

Organic Silica Hybrid Core-Shell Column

Shim-pack™ NovaCore C18-HB

CoreFocus



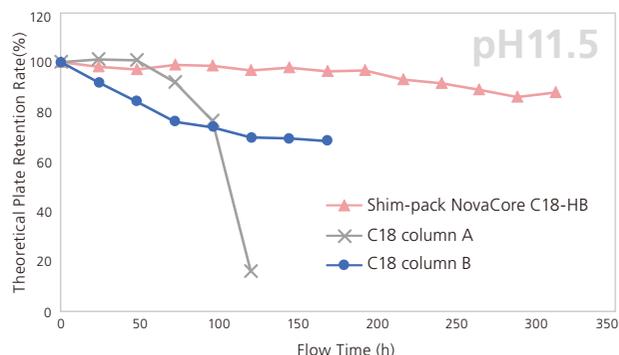
The Shim-pack NovaCore C18-HB core-shell columns are packed with an organic silica hybrid base material. Shim-pack NovaCore C18-HB offer a wider range of pH tolerance (pH 1 to 12) than columns packed with a conventional silica gel material, making them suitable for applications involving basic conditions that were previously difficult to accommodate. For fast analysis using a column packed with 2.6 μm particles, they can produce sharp peaks without a significant increase in pressure. By offering such characteristics, the Shim-pack NovaCore C18-HB serve as a revolutionary new Shim-pack series core-shell column that enables the analysis of a wide range of sample types.

● Suitable for a Wide pH Range from Acidic to Basic

Many drugs and metabolites contain amine groups which can exhibit unstable retention times and peak shapes under acidic conditions. These compound types are often analyzed using an ion-pairing reagent or in basic conditions to improve reproducibility and peak shape. Unlike traditional silica-based columns with a limited pH range, typically 2 to 7.5, Shim-pack NovaCore C18-HB columns can be used across a wide pH range (1 to 12) due to their organic silica hybrid base material. This makes them especially suitable for developing methods for basic analysis, since many standard silica columns have an upper pH limit of 7.5. This graph shows that the NovaCore C18-HB has 2 – 3 times longer lifetime, measured as % loss of theoretical plates, under strongly basic conditions (pH 11.5), compared to traditional silica-based C18 columns.

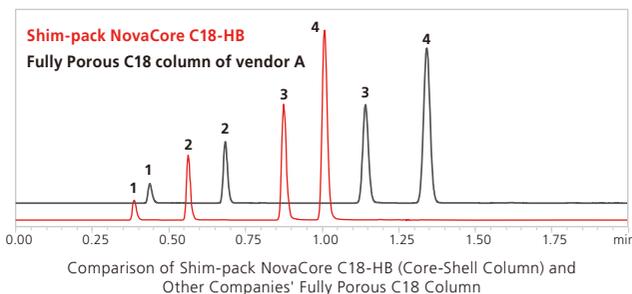
Column : Shim-pack NovaCore C18-HB (150 mm x 4.6 mm I.D., 5 μm)
C18 column A (150 mm x 4.6 mm I.D., 5 μm)
C18 column B (150 mm x 4.6 mm I.D., 5 μm)

Mobile Phase Composition : 50 mmol/L Triethylamine in water(pH11.5)/Methanol=90/10(v/v)

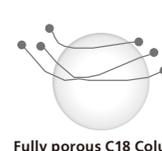
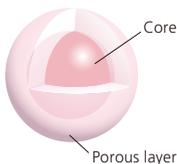


● Fast High-Resolution Analysis Achieved

Core-shell columns consist of particles with a non-porous interior core and a porous exterior layer, which results in different diffusion behavior compared to fully porous particle columns. In fully porous particle columns, analytes diffuse throughout the entire particle, which increases band broadening and retention. In core-shell particle columns, sample components only diffuse in the thin porous layer on the particle surface, resulting in more efficient separation and sharper peaks. A comparison of similarly sized columns shows that core-shell particle columns produce shorter analysis times, reducing mobile phase consumption and resulting in cost savings and lower environmental impact.



Core-shell column packing material



Column : Shim-pack NovaCore C18-HB (100 mm x 2.1 mm I.D., 1.7 μm)
Fully porous C18 Column (100 mm x 2.1 mm I.D., 1.7 μm)

Mobile Phase Composition : Acetonitrile/Water=70/30(v/v)

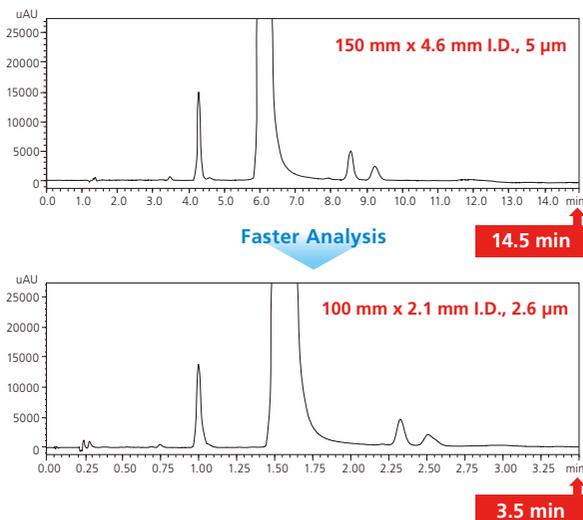
Broad Scalability

Shim-pack NovaCore C18-HB LC columns offer excellent scalability with a variety of column sizes and particle diameters, ensuring consistent high performance for diverse applications and LC system configurations, from method development to routine analysis. The extensive selection of particle size and column ID allows for quick and efficient migration from microbore to standard HPLC to UHPLC methods while maintaining reproducibility. When transitioning from general-purpose to fast analysis, speed can be increased without altering separation behavior, significantly reducing the time and effort required for method transfer.

Column : Shim-pack NovaCore C18-HB (100 mm x 2.1 mm I.D., 2.6 μm)
 Shim-pack NovaCore C18-HB (150 mm x 4.6 mm I.D., 5 μm)

Mobile Phase Composition : 25 mmol/L Phosphate (Na) buffer (pH2.5)/Acetonitrile=65/35(v/v)

Mobile Phase Flowrate 4.6 mm I.D. : 1.0 mL/min
 2.1 mm I.D. : 0.8 mL/min



Product Line

Analytical Columns						
Particle Size (μm)	I.D.(mm)		1	2.1	3	4.6
	Length(mm)					
1.7	50		227-32901-01	227-32901-04	-	-
	100		227-32901-02	227-32901-05	-	-
	150		227-32901-03	227-32901-06	-	-
2.6	20		-	227-32902-01	-	-
	30		-	227-32902-02	227-32902-06	227-32902-10
	50		-	227-32902-03	227-32902-07	227-32902-11
	100		-	227-32902-04	227-32902-08	227-32902-12
	150		-	227-32902-05	227-32902-09	227-32902-13
	250		-	-	-	227-32902-14
5	30		-	227-32903-01	227-32903-05	-
	50		-	227-32903-02	227-32903-06	227-32903-09
	100		-	227-32903-03	227-32903-07	227-32903-10
	150		-	227-32903-04	227-32903-08	227-32903-11
	250		-	-	-	227-32903-12

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