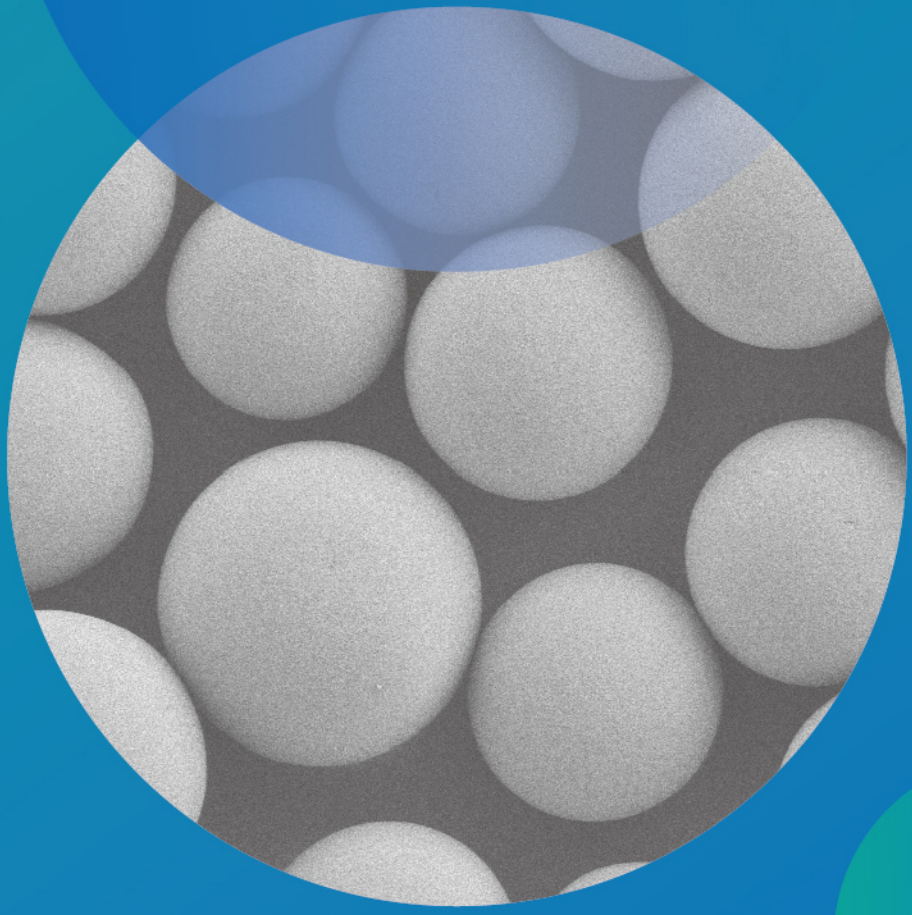
UNIFIED SEPARATION TECHNOLOGIES

Bonnasil Silica

Deliver Reliable Purification Across All Scales



FOR BETTER SEPARATION

Optimized Solutions for Better Separation

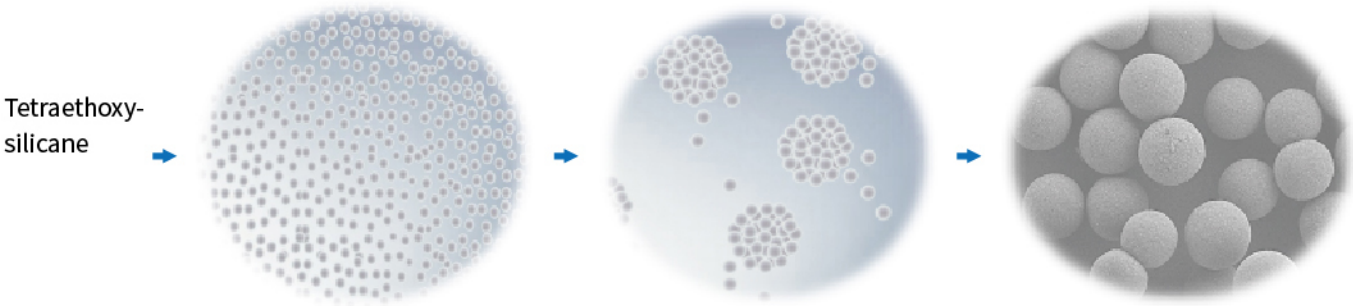
Unified Separation`s Bonnasil silica media is composed of high purity spherical silica gel with a uniform pore distribution and proprietary asymmetric bonding technology designed to support efficient and reliable separations across various applications. The Bonnasil product line includes three types: Bonnasil-BS, Bonnasil-HS, and Bonnasil-CH. Each type is available in a range of particle sizes, pore sizes, and bonded phases, tailored to diverse separation requirements from bench-scale testing to large-scale production, ensuring a smooth and efficient purification process.

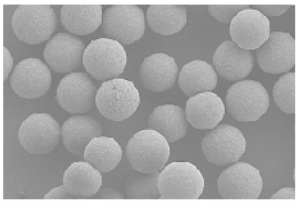
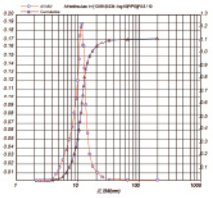
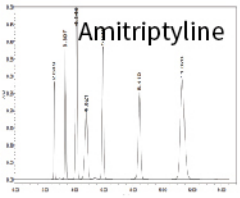
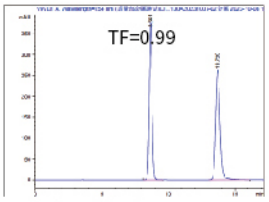
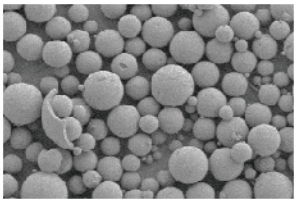
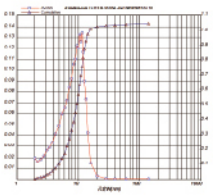
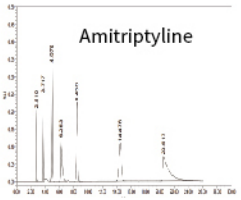
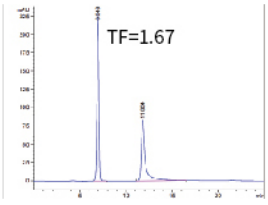
Bonnasil Silica Features

Uniform Pore Size and low Metal	Asymetric Bonding	Superior Mechanical Strengh and Chemical Stability	High Performance, Broad Selection, Lower Cost
· Increases effective surface area · Minimize peak tailing · Improve loading and yield	· Enhances selectivity for separating achiral isomers · Boost loading capacity	· Durable for repeated DAC packing cycles · High pH tolerance for easy NaOH cleaning · Cost effective with extended durability	· Significantly reduce total purification costs without compromising quality by selecting the most suitable material · Lower prices achieved through optimized manufacturing processes

High purity and narrow pore size distribution deliver sharper peaks and lower metal interference, boosting loading and yield to improve your productivity

Manufacturing Mesoporous Spherical Silica via High-Purity Nanosol Coacervation(Nano-Assembling Method)

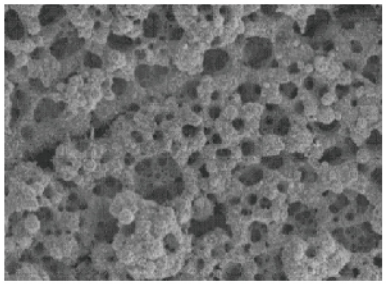
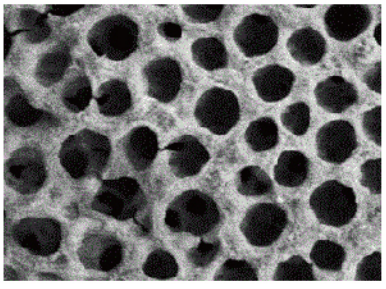
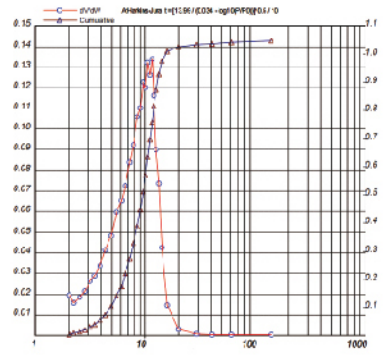
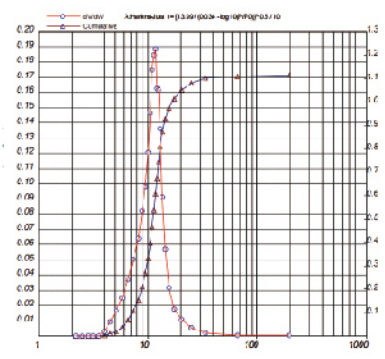


		Pore size distribution	Peak tailing caused by acidic sites	Metal conjugation
High purity and narrow pore size distribution: Sol-Gel Process				
Silica made from sodium silicate				

O-diphenol hydroxy naphthalene

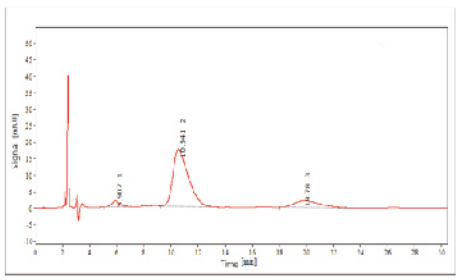
Silica purity → Lewis acid site ↓ → ireversible adsorption ↓ → Yield ↑
Nanopore number ↓ ↗ and tailing

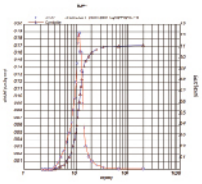
Manufactured via the Sol-Gel process, Bonnasil silica eliminates nanopores (<4nm) and exhibits a narrow pore size distribution.

Tiny-pore(smaller than 4nm) rich structure	Mesopore rich structure
	
	

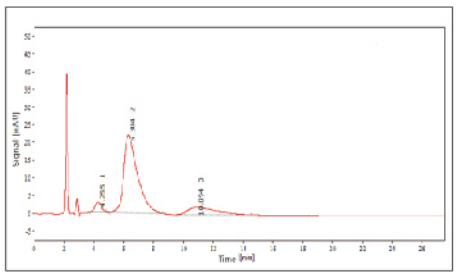
Removing irregular pores enhances peak symmetry and efficiency

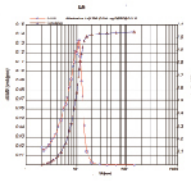
Media	Bonnasil C18 10 μm 100 Å	
	Regular Silica Based C8 10 μm 100 Å	
Mobile Phase	Phase A: 50 mM NH_4HCO_3	
	Phase B: ACN	
Gradient (min)	A	B
0.00	68	32
20.00	58	42
20.10	68	32
25.00	68	32
Flow Rate	1 mL/min	
Wave Length	254 nm	





Pore Distribution

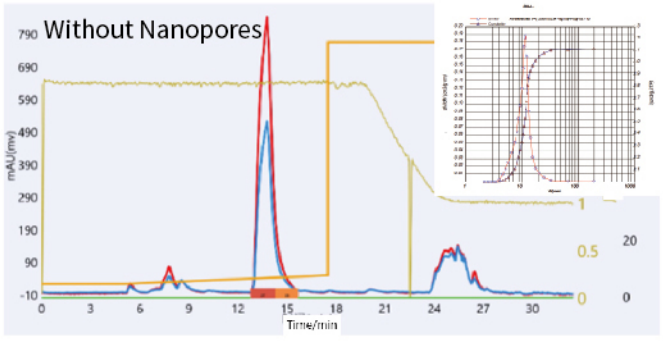




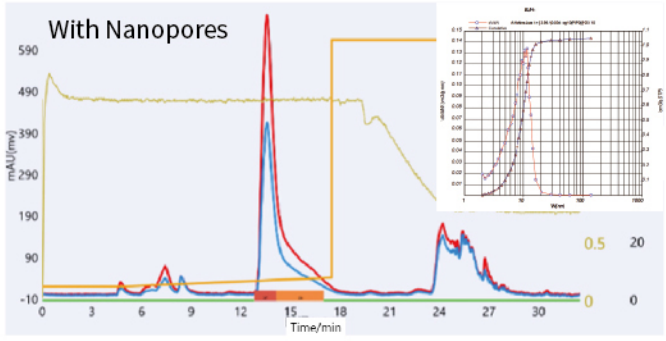
Pore Distribution

Nanopore elimination greatly enhances peak shape.

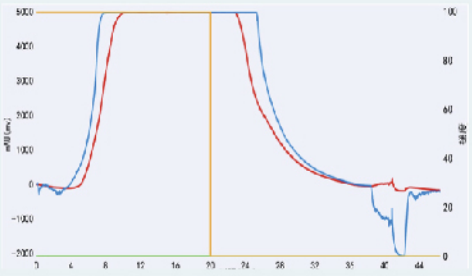
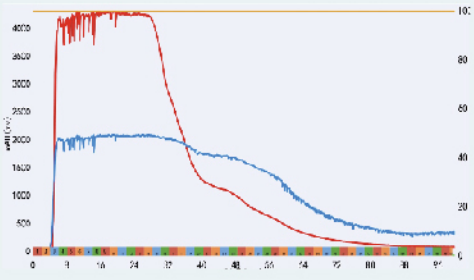
Narrow



Broad



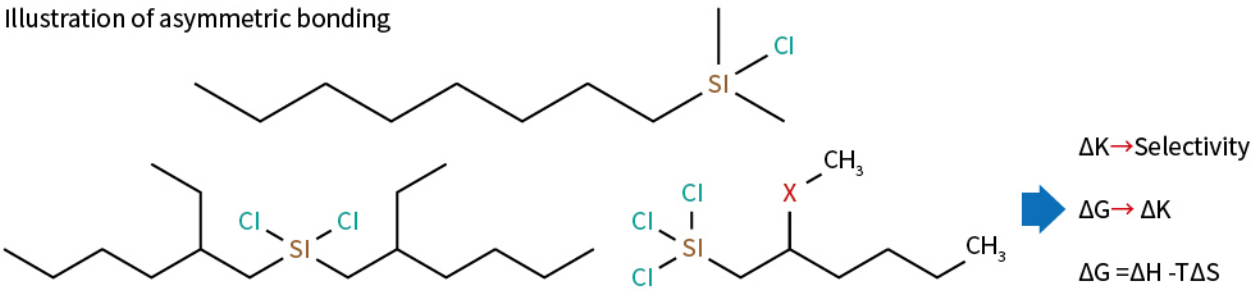
Bonnasil-BS, with its high purity and uniform pores, delivers superior purity and greater yield compared to standard silica.

Media	Bonnasil-BS silica 30 µm 100 Å	Regular silica 30 µm 100 Å
Column	10 g Silica Column	
Sample	Phosphoramidite	
Flow rate	4 mL/min	
Loading	2.5 g	2.5 g
Purity	99.3%	98.2%
Yield	81%	59%
Chromatogram		

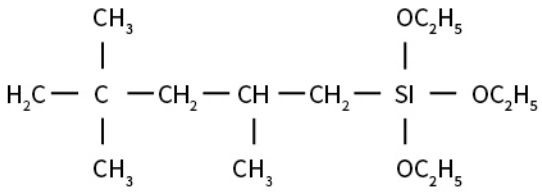
Asymmetric Bonding enhances separation of achiral isomers and increases loading capacity for greater efficiency

Asymmetric bonding using branched or mixed silanes modifies the thermodynamics of surface–analyte interactions, primarily by increasing entropy. This leads to greater variation in ΔG among analytes, thereby enhancing chromatographic selectivity—particularly for closely related compounds such as peptide isomers or oligonucleotide intermediates. By leveraging the principle of entropy increase, asymmetric bonding improves both resolution and sample loading capacity.

Illustration of asymmetric bonding

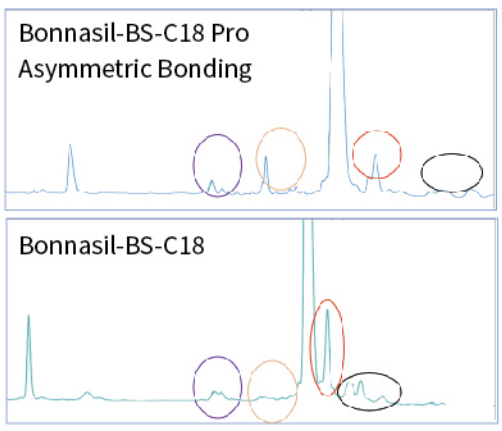


Branched silanes



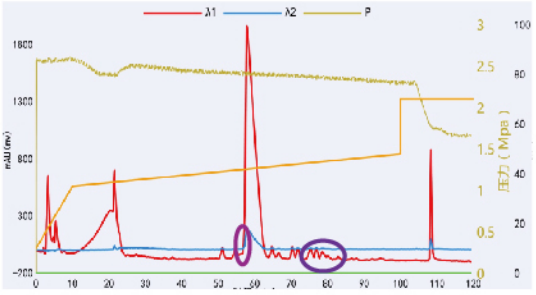
Asymmetric C18 bonding provides improved separation of Semaglutide compared to conventional C18 phases.

Media	Bonnasil-BS C18 Pro 8 μm 120 Å
	Bonnasil-BS C18 8 μm 120 Å
Column	4.6×250 mm
Sample	Semaglutide
Loading	0.01%
Mobile phase	A:TFA in H_2O
	B:ACN
Flow	1mL/min

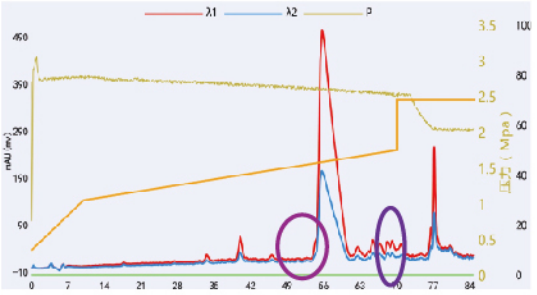


Asymmetrically bonded HS C8 Pro and BS C18 Pro columns show superior separation of both early- and late- eluting impurities on Semaglutide purification.

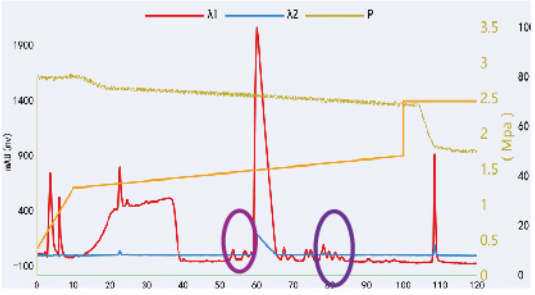
Bonnasil HS C8 10 µm 100 Å



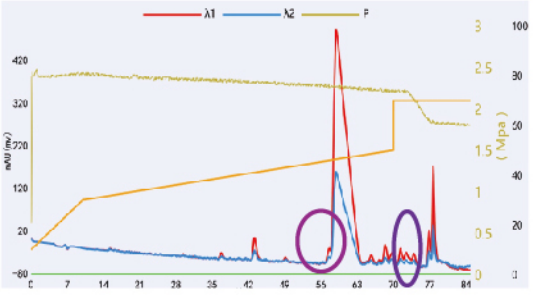
Bonnasil BS C18 10 µm 120 Å



Bonnasil HS C8 Pro 10 µm 100 Å
(Asymmetric Bonding)



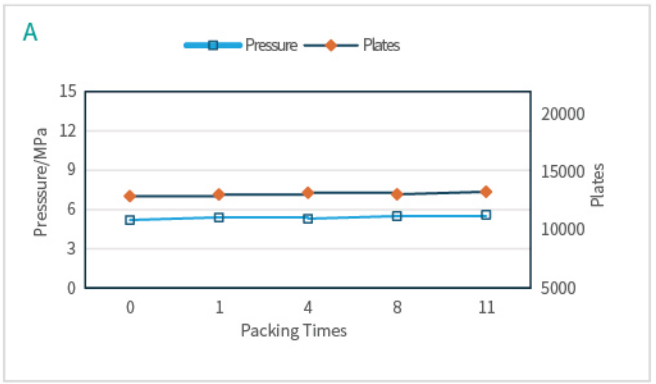
Bonnasil BS C18 Pro 10 µm 120 Å
(Asymmetric Bonding)

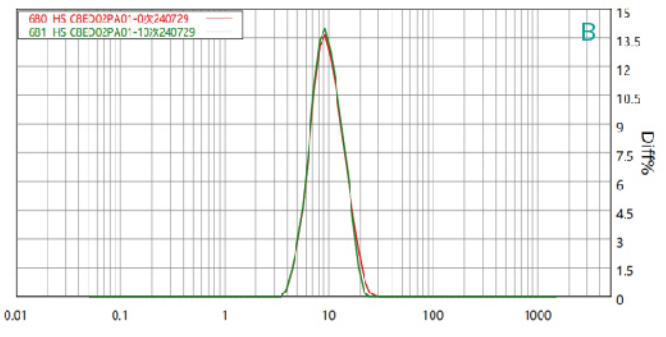


Enhanced stability prolongs media lifespan and lowers costs

High-purity Bonnasil silica with a narrow pore size distribution exhibits outstanding mechanical strength and chemical stability, leading to reduced costs.

As shown in the diagrams below, Bonnasil-HS C8 10 µm media exhibits stable back pressure and consistent theoretical plate counts across 11 consecutive packing cycles in a 50 mm ID DAC column (A). Particle size analysis throughout the cycles confirms that the majority of particles remain centered around 10 µm (B).





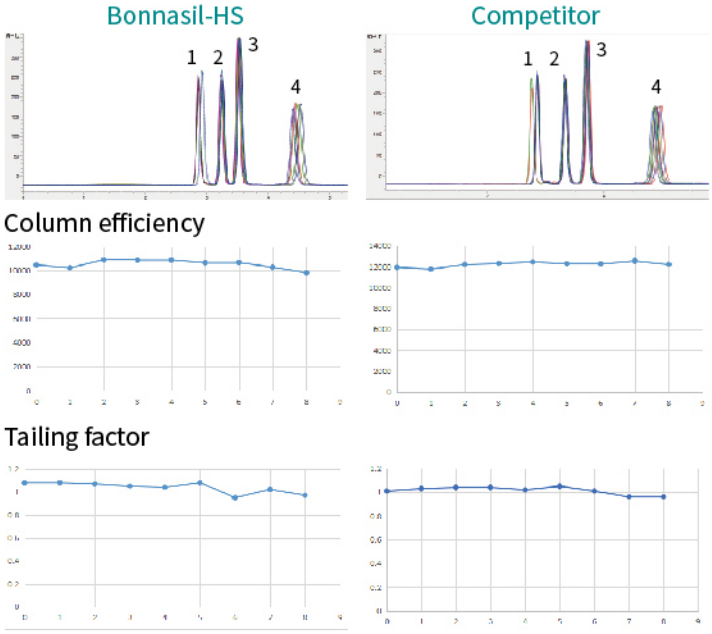
The test material was packed at 10 MPa, with back pressure monitored continuously. The diagrams illustrate the back-pressure profile and theoretical plate count after packing cycle (A), as well as particle size distribution (B).

Bonnasil-HS media demonstrates excellent high pH tolerance.

The data below illustrate peak shape, column efficiency, and tailing factor after each cycles of NaOH washing. Compared to a leading silica media on the market, Bonnasil-HS delivers comparable performance.

Media	Bonnasil-HS C8 10μm 100 Å
	Competitor C8 10μm 100 Å
Column	4.6×250 mm
NaOH Solution	0.1 M NaOH : ACN =50% : 50%
Mobile Phase	85% Methanol : 15% Water
Flow	1 mL/min
Samples	1.Uracil 2.Phenol 3.Nitrobenzene 4. Naphthalene

Column efficiency and tailing factor were determined using naphthalene as the test compound.

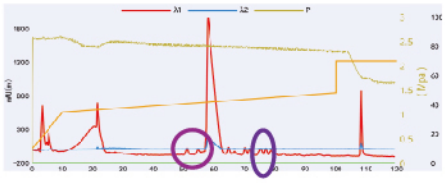


Bonnasil media offers a broad product range, delivering high performance at a competitive cost

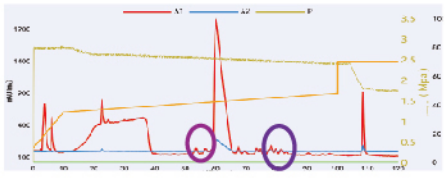
As shown in the chromatograms below, Bonnasil HS C8 Pro provides better impurity resolution in Semaglutide purification compared to the market-leading C8 column and Bonnasil HS C8. This demonstrates the performance advantages of its asymmetric bonding technology.

Column	Bonnasil HS C8 / Bonnasil HS C8 Pro / Competitor C8 10μm 100Å 10x250 mm				
Injection	5 mg				
Detection	210 nm				
Monitor	280 nm				
Mobile phase A	20 mM NaH_2PO_4 (pH2.5)				
Mobile phase B	ACN				
Flow rate	3 mL/min				
Gradient	T (min)	0	10	100	120
	B (%)	10	35	48(70)	70

Bonnasil HS C8 10 μm 100 Å



Bonnasil HS C8 PRO 10 μm 100 Å



Renowned Competitor C8 10 μm 100 Å

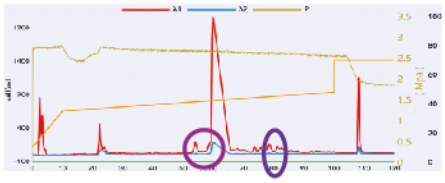


Table of Product Specification

	Bonnasil-BS	Bonnasil-HS	Bonnasil-CH	Bonnasil-PV
Particle size	10/15 µm	10 µm	10/30 µm	30 µm
Pore size	70/120 Å	100 Å	100 Å	70/100 Å
Metal content	⩽50 ppm	⩽50 ppm	⩽50 ppm	⩽50 ppm
Surface area	~300	~320	~300	~320
Pore volume	1.0	0.9	1.0	0.8
pH range	2-9	2-10	1-12	2-8
Application	Designed for a broad range of small-molecule purifications, providing versatile options in particle size, pore size, and bonding phases to meet diverse purification requirements.	Features precise control over particle and pore size distribution, making it ideal for purifying peptide products such as insulin, GLP-1 agonists.	Hybrid surface-treated, alkali-resistant silica gel capable of withstanding high pH conditions. This allows for a wider selection of mobile phases, making it well-suited for purifying alkaline compounds and fermentation products.	Large particle silica media is designed for medium-pressure columns, providing low back pressure and fast flow rates. With optimized pore structure and uniform particles, it delivers reliable efficiency and durability for fast purifications.

Order Information

Product Description	Bonded Phase	Particle Size (µm)	Pore Size (Å)	Part Number
Bonnasil-HS C8	C8	10	100	UHS8102000-0
Bonnasil-HS C18	C18	10	100	UHS9102000-0
Bonnasil-HS C8 Pro	C8	10	100	UHST102000-0
Bonnasil-BS C18	C18	10	120	UBS9102000-2
Bonnasil-BS AQ C18	C18	10	120	UBSM102000-2
Bonnasil-BS C18 Pro	C18	10	120	UBSE102000-2
Bonnasil-BS C8	C8	10	120	UBS8102000-2
Bonnasil-BS Silica	Silica	15	70	UBSS152000-T
Bonnasil-CH C8	C8	10	120	UCH8102000-2
Bonnasil-CH C18	C18	10	120	UCH9102000-2
Bonnasil-CH C18	C18	30	120	UCH9302000-2
Bonnasil-PV Silica	Silica	30	70	UPVS302000-T
Bonnasil-PV Silica	Silica	30	100	UPVS302000-0
Bonnasil-PV C18	C18	30	100	UPV9302000-0

Preparative Column

Silica Particle Size 10/15 µm	Preparative Column Dimensions mm x mm				
	ID 4.6 mm	ID 10 mm	ID 21.2 mm	ID 30 mm	ID 50 mm
Bonnasil-HS C8 Bonnasil-HS C18 Bonnasil-HS C8 Pro Bonnasil-BS C18 Bonnasil-BS AQ C18 Bonnasil-BS C18 Pro Bonnasil-BS C8 Bonnasil-BS Silica Bonnasil-CH C8 Bonnasil-CH C18	4.6×250	10×150 10×250	21.2×150 21.2×250	30×150 30×250	50×150 50×250

Flash Column

Silica Particle Size 30 µm	Flash Column Specification (g)	Packaging ea/pk
Bonnasil-CH C18 Bonnasil-PV Silica Bonnasil-PV C18	4	20
	12	20
	20	20
	40	10
	80	5
	120	5
	220	2
	330	1
	5000	1

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