New

Pinnacle™ DB HPLC Columns

Superior Performance for Basic Compounds

RESTEK

Pinnacle™ DB HPLC Columns

Superior Performance for Basic Compounds

- ✔ Sharp, symmetrical peaks for basic analytes.
- ✔ Silica manufactured by Restek, for total control of product quality.
- ✔ Narrow bore through preparative-scale formats.

Restek is among the few HPLC column manufacturers who manufacture silica. We believe that to truly control HPLC variables, a manufacturer must control the entire column manufacturing process, beginning at the initial step — making well-characterized, consistently-performing silica.

We are pleased to introduce a new line of HPLC columns, Pinnacle™ DB columns, prepared from our newest silica support. Pinnacle™ DB silica is a highly base-deactivated silica, suitable for a wide range of challenging applications. It has ideal performance characteristics for analyses of basic compounds or basic compounds mixed with other analytes. Our unique manufacturing process enables Pinnacle™ DB silica to resolve and elute basic compounds, such as many pharmaceuticals, without severe peak tailing, and with minimal or no need for mobile phase modifiers.

Column manufacturers often use a pyridine/phenol test mix to demonstrate a column's separation capabilities and indicate the peak shape that can be anticipated

Figure A Pyridine/Phenol Test Mix on Pinnacle™ DB C18

Peak List:	**Ret. Time** (min.)	**Conc.**
1. uracil	1.643	5.0µg/mL
2. pyridine	3.119	0.1µL/mL
3. phenol	6.969	1.86mg/mL

Sample:
Inj.: 5.0µL
Sample Diluent: mobile phase

Column: **Pinnacle™ DB C18**
Catalog #: 9414565
Dimensions: 150 x 4.6mm
Particle Size: 5µm
Pore Size: 140Å

Conditions:
Mobile Phase: A: 20mM potassium phosphate, pH 7.0
B: acetonitrile
Isocratic: 80%A:20%B
Flow: 1.0mL/min
Temp.: ambient
Det.: UV @ 254nm

Excellent resolution and sharp, symmetrical pyridine peak - without mobile phase modifier!

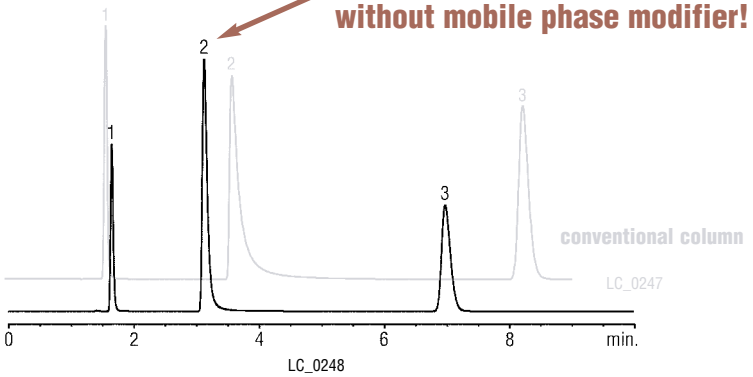

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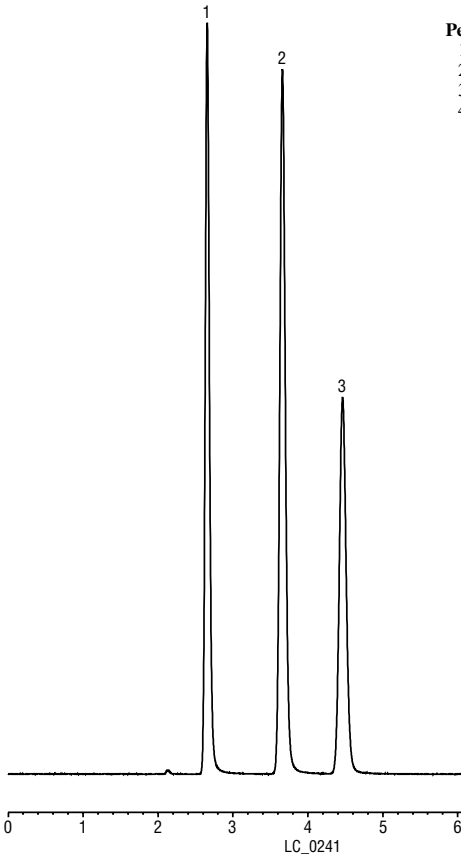
Figure B Xanthenes



LC_0241

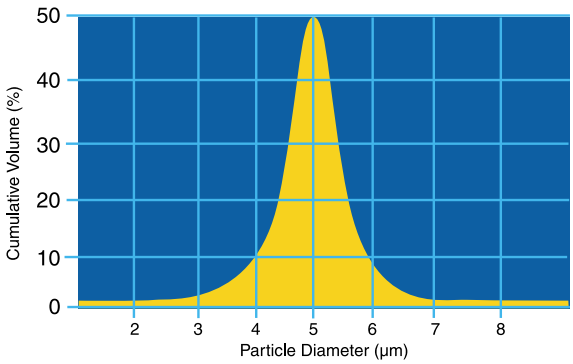
for basic compounds. Figure A shows pyridine/phenol separations from a Pinnacle™ DB C18 and a conventional C18 column. The sharp, symmetric peaks from the Pinnacle™ DB C18 column - without a mobile phase modifier - are what you can expect for many pharmaceutical or other basic analytes. In addition to the monomeric C18 bonded phase, the Pinnacle™ DB column line currently includes a C8 and a cyano bonded phase, and bare silica. Each of the bonded phases is endcapped.

Figure B shows an array of related basic pharmaceutical compounds analyzed on a Pinnacle™ DB C18 column. Note the consistent peak symmetry for these analytes. Often, neutral or acidic compounds complicate analyses of basic pharmaceuticals, as impurities or degradation products. Pinnacle™ DB columns are equally well suited to these challenges.

To ensure the high quality and the reliability that are characteristic of Restek HPLC columns, we established demanding quality control procedures to ensure each Pinnacle™ DB column will perform as described. Figure C is an example analysis of the test mix we use to individually quality check every column.

The Pinnacle™ DB line is available in a wide range of column dimensions, from 1mm narrow bore columns through 50mm preparative-scale columns. If you need sharp, consistent analyses for basic analytes, or bases mixed with acidic or neutral analytes, Pinnacle™ DB columns will more than meet your expectations. For additional information about this new column line please call our Technical Service Team, or, to place an order, call our Customer Service representatives.

Pinnacle DB™ silica features narrow particle distribution, ensuring sharper peaks and greater efficiency for the most demanding applications.



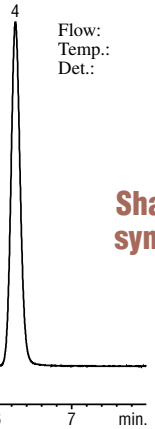
on Pinnacle™ DB C18

Peak List:	Ret. Time (min.)	Conc.
1. theobromine	2.7	225µg/mL
2. theophylline	3.7	418µg/mL
3. β-hydroxyethyltheophylline	4.6	418µg/mL
4. caffeine	6.25	400µg/mL

Sample:
Inj.: 2µL
Sample Diluent: mobile phase

Column: **Pinnacle™ DB C18**
Catalog #: 9414565
Dimensions: 150 x 4.6 mm
Particle Size: 5µm
Pore Size: 140Å

Conditions:
Mobile Phase: A: 20 mmolar KH_2PO_4 buffer, pH 3.0
B: acetonitrile
Isocratic: 90%A:10%B
Flow: 1.0 mL/min
Temp.: 27°C
Det.: UV @ 254nm



Sharp, consistently symmetrical peaks.

Figure C Reversed Phase Test Mix on Pinnacle™ DB C18

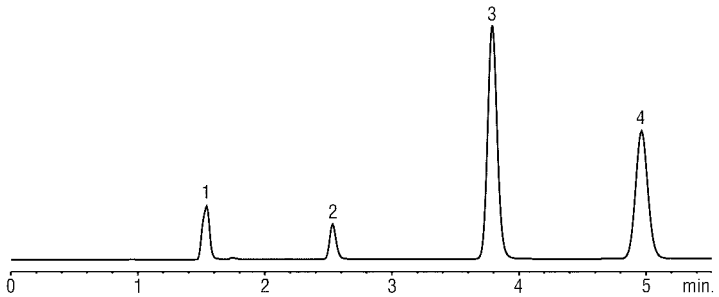
Peak List:	Conc.
1. uracil	0.02mg/mL
2. benzene	3.0mg/mL
3. naphthalene	0.5mg/mL
4. biphenyl	0.06mg/mL

Sample: **Reversed Phase Test Mix**
Inj.: 5µL
Sample Diluent: methanol:water (75:25 v/v)

Column: **Pinnacle™ DB C18**
Catalog #: 9414565
Dimensions: 150 x 4.6mm
Particle Size: 5µm
Pore Size: 140Å

Conditions:
Mobile Phase: A: water
B: methanol
Isocratic: 20%A:80%B
Run Time: 8 min.
Flow: 1.0mL/min
Temp.: ambient
Det.: UV @ 254nm

Every column tested to ensure proper peak symmetry and theoretical plate expectations.



Pinnacle™ DB C18 5µm Columns (USP L1)

Physical Characteristics:

particle: 5µm spherical
pore size: 140Å
carbon load: 11%
endcap: yes
pH: 2.5 - 7.5
temperature limit: 80°C

Restek Manufactured Silica

Chromatographic Properties:

Highly base-deactivated spherical silica manufactured by Restek Corp. Monomeric C18 bonding.

Hydrophobic C18 phase suitable for analyses of a wide range of compounds, from acidic through slightly basic. Replaces Hypersil® BDS C18.

Length	1.0mm ID cat.#	2.1mm ID cat.#	3.2mm ID cat.#	4.6mm ID cat.#
30mm	9414531	9414532	9414533	9414535
50mm	9414551	9414552	9414553	9414555
100mm	9414511	9414512	9414513	9414515
150mm	9414561	9414562	9414563	9414565
200mm	9414521	9414522	9414523	9414525
250mm	9414571	9414572	9414573	9414575

Pinnacle™ DB C8 5µm Columns (USP L7)

Physical Characteristics:

particle: 5µm spherical
pore size: 140Å
carbon load: 6%
endcap: yes
pH: 2.5 - 7.5
temperature limit: 80°C

Restek Manufactured Silica

Chromatographic Properties:

Highly base-deactivated spherical silica manufactured by Restek Corp. Monomeric C8 bonding. Similar to Pinnacle™ DB C18, but the shorter alkyl chain provides less hydrophobic retention.

Applications similar to Pinnacle™ DB C18, but with less hydrophobic retention. Less retention can be useful for shortening analysis time, if resolution is adequate. Replaces Hypersil® BDS C8.

Length	1.0mm ID cat.#	2.1mm ID cat.#	3.2mm ID cat.#	4.6mm ID cat.#
30mm	9413531	9413532	9413533	9413535
50mm	9413551	9413552	9413553	9413555
100mm	9413511	9413512	9413513	9413515
150mm	9413561	9413562	9413563	9413565
200mm	9413521	9413522	9413523	9413525
250mm	9413571	9413572	9413573	9413575

Pinnacle™ DB Cyano 5µm Columns (USP L10)

Physical Characteristics:

particle: 5µm spherical
pore size: 140Å
carbon load: 4%
endcap: yes
pH: 2.5 - 7.5
temperature limit: 80°C

Restek Manufactured Silica

Chromatographic Properties:

Highly base-deactivated spherical silica manufactured by Restek Corp. Cyano bonding.

Suitable for analyses of a wide range of compounds, from acidic through slightly basic. Also useful for confirmation of analyses on a C18 or C8 column. Can be used in normal phase or reversed phase mode of separation. Replaces Hypersil® BDS Cyano.

Length	1.0mm ID cat.#	2.1mm ID cat.#	3.2mm ID cat.#	4.6mm ID cat.#
30mm	9416531	9416532	9416533	9416535
50mm	9416551	9416552	9416553	9416555
100mm	9416511	9416512	9416513	9416515
150mm	9416561	9416562	9416563	9416565
200mm	9416521	9416522	9416523	9416525
250mm	9416571	9416572	9416573	9416575

Pinnacle™ DB Silica 5µm Columns (USP L3)

Physical Characteristics:

particle: 5µm spherical
pore size: 140Å
pH: 2.5 - 7.5
temperature limit: 80°C

Restek Manufactured Silica

Chromatographic Properties:

Highly base-deactivated spherical silica manufactured by Restek Corp. Normal phase mode of separation. Replaces Hypersil® BDS.

Length	1.0mm ID cat.#	2.1mm ID cat.#	3.2mm ID cat.#	4.6mm ID cat.#
30mm	9410531	9410532	9410533	9410535
50mm	9410551	9410552	9410553	9410555
100mm	9410511	9410512	9410513	9410515
150mm	9410561	9410562	9410563	9410565
200mm	9410521	9410522	9410523	9410525
250mm	9410571	9410572	9410573	9410575

To order a 2.1mm, 3.2mm, or 4.6mm column with a Trident™ Integral Inlet Fitting, add "-700" to the catalog number for the column.
Example: 100mm x 4.6mm ID Pinnacle™ DB C18 column with Trident™ Integral Inlet Fitting: 9414515-700

Nominal additional charge

For guard cartridges for these columns, see our catalog.

Lit. Cat.# 59499

Restek Corporation