Technical Information

# dermofeel® sensolv MB

## A natural choice for your beauty routine

### Intended use

Liquid lipohilic emollient

### Benefits at a glance

- Clear, low-viscous emollient that provides a light & non-sticky skin feel
- 100% vegetable-based raw material
- High SPF formulations feasible due to very good solubilization of crystalline UV filters
- Good stabilizing properties in color cosmetics due to excellent wetting properties of hydrophobic coated pigments
- Hair conditioning without greasy or heavy residues, no build-up
- Efficient combing force reduction
- Antistatic effect
- Improvement of foam characteristics (foam boosting & creamy foam)

### INCI (PCPC name)

Isoamyl Laurate (CFDA: yes)

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

| | |
|---|---|
| Physical form | Liquid |
| Viscosity (mPas) | ~4.8 |
| Surface tension (mN/m) | ~28 |
| Refractive index | 1.434 – 1.439 |
| Cloud point (°C) | ≤ -15 |
| Pour point (°C) | ~ – 17 |
| Spreadability | High |
| Polarity | Medium |

### Skin care – our studies based on dermofeel® sensolv MB

#### UV filter solubility

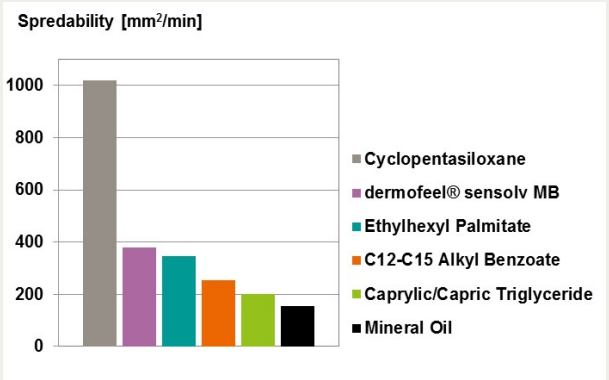
Knowing the capability of UV filter solubility is crucial for formulating efficient sun care products, especially with high sun protection factors. The following table displays the solubility of five of the most widely used lipophilic, crystalline UV filters.

**Solubilization performance for organic UV-A and UV-B Filters (%)**

| | |
|---|---|
| Benzophenone-3 | 12.2 |
| Butyl Methoxydibenzoylmethane | 11.2 |
| Ethylhexyl Triazone | 5.2 |
| Bis-Ethylhexyloxyphenol Methoxyphenyl Triazine | 5.6 |
| Diethylamino Hydroxybenzoyl Hexyl Benzoate | 10.9 |

#### *In vivo* spreadability

Spreadability was determined at 23.5 °C by addition of 1 mL emollient on the volar forearm. After one minute a replica of the oil spot was taken with filter paper and the diameter determined in $mm^2/min$.



## Pigment wetting

The most commonly used metal oxide pigments with Dimethicone coating were identified and tested (CI77492 (yellow iron oxide), CI77499 (black iron oxide), CI77491 (red iron oxide), CI77891 (titanium dioxide)). Uncoated Carbon Black was also evaluated (CI77266).

The ratio of the pigments versus the corresponding emollient was optimized for the highest pigment loading. This allowed clear differentiation of the emollient performance.

The viscosity at 1/100 seconds was measured using a rheometer. Measurements were taken at room temperature, unless noted.

The lower the viscosity, the better the pigment wetting.

| No. | Product name | INCI | Overall pigment wetting capability | Score 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| 1 | TEGOSOFT® AC MB | Isoamyl Cocoate | ●●●●●● | | | | | |
| 2 | dermofeel® sensolv MB | Isoamyl Laurate | ●●●●●● | | | | | |
| 3 | TEGOSOFT® P | Isopropyl Palmitate | ●●●●● | | | | | |
| 4 | TEGOSOFT® M | Isopropyl Myristate | ●●●●● | | | | | |

Yellow iron oxide, CI 77492
Black iron oxide, CI 77499
Red iron oxide, CI 77491
Carbon black, CI 77266
Titanium dioxide, CI 77891

Score values reflect the viscosity of the respective pigment/emollient dispersion. The lower the score value, the better the pigment wetting.
Rating of overall pigment wetting capability:
●●●●●● superior ●●●●● very high ●●●● high
●●● medium ●● low ● very low
* Emollient waxes are measured at elevated temperatures above their melting point.

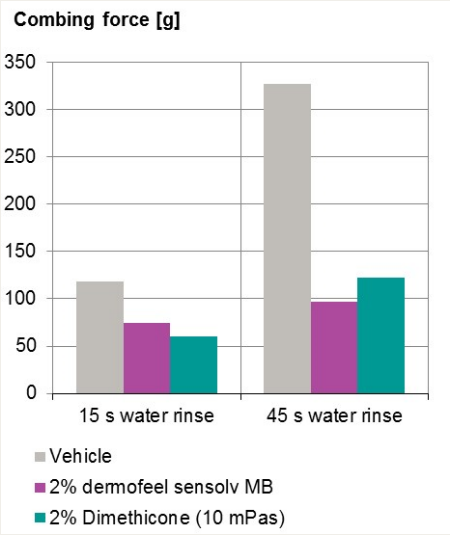
**dermofeel® sensolv MB** pigment wetting properties make it an ideal natural emollient for color cosmetics.

## Hair care – our studies based on dermofeel® sensolv MB

Traditional hair care is distinguished by silicones combined with quaternized / cationic substances, which leave hair with good, easy combing, shine and a silky touch but might also cause a build-up effect (valid for Dimethicone) with reduced lasting of the hairstyle. Natural hair care typically employs natural & vegetable alternatives like olive oil, coconut oil, argan oil which do not build up, but also have limited conditioning properties. Because of instabilities and separation, the incorporation of oils into shampoos may be difficult.

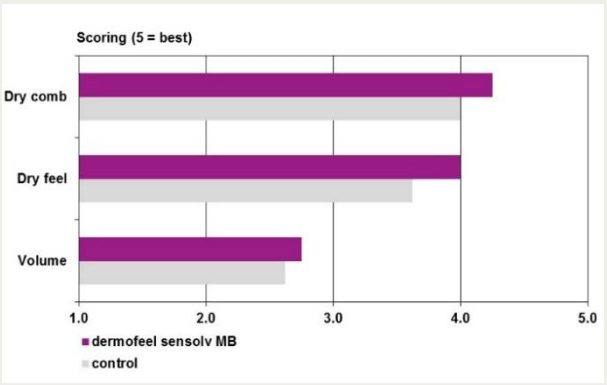
## Conditioning performance

Caucasian bleached hair was washed 3 x with 10% ether sulfate solution. 1 mL conditioner was added and left for 1 min, before rinsing with water. Combing force was determined on wet hair.




The conditioning performance and the lastingness of **dermofeel® sensolv MB** is comparable to Dimethicone 10 mPa·s.

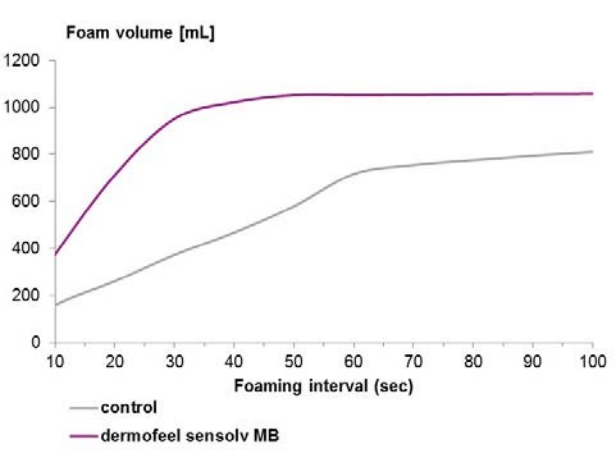
Conditioning performance was tested by sensory hair swatch test from a sulfate- and PEG-free surfactant system (8.8% Lauryl Glucoside, 3.3% Coco Glucoside, 12.5% REWOTERIC® AM C, 14.9% TEGO® Betain P 50 C, 0.2% Jaguar C 162, 0.5% **dermofeel® sensolv MB**, 1.0% ANTIL® SPA 80, pH = 5).




**dermofeel® sensolv MB** improves the conditioning properties of dry hair.

### Foam Kinetics – Flash Foam

Foam kinetics were evaluated with a SITA foam tester (c = 0.5%, T = 30 °C, Water ~10 °dH, pH 6, 1 500 rpm) from a sulfate- and PEG-free surfactant system (as above).




**dermofeel® sensolv MB** has foam boosting properties.

### Caring sensation

The foam of shampoos containing **dermofeel® sensolv MB** is creamy and fine pored (Test system natural shampoo based on: 6.0% Sodium Lauryl Sulfate, 5.0% Sodium Cocoyl Glutamate; Disodium Cocoyl Glutamate, 18.5% Lauryl Glucoside, 1.0% Coco Glucoside/Glyceryl Oleate, 0/1% **dermofeel® sensolv MB**).

1% dermofeel® sensolv MB | Vehicle

**dermofeel® sensolv MB** creates creamy and fine pored, dense foam. The creaminess increases with higher amounts of **dermofeel® sensolv MB**.

## Formulation hints

Skin care: Minimal hydrolysis of isoamyl esters can occur in aqueous environment leading to release of isoamyl alcohol. This has no effect on the stability of the formulation, however, in unperfumed formulations a distinct odor could be perceived. The hydrolysis is accelerated at low pH values and elevated temperatures.

In such case it is recommended to test a variety of perfumes/etheric oils, which can well cover the odor of isoamyl alcohol. It is also recommended to adjust the formulation to a more neutral pH (~ 6.5 – 7.0). Solutions for preservation at neutral pH are available from the Evonik Dr. Straetmans portfolio.

Hair Care & Body wash: **dermofeel® sensolv MB** can be clearly incorporated at doses of up to 0.5 to 1.0% in surfactant based systems. Dosages > 1.5% require a viscosity adjustment! The use of thickening agents like ANTIL® types or common jellifying agents is recommended. For improvement of conditioning performance mild surfactant combination (no/low level sulfates) and reduced total amount of surfactants is recommended.

## Application

**dermofeel® sensolv MB** – Your opportunities

Face care – e. g. natural based cosmetics, for regions with hot climate.

Sun care – e. g. effective sun protection products with improved spreadability and lighter textures, sun care products with high SPF, sun care for men, natural based sun care.

Baby & Body care – e. g. natural based body care, body oils.

Color cosmetics – e. g. natural based foundations.

Hair care & body wash – e. g. natural based body washes, natural clear shampoos, natural conditioner rinses.

## 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

| Feel the sun spray SPF 50 (ST 18/18-15) | |
|---|---|
| **Phase A** | |
| **TEGO® Care PBS 6 MB** (Polyglyceryl-6 Stearate, Polyglyceryl-6 Behenate) | 3.00% |
| **TEGIN® M Pellets MB** (Glyceryl Stearate) | 0.25% |
| **TEGO® Alkanol 1618** (Cetearyl Alcohol) | 0.25% |
| **dermofeel® sensolv MB** (Isoamyl Laurate) | **8.00%** |
| Bis-Ethylhexyloxyphenol Methoxyphenyl Triazine (Tinosorb S, BASF) | 6.00% |
| Diethylamino Hydroxybenzoyl Hexyl Benzoate | 6.00% |
| Ethylhexyl Salicylate | 5.00% |
| Ethylhexyl Triazone | 2.00% |
| **dermofeel® Toco 70 non GMO** (Tocopherol, Helianthus Annuus (Sunflower) Seed Oil) | 0.20% |
| **Phase B** | |
| Water | 48.45% |
| Glycerin | 3.00% |
| EDTA | 0.05% |
| **Phase C** | |
| Xanthan Gum (Keltrol CG-SFT, CP Kelco) | 0.50% |
| **Phase D** | |
| Phenylbenzimidazole Sulfonic Acid | 3.00% |
| Tromethamine (Trisaminomethane) | 1.32% |
| Water | 10.68% |
| **Phase E** | |
| **Verstatil® BOB** (Benzyl Alcohol; Caprylyl Glycol; Benzoic Acid) | 1.20% |
| **Phase Z** | |
| Perfume | 0.10% |

### Preparation

1. Heat phase A and B separately to approx. 85°C.
2. Add phase C to phase B.
3. Add phase A to phases B/C with stirring.[2]
4. Homogenize.
5. Cool with gentle stirring to approx. 60 °C and add phase D.
6. Homogenize for a short time.
7. Cool with gentle stirring and add phase E below 40 °C.
8. Adjust the pH value to 6.8 – 7.2. Stir well.

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

**Viscosity:** ~7 Pas (Brookfield RV DV-I, sp. 4, 5 rpm)
**Microbiological safety:** challenge test passed
SPF: 54.3, UVA balance: 43%
(calculated values, BASF Sunscreen Simulator)

| Natural Cream Gel (FU 18/17-2) | |
|---|---|
| **Phase A** | |
| **dermofeel® NC MB** (Polyglyceryl-3 Distearate; Glyceryl Stearate Citrate) | 3.00% |
| **TEGOSOFT® DC MB** (Decyl Cocoate) | 5.00% |
| **dermofeel® sensolv MB** (Isoamyl Laurate) | **5.00%** |
| **dermosoft® GMCY MB** (Glyceryl Caprylate) | 0.30% |
| **TEGO® Feel C 10** (Cellulose) | 1.00% |
| **Phase B** | |
| Water | 67.70% |
| Glycerin | 3.00% |
| **TEGO® Natural Betaine** (Betaine) | 3.00% |
| Propylene Glycol[1] | 3.00% |
| Mica (Submica E, Sensient)[1] | 5.00% |
| **Phase C** | |
| Xanthan Gum (Keltrol CG-SFT, CP Kelco)[1] | 0.50% |
| **Phase D** | |
| **dermosoft® 1388 eco** (Glycerin; Aqua; Sodium Levulinate; Sodium Anisate) | 3.50% |
| **Phase E** | |
| Citric Acid[1] | q.s. |
| **Phase Z** | |
| Perfume[1] | q.s. |

### Preparation

1. Heat phase A and phase B to approx. 75°C separately.
2. Add phase A into phase B with stirring.
3. Homogenize.
4. Cool down to 50 °C while stirring and add phase C.
5. Homogenize for a short time.
6. Cool down to 30 °C while stirring and add phase D.
7. Homogenize for a short time.
8. Adjust the pH to 5.0 – 5.5 by adding phase E and stir until uniform.

**Viscosity:** ~40 Pas (Brookfield RV DV-I, sp. 93, 10 rpm)
**Natural content $c^n$** (incl. water, ISO 16128): 79.6%
**Natural origin content $c^{no}$** (incl. water, ISO 16128): 100.0%
[1] not considered for calculation
**Microbiological safety:** challenge test passed

### Essential Elegance Face Care (MK 9/17-13)

| Phase A | |
|---|---|
| **ISOLAN® 17 MB** (Polyglyceryl-4 Diiso-stearate/Polyhydroxystearate/Sebacate; Caprylic/Capric Triglyceride; Polyglyceryl-3 Oleate; Diisostearoyl Polyglyceryl-3 Dimer Dilinoleate) | 3.00% |
| **dermofeel® sensolv MB** (Isoamyl Laurate) | 4.50% |
| **TEGOSOFT® CT** (Caprylic/Capric Triglyceride) | 4.50% |
| **Phase B** | |
| Water | 67.70% |
| Glycerin | 7.00% |
| Zinc Sulfate (Zinc Sulfate Heptahydrate)[1)] | 1.50 |
| **Verstatil® SL non GMO** (Water; Sodium Levulinate; Potassium Sorbate) | 2.00% |

**Preparation**

1. Adjust pH of phase B to 5.5.
2. Add phase B to phase A slowly while stirring (250 rpm) during 2 – 3 minutes.
3. Homogenize for 2 minutes at 1 100 rpm.

**Viscosity:** 200 Pas (Brookfield RV DV-I, sp. 94, 5 rpm)
**Natural content $c_n$** (incl. water, ISO 16128): 80.0%
**Natural origin content $c_{no}$** (incl. water, ISO 16128): 99.8%
[1)]not considered for calculation
**Microbiological safety:** challenge test passed

### Caring shampoo for damaged hair (UL 5874/2/4.3)

| Phase A | |
|---|---|
| Sodium Laureth Sulfate (28% in water)[1] | 32.00% |
| **dermofeel® sensolv MB** (Isoamyl Laurate) | 1.00% |
| **dermofeel® G 10 LW 70 MB** (Polyglyceryl-10 Laurate; Aqua; Citric Acid) | 4.00% |
| **TEGO® Betain P 50 C** (Cocamidopropyl Betaine) | 10.00% |
| **dermofeel® quadegra** (Aqua; Starch Hydroxypropyltrimonium Chloride; Urea; Sodium Lactate; Lactic Acid; Sodium Chloride; Glycerin; Levulinic Acid; p-Anisic Acid) | 1.50% |
| Water | 46.50% |
| **Verstatil® BP** (Phenoxyethanol; Benzoic Acid) | 0.80% |
| **ANTIL® 200** (PEG-200 Hydrogenated Glyceryl Palmate; PEG-7 Glyceryl Cocoate) | 4.00% |

**Preparation**

1. Blend ingredients in the given order.
2. Adjust pH value with citric acid to pH 5.0 to 5.3.

**Viscosity:** 4 200 mPas (Brookfield, sp. LV2, 60 rpm)
**Storage test not finalized.**
**Natural content $c_n$** (incl. water, ISO 16128): 85.9%
**Natural origin content $c_{no}$** (incl. water, ISO 16128): 92.9%
[1)]not considered for calculation
**Microbiological safety:** challenge test passed

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