



## Technical Data Sheet

# DOWSIL™ 2-2078 Fluid

### FEATURES

- Suitable for water based and anhydrous formulations
- Stable in alkaline formulations

### BENEFITS

- Long lasting shine to hair delivered in both water based and anhydrous systems
- Straightening enhancement when used in lye relaxers
- Color protection when used in rinse-off conditioners
- Color protection when used in permanent colorants
- Heat protection
- Substantive to skin
- Enhanced fragrance delivery
- Enhances hair strength

### COMPOSITION

- Amino phenyl silicone resin

Long lasting shine, straightening, heat and color protection

INCI NAME: Aminopropyl phenyl trimethicone

### APPLICATIONS

- Leave-in and styling hair products including shine sprays, creams, lotions, cuticle coats and pomades
- Relaxers, colorants.
- Rinse-off products: shampoos and conditioners
- Skin creams, lip sticks and nail varnishes

### TYPICAL PROPERTIES

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

Property	Unit	Result
Active	%	100
Appearance		Clear to slightly hazy
Color		Colorless to pale yellow
Physical form		Liquid
Specific gravity at 25°C (77°F)		1.0867
Viscosity at 25°C (77°F)	mm <sup>2</sup> /s	1000-3000
Refractive index		1.49-1.51
Cyclotetrasiloxane (D4) content	%	< 0.1
Cyclopentasiloxane (D5) content	%	< 0.1

### DESCRIPTION

DOWSIL™ 2-2078 Fluid is a liquid amino phenyl silicone resin. It was developed to provide high gloss and substantivity in personal care applications, e.g., hair care, skin care and color cosmetics.

### BENEFITS

DOWSIL 2-2078 Fluid provides superior long lasting shine to hair (Figure 1). DOWSIL 2-2078 Fluid protects hair from damage during heat treatments and protects color fading from shampoo washes. DOWSIL 2-2078 Fluid provides straightening

enhancement when used in a lye relaxer (Figure 2). Hair fibers treated with DOWSIL 2-2078 Fluid exhibited hair strengthening benefits (Figure 3). DOWSIL 2-2078 Fluid provides substantivity to lip sticks and nail varnishes, as well as enhanced fragrance delivery in skin care formulations.

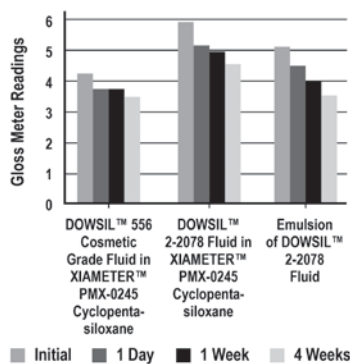
### HOW TO USE

DOWSIL 2-2078 Fluid can be added into the oil phase of the formulation. Recommended use levels for hair care products are 0.5% to 2%. For clear anhydrous formulations a small amount of ethanol will help

completely solubilize DOWSIL 2-2078 Fluid in cyclomethicone. Table 1 provides further information on compatibility of DOWSIL 2-2078 Fluid with other commonly used personal care ingredients. For water based systems add DOWSIL 2-2078 Fluid to the oil phase of the formulation.

Prototype formulations such as anhydrous shine spray and cuticle coat are listed in the Appendix. Further prototype formulations are available upon request.

**Figure 1: Shine measurements on slightly bleached blonde hair.**



Treatment with 2% DOWSIL 2-2078 Fluid or DOWSIL 556 Cosmetic Grade Fluid

**Figure 2: Straightening enhancement when used at 2% with lye relaxer.**

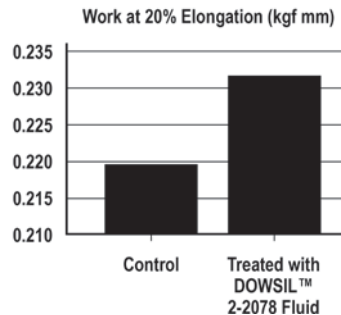
**Commercial Relaxer**



**Commercial Relaxer w/DOWSIL 2-2078 Fluid**



**Figure 3: Hair fibers treated (leave-on conditioner) with DOWSIL 2-2078 Fluid exhibited higher work vs. untreated fibers. Statistically significant at 99% confidence level. (Work is the total load or force to elongate a fiber multiplied by displacement).**



**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 WWW.CONSUMER.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) and above -20°C (-4°F) in the original unopened containers, this product has a usable life of 15 months from the date of production

**PACKAGING INFORMATION**

This product is available in 500ml sample bottles, 20kg pails and 200kg drums.

**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, [www.consumer.dow.com](http://www.consumer.dow.com) or consult your local Dow representative.

**LIMITED WARRANTY INFORMATION – PLEASE READ CAREFULLY**

The information contained herein is offered in good faith and is believed to be accurate. However, because conditions and methods of use of our products are beyond our control, this information should not be used in substitution for customer’s tests to ensure that our products are safe, effective, and fully satisfactory for the intended end use. Suggestions of use shall not be taken as inducements to infringe any patent.

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Your exclusive remedy for breach of such warranty is limited to refund of purchase price or replacement of any product shown to be other than as warranted.

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**Table 1: Compatibility chart. Ratios are for DOWSIL 2-2078 Fluid**

<b>Other Material</b>	<b>1:1</b>	<b>1:19</b>
<b>Esters:</b>		
C12-15 Alkyl benzoate	C <sup>1</sup>	
Caprylic/Capric triglyceride	C	
Isodecyl neopentanoate	C	C
Isopropyl isostrearate	C	
Isopropyl myristate	C	
Isopropyl palmitate	C	
Diisopropyl adipate	C	
<b>Fatty alcohols/acids:</b>		
Lauryl alcohol	NC	
Octyldodecanol	NC	
Oleyl alcohol	NC	
<b>Hydrocarbons:</b>		
Mineral oil	NC	
<b>Hydrophilics:</b>		
Ethanol 200 proof	C	C
Propylene glycol	NC	NC
Deionized water	NC	NC
Glycerin	NC	NC
<b>Sunscreen actives:</b>		
Octyl methoxycinnamate	C	
<b>Vegetable oils:</b>		
Almond oil	NC	
Castor oil	NC	
Coconut oil	NC	
Corn oil	NC	
Jojoba oil	NC	
Lanolin oil	NC	
Sesame oil	NC	
Soybean oil	NC	
Sunflower oil	NC	
<b>Miscellaneous:</b>		
Isododecane	C	NC
Isopar H	C	NC
Polydecene	NC	NC
<b>Dow materials:</b>		
Cyclopentasiloxane (and) dimethiconol	NC	NC
Dimethicone (and) dimethiconol	NC	NC
Dimethicone, 100 cSt	NC	NC
Dimethicone, 350cSt	NC	NC
Cyclomethicone	C	NC
Cetyl dimethicone	NC	
Stearyl dimethicone	NC	
Phenyltrimethicone	C	
Dimethicone (and) trimethylsiloxysilicate	NC	
Dimethicone (and) trisiloxane	C	NC
Dimethicone, 5 cSt	NC	NC

1. C=compatible, NC=not compatible

**Prototype Formulation: Cuticle Coat for Shine and Conditioning (Formulation number 00577)**

<b>Ingredient</b>	<b>Wt. %</b>	<b>Trade Name Supplier</b>
<b>Phase A</b>		
1. Cyclomethicone (and) dimethicone	50	XIAMETER™ PMX-1411 Fluid
2. Cyclomethicone	45	XIAMETER™ PMX-0245 Cyclopentasiloxane Fluid
<b>Phase B</b>		
3. Aminopropyl phenyl trimethicone	2	DOWSIL™ 2-2078 Fluid
4. Ethyl alcohol 200 proof	3	

**Procedure**

1. Mix ingredients of Phase A together.
2. In a separate vessel, add Phase B ingredients together and mix.
3. Add Phase A to Phase B.
4. Mix until uniform.

**Variations**

Alternative Dow Products have not been tested as of this printing.

**Stability**

Stable for at least 2 months at room temperature and 45°C (113°F). Passes 5 freeze/thaw cycles.

**External Reference Material**

No external references identified as of this printing.

**Dow Application Patents**

Dow hopes that this suggested formulation will be of interest to you, but you should be cautioned that this is only a representative formulation and is not a commercialized product. Dow believes that the information and data on which this formulation is based are reliable, but it has not been subjected to extensive testing for performance, efficacy or safety. In addition, Dow has not undertaken a comprehensive patent search on the formulation. BEFORE COMMERCIALIZATION, YOU SHOULD THOROUGHLY TEST THE FORMULATION OR ANY VARIATION OF IT TO DETERMINE ITS PERFORMANCE, EFFICACY AND SAFETY. IT IS YOUR RESPONSIBILITY TO OBTAIN ANY NECESSARY GOVERNMENT CLEARANCE, LICENSE OR REGISTRATION. Suggestions of uses should not be taken as inducements to infringe any particular patent.

**Prototype Formulation: Shine and Conditioning Spray with Sunscreen (Formulation number 00564)**

<b>Ingredient</b>	<b>Wt. %</b>	<b>Trade Name Supplier</b>
<b>Phase A</b>		
1. Ethyl alcohol 200 proof	30	
2. Aminopropyl phenyl trimethicone	2	DOWSIL 2-2078 Fluid
<b>Phase B</b>		
3. Cyclomethicone	52.5	XIAMETER PMX-0245 Cyclopentasiloxane Fluid
4. Isododecane	15	Fanco!® ID CG/Elementis Specialties, Inc.
5. Ethylhexyl methoxycinnamate	0.5	PARSOL® MCX /DSM Nutritional Products

**Procedure**

1. Mix ingredients of Phase A together.
2. Mix until uniform.
3. Add Phase B ingredients in order.
4. Mix until uniform after each addition.

**Variations**

Alternative Dow Products have not been tested as of this printing.

**Stability**

Stable for at least 2 months at room temperature and 45°C (113°F). Passes 5 freeze/thaw cycles.

**Attributes**

Contains a sunscreen (not tested for efficacy).

**External Reference Material**

No external references identified as of this printing.

**Dow Application Patents**

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