



InertSustainBio™ C18

Rapid Separations of Proteins and Peptides

GL Sciences Inc.

InertSustainBio C18

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High Recoveries of Proteins and Peptides

The 200 Å pore size silica creates the opportunity to separate compounds having a molecular weight from small to large molecules. In addition, the usage of highly inert packing material packed into a new Steel-Coated-PEEK hardware deliver excellent peak shapes for various analytes without any adsorption.

Physical Properties

Silica :	ES (Evolved Surface) Silica Gel
Particle Size :	1.9 µm, 3 µm
Surface Area :	200 m ² /g
Pore Size :	200 Å (20 nm)
Pore Volume :	1.00 mL/g
Bonded Phase :	Octadecyl Groups
End-capping :	Complete
Carbon Loading :	9.0 %
USP Code :	L1
pH Range :	1.0 to 10.0
Max. Operating Pressure:	80 MPa, 800 Bar for 1.9 µm columns 50 MPa, 500 Bar for 3 µm columns

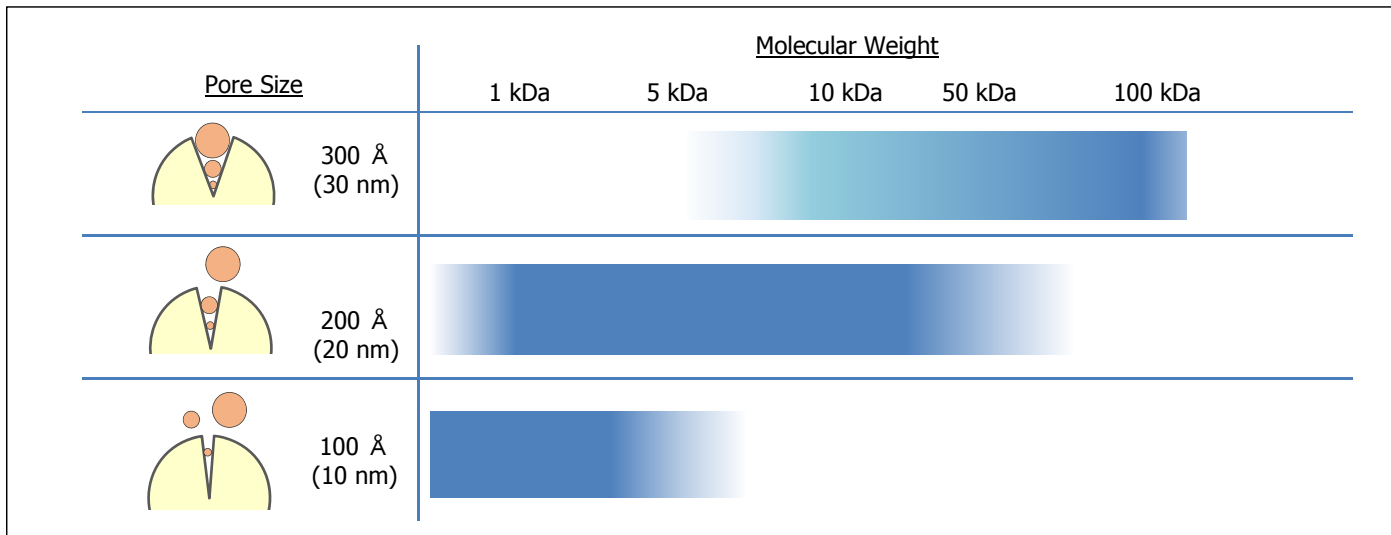


Benefits

- Separation of compounds from small to large molecules
- A radically new Steel-Coated-PEEK hardware preventing adsorption of peaks
- Suitable for analyzing Phosphate compounds WITHOUT the formation of phosphate-iron complexes found with stainless steel column hardware
- Extreme resistance to low and high pH mobile phases
- Endlessly reproducible from column-to-column and batch-to-batch for consistent results

Effects of Pore Size

The molecular weight of peptides and oligonucleotides are from several kDa to several dozen kDa. It is critically important to select the appropriate pore size column to achieve high efficiency. As shown below, the optimized 200 Å pore size silica enables InertSustainBio C18 to analyze peptides and oligonucleotides.



Analysis of Proteins

Conditions

Column : InertSustainBio C18 (1.9 µm, 50 x 2.1 mm I.D.)

Eluent : A) 0.1 % HCOOH in H₂O

B) 0.1 % HCOOH in CH₃CN

A/B = 80/20 - (2.5 min) - 20/80 - (0.5 min) - 20/80, v/v

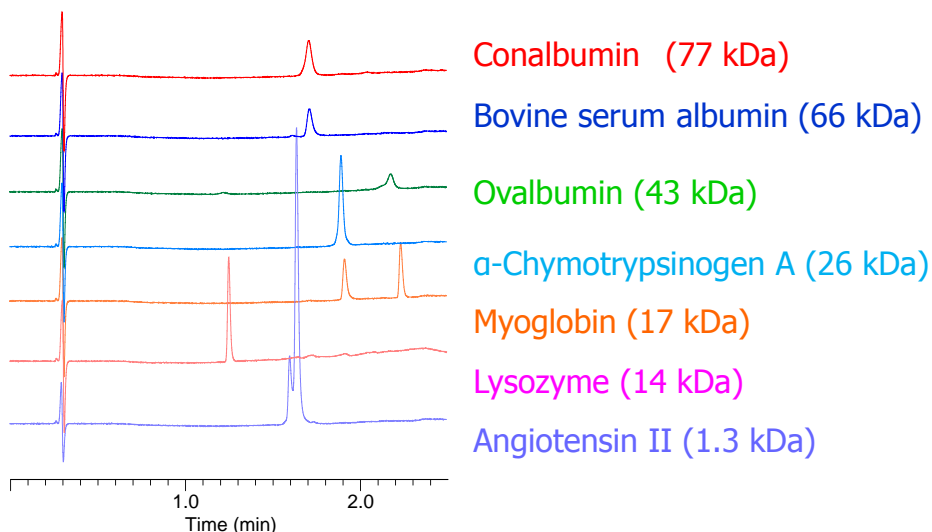
Flow Rate : 0.5 mL/min

Col. Temp. : 40 °C

Detection : UV 280 nm

Injection Vol. : 5 µL

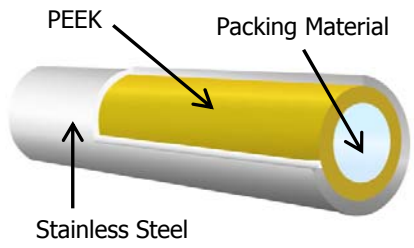
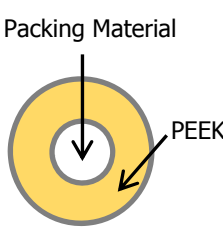
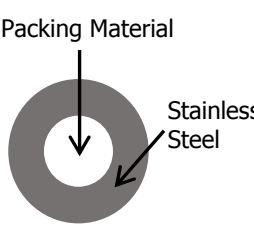
Sample : Proteins (100 mg/mL each)

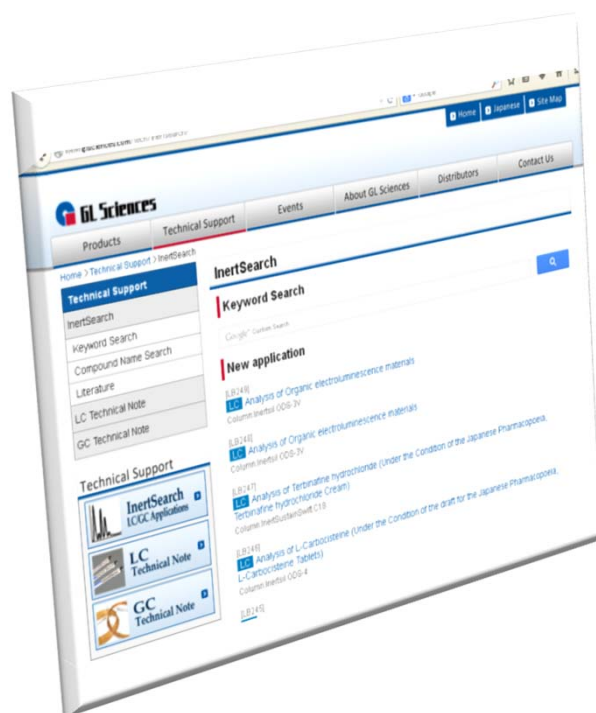


A Radically New Steel-Coated-PEEK Hardware

Generally, conventional PEEK hardware is tolerable up to a back pressure of 20 MPa. The mechanical strength of PEEK is far less than stainless steel and the durability to be very low as well. As illustrated below, the introduction of a radically new Steel-Coated-PEEK hardware in InertSustainBio C18 offer maximum operating pressure of 80 MPa for 1.9 μm columns achieving rapid analysis for analytes sensitive to frequently used stainless steel columns.

Comparison of Hardware Structure

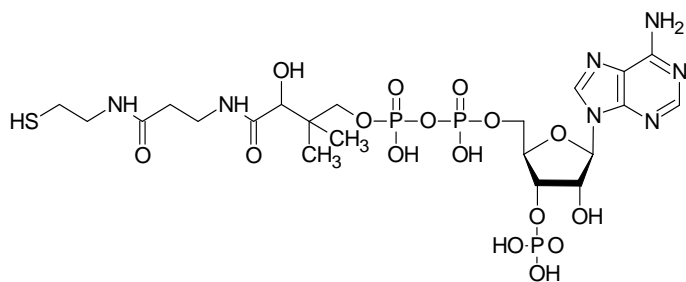
InertSustainBio C18	Conventional PEEK Hardware	Stainless Steel Hardware
 <p>PEEK Packing Material Stainless Steel</p> <ul style="list-style-type: none"> ■ Max. Operating Pressure: 80 MPa ■ PEEK frit 	 <p>Packing Material PEEK</p> <ul style="list-style-type: none"> ■ Max. Operating Pressure: 20 MPa ■ PEEK frit 	 <p>Packing Material Stainless Steel</p> <ul style="list-style-type: none"> ■ Max. Operating Pressure: 80 MPa ■ Sintered metal frit



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Analysis of Coenzyme A

As shown in the following chemical structure, Coenzyme A have several phosphate groups which is a sample sensitive to stainless steel hardware. InertSustainBio C18 successfully eluted Coenzyme A without any adsorption while stainless steel columns failed.



Conditions

Column : InertSustainBio C18 (1.9 μm , 50 x 2.1 mm I.D.)

Eluent : A) 5 mM HCOONH₄ in H₂O

B) 5 mM HCOONH₄ in CH₃CN

A/B = 98/2 - (2 min) - 80/20 - (0.01 min) - 98/2 - (2.99 min) - 98/2, v/v

Flow Rate : 0.4 mL/min

Col. Temp. : 40 °C

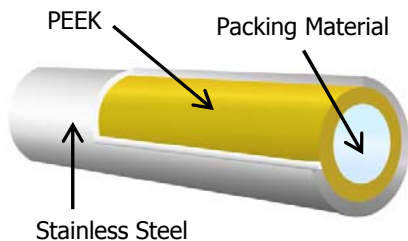
Detection : MS/MS (ESI positive)

Injection Vol. : 10 μL

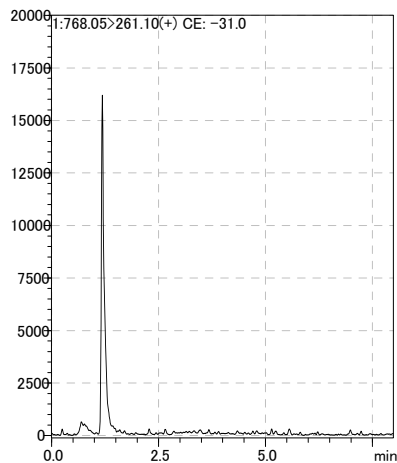
Sample : Coenzyme A 500 ng/mL

Q1/Q3: 768.05/261.0

InertSustainBio C18



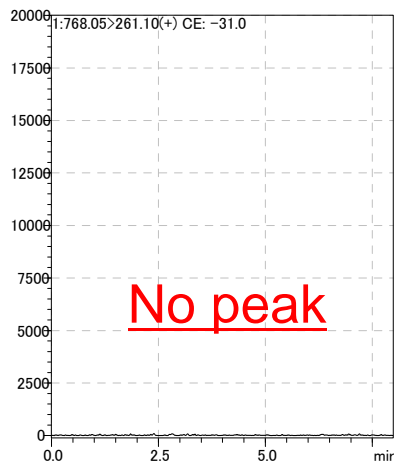
■ Pore Size 200 Å, 1.9 μm



Stainless Steel Hardware Packed with InertSustainBio C18



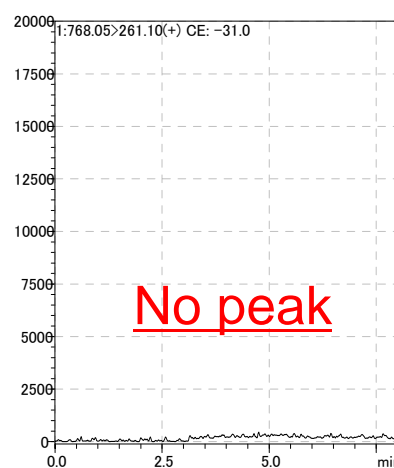
■ Pore Size 200 Å, 1.9 μm



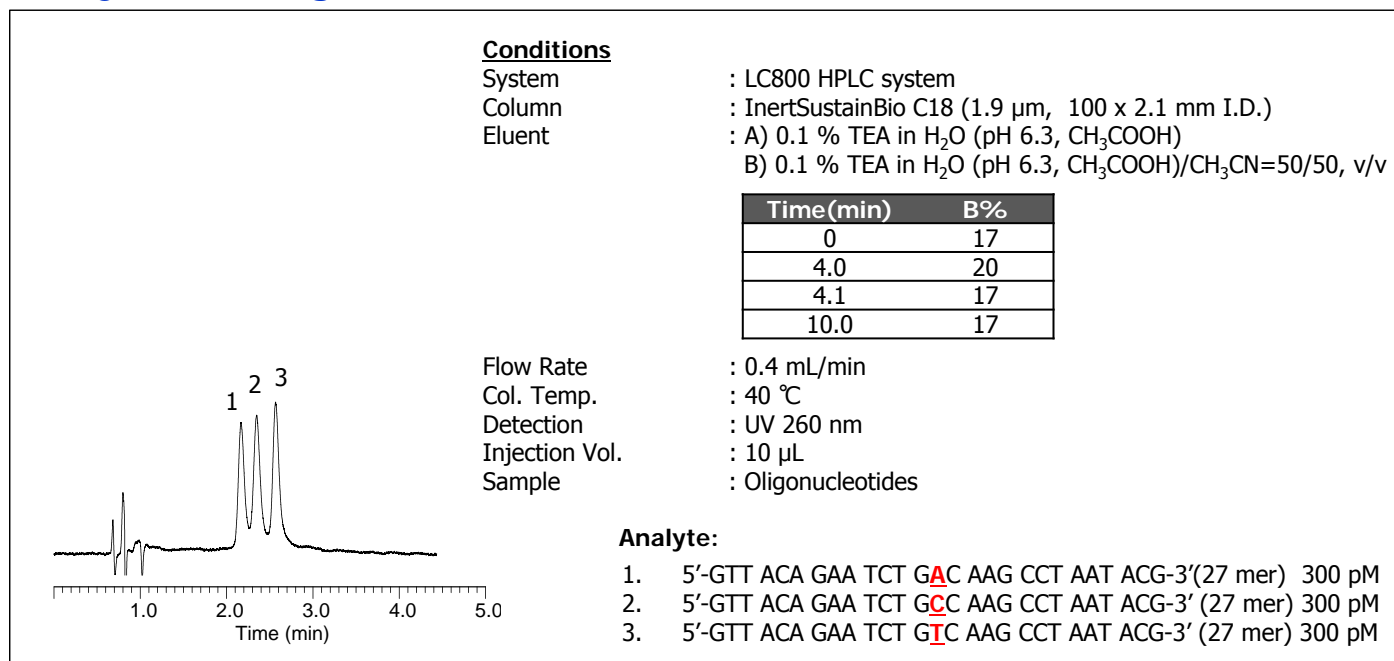
Stainless Steel Hardware Acquity BEH C18



■ Pore Size 130 Å, 1.7 μm

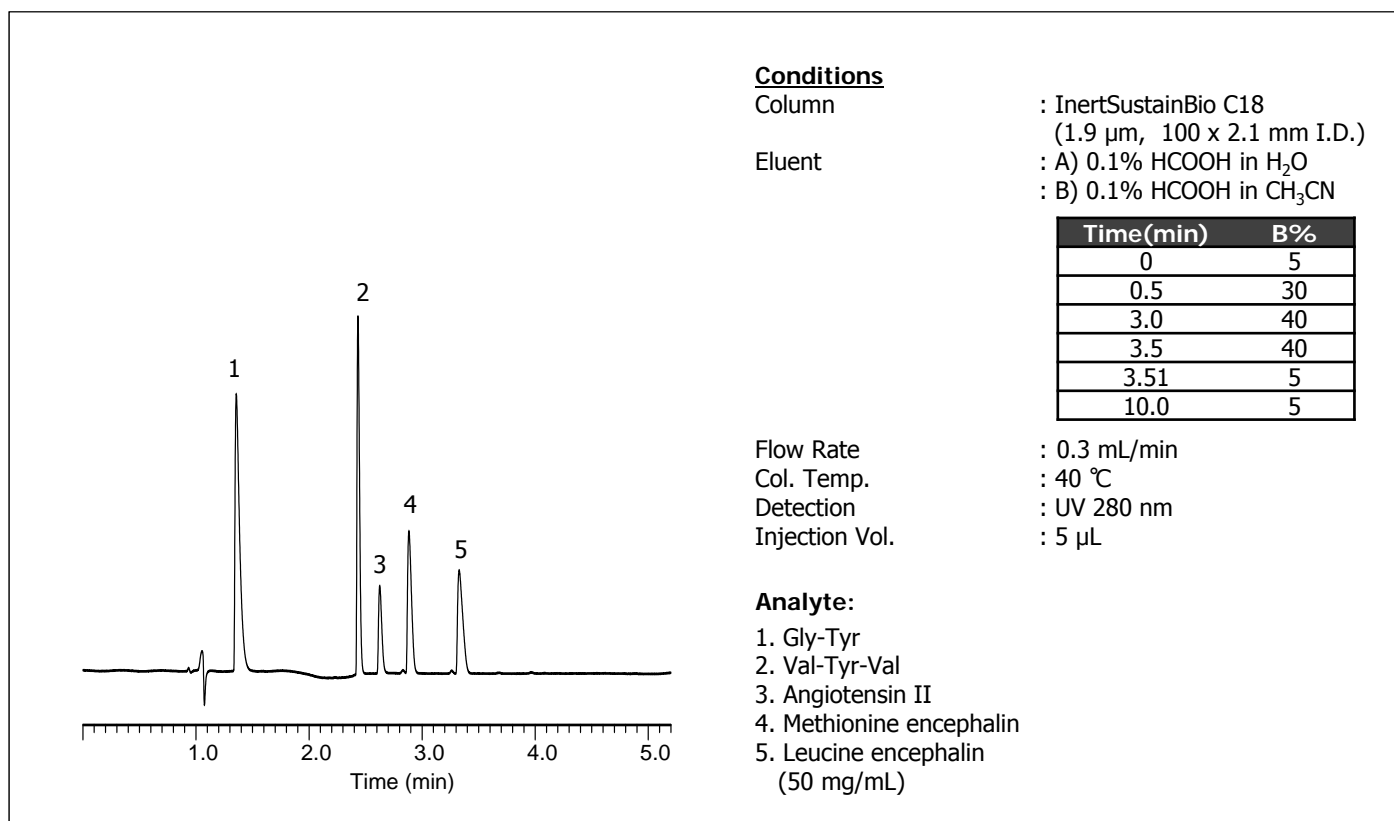


Analysis of Oligonucleotides



Analysis of Peptides

A batch test report made by analysis of standard peptides is attached to every column assuring great reproducibility from column-to-column and batch-to-batch for consistent results.

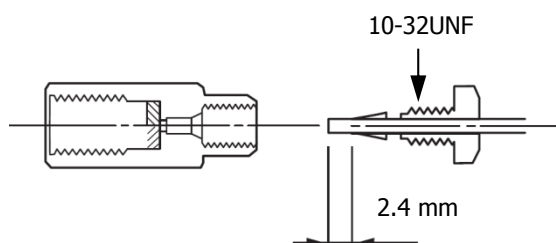


InertSustainBio C18 HPLC Columns

Analytical Columns

Cat#	Description	Max. Operating Pressure (MPa)
5020-89500	InertSustainBio C18 1.9 μ m 2.1x50mm	80
5020-89501	InertSustainBio C18 1.9 μ m 2.1x100mm	80
5020-89502	InertSustainBio C18 1.9 μ m 2.1x150mm	80
5020-89503	InertSustainBio C18 HP 3 μ m 2.1x50mm	50
5020-89504	InertSustainBio C18 HP 3 μ m 2.1x100mm	50
5020-89505	InertSustainBio C18 HP 3 μ m 2.1x150mm	50

* As shown below, end-fittings are "UP" type end-fittings, which are UHPLC compatible end-fittings for UHPLC systems (Ex: UPLC[®]) to avoid dead volume.



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

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