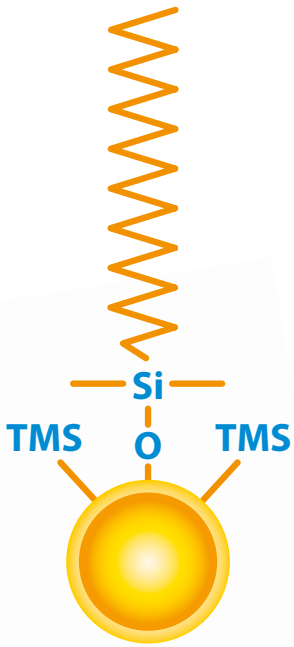
Stationary Phase: **C18**

Raptor™ LC Columns

Selectivity Accelerated

Raptor™ Speed, Efficiency, and Ruggedness—in C18



RESTEK® Pure Chromatography BGB GC | LC MS | CE

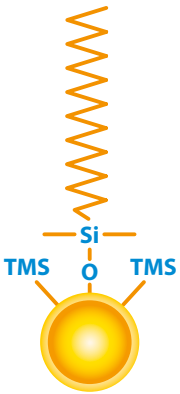
The Raptor™ C18 Column

With Raptor™ LC columns, Restek chemists became the first to combine the speed of superficially porous particles (also known as SPP or "core-shell" particles) with the resolution of highly selective USLC® technology. This new breed of chromatographic column allows you to more easily achieve peak separation and faster analysis times without expensive UHPLC instrumentation.

Even though every LC lab has a cache of C18s, not every C18 is created equal. Because the chemistry tends to be similar, the silica support that carries this ubiquitous octadecylsilane phase becomes vitally important. When you need a general-purpose LC column, don't just grab any C18. Choose the speed, efficiency, and long-lasting ruggedness of the new Raptor™ C18 SPP LC column.

The traditional end-capped Raptor™ C18 offers the highest hydrophobic retention of any Raptor™ phase, and it is compatible with a wide range of mobile phases from moderately acidic to neutral (pH 2–8). Whether for food safety, environmental or bioanalytical analyses, this new phase offers consistently excellent data quality in less time across myriad reversed-phase applications, matrices, and compound classes.

Column Description:



Stationary Phase Category:
C18, octadecylsilane (L1)

Ligand Type:
End-capped C18

Particle:
2.7 µm or 5 µm superficially porous silica (SPP or "core-shell")

Pore Size:
90 Å

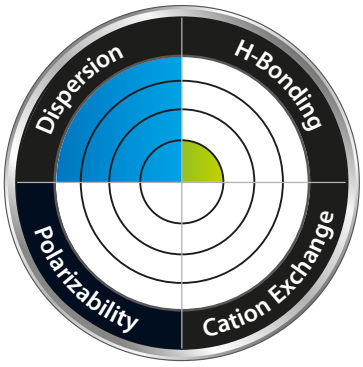
Surface Area:
150 m^2/g (2.7 µm)
or 100 m^2/g (5 µm)

Recommended Usage:
pH Range: 2.0–8.0
Maximum Temperature: 80 °C
Maximum Pressure: 600 bar / 8,700 psi (2.7 µm)
or 400 bar / 5,800 psi (5 µm)

Properties:
- Compatible with moderately acidic to neutral mobile phases (pH 2–8).
- Excellent data quality in food, environmental, bioanalytical, and other applications.

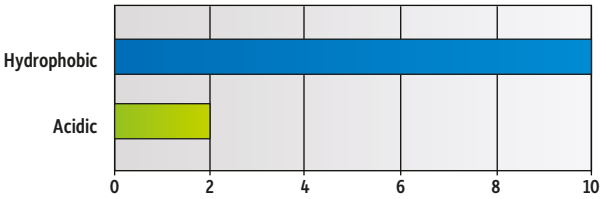
Switch to a C18 when:
- You need a general-purpose column for reversed-phase chromatography.
- You need to increase retention of hydrophobic compounds.

Column Interaction Profile:



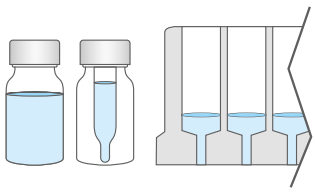
Defining Solute Interaction:
• Dispersion

Solute Retention Profile:

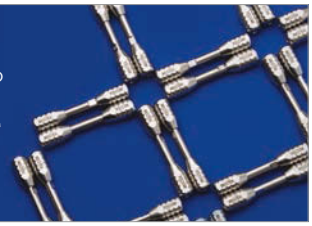


Target Analyte Structure:
• Hydrocarbons

Target Analyte Functionalities:
• Hydrophobic compounds



Part of the USLC® column set!
RESTEK® USLC®
Ultra Selective Liquid Chromatography™
Learn more about USLC® technology, phase profiles, and more at **www.restek.com/uslc**



Raptor™ C18 Performance: Speed, Efficiency, and Ruggedness in Action

Raptor™ C18 columns provide outstanding dependability and data quality with high efficiency and peak symmetry, and they are built to exacting specifications that make your columns exceptionally consistent and improve their lifetime. To lower costs and improve profitability, you need columns to last longer, data to be reproducible, and existing HPLC instrumentation to run faster. Get there with the only general-purpose C18 that gives you *Selectivity Accelerated.*

Figure 1: Even at high pressures, long-lasting Raptor™ C18 columns maintain their stability and efficiency, so you can operate at higher linear velocities to achieve fast, accurate separations without UHPLC.

Stable at high pressures for faster run times

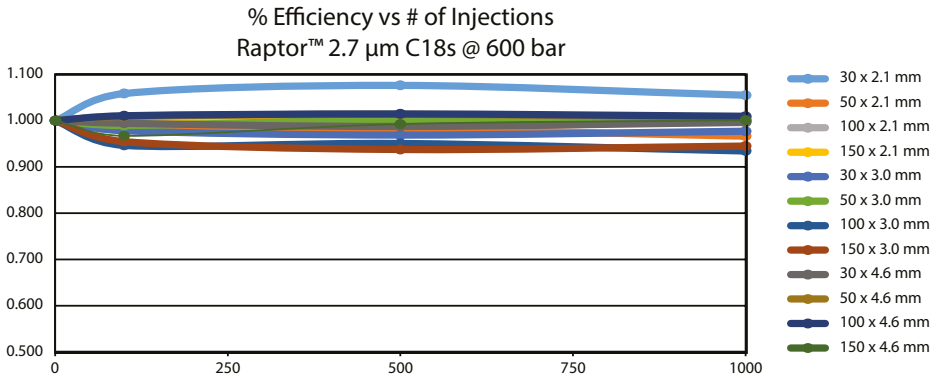
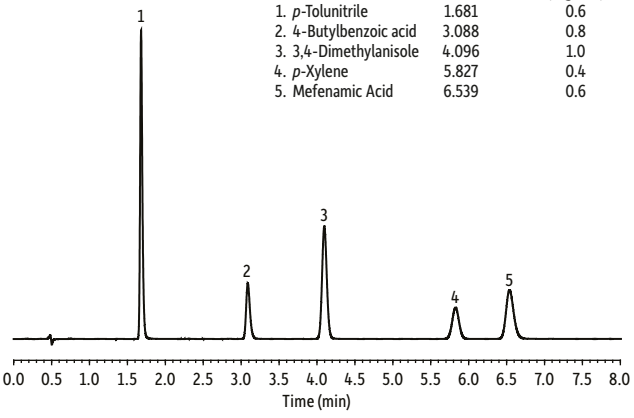


Figure 2: Raptor™ columns' stringent quality control (QC) specifications guarantee outstanding peak shape, even with active compounds, for superior data quality.

Outstanding peak shapes for top-notch data

Peaks	tR (min)	Conc. (mg/mL)
1. *p*-Tolunitrile	1.681	0.6
2. 4-Butylbenzoic acid	3.088	0.8
3. 3,4-Dimethylanisole	4.096	1.0
4. *p*-Xylene	5.827	0.4
5. Mefenamic Acid	6.539	0.6

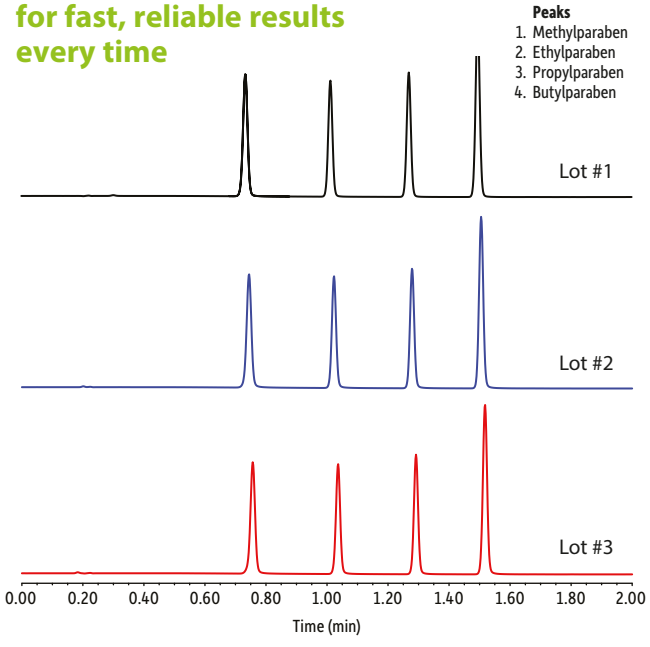


LC_GN0557

Column: Raptor™ C18 (cat.# 9304A1E); Dimensions: 100 mm x 3 mm ID; Particle Size: 2.7 µm; Pore Size: 90 Å; Temp.: 30 °C; **Sample:** Diluent: Acetonitrile:water:phosphoric acid (65:34:1); Inj. Vol.: 1 µL; **Mobile Phase:** A: 0.05% Formic acid in water, B: 0.05% Formic acid in acetonitrile; **Gradient (%B):** 0.00 min (45% B), 8.00 min (45% B); **Flow:** 0.8 mL/min; **Detector:** UV/Vis @ 220 nm; Cell Temp: 40 °C; **Instrument:** HPLC.

Figure 3: Lot-to-lot reproducibility is the key to keeping your productivity high and budget low. You can expect the same exceptional performance from every Raptor™ C18 column you purchase.

Lot-to-lot reproducibility for fast, reliable results every time



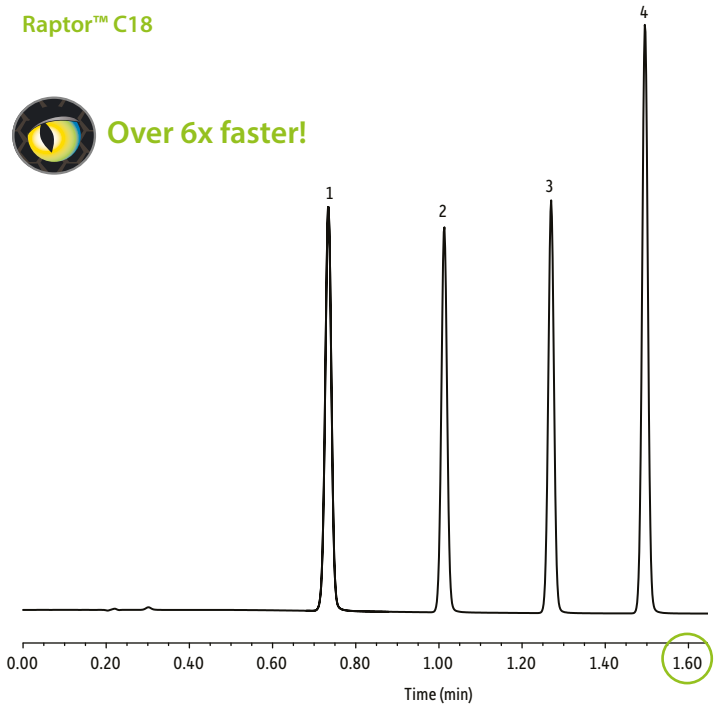
LC_PH0532

Column: Raptor™ C18 (cat.# 9304512); Dimensions: 100 mm x 2.1 mm ID; Particle Size: 5 µm; Temp.: 40 °C; **Sample:** Conc.: 100 µg/mL in water; Inj. Vol.: 1 µL; **Mobile Phase:** A: Water, B: Acetonitrile; **Gradient** (%B): 0.00 min (20% B), 2.00 min (80% B), 2.01 min (20% B), 3.50 min (20% B); **Flow:** 1.0 mL/min; **Detector:** PDA @ 254 nm; **Instrument:** UHPLC.

Boost Your Productivity with Raptor™ C18 Columns

When developing an assay, it is important to consider how productive your method will be. Because superficially porous, or core-shell, particles are well known for very high efficiency with minimal backpressure, they are ideal for decreasing analysis time on your current instrumentation (Figure 4). With its general-purpose applicability and SPP core-shell particles, the Raptor™ C18 column lets you quickly develop faster methods with existing LCs, thereby boosting your productivity without breaking your budget.

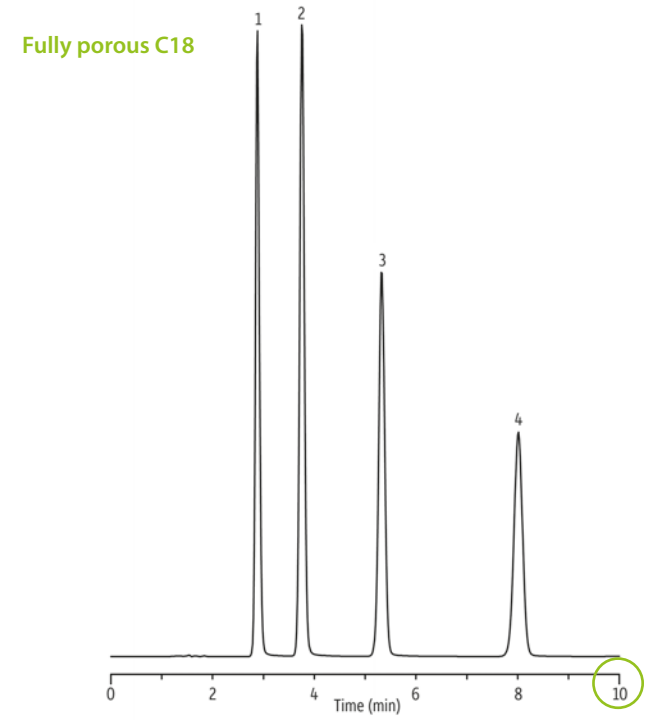
Figure 4: Switching from a conventional 5 µm fully porous particle column to a Raptor™ SPP column allows you to optimize method conditions and significantly reduce analysis time.



Peaks	t_R (min)
1. Methylparaben	0.73
2. Ethylparaben	1.01
3. Propylparaben	1.27
4. Butylparaben	1.50

Column: Raptor™ C18 (cat.# 9304512); Dimensions: 100 mm x 2.1 mm ID; Particle Size: 5 µm; Temp.: 40 °C; **Sample:** Conc.: 100 µg/mL in water; Inj. Vol.: 1 µL; **Mobile Phase:** A: Water B: Acetonitrile; **Gradient (%B):** 0.00 min (20% B), 2.00 min ;(80% B), 2.01 min (20% B), 3.50 min (20% B); **Flow:** 1.0 mL/min; **Detector:** PDA @ 254 nm; **Instrument:** UHPLC.

LC_PH0531



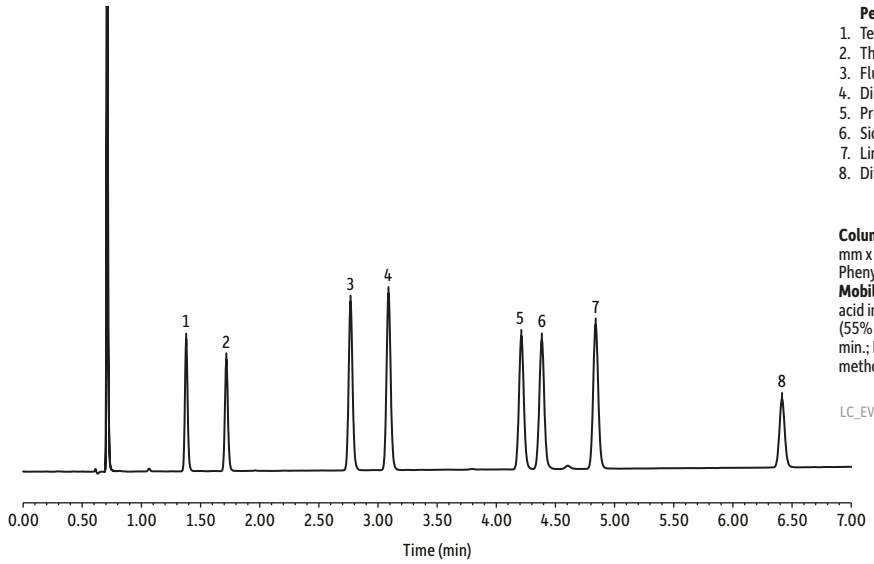
Peaks	t_R (min)
1. Methylparaben	2.90
2. Ethylparaben	3.77
3. Propylparaben	5.34
4. Butylparaben	8.03

Column: Traditional fully porous C18; Dimensions: 150 mm x 4.6 mm ID; Particle Size: 5 µm; Pore Size: 100 Å; Temp.: Ambient; **Sample:** Diluent: Methanol; Conc.: 100 µg/mL each component; Inj. Vol.: 5 µL; **Mobile Phase:** 0.1% Acetic acid in water:acetonitrile (50:50); Flow: 1.0 mL/min; **Detector:** UV/Vis @ 254 nm.

Your New Go-To Column for Fast and Dependable Analyses on Any Instrument

C18 columns are often a method developer's first choice, not only for their trusted performance, but also for their effectiveness with many types of compound and instrument. The Raptor™ C18 was designed to build on that foundation, offering usability, peak symmetry, efficiency, and dependability—with the unmatched reproducibility, speed, and reliability of a Raptor™ SPP LC column. Whether you are doing environmental, food safety, or bioanalytical work, you will finish your work faster if you choose the right column the first time. For general-purpose applications, the Raptor™ C18 is your best first choice.

Figure 5: Get the data quality and short analysis times you need with Raptor™ C18 columns, as shown here with phenylurea herbicides on a photodiode array (PDA) detector.

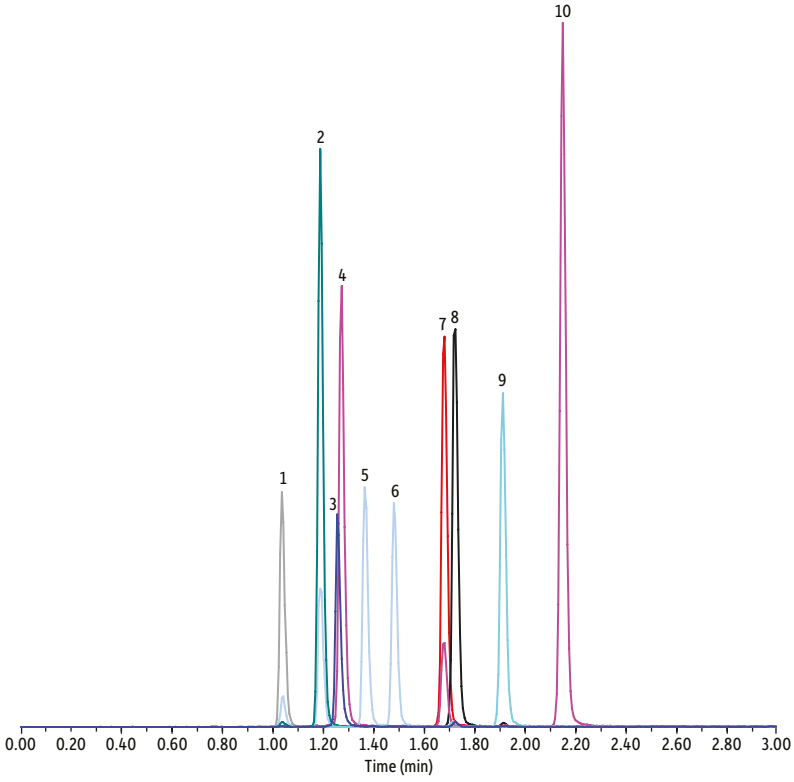


	Peaks	t_R (min)
1.	Tebuthiuron	1.38
2.	Thidiazuron	1.72
3.	Fluometuron	2.77
4.	Diuron	3.09
5.	Propanil	4.21
6.	Siduron	4.39
7.	Linuron	4.84
8.	Diflubenzuron	6.42

Column: Raptor™ C18 (cat.# 9304565); Dimensions: 150 mm x 4.6 mm ID; Particle Size: 5 µm; Temp.: 30 °C; **Sample:** Phenylurea pesticide mixture (cat.# 32434); Inj. Vol.: 2 µL; **Mobile Phase:** A: 0.1% Formic acid in water; B: 0.1% Formic acid in acetonitrile; **Gradient (%B)** 0.00 min (30% B), 7.00 min (55% B), 7.01 min (30% B), 10.00 min (30% B), **Flow:** 2 (mL/min.; **Detector:** PDA @ 245 nm; **Instrument:** HPLC; **Notes:** This method is not EPA 532 tested or compliant.

LC_EV0533

Figure 6: Raptor™ C18s offer exceptional peak symmetry and efficiency for high sensitivity and very low bleed—making them ideal for high-throughput LC-MS/MS.



	Peaks	t_R (min)	Precursor Ion	Product Ion
1.	Rutin	1.04	611.5	303.3
2.	Quercitrin	1.19	449.4	303.3
3.	Myricetin	1.26	319.3	153.2
4.	Fisetin	1.27	287.3	137.3
5.	Morin	1.36	303.3	153.2
6.	Quercetin	1.48	303.3	153.2
7.	Kaempferol	1.68	287.3	153.2
8.	Isorhamnetin	1.72	317.3	153.2
9.	Rhamnetin	1.91	317.3	123.3
10.	Galangin	2.15	271.3	153.2

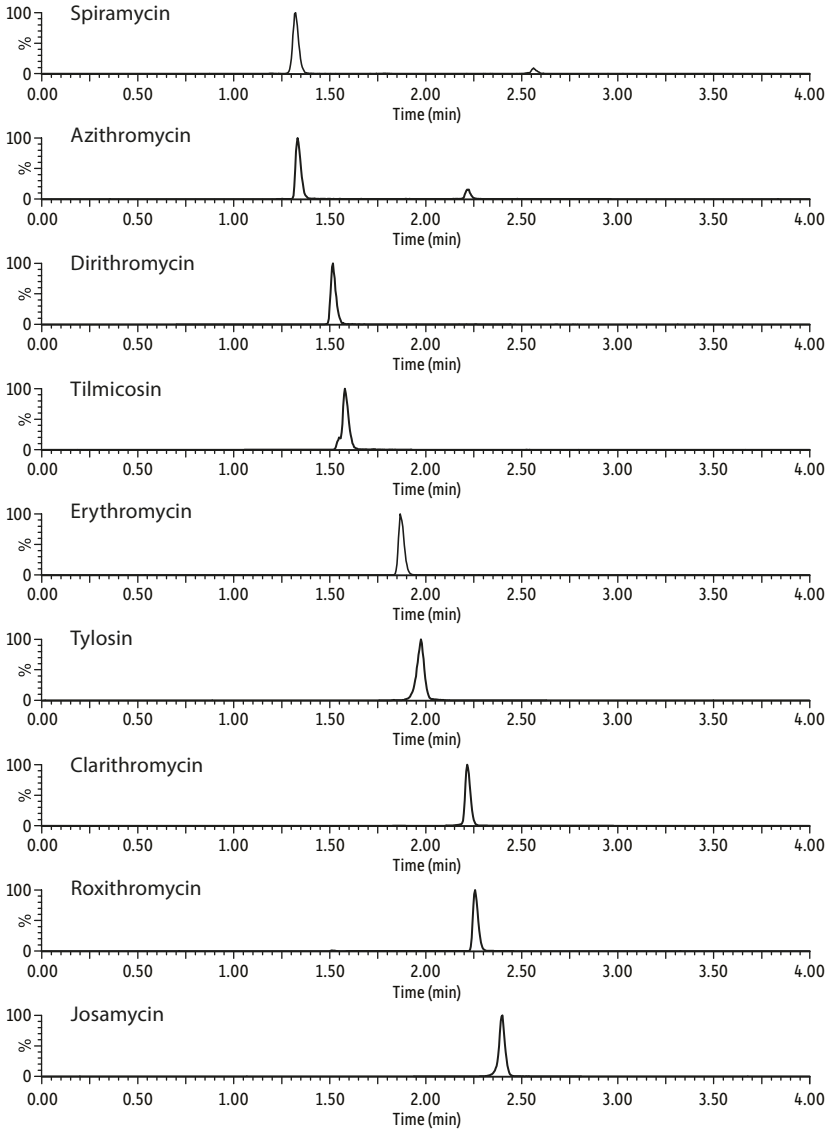
Column: Raptor™ C18 (cat.# 9304552); Dimensions: 50 mm x 2.1 mm ID; Particle Size: 5 µm; Pore Size: 90 Å; Temp.: 40 °C; **Sample:** Diluent: 90:10 (water:acetonitrile); Conc.: 500 ng/mL; Inj. Vol.: 5 µL; **Mobile Phase:** A: 0.1% Formic acid in water; B: 0.1% Formic acid in acetonitrile; **Gradient (%B):** 0.00 min (10% B), 2.40 min (70% B), 2.41 min (10% B), 3.50 min (10% B), **Flow:** 0.5 mL/min; **Detector:** MS/MS; Ion Mode: ESI+; **Instrument:** HPLC.

LC_FF0557

The Perfect Complement to High-Throughput Mass Spec

Fast LC-MS/MS screens with their exacting MRM transitions place severe demands on your LC column. The Raptor™ C18 can easily and dependably handle mass spec analysis of closely related compounds like macrolide antibiotics, which are widely used in human and veterinary medicine (Figure 7). Because it's a Raptor™ LC column, this C18 provides the reproducibility and consistent retention required for precise MRM analyses (see p. 3).

Figure 7: Confidently analyze closely eluting compounds, like macrolide antibiotics in this bioanalytical analysis, by LC-MS/MS.



Peaks	t_R (min)	Precursor Ion	Product Ion
1. Spiramycin	1.32	844.21	174.28
2. Azithromycin	1.33	750.14	591.83
3. Dirithromycin	1.52	836.26	158.23
4. Tilmicosin	1.58	870.23	174.29
5. Erythromycin	1.87	735.09	158.23
6. Tylosin	1.98	917.26	174.28
7. Clarithromycin	2.22	749.11	158.22
8. Roxithromycin	2.26	838.21	158.23
9. Josamycin	2.40	829.15	109.18

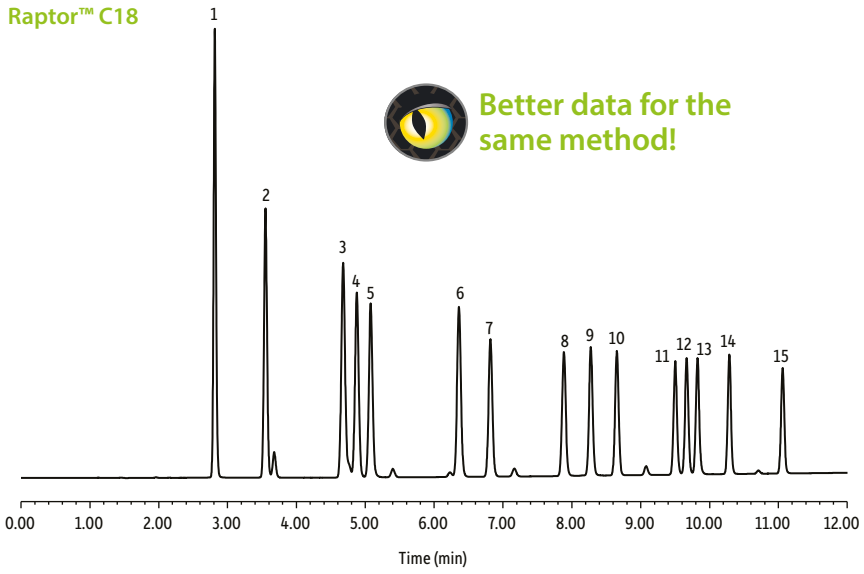
Column: Raptor™ C18 (cat.# 9304512); Dimensions: 100 mm x 2.1 mm ID; Particle Size: 5 µm; Pore Size: 90 Å; Temp.: 40 °C; **Sample:** Diluent: Water:acetonitrile (50:50); Conc.: 100 ng/mL; Inj. Vol.: 5 µL; **Mobile Phase:** A: 0.1% Formic acid in water; B: 0.1% Formic acid in acetonitrile; **Gradient (%B)** 0.00 min (20% B), 3.00 min (65% B), 3.01 min (20% B), 4.50 min (20% B), **Flow:** 0.4 mL/min; **Detector:** MS/MS; Ion Mode: ESI+; **Instrument:** UHPLC.

Improve Resolution on Your Current Methods

To quickly improve your data quality without altering conditions, add a Raptor™ C18 SPP column to your existing C18 methods. As exemplified in Figure 8 with EPA method TO-11A, which determines toxic compounds in ambient air, the Raptor™ C18 offers better peak separation than a traditional fully porous C18 under the same conditions. Going a step further, the improved analyte resolution of the Raptor™ C18 column gives you the freedom to further optimize your conditions and accelerate analysis times when permitted by method requirements.

Figure 8: Make a good method even better with improved resolution by switching your traditional fully porous C18 for a Raptor™ C18 column.

Raptor™ C18



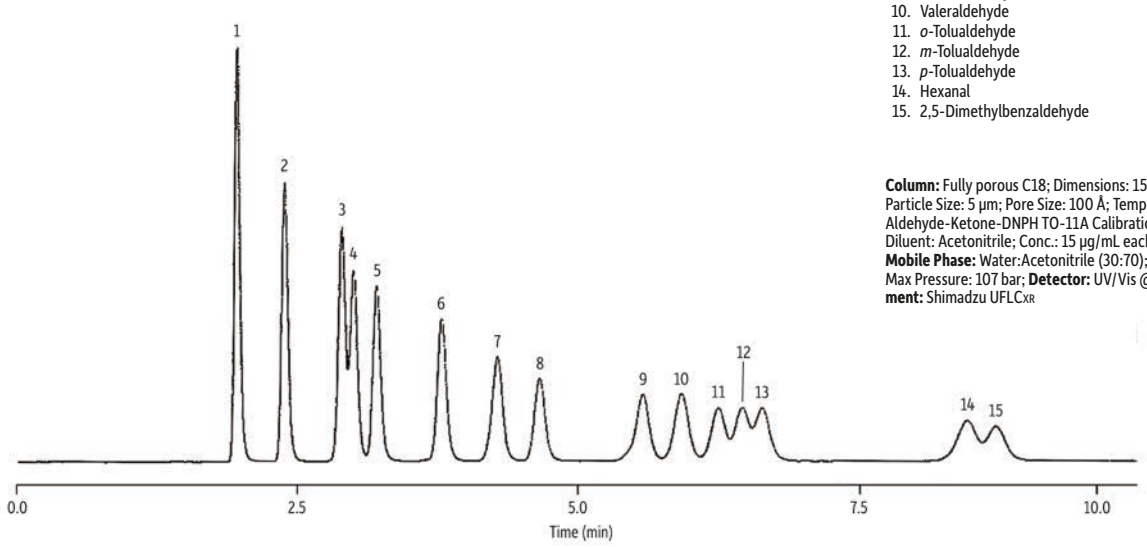
Better data for the same method!

Peaks	t_R (min)
1. Formaldehyde	2.814
2. Acetaldehyde	3.551
3. Acrolein	4.678
4. Acetone	4.877
5. Propionaldehyde	5.078
6. Crotonaldehyde	6.361
7. Butyraldehyde	6.818
8. Benzaldehyde	7.884
9. Isovaleraldehyde	8.276
10. Valeraldehyde	8.653
11. *o*-Tolualdehyde	9.502
12. *m*-Tolualdehyde	9.667
13. *p*-Tolualdehyde	9.825
14. Hexanal	10.287
15. 2,5-Dimethylbenzaldehyde	11.064

Column: Raptor™ C18 (cat.# 9304A65); Dimensions: 150 mm x 4.6 mm ID; Particle Size: 2.7 µm; Pore Size: 90 Å; Temp.: 30 °C; **Sample:** Aldehyde-ketone-DNPH TO-11A calibration mix (cat.# 31808); Diluent: Acetonitrile; Conc.: 15 µg/mL; Inj. Vol.: 2 µL; **Mobile Phase:** A: Water; B: Methanol: acetonitrile (650:50)*; **Gradient (%B)** 0.00 min (70% B), 5.00 min (75% B), 11.00 min (90% B), 11.01 min (100% B), 12.00 min (100% B), 12.01 min (70% B), 14.00 min (70% B), **Flow:** 0.8 mL/min; **Detector:** UV/Vis @ 365, 4.8 nm; **Instrument:** UHPLC; **Notes:** *Mobile phase B was prepared by combining 650 mL methanol and 50 mL acetonitrile.

LC_EV0532

Fully porous C18



Peaks	t_R (min)
1. Formaldehyde	1.954
2. Acetaldehyde	2.376
3. Acrolein	2.884
4. Acetone	2.987
5. Propionaldehyde	3.190
6. Crotonaldehyde	3.777
7. Butyraldehyde	4.273
8. Benzaldehyde	4.653
9. Isovaleraldehyde	5.572
10. Valeraldehyde	5.919
11. *o*-Tolualdehyde	6.242
12. *m*-Tolualdehyde	6.454
13. *p*-Tolualdehyde	6.634
14. Hexanal	8.450
15. 2,5-Dimethylbenzaldehyde	8.715

Column: Fully porous C18; Dimensions: 150 mm x 4.6 mm ID; Particle Size: 5 µm; Pore Size: 100 Å; Temp.: 25 °C; **Sample:** Aldehyde-Ketone-DNPH TO-11A Calibration Mix (cat.# 31808); Diluent: Acetonitrile; Conc.: 15 µg/mL each; Inj. Vol.: 10 µL; **Mobile Phase:** Water:Acetonitrile (30:70); Flow: 1.5 mL/min; Max Pressure: 107 bar; **Detector:** UV/Vis @ 365, 1 nm; **Instrument:** Shimadzu UFLCXR

Lower Costs and Improve Profitability with the Only General-Purpose C18 That Gives You *Selectivity Accelerated*

Raptor™ C18 LC Columns

Length	2.1 mm cat.#	3.0 mm cat.#	4.6 mm cat.#
2.7 µm Columns			
30 mm	9304A32	9304A3E	9304A35
50 mm	9304A52	9304A5E	9304A55
100 mm	9304A12	9304A1E	9304A15
150 mm	9304A62	9304A6E	9304A65
5 µm Columns			
30 mm	—	930453E	—
50 mm	9304552	930455E	9304555
100 mm	9304512	930451E	9304515
150 mm	9304562	930456E	9304565
250 mm	—	—	9304575

Raptor™ EXP® Guard Cartridges

Protect your investment and extend the life of our already-rugged LC columns and change guard column cartridges by hand without breaking fluid connections—no tools needed!

EXP® Direct Connect Holder

Description	qty.	cat.#
EXP Direct Connect Holder for EXP Guard Cartridges (includes hex-head fitting & 2 ferrules)	ea.	25808

EXP® Reusable Fittings for HPLC & UHPLC

for 10-32 fittings and $^{1}/_{16}$" tubing

Effortlessly achieve 8,700+ psi HPLC seals by hand! (Wrench-tighten to 20,000+ psi.) Hybrid titanium/PEEK seal can be installed repeatedly without compromising your seal.

Description	qty.	cat.#
EXP Hand-Tight Fitting (Nut w/Ferrule)	ea.	25937
EXP Hand-Tight Fitting (Nut w/Ferrule)	10-pk.	25938
EXP Hand-Tight Nut (w/o Ferrule)	ea.	25939

Hybrid Ferrule U.S. Patent No. 8201854, Optimize Technologies. Optimize Technologies EXP Holders are Patent Pending. Other U.S. and Foreign Patents Pending. The Opti- prefix is a registered trademark of Optimize Technologies, Inc.

Raptor™ EXP® Guard Column Cartridges

Description	Particle Size	qty.	5 x 2.1 mm cat.#	5 x 3.0 mm cat.#	5 x 4.6 mm cat.#
Raptor C18 EXP Guard Cartridge	2.7 µm	3-pk.	9304A0252	9304A0253	9304A0250
Raptor C18 EXP Guard Cartridge	5 µm	3-pk.	930450252	930450253	930450250

Maximum cartridge pressure: 600 bar / 8,700 psi (2.7 µm) or 400 bar / 5,800 psi (5 µm)
Raptor™ SPP LC columns combine the speed of SPP with the resolution of USLC® technology.
Learn more at **www.restek.com/raptor**

Experience *Selectivity Accelerated*. Order the Raptor™ C18 today at **www.bgb-info.com/raptor**

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