



DOWSIL™ EL-7040 Hydro Elastomer Blend

INCI Name: Caprylyl Methicone (and) PEG-12 Dimethicone/ PPG-20 Crosspolymer

Features & Benefits

- Clear to translucent crosslinked silicone-organic elastomer gel delivered in a silicone carrier fluid
- Ability to incorporate water and polar materials while maintaining a viscous, gel structure
- Compatible with a wide range of organic ingredients
- Provides smooth, powdery, non-greasy skin feel
- Enhanced spreadability versus traditional silicone elastomer gels
- Improved organic compatibility versus traditional silicone elastomer gels
- Ability to create clear systems with organic components
- Enhances aesthetics of anhydrous and water-based formulations
- Provides thickening benefits with organic solvents and in alcohol-based systems
- Cold processing
- Can incorporate up to 75% of water and up to 40% glycerin

Applications

- Delivery aid for lipophilic actives, including sunscreens
- Delivery aid for water soluble actives, including Vitamin C, Aloe Vera, caffeine, and Sensicalmine™
- Rheology modifier in water based and anhydrous systems
- Can be used in a wide range of personal care products such as skin care, color cosmetics, and sun care

Typical Properties

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

Property	Unit	Result
Viscosity at 25°C (77°F)	cP	275,000–600,000
Non-Volatile Content	%	17.5–19.5
Flash Point	°C	> 100
Appearance		Clear to translucent, colorless to light amber, no significant particulate. Thick gel may be crumbly in appearance.
Cyclotetrasiloxane (D4) Content	%	< 0.1
Cyclopentasiloxane (D5) Content	%	< 0.1
Cyclohexasiloxane (D6) Content	%	< 0.1

Description

DOWSIL™ EL-7040 Hydro Elastomer Blend is a mixture of high molecular weight polyglycol-modified silicone elastomer in caprylyl methicone.

How to Use

Disperse the oil phase into DOWSIL™ EL-7040 Hydro Elastomer Blend using simple mixing. There is no need for post-shearing. This hydrophilic product offers enhanced compatibility with a wide range of ingredients, both polar and non-polar, along with a caprylyl methicone carrier thereby providing a novel form of delivery for other formulation components. Formulations can be made using a cold process.

Formulation Tips

- DOWSIL™ EL-7040 Hydro Elastomer 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. In some cases, it may be possible to add DOWSIL™ EL-7040 Hydro Elastomer Blend to the water phase provided sufficient levels of elastomer and shear are applied to cause a phase inversion.
- It may be possible to post-add to emulsions provided the emulsion is viscous enough for the elastomer blend to be dispersed.
- For ease of use, its viscosity may be reduced by blending with a compatible solvent (see Table 1).
- DOWSIL™ EL-7040 Hydro Elastomer Blend may structure over time becoming crumbly in appearance, especially at the surface. This is a reversible phenomenon. The elastomer blend will return to a creamy paste-like texture via mixing or pumping.
- It is dispersible in a variety of liquid oils.
- It may be formulated with organic oils and silicon-based materials with the use of mixers and may be subjected to high shear devices such as homogenizers and sonolators.
- DOWSIL™ EL-7040 Hydro Elastomer Blend may be subjected to up to 80°C for up to 3 hours. When heat is used, the material should be processed in an enclosed vessel to prevent the caprylyl methicone from volatilizing; the vessel should be inerted at temperatures over 40°C (104°F).

Table 1: Compatibility with Common Cosmetic Ingredients at Several Ratios

Cosmetic Ingredients (INCI)	DOWSIL™ EL-7040 Hydro Elastomer Blend		DOWSIL™ EL-8050 ID Silicone Organic Elastomer Blend		DOWSIL™ 9045 Silicone Elastomer Blend	
	10%	25%	10%	25%	10%	25%
Esters						
C12-15 Alkyl Benzoate	C	C	H	H	C	O
Caprylic/Capric Triglyceride	C	C	C	C	C	O
Diisopropyl Adipate	C	C	C	H	H	H
Isopropyl Myristate	C	C	C	C	C	NC
Isodecyl Neopentanoate	C	C	C	C	O	O
Fatty Alcohols/Acids						
Lauryl Alcohol	C	C	C	C	C	O
Oleyl Alcohol	C	C	C	H	O	NC

Table 1: Compatibility with Common Cosmetic Ingredients at Several Ratios (Cont.)

Cosmetic Ingredients (INCI)	DOWSIL™ EL-7040 Hydro Elastomer Blend		DOWSIL™ EL-8050 ID Silicone Organic Elastomer Blend		DOWSIL™ 9045 Silicone Elastomer Blend	
	10%	25%	10%	25%	10%	25%
Hydrocarbons						
Isododecane	C	C	C	C	H	H
Isohexadecane	C	C	C	C	H	H
Isopar L	C	C	C	C	H	H
Mineral Oil	C	NC	C	NC	H	H
Hydrophilics						
Water	NC	NC	NC	NC	NC	NC
Ethanol	C	C	C	C	H	NC
Propylene Glycol	O	O	H	NC	NC	NC
Sunscreen Actives						
Octyl Methoxycinnamate	C	C	C	C	H	NC
Octylsalicylate	C	C	C	C	H	H
Homosalate	C	C	C	C	H	O
Vegetable Oils						
Avocado Oil	C	NC	C	NC	O	NC
Castor Oil	O	O	O	NC	O	NC
Jojoba Oil	C	NC	C	NC	H	NC
Sesame Oil	C	NC	C	H	O	O
Sunflower Oil	C	H	C	NC	O	NC
DOWSIL™ Materials						
DOWSIL™ 2502 Cosmetic Fluid	NC	NC	H	NC	O	NC
DOWSIL™ 2503 Cosmetic Wax	O	O	H	NC	O	O
DOWSIL™ 556 Cosmetic Grade Fluid	C	C	C	C	H	H
DOWSIL™ 593 Fluid	H	NC	H	NC	H	H
DOWSIL™ 5562 Carbinol Fluid	C	C	C	H	H	C
DOWSIL™ FZ-3196 Fluid	C	H	C	C	H	H
XIAMETER™ Materials						
XIAMETER™ PMX-1501 Fluid	H	H	H	H	H	H
XIAMETER™ PMX-1503 Fluid	H	H	H	H	H	H
XIAMETER™ PMX-200 Silicone Fluid 1.5 cSt	C	H	C	H	H	H
XIAMETER™ PMX-200 Silicone Fluid 100 cSt	NC	NC	NC	NC	H	H
XIAMETER™ PMX-245 Cyclosiloxane	C	H	C	C	H	H

C = Clear to Slight Haze; H = Hazy; O = Cloudy to Opaque; NC = Not Compatible

How to Use (Cont.)

Processing

DOWSIL™ EL-7040 Hydro Elastomer Blend is a viscous product that exhibits shear thinning behavior. The following information will aid in the selection of the proper equipment to use when processing DOWSIL™ EL-7040 Hydro Elastomer Blend out of a drum.

Pump Recommendation

GRACO BULLDOG 10:1 Pump with follower plate. For more information, contact GRACO at www.graco.com. Note: GRACO offers various models, and other pump manufacturers may offer similar equipment equally capable of processing the material efficiently. Users should work directly with the pump manufacturer to determine the best design for their needs.

Customer-specific pump design considerations:

1. Pressure and Flow Requirements

- a. Air supply pressure: Will depend on plant's air supply capabilities.
- b. Discharge pressure: Will depend on total pressure required to move the silicone organic elastomer blend from point A to point B. Pressure drops due to elevation, frictional losses within the piping, fittings, valves, filters, etc., will need to be considered.
- c. Flow requirements: Will depend on how quickly the user wishes to transfer the silicone organic elastomer blend from a 208 liter (55 gallon) drum into a vessel.

2. Material Viscosity in cP (mPa·s) at the Application Temperature

DOWSIL™ EL-7040 Hydro Elastomer Blend is shear thinning. It is the responsibility of the user to determine the effective viscosity based on the user's application. Once the material is pushed through the pump by the follower plate and processed in the pump, the product will shear thin and process as a lower viscosity fluid.

3. Construction Material for Wetted Parts

Stainless steel is recommended but carbon steel may also be used.

4. Construction Material for Seals and Gaskets

VITON or TEFLON materials are recommended. Please contact Dow for alternatives.

Clean-up

Non-polar organic or silicone solvents are recommended for soaking or cleaning equipment.

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 60°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 14 kg pails and 150 kg drums.

Samples are available in 0.3 kg tubs.

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.

dow.com

NOTICE: No freedom from infringement of any patent owned by Dow or others is to be inferred. Because use conditions and applicable laws may differ from one location to another and may change with time, Customer is responsible for determining whether products and the information in this document are appropriate for Customer's use and for ensuring that Customer's workplace and disposal practices are in compliance with applicable laws and other government enactments. The product shown in this literature may not be available for sale and/or available in all geographies where Dow is represented. The claims made may not have been approved for use in all countries. Dow assumes no obligation or liability for the information in this document. References to "Dow" or the "Company" mean the Dow legal entity selling the products to Customer unless otherwise expressly noted. NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.

