

## Technical Information

# Ceramide III EP MB

### Intended use

Active for skin care

### Benefits at a Glance

- **Easy to Process (EP)**
- **Ceramide III is a skin-identical barrier lipid**
- **Strengthens the barrier function**
- Based on vegetable raw materials
- Cosmos approved
- **Supports dry skin to recover**
- **Promotes skin comfort**

### INCI (PCPC name)

Cetearyl Alcohol AND Ceramide NP

#### Chemical and physical properties (not part of specifications)

Appearance	pellet
Active matter	Approx. 15%

### PROPERTIES

The Ceramide III EP MB is an easy to process blend of Ceramide III. This mixture allows to reduce the processing temperature from >90 °C to 75 °C. Due to lower processing temperature energy and time savings up to 25% are possible for the oil phase of the emulsion. This enables the customer to have more options for selection of temperature sensitive ingredient.

Ceramide III supports the renewal of the skin's natural protective layer and forms an effective barrier against moisture loss. This human-skin-identical molecule is therefore particularly suitable for long-term protection and support of sensitive and dry skin's recovery.

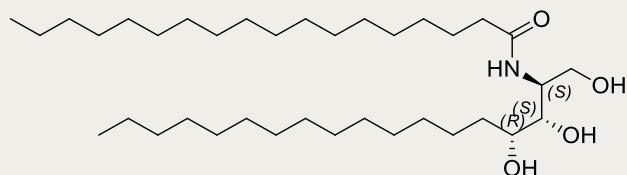


Figure 1: Structural formula of Ceramide III

Ceramide III consists of a phytosphingosine backbone acylated with a saturated fatty acid (stearic acid). All Ceramides based on the phytosphingosine backbone have three stereocenters. Of the eight possible diastereomers, only the 2S,3S,4R-configuration is located naturally in the human skin (Fig.1). Depending on the type of skin and desired effect, the advised concentration varies between 0.3% – 3.0%.

Ceramides are produced using a patented bio-fermentation 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 as crucial for optimal performance.

## IN VIVO EFFICACY

**Improvement of dry skin conditions study**  
Two Ceramide III containing formulations (0.05% and 0.5%) as well as a vehicle formulation were applied on the forearms of 20 volunteers twice daily for seven consecutive days. One area remained untreated. The measurements were performed before application, and during the application period at day 1, 3 and 7. 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.

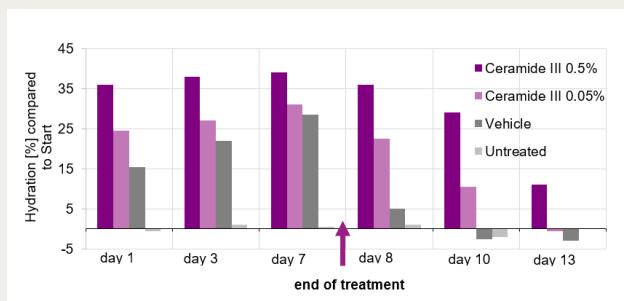


Figure 2: Skin hydration after application of Ceramide cream formulations.

During the application period, 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 observed. After the application was ceased, areas treated with the vehicle formulation showed a rapid decrease in hydration. On the contrary, the Ceramide III treated areas showed a significant longer lasting hydration, up to 6 days after the last application (day 13) using 0.5% Ceramide III (Fig. 2).

## Regeneration study

In a second study, the skin of 15 volunteers was pretreated with a 5% solution of SDS (sodium dodecylsulphate) for two hours. A vehicle formulation and two Ceramide III containing formulations (0.2% and 0.5%) were applied twice daily for 14 consecutive days. One area remained untreated. Measurements were performed after

skin damage/ before application (baseline) and during the application period at day 3, 7 and 14. The water retention capacity of the skin was determined by measuring skin hydration using a Corneometer.

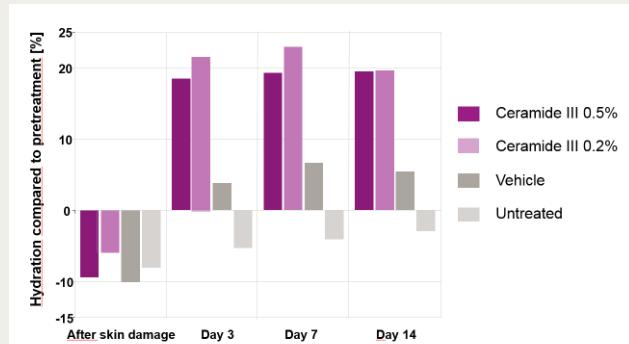


Figure 3: Skin hydration after pretreatment with SDS.

While the untreated skin areas recover slowly from the treatment with SDS, the Ceramide III containing formulations support a fast improvement in skin hydration.

## PREPARATION (formulation hints)

### Emulsions

Ceramide III EP MB should be added to the oil phase of an emulsion and heated up to 75 °C. It is very important that the ceramide is clearly and completely solved in the oil phase.

Ceramides are amphiphilic molecules and can be incorporated into the lamellar liquid crystalline structures built up by emulsifier and consistency agents in the external water phase of cosmetic O/W emulsions.

In general, pure ceramides are nearly insoluble in common cosmetic oils at room temperature. They can be clearly solved in most cosmetic oils by heating up to 90 °C. Ceramide III EP MB do not need this high temperature, it is possible to reduce the temperature up to 15 °C. The oils differ in the temperature at which the mixture becomes turbid again while cooling. The solubility in the oil phase seems not to be crucial for the stability of the formulation with respect to recrystallisation of ceramide. It is very important, however, that the ceramide is clearly and completely solved in the oil phase at the beginning of and during the homogenization step. Towards this end both the water phase and the oil phase should have a temperature of at least 75 °C.

### Recommended usage concentration

0.3–3.0% Ceramide III EP MB

## APPLICATIONS

- Dry skin recovery and face care cream
- Moisturizing formulations
- Body care

### Guideline Formulations

If you are interested in guideline formulations please visit our homepage <https://personal-care.evonik.com>.

## 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.

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