



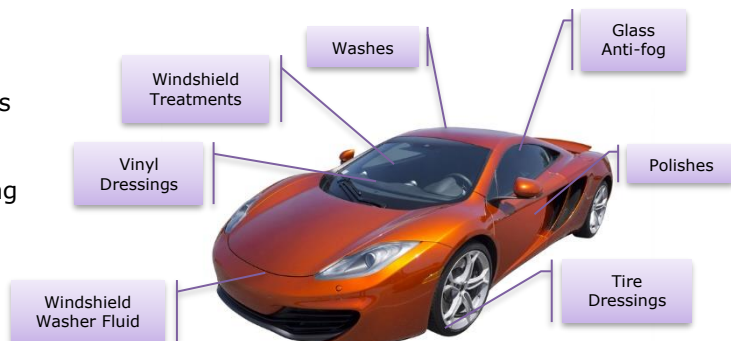
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TECHNICAL BULLETIN

Siltech® Car Care Products

Siltech Products for Car Care

Our specialty silicone products for car care include emulsions, wetting and gloss agents for tire dressings, surfactants for car washes, hydrophobic treatments for windshields and washer fluid, film forming hydrophobizing emulsions for body treatments and dressings, silicone quaternary ammonium polymers for waxes, and alkyl silicones for gloss and modification of polishes.



Water Based Tire and Vinyl Dressings

One of the main uses of silicones in car care is for tire and vinyl dressings. Historically offered in solvent and water-based formulations, the market now looks to the environmentally more friendly water-based versions. Simple silicone emulsions such as Siltech E-600 and E-660 are diluted and applied to tires and vinyl surfaces to leave a clean, glossy wet look.

The three basic formulations are aimed at three different segments. The Economy Formulation is a general purpose product which provides the basic clean, wet-look. The High Gloss Formulation contains a high refractive index silicone and has the highest gloss and provides greater safety against contamination in the paint shop. The Durable Gloss Formulation is the most durable product, and gives a "satin look" most resembling a new tire.

Economy Formulation

Ingredient	Use Level	Source
Siltech E-2140	35%	Siltech Corp
Water	65%	
Preservative	As per label	Various
Fragrance	As desired	

High Gloss Formulation

Ingredient	Use Level	Source
Siltech E-3132	35%	Siltech Corp
Water	65%	
Preservative	As per label	Various
Fragrance	As desired	

Durable Gloss Formulation

Ingredient	Use Level	Source
Siltech E-2145HG	35%	Siltech Corp
Water	65%	
Preservative	As per label	Various
Fragrance	As desired	

The film forming products discussed further below are also used for durable, glossy tire and vinyl dressings. These tend to give more durability and less sling-off.

The addition of 0.1-0.5% of a **Silsurf®** wetting agent such as **Silsurf A008-UP** or **Silsurf B608** will eliminate the legs or drip marks of any of these formulations improving customer satisfaction and adding value.

Car Polish and Wax Enhancers

Silwax® alkyl and aryl functional silicones are available in various melting points and viscosities. When mixed with a standard hydrocarbon wax, the gloss, ease of application, feel and beading of the final product are improved.

The **Silwax "M"** designated products are modified with two hydrocarbon groups, one a hard and the other a soft group. This dual T_g approach provides the durability and performance of high melt waxes and the rubout or ease of application of low melting waxes.

Silwax	Benefit	MP (°C)	% Alkyl
D02	Wetting of waxes	<-20	20
D0-MS	Very high gloss	<25	55
3H-MS		<25	65
Siltech E-3132	Emulsion of Silwax 3H-MS used for water-based waxes and dressings for high gloss.	<25	65
3H12-MS	High gloss and stabilizing	<25	70
L118	Spreading, lubricity, feel and gloss in liquid polishes	30	65
D3026		35	15
J219M	Hard and soft groups for easy rubout and good gloss	30	55
D221M		35	53
D222	Spreading, lubricity, feel and gloss in soft waxes	37	55
J1026		46	30
J226	Spreading, lubricity, feel and gloss in hard waxes	51	60
D026		65	55

Silmer Q resins give very strong water repellency with contact angles up to 115°. **Siltech E-2199** is an emulsion form of these which delivers high water repellency from an emulsion.

This water-based Starting Polish formulation can be used to develop a formulation to meet your explicit needs. Likewise, the Starting Wax formulation should be tailored to your specific requirements.

Starting Polish Formulation:

Product	Level	Benefit
Acrylic polymer emulsion	71-95%	Base Resin
Silwax D3026 or other from chart above	1-15%	Beading and Softness
Silquat CR 4000	1-5%	Durable Beading
Silsurf B1112	0.5-2%	Wetting
Silquat 3152	0.1-2%	Durable Beading
Dipropylene glycol methyl ether	2-5%	Solvent

Starting Wax Formulation

Silicone Car Plaster Polish	Level	Benefit
Carnauba Wax	10%	Base Wax
Silwax 3H32 or other from chart above	5%	Beading and Softness
Silquat CR 4000 or Di-30-F4D	5%	Durable Beading
Silquat 3150	10%	Durable Beading
Dowanol EB	10%	Solvent
Mineral Seal Oil	60%	Solvent

Silamine® amine functional silicone products are available which improve the durability and gloss of car wax or polish formulations. Use these at a higher use level instead of the **Silquat** products which are more effective at lower use levels.

Car Washes

Silquat® 3150, 3152, 3450 and 3452 are preformulated with organic waxes and stabilizing agents. Effectively used in car tunnel cheater waxes these leave a beading effect directly from the wash. They can be used in a wash formulation to provide a quick beading effect.

Example Tunnel Wash Formulation.

Ingredient	Use Level	Instructions
Silquat 3180, 3152	4%	Combine all ingredients Dilute 1:100 at end user
Silsurf 1308	1%	
Silsurf A008-UP	0.5%	
Silquat J2-8B	0.5%	
Tomah 4HF	10%	
Tomadol 900	20%	
Water	64%	

To formulate a car wash concentrate from scratch, start with a base of nonionic or anionic detergents at about 50%. if desired, add **Silplex® JQ-40** or **Silphos® J208** to boost the efficacy of the detergent package. Add up to 5% water dispersible **Silamine** or **Silquat** products for beading, shine, or cheater wax claims.

Silsurf B608, Silsurf A008-UP, Silsurf A208 or other **Silsurf** surfactants which lower surface tension can be used at 1-5% for self-drying claims. With these products the diluted car washes will run off the car leaving no water spots behind. The final end-use concentration of the **Silsurf** surfactants should be 0.1-0.5%.

One can use up to 500 ppm of defoamers such as **Siltech PA-140** to control foam. Alternatively, 1%-5% of profoaming **Silsurf J1015-O** or **Silsurf J208** will further stabilize the foam if desired.

Glass Treatments: Anti-fog Window Cleaner

Another use of **Silsurf** surfactants is to create a hydrophilic surface which causes fog droplets to coalesce into one film, allowing for one to see out of the window clearly. Typically, these are not suitable for the windshield as a trace of haziness can increase sun blindness in certain conditions.

Example Anti-Fog Window Cleaner.

Component	Use Level	Benefit
IPA	Up to 60%	Fast evaporating solvent and cleaner
Glycol ether type	1-15%	Cleaner
Silplex JQ-40	Up to 1%	Detergent
Silsurf A008-UP or J1015-O	0.1-1%	Anti-fog
Silsurf B608	~0.1%	(Optional foam control)
Water	q.s	Solvent

Windshield Treatments.

Silube® 12 is a formulated direct beading treatment for windshields. It leaves a clear coating on the windshield which beads water to over 100° contact angle.

Example Windshield Beading Treatment

Component	Use Level	Benefit
Silube 12	10%	Hydrophobic coating
Tetraethyl orthosilicate or alkylfunctional trialkoxy silane	0.5%	Cross linker
Isopropyl Alcohol	q.s.	Solvent
Acetic acid or mineral acid	0.1%	Catalyst
Water	1-2%	Reactant

As discussed in the car washes section, **Silquat** products will adhere to car surfaces such as the car body leaving a strong beading effect. These will deposit and adhere to the glass window surfaces even more effectively leaving a beading effect. A wide variety of products with specific balances of solubility and contact angle properties are available in this grade.

Silquat 1105B is preformulated for windshield wash solutions. When used in small amounts this product leaves a beading effect on the windshield directly from the wash. While not as durable as the direct treatment above, applying directly from the solution is very convenient.

Example Pet Safe Windshield Wash Formulation.

Ingredient	Use Level	Benefit
Dipropylene Glycol Methyl Ether	Up to 5%	Medium evaporating Solvent
Propylene Glycol Methyl Ether	Up to 15%	Slow evaporating solvent
Isopropyl Alcohol	15-35%	Fast evaporating Solvent
Silplex JQ-40 or nonionic surfactant	Up to 1%	Detergent
Silquat 1105-B	0.1%	Beading, release
Silsurf Surfactant	1%	Spreading, coverage
Silsurf or Siltech foam control agent	~0.05%	Foam control
Water	q.s.	Carrier

Unlike the windshield beading treatment formulation, this windshield wash formulation does not rely on cross-linking compounds which can clog the pump. The beading effect is obtained solely from the soluble **Silquat** compounds which deposit on the glass windshield surface from solution.

Film Formers

Siltech Film forming emulsions are an additional and highly cost-effective solution for applying a hydrophobic film to car surfaces. These can be used as a base for vinyl or tire dressings, car washes or water-based car polishes. The guidelines in the table below show the variations that are available.

Product	Actives	Degree of film forming	Unique properties	Individual differentiation
Siltech E-4155	35%	Highest	Amine groups for anchoring to surfaces and providing durability, imparting softness and providing long lasting lubricating effect.	Most durable, Quick cure
Siltech E-2150	30%	High		Most durable
Siltech E-2157	30%	High		More stable
Siltech E-2155	30%	Lower		Most flexible
Siltech E-2655	50%	High		Best combined properties
Siltech E-2178	40%	High	More water repellence, rubbery feel, neutral, non-yellowing	Some paintability & water repellence
Siltech E-2478	50%	Medium		Faster cure
Siltech E-2154	50%	Medium	High gloss and paintable	
Siltech E-2156	45%	Medium	Anchored and durable with gloss and paintable	
Siltech E-2770	60%	High	Stronger films give good adhesion and a soft, non-tacky rubbery feel.	Soft and repellent
Siltech E-8010	50%	Highest		Water and stain repellent
Siltech E-8050	50%	Highest		Softer and best repellency

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