Ascentis® Express Biphenyl U/HPLC Columns

A New Choice in Selectivity

The Ascentis® Express Biphenyl U/HPLC column offers extra separation power for the optimization of compounds that are challenging to resolve or elute early on C18 and other phenyl phases.

This new chemistry expands the selectivity choices offered in our Fused-Core® particle line-up:

- C18
- C8
- RP-Amide
- Phenyl Hexyl
- F5
- Biphenyl – new
- ES-Cyano
- HILIC (Si)
- OH5

The retention and selectivity offered by the biphenyl column are ideal for rapid, efficient drug and metabolite analysis using conditions that are compatible with MS detection (Figure 1).

**Figure 1. LC/MS Analysis of Pain Panel on Ascentis Express Biphenyl 2.7 µm**

- column: Ascentis Express Biphenyl, 5 cm x 2.1 mm I.D., 2.7 µm (64057-U)
- mobile phase: [A] water with 0.1% formic acid; [B] acetonitrile with 0.1% formic acid
- gradient: 5% B to 100% B in 5 min
- flow rate: 0.5 mL/min
- pressure: 1320 psi (91 bar)
- column temp.: 60 °C
- detector: MS-TOF, ESI+, XIC
- injection: 0.5 µL
- sample: 500 ng/mL in 99:1, water:methanol

The retention and selectivity offered by the biphenyl column are ideal for rapid, efficient drug and metabolite analysis using conditions that are compatible with MS detection (Figure 1).

The Fused-Core Advantage

**Fused-Core Particles**

- Narrow Particle Size Distribution
- More Consistent Bed
- Shorter Diffusion Path

**Traditional Porous Particles**

The Ascentis Express Biphenyl U/HPLC columns are currently available in the 2.7 µm Fused-Core platform.

**Fused-Core technology provides**

- Narrow particle size = sharper peaks and more peak resolution
- More consistent packing = more rugged column
- Shorter pore-diffusion = sharper peaks, higher flow, and more analysis speed

<table>
<thead>
<tr>
<th>Peak</th>
<th>rt</th>
<th>Analyte</th>
<th>m/z</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.474</td>
<td>Normorphone</td>
<td>288.0898</td>
</tr>
<tr>
<td>2</td>
<td>0.825</td>
<td>6a-Naloxol</td>
<td>330.1339</td>
</tr>
<tr>
<td>3</td>
<td>0.897</td>
<td>Naloxone</td>
<td>328.1178</td>
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<tr>
<td>4</td>
<td>1.023</td>
<td>6b-Naltrexol</td>
<td>344.1495</td>
</tr>
<tr>
<td>5</td>
<td>1.519</td>
<td>Norbuprenorphine</td>
<td>414.2246</td>
</tr>
<tr>
<td>6</td>
<td>1.839</td>
<td>Fentanyl</td>
<td>337.1915</td>
</tr>
<tr>
<td>7</td>
<td>1.904</td>
<td>Buprenorphine</td>
<td>468.2691</td>
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<tr>
<td>8</td>
<td>2.230</td>
<td>(−)-11-nor-9-Carboxy-D9-THC</td>
<td>345.1692</td>
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</tbody>
</table>
Selecting Your Ascentis Express Biphenyl Column

Which column ID is best for my needs?
If you are doing Mass Spec or desire high sensitivity  2.1 mm I.D.
If you want solvent savings, high loading, or high performance  3.0 mm I.D.
If you are doing standard HPLC  4.6 mm I.D.

Which column length is best for my needs?
If you want to maximize the speed of your application  2-7.5 cm
If you want a balance of resolution and speed  10 cm
If you want the best resolution possible  15 cm

What flow rate is best for my needs?
If you are using a column with a 4.6 mm I.D.  1.6 to 2.4 mL/min**
If you are using a column with a 3.0 mm I.D.  0.8 to 2.0 mL/min**
If you are using a column with a 2.1 mm I.D.  0.4 to 1.8 mL/min**
** Higher flow rates than indicated can be used for your system.

Ascentis Express 2.7 µm Biphenyl U/HPLC Columns

<table>
<thead>
<tr>
<th>Length</th>
<th>Internal Diameter</th>
<th>2.1 mm</th>
<th>3.0 mm</th>
<th>4.6mm</th>
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<tbody>
<tr>
<td>2 cm</td>
<td>64043-U</td>
<td>64047-U</td>
<td>64051-U</td>
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<tr>
<td>3 cm</td>
<td>64054-U</td>
<td>64055-U</td>
<td>64056-U</td>
<td></td>
</tr>
<tr>
<td>5 cm</td>
<td>64057-U</td>
<td>64058-U</td>
<td>64059-U</td>
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<tr>
<td>7.5 cm</td>
<td>64061-U</td>
<td>64062-U</td>
<td>64064-U</td>
<td></td>
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<tr>
<td>10 cm</td>
<td>64065-U</td>
<td>64066-U</td>
<td>64067-U</td>
<td></td>
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<tr>
<td>15 cm</td>
<td>64068-U</td>
<td>64069-U</td>
<td>64071-U</td>
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<tr>
<td>Guard Cartridges, pk 3</td>
<td>64074-U</td>
<td>64076-U</td>
<td>64078-U</td>
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Guard Cartridge Holder

<table>
<thead>
<tr>
<th>Description</th>
<th>Pkg. Size</th>
<th>Cat. No.</th>
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</thead>
<tbody>
<tr>
<td>Universal Guard Holder (cartridge not included)</td>
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<td>Holder w/EXP Titanium Hybrid Ferrule</td>
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<td>53500-U</td>
</tr>
</tbody>
</table>

Ascentis Express 2.7 µm Biphenyl Characteristics

- Particle Size: 2.7 µm
- Pore Size: 90 Å
- Phase Chemistry: Biphenyl
- Surface Area: 150 m²/g
- Max Pressure: 600 bar
- pH range: 1.5 – 9

Get Started

Additional resources are available for helping you implement Ascentis Express HPLC Columns into your laboratory.

For product information, webinars, ordering and real time availability information, visit sigma-aldrich.com/express

Our technical service staff is ready to answer questions.
EU: eurtechserv@sial.com US: techserv@sial.com

A technical seminar can be arranged on-site or via the web. Request via seminars@sial.com

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