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*Silicones Simplified*

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*Prototype Formulations*

# Automotive Appearance Products

# Prototype Formulation for Polish

## Low-VOC Polish

### Description

This polish is a detergent-resistant cleaner designed for automotive surfaces. The product exhibits little phase separation and provides easy rub-out, excellent gloss, very good durability, and resistance to detergent washings.

Solvent was replaced with a VOC-exempt silicone solvent, XIAMETER® PMX-0245 Cyclosiloxane, to target a VOC level of 14% for this formula as defined by California A.R.B.

This formula passes five cycles of freeze/thaw stability testing.



AV09029

Ingredient	Weight %	Trade Name/Supplier
<b>Phase A</b>		
DI water	59.0	
<i>Kaopolite</i> ® XDA	6.6	Kaopolite, Inc.
<i>Kaopolite</i> ® 1152	3.4	Kaopolite, Inc.
<i>Amadol</i> ® (Witcamide) WE	1.0	Akzo Nobel
Kerosene/mineral spirits	3.5	
XIAMETER® PMX-0245 Cyclopentasiloxane (VOC exempt)	11	Dow Corning Corp.
Sodium chloride	1.0	
<b>Phase B</b>		
Kerosene/mineral spirits	7.24	
<i>Bentone</i> ® 38 Thickener	0.6	Rheox, Inc.
<b>Phase C</b>		
<i>Dow Corning</i> ® 531 Fluid	5.5	Dow Corning Corp.
XIAMETER® OFX-0536 Fluid	1.0	Dow Corning Corp.
Isopropanol	.15	

### Procedure

- 1) Load phase A ingredients in the order shown into a vessel and mix well.
- 2) Mix phase B ingredients in a separate container.
- 3) Add phase B to the production vessel and mix well.
- 4) Add phase C ingredients to the production vessel and mix well.

### Typical Properties/Additional Information

After phase A mixing => material forms a thick paste emulsion

After phase B mixing => material is a similar thick paste emulsion

After phase C mixing => alcohols activate *Bentone* 38 Thickener.

Polish continues to thicken over several days.

Ensure high flow (turnover) mixing exists to prevent the abrasive from settling at the vessel bottom. If agitation is stopped on the mixing vessel during phase A or phase B, *Kaopolite* XDA Abrasive will settle to the bottom.

Observe precautions for handling XIAMETER® brand products as indicated on the material safety data sheets.

# Prototype Formulation for Shampoo

## Standard Shampoo



AV09029

## Description

The silicone surfactant provides wetting effects, while the amino-functional silicone can deposit onto the surface to provide a “top-up” to the polish film for gloss/water repellency.

Ingredient	Weight %	Trade Name/Supplier
<b>Phase A</b>		
1. Sodium lauryl ethoxy sulfate	10.0	Rhodapex ESB 70 FEA/ Rhodia Inc.
2. Soft water	78.7	
<b>Phase B</b>		
3. Makon TD12	5.5	Stepan Co.
4. Coconut diethanolamide	3.5	Ninol 49-CE/ Stepan Co.
5. <i>Dow Corning</i> ® 2-8035 Emulsion	1.5	Dow Corning Corp.
6. XIAMETER® OFX-0258 Fluid	0.3	Dow Corning Corp.
<b>Phase C</b>		
7. Hydroxyethyl cellulose thickener	0.5	Hercules-Aqualon

## Procedure

- 1) Dissolve ingredient 1 in ingredient 2. Add phase B ingredients with low-speed mixing until fully dispersed.
- 2) Sprinkle in the phase C ingredient and mix until completely dissolved, approximately 60 minutes.
- 3) Pour down and package appropriately.

## Typical Properties/Additional Information

Suggestion for adjusting the formulation:

- To improve gloss and color: Incorporate XIAMETER® MEM-0600 Emulsion at 1.0%

# Prototype Formulation for Exterior Trim Protection

## Exterior Plastic/Rubber Enhancers – Liquid



AV09029

### Description

The combination of an amino-functional silicone fluid and a high-viscosity silicone fluid gives a durable film to restore faded bumpers and other trim. Reducing the thickener level enables the product to be packaged in a spray dispenser.

Ingredient	Weight %	Trade Name/Supplier
1. Water	83.3	
2. <i>Dow Corning</i> <sup>®</sup> 2-8035 Emulsion	5.7	Dow Corning Corp.
3. XIAMETER <sup>®</sup> MEM-0600 Emulsion	10.0	Dow Corning Corp.
4. Cellulose thickener	1.0	Hercules – Aqualon Corp.

### Procedure

- 1) Add ingredients 1–3 in the order listed to an appropriate vessel, while mixing at low speed.
- 2) Slowly add ingredient 4 to the vessel. Mix for 30 minutes, or until the product is completely dissolved and no lumps are present.

### Typical Properties/Additional Information

Suggestions for adjusting the formulation:

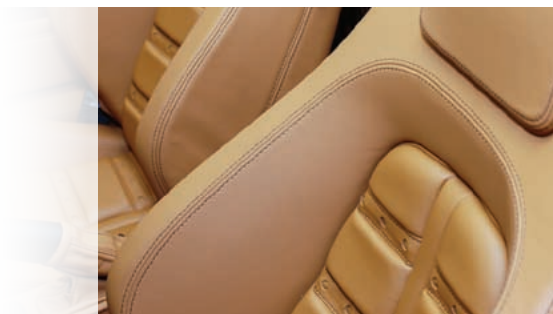
- To improve durability: Increase the level of *Dow Corning* 2-8035 Emulsion and/or replace XIAMETER<sup>®</sup> MEM-0600 Emulsion with *Dow Corning*<sup>®</sup> HV 495
- To improve leveling: Add XIAMETER<sup>®</sup> MEM-1665 Emulsion or XIAMETER<sup>®</sup> MEM-0349 Emulsion or XIAMETER<sup>®</sup> MEM-0346 Emulsion
- To improve wetting: Add 0.5% of *Dow Corning*<sup>®</sup> 2-5211 or *Sylgard*<sup>®</sup> 309

# Prototype Formulation for Interior Protection

## Vinyl Protectant

### Description

This formulation is a vinyl surface protectant that may be used on various soft surfaces such as vinyl, leather, rubber, and plastics to impart gloss.



AV08983

Ingredient	Weight %	Trade Name/Supplier
1. Water	79.1	
2. Hydroxyethyl cellulose	0.8	<i>Cellosize</i> ® QP4400H/ The Dow Chemical Co.
3. XIAMETER® MEM-0039 Emulsion or XIAMETER® MEM-0036 Emulsion	20	Dow Corning Corp.
4. <i>Kathon</i> ™ LX	0.1	Rohm & Haas Co.

### Procedure

- 1) Add ingredient 2 to ingredient 1 and stir to achieve a transparent solution.
- 2) Add ingredient 3 and stir for 10 minutes.
- 3) Add ingredient 4 and stir for 10 minutes more.

### Typical Properties/Additional Information

**Directions:** The final product can be applied by spray or with a damp cloth. This product should not be applied on floors or on vehicle controls.

# Prototype Formulation for Tire Care

## Water-Based Tire Shine



AV09029

## Description

This formulation is a water-based tire shine.

Ingredient	Weight %	Trade Name/Supplier
Water	67.95	
<i>Tween</i> <sup>®</sup> 80	0.70	Croda/Uniqema
<i>Span</i> <sup>®</sup> 80	0.50	Croda/Uniqema
Propylene glycol	4.00	
XIAMETER <sup>®</sup>	18.00	Dow Corning Corp.
MEM-1665 Emulsion		
<i>Dow Corning</i> <sup>®</sup>	1.00	Dow Corning Corp.
2-8035 Emulsion		
Sodium benzoate	0.20	
<i>Dow Corning</i> <sup>®</sup>	0.15	Dow Corning Corp.
2210 Emulsion		
XIAMETER <sup>®</sup>	7.00	Dow Corning Corp.
MEM-0600 Emulsion		
<i>Sylgard</i> <sup>®</sup> 309 Surfactant	0.50	Dow Corning Corp.
TOTAL	100.00	

## Procedure

Mix ingredients in the order listed with low stirring and add them slowly.

In addition to the variety of XIAMETER® brand materials showcased in this formulation guide, Dow Corning Corporation also offers a wide variety of *Dow Corning*® brand specialty silicone material and service options as well as other silicon-based materials available to help you keep your innovative edge in the marketplace. Visit [dowcorning.com](http://dowcorning.com) to learn more about the many additional silicone and silicon-based options available to you from Dow Corning.

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