

# CAPCELL PAK C<sub>18</sub> MGII

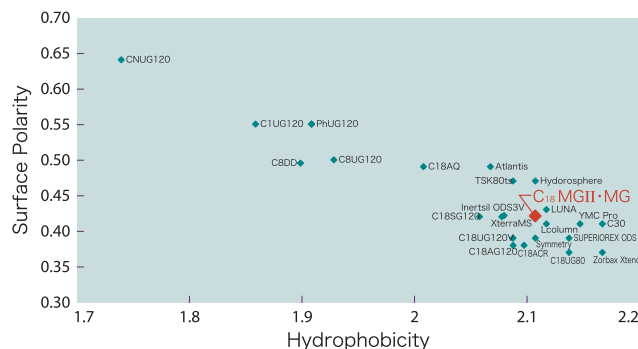


CAPCELL PAK MG II is based on high-purity silica support, being one of the MG series columns. MG II is designed to provide excellent peak shapes for basic compounds under neutral mobile phase conditions. Its outstanding "silanol-shielding" material was generated by the original polymer-coating technology.

## Characteristics and parameter mapping

The general characteristics of CAPCELL PAK C<sub>18</sub> MG II are same as that of MG. MG II is an easy-to-use column with moderate hydrophobicity and moderate surface polarity.

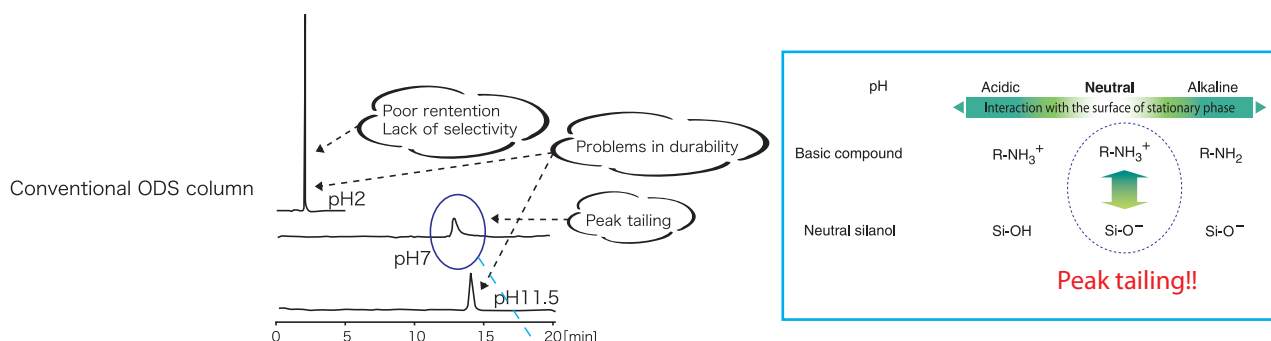
Function group	Pore size (nm)	Particle size (μm)	Specific surface area (m <sup>2</sup> /g)	Carbon%	Alky group density (μmol/m <sup>2</sup> )	pH	USP
C <sub>18</sub>	10	5	260	15	2.7	2-10	L1
C <sub>18</sub>	10	3	300	15	2.3	2-10	L1



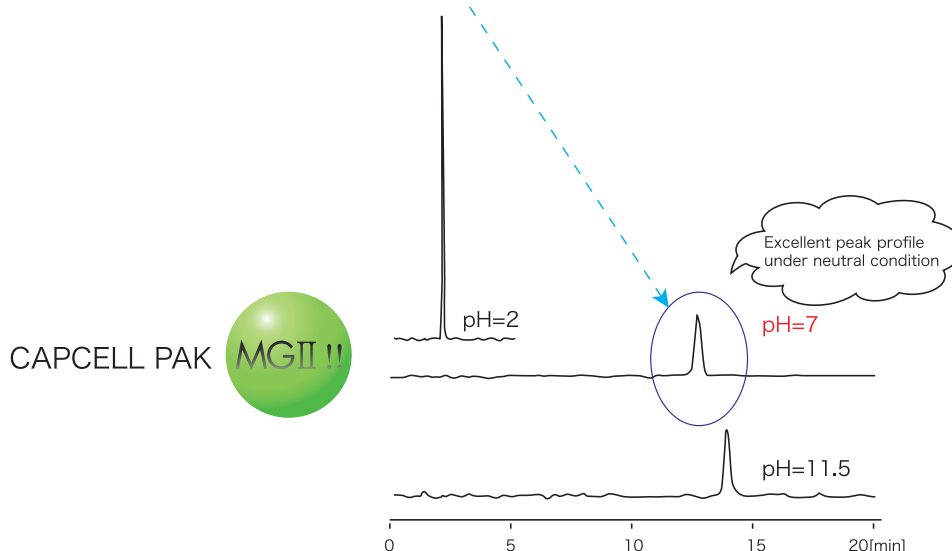
## Why do we need a good column to be used under neutral mobile phase conditions?

Many physiologically active compounds and their metabolites possess a basic nature. Chromatographers keep on seeking a good column for such compounds, free from peak shape deterioration caused by silica's acidity, the inherent nature of silica-based columns.

<Problems in analysis of basic compounds under acidic, basic, and neutral condition>



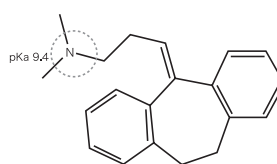
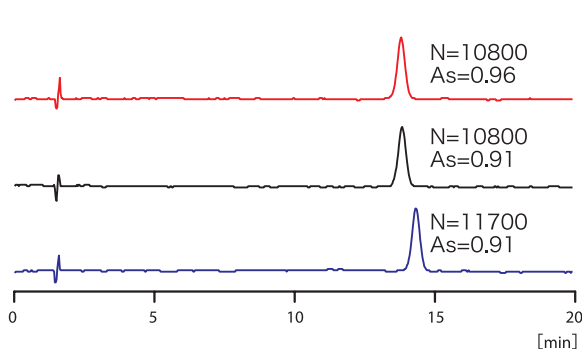
"CAPCELL PAK C<sub>18</sub> MG II" is the solution for analysis of basic compounds under neutral condition



- Advantage 1** → Possible to avoid lowering pH for compounds unstable at acidic conditions.
- Advantage 2** → Beginning a mobile phase optimization at neutral pH makes the process simple, especially in LC-MS.
- Advantage 3** → Good for compounds that show the highest ion intensity at neutral pH in LC-MS.

## Excellent reproducibility

In addition to "Standard of Silica" and "Standards for Parameters of Packing Materials" (both documented by Shiseido), a test with amitriptyline is used to quality-control the production of MG II.



Amitriptyline

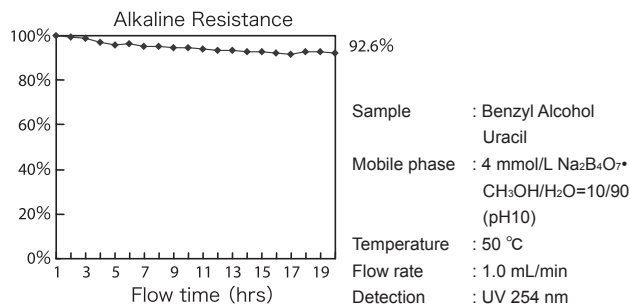
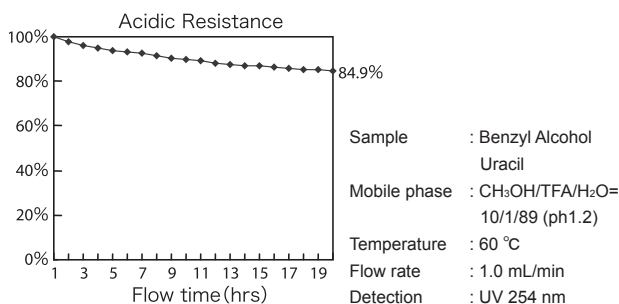
Sample	: Amitriptyline 50 ppm
Injection Vol.	: 5 $\mu$ L
Mobile Phase	: CH <sub>3</sub> OH/20 mmol/L phosphate buffer=75/25
Temperature	: 40 °C
Flow rate	: 1.0 mL/min
Detection	: UV 254 nm

## GLP/GMP Support Column

CAPCELL PAK C<sub>18</sub> MG II, a GLP/GMP support column, is attached with a test chromatogram and a certificate of performance for packing materials used for it. In addition, it is possible to request three columns from three different production lots for a validation purpose.

## Wide pH range from 2 to 10

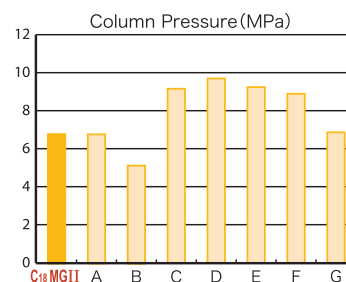
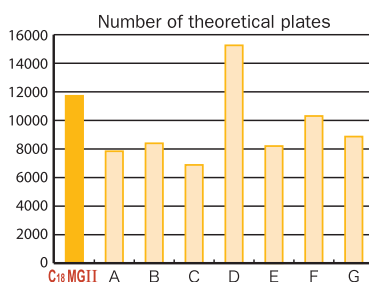
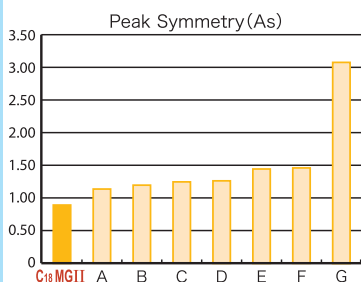
CAPCELL PAK C<sub>18</sub> MG II is a column having excellent performance and durability. The graphs below show the results of the durability test under acidic and basic conditions, indicating that CAPCELL PAK C<sub>18</sub> MG II can be used in a wide pH range.





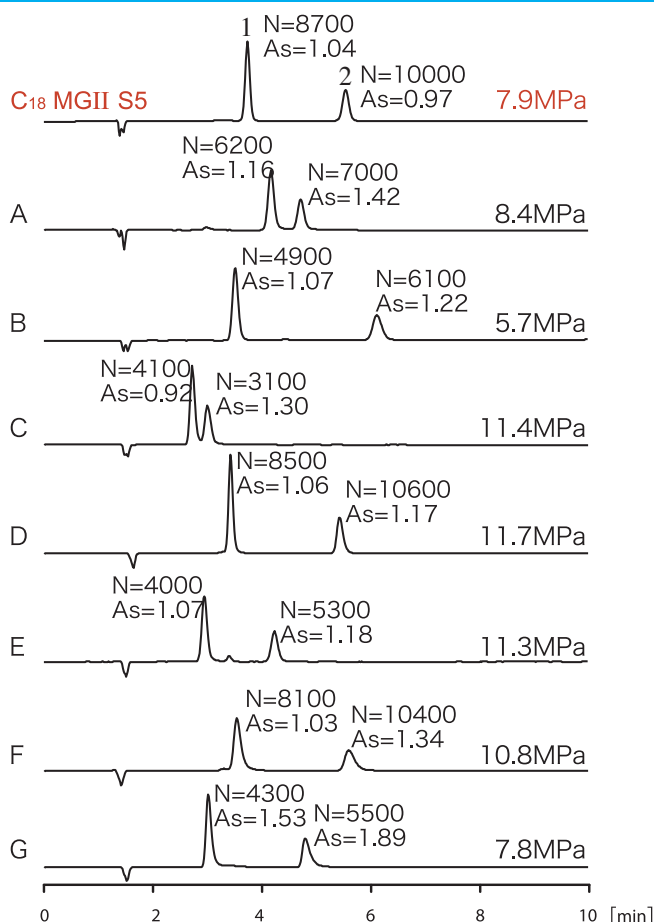
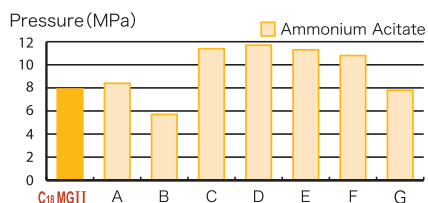
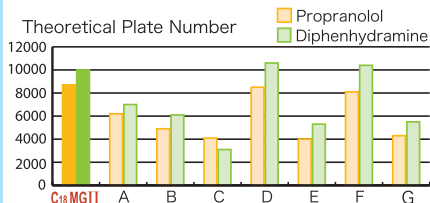
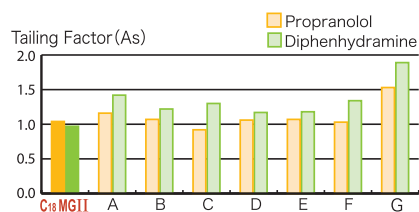
## Shielding silanol groups at the highest level

The graphs below show the comparisons among columns of other suppliers in terms of tailing factor (As), Number of theoretical plates, and pressure (MPa) of amitriptyline, which are the indicators of the influences of residual silanol. As for MG II, good values were obtained in the three comparative factors. The results indicate that MG II is the best choice for analysis of basic compounds, and has achieved the highest level in shielding silanol groups.



## Analysis using volatile salts

Basic compounds were analyzed with different columns using ammonium acetate, which is a neutral salt often used in LC-MS. Compared with other columns, CAPCELL PAK C<sub>18</sub> MG II showed the top level on peak symmetry and number of theoretical plates. In addition, MG II also showed low column pressure, which is one of the features common to all the CAPCELL PAK columns.



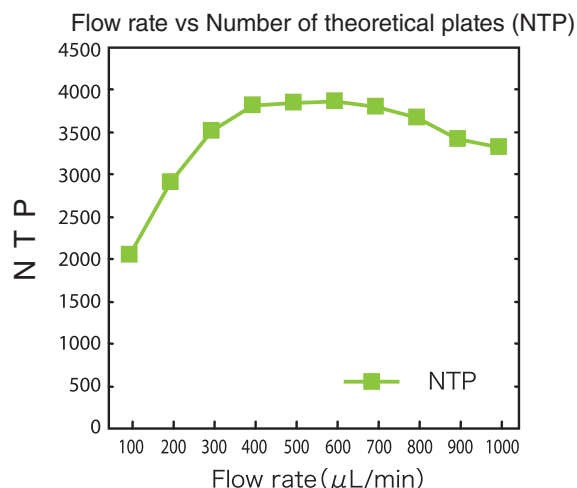
Column size : 4.6 mm i.d. x 150 mm  
 Mobile phase : 10 mmol/L NH<sub>4</sub>AcO, MeOH/H<sub>2</sub>O=60/40, pH 7.35  
 Flow rate : 1.0 mL/min  
 Detection : UV 254 nm  
 Injection Vol. : 5µL  
 Temperature : 40 °C  
 Sample : 1. Propranolol (100 ppm)  
 2. Diphenhydramine (200 ppm)



### 3- $\mu\text{m}$ particles for high-throughput analysis

#### CAPCELL PAK C<sub>18</sub> MGII S3 Provides the solution to meet the high-throughput demand.

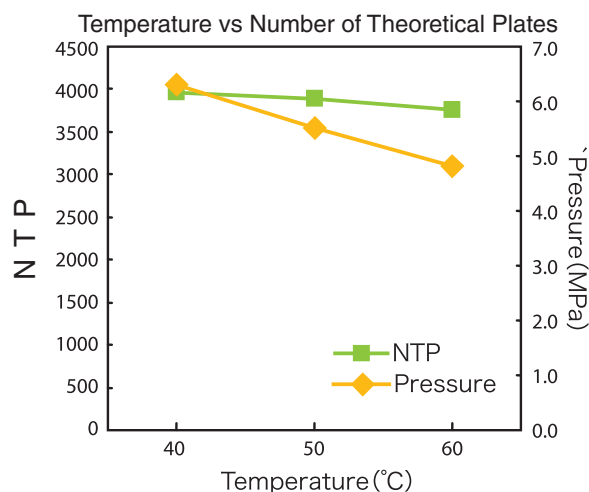
The largest number of theoretical plates is obtained around twice the normal flow rate (200 $\mu\text{L}/\text{min}$  for 2-mm column) and is nearly maintained in the zone of higher flow rates. (Recommended column pressure: 15 MPa or less, Maximum operating pressure: 20 MPa)



Run at more than twice the normal flow rate

- The run time is shortened in inverse proportion to the flow rate!
- Number of theoretical plates increases too!

Sample : Naphthalene  
 Injection Vol. : 5  $\mu\text{L}$   
 Column : C<sub>18</sub> MGII S-3  
 2.0 mm i.d.  $\times$  35 mm  
 Mobile phase : CH<sub>3</sub>CN/H<sub>2</sub>O=50/50  
 Temperature : 40  $^{\circ}\text{C}$   
 Detection : UV 254 nm



Raise the temperature.

- Lowering pressure and increasing number of theoretical plates!

Sample : Naphthalene  
 Injection Vol. : 5  $\mu\text{L}$   
 Column : C<sub>18</sub> MGII S-3  
 2.0 mm i.d.  $\times$  35 mm  
 Mobile phase : CH<sub>3</sub>CN/H<sub>2</sub>O=50/50  
 Flow rate : 400  $\mu\text{L}/\text{min}$   
 Detection : UV 254 nm  
 Temperature : 40 $^{\circ}\text{C}$ , 50 $^{\circ}\text{C}$ , 60 $^{\circ}\text{C}$

<http://hplc.shiseido.co.jp/e/>

#### Popular Column Dimension

Partial Number	Function Group	Grade	Pore Size ( $\text{\AA}$ )	Particle Size ( $\mu\text{m}$ )	Length (mm)	I.D. (mm)
92469	C <sub>18</sub>	MGII	100	3	100	2.0
92470	C <sub>18</sub>	MGII	100	3	150	2.0
92479	C <sub>18</sub>	MGII	100	3	50	4.6
92480	C <sub>18</sub>	MGII	100	3	75	4.6
92481	C <sub>18</sub>	MGII	100	3	100	4.6
92482	C <sub>18</sub>	MGII	100	3	150	4.6

Partial Number	Group	Grade	Pore Size ( $\text{\AA}$ )	Particle Size ( $\mu\text{m}$ )	Length (mm)	I.D. (mm)
92519	C <sub>18</sub>	MGII	100	5	100	2.0
92520	C <sub>18</sub>	MGII	100	5	150	2.0
92521	C <sub>18</sub>	MGII	100	5	250	2.0
92531	C <sub>18</sub>	MGII	100	5	100	4.6
92532	C <sub>18</sub>	MGII	100	5	150	4.6
92533	C <sub>18</sub>	MGII	100	5	250	4.6