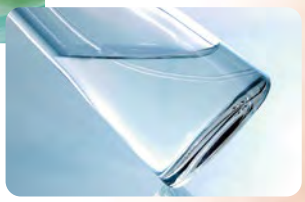
Shin-Etsu Silicone

Silicone Products for Personal Care
Unique Materials Plus
(For North and South America)



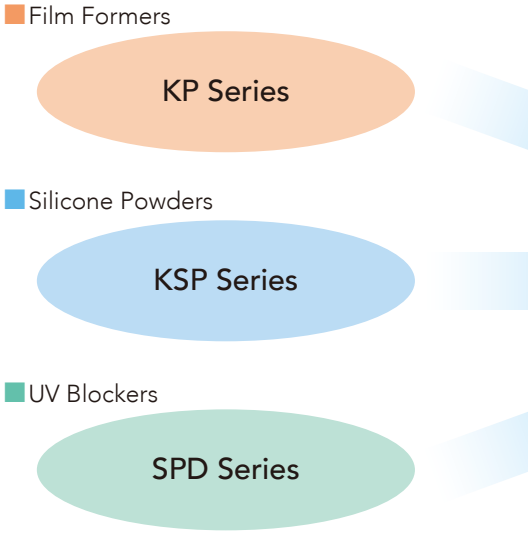
1.2024

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

Innovating Sensory Sol

Table of Contents

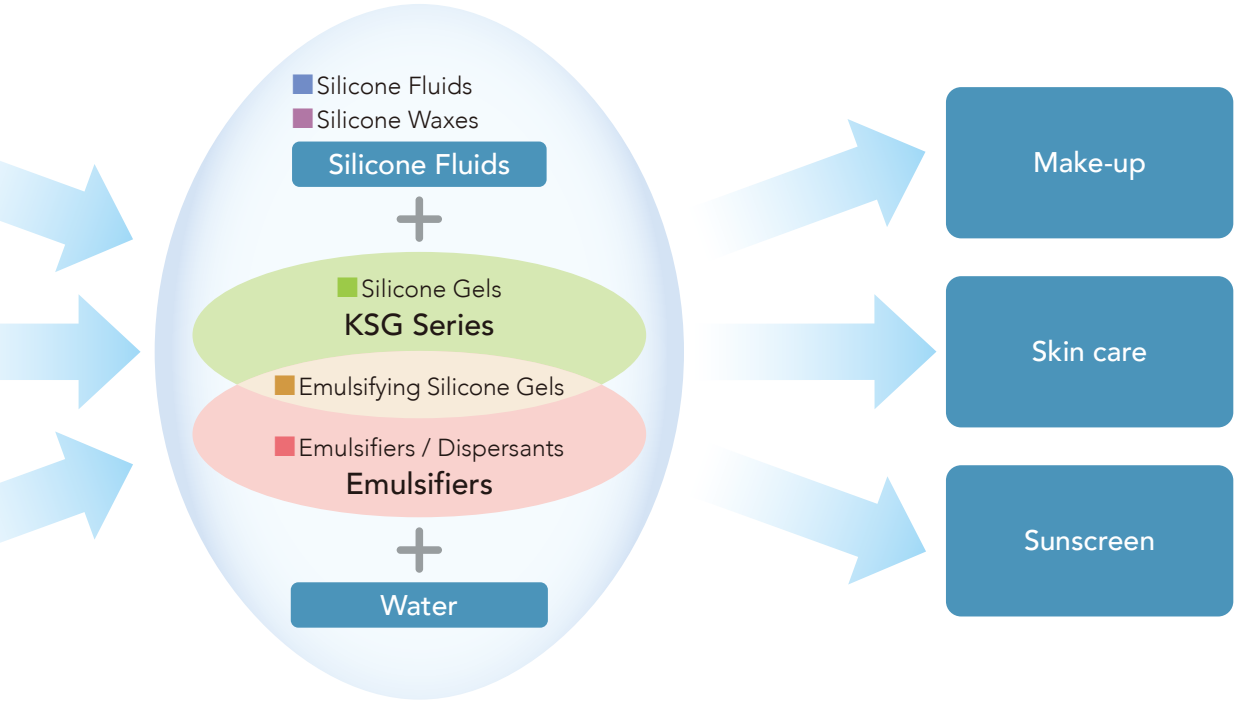
Shin-Etsu Formulation Design



Raw materials for personal care products	Skin care	Emulsified make-up Sunscreen
P5 Silicone Fluids	●Light, smooth feel ●Excellent spreadability ●Improve water repellency ●Volatility control ●Enhance gloss	●Volatility control ●Improve water repellency ●Light, smooth feel ●Excellent spreadability ●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	●W/O, O/W emulsifier; Control & Stabilization of emulsion particles ●Improve powder dispersibility and stability ●Reduce tackiness
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	●W/O emulsions, stabilization of emulsion particles ●Create high internal-phase, macro W/O emulsions ●Oil phase thickener
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	●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
P14 Film Formers	●Provide substantive feel ●Improve resistance to water, sebum and rubbing off	●Improve resistance to water, sebum and rubbing off → Long-lasting effect for sunscreen, prevent color migration, help keeping make-up in place
P16 Silicone Waxes	●Smoother skin, rich moisturizing effect	●Smoother skin, rich moisturizing effect ●Improve film feel
P18 Silicone Powders	●Soft, silky feel ●Reduce tackiness ●Easy to apply ●Soft-focus effect (conceals wrinkles, pores)	●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_2 or ZnO particles → Results in powerful UV-blocking effect ●Non-whitening, non-tacky	●Can be compounded with high concentrations of TiO_2 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	Lip color	Mascara
●Use as binder to impart a light, smooth feel	●Enhance gloss ●Help lip color go on smooth when applying	●Volatile oil (used for film former)
●Improve dispersibility of powders → Improve wetting of powders by binders	●Improve dispersibility of powders ●Prevent syneresis in non-aqueous formulations ●W/O emulsifier	●Improve dispersibility of powders ●Prevent syneresis in non-aqueous formulations ●W/O emulsifier
●Easy spread on skin ●Better adhesion with skin	●Oil phase thickener ●Prevent syneresis in non-aqueous formulations ●W/O emulsions, stabilization of emulsion particles	●W/O emulsions, consistent emulsion particle size
●Use as a binder to improve cohesion	●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 resistance to water, sebum and rubbing off → Long-lasting effect, prevent color migration ●Curl-hold effect
●Use as a binder to improve “creaminess” of preparations	●Improve creamy feel ●Enhance gloss	
●Soft, silky feel ●Improve smooth skin feeling by ball-bearing effect ●Soft-focus effect for a more natural look	●Reduce tackiness ●Easy spread by “roll on” effect ●Matte finish	●Use as a bulking agent in mascara preparations for a volumizing effect

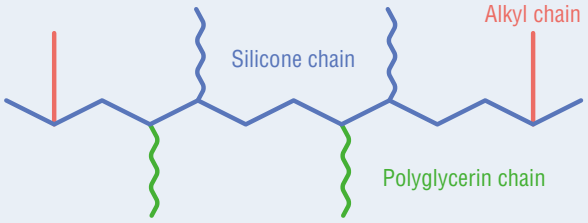
New Topics

Silicone Dispersant

New dispersant with a two-branch structure launched in addition to conventional dispersants KF-6106 and KP-578.
High dispersibility is exhibited in a formulation containing silicone fluids and hydrocarbon oils, UV absorberes, etc. together.

New KF-6115 Polyglycerin Modified Silicone Fluid

■ Molecular Model



Polyglycerin modified silicone dispersant with silicone and alkyl branch

■ Features

POINT 1
It has branched chains of silicone and alkyl, so it is soluble in a wide range of oils.

POINT 2
Stably uniform dispersion of powders in a hybrid oil phase of various oils
Highly stable and transparent formulations are realized.

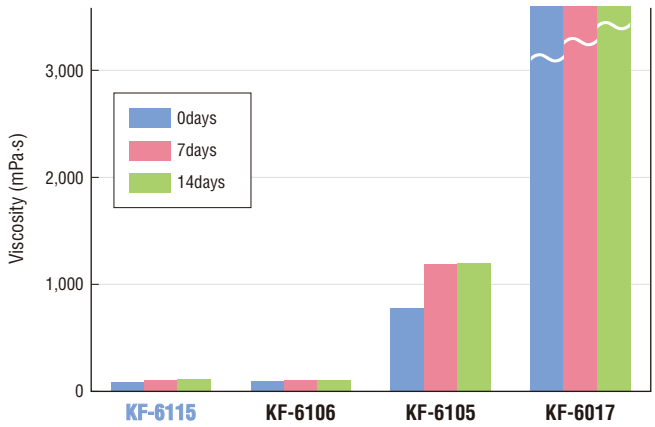
POINT 3
Highly effective in sunscreens and foundations containing silicone fluids and UV absorbers!

■ General Properties

Grade	Polymer, INCI	Viscosity 25°C, mm²/s	Specific gravity 25°C	HLB
KF-6115	LAURYL POLYGLYCERYL-3 POLYDIMETHYLSILOXYETHYL DIMETHICONE	1,000	0.945	Low

■ Dispersibility of Superfine Titanium Dioxide

—Viscosity of dispersions prepared with Bead-Mill—



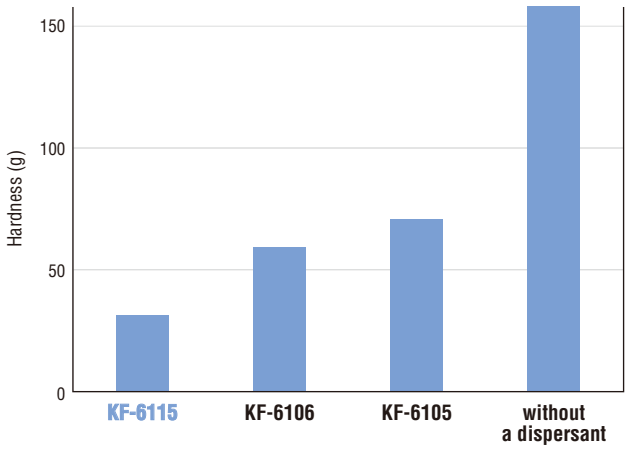
(Spindle No.2 / No.3, 30 rpm, 30 sec.)

Emulsifier: 6%, TiO_2: 45%, KF-995: 49%
TiO_2: treated with $Al(OH)_3$ / stearic acid

This is an example of dispersing a high concentration of superfine titanium dioxide in silicone fluid using a bead mill. When using KF-6115, KF-6106, the dispersions become low viscosity. Further, they maintain low viscosity even with time. It shows the powders were well-dispersed and the preparations to be highly stable. KF-6115 is particularly suitable for formulations containing various oils such as silicone oils, hydrocarbon oils and UV absorbers.

■ Dispersibility of Superfine Titanium Dioxide / Color Pigments

—Hardness of powder pastes prepared with Roll-Mill—



Rheometer (rod: 3 mm, speed: 5 cm/min, depth: 10 mm)

Emulsifier: 1 part, Superfine TiO_2: 5 parts, Color pigment: 10 parts, KF-56A: 5 parts
Superfine TiO_2; $Al(OH)_3$ / stearic acid treatment,
Color pigments; KTP-09W, R, Y, B

This is an example of dispersing superfine titanium dioxide and color pigments (titanium dioxide, iron oxide) through a roll mill. Each paste includes phenyl-modified silicone (KF-56A) as the base-oil and each dispersant. Paste with KF-6115 significantly reduces hardness compared to using other surfactants, making it easier to apply powders into formulations.

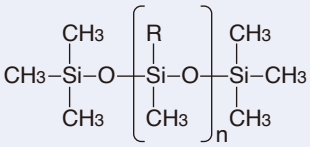
Silicone Fluids

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.

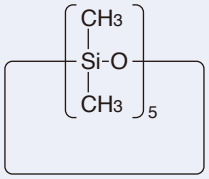
Grade	Polymer, INCI	Type	Viscosity 25°C, mm²/s	Specific gravity 25°C	Refractive index 25°C	Boiling point °C	Flash point °C
DM-FLUID-1cs	TRISILOXANE	Linear	1.0	0.818	1.382	153	37
DM-FLUID-1.5cs	DIMETHICONE	Linear	1.5	0.852	1.387	194	64
DM-FLUID-2cs	DIMETHICONE	Linear	2.0	0.873	1.391	229	88
KF-4422 New	ETHYL METHICONE	Linear	2.2	0.863	1.400	277	82
KF-995	CYCLOPENTASILOXANE	Cyclic	4.0	0.956	1.396	210	77
TMF-1.5	METHYL TRIMETHICONE	Branched	1.5	0.847	1.386	191	60

Linear silicone fluid

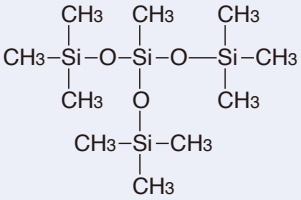


Note:
DM-FLUID-1cs, DM-FLUID-1.5cs, DM-FLUID-2cs : R=Methyl group
KF-4422 : R=Ethyl group

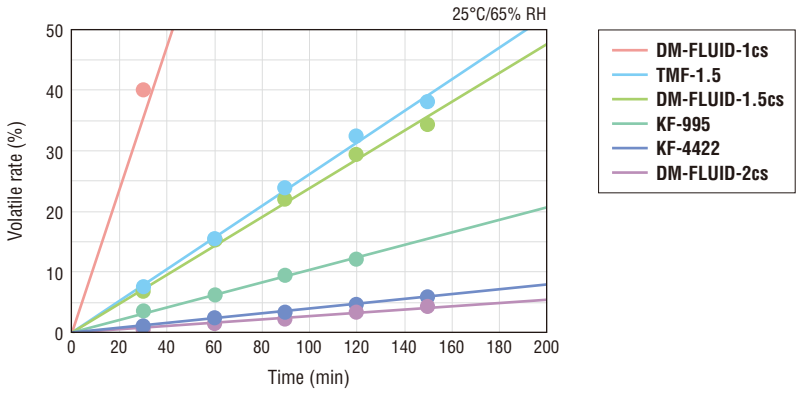
Silicone cyclics



Branched silicone fluid



■ Evaporation rate



Silicone Fluids

DM-FLUID-A-6cs is a non-volatile dimethyl silicone fluid. It has a narrow molecular weight distribution, is low viscosity and is easy to handle. DM-FLUID-A-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. KF-4418 is an alkyl-modified silicone fluid with smooth and skin-affinity feel, and highly compatible with various 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, mm²/s	Specific gravity 25°C	Refractive index 25°C	Pour point °C	Flash point °C
DM-FLUID-A-6cs	DIMETHICONE	6	0.925	1.397	< -100	174
KF-56A	DIPHENYLSILOXY PHENYL TRIMETHICONE	15	0.995	1.498	< -55	> 100
KF-4418 New	CAPRYLYL METHICONE	2.9	0.836	1.413	< -100	94

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

S: Soluble I: Insoluble

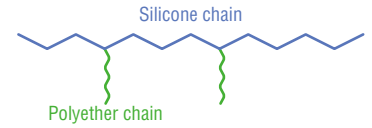
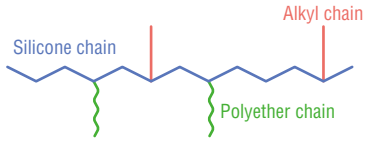
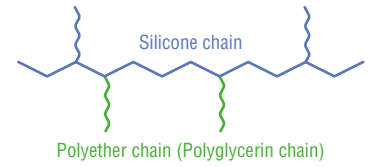
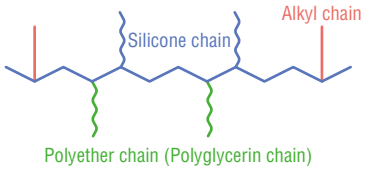
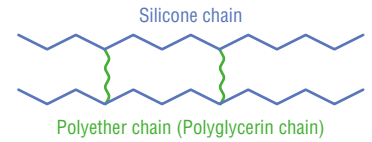
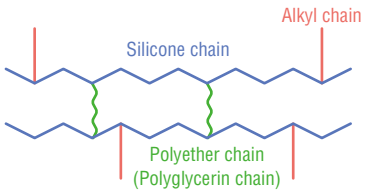
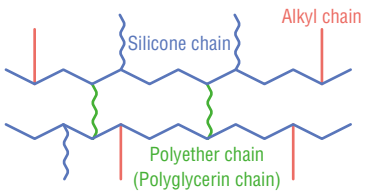
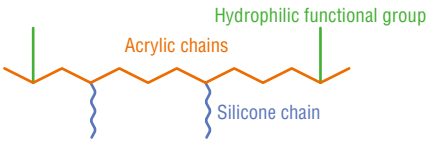
Oil	DM-FLUID-A-6cs	KF-56A	KF-4418
DM-FLUID-100cs	S	S	S
Triethylhexanoin	S	S	S
Isotridecyl isononanoate	S	S	S
Neopentyl glycol diethylhexanoate	S	S	S
Cetyl ethylhexanoate	S	S	S
Squalane	S	S	S
Isostearic acid	I	S	S
Jojoba oil	I	S	S
Ethylhexyl methoxycinnamate	I	S	S

✻ 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. ✻ INCI names are subject to change 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	**KF-6011** **KF-6011P** **KF-6012** **KF-6015** **KF-6017** **KF-6017P** **KF-6043** Details ▶ P7	
	Polyether / alkyl co-modified	**KF-6048** Details ▶ P7	
Branched type (Emulsifiers / Dispersants)	Polyether modified	**KF-6028** **KF-6028P** Details ▶ P8	
	Polyglycerin modified	**KF-6104** **KF-6106** Details ▶ P8	
	Polyether / alkyl co-modified	**KF-6038** Details ▶ P8	
	Polyglycerin / alkyl co-modified	**KF-6105** **KF-6115** New Details ▶ P8	
Cross-linked polymer type (Emulsifiers)	Polyether modified	**KSG-210** **KSG-240** **KSG-270** New Details ▶ P10	
	Polyglycerin modified	**KSG-710** Details ▶ P11	
	Polyether / alkyl co-modified	**KSG-310** **KSG-320** **KSG-330** **KSG-340** Details ▶ P10	
	Polyglycerin / alkyl co-modified	**KSG-810** **KSG-820** **KSG-830** **KSG-840** Details ▶ P11	
	Polyether / silicone / alkyl co-modified	**KSG-320Z** **KSG-350Z** **KSG-360Z** **KSG-380Z** Details ▶ P10	
	Polyglycerin / silicone / alkyl co-modified	**KSG-820Z** **KSG-850Z** Details ▶ P11	
Silicone acrylate type (Dispersant)		**KP-578** Details ▶ P9	

Polyether Modified Silicone Fluids (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^2/s	Specific gravity 25°C	Refractive index 25°C	HLB wt%, EO/5	Cloud point °C
KF-6011	PEG-11 METHYL ETHER DIMETHICONE	130	1.068	1.450	14.5	65
KF-6011P	PEG-11 METHYL ETHER DIMETHICONE	140	1.062	1.450	14.5	65
KF-6012	PEG/PPG-20/22 BUTYL ETHER DIMETHICONE	1,600	1.030	1.446	7.0	35
KF-6015	PEG-3 DIMETHICONE	150	1.000	1.420	4.5	—
KF-6017	PEG-10 DIMETHICONE	600	1.007	1.420	4.5	—
KF-6017P	PEG-10 DIMETHICONE	850	1.004	1.420	4.5	—
KF-6043	PEG-10 DIMETHICONE	400	1.082	1.454	14.5	71
Alkyl co-modified						
KF-6048	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.
✻ INCI names are subject to change without notice.

Polyether Modified Silicone Fluids (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^2/s	Specific gravity 25°C	Refractive index 25°C	HLB wt%, EO/5
KF-6028	PEG-9 POLYDIMETHYLSILOXYETHYL DIMETHICONE	900	0.998	1.420	4.0
KF-6028P	PEG-9 POLYDIMETHYLSILOXYETHYL DIMETHICONE	900	0.997	1.420	4.0
Alkyl co-modified					
KF-6038	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 Silicone Fluids (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 and KF-6115 offers outstanding performance as a powder dispersant.

Grade	INCI	Viscosity 25°C, mPa·s	Specific gravity 25°C	Refractive index 25°C	HLB
KF-6104	POLYGLYCERYL-3 POLYDIMETHYLSILOXYETHYL DIMETHICONE	4,000	0.976	1.409	Low
KF-6106	POLYGLYCERYL-3 POLYDIMETHYLSILOXYETHYL DIMETHICONE	3,500	0.982	1.412	Low
Alkyl co-modified					
KF-6105	LAURYL POLYGLYCERYL-3 POLYDIMETHYLSILOXYETHYL DIMETHICONE	4,000	0.950	1.426	Low
KF-6115 New	LAURYL POLYGLYCERYL-3 POLYDIMETHYLSILOXYETHYL DIMETHICONE	1,000	0.945	1.431	Low

✻ Please refer to a powder dispersibility data for some surfactants on page 4.

✻ 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.
✻ INCI names are subject to change without notice.

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, mm²/s	Specific gravity 25°C	Refractive index 25°C	HLB
KP-578	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.
✻ INCI names are subject to change 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-6104	KF-6105	KF-6106	KF-6115	KP-578
DM-FLUID-A-6cs (Dimethicone)	I	I	I	S	S	S	I	I	S	S	S	S	S
TMF-1.5 (Methyl Trimethicone)	I	I	S	S	S	S	I	S	S	S	S	S	S
KF-995 (Cyclopentasiloxane)	I	I	S	S	S	S	I	S	S	S	S	S	S
KF-56A (Diphenylsiloxy Phenyl Trimethicone)	S	S	S	S	S	S	I	S	S	S	S	S	S
Mineral Oil	I	I	I	I	I	S	I	S	I	S	I	S	I
Isotridecyl Isononanoate	I	S	S	I	I	S	I	S	S	S	S	S	S
Triethylhexanoin	S	S	S	S	S	S	S	S	I	S	I	S	S
Ethanol*	S	S	S	S	S	I	S	I	I	I	I	I	I
Butylene Glycol	S	I	I	I	I	I	S	I	I	I	I	I	I
Glycerin	I	I	I	I	I	I	I	I	I	I	I	I	I
Water	S	S	I	I	I	I	S	I	I	I	I	I	I

S: Soluble I: Insoluble ✻ Purity ca.95%

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
KSG-210	DIMETHICONE/PEG-10/15 CROSSPOLYMER	20-30	DIMETHICONE	DM-FLUID-A-6cs	Colorless, milky white paste	400	1.403
KSG-240		15-25	CYCLOPENTASILOXANE	KF-995	Colorless, milky white paste	400	1.400
KSG-270 New		15-25	DIPHENYLSILOXY PHENYL TRIMETHICONE	KF-56A	Colorless, milky white paste	370	1.485

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
KSG-310	PEG-15/LAURYL DIMETHICONE CROSSPOLYMER	25-35	MINERAL OIL	Mineral oil	Colorless, milky white paste	400	1.450
KSG-320		20-30	ISODODECANE	Isododecane	Colorless, milky white paste	400	1.420
KSG-330		15-25	TRIETHYLHEXANOIN	Triethylhexanoin	Colorless, milky white paste	395	1.442
KSG-340	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
KSG-320Z	PEG-15/LAURYL POLYDIMETHYLSILOXYETHYL DIMETHICONE CROSSPOLYMER	20-30	ISODODECANE	Isododecane	Colorless, milky white paste	360	1.420
KSG-350Z		20-30	CYCLOPENTASILOXANE	KF-995	Colorless, milky white paste	370	1.404
KSG-360Z		30-40	DIMETHICONE	DM-FLUID-A-6cs	Colorless, milky white paste	410	1.408
KSG-380Z		25-35	DIMETHICONE	DM-FLUID-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.
✻ INCI names are subject to change 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
KSG-710	DIMETHICONE/POLYGLYCERIN-3 CROSSPOLYMER	20-30	DIMETHICONE	DM-FLUID-A-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
KSG-810	LAURYL DIMETHICONE/POLYGLYCERIN-3 CROSSPOLYMER	25-35	MINERAL OIL	Mineral oil	Colorless, milky white paste	380	1.450
KSG-820		20-30	ISODODECANE	Isododecane	Colorless, milky white paste	340	1.420
KSG-830		15-25	TRIETHYLHEXANOIN	Triethylhexanoin	Colorless, milky white paste	380	1.442
KSG-840		25-35	SQUALANE	Squalane	Colorless, milky white paste	380	1.445

Silicone / alkyl branched type

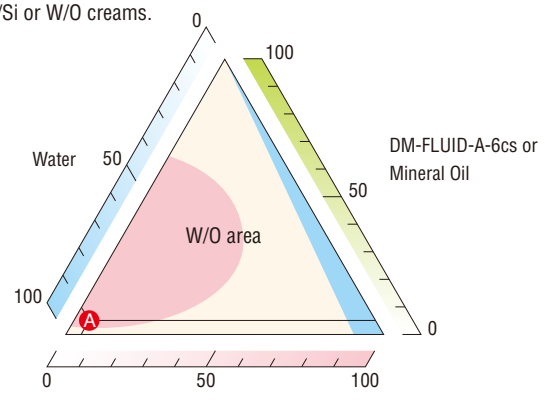
These gels were created by combining polyglycerin-modified crosslinked silicone polymers (having two types of branched chains: silicone and alkyl) with various oils.
They function as emulsifiers for preparing W/O emulsions in which the oil phase will consist of silicone fluid mixed with a hydrocarbon 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
KSG-820Z	POLYGLYCERYL-3/LAURYL POLYDIMETHYLSILOXYETHYL DIMETHICONE CROSSPOLYMER	20-30	ISODODECANE	Isododecane	Colorless, milky white paste	360	1.420
KSG-850Z		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.
✻ INCI names are subject to change without notice.

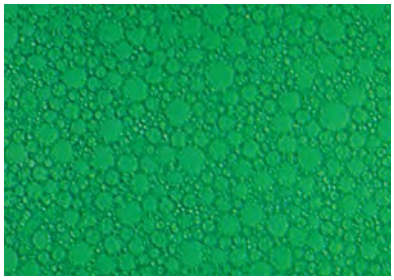
W/O region of KSG-210, -310, -710, -810

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 / DM-FLUID-A-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.



KSG-210, KSG-310, KSG-710, KSG-810

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



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

The Ⓐ point — This diagram illustrates a formulation containing 90% water, 5% DM-FLUID-A-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
KSG-15	DIMETHICONE/VINYL DIMETHICONE CROSSPOLYMER	4-10	CYCLOPENTASILOXANE	KF-995	Colorless, transparent paste	420	1.397
USG-103		8-12	CYCLOPENTASILOXANE	KF-995	Colorless, transparent paste	350	1.398
USG-105		8-12	METHYL TRIMETHICONE	TMF-1.5	Colorless, transparent paste	390	1.388
USG-110		8-12	DIMETHICONE	DM-FLUID-2cs	Colorless, transparent paste	380	1.392

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
KSG-16	DIMETHICONE/VINYL DIMETHICONE CROSSPOLYMER	20-30	DIMETHICONE	DM-FLUID-A-6cs	Colorless, translucent paste	330	1.400
KSG-1610		15-20	METHYL TRIMETHICONE	TMF-1.5	Colorless, translucent paste	380	1.389
KSG-18A	DIMETHICONE/PHENYL VINYL DIMETHICONE CROSSPOLYMER	10-20	DIPHENYLSILOXY PHENYL TRIMETHICONE	KF-56A	Colorless, translucent paste	330	1.495
KSG-19	DIMETHICONE/VINYL DIMETHICONE CROSSPOLYMER	10-20	DIMETHICONE	DM-FLUID-A-6cs	Colorless, translucent paste	360	1.399
KSG-016F		20-30	DIMETHICONE	DM-FLUID-A-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
KSG-41A	VINYL DIMETHICONE/LAURYL DIMETHICONE CROSSPOLYMER	20-30	MINERAL OIL	Mineral oil	Colorless, translucent paste	400	1.455
KSG-42A		15-25	ISODODECANE	Isododecane	Colorless, translucent paste	400	1.421
KSG-43		25-35	TRIETHYLHEXANOIN	Triethylhexanoin	Colorless, translucent paste	400	1.442
KSG-44		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.
✻ INCI names are subject to change without notice.

Silicone / alkyl branched type

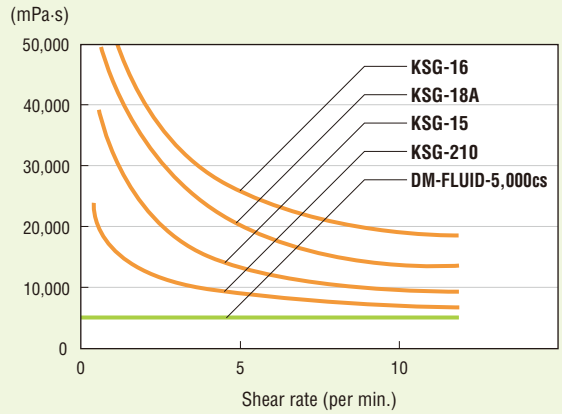
These gels were created by combining crosslinked silicone polymers (having two types of branched chains: silicone and alkyl) with various oils. They function as thickners for the oil phase which consist of silicone fluid mixed with a hydrocarbon oil, and the final preparations will be more stable.

Grade	Cross-linked polymer, INCI	Cross-linked polymer %	Base oil, INCI		Appearance	Penetration (worked) 25°C	Refractive index 25°C
KSG-042Z	LAURYL POLYDIMETHYLSILOXYETHYL DIMETHICONE/ BIS-VINYL DIMETHICONE CROSSPOLYMER	15-25	ISODODECANE	Isododecane	Colorless, transparent paste	330	1.418
KSG-045Z		15-25	CYCLOPENTASILOXANE	KF-995	Colorless, turbidity paste	350	1.401
KSG-048Z		15-25	DIMETHICONE	DM-FLUID-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.
✻ INCI names are subject to change 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

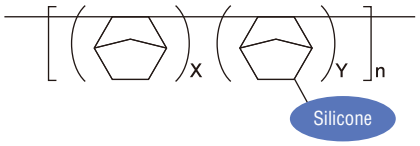
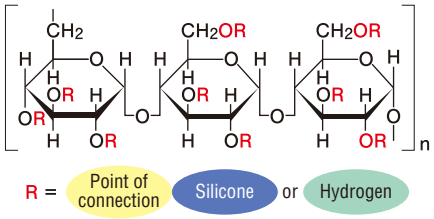
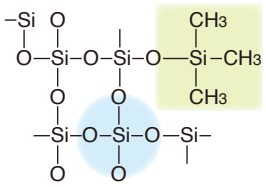
	Elastomer Gel											Emulsifier & Elastomer Gel													
	KSG-15	KSG-16	KSG-18A	KSG-41A	KSG-42A	KSG-43	KSG-44	KSG-042Z	KSG-045Z	KSG-210	KSG-240	KSG-310	KSG-320	KSG-330	KSG-340	KSG-320Z	KSG-350Z	KSG-710	KSG-810	KSG-820	KSG-830	KSG-840	KSG-820Z	KSG-850Z
TMF-1.5 (Methyl Trimethicone)	O	O	O	R	R	R	R	O	O	O	O	R	R	R	R	O	O	O	R	R	R	R	O	O
KF-995 (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
DM-FLUID-A-6cs (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
DM-FLUID-20cs (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
DM-FLUID-100cs (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
KF-56A (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
Isododecane	O	O	R	O	B	O	O	B	O	O	O	O	B	O	O	B	O	O	O	B	O	O	B	O
Mineral Oil	R	R	R	B	O	O	O	O	O	R	R	B	O	O	O	O	O	R	B	O	O	O	O	O
Squalane	R	R	R	R	R	R	B	O	O	R	R	R	R	R	B	O	O	R	R	R	R	B	O	O
Isotridecyl Isononanoate	R	R	O	O	O	O	O	O	O	R	R	O	O	O	O	O	O	R	O	O	O	O	O	O
Cetyl Caprylate	R	R	O	O	O	O	O	O	O	R	R	O	O	O	O	O	O	R	O	O	O	O	O	O
Jojoba (Buxus Chinensis) **Oil**	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Triethylhexanoin	O	O	O	O	O	B	O	O	O	O	O	O	B	O	O	O	O	O	O	B	O	O	O	O
Triisostearin	R	R	R	O	O	O	O	O	O	R	R	O	O	O	O	O	O	R	O	O	O	O	O	O
Macadamia Ternifolia Nut Oil	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	**NBN-30-ID**	Very hard, strong films Non-tacky, smooth feel Highly flexible and oil repellent High spinnability Details ▶P14	
Silicone-modified pullulan	**TSPL-30-ID** **TSPL-30-D5**	Hard, strong films Non-tacky, wet feel Flexible, glossy films Very high oil repellency Details ▶P14	
Silicone Acrylates	**KP-543** **KP-545** **KP-549** **KP-550** **KP-545L**	Wet, smooth feel Glossy Very soft, clingy film Details ▶P15	
Trimethylsiloxysilicates	**KF-7312J** **X-21-5249** **KF-7312K** **X-21-5250** **KF-7312L** **X-21-5595** **KF-7312T** **X-21-5616** **KF-9021** **KF-9021-ID**	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
NBN-30-ID	NORBORNENE/TRIS(TRIMETHYLSILOXY) SILYLNORBORNENE 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 mm²/s	Specific gravity 25°C	Refractive index 25°C
TSPL-30-ID	TRIMETHYLSILOXYSILYL CARBAMOYL PULLULAN	30	ISODODECANE	Isododecane	600	0.815	1.424
TSPL-30-D5		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.
✻ INCI names are subject to change 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 mm²/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-549		40	METHYL TRIMETHICONE	TMF-1.5	Colorless, transparent - light yellow hazy fluid	500-5,000	50	103
KP-550		40	ISODODECANE	Isododecane	Colorless, transparent - light yellow hazy fluid	100-3,000	50	103
KP-545L		40	DIMETHICONE	DM-FLUID-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 documentation on quality assurance and specifications, please contact a Shin-Etsu sales representative.
✻ INCI names are subject to change without notice.

✻ For data on compatibility, see P16

Trimethylsiloxysilicates

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 mm²/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	DM-FLUID-A-6cs✻1	Colorless, transparent liquid	5,000	1.070	1.410
KF-7312L			50	DIMETHICONE	DM-FLUID-2cs	Colorless, transparent liquid	120	1.000	1.401
KF-7312T			60	METHYL TRIMETHICONE	TMF-1.5	Colorless, transparent liquid	50	1.009	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-21-5250	TRIMETHYLSILOXYSILICATE	Soft	50	CYCLOPENTASILOXANE	KF-995	Colorless, transparent liquid	60	1.034	1.404
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-9021-ID			50	ISODODECANE	Isododecane	Colorless, transparent liquid	20	0.922	1.419

✻1 DM-FLUID-A-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.
✻ INCI names are subject to change 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

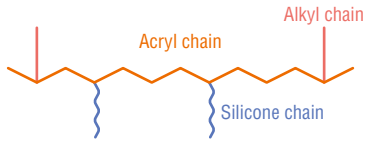
✻ Data figures in tables do not represent specified values.
✻ This catalog does not constitute a warranty of quality assurance. For documentation on quality assurance and specifications, please contact a Shin-Etsu sales representative.
✻ INCI names are subject to change without notice.

■ 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)

Model illustration



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

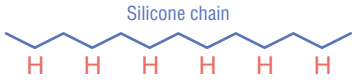
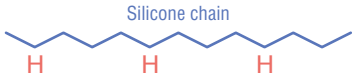
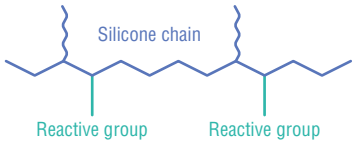
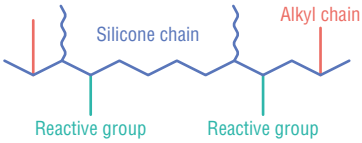
	KP-543	KP-545	X-21-5250	X-21-5249	KF-7312J	KF-9021	TSPL-30-ID	NBN-30-ID	KP-561P
KF-995 (Cyclopentasiloxane)	I	S	S	S	S	S	S	S	S
DM-FLUID-A-6cs (Dimethicone)	I	S	S	S	S	S	S	S	I
DM-FLUID-10cs (Dimethicone)	I	S	S	S	S	S	S	S	I
KF-56A (Diphenylsiloxyphenyl Trimethicone)	S	S	S	S	S	S	S	S	S
Triethylhexanoin	S	S	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)		**F-9W-9P**	
		KF-9901	
Branched type	Silicone branched type	**KF-9908**	
	Silicone / alkyl branched type	**KF-9909**	
Silicone acrylate type		**KP-541**	

Powder Treatments

Grade	INCI	Viscosity 25°C, mm²/s	Specific gravity 25°C	Refractive index 25°C	Volatile content 105°C x 3 h, %
F-9W-9P	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 60% ISOPROPYL ALCOHOL 40%	500-10,000	0.927	1.415	40

✻ 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.
✻ INCI names are subject to change 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
KSP-100	VINYL DIMETHICONE/METHICONE SILSESQUIOXANE CROSSPOLYMER	White, spherical powder	0.1	1.00	5	30
KSP-101	VINYL DIMETHICONE/METHICONE SILSESQUIOXANE CROSSPOLYMER	White, spherical powder	0.1	0.98	12	30
KSP-102	VINYL DIMETHICONE/METHICONE SILSESQUIOXANE CROSSPOLYMER	White, spherical powder	0.1	0.98	30	30
KSP-105	VINYL DIMETHICONE/METHICONE SILSESQUIOXANE CROSSPOLYMER	White, spherical powder	0.1	0.99	2	75
KSP-300	DIPHENYL DIMETHICONE/VINYL DIPHENYL DIMETHICONE/SILSESQUIOXANE CROSSPOLYMER	White, spherical powder	0.1	1.11	5	40
KSP-411	POLYSILICONE-1 CROSSPOLYMER	White, spherical powder	0.1	0.99	12	22
KSP-441	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
KMP-590	POLYMETHYLSILSESQUIOXANE	White, spherical powder	1.0	1.32	2
KMP-591	POLYMETHYLSILSESQUIOXANE	White, spherical powder	1.0	1.32	5
KMP-592	METHYL/PHENYL POLYSILSESQUIOXANE	White, spherical powder	1.0	1.32	2

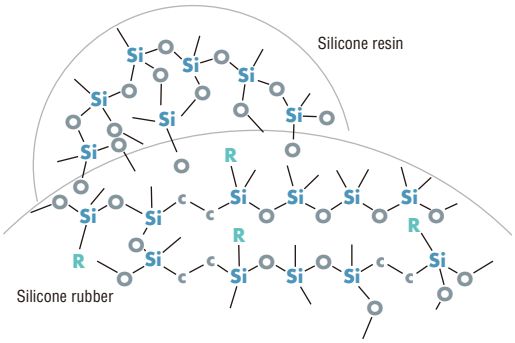
Silicone Powder Water-Suspension

It is a product in which silicone rubber powder with a very soft feel is dispersed in water at a high concentration.

Grade	INCI	Composition %	Modified type	Average particle size µm	Rubber hardness	pH	Ionic
KM-440 New	VINYL DIMETHICONE/LAURYL DIMETHICONE CROSSPOLYMER	60.0	Alkyl	5	—	6	Nonionic
	Others	2.3	—	—	—		

✻ 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.
✻ INCI names are subject to change without notice.

■ Molecular model (Hybrid Silicone Powders)

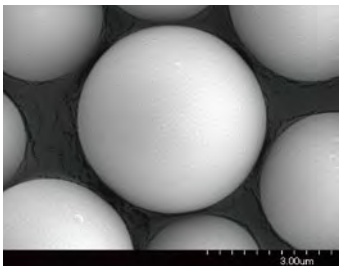


R=methyl groups, phenyl groups, alkyl groups

■ Electron micrograph

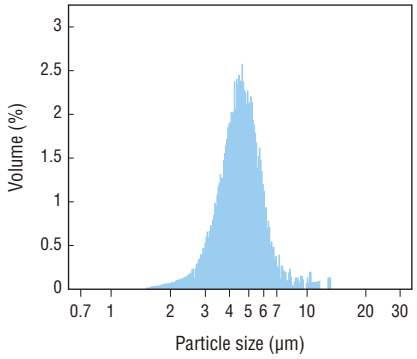
KSP-100

KMP-591

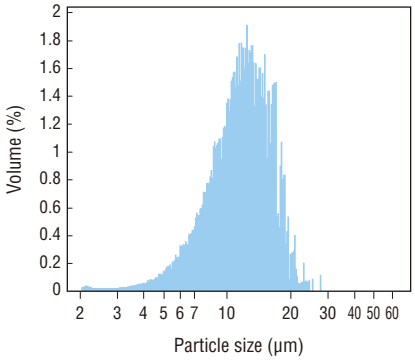


■ Particle size distribution

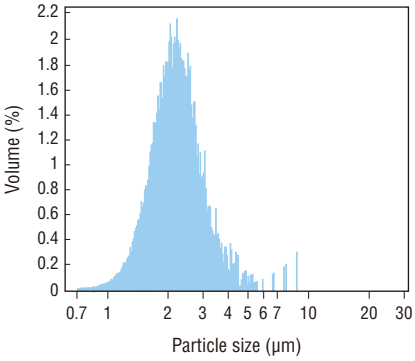
KSP-100



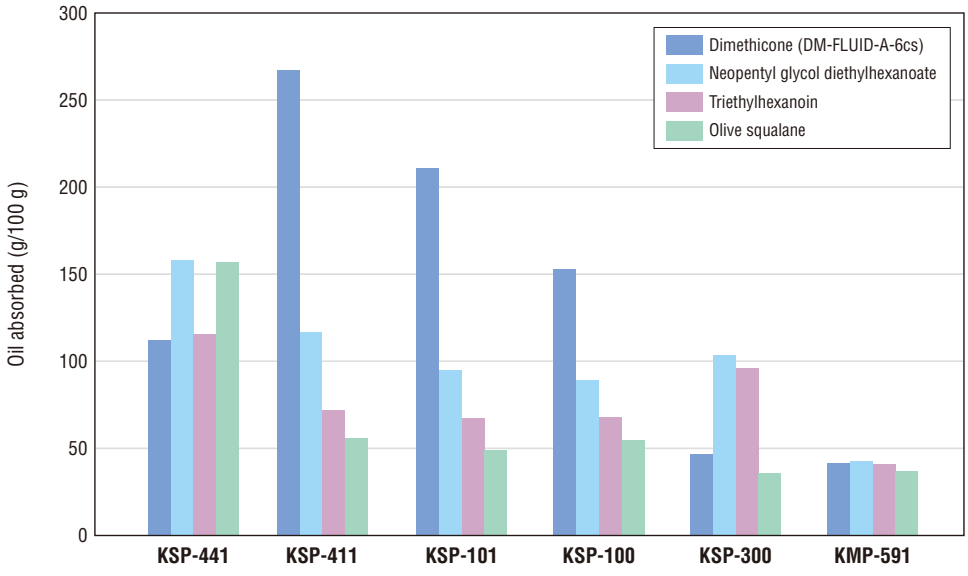
KSP-101



KSP-105



■ 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 %
SPD-T5	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
SPD-T5L	DIMETHICONE (and) TITANIUM DIOXIDE (and) POLYGLYCERYL-3 POLYDIMETHYLSILOXYETHYL DIMETHICONE (and) ALUMINUM HYDROXIDE (and) STEARIC ACID	White-light yellow fluid	< 4,000	1.7	40	> 65
SPD-T7	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
SPD-Z5	ZINC OXIDE (and) CYCLOPENTASILOXANE (and) POLYGLYCERYL-3 POLYDIMETHYLSILOXYETHYL DIMETHICONE (and) TRIETHOXYSILYLETHYL POLYDIMETHYLSILOXYETHYL HEXYL DIMETHICONE	White-light yellow fluid	< 4,000	1.7	60	> 65
SPD-Z7L	ZINC OXIDE (and) DIMETHICONE (and) POLYGLYCERYL-3 POLYDIMETHYLSILOXYETHYL DIMETHICONE (and) TRIETHOXYCAPRYLYLSILANE	White-light yellow fluid	< 4,000	1.7	60	> 60

*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.
* INCI names are subject to change without notice.

■ Transparency of the SPD Series

SPD-T5

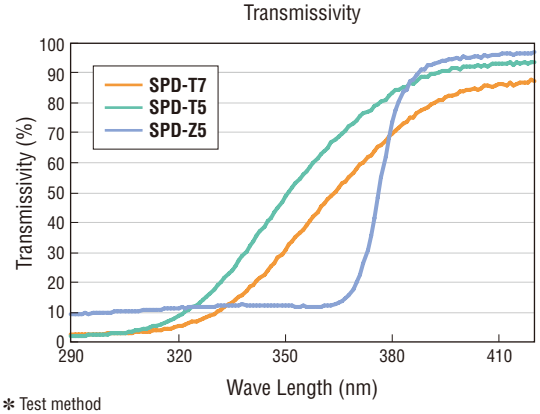
Composition
Fine Titanium Dioxide (coated) ··· 40 wt%
Cyclopentasiloxane ····· 50 wt%
Silicone Dispersant ····· 10 wt%

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
Measured by applying a formulation that contains 30% of SPD to a thickness of 6 µm.

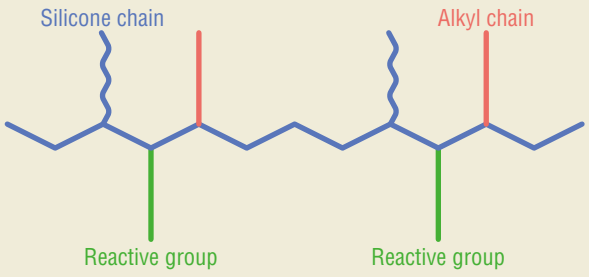
Surface Treated Pigment

Our KTP-09 series is a line-up of color pigments surface-treated with hydrophobic treatment agents having silicone and alkyl branches.
They feature high hydrophobicity and dispersing performance in a wide range of oils.

KTP-09 Series

- Optimal processing condition produce high hydrophobicity. Inhibits pigment aggregation and colored streaks in emulsified systems.
- Silicone and alkyl chains on the pigment surface provide high compatibility with a wide range of oils and facilitate easy dispersal.
- Features both silkiness from the silicone and adherence from the alkyl chain.

■ Molecular Model



Branched silicone with graft alkyl chain and triethoxysilyl group as reactive site.

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	—

✻ 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.
✻ INCI names are subject to change without notice.

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-19*1	10.0 wt%
2. DM-FLUID-A-6cs*1	5.0 wt%
3. Butylene Glycol	10.0 wt%
4. KF-6043*1	1.5 wt%
5. SIMULGEL EG*2	1.0 wt%
6. Carbopol Ultrez 21 Polymer*3 (2% aq.)	20.0 wt%
7. Arginine (10% aq.)	6.0 wt%
8. Preservatives	q.s wt%
9. Disodium EDTA (10% aq.)	q.s wt%
10. Water	46.5 wt%

A. Combine 1 and 2 with stirring.
B. Combine 3 - 9 and 10 with stirring.
C. Add A to B with stirring.
D. Add 7 to C to adjust pH to approx. 6.5.
*1: Shin-Etsu
*2: SEPPIC
*3: The Lubrizol Corporation

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. DM-FLUID-A-6cs*1	8.9 wt%
5. 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. USG-110*1	1.0 wt%
3. KF-6104*1	1.5 wt%
4. DM-FLUID-A-6cs*1	2.7 wt%
5. DM-FLUID-2cs*1	7.3 wt%
6. Butylene Glycol	5.0 wt%
7. Glycerin	10.0 wt%
8. Sodium Citrate	0.2 wt%
9. Sodium Chloride	0.5 wt%
10. Preservatives	q.s wt%
11.Water	67.8 wt%

A. Combine 1 - 4 and 5 with stirring.
B. Combine 6 - 10 and 11 with stirring.
C. Add B to A with stirring.
*1: Shin-Etsu

W/O Liquid Foundation

1. KSG-210*1	3.0 wt%
2. KSG-15*1	2.0 wt%
3. KF-6017*1	2.0 wt%
4. KF-56A*1	5.0 wt%
5. Disteardimonium Hectorite	1.0 wt%
6. KF-995*1	32.3 wt%
7. KSP-100*1	2.0 wt%
8. Isotridecyl Isononanoate	1.7 wt%
9. KP-578*1	0.3 wt%
10. Pigment (KTP-09 series*1)	10.0 wt%
11. Butylene Glycol	5.0 wt%
12. Sodium Citrate	0.2 wt%
13. Sodium Chloride	0.5 wt%
14. Water	35.0 wt%

A. Mix ingredients 1-6 and 7 until evenly distributed.
B. Ingredients 8-9 and 10 are mixed and dispersed with a roller.
C. Mix and dissolve ingredients 11-14.
D. Add C to A with stirring.
E. Add B to D with stirring.
*1: Shin-Etsu

Powder Foundation

1. KSP-100*1	5.0 wt%
2. Zinc Stearate	2.0 wt%
3. Mica (KF-9909*1 treatment)	30.0 wt%
4. Talc (KF-9909*1 treatment)	44.9 wt%
5. Pigment (KTP-09 series*1)	9.6 wt%
6. Triethylhexanoin	4.5 wt%
7. Dipentaerythrityl Hexahydroxystearate/ Hexastearate/Hexarosinate	0.5 wt%
8. KF-6038*1	0.5 wt%
9. KF-56A*1	1.0 wt%
10. DM-FLUID-100cs*1	2.0 wt%

A. Mix ingredients 1-4 and 5 evenly.
B. Combine 6-9 and 10, 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. DM-FLUID-A-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
Marunouchi Eiraku Bldg., 4-1, Marunouchi 1-chome, Chiyoda-ku, Tokyo 100-0005, Japan
Phone : +81-(0)3-3246-5132 Fax : +81-(0)3-3246-5361

Shin-Etsu Silicones of America, Inc.
1150 Damar Drive, Akron, OH 44305, U.S.A.
Phone : +1-330-630-9860 Fax : +1-330-630-9855

Shin-Etsu do Brasil Representação de Produtos Químicos Ltda.
Rua Coronel Oscar Porto, 736 - 8°Andar - Sala 84,
Paraíso São Paulo - SP Brasil CEP: 04003-003
Phone : +55-11-3939-0690 Fax : +55-11-3052-3904

- 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.
- For detailed information regarding safety, please refer to the Safety Data Sheet (SDS).
- 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 (JCQA-0004)	ISO 14001 (JCQA-E-0002)
Naoetsu Plant	ISO 9001 (JCQA-0018)	ISO 14001 (JCQA-E-0064)
Takefu Plant	ISO 9001 (JQA-0479)	ISO 14001 (JQA-EM0298)

https://www.shinetsusilicone-global.com/

This is an edited version of the product data released on Jan. 2024.