Technical Information

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	
Phase A	
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%
Phase 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%
Phase C	
TEGO® Carbomer 141 (Carbomer)	0.20%
TEGOSOFT® OP (Ethylhexyl Palmitate)	0.80%
Phase D	
Sodium Hydroxide (10% in water)	0.60%
Phase E	
Phenoxyethanol; Ethylhexylglycerin (Euxyl PE 9010, Schülke & Mayr GmbH)	1.00%

Preparation:

1. Heat phase A and B to approx. 80 °C.
2. Add phase A to phase B with stirring.[1)]
3. Homogenize.
4. Cool with gentle stirring to approx. 60 °C and add phase C.
5. Homogenize for a short time.
6. Cool with gentle stirring and add phase D/E below 40 °C.

[1)] Important: If phase A has to be charged into the vessel first, phase B must be added **without stirring**.

O/W Anti-Aging Cream with SK-INFLUV® V WR 3/16-1	
Phase A	
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%
Phase 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%
Phase C	
TEGO® Carbomer 134 (Carbomer)	0.10%
Mineral Oil (30 mPas)	0.40%
Phase D	
Sodium Hydroxide (10% in water)	q.s.
Phase E	
Benzyl Alcohol; Ethylhexylglycerin; Tocopherol (Euxyl K 900, Schülke & Mayr GmbH)	0.70%

Preparation:

1. Heat phase A and B separately to approx. 80 °C.
2. Add phase A to phase B with stirring1).
3. Homogenize.
4. Cool with gentle stirring to approx. 60 °C and add phase C.
5. Homogenize for a short time.
6. Cool with gentle stirring and add phase D and E below 40 °C.

[1)] Important: If phase A has to be charged into the vessel first, phase B must be added **without stirring**.

Ultra Light and Cooling Lotion JS 3/15-3	
Phase A	
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%
Phase 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%
Phase C	
Sodium Hydroxide (10% in water)	q.s.
Phase D	
Phenoxyethanol; Ethylhexylglycerin (Euxyl PE 9010, Schülke & Mayr GmbH)	0.70%
Phase Z	
Perfume	q.s.

Preparation:

1. Disperse Gellan Gum in water and heat to 85 °C. Then add other ingredients of phase B.
2. Heat phase A to approx. 80 °C.
3. Add phase B to phase A without stirring.
4. Homogenize.
5. Cool with gentle stirring and add phase C below 40 °C.
6. Add phase D below 30 °C and stir well.

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Product specification

Material TEGO CARE CG 90
Spec.Code K00 STANDARD

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Inspection Characteristics	Method	Limits	Units	Z
Hydroxyl value	GM_0020_01	580 - 700	mg KOH/g	X
Iodine value	GM_0050_01	<=1.00	g I/100g	C
Acid Value	GM_0010_01	<= 2	mg KOH/g	X
Water Content	GM_0080_01	<= 4	%	X

Report on inspection certificate: X = specific/actual value, C = unspecific value/conformity, T = not reported

Appearance: white to ivory powder

odor: characteristic

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This product only starting with an E or D in the batch

number is certified according to the rules set out by the

RSPO, Supply Chain Mass balance (MB).

RSPO Certification RSPO-V-14-13553.

This document is computer printed and therefore valid without signature.

The Standard Test Methods can be obtained from specialized publishers. Evonik's test methods are available on request.

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TEGO® Care CG 90

Product data record

1. General information

1.1 Manufacturer/Supplier

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1.2 Product Description

1.2.1 Raw material category O/W Emulsifier

1.2.2 Ingredients according to INCI

Cetearyl Glucoside

1.2.3 Composition

Components	Source	Ratio
Cetearyl Glucoside	vegetable	approx. 90 %
Cetyl Alcohol	vegetable	approx. 4.6 %
Stearyl Alcohol	vegetable	approx. 4.6 %
Water		approx. 0.8 %

This composition information serves for information of our customers only.
It is neither relevant for the composition listing according to Regulation (EC) No 1223/2009, nor does it reflect the chemical composition according to the different chemical regulations in the world which is disclosed in the table "information on ingredients/hazardous components" in the relevant parts of the respective (Material) Safety Data Sheets.

1.2.4 Solvents, preservatives and other additives

	CAS No./ REACH Reg. No.	EINECS / EC No.	content	Function
Cetyl Alcohol	36653-82-4 01-2119485905-24	253-149-0	approx. 4.6 %	starting material

Stearyl Alcohol	112-92-5 01-2119485907-20	204-017-6	approx. 4.6 %	starting material
Water	7732-18-5 exempt	231-791-2	approx. 0.8 %	solvent

No components which are listed in Annex II of the Regulation (EC) No 1223/2009 and its modifications and updates are added to and are not to be expected in the above mentioned product due to the raw materials used and the production process.

2. Information on production process

General description of production process:
TEGO® Care CG 90 is produced by etherification of glucose with cetearyl alcohol

The product is not irradiated.

TEGO® Care CG 90 is produced in the strictest absence of any animal derived material of any type.

Residual plant based source (dominant origin of main constituents): palm oil, corn

GMO-Status:
The item contains ingredients derived from corn (including oils and other refined ingredients), but these ingredients are sourced from an "Identity Preserved" programme and can be certified NON-GM.
However max 0.9 % cross-contamination is possible. Any protein or DNA is not present. Consequently the product will be PCR negative when tested.

2.1 By products

		method
Residual solvents	not applicable	
Free amines	not applicable	
Nitrosamines	not applicable	
Monochloroacetic acid	not applicable	Chromatography
Dichloroacetic acid	not applicable	Chromatography
1,4-Dioxane	not applicable	
Pesticides	meets the valid regulatory requirements for limits on agricultural pesticides	
Total heavy metals	max. 20 ppm	AAS-ICP
As, Cd, Co, Cr, Hg, Ni, Pb, Sb	Each < 1 ppm	AAS-ICP
Latex	not to be expected in the product due to the raw materials used and the production process	
VOC	< 3 % according to SR (Swiss Right) 814.018	

2.2 CMR (Carcinogenic, Mutagenic or Reprotoxic)

The use in cosmetic products of substances classified as CMR substances, of category 1A or 1B or 2 under Part 3 of Annex VI to Regulation (EC) No 1272/2008 shall be prohibited.

Further Information:
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:342:0059:0209:en:PDF

Some of the CMR substances mentioned below and listed in Annex VI to Regulation (EC) No 1272/2008 are used as starting materials or solvents for the production of our cosmetic raw materials and may require reporting under California Proposition 65 or the Safe Cosmetics Act, SB 484.

The presence of these prohibited substances has to be seen as non-intended. It is stemming from impurities of the starting materials or the manufacturing process which is technically unavoidable in good manufacturing practice.

CMR substance	Starting material	max. concentration	method
Ethylene Oxide	no		
Propylene Oxide	no		
Octamethylcyclotetrasiloxane (D4)	no		
2-Ethylhexanoic Acid	no		
n-Hexane	no		
Methyl Chloride	no		
Dimethyl Sulphate	no		

2.3 "Allergens" according to the Regulation (EC) No 1223/2009

The presence of substances, the mentioning of which is required under the column 'Other' in Annex III, shall be indicated in the list of ingredients in addition to the terms perfume or aroma.

The cosmetic raw materials and the cosmetic actives supplied by Evonik Personal Care are manufactured without the use of perfumes and fragrances. An analytical proof for the absence in traces of the substances to be mentioned in addition to the terms perfume or aroma is not performed in cosmetic raw materials, which are chemically produced.

None of these substances have been intentionally added to our cosmetic raw materials or are formed during the manufacturing process according to our knowledge of the chemistry.

2.4 Food Ingredients listed in Annex II of Regulation (EU) No 1169/2011

None of these substances have been intentionally added to our cosmetic raw materials or are formed during the manufacturing process according to our knowledge of the chemistry.

3. Microbiological status

Total Viable Count	max. 100 cfu/g
Pathogens*	absent/g

*Pathogens are: Enterobacteria, Pseudomonas, Enterococci, Candida albicans, Staphylococci

4. Shelf life / storage conditions

24 months after production (unopened original packaging)

5. Regulatory Status

5.1 Customs tariff number 38249993

5.2 Regulatory status (chemical regulations)

Europe

Components	REACH status	CAS No.	EINECS / EC No.
Cetearyl Glucoside	pre-registered	54549-27-8 27836-65-3	259-220-2 248-686-2

Other countries

Country		yes / no	Remark
Australia	AICS:	yes	CAS No. 246159-33-1
China	IECSC:	yes	
Canada	DSL: NDSL:	no	both CAS Nos. are on the revised ICL
Taiwan	TCSI:	yes	

In the following countries the relevant authorities currently do not require pre-market approval for cosmetic raw materials:

Brazil, Japan, South Korea, Philippines, USA

5.2.1 Regulatory status (cosmetic regulation)

Country		yes / no	Remark
China	CFDA:	yes	
Japan	JSQI:	yes	JSQI No. 523141, but specifications not controlled

6. Toxicology and Ecotoxicology

Refer to summary of ecotoxicological and toxicological data