Product Information
Personal Care

DOW CORNING

Dow Corning® 9040 Silicone Elastomer Blend

FEATURES

- 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

BENEFITS

- 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 *Dow Corning* 9040 Silicone Elastomer Blend prior to incorporation into a finished formulation

INCI NAME: Cyclopentasiloxane (and) Dimethicone Crosspolymer

APPLICATIONS

- Skincare
- Hair care
- Antiperspirants and deodorants
- Many other potential formulations

TYPICAL PROPERTIES

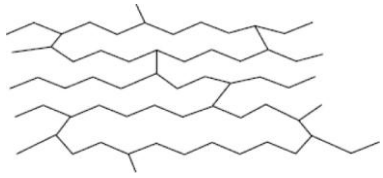
Specification Writers: These values are not intended for use in preparing specifications. Please contact your local Dow Corning sales office or your Global Dow Corning Connection before writing specifications on this product.

Parameter	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

Dow Corning® 9040 Silicone Elastomer Blend is a mixture of high molecular weight silicone elastomer in cyclopentasiloxane.

Figure 1: Cross-linked network of *Dow Corning*® 9040 Silicone Elastomer Blend.



HOW TO USE

Disperse the oil-phase into *Dow Corning* 9040 Silicone Elastomer Blend using simple mixing. There is no need for post-shearing.
Dow Corning 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
Dow Corning 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 *Dow Corning* 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 compatability chart on page 4).
- Because the elastomer is stable, *Dow Corning* 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
Dow Corning 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 *Dow Corning* 9040 Silicone Elastomer Blend out of a drum.

Pump recommendation
GRACO BULLDOG® 10:1 Pump with follower plate. For more information, contact GRACO at 1-800-367-4023.

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.

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**
   Dow Corning 9040 Silicone Elastomer Blend is shear thinning. Effective viscosity is 80,000-100,000cP. 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 Corning for alternatives.

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

PATENT POSITION
Dow Corning is the exclusive licensee of U.S. Patent No. 5,599,533; US Patent No. 6,027,738 and U.S. Patent No. 6,387,405 and any foreign equivalents thereof. Under this license the Licensor covenants not to enforce these patents against any third party who is making, using or selling products covered by these patents for so long as that third party is able to show that they purchased the silicone elastomer used in their product directly from Dow Corning or a Dow Corning distributor.

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

USABLE LIFE AND STORAGE
When stored at or below60°C (140°F) in the original unopened containers, this product has a usable life of 24 months from the date of production.

Dow Corning 9040 Silicone Elastomer Blend is considered a combustible liquid (per NEPA30 definition) for

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storage purposes and a flammable solid for transportation purposes.

PACKAGING INFORMATION

This product is available in 15kg and 180kg.

Samples are available in 400g.

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 Corning has an extensive Product Stewardship organization and a team of Product Safety and Regulatory Compliance (PS&RC) specialists available in each area.

For further information, please see our Web site, dowcorning.com or consult your local Dow Corning 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.

Dow Corning's sole warranty is that our products will meet the sales specifications in effect at the time of shipment.

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.

DOW CORNING SPECIFICALLY DISCLAIMS ANY OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY.

DOW CORNING DISCLAIMS LIABILITY FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.

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COMPATIBILITY

Wt % *Dow Corning*® 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, PMX-0245, PMX-0344, PMX-0345	C	C	C
XIAMETER® PMX-200 Silicone Fluid 5-30000 cSt	C	C	C
Dow Corning ® 556 Cosmetic Grade Fluid	C	C	C

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

SENSORY EVALUATION RESULTS[1]

Sensory parameters	*Dow Corning*® 9040 Silicone Elastomer Blend	XIAMETER® PMX-0245 Cyclopentasiloxane
Before absorption:		
Wetness (1=dry, 10=wet)	**3.24**[1]	**8.05**[1]
Spreadability (1=difficult, 10=easy)	**3.62**[1]	**8.33**[1]
Tackiness (1=not tacky, 10=tacky)	3.00	1.86
Absorbency (1=slowly, 10=quickly)	6.95	5.38
After absorption:		
Gloss (1=not shiny, 10=shiny)	**1.29**[1]	**5.67**[1]
Film residue (1=no film, 10=film)	**6.00**[1]	**4.10**[1]
Greasiness (1=not greasy, 10=greasy)	1.95	3.95
Silkiness (1=silky, 10=drag)	3.76	4.29
Tackiness (1=not tacky, 10=tacky)	2.14	2.05

[1]Significantly different.

Test method: Paired comparison, incomplete block experiment, number of panellists: 28.

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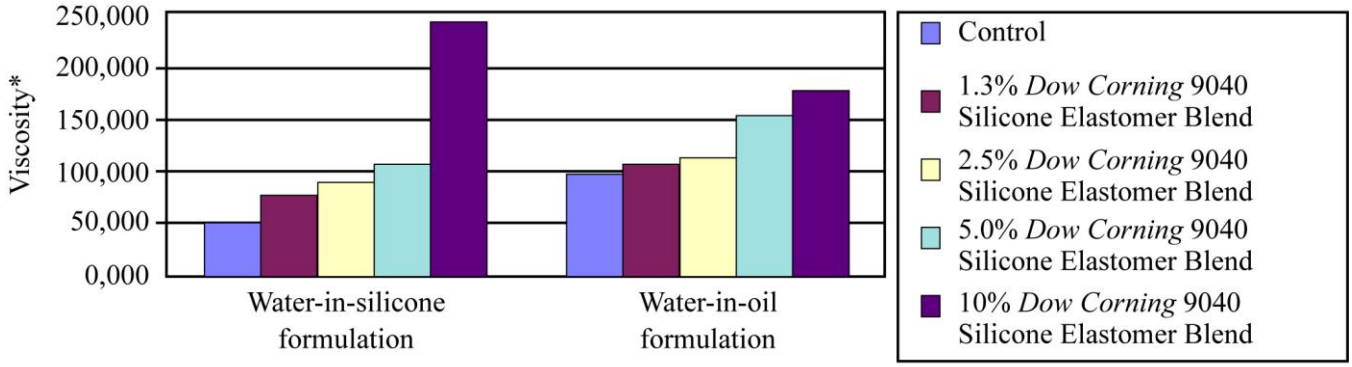
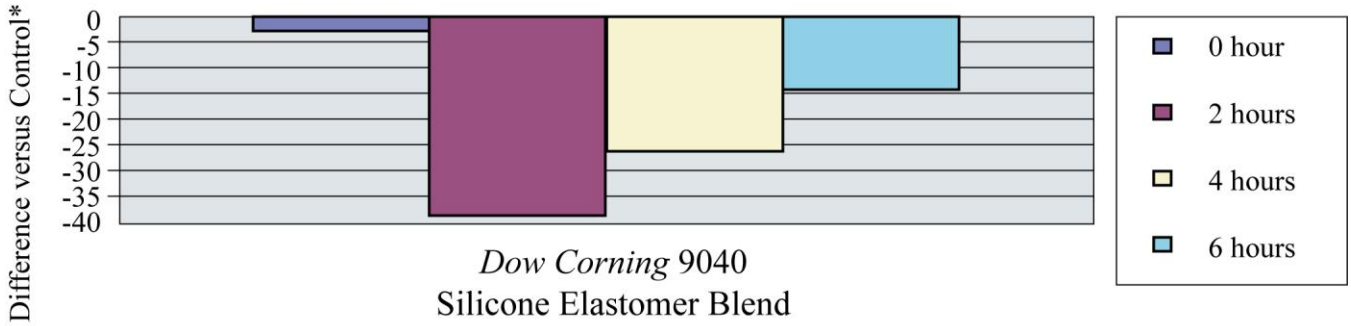
Figure 2: Thickening effect.



*Brookfield DVII spindle RV-07 at 5rpm.

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.

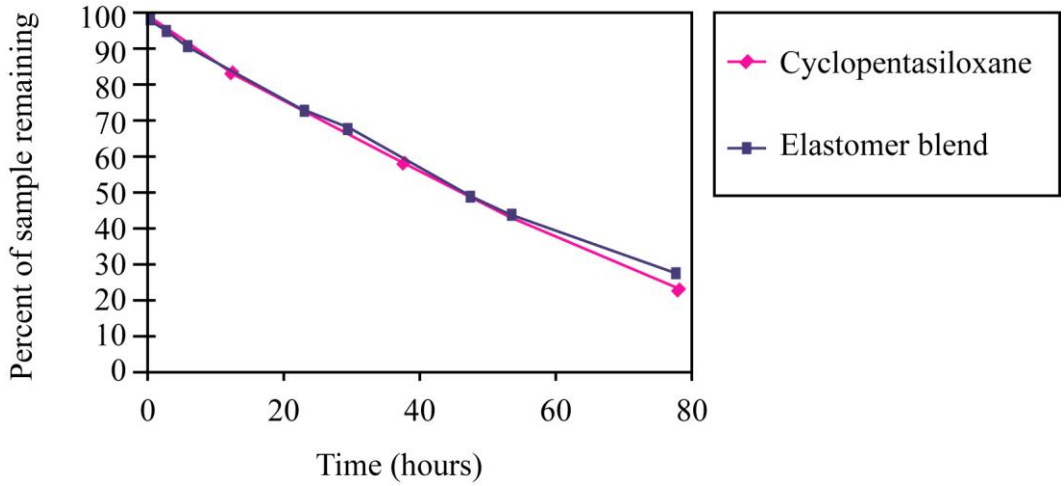
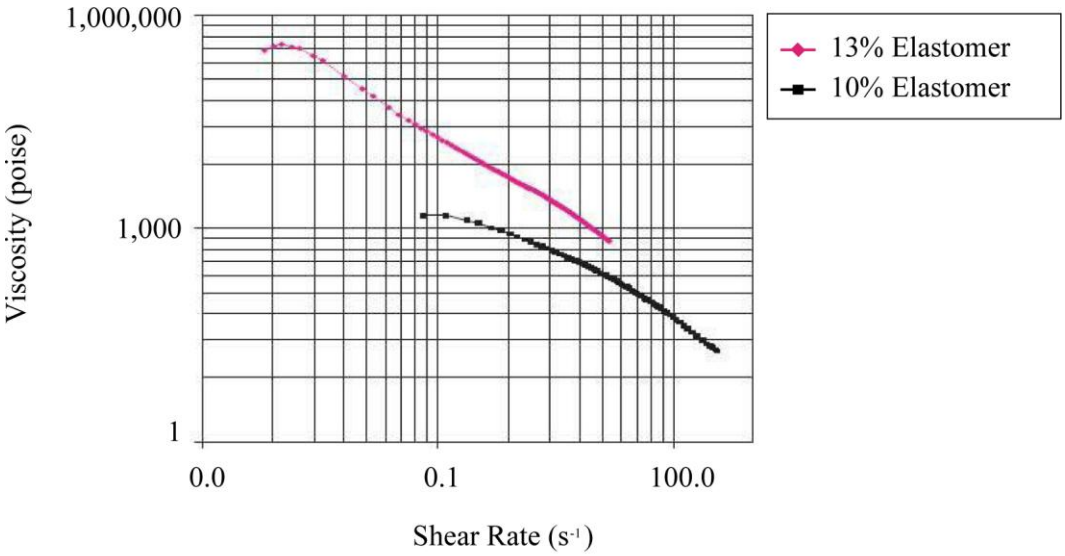


Figure 5: Stress sweeps for two elastomer blends.



1. Diluted with XIAMETER® PMX-0245 Cyclopenta siloxane

Figure 6: Stress ramps (0-5,000 dynes/cm^2) for *Dow Corning*® 9040 Silicone Elastomer blend at elastomer levels.