

# Fast Analysis of Ketones Using a Core Enhanced Technology Accucore HPLC Column

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## Key Words

- Accucore C18
- Superficially porous
- Core Enhanced Technology
- Fused core
- High throughput ketones

## Abstract

This application note demonstrates the use of Thermo Scientific Accucore C18 columns, for high throughput HPLC analysis of ketones in 2 minute cycle time, compared to Thermo Scientific Hypersil GOLD column. The faster analysis of ketones has resulted in excellent peak shapes without loss of resolution.

## Introduction

Fast HPLC analysis of selected ketones was achieved using an Accucore™ C18 column. The column uses a Core Enhanced Technology to offer high separation efficiencies. The Accucore particles are not totally porous but rather have a solid core and a porous outer layer. This optimised phase bonding creates a high coverage, robust phases which minimises the secondary interactions of the stationary phase resulting in reduced peak tailing of compounds. The tightly controlled particle size of 2.6 µm of Accucore results in lower back pressures than typically seen with sub 2 µm materials. This column therefore provides the an ideal choice for fast HPLC analysis without the need for a higher pressure pump.

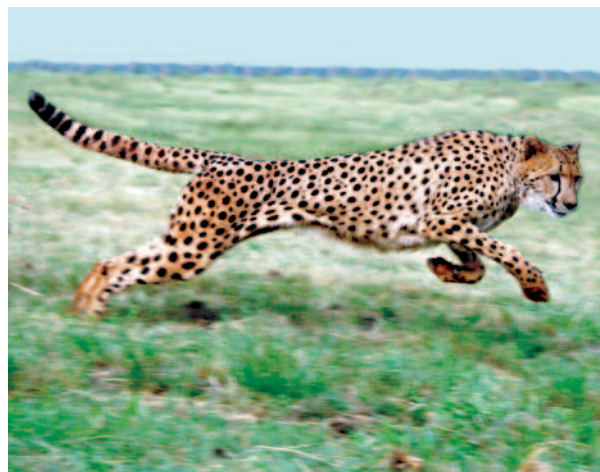
## Results

Figure 1 and 2 shows the chromatogram of ketones separated on two columns, the Accucore C18 2.6 µm 50 x 2.1 mm and the Thermo Scientific Hypersil GOLD 150 x 4.6 mm column. Demonstrated in Table 1, the analysis of ketones is seven times faster using Accucore C18 column in comparison to Hypersil GOLD™.

The analysis time on the Accucore C18 column is less than 1 minute.

## Conclusions

High sample throughput can be achieved using Accucore C18 column and this is demonstrated using a ketone mixture. The column therefore provides an excellent choice for the fast analysis of these compounds, giving excellent retention time reproducibility.



## Sample Preparation

A standard mixture of ketones was prepared up in 1:1 acetonitrile/water (see Table 1).

Thermo Scientific Column	Part Number
Accucore C18 2.6 µm 50 x 2.1 mm	17126-052130
Measure back pressure: 330 bar	
Hypersil GOLD 150 x 4.6 mm, 5 µm	25005-154630

## Thermo Scientific Accela HPLC/UHPLC

Column temperature	45 °C
Injection volume	1.0 µL
Flow rate	1.0 mL/min
PDA/UV detection	258 nm

## Mobile Phase

Mobile phase A	Water
Mobile phase B	Acetonitrile

Gradient:

Time/min (Accucore C18)	Time/min (Hypersil GOLD)	A%	B%
0.00	0.00	60	40
0.40	2.30	5	95
0.80	4.60	5	95
0.81	4.61	60	40
2.00	11.00	60	40

Consumables	Part Number
Fisher Scientific HPLC grade water	W/0106/17
Fisher Scientific HPLC grade acetonitrile	A/0626/17
Liquid handling hardware: FinnPippette (100-1000 µL)	642090
NSC Mass Spec Certified 2 mL clear vial with PTFE silicone cap	MSCERT4000-34W

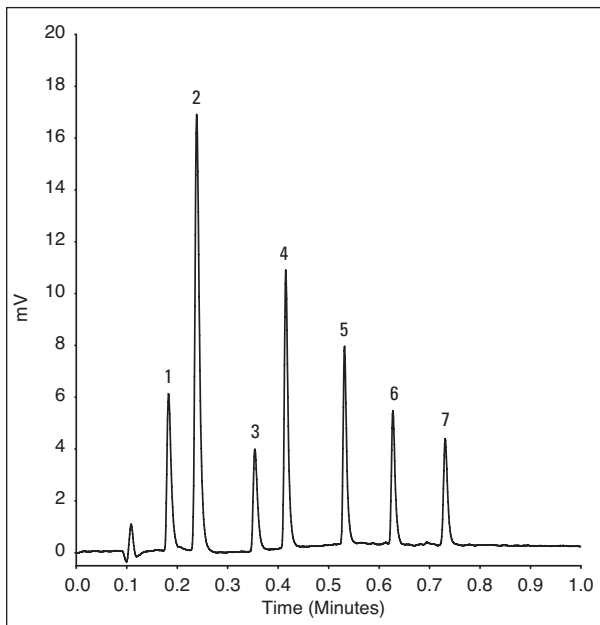


Figure 1: Chromatogram of ketones separated on an Accucore C18 2.6  $\mu\text{m}$  50 x 2.1 mm column

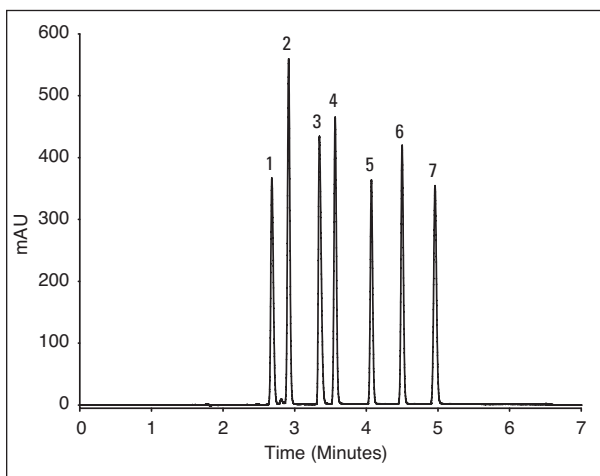


Figure 2: Chromatogram of ketones separated on a Hypersil GOLD 5 $\mu\text{m}$  150 x 4.6 mm column

	Compounds	Sample Concentration $\mu\text{g/mL}$	$t_r/\text{min}$ (Accucore C18)	$t_r/\text{min}$ (Hypersil GOLD)
1	2-Pentanone	1000	0.18	2.68
2	Acetophenone	100	0.24	2.91
3	2-Heptanone	1000	0.35	3.34
4	Butyrophenone	100	0.41	3.56
5	Hexanophenone	100	0.53	4.07
6	Octanophenone	100	0.63	4.49
7	Decanophenone	100	0.73	4.95

Table 1: The high throughput comparison of ketones on an Accucore and Hypersil GOLD columns

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