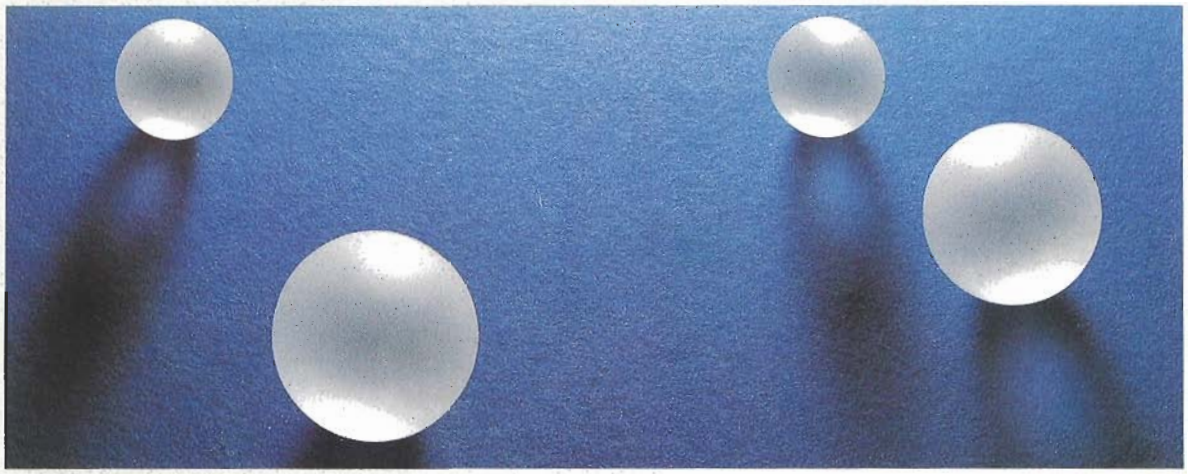
AGSI
Asahi Glass SI-Tech

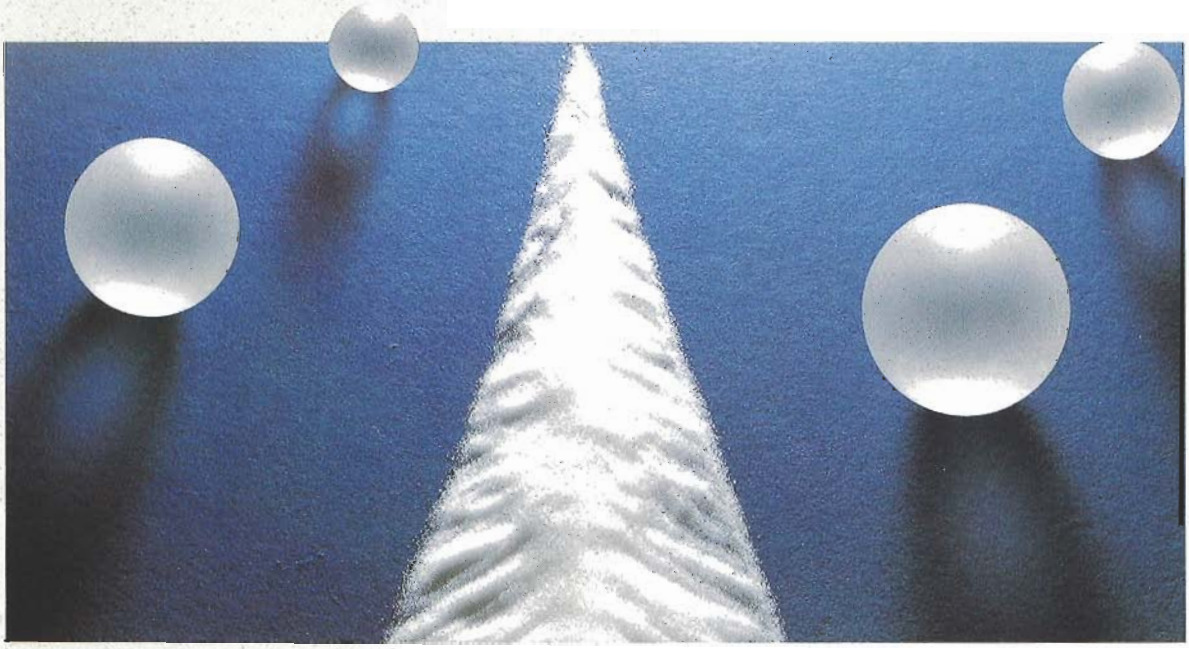
MICRO SPHERE GEL

M.S.GEL

シリカ系クロマトグラフィ用充填剤

Silica-based packing for chromatography





M.S.GEL

MICRO SPHERE GEL

M.S.GELは、わが国でシリカゲル製造歴の最も長い旭硝子エスアイテック（株）と旭硝子（株）開発研究陣が蓄積した技術と経験を生かして開発した真球状のシリカ系液体クロマトグラフィ用充填剤です。原料から最終製品まで一貫した生産管理と品質評価体制を確立し、分析用から大量分取用まで幅広いニーズへの対応を図ってきております。また、液体クロマトグラフィ用以外の分野でもM.S.GELの特徴ある機能を生かした用途開発が可能ですのでご相談下さい。

M.S.GEL is high-purity spherical silica gel and used as silica-based packing for chromatography.

It has been developed by Asahi Glass SI-Tech.Co.,Ltd. (subsidiary company of Asahi Glass) and the R&D staff of Asahi Glass. Co.,Ltd. in Japan.

The silica gel has been manufactured by making full use of our techonological expertise and accumulated know-how in long history.

Our integrated production system and quality control system ensures the supply of our M.S.GEL in stable and very competitive price.

The super silica gels, M.S.GEL assures the meet of various demands by its characteristics not only HPLC packings but also adsorbents, catalyst carriers,controlled releasing agents, and so on.

M.S.GELの特徴
Characteristics of M.S.GEL

1. くぼみや亀裂のない、真球状の多孔質の微細粒子ですので最密充填ができ、圧力損失が低く、良好な分離性能のカラムが得られます。
   - Spherical,all-porous fine particles free from cavities and cracks.
   - Can be packed into the most compact from.
   - Offerable low back pressure and good separation performance.

2. SiO_2純度は99.9%以上で、99.99%以上の高純度品も供給可能です。
   - The purity range of SiO_2 standard(99.9%)to super high purity (99.99%).

3. 粒径は2～200μmの範囲で、用途に応じた任意の粒度が選択可能です。標準品のD品と、特に分析用途に精密分級したDF品が供給可能です。
   - Particle size range 2μm to 200μm
   - Any application from high-level microanalysis to industrial use.
   - Available wide variety products, standard particle size distribution D series, to DF series very sharp particle size distribution.

4. 平均細孔径は6～30nmの範囲で供給可能です。細孔分布を厳密に制御しており、広い用途範囲に適用できます。
   - Mean pore size available 6 nm to 30 nm.
   - Pore size distribution strictly contorolled.

5. 大きな比表面積（80～800㎡/g）と細孔容積（0.7～1.5ml/g）を持っています。
   - The M.S.GEL has large surface area (80 to 800㎡/g) and large pore volume (0.7 to 1.5ml/g).

6. ユーザーの仕様に合わせた、オーダーメードも可能です。
   - Special quality grade acceptable provided consultation.

M.S.GELの表示
Nomenclature of M.S.GEL

Functional group	Grade of silica	Classification	Particle Size	Pore Size
SIL (Silanol)	– (Standard)	D (Standard)	Mean Particle Size (μm)	Mean Pore Size (A=10×nm)
C18 (ODS)	EP (Extra Pure)	DF (Closely Classified)		

Example M.S.GEL SIL EP-DF-5-120A

M.S.GEL for HPLC

EP-DF Grades(purity of SiO_2 99.99%)
DF Grades(purity of SiO_2 99.9%)

形　状
Shape

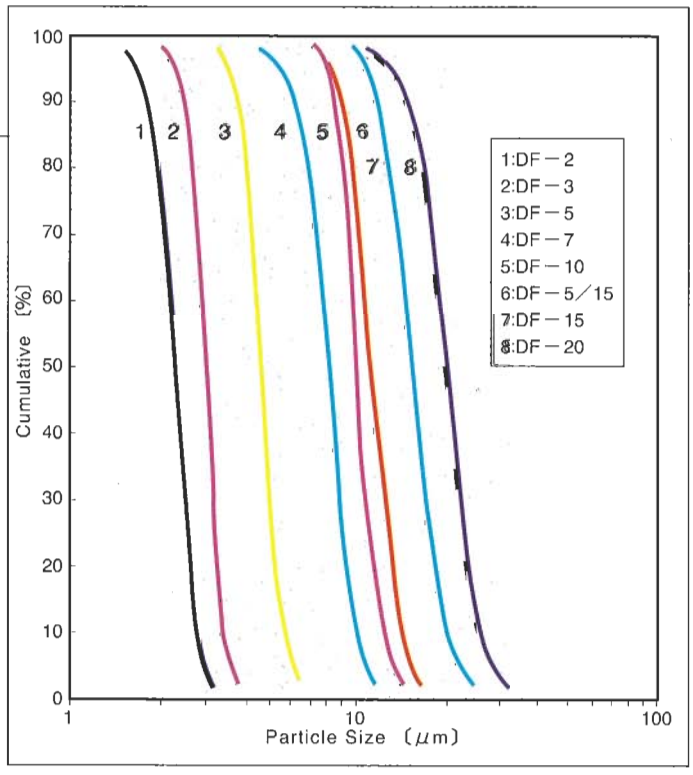
完全な真球で、くぼみや
亀裂は全くありません。

・Perfect spherical shape free from cavities and cracks.

粒度分布
Particle Size Distribution

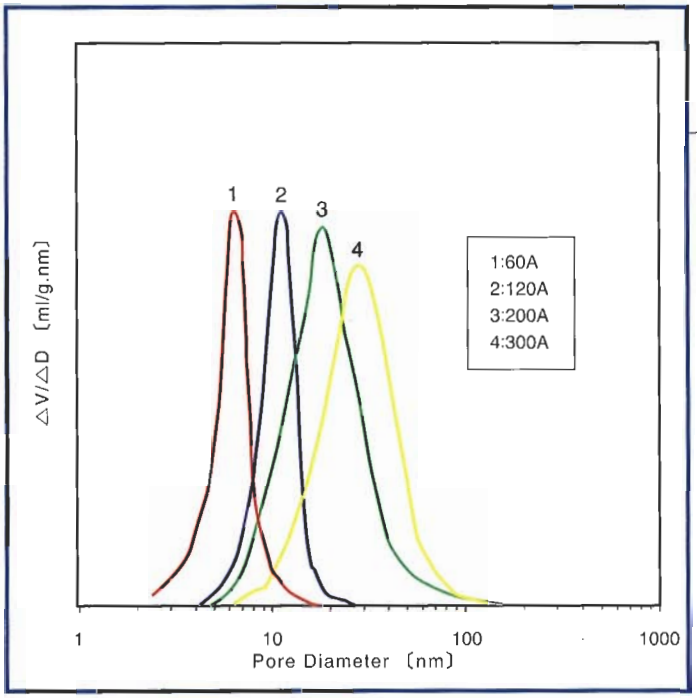
粒度分布はシャープであり、
粒径は2～20μmの範囲で
任意の粒度のものを選ぶ事
ができます。

・Average particle size range 2μm to 20μm.
・Particle size distrubution very sharp



Particle Size Distribution of DF and EP-DF grades

細孔分布
Pore Size Distribution



平均細孔径は6～30nmの範囲で選択可能で、細孔分布もシャープに制御しています。

・Mean pore size available from 6 nm to 30 nm.
・Pore size distribution contorolled sharply.

純　度
Purity

	高純度グレード EP grades	標準グレード Standard grades
Al	5	150
Fe	10	50
Ti	0.5	150
Mg	3	3
Ca	10	10
Na	15	150

$SiO_2$99.99%以上の超高純度品EPグレードの供給が可能です。
純度の低いシリカゲルを化学修飾型充填材の担体に使用すると、残存金属による悪影響がでます。

・The super high purity M.S.GEL(EP grades) of SiO_2 is above 99.99%.
・The high purity silicagel is ideal for super microanalysis, as it is not influenced by metal ions.

M.S.GELの特性値
Characteristics of M.S.GEL

		EP-DF-2-120A	EP-DF-3-120A	EP-DF-5-120A	EP-DF-7-120A	EP-DF-10-120A	EP-DF-5/15-120A	EP-DF-15-120A	EP-DF-20-120A
Average Particle Size	μm	2.2±0.1	2.75±0.1	4.4±0.1	7.5±0.5	10.0±1.0	10.0±1.0	15.0±2.0	20.0±2.0
D10/D90	–	≦1.65	≦1.65	≦1.65	≦1.65	≦1.65	≦1.90	≦1.90	≦1.90
Specific Suface Area	m^2/g	340±20	340±20	340±20	340±20	340±20	340±30	340±30	340±30
Pore Volume	ml/g	1.05±0.10	1.05±0.10	1.05±0.10	1.05±0.10	1.05±0.10	1.05±0.10	1.05±0.10	1.10±0.10
Pore Diameter	nm	12.5±1.5	12.5±1.5	12.5±1.5	12.5±1.5	12.5±1.5	12.5±1.5	12.5±1.5	12.5±1.5

※M.S.GEL pore size 6,8,10,15,20,30nm for each grade are available.

We can produce chemical bonded silica gel too. Please consult with us.

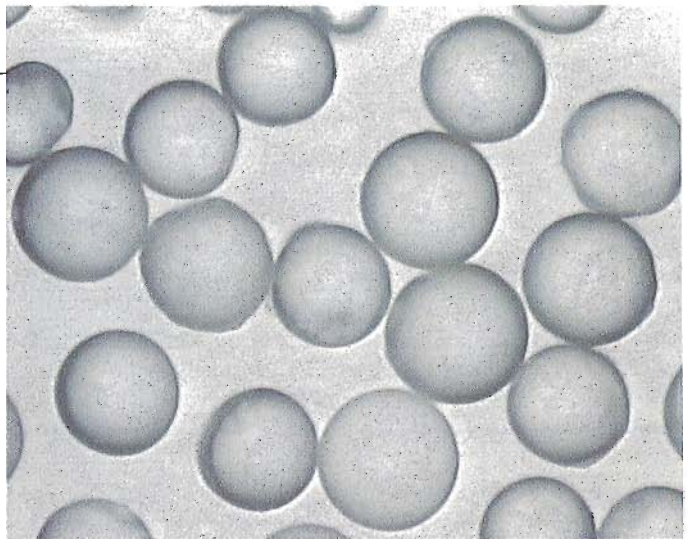
M.S.GEL for LC

D Grades(purity of SiO_2 99.9%)

形　状
Shape

ほぼ真球状で、充填が容易にできます。

・Spherical and easy packing in column.

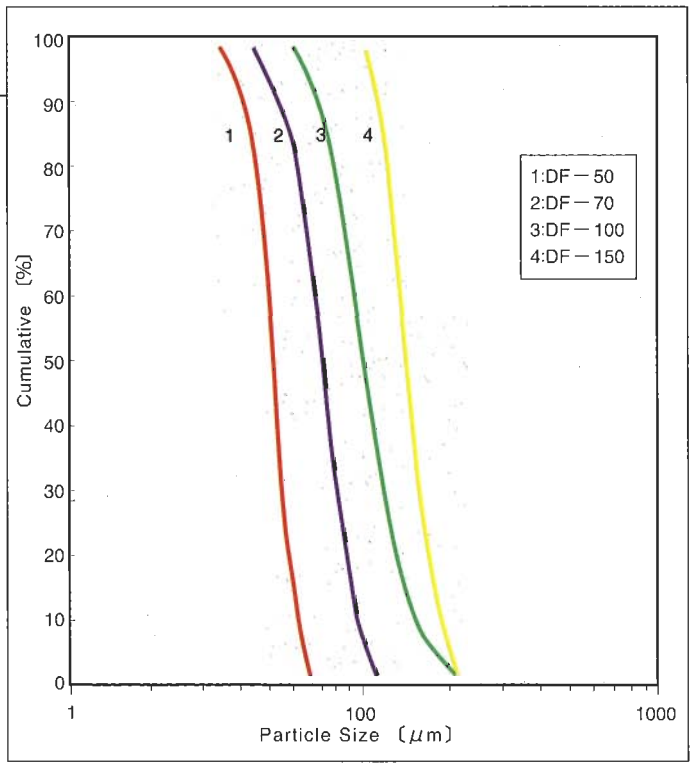


100μm

粒度分布
Particle Size Distribution

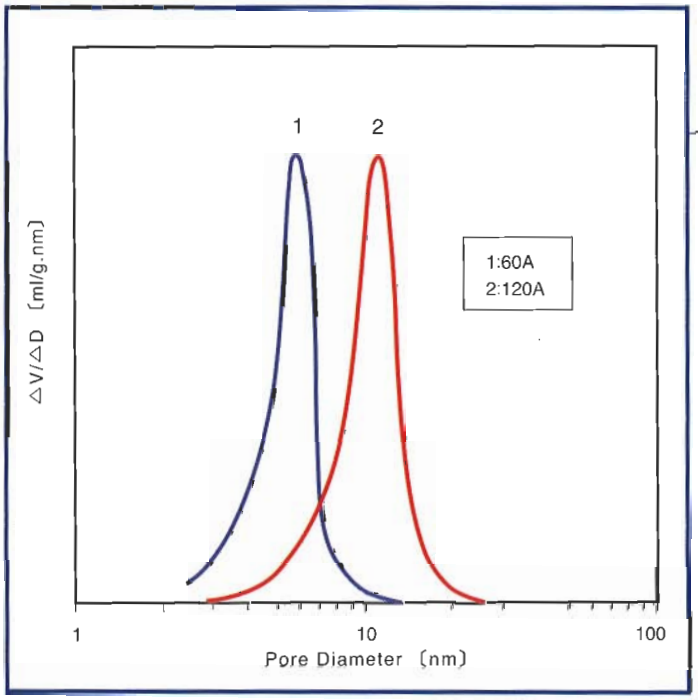
粒径は50～150μmの範囲で任意の粒度のものを選ぶ事ができます。

・Average particle size range 50μm to 150 μm.



Particle Size Distribution of D grades

細孔分布
Pore Size Distribution



平均細孔径は6～12nmの範囲で選択可能で、細孔分布もシャープに制御しています。

- Mean pore size available from 6 nm to 12 nm.
- Pore size distribution contorolled sharply.

M.S.GELの特性値
Characteristics of M.S.GEL

GRADE		Standard Grade				Neutral Grade			
		D-50-60A	D-75-60A	D-150-60A	D-100-60A	D-50-60A(N)	D-75-60A(N)	D-150-60A(N)	D-100-60A(N)
Particle Size		40-64μm ≧82%	40-105μm ≧82%	105-210μm ≧82%	64-210μm ≧82%	40-64μm ≧82%	40-105μm ≧82%	105-210μm ≧82%	64-210μm ≧82%
Surface Area	m^2/g	700±50	700±50	700±50	700±50	650±50	650±50	650±50	650±50
Pore Volume	ml/g	1.15±0.10	1.15±0.10	1.15±0.10	1.15±0.10	0.90±0.10	0.90±0.10	0.90±0.10	0.90±0.10
Pore Diameter	nm	6.5±1.0	6.5±1.0	6.5±1.0	6.5±1.0	6.0±1.0	6.0±1.0	6.0±1.0	6.0±1.0
pH	—	6.0±0.5	6.0±0.5	6.0±0.5	6.0±0.5	7.0±0.5	7.0±0.5	7.0±0.5	7.0±0.5
Specific Resistance	Ωcm	≧50,000	≧50,000	≧50,000	≧50,000	≧50,000	≧50,000	≧50,000	≧50,000
Impurities									
Al	ppm	≦150	≦150	≦150	≦150	≦150	≦150	≦150	≦150
Fe	ppm	≦50	≦50	≦50	≦50	≦50	≦50	≦50	≦50
Ti	ppm	≦200	≦200	≦200	≦200	≦200	≦200	≦200	≦200
Mg	ppm	≦50	≦50	≦50	≦50	≦50	≦50	≦50	≦50
Ca	ppm	≦50	≦50	≦50	≦50	≦500	≦500	≦500	≦500
Na	ppm	≦100	≦100	≦100	≦100	≦100	≦100	≦100	≦100

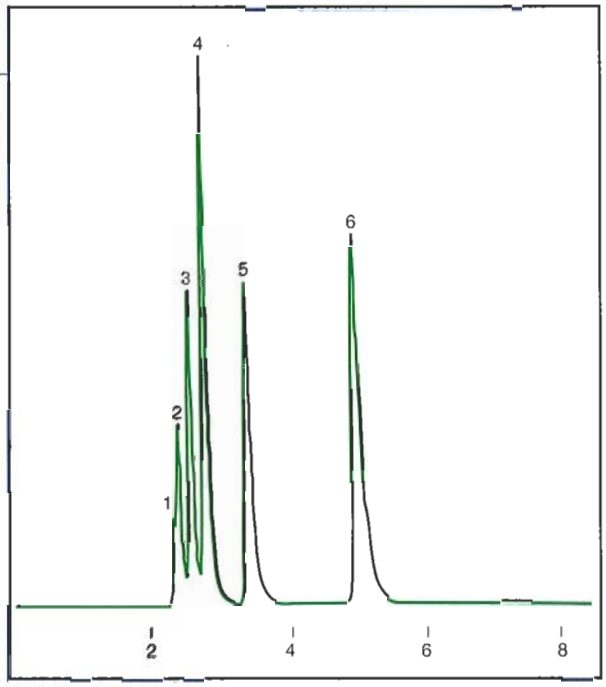
GRADE		Small Pore Volume Grade		120A Grade	
		D-50-60A SV	D-100-60A SV	D-50-120A	D-100-120A
Particle Size		40-64μm ≧82%	64-210μm ≧82%	40-64μm ≧82%	64-210μm ≧82%
Surface Area	m^2/g	475±25	475±25	320±30	320±30
Pore Volume	ml/g	0.75±0.10	0.75±0.10	1.15±0.10	1.15±0.10
Pore Diameter	nm	6.0±1.0	6.0±1.0	14.5±1.5	14.5±1.5
pH	—	7.0±0.5	7.0±0.5	6.0±1.0	6.0±1.0
Specific Resistance	Ωcm	≧50,000	≧50,000	≧50,000	≧50,000
Impurities					
Al	ppm	≦50	≦50	≦50	≦50
Fe	ppm	≦50	≦50	≦50	≦50
Ti	ppm	≦50	≦50	≦50	≦50
Mg	ppm	≦50	≦50	≦50	≦50
Ca	ppm	≦500	≦500	≦50	≦50
Na	ppm	≦100	≦100	≦100	≦100

Example of separation by

M.S.GEL SIL for HPLC

Separation of Acid & Base.

Column:4.6mmID×250mm
Packing:EP-DF-5-120A
Sample:1.Benzene
2.Benztrifluoride
3.Methylbenzoate
4.Nitrobenzene
5.Phenol
6.Aniline
Mobile phase:
n-Hexane:EtOH 90:10(v/v)
Flow rate:1.0ml/min
Detector:UV(254nm) at 40℃

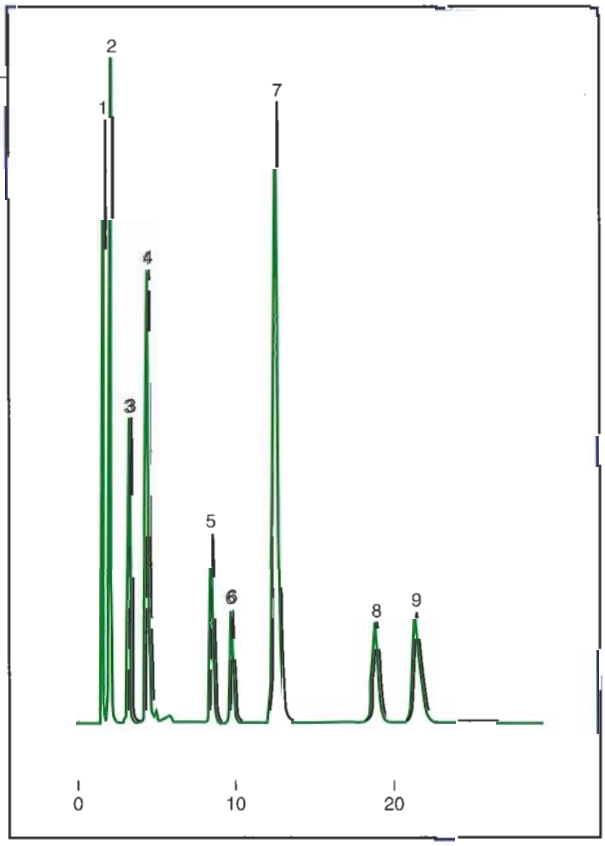


M.S.GEL ODS for HPLC

Separation of Standard Samples

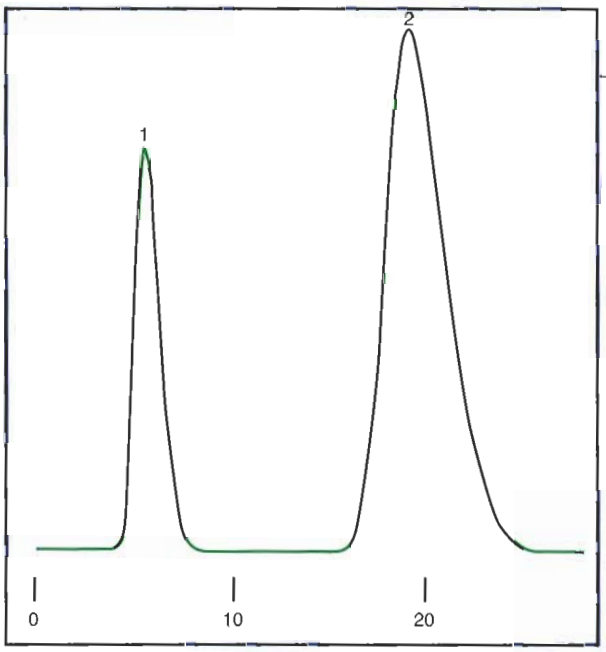
Column:4.6mmID×150mm
Packing:C18-EP-DF-5-120A
Sample:1.Uracil
2.Cafeine
3.Phenol
4.Ethyl pyridine
5.Methyl benzoate
6.Benzene
7.N,N-dimethylaniline
8.Toluene
9.Phenylacetyl acetone

Mobile phase:Methanol:Water
50:50(v/v)
Flow rate:1.0ml/min
Detector:UV(254nm) at 40℃



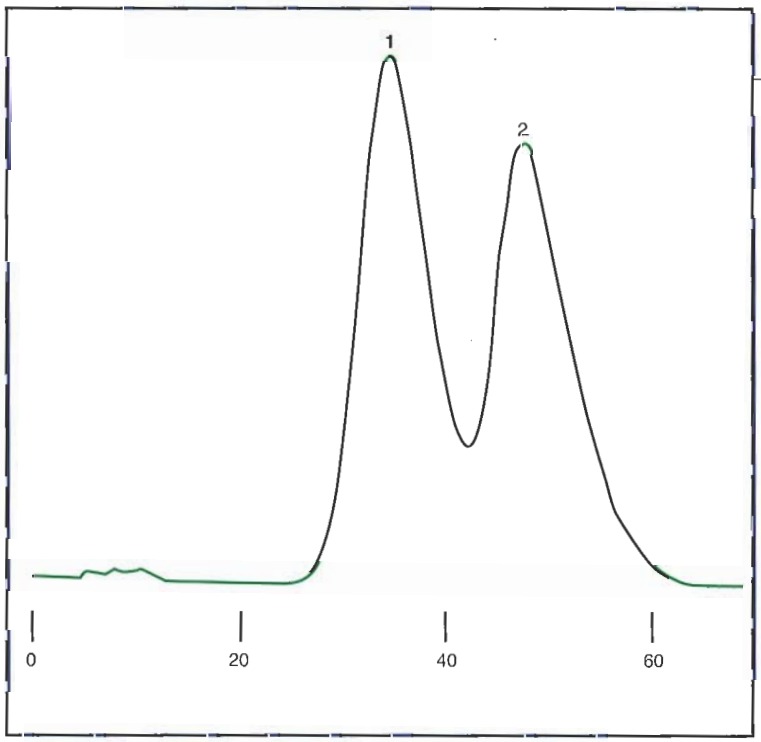
M.S.GEL

M.S.GEL SIL for LC



Separation of Vitamin K

Column: 10mmID×150mm
Packing: D-100-60A
Sample: 1. Vitamin K1 (10,000ppm)
2. Vitamin K3 (10,000ppm)
(charge volume 20μl)
Mobile phase: n-Hexane:Diethylether
93:7 (v/v)
Flow rate: 3.0ml/min
Detector: UV(254nm) at 40.0℃



Separation of Fatty acid ester

Column: 10mmID×150mm
Packing: D-100-60A
Sample: 1. Methyl Stearate (50,000ppm)
2. Methyl n-Octanoate (25,000ppm)
(chage volume 100μl)
Mobile phase: n-Hexane:Diethylether:Water
98:1:1 (v/v/v)
Flow rate: 1.5ml/min
Detector: UV(210nm) at 35.0℃

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