Agilent InfinityLab Poroshell 120 Columns for HPLC and UHPLC

PERFORM RUGGED, FAST LC
WITH CONFIDENCE
InfinityLab Poroshell 120 columns provide exceptional efficiency for standard HPLC, and significantly boost performance from all instruments, whether you have older 400 bar or newer 1300 bar UHPLC systems. Their advanced features include:

- **Excellent lot-to-lot reproducibility**: A proprietary, single-step porous shell process dramatically reduces tiny differences between lots and columns, giving you confidence in your separation results.

- **A scalable family of particles**: 1.9 μm, 2.7 μm, and 4 μm superficially porous particles enable you to get the best from your methods and instruments, and allow easy transfer between HPLC and UHPLC methods.

- **Easy method development**: Up to TWELVE chemistries, depending on particle size, provide selectivity options for fast method development. What’s more, alignment with ZORBAX chemistries makes it easy to transfer your methods.

- **Long column life**: Robust particles are stable at required pressures. In addition, 2.7 μm and 4 μm columns with standard 2 μm frits resist plugging with dirty samples. UHPLC guard columns further extend the life of your analytical column.

- **Superior peak shape**: High-purity silica and advanced bonding chemistries reduce peak tailing—especially at pH 6-7—and give you faster, more accurate results.

- **Easy traceability**: A preprogrammed ID tag allows you to track various column properties and usage parameters on your InfinityLab Series LC. This ensures analytical traceability, and simplifies routine documentation of columns and conditions.

"We choose InfinityLab Poroshell 120 because of its rugged performance"

"InfinityLab Poroshell 120 provides reliably excellent performance—it’s the new ‘standard’ in our lab”

“For complicated samples, which I face most, InfinityLab Poroshell 120 columns save me a lot of time”

“InfinityLab Poroshell 120 is my go-to column”

QUOTES FROM INFINITYLAB POROSHELL 120 USERS
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To learn more about Agilent InfinityLab Poroshell 120 columns, visit [www.agilent.com/chem/poroshell120](http://www.agilent.com/chem/poroshell120)
Reach new levels of efficiency and confidence with the Agilent InfinityLab LC family

Agilent InfinityLab is an optimized portfolio of LC instruments, columns, and supplies that work together in perfect harmony. It’s designed to provide the highest efficiency in your liquid chromatography workflow—regardless of application area.

Learn more at www.agilent.com/chem/InfinityLab

InfinityLab Poroshell 120 columns
Exceptional speed and resolution for reliable, reproducible results

• Analytical efficiency: A porous outer layer and solid core limit diffusion distance and improve separation speed, while narrow particle size distributions improve resolution.

• Excellent lot-to-lot reproducibility: InfinityLab Poroshell 120 columns are manufactured using a proprietary single-step porous shell process that dramatically reduces tiny differences between columns and lots.

• Up to 12 chemistries: Includes SB-C18 and SB-C8 for low-pH applications and HPH-C18 and HPH-C8 for high-pH applications.

• Preprogrammed ID tag allows you to track various column properties and usage parameters, such as column identity, lot and batch number, last injection date, number of injections, and maximum temperature used.

Enhance traceability and simplify documentation

InfinityLab Poroshell 120 columns with Column ID make it easy to document columns and conditions for routine analysis. Benefits include:

• Usability—find column details easily

• Traceability—know exactly which column is/was installed

• Security—avoid running methods incompatible with the column
In a tight spot?  
**Try an InfinityLab Quick Turn fitting**

For instrument connections that are too tight for Quick Connect fittings, you can rely on Agilent InfinityLab Quick Turn fittings. Like our Quick Connect fittings, they leverage a proprietary spring-loaded design for zero dead volume and a sure connection.

As easy as closing a lever: The proprietary Agilent design features a spring-loaded mechanism for zero dead volume and a sure, tight connection.

*Note: These fittings can only be used with capillaries using a long socket.*
InfinityLab Poroshell 120 columns are based on superficially porous particle technology, which features a solid silica core and a porous outer layer. Compared to traditional totally porous particles of the same (or similar) size, InfinityLab Poroshell particles deliver higher chromatographic efficiencies and enable fast, high-resolution separations.

**How is an InfinityLab Poroshell 120 particle made?**

Agilent uses a unique manufacturing process for InfinityLab Poroshell 120 particles. Specifically, we minimize the number of manufacturing steps to ensure maximum particle—and chromatographic—reproducibility.

**STEP 1**  
Make the solid core  
InfinityLab Poroshell 120 cores have a very smooth surface and a uniform particle size—both of which contribute to a tight overall particle size distribution. As a result, you get a more tightly packed column bed and higher efficiency than with totally porous particles.

**STEP 2**  
Apply the porous shell  
At Agilent, we **apply the porous shell in one single step**—similar to the coacervation techniques used to make traditional ZORBAX columns. This unique single-step process delivers higher yields and more column-to-column reproducibility than other vendors’ columns.

**STEP 3**  
Apply the bonded phase  
The family of Agilent InfinityLab Poroshell 120 phases aligns with the ZORBAX family for easy method development and transfer.

**Reproducible performance—lot to lot and year to year—minimizes workflow disruption**

**The simpler the manufacturing process, the more consistent the column**  
A single-step shell process creates a highly reproducible column, as you can see in this comparison of five lots.
A scalable family of particles for faster method transfer

InfinityLab Poroshell 120 columns are available in three different particle diameters—allowing you to choose the size that best fits your separation needs, and is most compatible with your LC systems. Because the different particles are engineered with a consistent core-to-particle size ratio, you can easily transfer a method developed on one particle size to any of the others.

<table>
<thead>
<tr>
<th>Solid Core</th>
<th>Porous Layer</th>
<th>Particle</th>
<th>Best for</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2 µm</td>
<td>0.35 µm</td>
<td>1.9 µm</td>
<td>Highest UHPLC performance</td>
</tr>
<tr>
<td>1.7 µm</td>
<td>0.5 µm</td>
<td>2.7 µm</td>
<td>UHPLC performance at lower pressures</td>
</tr>
<tr>
<td>2.5 µm</td>
<td>0.75 µm</td>
<td>4 µm</td>
<td>Improved HPLC performance</td>
</tr>
</tbody>
</table>

Scalability saves time when transferring your methods. As particle size is decreased, performance improves, while selectivity is maintained

**InfinityLab Poroshell 120 EC-C18, 2.1 x 50 mm, 1.9 µm** (p/n 699675-902)

**Conditions:**
- Mobile phase A: Water
- Mobile phase B: Acetonitrile
- Gradient: 35-95% B in 3-min
- Flow rate: 0.5 mL/min
- Detection: 254 nm @ 80 Hz
- Sample: 1 μL of alkylphenones mix (p/n 5188-6529) + 0.1 mL 1 mg/mL thiourea

**InfinityLab Poroshell 120 EC-C18, 2.1 x 50 mm, 2.7 µm** (p/n 699775-902)

**InfinityLab Poroshell 120 EC-C18, 2.1 x 50 mm, 4 µm** (p/n 699770-902)
Long column lifetimes reduce costs and minimizes re-work
You can count on InfinityLab Poroshell 120 particles to be robust under the most demanding operating conditions.

Stability for high-pH mobile phases
InfinityLab Poroshell HPH-C18 and HPH-C8 particles are made by chemically modifying the porous layer using proprietary technology that provides high-pH stability. That means you can use the InfinityLab Poroshell 120 family for all your fast LC method development needs—regardless of mobile phase pH.

Conditions:
Instrument: 1260 Infinity II Binary LC
Mobile phase: A: 10 mM Ammonium bicarbonate adjusted to pH 10.0 in water
B: Acetonitrile
Flow rate: 0.4 mL/min
Gradient: Time % B
0 5
5 95
5.1 5
Sample:
1. Methyl salicylate
2. 4 Chlorocinnamic acid
3. Acetophenone
4. Quinine
5. Nortryptiline
6. Heptanophenone
7. Amitriptyline

InfinityLab Poroshell 120 1.9 µm
SPP 2 µm
SPP 1.7 µm
SPP 1.6 µm

The InfinityLab Poroshell 120 columns showed stability for 5,000 injections under high-pressure UHPLC conditions.

After 2,000 injections at pH 10, InfinityLab Poroshell 120 columns showed no change in performance.
Easy method development saves time and money

With 12 different chemistries, InfinityLab Poroshell 120 columns provide a range of selectivities that makes your method development fast and easy.

InfinityLab Poroshell 120 chemistries

<table>
<thead>
<tr>
<th>Best all around</th>
<th>Best for low-pH mobile phases</th>
<th>Best for high-pH mobile phases</th>
<th>Best for alternative selectivity</th>
<th>Best for more polar compounds</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EC-C18</strong></td>
<td>SB-C18 USP L1</td>
<td>HPH-C18 USP L1</td>
<td>Bonus-RP USP L60</td>
<td>SB-Aq USP L96</td>
</tr>
<tr>
<td>USP L1</td>
<td>1.9, 2.7, 4 µm</td>
<td>1.9, 2.7, 4 µm</td>
<td>2.7 µm</td>
<td>2.7 µm</td>
</tr>
<tr>
<td><strong>EC-C8</strong></td>
<td>SB-C8 USP L7</td>
<td>HPH-C8 USP L7</td>
<td>PFP USP L43</td>
<td>EC-CN USP L10</td>
</tr>
<tr>
<td>USP L7</td>
<td>1.9, 2.7, 4 µm</td>
<td>2.7 µm</td>
<td>1.9, 2.7, 4 µm</td>
<td>2.7 µm</td>
</tr>
<tr>
<td><strong>Phenyl-Hexyl</strong></td>
<td>USP L11</td>
<td></td>
<td></td>
<td>HILIC USP L3</td>
</tr>
<tr>
<td>USP L11</td>
<td>1.9, 2.7, 4 µm</td>
<td></td>
<td></td>
<td>1.9, 2.7, 4 µm</td>
</tr>
</tbody>
</table>

In addition, the alignment of InfinityLab Poroshell 120 and ZORBAX chemistries allows easy transfer of your legacy methods.

<table>
<thead>
<tr>
<th>InfinityLab Poroshell 120 Family</th>
<th>Aligned Chemistry</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Best all around</strong></td>
<td></td>
</tr>
<tr>
<td>EC-C18</td>
<td>ZORBAX Eclipse Plus C18</td>
</tr>
<tr>
<td>EC-C8</td>
<td>ZORBAX Eclipse Plus C8</td>
</tr>
<tr>
<td>Phenyl-Hexyl</td>
<td>ZORBAX Eclipse Plus Phenyl-Hexyl</td>
</tr>
<tr>
<td><strong>Best for low-pH mobile phases</strong></td>
<td></td>
</tr>
<tr>
<td>SB-C18</td>
<td>ZORBAX StableBond SB-C18</td>
</tr>
<tr>
<td>SB-C8</td>
<td>ZORBAX StableBond SB-C8</td>
</tr>
<tr>
<td><strong>Best for alternative selectivity</strong></td>
<td></td>
</tr>
<tr>
<td>Bonus-RP</td>
<td>ZORBAX Bonus-RP</td>
</tr>
<tr>
<td><strong>Best for more polar compounds</strong></td>
<td></td>
</tr>
<tr>
<td>SB-Aq</td>
<td>ZORBAX StableBond SB-Aq</td>
</tr>
<tr>
<td>EC-CN</td>
<td>ZORBAX Eclipse XDB-CN</td>
</tr>
<tr>
<td>HILIC</td>
<td>ZORBAX HILIC-Plus</td>
</tr>
</tbody>
</table>

Superior peak shapes improve the accuracy and precision of your results

The high-quality particles and advanced bonding technology of InfinityLab Poroshell 120 columns provide exceptional peak shape—especially at pH 6 to 7—when compared to other superficially porous columns.

**Conditions:**

- Mobile phase: 20 mM 40% K<sub>2</sub>HPO<sub>4</sub>/KH<sub>2</sub>PO<sub>4</sub> pH 7, 60% methanol
- Flow rate: 1.2 mL/min

**Sample:**

- 1. Uracil
- 2. Propranolol
- 3. Butyl Paraben
- 4. Dipropylpthalate
- 5. Amitriptyline

InfinityLab Poroshell 120 columns outperform other columns for challenging analytes.
WHICH INFINITYLAB POROSHELL 120 COLUMNS SHOULD I CHOOSE?

Particle size guidelines

InfinityLab Poroshell 120 columns are available in three particle diameters—1.9 µm, 2.7 µm and 4 µm. The chart below will help you select the size that offers the best fit for your separation needs.

<table>
<thead>
<tr>
<th>Particle Size</th>
<th>Best For</th>
<th>Maximum Pressure</th>
<th>Typical Pressure</th>
<th>Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.9 µm</td>
<td>Highest UHPLC performance</td>
<td>1300 bar</td>
<td>Similar to sub-2 µm totally porous</td>
<td>~120% of sub-2 µm totally porous</td>
</tr>
<tr>
<td>2.7 µm</td>
<td>UHPLC performance at lower pressures</td>
<td>600 bar</td>
<td>50% of sub-2 µm totally porous</td>
<td>~90% of sub-2 µm totally porous</td>
</tr>
<tr>
<td>4 µm</td>
<td>Improved HPLC performance</td>
<td>600 bar</td>
<td>Typically &lt; 200 bar</td>
<td>~200% of 5 µm totally porous</td>
</tr>
</tbody>
</table>

Get more from every LC system in your lab

If your lab has this mix of LC instruments...

- **UHPLC only**
  - Maximum pressure: High (> 600 to 1000+ bar)
  - Dispersion volume: Very low
  - Example: Agilent 1290 Infinity II
  - We recommend...
    - InfinityLab Poroshell 120 1.9 µm
    - InfinityLab Poroshell 120 2.7 µm

- **HPLC and UHPLC**
  - Maximum pressure: Low to high (400 to 1000+ bar)
  - Dispersion volume: Medium to very low
  - Examples: Agilent 1260 Infinity II, Agilent 1290 Infinity II
  - We recommend...
    - InfinityLab Poroshell 120 2.7 µm
    - InfinityLab Poroshell 120 4 µm

- **HPLC only**
  - Maximum pressure: Low to mid (400 to 600 bar)
  - Dispersion volume: High to low
  - Examples: Agilent 1220 Infinity II, Agilent 1260 Infinity II
  - We recommend...
    - InfinityLab Poroshell 120 4 µm
    - InfinityLab Poroshell 120 2.7 µm

LC Column Navigator tool

Find a more efficient replacement for your current column—or get recommendations for a new column, based on method parameters.

www.agilent.com/chem/navigator
This separation of catechins in green tea demonstrates how scaling the method from larger to smaller particles increases pressure and improves resolution.

**Particle sizes**

<table>
<thead>
<tr>
<th>Particle Size</th>
<th>Pressure</th>
<th>Resolution Rsmin</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.9 µm</td>
<td>226 bar</td>
<td>2.2</td>
</tr>
<tr>
<td>2.7 µm</td>
<td>131 bar</td>
<td>1.3</td>
</tr>
<tr>
<td>4 µm</td>
<td>53 bar</td>
<td>0.7</td>
</tr>
</tbody>
</table>

**Conditions:**
- Mobile phase A: 0.2% formic acid in water
- Mobile phase B: Acetonitrile
- Gradient: 5-16% B in 7 min
- Flow rate: 0.5 mL/min
- Detection: 240 nm @ 80 Hz
- Sample: 1 µL of 0.06 mg/mL each of gallic acid, gallocatechin, epigallocatechin, catechin, caffeine, epicatechin, epigallocatechin gallate, gallocatechin gallate, epicatechin gallate, catechin gallate

Remember... scalability means that you can easily transfer methods developed on one particle size to any of the others.
InfinityLab Poroshell 120 columns are available in 12 different chemistries. This provides a range of selectivities that makes your method development fast and easy. See ordering information for chemistry specifications.

**Best all around**

**InfinityLab Poroshell 120 EC-C18, EC-C8, and Phenyl-Hexyl**

*Agilent InfinityLab Poroshell 120 EC-C8 is less retentive for faster analysis of nonpolar compounds*

**Conditions:**
- Mobile phase: 60% CH₃CN, 40% H₂O
- Flow rate: 0.85 mL/min
- Temperature: 26 °C
- Detection: 254 nm
- Sample: 2 µL of RRLC checkout sample (p/n 5188-6529), alkylphenones

EC-C18 is an excellent starting point. Use EC-C8 for less retention with a variety of samples.
With the InfinityLab Poroshell 120 4 µm columns, you can still take advantage of the flexibility of additional phase chemistries. With five chemistries available, choose the phase that takes advantage of key analyte interactions, such as the pi-pi interactions shown here with a steroid separation.

### Isocratic Test

Mobile Phase: 64% MeCN or MeOH
36% Water w/0.1% acetic acid
Flow rate: 1.2 mL/min
Temperature: 25 ºC
Detection: 220, 4 nm

Sample:
1. Triamcinolone
2. Prednisolone
3. Corticosterone
4. Estradiol

Choose the phase that takes advantage of key analyte interactions. Phenyl-Hexyl provides alternative selectivity to EC-C18 for compounds containing phenyl groups. The different selectivity is due to pi-pi interactions with the analytes, as shown in this steroid separation.

Best for low-pH mobile phases

**InfinityLab Poroshell 120 SB-C18 and SB-C8**

Agilent InfinityLab Poroshell 120 EC-C18 and InfinityLab Poroshell 120 SB-C18 provide different selectivity for optimizing separations.

**Conditions:**

- Mobile phase: 35% H₂O, 65% CH₃CN
- Flow rate: 1 mL/min
- Temperature: 30 ºC
- MS acquisition: Dynamic MRM

**Compound** | **Precursor** | **Fragmentor voltage**
---|---|---
Anandamide (AEA) | 348 | 135
Palmitoylethanolamide (PEA) | 300 | 135
2-Arachidonoylglycerol (2-AG) | 379 | 135
Oleoyl ethanolamide (OEA) | 326 | 135

**MS Source**

- Gas temp: 350 ºC
- Gas flow: 12 L/min
- Nebulizer: 40 psi
- Capillary: 4,000 V

**Analytes:**
1. Anandamide (AEA)
2. 2-Arachidonoylglycerol
3. Impurity
4. Palmitoylethanolamide (PEA)
5. Oleoyl ethanolamide (OEA)

SB-C18 and SB-C8 are made using bulky silanes that sterically protect the siloxane bond. Acid labile endcapping reagents are not used. The result is vastly improved column life and extraordinary chemical and temperature stability at pH 1-6. A lack of endcapping also provides a different selectivity to the endcapped EC-C18 and EC-C8.
Best for high-pH mobile phases

InfinityLab Poroshell HPH-C18 and HPH-C8

HPH-C18 and HPH-C8 are made by chemically modifying InfinityLab Poroshell particles using proprietary technology that provides high-pH stability. That means you can use the InfinityLab Poroshell 120 family for all your method development needs, regardless of mobile phase pH. What’s more, the selectivity of the HPH chemistries is very similar to EC-C18 and EC-C8, making method transfer simple.

A robust method development process is critical to ensuring that your method is long lasting, stable, and reliable. Because the retention and selectivity of ionizable compounds (such as acids and bases) can change significantly with varying pH, it is becoming standard practice to employ low, medium, and high-pH analyses during method development.

Here, a method using low, medium, and high pH separates the same mixture of acids, bases, and neutrals. The highest resolution for all compounds was obtained under higher-pH conditions; therefore, high pH would be the best choice going forward.

Best for alternative selectivity

InfinityLab Poroshell Bonus-RP and PFP

Bonus-RP provides unique mid pH selectivity and applicability with an embedded amide linkage in the alkyl chain. At pH 7, Bonus-RP provides excellent peak shape for even the most challenging basic compounds.

Analysis of beta blockers: a comparison of InfinityLab Poroshell 120 phases. This challenging separation demonstrates how different selectivities produce different results. Overall, the Bonus-RP phase delivered the best peak shape and resolution. This was especially true for nadolol, which appeared as a split peak with the C18 and Phenyl-Hexyl phases.
Positional isomers (15 compounds)

Conditions:
Mobile phase: A, Water (0.1% acetic acid)  B, Acetonitrile
Flow rate: 2 mL/min
Detection: Detection

Sample:
1. 3,4 Dimethoxyphenol
2. 2,6 Dimethoxyphenol
3. 3,5 Dimethoxyphenol
4. 2,6 Difluorophenol
5. 2,4 Difluorophenol
6. 2,3 Difluorophenol
7. 3,4 Difluorophenol
8. Degradation product 2,6 dimethoxyphenol
9. 3,5 Dimethylphenol
10. 2,6 Dimethylphenol
11. 2,6 Dichlorophenol
12. 4 Chloro 3 methyl phenol
13. 4 Chloro 2 methyl phenol
14. 3,4 Dichlorophenol
15. 3,5 Dichlorophenol

PFP is a pentafluorophenyl ligand, which provides an orthogonal separation mechanism with C18 chemistries. PFP phases can separate analytes based on small differences in structure, substitution, and steric access to polar moieties. The resulting selectivity for positional isomers, halogenated compounds, and polar analytes is particularly useful when analyzing complex mixtures.

Best for more polar compounds
InfinityLab Poroshell 120 SB-Aq, EC-CN, and HILIC

SB-Aq is a proprietary alkyl reversed-phase chemistry designed to retain hydrophilic and other compounds when using highly aqueous mobile phases—including 100% water.

InfinityLab Poroshell 120 SB-Aq, 3 × 100 mm, 2.7 µm (p/n 685975-314)

Conditions:
Eluent: 100 mM Potassium phosphate buffer, pH 2.5
Injection volume: 5 µL
Flow rate: 0.5 mL/min
Temperature: 50 °C
Detector: DAD, at 226 nm

Food acids chromatogram produced on an Agilent InfinityLab Poroshell 120 SB-Aq column.
Separation of morphine and metabolites using an InfinityLab Poroshell 120 HILIC column

An increasing number of labs are using HILIC early in drug discovery and development for several reasons:

• To achieve MS compatibility
• To improve retention of polar compounds and their more polar degradation products
• To increase LC/MS sensitivity

The separation of morphine and metabolites is one example of a fast, efficient HILIC LC/MS method. Here, you can see that these polar compounds are completely resolved in under 2 minutes with excellent peak shape and efficiency on the InfinityLab Poroshell 120 HILIC column. A reversed-phase method with high aqueous would have limited retention.

Analysis of vitamin B and related compounds using an InfinityLab Poroshell 120 HILIC column

HILIC eliminates the need for ion-pair reagents, such as the hexane sulfonic acid that is typically used in mobile phases for separating B vitamins. It also increases LC/MS compatibility and retention.
Highest UHPLC performance
InfinityLab Poroshell 120 1.9 μm

Finally—columns that let you take full advantage of UHPLC speeds
New Agilent InfinityLab Poroshell 120 1.9 μm columns are uniquely engineered for long life and robustness under the most demanding operating conditions, so you can reduce your operating costs while minimizing disruption and re-work.

Ultra-fast separations
InfinityLab Poroshell 120 1.9 μm columns generate lower pressures than many other sub-2 μm superficially porous columns. That means you can use high flow rates to drive ultra-fast separations without exceeding the pressure rating of your UHPLC instruments.

In this example, the separation of organic acids is achieved using a 0.3-minute gradient.

InfinityLab Poroshell 120 EC-C18, 2.1 x 50 mm, 1.9 μm (p/n 699675-902)

Conditions:
Mobile phase A: 0.2% formic acid in water
Mobile phase B: Acetonitrile
Gradient: 8-26% B in 0.3 min
Flow rate: 2.2 mL/min
Temperature: 60°C
Detection: 280 nm @ 160 Hz
Sample: 5 μL of 0.01 mg/mL each of protocatechuic acid, DOPAC, PABA, vanillic acid, syringic acid, salicylic acid
A low-dispersion UHPLC system, such as the Agilent 1290 Infinity II, is required for ultra-fast separations.

High-resolution separations increase accuracy and precision

Combining manageable pressure with longer, highly efficient InfinityLab Poroshell 120 1.9 μm columns allows you to perform very high-resolution separations on more complex samples.

This example represents a gradient separation of notoginseng.

**Conditions:**
- Mobile phase A: Water
- Mobile phase B: Acetonitrile
- Gradient: See chromatograms
- Flow rate: 0.42 mL/min
- Temperature: 25°C
- Detection: 203 nm @ 80 Hz
- Sample: 1.5 μL of Notoginsenoside R1, Ginsenoside Rg1, Ginsenoside Re, Ginsenoside Rb1, Ginsenoside Rd

### Pressure comparison

**InfinityLab Poroshell 120 1.9 μm**

**SPP 1.6 μm**

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**InfinityLab Poroshell 120 EC-C18, 2.1 x 100 mm, 1.9 μm**

**Pressure: 622 bar**

- Min %B
  - 0: 20
  - 9: 20
  - 20.25: 46
  - 24.75: 55
  - 27.00: 95
  - 27.10: 95
  - 33.00: 95

**InfinityLab Poroshell 120 EC-C18, 2.1 x 150 mm, 1.9 μm**

**Pressure: 840 bar**

- Min %B
  - 0: 20
  - 9: 20
  - 13.50: 46
  - 16.50: 55
  - 18.00: 55
  - 18.10: 95
  - 22.00: 95
UHPLC performance at lower pressures

**InfinityLab Poroshell 120 2.7 µm**

**Run more samples in less time—using your existing LC instruments**

With InfinityLab Poroshell 120 2.7 µm columns, you can achieve up to 90% or more of the efficiency you would expect from a sub-2 µm totally porous particle column, but at lower pressures. That means you can use short columns and achieve fast separations—dramatically enhancing productivity and decreasing cost per sample.

Plus, you can transfer your method seamlessly to higher-specification instruments when you’re ready for even greater productivity.

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**UHPLC efficiency with less pressure**

For this sample of neutral alkylphenones, the InfinityLab Poroshell 120 column delivered >90% of the efficiency of the 1.8 µm column. Note, too, that the pressure on the InfinityLab Poroshell 120 column is about 50% of the pressure on the 1.8 µm column.

**InfinityLab Poroshell 120 EC-C18, 3.0 x 100 mm, 2.7 µm**
(p/n 695975-302)

>90% of the efficiency of 1.8 µm

---

**Zorbax Eclipse Plus C18, 3.0 x 100 mm, 1.8 µm**
(p/n 959964-302)

---

**Conditions:**

- **Mobile phase:** 60% Acetonitrile, 40% water
- **Flow rate:** 0.58 mL/min
- **Injection volume:** 4 µL
- **Temperature:** 26 ºC
- **Detection:** DAD Sig = 254.4 nm Ref = 360.100 nm
- **Sample preparation:** RRLC checkout sample (p/n 5188-6529) spiked with 50 µL 2 mg/mL thiourea in water: acetonitrile (65:35)

---

**Agilent Captiva Premium Syringe Filters**

**Protect your samples and your results**

Even small amounts of particulate can clog your column inlet, causing high column backpressure, retention-time shift, resolution loss, and shorter column life. Agilent Captiva Premium Syringe Filters—developed by chromatographers—remove damaging particulates for optimal performance, column lifetime, and sample integrity.

To order, visit [www.chem.agilent.com/store](http://www.chem.agilent.com/store)
increase the accuracy and precision of your results

high-resolution separations: Because InfinityLab Poroshell 120 2.7 µm columns have a pressure limit of 600 bar, you can successfully apply them to your UHPLC methods—including those that use long columns, higher flow rates, and viscous solvents.

infinitylab poroshell 120 for hplc and uhplc comparison of epa 8330 separation on short and long columns
InfinityLab Poroshell columns give you the flexibility to choose longer columns for higher resolution. Here, you can see that as the column gets longer, resolution improves and pressure increases (up to UHPLC pressures for the longest column).

Note that column length affects resolution—not by the batch of material used in the column—proving that InfinityLab Poroshell 120 columns deliver reproducible performance.

Conditions:
- Mobile phase: 25% Methanol, 75% water
- Flow rate: 1 mL/min
- Temperature: 44 ºC

fast low pressure analysis
Here, a method for analyzing 11 non-nutritive food and beverage additives was transferred from a 5 µm ZORBAX Eclipse Plus C18 column to a InfinityLab Poroshell 120 EC-C18 column, reducing the analysis time from over 13 minutes to less than 3 minutes. Solvent consumption was reduced by more than 80% and resolution of the critical pair improved from 1.8 to 3.0.

Conditions:
- Mobile phase: A: 20 mM Ammonium acetate, pH 4.80
  B: Acetonitrile
- Flow rate: 1 mL/min
- Temperature: 44 ºC
- Gradient: 14% B at t_r, ramp to 52% B in 12.0 min
Agilent InfinityLab Poroshell 120 EC-C18 for fast UHPLC separations

This example shows a fast separation using a mobile phase that generates higher pressures. In the top chromatogram, a 3.0 mm id column was used, with a flow rate of 0.5 mL/min and a pressure below 400 bar—making this a typical LC separation.

Although the top separation was fast (just under 6 minutes), the middle and bottom chromatograms show that you can reduce run times to under 3 minutes by increasing the flow rate. These faster analyses will take your pressure to 400 to 560 bar. Explore the Agilent 1200 Infinity II Series flexible upgrade options to help you take advantage of UHPLC capabilities.

More viscous solvents like methanol can be used at HPLC or UHPLC pressures.

### Conditions:
- **Mobile phase:**
  - A: 65%, 0.2% Formic acid
  - B: 5% Methanol isocratic
- **Flow rate:** see chromatograms
- **Injection volume:** 1 µL
- **Temperature:** 26 ºC
- **Detection:** Sig = 220, 4 nm, Ref = Off

### Sample:
1. Saccharin
2. Caffeine
3. p-Hydroxybenzoic acid
4. Aspartame
5. Dehydroacetic acid
6. Benzoic acid

### Easy-to-use hardware available in all chemistries

High-performance Agilent UHPLC guards are designed for use with fast LC columns. They connect directly to the column inlet; no extra hardware is needed.

Agilent UHPLC guards are available in all InfinityLab Poroshell 120 chemistries—giving you confidence that the guard column will not adversely affect your separations.
Improved HPLC performance
InfinityLab Poroshell 120 4 μm

With pressures 50% less than 2.7 μm—and efficiencies nearly double those of totally porous 5 μm—InfinityLab Poroshell 120 4 μm columns allow you to easily improve separations using traditional longer column dimensions, or run at pressures well below 400 bar.

InfinityLab Poroshell 120 EC-C18, 4.6 x 150 mm, 4 μm
(p/n 693970-902)

ZORBAX Eclipse Plus C18, 4.6 x 150 mm, 5 μm
(p/n 959993-902)

Improved results with no change to the method conditions, other than the column used. In this example, direct replacement with an InfinityLab Poroshell 120 4 μm column decreased peak width by 50% compared to the 5 μm totally porous column. Although the backpressure increased somewhat, it was still acceptable for most HPLC instruments.

ZORBAX Eclipse Plus EC-C18, 4.6 x 150 mm, 5 μm

InfinityLab Poroshell 120 EC-C18, 4.6 x 150 mm, 4 μm (p/n 693970-902)

Conditions:
Mobile phase: A) Water B) Acetonitrile
Gradient for 4.6 x 150 mm columns:

<table>
<thead>
<tr>
<th>Time (min)</th>
<th>%A</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>81</td>
</tr>
<tr>
<td>12</td>
<td>81</td>
</tr>
<tr>
<td>60</td>
<td>64</td>
</tr>
<tr>
<td>61</td>
<td>10</td>
</tr>
<tr>
<td>65</td>
<td>10</td>
</tr>
<tr>
<td>66</td>
<td>81</td>
</tr>
<tr>
<td>70</td>
<td>81</td>
</tr>
</tbody>
</table>

Temperature: 30 °C
Flow rate: 1.0 mL/min
Injection volume: 10 μL for 150 mm columns
Detection: UV, 203 nm

Peak ID
1. Naproxen
2. Butyrophenone

InfinityLab Poroshell 120 EC-C18, 4.6 x 150 mm, 4 μm (p/n 693970-902)

Shorter columns can also be used to decrease run time. The higher efficiency of InfinityLab Poroshell 120 4 μm columns means that resolution is maintained.
Get the very best from your LC/MS methods with InfinityLab Poroshell 120

High-efficiency InfinityLab Poroshell 120 columns are ideally suited for LC/MS methods. Use a 2.1 or 3 mm column for the best flow rate compatibility with your MS.

Drugs of abuse at low and high pH

The InfinityLab Poroshell 120 HILIC column gives excellent retention and peak shape for underivatized amino acids.

Free amino acids by HILIC

The InfinityLab Poroshell 120 HILIC column gives excellent retention and peak shape for underivatized amino acids.
Many legacy methods developed on longer 5 µm totally porous columns can quickly be moved to InfinityLab Poroshell 120 columns—significantly increasing throughput and reducing costs.

**Transfer methods between Agilent InfinityLab Poroshell 120 and ZORBAX for time savings or scalability**

In this example, a complex method was transferred from a ZORBAX Eclipse Plus C18 250 mm, 5 µm column to a 100 mm InfinityLab Poroshell 120 EC-C18 column. All conditions were kept the same, except for the gradient time, which was adjusted for the shorter column.

As you can see, both separations are the same. However, the bottom chromatogram was generated in just over 7 minutes instead of 30 minutes for the top chromatogram—an excellent productivity improvement.

Keep in mind that both separations were run on an older Agilent 1100 Series instrument—proving that even gradient methods can be transferred while keeping the pressure below 400 bar.
1.9 μm method transfer:
Save even more time and solvent
Here, a legacy method was transferred from a 5 μm totally porous column to a shorter, narrower InfinityLab Poroshell 120 1.9 μm column. The run time was reduced by a factor of >10 without loss of resolution. Even though linear velocity was increased, the narrow I.D. column reduced the amount of solvent used.

### Conditions:
- **Legacy**: 8 - 35% B in 36-min
- **New**: 8 - 35% B in 3-min
- **Flow rate**: 1.0 mL/min
- **Pressure**: 193 bar
- **Rsmin**: 2.4

### More than 10x increase in throughput

| Mobile phase A: | 0.2% formic acid in water |
| Mobile phase B: | Acetonitrile |
| Temperature: | 25°C |
| Detection: | 240 nm @ 80 Hz |
| Sample: | 5 μL of 0.01 mg/mL each of protocatechuic acid, DOPAC, PABA, vanillic acid, syringic acid, salicylic acid |

### Parameter
- **Legacy**: 36-min
- **New**: 3-min
- **Savings**: 92%

### Solvent use
- **Legacy**: 36 mL
- **New**: 1.5 mL
- **Savings**: 96%

---

Agilent LC Handbook

**Your complete guide to method development and more**

Developed through the combined efforts of experienced Agilent chromatographers, the Agilent LC Handbook is filled with tips and tricks to help you succeed with HPLC column selection and method development. Newly updated with chapters on LC and LC/MS.

Download now at [www.agilent.de/chem/lc_handbook](http://www.agilent.de/chem/lc_handbook)
**Transfer of compendial methods**
Alignment of InfinityLab Poroshell 120 and ZORBAX chemistries means that selectivities are very similar between the column families, making it easy to transfer your legacy methods.

**USP method for naproxen tablets—4.5x faster analysis on Agilent InfinityLab Poroshell 120 at HPLC pressures**
This naproxen separation demonstrates how easy it can be to convert a method to InfinityLab Poroshell 120 columns without changing the flow rate or mobile phase.

The 1st chromatogram shows a USP analysis on an Agilent ZORBAX Eclipse Plus C18 column, which delivers sharp peaks, three times the needed efficiency, and a resolution of ~14.

In the 2nd and 3rd chromatograms, the InfinityLab Poroshell 120 EC-C18 4 μm columns (150 mm and 100 mm) provide greater efficiency and speed of the original method as easy, drop-in replacements. And because the pressure is only 165 bar for the 150 mm column and 98 bar for the 100 mm column, this isocratic method is an excellent HPLC option.

In the 4th chromatogram, the InfinityLab Poroshell 120 EC-C18 2.7 μm column (100 mm) provides greater efficiency and resolution at nearly 2x the speed of the original method. The InfinityLab Poroshell 120 EC-C18 column (50 mm), in the 5th chromatogram still meets the requirements for efficiency and resolution, but is 4.5 times faster than the 5 μm column.

**System suitability method requirement: N > 4,000, Rs > 11.5**

<table>
<thead>
<tr>
<th>Column</th>
<th>Mobile phase</th>
<th>Flow rate</th>
<th>Sample</th>
<th>Injection</th>
<th>Rs</th>
<th>Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZORBAX Eclipse Plus C18, 4.6 x 150 mm, 5 μm USP Prescribed Column</td>
<td>50:49:1 MeCN:H₂O:acetic acid</td>
<td>1.2 mL/min</td>
<td>1. Naproxen 2. Butyrophenone</td>
<td>13.67 µL</td>
<td>95 bar</td>
<td>37,500</td>
</tr>
<tr>
<td>InfinityLab Poroshell 120, 4.6 x 150 mm (L1) 4 μm (p/n 693970-902)</td>
<td>50:49:1 MeCN:H₂O:acetic acid</td>
<td>1.2 mL/min</td>
<td>1. Naproxen 2. Butyrophenone</td>
<td>13.67 µL</td>
<td>95 bar</td>
<td>37,500</td>
</tr>
<tr>
<td>InfinityLab Poroshell 120, 4.6 x 100 mm (L1), 4 μm (p/n 695970-902)</td>
<td>50:49:1 MeCN:H₂O:acetic acid</td>
<td>1.2 mL/min</td>
<td>1. Naproxen 2. Butyrophenone</td>
<td>13.67 µL</td>
<td>95 bar</td>
<td>37,500</td>
</tr>
<tr>
<td>InfinityLab Poroshell 120 EC-C18, 4.6 x 100 mm (L1), 2.7 μm (p/n 695975-902)</td>
<td>50:49:1 MeCN:H₂O:acetic acid</td>
<td>1.2 mL/min</td>
<td>1. Naproxen 2. Butyrophenone</td>
<td>6.7 µL</td>
<td>98 bar</td>
<td>25,000</td>
</tr>
<tr>
<td>InfinityLab Poroshell 120, 4.6 x 50 mm (L1), 2.7 μm (p/n 699975-902)</td>
<td>50:49:1 MeCN:H₂O:acetic acid</td>
<td>1.2 mL/min</td>
<td>1. Naproxen 2. Butyrophenone</td>
<td>6.7 µL</td>
<td>98 bar</td>
<td>18,518</td>
</tr>
</tbody>
</table>

InfinityLab Poroshell 120 is an excellent choice for faster methods at HPLC pressures.
Transfer of USP methods

USP methods are widely used in pharmaceutical drug products and raw materials testing. These methods can be updated by making adjustments that follow the recommendations in USP chapter <621> (updated August 2014). Modifications outside these ranges are considered changes and require method revalidation.

<table>
<thead>
<tr>
<th>Parameters for System Suitability</th>
<th>USP37-NF32S1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particle size (dp)</td>
<td>L/dp: -25% to +50% or N: -25% to +50%</td>
</tr>
<tr>
<td>Column length (L)</td>
<td>Flexible, w/ constant linear velocity</td>
</tr>
<tr>
<td>Flow rate</td>
<td>Based on dp Additional adjustments: ±50%, provided N decreases ≤20%</td>
</tr>
<tr>
<td>Injection volume</td>
<td>May be adjusted as far as is consistent with precision and detection limits</td>
</tr>
<tr>
<td>Column temperature</td>
<td>±10 °C</td>
</tr>
<tr>
<td>Mobile phase pH</td>
<td>±0.2 units</td>
</tr>
<tr>
<td>Salt concentration</td>
<td>Within ±10% if the permitted pH variation is met</td>
</tr>
<tr>
<td>Ratio of components in mobile phase</td>
<td>Minor component (≤50%): ±30% relative, but cannot exceed ±10% absolute May only adjust 1 minor component in ternary mixtures</td>
</tr>
<tr>
<td>Wavelength of UV-Visible detector</td>
<td>No changes allowed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>L (mm)</th>
<th>Dp (µm)</th>
<th>L/dp</th>
<th>%</th>
<th>N</th>
<th>%</th>
<th>621 compliant</th>
</tr>
</thead>
<tbody>
<tr>
<td>150</td>
<td>5</td>
<td>30,000</td>
<td>100%</td>
<td>10,639</td>
<td>100%</td>
<td>Yes</td>
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<tr>
<td>150</td>
<td>4</td>
<td>37,500</td>
<td>125%</td>
<td>19,054</td>
<td>179%</td>
<td>Yes</td>
</tr>
<tr>
<td>100</td>
<td>4</td>
<td>25,000</td>
<td>83%</td>
<td>13,186</td>
<td>124%</td>
<td>Yes</td>
</tr>
<tr>
<td>100</td>
<td>2.7</td>
<td>37,037</td>
<td>123%</td>
<td>21,046</td>
<td>198%</td>
<td>Yes</td>
</tr>
<tr>
<td>50</td>
<td>2.7</td>
<td>18,519</td>
<td>62%</td>
<td>11,281</td>
<td>106%</td>
<td>Yes</td>
</tr>
</tbody>
</table>
LONG COLUMN LIFETIME: A SIGNIFICANT ECONOMIC VALUE FOR YOUR LAB

Long lifetime at the highest pressures

InfinityLab Poroshell 120 1.9 µm columns not only minimize column costs, but also reduce expensive disruption and re-work due to column failure.

Long column lifetimes reduce costs and minimizes re-work

You can count on InfinityLab Poroshell 120 particles to be robust under the most demanding operating conditions.

The InfinityLab Poroshell 120 columns showed stability for 5,000 injections under high-pressure UHPLC conditions.
Long lifetime with “dirty” samples

Manufactured with 2 µm frits, InfinityLab Poroshell 120 2.7 µm and 4 µm columns resist plugging—even with “dirty” samples, such as unfiltered plasma.

Here, we precipitated the proteins, but did not centrifuge or filter the sample. Even under these conditions, there was no pressure increase after 2,500 injections.

Long lifetime in high-pH mobile phases

For consistent performance and longevity—even with high-pH mobile phases—use InfinityLab Poroshell HPH columns. Here, 2,000 injections of a separation mixture containing acidic, basic, and neutral compounds were performed under extreme pH 10 conditions.
INFINITYLAB POROSHELL TECHNOLOGY
FOR BIOMOLECULE ANALYSIS

Improve your biomolecule characterization with Agilent AdvanceBio columns

Complex biomolecules including monoclonal antibodies (mAbs), other proteins, peptides, and synthetic oligonucleotides are typically separated and characterized slowly to reduce peak broadening of these slow-diffusing analytes. However, InfinityLab Poroshell technology reduces the diffusion distance, allowing higher flow rates and steeper gradients.

Agilent AdvanceBio RP-mAb columns optimize the performance of intact and reduced mAb analysis when analyzing monoclonal antibodies for biopharma discovery, development, and QA/QC applications. Based on 3.5 µm InfinityLab Poroshell particles with a unique 450Å pore size—and a range of bonded phase selectivities—AdvanceBio RP-mAb columns deliver higher resolution and faster run times for accurate, reproducible results.

Agilent AdvanceBio Glycan Mapping columns ensure fast, high resolution, reproducible glycan identification using HILIC chromatography. The 2.7 µm InfinityLab Poroshell version is optimized for high resolution and lower backpressure. Choose from a selection of standards for performance testing and retention mapping of labeled and unlabeled glycans. Our AdvanceBio N-glycan sample preparation kits provide all the components plus a comprehensive procedure to simplify the process.

Agilent AdvanceBio Peptide Mapping columns provide high-resolution peptide maps for protein identification and determination of post-translation modifications. They feature a 120Å pore size, which is ideal for analyzing peptides produced by enzymatic protein digest. In addition, their 2.7 µm particle size enables UHPLC performance on HPLC systems. Every batch of AdvanceBio Peptide Mapping media is tested with a peptide mix to ensure suitability and reproducibility.

Agilent AdvanceBio Oligonucleotide columns feature high-efficiency, 2.7 µm InfinityLab Poroshell particles that have been chemically modified using proprietary HPH technology to make them very resistant to high-pH mobile phases. They are bonded with an end-capped C18 phase, and deliver excellent selectivity for oligonucleotides.

See more at www.agilent.com/chem/advancebio
InfinityLab Poroshell 120 column specifications

<table>
<thead>
<tr>
<th>InfinityLab Poroshell Family</th>
<th>Pore Size</th>
<th>Temp. Limits</th>
<th>pH Range</th>
<th>Endcapped</th>
<th>Carbon Load</th>
<th>Surface Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Best all around</td>
<td>EC-C18</td>
<td>120Å</td>
<td>60°C</td>
<td>2.0-8.0</td>
<td>Double</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>EC-C8</td>
<td>120Å</td>
<td>60°C</td>
<td>2.0-8.0</td>
<td>Double</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>Phenyl-Hexyl</td>
<td>120Å</td>
<td>60°C</td>
<td>2.0-8.0</td>
<td>Double</td>
<td>9%</td>
</tr>
<tr>
<td>Best for low-pH mobile phases</td>
<td>SB-C18</td>
<td>120Å</td>
<td>90°C</td>
<td>1.0-8.0</td>
<td>No</td>
<td>9%</td>
</tr>
<tr>
<td></td>
<td>SB-C8</td>
<td>120Å</td>
<td>80°C</td>
<td>1.0-8.0</td>
<td>No</td>
<td>5.5%</td>
</tr>
<tr>
<td>Best for high-pH mobile phases</td>
<td>HPH-C18</td>
<td>100Å</td>
<td>60°C</td>
<td>3.0-11.0</td>
<td>Double</td>
<td>Proprietary</td>
</tr>
<tr>
<td></td>
<td>HPH-C8</td>
<td>100Å</td>
<td>60°C</td>
<td>3.0-11.0</td>
<td>Double</td>
<td>Proprietary</td>
</tr>
<tr>
<td>Best for alternative selectivity</td>
<td>Bonus-RP</td>
<td>120Å</td>
<td>60°C</td>
<td>2.0-9.0</td>
<td>Triple</td>
<td>9.5%</td>
</tr>
<tr>
<td></td>
<td>PFP</td>
<td>120Å</td>
<td>60°C</td>
<td>2.0-8.0</td>
<td>Double</td>
<td>5.1%</td>
</tr>
<tr>
<td>Best for more polar compounds</td>
<td>SB-Aq</td>
<td>120Å</td>
<td>80°C</td>
<td>1.0-8.0</td>
<td>No</td>
<td>Proprietary</td>
</tr>
<tr>
<td></td>
<td>EC-CN</td>
<td>120Å</td>
<td>60°C</td>
<td>2.0-8.0</td>
<td>Double</td>
<td>3.5%</td>
</tr>
<tr>
<td></td>
<td>HILIC</td>
<td>120Å</td>
<td>60°C</td>
<td>0.0-8.0</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Specifications represent typical values only

InfinityLab Poroshell 120 1.9 µm columns: Highest UHPLC performance

<table>
<thead>
<tr>
<th>Size (mm)</th>
<th>EC-C18</th>
<th>EC-C8</th>
<th>Phenyl-Hexyl</th>
<th>HPH-C18</th>
<th>PFP</th>
<th>HILIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.0 x 150</td>
<td>693675-302</td>
<td>693675-306</td>
<td>693675-312</td>
<td>693675-502</td>
<td>693675-308</td>
<td>693675-301</td>
</tr>
<tr>
<td>3.0 x 100</td>
<td>695675-302</td>
<td>695675-306</td>
<td>695675-312</td>
<td>695675-502</td>
<td>695675-308</td>
<td>695675-301</td>
</tr>
<tr>
<td>3.0 x 50</td>
<td>699675-302</td>
<td>699675-306</td>
<td>699675-312</td>
<td>699675-502</td>
<td>699675-308</td>
<td>699675-301</td>
</tr>
<tr>
<td>2.1 x 150</td>
<td>693675-902</td>
<td>693675-906</td>
<td>693675-912</td>
<td>693675-702</td>
<td>693675-408</td>
<td>693675-901</td>
</tr>
<tr>
<td>2.1 x 100</td>
<td>695675-902</td>
<td>695675-906</td>
<td>695675-912</td>
<td>695675-702</td>
<td>695675-408</td>
<td>695675-901</td>
</tr>
<tr>
<td>2.1 x 50</td>
<td>699675-902</td>
<td>699675-906</td>
<td>699675-912</td>
<td>699675-702</td>
<td>699675-408</td>
<td>699675-901</td>
</tr>
</tbody>
</table>

InfinityLab Poroshell 120 1.9 µm Fast Guards: Extend column lifetime even further

<table>
<thead>
<tr>
<th>Size (mm)</th>
<th>EC-C18</th>
<th>EC-C8</th>
<th>Phenyl-Hexyl</th>
<th>HPH-C18</th>
<th>PFP</th>
<th>HILIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.0 x 5</td>
<td>823750-940</td>
<td>823750-941</td>
<td>823750-943</td>
<td>823750-945</td>
<td>823750-942</td>
<td>823750-944</td>
</tr>
<tr>
<td>2.1 x 5</td>
<td>821725-940</td>
<td>821725-941</td>
<td>821725-943</td>
<td>821725-945</td>
<td>821725-942</td>
<td>821725-944</td>
</tr>
</tbody>
</table>

Note: Guards supplied as 3/pk

<table>
<thead>
<tr>
<th>Particle</th>
<th>Pressure Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.9 µm</td>
<td>1300 bar</td>
</tr>
<tr>
<td>2.7 µm</td>
<td>600 bar</td>
</tr>
<tr>
<td>4 µm</td>
<td>600 bar</td>
</tr>
</tbody>
</table>

All InfinityLab Poroshell 120 1.9 µm columns are supplied with a pre-programmed Column ID.
### InfinityLab Poroshell 120 2.7 µm columns: UHPLC performance at lower pressures

<table>
<thead>
<tr>
<th>Size (mm)</th>
<th>EC-C18</th>
<th>EC-C8</th>
<th>SB-C18</th>
<th>SB-C8</th>
<th>HPH-C18</th>
<th>HPH-C8</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.6 x 150</td>
<td>693975-902</td>
<td>689375-906</td>
<td>689375-902</td>
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<tr>
<th>Size (mm)</th>
<th>Phenyl-Hexyl</th>
<th>Bonus-RP</th>
<th>PFP</th>
<th>SB-Aq</th>
<th>EC-CN</th>
<th>HILIC</th>
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<td>683975-914</td>
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<td>693975-901</td>
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</tbody>
</table>

Note: InfinityLab Poroshell 120 2.7 µm columns have a 600 bar/9,000 psi pressure limit.

### InfinityLab Poroshell 120 2.7 µm Fast Guards: Extend column lifetime even further

<table>
<thead>
<tr>
<th>Size (mm)</th>
<th>EC-C18</th>
<th>EC-C8</th>
<th>Phenyl-Hexyl</th>
<th>SB-C18</th>
<th>SB-C8</th>
<th>HPH-C18</th>
</tr>
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<tbody>
<tr>
<td>4.6 x 5</td>
<td>820750-911</td>
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<td>820750-912</td>
<td>820750-923</td>
<td>820750-928</td>
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<tr>
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<td>823750-913</td>
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<tr>
<td>2.1 x 5</td>
<td>821725-911</td>
<td>821725-913</td>
<td>821725-914</td>
<td>821725-912</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Size (mm)</th>
<th>HPH-C8</th>
<th>Bonus-RP</th>
<th>PFP</th>
<th>SB-Aq</th>
<th>EC-CN</th>
<th>HILIC</th>
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</thead>
<tbody>
<tr>
<td>4.6 x 5</td>
<td>820750-922</td>
<td>820750-925</td>
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<td>820750-924</td>
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<tr>
<td>3.0 x 5</td>
<td>823750-922</td>
<td>823750-925</td>
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<td>823750-924</td>
<td>823750-927</td>
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</tbody>
</table>

Note: Guards supplied as 3/pk.

InfinityLab Poroshell 120 2.7 µm columns are not supplied with a pre-programmed Column ID as standard. To order with Column ID, suffix the part number with "T" (example 693975-902T).
### InfinityLab Poroshell 120 4 µm columns: Improved HPLC performance

<table>
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<th>Size (mm)</th>
<th>EC-C18</th>
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<th>Phenyl-Hexyl</th>
<th>HPH-C18</th>
<th>HPH-C8</th>
<th>PFP</th>
<th>HILIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.6 x 250</td>
<td>690970-902</td>
<td>690970-906</td>
<td>690970-912</td>
<td>690970-702</td>
<td>690970-706</td>
<td>690970-408</td>
<td>690970-901</td>
</tr>
<tr>
<td>4.6 x 150</td>
<td>693970-902</td>
<td>693970-906</td>
<td>693970-912</td>
<td>693970-702</td>
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<tr>
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</tr>
<tr>
<td>4.6 x 50</td>
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<td>699970-906</td>
<td>699970-912</td>
<td>699970-702</td>
<td>699970-706</td>
<td>699970-408</td>
<td>699970-901</td>
</tr>
<tr>
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<td>690970-306</td>
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<td>693970-502</td>
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<tr>
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<tr>
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*Note: InfinityLab Poroshell 120 4 µm columns have a 600 bar/9,000 psi pressure limit.*

### Guard columns for 4 µm columns

<table>
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<tr>
<th>Size (mm)</th>
<th>EC-C18</th>
<th>HPH-C18</th>
<th>HPH-C8</th>
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</thead>
<tbody>
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<td>821725-916</td>
<td>821725-930</td>
<td>821725-929</td>
</tr>
</tbody>
</table>

*Note: Guards supplied as 3/pk. InfinityLab Poroshell 120 4 µm columns are not supplied with a pre-programmed Column ID as standard. To order with Column ID, suffix the part number with "T" (example 690970-902T).*
## Method Validation Kits

Contain 3 HPLC columns with the same column type (bonded phase, particle size, configuration), but from different manufacturing lots.

<table>
<thead>
<tr>
<th>Size (mm)</th>
<th>Particle Size (µm)</th>
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<th>EC-C8</th>
<th>Phenyl-Hexyl</th>
<th>SB-C18</th>
<th>SB-C8</th>
<th>SB-Aq</th>
<th>Bonus-RP</th>
</tr>
</thead>
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<td>693968-901K</td>
</tr>
<tr>
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</tr>
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<td>689975-902K</td>
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</tbody>
</table>

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**Don’t see a validation kit for your column part number?**

Validation kits can be assembled for most columns in the Agilent LC column portfolio. Simply send your request to the Agilent customer center in your country, indicating the part number for which you need a validation kit. A customer Service representative will send you a quote within 1-2 business days.

[www.agilent.com/chem/contactus](http://www.agilent.com/chem/contactus)
## AdvanceBio RP-mAb columns

<table>
<thead>
<tr>
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<th>SB-C8</th>
<th>Diphenyl</th>
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## AdvanceBio Peptide Mapping, Glycan Mapping and Oligonucleotide columns

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<th>Glycan Mapping</th>
<th>Oligonucleotide</th>
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</tr>
<tr>
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</tbody>
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## AdvanceBio Peptide Mapping, Glycan Mapping and Oligonucleotide Fast Guards

<table>
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<tr>
<th>Size</th>
<th>Peptide Mapping</th>
<th>Glycan Mapping</th>
<th>Oligonucleotide</th>
</tr>
</thead>
<tbody>
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<td>820750-921</td>
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<td>851725-911</td>
<td>821725-906</td>
<td>821725-921</td>
</tr>
</tbody>
</table>

## AdvanceBio column specifications

<table>
<thead>
<tr>
<th>Column</th>
<th>Chemistry</th>
<th>Particle</th>
<th>Pore Size</th>
<th>Temp. Limits</th>
<th>pH Range</th>
<th>End-capped</th>
</tr>
</thead>
<tbody>
<tr>
<td>RP-mAb</td>
<td>C4</td>
<td>3.5 µm</td>
<td>450Å</td>
<td>90 ºC</td>
<td>1.0-8.0</td>
<td>Yes</td>
</tr>
<tr>
<td>RP-mAb</td>
<td>SB-C8</td>
<td>3.5 µm</td>
<td>450Å</td>
<td>90 ºC</td>
<td>1.0-8.0</td>
<td>No</td>
</tr>
<tr>
<td>RP-mAb</td>
<td>Diphenyl</td>
<td>3.5 µm</td>
<td>450Å</td>
<td>90 ºC</td>
<td>1.0-8.0</td>
<td>Yes</td>
</tr>
<tr>
<td>Peptide Mapping</td>
<td>C18</td>
<td>2.7 µm</td>
<td>120Å</td>
<td>60 ºC</td>
<td>2.0-8.0</td>
<td>Double</td>
</tr>
<tr>
<td>Glycan Mapping</td>
<td>Amide-HILIC</td>
<td>2.7 µm</td>
<td>120Å</td>
<td>60 ºC</td>
<td>2.0-7.0</td>
<td>No</td>
</tr>
<tr>
<td>Oligonucleotide</td>
<td>C18</td>
<td>2.7 µm</td>
<td>100Å</td>
<td>65 ºC</td>
<td>3.0-11.0</td>
<td>Double</td>
</tr>
</tbody>
</table>

 Specifications represent typical values only

<table>
<thead>
<tr>
<th>Particle</th>
<th>Pressure Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.5 µm</td>
<td>600 bar</td>
</tr>
<tr>
<td>2.7 µm</td>
<td>600 bar</td>
</tr>
</tbody>
</table>
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