Technical Data Sheet

DOWSIL™ 3901 Liquid Satin Blend

INCI Name: Dimethicone (and) Dimethicone/Vinyl Dimethicone Crosspolymer

Features & Benefits

- Satin-like feel
- Cold processing
- Clear appearance
- Ability to create clear systems
- Enhanced sensory profile
- Perceived moisturization
- Perceived smoothness
- Listed in the Catalogue of Cosmetic Ingredients Used in China

Applications

- Skin care
- Color cosmetics
- Hair care
- Body care
- Many other potential formulations

Typical Properties

Specification Writers: These values are not intended for use in preparing specifications.

Property	Unit	Result
Appearance		Clear to translucent, colorless to slight amber
% Non-volatile content	%	6.25
Viscosity	cPs	1500
Cyclotetrasiloxane (D4) content	%	< 0.1
Cyclopentasiloxane (D5) content	%	< 0.1

Description

DOWSIL™ 3901 Liquid Satin Blend is a mixture of a high molecular weight polymer in dimethicone.

How to Use

Disperse DOWSIL™ 3901 Liquid Satin Blend into the oil phase of a formulation using simple mixing to help with emulsification or blending with other polar or non-polar oils. There is no need for post-shearing. Formulation with DOWSIL™ 3901 Liquid Satin Blend can be achieved using cold process.

Form No. 27-1545-01-0424 S2D

How to Use (Cont.)

Formulation Tips

DOWSIL™ 3901 Liquid Satin Blend may be formulated into oil-in-water emulsions, water-in-silicone emulsions, water-in-oil emulsions, and anhydrous products.

- It may be added to the oil phase or silicone phase in an emulsion formulation.
- It may be post-added to emulsions provided the emulsion is viscous enough for the DOWSIL 3901 Liquid Satin Blend to be dispersed.
- For ease of use, its viscosity may be reduced by blending with dimethicone or other similar non-polar oils.
- It may be necessary to use a syringe or similar device to help weigh out material.
- It may be formulated with organic oils and silicone-based materials with the use of mixers.
- It is dispersible in a variety of liquid oils (refer to Figures 1 and 2).
- Because the polymer is stable, DOWSIL™ 3901 Liquid Satin Blend may be subjected to heat for a short duration. When heat is used, material should be processed in an enclosed vessel to prevent the dimethicone from volatilizing; the vessel should be inerted at temperatures over 80°C (176°F).

Figure 1:

Compatibility

	DOWSIL™ 3901 Liquid Satin Blend: Cosmetic Ingredient		
Cosmetic Ingredient (INCI)	**10:90**	**50:50**	**90:10**
Hydrophilics			
Water	NC	NC	NC
Ethanol	NC	NC	NC
Esters			
Isopropyl Myristate	C	C	C
Isodecyl Neopentanoate	C	C	C
C12-15 Alkyl Benzoate	NC	NC	C
Caprylic/Capric Triglyceride	NC	NC	C
Vegetable Oil			
Sunflower Oil	NC	NC	H
Castor Oil	H	H	H
Sunscreens			
Ethylhexyl Methoxycinnamate	NC	NC	H
Etheylhexyl Salicylate	NC	H	C
Octocrylene	NC	H	H

NC: Not Compatible, H: Hazy, C: Clear

Figure 1 (Cont.)

	DOWSIL™ 3901 Liquid Satin Blend: Cosmetic Ingredient		
Silicones	**10:90**	**50:50**	**90:10**
Cylcopentasiloxane	C	C	C
PDMS 2 CST	C	C	C
PDMS 5 CST	C	C	C
PDMS 100 CST	C	C	C
PDMS 350 CST	C	C	C
Phenyl Trimethicone	C	C	C
Caprylyl Methicone	C	C	C
Hydrocarbons			
Isododecane	C	C	C
Isohexadecane	C	C	C
Mineral Oil	NC	NC	C

Figure 2:

Dissolution Times

Solvent	Time needed
C11-13 Isoparafin, IDD, IHD, IPM	
Cyclopentasiloxane, Phenyl Trimethicone, Caprylyl Methicone	< 20 minutes
XIAMETER™ PMX-200 Silicone Fluid 2 cst, 5 cst, 10 cst	
XIAMETER™ PMX-200 Silicone Fluid 50 cst, Dicaprylyl Carbonate	20–40 minutes
XIAMETER™ PMX-200 Sil Fluid 100 cst	40–60 minutes
XIAMETER™ PMX-200 Sil Fluid 350 cst	60–80 minutes
Ethanol, Caprylic/Capric Triglyceride, C12-15 Alkyl Benzoate	Not Compatible
Procedure: Mixed 50:50 using a marine propeller at 300 rpm at room temperature.	

How to Use (Cont.)

Processing

The following information may be useful when processing DOWSIL™ 3901 Liquid Satin Blend.

How to Use (Cont.)

Shear Degradation

The properties of the polymer contained within DOWSIL 3901 Liquid Satin Blend can be degraded when exposed to excessive shear. Figure 3 demonstrates the ability to lower the viscosity of the material under various shear for different time periods. The results are shown as % retention of the original material's viscosity. As can be noted, under low shear conditions (mixing such as stirring or agitated vessels) the material is stable. However, as you increase the applied shear to a medium rate (low or medium speed dispersers as one example) the material is stable under lower time exposure but can degrade with longer exposure. Under high shear conditions (rotor stators or high speed dispersers) the material can degrade with short exposure. Each situation is different and needs to be assessed as such, so please be aware of this processing limitation when evaluating this material in formulation and when designing processes.

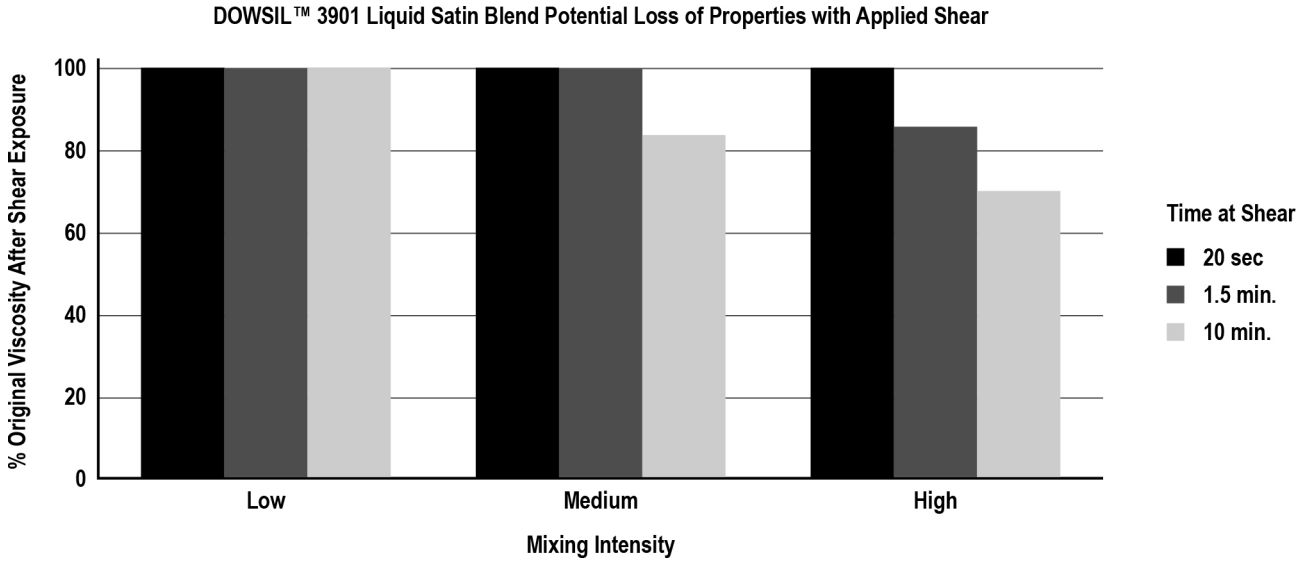

Figure 3: Shear Degradation

Dilution

DOWSIL™ 3901 Liquid Satin Blend can retain its properties upon dilution. Figure 4 shows that as you dilute the material in additional dimethicone fluid, the viscosity drops corresponding to the dilution of the polymer as expected. However, the stringing nature of the material actually increases indicating that the polymer entanglements continue thru dilution with additional fluid.

Clean-up

A non-polar solvent, which dilutes DOWSIL™ 3901 Liquid Satin Blend, is recommended for soaking or cleaning equipment.

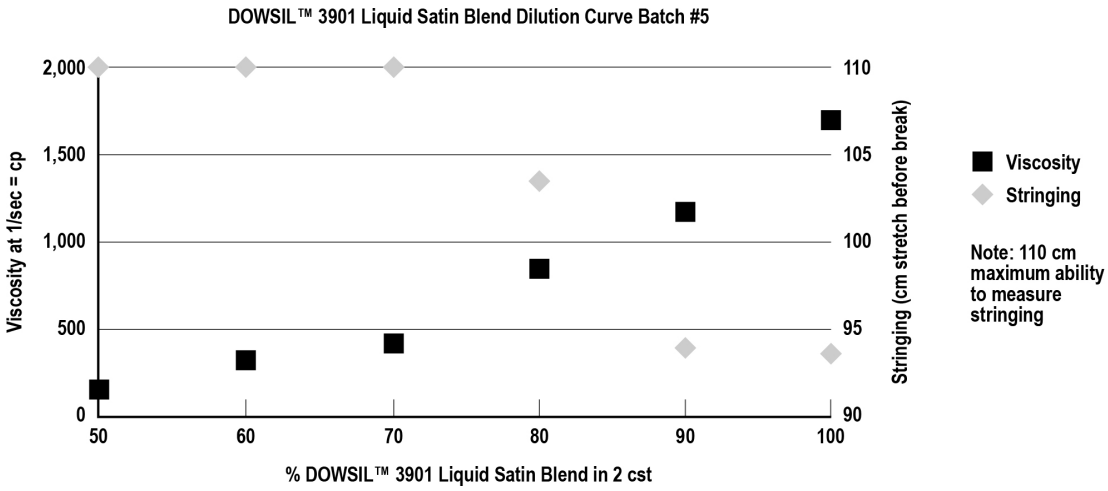

Figure 4: Dilution

Handling Precautions

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ PRODUCT AND SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE SAFETY DATA SHEET IS AVAILABLE ON THE DOW WEBSITE AT DOW.COM, OR FROM YOUR DOW SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CUSTOMER SERVICE.

Usable Life and Storage

When stored at or below 40°C (104°F) in the original unopened containers, this product has a usable life of 24 months from the date of production.

Packaging Information

This product is available in 170 kg drums and 16 kg pails.

Samples are available in 400 ml bottles.

Limitations

This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

Health and Environmental Information

To support customers in their product safety needs, Dow has an extensive Product Stewardship organization and a team of product safety and regulatory compliance specialists available in each area.

For further information, please see our website, dow.com or consult your local Dow representative.

Disposal Considerations

Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner.

It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your Dow Technical Representative for more information.

Product Stewardship

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.

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