

# Silicone Products for Personal Care Unique Materials Plus



1.2021

- Surface Treated Pigments •Silicone Fluids •Emulsifiers/Dispersants
- Emulsifying Silicone Gels •Silicone Gels •Film Formers •Silicone Waxes
- Powder Treatments •Silicone Powders •Powder Dispersions

# Innovating Sensory Sol

## Table of Contents

Advantages in personal care product formulations .....	P2
New Topics <Silicone /Alkyl Surface Treated Pigments> .....	P4
Silicone Fluids .....	P5
Emulsifiers / Dispersants .....	P6
Emulsifying Silicone Gels .....	P10
Silicone Gels .....	P12
Film Formers .....	P14
Silicone Waxes .....	P16
Powder Treatments .....	P17
Silicone Powders .....	P18
Powder Dispersions (UV Blockers) .....	P20
Handling Precautions .....	P21
Applications .....	P22

## Shin-Etsu Formulation Design

■ Film Formers

KP Series

■ Silicone Powders

KSP Series

■ UV Blockers

SPD Series

### Raw materials for personal care products

P5 Silicone Fluids

- Light, smooth feel
- Excellent spreadability
- Improve water repellency
- Volatility control
- Enhance gloss

P6 Emulsifiers / Dispersants

- W/O, O/W emulsifier; Control & Stabilization of emulsion particles
- Reduce tackiness
- Prevent syneresis in non-aqueous formulations
- Make powders easier to disperse and improve stability

P10 Emulsifying Silicone Gels

- W/O emulsifier, stabilization of emulsion particles
- Create high internal-phase, macro W/O emulsions
- Easy to apply and spread for non-aqueous formulations

P12 Silicone Gels

- Use as an oil phase thickener to improve stability of W/O & O/W emulsions, or as a base for non-aqueous formulations
- Silky, non-greasy feel
- Soft-focus effect

P14 Film Formers

- Provide substantive feel
- Improve resistance to water, sebum and rubbing off

P16 Silicone Waxes

- Smoother skin, rich moisturizing effect

P18 Silicone Powders

- Soft, silky feel
- Reduce tackiness
- Easy to apply
- Soft-focus effect (conceals wrinkles, pores)

P20 UV Blockers

- Can be compounded with high concentrations of TiO<sub>2</sub> or ZnO particles
- Results in powerful UV-blocking effect
- Non-whitening, non-tacky

### Emulsified make-up Sunscreen

- Volatility control
- Improve water repellency
- Light, smooth feel
- Excellent spreadability
- Enhance gloss

- W/O, O/W emulsifier; Control & Stabilization of emulsion particles
- Improve powder dispersibility and stability
- Reduce tackiness

- W/O emulsions, stabilization of emulsion particles
- Create high internal-phase, macro W/O emulsions
- Oil phase thickener

- Use as an oil phase thickener to improve stability of W/O & O/W emulsions
- Silky, non-greasy feel
- Soft-focus effect for a more natural look

- Improve resistance to water, sebum and rubbing off
- Long-lasting effect for sunscreen, prevent color migration, help keeping make-up in place

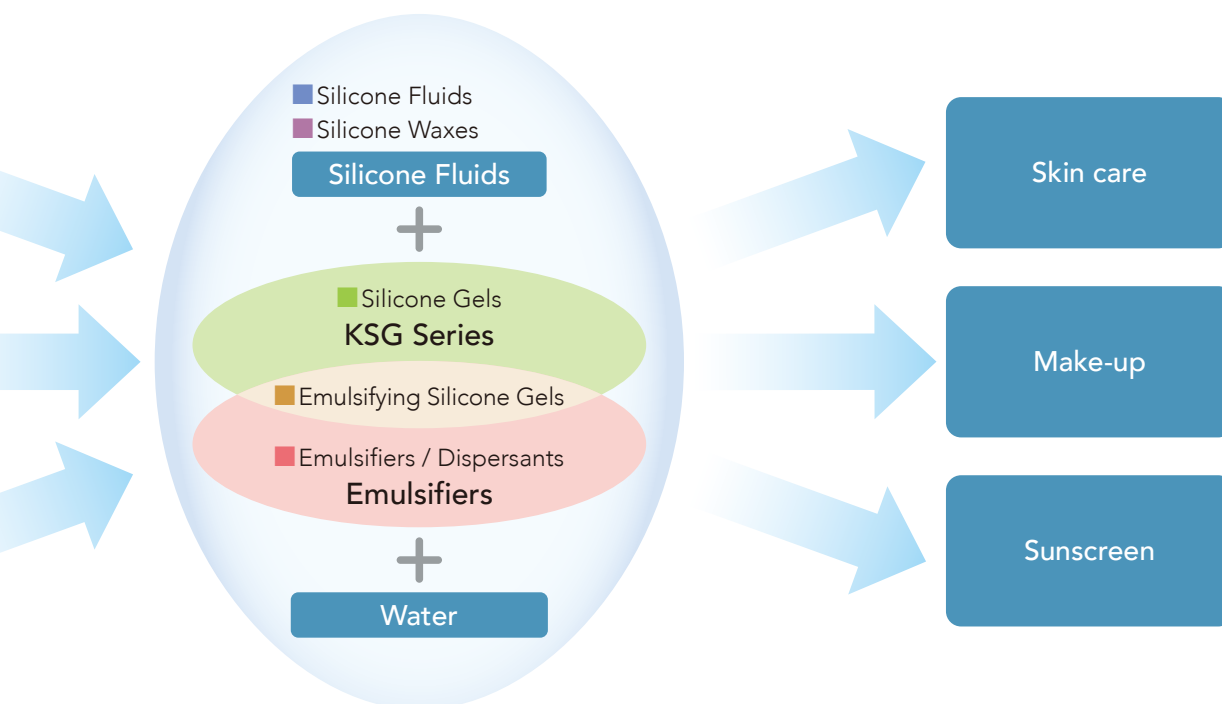
- Smoother skin, rich moisturizing effect
- Improve film feel

- Soft, silky feel
- Reduce tackiness
- Easy to apply
- Soft-focus effect (conceals wrinkles, pores)

- Can be compounded with high concentrations of TiO<sub>2</sub> and ZnO particles
- Results in powerful UV-blocking effect
- Preparations won't whiten or feel sticky

# utions

Shin-Etsu Silicone functional materials meet an increasingly diverse range of sophisticated customer needs, and hold the key to development of unique, high quality personal care products.



## Powdered make-up

- Use as binder to impart a light, smooth feel

- Improve dispersibility of powders  
→ Improve wetting of powders by binders

- Easy spread on skin
- Better adhesion with skin

- Use as a binder to improve cohesion

- Use as a binder to improve "creaminess" of preparations

- Soft, silky feel
- Improve smooth skin feeling by ball-bearing effect
- Soft-focus effect for a more natural look

## Lip color

- Enhance gloss
- Help lip color go on smooth when applying

- Improve dispersibility of powders
- Prevent syneresis in non-aqueous formulations
- W/O emulsifier

- Oil phase thickener
- Prevent syneresis in non-aqueous formulations
- W/O emulsions, stabilization of emulsion particles

- Use as an oil phase thickener to improve stability of W/O emulsions, or as a base for non-aqueous formulations

- Prevent color loss/color migration in lip color

- Improve creamy feel
- Enhance gloss

- Reduce tackiness
- Easy spread by "roll on" effect
- Matte finish

## Mascara

- Volatile oil (used for film former)

- Improve dispersibility of powders
- Prevent syneresis in non-aqueous formulations
- W/O emulsifier

- W/O emulsions, consistent emulsion particle size

- Improve resistance to water, sebum and rubbing off  
→ Long-lasting effect, prevent color migration
- Curl-hold effect

- Use as a bulking agent in mascara preparations for a volumizing effect

Shin-Etsu Silicone introduces a new series of silicone/alkyl surface treated pigments that feature high hydrophobicity and dispersing performance in a wide range of oils. They improve the quality of color cosmetics from liquid foundation to lip color and more.

KTP-09R, KTP-09Y, KTP-09B, KTP-09W

New

### ■ Features

#### High hydrophobicity

Optimal processing condition produce high hydrophobicity.  
Inhibits pigment aggregation and colored streaks in emulsified systems.

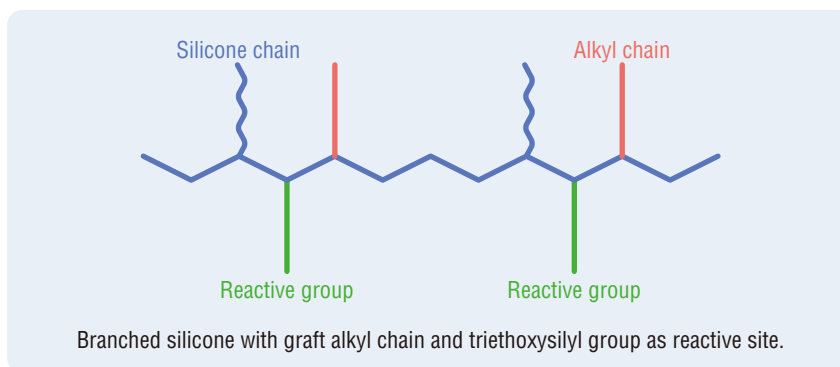
#### Excellent wetting in a wide range of oils

Silicone and alkyl chains on the pigment surface provide high compatibility with a wide range of oils and facilitate easy dispersal.

#### Silky feel and good skin adherence

Features both silkiness from the silicone and adherence from the alkyl chain.

### ■ Molecular Model



### ■ Product Lineup

Grade	Polymer, INCI	Appearance	Loss on drying 105°C×3 h %	Water repellency	Volatile content 105°C×3 h %
KTP-09R	IRON OXIDES (C.I. 77491), TRIETHOXYSILYLETHYL POLYDIMETHYLSILOXYETHYL HEXYL DIMETHICONE	Red powder	< 1.0	Yes	—
KTP-09Y	IRON OXIDES (C.I. 77492), TRIETHOXYSILYLETHYL POLYDIMETHYLSILOXYETHYL HEXYL DIMETHICONE	Yellow powder	< 1.0	Yes	—
KTP-09B	IRON OXIDES (C.I. 77499), TRIETHOXYSILYLETHYL POLYDIMETHYLSILOXYETHYL HEXYL DIMETHICONE	Black powder	< 1.0	Yes	—
KTP-09W	TITANIUM DIOXIDE (C.I. 77891), ALUMINUM HYDROXIDE, TRIETHOXYSILYLETHYL POLYDIMETHYLSILOXYETHYL HEXYL DIMETHICONE	White powder	< 1.0	Yes	—

### ■ Hydrophobicity

— Observation of state in silicone fluid/water —

KF-995 / Water only	Improperly treated sample	KTP-09R	KTP-09Y	KTP-09B	KTP-09W

KTP-09 series pigments are dispersed only in silicone fluid. With the improperly treated sample, on the other hand, the hydrophilic portion remaining on the pigment surface adsorbs to water and the state becomes as if water has gotten into the silicone fluid.

KF-995 (CYCLOPENTASILOXANE): Purified water: Pigment = 10 g : 10 g : 0.05 g  
Pigments dispersed in KF-995, purified water added. Mixture shaken and left to stand, then observed.

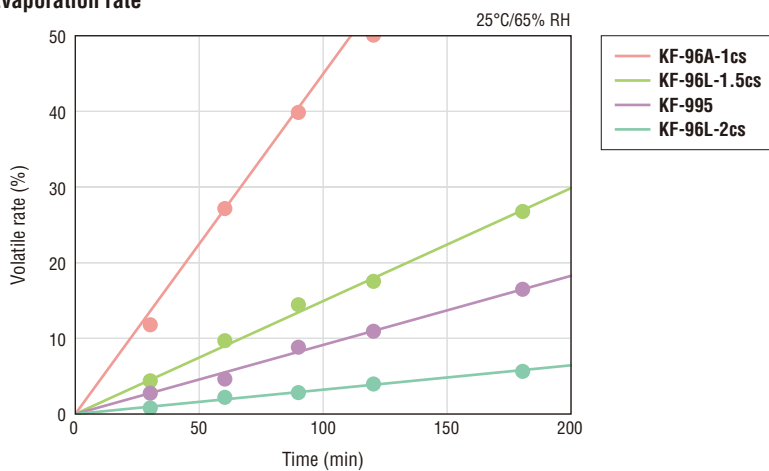
# Silicone Fluids

## Volatile Silicone Fluids

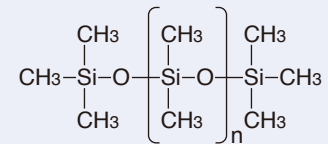
Shin-Etsu produces a line of high-purity silicone fluids with different degrees of volatility. Due to their low surface tension, these fluids spread easily on skin and don't feel greasy.

Grade	Polymer, INCI	Type	Viscosity 25°C, mm <sup>2</sup> /s	Specific gravity 25°C	Refractive index 25°C	Boiling point °C	Flash point °C
<b>KF-96A-1cs</b>	TRISILOXANE	Linear	1.0	0.818	1.382	153	37
<b>KF-96L-1.5cs</b>	DIMETHICONE	Linear	1.5	0.852	1.387	194	64
<b>KF-96L-2cs</b>	DIMETHICONE	Linear	2.0	0.873	1.391	229	88
<b>KF-995</b>	CYCLOPENTASILOXANE	Cyclic	4.0	0.956	1.396	210	77

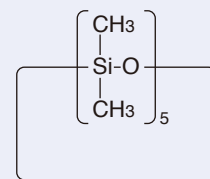
### Evaporation rate



### Linear silicone fluid



### Silicone cyclics



## Silicone Fluids

KF-96A-6cs is a non-volatile dimethyl silicone fluid. It has a narrow molecular weight distribution, is low viscosity and is easy to handle. KF-96A-6cs is water repellent, spreads easily on skin and feels smooth. KF-56A is a type of methylphenyl silicone fluid. It enhances gloss and has good compatibility with other oils. \* For dimethyl silicone fluids in other viscosities, please see our catalog of Shin-Etsu Silicones for Personal Care Products.

Grade	Polymer, INCI	Viscosity 25°C, mm <sup>2</sup> /s	Specific gravity 25°C	Refractive index 25°C	Pour point °C	Flash point °C
<b>KF-96A-6cs</b>	DIMETHICONE	6	0.925	1.397	< -100	174
<b>KF-56A</b>	DIPHENYLSILOXY PHENYL TRIMETHICONE	15	0.995	1.498	< -55	> 100

### Compatibility with other oils (concentration: 50 wt%)

Oil	KF-96A-6cs	KF-56A
<b>KF-96A-100cs</b>	S	S
Triethylhexanoïn	S	S
Isotridecyl isononanoate	S	S
Neopentyl glycol diethylhexanoate	S	S
Cetyl ethylhexanoate	S	S
Squalane	S	S
Isostearic acid	I	S
Jojoba oil	I	S
Ethylhexyl methoxycinnamate	I	S

S: Soluble I: Separation

\* Data figures in tables do not represent specified values.

\* This catalog does not constitute a warranty of quality assurance. For documentation on quality assurance and specifications, please contact a Shin-Etsu sales representative.

\* The display names and INCI names may be changed without notice.

# Emulsifiers / Dispersants

Shin-Etsu produces an extensive line of products that can be used as emulsifiers and as dispersants for powders.

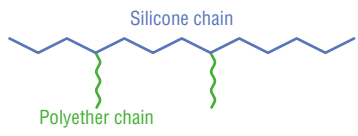
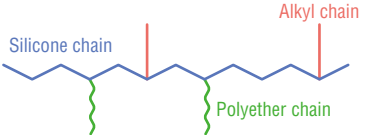
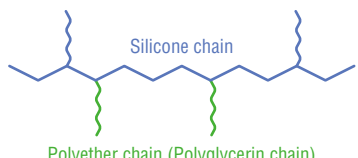
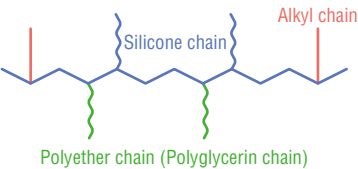
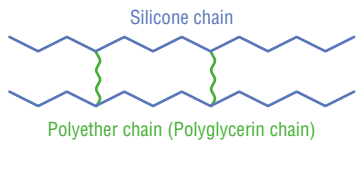
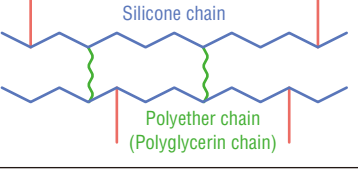
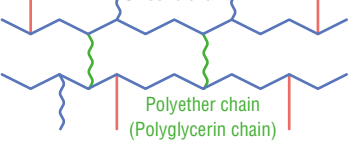
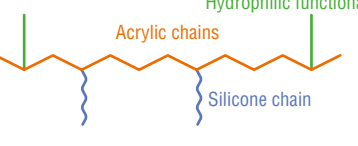

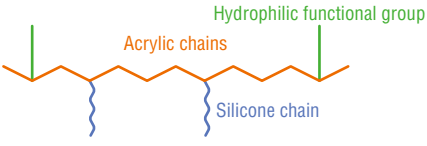
Products based on a main chain of silicone can have one of three types of structure: straight, branched and crosslinked.

Shin-Etsu also produces products with two types of hydrophilic groups: polyether or polyglycerin.

The customers can select the best product for their applications, further expanding the possibilities in personal care product development.

In addition, we offer a line of silicone acrylate type dispersants with outstanding dispersibility.

## Product type

Type		Product	Model illustration
Linear type (Emulsifiers / Dispersants)	Polyether modified	<b>KF-6011</b> <b>KF-6011P</b> <b>KF-6012</b> <b>KF-6015</b> <b>KF-6017</b> <b>KF-6017P</b> <b>KF-6043</b>  Details ▶ P7	
	Polyether / alkyl co-modified	<b>KF-6048</b> <b>New</b>  Details ▶ P7	
Branched type (Emulsifiers / Dispersants)	Polyether modified	<b>KF-6028</b> <b>KF-6028P</b>  Details ▶ P8	
	Polyglycerin modified	<b>KF-6100</b> <b>KF-6104</b> <b>KF-6106</b> <b>New</b>  Details ▶ P8	
	Polyether / alkyl co-modified	<b>KF-6038</b>  Details ▶ P8	
	Polyglycerin / alkyl co-modified	<b>KF-6105</b>  Details ▶ P8	
Cross-linked polymer type (Emulsifiers)	Polyether modified	<b>KSG-210</b> <b>KSG-240</b>  Details ▶ P10	
	Polyglycerin modified	<b>KSG-710</b>  Details ▶ P11	
	Polyether / alkyl co-modified	<b>KSG-310</b> <b>KSG-320</b> <b>KSG-330</b> <b>KSG-340</b>  Details ▶ P10	
	Polyglycerin / alkyl co-modified	<b>KSG-810</b> <b>KSG-820</b> <b>KSG-830</b> <b>KSG-840</b>  Details ▶ P11	
	Polyether / silicone / alkyl co-modified	<b>KSG-320Z</b> <b>KSG-350Z</b> <b>KSG-360Z</b> <b>KSG-380Z</b>  Details ▶ P10	
	Polyglycerin / silicone / alkyl co-modified	<b>KSG-820Z</b> <b>KSG-850Z</b>  Details ▶ P11	
Silicone acrylate type (Dispersant)		<b>KP-578</b>  Details ▶ P8	

## Polyether Modified Silicones (Linear type)

Shin-Etsu offers a line of polyether-modified silicone emulsifiers in a range of HLB values. Depending on the HLB value, these products can be used as either O/W or W/O emulsifiers.

Grade	INCI	Viscosity 25°C, mm <sup>2</sup> /s	Specific gravity 25°C	Refractive index 25°C	HLB wt%, EO/5	Cloud point °C
<b>KF-6011</b>	PEG-11 METHYL ETHER DIMETHICONE	130	1.068	1.450	14.5	65
<b>KF-6011P</b>	PEG-11 METHYL ETHER DIMETHICONE	140	1.062	1.450	14.5	65
<b>KF-6012</b>	PEG/PPG-20/22 BUTYL ETHER DIMETHICONE	1,600	1.030	1.446	7.0	35
<b>KF-6015</b>	PEG-3 DIMETHICONE	150	1.000	1.420	4.5	—
<b>KF-6017</b>	PEG-10 DIMETHICONE	600	1.007	1.420	4.5	—
<b>KF-6017P</b>	PEG-10 DIMETHICONE	850	1.004	1.420	4.5	—
<b>KF-6043</b>	PEG-10 DIMETHICONE	400	1.082	1.454	14.5	71
Alkyl co-modified						
<b>KF-6048</b>	CETYL PEG/PPG-10/1 DIMETHICONE	2,700	0.963	1.437	3.5	—

● P grade: This is a nearly odor-free grade created using a more advanced deodorization process.

\* Data figures in tables do not represent specified values.

\* This catalog does not constitute a warranty of quality assurance. For documentation on quality assurance and specifications, please contact a Shin-Etsu sales representative.

\* The display names and INCI names may be changed without notice.

## Polyether Modified Silicones (Branched type)

These silicones have good solubility in oils and can be used to create distinctive products based on the viscosity and stability of the emulsions.

KF-6038 is compatible with both silicone fluids and in fats and oils.

Grade	INCI	Viscosity 25°C, mm <sup>2</sup> /s	Specific gravity 25°C	Refractive index 25°C	HLB wt%, EO/5
<b>KF-6028</b>	PEG-9 POLYDIMETHYLSILOXYETHYL DIMETHICONE	900	0.998	1.420	4.0
<b>KF-6028P</b>	PEG-9 POLYDIMETHYLSILOXYETHYL DIMETHICONE	900	0.997	1.420	4.0
Alkyl co-modified					
<b>KF-6038</b>	LAURYL PEG-9 POLYDIMETHYLSILOXYETHYL DIMETHICONE	700	0.958	1.430	3.0

● P grade: This is a nearly odor-free grade created using a more advanced deodorization process.

## Polyglycerin Modified Silicones (Branched type)

These silicone emulsifiers/dispersants feature polyglycerin as the hydrophilic component.

These emulsifiers have excellent water-holding capacity and can be used to produce emulsions that absorb into skin quickly and have a very soft, rich feel. KF-6105 is a water-in-oil emulsifier that has been modified with alkyl chains, while KF-6106 offers outstanding performance as a powder dispersant.

Grade	INCI	Viscosity 25°C, mPa·s	Specific gravity 25°C	Refractive index 25°C	HLB
<b>KF-6100</b>	POLYGLYCERYL-3 DISILOXANE DIMETHICONE	40,000	1.086	1.458	Medium
<b>KF-6104</b>	POLYGLYCERYL-3 POLYDIMETHYLSILOXYETHYL DIMETHICONE	4,000	0.976	1.409	Low
<b>KF-6106</b>	POLYGLYCERYL-3 POLYDIMETHYLSILOXYETHYL DIMETHICONE	3,500	0.982	1.412	Low
Alkyl co-modified					
<b>KF-6105</b>	LAURYL POLYGLYCERYL-3 POLYDIMETHYLSILOXYETHYL DIMETHICONE	4,000	0.950	1.426	Low

## Silicone Acrylates

The KP Series is a line of products obtained through graft polymerization of an acrylic polymer and dimethylpolysiloxane.

KP-578, which has hydrophilic functional groups in its side chains, adheres well to the surface of pigments

and can be used as a dispersant for dispersing pigments in oils.

Grade	INCI	Viscosity 25°C, mm <sup>2</sup> /s	Specific gravity 25°C	Refractive index 25°C	HLB
<b>KP-578</b>	ACRYLATES/ETHYLHEXYL ACRYLATE/DIMETHICONE METHACRYLATE COPOLYMER	170	0.977	1.413	—

\* Data figures in tables do not represent specified values.

\* This catalog does not constitute a warranty of quality assurance. For documentation on quality assurance and specifications, please contact a Shin-Etsu sales representative.

\* The display names and INCI names may be changed without notice.

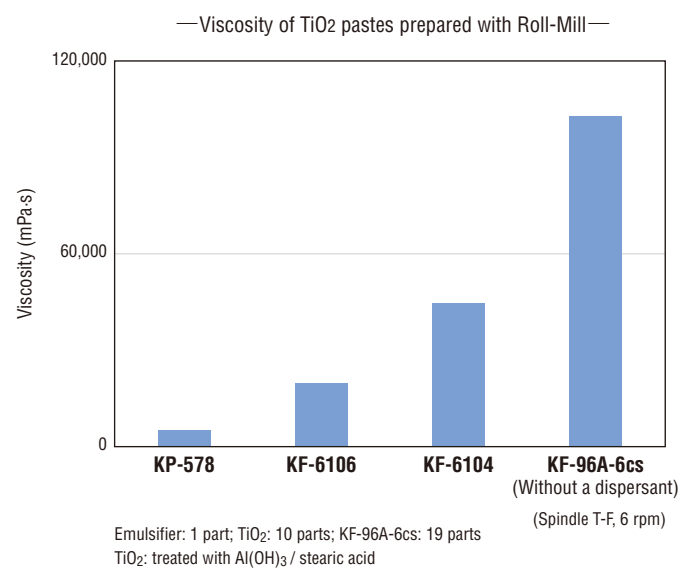
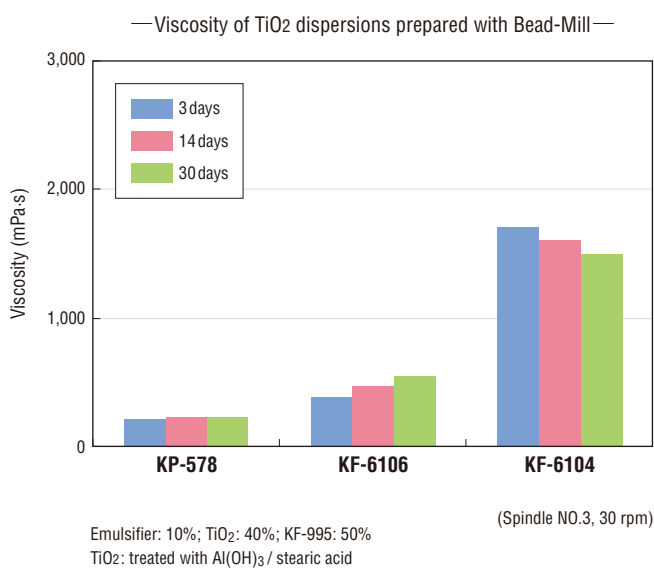


## ■ Compatibility (concentration: 20 wt%)

	KF-6011 6011P	KF-6012	KF-6015	KF-6017 6017P	KF-6028 6028P	KF-6038	KF-6043	KF-6048	KF-6100	KF-6104	KF-6105	KF-6106	KP-578
<b>KF-96A-6cs</b> (Dimethicone)	I	I	I	S	S	S	I	I	I	S	S	S	S
<b>KF-995</b> (Cyclopentasiloxane)	I	I	S	S	S	S	I	S	I	S	S	S	S
<b>KF-56A</b> (Diphenylsiloxy Phenyl Trimethicone)	S	S	S	S	S	S	I	S	I	S	S	S	S
<b>Mineral Oil</b>	I	I	I	I	I	S	I	S	I	I	S	I	I
<b>Isotridecyl Isononanoate</b>	I	S	S	I	I	S	I	S	I	S	S	S	S
<b>Triethylhexanoin</b>	S	S	S	S	S	S	S	S	I	I	S	I	S
<b>Ethanol*</b>	S	S	S	S	S	I	S	I	S	I	I	I	I
<b>1,3-Butylene Glycol</b>	S	I	I	I	I	I	S	I	S	I	I	I	I
<b>Glycerin</b>	I	I	I	I	I	I	I	I	S	I	I	I	I
<b>Water</b>	S	S	I	I	I	I	S	I	I	I	I	I	I

S: Soluble I: Insoluble \* Purity ca.95%

## ■ Dispersibility of Superfine Titanium Dioxide



The graph shows the viscosities of some dispersions of superfine titanium dioxide-in-silicone fluid, prepared using various emulsifiers and mixed in a bead mill. The dispersions prepared with KF-6106 and KP-578 had viscosities that were low initially and remained low over time; the powders were well-dispersed and the preparations proved to be highly stable.

Likewise, when superfine titanium dioxide/silicone fluid pastes were prepared with a roll mill, those made using KF-6106 and KP-578 had much lower viscosities than those made without a dispersant. KF-6106 and KP-578 make it easier to compound powders into cosmetic products.

# Emulsifying Silicone Gels

In the products of our KSG Series, crosslinked silicone polymers are combined with a silicone fluid or other fat or oil. Products in which the crosslinking portion of the molecule is a hydrophilic group can be used as a W/O emulsifier and will produce stable emulsion.

These functional materials can also be used as a thickening agent for the oil phase, so they can be used to create W/O cosmetic preparations with excellent stability.

The KSG Series offers great variety in terms of the hydrophobic and hydrophilic components.

Users can select the best product for their needs based on compatibility with the oil to be used and the desired feel.

## Polyether Modified Silicone Gels

### Standard type

These gels were created by combining crosslinked silicone polymers (crosslinked via the polyether chains) with silicone fluid. They function as W/O emulsifiers and can be used to prepare high internal-phase W/O creams.

Grade	Cross-linked polymer, INCI	Cross-linked polymer %	Base oil, INCI		Appearance	Penetration (worked) 25°C	Refractive index 25°C
<b>KSG-210</b>	DIMETHICONE/PEG-10/15 CROSSPOLYMER	20-30	DIMETHICONE	KF-96A-6cs	Colorless, milky white paste	400	1.403
<b>KSG-240</b>		15-25	CYCLOPENTASILOXANE	KF-995	Colorless, milky white paste	400	1.400

### Alkyl branched type

These gels were created by combining polyether-modified crosslinked silicone polymers (which feature alkyl chains in their molecular structures) with various oils. These function mainly as W/O emulsifiers for preparing emulsions in which the oil phase is a hydrocarbon oil, and can be used to create preparations that are easy to apply and spread on skin. They can also be used to prepare high internal-phase W/O creams.

Grade	Cross-linked polymer, INCI	Cross-linked polymer %	Base oil, INCI		Appearance	Penetration (worked) 25°C	Refractive index 25°C
<b>KSG-310</b>	PEG-15/LAURYL DIMETHICONE CROSSPOLYMER	25-35	MINERAL OIL	Mineral oil	Colorless, milky white paste	400	1.450
<b>KSG-320</b>		20-30	ISODODECANE	Isododecane	Colorless, milky white paste	400	1.420
<b>KSG-330</b>		15-25	TRIETHYLHEXANOIN	Triethylhexanoin	Colorless, milky white paste	395	1.442
<b>KSG-340</b>	PEG-10/LAURYL DIMETHICONE CROSSPOLYMER PEG-15/LAURYL DIMETHICONE CROSSPOLYMER	25-35	SQUALANE	Squalane	Colorless, milky white paste	430	1.445

### Silicone /alkyl branched type

These gels were created by combining polyether-modified crosslinked silicone polymers (having two types of branched chains: silicone and alkyl) with various oils. These gels show outstanding swelling in silicone fluids and hydrocarbon oils, and can be used to prepare W/O emulsions in which the oil phase will consist of mixed oils.

Grade	Cross-linked polymer, INCI	Cross-linked polymer %	Base oil, INCI		Appearance	Penetration (worked) 25°C	Refractive index 25°C
<b>KSG-320Z</b>	PEG-15/LAURYL POLYDIMETHYLSILOXYETHYL DIMETHICONE CROSSPOLYMER	20-30	ISODODECANE	Isododecane	Colorless, milky white paste	360	1.420
<b>KSG-350Z</b>		20-30	CYCLOPENTASILOXANE	KF-995	Colorless, milky white paste	370	1.404
<b>KSG-360Z</b>		30-40	DIMETHICONE	KF-96A-6cs	Colorless, milky white paste	410	1.408
<b>KSG-380Z</b>		25-35	DIMETHICONE	KF-96L-2cs	Colorless, translucent paste	380	1.400

\* Data figures in tables do not represent specified values.

\* This catalog does not constitute a warranty of quality assurance. For documentation on quality assurance and specifications, please contact a Shin-Etsu sales representative.

\* The display names and INCI names may be changed without notice.

## Polyglycerin Modified Silicone Gels

### Standard type

These gels were created by combining crosslinked silicone polymers (crosslinked via the polyglycerin chains) with silicone fluid. They have excellent water-holding ability and can be used to prepare W/O emulsions that give a soft, rich feel. Like the polyether-modified gels, these can be used to prepare high internal-water-phase W/O creams.

Grade	Cross-linked polymer, INCI	Cross-linked polymer %	Base oil, INCI		Appearance	Penetration (worked) 25°C	Refractive index 25°C
<b>KSG-710</b>	DIMETHICONE/POLYGLYCERIN-3 CROSSPOLYMER	20-30	DIMETHICONE	KF-96A-6cs	Colorless, milky white paste	400	1.400

### Alkyl branched type

These gels were created by combining polyglycerin-modified crosslinked silicone polymers (which have alkyl chains in their molecular structures) with hydrocarbon oils. They function mainly as emulsifiers for preparing W/O emulsions in which the oil phase will be a hydrocarbon. Preparations made with these gels work easily into the skin. They can also be used to create high internal-water-phase W/O creams.

Grade	Cross-linked polymer, INCI	Cross-linked polymer %	Base oil, INCI		Appearance	Penetration (worked) 25°C	Refractive index 25°C
<b>KSG-810</b>	LAURYL DIMETHICONE/POLYGLYCERIN-3 CROSSPOLYMER	25-35	MINERAL OIL	Mineral oil	Colorless, milky white paste	380	1.450
<b>KSG-820</b>		20-30	ISODODECANE	Isododecane	Colorless, milky white paste	340	1.420
<b>KSG-830</b>		15-25	TRIETHYLHEXANOIN	Triethylhexanoin	Colorless, milky white paste	380	1.442
<b>KSG-840</b>		25-35	SQUALANE	Squalane	Colorless, milky white paste	380	1.445

### Silicone / alkyl branched type

These gels were created by combining polyglycerin-modified crosslinked silicone polymers (having two types of branched chains: silicone and alkyl) with various oils.

They function as emulsifiers for preparing W/O emulsions in which the oil phase will consist of silicone fluid mixed with a hydrocarbon oil, and they give a rich moisturizing feel.

Grade	Cross-linked polymer, INCI	Cross-linked polymer %	Base oil, INCI		Appearance	Penetration (worked) 25°C	Refractive index 25°C
<b>KSG-820Z</b>	POLYGLYCERYL-3/LAURYL POLYDIMETHYLSILOXYETHYL	20-30	ISODODECANE	Isododecane	Colorless, milky white paste	360	1.420
<b>KSG-850Z</b>	DIMETHICONE CROSSPOLYMER	20-30	CYCLOPENTASILOXANE	KF-995	Colorless, milky white paste	360	1.404

\* Data figures in tables do not represent specified values.

\* This catalog does not constitute a warranty of quality assurance. For documentation on quality assurance and specifications, please contact a Shin-Etsu sales representative.

\* The display names and INCI names may be changed without notice.

### W/O region of KSG-210, -310, -710, -810

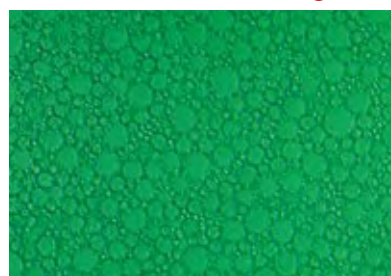
Using a silicone gel emulsifier as the main component of emulsifying system, we can prepare stable W/Si or W/O creams. The figure at right shows the condition of the following W/O creams.

\* KSG-210 or KSG-710 / KF-96A-6cs / Water

\* KSG-310 or KSG-810 / Mineral oil / Water

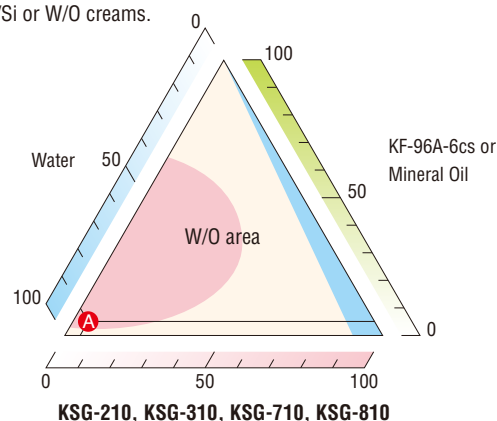
Thus, these products can be used to prepare stable W/O creams containing extremely high amounts of water, such as is represented by the "A" point on the graph.

W/O emulsion with KSG-310 (x200 **A** point)



100µm

**A** Component of Emulsion  
 KSG-310..... 5 wt%  
 Mineral Oil..... 5 wt%  
 Water..... 90 wt%



The **A** point

This diagram illustrates a formulation containing 90% water, 5% KF-96A-6cs and 5% KSG-210 or KSG-710 (90% water, 5% mineral oil and 5% KSG-310 or KSG-810). This example illustrates the ability of KSG-210, KSG-310, KSG-710 or KSG-810 to form stable W/O creams with extremely high water content.

# Silicone Gels

The KSG Series is a line of gels created by combining crosslinked silicone polymers with silicone fluid or other oils. Those in which the crosslinking portion consists of silicone chains are advanced materials that function as thickeners for the oil phase, and can impart a degree of structural viscosity. Shin-Etsu produces gels that are compatible with a variety of oils and offer great variation in terms of tactile feel.

## Silicone Gels

### Standard type

These gels were created by combining a crosslinked silicone with a 3D network structure with a silicone fluid. KSG-15 can be used to increase the structural viscosity of the oil phase without big effect on feel. They can be used to prepare W/O, O/W, and non-aqueous emulsions, and the final preparations will be more stable thanks to the thickening of the oil phase.

Grade	Cross-linked polymer, INCI	Cross-linked polymer %	Base oil, INCI		Appearance	Penetration (worked) 25°C	Refractive index 25°C
<b>KSG-15</b>	DIMETHICONE/VINYL DIMETHICONE CROSSPOLYMER	4-10	CYCLOPENTASILOXANE	KF-995	Colorless, transparent paste	420	1.397
<b>USG-103</b>		8-12	CYCLOPENTASILOXANE	KF-995	Colorless, transparent paste	350	1.398
<b>USG-106</b>		8-12	ISODODECANE	Isododecane	Colorless, transparent paste	420	1.418

The types below have a thickening effect on the oil phase, provide the sort of smooth, silky feel unique to silicone gels, and have a matting effect on the application surface.

Our diverse offerings include types that form thick, durable films, and other types with an exceptionally light, silky feel.

Grade	Cross-linked polymer, INCI	Cross-linked polymer %	Base oil, INCI		Appearance	Penetration (worked) 25°C	Refractive index 25°C
<b>KSG-16</b>	DIMETHICONE/VINYL DIMETHICONE CROSSPOLYMER	20-30	DIMETHICONE	KF-96A-6cs	Colorless, translucent paste	330	1.400
<b>KSG-18A</b>	DIMETHICONE/PHENYL VINYL DIMETHICONE CROSSPOLYMER	10-20	DIPHENYLSILOXY PHENYL TRIMETHICONE	KF-56A	Colorless, translucent paste	330	1.495
<b>KSG-19</b>	DIMETHICONE/VINYL DIMETHICONE CROSSPOLYMER	10-20	DIMETHICONE	KF-96A-6cs	Colorless, translucent paste	360	1.399
<b>KSG-016F</b>		20-30	DIMETHICONE	KF-96A-6cs	Colorless, translucent paste	350	1.398

### Alkyl branched type

These gels were created by combining crosslinked silicone polymers (having alkyl chains in their molecular structures) with various oils. They exhibit high swelling in hydrocarbon oils and increase the structural viscosity of the oil phase. These gels can be used to prepare W/O, O/W, and non-aqueous emulsions. They improve the stability of the preparation and can be used to create cosmetic products that are easy to apply and spread on skin and have a smooth feel.

Grade	Cross-linked polymer, INCI	Cross-linked polymer %	Base oil, INCI		Appearance	Penetration (worked) 25°C	Refractive index 25°C
<b>KSG-41A</b>	VINYL DIMETHICONE/LAURYL DIMETHICONE CROSSPOLYMER	20-30	MINERAL OIL	Mineral oil	Colorless, translucent paste	400	1.455
<b>KSG-42A</b>		15-25	ISODODECANE	Isododecane	Colorless, translucent paste	400	1.421
<b>KSG-43</b>		25-35	TRIETHYLHEXANOIN	Triethylhexanoin	Colorless, translucent paste	400	1.442
<b>KSG-44</b>		25-35	SQUALANE	Squalane	Colorless, translucent paste	380	1.447

\* Data figures in tables do not represent specified values.

\* This catalog does not constitute a warranty of quality assurance. For documentation on quality assurance and specifications, please contact a Shin-Etsu sales representative.

\* The display names and INCI names may be changed without notice.

## Silicone /alkyl branched type

These gels were created by combining crosslinked silicone polymers (having two types of branched chains: silicone and alkyl) with various oils. They function as thickeners for the oil phase which consist of silicone fluid mixed with a hydrocarbon oil, and the final preparations will be more stable.

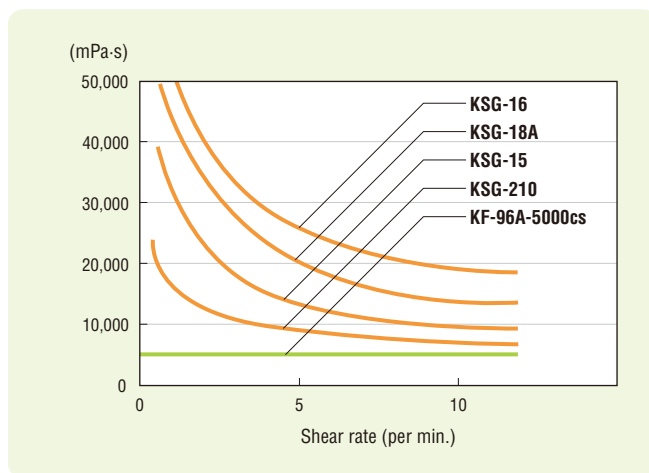
Grade	Cross-linked polymer, INCI	Cross-linked polymer %	Base oil, INCI		Appearance	Penetration (worked) 25°C	Refractive index 25°C
<b>KSG-042Z</b>	LAURYL POLYDIMETHYLSILOXYETHYL DIMETHICONE/ BIS-VINYL DIMETHICONE CROSSPOLYMER	15-25	ISODODECANE	Isododecane	Colorless, transparent paste	330	1.418
<b>KSG-045Z</b>		15-25	CYCLOPENTASILOXANE	KF-995	Colorless, turbidity paste	350	1.401
<b>KSG-048Z</b>		15-25	DIMETHICONE	KF-96L-2cs	Colorless, translucent paste	370	1.397

- \* Data figures in tables do not represent specified values.
- \* This catalog does not constitute a warranty of quality assurance.  
For documentation on quality assurance and specifications, please contact a Shin-Etsu sales representative.
- \* The display names and INCI names may be changed without notice.

### ■ Structural viscosity

The products in the KSG Series are pastes with nearly zero fluidity when left in a static condition. However, these demonstrate thixotropic properties. And while the viscosity change at a given number of revolutions per minute varies from product to product in the KSG series, the viscosity of each drops sharply as RPM increases.

Thus, when using any of the KSG products to formulate cosmetics, the user can simply disperse them into a pigment or other component at the time of manufacture to obtain a composition that is stable after formulation.



### ■ Swelling ability of KSG Series with cosmetic oils

	Elastomer Gel										Emulsifier & Elastomer Gel													
	KSG-15	KSG-16	KSG-18A	KSG-41A	KSG-42A	KSG-43	KSG-44	KSG-042Z	KSG-045Z	KSG-210	KSG-240	KSG-310	KSG-320	KSG-330	KSG-340	KSG-320Z	KSG-350Z	KSG-710	KSG-810	KSG-820	KSG-830	KSG-840	KSG-820Z	KSG-850Z
<b>KF-995</b> (Cyclopentasiloxane)	B	O	O	R	R	R	R	O	B	O	B	R	R	R	R	O	B	O	R	R	R	R	O	B
<b>KF-96A-6cs</b> (Dimethicone)	O	B	O	R	R	R	R	O	O	B	O	R	R	R	R	O	O	B	R	R	R	R	O	O
<b>KF-96A-20cs</b> (Dimethicone)	O	O	R	R	R	R	R	O	O	O	O	R	R	R	R	O	O	O	R	R	R	R	O	O
<b>KF-96A-100cs</b> (Dimethicone)	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
<b>KF-56A</b> (Diphenylsiloxy Phenyl Trimethicone)	O	O	B	R	R	R	R	O	O	O	O	R	R	R	R	O	O	O	R	R	R	R	O	O
<b>Isododecane</b>	O	O	R	O	B	O	O	B	O	O	O	B	O	O	B	O	O	O	B	O	O	B	O	B
<b>Mineral Oil</b>	R	R	R	B	O	O	O	O	R	R	B	O	O	O	O	O	R	B	O	O	O	O	O	O
<b>Squalane</b>	R	R	R	R	R	R	B	O	O	R	R	R	R	R	B	O	O	R	R	R	R	B	O	O
<b>Isotridecyl Isononanoate</b>	R	R	O	O	O	O	O	O	R	R	O	O	O	O	O	O	R	O	O	O	O	O	O	O
<b>Cetyl Caprylate</b>	R	R	O	O	O	O	O	O	R	R	O	O	O	O	O	O	R	O	O	O	O	O	O	O
<b>Jojoba</b> (Buxus Chinensis) <b>Oil</b>	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
<b>Triethylhexanoin</b>	O	O	O	O	O	B	O	O	O	O	O	B	O	O	O	O	O	O	B	O	O	O	O	O
<b>Triisostearin</b>	R	R	R	O	O	O	O	O	R	R	O	O	O	O	O	O	R	O	O	O	O	O	O	O
<b>Macadamia Ternifolia Nut Oil</b>	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R

B: Base Oil O: Optional Amount R: Restrictive Use

# Film Formers

Silicone-based film formers excel in water repellency, moisture resistance and oil resistance. These functional materials are used extensively in the manufacture of sunscreens and make-up products. Shin-Etsu Silicone has developed a diverse line of film formers with unique features that can be used to expand the possibilities of cosmetic preparations.

## Product type

Type	Product	Film characteristics	Model illustration
Silicone-modified polynorbornenes	<b>NBN-30-ID</b>	Very hard, strong films Non-tacky, smooth feel Highly flexible and oil repellent High spinnability  Details ▶ P14	
Silicone-modified pullulan	<b>TSPL-30-ID</b> <b>TSPL-30-D5</b>	Hard, strong films Non-tacky, wet feel Flexible, glossy films Very high oil repellency  Details ▶ P14	
Silicone Acrylates	<b>KP-543</b> <b>KP-545</b> <b>KP-550</b> <b>KP-545L</b>	Wet, smooth feel Glossy Very soft, clingy film  Details ▶ P15	
Trimethylsiloxy-silicates	<b>KF-7312J</b> <b>X-21-5249</b> <b>KF-7312K</b> <b>X-21-5249L</b> <b>KF-7312L</b> <b>X-21-5250</b> <b>KF-9021</b> <b>X-21-5250L</b> <b>KF-9021L</b> <b>X-21-5595</b> <b>KF-9021-ID</b> <b>X-21-5616</b>	Film hardness Hard: Dry Film hardness Soft: Tacky Non-glossy Hard film  Details ▶ P15	

## Silicone-modified polynorbornenes

These film formers consist of silicone groups grafted onto very hard, large polynorbornene molecules. Dissolved in volatile solvents, these film formers have high spinnability and adhesiveness. The dried films will be hard yet flexible, meaning these film formers can be used to create preparations with good oil repellency and greater resistance to moisture and rub-off.

Grade	Main component, INCI	Main component %	Solvent, INCI		Viscosity Pa·s	Specific gravity 25°C	Refractive index 25°C
<b>NBN-30-ID</b>	NORBORNENE/TRIS(TRIMETHYLSILOXY)SILYL NORBORNENE COPOLYMER	30	ISODODECANE	ISODODECANE	300	0.830	1.433

\* For data on compatibility, see P16

## Silicone-modified pullulan

This film former consists of silicone groups grafted onto pullulan, a type of water-soluble polysaccharide. These are dissolved in a volatile solvent. The dried film will be hard yet flexible, meaning this film former can be used to create preparations with outstanding oil repellency and greater resistance to moisture and rub-off.

Grade	Main component, INCI	Main component %	Solvent, INCI		Viscosity mm <sup>2</sup> /s	Specific gravity 25°C	Refractive index 25°C
<b>TSPL-30-ID</b>	TRIMETHYLSILOXYSILYL CARBAMOYL PULLULAN	30	ISODODECANE	ISODODECANE	600	0.815	1.424
<b>TSPL-30-D5</b>		30	CYCLOPENTASILOXANE	KF-995	8,000	0.981	1.410

\* Data figures in tables do not represent specified values.

\* This catalog does not constitute a warranty of quality assurance.

For documentation on quality assurance and specifications, please contact a Shin-Etsu sales representative.

\* The display names and INCI names may be changed without notice.

\* For data on compatibility, see P16

## Silicone Acrylates

These film formers are graft polymers of acrylic and dimethylpolysiloxane. The polymers are dissolved in volatile oil, which evaporates to leave behind a soft, highly conforming film that helps improve resistance to water, sebum and rubbing off.

Grade	Main component, INCI	Main component %	Solvent, INCI		Appearance	Viscosity mm <sup>2</sup> /s	Glass transition point °C	Water contact angle
KP-543	ACRYLATES/DIMETHICONE COPOLYMER	50	BUTYL ACETATE	Butyl acetate	Colorless, transparent - light yellow hazy fluid	100-1,000	20	98
KP-545		30	CYCLOPENTASILOXANE	KF-995	Colorless, transparent - light yellow hazy fluid	100-500	50	103
KP-550		40	ISODODECANE	Isododecane	Colorless, transparent - light yellow hazy fluid	100-3,000	50	103
KP-545L		40	DIMETHICONE	KF-96L-2cs	Colorless, transparent - light yellow hazy fluid	800-8,000	50	103

\* Data figures in tables do not represent specified values.

\* This catalog does not constitute a warranty of quality assurance.

\* For data on compatibility, see P16

For documentation on quality assurance and specifications, please contact a Shin-Etsu sales representative.

\* The display names and INCI names may be changed without notice.

## Trimethylsiloxy-silicates

These film formers are made using partially crosslinked silicones. The silicones are dissolved in volatile oil, which evaporates to leave behind a film that can improve a preparation's water repellency and resistance to water and sebum.

Shin-Etsu offers a diverse line of products made using different solvents which produce films of different hardnesses.

Grade	Main component, INCI	Film hardness	Main component %	Solvent, INCI		Appearance	Viscosity mm <sup>2</sup> /s	Specific gravity 25°C	Refractive index 25°C
KF-7312J	TRIMETHYLSILOXYSILICATE	Hard	50	CYCLOPENTASILOXANE	KF-995	Colorless, transparent liquid	120	1.050	1.405
KF-7312K			60	DIMETHICONE	KF-96A-6cs*1	Colorless, transparent liquid	5,000	1.070	1.410
KF-7312L			50	DIMETHICONE	KF-96L-2cs	Colorless, transparent liquid	120	1.000	1.401
X-21-5595			60	ISODODECANE	Isododecane	Colorless, transparent liquid	30	0.967	1.416
X-21-5249	TRIMETHYLSILOXYSILICATE	Medium	50	CYCLOPENTASILOXANE	KF-995	Colorless, transparent liquid	60	1.036	1.404
X-21-5249L			50	DIMETHICONE	KF-96L-2cs	Colorless, transparent liquid	15	0.980	1.400
X-21-5250	TRIMETHYLSILOXYSILICATE	Soft	50	CYCLOPENTASILOXANE	KF-995	Colorless, transparent liquid	60	1.034	1.404
X-21-5250L			50	DIMETHICONE	KF-96L-2cs	Colorless, transparent liquid	10	0.970	1.399
X-21-5616			60	ISODODECANE	Isododecane	Colorless, transparent liquid	10	0.916	1.412
KF-9021	TRIMETHYLSILOXYSILICATE	Very Hard	50	CYCLOPENTASILOXANE	KF-995	Colorless, transparent liquid	2,000	1.070	1.406
KF-9021L			50	DIMETHICONE	KF-96L-2cs	Colorless, transparent liquid	180	1.020	1.402
KF-9021-ID			50	ISODODECANE	Isododecane	Colorless, transparent liquid	20	0.922	1.419

\*1 KF-96A-6cs is non-volatile fluid.

\* For data on compatibility, see P16

\* Data figures in tables do not represent specified values.

\* This catalog does not constitute a warranty of quality assurance.

For documentation on quality assurance and specifications, please contact a Shin-Etsu sales representative.

\* The display names and INCI names may be changed without notice.

# Silicone Waxes

These silicone acrylate waxes are based on acrylic polymers with silicone and long-chain alkyl groups in their side chains. They spread on smoothly seeming to melt into skin, produce a tightly conforming film and impart a moist feel.

## Silicone Waxes

Grade	INCI	Appearance	Melt point °C	Liquid
KP-561P	ACRYLATES/STEARYL ACRYLATE/DIMETHICONE METHACRYLATE COPOLYMER	Solid	25-35	Neutral

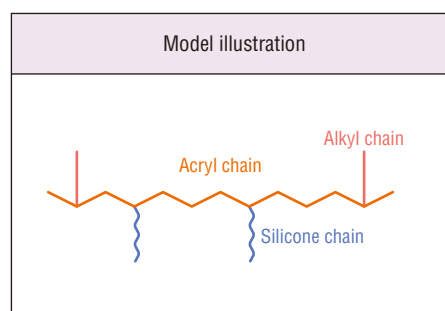
\* Data figures in tables do not represent specified values.

\* This catalog does not constitute a warranty of quality assurance. For documentation on quality assurance and specifications, please contact a Shin-Etsu sales representative.

\* The display names and INCI names may be changed without notice.

### ■ Luster of lipsticks made with KP-561P

		Sample A	Sample B	Sample C
Formulation	Candelilla wax	8.0%	8.0%	8.0%
	Polyethylene wax	8.0%	8.0%	8.0%
	KP-561P	15.0%	—	—
	Polyhydric alcohol	—	15.0%	—
	Rosin-modified resin	—	—	15.0%
	KF-54	3.0%	3.0%	3.0%
	Isotridecyl isononanoate	20.0%	20.0%	20.0%
	Glyceryl isostearate	16.0%	16.0%	16.0%
	Polyglyceryl triisostearate	30.0%	30.0%	30.0%
	Pigment	Suitable qty.	Suitable qty.	Suitable qty.
Result	Luster	47	39	21



\* A fixed quantity of each sample was applied to test strips, and measurements were taken with a VG-2000 gloss meter. (VG-2000: Nihon Denshoku gloss meter)

### ■ Compatibility with various cosmetic product ingredients (concentration: 10 wt%)

	KP-543	KP-545	X-21-5250	X-21-5249	KF-7312J	KF-9021	TSPL-30-ID	NBN-30-ID	KP-561P
KF-995	I	S	S	S	S	S	S	S	S
KF-96A-6cs	I	S	S	S	S	S	S	S	I
KF-96A-10cs	I	S	S	S	S	S	S	S	I
KF-56A	S	S	S	S	S	S	S	S	S
Triethylhexanoin	S	S	S	S	S	S	S	S	S
Isotridecyl isononanoate	I	S	S	S	S	S	S	S	S
Isododecane	I	S	S	S	S	S	S	S	S
Mineral oil	I	I	S	I	I	I	I	S	S
Squalane	I	I	S	I	I	I	I	S	S
Ethanol*	I	I	I	I	I	I	I	I	I
Water	I	I	I	I	I	I	I	I	I

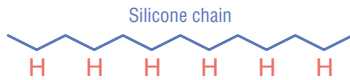
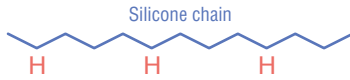
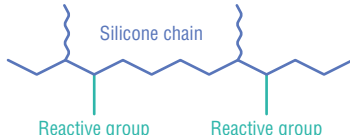
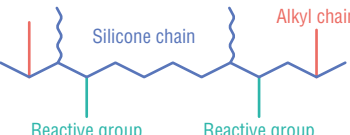


S: Soluble I: Insoluble (at room temperature) \* Purity ca.95%



# Powder Treatments

Shin-Etsu produces a line of surface treatment agents designed to improve the dispersibility of powders. The straight silicone types help keep make-up looking good longer, thanks to their powerful water repellency. The branched and silicone acrylate types have excellent dispersibility in a variety of oils.

## Product type

Type		Product	Model illustration
Linear silicone type (hydrogen type)		KF-99P	
		KF-9901	
Branched type	Silicone branched type	KF-9908	
	Silicone / alkyl branched type	KF-9909	
Silicone acrylate type		KP-541	
		KP-574	

## Powder Treatments

Grade	INCI	Viscosity 25°C, mm <sup>2</sup> /s	Specific gravity 25°C	Refractive index 25°C	Volatile content 105°C x 3 h, %
KF-99P	METHICONE	20	0.999	1.396	< 5
KF-9901	HYDROGEN DIMETHICONE	20	0.971	1.398	< 5
KF-9908	TRIETHOXYSILYLETHYL POLYDIMETHYLSILOXYETHYL DIMETHICONE	60	0.962	1.412	< 5
KF-9909	TRIETHOXYSILYLETHYL POLYDIMETHYLSILOXYETHYL HEXYL DIMETHICONE	45	0.962	1.415	< 5
KP-541	ACRYLATES/DIMETHICONE COPOLYMER	500-10,000	0.927	1.415	40
	ISOPROPYL ALCOHOL				
KP-574	ACRYLATES/TRIDECYL ACRYLATE/TRIETHOXYSILYLPROPYL METHACRYLATE/ DIMETHICONE METHACRYLATE COPOLYMER	300	0.981	1.416	< 5

\* Data figures in tables do not represent specified values.

\* This catalog does not constitute a warranty of quality assurance. For documentation on quality assurance and specifications, please contact a Shin-Etsu sales representative.

\* The display names and INCI names may be changed without notice.

# Silicone Powders

These high-performance powders offer the fine properties of silicones, such as good lubricity, softness and high light diffusibility. The feel these powders impart will vary depending on their structure and particle size. The customer has great control in adjusting that feel, which can open the door to the development of more sophisticated cosmetic products.

## Hybrid Silicone Powders

Our hybrid silicone powders were created by coating spherical particles of silicone rubber powder with a silicone resin.

These powders have characteristics of both a rubber and resin, giving them softness and a nice, smooth feel in addition to excellent dispersibility.

They also provide excellent soft-focus effect, help to conceal wrinkles, pores and other skin problems, and resulting in a smooth and natural look.

We offer a range of powders with different oil-absorption properties, depending on the type of modifying groups used in the rubber portion.

Grade	INCI	Appearance	Loss on drying 105°C x 3 h, %	True specific gravity	Average particle size µm	Rubber hardness Durometer A
<b>KSP-100</b>	VINYL DIMETHICONE/METHICONE SILSESQUIOXANE CROSSPOLYMER	White, spherical powder	0.1	1.00	5	30
<b>KSP-101</b>	VINYL DIMETHICONE/METHICONE SILSESQUIOXANE CROSSPOLYMER	White, spherical powder	0.1	0.98	12	30
<b>KSP-102</b>	VINYL DIMETHICONE/METHICONE SILSESQUIOXANE CROSSPOLYMER	White, spherical powder	0.1	0.98	30	30
<b>KSP-105</b>	VINYL DIMETHICONE/METHICONE SILSESQUIOXANE CROSSPOLYMER	White, spherical powder	0.1	0.99	2	75
<b>KSP-300</b>	DIPHENYL DIMETHICONE/VINYL DIPHENYL DIMETHICONE/SILSESQUIOXANE CROSSPOLYMER	White, spherical powder	0.1	1.11	5	40
<b>KSP-411</b>	POLYSILICONE-1 CROSSPOLYMER	White, spherical powder	0.1	0.99	12	22
<b>KSP-441</b>	POLYSILICONE-22	White, spherical powder	0.1	0.92	12	—

## Silicone Resin Powders

These silicone powders consist of spherical particles and provide a dry, silky feel. Low oil absorption and high dispersibility.

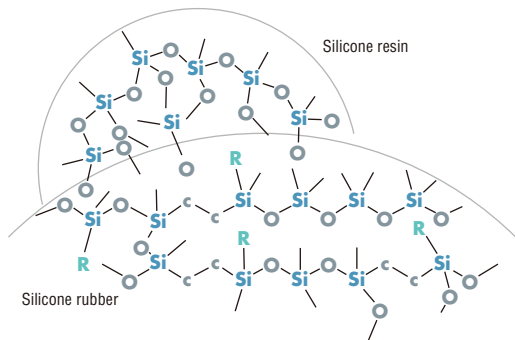
Grade	INCI	Appearance	Loss on drying 105°C x 3 h, %	True specific gravity	Average particle size µm
<b>KMP-590</b>	POLYMETHYLSILSESQUIOXANE	White, spherical powder	1.0	1.32	2
<b>KMP-591</b>	POLYMETHYLSILSESQUIOXANE	White, spherical powder	1.0	1.32	5
<b>KMP-592</b>	METHYL/PHENYL POLYSILSESQUIOXANE	White, spherical powder	1.0	1.32	2

\* Data figures in tables do not represent specified values.

\* This catalog does not constitute a warranty of quality assurance. For documentation on quality assurance and specifications, please contact a Shin-Etsu sales representative.

\* The display names and INCI names may be changed without notice.

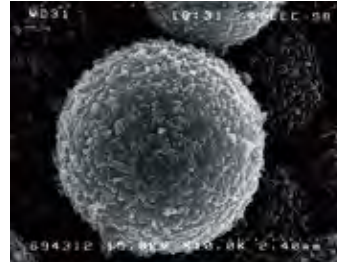
■ Molecular model (Hybrid Silicone Powders)



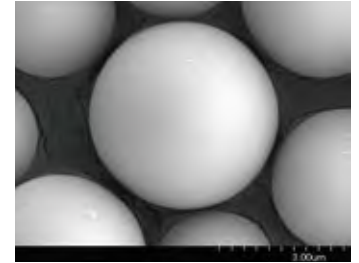
R=methyl groups, phenyl groups, alkyl groups

■ Electron micrograph

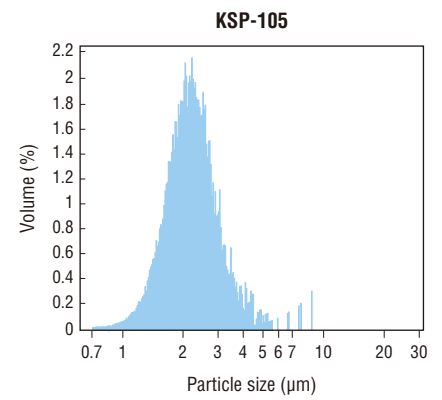
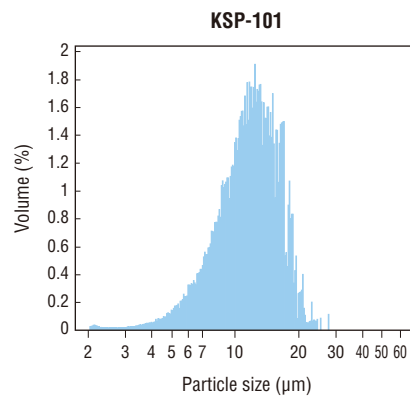
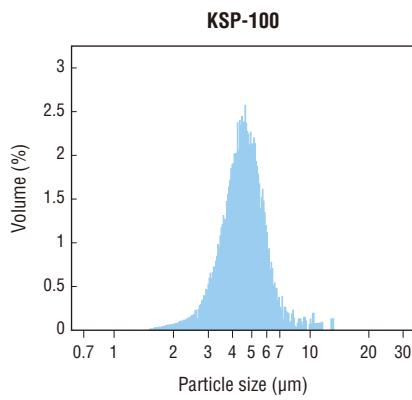
KSP-100



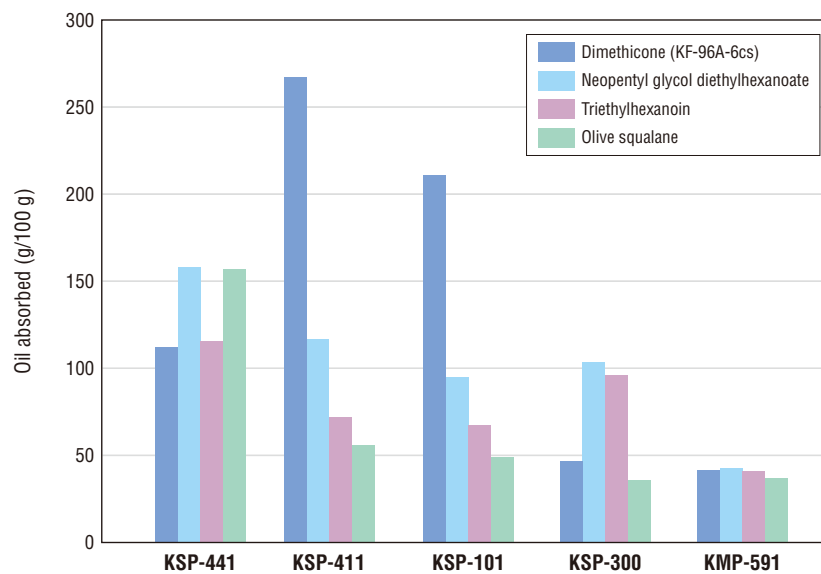
KMP-591



■ Particle size distribution



■ Absorption of various oils



# Powder Dispersions (UV Blockers)

The SPD series are line of fine titanium dioxide or zinc oxide particles dispersed in volatile silicone fluid. They can be used not only for sunscreens, but also for producing make-up products such as cosmetic bases and liquid foundations

## SPD Series

- Even though these are highly concentrated dispersions of fine particles of titanium dioxide or zinc oxide, they are very low viscosity and are easy to handle.
- Excellent dispersibility
- High SPF products can be created simply by adding a product from our SPD Series.
- Gives a smooth feel with no tackiness.

Grade	INCI	Appearance	Viscosity 25°C, mPa·s	Specific gravity 25°C	Powder content 105°C x 3 h wt%	Transmissivity*1 %
<b>SPD-T5</b>	CYCLOPENTASILOXANE (and) TITANIUM DIOXIDE (and) POLYGLYCERYL-3 POLYDIMETHYLSILOXYETHYL DIMETHICONE (and) ALUMINUM HYDROXIDE (and) STEARIC ACID	White- light gray fluid	< 4,000	1.3	40	> 65
<b>SPD-T5L</b>	DIMETHICONE (and) TITANIUM DIOXIDE (and) POLYGLYCERYL-3 POLYDIMETHYLSILOXYETHYL DIMETHICONE (and) ALUMINUM HYDROXIDE (and) STEARIC ACID	White- light gray fluid	< 4,000	1.2	40	> 65
<b>SPD-T7</b>	CYCLOPENTASILOXANE (and) TITANIUM DIOXIDE (and) POLYGLYCERYL-3 POLYDIMETHYLSILOXYETHYL DIMETHICONE (and) ALUMINUM HYDROXIDE (and) STEARIC ACID	White- light gray fluid	< 4,000	1.4	45	> 45
<b>SPD-Z5</b>	ZINC OXIDE (and) CYCLOPENTASILOXANE (and) POLYGLYCERYL-3 POLYDIMETHYLSILOXYETHYL DIMETHICONE (and) TRIETHOXYSILYLETHYL POLYDIMETHYLSILOXYETHYL HEXYL DIMETHICONE	White- light yellow fluid	< 4,000	1.7	60	> 65

\*1: Transmissivity at 400 nm. Measured with a spectrophotometer.

\* Data figures in tables do not represent specified values.

\* This catalog does not constitute a warranty of quality assurance.

For documentation on quality assurance and specifications, please contact a Shin-Etsu sales representative.

\* The display names and INCI names may be changed without notice.

■ Transparency of the SPD Series

SPD-T5



Composition  
 Fine Titanium Dioxide (coated)..... 40 wt%  
 Cyclopentasiloxane.....50 wt%  
 Silicone Dispersant.....10 wt%

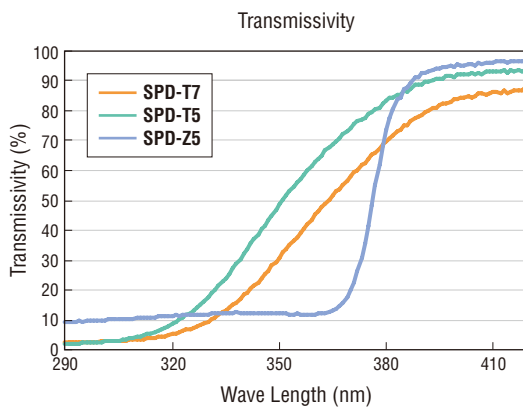
SPD-Z5



Composition  
 Fine Zinc Oxide (coated) ..... 60 wt%  
 Cyclopentasiloxane.....35 wt%  
 Silicone Dispersant.....5 wt%

\* Photographs taken through a glass plate coated with SPD-T5/Z5 (Thickness: 6 μm)

■ Transmission spectrum of SPD-T7, SPD-T5, SPD-Z5



\* Test method  
 Each sample coated on a quartz plate with thickness of 6 μm by wire bar.  
 Percent transmission was measured by a spectrophotometer.

## Handling Precautions

- Since changes in quality may occur due to exposure to heat, humidity, light or acidic or alkaline environments, be sure to close tightly and store in a cool, dark location.
- Wear rubber gloves, safety glasses and other protective gear to prevent contact with the skin and mucous membranes. In case of eye contact, immediately flush eyes with plenty of running water, and consult a physician if necessary.
- To clean, wipe off excess with a rag and then wash with water.
- Keep out of reach of children.
- Please read the Safety Data Sheet (SDS) before use. SDS can be obtained from our Sales Department.

# Applications

## O/W Cream

1. KSG-15*1	8.0 wt%
2. KSG-16*1	30.0 wt%
3. KF-995*1	10.0 wt%
4. 1,3-Butylene Glycol	3.0 wt%
5. KF-6100*1	0.6 wt%
6. KF-6104*1	0.3 wt%
7. SIMULGEL 600*2	0.6 wt%
8. Ammonium Acryloyldimethyltaurate/ VP copolymer (5% aq)	13.0 wt%
9. Sodium Chloride (1% aq)	8.0 wt%
10. Water	26.5 wt%

- A. Combine 1, 2 and 3 with stirring.  
 B. Combine 4 - 9 and 10 with stirring.  
 C. Add A to B with stirring.

\*1: Shin-Etsu

\*2: SEPPIC

## Wrinkle Concealer

1. KSG-210*1	5.0 wt%
2. KSG-15*1	55.0 wt%
3. KSG-16*1	15.0 wt%
4. KF-995*1	8.0 wt%
5. KSP-101*1	12.0 wt%
6. KF-9028*1	5.0 wt%

- A. Combine 1-5 and 6 with stirring.

\*1: Shin-Etsu

## W/O Cream (water break type)

1. KSG-210*1	3.0 wt%
2. KSG-15*1	1.0 wt%
3. KF-6017*1	0.1 wt%
4. KF-96A-6cs*1	8.9 wt%
5. 1,3-Butylene Glycol	8.0 wt%
6. Ethanol*2	5.0 wt%
7. Sodium Citrate	0.2 wt%
8. Sodium Chloride	0.5 wt%
9. Water	73.3 wt%

- A. Combine 1 - 3 and 4 with stirring.  
 B. Combine 5 - 8 and 9 with stirring.  
 C. Add B to A with stirring.

\*1: Shin-Etsu

\*2: Purity ca.95%

## W/O Cream (moisturizing type)

1. KSG-710*1	4.0 wt%
2. KSG-15*1	1.0 wt%
3. KF-6104*1	3.0 wt%
4. KF-96A-6cs*1	13.0 wt%
5. 1,3-Butylene Glycol	8.0 wt%
6. Ethanol*2	5.0 wt%
7. Sodium Citrate	0.2 wt%
8. Sodium Chloride	0.5 wt%
9. Water	65.3 wt%

- A. Combine 1 - 3 and 4 with stirring.  
 B. Combine 5 - 8 and 9 with stirring.  
 C. Add B to A with stirring.

\*1: Shin-Etsu

\*2: Purity ca.95%

### W/O Liquid Foundation

1. KSG-210*1	3.5 wt%
2. KSG-15*1	5.0 wt%
3. KF-6028*1	2.0 wt%
4. Disteardimonium Hectorite	1.2 wt%
5. Triethylhexanoin	5.0 wt%
6. KF-96A-6cs*1	6.5 wt%
7. KF-995*1	22.6 wt%
8. KP-578*1	0.5 wt%
9. Pigment (Treated with KF-9909*1)	10.0 wt%
10. Dipropylene Glycol	5.0 wt%
11. Sodium Citrate	0.2 wt%
12. Water	38.5 wt%

- A. Combine 1-5, a part of 6 and a part of 7 until uniformly dispersed.  
 B. Add 9 to the rest of 6, the rest of 7 and 8, and mix with roller.  
 C. Combine 10, 11 and 12 mix until dissolved.  
 D. Add C to A with stirring.  
 E. Add B to D with stirring.  
 \*1: Shin-Etsu

### Powder Foundation

1. Mineral Oil	2.0 wt%
2. Squalane	2.0 wt%
3. KF-96A-20cs*1	3.0 wt%
4. Polyethylene	1.5 wt%
5. Mica (Treated with KF-9909*1)	40.0 wt%
6. Barium Sulfate	10.0 wt%
7. Titanium Dioxide (Treated with KF-9909*1)	9.0 wt%
8. KSP-300*1	3.0 wt%
9. KMP-590*1	4.5 wt%
10. Talc (Treated with KF-9909*1)	25.0 wt%
11. Iron Oxides (Treated with KF-9909*1)	q.s.

- A. Combine 1, 2 and 3.  
 B. Combine 4-10 and 11, and blend until uniform.  
 C. Add A to B and disperse until uniform.  
 D. Press C into a mold.  
 \*1: Shin-Etsu

### Sunscreen Lotion (SPF: 50+, PA++\*2)

1. KSG-210*1	3.0 wt%
2. KSG-15*1	2.0 wt%
3. KF-96A-6cs*1	5.0 wt%
4. KF-995*1	5.0 wt%
5. KF-6028*1	1.0 wt%
6. Isotridecyl Isononanoate	4.0 wt%
7. SPD-T5*1	25.0 wt%
8. SPD-Z5*1	35.0 wt%
9. Dipropylene Glycol	2.0 wt%
10. Sodium Citrate	0.2 wt%
11. Sodium Chloride	1.0 wt%
12. Water	16.8 wt%

- A. Combine 1 - 5 and 6 with stirring.  
 B. Combine 9 - 11 and 12 with stirring.  
 C. Add B to A. with stirring.  
 D. Add 7, 8 to C with stirring.  
 \*1: Shin-Etsu  
 \*2: By Consumer Product Testing Co.

### Lip Stick

1. Candelilla Wax	4.0 wt%
2. Polyethylene	2.0 wt%
3. Microcrystalline Wax	3.0 wt%
4. Ceresin	7.0 wt%
5. KP-561P*1	15.0 wt%
6. KF-6105*1	3.0 wt%
7. Macadamia Ternifolia Seed Oil	28.0 wt%
8. Diisostearyl Malate	10.0 wt%
9. Hydrogenated Polyisobutene	10.0 wt%
10. Isotridecyl Isononanoate	18.0 wt%
11. Pigment Base*2	q.s
12. Mica	q.s

- A. Combine 1 - 9 and 10 with stirring (90°C).  
 B. Add 11, 12 to A with stirring.  
 \*1: Shin-Etsu  
 \*2: Polyglyceryl-2 Triisostearate 60 % Base

## Silicone Division Sales and Marketing Department I

6-1, Ohtemachi 2-chome, Chiyoda-ku, Tokyo, Japan

Phone : +81-(0)3-3246-5132 Fax : +81-(0)3-3246-5361

### Shin-Etsu Silicones Europe B.V.

Bolderweg 32, 1332 AV, Almere, The Netherlands

Phone : +31-(0)36-5493170 Fax : +31-(0)36-5326459

(Products & Services: Products for Cosmetics Application)

#### Germany Branch

Rheingastrasse 190-196, 65203 Wiesbaden, Germany

Phone : +49-(0)611-962-5366 Fax : +49-(0)611-962-9266

(Products & Services: Products for Industrial Applications)

### Shin-Etsu Silicone Taiwan Co., Ltd.

Hung Kuo Bldg. 11F-D, No. 167, Tun Hua N. Rd.,

Taipei, 10549 Taiwan, R.O.C.

Phone : +886-(0)2-2715-0055 Fax : +886-(0)2-2715-0066

### Shin-Etsu Silicone Korea Co., Ltd.

GT Tower 15F, 411, Seocho-daero, Seocho-gu,

Seoul 06615, Korea

Phone : +82-(0)2-590-2500 Fax : +82-(0)2-590-2501

### Shin-Etsu Singapore Pte. Ltd.

4 Shenton Way, #10-03/06, SGX Centre II, Singapore 068807

Phone : +65-6743-7277 Fax : +65-6743-7477

### Shin-Etsu Silicones India Pvt. Ltd.

Unit No. 403A, Fourth Floor, Eros Corporate Tower,

Nehru Place, New Delhi 110019, India

Phone : +91-11-43623081 Fax : +91-11-43623084

### Shin-Etsu Silicones (Thailand) Ltd.

7th Floor, Harindhorn Tower, 54 North Sathorn Road,  
Bangkok 10500, Thailand

Phone : +66-(0)2-632-2941 Fax : +66-(0)2-632-2945

### Shin-Etsu Silicone International Trading (Shanghai) Co., Ltd.

29F Junyao International Plaza, No.789,

Zhao Jia Bang Road, Shanghai 200032, China

Phone : +86-(0)21-6443-5550 Fax : +86-(0)21-6443-5868

#### Guangzhou Branch

Room 2409-2410, Tower B, China Shine Plaza, 9 Linhexi Road,  
Tianhe, Guangzhou, Guangdong 510610, China

Phone : +86-(0)20-3831-0212 Fax : +86-(0)20-3831-0207

- The data and information presented in this catalog may not be relied upon to represent standard values. Shin-Etsu reserves the right to change such data and information, in whole or in part, in this catalog, including product performance standards and specifications without notice.
- Users are solely responsible for making preliminary tests to determine the suitability of products for their intended use. Statements concerning possible or suggested uses made herein may not be relied upon, or be construed, as a guaranty of no patent infringement.
- The silicone products described herein have been designed, manufactured and developed solely for general industrial use only; such silicone products are not designed for, intended for use as, or suitable for, medical, surgical or other particular purposes. Users have the sole responsibility and obligation to determine the suitability of the silicone products described herein for any application, to make preliminary tests, and to confirm the safety of such products for their use.
- Users must never use the silicone products described herein for the purpose of implantation into the human body and/or injection into humans.
- Users are solely responsible for exporting or importing the silicone products described herein, and complying with all applicable laws, regulations, and rules relating to the use of such products. Shin-Etsu recommends checking each pertinent country's laws, regulations, and rules in advance, when exporting or importing, and before using the products.
- Please contact Shin-Etsu before reproducing any part of this catalog.  
Copyright belongs to Shin-Etsu Chemical Co., Ltd.



The Development and Manufacture of Shin-Etsu Silicones are based on the following registered international quality and environmental management standards.

**Gunma Complex** ISO 9001 ISO 14001  
(JCQA-0004 JCQA-E-0002)

**Naoetsu Plant** ISO 9001 ISO 14001  
(JCQA-0018 JCQA-E-0064)

**Takefu Plant** ISO 9001 ISO 14001  
(JQA-0479 JQA-EM0298)

"Shin-Etsu Silicone" is a registered trademark of Shin-Etsu Chemical Co., Ltd. <https://www.shinetsusilicone-global.com/>