## SPHINGONY

Hair cycle balancer

- Improves appearance of hair quality
- Provides the appearance of a healthy scalp
- Unique sphingolipid based on Evonik’s ceramide expertise: Skin-identical sphinganine stereochemistry due to patented process
- Usage concentration: 0.1–0.5%

Personal Care
INCI name (PCPC name)
Sphinganine

Chemical and physical properties (not part of specifications)

<table>
<thead>
<tr>
<th>Form</th>
<th>White to off-white powder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melting range [°C]</td>
<td>73 – 84°C</td>
</tr>
</tbody>
</table>

Introduction
The appearance of one’s hair impacts the first impression a person makes on others. Hair has been identified as an important social signal between people, and is also related to individual self-esteem and well-being. Healthy hair is the product of a highly regulated and complex biological process (Figure 1a). With aging and under other circumstances, i.e. androgenic alopecia, miniaturization of the hair follicle occurs and the anagen phase is shortened, resulting in hair loss and formation of fine and lifeless hair. To minimize hair loss, healthy hair embedded in a healthy scalp is essential.

SPHINGONY is the trade name for Sphinganine, a naturally occurring, skin-identical sphingolipid. It is produced by fermentation of a unique yeast strain, ensuring that Sphinganine features the same stereochemical configuration as found in nature and in human skin. The skin-identical stereochemistry of Sphinganine is of key importance for its function.

SPHINGONY addresses hair loss by improving the appearance of hair quality and giving the appearance of improved scalp health.

Hair quality and scalp health improving effects of SPHINGONY
Cosmetic consumer panel study on men (combined study data)
The aim of the study was to investigate the potential of SPHINGONY to improve the appearance of hair quality and scalp health.

The TrichoScan® method was employed to objectively determine the state of the hair life cycle. Visual and perceivable effects were assessed by expert rating and photographic documentation.

An ethanolic Hair Tonic was provided and evenly applied to the scalp (dry hair) and hairline by the volunteers in the morning and evening, aided by some gentle massage. Measurements were conducted before first application (t0) and after 8 and 16 weeks of product application. Data from a total of 96 test subjects was considered.

Photographic documentation was standardized, and hair was washed the day before measurement and no styling products were used. Hair tonic was not used on days of evaluation visits.

Figure 1a: The hair life cycle.

Figure 2: Photographic documentation of the effect of SPHINGONY application on four male panelists.
The photographs (Figure 2) clearly show the result of SPHINGONY application (right-hand panels), in promoting scalp skin that appears healthy and hair that appears more voluminous. Effects are achieved with application of 0.1% SPHINGONY.

TrichoScan® images were taken and analyzed (data not shown).

Expert grading of scalp and hair appearance was carried out and the data summarized (Figure 3). All hair quality and scalp health parameters were improved after application of any concentration of SPHINGONY. In particular, the appearance of hair quality parameters were strongly improved in all SPHINGONY groups compared to Vehicle, and improvements in hair volume scored best.

**Figure 3**: Changes in the appearance of hair quality and scalp health parameters as determined by expert rating on the basis of a questionnaire using a five point scale. Statistics: (*) p<0.1, * p<0.05, ** p<0.01, *** p<0.001 vs. Vehicle.

**Summary**

SPHINGONY is the trade name for the naturally occurring, skin-identical molecule Sphinganine which is produced through a patented process. By using a unique yeast strain, the skin identical stereochrome of the molecule is preserved. As shown, SPHINGONY targets hair appearance by improving scalp health and hair quality appearance parameters.

A detailed test summary report (technical dossier) is available on request.

**Claim summary**

SPHINGONY

- Improves appearance of hair quality
- Provides the appearance of a healthy scalp
- Unique sphingolipid based on Evonik’s ceramide expertise
- Skin-identical sphinganine stereochrome due to patented process

**Patent position**

A patent application describing the use SPHINGONY to improve the visual appearance of skin and hair was filed by Evonik Industries AG (DE102011109546A1, WO2013017361A1).

A patent application describing a formulation containing SPHINGONY and at least one ingredient from the group of creatine, caffeine, carnitine, biotin, arjunolic acid and xymenylic acid was submitted by Evonik Industries AG.

To the best of our knowledge, no third party patent rights exist that generally prevent the use of SPHINGONY in cosmetic formulations.

**Formulation hints**

SPHINGONY is soluble in pure ethanol or in pentylene glycol. An ethanolic solution of 2% is readily prepared at room temperature, higher concentrations require prolonged stirring and/or heating.

For preparation of hair tonics, it is recommended to dissolve SPHINGONY in a raw material (e.g. TEGOSOFT® PC 41, TEGO® SML 20, TEGOSOFT® GC), if required by heating, before addition of other ingredients like emollient, ethanol and water. Additional raw materials with good solvency for SPHINGONY are TEGO® SMO 80 V, TAGAT® CH 40, TEGINACID® C, TEGO® Alkanol L4, REWODERM® LI 63, TEGOSOFT® APM, TEGOSOFT® G 20.

For preparation of conditioners, SPHINGONY is added to the hot oil phase until homogeneously solubilized, before addition of the other ingredients.

**Recommended usage concentration**

Recommended use level 0.1–0.5%, clinically tested at different concentrations.
Possible applications
- Hair tonic
- Rebalancing leave-in conditioner
- Multifunctional scalp fluid

Packaging
0.25 kg package
2.50 kg bag

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 the material safety data sheet.
### Volume-Boosting Tonic (MM 250/1/9)

<table>
<thead>
<tr>
<th>Phase A</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>TAGAT® CH 40 (PEG-40 Hydrogenated Castor Oil)</td>
<td>3.0%</td>
</tr>
<tr>
<td>SPHINGONY (Sphinganine)</td>
<td>0.1%</td>
</tr>
<tr>
<td>TEGOSOFT® GC (PEG-7 Glyceryl Cocoate)</td>
<td>2.0%</td>
</tr>
<tr>
<td>TEGOSOFT® DEC (Diethylhexyl Carbonate)</td>
<td>0.5%</td>
</tr>
<tr>
<td>Perfume</td>
<td>0.2%</td>
</tr>
<tr>
<td>Ethanol</td>
<td>50.0%</td>
</tr>
<tr>
<td>Water</td>
<td>44.2%</td>
</tr>
<tr>
<td>Preservative</td>
<td>q.s.</td>
</tr>
</tbody>
</table>

**Preparation:**
1. Heat solubilizer and SPHINGONY to approx. 80 °C until homogeneously solubilized.
2. Add emollients, perfume and ethanol step by step and mix until homogeneous. Heat if necessary.
3. Add the water.

### Rebalancing Leave-In Conditioner (CD 1011/10)

<table>
<thead>
<tr>
<th>Phase A</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>TEGINACID® C (Ceteareth-25)</td>
<td>1.0%</td>
</tr>
<tr>
<td>TEGO® Alkanol 18 (Stearyl Alcohol)</td>
<td>2.0%</td>
</tr>
<tr>
<td>Cyclopentasiloxane</td>
<td>5.0%</td>
</tr>
<tr>
<td>TEGOSOFT® DEC (Diethylhexyl Carbonate)</td>
<td>3.0%</td>
</tr>
<tr>
<td>SPHINGONY (Sphinganine)</td>
<td>0.1%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Phase B</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>80.9%</td>
</tr>
<tr>
<td>VARISOFT® 300 (Cetrimonium Chloride)</td>
<td>1.5%</td>
</tr>
<tr>
<td>ABIL® Quat 3272 (Quaternium-80)</td>
<td>0.5%</td>
</tr>
<tr>
<td>TEGO® Cosmo C 100 (Creatine)</td>
<td>1.0%</td>
</tr>
<tr>
<td>Lactic Acid (10% in water)</td>
<td>3.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Phase Z</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Preservative, Perfume</td>
<td>q.s.</td>
</tr>
</tbody>
</table>

**Preparation:**
1. Heat phase A and B to approx. 70–75 °C.
2. Add phase B to A and homogenize.
3. Cool with stirring to approx. 30 °C.
4. Adjust pH to approx. 4–4.5.

---

This product information is not intended to provide legal or regulatory advice about product uses or claims in any jurisdiction and should not be relied upon for such guidance (especially in the United States, Canada, and Mexico). Since global regulatory requirements differ, parties accessing this information are solely responsible for determining whether the products and/or claims comply with applicable local laws and regulations, including but not limited to import and export regulations. Please contact your local Evonik representative for more product information. Evonik assumes no liability for any use of our products that is not in compliance with the requirements of the country of the user. This product is not intended to be used as a drug.

---

This information and all further technical advice is based on our present knowledge and experience. However, it implies no liability or other legal responsibility on our part, including with regard to existing third-party intellectual property rights, especially patent rights. In particular, no warranty, whether express or implied, or guarantee of product properties is the legal sense is intended or implied. We reserve the right to make any changes according to technological progress or further developments.

The customer is not released from the obligation to conduct careful inspection and testing of incoming goods. Performance of the product described herein should be verified by testing, which should be carried out only by qualified experts in the sole responsibility of a customer. Reference to trade names used by other companies is neither a recommendation, nor does it imply that similar products could not be used.

(Statref: April 2004)