

# Separation of Bases Using a Core Enhanced Technology Accucore HPLC Column.

Anila Khan, Thermo Fisher Scientific, Runcorn, Cheshire, UK

## Key Words

- Accucore RP-MS
- Superficially porous
- Core Enhanced Technology
- Fused core
- Bases

## Abstract

This application note demonstrates the use of Thermo Scientific Accucore RP-MS columns for the separation of basic and neutral compounds.

## Introduction

The HPLC analysis of basic compounds can be problematic as secondary interactions with residual acidic silanols on the surface of the silica support of the stationary phase can cause peak tailing. Accucore™ HPLC columns use Core Enhanced Technology to facilitate fast and high efficiency separations. The 2.6 µm diameter particles are not totally porous, but rather have a solid core and a porous outer layer. The optimised phase bonding creates a series of high coverage, robust phases. Accucore RP-MS uses an optimized alkyl chain length for more effective coverage of the silica surface. This coverage results in a significant reduction in secondary interactions and thus highly efficient peaks with very low tailing. The tightly controlled 2.6 µm diameter of Accucore particles results in much lower backpressures than typically seen with sub-2 µm materials.



## Sample Preparation

A 1000 µg/mL solution of base standards was prepared in water, apart from acenaphthene and naphthalene which were prepared in methanol; these solutions were then diluted with methanol to the required concentrations (refer to Table 1)

Thermo Scientific Column	Part Number
Accucore RP-MS 2.6 µm 50 x 2.1mm	17626-052130
Measured pressure: 232 bar	

## Thermo Scientific HPLC System

Column temperature	30 °C
Injection volume	1 µL
Flow rate	0.5 mL/min
PDA/UV detection	215 nm

## Mobile Phase

65:35 Methanol/25 mM potassium phosphate pH, 7.00

Consumables	Part Number
HPLC grade water, Fisher Scientific	W/0106/17
HPLC grade Methanol, Fisher Scientific	M/4056/17
Liquid handling hardware: FinnPipette (100-1000µL)	642090
NSC Mass Spec Certified 2 mL clear vial with PTFE silicone cap	MSCERT4000-34W

## Results

Figure 1 shows the chromatogram of the basic and neutral compounds separated on an Accucore RP-MS 2.6  $\mu\text{m}$  50 x 2.1 mm column under 2.5 minutes. The analysis demonstrates this column can provide not only a good baseline resolution but excellent retention time reproducibility when these compounds are separated. Amitriptyline tailing factor is low at 1.27.

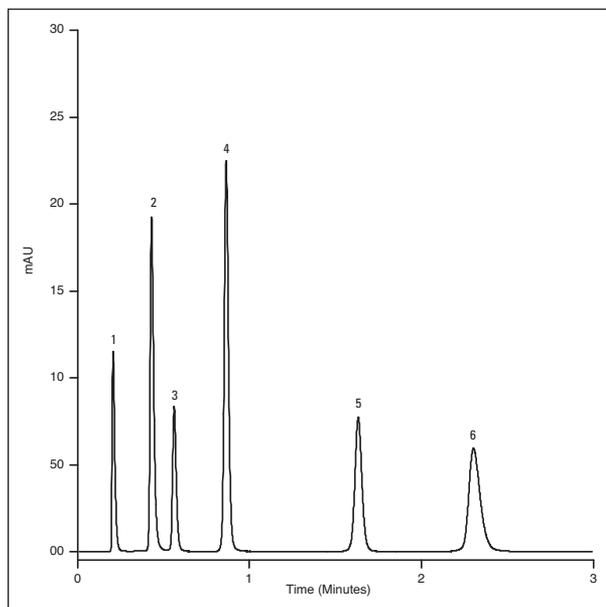


Figure 1: Chromatogram of basic and neutrals separated on an Accucore RP-MS 2.6  $\mu\text{m}$  50 x 2.1 mm column

	Compounds	Sample Conc $\mu\text{g/mL}$	$t_r/\text{min}$	%RSD ( $t_r/\text{min}$ ) n=6
1	Uracil	20	0.21	0.29
2	Butyl paraben	20	0.43	0.72
3	propranolol	20	0.56	0.42
4	Napthalene	5	0.87	0.50
5	Acenaphthene	5	1.64	0.28
6	Amitriptyline	20	2.31	1.05

Table 1: The analysis of basic and neutrals separated on an Accucore RP-MS 2.6  $\mu\text{m}$  50 x 2.1 mm column

## Conclusions

The separation of bases was successfully achieved on the Accucore RP-MS column giving excellent retention time reproducibility and resolution. Therefore, this provides an excellent choice of column for the analysis of bases and neutrals.

*In addition to these offices, Thermo Fisher Scientific maintains a network of representative organizations throughout the world.*

**North America  
USA and Canada**  
+1 800 332 3331

**Europe  
France**  
+33 (0)1 60 92 48 34

**Germany**  
+49 (0) 2423 9431 -20  
or -21

**Switzerland**  
+41 56 618 41 11

**United Kingdom**  
+44 1928 534110

**Asia  
Japan**  
+81 3 5826 1615

**China**  
+86-21-68654588  
or +86-10-84193588  
800-810-5118

**India**  
1800 22 8374 (toll-free)  
+91 22 6716 2200

**Thermo Fisher  
Scientific Australia  
Pty Ltd**  
1300 735 292 (free call  
domestic)

**Thermo Fisher  
Scientific New  
Zealand Ltd**  
0800 933 966 (free call  
domestic)

**All Other Enquiries**  
+44 (0) 1928 534 050

### Technical Support

**North America**  
800 332 3331

**Outside North  
America**  
+44 (0) 1928 534 440

[www.thermoscientific.com/chromatography](http://www.thermoscientific.com/chromatography)

©2011 Thermo Fisher Scientific Inc. All rights reserved. All trademarks are the property of Thermo Fisher Scientific Inc. and its subsidiaries. Specifications, terms and pricing are subject to change. Not all products are available in all countries. Please consult your local sales representative for details.

ANCCSCTBASES 0611