

# SPHINGONY

Hair cycle balancer

- Improves appearance of hair quality
- Provides the appearance of a healthy scalp
- Unique sphingolipid based on Evonik's ceramide expertiseSkin-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)

Form	White to off-white powder
Melting range [°C]	73 – 84°C

## 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.

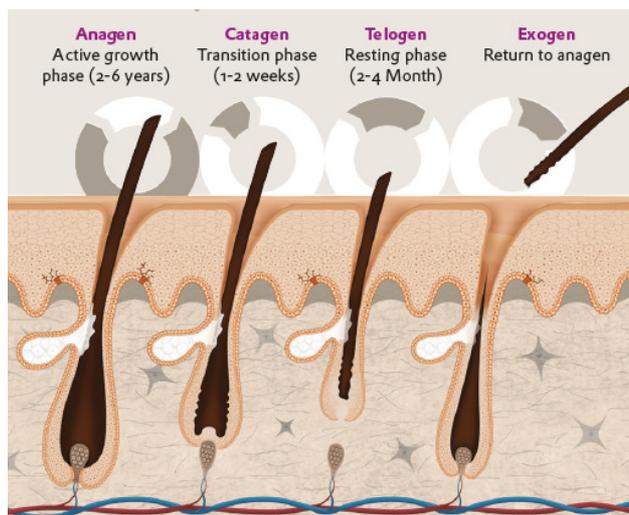


Figure 1a: The hair life cycle.

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.



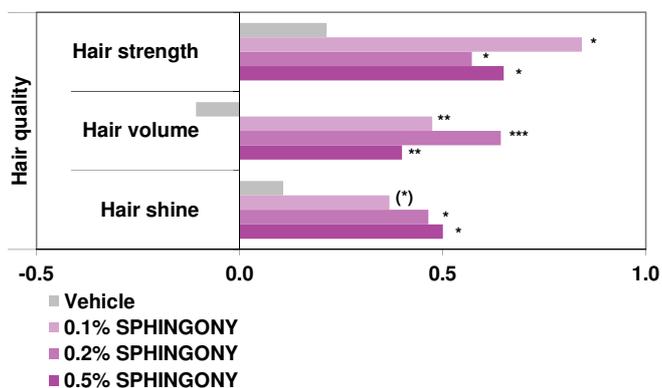
Figure 2: Photographic documentation of the effect of SPHINGONY application on four male panelists.

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.

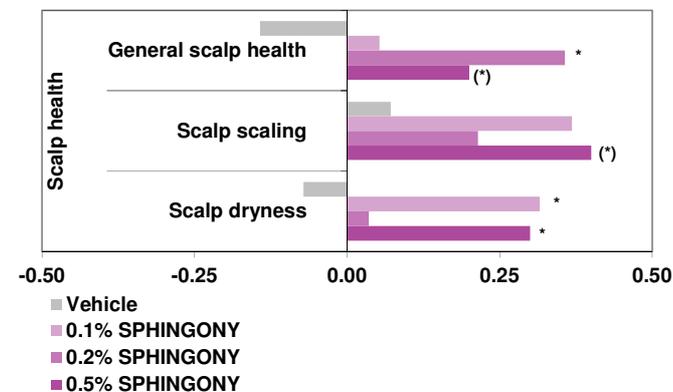
TrichoScan® images were taken and analyzed (data not shown)..

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.

#### Improvement in hair quality (expert rating) [score]



#### Improvement in scalp health (expert rating) [score]



**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 stereochemistry 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
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- Skin-identical sphinganine stereochemistry 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, carnitin, biotin, arjunolic acid and xymenynic 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.

## Guide Line Formulations

<b>Volume-Boosting Tonic (MM 250/1/9)</b>	
<b>Phase A</b>	
TAGAT® CH 40 (PEG-40 Hydrogenated Castor Oil)	3.0%
SPHINGONY (Sphinganine)	0.1%
TEGOSOFT® GC (PEG-7 Glyceryl Cocoate)	2.0%
TEGOSOFT® DEC (Diethylhexyl Carbonate)	0.5%
Perfume	0.2%
Ethanol	50.0%
Water	44.2%
Preservative	q.s.
<b>Preparation:</b>	
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.	

<b>Rebalancing Leave-in Conditioner (CD 1011/10)</b>	
<b>Phase A</b>	
TEGINACID® C (Ceteareth-25)	1.0%
TEGO® Alkanol 18 (Stearyl Alcohol)	2.0%
Cyclopentasiloxane	5.0%
TEGOSOFT® DEC (Diethylhexyl Carbonate)	3.0%
SPHINGONY (Sphinganine)	0.1%
<b>Phase B</b>	
Water	80.9%
VARISOFT® 300 (Cetrimonium Chloride)	1.5%
ABIL® Quat 3272 (Quaternium-80)	0.5%
TEGO® Cosmo C 100 (Creatine)	1.0%
Lactic Acid (10% in water)	3.0%
<b>Phase Z</b>	
Preservative, Perfume	q.s.
<b>Preparation:</b>	
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.	

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