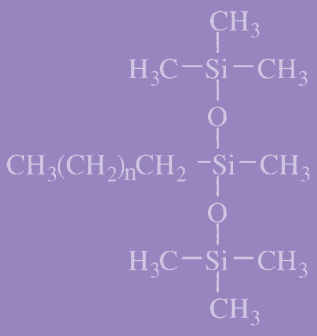
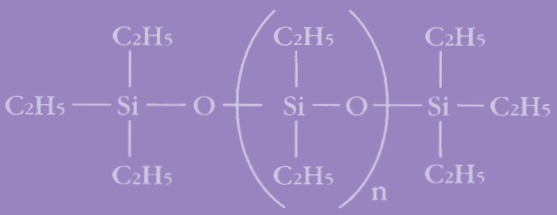
Gelest

Enabling Your Technology



Trimethicone
TM 081, TM 121, TM 181



Diethicone
DE 11, DE 15, DE 23

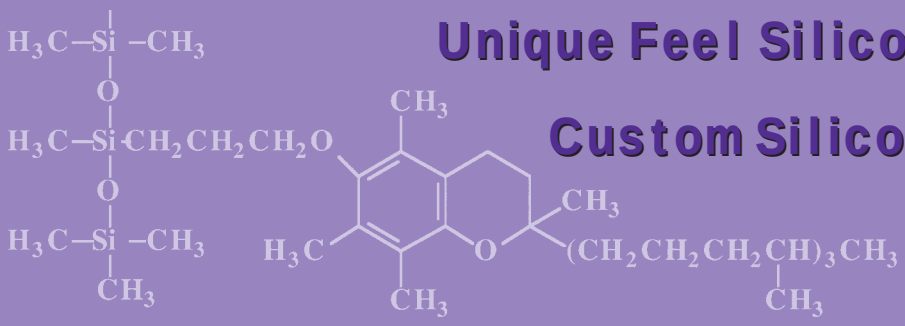
Biomolecule Grafted Silicones

High Compatibility Silicones

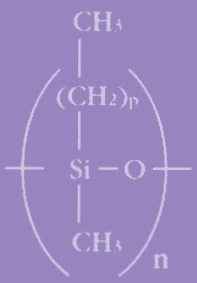
Performance Silicones

Unique Feel Silicones

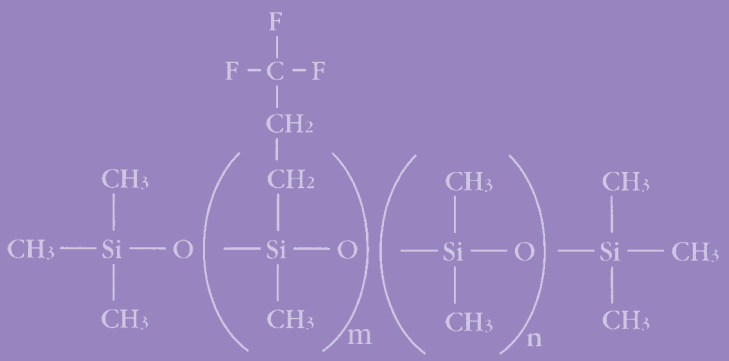
Custom Silicones



Tocopheryl Trisiloxane
TM VE1



Alkyl Methicone
AM 108, AM 114,
AM 118, PM 212



Fluorocarbon Silicone
FCS 331

SiBRID®
SILICONES

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Gelest enables customer technologies by applying a thirty year history of silicon chemistry and expertise to the requirements of new applications. The company supplies specialty compounds to high technology industries including drug, microelectronic and medical device. In addition to offering a wide range of existing compounds, Gelest routinely provides custom product development to meet specific customer needs. Most recently, Gelest has begun a program to identify existing products and technologies suitable for cosmetic applications. The products offered in this brochure are the initial result of that effort.

Diethicone

SiBRID® DE 11, DE 15, DE 23

Although polydimethylsiloxanes (Dimethicones) and their many organic derivatives have been used extensively in the cosmetic industry, no polysiloxanes without methyl substitution have been developed for personal care. The Dimethicones are characterized by their ability to improve slip, increase lubricity, reduce tack, and impart water repellency in all types of cosmetic formulations. The insolubility of many surfactants, emollient oils, and waxes in the Dimethicone causes formulation difficulties and restricts the amount of Dimethicone that can be incorporated into a product.

Polydiethylsiloxanes (Diethicones) are the first series of hybrid silicone polymers with other than methyl substitution. Analogous in structure to Dimethicones, the flexible polymer backbone of Diethicones allows the manufacture of a wide range of fluid viscosities. Dimethicone's beneficial properties of excellent spreading, gas permeability, and water proofness are maintained due to the similarity of physical properties.

Low surface tension enables the Diethicones to spread easily on skin and hair, acting as a lubricant and detackifying agent. Tactile properties include a "dry feel" with increased "cushion". Most significantly, Diethicones have a much broader organic compatibility, allowing formulation with common cosmetic raw materials, including many hydrocarbons, esters, waxes, and surfactants. Unlike Dimethicones, Diethicones wet pigments well, a useful property when formulating color cosmetics and suncreens containing pigments.

Trisiloxanes

The alkyl trisiloxanes are light, dry, emollient oils with good organic compatibility, even greater than that of phenyl trimethicone. They are used to enhance slip and reduce tack in hair care, skin care and color cosmetics. Organic and inorganic pigments can be easily wet and dispersed in the alkyl trisiloxanes for use in foundations, eyeshadows, blushes and lip color.

SiBRID® TM 081 Caprylyl Trimethicone offers an exceptionally light, dry feel, combined with excellent spreading properties. SiBRID® TM 081 is an excellent vehicle for long wearing foundations and eyeshadows.

SiBRID® TM 121 Lauryl Trimethicone is similar to SiBRID® TM 081 with reduced volatility and increased pigment wetting properties.

SiBRID® TM 181 Stearyl Trimethicone is slightly more lubricious than SiBRID® TM 081 and SiBRID® TM 121 but leaves a smooth weightless feeling on the skin. SiBRID® TM 181 can be used to reduce tack and lend a lighter feel to skin treatment products and liquid foundations.

Alkyl-Arylalkyl Silicones

SiBRID® AM 108 is a C_8 modified silicone that provides a rich, emollient feel in skin treatment products. SiBRID® AM 108 spreads to form a non-tacky protective layer, leaving the skin feeling softer with improved flexibility. In lipsticks, SiBRID® AM 108 softens and smooths the lips and has good compatibility with other ingredients.

SiBRID® AM 114 is a C_{14} modified silicone wax having a melting point close to that of skin temperature. Incorporated into creams and lotions, SiBRID® AM 114 forms a non-tacky protective layer on the skin with a rich emollient feel. In lipsticks, SiBRID® AM 114 provides excellent slip with conditioning, softening, and smoothing properties.

SiBRID® AM 118 is a C_{18} modified silicone wax used to provide structure to powdercream products while maintaining slip and spreading properties. SiBRID® AM 118 is also used to gel combinations of silicones and conventional oils.

SiBRID® PM 212 is a viscous, high refractive index C_{12} /phenylpropyl modified silicone that gives high luster and shine to lip products. Films formed using SiBRID® PM 212 resist feathering and creeping, allowing the formulation of emollient lip glosses and lipsticks. SiBRID® PM 212 can also be used in skin and sun care products to improve skin adhesion and film forming capability.

Fluorocarbon Silicone

SiBRID® FCS 331 is a highly lubricious gel consisting of submicron particles of a tetrafluoroethylene/hexafluoropropylene copolymer dispersed in a fluorinated dimethyl fluid. The gel has the unusual property of exhibiting increasing slip as higher amounts of shear force are applied, as when vigorously rubbing product on the skin.

The fluorinated dimethyl fluid that is the base for SiBRID® FCS 331 is insoluble in other polydimethylsiloxane fluids and common organic oils but can be dispersed in cyclic siloxanes for incorporation into emulsions and anhydrous systems. Skin care products containing SiBRID® FCS 331 deposit a persistent soft, pleasant feeling film on the skin that is resistant to wash off.

Incorporated into color cosmetics, SiBRID® FCS 331 not only imparts excellent slip and spreading characteristics, but also improves wear by resisting wetting by sebum. SiBRID® FCS 331 can be used alone or in combination with oily binders in pressed powders to formulate creaseproof eyeshadows and powder foundations that are resistant to oil breakthrough. In liquid foundations, SiBRID® FCS 331 aids spreading and blending, improves residual feel, and extends wear.

Biomolecule Silicone

SiBRID® TM VE1 is a unique hybrid organo-silicon compound formed by grafting tocopherol to a siloxane backbone. The tocopheryl substituent adds skin treatment properties to the siloxane backbone while the siloxane component improves the slip and skin feel of the tocopherol. This unique structure enables the Tocopheryl Trisiloxane to act as a solvent for a number of mineral and vegetable waxes. SiBRID TM VE1 is recommended for use in skin care and lip products to provide softening, emolliency and moisturization.

Physical Properties

INCI name **Product Code**	**Viscosity cSt.**	**Refractive Index**	**Specific Gravity**	**Pour-Point, °C**
Polydiethylsiloxane				
SiBRID® DE 11	10	1.439	0.91	-139°C
SiBRID® DE 15	50	1.442	0.96	–
SiBRID® DE 23	300	1.447	0.99	–
Caprylyl Trimethicone				
SiBRID® TM 081	3	1.413	0.82	–
Lauryl Trimethicone				
SiBRID® TM 121	5.5	1.431	0.84	–
Stearyl Trimethicone				
SiBRID® TM 181	13	0.433	0.83	–
Caprylyl Methicone				
SiBRID® AM 108	800	1.445	0.91	-44°C
Myristyl Methicone				
SiBRID® AM 114	1750	1.455	0.89	25°C
Stearyl Methicone				
SiBRID® AM 118	275 (50°C)	1.443	0.89	45°C
Lauryl Phenylpropyl Methicone				
SiBRID® PM 212	1200	1.464	0.91	–
Trifluoropropyl Dimethicone (and) Hexafluoropropylene/ Tetrafluoroethylene Copolymer				
SiBRID® FCS 331	8000	1.387	1.41	–
Tocopheryl Trisiloxane (proposed)				
SiBRID® TM VE1	700	1.472	0.92	–

Solubility

	PDMS	AM 108	AM 114	AM 118	PM 212	TM 081	TM 121	TM 181	DE 11	DE15	DE23	TM VE1
Dimethicone/10cs	S	I	I	I	I	S	PS	PS	S	S	S	S
Ethylhexyl Palmitate	S	S	S to 60%	S*	S	S	S	S	S	S	S	S
Octyldodecyl Stearate	I	S	S to 50%	S*	S	S	S	S	S	S	S	S
Castor Oil	I	D	D	Dhot	D	I	D	D	I	I	I	S
Octyldodecanol	I	S	S	S	S	S	S	S	S	S	S	S
Tri-isostearyl Citrate	I	S	S	S*	S	PS	PS	PS	S	S	S	S
Hydrogenated Polydecene	PS	S	S	S**	S	S	S	S	S	S	S	S
Cyclopentasiloxane	S	S	I	I	S	S	S	S	S	S	S	S
Stearyl Methicone	I								S	S	PS	S_{hot}
10% Microcrystalline Wax	I								S	S	PS	S_{hot}
10% Ceresin	I								S	S	PS	S_{hot}

S = Soluble PS = Partially Soluble I = Insoluble D = Dispersible *10% soft gel, 50% translucent solid **10% gel, 50% solid

Recommended Applications

SiBRID® SILICONES	DE 11	DE 15	DE 23	TM 081	TM 121	TM 181	AM 108	AM 114	AM 118	PM 212	FCS 331	TM VE1
Suncreens		●	●				●	●	●	●		●
Creams & Lotions		●	●		●	●	●	●	●	●		●
Lip Products		●	●		●	●	●	●	●	●	●	●
Powder Creams	●			●	●				●			
Liquid Foundations	●	●		●	●	●	●		●	●		●
Pressed Powders		●	●			●				●	●	

Formulations

Lipstick with SiBRID® TM VE1 GJH2-24-3

Unlike many silicones and silicone derivatives, SiBRID® TM VE1 is easily incorporated into lip products due to its solubility of in a range of polar compounds, including castor oil. Benefits of SiBRID® TM VE1in lip products are lip conditioning, lip softening, and protection against the drying effects of the environment.

Ingredient (Supplier)	INCI name	%
Crystal O, (Caschem)	Castor Oil	13.45
Schercemol TISC, (Noveon)	Triisostearyl Citrate	30.00
Eutanol G	Octyldocecanol	5.00
SiBRID® TM VE1, (Gelest)	Tocopheryl Trisiloxane*	2.50
Ceraphyl ODS	Octyldodecyl Stearate	7.50
Methylparaben		0.20
Propylparaben		0.10
Candelilla		6.00
Carnauba		1.00
Microwax SP 19, (Strahl & Pitsch)	Microcrystalline Wax	3.00
Ozokerite 170D, (Ross Wax)	Ceresin	2.00
Color Grind		
Crystal O, (Caschem)		10.00
A-1206, (Color Techniques)	Iron Oxides	6.50
AFDC-200, (Kemira)	Titanium Dioxide	2.50
c39-4433, (Sun Chemical)	Blue 1 Lake	0.10
c19-7711, (Sun Chemical)	Red 7 Lake	0.75
c19-7712, (Sun Chemical)	Red 6 Lake	1.35
Timiron Splendid Red, (EMD Chemicals, Rona div.)	Mica, Titanium Dioxide, Silica	8.00
Ascorbyl Palmitate, (DSM)		0.05
		100.00

Water in Silicone Foundation with SiBRID® DE 11 and AM 118
2-461

Ingredient (Supplier)	INCI Name	%
Water Phase		
Deionized water		48.90
Magnesium Sulfate		0.20
Butylene Glycol		6.00
Methylparaben		0.20
Benzoic Acid		0.10
Silicone Phase		
Cyclopentasiloxane		15.00
KF 6028, (Shin-Etsu)	PEG-9 Polydimethylsiloxyethyl Dimethicone	2.00
SiBRID® DE 11, (Gelest)	Polydiethylsiloxane	5.00
SiBRID® AM 118, (Gelest)	Stearyl Methicone	1.00
Rhodasurf L-790, (Rhodia)	Laureth-7	0.50
Propylparaben		0.10
Pigment Grind (add to silicone phase after milling)		
D 9812/I, (Color Techniques)	Titanium Dioxide, Methicone	8.00
D 9831/I, (Color Techniques)	Iron Oxides, Methicone	1.20
D 9126/I, (Color Techniques)	Iron Oxides, Methicone	0.50
D 9146/I, (Color Techniques)	Iron Oxides, Methicone	0.20
D 10707/I, (Color Techniques)	Talc, Methicone	4.10
SiBRID® DE 11, (Gelest)	Polydiethylsiloxane	7.00
		100.00

Super Shine Lipgloss with SiBRID® PM 212 and AM 118
2-481

SiBRID PM 212 provides high shine and comfortable wear. SiBRID AM 118 gels the oil to suspend the pigments.

Ingredient (Supplier)	INCI Name	%
Schercemol TISC, (Noveon)	Triisostearyl Citrate	74.19
SiBRID® PM 212, (Gelest)	Laurylphenylpropyl Methicone	20.00
SiBRID® AM 118, (Gelest)	Stearyl Methicone	5.00
Methylparaben		0.20
Propylparaben		0.10
AS Timiron Spendid Red, (Rona div. EMD Chemicals)	Mica, TiO2, SiO2 treated with triethoxycaprylylsilane	0.50
40% Red 7 Lake in SiBRID® DE 15		0.01
		100.00

Powdercream Makeup with SiBRID® AM 118 and DE 11
1-701

SiBRID® DE 11 has the characteristic light, dry feel of a Dimethicone, yet can act as the sole solvent for the formula waxes. SiBRID® AM 118 is a silicone wax that provides structure to the product without the tack associated with most conventional waxes.

Ingredient (Supplier)	INCI Name	%
Phase A		
Syncrowax HRC, (Croda)	Tribehenin	5.70
SiBRID® AM 118, (Gelest)	Stearyl Methicone	6.60
SiBRID® DE 11, (Gelest)	Polydiethylsiloxane	39.69
Emerest 2452, (Cognis)	Polyglyceryl-3 Diisostearate	0.70
Methylparaben		0.20
Propylparaben		0.10
BHT		0.01
Phase B		
AS 5812 Titanium Dioxide, (Color Techniques)	Titanium Dioxide, Triethoxycaprylylsilane	15.00
AS 5137 Yellow Iron Oxide, (Color Techniques)	Iron Oxides, Triethoxycaprylylsilane	2.80
AS 5126 Red Iron Oxide, (Color Techniques)	Iron Oxides, Triethoxycaprylylsilane	1.20
AS 5146 Black Iron Oxide, (Color Techniques)	Iron Oxides, Triethoxycaprylylsilane	0.25
AS 50707 S'Duan Talc, (Color Techniques)	Talc, Triethoxycaprylylsilane	9.75
AS 5061 Sericite, (Color Techniques)	Mica, Triethoxycaprylylsilane	12.00
AS 5071 Nylon	Nylon-12, Triethoxycaprylylsilane	6.00
		100.00

Water in Oil Lotion with SiBRID® TM 181 and AM 118
1-621

SiBRID® TM 181 provides slip and light emolliency to this moisturizing lotion. SiBRID® AM 118 gels the oil phase to control viscosity.

Ingredient (Supplier)	INCI Name	%
Phase A		
Deionized Water		62.15
NaCl	Sodium Chloride	1.00
Butylene Glycol		6.00
Methylparaben		0.20
Benzoic Acid		0.20
Phase B		
Abil® EM-90, (Degussa)	Cetyl PEG/PPG 10/1 Dimethicone	2.00
Abil® WE-09, (Degussa)	Polyglyceryl-4 Isostearate, Cetyl PEG/PPG 10/1 Dimethicone, Hexyl Laurate	0.90
Ceraphyl® ODS, (ISP)	Octyldodecyl Stearate	9.70
SiBRID® TM 181, (Gelest)	Stearyl Trimethicone	15.80
SiBRID® AM 118, (Gelest)	Stearyl Methicone	2.00
Propylparaben		0.05
		100.00

Pressed Powder with SiBRID® FCS 331
1-711

SiBRID® FCS 331 provides exceptional slip, smooth skin feel, and improved wear.

Ingredient (Supplier)	INCI Name	%
Phase A		
S'Duan Talc, (Color Techniques)	Talc	56.10
Zinc Stearate		3.00
D-9051, (Color Techniques)	Mica, Methicone	20.00
A-8112, (Color Techniques)	Titanium Dioxide	8.00
A-1301, (Color Techniques)	(Yellow) Iron Oxides	2.00
A-1226, (Color Techniques)	(Red) Iron Oxides	1.25
A-1404, (Color Techniques)	(Black) Iron Oxides	0.35
Methylparaben		0.20
Propylparaben		0.10
Phase B		
Cromollient DP3A, (Croda)	di-PPG-3 Myristyl Ether Adipate	4.00
SiBRID® FCS 331, (Gelest)	Trifluoropropyl Dimethicone (and) Hexafluoropropylene/ Tetrafluoroethylene Copolymer	5.00
		100.00

Pressed Powder with SiBRID® DE 15
2-36-1

The Diethicone wets the powder sufficiently to provide compaction equal to many esters but with the dry slippery feel of silicone.

Ingredient (Supplier)	INCI Name	%
Phase A		
S'Duan Talc, (Color Techniques)	Talc	82.60
Zn Stearate 921-G, (MPSI) (Color Techniques)		3.00
PFD Titanium Dioxide, (Color Techniques)	Titanium Dioxide, Fluoropropyl Methicone	8.00
PFD Yellow Iron Oxide, (Color Techniques)	Iron Oxides, Fluoropropyl Methicone	1.30
PFD Red Iron Oxide, (Color Techniques)	Iron Oxides, Fluoropropyl Methicone	0.60
PFD Black Iron Oxide, (Color Techniques)	Iron Oxides, Fluoropropyl Methicone	0.20
Methylparaben		0.20
Propylparaben		0.10
Phase B		
SiBRID® Diethicone DE 15, (Gelest)	Polydiethylsiloxane	4.00
		100.00