CHROMATOREX

Bare Spherical Silica Gels
For Improved Flash and Industrial Chromatography
MB70 Silica

FUJI SILYSIA CHEMICAL LTD
INTRODUCTION

Our "Chromatography Silica Gel" is commonly used in research laboratories and industrial production in many fields such as pharmaceutical and electronic material. We introduce spherical silica gel "MB 70-40/75" (Fig.1) and "MB 70-75/200" (Fig.2) for industrial use. A spherical silica gel has characteristics of easier uniform column packing and superior chromatographic performance in comparison with those of granular silica gel. We developed these new products suit for separation in industrial use through our technology and experience of silica production for a wide area. MB series have properties controlled especially for open column, flash chromatography, and large-scale HPLC.

We believe that MB 70-75/200 and MB 70-40/75 will assist you with your production needs.

![Microphotograph of MB 70-40/75](image1)  ![Microphotograph of MB 70-75/200](image2)

Fig.1 Microphotograph of MB 70-40/75  Fig.2 Microphotograph of MB 70-75/200

PHYSICAL PROPERTIES

MB 70-40/75 and MB 70-75/200 are spherical silica gel of average pore diameter 6 nm with controlled particle size distribution precisely. MB series can be used without changing your separation condition because adsorption force and surface activity are controlled as same as conventional our product.

<table>
<thead>
<tr>
<th>Items</th>
<th>MB 70-40/75</th>
<th>MB 70-75/200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific Surface Area m²/g</td>
<td>490</td>
<td>490</td>
</tr>
<tr>
<td>Pore Volume ml/g</td>
<td>0.77</td>
<td>0.77</td>
</tr>
<tr>
<td>Bulk Density g/ml</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>pH (5% slurry)</td>
<td>7.0</td>
<td>7.0</td>
</tr>
<tr>
<td>Average Particle Size μm</td>
<td>60</td>
<td>110</td>
</tr>
</tbody>
</table>
COLUMN CHROMATOGRAPHY

MB70-75/200 is suitable grade for particularly open columns mass processing. Separation examples of column chromatography with MB70-75/200 and commercial silica gel (granular) of the same particle size are illustrated in figures below. (Fig.3, Fig.4) Spherical silica gel in shape gives you following (1~3) characteristics in chromatographic separations.

1. High theoretical plate number
2. Superior column packing
3. Less peak tailing of each elution

Therefore, high purity refined chemicals can be obtained in even high-load situation.

[Chromatography Conditions]
Column : I.D. 20mm, Length 1000mm Glass Column
Silica gel : MB70-75/200 (Spherical), Commercial Silica gel (Granular) 75-200 μm (100g each)
Mobile Phase : 20wt%Ethylacetate/n-Hexane (w/w)
Flow Rate : 2.5cm/min (8ml/min)
Detector : UV254nm

Fig3. Chromatogram of MB70-75/200 (Spherical)

Fig.4 Chromatogram of Commercial Silica gel (Granular)
FLASH CHROMATOGRAPHY

Separation examples by flash chromatography of MB70-40/75 are shown in figures below. (Fig.5, Fig.6) MB70-40/75 can be packed well in both wet process / dry process, and the column demonstrates high performance in separations.

**Flash Chromatography Conditions:**
- Mobile Phase: 10 wt% Ethylacetate/n-Hexane (w/w)
- Sample: 1. Benzene
  2. Dioctyl phthalate
  3. Dibutyl phthalate
  4. Dimethyl phthalate
- Flow rate: 5 cm/min
- Detector: UV 254nm
- Column: I.D. 20 mm Glass Column (Column Height 175mm)
  I.D. 27 mm PP Cartridge Column (Column Height 108mm)
- Silica gel: MB70-40/75 (25g) Wet packing
  MB70-40/75 (30g) Dry packing

**Wet Packing**
- Fig.5 Chromatogram of MB70-40/75 (Wet Packing)
  - Pressure = 0.015 MPa
  - $k'$ DMP = 6.90
  - N DBP = 551

**Dry packing**
- Fig.6 Chromatogram of MB70-40/75 (Dry Packing)
  - Pressure = 0.03 MPa
  - $k'$ DMP = 7.50
  - N DMP = 401

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