20 x 4.0mm MercuryMS	App ID 14229
XTerra® 2.5µ MS C18 20 x 4.6mm	App ID 14232
Zorbax [®] 3.5µ SB C18 15 x 4.6mm	App ID 14231





Polar Embedded C18 Column

Fusion-RP

Improved Polar Selectivity with Reduced Run Times

- Enhanced polar retention under organic conditions
- Low MS bleed
- 100% aqueous stable



:: synergi

Synergi[®] Fusion-RP

IMPROVED POLAR SELECTIVITY WITH REDUCED RUN TIMES

Synergi Fusion-RP uses a polar embedded and a hydrophobic ligand to achieve improved selectivity. The C18 ligand gives Synergi Fusion-RP good hydrophobic retention and selectivity, while the polar embedded group provides enhanced polar retention. This dual-phase selectivity allows balanced polar, acidic, basic and hydrophobic compound retention and resolution. If you are working with mixtures of compounds with polar and non-polar characteristics, and having difficulties finding that perfect mix of selectivity, then you should try Synergi Fusion-RP.

INCREASED POLAR RETENTION WITH REDUCED HYDROPHOBIC INTERACTION

Synergi 4µ Fusion-RP	App ID 14840	
Typical C18		



Columns: Synergi 4µ Fusion-RP Typical C18 Dimensions: 150 x 4.6mm Mobile Phase: 20mm Potassium Phosphate, pH2.5 / Acetonitrile (75:25) Flow Rate: 1.0mL/min Detection: UV @ 210nm Sample: 1. Maleic acid 2. Chlorpheniramine 3. Triprolidine 4. Diphenhydramine

PEAK SHAPE COMPARISON USING PROPRANOLOL



Synergi Fusion-RP

1.5-10 pH STABLE FOR RUGGED METHODS

The ability of Synergi Fusion-RP to operate in an extended pH range of 1.5-10 (under isocratic elution conditions) is the direct result of an exhaustive endcapping procedure, which is highly protective of the silica surface. pH stability is an indication of column ruggedness. pH tested at the extremes (1.5 and 10), for more than 4000 column volumes, the results below clearly show how rugged Synergi Fusion-RP is. Imagine how well this column will work for your application.

pH 10.0 STABILITY TEST



pH 1.5 STABILITY TEST



pH testing was done under isocratic conditions with phosphate buffer. Formic acid and ammonium formate were also used as test buffers.

ANTIHISTAMINES

Synergi 4µ Fusion-RP Waters SymmetryShield[™] 5µ C18

App ID 14839

App ID 14838

Supelco Discovery® 5µ RP-AmideC16

Columns: Synergi 4µ Fusion-RP SymmetryShield[™] 5µ C18 Supelco Discovery® 5µ RP-Amide C16 Dimensions: 150 x 4.6mm Mobile Phase: 20mm Potassium Phosphate, pH7 / Methanol (70:30) Flow Rate: 1.0mL/min Detection: UV @ 210nm Sample: 1. Phenylephrine 2. Phenylpropanolamine 3. Pseudoephedrine



SULFA DRUGS

Svnerai 4u Fusion-RP Waters SymmetryShield[™] 5µ C18

Columns: Synergi 4µ Fusion-RP SymmetryShield[™] 5µ C18 Dimensions: 150 x 4.6mm Mobile Phase: A: 20mM Potassium Phosphate, pH2.5 B: Methanol Gradient: A/B (95:5) for 0.5min A/B (20:80) in 15min Flow Rate: 1.0ml /min Detection: UV @ 254nm Sample: 1. Sulfanilamide 2. Sulfathiazole 3. Sulfamerazine 4. Sulfamethoxazole 5. Sulfaguinoxaline





EXTREMELY LOW LC/MS COLUMN BLEED

A careful control of the endcapping process combined with the chemical nature of the polar embedded group results in high phase stability with minimal ligand cleavage. The excellent bleed profile compared to a competitor's in the figure below shows Synergi Fusion-RP is well suited for LC/MS work.

100% AQUEOUS FOR ADDED METHOD FLEXIBILITY

Use Synergi Fusion-RP for greater polar retention under 100% aqueous conditions. The polar embedded group allows this phase to be run under 100% aqueous conditions without loss of retentivity. Unlike typical C18 phases, the pores and the sorbent surface of Synergi Fusion-RP stay wet even after many hours of operation in 100% aqueous mobile phase. This aqueous stability offers greater flexibility in application development.





:: synergi

Max-RP Reversed Phase C12 Column

Maximum Reversed Phase Performance

- Hydrophobic retention similar to a C18-but it's a C12
- 25% more free silanol coverage than most C18 columns
- Sharper peaks for basic and tailing compounds



synergi MAX-RP

HYDROPHOBIC RETENTION SIMILAR TO A C18 - BUT IT'S A C12

The bulky nature of C18 ligands results in relatively low coverage of surface silanols which cause peak tailing. Nevertheless, C18 columns have the hydrophobic selectivity chromatographers rely on. To reduce peak tailing and still offer the preferred hydrophobic selectivity, we engineered Synergi Max-RP with a C12 bonded phase. A C12 ligand is sterically less hindered than a C18 and can be bonded to result in 25% more of the silica surface being covered than a C18, shielding more free silanols from non-specific interaction. When bonded to our high (475m²/g) surface area silica. Synergi Max-RP gives the hydrophobic retention and methylene selectivity you would expect from a C18 column, but with sharper peaks, less tailing, and improved reproducibility.

HYDROPHOBIC RETENTION: SYNERGI[™] MAX-RP (C12) PERFORMS LIKE A C18



XTerra 5µ MS C18 Zorbax 5µ SB C18 Nucleosil 5µ C18 Synergi 4µ Max-RP Zorbax 5µ XDB C18 Luna 5µ C18(2)

SYNERGI™ MAX-RP VS. ZORBAX 3.5 XDB C18 App ID 12519

Zorbax® 3.5µ XDB C18



Dimensions: 50 x 4.6mm Mobile Phase: A = Water with 0.1% Formic acid B = Acetonitrile with 0.1% Formic acid Gradient: A/B (95:5) to 100% B in 5min Flow Rate: 1.5mL/min Detection: UV @ 254nm Injection: 5µL Temperature: 30°C Sample: 1. Thiourea (0.25µg) 2. Codeine (1µg) Chlorpheniramine (2µg) 4. Propranolol (6µg) 5. Desipramine (0.5µg) 6. Ibuprofen (6µg)

Zorbax 5µ SB C18

Synergi 4µ Max-RP

Zorbax 5µ XDB C18

Nucleosil 5u C18

Luna 5µ C18(2)

Water (80:20)

SYNERGI™ MAX-RP VS. SYNERGI[™] HYDRO-RP









Synergi Max-RP

SHARPER PEAKS FOR BASIC COMPOUNDS

lonic interactions with free silanol groups on the silica surface can contribute to peak tailing during a separation. This effect is particularly pronounced for basic compounds that can bind to un-protonated free silanol groups on the silica surface. Synergi Max-RP combines dense bonding and a C12 bonded phase to provide better surface coverage while reducing silanol activity. This reduced silanol activity as shown with standard probes (benzylamine and phenol) results in better peak shapes, especially for basic compounds.

SILANOL ACTIVITY AT LOW pH: C12 VS. C18 PHASES



Columns: XTerra 5u MS C18 Zorbax 5µ SB C18 Nucleosil 5µ C18 Synergi 4µ Max-RP Zorbax 5µ XDB C18 Luna 5µ C18(2) Dimensions: 150 x 4.6mm Mobile Phase: Methanol/20 mM Potassium phosphate, pH2.5 (30:70) Flow Rate: 1mL/min Detection: UV @ 254nm Injection: 5µL Temperature: Ambient Sample: 1. Benzvlamine 2. Phenol





REPRODUCIBLE PERFORMANCE FROM pH 1.5-10

Our bonding and endcapping procedures give Synergi 4µ Max-RP stability from pH 1.5 (0.1% TFA) to 10. This robust pH range ensures that there will be little bleed at low pH's due to bonded phase hydrolysis and that a broad range of mobile phase modifiers can be used without damaging the column. It also allows analysts to use high pH's to overcome basic ionization and to overcome sample solubility issues.





PERFORMANCE IN MS-COMPATIBLE MODIFIERS

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::: synergi

Hydro-RP Reversed Phase C18 Column

Hydro-phobic/philic Reversed Phase Retention

- Extreme retention of hydrophobic compounds
- Stable in 100% aqueous mobile phase
- Improved polar selectivity



synergi Hydro-RP

A C18 WITH ENHANCED RETENTION OF POLAR COMPOUNDS **UNDER 100% AQUEOUS CONDITIONS**

14239

Extremely polar analytes are not always retained and often do not separate well on conventional C18 or Synergi Max-RP columns. Unlike conventional C18 columns, Synergi Hydro-RP is a C18 bonded phase endcapped with a unique proprietary polar group to provide extreme retention of both hydrophobic as well as polar compounds under 100% aqueous conditions. The high (475m²/g) 4µ silica surface area combined with a dense bonded phase coverage allows for substantial interaction between the sample analyte and the bonded phase. The net result is a very retentive C18 phase well suited to separating extremely polar analytes.

SYNERGI HYDRO-RP VS. ZORBAX XDB

Synergi [™] 4µ Hydro-RP	App ID 14239
Agilent Technologies® Zorbax® 5µ Eclipse® XDB	App ID 14266



Dimensions: 150 x 4.6mm Mobile Phase: A=10mM Triethylammonium formate pH 6.0 B=Acetonitrile with 10mM Triethylammonium formate Gradient: A/B (85:15) to A/B (35:65) in 15 minutes Flow Rate: 1.5mL/min Temperature: Ambient Detection: UV @ 230nm Injection: 1uL of beta-blockers mix each at 0.8µg/µL Sample: 1. Atenolol 2. Pindolol 3. Nadolol 4. Acebutolol 5. Metoprolol 6. Labetalol

SYNERGI HYDRO-RP VS. SYNERGI MAX-RP



EXPLOSIVES MIX: EPA METHOD 8330



Column: Synergi 4µ Hydro-RP Dimensions: 250 x 4.6mm Order No.: 00G-4375-E0 Mobile Phase: Water/Methanol/Acetonitrile (51:45:4) Flow Rate: 0.8mL/min Temperature: 35°C Detection: UV @ 254nm Sample: 1. HMX 2. RDX 3. 1,3,5-Trinitrobenzene 4 1,2-Dinitrobenzene (Int Std) 5. Tetryl 6. 1,2-Dintrobenzene 7. Nitrobenzene 8. 2.4.6-Trinitrotoluene 9. 4-Amino-dinitrotoluene 10. 2-Amino-dinitrotoluene 11. 2,6-Dinitrotoluene 2,4-Dinitrotoluene 13. 2-Nitrotoluene 14 4-Nitrotoluene 15. 3-Nitrotoluene

REDUCED AND OXIDIZED GLUTATHIONE



synergi Hydro-RP

EXTREME RETENTION OF HYDROPHOBIC COMPOUNDS

Synergi Hydro-RP shows significantly higher hydrophobic retention when compared to other C18 phases. Greater hydrophobicity is useful for many applications because higher percentage organic mobile phase can be used resulting in shorter run and re-equilibration times. For LC/MS applications this enhanced hydrophobicity results in analytes eluting at higher percentage organic mobile phase, resulting in improved sensitivity. Dense bonding and endcapping make Synergi Hydro-RP compatible with a variety of MS-compatible mobile phase modifiers such as formic acid, TEAA, and acetic acid. Through a combination of greater retention, excellent efficiency, and stability to MS-compatible buffers, Synergi Hydro-RP is ideal for LC/MS applications.

SYNERGI[™] HYDRO-RP VS. LUNA® C18(2) App ID 14424

Synergi™4µ Hydro-RP 80Å	
Luna® 5µ C18(2) 100Å	





10

12 min

Dimensions: 150 x 4.6mm Mobile Phase: 20mM Potassium phosphate, pH7.0 /Methanol (60:40) Flow Rate: 1mL/min Temperature: 22°C Detection: UV @ 210nm Sample: 1. Phenylephrine 2. Phenylpropanolamine 3. Pseudoepherine 4. Methylparaben

HYDROPHOBIC RETENTIVITY COMPARED



Temperature: Ambient

Sample: 1. Butvlbenzene

2. Amylbenzene

The chart was obtained by plotting hydrophobic retention (k for butylbenzene vs. methylene selectivity (log k for amylbenzene vs the number of methyl groups) under the stated conditions. A column with high hydrophobicity will better resolve two analytes which subtly differ in their overall hydrophobicity than a column with lower hydrophobic selectivity.

STABLE IN 100% AQUEOUS MOBILE PHASE

Running a 100% aqueous mobile phase on a C18 column can provide improved retention of extremely polar compounds. However, conventional C18 phases are poorly wetted by highly aqueous mobile phases causing the C18 ligands to mat down on the surface of the silica and, over time, retention is completely lost. Organic acids and catecholamines are often difficult to separate analyze as their polarity hinders interaction with conventional C18 ligands, but this is easily accomplished using Synergi Hydro-RP under 100% aqueous conditions. Synergi Hydro-RP utilizes this versatility for method development while providing superior column ruggedness.

AQUEOUS STABILITY

Detection: UV @ 210nm Injection: 5µL

Sample: 1. Norepinephrine (0.8mg/mL) 2. Epinephrine (0.5mg/mL) 3. Normetanephrine (0.6mg/mL) 4. Dopamine (0.4mg/mL) 5. L-DOPA (0.3mg/mL)





CATECHOLAMINES



Polar and Aromatic Reversed Phase Selectivity

- Increased retention of highly polar and aromatic compounds
- Stable in 100% buffer mobile phases
- Highly reproducible

Polar-RP[®]

Phenyl Column

Ether-Linked



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Synergi Polar-RP®

ENHANCED SELECTIVITY FOR POLAR AROMATICS

Synergi Polar-RP is an ether-linked phenyl phase with proprietary hydrophilic endcapping designed specifically to maximize retention and selectivity for polar and aromatic analytes. Aromatic selectivity can be further enhanced by the addition of methanol to the mobile phase. Methanol facilitates the π - π interactions between the aromatic rings of the analyte and the phenyl functional group of Synergi Polar-RP. This feature allows for improved polar retention that complements the more conventional C18 column chemistries, as well as provides improved peak shape and an alternative selectivity compared to other polar phases.

INCREASED RESOLUTION OF POLAR COMPOUNDS

Synergi™ 4µ Polar-RP	App ID 12485
Waters [®] 5µ SymmetryShield [™] C18	App ID 12525
Waters [®] 5µ XTerra [™] RP18	App ID 12526
Waters [®] 5µ Symmetry [®] C18	App ID 12527



3. Metoprolol (0.15µg)

4. Alprenolol (0.3µg)

5. Propranolol (0.04µg)

6. Ethylparaben (0.4µg)

IMPROVED RESOLUTION AND PEAK SHAPE Synergi[™] 4µ Polar-RP App ID 10905 Waters XTerra[™] RP18 App ID 10906





Columns: Synergi 4µ Polar-RP Waters 5µ XTerra RP18 Agilent 5µ Zorbax SB-Phenyl G.L. Sciences 5µ Inertsil Phenvl PH-3 Dimensions: 150 x 4.6mm Mobile Phase: 20mM Potassium phosphate pH 7.0/Acetonitrile (80:20) Flow Rate: 1mL/min Detection: UV @ 254nm Temperature: 25°C Sample: 1. Famotidine 2. Cimetidine 3. Ranitidine

SYNERGI[™] POLAR-RP VS. SYNERGI[™] HYDRO-RP

Synergi[™] 4µ Polar-RP Synergi[™] 4µ Hydro-RP







- 4. Thiamine
- 5. Riboflavin

100% BUFFER MOBILE PHASE STABILITY

The ether-linkage on the Synergi 4µ Polar-RP phase contributes to not only sharp peak shape for acidic and basic analytes, but also ensures stability under highly aqueous mobile phase conditions. Very polar analytes, like formic acid, are typically poorly retained on alkyl-bonded phases. However, using a 100% buffer mobile phase, the formic acid impurity is easily resolved from acetic acid. Other polar-embedded phases typically use a nitrogen-containing amide linkage or carbamate group; this can interfere with the resolution of highly acidic polar compounds. Since Synergi Polar-RP uses an ether-linkage as the polar embedded group, the result is improved peak shape and resolution of the highly acidic polar compound, formic acid.

FORMIC AND ACETIC ACIDS





Dimensions: 150 x 4.6mm Mobile Phase: 20mM Potassium phosphate pH2.5/ Methanol (97:3) Flow Rate: 1.0mL/min Detection: UV @ 220nm Temperature: 25°C Sample: 1. Formic acid 2. Acetic acid

NUCLEIC ACID BASES







THYMIDINE NUCLEOTIDES



Column:	Synergi 4µ Polar-RP
Dimensions:	150 x 4.6mm
Order No.:	00F-4336-E0
Mobile Phase:	20mM Potassium phosphate pH2.7
Flow Rate:	2.0mL/min
Detection:	UV @ 254nm
Injection:	2.5µL
Temperature:	22°C
Sample:	1. Thymidine triphosphate (TTP) (1.25µg)
	2. Thymidine diphosphate (TDP) (1.25µg)
	3. Thymidine monophosphate (TMP) (1.25µg)
	4. Thymidine (1.25µg)

A REPRODUCIBLE & STABLE POLAR COLUMN

Synergi Polar-RP is highly reproducible. As indicated by the chromatograms from three separate batches of bonded stationary phase, Synergi Polar-RP exhibits almost no variation between batches. In addition, the ether-linkage is extremely resistant to hydrolysis, even at pH 1.5, thus enabling separations even under relatively harsh 0.1% TFA running conditions for thousands of column volumes. At the other end of the pH spectrum, Synergi Polar-RP is stable to a pH of 7.0

BATCH REPRODUCIBLITY

Mobile Phase: Methanol/20mM Potassium phosphate pH6.5 (35:65)

> Sample: 1. Phenylephrine (1µg) 2. Phenylpropanolamine (1µg) 3. Pseudoephedrine (1µg) 4. Methylparaben (1µg)

Flow Rate: 1.5mL/min Detection: UV @ 210nm Injection: 1µL Temperature: 22°C



AQUEOUS STABILITY



Column: Synergi 4µ Polar-RP Dimensions: 30 x 2.0mm Order No.: 00A-4336-B0 Mobile Phase: A = Water with 0.1% TFA B = Acetonitrile with 0.1% TFA Gradient: A/B (95:5) to A/B (5:95) in 3 min Flow Rate: 1.0mL/min Detection: UV @ 254nm Injection: 1µL Temperature: 30°C Sample: Precipitated porcine serum (2:1 Acetonitrile: serum) containing: 1. Oxazepam (50ng) 2. Temazepam (50ng) 3. Nordiazepam (50ng) 4. Diazepam (50ng)

Synergi Specifications

HPLC COLUMN TECHNICAL SPECIFICATIONS

Material Characteristics

Packing Material	Particle Shape/Size (µ)	Pore Size (Å)	Pore Volume (mL/g)	Surface Area (m²/g)	Carbon Load %	Calculated Bonded Phase Coverage (µmole/m²)	End Capping
Synergi™ Fusion-RP	Spher. 2, 4, 10	80	1.05	475	12	N/A	TMS
Synergi™ Max-RP	Spher. 2, 4, 10	80	1.05	475	17	3.21	TMS
Synergi™ Hydro-RP	Spher. 2, 4, 10	80	1.05	475	19	2.45	Hydrophilic
Synergi™ Polar-RP®	Spher. 4, 10	80	1.05	475	11	3.15	Hydrophilic



Synergi Column Selector

SIMPLIFY AND AUTOMATE ALL YOUR METHOD DEVELOPMENT AND VALIDATION WORK



Holds up to 6 Analytical or Semi-Prep Columns

BENEFITS

- Develop, optimize and validate methods faster
- Save time and significantly boost productivity
- Speed and automate routine validation studies

TECHNICAL SPECIFICATIONS

- HPLC system communication protocols via contact closures, pulse and level logic, BCD, RS-232
- A single rear mounted "D" connector
- Spring loaded clips that firmly hold columns from 2-25mm ID and 5-35cm length
- Digital valve positioning with fast actuation to minimize dispersion
- Front-mounted switching valve with easy-to-access fittings
- Valve architecture eliminates upswept dead volumes
- Numeric display indicating selected column
- Removable, magnetic cover providing environmental isolation and ambient temperature stabilitization
- Pressure rated at 35 MPa/345 bar/5000 psi.

Power Line Cords (specify Order No_included at

(opecity ofder No., included at no charge)	
Australia and New Zealand	AV0-6088
Italy	AV0-6089
Japan	AV0-6090
North America	AV0-6091
Schuko (most of Europe)	AV0-6092
Switzerland	AV0-6093
United Kingdom	AV0-6094

Synergi Analytical LC Column of ≤ 4.6mm ID with a 6-Column Selector Purchase

ORDERING INFORMATION

Order No.	Description	Price
AV0-6080	Synergi 6-Column Selector, Stainless Steel, 4 Line BCD Control and RS-232 communication, Universal power supply 100-240 VAC, 50-60 Hz	
AV0-7136	Synergi Column Selector Installation Kit	
AV0-7039	Synergi Valve Repair Kit for 6-Column Selector	
	0	

Warranty: All Synergi Column Selectors are warranted for one year parts and labor.

 Call your technical representative for more information on individual systems and your specific requirements.

2. All units supplied with 10-32 threaded PEEK nuts and ferrules for all ports, 3.5m (12ft) of ¼e" OD PEEK tubing, power line cord (please specify) and RS-232 interface cable. The selectors are stainless steel and include 4 line BCD control, with port for RS-232 communication, Universal power supply 100-240 VAC, 50-60 Hz. Serial cable and software not included. In order to control the Column Selector via the ChemStation software, Agilent 1100 Systems require the additional purchase (from Phenomenex or Agilent) of a BCD Board (Agilent P/N G1351-68701) and External Contact Cable (Agilent P/N G1103-61611).

Phenomenex • Website: www.phenomenex.com

Synergi ORDERING INFORMATION

COLUMNS

MercuryMS LC/MS Cartridges* (mm) 10 x 2 0 10 x 4 0 20 x 2 0 20 x 4 0									
		10 X 2.0	10 X 2.0 10 X 4.0		20 X 4.0				
2μ	Phase				_				
2μ Synergi	Phase Fusion-RP	00N-4423-B0-CE	00N-4423-D0-CE	00M-4423-B0-CE	00M-4423-D0-CE				
2µ Synergi Synergi	Phase Fusion-RP Max-RP	00N-4423-B0-CE 00N-4372-B0-CE	00N-4423-D0-CE 00N-4372-D0-CE	00M-4423-B0-CE 00M-4372-B0-CE	00M-4423-D0-CE 00M-4372-D0-CE				

*Requires MercuryMS cartridge holder

4μ Capillary Columns (mm)								
	50 x 0.30	150 x 0.30	250 x 0.30	50 x 0.50	150 x 0.50	250 x 0.50		
Max-RP Hydro-RP	I 00B-4337-AC 00B-4375-AC	I 00F-4337-AC 00F-4375-AC	l 00G-4337-AC 00G-4375-AC	l 00B-4337-AF 00B-4375-AF	l 00F-4337-AF 00F-4375-AF	I 00G-4337-AF 00G-4375-AF		

MercuryMS[™] LC/MS CARTRIDGES PACKED WITH 2µ SYNERGI



The direct-connect holder is designed to interface with your MS, detector or automated switching valve to maximize system efficiency.

Direct-Con	nect Cartridge Holders	
Order No.	Description	Price
CHO-7187 CHO-7188	10mm direct-connect holder 20mm direct-connect holder	

4µ Microbor	e Columns (mm	I)	
	50 x 1.0	150 x 1.0	250 x 1.0
Fusion-RP Max-RP Hydro-RP	II 00B-4337-A0 00B-4375-A0	00F-4424-A0 00F-4337-A0 00F-4375-A0	1 00G-4424-A0 00G-4337-A0 00G-4375-A0

4μ Minibore Columns (mm) SecurityGuard™ Cartridges require universal holder. Order No SecurityGuard™ Cartridges require universal holder. Order No								
	30 x 2.0	50 x 2.0	75 x 2.0	150 x 2.0	250 x 2.0	4 x 2.0mm /10pk	4 x 3.0mm /10pk	
Fusion-RP Max-RP Hydro-RP Polar-RP	I 00A-4424-B0 I 00A-4337-B0 00A-4375-B0 00A-4336-B0	00B-4424-B0 00B-4337-B0 00B-4375-B0 00B-4336-B0	1 00C-4424-B0 00C-4337-B0 00C-4375-B0 00C-4336-B0	l 00F-4424-B0 00F-4337-B0 00F-4375-B0 00F-4336-B0	l 00G-4424-B0 00G-4337-B0 00G-4375-B0 00G-4336-B0	AJ0-7556 AJ0-6073 AJ0-7510 AJ0-6075 for ID: 2.0-3.0mm	AJ0-7557 AJ0-6074 AJ0-7511 AJ0-6076 3.2-8.0mm	

4μ Narrow Bore Columns (mm) SecurityGuard [™] Cartri										
	30 x 3.0	50 x 3.0	75 x 3.0	150 x 3.0	250 x 3.0	4 x 2.0mm /10pk	4 x 3.0mm /10pk			
Fusion-RP Max-RP Hydro-RP Polar-RP	1 00A-4424-Y0 1 00A-4337-Y0 00A-4375-Y0 00A-4336-Y0	00B-4424-Y0 00B-4337-Y0 00B-4375-Y0 00B-4336-Y0	l 00C-4424-Y0 00C-4337-Y0 00C-4375-Y0 00C-4336-Y0	1 00F-4424-Y0 00F-4337-Y0 00F-4375-Y0 00F-4336-Y0	l 00G-4424-Y0 00G-4337-Y0 00G-43375-Y0 00G-4336-Y0	AJ0-7556 1 AJ0-6073 AJ0-7510 AJ0-6075 for JD: 2.0-3 0mm	AJ0-7557 AJ0-6074 AJ0-7511 AJ0-6076 3.2-8.0mm			

4µ Analytical Columns (mm)							I [™] Cartridges
	30 x 4.6	50 x 4.6	75 x 4.6	150 x 4.6	250 x 4.6	4 x 2.0mm /10pk	4 x 3.0mm /10pk
Fusion-RP I Max-RP Hydro-RP Polar-RP	00A-4424-E0 00A-4337-E0 00A-4375-E0 00A-4336-E0	1 00B-4424-E0 00B-4337-E0 00B-4375-E0 00B-4336-E0	l 00C-4424-E0 00C-4337-E0 00C-4375-E0 00C-4336-E0	1 00F-4424-E0 1 00F-4337-E0 00F-4375-E0 00F-4336-E0	00G-4424-E0 00G-4337-E0 00G-4375-E0 00G-4336-E0	AJ0-7556 AJ0-6073 AJ0-7510 AJ0-6075 for ID: 2.0.2 0mm	AJ0-7557 AJ0-6074 AJ0-7511 AJ0-6076



Standard Cartridge Holders					
Order No.	Description	Price			
CH0-5846 CH0-5845	10mm standard holder 20mm standard holder	1			

Synergi ORDERING INFORMATION

PREP / PROCESS AND BULK

4µ Semi-Pro	ep and Prepar	ative Column	Se	curityGuard™	Cartridges			
	250 x 10	250 x 15	50 x 21.2	100 x 21.2	150 x 21.2	250 x 21.2	250 x 30	10 x 10mm* /3pk
Fusion-RP Max-RP Hydro-RP Polar-RP	1 00G-4424-N0 1 00G-4337-N0 00G-4375-N0 00G-4336-N0	00G-4424-AK 00G-4337-AK 00G-4375-AK 00G-4336-AK	00B-4424-P0 00B-4337-P0 00B-4375-P0 00B-4336-P0	1 00D-4424-P0 00D-4337-P0 00D-4375-P0 00D-4336-P0	1 00F-4424-P0 00F-4337-P0 00F-4375-P0 00F-4336-P0	1 00G-4424-P0 00G-4337-P0 00G-4375-P0 00G-4336-P0	00G-4424-U0 00G-4337-U0 00G-4375-U0 00G-4336-U0	AJ0-7558 AJ0-7275 AJ0-7221 AJ0-7276 for ID: 9-16mm

10µ Analytic	cal, Semi-Pre	p, Preparativo	tive and Pilot Scale Columns (mm) SecurityGuard [™] Car				
	250 x 4.6	250 x 10	250 x 15	250 x 21.2	250 x 30	250 x 50	10 x 10mm* /3pk
Fusion-RP Max-RP Hydro-RP Polar-RP	00G-4425-E0 00G-4350-E0 00G-4376-E0 00G-4351-E0	I 00G-4425-N0 I 00G-4350-N0 00G-4376-N0 00G-4351-N0	00G-4425-AK 00G-4350-AK 00G-4376-AK 00G-4351-AK	00G-4425-P0 00G-4350-P0 00G-4376-P0 00G-4351-P0	00G-4425-U0 00G-4350-U0 00G-4376-U0 00G-4351-U0	I 00G-4425-V0 00G-4350-V0 00G-4376-V0 00G-4351-V0	AJ0-7558 AJ0-7275 AJ0-7221 AJ0-7276

* Requires Holder, Order No.: AJ0-7220

10µ Bulk Pac	kings		
	100g	1kg	5kg
Fusion-RP Max-RP Hydro-RP Polar-RP	04G-4425 04G-4350 04G-4376 04G-4351	04K-4425 04K-4350 04K-4376 04K-4351	04L-4425 04L-4350 04L-4376 04L-4351

Larger quantities of bulk media available upon request.





Improve Reproducibility with a Column Heater, Use a ThermaSphere[™] TS-130

- Improves chromatographic reproducibility
- Improves method ruggedness
- Improves peak efficiency and analyte quantitation

ORDERING INFORMATION

Order No.	Description	Price
EH0-7057	ThermaSphere TS-130 HPLC Column Heater 25-80°C 95 to 265 VAC, 50/60 Hz	
EH0-7058	Stand for ThermaSphere TS-130 HPLC Column Heater	

1. The ThermaSphere TS-130 is warranted for one year parts and labor. Each unit is individually calibrated and comes with a Certificate of Performance. No adjustment or re-calibration is ever neccessary. CE approved, UL and CSA approval pending.

2. Please specify Line Cord if other than U.S. (Australia, Germany, Italy and U.K. are available)



If you are not completely satisfied with the performance of your new TS-130 column heater, simply return the unit within 60 days of purchase for A FULL REFUND.



15% (Any single) TS-130

TECHNICAL SPECIFICATIONS

Column Sizes Accommodated Fits up to one 30cm length column, or 25cm column with guard column. Multiple inlet and outlet slots allow the shortest length of tubing to be used with any length column.

CE

Temperature Range From 25 to 80°C in 0.1°C increments.

Temperature Stability $\pm 0.1^{\circ}$ C Calibration two point, electronic, factory set. (Never needs re-calibration).

Power 12 volts DC universal power supply takes voltage inputs from 95 VAC to 265 VAC, 50/60 Hz. CE approved.

guarantee

If Synergi does not provide an equivalent separation as compared to a competing column of the similar particle size, similar phase and dimensions, send in your comparative data within 45 days and KEEP THE SYNERGI COLUMN FOR FREE PRINTED MATTER

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Ultra-Performance LC Columns**



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