DAISOGEL™

HIGH RESOLUTION CHROMATOGRAPHY PRODUCTS

OSAKA SODA CO., LTD.

DAISOGEL Prologue

Prologue

OSAKA SODA CO., LTD. is one of the leading silica gel manufacturers for liquid chromatography in the world. Analytical and preparative grades are made by the same production method under carefully controlled conditions in order to assure consistent selectivity from lot to lot and between different particle sizes, which is essential for scale-up work.

Quality is maintained through the full Quantity scale. We can deliver grade silica (3-5μm, bare or bonded) in the HUNDRED KILO magnitude opening new horizons for preparative chromatography.

The DAISOGEL product line is very wide and additional custom grade manufacturing is possible.

Our customers are from the pharmaceutical industry, therefore to provide unparalleled RELIABILITY and SUPPLIABILITY are our highest priorities.

Our company was established in 1915 and a centennial anniversary came around in 2015. We have changed the company name from DAISO CO., LTD. to OSAKA SODA CO., LTD. since October 1st, 2015.

Tight Quality Control

DAISOGEL is "MADE IN JAPAN", handcrafted by our dedicated manufacturing team in our Amagasaki factory.

Our primary product is bare silica gel, manufactured under ISO 9001 controlled conditions with the most advanced sol-gel method.

DAISOGEL bare silica products may be sold or moved to the second stage of manufacturing: The chemical surface modification of the silica gel. The DAISOGEL bonded phases are manufactured in industry leading GMP compliant way. The DAISO GMP system is based on ICH-Q7A. Our pride, the MS-1 silica modification plant has been audited by major multinational pharmaceutical companies.

The rigid manufacturing standards guarantee that only the highest quality products are delivered to our valued customers.

We have FDA DMF(Drug Master File) registration for the best sold DAISOGEL phases as follows.

file #23227 for DAISOGEL ODS series
file #22317 for DAISOGEL C8 series
file #29201 for DAISOGEL C4 series

For the same phases Regulatory Support Files are available upon request.

HPLC
HIGH RESOLUTION CHROMATOGRAPHY PRODUCTS

Contents

How to interpret the letters and numbers in the *DAISOGEL product names*

Meaning

① shape of silica particles
variations: ***SP (spherical)***

② pore size in Angstroms
variations: ***60, 100, 120, 200, 300*** or ***1000, 2000*** in the SWP (super wide pore) series

③ particle size in micrometers
variations: ***3, 4, 5, 7, 10, 15, 20,*** or e.g. ***40/60*** (range of particle sizes)

④ bonded phase
variations: see table below!

for example: ①**SP-** ②**120-** ③**5-** ④**C8-** ⑤**P** ⑥**(NEC)**

⑤ purity of the base silica
P is for ultra high purity (alone or as the last letter of the bonded phase) if P not stated, the product is based on high purity silica. Though it is not indicated, the new BIO and HSA series is based on ultra high purity silica

⑥ endcapping
variations: ***(NEC)*** is for ***none endcapped*** or if ***(NEC)*** not stated, the product is ***endcapped***

④ bonded phase

ODS-BIO	designed for biopharmaceutical applications, novel bonding technique ensures strong resistence against alkalic and acidic conditions
(HSA) ODS-P	high surface area provides extremely high loadability
ODS-BP	low carbon content, suitable for hydrophilic and polar compound separation in up to 100 % aqueous eluents
ODS-RPS	high acidic resistance, suitable for organic compound separation
C8-BIO	new variation of the C8 phase, novel bonding technique ensures strong resistence against alkalic and acidic conditions
C8-P	for compounds too strongly retained on ODS phases
C4-BIO	new variation of the C4 phase, novel bonding technique ensures strong resistence against alkalic and acidic conditions
C4-P	moderate hydrophobicity makes it ideal for large biological molecule separation
C1-P	suitable for hydrophobic peptide and protein separation, GPC applications are possible depending on the eluent
APS-P	amino-propyl silane bonded phase for saccharide separation, or may be used for highly hydrophilic compound separation
—	if no bonded phase is indicated, the product is bare silica

DAISOGEL SP-P Series

✻ Ultra high purity silica
✻ Narrow particle size distribution
✻ Higher loading capacity
✻ Enhanced mechanical stability

DAISOGEL SP-P (spherical ultra pure) series are based on spherical and totally porous silica gel with metal impurities specified to be less than 10 ppm each for Al, Fe, Ti and Zr. Its manufacturing process under strictly controlled conditions produces a material with reproducible distribution of particle and pore size and surface area. The presence of performance-degrading small pores is avoided.
DAISOGEL SP-P series packing materials for analytical applications are available in 3µm, 4µm and 5µm particle sizes.
Nowadays, preparative liquid chromatography is used for the purification of a wide range of high value products.
DAISOGEL SP-P series packing materials for preparative chromatography feature narrow particle size distribution and ultra high silica purity. Using DAISOGEL, scale up is guaranteed by a using the same production procedure for all grades.
DAISOGEL SP-P series packing materials for preparative use are available in 7µm, 10µm, 15µm and 20µm.
High purity 40-60µm spherical silica is a cost effective alternative for medium and low pressure chromatography.

Product names and properties / analytical grades

	Pore Size (nm)	Particle Size (µm)	Particle Size Distribution (D40/D90)	Pore Volume (ml/g)	Surface Area (m^2/g)	Minimum Lot (g)
SP-60-3-P	6	3	≤1.25	0.75	450	50
SP-60-5-P	6	5	≤1.25	0.75	450	50
SP-120-3-P	12	3	≤1.25	1.0	300	50
SP-120-4-P	12	4	≤1.25	1.0	300	50
SP-120-5-P	12	5	≤1.25	1.0	300	50
SP-120-7-P	12	7	≤1.25	1.0	300	50
SP-200-3-P	20	3	≤1.25	1.1	200	50
SP-200-5-P	20	5	≤1.25	1.1	200	50
SP-300-3-P	30	3	≤1.25	0.9	100	50
SP-300-5-P	30	5	≤1.30	0.9	100	50

Product names and properties / preparative grades

	Pore Size (nm)	Particle Size (µm)	Particle Size Distribution (D40/D90)	Pore Volume (ml/g)	Surface Area (m^2/g)	Minimum Lot (g)
SP-60-10-P	6	10	≤1.30	0.75	450	500
SP-60-15-P	6	15	≤1.40	0.75	450	500
SP-60-20-P	6	20	≤1.40	0.75	450	500
SP-60-40/60	6	50	≤1.60	0.75	450	500
SP-120-10-P	12	10	≤1.30	1.0	300	500
SP-120-15-P	12	15	≤1.40	1.0	300	500
SP-120-20-P	12	20	≤1.40	1.0	300	500
SP-120-40/60	12	50	≤1.60	1.0	300	500
SP-200-10-P	20	10	≤1.30	1.1	200	500
SP-200-15-P	20	15	≤1.40	1.1	200	500
SP-200-20-P	20	20	≤1.40	1.1	200	500
SP-200-40/60	20	50	≤1.60	1.1	200	500
SP-300-10-P	30	10	≤1.30	0.9	100	500
SP-300-15-P	30	15	≤1.40	0.9	100	500
SP-300-20-P	30	20	≤1.40	0.9	100	500
SP-300-40/60	30	50	≤1.60	0.9	100	500

DAISOGEL HSA Series

SP-100-P

Product names and properties

The new member of the DAISOGEL base silica family is the SP-100-P series, available in 3, 5, 10 and 15 micron particle sizes. The 10 nm pore size provides extraordinary high surface area. Less than 600 milligram of SP-100-P has bigger surface area than a whole doubles tennis court.

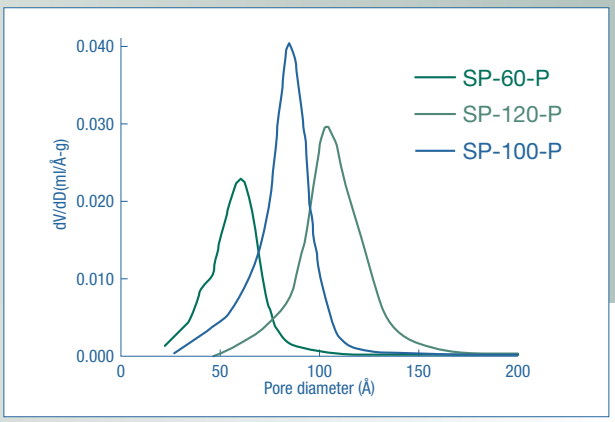
	Pore Size (nm)	Particle Size (μm)	Pore Volume (ml/g)	Surface Area (m^2/g)	Particle Size Distribution (D40/D90)
SP-100-3-P	10	3	1.1	450	≤1.25
SP-100-5-P	10	5	1.1	450	≤1.25
SP-100-10-P	10	10	1.1	450	≤1.30
SP-100-15-P	10	15	1.1	450	≤1.40

High Surface Area series / SP-100-P : optimal porosity

Prosity Comparison

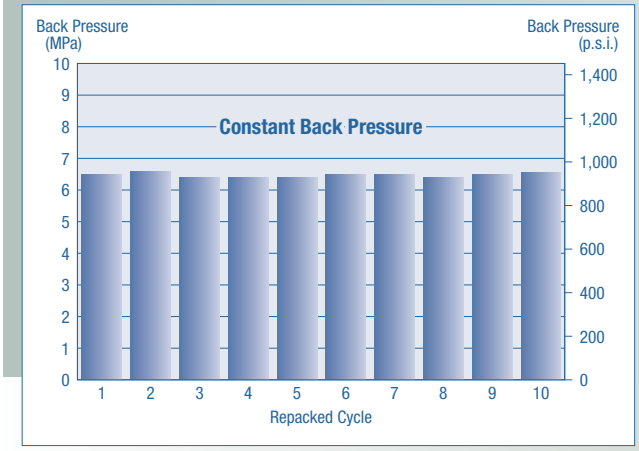
Grade	Pore Diameter (nm)	Surface Area (m^2/g)	Pore Volume (ml/g)
SP-60	6	450	0.75
SP-120	12	300	1.00
SP-100	***10***	***450***	***1.10***

Pore Size Distribution

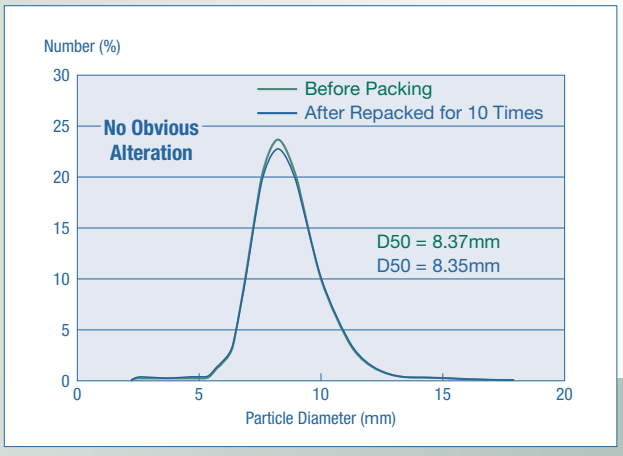


High Surface Area series / SP-100-P : mechanical strength for DAC column

Back Pressure in Repacking



Particle Size Alteration



Material: SP-100-10P; Column: Dynamic Axial Compression Column (50mm I.D.);
Bed Length: 23cm (Packed 170g of Silica Gel); Mobile Phase: 2-Propanol (20°C); Flow Rate: 150ml/min;
Piston Pressure: 10 MPa (100 Bar). Particle Size Distribution: measured by Coulter Counter.

DAISOGEL SWP Series

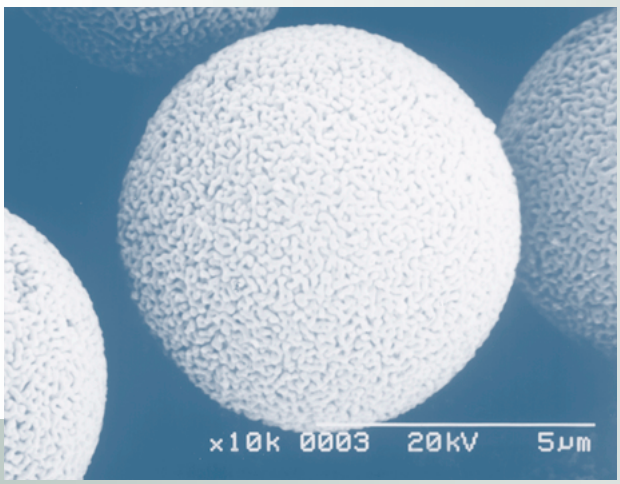
DAISOGEL SWP (super wide pore) series are packing materials that feature consistent pore and particle size distribution, low metal contamination and enhanced mechanical stability, and are perfectly suited for the separation of very large molecules due to their wide-pore structure.
We offer DAISOGEL SWP packings with pore diameters of 100 nm and 200 nm for separating many interesting large molecules such as proteins, oligo nucleic acid and other biomolecules that could not be separated using conventional narrow pore silicas which are currently on the market.
DAISOGEL SWP series packings are available as unmodified silica as well as with numerous chemically bonded phases.

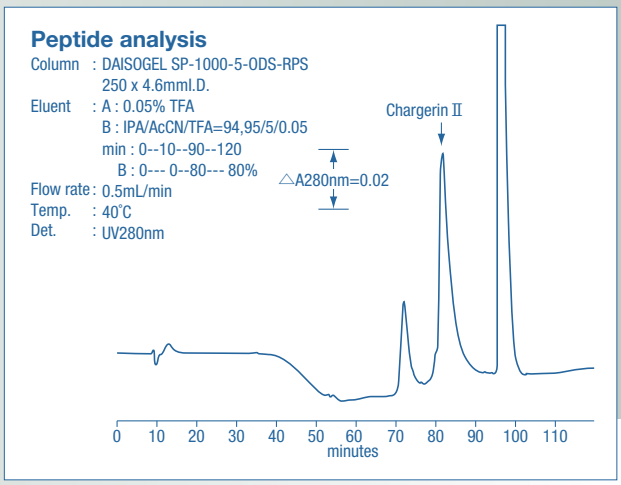
Product names and properties / analytical grades

	Pore Size (nm)	Particle Size (μm)	Pore Volume (ml/g)	Surface Area (m^2/g)	Minimum Lot (g)
SP-1000-3	100	3	0.9	25	50
SP-1000-5	100	5	0.9	25	50
SP-1000-7	100	7	0.9	25	50
SP-2000-3	200	3	0.8	15	50
SP-2000-5	200	5	0.8	15	50
SP-2000-7	200	7	0.8	15	50

Product names and properties / preparative grades

	Pore Size (nm)	Particle Size (μm)	Pore Volume (ml/g)	Surface Area (m^2/g)	Minimum Lot (g)
SP-1000-10	100	10	0.9	25	500
SP-1000-15	100	15	0.9	25	500
SP-1000-20	100	20	0.9	25	500
SP-1000-40/60	100	50	0.9	25	500
SP-2000-10	200	10	0.8	15	500
SP-2000-15	200	15	0.8	15	500
SP-2000-20	200	20	0.8	15	500
SP-2000-40/60	200	50	0.8	15	500





DAISOGEL SP-ODS-RPS Series

✻ High coverage and exhaustive endcapping
✻ Exceptional batch-to-batch reproducibility
✻ Enhanced mechanical stability
✻ Suitable for Dynamic Axial Compression columns

DAISOGEL ODS-RPS packings featuring maximum surface coverage are the ideal choice for a wide variety of organic compounds. Carefully controlled full endcapping leads to optimal performance with acidic, basic and chelating compounds. There is a choice of pore sizes between 6, 12, 20 and 30 nm. For analytical high speed applications 20 nm phases offer a good compromise between surface area available, separation speed on solvent consumption.

Product names and properties / analytical grades

	Pore Size (nm)	Particle Size (µm)	Pore Volume (ml/g)	Surface Area (m^2/g)	% of Carbon	Minimum Lot (g)
SP-60-3-ODS-RPS	6	3	0.75	450	19	50
SP-60-5-ODS-RPS	6	5	0.75	450	19	50
SP-120-3-ODS-RPS	12	3	1.0	300	17	50
SP-120-4-ODS-RPS	12	4	1.0	300	17	50
SP-120-5-ODS-RPS	12	5	1.0	300	17	50
SP-120-7-ODS-RPS	12	7	1.0	300	17	50
SP-200-3-ODS-RPS	20	3	1.1	200	12	50
SP-200-5-ODS-RPS	20	5	1.1	200	12	50
SP-300-3-ODS-RPS	30	3	0.9	100	7	50
SP-300-5-ODS-RPS	30	5	0.9	100	7	50

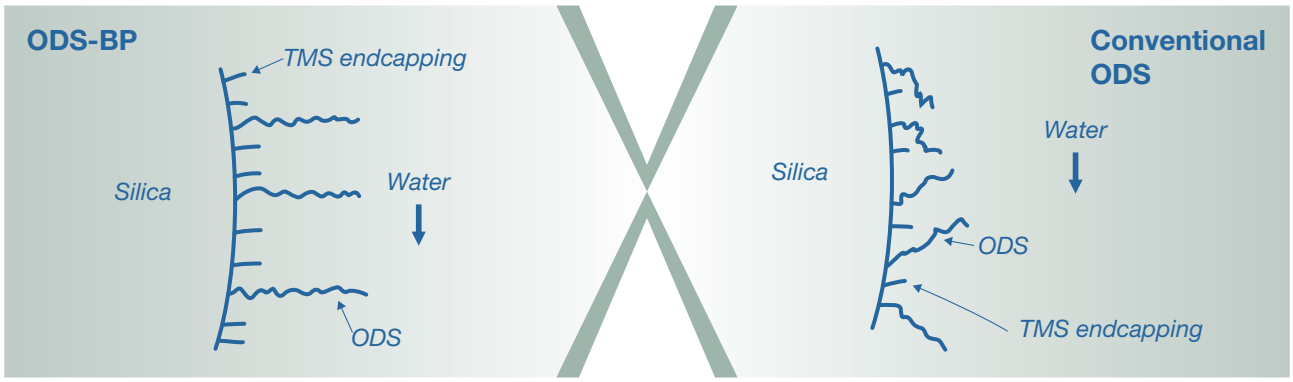
Product names and properties / preparative grades

	Pore Size (nm)	Particle Size (µm)	Pore Volume (ml/g)	Surface Area (m^2/g)	% of Carbon	Minimum Lot (g)
SP-60-10-ODS-RPS	6	10	0.75	450	19	500
SP-60-15-ODS-RPS	6	15	0.75	450	19	500
SP-60-20-ODS-RPS	6	20	0.75	450	19	500
SP-60-40/60-ODS-RPS	6	50	0.75	450	19	500
SP-120-10-ODS-RPS	12	10	1.0	300	17	500
SP-120-15-ODS-RPS	12	15	1.0	300	17	500
SP-120-20-ODS-RPS	12	20	1.0	300	17	500
SP-120-40/60-ODS-RPS	12	50	1.0	300	17	500
SP-200-10-ODS-RPS	20	10	1.1	200	12	500
SP-200-15-ODS-RPS	20	15	1.1	200	12	500
SP-200-20-ODS-RPS	20	20	1.1	200	12	500
SP-200-40/60-ODS-RPS	20	50	1.1	200	12	500
SP-300-10-ODS-RPS	30	10	0.9	100	7	500
SP-300-15-ODS-RPS	30	15	0.9	100	7	500
SP-300-20-ODS-RPS	30	20	0.9	100	7	500
SP-300-40/60-ODS-RPS	30	50	0.9	100	7	500

DAISOGEL SP-ODS-BP Series

- ✻ *Suitable for hydrophilic compounds separation*
- ✻ *Strong retention in aqueous condition*
- ✻ *Longer lifetime in aqueous eluents*
- ✻ *Different selectivity from ODS-RPS*
- ✻ *Enhanced mechanical stability*
- ✻ *Suitable for Dynamic Axial Compression Columns*

DAISOGEL SP-ODS-BP phases are designed to show extended selectivity for hydrophilic and polar compounds which are either not or poorly retained on other phases. A proprietary modification technique avoids the matting-down effect of the C18 chains which conventional ODS-phases show at high water contents in the mobile phase, even if pure water is used. Typical applications are separations of biomolecules and metabolites such as oligosaccharides, amino acids, small peptides, nucleotides and organic acids.
DAISOGEL SP-ODS-BP phases are fully endcapped and show similar selectivity as conventional C18 phases when being used for separations of hydrophobic compounds with typical reversed phase eluents.
DAISOGEL SP-ODS-BP phases show stable base lines and high sensitivity even under neutral pH conditions and without buffer or counter-ion additives, which makes them appear especially suited for hyphenated techniques like LC-MS, where such additives disturb the detection.



Product names and properties / analytical grades

	Pore Size (nm)	Particle Size (µm)	Pore Volume (ml/g)	Surface Area (m²/g)	% of Carbon	Minimum Lot (g)
SP-120-3-ODS-BP	12	3	1.0	300	15	50
SP-120-4-ODS-BP	12	4	1.0	300	15	50
SP-120-5-ODS-BP	12	5	1.0	300	15	50
SP-120-7-ODS-BP	12	7	1.0	300	15	50
SP-200-3-ODS-BP	20	3	1.1	200	10	50
SP-200-5-ODS-BP	20	5	1.1	200	10	50

Product names and properties / preparative grades

	Pore Size (nm)	Particle Size (µm)	Pore Volume (ml/g)	Surface Area (m²/g)	% of Carbon	Minimum Lot (g)
SP-120-10-ODS-BP	12	10	1.0	300	15	500
SP-120-15-ODS-BP	12	15	1.0	300	15	500
SP-120-20-ODS-BP	12	20	1.0	300	15	500
SP-120-40/60-ODS-B	12	50	1.0	300	15	500
SP-200-10-ODS-BP	20	10	1.1	200	10	500
SP-200-15-ODS-BP	20	15	1.1	200	10	500
SP-200-20-ODS-BP	20	20	1.1	200	10	500
SP-200-40/60-ODS-B	20	50	1.1	200	10	500

DAISOGEL SP-C8-P Series

✻ Recommended for higher hydrophobic samples
✻ Most versatile reversed phase
✻ Available in four porosities

DAISOGEL SP-C8-P packing materials are bonded with octyl groups and are fully endcapped. They are recommended for compounds which are too strongly retained on C18 phases.
Four pore sizes, namely 6, 12, 20 and 30 nm are available to optimise the separation depending on the solutes' molecular size.
20 and 30 nm materials are widely used for larger molecules with higher hydrophobicity.

Product names and properties

Analytical Grades	Pore Size (nm)	Particle Size (µm)	Pore Volume (ml/g)	Surface Area (m^2/g)	% of Carbon	Minimum Lot (g)
SP-60-3-C8-P	6	3	0.75	450	14	50
SP-60-5-C8-P	6	5	0.75	450	14	50
SP-120-3-C8-P	12	3	1.0	300	10	50
SP-120-5-C8-P	12	5	1.0	300	10	50
SP-200-3-C8-P	20	3	1.1	200	7	50
SP-200-5-C8-P	20	5	1.1	200	7	50
SP-300-3-C8-P	30	3	0.9	100	4	50
SP-300-5-C8-P	30	5	0.9	100	4	50

Preparative Grades	Pore Size (nm)	Particle Size (µm)	Pore Volume (ml/g)	Surface Area (m^2/g)	% of Carbon	Minimum Lot (g)
SP-60-10-C8-P	6	10	0.75	450	14	500
SP-60-15-C8-P	6	15	0.75	450	14	500
SP-60-20-C8-P	6	20	0.75	450	14	500
SP-60-40/60-C8	6	50	0.75	450	14	500
SP-120-10-C8-P	12	10	1.0	300	10	500
SP-120-15-C8-P	12	15	1.0	300	10	500
SP-120-20-C8-P	12	20	1.0	300	10	500
SP-120-40/60-C8	12	50	1.0	300	10	500
SP-200-10-C8-P	20	10	1.1	200	7	500
SP-200-15-C8-P	20	15	1.1	200	7	500
SP-200-20-C8-P	20	20	1.1	200	7	500
SP-200-40/60-C8	20	50	1.1	200	7	500
SP-300-10-C8-P	30	10	0.9	100	4	500
SP-300-15-C8-P	30	15	0.9	100	4	500
SP-300-20-C8-P	30	20	0.9	100	4	500
SP-300-40/60-C8	30	50	0.9	100	4	500

DAISOGEL SP-C4-P Series

✻ Recommended for biological separation
✻ Quick separation of samples with wide range of hydrophobicity
✻ Available in four porosities

DAISOGEL SP-C4-P packing materials are bonded with butyl groups and show moderate hydrophobicity. They are available in four pore sizes, 6, 12, 20 and 30 nm to optimise the separations depending on the size of the solute. 12, 20, and 30 nm materials are suited for the separation of peptides and proteins. Especially, larger pore silicas with less surface area are used to avoid denaturation of proteins. The phases are also useful for separating components within a wide range of hydrophobicity in one shot.

Product names and properties

Analytical Grades	Pore Size (nm)	Particle Size (μm)	Pore Volume (ml/g)	Surface Area (m^2/g)	% of Carbon	Minimum Lot (g)
SP-60-3-C4-P	6	3	0.75	450	10	50
SP-60-5-C4-P	6	5	0.75	450	10	50
SP-120-3-C4-P	12	3	1.0	300	7	50
SP-120-5-C4-P	12	5	1.0	300	7	50
SP-200-3-C4-P	20	3	1.1	200	5	50
SP-200-5-C4-P	20	5	1.1	200	5	50
SP-300-3-C4-P	30	3	0.9	100	3	50
SP-300-5-C4-P	30	5	0.9	100	3	50

Preparative Grades	Pore Size (nm)	Particle Size (μm)	Pore Volume (ml/g)	Surface Area (m^2/g)	% of Carbon	Minimum Lot (g)
SP-60-10-C4-P	6	10	0.75	450	10	500
SP-60-15-C4-P	6	15	0.75	450	10	500
SP-60-20-C4-P	6	20	0.75	450	10	500
SP-60-40/60-C4	6	50	0.75	450	10	500
SP-120-10-C4-P	12	10	1.0	300	7	500
SP-120-15-C4-P	12	15	1.0	300	7	500
SP-120-20-C4-P	12	20	1.0	300	7	500
SP-120-40/60-C4	12	50	1.0	300	7	500
SP-200-10-C4-P	20	10	1.1	200	5	500
SP-200-15-C4-P	20	15	1.1	200	5	500
SP-200-20-C4-P	20	20	1.1	200	5	500
SP-200-40/60-C4	20	50	1.1	200	5	500
SP-300-10-C4-P	30	10	0.9	100	3	500
SP-300-15-C4-P	30	15	0.9	100	3	500
SP-300-20-C4-P	30	20	0.9	100	3	500
SP-300-40/60-C4	30	50	0.9	100	3	500

DAISOGEL BIO Series

SP-120-BIO

✻ Suitable for purification of small peptides and other compounds
✻ 12 nm pore size, narrow distribution range
✻ Totally spherical particles made of ultra high purity silica gel
✻ Featuring extended acidic and alkalic resistance, high durability

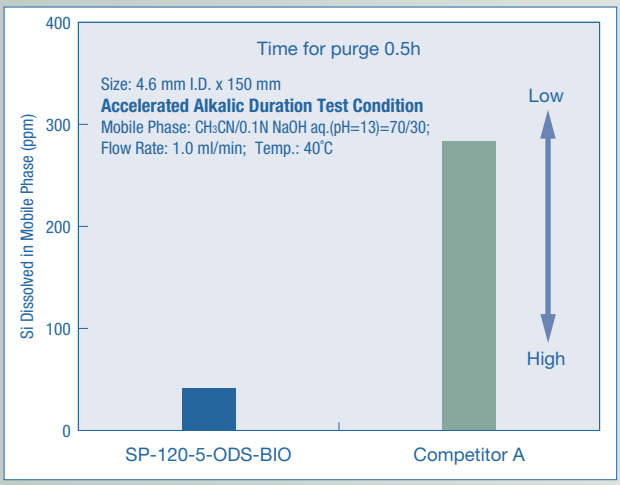
*12 nm pore size, narrow particle size distribution range, ultra high purity totally spherical silica gel
The improved high density bonding and full endcapping makes it very suitable to separate or purify lower molecular weight compounds, especially smaller peptides. Because of the significant improvement in durability and acidic, alkalic resistance it can be used for extended period of time in acidic mobile phase condition and rinsed for recovery with NaOH containing buffer.
The ODS phases are recommended for general use, first choice for unknown compounds.
Available types: SP-120-ODS-BIO, SP-120-C8-BIO, SP-120-C4-BIO

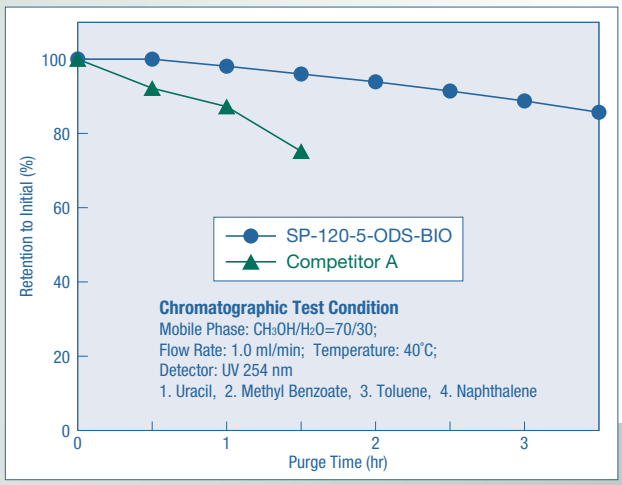
Product names and properties

	Pore Size (nm)	Particle Size (μm)	Pore Volume (ml/g)	Surface Area (m^2/g)	% of Carbon	Minimum Lot (g)
SP-120-5-ODS-BIO	12	5	1.0	300	20	50
SP-120-10-ODS-BIO	12	10	1.0	300	20	500
SP-120-15-ODS-BIO	12	15	1.0	300	20	500
SP-120-20-ODS-BIO	12	20	1.0	300	20	500
SP-120-5-C8-BIO	12	5	1.0	300	12	50
SP-120-10-C8-BIO	12	10	1.0	300	12	500
SP-120-15-C8-BIO	12	15	1.0	300	12	500
SP-120-20-C8-BIO	12	20	1.0	300	12	500
SP-120-5-C4-BIO	12	5	1.0	300	9	50
SP-120-10-C4-BIO	12	10	1.0	300	9	500
SP-120-15-C4-BIO	12	15	1.0	300	9	500
SP-120-20-C4-BIO	12	20	1.0	300	9	500

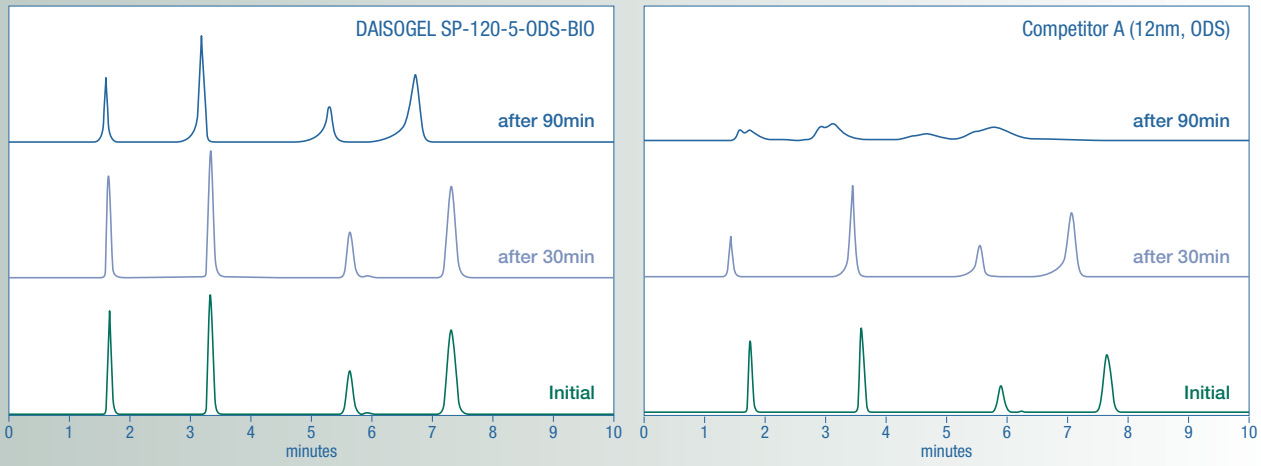
Superior alkalic and acidic resistance

Alkalic Resistance





Comparison of Durability in Alkalic Environment



Size: 4.6 mm I.D. x 150 mm

Accelerated Alkalic Duration Test Condition

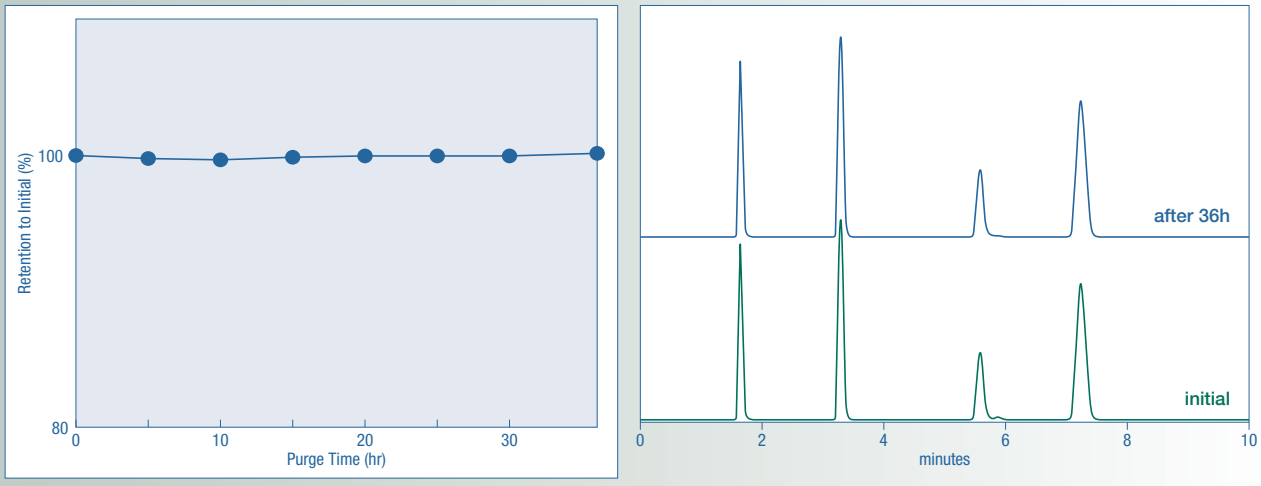
Mobile Phase: CH_3CN/0.1N NaOH aq.(pH=13)=70/30; Flow Rate: 1.0 ml/min; Temp.: 40°C

Chromatographic Test Condition

Mobile Phase: CH_3OH/H_2O=70/30; Flow Rate: 1.0 ml/min; Temperature: 40°C; Detector: UV 254 nm

1. Uracil, 2. Methyl Benzoate, 3. Toluene, 4. Naphthalene

Acidic Resistance



Size: 4.6 mm I.D. x 150 mm

Accelerated Acidic Duration Test Condition

Mobile Phase: CH_3CN/H_2O/TFA=70/30/1; Flow Rate: 1.0 ml/min; Temp.: 70°C

Chromatographic Test Condition

Mobile Phase: CH_3OH/H_2O=70/30; Flow Rate: 1.0 ml/min; Temperature: 40°C; Detector: UV 254 nm

1. Uracil, 2. Methyl Benzoate, 3. Toluene, 4. Naphthalene

DAISOGEL BIO Series

SP-200-BIO

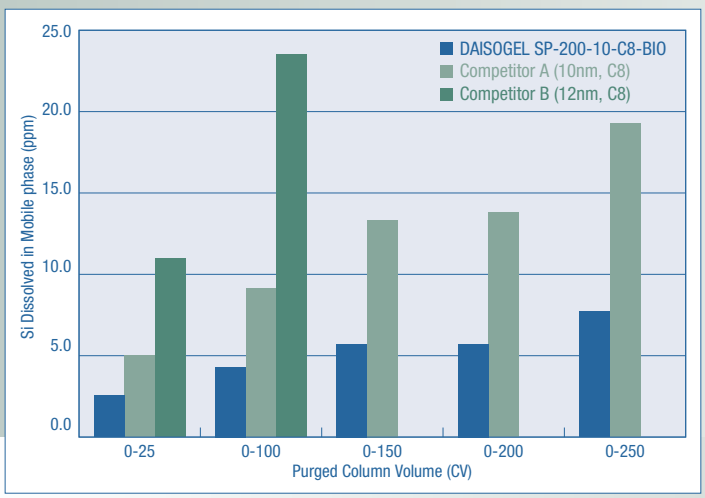
- ✻ *Suitable for purification of medium molecular weight peptides and other compounds*
- ✻ *Superior mechanical strength*
- ✻ *Totally spherical particles made of ultra high purity silica gel*
- ✻ *Featuring extended acidic and alkalic resistance, high durability*

*20 nm pore size, narrow particle size distribution range, ultra high purity totally spherical silica gel
The improved high density bonding and full endcapping makes it very suitable to separate or purify medium molecular weight compounds, especially insulin. Because of the significant improvement in durability and acidic, alkalic resistance it can be used for extended period of time in acidic mobile phase condition and rinsed for recovery with NaOH containing buffer.
The C8 phases are recommended for compounds too strongly retained on ODS phases.
Available types: SP-200-ODS-BIO, SP-200-C8-BIO, SP-200-C4-BIO

Product names and properties

	Pore Size (nm)	Particle Size (μm)	Pore Volume (ml/g)	Surface Area (m^2/g)	% of Carbon	Minimum Lot (g)
SP-200-5-ODS-BIO	20	5	1.1	200	15	50
SP-200-10-ODS-BIO	20	10	1.1	200	15	500
SP-200-15-ODS-BIO	20	15	1.1	200	15	500
SP-200-20-ODS-BIO	20	20	1.1	200	15	500
SP-200-5-C8-BIO	20	5	1.1	200	8	50
SP-200-10-C8-BIO	20	10	1.1	200	8	500
SP-200-15-C8-BIO	20	15	1.1	200	8	500
SP-200-20-C8-BIO	20	20	1.1	200	8	500
SP-200-5-C4-BIO	20	5	1.1	200	6	50
SP-200-10-C4-BIO	20	10	1.1	200	6	500
SP-200-15-C4-BIO	20	15	1.1	200	6	500
SP-200-20-C4-BIO	20	20	1.1	200	6	500

Superior mechanical strength



Alkalic Durability (pH=13) Comparison of Si Dissolved in Mobile Phase

Alkalic Durability Evaluation
Column Size: 4.6 mm I.D. x 250 mm Length
Mobile Phase: Ethanol/0.1 N NaOH aq. (pH=13) = 70/30;
Flow Rate: 2.0 ml/min; Temperature: ambient.
Elution was collected every 50 CV and Si dissolved was analyzed by ICP.

SP-300-BIO

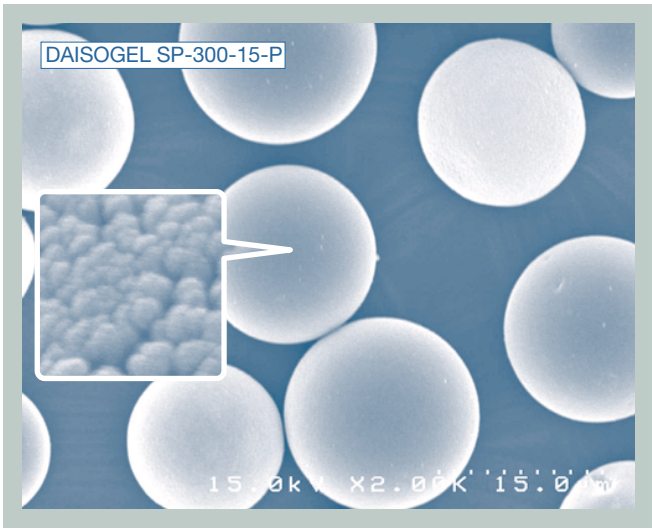
✻ Designed for protein purification
✻ 30 nm pore size, narrow distribution range
✻ Totally spherical particles made of ultra high purity silica gel
✻ Featuring extended acidic and alkalic resistance, high durability

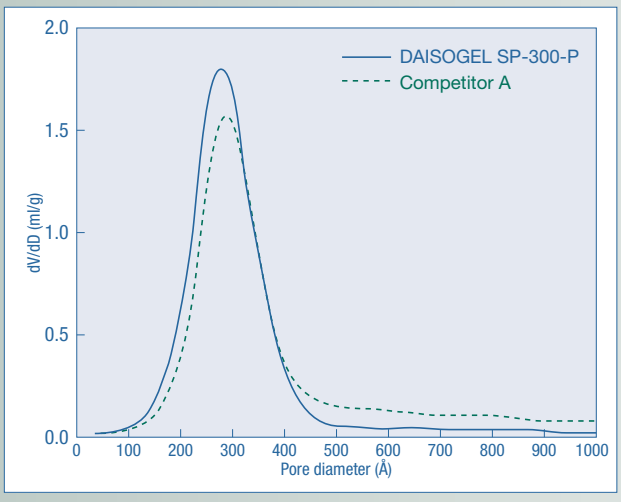
*30 nm pore size, narrow particle size distribution range, ultra high purity totally spherical silica gel
The improved high density bonding and full endcapping makes it very suitable to general use and to separate or purify high molecular weight compounds, especially proteins. Because of the significant improvement in durability and acidic, alkalic resistance it can be used for extended period of time in acidic mobile phase condition and rinsed for recovery with NaOH containing buffer.
The C4 phases are recommended for compounds too strongly retained on ODS and C8 phases.
Available types: SP-300-ODS-BIO, SP-300-C8-BIO, SP-300-C4-BIO

Product names and properties

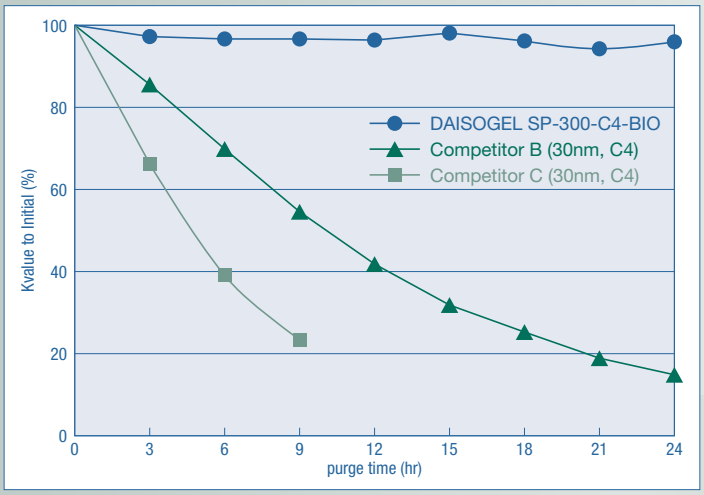
	Pore Size (nm)	Particle Size (μm)	Pore Volume (ml/g)	Surface Area (m^2/g)	% of Carbon	Minimum Lot (g)
SP-300-5-ODS-BIO	30	5	0.9	100	8	50
SP-300-10-ODS-BIO	30	10	0.9	100	8	500
SP-300-15-ODS-BIO	30	15	0.9	100	8	500
SP-300-20-ODS-BIO	30	20	0.9	100	8	500
SP-300-5-C8-BIO	30	5	0.9	100	6	50
SP-300-10-C8-BIO	30	10	0.9	100	6	500
SP-300-15-C8-BIO	30	15	0.9	100	6	500
SP-300-20-C8-BIO	30	20	0.9	100	6	500
SP-300-5-C4-BIO	30	5	0.9	100	3	50
SP-300-10-C4-BIO	30	10	0.9	100	3	500
SP-300-15-C4-BIO	30	15	0.9	100	3	500
SP-300-20-C4-BIO	30	20	0.9	100	3	500

Morphology and pore size distribution



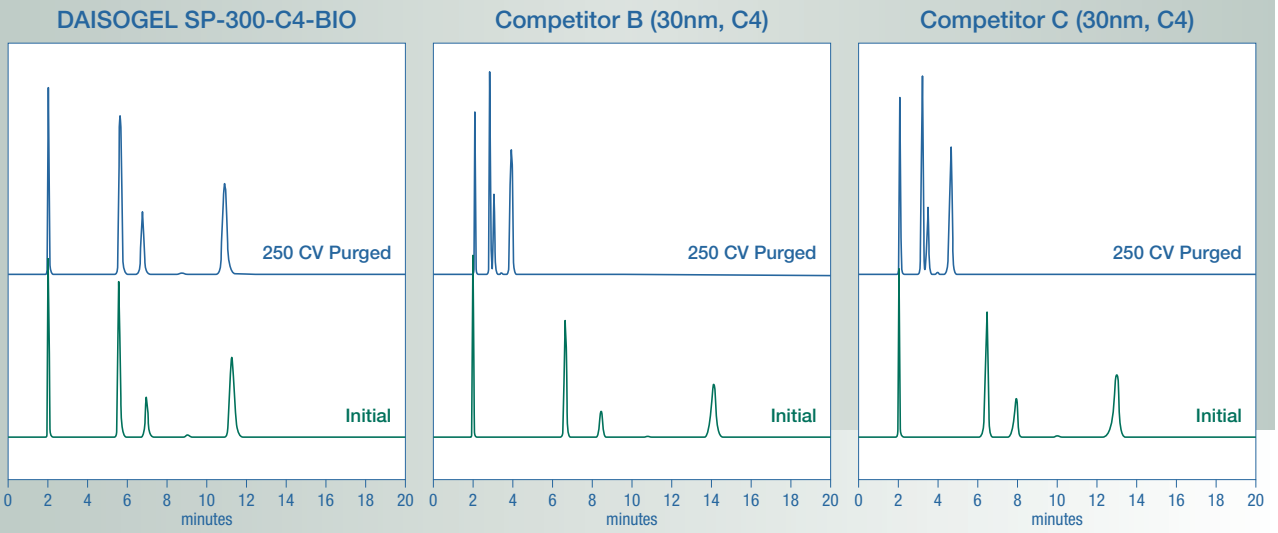


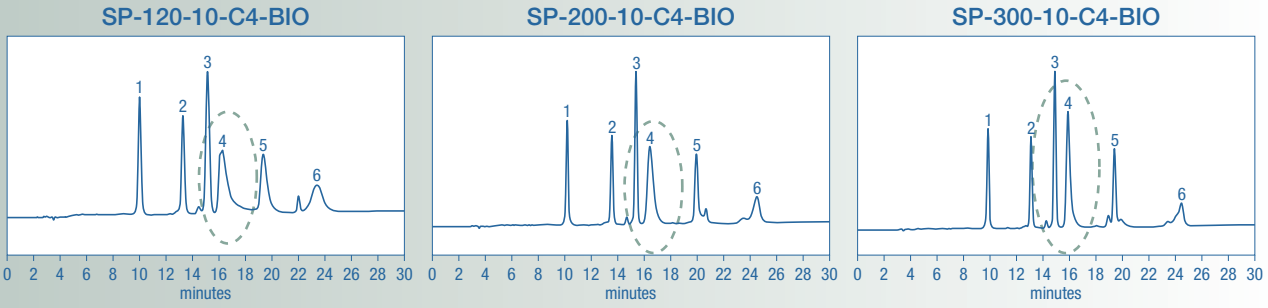
SP-300-BIO



Comparison: Durability in Acidic Environment

Column Size : 4.6mm I.D. x 150mm Length
Accelerated Acidic Duration Test Condition
Mobile Phase : CH_3CN/1.0% TFA aq. (pH=1.0) = 10/90
Flow Rate : 1.0 ml/min
Temperature : 70°C
Purge time : 3h
Chromatographic Test Condition
Mobile Phase : CH_3OH/H_2O=35/65
Flow Rate : 1.0 ml/min
Temperature : 40°C
Detector : UV 254 nm
Analyst : 1. Uracil
2. Methyl Benzoate
3. Toluene
4. Naphthalene





Protein Standards

Column Size: 6 mm I.D. x 250 mm Length; Temperature: 35°C; Detector: UV 220 nm;
Mobile Phase: A) CH_3CN/H_2O/TFA = 20/80/0.1, B) CH_3CN/H_2O/TFA = 60/40/0.1,
Linear Gradient from A to B in 25 min and hold for 10 min; Flow Rate: 1.7 ml/min.
1. Ribonuclease A (M.W. 13,700), 2. Cytochrome C (M.W. 12,400), 3. Lysozyme (M.W. 14,300)
4. BSA (M.W. 67,000), 5. Myoglobin (M.W. 18,800), 6. Ovalbumin (M.W. 45,300)

DAISOGEL ODS-P Series

SP-100-ODS-P

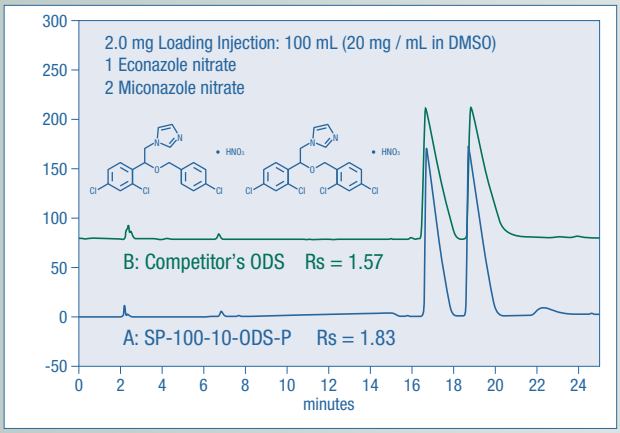
* *Long retention and high loadability*
* *Superior performance for both hydrophilic and hydrophobic compounds*
* *Minimal silanol activity due to our new proprietary endcapping technology*

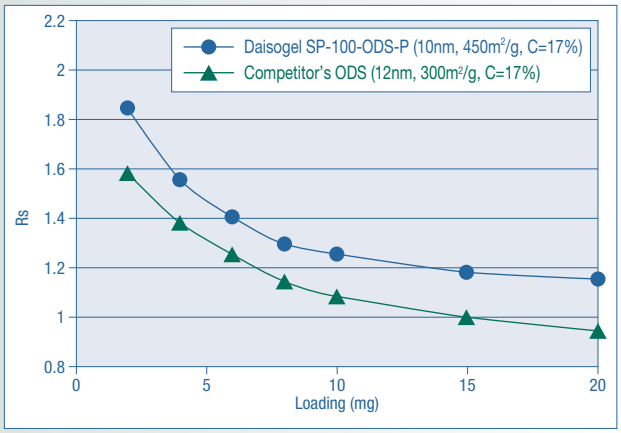
The DAISOGEL SP-100-ODS-P series represents a high performance ODS phase based on a new type of silica gel developed to show long peak retention and high loadability, caused by its exceptionally high surface area.
The ODS bonding density is chosen with respect to optimal selectivity for both hydrophilic and hydrophobic compounds, enabling even the use of 100% aqueous eluents. Our proprietary endcapping technology minimises residual silanol groups to an amount which is below the detectable level. Silanol groups have negative effects on peak symmetry, particularly in case of basic compounds, and on chemical phaserobustness.
DAISOGEL SP-100-ODS-P series is available with particle sizes of 3, 5, 10 and 15 microns for both analytical as well as preparative applications.

Product names and properties

	Pore Size (nm)	Particle Size (μm)	Pore Volume (ml/g)	Surface Area (m^2/g)	% of Carbon	Minimum Lot (g)
SP-100-3-ODS-P	10	3	1.1	450	17	50
SP-100-5-ODS-P	10	5	1.1	450	17	50
SP-100-10-ODS-P	10	10	1.1	450	17	500
SP-100-15-ODS-P	10	15	1.1	450	17	500

Resolution(Rs) comparison between SP-100-10-ODS-P [450 m^2/g] and Competitor's ODS [300 m^2/g] by Econazole/Miconazole separation





Column Size: 20 mmI.D.×250 mmL, Flow Rate: 19 mL / min
CH_3CN / H2O / TFA = 30 / 70 / 0.1 → CH_3CN / H2O / TFA = 70 / 30 / 0.1 (20 min Linear, 5 min Hold)
Temp: Ambient, Detector: UV 270 nm

DAISOGEL HP Series

SP-100-ODS-HP / SP-100-C8-HP

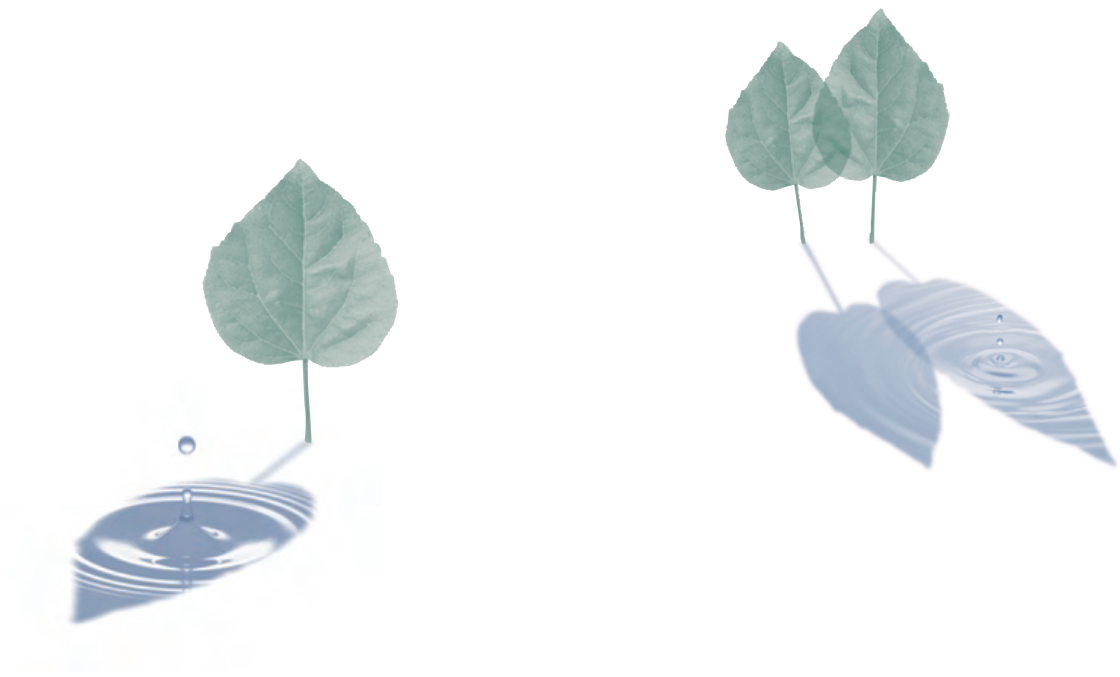
✻ For the most difficult separations
✻ High performance with the most powerful separation
✻ Superior pH resistance

The DAISOGEL HP series combines the best high surface area silica with the possible highest bonding density and with our most advanced end capping technology.
The result of this “best of bests” selection is a very high performance grade stationary phase. The high surface area of the base silica ensures high loading capacity and long retention time. The very high ligand density adds to this effect and stretching the peaks even further apart. Our proprietary end capping technology combined with the high carbon content guarantees extremely wide pH range.
This series is suitable for extremely difficult, very demanding purification of small molecules and peptides.
The DAISOGEL HP series is available with ODS and C8 bonding on 3, 5, 10 and 15 micron particle sizes.

Product names and properties

	Pore Size (nm)	Particle Size (µm)	Pore Volume (ml/g)	Surface Area (m^2/g)	% of Carbon	Minimum Lot (g)
SP-100-3-ODS-HP	10	3	1.1	450	24	50
SP-100-5-ODS-HP	10	5	1.1	450	24	50
SP-100-10-ODS-HP	10	10	1.1	450	24	500
SP-100-15-ODS-HP	10	15	1.1	450	24	500

	Pore Size (nm)	Particle Size (µm)	Pore Volume (ml/g)	Surface Area (m^2/g)	% of Carbon	Minimum Lot (g)
SP-100-3-C8-HP	10	3	1.1	450	15.5	50
SP-100-5-C8-HP	10	5	1.1	450	15.5	50
SP-100-10-C8-HP	10	10	1.1	450	15.5	500
SP-100-15-C8-HP	10	15	1.1	450	15.5	500



DAISOGEL SP-APS-P Series

✻ Useful in both normal and reversed phase
✻ Useful as a support of special modification
✻ Recommended for basic compounds separation

DAISOGEL SP-APS-P packing materials are bonded with amino-propyl silane using our ultra pure spherical silica gel as base material. Depending on the choice of the eluent, it can both be used under normal and reversed phase mode. Especially, it is useful for saccharide separation using acetonitrile/water. The phase is also recommended for the separation of basic compounds under normal phase conditions, which could not be separated using unmodified silica gel. Simple eluents such as hexane / ethyl acetate or chloroform / methanol are used for the separation without any polar solvent additives.

Product names and properties

Analytical Grades	Pore Size (nm)	Particle Size (µm)	Pore Volume (ml/g)	Surface Area (m^2/g)	% of Carbon	Minimum Lot (g)
SP-60-3-APS-P	6	3	0.75	450	5	50
SP-60-5-APS-P	6	5	0.75	450	5	50
SP-120-3-APS-P	12	3	1.0	300	4	50
SP-120-5-APS-P	12	5	1.0	300	4	50
SP-200-3-APS-P	20	3	1.1	200	3	50
SP-200-5-APS-P	20	5	1.1	200	3	50
SP-300-3-APS-P	30	3	0.9	100	2	50
SP-300-5-APS-P	30	5	0.9	100	2	50

Preparative Grades	Pore Size (nm)	Particle Size (µm)	Pore Volume (ml/g)	Surface Area (m^2/g)	% of Carbon	Minimum Lot (g)
SP-60-10-APS-P	6	10	0.75	450	5	500
SP-60-15-APS-P	6	15	0.75	450	5	500
SP-60-20-APS-P	6	20	0.75	450	5	500
SP-60-40/60-APS	6	50	0.75	450	5	500
SP-120-10-APS-P	12	10	1.0	300	4	500
SP-120-15-APS-P	12	15	1.0	300	4	500
SP-120-20-APS-P	12	20	1.0	300	4	500
SP-120-40/60-APS	12	50	1.0	300	4	500
SP-200-10-APS-P	20	10	1.1	200	3	500
SP-200-15-APS-P	20	15	1.1	200	3	500
SP-200-20-APS-P	20	20	1.1	200	3	500
SP-200-40/60-APS	20	50	1.1	200	3	500
SP-300-10-APS-P	30	10	0.9	100	2	500
SP-300-15-APS-P	30	15	0.9	100	2	500
SP-300-20-APS-P	30	20	0.9	100	2	500
SP-300-40/60-APS	30	50	0.9	100	2	500

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2015.10 PUB