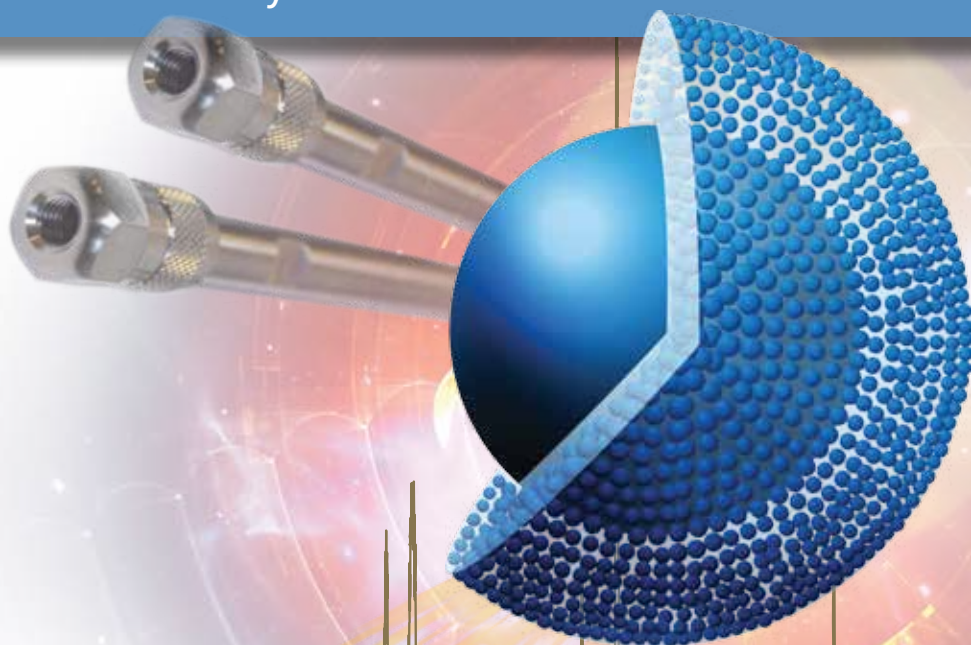


ACE[®] UltraCore[™] SuperC18[™]

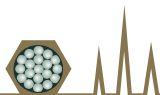
UHPLC / HPLC Columns Developed for

MASS SPECTROMETRY

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



- Ultra-inert 2.5 μ m and 5 μ 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[®] UltraCore[™]
Solid-Core UHPLC / HPLC Columns for MS

ACE UltraCore SuperC18

Explore the advantages of ACE UltraCore SuperC18 for MS

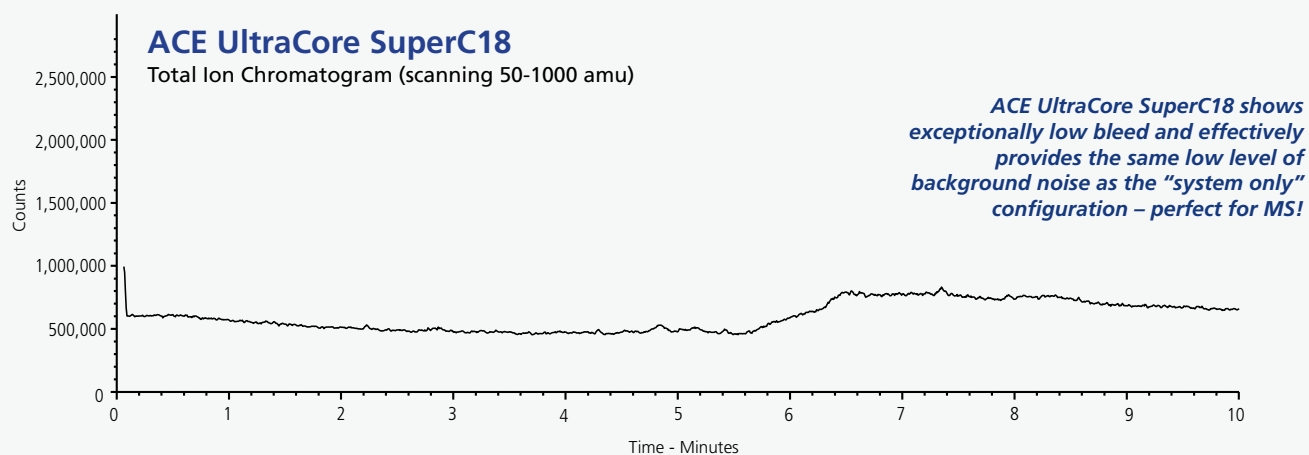
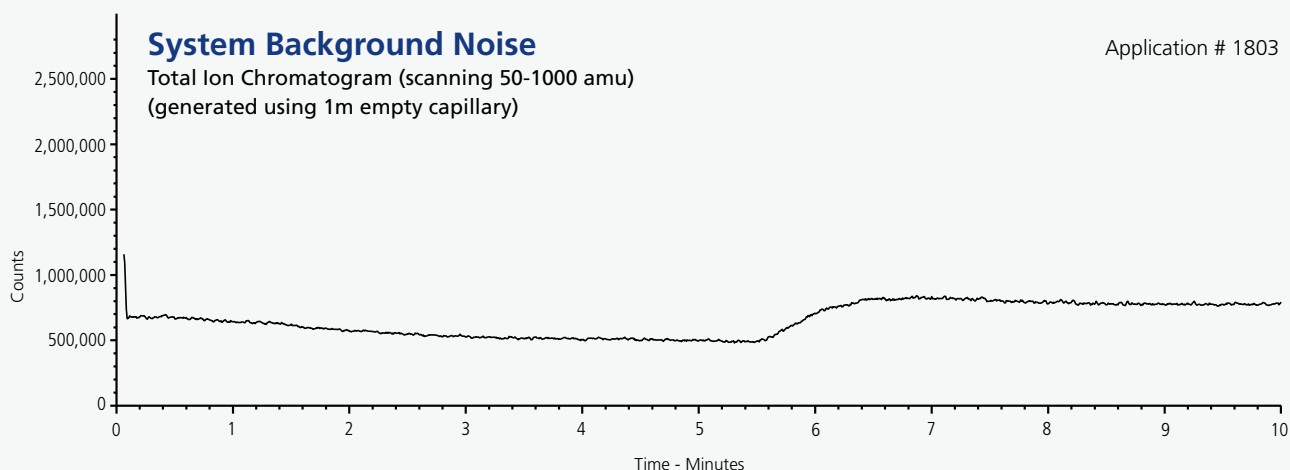
ACE UltraCore SuperC18 has been specifically designed for MS applications and is based on the high efficiency, low back pressure solid-core particles with our unique Encapsulated Bonding Technology (EBT™). This technology dramatically increases ligand coverage on the solid-core silica surface and consequently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

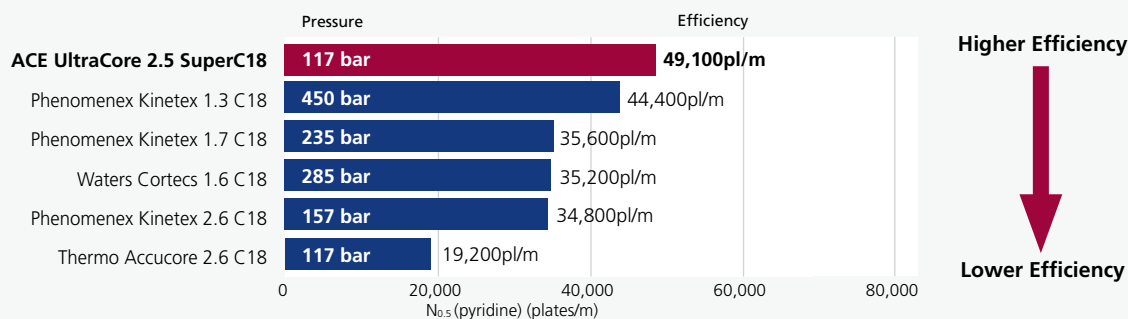
Advantage #2: Improved Peak Shape and MS Signal Intensity

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

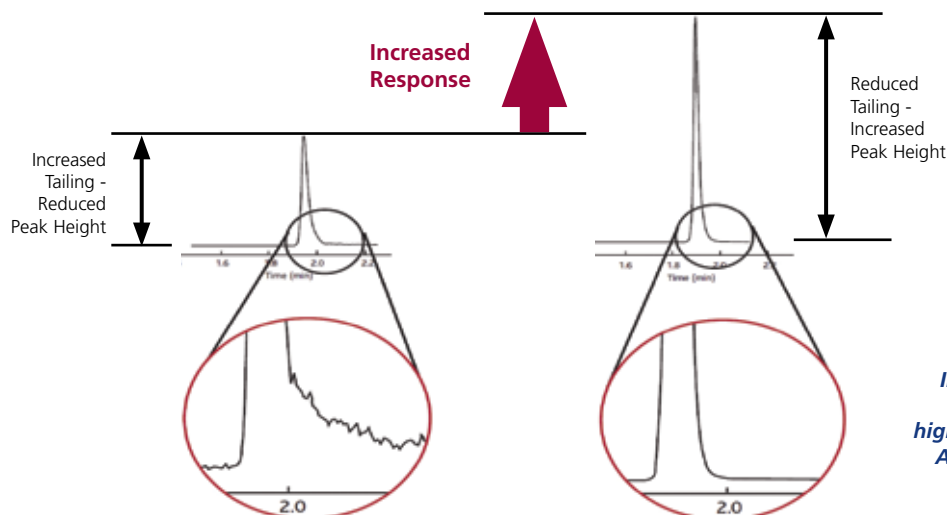
Peak Efficiency Comparison Reproduced with kind permission of The Open University, UK. Application # 1802



Column Dimensions: 50 x 2.1mm Sample: 1) uracil 2) pyridine 3) phenol
 Mobile Phase: 30:70 (v/v) MeOH/10mM NH₄OAc in H₂O (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

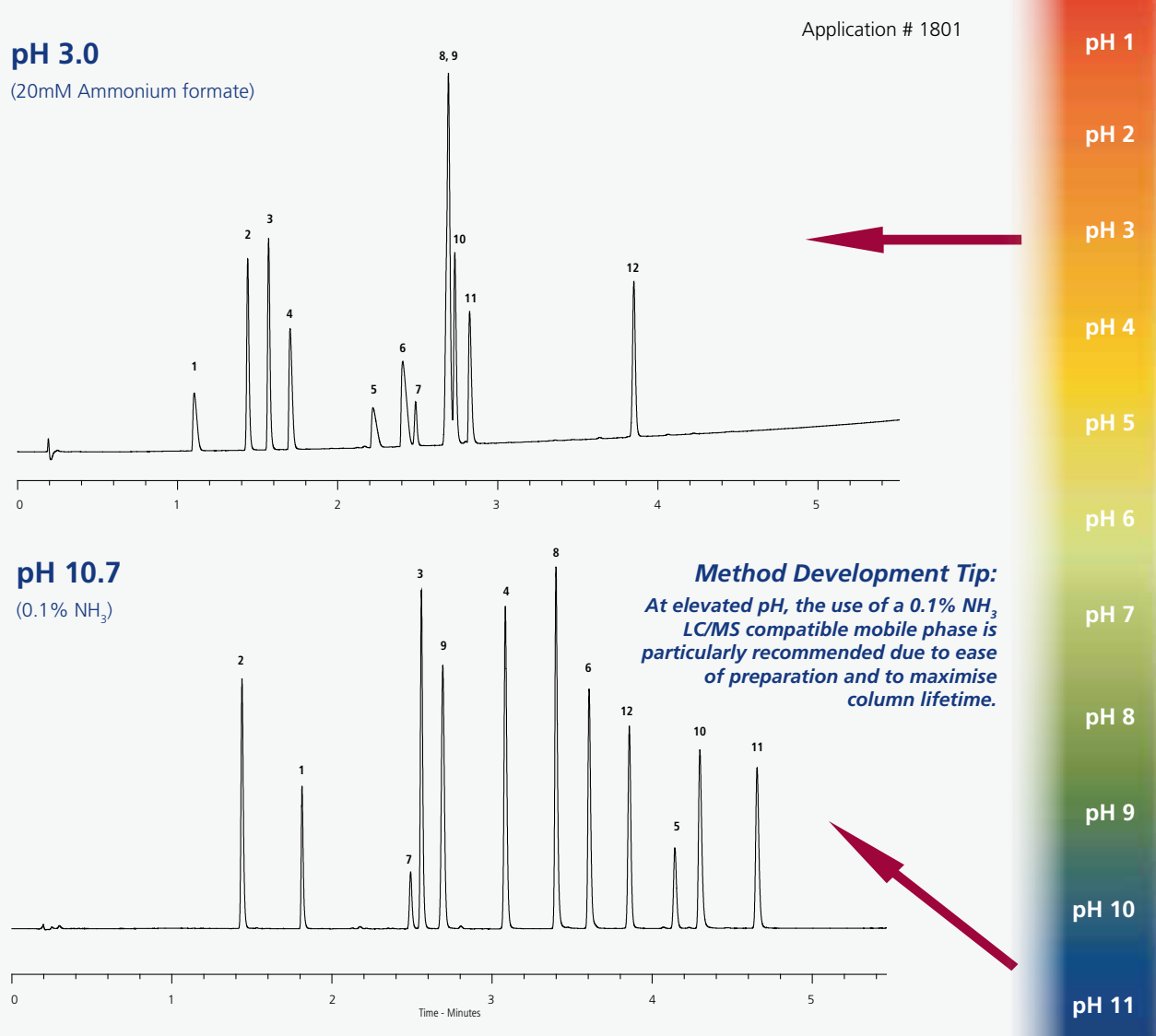
Advantage #3: Exploit a Wider pH Operating Range

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



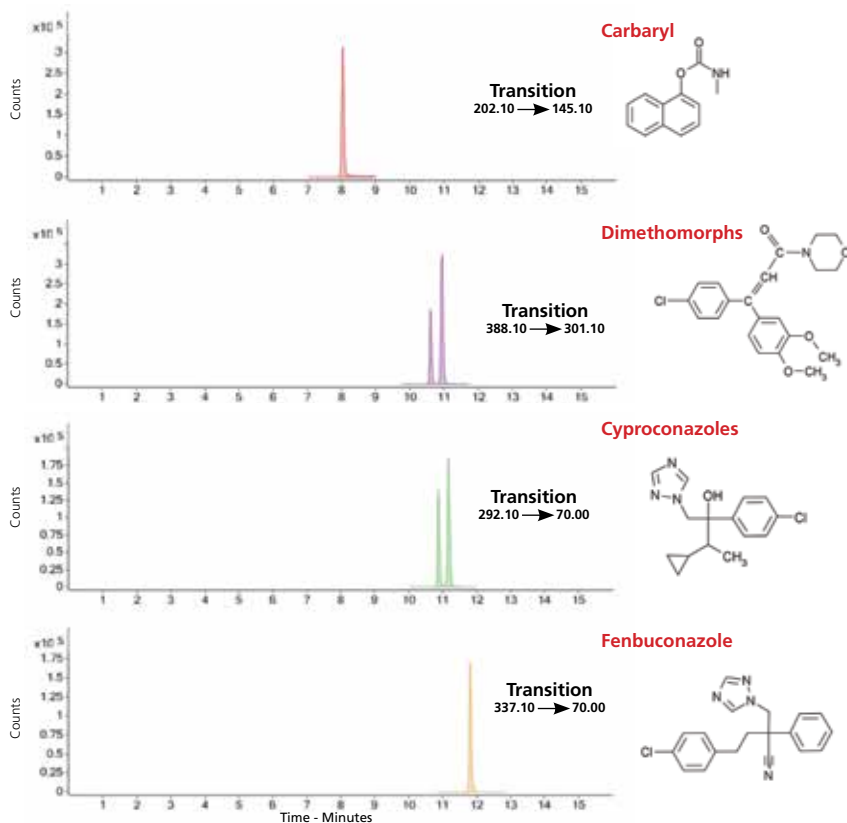
Column: ACE UltraCore SuperC18, 50 x 2.1mm, 2.5µm
Sample: 1) atenolol 2) methylphenylsulphoxide 3) eserine 4) prilocaine 5) bupivacaine 6) tetracaine
7) 1,2,3,4-tetrahydro-1-naphthol 8) carvedilol 9) nitrobenzene 10) methdilazine 11) amitriptyline 12) valerophenone
Temperature: 40°C Flow Rate: 0.60ml/min Wavelength: 254nm Gradient: 3 – 100% B in 5 minutes
Acidic Mobile Phase: A: 20mM ammonium formate in H₂O (pH 3.0) B: 20mM ammonium formate (pH 3.0) in 90:10 (v/v) MeCN/H₂O
Basic Mobile Phase: A: 0.1% v/v NH₃ (= 18mM) in H₂O (pH 10.7) B: 0.1% v/v NH₃ (=18mM), pH 10.7 in 90:10 (v/v) MeCN/H₂O

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	

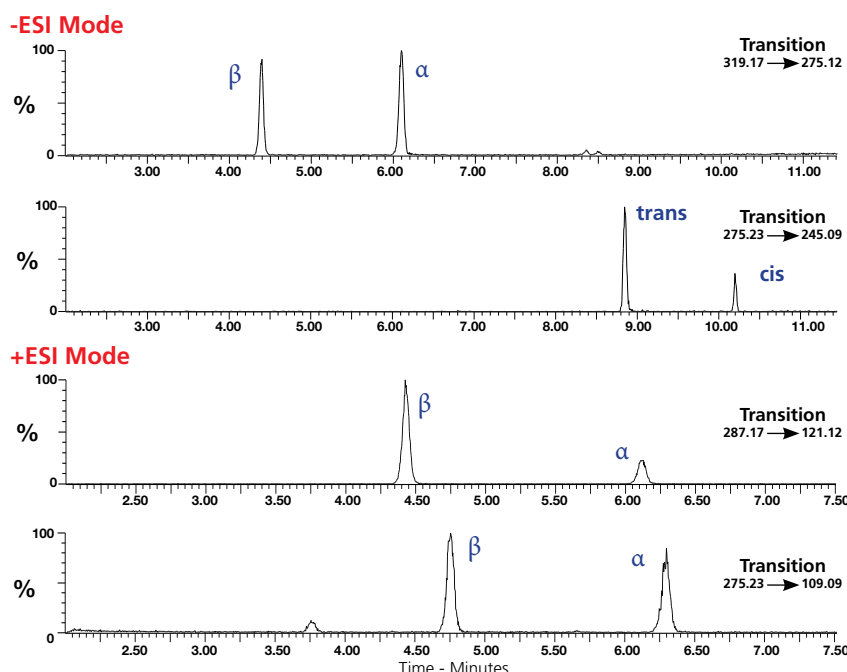
Visit www.ace-hplc.com for further MS application details

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/H₂O Mobile Phase B: 0.1% v/v HCOOH + 5mM ammonium formate in 90:10 v/v MeOH/H₂O
 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:

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

Additional +ve mode (+ESI) analytes:

Hydroxystanazolol
 Hydroxystanazolol-d3
 Methyltestosterone
 Methyltestosterone-d3
 β -Nortestosterone-d3
 β -Trenbolone
 α -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 NH₄F + 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 for further MS application details

Product Availability and Specifications

Phase	Functional Group	Particle Size (µm)	Pore Size (Å)	Surface Area (m ² /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 ^a	L1
ACE UltraCore 5 SuperC18	Octadecyl encapsulated	5	95	100	5.4	1.5-11.0 ^a	L1

^aACE 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.

^b**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) ^b	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) ^b	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) ^b	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) ^b	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

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ACE UltraCore columns are available through our international distributor network:

