



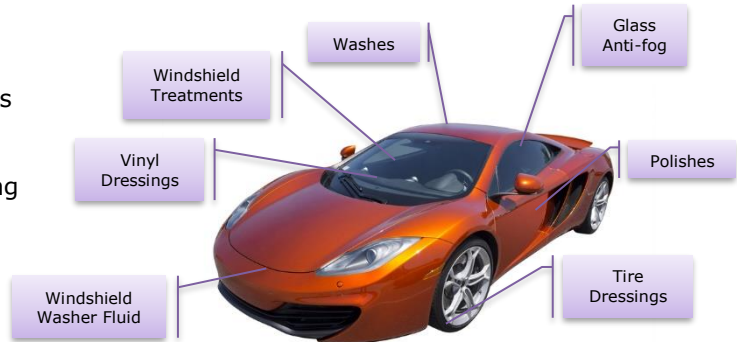
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TECHNICAL BULLETIN

## Siltech® Car Care Products

### Siltech Products for Care 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**<sup>®</sup> 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<sub>g</sub> approach provides the durability and performance of high melt waxes and the rubout or ease of application of low melting waxes.

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

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:**

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

### **Starting Wax Formulation**

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

**Silamine**<sup>®</sup> 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
<b>Silquat 3180, 3152</b>	4%	Combine all ingredients Dilute 1:100 at end user
<b>Silsurf 1308</b>	1%	
<b>Silsurf A008-UP</b>	0.5%	
<b>Silquat J2-8B</b>	0.5%	
<b>Tomah 4HF</b>	10%	
<b>Tomadol 900</b>	20%	
<b>Water</b>	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
<b>IPA</b>	Up to 60%	Fast evaporating solvent and cleaner
<b>Glycol ether type</b>	1-15%	Cleaner
<b>Silplex JQ-40</b>	Up to 1%	Detergent
<b>Silsurf A008-UP or J1015-O</b>	0.1-1%	Anti-fog
<b>Silsurf B608</b>	~0.1%	(Optional foam control)
<b>Water</b>	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
<b>Silube 12</b>	10%	Hydrophobic coating
<b>Tetraethyl orthosilicate or alkylfunctional trialkoxy silane</b>	0.5%	Cross linker
<b>Isopropyl Alcohol</b>	q.s.	Solvent
<b>Acetic acid or mineral acid</b>	0.1%	Catalyst
<b>Water</b>	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-2150	30%	High	Amine groups for anchoring to surfaces and providing durability	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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