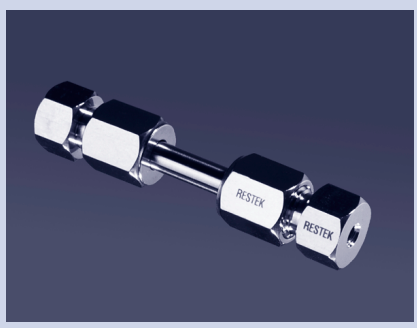




Ultra IBD HPLC Columns

Excellent Peak Shape for Acids and Bases



Restek's Ultra IBD column

The Ultra IBD can operate under both reverse and normal phase conditions and retains compounds across a wide range of mobile phase compositions. Request a copy of Restek's Applications Note cat. #59512, *The Ultra IBD Column Allows HPLC Separation of Polar and Non-Polar Analytes from the Same Sample*, for more detailed information.

Visit our website

at www.restekcorp.com and see our growing compilation of HPLC application chromatograms:

- LC_0129** Adenine, Adenosine, ATP, ADP, and AMP on Ultra IBD
- LC_0130** Cytosine, Cytidine, CTP, CDP, and CMP on Ultra IBD
- LC_0131** Guanine, Guanosine, GTP, GDP, and GMP on Ultra IBD
- LC_0132** Thymine, Thymidine, TTP, TDP, and TMP on Ultra IBD
- LC_0130** Uracil, Uridine, UTP, UDP, and UMP on Ultra IBD

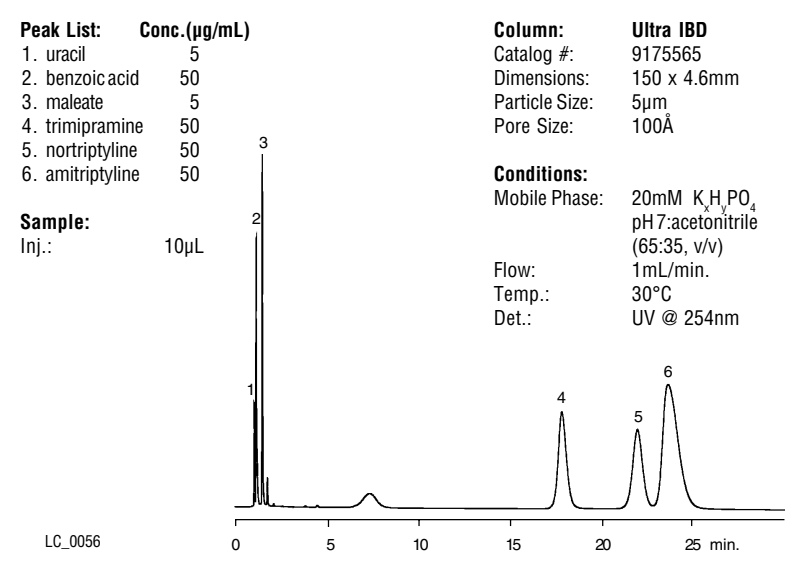
Restek's Ultra IBD (intrinsically based deactivated) phase exhibits excellent peak shape and selectivity for acids, bases, zwitterions, and polar compounds. In contrast to conventional C18 columns, the Ultra IBD phase contains a polar functional group within the hydrocarbon bonded chain. This allows the column to retain solutes not only by hydrophobic interactions, but also by polar attraction forces between the stationary phase and the analyte.

Features & Benefits

Feature	Benefit
Separates acids, bases, zwitterions, and neutral compounds.	One column can analyze a wide range of compounds simultaneously.
Can be used with a wide range of mobile phase polarity and pH.	More flexibility with method development.
Excellent batch-to-batch consistency.	Reproducible analyses.
Highly retentive phase.	Improved LC/MS sensitivity and HPLC resolution.

Figure 1a

Restek's Ultra IBD column exhibits excellent peak shape for acidic and basic compounds at a neutral pH.



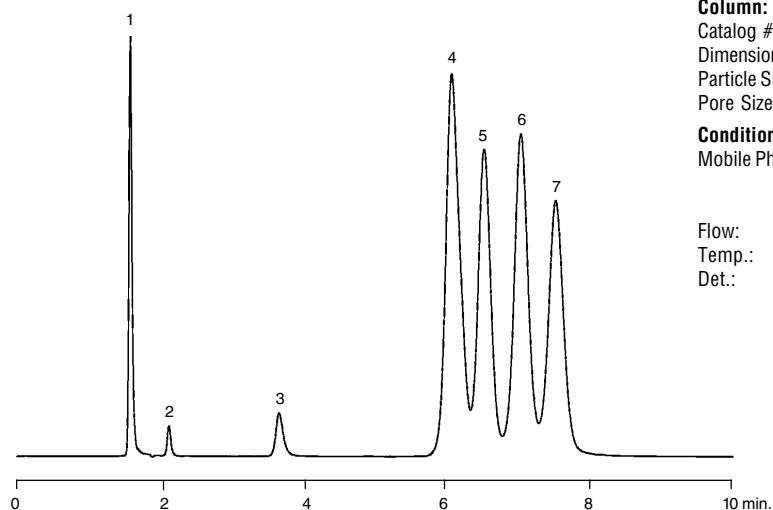
Peak shape of basic compounds on bonded phase silica can be improved by lowering the pH to protonate active silanols. However, doing so can cause problems with some samples that are labile at acidic pH conditions. The Ultra IBD column performs well even under neutral pH mobile phase conditions. Figures 1a and 1b show the separation of acidic and basic compounds under neutral and acidic mobile phase conditions. The two elution order reversals between Figures 1a and 1b demonstrate how selection of pH can be used to alter selectivity.

Figure 1b

Restek's Ultra IBD column exhibits excellent peak shape for acidic and basic compounds at an acidic range of pH.

Peak List:	Conc. (µg/mL)
1. uracil	5
2. unknown	
3. maleate	5
4. benzoic acid	50
5. nortriptyline	50
6. amitriptyline	50
7. trimipramine	50

Sample:
Inj.: 10µL
Solvent: mobile phase



Column: Ultra IBD
Catalog #: 9175565
Dimensions: 150 x 4.6mm
Particle Size: 5µm
Pore Size: 100Å

Conditions:
Mobile Phase: 20mM KH₂PO₄
pH3:acetonitrile
(70:30, v/v)
1mL/min.
30°C
Det.: UV @ 254nm

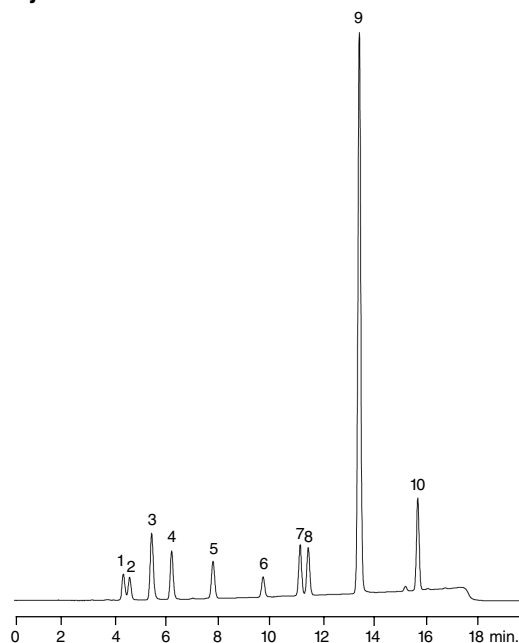
LC_0057

Figure 2

Ultra IBD shows great selectivity for Carbamates.

Peak List:
1. aldicarb sulfoxide
2. aldicarb sulfone
3. oxamyl
4. methomyl
5. 3-hydroxycarbofuran
6. aldicarb
7. propoxur
8. carbofuran
9. carbaryl
10. methiocarb

Sample:
Inj.: 5µL
Solvent: methanol
Conc.: 1mg/mL each
component



Column: Ultra IBD
Catalog #: 9175565
Dimensions: 150 x 4.6mm
Particle Size: 5µm
Pore Size: 100Å

Conditions:
Mobile Phase: water:methanol
(80:20 to 20:80
in 15 minutes)
1mL/min.
ambient
Det.: UV @ 220nm

LC_0134

Commonly Asked Questions

- **Why is the Ultra IBD different from other HPLC columns?**

The Ultra IBD phase incorporates a polar functional group within the hydrocarbon chain, resulting in a column that exhibits excellent peak shape for acids, bases, zwitterions, and neutral compounds. The unique chemistry of this phase allows compounds to be retained by both hydrophobic and polar interactions.

- **What advantage does the Ultra IBD offer for LC/MS analyses?**

Mobile phases with high aqueous content are required to obtain adequate retention of polar analytes with most conventional reverse phase packings. However, mobile phases with high aqueous content can cause sensitivity loss in LC/MS analyses. The polar interaction of the Ultra IBD phase provides excellent retention with higher organic content mobile phases, and also greatly reduces or eliminates the need for mobile phase modifiers that are often required to obtain symmetrical peaks and/or sufficient retention when analyzing highly polar compounds with other columns. This makes the Ultra IBD much more compatible with MS detection than traditional straight chain alkyl stationary phases.

- **What are the particle and pore sizes of the silica used for the Ultra IBD phase?**

The Ultra IBD is offered in both 3 and 5 μ m, spherical Type B silica with a 100 Angstrom pore size.

- **What are the pH and temperature limits for the Ultra IBD phase?**

The Ultra IBD phase can be used from pH 2 to pH 8 and at temperatures up to 80°C.

- **Are guard columns available for the Ultra IBD columns?**

Restek's unique Trident™ guard column system is available for the Ultra IBD column. The integral leak-free design of the Trident™ system contains a cap frit that can be replaced easily without disturbing the packed bed. The guard cartridge, packed with the Ultra IBD phase also can be replaced easily as needed.

Ultra IBD

**FAST
FACTS**

At-a-Glance
Product
Information
from Restek

**Restek is your free
technical literature source!**

Application Notes:

(#59511) Improved HPLC
Analysis of Analgesics

(#59512) The Ultra IBD Column Allows
HPLC Separation of Polar and Non-Polar
Analytes from the Same Sample

(#59510) HPLC Stationary Phase Selection
for the Analysis of Steroids

(#59118) Allure™ PFP Propyl HPLC Column
Provides Improved LC/MS Analyses of
Basic Compounds

(#59141) Analyze Nucleotides,
Nucleosides, Purine, and Pyrimidine Bases
Simultaneously with the Ultra IBD Column

(#59398) Analysis of Preservatives
Using HPLC

- **Call** 814-353-1300 or
800-356-1688, ext. 5
- **Fax** 814-353-1309
- **Online** www.restekcorp.com

RESTEK

Ultra IBD



At-a-Glance
Product
Information
from Restek

■ Ultra IBD 3 μ m Columns

Column Length	1.0mm ID cat.#	2.1mm ID cat.#	3.2mm ID cat.#	4.6mm ID cat.#
30mm	9175331	9175332	9175333	9175335
50mm	9175351	9175352	9175353	9175355
100mm	9175311	9175312	9175313	9175315
150mm	9175361	9175362	9175363	9175365

■ Ultra IBD 3 μ m Columns with Trident™ Inlet

Column Length	2.1mm ID cat.#	3.2mm ID cat.#	4.6mm ID cat.#
30mm	9175332-700	9175333-700	9175335-700
50mm	9175352-700	9175353-700	9175355-700
100mm	9175312-700	9175313-700	9175315-700
150mm	9175362-700	9175363-700	9175365-700

■ Ultra IBD 5 μ m Columns

Column Length	1.0mm ID cat.#	2.1mm ID cat.#	3.2mm ID cat.#	4.6mm ID cat.#
30mm	9175531	9175532	9175533	9175535
50mm	9175551	9175552	9175553	9175555
100mm	9175511	9175512	9175513	9175515
150mm	9175561	9175562	9175563	9175565
200mm	9175521	9175522	9175523	9175525
250mm	9175571	9175572	9175573	9175575

■ Ultra IBD 5 μ m Columns with Trident™ Inlet

Column Length	2.1mm ID cat.#	3.2mm ID cat.#	4.6mm ID cat.#
30mm	9175532-700	9175533-700	9175535-700
50mm	9175552-700	9175553-700	9175555-700
100mm	9175512-700	9175513-700	9175515-700
150mm	9175562-700	9175563-700	9175565-700
200mm	9175522-700	9175523-700	9175525-700
250mm	9175572-700	9175573-700	9175575-700

■ Ultra IBD Guard Cartridges

Dimensions	cat.#	qty.
10 x 2.1mm	917550212	3
10 x 4.0mm	917550210	3
20 x 4.0mm	917550220	2

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