

## Consumer Solutions

# Boost Sun Protection for Ageless, Beautiful Skin

Sun Protection, Anti-Aging

## Adding Value to Life

In today's ever-changing beauty and sun care market, Dow brings you effective materials to enhance UV protection — but that's not all. These innovative products and formulations offer multiple benefits and improved sensory experience, so you can give consumers the creams, lotions and gels they'll want to use again and again.



### Sun Care Products for Enhanced Protection and Younger-looking Skin

Consumers understand that protecting their skin from the damaging, dangerous effects of the sun is crucial to staying healthy and beautiful — for decades to come. They recognize the importance of a higher SPF, and they want it delivered with other performance and aesthetics

benefits that they enjoy, like ease of spreading and a non-greasy feel.

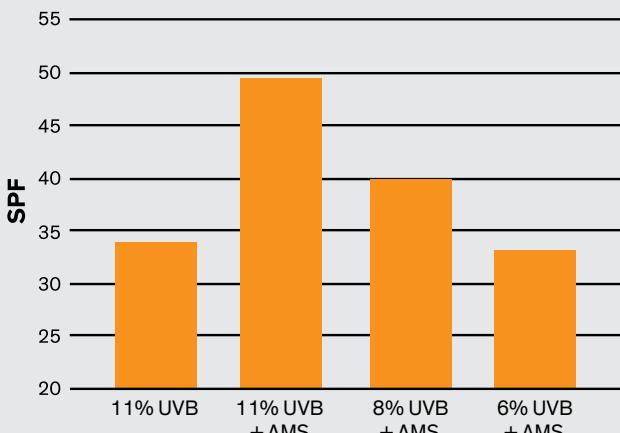
Through advanced silicone technology, formulations and products by Dow for sun care help improve UV shielding. They also increase wash-off resistance for longer-lasting protection, with a pleasing touch and lightinteracting qualities for a more beautiful appearance — features that consumers are asking for.

## Quality Sun Protection that's also Cost-Effective

In a prototype oil-in-water sun care formulation using a given blend of organic sunscreens, Dow early studies demonstrated that the addition of alkylmethylsiloxanes could maintain a similar in vitro SPF value while decreasing the volume of sunscreen from 11% to 6%. This can potentially lead to a product with less skin irritation and improved sensory performance — as well as lower formulation cost (Figure 1).

**Figure 1:**

SPF versus UVB sunscreens in prototype oil-in-water formulation



Lower your costs while maintaining product performance:

## Oil-in-Water Formulation with SPF Enhancement by DOWSIL™ 5562 Carbinol Fluid

INCI Name	Wt.%
<b>Phase A</b>	
1. Octocrylene	10.0
2. Ethylhexyl Salicylate	5.0
3. Butyl Methoxydibenzoylmethane	4.5
4. Glyceryl Stearate SE	3.0
5. C12-15 Alkyl Benzoate	4.0
6. Cetearyl Alcohol	0.25
7. Methylparaben/Propylparaben	0.25
8. BHT	0.5
9. Dimethicone 2 cSt – (Xiameter™ PMX-200 Silicone Fluid 2cS)	3.5
10. Bis-Hydroxyethoxypropyl Dimethicone (DOWSIL™ 5562 Carbinol Fluid)	4.0
<b>Phase B</b>	
1. Potassium Cetyl Phosphate	2.0
<b>Phase C</b>	
1. Acrylates/C10-30 Alkyl Acrylate Crosspolymer	0.1
2. Propylene Glycol	2.5
3. NaOH (20%)	qs
4. Water	57.75
5. Disodium EDTA	0.1
6. Titanium Dioxide (and) Silica	2.5

## The Beauty of Multiple Benefits

One of the truly beautiful things about Dow specialty silicones is their compatibility with other ingredients — allowing you to formulate multiple benefits into one product. You can develop lotions, creams and gels that offer UV protection and also defy the sun's aging effects with improved pigment stability and improved oil absorption for skin at its most beautiful. Our specialty silicones also refine skin texture and minimize imperfections to create a more luminous, healthy-looking appearance. Additionally, our specialty silicones help build viscosity and add body to formulations, while reducing moisture loss from skin.

For instance, take the multifunctional benefits of DOWSIL™ FA 4002 ID Silicone Acrylate, including increased SPF. These benefits also translate into great transfer resistance and wear properties that are ideal for color cosmetics formulations. One product. Multiple benefits. Leveraged to multiple markets. Now that's beautiful.

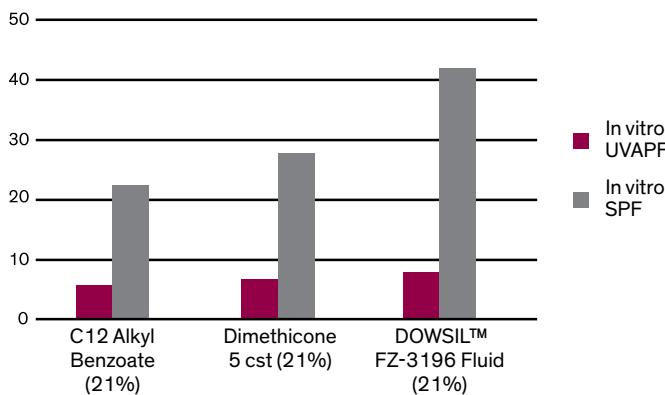
## Serious Performance for Sun Protection

Dow silicones help improve wash-off resistance — providing longer-lasting UV protection in textures that feel great while

they stay put — even in water. This makes them a great fit for the beach and sports.

Let Dow products boost SPF performance, wash-off resistance and other benefits that you can leverage into a better, more cost-effective product.

**Figure 2:** In vitro SPF/UVAPF in water-in-oil formulation



The level of DOWSIL™ FZ-3196 Fluid has a positive impact on the SPF/UVAPF within the tested formulation. All data presented based on in vitro SPF determination in typical sun protection formulation. Dow cannot warrant that these data are representative of expected benefits in different formulations or in vivo on human skin.

**Products for oil-in-water formulations that boost SPF include:**

- DOWSIL™ 5562 Carbinol Fluid
- DOWSIL™ 556 Cosmetic Grade Fluid
- DOWSIL™ 2503 Cosmetic Wax
- DOWSIL™ MQ-1640 Flake Resin
- DOWSIL™ MQ-1600 Solid Resin
- DOWSIL™ FA 4002 ID Silicone Acrylate
- DOWSIL™ 9701 Cosmetic Powder

**Products for water-in-oil formulations that boost SPF include:**

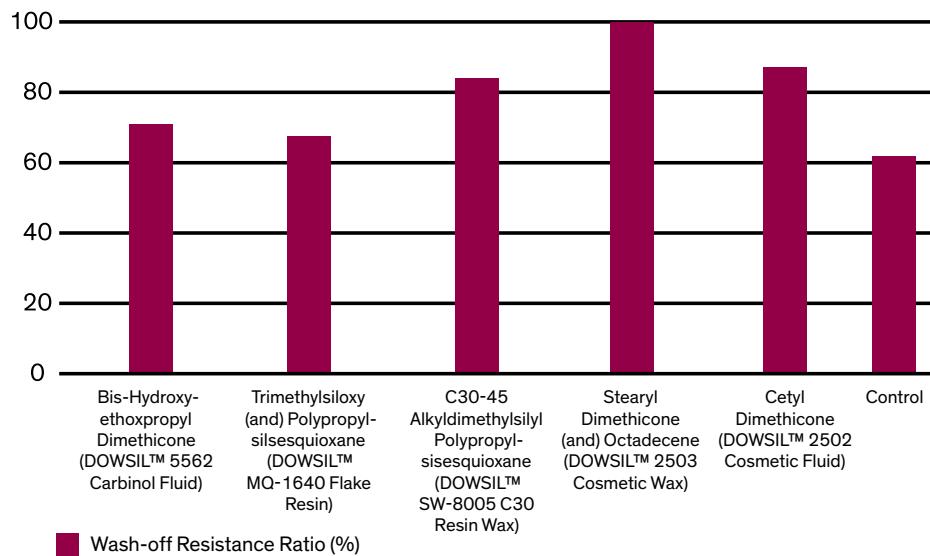
- DOWSIL™ 5562 Carbinol Fluid
- DOWSIL™ 556 Cosmetic Grade Fluid
- DOWSIL™ MQ-1640 Flake Resin
- DOWSIL™ 2502 Cosmetic Fluid
- DOWSIL™ AMS-C30 Cosmetic Wax
- DOWSIL™ FZ-3196 Fluid

**Sun Care Creams with Staying Power**

Test results proved that Dow silicones can enhance the effectiveness of sunscreen ingredients while significantly improving wash-off resistance, which means products will last longer to meet consumer demands.

**Water-in-oil formulations using silicone polyether as emulsifier exhibit an 82% to 100% wash-off resistance ratio:**

**Figure 3: Wash-off resistance, oil-in-water formulation**



**Silicones that help prevent wash-off in oil-in-water formulations include:**

- DOWSIL™ 5562 Carbinol Fluid
- DOWSIL™ 2502 Cosmetic Fluid
- DOWSIL™ 2503 Cosmetic Wax
- DOWSIL™ MQ-1640 Flake Resin

**Find new, innovative options that deliver your market segments' sun care expectations and more**

At Dow, we never stop searching for ways to stay on track with sun care trends and improved formulations that protect and create younger-looking, luminous skin.

For additional information about our sun care products, including additional sample formulations, samples and product data sheets with full compatibility details, go to [consumer.dow.com](http://consumer.dow.com).

**How Can We Help You Today?**

When you need industry-leading innovation, Dow can help. Dow solutions are dedicated to meeting your needs for specialty materials, collaborative problem solving and innovation support. Learn how we can help you bring BEAUTY WITH IMPACT to your products, at [consumer.dow.com/personalcare](http://consumer.dow.com/personalcare). Contact your local Dow sales representative at [consumer.dow.com/contactus](http://consumer.dow.com/contactus).



The following table gives you an easy view of all products for water-in-oil or oil-in-water formulations with enhanced SPF and wash-off resistance.

Class	Product Name	INCI Name	Use Level (Weight %)	W/O		O/W	
				SPF	Wash-off	SPF	Wash-off
Alkyl Methyl Siloxane	DOWSIL™ 2502 Cosmetic Fluid	Cetyl Dimethicone	2	●			●
	DOWSIL™ 2503 Cosmetic Wax	Stearyl Dimethicone	2	●		●	○
	DOWSIL™ AMS-C30 Cosmetic Wax	C30-45 Alkyl Methicone (and) C30-45 Olefin	2	●			
	DOWSIL™ FZ-3196 Fluid	Caprylyl Methicone	qs	●			
	DOWSIL™ SW-8005 C30 Resin Wax	C30-45 Alkyldimethylsilyl Polypropylsilsesquioxane	2	●			●
Silicone Acrylate	DOWSIL™ FA 4002 ID Silicone Acrylate	Isododecane (and) Acrylates/ Polytrimethylsiloxymethacrylate Copolymer	7.5 (3% active)			○	
Resin	DOWSIL™ MQ-1600 Solid Resin	Trimethylsiloxysilicate	3			●	
	DOWSIL™ MQ-1640 Flake Resin	Trimethylsiloxysilicate (and) Polypropylsilsesquioxane	3	●		●	●
	DOWSIL™ 680 ID Fluid	Isododecane (and) Polypropylsilsesquioxane	4 (3% active)	●			
Elastomer	DOWSIL™ 9701 Cosmetic Powder	Dimethicone/Vinyl Dimethicone Crosspolymer (and) Silica	4			●	
Fluid	DOWSIL™ 556 Cosmetic Grade Fluid	Phenyltrimethicone	4	○		●	
	DOWSIL™ 5562 Carbinol Fluid	Bis-Hydroxyethoxypropyl Dimethicone	4	○		●	●
Silicone Polyether - Emulsifiers	DOWSIL™ FZ-2233	Bis-Isobutyl PEG/PPG-10/7 Dimethicone Copolymer	3.5		○		
	DOWSIL™ ES-5612 Formulation Aid	PEG-10 Dimethicone	3.5		○		
	DOWSIL™ 5200 Formulation Aid	Lauryl PEG/PPG-18/18 Methicone	3.5		○		
	DOWSIL™ BY 25-337	PEG/PPG-19/19 Dimethicone (and) C13-16 Isoparaffin (and) C10-13 Isoparaffin	7		○		
	DOWSIL™ ES-5226 DM Formulation Aid	Dimethicone (and) PEG/ PPG-18/18 Dimethicone	8		○		
	DOWSIL™ ES-5227 DM Formulation Aid	Dimethicone (and) PEG/ PPG-18/18 Dimethicone	12		○		

Within the tested formulation: All data presented based on in vitro SPF determination in typical sun protection formulation. Dow cannot warrant that these data are representative of expected benefits in different formulations or in vivo on human skin.

● Improved Performance      ○ Best Solution  
No value = Not tested or no significant difference

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