COSMOFERM® Mix III

Reinforcing the skins and hairs natural protective lipid barrier

- Reinforces the natural lipid barrier of dry and ageing skin
- Improves long term moisturization and protects the skin from external influences
- Repairs and protects damaged hair (mechanical properties, liveliness, combability, shine)
- Ready-to-use solutions of Ceramide NP
- Effective at low concentrations

Personal Care

INCI Name (PCPC name)

Isocetyl Alcohol; Ceramide NP; Cetyl Alcohol

For Chinese SFDA listed as:
Isocetyl Alcohol; Ceramide 3; Cetyl Alcohol

Chemical and physical properties (not part of specifications)

Form	Paste
Active matter	approx. 10%

Properties

- **COSMOFERM® Mix III** is a ready-to-use solution of Ceramide III (oil-soluble).
- Depending on the type of skin / hair and desired effect, COSMOFERM® Mix III is used at concentrations ranging from 0.25% - 5%.
- Ceramide III supports the renewal of the skin's natural protective layer and form an effective barrier against moisture loss. This human-skin-identical molecules is particularly suitable for long term protection and repair of sensitive and dry skin.
- Ceramides are produced using patented biofermentation processes. In contrast to various pseudo ceramides that are on the market, the ceramides produced according to this process have the same stereo-chemical configuration as the ceramides present in the human skin. This unique configuration is regarded to be crucial for optimal performance (Fig. 1 + 2).
- The production conditions are strictly standardised and carried out under GMP conditions. Its high purity and consistent quality are prerequisites for optimal safety and efficacy of the end product.

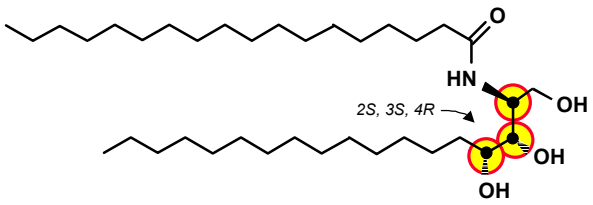

Fig.1 : Structural formula of Ceramide III.
Ceramide III consists of a Phytosphingosine backbone acylated with a saturated fatty acid (stearic acid). All Ceramides based on the Phytosphingosine backbone have three stereo-active groups. Of the 8 possible configurations, only the 2S,3S,4R configuration is naturally found in the human skin (Fig. 1). That is exactly the configuration that makes up Ceramide III.

Hair Care

European virgin brown hair was damaged by perming and bleaching followed by 10 treatment cycles consisting of washing of the hair tresses with 8% SLES solution followed by applications with a hair rinse containing 0.5% Ceramide III. Afterwards, the tensile strength was measured. The hair rinse containing Ceramide III restored approx. 35% of the break stress lost when the hair was damaged by bleaching and perming. The results are summarized in Fig. 2.

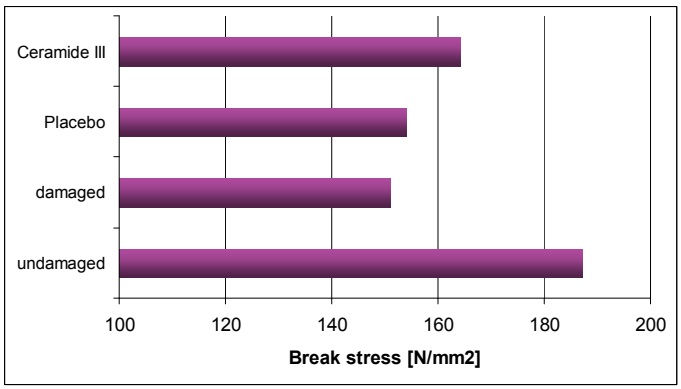

Fig.2: Break stress of single hair fibres after 10 treatments

- In hair care formulations Ceramide III and Ceramide IIIB are not only able to restore strength to damaged hair, but, as reported in the literature, they are able to protect hair against chemical and UV damage
(D. Braida et al., Cosmetics and Toiletries 109, 49-57 (Dec. 1994)).

Skin Care

- Two Ceramide III formulations (0.05% and 0.5%), and a control product were applied on the forearms of volunteers twice/day for 7 consecutive days. One area remained untreated. The skin hydration was measured before application, and during the application period at 1, 3 and 7 days. After the application was ceased (day 7), the measurements were continued on day 8, 10 and 13. The water retention capacity of the skin was determined by measuring skin hydration using a corneometer. During the application week Ceramide III resulted in a statistically significant increase in water retention capacity of the skin compared to the Control. A dose-response effect with 0.05% and 0.5% Ceramide III was seen (Fig. 4).

  After the application was ceased, areas treated with the Control showed a rapid decrease in hydration. In contrast, Ceramide III showed a significantly longer lasting hydration, up to 6 days after the last application (day 13) of 0.5% Ceramide III (Fig. 3).

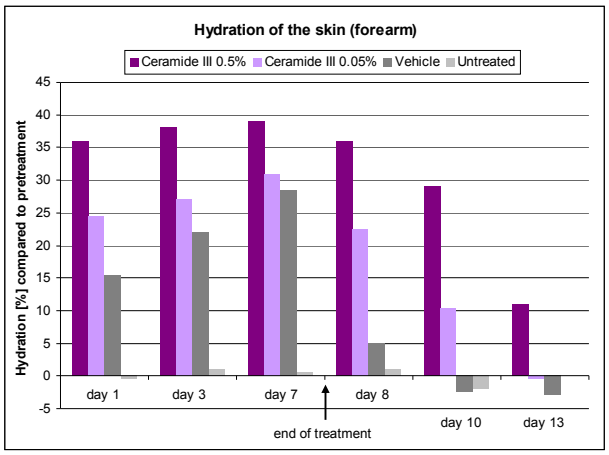

Fig. 3: Skin hydration measured by corneometry

- In a second study two Ceramide III formulations (0.2% and 0.5%) and a control product were applied on the forearms of volunteers twice/day for 7 consecutive days. One area remained untreated. Skin hydration was evaluated before application (baseline) and two hours after the last application (day 7). The test areas were then exposed to a 5% aqueous solution of Sodium Dodecyl Sulphate (SDS) for 2 hours to induce skin irritation.

  The graph (Fig. 4) shows the TEWL (%) compared to pretreatment. After 7 days of application on healthy skin, no disturbance of the normal skin physiology was seen. Application of Ceramide III does not occlude the skin.
  After irritation with SDS, untreated skin and areas treated with the Control showed a large increase in TEWL. The areas treated with Ceramide III showed a lower increase in TEWL after SDS irritation, demonstrating the protective effect of Ceramide III on the skin.

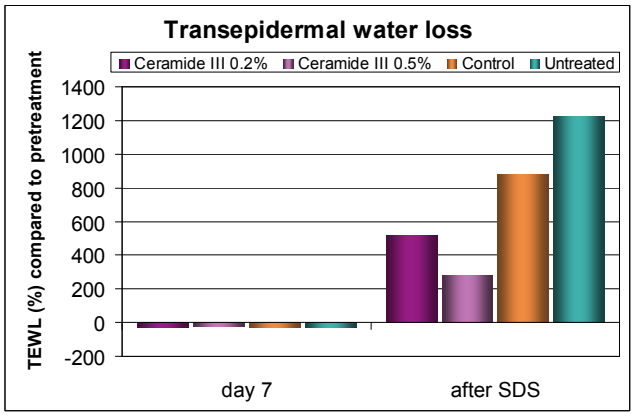

Fig. 4: Transepidermal water loss (TEWL) measured by tewametry

Other efficacy studies are available on request.

Preparation

- **COSMOFERM® Mix III** should be added to the oil phase of an emulsion and heated up to 85 °C. It is very important that the ceramide is clearly and completely solved in the oil phase at the beginning of and during the homogenization step.

Recommended usage concentration

0.25 – 5.00% COSMOFERM® Mix III

Application

COSMOFERM® Mix III has a wide range of applications, such as

- O/W creams and lotions of the segments:
  - Moisturizing
  - Skin repair
  - Baby care
  - Facial Care
  - Sun care
- Hair Care preparations
  - Hair Rinses
  - Leave-in Conditioners
  - Conditioning Shampoos

Packaging

0.50 kg package
4.00 kg package

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.

Guide Line Formulations

O/W Cream with COSMOFERM® Mix III WR 1/03-2	
Phase A	
ABIL® Care 85 (Bis-PEG/PPG-16/16 PEG/PPG16/16 Dimethicone; Caprylic/Capric Triglyceride)	1.0 %
TEGINACID® C (Ceteareth-25)	1.0 %
TEGIN® Pellets (Glyceryl Stearate SE)	4.0 %
TEGO® Alkanol 1618 (Cetearyl Alcohol)	1.5 %
Stearic Acid	0.5 %
TEGOSOFT® DC (Decyl Cocoate)	4.0 %
TEGOSOFT® OP (Ethylhexyl Palmitate)	4.0 %
TEGOSOFT® CT (Caprylic/Capric Triglyceride)	4.0 %
COSMOFERM® Mix III (Isocetyl Alcohol, Ceramide NP, Cetyl Alcohol)	5.0 %
Phase B	
Glycerin	3.0 %
Water	70.82 %
Phase C	
NaOH, 10%	0.43 %
Phase D	
TEGO® Carbomer 134 (Carbomer)	0.15 %
TEGOSOFT® OP (Ethylhexyl Palmitate)	0.6 %
Phase Z	
Preservative, Parfum	q.s.

Preparation:

1. Heat phase A and B separately to approx. 80 °C.
2. Add phase A to phase B with stirring [1)].
3. Homogenise.
4. Cool with gentle stirring to approx. 70 °C and add phase C with gentle stirring.
5. Add phase D at approx. 60 °C and homogenise for a short time.
6. Cool with gentle stirring below 30 °C.

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

O/W Cream with COSMOFERM® Mix III WR 1/03-6	
Phase A	
TEGO® Care 450 (Polyglyceryl-3 Methylglucose Distearate)	2.0 %
TEGIN® Pellets (Glyceryl Stearate SE)	2.0 %
TEGO® Alkanol 1618 (Cetearyl Alcohol)	3.0 %
Stearic Acid	0.5 %
TEGOSOFT® DC (Decyl Cocoate)	4.5 %
TEGOSOFT® OP (Ethylhexyl Palmitate)	4.0 %
TEGOSOFT® CT (Caprylic/Capric Triglyceride)	4.0 %
COSMOFERM® Mix III (Isocetyl Alcohol, Ceramide NP, Cetyl Alcohol)	5.0 %
Phase B	
Glycerin	3.0 %
Water	70.82 %
Phase C	
NaOH, 10%	0.43 %
Phase D	
TEGO® Carbomer 134 (Carbomer)	0.15 %
TEGOSOFT® OP (Ethylhexyl Palmitate)	0.6 %
Phase Z	
Preservative, Parfum	q.s.

Preparation:

1. Heat phase A and B separately to approx. 80 °C.
2. Add phase A to phase B with stirring [1].
3. Homogenise.
4. Cool with gentle stirring to approx. 70 °C and add phase C with gentle stirring.
5. Add phase D at approx. 60 °C and homogenise for a short time.
6. Cool with gentle stirring below 30 °C.

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

Conditioning Hair Rinse for damaged hair UR 433/3/4	
Phase A	
TEGINACID® C (Ceteareth-25)	0.5 %
TEGO® Alkanol 1618 (Cetearyl Alcohol)	2.5 %
VARISOFT® TA 100 (Distearyldimonium Chloride)	1.0 %
COSMOFERM® Mix III (Isocetyl Alcohol, Ceramide NP, Cetyl Alcohol)	2.0 %
TEGIN® M Pellets (Glyceryl Stearate)	1.5 %
Phase B	
Glycerin	3.0 %
ABIL® Quat 3474 (Quaternium-80)	1.0 %
Water	88.5 %
Citric Acid (30%)	pH = 4
Preservative, Perfume	q.s.

Preparation:

1. Mix phase A at 85 °C. Cosmoferm® Mix III has to be clearly solved.
2. Mix phase B at 70 °C.
3. Combine both phases and homogenize. Cool down while stirring and add the perfume below 45 °C. Adjust the pH value with citric acid to 4.

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