

HPLC column

**ChromaNik**  
ChromaNik Technologies Inc.

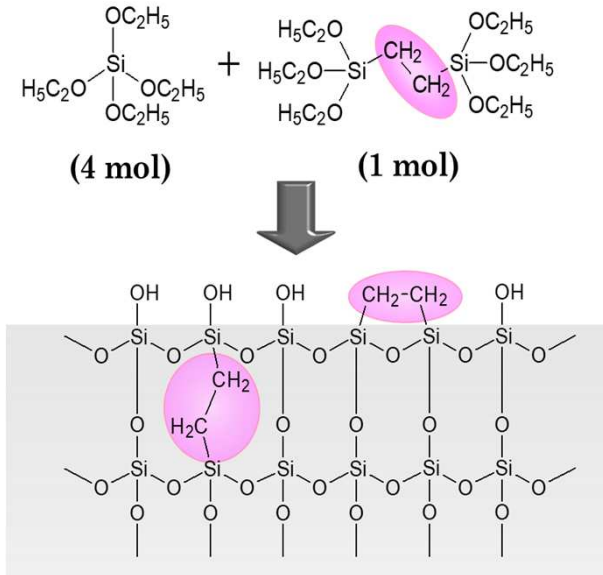
**SunBridge**



**ChromaNik Technologies**

## SunBridge C18

Ethylene cross-linked silica gel

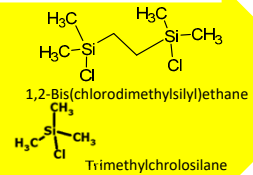


Synthesis of hybrid silica gel

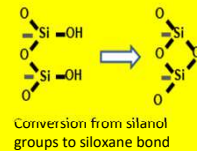
Particle size: 5  $\mu\text{m}$ , Pore volume: 0.8 mL/g,  
Specific surface area: 190  $\text{m}^2/\text{g}$ , Pore diameter: 15 nm

Bonding with Trifunctional C18

Double End-capping

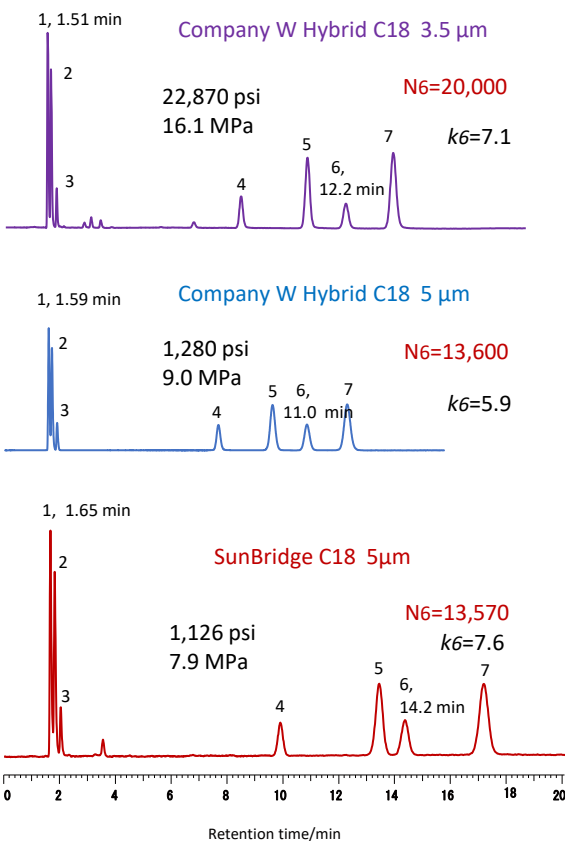


Elevated temperature end-capping



Hybrid silica gel + special end-capping

### Evaluation of hydrogen bonding, hydrophobicity and steric selectivity



As a comparison, Hybrid C18 manufactured by W Company, which is ethylene crosslinked silica gel C18 in which an ethylene chain is incorporated into the silica skeleton, was used.

Column: Company W Hybrid C18 3.5  $\mu\text{m}$ , 5  $\mu\text{m}$ ,

SunBridge C18 5  $\mu\text{m}$ ,

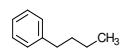
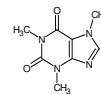
Column dimensions: 150 x 4.6 mm

Mobile phase:  $\text{CH}_3\text{OH}/\text{H}_2\text{O}=75/25$

Flow rate: 1.0 mL/min

Temperature: 40  $^\circ\text{C}$

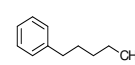
Sample: 1 = Uracil, 2 = Caffeine, 3 = Phenol, 4 = Butylbenzene,



5 = o-Terphenyl,



6 = Amylbenzene,

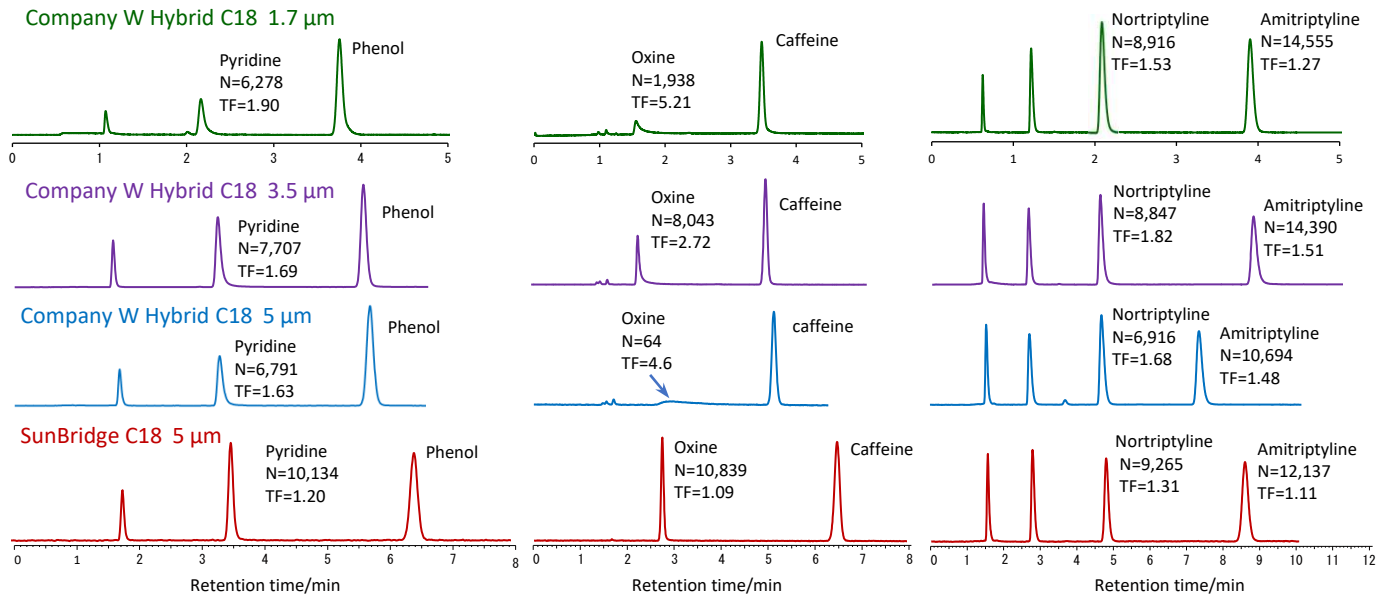


7 = Triphenylene



	Hydrogen bonding $\alpha(\text{Caffeine/Phenol})$	Hydrophobicity $\alpha(\text{Amylbenzene/Butylbenzene})$	Steric selectivity $\alpha(\text{Triphenylene/o-Terphenyl})$	Specific surface area ( $\text{m}^2/\text{g}$ )	Carbon loading (%)
Company W Hybrid C18 3.5 $\mu\text{m}$	0.38	1.54	1.33	185	17.4%
Company W Hybrid C18 5 $\mu\text{m}$	0.39	1.52	1.33	188	18.0%
SunBridge C18 5 $\mu\text{m}$	0.42	1.54	1.32	190	16.1%

## Comparison of peaks for pyridine, oxine, and nortriptyline



Column dimension:

150 x 4.6 mm for 3.5 and 5  $\mu$ m  
100 x 2.1 mm for 1.7  $\mu$ m

Mobile phase: CH<sub>3</sub>OH/H<sub>2</sub>O=30/70

Flow rate: 1.0 mL/min for 3.5 and 5  $\mu$ m  
0.2 mL/min for 1.7  $\mu$ m

Temperature: 40 °C

Detection: UV@250 nm

Sample: 1 = Uracil

2 = Pyridine

3 = Phenol



Column dimension:

150 x 4.6 mm for 3.5 and 5  $\mu$ m  
100 x 2.1 mm for 1.7  $\mu$ m

Mobile phase: CH<sub>3</sub>CN/20mM H<sub>3</sub>PO<sub>4</sub>=10/90

Flow rate: 1.0 mL/min for 3.5 and 5  $\mu$ m  
0.2 mL/min for 1.7  $\mu$ m

Temperature: 40 °C

Detection: UV@250 nm

Sample: 1 = 8-Quinololin (Oxine)

2 = Caffeine



Column dimension:

150 x 4.6 mm for 3.5 and 5  $\mu$ m  
100 x 2.1 mm for 1.7  $\mu$ m

Mobile phase: Acetonitrile/10mM ammonium acetate pH6.8=40/60

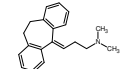
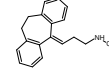
Flow rate: 1.0 mL/min for 3.5 and 5  $\mu$ m  
0.3 mL/min for 1.7  $\mu$ m

Temperature: 40 °C

Detection: UV@250 nm

Sample: 1=Uracil, 2=Propranolol,

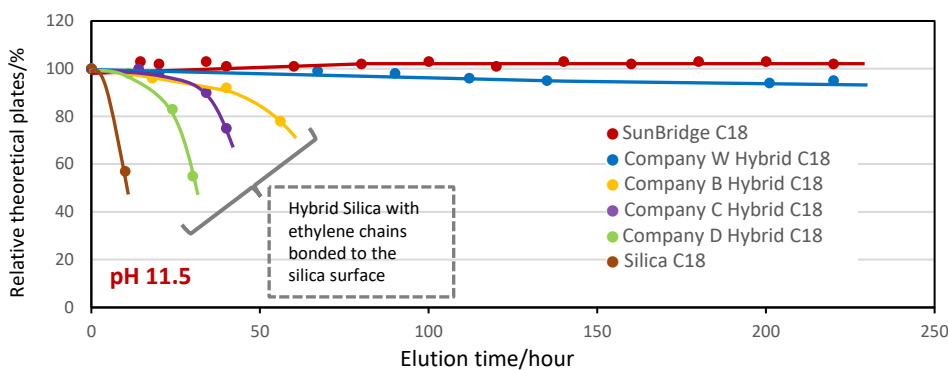
3= Nortriptyline, 4=Amitriptyline



Company W Hybrid C18 showed severe tailing of metal-chelating, oxine.

Compared to Company W Hybrid C18, SunBridge C18 showed a higher number of plates and less tailing of peaks for metal-chelating and basic compounds.

## Comparison of Stability under pH 11.5 and pH 1.0 conditions

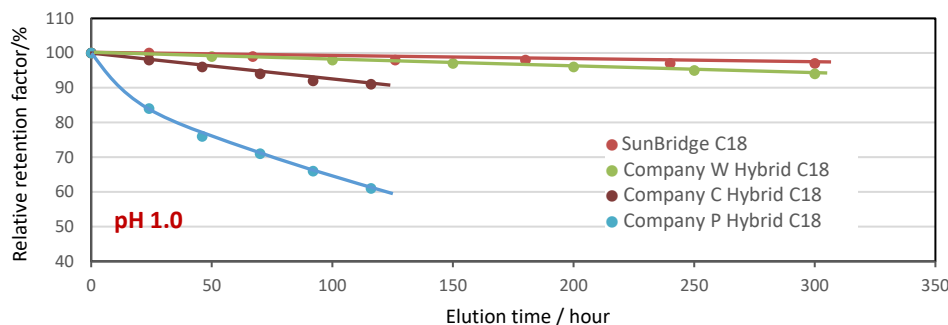


**Durable test condition (pH 11.5)**

Column dimension: 150 x 4.6 mm  
Mobile phase: Methanol/50mM potassium phosphate pH 11.5=10/90  
Flow rate: 1.0 mL/min  
Temperature: 40 °C

**Measurement condition**

Mobile phase: Acetonitrile/water=70/30  
Flow rate: 1.0 mL/min  
Temperature: 40 °C  
Sample: 1 = Uracil, 2 = Butylbenzene



**Durable test condition (pH 1.0)**

Column dimension: 50 x 2.1 mm  
Mobile phase: Acetonitrile/1.0% TFA pH1=10/90  
Flow rate: 0.4 mL/min  
Temperature: 80 °C

**Measurement condition**

Same as above

SunBridge C18 showed almost the same or higher stability under pH 11.5 condition as Company W Hybrid C18, which shows an order of magnitude higher stability than other companies' hybrid C18. In addition, the decrease in retention due to alkali was suppressed by end-capping with a bidentate silylating reagent.

## Ordering information

Packings	Inner diameter (mm)	2.1	3.0	4.6	10	20	USP category
	Length (mm)	Catalog number	Catalog number	Catalog number	Catalog number	Catalog number	
SunBridge C18, 5 μm	50	JB3941	JB3341	JB3441	-----	-----	L1
	100	JB3961	JB3361	JB3461	-----	-----	
	150	JB3971	JB3371	JB3471	-----	-----	
	250	JB3981	JB3381	JB3481	JB3781	JB3881	

\* SunBridge columns packed with 3 μm and 1.8 μm particles will be released sequentially.