

## Emulsifier for O/W emulsions with a velvety-silky skin feel

### Intended use

O/W emulsifier

### Benefits at a glance

- For sprayable emulsions, creams and lotions
- Cold processable emulsions are possible
- Long-lasting skin smoothing perception
- Low usage concentration (1.5 – 3.0%)
- Formulations with a wide range of cosmetic oils
- Easy to handle (liquid and clear down to 0 °C)

### INCI (PCPC name)

Bis-PEG/PPG-16/16 PEG/PPG16/16 Dimethicone;  
Caprylic/Capric Triglyceride

#### Chemical and physical properties (not part of specifications)

Form	Liquid
HLB value	Approx. 10

### Properties

- ABIL® Care 85 is a silicone based nonionic emulsifier for oil-in-water emulsions. Due to its specific chemical structure a maximum contribution of silicone character to the skin feel is realized.
- The specific characteristic of ABIL® Care 85 is its strong impact on the after feel of emulsion preparations.
- ABIL® Care 85 can even overcome the negative influence of other ingredients, for example the tackiness of glycerine or the dry feel of waxy stabilizers.

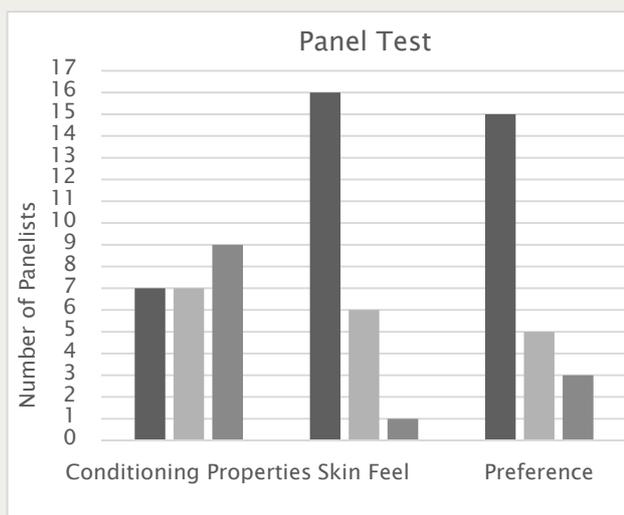
- The usage concentration of ABIL® Care 85 is 1.5 – 3.0% depending on the type and amount of co-emulsifier used.
- For cold processed formulations a viscosity enhancing and stabilizing system is necessary. A combination of Carbomer and Xanthan Gum is recommended. For optimization of heat and cold stability ABIL® Care 85 should be combined with low amounts of a hydrophilic co-emulsifier, e. g. 0.2% TEGO® SMO 80 V (Polysorbate 80).
- For hot processed creams with waxy consistency-enhancers a co-emulsifier is required for the formation of liquid-crystalline structures in the external water phase.

For example TEGINACID® C Pellets (Ceteareth-25) at 0.5 – 1.0 % can be used. As consistency-enhancer a combination of TEGIN® M Pellets MB (Glyceryl Stearate), Stearyl Alcohol and Stearic Acid is suggested.

- The formulations have a wide heat and cold stability range, typically they are stable from – 15 °C up to +45 °C.

The remarkable skin feel of ABIL® Care 85 has been proven by a panel test. A commercially available body lotion was compared with a formula containing ABIL® Care 85 as emulsifier. The conditioning properties were comparable to the market product (see Fig. 1). The skin feel of the ABIL® Care 85 lotion is preferred. The preference for the ABIL® Care 85 lotion goes parallel with the preference for skin feel.

The skin feel is the most important influence on the choice and repeat purchase of a product.



	Lotion 1 (ABIL® Care 85)
	Lotion 2 (commercial product)
	No difference

Figure 1: Panel test to prove the skin feel of ABIL® Care 85 in formulations

### Application

ABIL® Care 85 is especially suitable for

- Sprayable emulsions
- Body lotions
- Sunscreen lotions
- After sun lotions
- Skin care creams

### Preparation

#### Sprays and lotions (cold processable)

For this type of formulations both **hot and cold** processing is possible. If oil and water phase are combined hot, the Carbomer/Xanthan Gum should be present in the oil phase before the homogenization step.

The usage level of ABIL® Care 85 is approximately 2%. A co-emulsifier such as TEGO® SMO 80 V is required for sprayable emulsions.

#### Production

The components of the oil phase including ABIL® Care 85 and the components of the water phase are mixed separately. The oil phase is added to the water phase with stirring. Then the coarsely dispersed pre-emulsion is homogenized.

If the oil phase has to be charged into the vessel first due to production facility related conditions, the water phase should be added **without stirring** to the oil phase before the homogenization step (to avoid the formation of a water-in-oil emulsion).

After homogenization the dispersion of Carbomer/Xanthan Gum in oil – at 20% in Mineral Oil or ester oils – is added and the emulsion is homogenized again for a short time. Avoid the use of triglyceride based esters for dispersion of the Carbomer/Xanthan Gum.

The Carbomer is then neutralized with e. g. Sodium Hydroxide (pH value approx. 6.0).

### Creams

Creams require a co-emulsifier. The combination of ABIL® Care 85 at 1.5% and TEGINACID® C Pellets (Cetareth-25) at 0.5 – 1.0% is suggested.

Depending on the formula 4.0 – 6.0% of a consistency-enhancer is required for the formation of viscosity increasing structures in the external water phase. Especially effective is a combination of TEGIN® M Pellets MB (Glyceryl Stearate), Stearyl Alcohol and Stearic Acid in a ratio of e. g. 2 : 1 : 1. The addition of Stearic Acid improves heat stability. Carbomer is added for cold stability.

### Production

Oil and water phases are heated separately to approx. 80 °C. The hot oil phase is added to the hot water phase with stirring. Then it is homogenized (the homogenizer should be placed in the water phase).

If the oil phase has to be charged into the vessel first due to the production facility, the water phase should be added without stirring to the oil phase, then homogenized (to avoid the formation of a water-in-oil emulsion).

After homogenization a dispersion of Carbomer – at 20% in Mineral Oil or ester oils – is added at 60 °C and the emulsion is homogenised again for a short time. Avoid the use of triglyceride based esters for dispersion of the Carbomer. During cooling under continuous moderate stirring the viscosity of the initially low viscous emulsion increases to a cream viscosity due to the solidification of the hydrated consistency-enhancers.

Fragrance, heat sensitive or electrolyte containing active ingredients are added between 40 and 35 °C. The Carbomer can be neutralized with e.g. Sodium Hydroxide between 60 and 35 °C.

## Suggested usage concentration

1.5 – 3.0% ABIL® Care 85

## Hazardous goods classification

Information concerning

- classification and labelling according to regulations for transport of chemicals
- protective measures for storage and handling
- measures in case of accidents and fire
- toxicological and ecotoxicological effects

is given in our safety data sheets.

## Guideline formulations

If you are interested in guideline formulations please visit our homepage <https://personal-care.evonik.com>.

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**Evonik Nutrition & Care GmbH**  
Goldschmidtstraße 100  
45127 Essen, Germany  
PO Box, 45116 Essen, Germany  
Phone +49 201 173 2546  
Fax +49 201 173 712546  
[personal-care@evonik.com](mailto:personal-care@evonik.com)  
[www.evonik.com/personal-care](http://www.evonik.com/personal-care)

