Technical Information

dermofeel® viscolid MB

Natural oil thickener

Intended use

Stabilizer

Benefits at a glance

Natural oil thickener for pure oils
- Solidifies the liquid oil phase
- Does not alter the sensory profile
- Creates soft and creamy oil gel textures (non-clear)
- Allows clean & precise application of oil gels on the skin

and creams
- Increases viscosity of W/O emulsions
- Stabilizes the oil phase
- No change of sensorial profile

INCI (PCPC name)

Hydrogenated Vegetable Oil (CFDA: yes)

Chemical and physical properties (not necessarily part of product specifications)

Melting point	~60 °C
Appearance	powder

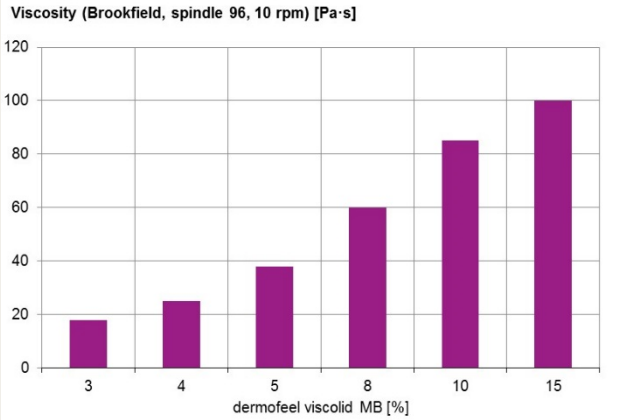
Properties

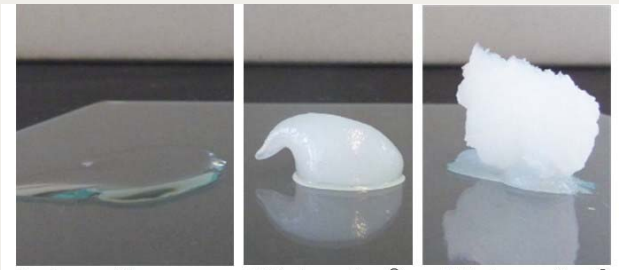
- 100% vegetable-based raw material
- Natural origin index (ISO 16128) I_{no} = 1.00
- Vegan according to the definition of the European Vegetarian Union
- Certificates: Cosmos

Oil gels – Performance, process and technical advices

Performance – Thickening of sunflower oil

The viscosity of the final oil gel depends on the amount of **dermofeel® viscolid MB**. A gel texture is essential to obtain stable formulations (approx. ≥5% **dermofeel® viscolid MB**).





Sunflower Oil | +5% **dermofeel®** **viscolid MB** | +10% **dermofeel®** **viscolid MB**

Performance – Compatibility summary of natural oils & emollients

Emollient	INCI	Oil gel texture RT	Oil gel texture 3m 45°C	Oil gel texture FTC
Almond oil	Prunus Amygdalus Dulcis (Sweet Almond) Oil	+	+	+
Argan oil	Argania Spinosa Kernel Oil	++	+	+
Apricot kernel oil	Prunus Armeniaca (Apricot) Kernel Oil	+	+	+
Avocado oil	Persea Gratissima (Avocado) Oil	+	+	+
Castor oil	Ricinus Communis (Castor) Seed Oil	++	++	+
Grape seed oil	Vitis Vinifera (Grape) Seed Oil	++	+	+
Jojoba oil	Simmondsia Chinensis (Jojoba) Seed Oil	+	++	+/-
Phytosqualan	Squalane	+	-	+/-
Soybean oil	Glycine Soja (Soybean) Oil	++	+	+
Sunflower oil	Helianthus Annuus (Sunflower) Seed Oil	+	+	+
TEGOSOFT® XC MB	Phenoxyethyl Caprylate	+/-	+	-
dermofeel® sensolv MB	Isoamyl Laurate	-	-	+/-
TEGOSOFT® AC MB	Isoamyl Cocoate	+/-	-	+/-
TEGOSOFT® DC MB	Decyl Cocoate	+/-	-	+/-
TEGOSOFT® OER MB	Oleyl Erucate	++	++	+
TEGOSOFT® CT	Caprylic/Capric Triglyceride	+/-	+	-
TEGOSOFT® DEC	Diethylhexyl Carbonate	-	-	-
TEGOSOFT® APM	PPG-3 Myristyl Ether	+	++	+
TEGOSOFT® OS	Ethylhexyl Stearate	+/-	++	+/-

Table: Appearance and stability of oil gels with 5% **dermofeel® viscolid MB**. Room temperature (RT) and after three freeze-thaw-cycles (FTC):
++ gel-like, high consistency
+ gel-like
+/- little gel-like
- non gel-like, little thickening
At 45 °C (after 3 months storage):
++ homogeneous turbid, gel-like at 45 °C and after cooling to RT
+ homogeneous turbid, liquid at 45 °C and gel-like after cooling to RT
- phase separation at 45°C and after cooling to RT

Processing – Formulation hints

1. Mix ingredients and heat to 60-70°C until a clear solution is obtained.
2. Cool with gentle stirring until first turbidities are observed. (*This is when the crystallization process begins, typically in the range of 35-55 °C, depending on the oil (composition)*).
3. Add active ingredients, perfumes etc. below ~40°C (before homogenization). (*For heat sensitive ingredients*)
4. Homogenize with UltraTurrax for 1 minute at 20,500 rpm (lab scale, ~200 g). (*Homogenization is essential in order to create finely dispersed crystallization seeds. Ensure proper homogenization of the complete batch. Strong homogenization is better than extended homogenization. The finer the seeds, the more efficient the crystallization process, and the higher the resulting viscosity, and the smoother overall oil gel appearance.*)
5. Fill immediately into final packaging and leave the oil gel untouched without further stirring. (*Immediate filling into final packaging is recommended instead overnight crystallization in the production vessel and subsequent filling. Filling temperature can influence the results. Additional shear after crystallization can result in reduced viscosity / stability.*)

Technical advices

a) Requirements

- Suggested usage concentration: 5–10%
- A non-fluid gel structure is required in order to obtain a stable oil gel with **dermofeel® viscolid MB**
- Fluid textures typically do not give sufficient storage stability

b) Recommendations

- Natural oils are better to thicken with **dermofeel® viscolid MB** than emollients
- Different grades of natural oils can give different results
- A mixture of different type of emollients is recommended to achieve a balanced stability profile
- Processing details can have a huge impact on the appearance, viscosity and stability of the resulting oil gel
- Shear introduced after crystallization can result in reduced viscosity / stability of oil gels
- Careful scale-up testing & and long term storage tests are essential in the development
- Final packaging and filling temperature are important parameters

c) Additional stabilization

- Addition of other oil structuring agents can help to improve oil gel viscosity and stability, but can also influence the sensory properties
- Some recommendations include
  - silica types (e.g. 0.5–2% AEROSIL® 200)
  - clays (bentonite, hectorite, etc…)
  - cosmetic butters or waxes
  - solids like Titanium Dioxide or Zinc Oxide
  - (co-) emulsifiers

d) Compatibilities

Oil gels are generally compatible with

- organic UV filters
- lipophilic active ingredients
- water/ aqueous extracts or hydrophilic substances up to 10%
- ethanol up to 5%
- solids like e.g. peeling particles
- essential perfume oils

Stabilizer and viscosity modifier in other applications

Thickening & stabilization of W/O emulsion

Phase	Ingredients	w/w %	w/w %	w/w %	w/w %
A	**ISOLAN© 17 MB** (Polyglyceryl-4 Diisostearate/Polyhydroxystearate/ Sebacate; Caprylic/Capric Triglyceride; Polyglyceryl-3 Oleate; Diisostearoyl Polyglyceryl-3 Dimer Dilinoleate)	5.00	5.00	5.00	5.00
	Helianthus Annuus (Sunflower) Seed Oil	13.00	12.00	12.00	11.00
	TEGOSOFT© OER MB (Oleyl Erucate)	5.00	5.00	5.00	5.00
	TEGOSOFT© DC MB (Decyl Cocoate)	5.00	5.00	5.00	5.00
	dermofeel© viscolid MB (Hydrogenated Vegetable Oil)			1.00	2.00
	Cera Alba		0.50		
	Hydrogenated Castor Oil		0.50		
	dermosoft© GMC MB (Glyceryl Caprate)	0.30	0.30	0.30	0.30
	dermofeel© Toco 70 non GMO (Tocopherol, Helianthus Annuus (Sunflower) Seed Oil)	0.30	0.30	0.30	0.30
B	Water	ad 100	ad 100	ad 100	ad 100
	Glycerin	3.00	3.00	3.00	3.00
	Zinc Sulfate (Zinc Sulfate Heptahydrate)	1.50	1.50	1.50	1.50

Processing

1. Heat phase A to approx. 75 °C.
2. Adjust pH value of phase B to 5.0–5.5.
3. Add phase B to phase A slowly while stirring.
4. Homogenize.
5. Cool down below 30 °C.
6. Homogenize again.

Increasing amounts of **dermofeel® viscolid MB** give increasing viscosity. The effect of **dermofeel® viscolid MB** on viscosity is stronger than the effect on formulation stabilization (1% wax similar stabilization as 2% **dermofeel® viscolid MB**).

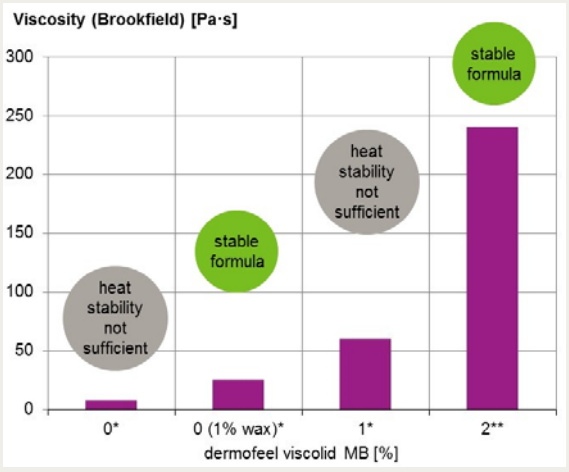


Figure: Thickening & stabilization effects. *spindle 93, 10 rpm; **spindle 94, 5 rpm.

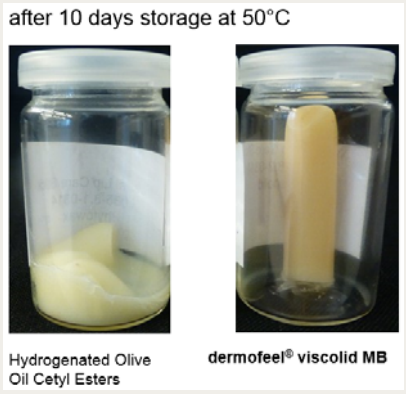
Stable W/O emulsions with 2% **dermofeel® viscolid MB** are possible, without any other consistency enhancer. **dermofeel® viscolid MB** is particularly suited for W/O rich and caring cream textures.

Lip Care Stick

Phase	Ingredients	w/w %	w/w %
A	Ricinus Communis (Castor) Seed Oil	30.50	30.50
	dermofeel® sensolv MB (Isoamyl Laurate)	2.00	2.00
	Tricaprylin	15.00	15.00
	Simmondsia Chinensis (Jojoba) Seed Oil	5.00	5.00
	Olus Oil (Cremerlin PURA, Cremer Oleo)	15.00	15.00
	Theobroma Grandiflorum Seed Butter, Tocopherol (Cupuacu Butter refined, Beraca)	8.00	8.00
	Cera Alba	5.00	5.00
	Euphorbia Cerifera (Candelilla) Wax	3.00	3.00
	dermofeel® viscolid MB (Hydrogenated Vegetable Oil)		10.00
	Hydrogenated Olive Oil Cetyl Esters (Phytowax Olive 16L55, Sophim)	10.00	
	Polyglyceryl-3 Beeswax (Cera Bellina, Koster Keunen)	3.00	3.00
	dermofeel® Toco 70 non GMO (Tocopherol, Helianthus Annuus (Sunflower) Seed Oil)	0.50	0.50
B	Euterpe Oleracea Fruit Oil, Tocopherol (Acai Oil refined, Beraca)	1.00	1.00
	Aroma	2.00	2.00

Processing

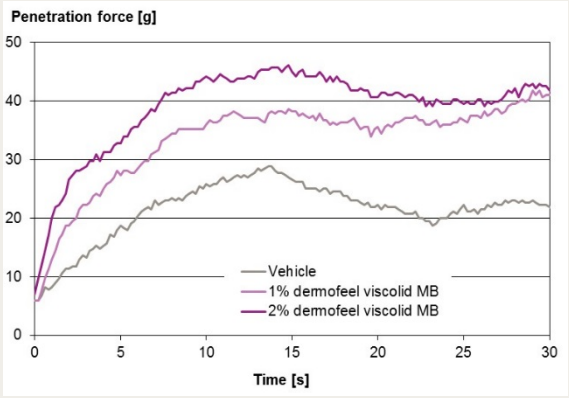
1. Heat phase A to approx. 85°C and add ingredients of phase B.
2. Cool to approx. 75 °C and pour into molds.
3. Cool to room temperature and keep in the freezer for 30 min.
4. After equilibrating to room temperature, remove from molds and put into final packaging



dermofeel® viscolid MB provides improved heat stability of lip care sticks after storage at 50°C.

Lip care stick durability testing

A penetration test was performed measuring the force which is needed for a needle to enter the stick formulation. The average force of five measurements conducted on lip care sticks formulated without and with 1% resp. 2% **dermofeel® viscolid MB** is reported during a penetration time of 30 s.
The higher the penetration force for the needle to enter the stick formulation, the higher the durability of the stick.



dermofeel® viscolid MB improves durability in lip care stick formulations

Application

dermofeel® viscolid MB – Your opportunities

Baby & Body care – e.g. natural based baby/body care, massage gels, body oils, foot care mask

Sun care – e.g. water free sun care products like sticks, sun protection gels

Facial & body cleansing– e.g. body scrubs, facial peeling, cleansing oils/gels, in-shower creams, water free hair masks

Face care – e.g. oil masks, night creams, lip balms

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

Timeout Massage Oil Gel (ST 01/19-10)

- Light, long-lasting formula that nourishes and moisturizes the skin
- High amount of vegetable oils for soft and smooth afterfeel
- **dermofeel® viscolid MB** as viscosity builder

Phase A	
Persea Gratissima (Avocado) Oil	89.70%
dermofeel® viscolid MB (Hydrogenated Vegetable Oil)	5.00%
Prunus Amygdalus Dulcis (Sweet Almond) Oil	3.50
dermofeel® Toco 70 non GMO (Tocopherol, Helianthus Annuus (Sunflower) Seed Oil)	0.50
Argania Spinosa Kernel Oil	0.50
Butyrospermum Parkii (Shea) Butter	0.50
Phase B	
Perfume (Pink Grapefruit, IFF)[1]	0.30

Preparation

1. Heat phase A to approx. 65°C until a clear solution is obtained.
2. Cool with gentle stirring to approx. 40 °C and add phase B.
3. Cool down until first turbidities are observed and homogenize.
4. Fill immediately into final packaging and leave untouched in order to crystallize.

Viscosity: ~700 Pa·s (Brookfield, sp. 96, 5 rpm)
Natural content c_n (incl. water, ISO 16128): 95.0%
Natural origin content c_{no} (incl. water, ISO 16128): 100.0%
[1)]not considered for calculation

Lip scrub (L014-82.24)

- Removement of dead skin cells and smoothening of the skin
- **dermofeel® viscolid MB** as viscosity builder

Phase A	
Ricinus Communis (Castor) Seed Oil	64.15
Sesamum Indicum (Sesame) Seed Oil	15.00
dermofeel® viscolid MB (Hydrogenated Vegetable Oil)	3.50
Prunus Armeniaca (Apricot) Kernel Oil	5.50
Theobroma Cacao (Cocoa) Seed Butter	1.00
dermofeel® MT 70 non GMO (Tocopherol, Helianthus Annuus (Sunflower) Seed Oil)	0.50
CI 77491, Mica (Colorona Bordeaux, Merck)[1]	0.05
Phase B	
Fragaria Vesca (Strawberry) Seed (Fraises Akenes, Greentech)[1]	2.00
Aroma (Strawberry P0602862, Frey & Lau)[1]	0.30
Sucrose (sugar)	8.00

Preparation

1. Heat phase A to approx. 80°C until a clear solution is obtained.
2. Cool down until first turbidities are observed.
3. Add phase B below 35°C.
4. Homogenize.
5. Add sugar under low stirring.
6. Fill immediately into final packaging and leave untouched in order to crystallize.

Viscosity: ~100 Pa·s (Brookfield, sp. 96, 10 rpm)
Natural content c_n (incl. water, ISO 16128): 96.4%
Natural origin content c_{no} (incl. water, ISO 16128): 100.0%
[1)]not considered for calculation

Natural Sun Protection Stick (L014-119.30)

- Mineral UV-filter stick to go with estimated SPF 25 UVA/UVB balance
- **dermofeel® sensolv MB** and **TEGO® Feel C 10** provide high absorption and low oiliness
- **dermofeel® viscolid MB** for solidification & stabilization

Phase A	
Carthamus Tinctorius (Safflower) Seed Oil	22.80
Butyrospermum Parkii (Shea) Butter	7.00
Hippophae Rhamnoides Fruit Oil	1.00
dermofeel® sensolv MB (Isoamyl Laurate)	10.00
dermofeel® viscolid MB (Hydrogenated Vegetable Oil)	10.00
TEGOSOFT® DC MB (Decyl Cocoate)	6.00
TEGOSOFT® OER MB (Oleyl Erucate)	6.00
Cera Alba (Beeswax 8104, KahlWax)	5.00
Helianthus Annuus Seed Cera, Ascorbyl Palmitate, Tocopherol (Sunflower Seed Wax 6607L, KahlWax)	3.00
Euphorbia Cerifera Cera (Candelilla Wax 2039L, KahlWax)	3.00
dermofeel® TocoBalance (Tocopherol, Helianthus Annuus (Sunflower) Seed Oil)	1.50
dermosoft® GMCY MB (Glyceryl Caprylate)	1.00
Phase B	
Distarch Phosphate (Corn P04 PH "B", Agrana)	1.00
TEGO® Feel C 10 (Cellulose)	2.00
Zinc Oxide (Zano 10, EverZinc)	20.00
Phase C	
Perfume	0.70

Preparation

1. Heat phase A to approx. 80°C.
2. Add phase B to phase A while stirring.
3. Homogenize.
4. Cool down and add phase C below 75°C.
5. Fill into containers at approx. 65-70°C.

Appearance: Light yellow solid stick
Natural content c_n (incl. water, ISO 16128): 42.3%
Natural origin content c_{no} (incl. water, ISO 16128): 99.9%
Microbiological safety: Challenge test passed

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