



# Ultra II™ LC Columns

The Column Line Designed for Optimal Chromatography on **Any LC System**, Based on Highly Inert Restek Silica

#### Available Phases:

- C18
- Silica
- Biphenyl
- PFP Propyl
- Aromax
- Aqueous C18

#### Available Particle Sizes:

- 1.9µm for UHPLC
- 2.2µm for UFLC and RRLC
- 3µm and 5µm for HPLC

**More phases  
coming soon!**



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**ECH**restek Pty Ltd **10**  
AUSTRALIAN Distributors [www.chromtech.net.au](http://www.chromtech.net.au)



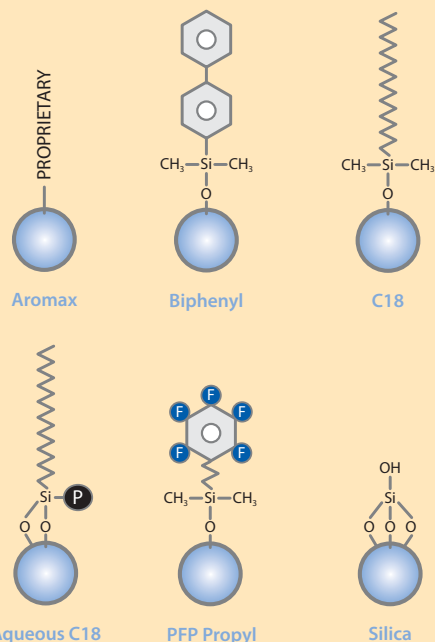
**Chromatography Products**

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

Website : [www.chromtech.net.au](http://www.chromtech.net.au) E-mail : [info@chromtech.net.au](mailto:info@chromtech.net.au) TelNo : 03 9762 2034 . . . in Australia

# NEW! Ultra II™ LC Columns

The Ultra II™ product line is the first LC column line specifically designed for universal application—optimal chromatography on any system. This column line is built on a highly inert, high surface area silica that is completely Restek manufactured, providing excellent column-to-column reproducibility. Only Ultra II™ columns are available in a comprehensive range of particle sizes (1.9µm, 2.2µm, 3µm, and 5µm), creating truly scalable chromatography on any type of LC instrument, from conventional to ultra-high pressure systems. Ultra II™ columns are available in traditional phases (C18, Aqueous C18, Silica) and unique chemistries which provide alternate selectivity (Biphenyl, Aromax, PFP Propyl).



## Ultra II™ Aromax Columns (USP L11)

Ultra II Aromax is a unique reversed phase material that exhibits superior retention and selectivity for aromatic and/or unsaturated compounds, compared to conventional alkyl and phenyl phases. This column is a great alternative to our Biphenyl phase when increased retention is required. A very suitable choice for analysis of steroids, tetracyclines, drug metabolites, and other compounds that contain some degree of unsaturation.

## Ultra II™ Biphenyl Columns (USP L11)

A unique reversed phase material that exhibits both increased retention and selectivity for aromatic and/or unsaturated compounds, compared to conventional alkyl and phenyl phases. This is a great alternative to a C18 column when alternative selectivity is desired. An excellent choice for the analysis of steroids, tetracyclines, drug metabolites, and other compounds that contain some degree of unsaturation.

## Ultra II™ C18 Columns (USP L1)

A retentive, highly pure material that exhibits excellent peak shape for a wide range of compounds. This is a robust and very reproducible general-purpose reversed phase column.

## Ultra II™ Aqueous C18 Columns (USP L1)

Highly retentive and selective for reversed phase separations of polar analytes. Highly base-deactivated. Compatible with highly aqueous (up to 100%) mobile phases.

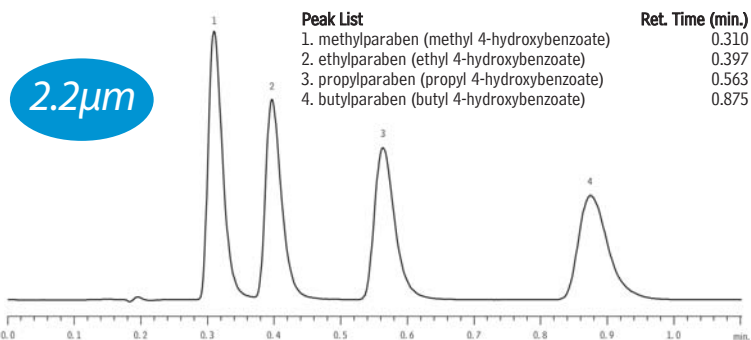
## Ultra II™ PFP Propyl Columns (USP L43)

A pentafluorophenyl phase with a propyl spacer. Highly retentive for basic analytes. An excellent phase for separating nucleosides, nucleotides, purines, pyrimidines, and halogenated compounds.

## Ultra II™ Silica Columns (USP L3)

High surface area. Type B silica packing.

## Parabens on Ultra II™ C18

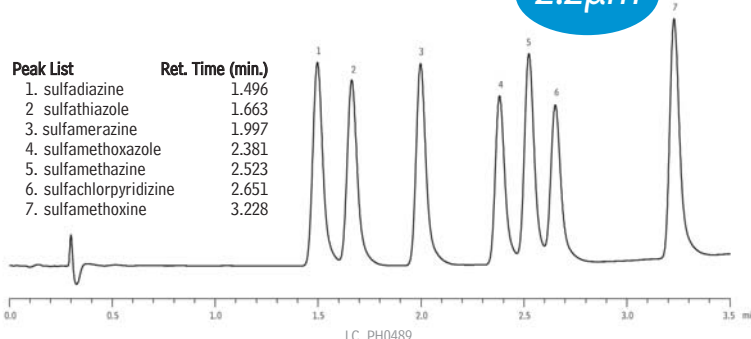


**Sample:**  
 Inj.: 1µL  
 Conc.: 50µg/mL each component  
 Sample diluent: methanol

**Conditions:**  
 Instrument: Shimadzu Prominence UFLC<sub>R</sub>  
 Mobile phase: 0.1% formic acid in water:methanol (35:65)  
 Flow: 1.5mL/min.  
 Temp.: 30°C  
 Pressure: 630bar  
 Det.: UV @ 254nm

**Column:** Ultra II™ C18  
 Cat.#: 9604853  
 Dimensions: 50mm x 3.0mm  
 Particle size: 2.2µm  
 Pore size: 100Å

## Sulfa Drugs on Ultra II™ Biphenyl



**Sample:**  
 Inj.: 3µL  
 Conc.: 25µg/mL each component  
 Sample diluent: methanol

**Conditions:**  
 Instrument: Shimadzu Prominence UFLC<sub>R</sub>  
 Mobile phase: A. 0.1% formic acid in water  
 B. methanol  
 Time (min.) %B  
 0 25  
 3.5 65

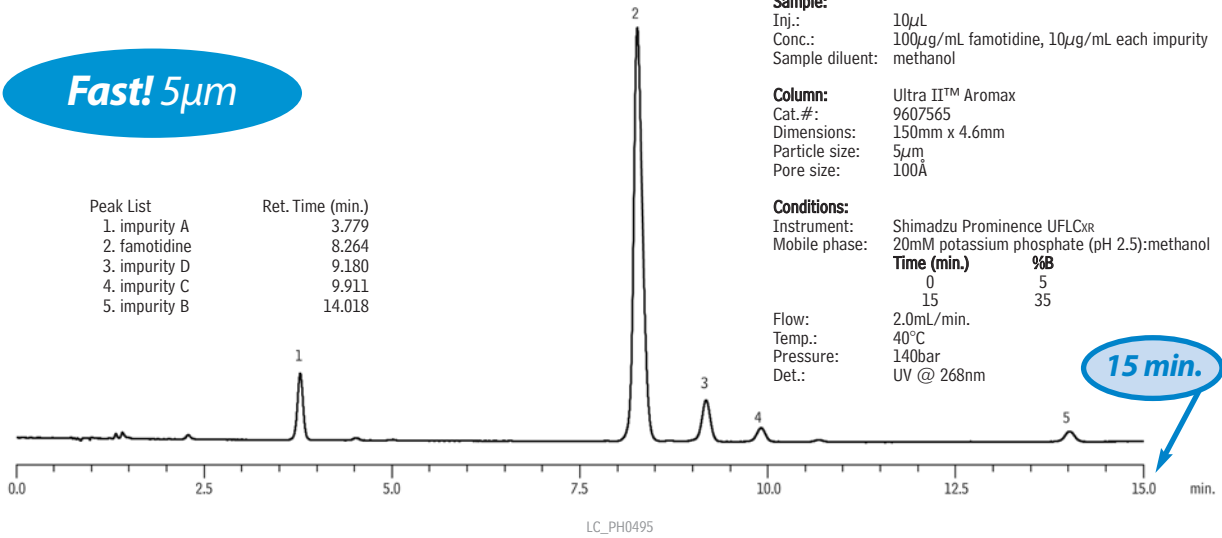
**Column:** Ultra II™ Biphenyl  
 Cat.#: 9609853  
 Dimensions: 50mm x 3.0mm  
 Particle size: 2.2µm  
 Pore size: 100Å

**Flow:** 1.0mL/min.  
**Temp.:** 30°C  
**Pressure:** 540bar  
**Det.:** UV @ 254nm

## Famotidine on Ultra II™ Aromax

**Fast! 5µm**

| Peak List     | Ret. Time (min.) |
|---------------|------------------|
| 1. impurity A | 3.779            |
| 2. famotidine | 8.264            |
| 3. impurity D | 9.180            |
| 4. impurity C | 9.911            |
| 5. impurity B | 14.018           |



**Sample:**  
 Inj.: 10µL  
 Conc.: 100µg/mL famotidine, 10µg/mL each impurity  
 Sample diluent: methanol

**Column:** Ultra II™ Aromax  
 Cat.#: 9607565  
 Dimensions: 150mm x 4.6mm  
 Particle size: 5µm  
 Pore size: 100Å

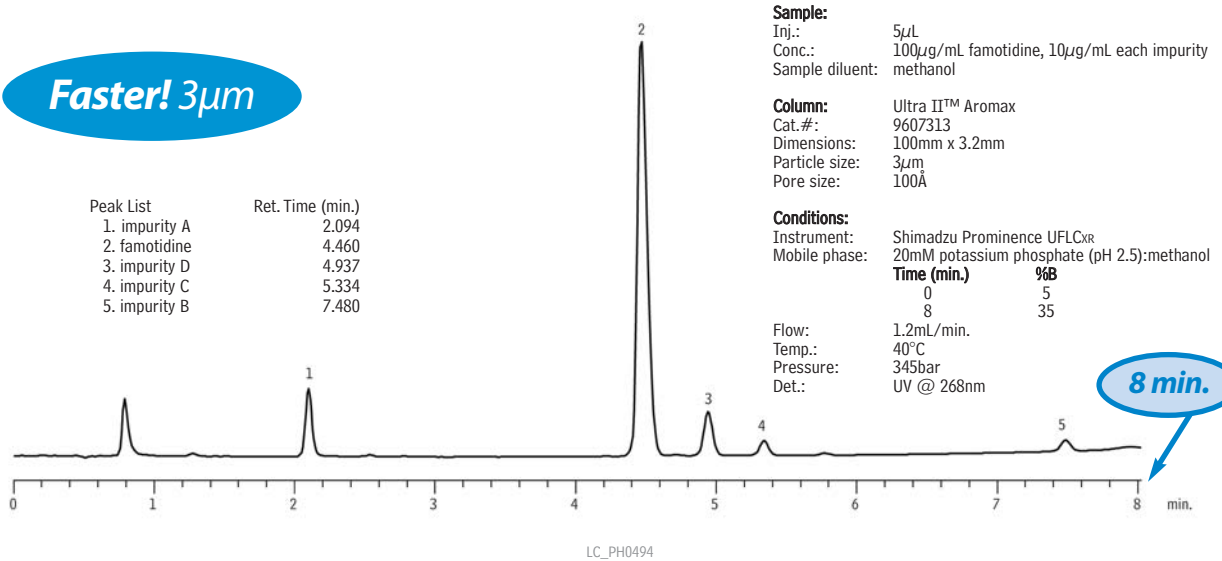
**Conditions:**  
 Instrument: Shimadzu Prominence UFLCXR  
 Mobile phase: 20mM potassium phosphate (pH 2.5):methanol

| Time (min.) | %B |
|-------------|----|
| 0           | 5  |
| 15          | 35 |

Flow: 2.0mL/min.  
 Temp.: 40°C  
 Pressure: 140bar  
 Det.: UV @ 268nm

**Faster! 3µm**

| Peak List     | Ret. Time (min.) |
|---------------|------------------|
| 1. impurity A | 2.094            |
| 2. famotidine | 4.460            |
| 3. impurity D | 4.937            |
| 4. impurity C | 5.334            |
| 5. impurity B | 7.480            |



**Sample:**  
 Inj.: 5µL  
 Conc.: 100µg/mL famotidine, 10µg/mL each impurity  
 Sample diluent: methanol

**Column:** Ultra II™ Aromax  
 Cat.#: 9607313  
 Dimensions: 100mm x 3.2mm  
 Particle size: 3µm  
 Pore size: 100Å

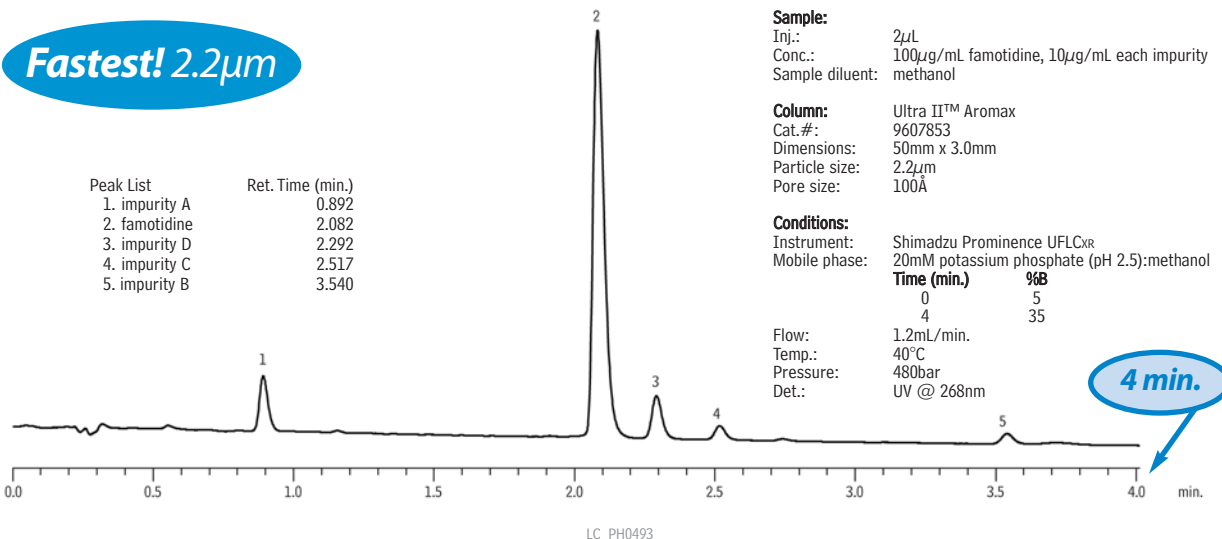
**Conditions:**  
 Instrument: Shimadzu Prominence UFLCXR  
 Mobile phase: 20mM potassium phosphate (pH 2.5):methanol

| Time (min.) | %B |
|-------------|----|
| 0           | 5  |
| 8           | 35 |

Flow: 1.2mL/min.  
 Temp.: 40°C  
 Pressure: 345bar  
 Det.: UV @ 268nm

**Fastest! 2.2µm**

| Peak List     | Ret. Time (min.) |
|---------------|------------------|
| 1. impurity A | 0.892            |
| 2. famotidine | 2.082            |
| 3. impurity D | 2.292            |
| 4. impurity C | 2.517            |
| 5. impurity B | 3.540            |



**Sample:**  
 Inj.: 2µL  
 Conc.: 100µg/mL famotidine, 10µg/mL each impurity  
 Sample diluent: methanol

**Column:** Ultra II™ Aromax  
 Cat.#: 9607853  
 Dimensions: 50mm x 3.0mm  
 Particle size: 2.2µm  
 Pore size: 100Å

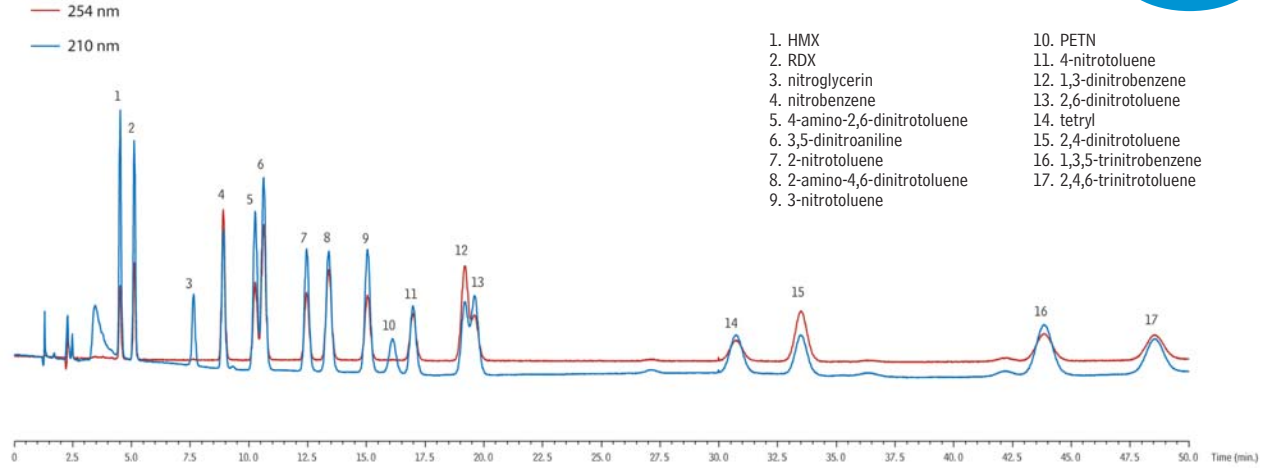
**Conditions:**  
 Instrument: Shimadzu Prominence UFLCXR  
 Mobile phase: 20mM potassium phosphate (pH 2.5):methanol

| Time (min.) | %B |
|-------------|----|
| 0           | 5  |
| 4           | 35 |

Flow: 1.2mL/min.  
 Temp.: 40°C  
 Pressure: 480bar  
 Det.: UV @ 268nm

## Explosives on Ultra II™ Aromax

5µm



- |                               |                           |
|-------------------------------|---------------------------|
| 1. HMX                        | 10. PETN                  |
| 2. RDX                        | 11. 4-nitrotoluene        |
| 3. nitroglycerin              | 12. 1,3-dinitrobenzene    |
| 4. nitrobenzene               | 13. 2,6-dinitrotoluene    |
| 5. 4-amino-2,6-dinitrotoluene | 14. tetryl                |
| 6. 3,5-dinitroaniline         | 15. 2,4-dinitrotoluene    |
| 7. 2-nitrotoluene             | 16. 1,3,5-trinitrobenzene |
| 8. 2-amino-4,6-dinitrotoluene | 17. 2,4,6-trinitrotoluene |
| 9. 3-nitrotoluene             |                           |

LC\_EV0484

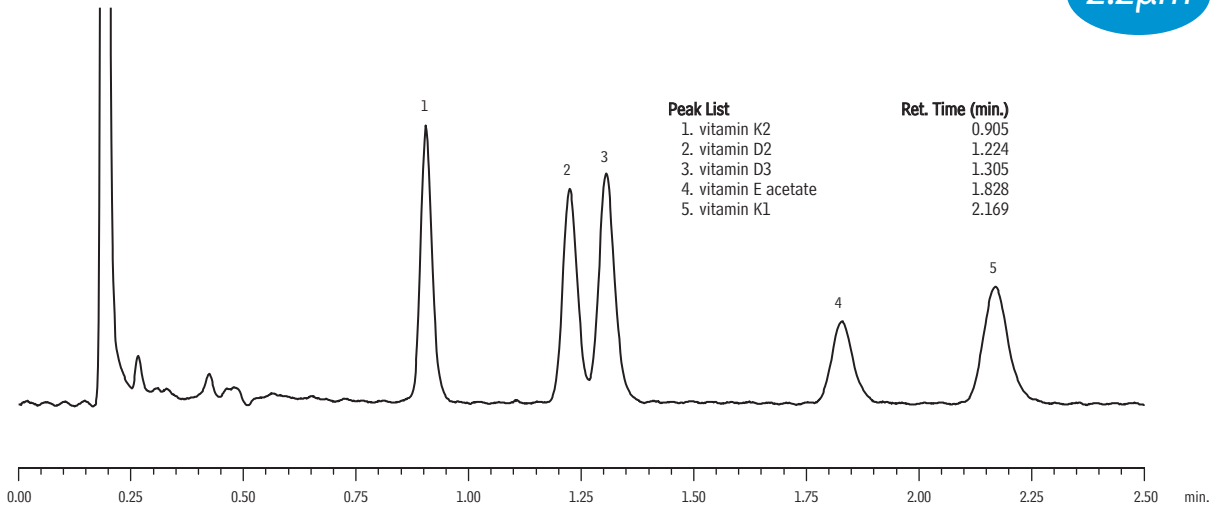
**Sample:** Nitroaromatics and Nitramine Explosives by HPLC,  
EPA 8330B (cat.# 33204)  
**Inj.:** 10µL  
**Conc.:** 10µg/mL each component  
**Sample diluent:** methanol

**Column:** Ultra II™ Aromax  
**Cat.#:** 9607575  
**Dimensions:** 250mm x 4.6mm  
**Particle size:** 5µm  
**Pore size:** 100Å

**Conditions:**  
**Instrument:** Shimadzu Prominence  
**Mobile phase:** water:methanol, 35:65 (v/v)  
**Flow:** 1.2mL/min.  
**Temp.:** 30°C  
**Pressure:** 170bar  
**Det.:** UV @ 254nm and 210nm

## Fat Soluble Vitamins on Ultra II™ C18

2.2µm



| Peak List            | Ret. Time (min.) |
|----------------------|------------------|
| 1. vitamin K2        | 0.905            |
| 2. vitamin D2        | 1.224            |
| 3. vitamin D3        | 1.305            |
| 4. vitamin E acetate | 1.828            |
| 5. vitamin K1        | 2.169            |

LC\_PH0492

**Sample:**  
**Inj.:** 1µL  
**Conc.:** 100µg/mL each component  
**Sample diluent:** acetone

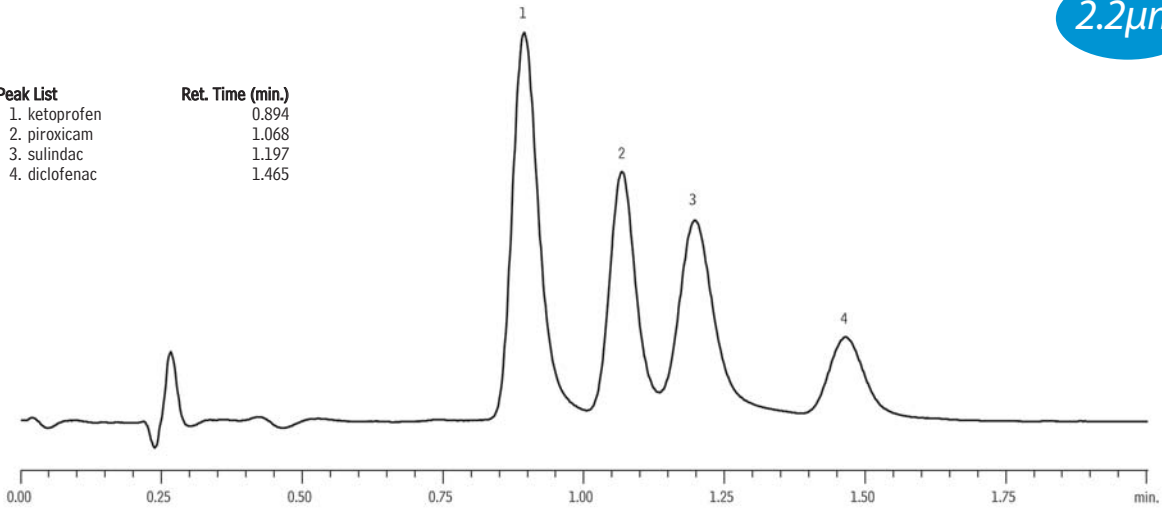
**Column:** Ultra II™ C18  
**Cat.#:** 9604853  
**Dimensions:** 50mm x 3.0mm  
**Particle size:** 2.2µm  
**Pore size:** 100Å

**Conditions:**  
**Instrument:** Shimadzu Prominence UFLCxr  
**Mobile phase:** acetonitrile:methanol (85:15)  
**Flow:** 1.5mL/min.  
**Temp.:** ambient  
**Pressure:** 280bar  
**Det.:** UV @ 230nm

## NSAIDs on Ultra II™ Biphenyl

2.2µm

| Peak List     | Ret. Time (min.) |
|---------------|------------------|
| 1. ketoprofen | 0.894            |
| 2. piroxicam  | 1.068            |
| 3. sulindac   | 1.197            |
| 4. diclofenac | 1.465            |



LC\_PH0487

**Sample:**  
 Inj.: 5µL  
 Conc.: 15µg/mL each component  
 Sample diluent: methanol

**Column:** Ultra II™ Biphenyl  
 Cat.#: 9609853  
 Dimensions: 50mm x 3.0mm  
 Particle size: 2.2µm  
 Pore size: 100Å

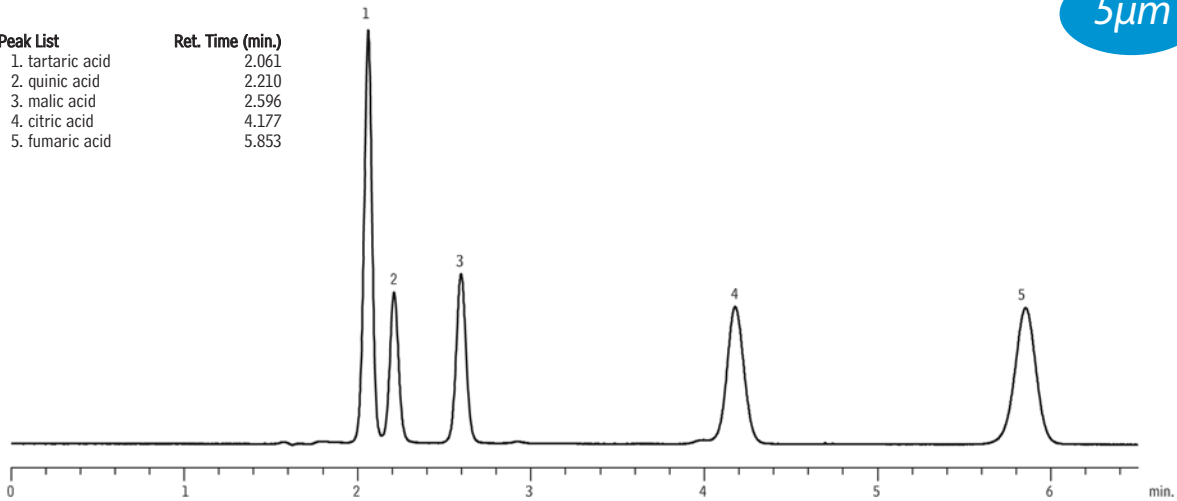
**Conditions:**  
 Instrument: Shimadzu Prominence UFLCXR  
 Mobile phase: 20mM potassium phosphate, pH 2.5: methanol (30:70)

Flow: 1.2mL/min.  
 Temp.: 40°C  
 Pressure: 460bar  
 Det.: UV @ 254nm

## Organic Acids on Ultra II™ Aqueous C18

5µm

| Peak List        | Ret. Time (min.) |
|------------------|------------------|
| 1. tartaric acid | 2.061            |
| 2. quinic acid   | 2.210            |
| 3. malic acid    | 2.596            |
| 4. citric acid   | 4.177            |
| 5. fumaric acid  | 5.853            |



LC\_PH0498

**Sample:**  
 Inj.: 5µL  
 Conc.: 10µg/mL fumaric acid,  
 2,000µg/mL each other acids  
 Sample diluent: water

**Column:** Ultra II™ Aqueous C18  
 Cat.#: 9608565  
 Dimensions: 150mm x 4.6mm  
 Particle size: 5µm  
 Pore size: 100Å

**Conditions:**  
 Instrument: Shimadzu Prominence UFLCXR  
 Mobile phase: 100% 20mM potassium phosphate (pH 2.5)  
 Flow: 1.0mL/min.  
 Temp.: 30°C  
 Pressure: 80bar  
 Det.: UV @ 226nm

## Alcohol Metabolites on Ultra II™ Biphenyl

5µm

**Sample:**  
 Inj.: 5µL  
 Conc.: 5µg/mL each component  
 Sample diluent: urine diluted 1:10 with mobile phase

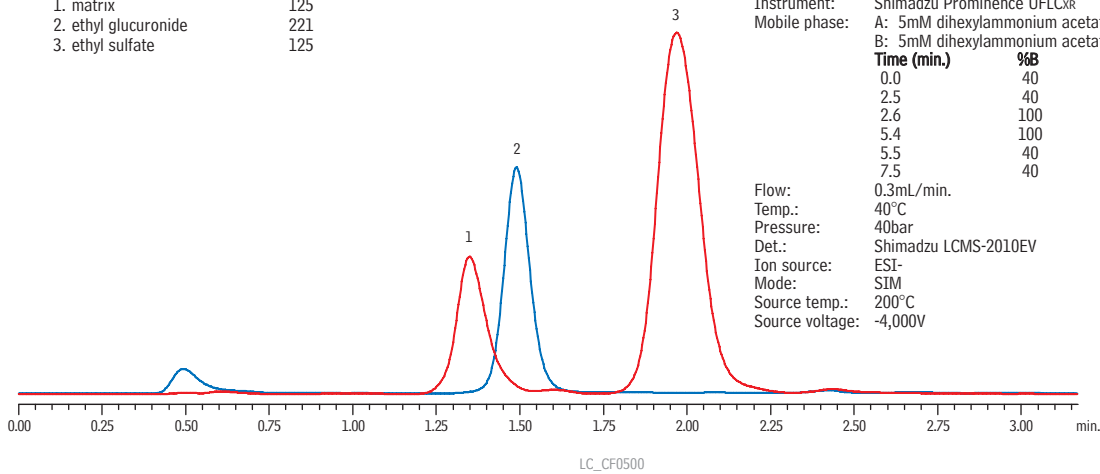
**Column:** Ultra II™ Biphenyl  
 Cat.#: 9609552  
 Dimensions: 50mm x 2.1mm  
 Particle size: 5µm  
 Pore size: 100Å

**Conditions:**  
 Instrument: Shimadzu Prominence UFLC<sub>R</sub>  
 Mobile phase: A: 5mM dihexylammonium acetate in water  
 B: 5mM dihexylammonium acetate in methanol

| Time (min.) | %B  |
|-------------|-----|
| 0.0         | 40  |
| 2.5         | 40  |
| 2.6         | 100 |
| 5.4         | 100 |
| 5.5         | 40  |
| 7.5         | 40  |

Flow: 0.3mL/min.  
 Temp.: 40°C  
 Pressure: 40bar  
 Det.: Shimadzu LCMS-2010EV  
 Ion source: ESI-  
 Mode: SIM  
 Source temp.: 200°C  
 Source voltage: -4,000V

| Peak List            | m/z |
|----------------------|-----|
| 1. matrix            | 125 |
| 2. ethyl glucuronide | 221 |
| 3. ethyl sulfate     | 125 |



## Cannabinoids on Ultra II™ Biphenyl

2.2µm

- Peak List:**
- cannabidiol
  - THC-COOH
  - cannabinol
  - Δ<sup>9</sup>-THC-d<sub>3</sub>
  - Δ<sup>9</sup>-THC

**Sample:**  
 Inj.: 20µL  
 Conc.: 300ng/mL urine sample with 50ng/mL internal standard

**Column:** Ultra II™ Biphenyl  
 Cat.#: 9609853  
 Dimensions: 50mm x 3.0mm  
 Particle size: 2.2µm  
 Pore size: 100Å

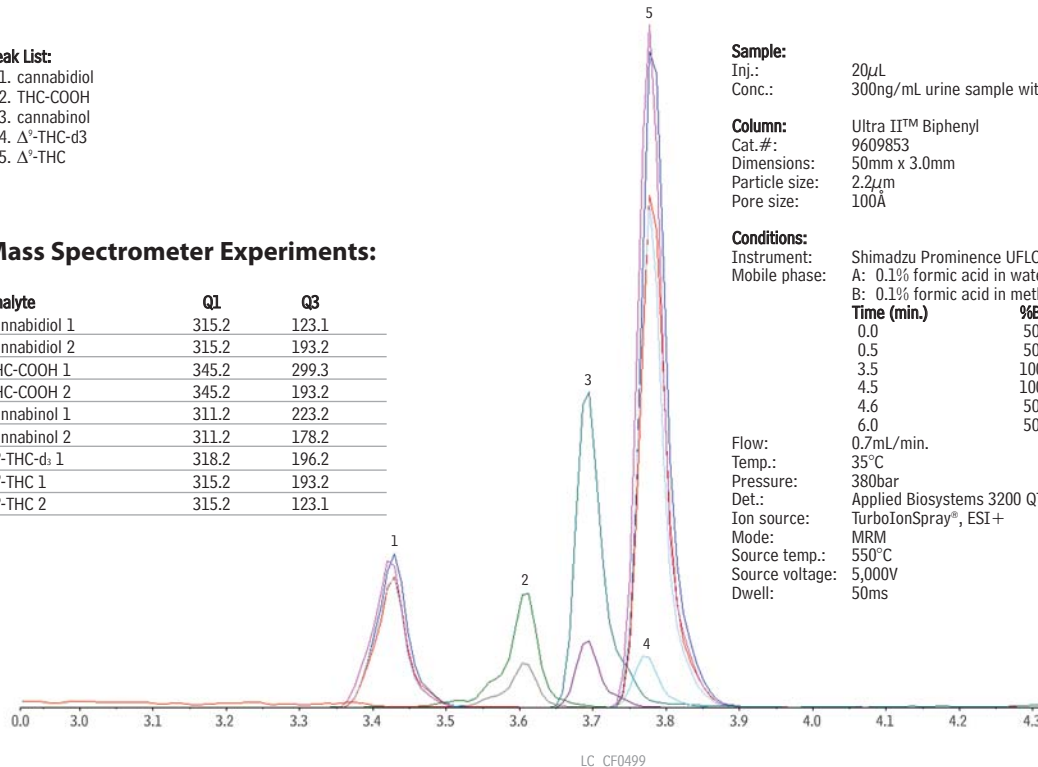
**Conditions:**  
 Instrument: Shimadzu Prominence UFLC<sub>R</sub>  
 Mobile phase: A: 0.1% formic acid in water  
 B: 0.1% formic acid in methanol

| Time (min.) | %B  |
|-------------|-----|
| 0.0         | 50  |
| 0.5         | 50  |
| 3.5         | 100 |
| 4.5         | 100 |
| 4.6         | 50  |
| 6.0         | 50  |

Flow: 0.7mL/min.  
 Temp.: 35°C  
 Pressure: 380bar  
 Det.: Applied Biosystems 3200 QTRAP™ LC/MS/MS system  
 Ion source: TurboIonSpray®, ESI+  
 Mode: MRM  
 Source temp.: 550°C  
 Source voltage: 5,000V  
 Dwell: 50ms

### Mass Spectrometer Experiments:

| Analyte                              | Q1    | Q3    |
|--------------------------------------|-------|-------|
| cannabidiol 1                        | 315.2 | 123.1 |
| cannabidiol 2                        | 315.2 | 193.2 |
| THC-COOH 1                           | 345.2 | 299.3 |
| THC-COOH 2                           | 345.2 | 193.2 |
| cannabinol 1                         | 311.2 | 223.2 |
| cannabinol 2                         | 311.2 | 178.2 |
| Δ <sup>9</sup> -THC-d <sub>3</sub> 1 | 318.2 | 196.2 |
| Δ <sup>9</sup> -THC 1                | 315.2 | 193.2 |
| Δ <sup>9</sup> -THC 2                | 315.2 | 123.1 |



## Ultra II™ Silica Columns (USP L3)

### Physical Characteristics:

particle size: 1.9µm, 2.2µm, 3µm or 5µm, spherical  
pore size: 100Å  
carbon load: 0%

endcap: no  
pH range: 2.5 to 7.5  
temperature limit: 80°C

| Column                     | cat. #  |
|----------------------------|---------|
| <b>1.9µm Column, 2.1mm</b> |         |
| 30mm                       | 9600232 |
| 50mm                       | 9600252 |
| 100mm                      | 9600212 |
| <b>2.2µm Column, 3.0mm</b> |         |
| 30mm                       | 9600833 |
| 50mm                       | 9600853 |
| 100mm                      | 9600813 |
| <b>3µm Column, 1.0mm</b>   |         |
| 30mm                       | 9600331 |
| 50mm                       | 9600351 |
| 100mm                      | 9600311 |
| 150mm                      | 9600361 |
| <b>3µm Column, 2.1mm</b>   |         |
| 30mm                       | 9600332 |
| 50mm                       | 9600352 |
| 100mm                      | 9600312 |
| 150mm                      | 9600362 |
| <b>3µm Column, 3.2mm</b>   |         |
| 30mm                       | 9600333 |
| 50mm                       | 9600353 |
| 100mm                      | 9600313 |
| 150mm                      | 9600363 |
| <b>3µm Column, 4.6mm</b>   |         |
| 30mm                       | 9600335 |
| 50mm                       | 9600355 |
| 100mm                      | 9600315 |
| 150mm                      | 9600365 |
| <b>5µm Column, 1.0mm</b>   |         |
| 30mm                       | 9600531 |
| 50mm                       | 9600551 |
| 100mm                      | 9600511 |
| 150mm                      | 9600561 |
| 200mm                      | 9600521 |
| 250mm                      | 9600571 |
| <b>5µm Column, 2.1mm</b>   |         |
| 30mm                       | 9600532 |
| 50mm                       | 9600552 |
| 100mm                      | 9600512 |
| 150mm                      | 9600562 |
| 200mm                      | 9600522 |
| 250mm                      | 9600572 |
| <b>5µm Column, 3.2mm</b>   |         |
| 30mm                       | 9600533 |
| 50mm                       | 9600553 |
| 100mm                      | 9600513 |
| 150mm                      | 9600563 |
| 200mm                      | 9600523 |
| 250mm                      | 9600573 |
| <b>5µm Column, 4.6mm</b>   |         |
| 30mm                       | 9600535 |
| 50mm                       | 9600555 |
| 100mm                      | 9600515 |
| 150mm                      | 9600565 |
| 200mm                      | 9600525 |
| 250mm                      | 9600575 |

## Ultra II™ Biphenyl Columns (USP L11)

### Physical Characteristics:

particle size: 2.2µm, 3µm or 5µm, spherical  
pore size: 100Å  
carbon load: 15%

endcap: fully endcapped  
pH range: 2.5 to 7.5  
temperature limit: 80°C

| Column                     | cat. #  |
|----------------------------|---------|
| <b>2.2µm Column, 3.0mm</b> |         |
| 30mm                       | 9609833 |
| 50mm                       | 9609853 |
| 100mm                      | 9609813 |
| <b>3µm Column, 1.0mm</b>   |         |
| 30mm                       | 9609331 |
| 50mm                       | 9609351 |
| 100mm                      | 9609311 |
| 150mm                      | 9609361 |
| <b>3µm Column, 2.1mm</b>   |         |
| 30mm                       | 9609332 |
| 50mm                       | 9609352 |
| 100mm                      | 9609312 |
| 150mm                      | 9609362 |
| <b>3µm Column, 3.2mm</b>   |         |
| 30mm                       | 9609333 |
| 50mm                       | 9609353 |
| 100mm                      | 9609313 |
| 150mm                      | 9609363 |
| <b>3µm Column, 4.6mm</b>   |         |
| 30mm                       | 9609335 |
| 50mm                       | 9609355 |
| 100mm                      | 9609315 |
| 150mm                      | 9609365 |
| <b>5µm Column, 1.0mm</b>   |         |
| 30mm                       | 9609531 |
| 50mm                       | 9609551 |
| 100mm                      | 9609511 |
| 150mm                      | 9609561 |
| 200mm                      | 9609521 |
| 250mm                      | 9609571 |
| <b>5µm Column, 2.1mm</b>   |         |
| 30mm                       | 9609532 |
| 50mm                       | 9609552 |
| 100mm                      | 9609512 |
| 150mm                      | 9609562 |
| 200mm                      | 9609522 |
| 250mm                      | 9609572 |
| <b>5µm Column, 3.2mm</b>   |         |
| 30mm                       | 9609533 |
| 50mm                       | 9609553 |
| 100mm                      | 9609513 |
| 150mm                      | 9609563 |
| 200mm                      | 9609523 |
| 250mm                      | 9609573 |
| <b>5µm Column, 4.6mm</b>   |         |
| 30mm                       | 9609535 |
| 50mm                       | 9609555 |
| 100mm                      | 9609515 |
| 150mm                      | 9609565 |
| 200mm                      | 9609525 |
| 250mm                      | 9609575 |

**1.9µm coming soon!**

## Ultra II™ Aromax Columns (USP L11)

### Physical Characteristics:

particle size: 3µm or 5µm, spherical  
pore size: 100Å  
carbon load: 17%

endcap: fully endcapped  
pH range: 2.5 to 7.5  
temperature limit: 80°C

| Column                   | cat. #  |
|--------------------------|---------|
| <b>3µm Column, 1.0mm</b> |         |
| 30mm                     | 9607331 |
| 50mm                     | 9607351 |
| 100mm                    | 9607311 |
| 150mm                    | 9607361 |
| <b>3µm Column, 2.1mm</b> |         |
| 30mm                     | 9607332 |
| 50mm                     | 9607352 |
| 100mm                    | 9607312 |
| 150mm                    | 9607362 |
| <b>3µm Column, 3.2mm</b> |         |
| 30mm                     | 9607333 |
| 50mm                     | 9607353 |
| 100mm                    | 9607313 |
| 150mm                    | 9607363 |
| <b>3µm Column, 4.6mm</b> |         |
| 30mm                     | 9607335 |
| 50mm                     | 9607355 |
| 100mm                    | 9607315 |
| 150mm                    | 9607365 |
| <b>5µm Column, 1.0mm</b> |         |
| 30mm                     | 9607531 |
| 50mm                     | 9607551 |
| 100mm                    | 9607511 |
| 150mm                    | 9607561 |
| 200mm                    | 9607521 |
| 250mm                    | 9607571 |
| <b>5µm Column, 2.1mm</b> |         |
| 30mm                     | 9607532 |
| 50mm                     | 9607552 |
| 100mm                    | 9607512 |
| 150mm                    | 9607562 |
| 200mm                    | 9607522 |
| 250mm                    | 9607572 |
| <b>5µm Column, 3.2mm</b> |         |
| 30mm                     | 9607533 |
| 50mm                     | 9607553 |
| 100mm                    | 9607513 |
| 150mm                    | 9607563 |
| 200mm                    | 9607523 |
| 250mm                    | 9607573 |
| <b>5µm Column, 4.6mm</b> |         |
| 30mm                     | 9607535 |
| 50mm                     | 9607555 |
| 100mm                    | 9607515 |
| 150mm                    | 9607565 |
| 200mm                    | 9607525 |
| 250mm                    | 9607575 |

**1.9µm & 2.2µm coming soon!**

## ordering note

Guard cartridges are available, visit our website at [www.restek.com](http://www.restek.com) for ordering information.

Visit us at [www.restek.com/ultra2](http://www.restek.com/ultra2) for our most complete listing of Ultra II™ columns.

## Ultra II™ C18 Columns (USP L1)

### Physical Characteristics:

particle size: 1.9µm, 2.2µm, 3µm or 5µm, spherical  
pore size: 100Å  
carbon load: 19%

endcap: fully endcapped  
pH range: 2.5 to 7.5  
temperature limit: 80°C

|                            |               |
|----------------------------|---------------|
| <b>1.9µm Column, 2.1mm</b> | <b>cat. #</b> |
| 30mm                       | 9604232       |
| 50mm                       | 9604252       |
| 100mm                      | 9604212       |
| <b>2.2µm Column, 3.0mm</b> | <b>cat. #</b> |
| 30mm                       | 9604833       |
| 50mm                       | 9604853       |
| 100mm                      | 9604813       |
| <b>3µm Column, 1.0mm</b>   | <b>cat. #</b> |
| 30mm                       | 9604331       |
| 50mm                       | 9604351       |
| 100mm                      | 9604311       |
| 150mm                      | 9604361       |
| <b>3µm Column, 2.1mm</b>   | <b>cat. #</b> |
| 30mm                       | 9604332       |
| 50mm                       | 9604352       |
| 100mm                      | 9604312       |
| 150mm                      | 9604362       |
| <b>3µm Column, 3.2mm</b>   | <b>cat. #</b> |
| 30mm                       | 9604333       |
| 50mm                       | 9604353       |
| 100mm                      | 9604313       |
| 150mm                      | 9604363       |
| <b>3µm Column, 4.6mm</b>   | <b>cat. #</b> |
| 30mm                       | 9604335       |
| 50mm                       | 9604355       |
| 100mm                      | 9604315       |
| 150mm                      | 9604365       |
| <b>5µm Column, 1.0mm</b>   | <b>cat. #</b> |
| 30mm                       | 9604531       |
| 50mm                       | 9604551       |
| 100mm                      | 9604511       |
| 150mm                      | 9604561       |
| 200mm                      | 9604521       |
| 250mm                      | 9604571       |
| <b>5µm Column, 2.1mm</b>   | <b>cat. #</b> |
| 30mm                       | 9604532       |
| 50mm                       | 9604552       |
| 100mm                      | 9604512       |
| 150mm                      | 9604562       |
| 200mm                      | 9604522       |
| 250mm                      | 9604572       |
| <b>5µm Column, 3.2mm</b>   | <b>cat. #</b> |
| 30mm                       | 9604533       |
| 50mm                       | 9604553       |
| 100mm                      | 9604513       |
| 150mm                      | 9604563       |
| 200mm                      | 9604523       |
| 250mm                      | 9604573       |
| <b>5µm Column, 4.6mm</b>   | <b>cat. #</b> |
| 30mm                       | 9604535       |
| 50mm                       | 9604555       |
| 100mm                      | 9604515       |
| 150mm                      | 9604565       |
| 200mm                      | 9604525       |
| 250mm                      | 9604575       |

## Ultra II™ Aqueous C18 Columns (USP L1)

### Physical Characteristics:

particle size: 2.2µm, 3µm or 5µm, spherical  
pore size: 100Å  
carbon load: 15%

endcap: no  
pH range: 2.5 to 7.5  
temperature limit: 80°C

|                            |               |
|----------------------------|---------------|
| <b>2.2µm Column, 3.0mm</b> | <b>cat. #</b> |
| 30mm                       | 9608833       |
| 50mm                       | 9608853       |
| 100mm                      | 9608813       |
| <b>3µm Column, 1.0mm</b>   | <b>cat. #</b> |
| 30mm                       | 9608331       |
| 50mm                       | 9608351       |
| 100mm                      | 9608311       |
| 150mm                      | 9608361       |
| <b>3µm Column, 2.1mm</b>   | <b>cat. #</b> |
| 30mm                       | 9608332       |
| 50mm                       | 9608352       |
| 100mm                      | 9608312       |
| 150mm                      | 9608362       |
| <b>3µm Column, 3.2mm</b>   | <b>cat. #</b> |
| 30mm                       | 9608333       |
| 50mm                       | 9608353       |
| 100mm                      | 9608313       |
| 150mm                      | 9608363       |
| <b>3µm Column, 4.6mm</b>   | <b>cat. #</b> |
| 30mm                       | 9608335       |
| 50mm                       | 9608355       |
| 100mm                      | 9608315       |
| 150mm                      | 9608365       |
| <b>5µm Column, 1.0mm</b>   | <b>cat. #</b> |
| 30mm                       | 9608531       |
| 50mm                       | 9608551       |
| 100mm                      | 9608511       |
| 150mm                      | 9608561       |
| 200mm                      | 9608521       |
| 250mm                      | 9608571       |
| <b>5µm Column, 2.1mm</b>   | <b>cat. #</b> |
| 30mm                       | 9608532       |
| 50mm                       | 9608552       |
| 100mm                      | 9608512       |
| 150mm                      | 9608562       |
| 200mm                      | 9608522       |
| 250mm                      | 9608572       |
| <b>5µm Column, 3.2mm</b>   | <b>cat. #</b> |
| 30mm                       | 9608533       |
| 50mm                       | 9608553       |
| 100mm                      | 9608513       |
| 150mm                      | 9608563       |
| 200mm                      | 9608523       |
| 250mm                      | 9608573       |
| <b>5µm Column, 4.6mm</b>   | <b>cat. #</b> |
| 30mm                       | 9608535       |
| 50mm                       | 9608555       |
| 100mm                      | 9608515       |
| 150mm                      | 9608565       |
| 200mm                      | 9608525       |
| 250mm                      | 9608575       |

**1.9µm coming soon!**

### PATENTS & TRADEMARKS

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## Ultra II™ PFP Propyl Columns (USP L43)

### Physical Characteristics:

particle size: 2.2µm, 3µm or 5µm, spherical  
pore size: 100Å  
carbon load: 11%

endcap: fully endcapped  
pH range: 2.5 to 7.5  
temperature limit: 80°C

|                            |               |
|----------------------------|---------------|
| <b>2.2µm Column, 3.0mm</b> | <b>cat. #</b> |
| 30mm                       | 9606833       |
| 50mm                       | 9606853       |
| 100mm                      | 9606813       |
| <b>3µm Column, 1.0mm</b>   | <b>cat. #</b> |
| 30mm                       | 9606331       |
| 50mm                       | 9606351       |
| 100mm                      | 9606311       |
| 150mm                      | 9606361       |
| <b>3µm Column, 2.1mm</b>   | <b>cat. #</b> |
| 30mm                       | 9606332       |
| 50mm                       | 9606352       |
| 100mm                      | 9606312       |
| 150mm                      | 9606362       |
| <b>3µm Column, 3.2mm</b>   | <b>cat. #</b> |
| 30mm                       | 9606333       |
| 50mm                       | 9606353       |
| 100mm                      | 9606313       |
| 150mm                      | 9606363       |
| <b>3µm Column, 4.6mm</b>   | <b>cat. #</b> |
| 30mm                       | 9606335       |
| 50mm                       | 9606355       |
| 100mm                      | 9606315       |
| 150mm                      | 9606365       |
| <b>5µm Column, 1.0mm</b>   | <b>cat. #</b> |
| 30mm                       | 9606531       |
| 50mm                       | 9606551       |
| 100mm                      | 9606511       |
| 150mm                      | 9606561       |
| 200mm                      | 9606521       |
| 250mm                      | 9606571       |
| <b>5µm Column, 2.1mm</b>   | <b>cat. #</b> |
| 30mm                       | 9606532       |
| 50mm                       | 9606552       |
| 100mm                      | 9606512       |
| 150mm                      | 9606562       |
| 200mm                      | 9606522       |
| 250mm                      | 9606572       |
| <b>5µm Column, 3.2mm</b>   | <b>cat. #</b> |
| 30mm                       | 9606533       |
| 50mm                       | 9606553       |
| 100mm                      | 9606513       |
| 150mm                      | 9606563       |
| 200mm                      | 9606523       |
| 250mm                      | 9606573       |
| <b>5µm Column, 4.6mm</b>   | <b>cat. #</b> |
| 30mm                       | 9606535       |
| 50mm                       | 9606555       |
| 100mm                      | 9606515       |
| 150mm                      | 9606565       |
| 200mm                      | 9606525       |
| 250mm                      | 9606575       |

**1.9µm coming soon!**



Lit. Cat.# GNTS1177-INT

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10