



DOWSIL™ 9040 Silicone Elastomer Blend

INCI NAME: Cyclopentasiloxane (and) Dimethicone Crosspolymer

Features & Benefits

- Compatible with a variety of lipophilic active ingredients such as fragrances, sunscreens, vitamins, and vitamin derivatives
- Clear to slightly translucent cross-linked silicone elastomer gel
- Easy to formulate
- Acts as a thickening agent for water-in-oil and water-in-silicone formulations and silicone fluids
- Slight sebum absorption
- Provides dry smoothness and a light silky skin feel non-greasy
- Enhances the aesthetics of volatile silicones
- Reduces tackiness of formulations
- Quick absorption
- Cold processing
- The stability of vitamin derivatives such as Vitamin A Palmitate is improved when pre-mixed with DOWSIL™ 9040 Silicone Elastomer Blend prior to incorporation into a finished formulation

Applications

- Skincare
- Hair care
- Many other potential formulations

Typical Properties

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

Property	Unit	Result
Appearance		Crystal clear to slightly translucent gel. May have slight yellow or brownish color. Free of particulate matter.
Viscosity	mm ² /s	250,000–580,000
Specific gravity		0.96
Non-volatile content	%	12.0–12.75
Cyclotetrasiloxane (D4) content	%	< 1

Description

DOWSIL™ 9040 Silicone Elastomer Blend is a mixture of high molecular weight silicone elastomer in cyclopentasiloxane.

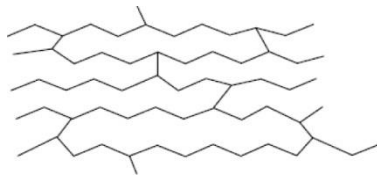


Figure 1: Cross-linked network of DOWSIL™ 9040 Silicone Elastomer Blend.

How to Use

Disperse the oil-phase into DOWSIL™ 9040 Silicone Elastomer Blend using simple mixing. There is no need for post-shearing. DOWSIL™ 9040 Silicone Elastomer Blend provides cyclopentasiloxane which has already been thickened and can provide a novel form of delivery for other formulation components. Thickening of formulations can be achieved using a cold process.

Formulation Tips

DOWSIL™ 9040 Silicone 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.
- It may be post-added to emulsions provided the emulsion is viscous enough for the DOWSIL™ 9040 Silicone Elastomer Blend to be dispersed.
- For ease of use, its viscosity may be reduced by blending with dimethicone or cyclomethicone.
- 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.
- It is dispersible in a variety of liquid oils (refer to compatibility chart on page 4).
- Because the elastomer is stable, DOWSIL™ 9040 Silicone Elastomer Blend may be subjected to heat for a short duration. When heat is used, the material should be processed in an enclosed vessel to prevent the cyclopentasiloxane from volatilizing; the vessel should be inerted at temperatures over 60°C (140°F).

Processing

DOWSIL™ 9040 Silicone Elastomer Blend is a viscous product but has the unique characteristic of being a shear-thinning material (see Figure 6).

The following information will aid in the selection of the proper equipment to use when processing DOWSIL™ 9040 Silicone Elastomer Blend out of a drum.

Pump Recommendation

GRACO BULLDOG 10:1 Pump with follower plate.

Note: GRACO offers various BULLDOG 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.

How to Use (Cont.)

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 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 elastomer blend from a 208 liter (55 gal) drum into a vessel.
2. Material viscosity in cP at the application temperature
DOWSIL™ 9040 Silicone Elastomer Blend is shear thinning. Effective viscosity is 80,000–100,000 cP. This is only an example; 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 materials for seals and gaskets.
VITON or TEFLON materials are recommended. Please contact Dow for alternatives.

Clean-up

XIAMETER™ PMX-0245 Cyclopentasiloxane, which dilutes the viscosity of DOWSIL™ 9040 Silicone Elastomer Blend to water thin, is recommended for soaking or cleaning equipment. Other non-polar solvents may work as well.

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 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 60°C (140°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 15 kg and 180 kg.

Samples are available in 400 g.

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, consumer.dow.com or consult your local Dow representative.

Table 1: Compatibility

Wt % DOWSIL™ 9040 Silicone Elastomer Blend:	10	50	90
Material			
Water	NC	NC	NC
Triglycerides	NC	NC	NA
Solvents			
Ethanol	NC	NC	C
Propylene glycol	NC	NC	C
Isopropyl alcohol	NC	NC	C
Acetone	NC	NC	C
Fatty Esters			
Isopropyl myristate	C	C	C
Octyl palmitate	C	C	C
Hydrocarbons			
Mineral oil	NC	NC	C
Isododecane	C	C	C
Silicones			
XIAMETER™ PMX-0244 Cyclopentasiloxane	C	C	C
XIAMETER™ PMX-0245 Cyclopentasiloxane	C	C	C
XIAMETER™ PMX-0344 Cyclopentasiloxane Blend	C	C	C
XIAMETER™ PMX-0345 Cyclopentasiloxane Blend	C	C	C
XIAMETER™ PMX-200 Silicone Fluid 5–30000 cSt	C	C	C
DOWSIL™ 556 Cosmetic Grade Fluid	C	C	C

NC: Not Compatible; C: Compatible; NA: Not Available

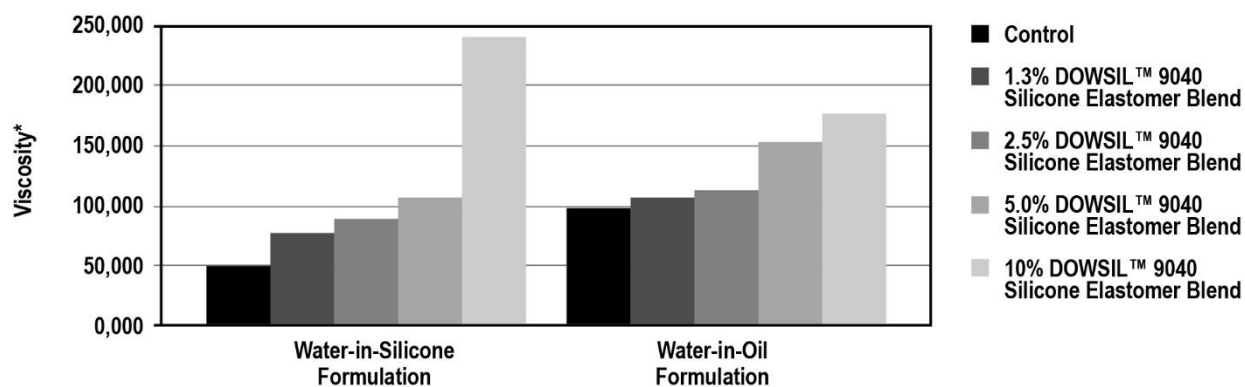


Figure 2: Thickening Effect

*Brookfield DVII spindle RV-07 at 5 rpm.

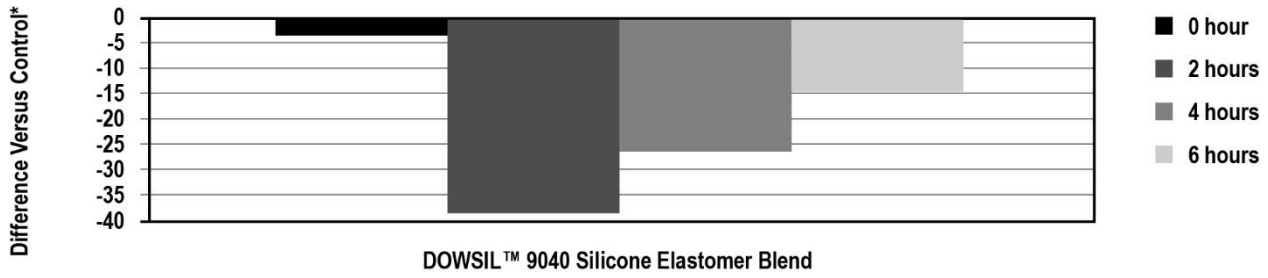


Figure 3: Absorption of Sebum

Results significant at 90% confidence level; control: untreated skin
 *Sebumeter SM 180

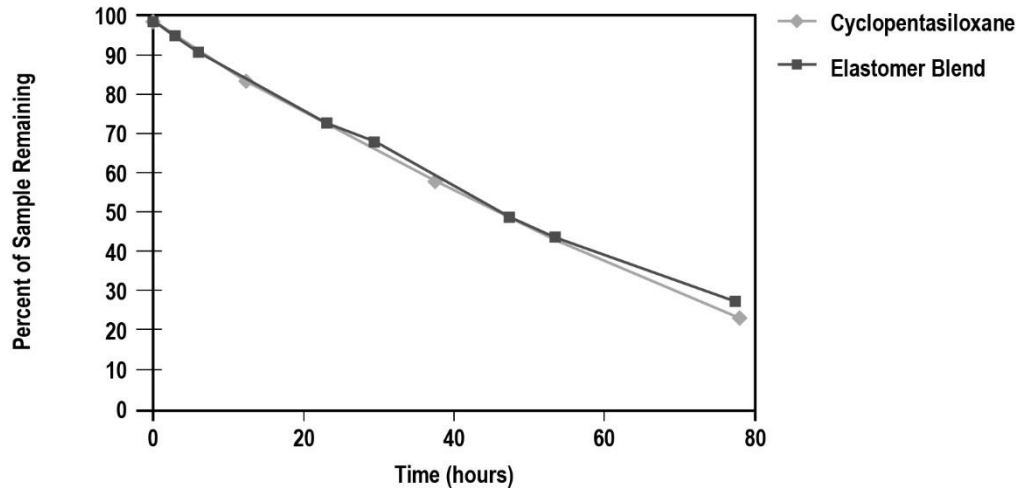


Figure 4: Volatility of Cyclopentasiloxane from Elastomer Blend

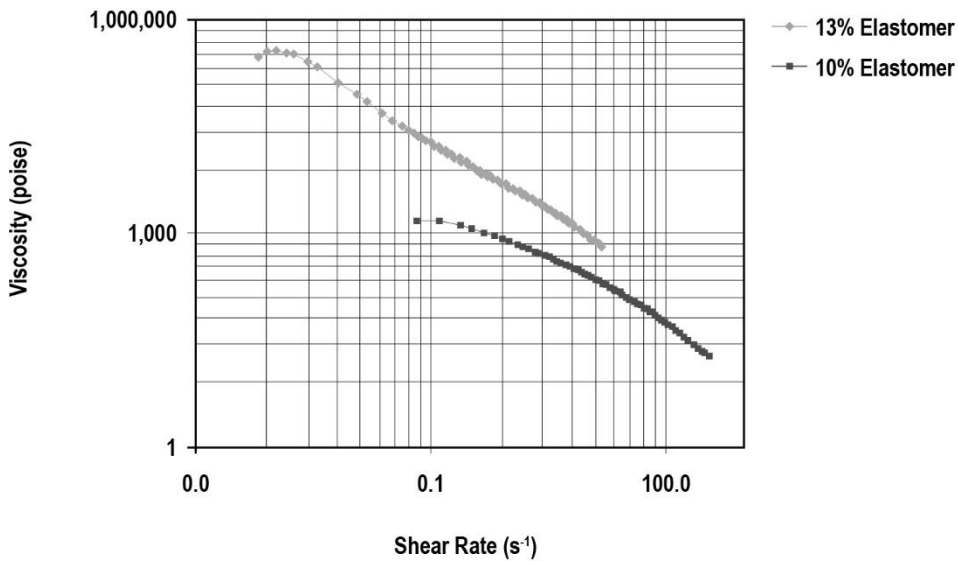


Figure 5: Stress Sweeps for Two Elastomer Blends

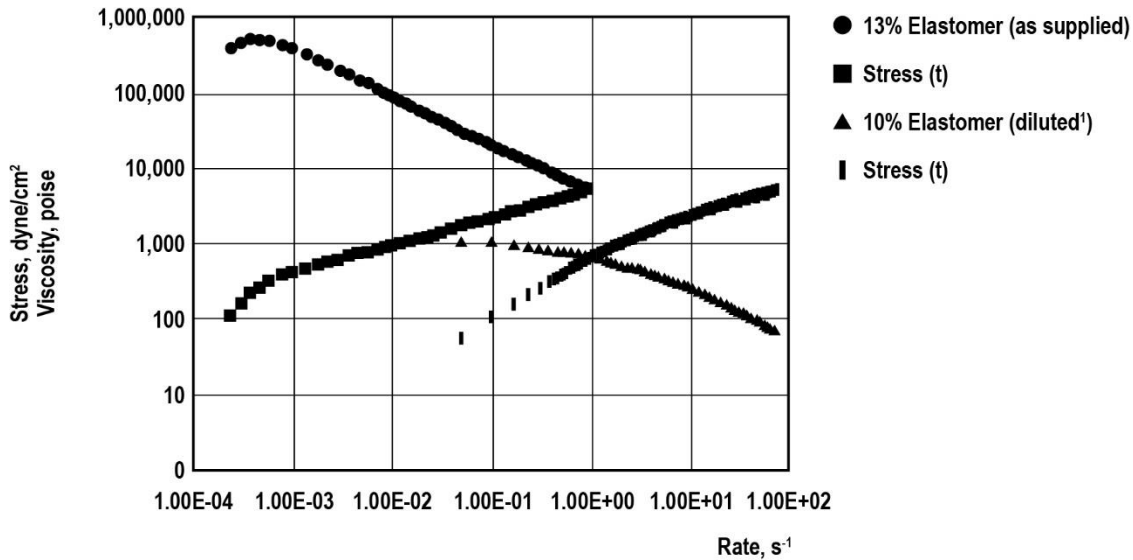


Figure 6: Stress Ramps (0–5,000 dynes/cm²) for DOWSIL™ 9040 Silicone Elastomer Blend at Elastomer Levels

1. Diluted with XIAMETER™ PMX-0245 Cyclopentasiloxane

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LIMITED WARRANTY INFORMATION – PLEASE READ CAREFULLY

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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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