Technical Data Sheet

# DOWSIL™ 9045 Silicone Elastomer Blend

INCI NAME: Cyclopentasiloxane and Dimethicone Crosspolymer

## Features & Benefits

- Smooth, clear to slightly translucent cross-linked silicone elastomer gel
- Easy to formulate
- Provides dry smoothness and a light, silky, non-greasy skin feel
- Enhances the aesthetic of volatile silicones
- No balling effect when rubbed on the skin
- Reduces tackiness of formulations
- Quick absorption
- Cold processing
- Acts as a thickening agent for water-in-oil and water-in-silicone formulations and silicones fluids.
- Sebum absorption
- Improves fragrance retention

## Composition

- Approximately 12.5 wt. percent Dimethicone Crosspolymer in Cyclopentasiloxane (D5)

## Applications

- Skin care
- Hair care
- Many other potential formulations (examples: sunscreens, color cosmetics, styling aids, etc.)

## 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 amber color. Free of particulate matter. |
| Viscosity | $mm^2/s$ | 350,000–550,000 |
| Specific gravity | | 0.96 |
| Non-volatile content | % | 12.0–12.75 |
| Cyclotetrasiloxane (D4) content | % | < 1 |

## Description

DOWSIL™ 9045 Silicone Elastomer Blend is a mixture of high molecular weight silicone elastomer in Cyclopentasiloxane.

## How to Use

Disperse the oil-phase into DOWSIL™ 9045 Silicone Elastomer Blend using simple mixing. There is no need for post-shearing. DOWSIL™ 9045 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™ 9045 Silicone Elastomer Blend may be formulated into oil-in water emulsions, water-in-oil emulsions and anhydrous products.

- It can be added to the oil phase or silicone phase in an emulsion formulation.
- It can be post-added to emulsions provided the emulsion is viscous enough for the DOWSIL™ 9045 Silicone Elastomer Blend to be stabilized.
- For ease of use, its viscosity may be reduced by blending with Dimethicone or Cyclomethicone.
- It may be formulated with organic oils and silicone-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 the DOWSIL™ 9040 Silicone Elastomer Blend product information sheet, Form No. 22-1765, for details).
- Because the elastomer is stable, DOWSIL™ 9045 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™ 9045 Silicone Elastomer Blend is a viscous product but has the unique characteristic of being a shear-thinning material (see Figure 2).

The following information will aid in the selection of the proper equipment to use when processing DOWSIL™ 9045 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.

## How to Use (Cont.)

**Customer-specific Pump Design Considerations**

1. Pressure and flow requirements
    a. Air supply pressure: will depend on plants 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™ 9045 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 users 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.

**Clean-up**

XIAMETER™ PMX-0245 Cyclopentasiloxane, which dilutes the viscosity of DOWSIL™ 9045 Silicone Elastomer Blend to water-thin, is recommended for soaking or cleaning equipment. Other non-polar solvents may work as well.

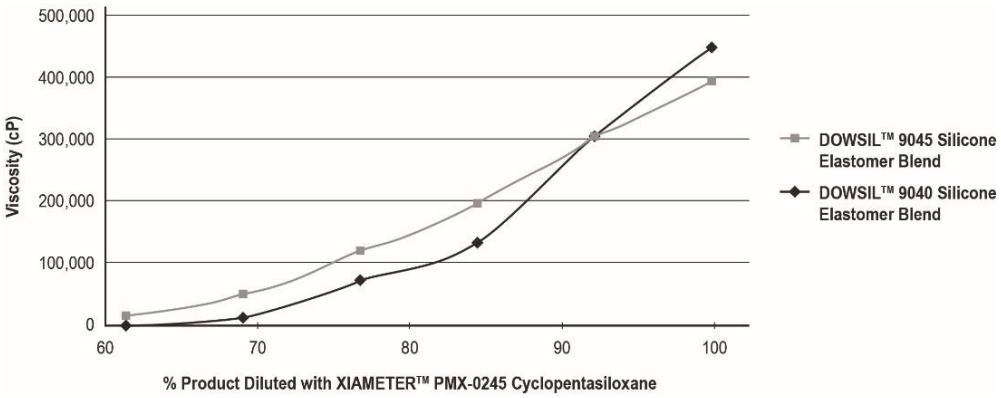


**Figure 1:** Dilution curves comparing DOWSIL™ 9045 Silicone Elastomer Blend and DOWSIL™ 9040 Silicone Elastomer Blend

## How to Use (Cont.)

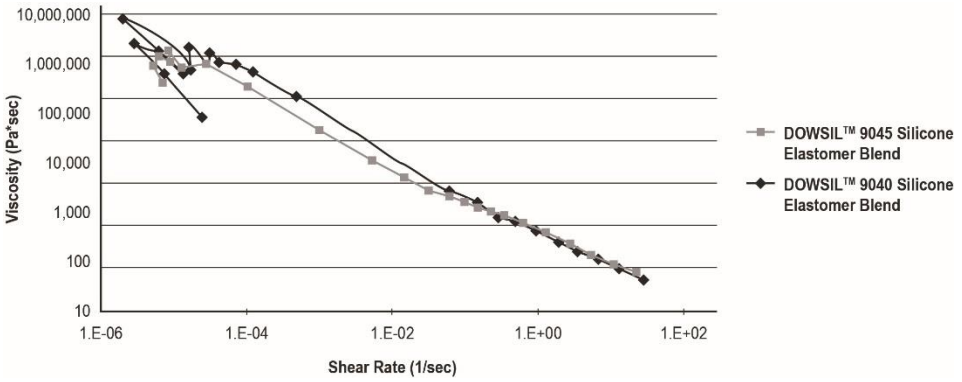


**Figure 2:** Rheological flow comparison of DOWSIL™ 9045 Silicone Elastomer Blend and DOWSIL™ 9040 Silicone Elastomer Blend

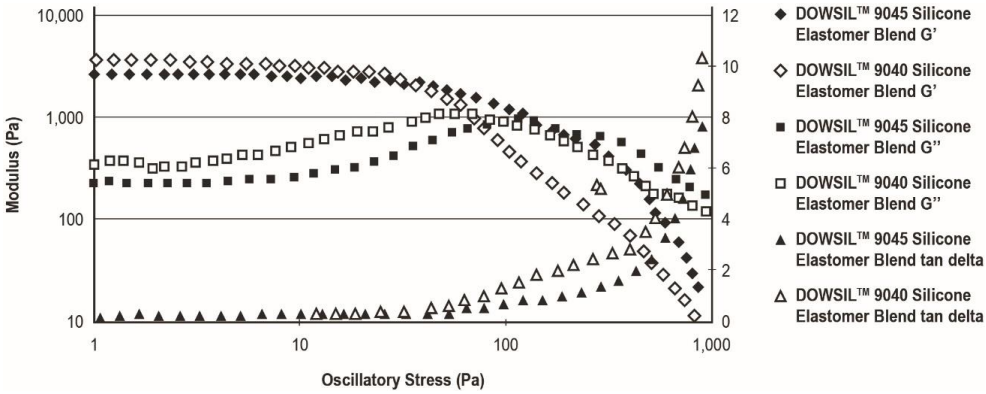


**Figure 3:** Rheology profile comparison of DOWSIL™ 9045 Silicone Elastomer Blend and DOWSIL™ 9040 Silicone Elastomer Blend

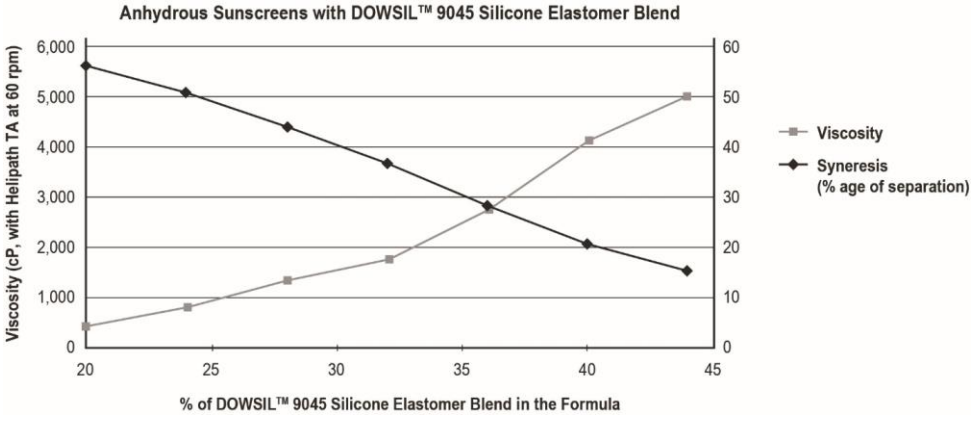


**Figure 4:** Effect of DOWSIL™ 9045 Silicone Elastomer Blend on viscosity and syneresis in an anhydrous sunscreen formulatio

## 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, these products have a usable life of 24 months from the date of production.

## Packaging Information

This product is available in 15 kg pails and 180 kg drums.

Samples are available in 0.4 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, consumer.dow.com or consult your local Dow representative.

consumer.dow.com