Technical Information

# dermofeel® GO soft

## Cost-effective W/O emulsifier with unique sensorial profile

### Intended use

W/O emulsifier

### Benefits at a glance

- 100% naturally derived PEG-free emulsifier
- Allows the formulation of cost-effective W/O creams
- This emulsifier gives a lighter and softer touch to W/O-emulsions which still remain caring and protective.
- Emulsions are easily spreadable and absorb fast to the skin.

### INCI (PCPC name)

Polyglyceryl-2 Sesquioleate

**dermofeel® GO soft** is CFDA registered.
It is Ecocert and Cosmos certified and vegan according to the definition of the European Vegetarian Union.

### Structure

**dermofeel® GO soft** is a sunflower and rape seed oil based polyglyceryl W/O emulsifier.

### Properties

It is a brownish viscous liquid and has an HLB value of approx. 4.

### Application

- **dermofeel® GO soft** is perfectly suitable for W/O-emulsions with medium to high viscosity range of ~ 20.000 and 100.000 mPas.
- The emulsifier creates white, glossy W/O-emulsions with gel-like to creamy texture.
- As typical usage concentration of 0.5 - 4.0% **dermofeel® GO soft** is recommended depending on the type of formulation (see suggested usage concentration).
- It is recommended to combine **dermofeel® GO soft** with consistency enhancing agents, e.g., Cetyl Palmitate, **dermofeel® viscolid MB** and/or ~ 2 % waxes (e.g. Hydrogenated Castor Oil or Cera Alba).
- It is possible to process W/O lotions based on **dermofeel® GO soft** cold/cold. In cold processed formulations a viscosity enhancing and stabilizing system in the oil phase is necessary. 0.5-1.0% Zinc Stearate proved to be most effective.
- It is compatible with many kinds of emollients and oils. It can be used for oil phases from 15-35% (ideally 25 - 30%). Max. 5% vegetable oils, in combination with medium or (ideally) non-polar oils should be used. Non-polar or mixed polarity oils work best.
- Besides being useable for natural cosmetics **dermofeel® GO soft** can be used as well for classical emulsions as it is also compatible with silicone oils.
- The emulsifier tolerates up to 5% Ethanol.
- Electrolytes are required in amounts of approx. 0.7 to 2.0%. Amongst others, Zinc Sulfate Heptahydrate is best suitable.
- Typical application are systems such as body balms or night creams combining caring properties with a soft and light skin feel.

### Preparation

A pre-requisite for this is careful adjustment of the formulation (phase ratio, viscosity of the oil phase) and optimum emulsification.

The favorable droplet size for W/O is typically in the range of 1 - 4 µm. More coarsely dispersed emulsions tend to separate upon storage.

Thorough, but not too intensive homogenization is required. Extreme energy input frequently causes the formation of highly viscous, metastable secondary structures which break down on storage.

Optimum manufacturing conditions correspond to the principles of typical production processes for W/O emulsions.

The water phase is incorporated slowly into the oil phase which contains the emulsifier while stirring intensively. The coarsely dispersed pre-emulsion is then homogenized. The final homogenization should be performed below 30 °C.

The temperature program is variable and can take the form of:

- hot/hot procedure (H/H)
- hot/cold procedure (H/C)
- cold/cold procedure (C/C)

In addition to the traditional hot/hot procedure (both phases 80 – 90 °C) the hot/cold procedure can be used. It is characterized by incorporation of the cold water phase (15 – 30 °C) into the hot oil phase which significantly shortens the time of manufacture. Homogenization should be carried out below 30 °C in order to ensure that the waxes have recrystallized.

The decisive criterion for production is the viscosity. Mechanical processing is discontinued when the viscosity is equal to that of the standard emulsion developed and tested in the laboratory.

## Influence on the viscosity of the emulsion

The viscosity of W/O emulsions based on dermofeel® GO soft can be adjusted by three variables: viscosity of the oil phase, ratio between water and oil phase and droplet size distribution.

## Emulsifying machines

Stirring equipment or planetary mixers with high sheering force are suitable for the manufacture of creams and lotions in the laboratory and production scale, provided that they can insure uniform work-up of the emulsion. Machines predominately used in the cosmetic industry, which are equipped with stirrer, stripper and rotor-stator homogenizer, fulfil all requirements for optimum emulsification.

However, utilization of their maximum capacity may result in over-emulsification. High-pressure emulsifiers may cause problems because of the danger of over-emulsification and liberation of water due to cavitation.

## Recommended usage concentration

| | |
|---|---|
| 2.0 – 4.0% | as primary emulsifier |
| 0.5 – 2.0% | as co-emulsifier in W/O formulations |
| 0.5 – 1.0% | as film former in O/W formulations |

## 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

**Natural Care and Cleansing Oil (L014-235.6-0118)**

**Phase A**

| | |
|---|---|
| Helianthus Annuus (Sunflower) Seed Oil | 36.00% |
| **dermofeel® GO soft** (Polyglyceryl-2 Sesquioleate) | 5.00% |
| **dermosoft® DGMC MB** (Polyglyceryl-2 Caprate) | 2.00% |
| **dermofeel® sensolv MB** (Isoamyl Laurate) | 35.00% |
| Sesamum Indicum (Sesame) Seed Oil | 16.00% |
| **TEGOSOFT® DC MB** (Decyl Cocoate) | 5.00% |
| **dermofeel® Toco 70 non GMO** (Tocopherol; Helianthus Annuus Seed Oil) | 1.00% |

### Preparation

Mix ingredients in given order.

### Remarks

**Microbiological safety:** challenge test passed
**Natural content $c_n$ (ISO 16128):** 53.0%
**Natural origin content $c_{no}$ (ISO 16128):** 100%

| Hamburg Weather Protection Cream (L014-58.4A-0313) | |
|---|---|
| **Phase A** | |
| Water | 55.35% |
| Glycerin | 7.00% |
| Zinc Sulfate Heptahydrate* | 1.00% |
| **Phase B** | |
| **dermofeel® GO soft** (Polyglyceryl-2 Sesquioleate) | 2.50% |
| **dermosoft® GMC MB** (Glyceryl Caprate) | 0.50% |
| Cera Alba* | 2.00% |
| Hydrogenated Castor Oil* | 1.00% |
| **dermofeel® sensolv MB** (Isoamyl Laurate) | 7.00% |
| Theobroma Grandiflorum Seed Butter; Tocopherol; Helianthus Annuus (Sunflower) Seed Oil (Cupuacu Butter Refined, Beraca) | 2.00% |
| Olus Oil (Softigen Pura, IOI Oleo) | 5.00% |
| **dermofeel® Toco 70 non GMO** (Tocopherol; Helianthus Annuus Seed Oil) | 0.20% |
| Tocopheryl Acetate* | 0.50% |
| **Phase C** | |
| Magnesium Stearate* | 0.70% |
| Squalane (Phytosqualan, veg.grade, Sophim) | 10.00% |
| **Phase D** | |
| Alcohol denat. | 5.00% |
| Perfume | 0.25% |

## Preparation

1. Heat phase A up to. 80 °C under stirring. Adjust pH value to 5.1 – 5.3.
2. Add phase C up to 115 °C under strong stirring until a clear solution is obtained.
3. Add phase B and cool down to 80 °C. Emulsify phase A slowly and stepwise to phase B/C under stirring.
4. Homogenize.
5. Start to cool down under stirring. Add phase D below 30 °C.
6. Homogenize again for a short time.

## Remarks

**Viscosity:** 90000 – 100000 mPa*s (Brookfield: TF; Speed 10 rpm)

**Microbiological safety:** challenge test passed
**Natural content $c_n$ (incl. water, ISO 16128):** 89.4%
**Natural origin content $c_{no}$ (incl. water, ISO 16128):** 100%
*Not considered for calculation of $c_n$ and $c_{no}$

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