



DOW CORNING SILICONE ELASTOMER BLENDS

Dow Corning® Silicone Elastomer Blends represent a new technology in our array of delivery options for active ingredients. These innovative, multifunctional elastomer blends can also improve formulation stability and modify aesthetics while imparting the soft, silky, nontacky feel unique to silicones.

A Solution for Stability

Consumers are looking for products that help prevent premature aging, offer UV protection, provide long-lasting fragrance and allow controlled release for prolonged benefits. Yet the actives that meet these needs can be vulnerable to instability caused by heat, light, UV radiation, oxidation, volatile components and other formulation ingredients. The structure of silicone elastomer blends can help to overcome many of these issues.

Flexibility for Formulators

Silicone elastomer blends are lightly cross-linked silicone gels swollen in a cosmetic solvent such as cyclopentasiloxane or isododecane, or an emollient such as dimethicone. This distinctive structure is responsible for superior skin feel, while allowing the entrapment of active ingredients such as vitamins, sunscreens, fragrances and selected plant extracts into the gel matrix.

The flexibility of silicone elastomer blends allows for two methods of entrapment (Figure 1):

- **Pre-loading:** actives are incorporated into a reactive mixture, then entrapped and immobilized within the elastomer gel network upon curing. This approach can offer more gradual release upon drying as gel particles break down.
- **Post-loading:** actives are physically incorporated directly or with a carrier fluid (i.e., cosmetic solvent) within the gel particles. When the cosmetic solvent evaporates as the formulation dries on the skin, the actives are released.

Innovative solutions for delivering active ingredients. Product stability with silicone aesthetics.

The degree of cross-linking, elastomer structure, gel content, carrier fluid and shear process used to create the elastomer blend influence its type and properties. These parameters can produce variations that help achieve specific targeted properties.

Documented Stability

In studies using vitamin A palmitate (VAP) as a model active, silicone elastomer blends were loaded with the VAP to quantify the effects of post- and pre-loading, type of carrier fluid (e.g., cyclopentasiloxane, phenyl trimethicone and IDNP) and use of a BHT stabilizer. HPLC assays were used to quantify the VAP in silicone elastomer blends and prototype body lotions, and the loss of VAP was measured over time. The data showed good stability of the VAP, with loss of only 15-20% after 10 weeks at 40 °C.* (Figures 2-4 illustrate these results.)

Freedom to Innovate

In today's competitive personal care market, the challenge is to create innovative products that offer distinctive benefits. Silicone elastomer blends can be used in a variety of general skin care and hair care applications that formulators may wish to explore

Want to learn more?

Dow Corning is committed to being a world-class, global supplier of delivery systems to exactly meet your formulating needs. For more information about silicone elastomer blends for the delivery of active ingredients, to request experimental samples or learn more about formulating with these innovative ingredients, please contact your local Dow Corning representative, or visit our website at www.dowcorning.com/personalcare.

*Additional details are available from a Dow Corning representative.

Figure 1

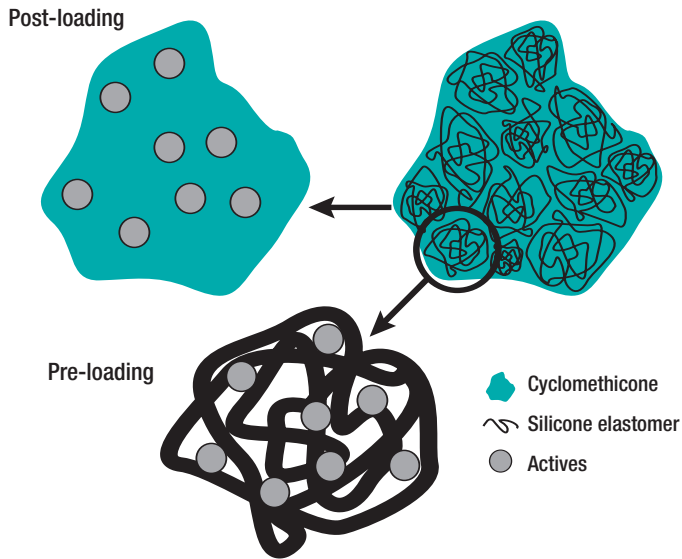


Figure 4

40°C Aging Stability of SEB Entrapped VAP in Hydrogels

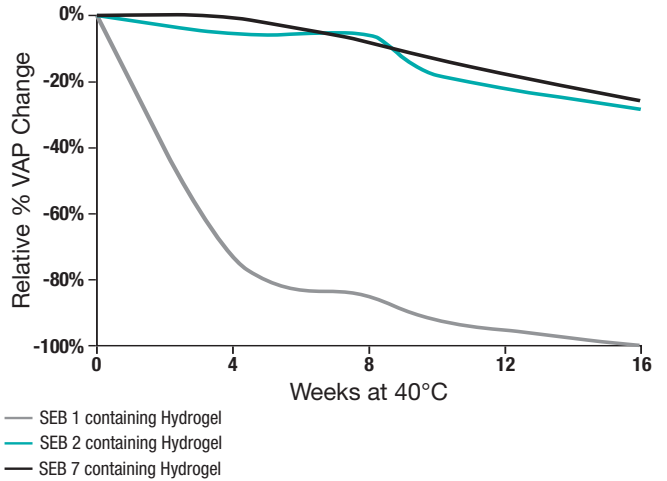


Figure 2

40°C Aging Stability of VAP in 9040 SEB

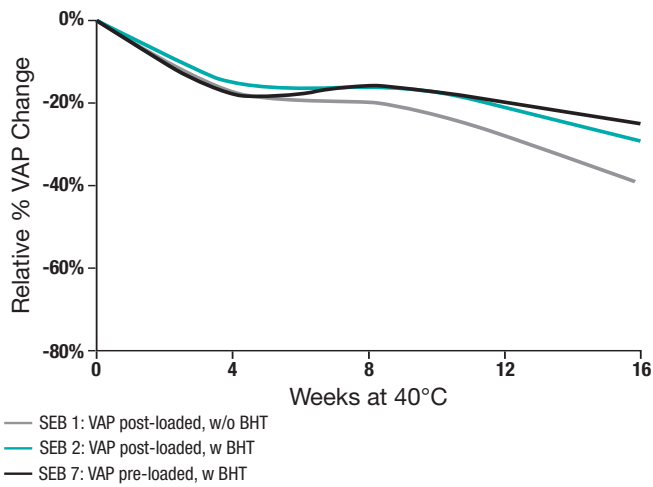
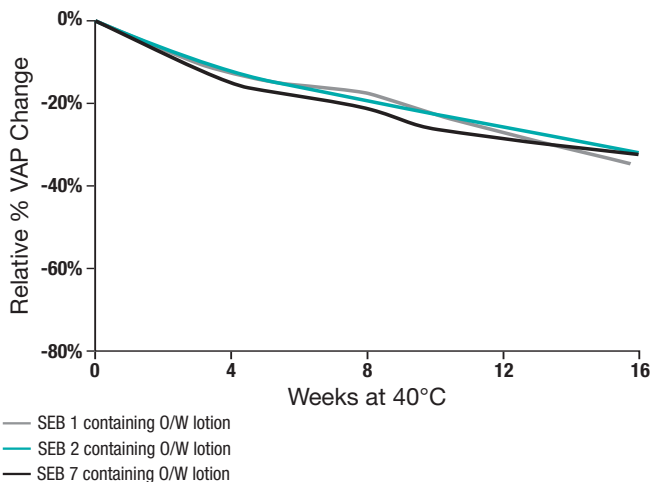


Figure 3

40°C Aging Stability of SEB Entrapped VAP in Body Lotions



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