HPLC, LC/MS Columns

InertSustain® Cyano

The Most Reliable and Reproducible Cyano Column

Physical Properties

- Silica: Newly Developed ES Silica Gel
- Particle Size: 3 μm, 5 μm
- Surface Area: 350 m²/g
- Pore Size: 100 Å (10 nm)
- Pore Volume: 0.85 mL/g
- Bonded Phase: Cyanopropyl Groups
- End-capping: Yes
- Carbon Loading: 8 %
- pH Range: 2 ~ 7.5
- USP Code: L10
The Most Reliable and Reproducible Cyano Column

In general, the stability and reproducibility of the Cyano phase available in the market are poor. Many batch-to-batch or lot-to-lot reproducibility issues are occurring at many laboratories. The InertSustain Cyano columns were developed to resolve these problems and are designed using the most modern LC column technology available providing them to be extremely inert, stable and reproducible. The InertSustain Cyano columns are highly recommended for all pharmacopeia methods requiring a Cyano phase to be used. (Ex: USP L10)

Benefits

- Endlessly reproducible from column-to-column and batch-to-batch
- Highly recommended for all pharmacopeia methods requiring a Cyano phase to be used (Ex: USP L10)
- Highly inert packing material results in less tailing of peaks for virtually any type of analytes
- A new selectivity option for method development due to the multiple retention mechanisms
- Originally shipped in reversed-phase solvents and is ready to use for reversed-phase methods
- Can be used for both reversed-phase separations as well as normal-phase separations

Comparison of Batch-To-Batch Reproducibility

As proven below, InertSustain Cyano provide exceptional reproducibility from batch-to-batch even with those challenging strong basic compounds such as Dextromethorphan or Berberine.

<table>
<thead>
<tr>
<th>Conditions</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Column</td>
<td>: 5 μm, 150 x 4.6 mm I.D.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eluent</td>
<td>A) CH₃CN  B) 0.1% H₃PO₄</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A/B</td>
<td>: 25/75, v/v</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flow Rate</td>
<td>: 1.0 mL/min</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Col.Temp.</td>
<td>: 40 °C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Detection</td>
<td>: UV 230 nm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sample</td>
<td>1. Uracil</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Dextromethorphan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Berberine</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

InertSustain Cyano

InertSustain Cyan®

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InertSustain Cyano

InertSustain Cyan®
Highly Inert Packing Material

As shown below, InertSustain Cyano columns provide symmetric peaks for strong bases and chelating compounds, delivering highly stable chromatograms for qualitative and quantitative analysis.

Figure 1. Comparison of Peak Shapes using Strong Basic Compounds

![Figure 1](image1)

**Conditions**
- **Column**: 5 μm, 150 × 4.6 mm I.D.
- **Eluent**: A) CH₃CN B) 0.1% H₃PO₄
  A/B = 75/25, v/v
- **Flow Rate**: 1.0 mL/min
- **Col.Temp.**: 40 °C
- **Detection**: UV 230 nm
- **Sample**: 1. Uracil
  2. Dextromethorphan
  3. Berberine

InertSustain Cyano

![InertSustain Cyano](image2)

XSelect HSS CN

![XSelect HSS CN](image3)

Figure 2. Comparison of Peak Shape using Strong Chelating Compound

![Figure 2](image4)

**Conditions**
- **Column**: 5 μm, 150 × 4.6 mm I.D.
- **Eluent**: A) CH₃CN B) 0.1% H₃PO₄
  A/B = 25/75, v/v
- **Flow Rate**: 1.0 mL/min
- **Col.Temp.**: 40 °C
- **Detection**: UV 310 nm
- **Sample**: 1. Hinokitiol

InertSustain Cyano

![InertSustain Cyano](image5)

XSelect HSS CN

![XSelect HSS CN](image6)
Highly Stable Chemistry for Normal-Phase Separations

Although the InertSustain Cyano columns are originally shipped in reversed-phase solvents, it can also be used for normal-phase separations by properly equilibrating the column with ethanol or 2-propanol prior to the analysis.

A New Selectivity Option

The InertSustain Cyano column uses multiple retention mechanisms which can lead to achieving the desired separation where a C18 or Phenyl column failed to separate. The Cyano column provides different separation pattern and decreased retention for hydrophobic compounds when comparing to a C18 or Phenyl column.
Applications

Analysis of Nortriptyline Hydrochloride Capsules
[USP Method]

USP Column: 5 μm, 150 x 4.6 mm I.D. (L10)
System suitability requirements:
  Efficiency (N): > 500
  Tailing factor: < 3.0

Sample Conc.: 0.38 mg/mL (in Methanol)
Mobile Phase: ACN : CH₃OH : 12 mM Potassium phosphate (pH 6.7)
  = 40 : 43 : 17
Flow Rate: 2.5 mL
Detection: UV 239 nm
Injection: 5 μL

Analysis of Sertraline Hydrochloride
[USP Method]

USP Column: 5 μm, 150 x 4.6 mm I.D. (L10)
System suitability requirements:
  Tailing factor: < 2.0

Sample Conc.: 0.050 mg/mL (in Mobile Phase)
Mobile Phase: CH₃OH : 0.1% (v/v) Phosphoric acid
  = 1 : 1
Flow Rate: 1.5 mL
Detection: UV 210 nm
Column Temp.: 30 °C
Injection: 10 μL
Applications

Analysis of Tetracaine Hydrochloride Ophthalmic Solution
[USP Method]

USP Column: 5 μm, 150 x 4.6 mm I.D. (L10)
System suitability requirements:
  Efficiency (N) : > 500
  Tailing factor : < 2.0

Sample Conc.: 0.1 mg/mL (in Water)
Mobile Phase: ACN : 10 mM Ammonium phosphate (pH 3.0) = 30 : 70
Flow Rate: 2.0 mL
Detection: UV 280 nm
Injection: 10 μL

N : 9679
Tailing factor : 1.16

Ordering Information

InertSustain® Cyano Analytical Columns

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<th>HP Series</th>
<th>Particle Size</th>
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<th>3.0</th>
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<td>5020-89388</td>
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* End-fittings are 1/16" Waters-compatible.
* Max. Operating Pressure: 20 MPa (200 Bar)
Ordering Information

Cartridge Guard Column E

<table>
<thead>
<tr>
<th>I.D. of the Analytical Column Applicable (mm)</th>
<th>Length (mm)</th>
<th>I.D. (mm)</th>
<th>Replacement Cartridge E Guard Column (2 EA.)</th>
<th>Cartridge E Holder / Cartridge Set (2 Cartridge E Guard Columns &amp; 1 Holder)</th>
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</thead>
<tbody>
<tr>
<td></td>
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<td>Holder for Cartridge Guard Column E</td>
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<tr>
<td></td>
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<td>For 20 mm Length</td>
<td>5020-08550</td>
</tr>
</tbody>
</table>

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Worldwide Ordering Information

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Web: www.glsciences.eu

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InertSustain
Inertsil

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The specification and the column type are subject to change without notice due to continual improvements.