



EXCELLENT
25 μ m & 50 μ m
SI NH ODS DIOL

~The greatest preparative cartridge column~
Fine filling of spherical silica gel with fine particle size and high precision

Cartridge columns for middle pressure preparative chromatography and flash chromatography

Purif-Pack™-EX

~Purif-Pack-Excellent~



ODS
25 μ m

NH
50 μ m

SI
50 μ m

DIOL
25 μ m

SI
25 μ m

SI
15 μ m

High performance spherical silica gel

High Performance Cartridge Columns filled with high precise spherical silica gel

You can choose the best column from variety of columns with many kinds of gel such as SI, NH, ODS, DIOL etc., different particle size and column size.

Cartridge columns for flash chromatography Purif-Pack™-EX

- 2 sizes of spherical silica gel are available to achieve higher performance. The particle size of 50 μm provides high performance and the size of 25 μm is top grade. In addition, the highest grade with 15 μm particle size is newly line-upped for SI gel series.
- Peak tailing is suppressed and critical separation is obtained. A sharper peak can be obtained and that will improve the recovery ratio of sample and the amount of solvent used.
- Sample charge can be done easily because spherical silica gel has high permeability. Much amount of sample can be charged and that will contribute to the efficiency of the preparative experiment. Also, spherical silica gel has lower pressure loss than irregular type silica gel and useful for separation of high viscous samples
- The best size column can be selected from many size of columns to fit the amount of sample. The diameter and length of the column can be selected depending on sample state.
- The column packed in high grade polypropylene housing has high pressure resistance(1MPa) and high transparency to confirm the state of sample visually.



Product name

SI - 50 SIZE : 60

[Types of silica gel]

SI : Silica gel
 NH: Silica gel modified with Amine
 ODS: Silica gel modified with C18
 DIOL: Silica gel modified with Diol

[Particle size]

50:50 μm
 25:25 μm

[The approx volume of gel on column size]

20: 10 g
 60: 30 g
 120: 60 g
 200: 100 g
 400: 200 g
 800: 400 g

The features of Purif-Pack™-EX

- Higher resolution ability than irregular silica gel.
- Lower pressure loss provides excellent separation at high flow rate.
- Much amount of sample can be charged.
- Easy to scale up from the development stage.
- Various columns are line up to select the best column fitting the amount and composition of sample.

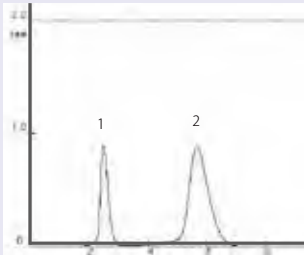
SI series

High performance 50 μ m gel and Top grade 25 μ m gel

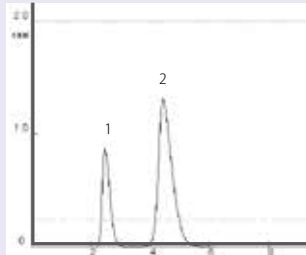
It is possible to provide excellent preparation and separation utilizing with high resolution of spherical silica gel.

Difference in particle size

SI 50 μ m



SI 25 μ m

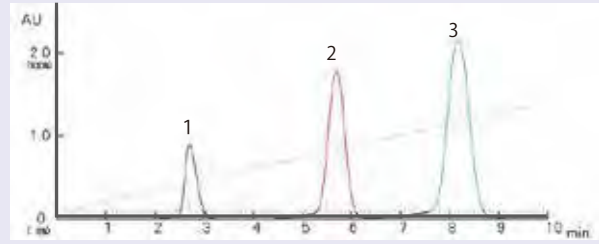


Preparative conditions

Mobile phase	Hexane/Ethyl Acetate, Isocratic
Flow rate	20ml/min
Detection	UV254nm
Sample	1. Toluene, 2. Dibutyl phthalic acid

Separation of Phthalic ester

SI 50 μ m



Preparative conditions

Mobile phase	Hexane/Ethyl Acetate, Gradient
Flow rate	20ml/min
Detection	UV254nm
Sample	1. Toluene, 2. Dibutyl phthalic acid, 3. Dimethyl phthalic acid

NHseries

The best for separation of alkaline substances or removal of acids.

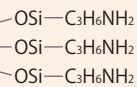
50 μ m gel or 25 μ m gel is selectable for your application.

Separation of alkaline substances

Features

By combining chemically with aminopropyl groups, alkaline substances can be separated and realize improvement in peak tailing and recovery rate.

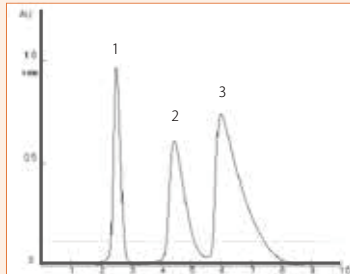
Amino silica surface (Image)



This silica gel is obtained by the chemical combination of silanol groups on the surface of silica with aminopropylsilane.

Elution of pyridine

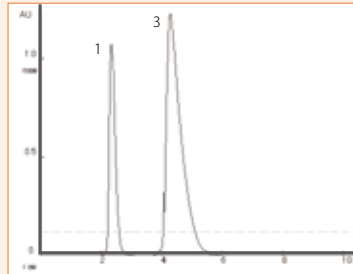
NH50 μ m



Preparative conditions

Mobile phase	Hexane/ Ethyl Acetate, Isocratic
Flow rate	20ml/min
Detection	UV254nm
Sample	1. Toluene, 2. Dibutyl phthalic acid, 3. Pyridine

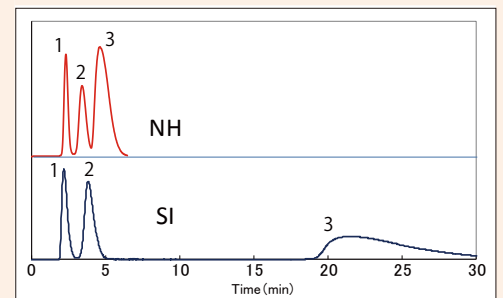
NH25 μ m*



*Dibutyl phthalic acid is not contained in this sample separated with NH25 μ m gel column.

Comparison with silica column (SI series)

NH series can separate alkaline samples which SI series cannot separate easily due to the absorption of alkaline substances to SI gel.



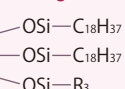
ODSseries

High quality spherical ODS silica column being end capped

50 μ m gel or 25 μ m gel is selectable for your application.

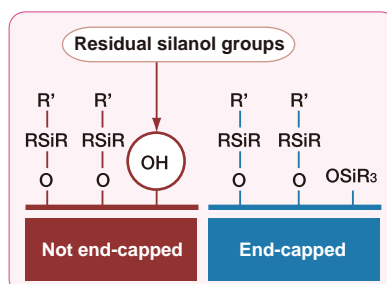
Separation of alkaline substances

ODS silica surface (Image)



*Chemical binding of Octadecyl group (C₁₈)

End-capping treatment



Features

ODS gel can prevent adsorption of alkaline substances and separate alkaline substances because silanol groups remaining on the surface of silica are masked by end capping.

In the case that samples can be dissolved in low polar solvent

Direct inject

The sample penetrates so easy that more amount of sample can be injected.



Remove the seal adaptor.



Take the sample with a pipet.



Inject the sample into a column.



Connect the line of an instrument (lure adaptor) to a column.



Attach the seal adaptor.



The sample gradually penetrates into the frit (filter) of a column.

Tips!

- ◆ This is the method with the least sample loss.
- ◆ The sample penetrates into a column soon after pushing the seal adaptor in.

It is unnecessary to decompress from the bottom of a column, so air never enter the column.

Before injection of the sample



After injection of the sample



The 5ml of sample can penetrate within a few seconds.

Inject with a syringe



Insert the syringe containing the sample into the lure joint of a column.



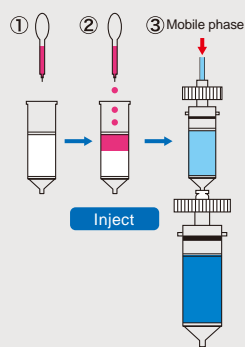
Inject the sample slowly into a column.



Connect the line of an instrument (lure adaptor) to a column.

In the case of slightly soluble sample or solid sample

The method with a injection column



An injection column is convenience and easy for use to inject the high viscosity sample or large amount of sample.

- High polar solvent can be used.
- High viscosity sample can be injection.

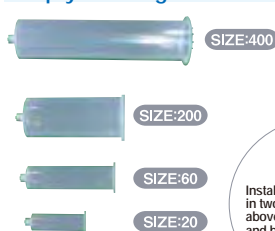
- ① Put the sample into a injection column.
- ② Dry a injection column containing the sample.
 - Put it in a desiccator and decompose.
 - Attach a seal adaptor to a charging column and blow N₂ gas.
- ③ Install a injection column at the upper side of a main column.

Connect with a conditioned main column

The method with the column packed sample-coated silica

Pack sample-coated silica in an empty column and then cover it with a frit. This is a cheap and easy way.

Empty housing



Install the column at the upper side of a main column.

Example

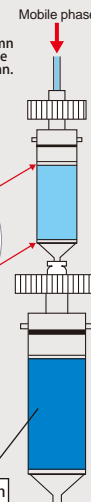
Install frits in two places above and below

Frit

- Frit 20φ → Purif-Pack™ SIZE:20
- Frit 27φ → Purif-Pack™ SIZE:60/120
- Frit 46.5φ → Purif-Pack™ SIZE:200/400



Main column



Tips!

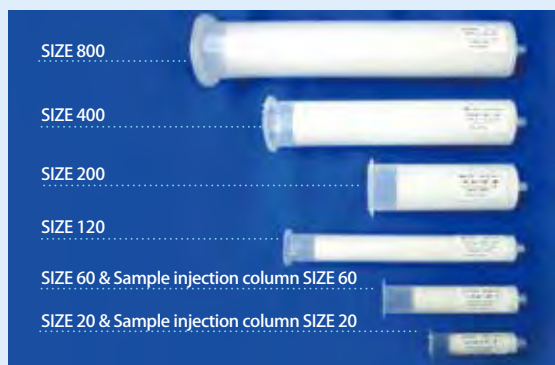
The sample is easy to permeate in Purif-Pack™-EX, because spherical silica gel is packed.

Purif-Pack™-EX is very easy to inject samples.

Column size lineup

Purif-Pack™-EX & Sample charging column

Selection of column size depends on the amount of sample and resolution (Rf value). Please select a thicker column for much amount of sample and select a longer column for higher resolution.



Column size	Dimension (mm) <small>(Inner diameter x length)</small>	Amount of filled silica gel <small>(g)</small>	Recommen-dable amount of sample <small>(g)</small>	Recommen-dable flow rate for separation <small>(mL/min)</small>
SIZE20	20 × 60	10	0.07-0.5	7-10
SIZE60	27 × 100	30	0.3-3	20
SIZE120	27 × 200	60	0.6-6	20
SIZE200	46 × 110	100	3-7	60
SIZE400	46 × 220	200	5-10	60
SIZE800	55 × 308	400	10-20	80
Sample injection column SIZE20	20 × 60	10	0.07-0.5	—
Sample injection column SIZE60	27 × 100	30	0.3-3	—

- ※1) Please be advised that the sample recovery rate and the amount of solvent used depend on the sample characteristic or a kind of solvent.
- ※2) Only the part filled with silica gel
- ※3) Approx amount of filled silica gel for SI series

Components

Seal adaptor

The material is PEEK. It is cheap and high quality.

Seal adaptor SIZE:20 → Purif-Pack SIZE: 20
 Seal adaptor SIZE:60 → Purif-Pack SIZE: 60/120
 Seal adaptor SIZE: 200 → Purif-Pack SIZE: 200/400
 Seal adaptor SIZE: 800 → Purif-Pack SIZE: 800



Movable stopper

It is adjustable to different height in packed bed of silica gel. It is useful for using sample charging columns.



O-ring tightening type



Simple type

Column holder

It is made from stainless steel that can withstand pressure.

Column holder SIZE:20 → Purif-Pack SIZE: 20
 Column holder SIZE:60 → Purif-Pack SIZE: 60/120
 Column holder SIZE: 200 → Purif-Pack SIZE: 200/600
 Column holder SIZE: 800 → Purif-Pack SIZE: 800



Column holder



Seal adaptor (with lure injection)

Lure connection items

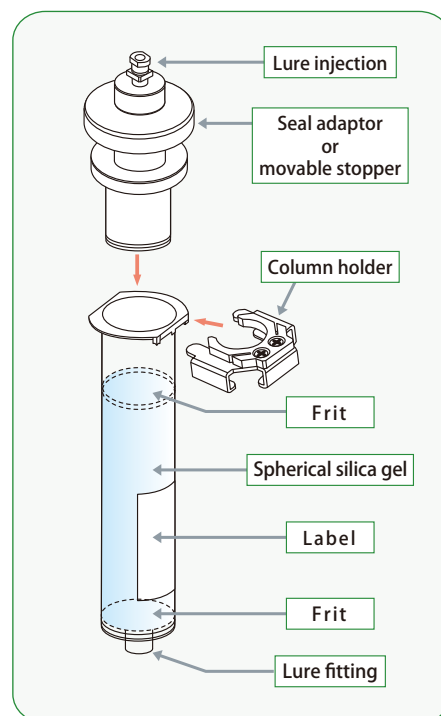
Lure adaptor (male)



Lure adaptor (female)



Lure injection



Purification system line up, Purif™ series

Purif™-Rp2

2-channel parallel high pressure & high sensitivity purification system



This system can use not only middle pressure cartridge columns but also HPLC stainless steel columns and semi preparative columns.

Features

- Max. pressure: 20MPa + High sensitive cell
- It can provide the preparation and purification in the order of $\mu\text{g}\sim\text{g}$.
- It can use both normal phase separation and reverse phase separation.

It incorporates functions to automatically set separation conditions by using TLC data.

[Developing solvent]

Hexane: 70%, Ethyl Acetate: 30%

[Sample]

n-butyl p-hydroxybenzoate (Rf:0.28),
p-anisyl alcohol (Rf:0.15)

Setting optimal conditions automatically when Rf value of each sample is input.

Features of setting conditions

- 1) Setting conditions focusing on separation
- 2) Setting conditions for efficient separation
- 3) Wide range of effective Rf value
- 4) Easy operation



Purif™-aios

2-channel parallel purification system

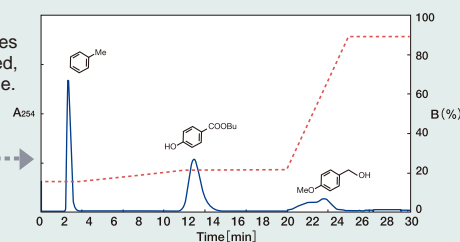


This is the middle pressure purification system in which all functions are standard equipped.

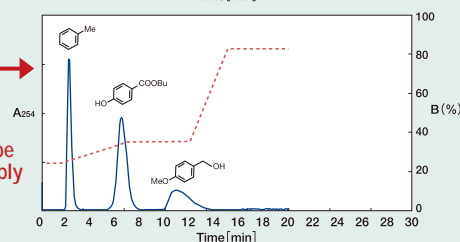
Features

- New designed double-plunger pumps promises accurate liquid transfer.
- It can select two kinds of wavelength from 200~400 nm. It can select two kinds of wavelength for preparative trigger at the same time, or one wavelength.

Although samples can be separated, it takes long time.



Samples can be separated reliably in a short time.



Options

● Remaining solvent sensing unit (concurrent use to prevent the leakage of waste liquid)

- The pump will be stopped before the solvent is running out by detecting with optical fiber sensor.



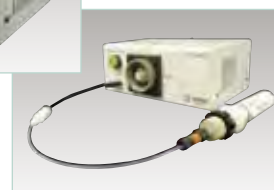
Remaining solvent sensing unit

● Air purge unit

- After the preparation completed, this unit forcibly drains residual solvent in a column by air to reduce column drying time.



Air purge unit



● Flash (Preparative)-MS



- Mass spectrum can be obtained during preparation.
- Correspond to normal phase
- As high sensitive detector
- Connection to Purif™ series

- It is possible to separate by mass trigger combined with Purif® series.
- It can separate samples more effectively by better S/N value when combined with Purif series installed HPLC pump.

[Examples]

- Detection for samples which cannot be detected by UV
- Purification for samples which contains lots of contaminants
- Search for candidate compounds

Polymer gel cartridge column

For customers who are facing a problem of basic materials other than silica gel

Column type ※「-S」 = small particle size type



Product name	Feature	Absorption amount	Polarity
Methacrylic synthetic polymer <i>Vega</i> <i>Vega-S</i>	<ul style="list-style-type: none"> ◆ Effective to absorb high polar organic substances ◆ Effective to absorb substances having Hydrogen bonding functional group ◆ Water-soluble vitamins, Flavorings, Chinese medicines, Peptides, Proteins 	Small	
Polystyrene synthetic polymer <i>Sirius</i> <i>Sirius-S</i>	<ul style="list-style-type: none"> ◆ Effective to absorb compounds having Benzene ring or conjugated double bond ◆ Alkaloids, Terpenes 	Moderate	
Modified polystyrene synthetic polymer <i>Antares</i> <i>Antares-S</i>	<ul style="list-style-type: none"> ◆ High absorption amount ◆ In addition to the application of Sirius; <ul style="list-style-type: none"> • Purification of Halogen compounds • Removal of low polar substances 	Large	

Features

- ◆ 2 types of particle size and 3 types of polarity (high, moderate, low)
- ◆ Wide range of usable pH → low and moderate polarity gel ▶ pH1-14
high polarity gel ▶ pH2~12
- ◆ Effective from adsorption/desorption of sample to chromatography.
- ◆ In the separation by reverse phase mode, samples are eluted with low polar solvent and it is easy to concentrate sample compared with the separation by ODS column.

Topics

How to treat solvents after the preparation/purification

Do you have a problem on the treatment of cartridge columns after the preparation?
This unit can remove quickly remaining solvents in cartridge columns.

Air purge unit (with timer)

Features

- Quick removal of remaining solvents in cartridge columns by air.
- Easy to install/uninstall cartridge columns
- With timer
- Space saving type

Specification

- Front panel: Power button, Timer, Piping mounting ports (IN/OUT)
- Size: 170W X 120D X 78H (mm)
- Weight: 220g
- Power supply: AC100V



Estimated solvent removal time (Time until liquid doesn't come out.)

Our company's cartridge column

SIZE60	27mmID X 100mmL, Amount of silica gel: 30g	→ about 1 min
SIZE800	55mmID X 308mmL, Amount of silica gel: 400g	→ about 5 min

Silica gel is insoluble in Methanol.

When samples are purified with silica gel column, the white residue is sometimes watched in the concentrate as the concentration of Methanol increases after preparation. Although it is thought that silica gel dissolves in Methanol, silica gel is insoluble in Methanol basically. Actually, the solubility of silica gel in Methanol-water solution decreases as the concentration of Methanol in Methanol-water solution increases.

The white residue is inorganic impurities such as Na, Ca and Mg etc. which are slightly contained in silica gel. In general, there is the process to wash silica gel with water in the production of silica gel for cartridge columns. Especially, overseas silica gel is washed with hard water which contains much amount of Na, Ca and Mg etc.. However the production process of silica gel for Purif-Pack is well controlled to reduce the contamination with inorganic impurities and they are washed with soft water which contains less amount of inorganic impurities than hard water.

Table. Silica gel solubility in Methanol-water solution

The concentration of Methanol (wt%)	Silica gel solubility (25°C)(mg/L)
0	140
25	75
50	40
75	15
90	5

1) R.K.Iler, The Chemistry of Silica John Wiley & Sons, New York 1979

**Product
lineup**

Type of gel	Product code	Product name	Pcs./box
SI 50um	CAP04132	SI-50 SIZE:20	30
	CAP04133	SI-50 SIZE:60	20
	CAP04134	SI-50 SIZE:120	20
	CAP04135	SI-50 SIZE:200	12
	CAP04136	SI-50 SIZE:400	12
	CAP04137	SI-50 SIZE:800	5
SI 25um	CAP04138	SI-25 SIZE:20	30
	CAP04139	SI-25 SIZE:60	20
	CAP04140	SI-25 SIZE:120	20
	CAP04141	SI-25 SIZE:200	12
	CAP04142	SI-25 SIZE:400	5
SI 15um	CAP04239	SI-15 SIZE:20	10
	CAP04240	SI-15 SIZE:60	10
NH 50um	CAP04143	NH-50 SIZE:20	30
	CAP04144	NH-50 SIZE:60	20
	CAP04145	NH-50 SIZE:120	20
	CAP04146	NH-50 SIZE:200	12
	CAP04147	NH-50 SIZE:400	5
NH 25um	CAP04148	NH-25 SIZE:20	10
	CAP04149	NH-25 SIZE:60	10
ODS 50um	CAP04150	ODS-50 SIZE:20	10
	CAP04151	ODS-50 SIZE:60	10
	CAP04152	ODS-50 SIZE:200	5
ODS 25um	CAP04153	ODS-25 SIZE:20	5
	CAP04154	ODS-25 SIZE:60	5
DIOL 25um	CAP04155	DIOL-25 SIZE:20	10
	CAP04156	DIOL-25 SIZE:60	10
For sample injection	CAP04214	Inject SI SIZE:20	30
	CAP04215	Inject SI SIZE:60	20

	Product code	Product name	Pcs./package
Lure connector	CAP00144	Lure adaptor (male)	1
	CAP00145	Lure injection	1
	CAP00184	Lure adaptor (female)	1
Seal adaptor	CAP00271	Seal adaptor SIZE: 20 (assembled/with lure injection)	1
	CAP00272	Seal adaptor SIZE: 60/120 (assembled/with lure injection)	1
	CAP00273	Seal adaptor SIZE: 200/400 (assembled/with lure injection)	1
	CAP01370	Seal adaptor SIZE: 800 (assembled/with lure injection)	1
Movable stopper	CAP04085	Movable stopper SIZE: 20	1
	CAP04086	Movable stopper SIZE: 60/120	1
	CAP04206	Movable stopper SIZE: 200/400	1
Cartridge column holder	CAP01290	Cartridge column holder SIZE: 20 (with drop-off prevention)	1
	CAP01291	Cartridge column holder SIZE: 60/120 (with drop-off prevention)	1
	CAP01292	Cartridge column holder SIZE: 200/400 (with drop-off prevention)	1
	CAP02033	Cartridge column holder SIZE: 800 (special part for Purif)	1
Empty cartridge	CAP00369	Empty cartridge SIZE:20	100
	CAP00371	Empty cartridge SIZE:60	100
	CAP02604	Empty cartridge SIZE:120	100
	CAP04019	Empty cartridge SIZE:200	50
	CAP04020	Empty cartridge SIZE:400	50
	CAP01380	Empty cartridge SIZE:800	10
Frit	CAP00382	Frit Φ20 SIZE:20	100
	CAP00384	Frit Φ27 SIZE:60/120	100
	CAP00385	Frit Φ46.5 SIZE:200/400	100
	CAP01381	SIZE:800	10

◆Specification and price may be subjected to change without prior notice for Improvement.

Contact information for your distributor

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