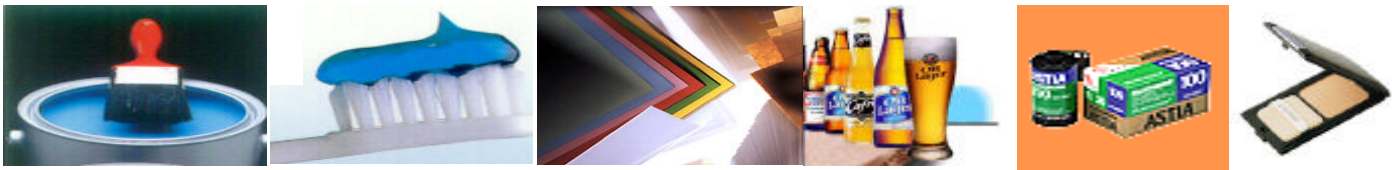


LABKOREA PRODUCTS GUIDE FOR SILICA



Anti blocking and processing aids for plastic industry

Matting agent for paint industry

Pharmaceutical, Food, Ink, industry

Dentifrice silica

Many kind of silica gel

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Matting agent for PAINT, INK



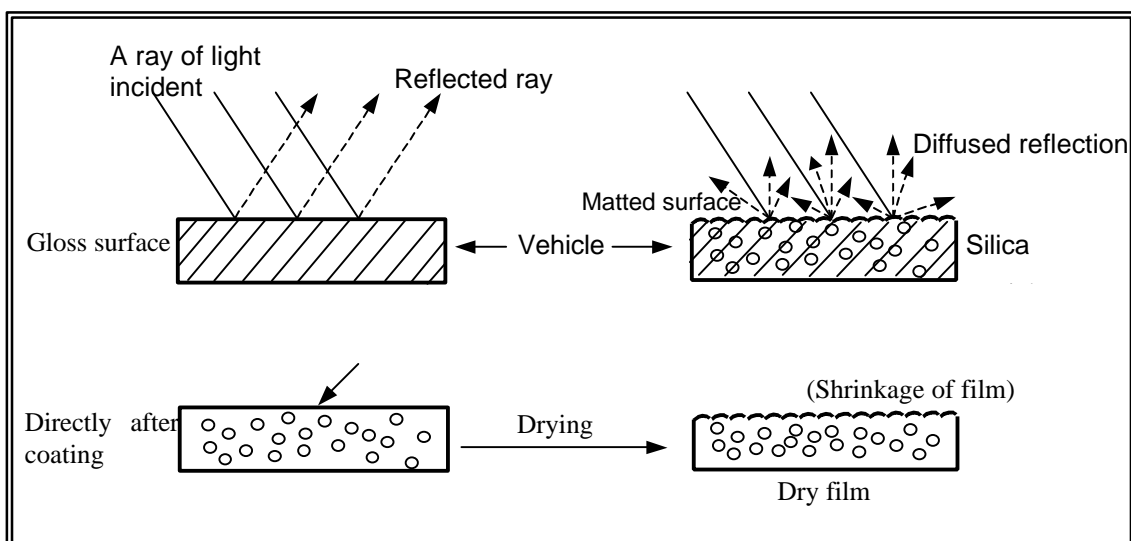
SS-SIL as a matting agent is applied to lacquer, polyurethane, epoxy, alkyd, metallic paint and inks.

The typical properties of Micronized Silica to make matting effect are to have excellent stability of luster, to have smooth surface film, not to form hard cake by precipitation in paint, etc. To select optimum grade of SS-SIL is also important because each kind of resins has its own property. To disperse intensely in a long time is avoided because matting effect is also changed by disperse condition.

Advantage of SS-SIL for paint industry

1. No haze formation
2. Good transparency property
3. Easy disperse
4. No effect on drying characteristics
5. No effect on intercoat adhesion
6. Excellent scratch and impact resistance
7. High flexibility

We are producing various grades of SS-SIL as a matting agent and ceaselessly developing new products to satisfy customer's desire.



Anti blocking and processing aids for PLASTIC



SS-SIL as an anti-blocking agent is applied to various kinds of plastic film such as PE, PP, PET, Nylon and PVC, etc.

If silica is not used in plastic film making process, the films stick together during rolling process. To protect this phenomenon we add SS-SIL which forms fine projections.

Advantage of SS-SIL in plastic

1. Excellent dispersibility
2. Reproducible product quality
3. Stopping the blocking effect of polymer film
4. A beautiful finish to films, sheets and extrudates
5. Giving molds the release they need

The properties of Micronized Silica as an anti-blocking agent are maintaining transparency with the same refractive index of film and not being condensed between silica in film. Selecting anti-blocking agent for plastic film is very important because it has great effect on manufacturing condition and quality level of the film.

Processing aid for PAPER



SS-SIL as a filler or processing aids for papers is available in grades with different properties in the following recording papers;

1. Thermosensitive paper
2. Ink jet recording paper
3. Diazo photosensitive paper
4. Tracing paper
5. Electrostatic recording paper
6. Multi purpose paper

Thermosensitive recording paper is widely used in facsimile machines, printers and labels due to its high reliability, simplicity and high speed. Thermosensitive paper consists of a thermosensitive coloring layer coated onto a base paper to a thickness of several microns. This layer develops a color when it is heated by a thermal head or a thermal pen, and thus permits recordings to be made. Mixing SS-SIL with thermal colorants offers the following advantages;

1. A pure white thermosensitive paper is obtained and there is no soiling of the undercoat.
2. Smudge adhesion and sticking are effectively prevented.
3. Excellent coloring properties are obtained.

SS-SIL is extremely effective when mixed with the undercoat to improve sensitivity, or when mixed with the topcoat to improve storage properties.

If SS-SIL is used with ink jet recording paper, first the ink is observed better, plotting is prevented and perfectly round dots are formed with reproducibility, second high image density is obtained together with crisp, clear color.



OTHER APPLICATIONS



Filtering agent

SS-SIL has great influence on manufacturing pure drink by filtering protein in it. SS-SIL is not harmful to human body because it is highly refined and has excellent adsorptive power owing to plenty of minute pores strictly controlled. By controlling moisture contents it prevents dusts on working.

Application: beverages(beer, drinks), food(soysauce), edible oil

Moisture remover/coagulation preventer

If moisture exists in zinc paint or alumina paint, hydrogen gas occurs and it makes cracks. Micronized powder makes heterogeneous color distribution owing to moisture during storage, transport and handling. SS-SIL has great adsorptive power thus when added to powder-type products, moisture is easily removed. Also it's not harmful to human body, SS-SIL makes it possible to take food custody for a long time when used as a food additive.



Application: instant food, powder-type food(salt, sugar), animal feed

OTHER APPLICATIONS

Powder additives

SS-SIL can store liquid additive, perfume or effective component because it's not harmful, has lots of minute pores and microscopic particle size. Also these components can be changed to powder-type and quantitative input is easily controlled.



Application: tooth pastes, medicines, foods, chemicals, etc.

Dentifrice



SS-SIL is used as functional material of tooth paste cause it's high purity micronized powder which is chemically stable. Comparing to normal precipitation silica it has high purity and low bulk density thus additive efficiency is excellent.

Application: Toothpastes, medicines

SS-SIL TYPICAL SPECIFICATION

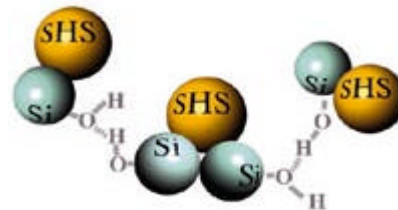
Chemical Composition: 99.9% Silica
 Package: in-CRAFT, out-Polyethylene
 Package Weight: 10KG, 15KG, 20KG

SS-SIL	Ave. particle size	Ignition loss	pH	Whiteness	Surface area	Oil Absorption	Pore Volume	Surface Modification
	µm	wt%	-	-	m ² / g	ml/100g	ml/5g	-
Z210	2.80	5.0	7.5	96	300	310	110	
Z220	3.00	5.0	7.5	96	300	310	100	
Z234R	3.50	5.0	7.5	96	300	310		
Z230	3.30	5.0	7.8	96	300	310	90	
Z240	3.30	5.0	7.5	96			80	Inorganic
Z310	3.00	5.0	7.5	95	310	230	55	
Z320	4.70	5.0	7.5	95	300	220	55	
Z330	5.60	5.0	7.5	95	300	210	50	
Z340	7.00	5.0	7.5	95	300	200	47	
Z350	15.00	5.0	7.5	95	300	180	30	
Z360	4.00	4.5	2.5	98		220	55	Inorganic
Z370	5.00	4.5	2.5	98		210	50	Inorganic
Z380	4.00	13.5	7.5	98			45	Organic
Z390	6.20	13.5	7.5	98			43	Organic
Z391	7.30	13.5	7.5	92			40	Organic
Y110	2.80	7.0	7.5	92	500	170	35	
Y120	3.80	7.0	7.0	92	500	160	32	
Y130	4.20	7.0	7.0	92	500	160	30	
X110	3.34	11.0	3.5	95	750	95	17	
X120	5.00	11.0	4.0	95	700	95	15	
X130	8.00	11.0	4.0	95	700	95	13	

- Particle size by Malvern Mastersizer

CLASSIFICATION OF SS-SIL

(Classified into 3 types, X, Y, Z)



X-type has the finest silica gel primary particle size and lots of minute pores are distributed. Having typical silanol in it, X-type strongly adsorbs polar materials such as water, alcohol, etc. X-type is made of silica gel as raw material by grinding it followed by uses after synthesis. Pore volume of it is 0.4 - 0.45ml/g, surface area 700 - 800m²/g, pore size 20 - 25 , thus used for tooth paste.

Y-type's pore volume is 0.7 - 0.8ml/g, surface area of it is 450 - 550m²/g and is applied to anti-blocking agent of plastic film.

Z-type has two kinds of SS-SIL, 200 series and 300 series. 200 series have following properties; pore volume 1.8ml/g, surface area 300m²/g and average pore size about 240 Å. 300 series; pore volume 1.2 - 1.3ml/g, surface area 350m²/g and average pore size about 160 - 180. This type is used as matting agent of paint and anti-blocking agent of plastic film.

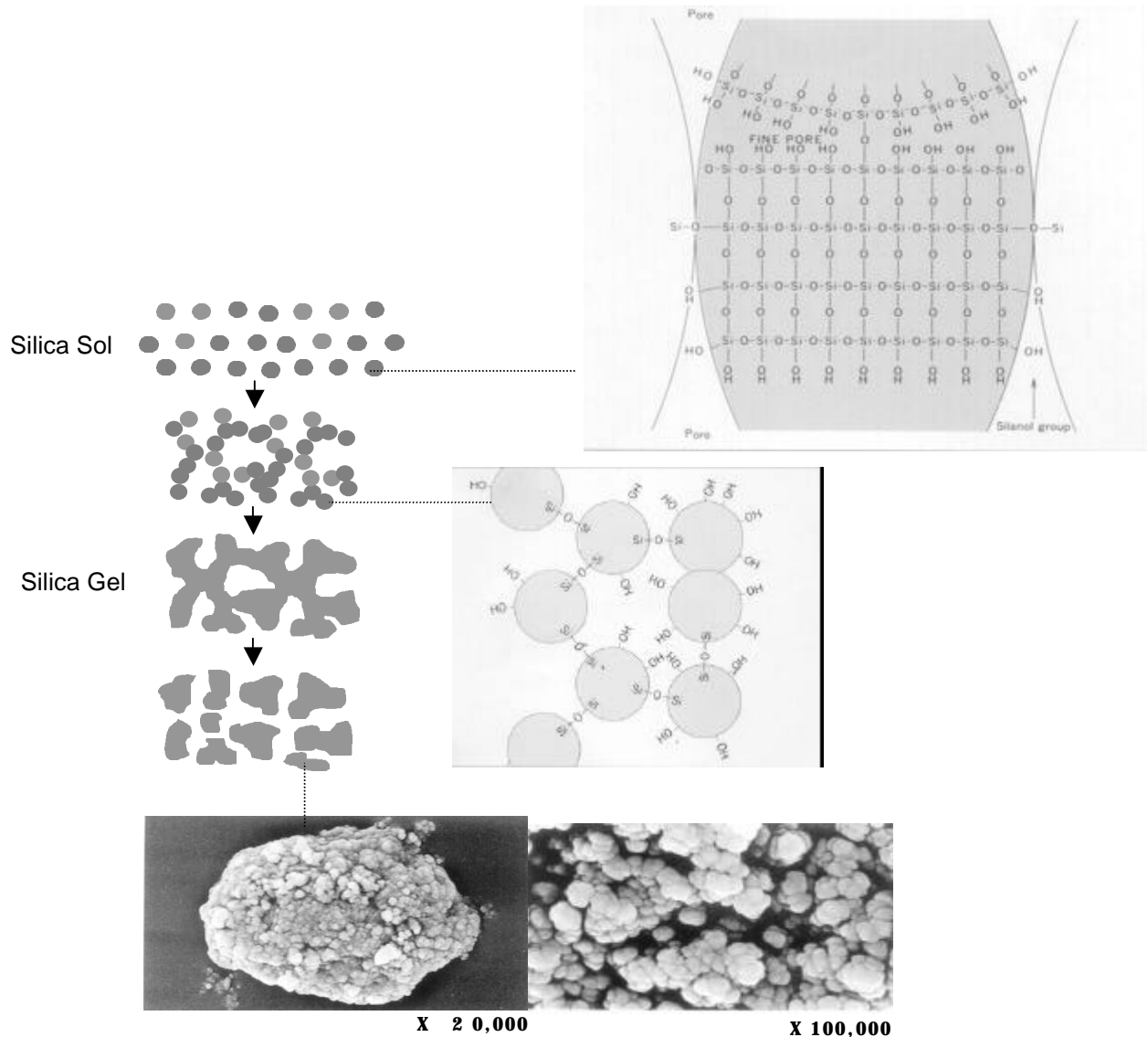
Customer made grade.

It is able to produce various silica for your R & D.



Micronized silica (SS-SIL)

(Amorphous-SiO₂ powders)

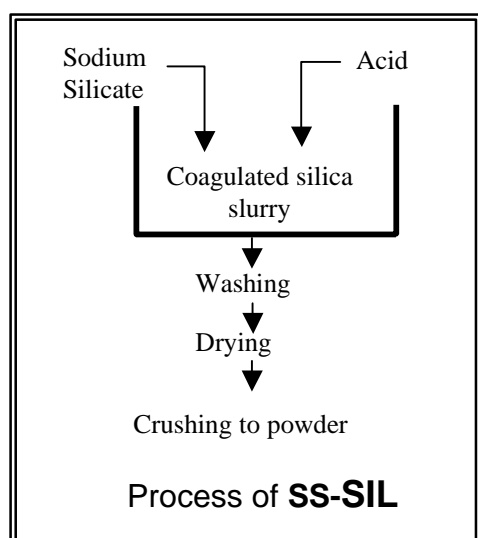


When acid is added to sodium silicate, silica sol with primary particle is created. Radical dehydration condensation reaction is promoted at silano(Si-OH) on the surface of primary particle by continuous adding of acid. As a result, network (Si-O-Si) is formed and three dimensional structure is generated. This is so called Silica gel. Physical properties are controlled via washing and drying process and finally Micronized silica is produced by grinding it.

Theoretically very simple but practically very delicate High Tech industry it is to control each physical properties on each applications.

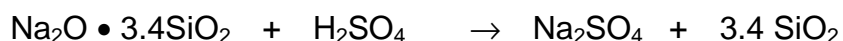
SS-SIL

Amorphous porous silica gel is raw material of SS-SIL and according to the degree of porosity basic properties are diversified. SS-SIL has various grades according to the difference of particle size or surface treatment (coating or substitution). SS-SIL has irregular three dimensional network structure having SiO₄ regular tetrahedron a basic structure that it's amorphous without regular structure like quartz. The inner part and the surface of silica gel with three dimensional network structure have a lot of silanols(Si-OH) that shows porous structure.



Manufacture process

Silica hydro gel as a raw material of SS-SIL is composed by following mixing reaction between strictly selected sodium silicate and sulfuric acid.



Once silica gel manufactured by above reaction follows washing and drying process to get desirable physical properties. Next by grinding it, make a variety of SS-SIL grades with controlling particle size and shape, coherence among particles and filling structure of particles

The applications of SS-SIL are not only film, paint, ink, paper industries but also tooth paste, medicine, food industries because it's not harmful to human body.