

TEGO® Care PS

Emulsifier for the formulation of O/W creams and lotions

Intended use

O/W emulsifier

Benefits at a glance

- Low usage concentration of 2 – 4%
- Emulsifier for O/W emulsions with a bright white appearance and pleasant application properties
- Formulations with all kinds of cosmetic oils
- High compatibility with active ingredients
- Stable creams from pH 3.5 up to 8.5; lotions from pH 5.5 to 8.5
- Emulsions with high heat and freeze stability
- PEG-free emulsifier
- Vegetable-based raw materials

INCI (PCPC name)

Methyl Glucose Sesquistearate

Chemical and physical properties (not part of specifications)

Form	pellets
Color	light yellow
HLB value	approx. 12

Application

TEGO® Care PS is a non-ionic, PEG-free emulsifier based on natural renewable raw materials.

- TEGO® Care PS is suitable for the formulation of O/W creams and lotions.
- The amount used, referred to the emulsion, is 2.0 – 3.0% for lotions, approx. 2.0 – 4.0% for creams.
- Creams based on TEGO® Care PS show good application and stability properties, if they contain 20 – 40% of oil phase; lotions should contain 15 – 25% of oil phase.
In addition to the lipoid ingredients, emulsifiers and consistency promoters are included as parts of the oil phase, even though a considerable amount of them will move to the water phase during emulsification to form viscosity-increasing gel structures there.
- TEGO® Care PS forms stable emulsions with all common oils and fats used for skin care products, including polar oils. Thus it gives the possibility to adjust the application properties of the emulsion by the choice of the oils: the better the spreading properties and the lower the viscosities of the oils are, the "lighter" the resulting emulsions are. The application properties may also be adjusted by varying the quantity of the oil phase.
- For the formulation of lotions consistency-providing substances such as 0 – 3% cetyl and/or stearyl alcohol may be needed. To increase heat stability a rheological additive such as 0.15 to 0.20% of TEGO® Carbomer 141 should be added.
- For the preparation of creams, depending on the formulation, additional 2 – 7% of consistency-providing substances may be needed for the formation of viscosity-enhancing gel structures in

the external water phase. Blends of TEGIN® M (glycerol stearate) and stearic acid or cetyl/stearyl alcohol have proved most effective. These form liquid-crystalline structures in the water phase, the viscosity of the external phase is increased and the emulsion is stabilized.

By addition of max. 0.2% TEGO® Carbomer 134 the amount of consistency-providing substances can be reduced. Furthermore the stability of creams towards freeze will improve significantly.

- Substances with specific properties, such as UV filters, plant extracts, protein derivatives and moisturisers are well tolerated by the emulsion.
- TEGO® Care PS is well suited for emulsions containing higher amounts of electrolytes.
- TEGO® Care PS is used in slightly acidic to neutral emulsions; however, slightly alkaline adjustments are possible (pH 3.5 to pH 8.5 in creams, pH 5.5 to 8.5 in lotions).
- The creams and lotions are distinguished by high stability towards heat and freezing stress; stability between -25 °C and +45 °C is attainable.

Preparation

TEGO® Care PS belongs to the group of the so called lipid emulsifiers. The HLB value of these emulsifiers is lower in comparison to ethoxylated emulsifiers.

If the production takes place with the for ethoxylates common method (add the hot water phase slowly to the hot oil phase while stirring) it could happen that a water-in-oil emulsion be formed (recognizable by high viscosity and transparent/gel-like appearance). During the cooling process this emulsion converts to an oil-in-water emulsion with great particle size.

We therefore recommend for the preparation of creams to heat oil phase and water phase separately to approx. 65 °C; for lotions oil phase and water phase are heated separately to 80 °C.

Furthermore we recommend adding the hot oil phase to the hot water phase **while stirring**. The coarsely dispersed pre-emulsion is then homogenized.

If the above mentioned processing is not possible, we recommend to combine the hot water and oil phase **without stirring** (to avoid the building of the water-in-oil form) and start afterwards with the homogenisation.

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.

The dispersion of TEGO® Carbomer 141 or TEGO® Carbomer 134 in oil (e.g. in mineral oil, decyl oleate, octyl stearate; not in triglycerides) is added at 60 °C. Then the emulsion is homogenized again.

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

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

The particle size of the dispersed oil droplets of long-term stable emulsions is approx.

1 - 5 µm. More coarsely dispersed emulsions tend to separate.

Recommended usage concentration

2.0 - 4.0%

Packaging

600 kg pallet (24 x 25 kg)

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 Cream with AHA F 68/96	
Phase A	
TEGO® Care PS	4.0%
Decyl Oleate	8.5%
TEGOSOFT® OS (Ethylhexyl Palmitate)	8.5%
TEGIN® M Pellets (Glyceryl Stearate)	2.0%
TEGO® Alkanol 18 (Stearyl Alcohol)	2.0%
Phase B	
Glycerin	2.0%
Water	63.0%
Phase C	
Water	6.4%
Malic Acid	1.5%
Citric Acid	1.5%
Sodium Hydroxide (10% in water)	0.6%
Phase Z	
Preservative, Perfume	q.s.
Preparation:	
<ol style="list-style-type: none"> 1. Heat phase A and phase B separately to 70 – 75 °C. 2. Add phase A to phase B with stirring¹⁾. 3. Homogenize. 4. Cool with gentle stirring and add phase C below 40 °C. 5. Adjust the pH to approx. 4.0 . 	
¹⁾ Important: If phase A has to be charged into the vessel first, phase B must be added without stirring .	

O/W Antiperspirant Lotion, PEG-free MK 65/05-21	
Phase A	
TEGO® Care PS	1.75%
TEGO® Care PL 4 (Polyglyceryl-4 Laurate)	0.25%
TEGOSOFT® DEC (Diethylhexyl Carbonate)	3.50%
TEGOSOFT® PBE (PPG-14 Butyl Ether)	3.50%
TEGO® Cosmo P 813 (Polyglyceryl-3 Caprylate)	0.50%
Phase B	
Hydroxyethyl Cellulose (Natrosol 250 HHR)	1.00%
Water	74.50%
Phase C	
Aluminum Chlorohydrate (Reach 501 L, Reheis)	15.00%
Phase Z	
Preservative, Perfume	q.s.
Preparation:	
<ol style="list-style-type: none"> 1. Heat phase A and B separately to approx. 70 – 75 °C. 2. Add phase A to phase B with stirring¹⁾. 3. Homogenize. 4. Cool with gentle stirring. 5. Add phase C below 40 °C. 	
¹⁾ Important: If phase A has to be charged into the vessel first, phase B must be added without stirring.	

Caring O/W Body Lotion	
F 1/99	
Phase A	
TEGO® Care PS	2.0%
TEGOSOFT® OS (Ethylhexyl Stearate)	5.0%
TEGOSOFT® MM (Myristyl Myristate)	1.0%
Mineral Oil (30 mPas)	5.7%
Tocopheryl Acetate	0.5%
Phase B	
Glycerin	3.0%
Panthenol	0.5%
Water	81.0%
Phase C	
TEGO® Carbomer 141 (Carbomer)	0.2%
Mineral Oil (30 mPas)	0.8%
Phase D	
Sodium Hydroxide (10% in water)	0.3%
Phase Z	
Preservative, Perfume	q.s.
Preparation:	
<ol style="list-style-type: none"> 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 below 40 °C. 	
¹⁾ Important: If phase A has to be charged into the vessel first, phase B must be added without stirring.	

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Product specification

Material TEGO CARE PS
Spec.Code K00 STANDARD

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Inspection Characteristics	Method	Limits	Units	Z
Iodine value	GM_0050_04	<=5.00	g l/100g	X
pH-Value 5 %	GM_0132_01	7.5-8.5		X
Acid Value	GM_0010_01	15.00-25.00	mg KOH/g	X
Saponification Value	GM_0030_01	127.0-137.0	mg KOH/g	X
Water Content	GM_0080_01	<=1.50	%	X

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

This document is computer printed and therefore valid without signature.

All warranty claims in respect of the conformity of our product are subject to our General Terms and Conditions of Sale and Delivery. The data listed above reflects the criteria for our internal quality tests. We do not hereby make any express or implied warranty, whether for specific properties or for fitness for any particular application or purpose. All values are valid for the product when despatched from the works.

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

Material: TEGO CARE PS		Spec-Code: K00 STANDARD	Page 1 from 1
Print date: 06.07.2015	Valid from: 14.06.2007	Version: 4	

TEGO® Care PS

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

Methyl Glucose Sesquistearate

1.2.3 Composition

Components	Source	Ratio
Methyl Glucose Sesquistearate	vegetable / synthetic	100 %

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.	EINECS / EC No.	content	Function
no additives				

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:
 Esterification product

The product is not irradiated.

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

Origin of vegetable starting material: rapeseed oil, corn

GMO-Status:

The item contains ingredients derived from rapeseed and 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	Chromatography
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 parfum 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 parfum 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 IIIa of Commission Directive 2007/68/EC.

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 29400000

5.2 Regulatory status (chemical regulations)

Europe

Components	REACH status	CAS No.	EINECS / EC No.
Methyl Glucose Sesquistearate	Reg.-No. 01-2119969646-19	not assigned	939-238-3

Other countries

Country		yes / no	Remark
Australia	AICS:	yes	CAS No. 68936-95-8
China	IECSC:	yes	CAS No. 68936-95-8
Canada	DSL: NDSL:	yes	CAS No. 68936-95-8
Taiwan	TCSI:	yes	CAS No. 68936-95-8

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. 503088, but specifications not controlled

6. Toxicology and Ecotoxicology

Refer to summary of ecotoxicological and toxicological data