

# TEGO® Care CG 90

## Sugar based, very efficient emulsifier for PEG-free O/W lotions and creams

### Intended use

O/W emulsifier

### Benefits at a glance

- Emulsifier for "natural" O/W emulsions with excellent application properties
- Sprayable emulsions are possible
- Very low usage concentration (~ 1%)
- Suitable for wide range of oil phase level and content
- Concentrated, PEG-free emulsifier of vegetable origin

### INCI (PCPC name)

Cetearyl Glucoside

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

Form	powder
HLB value	approx. 13

### Properties

- Only 1.0 – 1.5% of TEGO® Care CG 90 is needed to form an emulsion.
- The emulsions formed show excellent cosmetic properties with very good spreadability and an enhanced soft skin feel.
- TEGO® Care CG 90 is suitable for the formulation of O/W lotions and creams.
- Using Potassium Stearate as a co-emulsifier sprayable emulsions are also possible.

- The low usage level of TEGO® Care CG 90 allows the formulator to use a wide range of oil phase levels and content.
- The oil phase components can be selected from mineral oil, vegetable oils and synthetic esters that will enable the formulator to vary the application profile of the emulsion. Low viscosity oil phase components give a higher spreadability. The skin feel is modified by the oil phase composition.
- Lotions and creams based on TEGO® Care CG 90 show good application and stability properties, if lotions will contain 10 – 2% of oil phase; and creams 20 – 35% of oil phase.
- TEGO® Care CG 90 based formulas do not whiten the skin on application.
- The lotions and creams have a wide heat and cold stability range; typically, they are stable from –15 °C up to +45 °C.
- TEGO® Care CG 90 is a nonionic, PEG-free emulsifier and is hydrolytically stable.
- TEGO® Care CG 90 is vegetable based.

### Application

TEGO® Care CG 90 is especially suitable for low viscosity lotions (sprays), lotions, creams and foams for:

- Facial and body care
- Baby care
- Sun care

## Preparation

### Lotions

The suggested usage concentration of TEGO® Care CG 90 is approx. 1%. TEGO® Care CG 90 should be added to the water phase.

As an auxiliary ingredient to improve the freeze stability TEGO® Carbomer 141 should be used at a level of approx. 0.20%.

The viscosity profile can be adjusted by using TEGIN® 4100 Pellets (Glyceryl Stearate) and Stearic Acid.

We recommend for the preparation of lotions to heat oil and water phases separately to approx. 80 °C.

The oil phase is added to the water phase with stirring. The coarsely dispersed pre-emulsion is then homogenized.\*

If necessary, because of production considerations the water phase can be added to the oil phase **without stirring** (to avoid the building of the water-in-oil form) and start afterwards with the homogenization.\*

After homogenization the dispersion of TEGO® Carbomer 141 in oil – at 20% in Mineral Oil or ester oils such as TEGOSOFT® OS (Ethylhexyl Stearate) – is added and the emulsion is homogenized again for a short time. Avoid the use of triglyceride based esters for dispersion of the Carbomer. During cooling, a constant horizontal and vertical movement of the emulsion is needed. Perfume, temperature-sensitive substances or electrolyte containing ingredients should be added at 35 – 45 °C.

Neutralization of the emulsion is completed at approx. 35 °C.

### Sprays

For sprayable lotions the suggested usage concentration is 0.5%. Potassium Stearate at 0.5% is recommended as a co-emulsifier to prevent the formation of particles in the emulsion. A special stabilizing system is needed. The combination of Carbomer and an alkyl-modified crosspolymer proved to be especially effective. The preparation is analogous to the preparation of lotions.

### Creams

TEGO® Care CG 90 should be used at a level of 1.0 to 1.5%. We recommend adding the emulsifier to the water phase.

Depending on the formulation, 0.1 – 0.3% of TEGO® Carbomer 134 and 3 – 5% of consistency promoting substances are needed for the formation of viscosity-increasing gel structures in the external water phase. Combinations of TEGIN® 4100 Pellets (Glyceryl Stearate), Stearic acid, TEGO® Alkanol 16 (Cetyl Alcohol), Stearyl Alcohol or TEGO® Alkanol 1618 (Cetearyl Alcohol) have proved most effective.

Usage of TEGO® Carbomer 134 improves the freeze stability.

We recommend for the preparation of creams to heat oil and water phases separately to approx. 80 °C.

The oil phase is added to the water phase with stirring. The coarsely dispersed pre-emulsion is then homogenized.\*

If necessary because of production considerations the water phase can be added to the oil phase **without stirring** (to avoid the building of the water-in-oil form) and then homogenized.\*

After homogenization the dispersion of TEGO® Carbomer 134 in oil – at 20% in Mineral Oil or ester oils such as TEGOSOFT® OS (Ethylhexyl Stearate) – is added and the emulsion is homogenized again for a short time. Avoid the use of triglyceride based esters for dispersion of the Carbomer.

During cooling, a constant horizontal and vertical movement of the emulsion has to be ensured. The viscosity of the liquid emulsion increases to a creamy consistency, as the hydrated consistency promoters solidify.

Perfume, temperature-sensitive substances or electrolyte containing ingredients should be added at 35 – 45 °C.

Neutralization of the emulsion is completed at approx. 35 °C.

\* The homogenizer must be placed in the water phase.

### Recommended usage concentration

1.0 – 1.5% TEGO® Care CG 90

### Packaging

180 kg pallet (12 x 15 kg)

### Storage

The product should be stored protected from humidity.

### Hazardous goods classification

Information concerning

- classification and labelling according to regulations for transport and for dangerous substances
- protective measures for storage and handling
- measures in accidents and fires
- toxicity and ecological effects

is given in our material safety data sheets.

## Guideline formulations

O/W Moisturizing Body Lotion SZ 37/14-3		
<b>Phase A</b>		
TEGIN® 4100 Pellets (Glyceryl Stearate)		0.50%
Stearic Acid		0.50%
TEGOSOFT® MM (Myristyl Myristate)		1.00%
TEGOSOFT® OP (Ethylhexyl Palmitate)		4.20%
TEGOSOFT® APM (PPG-3 Myristyl Ether)		3.00%
Cyclopentasiloxane		5.00%
ABIL® 350 (Dimethicone)		0.30%
Tocopheryl Acetate		0.50%
<b>Phase B</b>		
TEGO® Care CG 90		1.00%
TEGO® Care SE 121 (Sucrose Stearate)		2.00%
Panthenol		0.50%
Allantoin		0.20%
Glycerin		3.00%
Water		75.70%
<b>Phase C</b>		
TEGO® Carbomer 141 (Carbomer)		0.20%
TEGOSOFT® OP (Ethylhexyl Palmitate)		0.80%
<b>Phase D</b>		
Sodium Hydroxide (10% in water)		0.60%
<b>Phase E</b>		
Phenoxyethanol; Ethylhexylglycerin (Euxyl PE 9010, Schülke & Mayr GmbH)		1.00%
<b>Preparation:</b>		
<ol style="list-style-type: none"> <li>1. Heat phase A and B to approx. 80 °C.</li> <li>2. Add phase A to phase B with stirring.<sup>1)</sup></li> <li>3. Homogenize.</li> <li>4. Cool with gentle stirring to approx. 60 °C and add phase C.</li> <li>5. Homogenize for a short time.</li> <li>6. Cool with gentle stirring and add phase D/E below 40 °C.</li> </ol>		
<sup>1)</sup> <b>Important:</b> If phase A has to be charged into the vessel first, phase B must be added <b>without stirring</b> .		

O/W Anti-Aging Cream with SK-INFLUV® V WR 3/16-1		
<b>Phase A</b>		
TEGO® Alkanol 1618 (Cetearyl Alcohol)		3.00%
TEGIN® 4100 Pellets (Glyceryl Stearate)		1.00%
Stearic Acid		1.00%
TEGOSOFT® liquid (Cetearyl Ethylhexanoate)		5.00%
TEGOSOFT® DC (Decyl Cocoate)		4.00%
TEGOSOFT® CI (Cetearyl Isononanoate)		5.00%
Tocopheryl Acetate		2.00%
<b>Phase B</b>		
TEGO® Care CG 90		1.00%
Glycerin		3.00%
Allantoin		0.10%
SK-INFLUX® V (Ceramide NP; Ceramide AP; Ceramide EOP; Phytosphingosine, Cholesterol, Sodium Lauroyl Lactylate; Carbomer; Xanthan Gum)		5.00%
Water		68.47%
<b>Phase C</b>		
TEGO® Carbomer 134 (Carbomer)		0.10%
Mineral Oil (30 mPas)		0.40%
<b>Phase D</b>		
Sodium Hydroxide (10% in water)		q.s.
<b>Phase E</b>		
Benzyl Alcohol; Ethylhexylglycerin; Tocopherol (Euxyl K 900, Schülke & Mayr GmbH)		0.70%
<b>Preparation:</b>		
<ol style="list-style-type: none"> <li>1. Heat phase A and B separately to approx. 80 °C.</li> <li>2. Add phase A to phase B with stirring<sup>1)</sup>.</li> <li>3. Homogenize.</li> <li>4. Cool with gentle stirring to approx. 60 °C and add phase C.</li> <li>5. Homogenize for a short time.</li> <li>6. Cool with gentle stirring and add phase D and E below 40 °C.</li> </ol>		
<sup>1)</sup> <b>Important:</b> If phase A has to be charged into the vessel first, phase B must be added <b>without stirring</b> .		

<b>Ultra Light and Cooling Lotion</b>	
<b>JS 3/15-3</b>	
<b>Phase A</b>	
TEGO® Care CG 90	1.50%
TEGOSOFT® PC 31 (Polyglyceryl-3 Caprate)	0.50%
TEGOSOFT® DEC (Diethylhexyl Carbonate)	5.00%
TEGOSOFT® TN (C12-15 Alkyl Benzoate)	3.00%
Cyclopentasiloxane	2.00%
Phytosphingosine SLC (Salicyloyl Phytosphingosine)	0.10%
<b>Phase B</b>	
Water	82.17%
Glycerin	2.00%
Gellan Gum ( KELCOGEL CG-HA, CP Kelco)	0.03%
TEGO® Carbomer 341ER (Acrylates/C10-30 Alkyl Acrylates Crosspolymer) (2% in water)	2.50%
TEGO® Feel Green (Cellulose)	1.00%
<b>Phase C</b>	
Sodium Hydroxide (10% in water)	q.s.
<b>Phase D</b>	
Phenoxyethanol; Ethylhexylglycerin (Euxyl PE 9010, Schülke & Mayr GmbH)	0.70%
<b>Phase Z</b>	
Perfume	q.s.
<b>Preparation:</b>	
<ol style="list-style-type: none"> <li>1. Disperse Gellan Gum in water and heat to 85 °C. Then add other ingredients of phase B.</li> <li>2. Heat phase A to approx. 80 °C.</li> <li>3. Add phase B to phase A without stirring.</li> <li>4. Homogenize.</li> <li>5. Cool with gentle stirring and add phase C below 40 °C.</li> <li>6. Add phase D below 30 °C and stir well.</li> </ol>	

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