PRODUCT CATALOGUE & TECHNICAL GUIDE

(FILE)

Your Technology Our Chemistry

SIL TECH



Innovative Silicone Specialties



Toronto Head Office, Research Lab and Plant

Siltech develops and manufactures a full line of organo-functional silicone compounds and related specialties for a wide range of industrial and personal care applications, using our

Siltech owns and operates two manufacturing plants in the Greater Toronto Area. These plants are equipped with efficient, large-scale, high-temperature and pressure reactors, thin

Siltech serves a wide range of industries, such as personal care, polyurethane foam, inks and coatings, plastics and polymers, car care, textiles, automotive, oil and gas, HI&I, water

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Research-Intensive Silicone Technology

A proven track record of innovative, creative problem solving, offering a diverse product portfolio.



Mississauga, Ontario, Canada Plant

Siltech's philosophy is to constantly innovate and create new products that provide you with enabling solutions to your problems. Siltech invests a substantial portion of our resources into R&D and new-product development.

Our R&D and technical service laboratories are modernly equipped and staffed by chemists with many decades of experience in diverse segments of the chemical processing industry. In addition, we have efficient pilot plant facilities available to produce special products for your experimental needs.

Siltech's commercial products are approved for use in most global jurisdictions. Siltech is committed to such compliance, and we have dedicated personnel to ensure this. We have

We are proud of the quality of the products described in this brochure. Most are available from stock on short notice. However, we will gladly manufacture other homologues to minimum order. Many problems, old and new, can be solved with new silicone specialties. We welcome the opportunity to partner with customers, as we believe that this results in the most creative formulator-friendly and cost-effective silicone specialties possible.

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Reactive Silicones - Silmer continued
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Silmer EP - Epoxide-Functional Pre-Polymer
Silmer VIN - Vinyl-Functional Pre-Polymer
Silmer SH
Silmer ACRN and ACRT

Silicone Resins
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Innovation Creates Solutions

Silicone is a polymer derived ultimately from minerals and synthetic feedstocks. This incredibly diverse material has been commercially available for over six decades and has found its way into our lives perhaps more than any other synthetic material. Silicones are known for their very low toxicity, low surface energy (20 mN/m), low Tg (153°K), low flammability, lubricity, release, softness, conditioning, thermal stability, photostability, penetration, oxygen permeability, and many other unique features. These features are why silicones are found in the hair and skin products we use, the clothes we wear, the furniture we sit on, the houses we live in, the cars we drive, the electronics we play with, the drugs we take and the foods we eat.

Silicone polymers are known by many pseudonyms, including siloxane, polydimethylsiloxane (PDMS) and others. This most basic silicone polymer is chemically simple and is restricted by its incompatibility with other materials. Whether these materials are water-like or oil-like, silicone is not miscible with them. Fortunately, silicone polymers are readily chemically functionalized by reacting them with a myriad of organic species. These hybrid organo-functional silicones can be completely water soluble, completely oil soluble, or even miscible with both milieus.

These specialized organo-functional silicones are used extensively to enable end users to solve difficult challenges. Their effect in and impact on the formulation dwarf the small percentages in which they are used.

From a safety standpoint, silicones are among the most thoroughly studied polymers and are recognized as having very little toxicity. They are approved in a wide variety of food, drug, medical, defense and other sensitive applications. Historical episodes of toxicity concerns and regulatory actions have not withstood scientific testing and have now been reversed.

Siltech's Specialty Silicones

Siltech's Silsurf products are chemical hybrids of polyalkyleneoxide polymers with silicone polymers. The resultant materials are surfactants and can be designed to be water-soluble, water-dispersible or water-insoluble. The polyether functionality also confers miscibility with many organic materials, such as ketones, alcohols, ethers, aromatics and esters. Only the most lipophilic solvents such as mineral oils, are not miscible with these Silsurf structures.

This extremely useful family of organo-functional silicones finds utility in personal care products for softening, conditioning, shine or formula stabilization among other uses; inks and coatings as additives for flow and levelling, wetting, defoaming, slip, release, lubricity and mar resistance; polyurethane foam for stabilizing the foam as it reacts; many other industrial applications, as well as processing aides in many industries.

Siltech's Silsurf portfolio is vast and diverse. We can manufacture these commercially from 20 kg to 20 metric tons and routinely develop new Silsurf structures for specific customer needs.



Our Silwax line is the oil-soluble analogue of Silsurf surfactants. These materials are the chemical combination of silicone polymer with styrene or aliphatic alpha-olefins and are available from two to 32 carbon chain lengths. Designed to bring softness, surface tension reduction, wetting and gloss to waxes, polishes and other non-aqueous formulations, these are also emulsified for aqueous delivery applications such as mold release. Some of the more unique applications for these are making mineral oil feel like silicone oil and improving penetration of lubricants. Like that of their Silsurf cousins, our portfolio of Silwax products is unrivalled in breadth and diversity.

Siltech's Silube silicones offer both polyether and hydrocarbon moieties appended to the same silicone polymer and are very useful as emulsifiers and formulation stabilizers. The hydrocarbon confers lipophilicity, the polyether brings hydrophilicity, and the silicone provides the low surface and interfacial tensions critical to emulsion stability.

Reactive Silmer silicones contain the same reactive species attached to silicone as used by organic polymer manufacturers. The resultant Silmer products are reactive under the same conditions and allow modification of the polymers, modification of films or composites or homo-polymerization of the reactive silicones. Organic systems are made more flexible and have improved mar resistance, are given more release and lubricity properties and often see advantages like stain resistance. All of the commonly used reactive groups are available, including acrylate esters, amino, epoxy (glycidyl and cycloaliphatic), hydride, hydroxyl, isocyanato, mercapto, trialkoxysilanyl and vinyl. Many are also available with solubilizing groups in addition to the reactive groups to improve miscibility and reactivity.

At Siltech's development labs in Toronto, we have made numerous systems with both homo-polymerized Silmer and co-polymerized Silmer/organic systems. Consequently, we have an extensive knowledge of how these systems react and what properties are brought in. These reactive silicones can be incorporated into polymers, thin films and three-dimensional elastomeric systems. By including Silmer reactive silicones into these systems, we have seen increased flexibility, stain resistance and release, reduced coefficient of friction, improved surface wetting, and resistance to mar and abrasion. Given the number of different reactive silicones offered, any polymer and cross-linking system can be modified with silicone.

Fluorosil products are silicone polymers with perfluorobutylethyl or trifluoropropyl groups conjoined to the silicones. These molecules bring typical fluoroalkyl properties without perfluorooctyl concerns, and can often be made reactive as with Silmer products.

Siltech's Silguat products are alkylamino-modified silicones quaternized with methyl diethyl or methyl distearyl groups to provide a cationic material that is exceptional at migrating and attaching to surfaces, including from an aqueous solution, leaving behind a layer of hydrophobic silicone. These highly unique materials are used in car care, textiles, hair care, hard surface treatments and other applications. Siltech's portfolio of Silquat quaternized silicones is unmatched in the industry. Siltech antifoam products are silica-filled and/or Silmer MQ resin-fortified silicone oil compounds or emulsions. In formulating these products, we make use of our specialized technologies to maximize stability and performance.

Many other unique products are available, so we invite you to peruse the pages of this brochure for ideas and then challenge us to build them.





Properties & Applications Guide



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	Debonn	4 million	4001151	Closs A	10 Millings	Liborcon	OIL POR	20 Miles	4-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0	Schener	Hotel C	Netting
Class of Silicone Products												
Alkylated	P	P	P	P	Ŧ	P			P	P	P	
Amines				P		P				P	P	
Defoamers	P											
Emulsions				Ð		Ð			Ð	Ð		
Fluids	÷			Ð		P			Ð	P		
Fluorinated	P			Ð	P	Ð	P			P	P	P
Gels						P				P		
Phosphates		P			P	P						P
Polyethers	÷	P	P	P	P	P		P	P	P		P
Q Resins	P	P				P	P				P	P
Quats	Ð	P		P	P	P				P	P	P
Reactive							P	P	P	Ð		
Resins										P	P	
Silicone Anionic/ Cationic Complex						Ð				P		
				Fυ	nctions							



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Silicone Polyethers - Silsurf

Silicone polyethers, also known as dimethicone copolyols in the personal care industry, contain both a water-insoluble silicone backbone and a number of water-soluble polyether pendant groups. The ratio of the silicone to polyether and the molecular weight and composition of the components determine the solubility and specific properties of a product. These products exist as multi-pendant and linear-difunctional polymers. Siltech offers a broad range of silicone polyethers as well as custom-designed products for specific applications. These are also available in cosmetic grades.



Products	Properties and Applications	Appearance
Silsurf A008-UP	Shortest silicone chain possible for silicone polyethers. These products are excellent wetters. Used in textiles, agricultural,	Clear, light straw liquid
Silsurf A010-D	wetting is required. Also act as a flow and levelling aid in paints and coatings.	Clear, light straw liquid
Silsurf C208	Water-soluble silicone polyether. Used frequently in industrial and personal care applications. Provides surface tension reduction, conditioning and lubricity. Provides good wetting and is more hydrolytically stable than Silsurf A008-UP.	Clear, light straw liquid
Silsurf J208	Similar to Silsurf C208 but higher molecular weight. Is more substantive and provides thicker foam than Silsurf C208 and Silsurf D212-CG. Used as a conditioner and lubricant.	Clear, light straw liquid
Silsurf D212-CG	Low-odour, cosmetic-grade silicone polyether. Used in personal care applications. Provides conditioning and lubricity.	Clear, light straw liquid
Silsurf B608	Self-emulsifying in water. Can be used as an oil-in-water emulsifier. Also useful as a lubricant in textile and personal care applications.	Clear, light straw liquid
Silsurf C410	Water-dispersible silicone polyether. Used as a lubricant in textiles and personal care. Useful as slip agent in inks and coatings.	Clear to hazy light straw liquid
Silsurf E608	Water-dispersible silicone polyether. Provides slip and mar resistance to paints and coatings. Also used as a lubricant.	Clear, light straw liquid
Silsurf J1015-O	High-molecular-weight, water-soluble ethoxylated and propoxylated silicones. Provide slip and mar resistance, and act as a flow and	Clear, light straw liquid
Silsurf J1015-O-AC	emulsifier in personal care applications. Silsurf J1015-O-AC is an acetoxy-capped version of Silsurf J1015-O.	Clear, light straw liquid
Silsurf Di-1010	Polyother terminated silicones. Used in personal care and industrial	Clear, light straw liquid
Silsurf Di-2012	applications where lubricity and conditioning are needed. Can be reacted with isocyanates, epoxides and other reactive compounds	Clear to hazy liquid
Silsurf Di-151	to modity resins and coatings.	Clear, light straw liquid
Silsurf Di-5018-F	Polyether-terminated silicone. Gel-like at room temperature. Used as a lubricant and as a chain modifier for resins and coatings.	Clear, light straw gel at RT

											Solubiliti	es at Ro	om Temp	perature						
Colour (Gardner)	Cloud Point (°C)	Viscosity (cps@25°C)	Molecular Weight	Density (g/ml)	Refractive Index	Wa 1%	ater 10%	IF 1%	PA 10%	Min Sp 1%	eral irits 10%	Miner 1%	ral Oil 10%	Aron Solv 1%	matic vents 10%	Cy Meth 1%	rclo icone 10%	350 V Silicon 1%	scosity e Fluid 10%	
<2	35	75	650	1.034	1.450	D	D	S	S	Ι	I	I	I	S	S	I	I	D	D	
<2	45	75	900	1.030	1.450	S	S	S	S	I	I	S	I	S	S	D	I	D	I	
<2	58	200	2,000	1.070	1.449	S	S	S	S	I	I	I	I	S	S	I	I	D	I	
<2	60	600	6,300	1.079	1.453	S	S	S	S	I	I	I	I	S	S	I	I	D	D	
<2	55	320	2,800	1.070	1.449	S	S	S	S	I	I	I	I	S	S	I	I	D	D	
<2	N/A	200	2,000	1.034	1.432	D	D	S	S	I	I	I	I	S	S	I	I	D	D	
<2	RT	400	2,700	1.047	1.445	D	D	S	S	I	I	I	I	S	S	ļ	I	D	D	
<2	RT	700	4,700	1.040	1.437	D	D	S	S	I	I	I	I	S	S	I	I	D	D	
<2	40	2,000	24,000	1.029	1.444	S	S	S	S	I	I	I	I	S	S	I	I	D	D	
<2	32	2,000	24,500	1.029	1.440	S	S	S	S	I	I	I	I	S	S	D	D	S	Ι	
<2	RT	250	1,800	1.040	1.441	D	D	S	S	I	l	I	Ι	S	S	ļ	I	D	D	
<2	60	350	2,900	1.040	1.441	D	Ι	S	S	I	I	D	Ι	S	S	I	Ι	Ι	I	
<2	N/A	200	2,400	1.040	1.440	Ι	I	S	S	S	S	I	I	S	S	S	D	D	I	
<2	N/A	Gel at RT	6,200	0.986	1.428	D	I	S	S	S	S	Ι	I	S	S	D	D	D	D	



Alkylated Silicones - Silwax

Silwax alkylated silicones are based on alkyl pendant groups ranging from C2 to C32. The ratio of silicone to alkyls and the chain length of the alkyls determine the melting point and liquidity of the final product. These products can range from liquids to soft pastes to hard waxes. They are excellent lubricants in textile, metalworking and automotive applications. They impart water and solvent repellency to textiles, and flow, levelling, slip and mar resistance to inks and coatings. They also provide gloss, emollience and softness in personal care applications. The Silwax alkylated silicones are represented by both alkyl and alkyl aryl silicones.







	Products	Properties and Applications	Appearanc					
	Silwax D02		Liquid					
	Silwax E1316	Liquid silicone alkylates, compatible with many organic systems.	Liquid					
	Silwax H416	Used as lubricants and provide softness and gloss to industrial and personal care applications.	Liquid					
	Silwax B116		Liquid					
	Silwax L118	Gel-like at room temperature. Provide good slip, lubricity and emollience	Gel					
	Silwax J1022	to shampoos, creams and conditioners as well as slip, hydrophobicity and protection to industrial applications.	Gel					
	Silwax D222		Soft wax					
	Silwax D226	Soft, lubricous waxes. Used in personal care, industrial and other applications where lubricity and softness are needed.	Soft wax					
	Silwax J1026		Soft wax					
	Silwax J226	High molting point cilicopo waxas. Used in lingtick applications	Hard wax					
	Silwax D026	in textiles as a softener and water and solvent repellent, and in	Hard wax					
	Silwax J1032	orner industrial applications such as waxes.	Hard wax					
	Silwax Di-5026	Difunctional alkyl silicone that gives excellent lubricity and slip.	Soft wax					
	Silwax D221M	Series of multi-domain-silicones. Silicone waxes that contain both	Soft wax					
	Silwax J219M	liquid and solid alkyl chains on the same molecule. This results in products that are easily spreadable, yet also provide excellent	Soft wax					
	Silwax J221M	cushion and a long-lasting feel in personal care products and ease of application with gloss and durability in industrial applications	Soft wax					
	Silwax Di-1021M	such as waxes and polishes.	Soft wax					
	Silwax 3H32	Siloxane with C32 alkyl groups that provides improved durability, gloss and water repellence for various waxes and polishes.	Hard wax, prilled					
	Silwax CR 5016	Loosely cross-linked alkyl silicone that gives better substantivity and surface migration.	Liquid					
	Silwax 3H12-MS	A alkyl aryl siloxane based on C12. Used as a paintable release agent for die-casting metals, molding, plastics, etc.	Liquid					
	Silwax 3H2-MS	A alkyl aryl siloxane based on C2. Acts as a paintable mold release agent for plastics and rubber.						
	Silwax 3H-MS	Aryl siloxanes that have a very high refractive index and give	Liquid					
	Silwax DO-MS	excellent snine to various substrates in personal care and industrial applications.						
_								

										Solub	oilities at Ro	oom Temp	erature							
Colour (Gardner)	Melting Point (°C)	Viscosity (cps@25°C)	% Alkyl	W a 1%	ater 10%	IP 1%	A 10%	Propy Gly 1%	ylene vcol 10%	Minera 1%	l Spirits 10%	Miner 1%	al Oil 10%	Hiso 1%	l 10 10%	Cy Meth 1%	clo icone 10%	350 V Silicor 1%	iscosity ne Fluid 10%	
<1	<-20	10	20	I	Ι	S	S	I	I	S	S	S	S	S	S	S	S	S	S	
<1	<-20	140	20	I	I	I	I	I	I	S	S	S	S	S	S	S	S	S	D	
<1	-10	110	40	I	Ι	I	I	I	Ι	S	S	S	S	S	S	S	S	Ι	Ι	
<1	-4	25	50	I	Ι	I	Ι	Ι	Ι	S	S	S	S	S	S	S	S	D	Ι	
<1	30	N/A	65	I	Ι	I	I	I	I	S	S	S	S	S	S	I	I	I	Ι	
<1	20	100	30	I	Ι	Ι	I	I	Ι	S	S	S	S	S	S	S	D	Ι	Ι	
<1	37	N/A	55	Ι	I	I	I	I	I	S	S	S	S	S	S	I	Ι	Ι	I	
<1	54	N/A	60	l	Ι	I	I	I	Ι	S	S	S	S	S	S	I	I	Ι	Ι	
<1	46	N/A	30	I	Ι	I	I	I	Ι	S	S	S	S	Ι	Ι	I	I	Ι	Ι	
<1	51	N/A	60	Ι	Ι	Ι	I	Ι	Ι	Ι	Ι	S	D	Ι	Ι	I	Ι	Ι	Ι	
<1	65	N/A	80	l	Ι	I	I	I	I	Ι	l	S	S	S	D	I	I	I	I	
<1	60	N/A	35	Ι	Ι	Ι	I	Ι	Ι	S	D	S	D	Ι	Ι	Ι	Ι	Ι	Ι	
<1	31	N/A	15	I	Ι	Ι	Ι	Ι	I	S	S	S	S	S	S	Ι	Ι	Ι	Ι	
<1	35	N/A	53	I	I	I	I	I	I	S	S	I	I	S	S	I	Ι	I	I	
<1	30	N/A	55	I	Ι	I	I	Ι	Ι	S	S	S	S	S	S	I	Ι	I	Ι	
<1	32	N/A	58		Ι	I	I	I	Ι	S	S	S	Ι	S	S	I	I	Ι	Ι	
<1	37	N/A	40	Ι	Ι	Ι	Ι	I	I	S	S	S	Ι	S	S	Ι	Ι	Ι	Ι	
<1	70	N/A	90	Ι	Ι	Ι	Ι	Ι	Ι	Ι	Ι	Ι	Ι	S	Ι	Ι	Ι	Ι	Ι	
<1	-10	110	40	Ι	Ι	Ι	I	Ι	Ι	S	S	S	S	S	S	S	S	D	D	
<1	N/A	1,200	70	Ι	Ι	I	I	Ι	I	S	S	S	S	S	S	S	Ι	D	Ι	
<]	N/A	1,000	45	Ι	I	D	D	D	D	S	S	S	S	S	S	S	S	D	D	
<1	N/A	8,000	65	I	I	D	D	D	D	S	S	S	S	S	S	D	I	I	I	
<1	N/A	100	55	I	Ι	S	S	D	D	S	S	S	S	S	S	S	S	D	Ι	



Silicone Amines – Silamine

Siltech offers two classes of silicone amines:

- 1. Primary-Secondary Amines,
- 2. Solubilized Primary-Secondary Amines

1. Primary-Secondary Amines

These are aminoethylaminopropyl-based amines.



Products	Properties and Applications	Colour	(cps@25°C)	Value
Silamine 2972	Aminopropylmethylpolysiloxane that can impart softness and durability to textiles and are very low yellowing. In personal care applications, it provides good conditioning to hair and provides good feel and delivery properties to creams and lotions.	<1	1,500	15
Silamine MUE	Amino-functional polydimethylsiloxane that is reactive with fibres, textiles, automobile surfaces and plastics. Used in both solvent and water-based polishes to give a durable shine to various surfaces and can impart softness to textiles. Has higher amine value than Silamine 2972 so will be more durable.	1	2,000	28
Silamine T-97	Aminoethylaminopropyl polysiloxane with high % branched alkyl group to improve organic compatibility. Imparts softness to textiles and improved hair conditioning.	1	50	10
Silamine DG-50	Amino-functional polydimethylsiloxane. Excellent durable gloss for automotive polishes and hard surface cleaners. This clear to hazy liquid is 50% active in mineral spirits and isopropyl alcohol.	<1	1 <i>5</i> 0	16



The Earth's crust contains an abundance of silicon, and these natural-based materials have been used for thousands of years. These versatile silicon rock crystals were familiar to a number of ancient civilizations, including the predynastic Egyptians, and Chinese who used them for small vases, jewellery and glass. Natural silicate compounds were also used in various types of mortar for construction of early human dwellings. The name silicon is derived from the Latin word silex meaning flint or hard stone, corresponding to the materials now called silica or silicates. It was first identified by Antoine Lavoisier in 1787, as a component of silex, but Humphry Davy (in 1800) mistook it as a compound. In 1811, Gay-Lussac and Louis Jacques Thénard probably prepared impure amorphous silicon through the heating of potassium with silicon tetrafluoride. The first person to identify it as an element was Jöns Jacob Berzelius, in 1823. The following year, Berzelius prepared amorphous silicon using approximately the same method as Gay-Lussac and then purified it with repeated washing.

2. Solubilized Primary-Secondary Amines

Solubilized Primary-Secondary Amines

The aminoethylaminopropyl silicone is solubilized with polyether groups. These products add softness and lubricity in personal care and textile applications. They are substantive to fibres and are low yellowing.

CH3-Si-O- Si-O-Si-O-Si-O- Si-CHa $CH_3 \setminus CH_3 / a \setminus (CH_2)_3 / b \setminus (CH_2)_3 / c CH_3$ NH-CH₂-CH₂-NH₂ (OCH₂CH₂)_d - (OCH₂-CH)_e-OH CH₃

Products	Properties and Applications	Colour (Gardner)	Molecular Weight	Equivalent Weight	
Silamine AS	100% active amino silicone.	3	3,000	3,000	
Silamine C-100	50% active in water.	3	2,500	2,500	
Silamine PD	90% active in water.	3	3,500	3,500	
Silamine D208 EDA	100% active amino silicone.	3	2,500	2,500	

Silicon: The 14th element in the periodic table; chemical symbol; Si, density = 2.33g/ml; molar mass = 28.09 g/mol; melting point = 1,420°C; boiling point = 3,265°C; electronic configuration [Ne]3s²p²; metallic-looking; does not occur naturally in free form; in its combined form, accounts for 27.6% of the Earth's crust; 2nd most abundant element on Earth after oxygen and one of the 10 most abundant elements in the solar system; 4.47×10^7 (rel. to [H] = 1×10^{12}).





Silicone Quaternary Compounds – Silquat

Siltech offers two classes of quaternary compounds: 1. Silicone Dialkyl Quats, 2. Silicone Polyether Fatty Quats

1. Silicone Dialkyl Quats. The alkyl group can range from C1 to C18. These are 70% active in hexylene glycol, except as otherwise noted. Many of these Silquats can be made in other solvents than those listed here. The dialkyl quats are substantive to fibres, are non-yellowing and provide softness, lubricity and anti-stat properties in textile applications. They also provide water repellency to glass and automotive surfaces.



											Solu	oilities at Ro	om Temperat	ture						
			Colour	Alkyl	Contact	Wa	ater	I	PA	Mii Sp	neral pirits	Mine	ral Oil	Aro Sol	matic vents	Cy Meth	vclo nicone	350 V Silicor	iscosity ne Fluid	
Products	Properties and Applications	Appearance	(Gardner)	Group	Angle	1%	10%	1%	10%	1%	10%	1%	10%	1%	10%	1%	10%	1%	10%	
Silquat A0	Shortest silicone chain quat. Used in coatings as a levelling agent, and in textiles as a wetter and for anti-stat, lubricity and slip.	Clear amber liquid	3	C2	72	S	S	S	S	I	I	I	I	I	I	I	I	I	I	
Silquat J2	Water-soluble quat. Substantive to hair and fibres.	Clear amber viscous liquid	3	C2	83	S	S	S	S	Ι	I	I	I	Ι	I	Ι	Ι	I	I	
Silquat J15	Water-insoluble quat. Gives excellent water repellency to glass and automotive surfaces.	Clear amber viscous liquid	3	C2	101	I	I	S	S	I	I	I	I	I	I	I	I	I	I	
Silquat Di-10	Difunctional linear silicone quats. Silquat Di-25 has a higher percentage	Clear amber	3	C2	87	S	D	S	S	I	l	I	I	I	I	I	l	l	I	
Silquat Di-25	of silicone.	liquid	3	C2	93	D	D	S	S	Ι	I	Ι	Ι	Ι	Ι	Ι	I	I	I	
Silquat J2-B	Products contain low ratio of silicone to fatty groups. Silquat J2-B has a lower molecular weight than Silquat J15-B.	Clear amber viscous liquid	3	C18	91	I	I	S	S	S	S	S	S	S	S	D	I	D	I	
Silquat J15-B	Contains a higher ratio of silicone to fatty groups than Silquat J2-B. Provides water repellency and increased softness and hand to textiles.	Clear amber viscous liquid	3	C18	100	Ι	Ι	S	S	S	S	S	S	S	S	S	S	D	D	
Silquat J208-1B	Products have polyether groups incorporated to make them more water soluble.	Clear amber viscous liquid	3	C18	N/A	S	S	S	S	Ι	Ι	Ι	Ι	S	S	Ι	I	D	I	
Silquat CR 4000	Very-high-molecular-weight water-soluble silicone quaternary compound. 70% active in hexylene glycol. Excellent hair conditioner for both clear and opaque 2-in-1 shampoos.	Clear amber viscous liquid	8	C2	90	S	S	S	S	Ι	I	I	Ι	Ι	Ι	Ι	I	I	Ι	
Silquat 3180	Water-dispersible blend of high-molecular-weight and low-molecular-weight silicone quats. 70% active in hexylene alcohol.	Clear amber viscous liquid	3	C2	96	D	D	S	S	Ι	I	Ι	I	S	S	Ι	I	D	I	
Silquat 3150	Water-dispersible silicone quats. These products are blends of fatty quats	Clear amber	3	C2	98	D	D	S	S	S	S	Ι	Ι	I	Ι	Ι	I	D	I	
Silquat 3152	and silicone quats. Excellent beading for car care products.	viscous liquid	3	C2	94	S	D	S	S	Ι	I	Ι	Ι	Ι	Ι	D	Ι	D	D	
Products	Properties and Applications	Appearance	Colour	Viscosity (cps@25°C)	Functional Group															
Silquat AD	These products provide lubricity and softness to fibres. The water solubility can be varied according to the ratio of silicone, polyether and the molecular weight of the alkyl group.	Clear to hazy yellow liquid	3	20	Dimer	S	S	S	S	I	I	I	I	I	I	I	I	I	I	
Silquat AC	Compatible with anionic systems. Provides outstanding conditioning and anti-stat for 2-in-1 shampoos. Does not adversely affect foam. Silquat AD and AC are 40% active in water.	Clear to hazy yellow liquid	3	20	Сосо	S	S	S	S	I	I	I	I	I	I	I	I	I	I	

2. Silicone Polyether Fatty Quats. The fatty group can range from lauric to stearic.

CH₃ CH₃ CH₃ CH₃ $CH_{3}-Si - \begin{pmatrix} I \\ O-Si - \end{pmatrix}_{a} \begin{pmatrix} I \\ I \\ O-Si - \end{pmatrix}_{b} \begin{pmatrix} O-Si - I \\ O-Si - OH \end{pmatrix}_{b} \begin{pmatrix} O-Si - OH_{3} \\ O-Si - OH_{3} \end{pmatrix}_{b}$ CH₃ CH₃ (CH₂)₃ CH₃ I⊕ CH₃ 0 $(OCH_2CH_2)_c - (OCH_2-CH)_d - O-CCH_2-N-(CH_2)_3-NH-C-R$ CH₃ 0 CH₃ where R = functional group



Silicone Polyether Esters and Carboxylates

Siltech offers a series of silicone polyether esters and carboxylates based on fatty acids such as lauric and isostearic. These products are excellent emulsifiers and provide good conditioning to hair and fibres. The fatty portion of the molecule as well as the molecular weight of the silicone can be altered to suit customer needs.





												S	olubilities at	Room Tem	perature					
				Colo	ur	Viscosity		Water		IPA	Mine	ral Spirits	s Mir	neral Oil	A	romatic iolvents	N	Cyclo Iethicone	3 S	350 Visco Silicone F
Products	Properties and Applications	Appearance		(Gardı	ner)	(cps@25°C)		1% 10	% 1%	10%	1%	10%	5 1%	10%	1%	10	% 1%	10%	5 19	%
Silwax WD-IS	Silicone isostearate. Forms a lubricious micro-emulsion in water. Excellent for making oil or silicone-in-water emulsions.	Clear liquid		2		200		D D	S	S	I	I	D	I	S	S	D	I	C	D
Silwax WS-L	Silicone laurate. Acts as an emulsifier, slip additive and conditioner.	Clear liquid		2		200		S S	S	S	I	I	I	I	S	S	D	I	D)
Silube CS-1	Carboxy silicone in the free acid form based on succinic acid. Excellent emulsifier and complexation agents for quats and amines.	Clear liquid		2		3,000		S I	S	S	Ι	Ι	D	Ι	D	I	D	I	Ľ	C
Silmer CSO Di-25	Oil-in-water emulsifier and pigment dispersant. Especially effective for chemical sunscreens.	Clear liquid		3		250		I I	S	S	S	S	I	I	S	S	S	S	S	S di
Silmer CST Di-25	Oil-in-water emulsifier and pigment dispersant. Especially effective for physical sunscreens.	Slightly hazy liquid		3		7,000	S dis	ilightly persible	S	S	D	I	I	I	S	Sligł disper	ntly I rsible	I	I	1
														Solubilit	ies at Room	Temperat	ure			
Products	Properties and Applications	Appearance	Colour (Gardner)	Viscosity (cps@25°C)	% Fluoro	% Alkyl	% Ethylene Oxide	Refractive Index	• 15	Water % 10%	IP. 1%	A 10%	Mineral S 1%	p <mark>irits</mark> 1 10% 1	Mineral Oi 1% 109	ب ا : % 1%	vromatic Solvents 6 10%	Cyc Methi 1%	lo cone 10%	350 Vi Silicon 1%
Fluorosil J15	Fluorinated silicone. Superior slip and lubricity in cosmetic and industrial applications.	Clear, light straw liquid	<1	500	17	0	0	1.399	I	I	I	I	S	S	1 1	S	S	S	S	S
Fluorosil H418	Liquid alkylfluorosilicone. Provides slip and lubricity.	Clear, light straw liquid	<]	300	20	20	0	1.422	I	I	I	Ι	S	S	S S	S	S	S	S	S
Fluorosil 2010	Fluorinated silicone polyethers. The water solubility can be varied to suit customer needs.	Clear, light straw liquid	<1	800	3	0	70	1.451	S	S S	S	S	I	I	I I	S	S	I	I	D
Fluorosil TFP 1000	Medium-molecular-weight trifluoropropyl silicone oil.	Clear, colourless liquid	1	1,000	13	0	0	1.38	I	I	I	Ι	I	I	I I	I	I	I	I	I
Fluorosil TFP 10,000	High-molecular-weight trifluoropropyl silicone oil.	Clear, colourless liquid	1	10,000	13	0	0	1.38	I	I	I	I	I	I	I I	I	I	I	I	I

Fluorinated Silicones – Fluorosil

Siltech offers a series of fluorinated silicones as well as fluorinated silicones that also contain alkyl or polyether pendant groups. By virtue of the fluorine group, these products offer good solvent resistance, lubricity and slip. The ratio of fluorine and silicone can be varied to suit customer needs.



												Sol	ubilities at Ro	om Tempero	ature				
Products	Properties and Applications	Appearance		Color (Gardn	ır er) (ı	Viscosity cps @ 25°C)		Water 1% 10%	6 1%	IPA 10%	Miner 1%	al Spirits 10%	Miner 1%	al Oil 10%	Aroı Solv 1%	matic vents 10%	C Me 1%	Cyclo thicone 10%	350 Visc Silicone 1%
Silwax WD-IS	Silicone isostearate. Forms a lubricious micro-emulsion in water. Excellent for making oil or silicone-in-water emulsions.	Clear liquid		2		200		D D	S	S	I	I	D	I	S	S	D	I	D
Silwax WS-L	Silicone laurate. Acts as an emulsifier, slip additive and conditioner.	Clear liquid		2		200		S S	S	S	I	I	I	I	S	S	D	I	D
Silube CS-1	Carboxy silicone in the free acid form based on succinic acid. Excellent emulsifier and complexation agents for quats and amines.	Clear liquid		2		3,000		S I	S	S	I	I	D	I	D	I	D	I	D
Silmer CSO Di-25	Oil-in-water emulsifier and pigment dispersant. Especially effective for chemical sunscreens.	Clear liquid		3		250		1 1	S	S	S	S	I	I	S	S	S	S	s _{di}
Silmer CST Di-25	Oil-in-water emulsifier and pigment dispersant. Especially effective for physical sunscreens.	Slightly hazy liquid		3		7,000	S dis	Slightly spersible	S	S	D	I	I	I	S	Slightly dispersible))	I	Ι
														Solubilities	at Room Ter	mperature			
Products	Properties and Applications	Appearance	Colour (Gardner)	Viscosity (cps@25°C)	% Fluoro	% Alkyl	% Ethylene Oxide	Refractive Index	19	Water 6 10%	194 1%	. <i>I</i> 10%	Mineral Spiri 1% 10%	its Min % 1%	neral Oil 10%	Aror Solv 1%	natic vents 10%	Cyclo Methicou 1% 1	350 Vi ne Silicon 0% 1%
Fluorosil J15	Fluorinated silicone. Superior slip and lubricity in cosmetic and industrial applications.	Clear, light straw liquid	<1	500	17	0	0	1.399	I	I	I	I	S S	I	I	S	S	S	S S
Fluorosil H418	Liquid alkylfluorosilicone. Provides slip and lubricity.	Clear, light straw liquid	<1	300	20	20	0	1.422	I	I	I	Ι	S S	S	S	S	S	S	S S
Fluorosil 2010	Fluorinated silicone polyethers. The water solubility can be varied to suit customer needs.	Clear, light straw liquid	<1	800	3	0	70	1.451	S	S	S	S	1 1	I	I	S	S	I	I D
Fluorosil TFP 1000	Medium-molecular-weight trifluoropropyl silicone oil.	Clear, colourless liquid	1	1,000	13	0	0	1.38	I	I	I	I	I I	I	I	I	Ι	I	
Fluorosil TFP 10,000	High-molecular-weight trifluoropropyl silicone oil.	Clear, colourless liquid	1	10,000	13	0	0	1.38	I	I	I	Ι	I I	I	Ι	I	Ι	I	1 1





Silicone Gels

The Silmer G-162 series is a group of related silicone elastomers that are based on unique dimethicone/vinyl dimethicone cross polymers in cyclopentasiloxane. The different products vary in the modifier added to the base polymer, which alters the ultimate aesthetics. Silmer G-162 series elastomers are easy to formulate and improve gloss, pigment dispersion and softness to many personal care products. Silube 550 is based on urethane siloxanes.

Products	Properties and Applications	Appearance
Silube 550	Silicone urethane resin that can be incorporated into coatings and fabric protectants to provide good water and soil repellence.	Clear liquid
Silmer G-162	Used in formulating various personal care products to provide a dry, soft, powdery-skin feel.	Clear liquid
Silmer G-162A	More cushion and play time.	Clear liquid
Silmer G-162F	Forms thinner and more spreadable film.	Clear liquid
Silmer G-162Q	More powdery and silky feel. Adds transfer resistance to lipsticks.	Clear liquid

World-Class Manufacturing



Our 15,000 m² of manufacturing floor space is divided between our two modern plants bracketing the city of Toronto. The Mississauga plant was purchased in 2010 to accommodate growth and has since been further modernized to the standards of our Toronto plant. New control systems have been installed in the Toronto plant to bring them to the standards of the Mississauga plant. We combined the best of both locations. With reactors ranging in size from 20 to 30,000 kg, we have the flexibility to support our growth strategy of introducing new innovative products and the capacity to address your needs. Our highly skilled and experienced manufacturing teams take great pride in the quality and purity of our products. We will make sure they are the best in the industry. Both of our manufacturing facilities were designed by the same chemical engineer, our founder; so the products made in our larger kettles are processed the same as those made in our pilot reactors resulting in excellent scale up reproducibility. The co-location of R&D personnel at each plant provides immediate support for manufacturing. The 40 km distance separating the two facilities is close enough to allow for synergy, but far enough to allow for a secure customer supply in the event of any unforeseen event at either plant.

								Sc	olubilities at	Room Temp	erature						
	Viscosity		Wa	ter	IF	PA	Minera	l Spirits	Miner	al Oil	Aror Solv	natic ents	Cy Meth	clo icone	350 Vi Silicon	scosity e Fluid	
% Solids	(cps@25°C)	Solvent	1%	10%	1%	10%	1%	10%	1%	10%	1%	10%	1%	10%	1%	10%	
40-50	5,000	Isododecane	I	I	S	S	S	S	I	I	S	S	S	S	D	I	
80-90	400,000	Cyclopentasiloxane	Ι	Ι	I	I	I	I	I	I	I	I	D	D	D	D	
80-90	400,000	Cyclopentasiloxane	I	I	I	I	I	I	I	I	I	I	S	D	D	D	
80-90	400,000	Cyclopentasiloxane	Ι	Ι	I	I	I	I	Ι	I	I	I	S	D	S	D	
80-90	400,000	Cyclopentasiloxane	I	Ι	I	I	I	I	I	I	I	I	S	D	S	D	





Silicone Phosphates – Silphos

Siltech offers a series of phosphated silicone polyethers that are available as free acids or sodium salts. Silicone phosphates exhibit good foaming, emulsification, detergency and wetting properties and, due to their anionic character, have good substantivity to glass and other surfaces. Phosphates also help sequester iron and other metal ions and have good rust-inhibition properties.

> CH₃ CH₃/ CH₃ CH3-Si - (O-Si -) O-Si- / O-Si-CH3 CH₃ CH₃ (CH₂)₃ CH₃ $(O-CH_2-CH_2)_c - (O-CH_2-CH)_d - O-P - OH$ CH₃ OH

Silicone Anionic/Cationic Complex – Si

Siltech offers a series of silicone complexes that are the salts of anionic and cationic silicones.

Products	Properties and Applications
Silphos A-100	Silicone polyether phosphate ester in free acid form. Excellent emulsifier, dispersant and anti-stat.
Silphos J208	Higher molecular weight than Silphos A-100.



ilPlex				Colour	Viscosity	Wa	ater		PA	Miner	al Spirits	Mine	ral Oil	Aroi Solv	matic vents	Cy Meti	vclo nicone	350 Visco Silicone F
	Products	Properties and Applications	Appearance	(Gardner)	(cps@25°C)	1%	10%	1%	10%	1%	10%	1%	10%	1%	10%	1%	10%	1%
	SilPlex J2-S	Unique complexes of varying silicone quaternary compounds and anionic silicone compounds. These water-soluble silicones are compatible	Clear liquid	2	700	S	S	S	S	I	I	I	I	I	I	I	I	I
	SilPlex JQ-40	and skin and softening to textile fibres. Very mild to the skin and eyes, making their use in baby shampoos an important application.	Clear liquid	2	20	S	S	S	S	I	I	I	I	I	I	I	I	I

											Solubilities of	at Room T	Temperature			
Castor Oil Silicones	Products	Properties and Applications	Appearance	Colour (Gardner)	Viscosity (cps@25°C)	% Castor Oil	Water 1% 105	IPA 6 1% 1	۸ ۵%	Aineral Spirits 1% 10%	Mineral C 1% 10)il)% 1	Aromatic Solvents % 10%	Cyclo Methicone 1% 10%	350 Visc Silicone 5 1%	osity Fluid Trigly 10% 1%
These silicones are modified to have the natural castor oil triglyceride attached to the silicone backbone, making these silicones more compatible with castor-oil-containing consumer products. For personal care products, these silicones add gloss and give an excellent feel. For inks and	Silube CO Di-10		Clear liquid	3	1,000	80	1 1	S	S	S S	D	:	S S	1 1	D	I S
coatings, they enhance slip and mar resistance. The hydroxyl group can also be reacted into certain coating systems to provide anti-graffiti properties.	Silube CO Di-50	Linear castor-oil-based silicone.	Clear liquid	3	2,400	40	1 1	S	S	S S	D	1	S S	1 1	D	I I

									Solubilitie	s at Room T	emperature						
	Colour	Viscosity	Wa	lter	I	PA	Minera	l Spirits	Miner	al Oil	Aroi Solv	natic vents	Cy Meth	clo icone	350 V Silicon	scosity e Fluid	
Appearance	(Gardner)	(cps@25°C)	1%	10%	1%	10%	1%	10%	1%	10%	1%	10%	1%	10%	1%	10%	
Clear yellow liquid	1	300	S	S	S	S	I	I	I	I	I	I	I	I	I	I	
Clear yellow liquid	2	600	S	S	S	S	Ι	I	I	I	I	I	I	I	Ι	I	
														S		> `H	
											A	a atta	<u> </u>	ala	250 V		















Alkylated Silicone Polyethers – Silube

Siltech offers a series of alkylated silicones co-reacted with polyethers to make them either fully or partially soluble in water. The products listed below represent only a partial list. Siltech has the capability of offering any alkylated silicone wax in a water-soluble form. The Silube products are represented by the following structure:

$$\begin{array}{c} CH_{3} \\ I \\ H_{3}-Si \\ I \\ H_{3}-Si \\ I \\ CH_{3} \\ CH_{2} \\ CH_{3} \\ CH_{3}$$

Products	Properties and Applications	Appearance	(Gardne
Silube T308-16	Water-insoluble silicone alkyl polyether. Provides good lubricity and is a good water-in-oil emulsifier for creams and lotions used in the personal care industry.	Clear liquid	1
Silube T310-A16	Water-insoluble silicone alkyl polyether. Provides good lubricity and is a good water-in-oil emulsifier for creams and lotions used in the personal care industry.	Clear liquid	1
Silube FF108-16	Water-soluble silicone alkyl polyether. Provides good lubricity and is a good oil-in-water emulsifier when used in combination with Silube T308-16.	Clear liquid	1
Silube J208-212	Water-soluble alkyl silicone polyether. Good oil-in-water emulsifier.	Clear liquid	1
Silube J208-412	Water-dispersible alkyl silicone polyether. Good oil-in-water emulsifier.	Clear liquid	1
Silube J208-612	Water-dispersible silicone alkyl polyethers. Good ester-in-oil emulsifier.	Clear liquid	1
Silube J208-812	Water-insoluble alkyl silicone polyether. Good water-in-oil emulsifier.	Clear liquid	1

Siltech is an Innovation Company



We have built our business and reputation on creating new silicones for new customers with new applications. Our R&D, Technical Service and Process R&D laboratories are modern, well-equipped, co-located with our manufacturing facilities, and staffed with first-class chemists and engineers. These scientists have years of experience in synthesis and key applications such as personal care, polyurethane foam stabilization, inks and coatings, and silicone gel formulation. Our first-rate analytical labs support the quality of our manufactured products as well as new-product development and technical service. Our track record of innovation and outside-the-box problem solving is demonstrated by our broad portfolio of product types. Our early history as an organic surfactant company gives us a different perspective from the other silicone manufacturers and results in classic organic surfactant derivations to silicone, such as our Silamine[®], Silphos[®] and Silquat[®] products. All are commercial grades. We are continually adding chemists and the latest equipment to make sure our R&D capabilities support all of your needs. Our typical approach is to develop products directly with our customers.

				Solubilities at Room Temperature													
Viscosity		% Ethylene	Wa	ter	IP	PA	Minera	Spirits	Miner	al Oil	Aron Solv	natic ents	Cyc Methi	clo cone	350 Vi Silicon	scosity Fluid	
(cps@25°C)	% Alkyl	Oxide	1%	10%	1%	10%	1%	10%	1%	10%	1%	10%	1%	10%	1%	10%	
800	30	12	I	I	S	S	S	S	S	S	S	S	S	D	I	I	
1,500	27	17	I	Ι	S	S	S	S	S	S	S	S	S	D	I	Ι	
1,500	10	60	S	S	S	S	I	I	D	I	D	I	I	I	D	I	
1,000	6	48	S	S	S	S	I	Ι	Ι	I	I	Ι	Ι	I	I	I	
800	13	39	D	D	S	S	I	Ι	Ι	Ι	S	S	Ι	Ι	Ι	Ι	
600	22	28	D	Ι	S	S	S	S	Ι	Ι	S	S	Ι	Ι	Ι	I	
300	32	16	I	I	S	D	S	D	S	S	S	S	S	D	I	I	

Everyone claims to be innovative and to like to partner. The difference is we actually do it every day. It's our norm!







Silicone MQ Resins

Silmer Q Resins

Silmer Q Resins are the kinetic reaction products of silicates with trimethyl siloxy groups, which generates a silicon-based, cross-linked network. These are often referred to as MQ resins because they are built of a network of tetrafunctional silicon atoms (Q group – silicon surrounded by four oxygen groups) endcapped with monofunctional silicon (M group – silicon with one oxygen group and three alkyls).

Depending on the specific structures, molecular weights and cross-link densities, these are available as pourable liquids or solids diluted in solvents. All are presented as clear liquids.



		Viscosity (cps@25°C),		Molecular	Refractive
Products	M:Q Ratio	Appearance	% Actives	Weight	Index
Silmer Q20	2:1	250, Clear liquid	100%	2,000	1.404
Silmer Q12IDD	1.25:1	20, Clear liquid	70% in isododecane	2,500	1.413
Silmer Q12XYL	1.25:1	10, Clear liquid	70% in xylene	2,500	1.413
Silmer Q9IDD	0.9:1	20, Clear liquid	70% in isododecane	4,700	1.413
Silmer Q9XYL	0.9:1	10, Clear liquid	70% in xylene	4,700	1.413

	Products	Description	M:Q Ratio	Viscosity (cps @ 25°C), Appearance	% Actives	Molecular Weight	% Hydride
Silmer HQ Containing Resins Silmer HQ Resins are MQ resins with reactive hydride groups. These can be used in two-component siloxane VIN/SiH cured systems to help improve rheological properties such as tear strength and elongation.	Silmer HQ20	Low-molecular-weight MQ resin with all "M" endcapped portions functionalized with SiH.	2:1	12, Clear liquid	100%	2,000	0.65
	Silmer HQ203	Higher-molecular-weight MQ resins. Contains less SiH than Silmer HQ 20.	2:1	100, Clear liquid	100%	2,500	0.12

		Products	M:Q Ratio	Viscosity (cps@25°C), Appearance	% Actives	Molecular Weight
Silmer VQ Resins Silmer VQ Resins are MQ resins with reactive vinyl		Silmer VQ20	2:1	1,000, Clear liquid	100%	2,000
groups. These can be used in two-component siloxane VIN/SiH cured systems to help improve rheological properties such as tear strength and elongation. The G-180 series are blends of VQ resins and vinyl terminated siloxanes for ease of use. SILMER VTQ RESINS	Silmer VQ92XYL	0.9:1	20, Clear liquid	70%	4,700	
	Silmer VQ92IDD	0.9:1	30, Clear liquid	70% in isododecane	4,700	
	OF USE.	Silmer G-180	0.9:1	14,000, Clear liquid	50% VQ92 in Silmer VIN 1,000	Not applicable
	6.1.	Silmer G-181	0.9:1	50,000, Clear liquid	50% VQ92 in Silmer VIN 10,000	Not applicable

Silmer G-182

Silsurf Q20308

Silmer VQT92-T30XYL





	Products	OH Value	Viscosity (cps@25°C), Appearance	Refractive Index	Cloud Pt (°C)	Molec Weig
esins ed silicone polyethers. Due to s, these products can provide	Silsurf Q25315-O	30	500, Clear liquid	1.448	44	2,00

55

0.9:1

0.9:1

70,000,

Clear liquid

16 Clear liquid

800, Clear liquid

50% Silmer VQ92 in

Silmer VIN 65,000

70% in xylenes

1.439

Not applicable

5,000

<25

Silmer Polyether MQ Re

These are highly branche their branched properties for better substantivity than standard silicone polyethers and also act as improved carriers for applications such as defoaming.

Vinyl	
12.0	
2.0	
2.0	
1.0	
1.0	
1.0	



2.0

3,000

Reactive Silicones – Silmer

The Silmer line of reactive silicones consists of both multifunctional and linear-difunctional silicone pre-polymers with reactive terminal end groups. The silicones can be co-reacted into various polymers for coatings, plastics, resins and other applications to incorporate a silicone moiety into a polymer structure. Some basic homologues are offered in each class, but other homologues can be custom made.

Siltech offers 12 classes of reactive silicones:	1. Silmer OH	4. Silmer OH ACR	7. Silmer NH	10. Silmer VIN
	2. Silmer OHT	5. Silmer H	8. Silmer TMS	11. Silmer SH
	3. Silmer ACR	6. Silmer NCO	9. Silmer EP	12. Silmer ACRN and ACRT

1. Silmer OH – Hydroxyl-Functional Pre-Polymer

Products	Properties and Applications	Appearance	Molecular Weight	Equivalent Weight	Viscosity (cps@25°C)
Silmer OH A0-UP	Lowest-molecular-weight reactive silicone. Contains one reactive group on a heptamethyltrisiloxane backbone. Used as a chain terminator and polymer modifier.	Clear liquid	280	280	20
Silmer OH C50	High-molecular-weight trifunctional silicone pre-polymer.	Clear liquid	11,600	3,800	500
Silmer OH J10	High-molecular-weight multifunctional silicone pre-polymer.	Clear liquid	8,800	880	1,300
Silmer OH Di-10	Linear-difunctional hydroxyl-terminated silicone pre-polymer.	Clear liquid	1,000	500	50
Silmer OH Di-50	Linear-difunctional hydroxyl-terminated silicone pre-polymer.	Clear liquid	4,000	2,000	100







LINEAR-DIFUNCTIONAL

CH₃/ CH₃ CH₃ OH-(CH₂)₃-Si - O-Si - /a O-Si-(CH₂)₃-OH CH₃ CH₃ CH₃

2. Silmer OHT – Dual Hydroxyl-Functional Pre-Polymer

Provides the superb slip, mar and stain resistance of linear silicones but also provide some degree of crosslinking to better anchor the silicone co-polymer into the system.

Products	Properties and Applications	Appearance	Molecular Weight	Equivalent Weight	Viscosity (cps @ 25°
Silmer OHT A0	Two-functional hydroxyl attached to silicone backbone. Can be reacted into urethane coatings to have a single monofunctional silicone layer incorporated into the coating.	Clear liquid	400	200	100
Silmer OHT Di-10	Tetra-functional hydroxyl silicone. Best organic compatibility.	Clear liquid	1,200	300	200
Silmer OHT Di-50	Tetra-functional hydroxyl silicone. Provides good slip, mar resistance and release.	Clear liquid	3,800	950	300
Silmer OHT Di-100	Tetra-functional hydroxyl silicone. Provides good slip, mar resistance and release.	Clear liquid	7,900	1,975	500
Silmer OHT Di-400	Tetra-functional hydroxyl silicone. Provides best slip, mar resistance and release.	Clear liquid	30,000	7,500	9,500
Silmer OHT E13	Ten-functional hydroxyl silicone. Provides good slip, mar resistance and release and high degree of crosslinking.	Clear liquid	6,100	1,525	1,500

LINEAR-DIFUNCTIONAL





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3. Silmer ACR – Acrylate-Functional Pre-Polymer

Products	Properties and Applications	Appearance	Molecular Weight	Equivalent Weight	Viscosity (cps@25°C)
Silmer ACR D208	Water-soluble multifunctional acrylate silicone pre-polymer.	Clear liquid	3,000	1,200	270
Silmer ACR Di-10	Linear-difunctional acrylate-terminated silicone pre-polymer.	Clear liquid	1,100	550	30
Silmer ACR Di-50	Linear-difunctional acrylate-terminated silicone pre-polymer.	Clear liquid	4,100	2,050	120
Silmer ACR Di-400	Linear-difunctional acrylate-terminated silicone pre-polymer.	Clear liquid	24,100	14,200	2,100
Silmer ACR Di-1508	Linear-difunctional water-insoluble acrylate silicone pre-polymer.	Clear liquid	1,500	750	160
Silmer ACR Di-2510	Linear water-dispersible cross-linkable silicone acrylate pre-polymer.	Clear liquid	2,800	1,400	350
Silmer ACR Di-4515-0	Linear-difunctional water-dispersible acrylate silicone pre-polymer.	Clear liquid	6,600	3,000	2,200

MULTI $\begin{array}{c} CH_{3} & CH_{3} \\ I \\ CH_{3}\text{-}Si & - \begin{pmatrix} CH_{3} \\ I \\ O\text{-}Si & - \end{pmatrix}_{a} \begin{pmatrix} CH_{3} \\ I \\ O\text{-}Si & - \end{pmatrix}_{b} & \begin{array}{c} OH_{3} \\ O\text{-}Si & -CH_{3} \\ I \\ CH_{3} & CH_{3} \\ CH_{2} \end{pmatrix}_{a} & \begin{array}{c} CH_{3} \\ I \\ CH_{2} \end{pmatrix}_{a} \\ \end{array}$ LINEAR-DIFUNCTIONAL

 $\begin{array}{c} \mathsf{CH}_3 \begin{pmatrix} \mathsf{CH}_3 \\ \mathsf{I} \\ \mathsf{O-Si} \\ \mathsf{O-Si} \\ \mathsf{O-Si} \\ \mathsf{O-Si-(CH_2)_3-Si} \\ \mathsf{O-Si-(CH_2)_3-R} \\ \mathsf{I} \\ \mathsf{CH}_3 \\ \mathsf{CH}_3 \\ \mathsf{CH}_3 \end{array}$

where $R = (OCH_2-CH_2-)_c (OCH_2 CH_2)_d OCCH=CH_2$ CH₃



4. Silmer OH ACR – Acrylate-Functional Pre-Polymer with Secondary Hydroxyl Groups

Products	Properties and Applications	Appearance	Molecular Weight	Equivalent Weight	Viscosi (cps@25
Silmer OH ACR Di-10	Linear low-molecular-weight silicone acrylate pre-polymer for UV cured systems. More compatible to organics. Fast curing, provides good slip, mar resistance and release.	Clear liquid	1,200	600	120
Silmer OH ACR Di-50	Linear medium-molecular-weight silicone acrylate pre-polymer for UV cured systems. Fast curing, provides good slip, mar resistance and release.	Clear liquid	3,900	1,900	210
Silmer OH ACR Di-100	Linear high-molecular-weight silicone acrylate pre-polymer for UV cured systems. Fast curing, provides good slip, mar resistance and release.	Clear liquid	8,000	4,000	310
Silmer OH ACR Di-400	Linear high-molecular-weight silicone acrylate pre-polymer for UV cured systems. Fast curing, provides best slip, mar resistance and release.	Clear liquid	1,500	6,000	1,500
Silmer OH ACR D4	Multifunctional low-molecular-weight silicone acrylate pre-polymer for UV cured systems. Provides more hardness and brittleness than OH ACR C50 but still flexible.	Clear liquid	2,270	570	645
Silmer OH ACR C50	Multi tri-functional high-molecular-weight silicone acrylate pre-polymer for UV cured systems. Provides for a good flexible resin with slip, mar resistance and release.	Clear liquid	12,000	4,000	1,200



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LINEAR-DIFUNCTIONAL

 $\begin{array}{c} CH_{3} \\ I \\ R-Si- \\ I \\ CH_{3} \\ CH_{3} \\ \end{array} \begin{pmatrix} CH_{3} \\ I \\ O-Si- \\ I \\ CH_{3} \\ a \\ \end{array} \begin{pmatrix} CH_{3} \\ I \\ O-Si- \\ I \\ CH_{3} \\ a \\ \end{array} \end{pmatrix} _{a} \begin{array}{c} CH_{3} \\ I \\ O-Si- \\ I \\ CH_{3} \\ CH_{3} \\ a \\ \end{array}$

 $OH \qquad OH \qquad I \qquad I$ where R = $(CH_2)_3 - O - CH_2 - CH - CH_2 - O - C - CH = CH_2$



5. Silmer H – Hydride-Functional Pre-Polymer

Products	Properties and Applications	Appearance	Molecular Weight	Equivalent Weight	Viscosity (cps@25°C)
Silmer H D2	Multifunctional silicone hydride pre-polymer.	Clear liquid	1,100	270	10
Silmer H E4	Multifunctional silicone hydride pre-polymer.	Clear liquid	2,100	420	25
Silmer H Di-10	Linear-difunctional silicone hydride pre-polymer.	Clear liquid	875	438	10
Silmer H Di-E2	Linear-difunctional and multifunctional silicone hydride pre-polymer.	Clear liquid	1,000	142	10



LINEAR AND MULTI COMBINATION

LINEAR



 $\begin{array}{c} \mathsf{CH}_{3} \\ \mathsf{I} \\ \mathsf{H}\text{-}\mathsf{Si} & \mathsf{-} \\ \mathsf{I} \\ \mathsf{I} \\ \mathsf{CH}_{3} \end{array} \begin{pmatrix} \mathsf{CH}_{3} \\ \mathsf{I} \\ \mathsf{O}\text{-}\mathsf{Si} & \mathsf{-} \\ \mathsf{I} \\ \mathsf{CH}_{3} \end{pmatrix}_{\mathsf{a}} \begin{array}{c} \mathsf{CH}_{3} \\ \mathsf{O}\text{-}\mathsf{Si}\text{-}\mathsf{H} \\ \mathsf{I} \\ \mathsf{I} \\ \mathsf{CH}_{3} \end{pmatrix}_{\mathsf{a}} \end{array}$

6. Silmer NCO – Isocyanate-Functional Pre-Polymer

Products	Properties and Applications	Appearance	Molecular Weight	Equivalent Weight	Viscosity (cps@25°C)
Silmer NCO C50	High-molecular-weight trifunctional silicone pre-polymer.	Clear liquid	12,400	4,100	1,100
Silmer NCO Di-50	Linear-difunctional isocyanate-terminated silicone pre-polymer.	Clear liquid	4,300	2,150	1,400
Silmer NCO Di-100	Linear-difunctional isocyanate-terminated silicone pre-polymer. Twice the molecular weight of Silmer NCO Di-50.	Clear liquid	8,000	4,000	3,000

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$$\begin{array}{c} CH_3 \begin{pmatrix} CH_3 \\ I \\ O-Si - \\ I \\ CH_3-Si - \\ I \\ CH_3 \end{pmatrix}_a \begin{pmatrix} CH_3 \\ I \\ O-Si - \\ I \\ CH_3 \end{pmatrix}_b \begin{array}{c} CH_3 \\ O-Si - CH_3 \\ I \\ O-C - NH - R \\ II \\ O \end{array} \qquad \text{where } R = \bigcirc -CH_2 - \bigcirc -NCO \\ -CH_2 - \bigcirc -NCO \\ -NCO \\ -CH_2 - O- \\ -CH_2 - O$$

LINEAR-DIFUNCTIONAL

CHa where $R = \bigcirc -CH_{2^{-}} \bigcirc -NCO$ R-N-C-O-(CH 2)3 - Si - O-Si - O-Si - (CH2)3-O-C-NH-R НU $\dot{C}H_3 \setminus \dot{C}H_3/a$ ĊH₃

7. Silmer NH – Amino-Functional Pre-Polymer

Products	Properties and Applications	Appearance	Molecular Weight	Equivalent Weight	Viscosit (cps@25°
Silmer NH C50	High-molecular-weight trifunctional silicone pre-polymer.	Clear liquid	11,600	3,800	500
Silmer NH Di-8	Linear-difunctional amino-terminated silicone pre-polymer.	Clear liquid	850	425	12
Silmer NH Di-50	Linear-difunctional amino-terminated silicone pre-polymer.	Clear liquid	3,600	1,800	70



8. Silmer TMS – Trimethoxysilane Pre-Polymer

These trimethoxysilane functionalized siloxanes cure by condensation with silanols, organic hydroxyl groups and other alkoxy silane materials. Can be used "as is" for slow cure condensation or used with tin or titanium catalysts for faster cure. Can be reacted with pigments to provide good hydrophobicity.

Products	Properties and Applications	Appearance	Molecular Weight	# of Trimethoxy Silane Groups	Viscosity (cps@25°
Silmer TMS C50	Trifunctional polysiloxane with trimethoxysilane groups.	Clear liquid	1,200	3	500
Silmer TMS Di-10	Linear, trimethoxysilane terminated polysiloxane.	Clear liquid	1,100	2	15
Silmer TMS Di-50	Linear, trimethoxysilane terminated polysiloxane.	Clear liquid	3,800	2	60





LINEAR-DIFUNCTIONAL



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9. Silmer EP – Epoxide-Functional Pre-Polymer

Products	Properties and Applications	Appearance	Molecular Weight	Equivalent Weight	Viscosity (cps@25°C)
Silmer EP C50	High-molecular-weight trifunctional silicone pre-polymer.	Clear liquid	11,800	3,900	500
Silmer EPC C50	High-molecular-weight trifunctional silicone pre-polymer, with a cyclic epoxide.	Clear liquid	11,800	3,900	500
Silmer EP J10	High-molecular-weight multifunctional silicone pre-polymer.	Clear liquid	9,300	930	900
Silmer EP Di-50	Linear-difunctional epoxide-terminated silicone pre-polymer.	Clear liquid	4,100	2,050	70
Silmer EP Di-100	Linear-difunctional epoxide-terminated silicone pre-polymer. Twice the molecular weight of Silmer EP Di-50.	Clear liquid	7,800	3,900	160
Silmer EPC Di-50	Linear-difunctional silicone pre-polymer terminated with a cyclic epoxide.	Clear liquid	4,100	2,050	85
Silmer EP D208	Water-dispersible glycidyl-based reactive silicone epoxy pre-polymer. Often improves compatibility in non-aqueous formulations.	Clear liquid	2,400	2,400	300
Silmer EPC F418-F	Water-dispersible multifunctional cycloaliphatic-based reactive silicone epoxy pre-polymer. Often improves compatibility in non-aqueous formulations.	Clear liquid	8,200	8,200	900

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 $\begin{array}{c} \mathsf{CH}_3 \begin{pmatrix} \mathsf{CH}_3 \\ \mathsf{I} \\ \mathsf{O-Si} \\ \mathsf{I} \\ \mathsf{O-Si} \\ \mathsf{I} \\ \mathsf{I} \\ \mathsf{O-Si} \\ \mathsf{I} \\ \mathsf{CH}_3 \\ \mathsf{CH}_3 \\ \mathsf{CH}_3 \\ \mathsf{CH}_3 \\ \mathsf{R} \\ \mathsf{CH}_3 \end{array} \xrightarrow{\begin{array}{c} \mathsf{CH}_3 \\ \mathsf{I} \\ \mathsf{O-Si} \\ \mathsf{I} \\ \mathsf{I} \\ \mathsf{I} \\ \mathsf{O-Si} \\ \mathsf{I} \\ \mathsf{I$

LINEAR-DIFUNCTIONAL

 $\begin{array}{c} CH_{3} \begin{pmatrix} CH_{3} \\ I \\ R-Si \\ I \\ CH_{3} \end{pmatrix} \stackrel{CH_{3}}{}_{a} O-Si - R \\ I \\ CH_{3} \\ CH_{3} \\ CH_{3} \\ CH_{3} \\ CH_{3} \end{array}$

where $R = CH_2CH_2 - \langle$ or $R = (CH_2)_3 - O - CH_2 - CH - CH_2$

10. Silmer VIN – Vinyl-Functional Pre-Polymer

Products	Properties and Applications	Appearance	% Vinyl	Vinyl Meq.	Viscosit (cps@25°
Silmer VIN C50	High-molecular-weight trifunctional silicone pre-polymer.	Clear liquid	0.701	0.260	250
Silmer VIN J10	High-molecular-weight multifunctional silicone pre-polymer.	Clear liquid	3.190	1.182	170
Silmer VIN 70		Clear liquid	1.390	0.514	70
Silmer VIN 100		Clear liquid	0.882	0.327	100
Silmer VIN 200		Clear liquid	0.500	0.185	200
Silmer VIN 1,000	Linear-difunctional vinyl-terminated silicone pre-polymers with viscosities ranging from 70 to 65,000 cps. Please refer to	Clear liquid	0.311	0.115	1,000
Silmer VIN 5,000	Silmer H cross-linkers for hydride silicones as part of our silicone line.	Clear liquid	0.115	0.0426	5,000
Silmer VIN 10,000		Clear liquid	0.100	0.0370	10,000
Silmer VIN 20,000		Clear liquid	0.080	0.0296	20,000
Silmer VIN 65,000		Clear liquid	0.050	0.0185	65,000





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LINEAR-DIFUNCTIONAL





11. Silmer SH

Thiol functional, highly cross-linked silicon materials that offer a unique site for reactions. Siltech have used this to undergo the mercapto-ene reaction in UV-cured 3D printed systems to give high elongation values not normally obtainable with UV-cured chemistry. These materials have barely any volatility or characteristic odour due to the cross-link density.

Products	Properties and Applications	Appearance	Molecular Weight	Viscosity (cps@25°C)
Silmer SH JO	Highly functional mercapto silicone designed to be the thiol component in a UV cured thiol-ene reaction based resin system. We have reacted this with Silmer VQ resins, such as Silmer VQ92, and linear extenders such as Silmer VIN 65,000.	Clear to slightly hazy liquid	2,500	400
Silmer SH Q20	Silicon thiol resin with very high cross-link density. Contains no dimethyl silicone groups to maximize the hardness of the materials cured from it.	Clear to slightly hazy liquid	2,500	1 <i>5,</i> 000
Silmer SH 208-30Q	Silicon thiol resin with very high cross-link density. Contains no dimethyl silicone groups to maximize the hardness of the materials cured from it.	Clear to slightly hazy liquid	2,500	3,000



SILMER SH QT RESINS

SIL TECH

12. Silmer ACRN and ACRT

Tetra-acrylate functional silicone materials provide a high degree of cross-linking in UV cured systems such as paper release.

Products	Properties and Applications	Appearance	Molecular Weight	Equivalent Weight	Viscosi t (cps@25 ⁴
Silmer ACRN Di-100	Tetra functional silicone acrylate pre-polymer. An additive in energy cured coatings systems or to modify acrylate polymers improving the surface and physical properties. Highest-molecular-weight version gives extension with least cross-linking.	Clear amber liquid	7,880	1,970	850
Silmer ACRT Di-5	Lowest-molecular-weight version is ideal for 3D printing and other low-viscosity systems.	Clear to hazy liquid	720	180	40
Silmer ACRT Di-10	Low-molecular-weight version suitable for providing high cross-link density.	Clear to hazy liquid	1,440	360	100
Silmer ACRT Di-25	Medium-molecular-weight version provides good balance of cross-link and extension.	Clear to hazy liquid	2,550	1,110	360
Silmer ACRT Di-100	Tetra functional silicone acrylate pre-polymer. An additive in energy cured coatings systems or to modify acrylate polymers improving the surface and physical properties. Highest-molecular-weight version gives extension with least cross-linking.	Clear to hazy liquid	8,000	2,000	580

SILMER ACRT AND ACRN







Silicon Resins

Silmer G-100 series. Siltech offers a number of two-part, optically clear silicone gels that can be used for pressure-sensitive adhesives, encapsulation, dampeners and many other applications.

The Silmer G-100 products are a series of two-part, optically clear, addition cured silicone gel systems that range from soft, tacky gels to hard rubbers. They can be used over a wide range of temperatures and offer chemical and electrical resistance with various mechanical properties.

They are particularly useful in dental impressions, electronic encapsulants and dampeners, photonic, aerospace and under-the-hood applications.

Silmer G-100 Series. Typical Cured Properties, @ 100°C for 1 hour





We have built our business and reputation on creating new silicones for new customers with new applications.



Defoamers and Antifoams

Silicones are widely used as defoamers and antifoams in pulp and paper, paints and coatings, water treatment and other industrial applications. Siltech offers a range of defoamers, which include basic emulsions of hydrophobized silica. Siltech also offers specialized silicone polyethers that are effective defoamers in the following industries: paints and coatings, pulp and paper, metalworking fluids and any other area where paintability is important.

Products	Properties and Applications
Siltech 5800 Siltech 5821	Water-dispersible silicone polyether reacted with silica. Excellent defoamers for metal working fluids, pulp and paper, paints, coatings and other applications where dyeing and paintability are important. Prevents entrained foam. Product is cold water rinsable and will not leave deposits. Siltech 5821 is 75% active.
Siltech 2200	Industrial-grade antifoam with added MQ resin to boost defoaming capabilities. 100% active. Can also be used as is or preferably diluted in a suitable carrier for non-aqueous systems.
Siltech E-2210 Siltech E-2211 Siltech E-2220 Siltech E-2221 Siltech E-2230 Siltech E-2231	Industrial-grade antifoam emulsions. Used in aqueous systems. 10%, 20% and 30% active.
Siltech 2300	Industrial-grade antifoam with added MQ resin to boost defoaming capabilities. 100% active. Can also be used as is or preferably diluted in a suitable carrier for non-aqueous systems.
Siltech PA-140	Emulsifiable antifoam concentrate for use in brownstock washing for kraft and sulfite processes. 100% active.
Siltech P-982	100% active, emulsifiable pulp antifoam compound base. It is designed as a foam control agent in brown stock washing for kraft and sulfide processes.
Siltech C-4700	Water-insoluble silicone polyether copolymer with hydrophobized silica. Designed to control foam without defects in waterborne and solvent based paints and coatings.
Siltech C-4760	Emulsion of silicone polyether copolymers and hydrophobized silica. Designed to control foam without defects in waterborne paints and coatings. Emulsified with nonionic emulsifiers and can be used as is or at diluted concentrations.
Siltech C-4800	Fully formulated industrial-grade antifoam. Easily dispersed, durable foam control. 65% active.
Siltech C-4830	Defoamer and antifoam for use in water-based coating and ink applications as well as in various water-based industrial formulations. 40% active.
Siltech C-4852	High-efficiency, high-durability antifoam compound.



Emulsions

Often, it is highly desirable to use silicone fluids in dilute form. To be used as such, the silicone compounds must be emulsified. Siltech's line of emulsions exhibits a wide variety of uses, including mold release, polish for tires and furniture, and lubrication and conditioning for personal care applications.

Products	Properties and Applications
Siltech E-600	35% active emulsion of Siltech F-60,000.
Siltech E-660	60% active emulsion of high and low-viscosity silicone fluids.
Siltech E-2140	Emulsion of Siltech F-350. Effective mold release compound. Also used to give glossy finish to tires and vinyl and as a furniture polish. 60% active.
Siltech E-2145	Emulsion of an amino-functional polydimethylsiloxane. Excellent lubricant and softener for use in textiles. Non-yellowing. Good mold release for metal applications.
Siltech E-2145-35	Also gives a durable gloss to tires, vinyl and furniture polishes. More durable than Siltech E-2140. 60% active. Siltech E-2145 is 60% active and Siltech E-2145-35 is 35% active.
Siltech E-2145HG	60% active emulsion of reactive silicones. Provides best durability and gloss to tires and vinyl.
Siltech E-2150	30% active emulsion of a cross-linked high-molecular-weight silicone amine.
Siltech E-2152	50% active emulsion of a cross-linked alkyl siloxane that will form a dry siloxane film on dry down. Excellent durability and softness to textiles, leather and other substrates.
Siltech E-2155	30% active emulsion of a medium viscosity cross-linking amino silicone that forms a durable finish on dry down. Excellent durability and shine to tires, furniture polishes and hard surface cleaners.
Siltech E-2178	35% active emulsion used to provide hydrophobicity to a wide variety of substrates, including cementitious surfaces.
Siltech E-3H60	60% active emulsion of a highly reactive silicone hydride pre-polymer.
Siltech E-3132	Emulsion of a stripped alkyl aryl silicone. Excellent mold release for plastics, rubber, and die cast metal parts where paintability is important. 50% active.
Siltech E-4135	Micro-emulsion of an amino-functional polydimethylsiloxane.
Siltech E-4080	60% active emulsion of a silicone resin.
Siltech E-5050	30% active emulsion of a high-molecular-weight silicone urethane resin. Used as an additive to improve water repellence, soil resistance, slip, mar resistance and softness to coated materials.
Siltech E-8010	10% active. Cross-links into a durable finish. Provides excellent durability, shine, water repellency, and release.
Siltech E-8050	50% active. Cross-links into a durable finish. Provides excellent durability, shine, water repellency, and release.
Siltech C-4405	80% active dispersion of a very-high-molecular-weight polydimethylsiloxane. Very effective additive for both water-based and solvent-based coating systems providing excellent softness to leather and slip, mar resistance, gloss, antiblocking and release to coatings.
Siltech C-4436	100% active. Similar to Siltech C-4405, but does not contain any tin-based catalysts.
Siltech C-4445	80% active. Similar to Siltech C-4405, but does not contain any tin-based catalysts.

Siltech Patents

Number	U.S. Patent	Date Issued	Торіс
1	4,868,236	Sept/89	Guerbet Citrate Esters
2	5,051,489	Sept/91	Silanol Waxes
3	5,070,168	Dec/91	Ether Amine Functional Silicone Polymers
4	5,070,171	Dec/91	Phosphated Silicone Polymers
5	5,073,619	Dec/91	Silicone Amphoterics
6	5,091,493	Feb/92	Silicone Phosphobetaines
7	5,098,979	Mar/92	Silicone Quats
8	5,115,049	May/92	Silicone Amine Salts
9	5,120,812	June/92	Free-Radical Silicone Monomers
10	5,136,063	Aug/92	Silicone Waxes
11	5,149,765	Sept/92	Terminal Silicone Phosphates
12	5,153,294	Oct/92	Silicone Quats
13	5,162,472	Nov/92	Silicone Free-Radical Polymers
14	5,164,471	Nov/92	Fluorine Silicone Waxes
15	5,166,297	Nov/92	Silicone Quat Intermediates
16	5,180,843	Jan/93	Silicone Esters
17	5,196,499	Feb/93	Terminal Silicone Quats
18	5,378,787	Jan/95	Silicone Amines
19	5,446,114	Aug/95	Fluorinated Dimethicone Copolyols
20	6,346,595	Feb/02	Aromatic Dimethicone Copolyol Polymers as Sun Screen Agents
21	6,841,649	Jan/05	Fluoro Alkyl Dimethicone Esters
22	7,407,666	Aug/08	Linear Silicone Resins in Personal Care Applications
23	7,632,488	Dec/09	Cross-linked Silicone Polymers
24	7,718,750	May/10	Multi Alkoxylated Silicone Surfactants
25	7,723,443	May/10	Multifunctional Linear Silicone Resin Polymers
26	7,786,241	Aug/10	Polyester Silicone Resins
27	7,790,813	Sept/10	Multifunctional Silicone Resin Polymers
28	7,811,976	Oct/10	Dimer Alkyl Silicone Polymers
29	7,834,116	Nov/10	Fluoro Silicone Acrylates and Polymers Thereof
30	7,875,263	Jan/11	Polymeric Structured Gels
31	7,951,893	May/11	Star Silicone Polymers
32	7,956,152	Jun/11	Star Silicone Polymers
33	8,025,870	Sep/11	Vinyl Ether Silicone Polymers
34	8,124,062	Feb/12	Dimer Alkyl Silicone Polymers in Personal Care Applications
35	8,148,483	Apr/12	Fluoro Silicone Acrylates and Polymers Thereof
36	8,153,106	Apr/12	Silicone Based Sun Screening Compositions with Improved UVA1/UV Ratios
37	8,263,061	Sep/12	Alkyl Quaternary Silicone Compounds
38	9,497,962	Nov/16	Hydroalcoholic Foaming Sanitizer
39	10,336,766	Jul/19	Invert Emulsions made with Non-PEG Containing Silicone Based Polyhydric Emulsifiers





Siltech Corporation 225 Wicksteed Avenue Toronto . Ontario . Canada M4H 1G5

Telephone: 416.424.4567 Facsimile: 416.424.3158

siltech.com

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