

# The Five Pros of Kinetex® Core-Shell Technology



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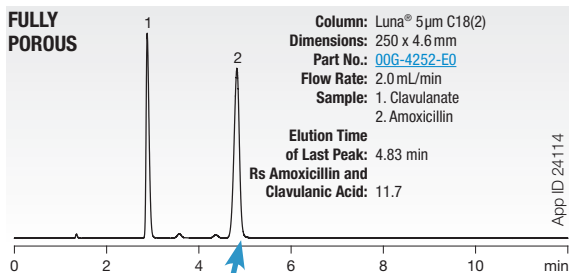
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# The Five Pros of Kinetex® Core-Shell Technology

## PRODUCTIVITY - Improve Method Productivity!

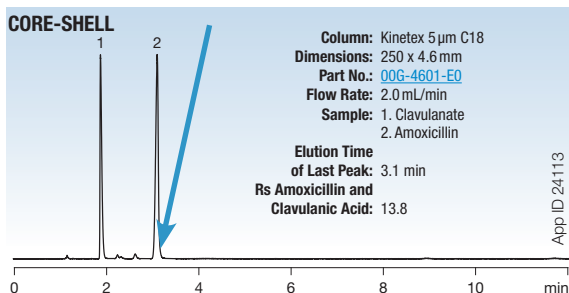
With virtually no development effort or investment required, LC methods utilizing fully porous column technology can easily be improved in resolution, sensitivity, and productivity by simply replacing the 5  $\mu\text{m}$  or 3  $\mu\text{m}$  fully porous columns currently in use with an equivalent Kinetex Core-Shell column.

### Method 1 Standard Method with Allowable Adjustments

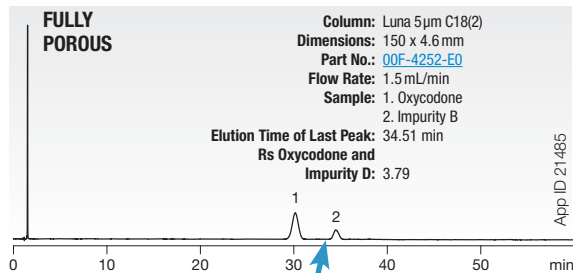


**36 % Decrease in Run Time!**

### Method 2 Faster and Higher Resolution Within Allowable Adjustments

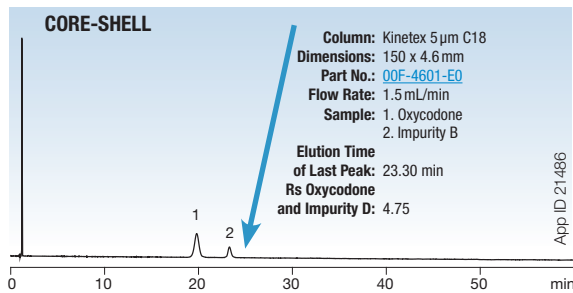


### Method 1 Original Method as Described in the Monograph



**32 % Decrease in Run Time!**

### Method 2 Faster Method Utilizing Core-Shell Technology



**Figure 1** illustrates three different Kinetex particle sizes (1.7, 2.6, and 5  $\mu\text{m}$ ) and how they are scalable, delivering the same retention and selectivity for this separation of nine related analytes. The scalability of the Kinetex particle allows for method portability at relatively different backpressures (see **Table 1**).

**Conditions for all columns:**

**Column:** Kinetex C18  
(particle sizes noted in chromatogram)

**Dimensions:** 50 x 2.1 mm

**Mobile Phase:** A: Water  
B: Acetonitrile

Gradient Time (min)	% B
0	20 %
6	80 %
6.1	20 %
8	20 %

**Flow Rate:** 0.3 mL/min

**Temperature:** 30 °C

**Detection:** UV @ 220 nm

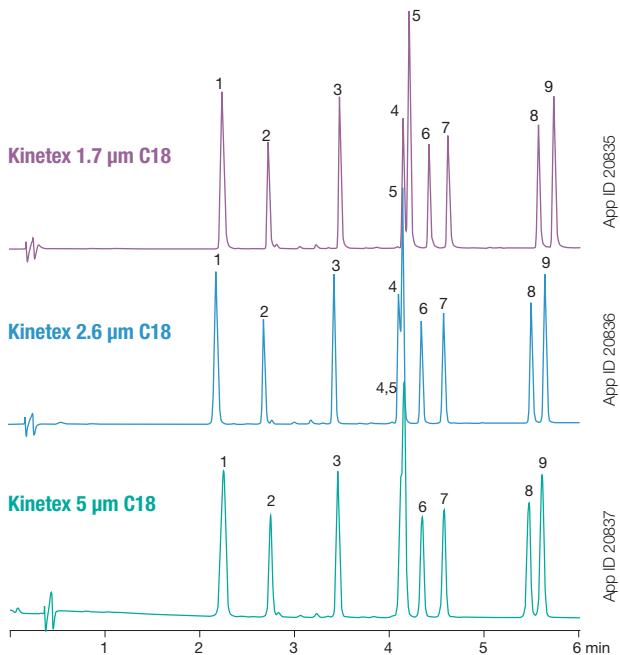
Sample:	1. Estriol	2. Hydrocortisone	3. Corticosterone	4. Cortisone Acetate	5. $\beta$ -estradiol	6. 21-Hydroxyprogesterone	7. Estrone	8. Deoxycorticosterone	9. Progesterone
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**Table 1**

Retention time window, resolution of Peak 4 and Peak 5, and the backpressure generated by Kinetex C18 columns in different particle sizes.

Particle Size ( $\mu\text{m}$ )	Retention Time Window (min, Peak 1 and 9)	Resolution (4,5)	Backpressure (bar)
1.7	3.370	1.33	198
2.6	3.352	0.73	130
5	3.366	0.41	50

**Figure 1**



App ID 20835

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App ID 20837

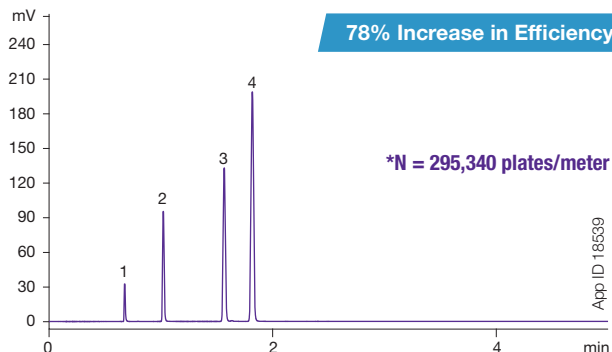
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The Five Pros of Kinetex® Core-Shell Technology

PERFORMANCE – Get the Most Efficiency Out of Your LC System!

The Kinetex Core-Shell technology achieves higher chromatographic efficiencies in comparison to fully porous particles of similar diameters and under similar method conditions. This efficiency gain allows chromatographers to maximize the performance out of their HPLC/UHPLC system by using the right particle morphology for the application.

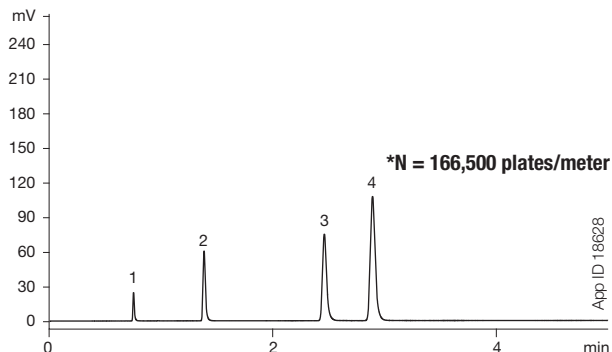
**Kinetex 2.6 µm C18**  
150 x 4.6 mm



**Conditions for both columns:**

**Column:** Kinetex 2.6 µm C18  
Traditional 3 µm C18  
**Dimensions:** 150 x 4.6 mm  
**Mobile Phase:** Acetonitrile / Water (70:30)  
**Flow Rate:** 1.8 mL/min  
**Temperature:** 25 °C  
**Backpressure:** 380 bar (Kinetex)  
250 bar (Traditional)

**Fully Porous 3 µm C18**  
150 x 4.6 mm



**Detection:** UV @ 254 nm  
**Instrument:** Agilent® 1200SL  
**Sample:** 1. Uracil  
2. Acetophenone  
3. Toluene  
4. Naphthalene

\*Efficiency (plates/meter) comparison is based on peak performance associated with the compound naphthalene for both columns.

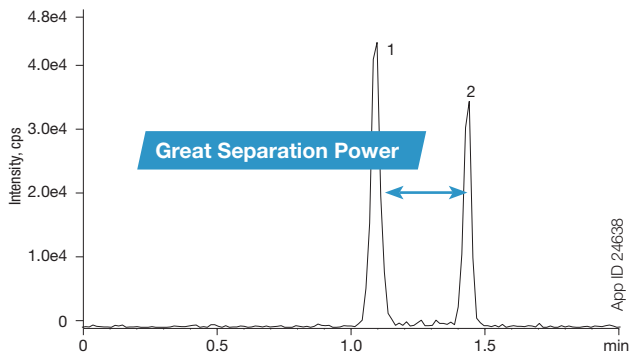


# The Five Pros of Kinetex® Core-Shell Technology

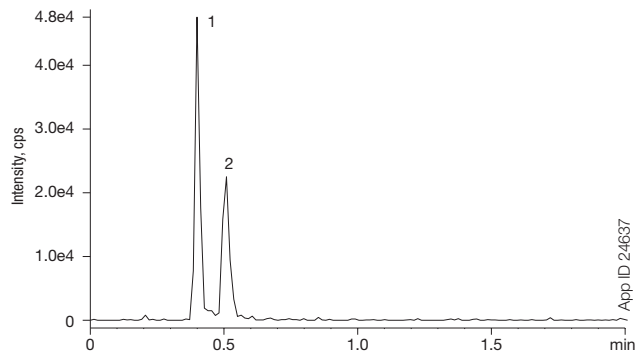
## PHASES – 11 Unique Phase Selectivities for Any Application!

Selectivity has an impact on resolution and is often the simplest way to change your chromatographic results. Phenomenex offers a wide breadth of phase chemistries across the Kinetex Core-Shell product line for simplified method development and optimization.

### Kinetex 1.7 µm Biphenyl



### Kinetex 1.7 µm C18



#### Conditions for both columns:

**Columns:** Kinetex 1.7 µm C18  
Kinetex 1.7 µm Biphenyl

**Dimensions:** 50 x 2.1 mm

**Part No.:** [00B-4628-AN](#)  
[00B-4475-AN](#)

**Mobile Phase:** A: Water with 0.1 % Formic Acid  
B: Methanol with 0.1 % Formic Acid

Gradient:	Time (min)	% B
	0	10
	4	100
	4.1	10

**Flow Rate:** 0.4 mL/min

**Injection Volume:** 10 µL

**Temperature:** 50 °C

**Backpressure:** 450 Bar

**Detection:** MS/MS (SCIEX® API 4000™)

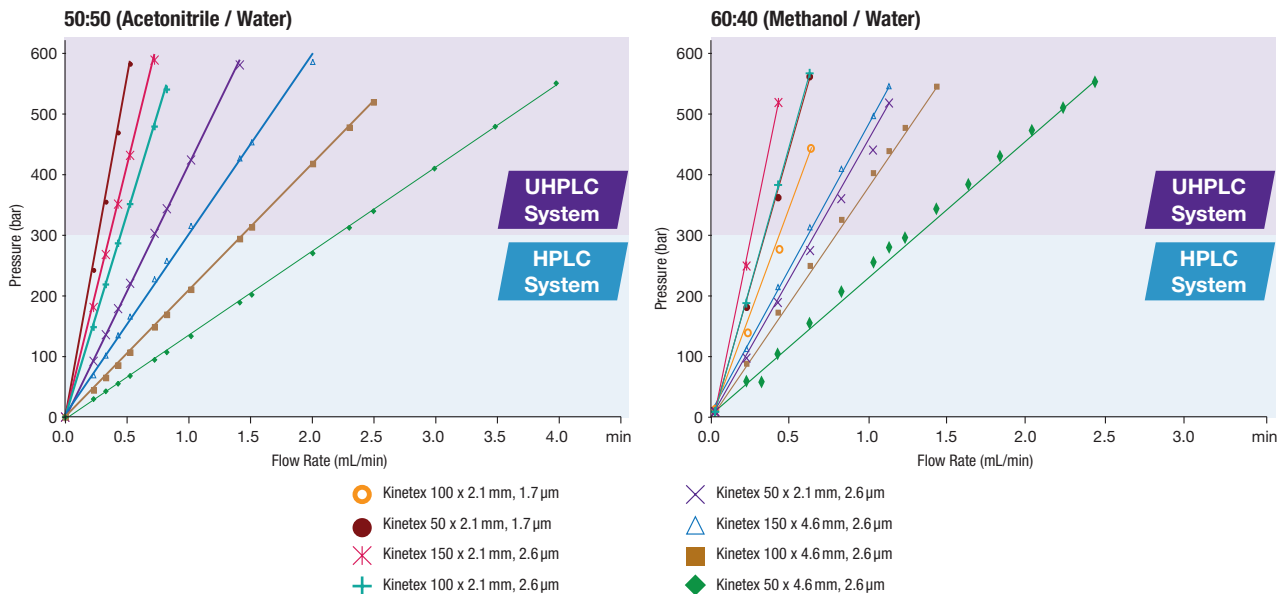
**Sample:** 1. Morphine  
2. Hydromorphone



# The Five Pros of Kinetex® Core-Shell Technology

## PRESSURE – Higher Efficiency at Lower Pressure!

Use Kinetex Core-Shell technology to achieve higher chromatographic efficiencies at substantially lower system backpressures. The higher efficiency at larger particle diameter, in comparison to fully porous particles, allows chromatographers to get the most out of their conventional LC instruments for routine analysis, rather than requiring expensive ultra-high-pressure capable LC instrumentation.



Note: Due to variation in system, sample and method parameters, graphs provided may not be representative of all applications. Data generated on Agilent® 1200 SL.

# Universal Column Protection

**SecurityGuard**<sup>ULTRA</sup>  
UHPLC Column Protection



Protect Your  
New Column

**AND**

Simplify Your  
Connections

**SecurityLINK**  
UHPLC Connections in a Click



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