



LC Columns

# **NEW!** Roc LC Columns: The Reliable Cornerstone for Your LC Lab

Conventional HPLC columns built for solid performance, exceptional value, and compact storage.

[www.restek.com/roc](http://www.restek.com/roc)



**RESTEK**<sup>®</sup>

Pure Chromatography

[www.restek.com](http://www.restek.com)

# Roc LC Columns

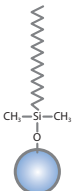
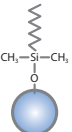
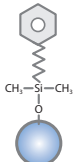
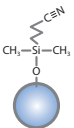
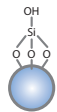
- Conventional HPLC column built to be the cornerstone for your lab; pressure rated for any 400 bar HPLC system.
- Solid and reliable—delivers the peak shape, reproducibility, ruggedness, and performance you demand.
- Exceptional value for routine analyses and large-volume workflows—high-purity, fully porous silica backed by quality manufacturing features a variety of phases to fit most HPLC methods.
- Ideal for a wide range of applications from food to pharma; 5 phases cover 98% of USP methods.
- Newly designed minimal packaging for compact storage—download serial #-specific certificates of analysis at [www.restek.com/documentation](http://www.restek.com/documentation)

Get more of what you want, and less of what you don't, with Roc LC columns from Restek.

Order today at [www.restek.com/roc](http://www.restek.com/roc)



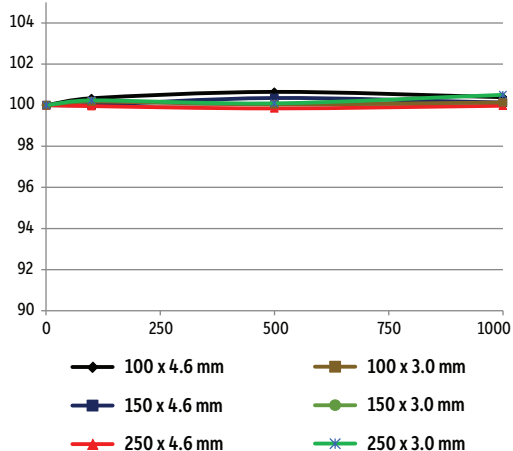
## Roc Family of LC Phases

	<b>C18</b>	<b>C8</b>	<b>Phenyl-Hexyl</b>	<b>Cyano</b>	<b>Silica</b>
					
<b>USP Phase Code</b>	L1	L7	L11	L10	L3
<b>Stationary Phase Category</b>	C18, octadecylsilane	C8, octylsilane	phenyl	cyano	bare silica
<b>Ligand Type</b>	monomeric C18	monomeric C8	phenyl-hexyl	cyanopropyl	n/a
<b>Particle Size</b>	3 µm or 5 µm, spherical	3 µm or 5 µm, spherical	3 µm or 5 µm, spherical	3 µm or 5 µm, spherical	3 µm or 5 µm, spherical
<b>Pore Size</b>	100 Å	100 Å	100 Å	100 Å	100 Å
<b>Surface Area</b>	300 m <sup>2</sup> /g	300 m <sup>2</sup> /g	300 m <sup>2</sup> /g	300 m <sup>2</sup> /g	300 m <sup>2</sup> /g
<b>Carbon Load</b>	20%	12%	15%	8%	n/a
<b>End-Cap</b>	yes	yes	yes	yes	n/a
<b>pH Range</b>	2.5 to 8.0	2.5 to 8.0	2.0 to 8.0	2.5 to 8.0	2.5 to 8.0
<b>Maximum Temperature</b>	80 °C	80 °C	80 °C	80 °C	80 °C

# Roc On with These Dependable LC Columns

**Figure 1:** Over 1,000 injections and Roc HPLC columns will still offer reliable performance, regardless of which dimension your method calls for.

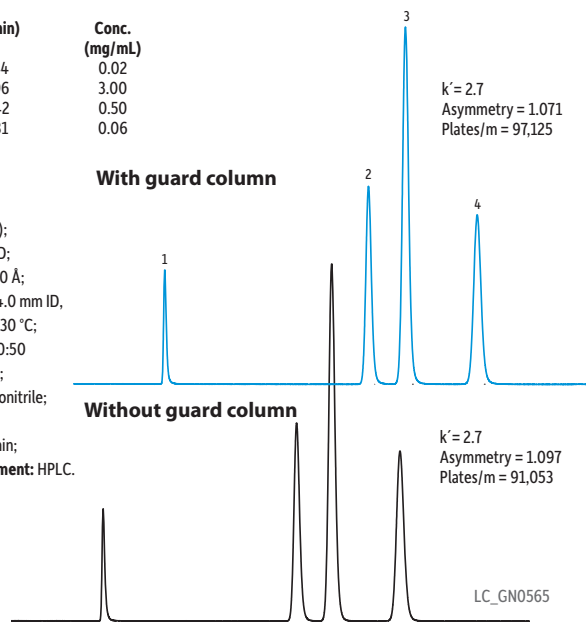
**% Efficiency vs # of Injections**  
Roc 5 µm C18s @ 375 bar



**Figure 2:** Add a Roc LC guard to further extend the life of your analytical column without impacting your retention, peak shape, or efficiency.

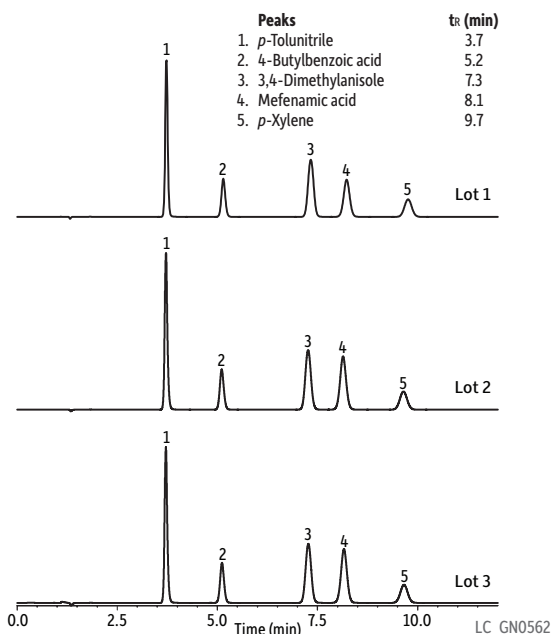
Peaks	tr (min)	Conc. (mg/mL)
1. Uracil	1.44	0.02
2. Toluene	3.96	3.00
3. Naphthalene	4.42	0.50
4. Biphenyl	5.31	0.06

**Column:** Roc C8 (cat.# 9533565); Dimensions: 150 mm x 4.6 mm ID; Particle Size: 5 µm; Pore Size: 100 Å;  
**Guard Column:** Roc C8 10 mm, 4.0 mm ID, 5 µm (cat.# 953350210); Temp.: 30 °C;  
**Sample:** Custom mix; Diluent: 50:50 Acetonitrile:water; Inj. Vol.: 2 µL;  
**Mobile Phase:** A: Water, B: Acetonitrile; Gradient (%B): 0.00 min (70%), 8.00 min (70%); Flow: 1.0 mL/min;  
**Detector:** UV @ 254 nm; **Instrument:** HPLC.



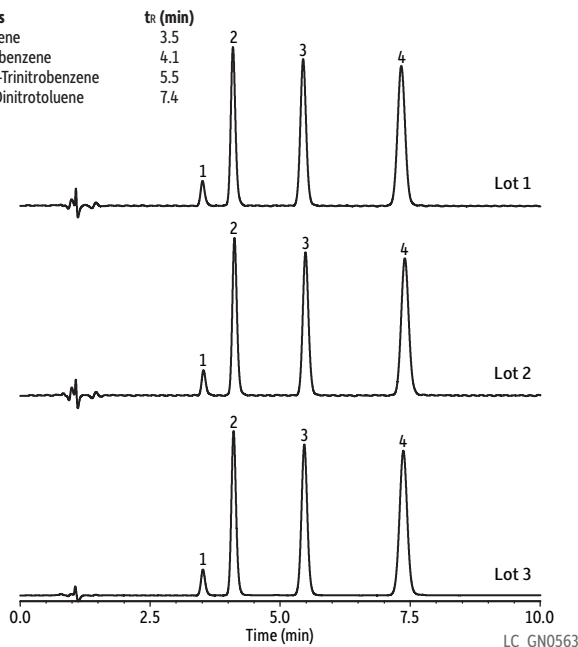
**Figure 3:** From one column to the next, one lot to the next, Roc columns provide results you can trust time and time again.

## Reversed Phase



**Column:** Roc C18 (cat.# 9534565); Dimensions: 150 mm x 4.6 mm ID; Particle Size: 5 µm; Pore Size: 100 Å; Temp.: 35 °C; Inj. Vol.: 5 µL; **Mobile Phase:** 0.05% Formic acid in water:0.05% formic acid in acetonitrile (40:60); Flow: 1.0 mL/min; **Detector:** UV/Vis @ 220 nm; Cell Temp.: 35 °C; **Instrument:** HPLC.

## Normal Phase



**Column:** Roc Cyano (cat.# 953631E); Dimensions: 100 mm x 3.0 mm ID; Particle Size: 3 µm; Pore Size: 100 Å; Temp.: 40 °C; **Sample:** Inj. Vol.: 1 µL; **Mobile Phase:** Water:acetonitrile (80:20); Flow: 0.6 mL/min; **Detector:** UV/Vis @ 254 nm; Cell Temp.: 40 °C; **Instrument:** HPLC.

Find the entire Roc HPLC column line and order now at [www.restek.com/roc](http://www.restek.com/roc)

# Roc LC Columns from Restek

## Perform Better Than or Equal To Columns from Other Vendors



**Table I:** Roc LC columns offer equivalent or better peak shape, retention, and resolution compared to FPP columns from other manufacturers under identical conditions (average values, n = 5).

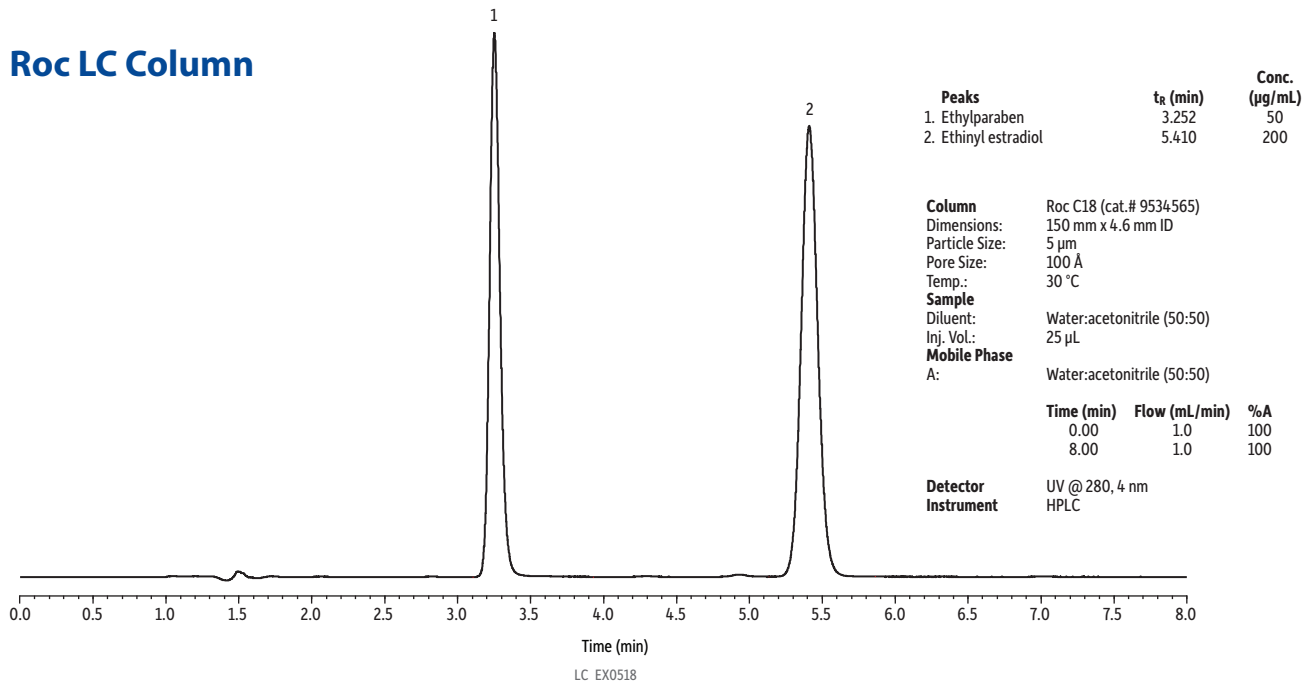
Columns	Analyte	tr	Area	Height	USP Tailing	Asymmetry (10%)	k'	Plate Number	Resolution
Roc	Ethylparaben	3.252	1,407,609	281,358	1.176	1.148	1.182	9,738	12.5
	Ethinyl Estradiol	5.410	1,869,684	234,346	1.075	1.064	2.631	10,264	
Vendor A	Ethylparaben	3.060	1,424,621	215,698	1.907	1.608	1.013	6,732	10.1
	Ethinyl Estradiol	4.889	1,860,659	223,879	1.311	1.217	2.217	8,575	
Vendor B	Ethylparaben	2.873	1,426,068	319,850	1.143	1.124	0.866	9,706	9.9
	Ethinyl Estradiol	4.307	1,867,049	287,414	1.064	1.057	1.797	10,031	
Vendor C	Ethylparaben	2.763	1,413,099	315,080	1.262	1.217	0.932	8,643	11.9
	Ethinyl Estradiol	4.580	1,868,724	270,662	1.143	1.122	2.203	9,700	
Vendor D	Ethylparaben	3.157	2,939,187	357,541	1.159	0.965	1.084	4,478	12.2
	Ethinyl Estradiol	5.816	1,771,785	182,056	1.301	1.232	2.839	8,954	
Vendor E	Ethylparaben	3.873	1,498,446	244,642	1.172	1.134	1.221	9,348	13.7
	Ethinyl Estradiol	6.839	1,781,453	174,955	1.080	1.063	2.921	9,963	

### Chromatographic conditions for Table I and Figure 4 (USP Monograph 38, Ethinyl Estradiol)

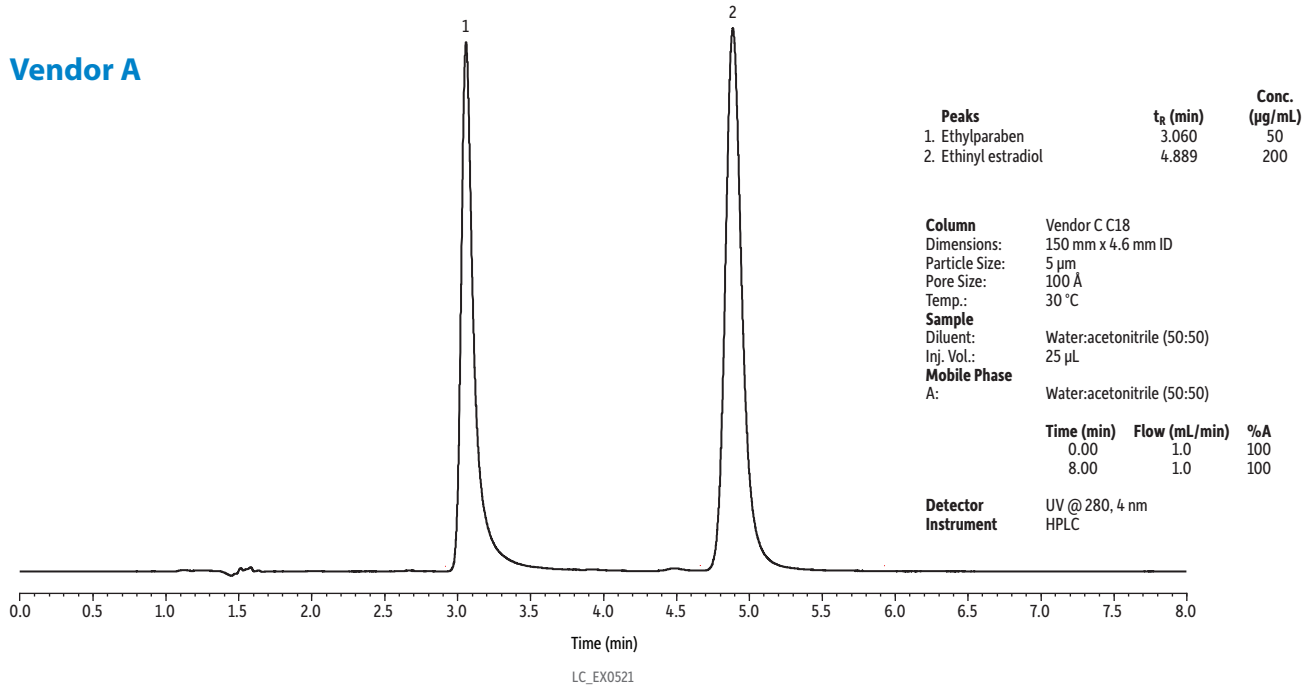
All columns are C18 stationary phase (5  $\mu$ m, 150 x 4.6 mm). Conditions are as follows. Mobile phase: water:acetonitrile (1:1); Flow rate: 1 mL/min; Injection volume: 25  $\mu$ L; Instrument: HPLC with UV detector, 280 nm; Sample: 200  $\mu$ g/mL ethinyl estradiol and 50  $\mu$ g/mL ethylparaben in water:acetonitrile (1:1).

Figure 4: Count on Roc LC columns from Restek for outstanding chromatographic performance.

### Roc LC Column



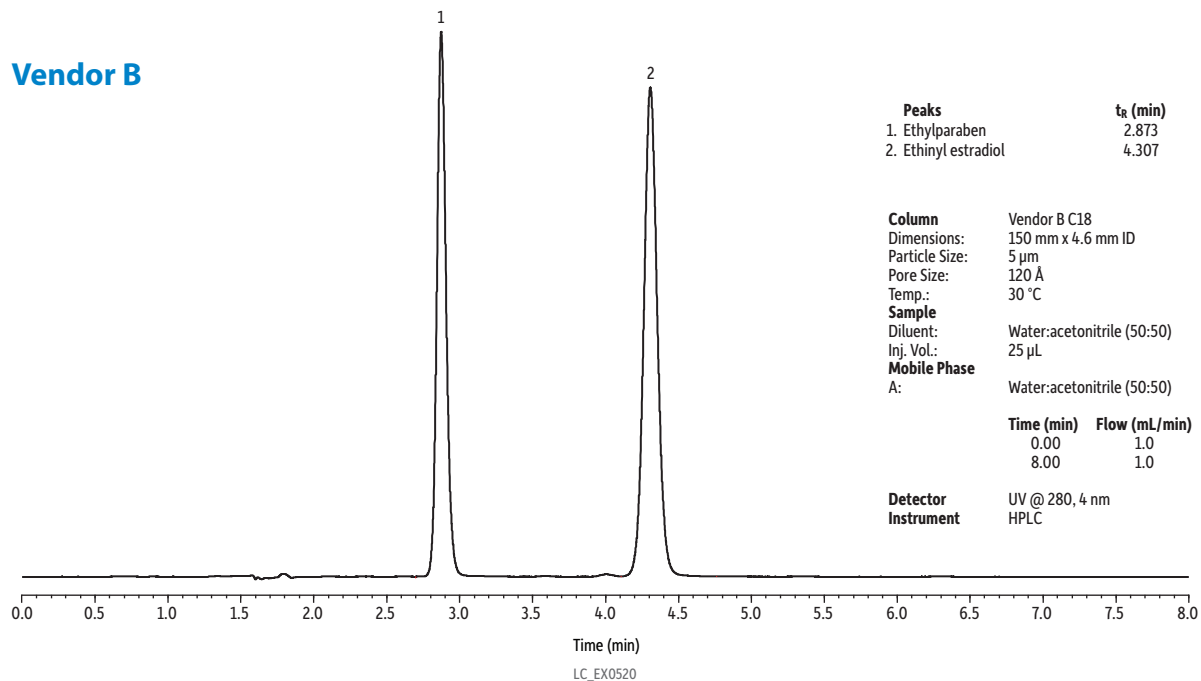
### Vendor A



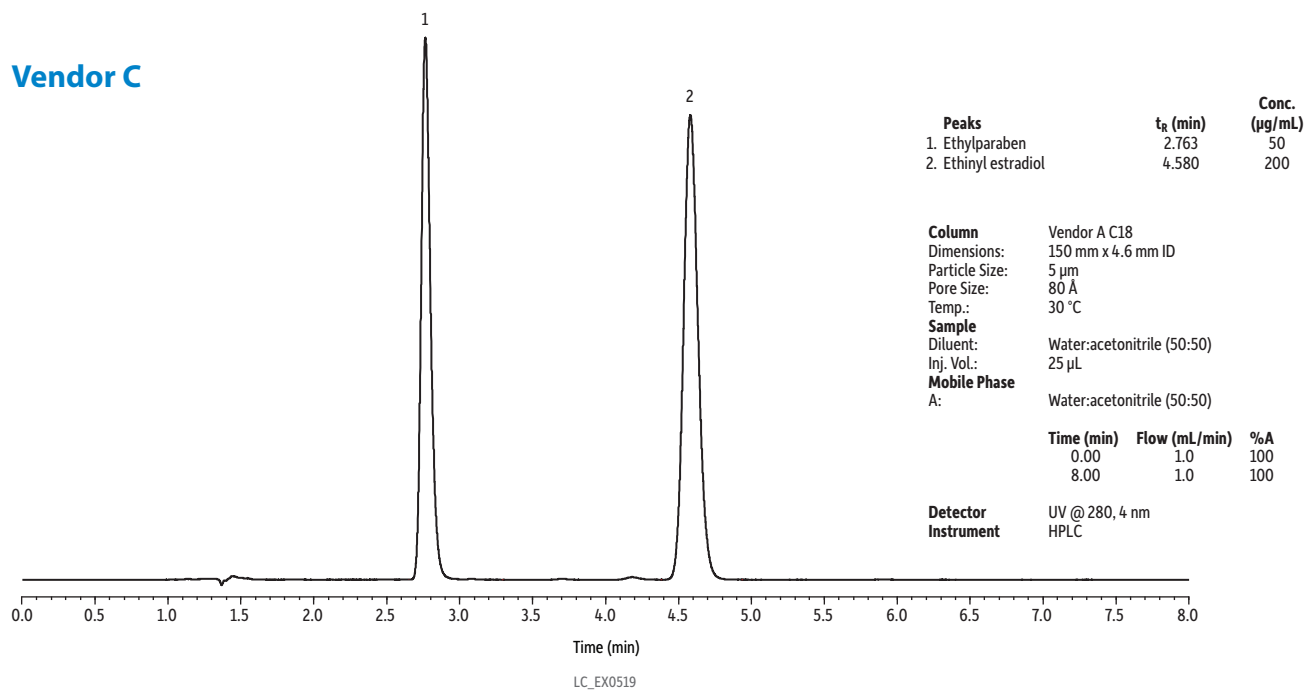
(Continued from page 5)

Figure 4: Count on Roc LC columns from Restek for outstanding chromatographic performance.

### Vendor B



### Vendor C



(Continued from page 6)

Figure 4: Count on Roc LC columns from Restek for outstanding chromatographic performance.

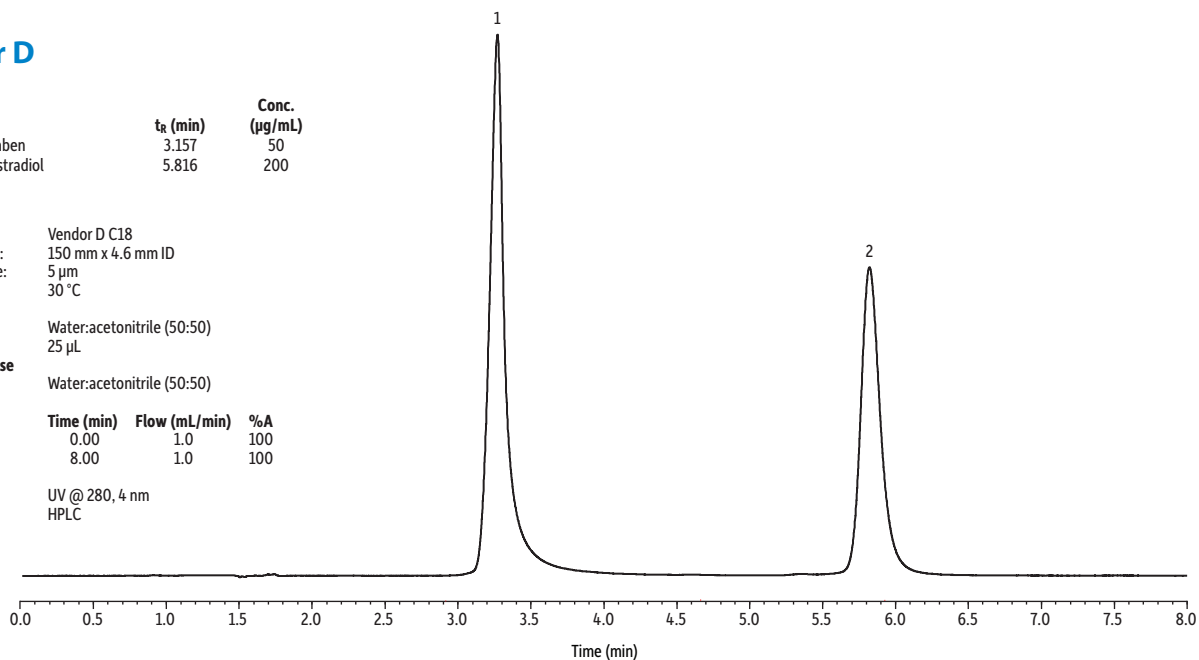
### Vendor D

Peaks	t <sub>R</sub> (min)	Conc. (µg/mL)
1. Ethylparaben	3.157	50
2. Ethinyl estradiol	5.816	200

**Column** Vendor D C18  
**Dimensions:** 150 mm x 4.6 mm ID  
**Particle Size:** 5 µm  
**Temp.:** 30 °C  
**Sample**  
**Diluent:** Water:acetonitrile (50:50)  
**Inj. Vol.:** 25 µL  
**Mobile Phase**  
**A:** Water:acetonitrile (50:50)

Time (min)	Flow (mL/min)	%A
0.00	1.0	100
8.00	1.0	100

**Detector** UV @ 280, 4 nm  
**Instrument** HPLC



LC\_EX0522

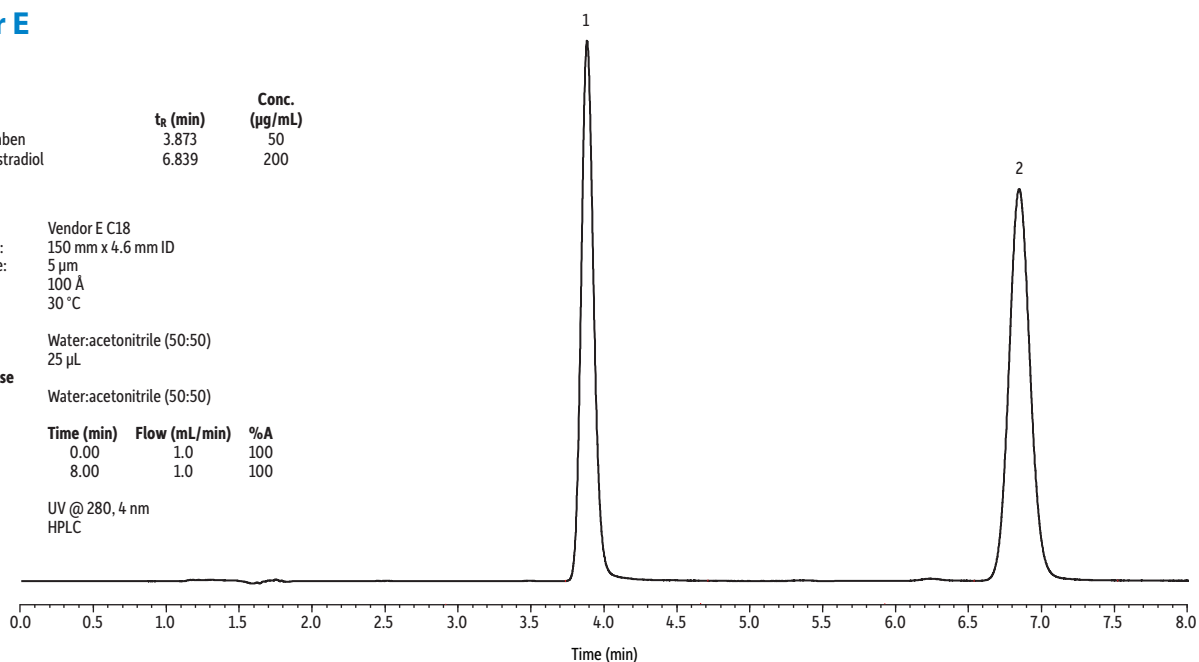
### Vendor E

Peaks	t <sub>R</sub> (min)	Conc. (µg/mL)
1. Ethylparaben	3.873	50
2. Ethinyl estradiol	6.839	200

**Column** Vendor E C18  
**Dimensions:** 150 mm x 4.6 mm ID  
**Particle Size:** 5 µm  
**Pore Size:** 100 Å  
**Temp.:** 30 °C  
**Sample**  
**Diluent:** Water:acetonitrile (50:50)  
**Inj. Vol.:** 25 µL  
**Mobile Phase**  
**A:** Water:acetonitrile (50:50)

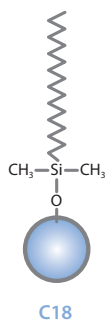
Time (min)	Flow (mL/min)	%A
0.00	1.0	100
8.00	1.0	100

**Detector** UV @ 280, 4 nm  
**Instrument** HPLC



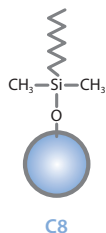
LC\_EX0523

# Get Roc Solid Performance



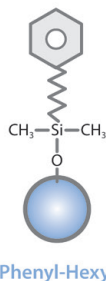
## Roc C18 HPLC Columns (USP L1)

Length	3.0 mm cat.#	4.6 mm cat.#
<b>3 μm Columns</b>		
100 mm	953431E	9534315
150 mm	953436E	9534365
<b>5 μm Columns</b>		
100 mm	953451E	9534515
150 mm	953456E	9534565
250 mm	953457E	9534575



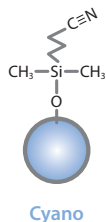
## Roc C8 HPLC Columns (USP L7)

Length	3.0 mm cat.#	4.6 mm cat.#
<b>3 μm Columns</b>		
100 mm	953331E	9533315
150 mm	953336E	9533365
<b>5 μm Columns</b>		
100 mm	953351E	9533515
150 mm	953356E	9533565
250 mm	953357E	9533575



## Roc Phenyl-Hexyl HPLC Columns (USP L11)

Length	3.0 mm cat.#	4.6 mm cat.#
<b>3 μm Columns</b>		
100 mm	953531E	9535315
150 mm	953536E	9535365
<b>5 μm Columns</b>		
100 mm	953551E	9535515
150 mm	953556E	9535565
250 mm	953557E	9535575



## Roc Cyano HPLC Columns (USP L10)

Length	3.0 mm cat.#	4.6 mm cat.#
<b>3 μm Columns</b>		
100 mm	953631E	9536315
150 mm	953636E	9536365
<b>5 μm Columns</b>		
100 mm	953651E	9536515
150 mm	953656E	9536565
250 mm	953657E	9536575



## Roc Silica HPLC Columns (USP L3)

Length	3.0 mm cat.#	4.6 mm cat.#
<b>3 μm Columns</b>		
100 mm	953031E	9530315
150 mm	953036E	9530365
<b>5 μm Columns</b>		
100 mm	953051E	9530515
150 mm	953056E	9530565
250 mm	953057E	9530575

## Roc LC Guard Column Cartridges

- Protect your Roc LC columns with minimal effect on retention, peak shape, or efficiency.
- Guard column cartridges require Roc guard column holder (cat.# 25812).



Description	qty.	10 x 4.0 mm cat.#
Roc C8 Guard Cartridge	3-pk.	953350210
Roc C18 Guard Cartridge	3-pk.	953450210
Roc Cyano Guard Cartridge	3-pk.	953650210
Roc Phenyl-Hexyl Guard Cartridge	3-pk.	953550210
Roc Silica Guard Cartridge	3-pk.	953050210

## Roc LC Guard Column Holder



Requires separate guard column cartridges (available from Restek).

Description	qty.	cat.#
Roc LC Guard Column Holder for 10 x 4.0 mm Roc Guard Cartridges	ea.	25812

## Replacement PEEK Ferrules for Roc LC Guard Column Holder



Description	qty.	cat.#
Replacement PEEK Ferrules for Roc LC Guard Column Holder	3-pk.	26391

Find the entire Roc HPLC column line and order now at [www.restek.com/roc](http://www.restek.com/roc)

**RESTEK**  
Pure Chromatography

Questions about this or any other Restek product?

Contact us or your local Restek representative ([www.restek.com/contact-us](http://www.restek.com/contact-us)).

Restek patents and trademarks are the property of Restek Corporation. (See [www.restek.com/Patents-Trademarks](http://www.restek.com/Patents-Trademarks) for full list.) Other trademarks in Restek literature or on its website are the property of their respective owners. Restek registered trademarks are registered in the U.S. and may also be registered in other countries.

© 2016 Restek Corporation. All rights reserved. Printed in the U.S.A.

[www.restek.com](http://www.restek.com)



Lit. Cat.# GNS52332A-UNV