



# HICHROM

Chromatography Columns and Supplies

## LC COLUMNS Capcell Pak

Catalogue 9

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- Polymer-coated ‘capsule type’ silica
- Extended pH range of 1 – 10
- High durability and reproducibility
- Low column pressure

CAPCELL PAK® columns are manufactured by Shiseido in Japan. The base silica is first homogeneously coated with a silicone polymer monolayer, by vapour deposition. A series of phases is then produced by bonding alkyl groups, which shield any acidic silanols, to the coated surface. This imparts superior mechanical strength as well as extended pH stability. The product line has evolved over time with regard to quality of the silica support as well as the polymer coating technology.

### Overview of CAPCELL PAK Phases

Type	Base Silica	Polymer Coating	Pore Size (Å)	pH Range	Separation	Retention of Polar Compounds
AG	Conventional grade	Monolayer	120	2 - 10	Good	Fair
SG	High purity <sup>2</sup>	Monolayer	120	2 - 9	Good	Fair
UG	High purity <sup>2</sup>	Homogeneous monolayer	120 (C18 <sup>1</sup> , C8, C1, Phenyl, CN) 80 (NH <sub>2</sub> , SCX)	2 - 10	Excellent	Fair
MG MGII MGIII	High purity <sup>2</sup>	Controlled homogeneous monolayer	100	2 - 10	Excellent	Strong
IF	High purity <sup>2</sup>	Controlled homogeneous monolayer	120	2 - 9	Excellent	Strong
ACR	High purity <sup>2</sup>	Reinforced homogeneous monolayer	80	1 - 10	Excellent	Fair
AQ	High purity <sup>2</sup>	Controlled homogeneous monolayer	80	2 - 9	Excellent	Excellent
DD	High purity <sup>2</sup>	Controlled homogeneous monolayer	80	1.5 - 10	Excellent	Excellent

<sup>1</sup>80Å phase also available    <sup>2</sup>High purity – metal content <5ppm

For further phase specifications, including surface area and carbon load, please see pages 37 – 50.

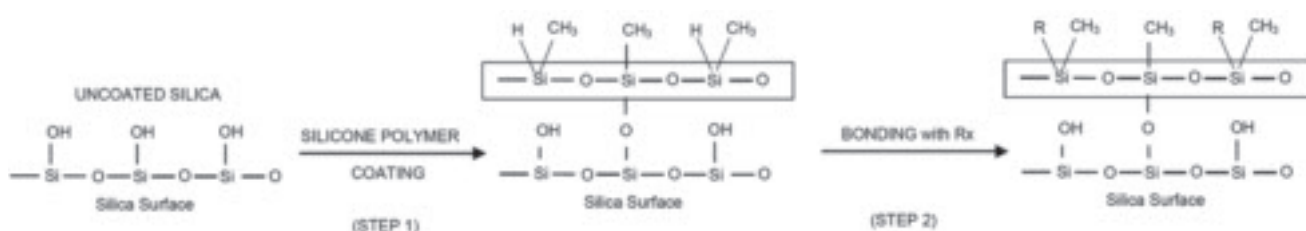


Figure 1. Two stage manufacturing process of CAPCELL PAK phases

### C18 MG, C18 MGII and C18 MGIII

Each of the three MG series columns is based on high purity silica with MG being the earliest column developed. MGII has an even higher level of silanol shielding than the C18 MG phase, making it suitable for the analysis of basic compounds under neutral pH conditions. MGIII is the third generation of the MG series, developed to overcome column-to-column retention variation for basic compounds under acidic conditions. It has lower bleed, making it ideal for LC-MS.

### C18 IF

C18 IF (Ideally Fine), consisting of 2µm particles, is the latest addition to the CAPCELL PAK product line.

### C18 UG

C18 UG has moderate hydrophobicity and is recommended for the fast separation of basic and polar compounds. It has similar retention characteristics to the SG series but produces sharper and more symmetrical peaks. A wide range of alternative chemistries is available in the UG series.

### C18 ACR

C18 ACR is synthesised using a modified polymer-coating technique, to give a reinforced homogeneous monolayer. It shows excellent durability under acidic mobile phase conditions, down to pH 1.

### C18 AQ

C18 AQ has a high surface polarity, compared with other C18 phases, which results in strong retention and high performance separations of very polar compounds. The phase is stable in 100% water and shows high acid resistance.

### C8 DD

CAPCELL PAK C8 DD (Double Durability) has excellent acidic and basic resistance. The high surface polarity and lower hydrophobicity compared to C18 columns, make this product ideal for fast analyses of mixtures with diverse hydrophobicities.

## CAPCELL PAK (continued)

## Column Selection by Application

Parameter	Recommended Phase
General purpose	MGIII, MGII, MG
Harsh acidic conditions	ACR, DD
Preparative applications	UG80
Fast analysis	MGIII, MGII, UG120
Acid resistance	ACR > DD > MGIII, MGII, MG > AG > UG
Alkaline resistance	MGIII, MGII, MG > ACR > DD > UG > AG
Column pressure	DD < UG < ACR < AQ < MGIII, MGII, MG
Polar compounds	AQ > DD > MGIII, MGII, MG

## CAPCELL PAK MF

- Direct injection of body fluids
- High drug recovery
- Very reproducible

CAPCELL PAK MF (mixed functional phase) allows direct injection of serum, plasma or other biological fluids. This is made possible by bonding hydrophilic polyoxyethylene groups and hydrophobic groups (phenyl, C8, C1, SCX) to the polymer coated silica. This allows proteins to be eluted in the void volume (due to the restricted access to the surface of the material), while the drug of interest is retained (Figure 2).

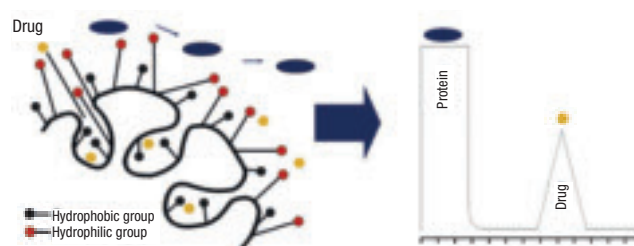


Figure 2. Direct analysis of drugs

## Ordering Information

CAPCELL PAK Phase	Column Dimensions <sup>1</sup> (mm)				Guard Cartridges <sup>2</sup> (2/pk)
3µm	35 x 4.6	50 x 4.6	150 x 4.6	250 x 4.6	
C18 MGIII	92763	92764	-	-	-
C18 MGII	92478	92479	92482	-	12198
C18 MG	90801	90802	90808	-	12305
C18 AQ	92151	92152	92155	92156	12140
C18 ACR	92250	92251	92254	92255	12060
C18 UG	61527	61526	61533	-	12486
<b>5µm</b>					
C18 MGIII	92630	92631	92634	92635	12224
C18 MGII	92528	92529	92532	92533	12200
C18 MG	90101	-	90103	90104	12496
C18 AQ	92040	92041	92044	92045	12180
C18 ACR	91101	91105	91103	91104	12155
C8 DD	90980	90981	90984	90985	12090
C18 UG	61501	61502	61503	61504	12412
C8 UG	71501	71502	71503	71504	12419
C1 UG	63501	63502	63503	63504	12427
Phenyl UG	73501	73502	73503	73504	12422
CN UG	64501	64502	64503	64504	12382
NH <sub>2</sub> UG	62501	62505	62503	62504	12429
SCX UG	77001	77002	77003	77004	12195
C18 AG	12501	-	12503	12504	-
C8 AG	21501	-	21503	21504	-
C18 SG	12510	12514	12512	12513	-
C8 SG	21511	21515	21513	21514	-
MF Ph-I	60500	60501	60503	-	12416
MF C8	60520	60521	60523	-	12426
MF SCX	60530	60531	60533	-	12471

<sup>1</sup> Other dimensions available<sup>2</sup> 10 x 4.0mm. Use with holder EF4010

For ordering information for alternative dimension columns and for 2µm CAPCELL PAK IF columns please contact Hichrom. Please contact Hichrom for pricing information on all CAPCELL PAK columns.