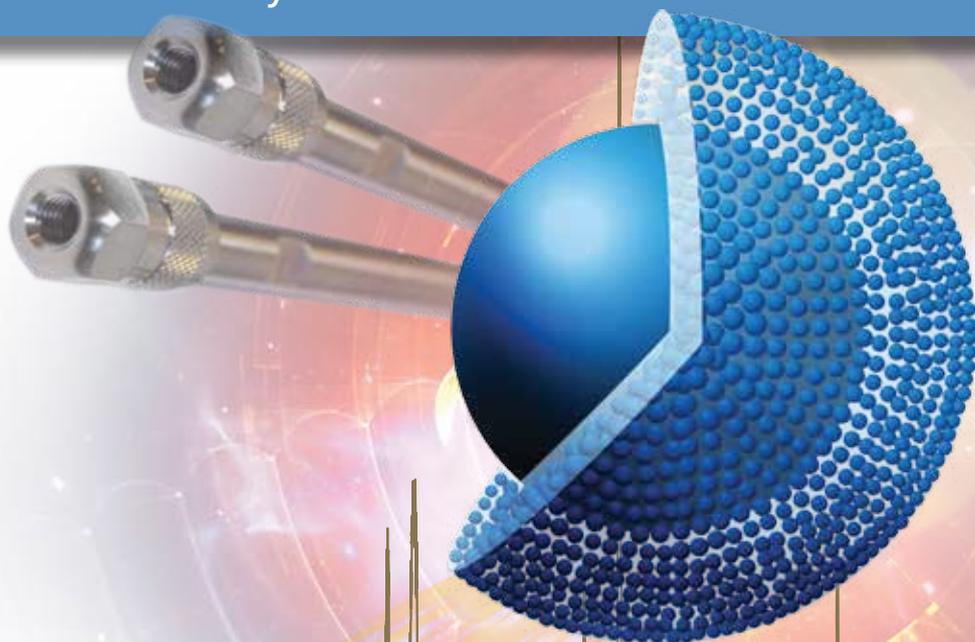


# ACE<sup>®</sup> UltraCore<sup>™</sup> SuperC18<sup>™</sup>

UHPLC / HPLC Columns Developed for

## MASS SPECTROMETRY

- Water analysis • Pharmaceutical • Environmental • Toxicology
- Food safety • Clinical • Forensics • Metabolism • Trace analysis



- Ultra-inert 2.5 $\mu$ m and 5 $\mu$ m solid-core particles for sharp peaks and high MS signal sensitivity
- Ultra-low bleed profile for minimal background in all UV and MS applications
- Columns stable between pH 1.5 and pH 11 for maximum versatility
- Rapid analysis formats available including 0.5mm and 1.0mm id columns



**ACE<sup>®</sup> UltraCore<sup>™</sup>**  
Solid-Core UHPLC / HPLC Columns for MS

# ACE UltraCore SuperC18

## Explore the advantages of ACE UltraCore SuperC18 for MS

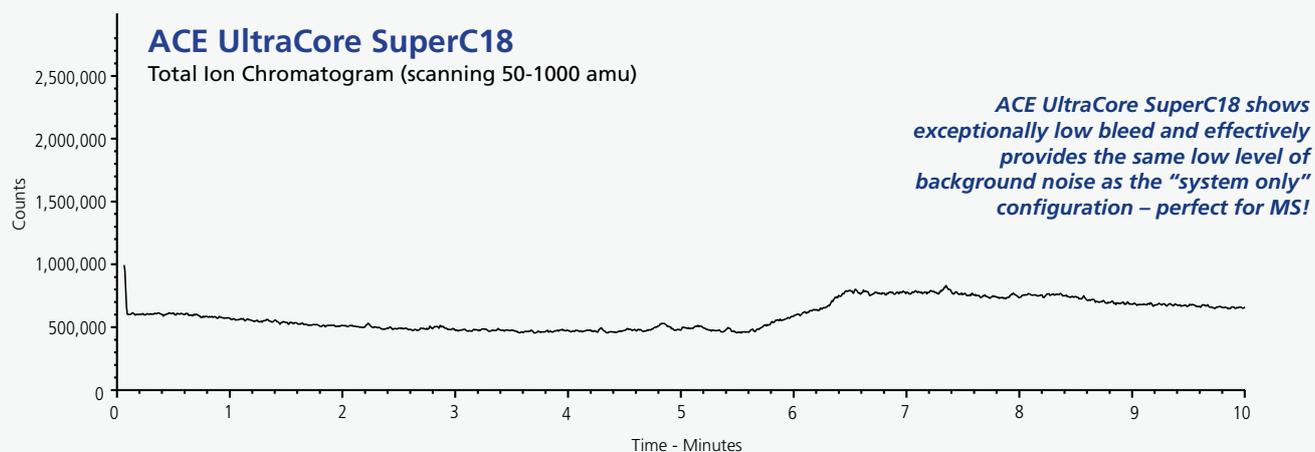
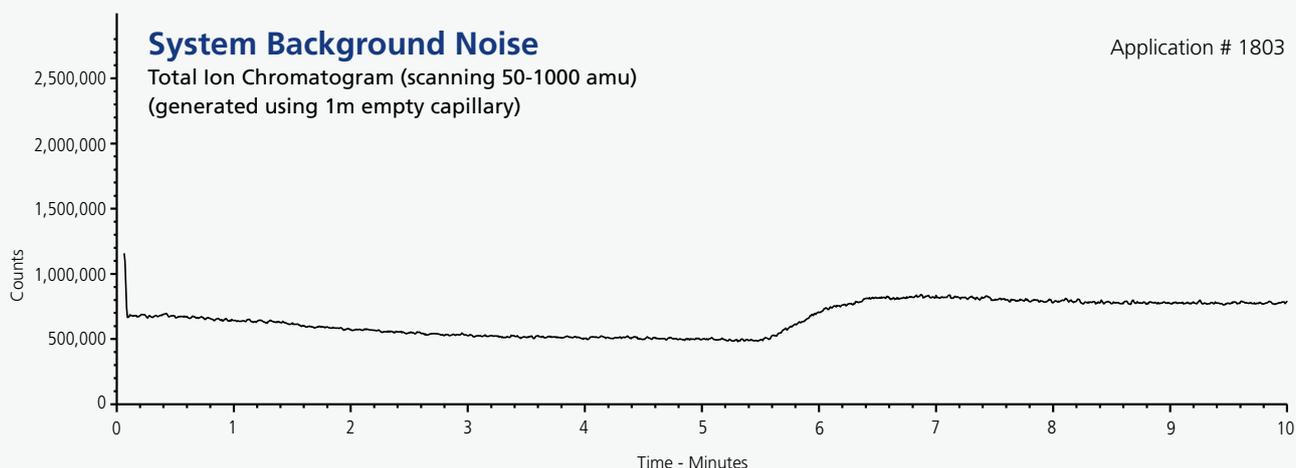
ACE UltraCore SuperC18 has been specifically designed for MS applications and is based on the high efficiency, low back pressure solid-core particles with our unique Encapsulated Bonding Technology (EBT™). This technology dramatically increases ligand coverage on the solid-core silica surface and consequently provides a number of key advantages for MS users.

## Advantage #1: Reduced Background Noise for MS

The proprietary Encapsulated Bonding Technology (EBT™) ensures ACE UltraCore SuperC18 columns are highly resistant to hydrolysis. The resulting highly stable phase contributes minimal background column bleed ensuring maximum MS response and intensity.

### ACE UltraCore SuperC18 Columns Provide Exceptionally Low MS Bleed

- The following example compares bleed from a gradient analysis as a Total Ion Chromatogram detected by the MS with and without the presence of a highly stable ACE UltraCore SuperC18 column.



Column: ACE UltraCore SuperC18, 50 x 2.1mm, 5µm  
Flow Rate: 0.60ml/min Temp: 40°C Detection: Agilent 1290B with 6150MSD, AJS-ES spray chamber  
Mobile Phase A: 0.1% v/v HCOOH (aq)  
Mobile Phase B: 0.1% v/v HCOOH in MeCN  
Gradient: Time (mins) 0 0.2 6 10 10.5  
          %B 5 5 100 100 5

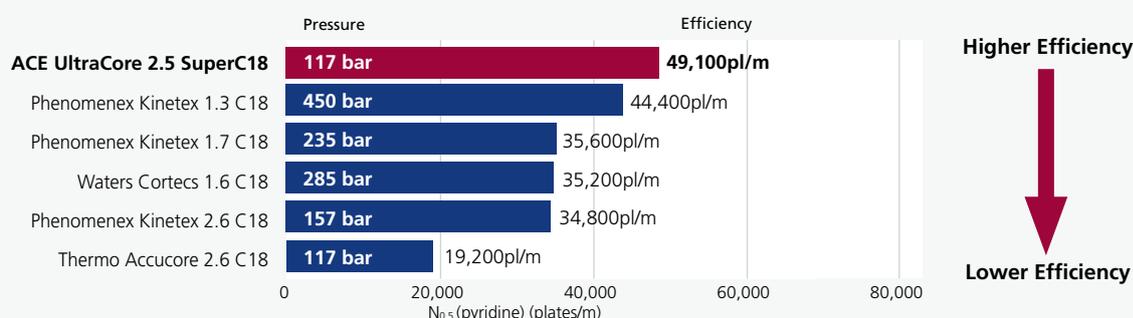
## Advantage #2: Improved Peak Shape and MS Signal Intensity

ACE UltraCore columns have earned a well deserved reputation for delivering highly efficient, symmetrical peak shapes even with the most challenging of molecules as illustrated by the following independent test. The use of a highly efficient column exhibiting minimal peak tailing will result in an improved MS signal response.

### ACE UltraCore SuperC18 Provides Exceptional Efficiency

- Leading column brands from major manufacturers investigated
- Comparison of column efficiency for pyridine – a basic molecule

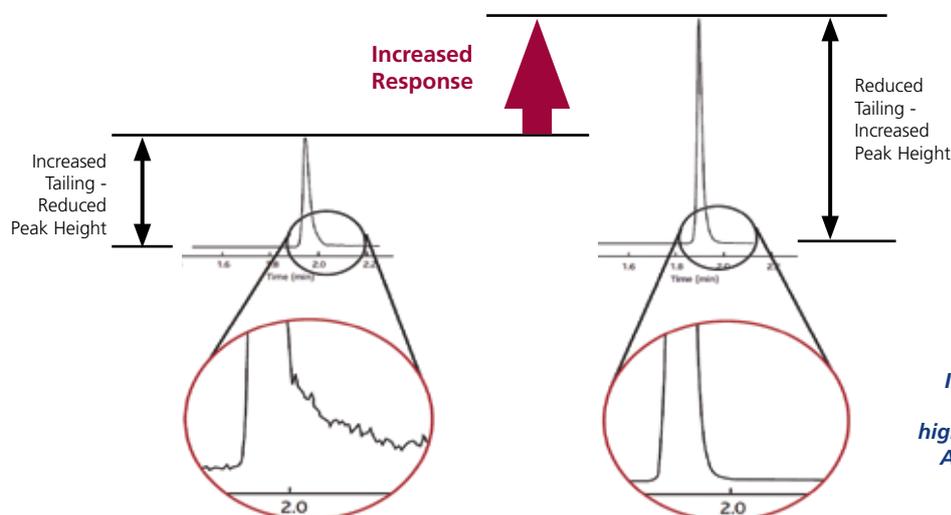
#### Peak Efficiency Comparison Reproduced with kind permission of The Open University, UK. Application # 1802



Column Dimensions: 50 x 2.1mm Sample: 1) uracil 2) pyridine 3) phenol  
 Mobile Phase: 30:70 (v/v) MeOH/10mM NH<sub>4</sub>OAc in H<sub>2</sub>O (pH 5.8) Flow Rate: 0.20ml/min Temperature: 22°C Wavelength: 254nm  
 Comparative data may not be representative of all applications. Please see back page for acknowledgement of trademarks.

### Reduce Peak Tailing to Improve MS Signal Response

- Improved efficiency and peak shape has a direct effect upon signal response



*Improve your MS signal response by selecting high efficiency, low tailing ACE UltraCore SuperC18 columns*

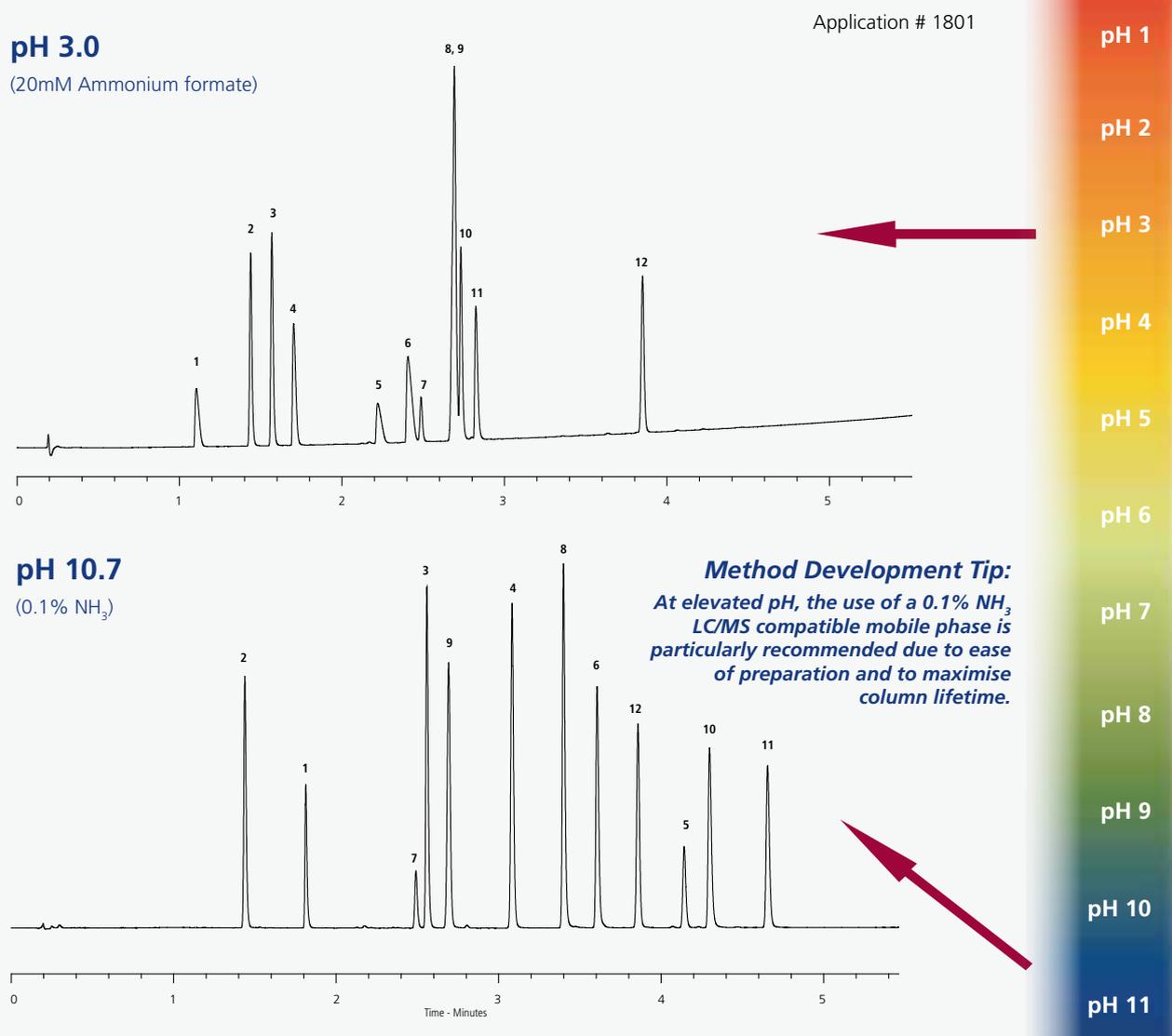
## Advantage #3: Exploit a Wider pH Operating Range

A further advantage of the proprietary Encapsulated Bonding Technology (EBT™) is the extended pH operating range compared to traditional C18 phases.

Highly stable ACE UltraCore SuperC18 columns can be used with MS compatible buffers from pH 1.5 – 11.0 to maximise both resolution and MS signal response.

### Exploit Selectivity by Adjusting pH with MS Compatible Buffers

- Confidently develop methods at an eluent pH that maximises resolution and MS response
- Stable and rugged ACE UltraCore columns offer excellent column lifetimes across the pH range



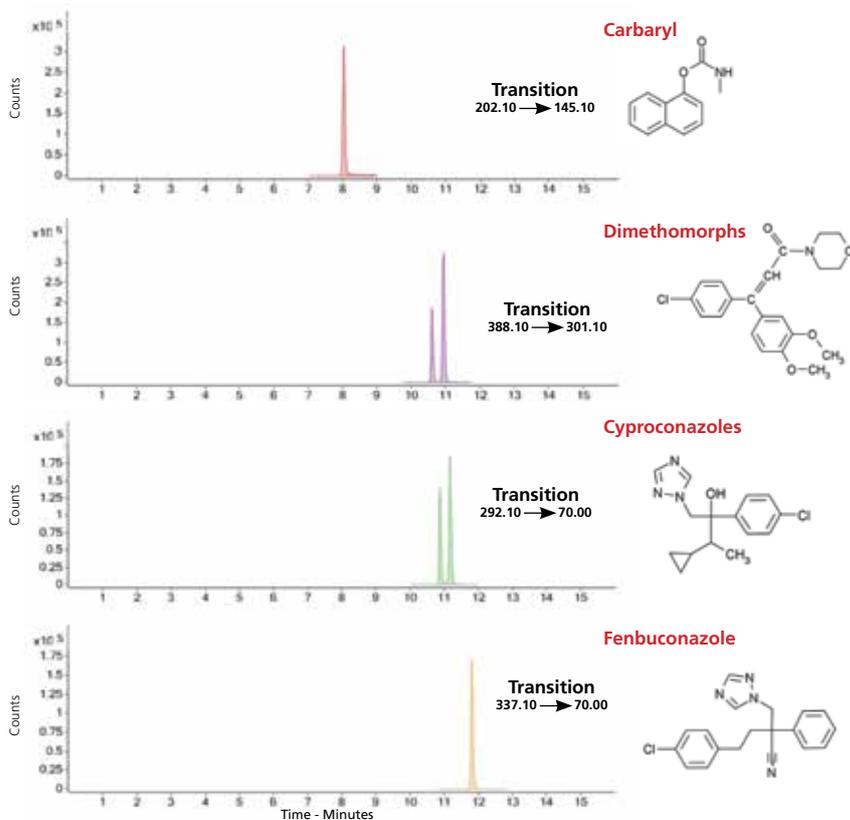
Column: ACE UltraCore SuperC18, 50 x 2.1mm, 2.5µm  
Sample: 1) atenolol 2) methylphenylsulphoxide 3) eserine 4) prilocaine 5) bupivacaine 6) tetracaine  
7) 1,2,3,4-tetrahydro-1-naphthol 8) carvedilol 9) nitrobenzene 10) methdilazine 11) amitriptyline 12) valerophenone  
Temperature: 40°C Flow Rate: 0.60ml/min Wavelength: 254nm Gradient: 3 – 100% B in 5 minutes  
Acidic Mobile Phase: A: 20mM ammonium formate in H<sub>2</sub>O (pH 3.0) B: 20mM ammonium formate (pH 3.0) in 90:10 (v/v) MeCN/H<sub>2</sub>O  
Basic Mobile Phase: A: 0.1% v/v NH<sub>3</sub> (= 18mM) in H<sub>2</sub>O (pH 10.7) B: 0.1% v/v NH<sub>3</sub> (=18mM), pH 10.7 in 90:10 (v/v) MeCN/H<sub>2</sub>O

# Use ACE UltraCore SuperC18 for MS Applications

## Example #1 Low Level Determination of Multiple Pesticide Residues by LC/MS/MS

Reproduced with kind permission of Kent Scientific Services, UK

Application # 1804



### Additional pesticides within the same analysis:

Acephate	Hexaconazole
Acetamiprid	Hexaflumuron
Aldicarb	Imidacloprid
Aldicarb sulphone	Indoxacarb
Aldicarb sulphoxide	Mandipropamid
Benomyl	Methamidophos
Carbendazim	Methomyl
Carbofuran	Monocrotophos
Clofentezine	Nicotine
Clothianidin	Omethoate
Cyfluthrin	Oxamyl
Demeton S-methylsulphone	Pencycuron
Demeton S-methylsulphoxide	Prochloraz
Dicrotophos	Propargite
Dimethoate	Thiabendazole
Dinotefuran	Thiacloprid
DMA	Thiamethoxam
DMPF	Thiodicarb
Flubendiamide	Thiophanate methyl
Folpet	Triforine
Formetanate	

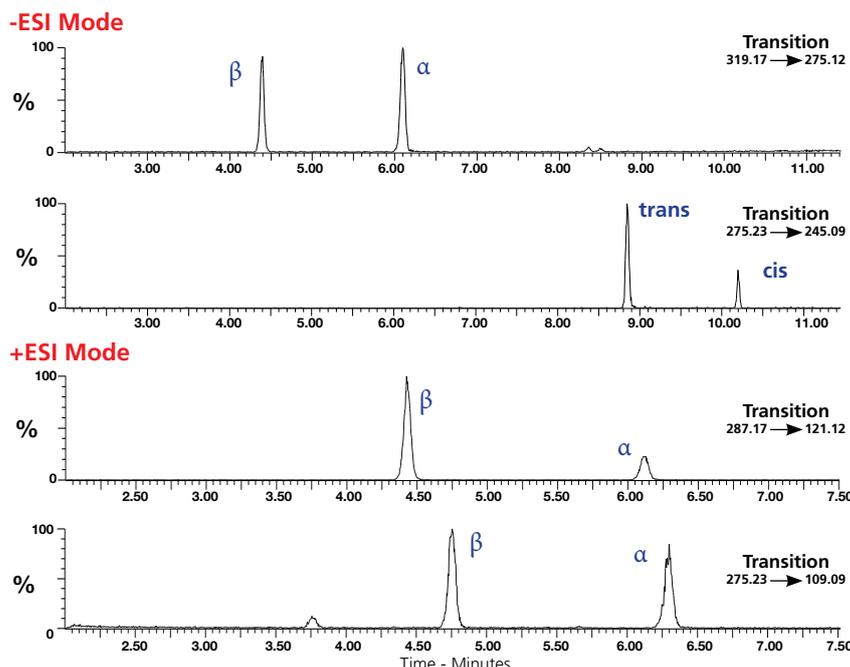
Visit [www.ace-hplc.com](http://www.ace-hplc.com) for further MS application details

Column: ACE UltraCore SuperC18, 50 x 2.1mm, 2.5µm Temp: 40°C Flow Rate: 0.40ml/min Detection: Agilent 6420 triple quadrupole MS, ESI +ve mode, dynamic MRM  
 Mobile Phase A: 0.1% v/v HCOOH + 5mM ammonium formate in 10:90 v/v MeOH/H<sub>2</sub>O Mobile Phase B: 0.1% v/v HCOOH + 5mM ammonium formate in 90:10 v/v MeOH/H<sub>2</sub>O  
 Gradient: Time (mins) 0 1 15 18 18.05 20  
 %B 0 0 100 100 0 0

## Example #2 Multiple Veterinary Steroids and Various Epimers by LC/MS/MS (with Positive/Negative Switching)

Reproduced with kind permission of The Food and Environment Research Agency, UK

Application # 1805



### Additional -ve mode (-ESI) analytes:

Talaranol and zearanol-d4  
 Talaranol and zearanol  
 Zearalenone  
 Hexestrol  
 Diethylstilbestrol  
 Dienestrol

### Additional +ve mode (+ESI) analytes:

Hydroxystanzolol  
 Hydroxystanzolol-d3  
 Methyltestosterone  
 Methyltestosterone-d3  
 $\beta$ -Nortestosterone-d3  
 $\beta$ -Trenbolone  
 $\alpha$ -Trenbolone

Column: ACE UltraCore SuperC18, 100 x 2.1mm, 2.5µm Flow Rate: 0.50ml/min Temp: 45°C Detection: Waters Xevo TQS MS, +ve or -ve mode as required, MRM data Mobile Phase A: 0.01mM NH<sub>4</sub>F + 0.001% v/v HCOOH (aq) Mobile Phase B: MeCN  
 Gradient: Time (mins) 0 0.5 7 7.5 10.5  
 %B 25 25 35 35 60

Visit [www.ace-hplc.com](http://www.ace-hplc.com) for further MS application details

# Product Availability and Specifications

Phase	Functional Group	Particle Size (µm)	Pore Size (Å)	Surface Area (m <sup>2</sup> /g)	Carbon Load (%)	Maximum pH Range	USP Listing
ACE UltraCore 2.5 SuperC18	Octadecyl encapsulated	2.5	95	130	7.0	1.5-11.0 <sup>a</sup>	L1
ACE UltraCore 5 SuperC18	Octadecyl encapsulated	5	95	100	5.4	1.5-11.0 <sup>a</sup>	L1

<sup>a</sup>ACE UltraCore columns are designed for use with LC/MS compatible buffers. Further information is contained within "ACE UltraCore – A Guide to Buffer Selection" - please contact your distributor to request your FREE copy or visit [www.ace-hplc.com](http://www.ace-hplc.com).

<sup>b</sup>**Important Note:** ACE UltraCore microbore columns (1.0mm id and 0.5mm id) are available with either standard 1/16" (10-32 thread) connections or 1/32" (6-40 thread) connections. For use with Eksigent micro and nano LC systems, order columns with 1/32" connections and use either ACE 6-40 fittings (part number ACE-MC3210, 10 pack) or Eksigent 6-40 fittings (part number 5019621).

## ACE UltraCore 2.5µm SuperC18 UHPLC/HPLC Columns (UHPLC/HPLC hardware format with 1000 bar/15000 psi pressure limit)

Column Diameter	Column Length							
	20mm	30mm	35mm	50mm	75mm	100mm	125mm	150mm
2.1mm	CORE-25A-0202U	CORE-25A-0302U	CORE-25A-3502U	CORE-25A-0502U	CORE-25A-7502U	CORE-25A-1002U	CORE-25A-1202U	CORE-25A-1502U
3.0mm	CORE-25A-0203U	CORE-25A-0303U	CORE-25A-3503U	CORE-25A-0503U	CORE-25A-7503U	CORE-25A-1003U	CORE-25A-1203U	CORE-25A-1503U
4.6mm	CORE-25A-0246U	CORE-25A-0346U	CORE-25A-3546U	CORE-25A-0546U	CORE-25A-7546U	CORE-25A-1046U	CORE-25A-1246U	CORE-25A-1546U

## ACE UltraCore 2.5µm SuperC18 Microbore HPLC Columns (HPLC hardware format with 400 bar/6000 psi recommended pressure limit)

Column Diameter	Column Length					
	30mm	50mm	75mm	100mm	125mm	150mm
0.5mm (1/32" connection) <sup>b</sup>	CORE-25A-03005S	CORE-25A-05005S	CORE-25A-75005S	CORE-25A-10005S	CORE-25A-12005S	CORE-25A-15005S
0.5mm	CORE-25A-03005	CORE-25A-05005	CORE-25A-75005	CORE-25A-10005	CORE-25A-12005	CORE-25A-15005
1.0mm (1/32" connection) <sup>b</sup>	CORE-25A-0301S	CORE-25A-0501S	CORE-25A-7501S	CORE-25A-1001S	CORE-25A-1201S	CORE-25A-1501S
1.0mm	CORE-25A-0301	CORE-25A-0501	CORE-25A-7501	CORE-25A-1001	CORE-25A-1201	CORE-25A-1501

## ACE UltraCore 5µm SuperC18 UHPLC/HPLC Columns (UHPLC/HPLC hardware format with 1000 bar/15000 psi pressure limit)

Column Diameter	Column Length								
	20mm	30mm	35mm	50mm	75mm	100mm	125mm	150mm	250mm
2.1mm	CORE-5A-0202U	CORE-5A-0302U	CORE-5A-3502U	CORE-5A-0502U	CORE-5A-7502U	CORE-5A-1002U	CORE-5A-1202U	CORE-5A-1502U	CORE-5A-2502U
3.0mm	CORE-5A-0203U	CORE-5A-0303U	CORE-5A-3503U	CORE-5A-0503U	CORE-5A-7503U	CORE-5A-1003U	CORE-5A-1203U	CORE-5A-1503U	CORE-5A-2503U
4.6mm	CORE-5A-0246U	CORE-5A-0346U	CORE-5A-3546U	CORE-5A-0546U	CORE-5A-7546U	CORE-5A-1046U	CORE-5A-1246U	CORE-5A-1546U	CORE-5A-2546U

## ACE UltraCore 5µm SuperC18 Microbore HPLC Columns (HPLC hardware format with 400 bar/6000 psi recommended pressure limit)

Column Diameter	Column Length							
	30mm	50mm	75mm	100mm	125mm	150mm	250mm	
0.5mm (1/32" connection) <sup>b</sup>	CORE-5A-03005S	CORE-5A-05005S	CORE-5A-75005S	CORE-5A-10005S	CORE-5A-12005S	CORE-5A-15005S	CORE-5A-25005S	
0.5mm	CORE-5A-03005	CORE-5A-05005	CORE-5A-75005	CORE-5A-10005	CORE-5A-12005	CORE-5A-15005	CORE-5A-25005	
1.0mm (1/32" connection) <sup>b</sup>	CORE-5A-0301S	CORE-5A-0501S	CORE-5A-7501S	CORE-5A-1001S	CORE-5A-1201S	CORE-5A-1501S	CORE-5A-2501S	
1.0mm	CORE-5A-0301	CORE-5A-0501	CORE-5A-7501	CORE-5A-1001	CORE-5A-1201	CORE-5A-1501	CORE-5A-2501	

For 1/16" HPLC column connections up to 6000 psi, PEEK™ 1/16" fingertight fittings (part number ACE-CC10, 10 pack) are recommended. For 1/32" Microbore HPLC column connections up to 6000 psi, PEEK™ 1/32" (6-40 thread) fingertight fittings (part number ACE-MC3210, 10 pack) are recommended. For 1/16" UHPLC column connections up to 25000 psi, reusable 1/16" fittings (part number EXL-CC10, 10 pack) are recommended. To further extend UHPLC and HPLC column lifetimes, ACE pre-column filters are recommended. For further details please contact your distributor or visit [www.ace-hplc.com](http://www.ace-hplc.com)

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ACE UltraCore columns are available through our international distributor network:

