

ProductProfile

Discovery LC-MS Columns

Rugged HPLC Columns for Fast LC-MS Analysis



The Discovery® LC-MS line offers short length (2 and 3cm) columns for fast LC-MS analysis that are rugged and dependable. Supelco offers a robust product that withstands column shock due to fast gradient turnaround times.

Columns installed on LC-MS instruments are typically operated using gradients of 10%-90% organic with gradient cycle times of 2-3 minutes. Our column lifetime is maximized through the use of stable bonding chemistry, high purity silica and optimal proprietary packing procedures.

The Discovery line of HPLC columns offers excellent retentivity, selectivity and reproducibility for optimal results. LC-MS formats are available with Discovery C18, C8 and Cyano phases.

Discovery LC-MS Columns Deliver...

- High speed separations
- Excellent peak shape
- Demonstrated ruggedness, stability and reproducibility
- Excellent LC-MS bleed characteristics

High Speed Separations

Rifampicin on Discovery C18

Column 1: Discovery C18, 15cm x 2.1mm ID, 5µm particles
Cat. No.: 50495521

Column 2: Discovery C18, 2cm x 2.1mm ID, 5µm particles
Cat. No.: 577507-U

Mobile Phase: 60:40, 33mM HCO₂H:CH₃CN

Flow Rate: 0.2mL/min

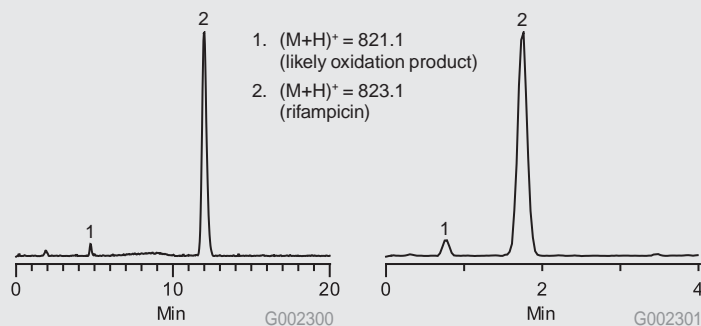
Temp.: 35°C

Det.: ESI (+), full scan

Inj.1: 6µL

Inj.2: 0.8µL

Sample: 10mg/L in 50% CH₃OH



Product Specifications

All Phases - C18, C8, and Cyano			
Silica:	Spherical, high purity (Fe <20; NA <7; Ca <7; Ti <1; Al <1; Mg <1ppm)		
Particle Size:	5µm		
Pore Size:	180Å		
Surface Area:	200m ² /g		
	C18	C8	Cyano
Bonded Phase:	Octadecylsilane	Octylsilane	Cyanopropylsilane
Endcapped:	Yes	Yes	Yes
Loading (Carbon)	12%	7.5%	4.5%
Surface Coverage	3µmoles/m ²	3.4µmoles/m ²	3.5µmoles/m ²

Excellent Peak Shape

Veterinary Antibiotics on Discovery C18 and C8 Columns

Column 1: Discovery C18, 2cm x 2.1mm ID, 5µm particles

Cat. No.: 577507-U

Column 2: Discovery C8, 2cm x 2.1mm ID, 5µm particles

Cat. No.: 577501-U

Mobile Phase 1: 25:75, 40mM HOAC/NH₄OH (pH6.0):CH₃OH

Mobile Phase 2: 30:70, 33mM HOAC/NH₄OH (pH6.0):CH₃OH

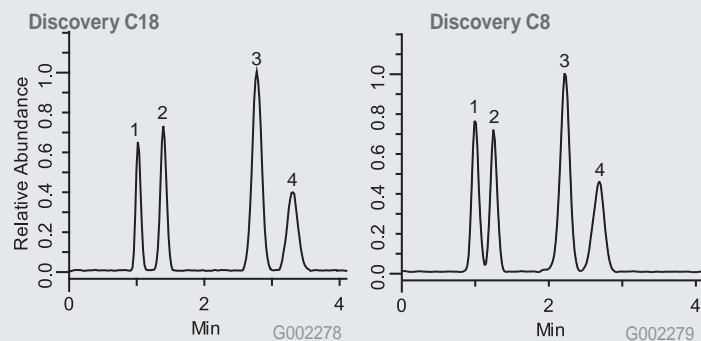
Flow Rate: 0.2mL/min

Temp.: 65°C

Inj.: 1µL

Det.: ESI(-)

1. Lasalocid A (1µg/mL)
2. Monensin (10µg/mL)
3. Salinomycin (10µg/mL)
4. Narasin (5µg/mL)





Mechanical Stability After Ballistic Gradient Testing

The Supelco Discovery LC-MS HPLC columns are rigorously tested in order to provide the highest mechanical stability under repeated gradient cycles. **Table 1** shows of the impact on column efficiency, peak shape, retention times and back pressure after 1000 cycles of a 2-minute rapid (ballistic) gradient with 1-minute equilibration period.

There is no loss of column efficiency or increase in tailing or column backpressure, and no change in retention time. Test conditions are available on our website, sigma-aldrich.com/supelco

Table 1. Test Results from Rapid Gradient Turnaround Testing of Discovery LC-MS HPLC Columns

Discovery Phase	Efficiency	USP Tailing Factor	Retention	Pressure
C18 (3cm x 3.0mm ID)				
Before stability test	2792	1.04	1.989	39 bar
After stability test	2899	1.09	1.985	41 bar
C8 (2cm x 2.1mm ID)				
Before stability test	1451	1.05	1.767	26 bar
After stability test	1507	1.09	1.761	25 bar
Cyano (3cm x 4.6mm ID)				
Before stability test	3329	1.01	1.368	44 bar
After stability test	3448	1.01	1.362	40 bar

Excellent LC-MS Bleed Characteristics

Mass spectral responses from background ions often inhibit both qualitative and quantitative analysis in LC-MS experiments. Common sources of background ions include the solvents, interface or system contamination and HPLC column bleed. The presence of background ions can be reduced by using high quality solvents such as LC-MS CHROMASOLV® from Riedel-de Haën, maintaining a clean LC-MS system and by using high quality HPLC stationary phases from Supelco.

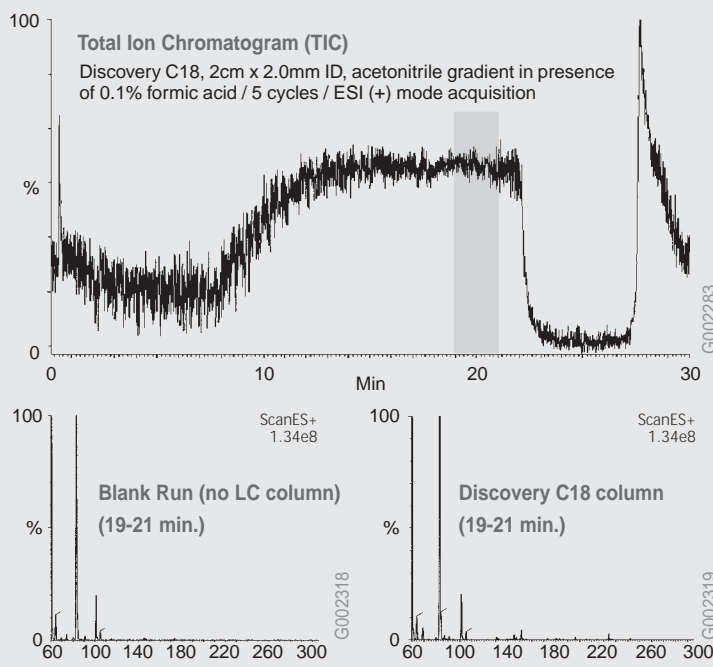
Supelco utilizes technologically advanced bonding chemistry and highly purified silica to minimize the potential for column bleed.

LC-MS Bleed Analysis

The Total Ion Chromatogram (TIC) shows the result from an ESI (+) detector of one gradient cycle with a Discovery C18, 2cm x 2.0mm ID column in-line. The two bottom figures show the mass spectrum taken from the shaded region of the TIC (at the high organic content point in

the gradient). The right-hand figure shows that the Discovery C18 column does not introduce any additional masses that were not in the blank run. The Discovery C18 column is low bleed for LC-MS analyses.

LC-MS Bleed Study



Ordering Information

Phase	ID (mm)	Length (cm)	Cat. No.
5µm Discovery C8 Columns	2.1	2	577501-U
	2.1	3	577502-U
	3.0	2	577503-U
	3.0	3	577504-U
	4.6	2	577505-U
	4.6	3	577506-U
5µm Discovery C18 Columns	2.1	2	577507-U
	2.1	3	577508-U
	3.0	2	577509-U
	3.0	3	577510-U
	4.6	2	577511-U
	4.6	3	577512-U
5µm Discovery Cyano Columns	2.1	2	577513-U
	2.1	3	577514-U
	3.0	2	577515-U
	3.0	3	577516-U
	4.6	2	577517-U
	4.6	3	577518-U

Trademarks

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