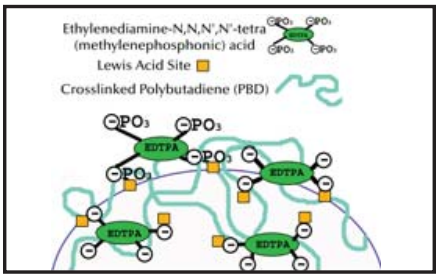
- Easy-to-Use (No Special Additives Required)
- Designed for LC/MS
- Unique Selectivity for Basic Compounds
- High Efficiency (>120,000 plates/meter)
- pH Stable from 1 up to 10

Method Development with ZirChrom®-EZ (Lewis Acid "Deactivated")

ZirChrom®-EZ is a first of its kind Lewis acid deactivated zirconia-based reversed-phase HPLC column. Compared to traditional zirconia-based reversed phases, ZirChrom®-EZ is easier to use because it is less prone to problems caused by solute interactions with the strong Lewis acid sites on the zirconia surface. The deactivation of Lewis acid sites on the surface of the ZirChrom®-EZ particle allows for the chromatography of Lewis base analytes (like carboxylates or phosphates) using traditional mobile phase additives of the user's choice including conventional LC/MS compatible buffers (such as acetate and formate) throughout the pH range of 1-10, and up to 50 °C. This new column still maintains the very different chromatographic selectivity for basic pharmaceuticals that zirconia-based columns are known to have compared to traditional bonded silica phases.

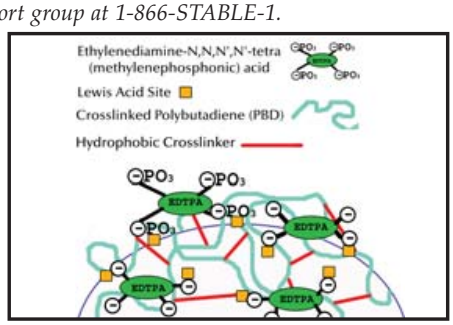
For more detailed guidelines, consult our new "Deactivated" Column Method Development Guide. Or, contact our technical support group at 1-866-STABLE-1.



Method Development with ZirChrom®-MS (Lewis Acid "Deactivated")

ZirChrom®-MS is revolutionary new zirconia-based reversed-phase column for HPLC. This new column was designed from the ground up to be used in conjunction with MS detection. It uses the same type of Lewis acid deactivation chemistry as the ZirChrom®-EZ column but with a covalent attachment for low bleed. ZirChrom®-MS also has about 2.5 times as much retention for simple reversed-phase compounds than the ZirChrom®-EZ column, which is beneficial for MS detection. The deactivation of Lewis acid sites on the zirconia surface allows for the chromatography of Lewis base analytes (like carboxylates or phosphates) using volatile mobile phase additives of the user's choice including conventional LC/MS compatible buffers (such as acetate and formate) throughout the pH range of 1-10, and up to 50 °C. Due to a mixed-mode separation mechanism the ZirChrom®-MS column offers unique selectivity for pharmaceutical method development.

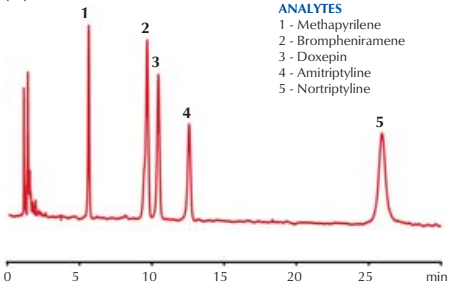
For more detailed guidelines, consult our new "Deactivated" Column Method Development Guide. Or, contact our technical support group at 1-866-STABLE-1.



ZirChrom®
...For Peak Performance

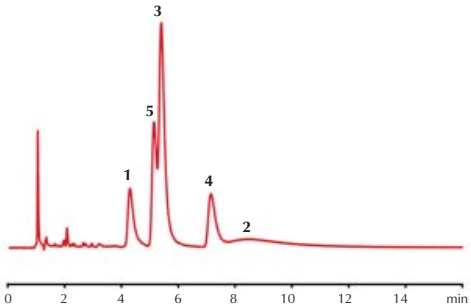
ZirChrom®-MS Versus C18 Silica for Basic Drugs

(A) ZirChrom®-MS



ANALYTES
1 - Methapyrilene
2 - Brompheniramene
3 - Doxepin
4 - Amitriptyline
5 - Nortriptyline

(B) Leading C18 Silica

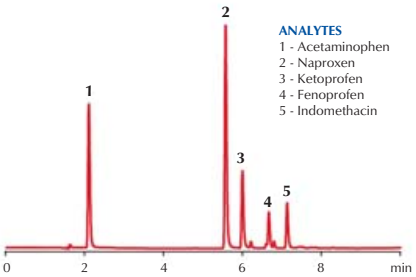


LC CONDITIONS
Mobile phase: Machine mixed 80/20 ACN/10 mM ammonium acetate, pH 6.7 without pH adjustment
Flow rate: 1.0 ml/min Temperature: 35 °C
Injection volume: 0.1 µl Detection: 254 nm
Column A: ZirChrom®-MS, 150 x 4.6 mm i.d. (3 micron) (**part# MS01-1546**)
Column B: Leading C18 Silica, 150 x 4.6 mm i.d. (3.5 micron)

PACKING	MODE	PART
ZirChrom®-EZ	Reversed-Phase	EZ01
ZirChrom®-MS	Reversed-Phase	MS01
ZirChrom®-SELECT	Reversed-Phase	ST01

Microbore, Semi-Prep and Prep Formats Available–see Page 24

NSAIDs Separation on ZirChrom®-EZ

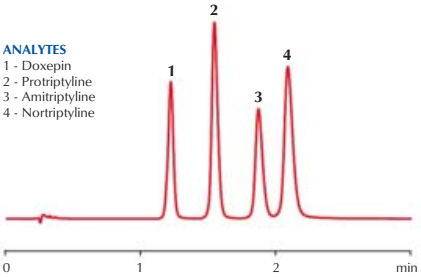


ANALYTES
1 - Acetaminophen
2 - Naproxen
3 - Ketoprofen
4 - Fenoprofen
5 - Indomethacin

LC CONDITIONS
Mobile phase: (A) 100 ACN
(B) 20 mM ammonium acetate, pH 5.0
Gradient elution: 10 - 90% A over 0 - 10 min
Flow rate: 1.0 ml/min Temperature: 35 °C
Injection volume: 10 µl Detection: 254 nm
Column: ZirChrom®-EZ, 150 x 4.6 mm i.d. (**part# EZ01-1546**)

Tricyclic Antidepressants on ZirChrom®-EZ

ANALYTES
1 - Doxepin
2 - Protriptyline
3 - Amitriptyline
4 - Nortriptyline



LC CONDITIONS
Mobile phase: 65/35 ACN/20mM ammonium acetate, pH 6.0
Flow rate: 2.0 ml/min Temperature: 35 °C
Injection volume: 5 µl Detection: 254 nm
Column: ZirChrom®-EZ, 50 x 4.6 mm i.d. (**part# EZ01-0546**)

The Analysis of Basic Compounds Using Neutral pH Conditions: A Column Comparison Study

A column comparison study using pharmaceutically relevant compounds was performed to demonstrate the unique selectivity of ZirChrom®-MS relative to a leading bonded phase C18 silica (see left). The LC/MS compatible operating conditions that were used included a volatile, near neutral pH mobile phase with an ammonium acetate buffer. Results of the column comparison study indicate that ZirChrom®-MS exhibits enhanced retention, improved peak shape and greater efficiency (versus C18 silica) for basic pharmaceutical compounds under LC/MS compatible operating conditions (see technical bulletin #303 for more details).

Selectivity Comparison of ZirChrom®-MS Versus a Leading Bonded Phase C18 Silica for Basic Compounds