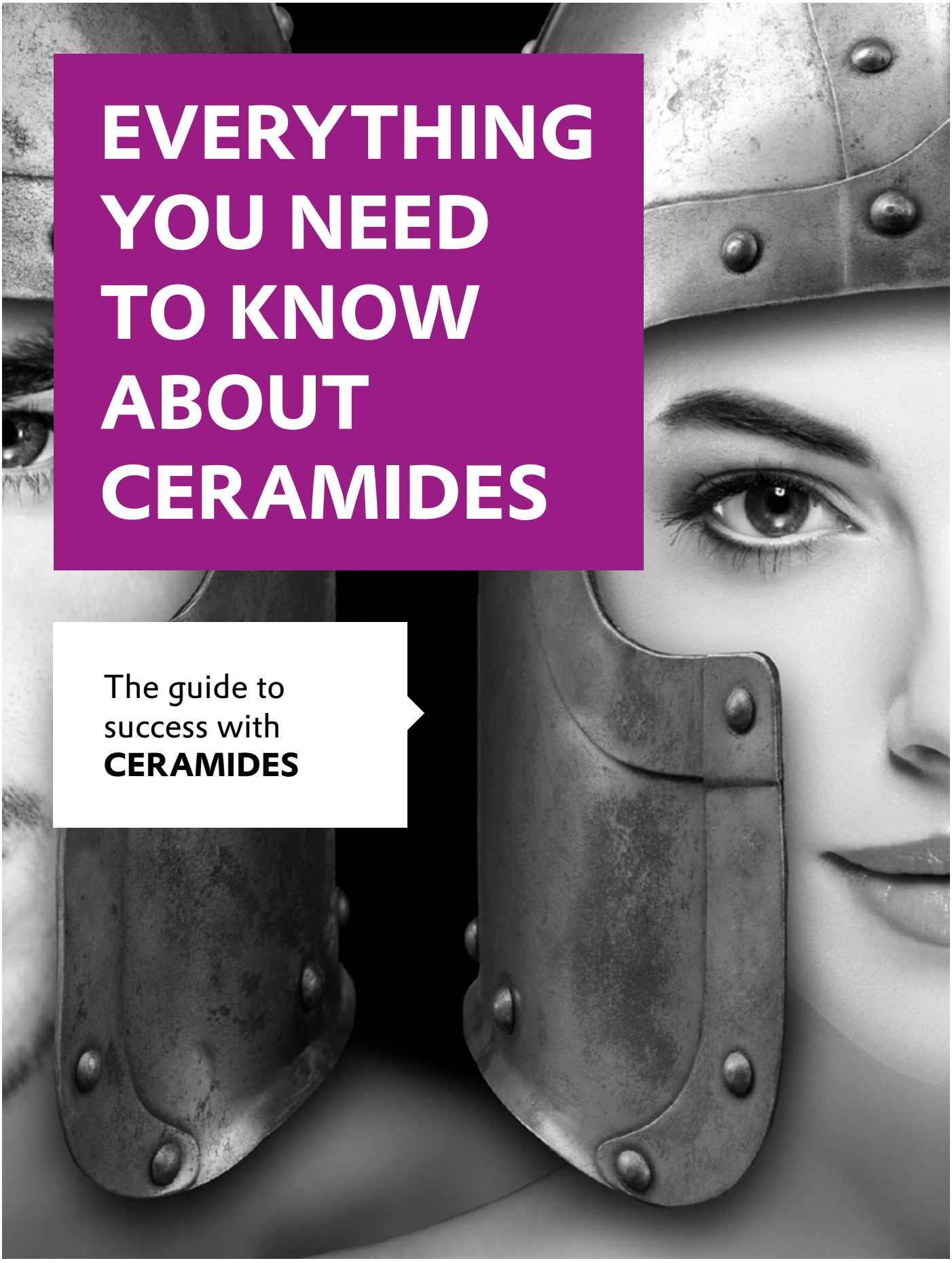


# EVERYTHING YOU NEED TO KNOW ABOUT CERAMIDES

The guide to success with **CERAMIDES**

EVONIK
Leading Beyond Chemistry

# INTRODUCTION

Beauty brands face many challenges in today's fast moving cosmetic Industry. The market is saturated. Consumers are confused. There are too many brands to follow. That's why it's even more important to always focus on the right trends – especially for established components of many products like ceramides in hair and skin care cosmetics. This can be a challenge for innovative and aspiring beauty brands.

As a beauty brand you may need some support with your first pilot, launch roll-out or additional product lines? Evonik helps to transform your beauty concepts into developed formulations and finished products.

Rely on the guidance of an experienced ingredient supplier like Evonik to

- enrich the process.
- provide access to knowledge and expertise.
- get insights on cutting edge formulations and ingredients.

As navigating the ingredient supplier landscape is often challenging, we've put together this guide to give you the need to knows about contract manufacturing, and to support you in creating and sustaining a thriving beauty brand.



# CONTENTS

Our ceramide technology guide for beauty brands will give you industry insights on:


**1 What are ceramides and how do they work in cosmetics products?**

- What exactly are ceramides?
- What do ceramides do?
- What are the benefits of ceramides?
- Which skin types are ceramides best for?

**2 Evonik's strong products for beauty brands**

- Evonik's ceramide technologies – A wide variety of applications
- Regenerate the skin barrier with SK-INFLUX® technology
- Repair the hair structure with HAIRFLUX®
- Enhance skin moisturization with Bodyflux® Olive




# 1 |

# WHAT ARE CERAMIDES AND HOW DO THEY WORK IN HAIR CARE AND SKIN CARE PRODUCTS?



# WHAT EXACTLY ARE CERAMIDES?

Ceramides, a special class of sphingolipids, have been found to be key components in the outermost layer of the skin and hair. They play an essential role in maintaining and structuring the lipid barrier.

## THE ROLE OF CERAMIDES ON SKIN

Ceramides are lipids (fats) that are found naturally in high concentrations in the uppermost layers of skin. They make up over 50 percent of skin's composition. So it's no surprise they play a vital role in determining how our skin looks and how it responds to environmental threats.

Often referred to as the building blocks of skin, ceramides form the protective, outermost layer, known as the skin barrier. The skin barrier is the first line of defense against the outside world, and it works to fight off environmental aggressors – like free radicals, pollution and other irritants – while helping skin to retain that all-important moisture.

## THE ROLE OF CERAMIDES ON HAIR

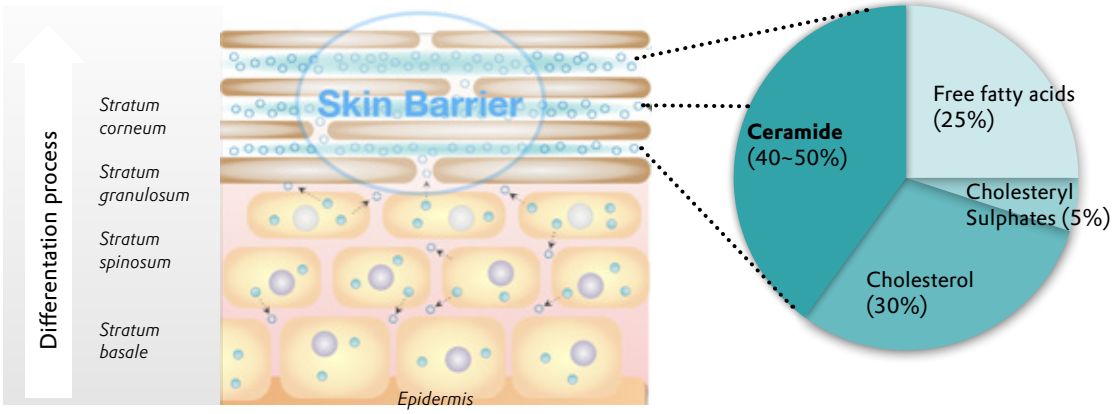
Ceramides also can be found in the hair's cuticle. They create a protective barrier around the hair to hold in moisture and protein while also guarding the hair from chemical damage, heat damage and UV rays as such 'repairing' the cuticle layer. The cuticle is considered to be the hair's defense layer, which when closed, gives your hair shine, healthy look, and protection it deserves.

Similarly, ceramides are known to keep the hair cuticle intact, because raised cuticle can cause hair damage. By binding the cuticles together, ceramides prevent damage, keep the hair follicles in their place, and strengthen hair strands.

## THE IMPORTANCE OF CERAMIDES FOR COSMETICS PRODUCTS

Ceramides come in nine types, numbered from 1 to 9. They differ in the length of their fatty acid chains, the nature of their sphingoid bases, and how these entities are attached. Benefits range from strengthening the skin from the stratum corneum to the subcutis, reinforcing the skin lipid barrier, improving skin moisturization, protecting from harmful external effects and counteracting dermal photo aging right through to prevention of hair loss.

## SKIN BARRIER LIPID CONSIST 40 ~ 50% OF CERAMIDE




*Source: Human skin-identical Ceramides, Evonik Industries, P.7 (2007)*





# SHIELD YOUR NATURAL PROTECTIVE BARRIER

Pollution, the aging process, seasonal factors, UV irradiation and predisposition disrupt our natural protective skin and hair barrier. Evonik technologies preserve and maintain this barrier for a moisturized, vital, smooth and healthy look.

**PROTECT**
Reinforce the natural lipid barrier of dry, sensitive or aging skin against moisture loss and external challenges

**REPLENISH**
Counteract photodamaged skin and reduce inflammation

**STRENGTHEN**
Reduce hair breakage and shield hair fibers against mechanical and thermal stress

# THE IMPORTANCE OF CERAMIDES AND SPHINGOLIPIDS FOR ...

**THE SKIN**

## THE TRIGGERS

Our skin is bombarded by external aggressors and must endure the aging process.

## THE IMPLICATIONS

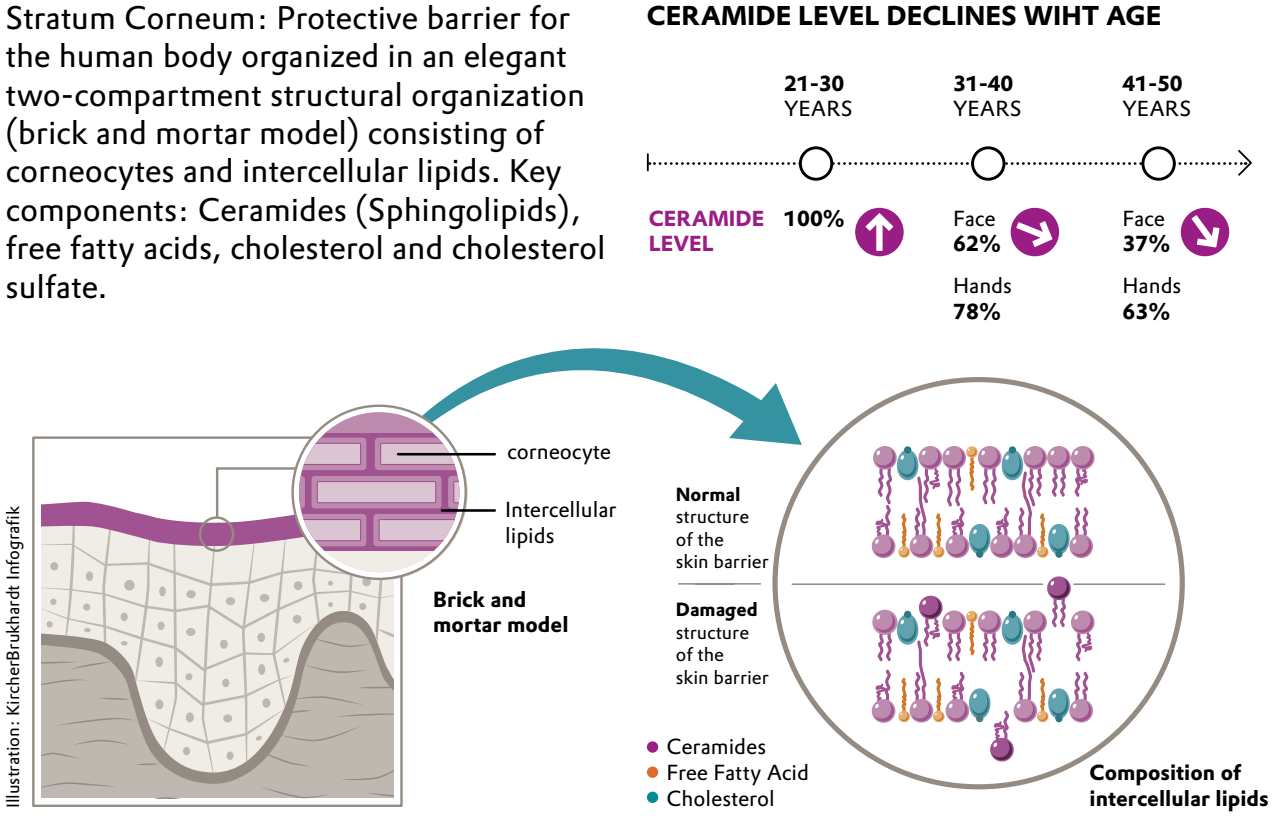
The level of ceramides in the skin decreases. This weakens the skin barrier, leading to dry, dull and blemished skin.

## THE SOLUTION

Evonik's ceramide and sphingolipid technology show remarkable proven efficacy improving these skin conditions.

### THE SKIN: PROTECTOR – DEFENDER – GATEKEEPER

Stratum Corneum: Protective barrier for the human body organized in an elegant two-compartment structural organization (brick and mortar model) consisting of corneocytes and intercellular lipids. Key components: Ceramides (Sphingolipids), free fatty acids, cholesterol and cholesterol sulfate.



# WHAT ARE THE BENEFITS OF CERAMIDES?

Well-formulated skin care products containing ceramides will help reinforce the skin's barrier and increase hydration – giving a smoother and firmer-feeling skin with fewer visible lines and wrinkles, as well as fewer signs of sensitivity.

## THE BENEFITS OF CERAMIDES FOR THE SKIN

- **Strengthens the skin's natural barrier:** Our skin helps to keep the wrong things away from our body. These so-called skin barriers are made up of fats including ceramides and lipids that keep unwanted stuff off our skin, and make the skin look healthy and balanced.

- **Deep, long-lasting hydration:** Ceramides in skin care offer long-term hydration. Ceramides work towards repairing the damaged skin, enhancing skin hydration, and bettering the barrier functioning of the skin.

- **Repairs chronic dryness of the skin:** Ceramides work effortlessly towards restoring and retaining the moisture content in the skin. Due to various factors – like lifestyle changes, pollution, lack of hydration - the skin can become dry and flaky. A moisturizer with high load of ceramides can counteract a severely damaged stage.

- **Provides Firm and Supple Skin:** Looking youthful doesn't come easy. That's why, moisturizers contain ceramides acting as an antioxidant, which keeps the moisture content of the skin intact, making it firm and supple in the long run.

# WHICH SKIN TYPES ARE CERAMIDES BEST FOR?

Ceramides are naturally a part of your skin, they are ideal for all skin types – even for extremely sensitive, breakout-prone, or oily skin.

Ceramides fall under the category of 'skin-replenishing' (aka skin-identical) ingredients. Because they're naturally a part of your skin, ceramides are ideal for all skin types – even for extremely sensitive, breakout-prone, or oily skin. They're also safe to use around the eyes.

It's unclear whether skin's naturally occurring ceramide levels relate to the risk of developing certain underlying skin conditions. However, research does suggest that people who have eczema or psoriasis have fewer ceramides in their skin.

Using ceramide-containing skin care products may help soothe skin irritation and provide an additional barrier to certain cases of dry skin.

You may also benefit from supplementary ceramides if you have mature skin.

## 5 REASONS FOR BEAUTY BRANDS TO BOOST BUSINESS WITH CERAMIDES:

I Global market acceptance and approval of ceramides in cosmetic products.

II Differentiate your beauty brand from the competition with ceramides.

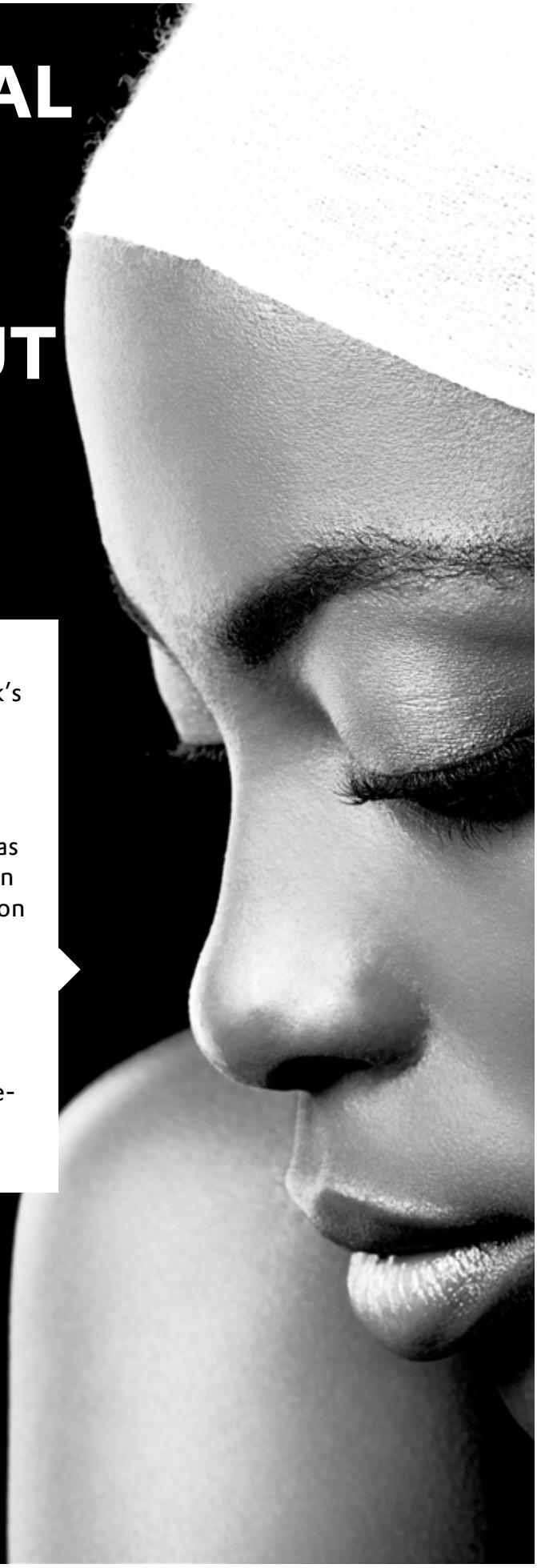
III Proven technologies and formulations convince customers about the value of your products.

IV Ceramides also help your customers with skin conditions like itching, eczema or sensitivity.

V Natural substances such as ceramides can be easily obtained by biotechnological means.

# SKIN-IDENTICAL

# WHAT'S SO SPECIAL ABOUT EVONIK'S CERAMIDES?



As the global, undisputed market leader in the skin-identical ceramide business, Evonik's objective is it to bring innovation and share new findings within the ceramide research field on a regular base.

As opposed to chemical synthesis, Evonik has developed a patented biotechnological green production process based on the fermentation of a non-conventional yeast extracted from tonka beans.

The ceramide biosynthesis pathway is conserved from yeast to man. Therefore, Evonik's ceramides have the same stereochemical conformation as the ceramides in our skin, i.e. they are truly skin-identical.

# THE IMPORTANCE OF CERAMIDES AND SPHINGOLIPIDS FOR ...

**THE HAIR**

## THE TRIGGERS

Our hair is exposed daily to different environmental factors like UV rays, pollution as well as harsh styling treatments like straightening and bleaching.

## THE IMPLICATIONS

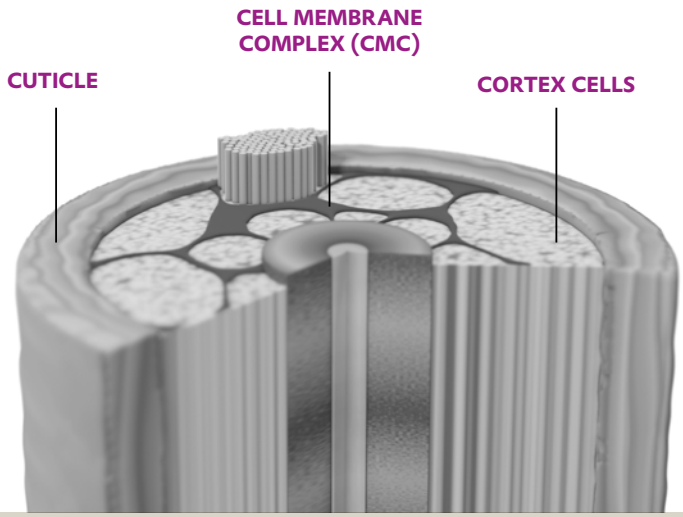
This leads to damage of hair structures, irritation of the scalp and an imbalanced hair lifecycle.

## THE SOLUTION

Evonik's ceramide and sphingolipid technology shows outstanding performance on different hair types, with different kind of damages and an improvement of overall scalp health.

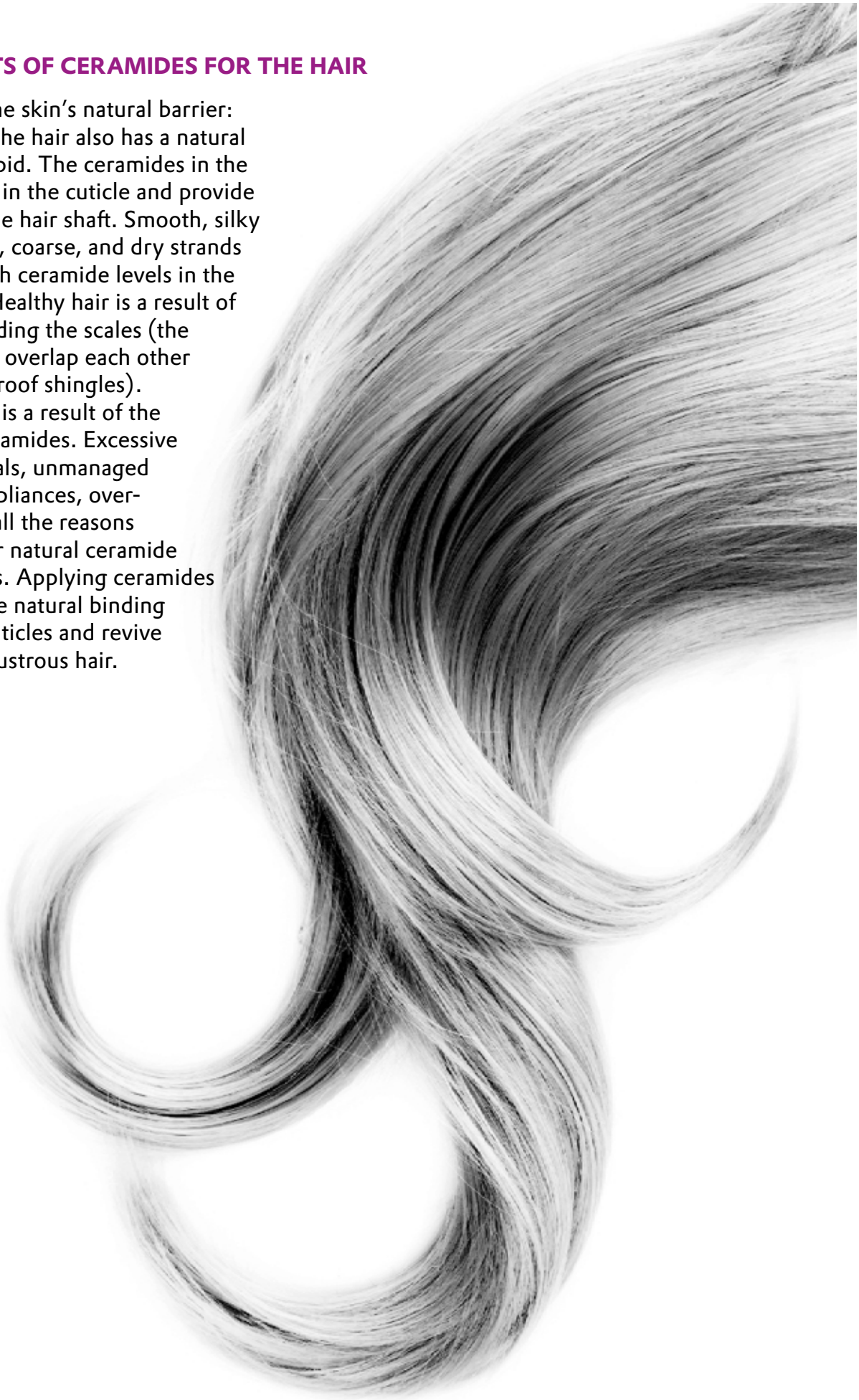
### THE HAIR: CUTICLE – CORTEX – CELL MEMBRANE COMPLEX (CMC)

CMC: Kit between different hair cells
to maintain cohesion.
Key components: Ceramides and lipids



## THE BENEFITS OF CERAMIDES FOR THE HAIR

Strengthens the skin's natural barrier: Just like skin, the hair also has a natural component, lipid. The ceramides in the hair are found in the cuticle and provide strength for the hair shaft. Smooth, silky strands or dull, coarse, and dry strands have to do with ceramide levels in the hair cuticles. Healthy hair is a result of ceramides binding the scales (the dead cells that overlap each other and resemble roof shingles). Damaged hair is a result of the absence of ceramides. Excessive use of chemicals, unmanaged use of heat appliances, over-cleansing are all the reasons for which your natural ceramide count depletes. Applying ceramides will restore the natural binding of scales on cuticles and revive your natural, lustrous hair.



# 2 |

# EVONIK'S STRONG PRODUCTS AND PARTNERSHIPS FOR BEAUTY BRANDS



# EVONIK'S CERAMIDE TECHNOLOGIES – A WIDE VARIETY OF APPLICATIONS

By adding ceramides to skincare products, the skin barrier can be strengthened, and the moisture levels of the skin can be improved. This will result in a smoother, more even, softer and firmer skin with less irritation. In hair care products ceramides have the potential to calm down irritated scalp and repair damaged hair.

Over the past more than 25 years, Evonik has developed a range of sphingolipid and ceramide technologies – including the production of pure human skin-identical ceramides – with a variety of applications. These technologies protect by reinforcing the natural lipid barrier of dry, sensitive or aging skin and hair against moisture loss and external changes; replenish by counteracting photo-damaged skin and reducing inflammation; and strengthen the skin from the stratum corneum to the subcutis, as well as reducing hair breakage and shielding hair fibers against mechanical and thermal stress.

Evonik continues to develop new products based on market trends and customer needs. See how we can cover your needs with our technologies on the following pages:

I Regenerate the skin barrier with **SK-INFLUX® Technology**

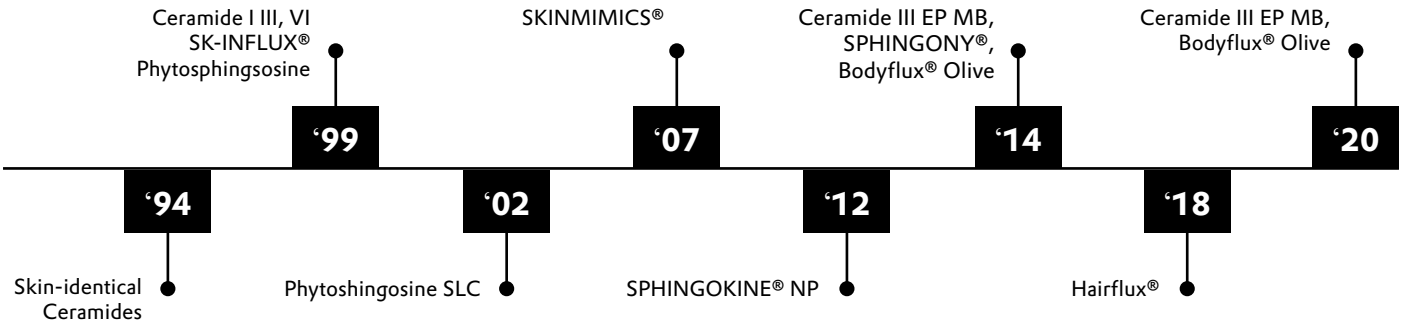
II Enhance skin moisturization **BODYFLUX® Olive**

III Repair the hair structure with **HAIRFLUX®**

# EVONIK - OVER 25 YEARS OF EVOLUTION BASED ON CERAMIDE TECHNOLOGY

Pollution, the aging process, seasonal factors, UV irradiation and predisposition disrupt our natural protective skin and hair barrier. Evonik technologies preserve and maintain this barrier for a moisturized, vital, smooth and healthy look and is continuously developing new products based on market trends and customer needs.

## OUR HISTORY OF CERAMIDE TECHNOLOGY




## ... AND WE CAN PROVE OUR EXPERTISE

In 1994, Cosmoferm (now Evonik) succeeds in developing a technology, which enables the production of pure human skin-identical ceramides. Evonik is continuously developing new products based on market trend and customer needs.

**OVER 25 YEARS OF EVELUTION**
Based on ceramide technology

- Reinforcement of skin and hair structures
- Technology pioneer in producing nature identical ceramides and sphingolipid derivatives
- Sophisticated biotechnological processes
- Outstanding performance on different skin and hair conditions
- Proven efficacy *(in vitro, in vivo)*
- Inspired by customer needs and market trends
- Broad application profile
- Ceramide competence center (formulation know-how)

# I REGENERATE THE SKIN BARRIER WITH SK-INFLUX® TECHNOLOGY

SK-INFLUX® is a skin-identical lipid concentrate for enhanced skin moisturization and protection. It is ideal for aging skin, dry skin and sensitive skin. SK-INFLUX® is a concentrated formulation, consisting of a multi-lamellar (membrane) system resembling the structure of the lipid barrier in the Stratum Corneum. It is a concentrated mix of different types of ceramides, cholesterol, free fatty acids and phytosphingosine making it an ideal ingredient for personal care products with unique restoring capabilities.

**INCI:** Ceramide NP; Ceramide AP; Ceramide EOP; Phytosphingosine; Cholesterol; Sodium Lauroyl Lactylate; Carbomer; Xanthan Gum

## BENEFITS AT A GLANCE:

- Restores the protective barrier function of the skin
- Enhances skin moisturization
- Ideal for aging skin, dry skin and sensitive skin
- Enhanced delivery and exchange of skin lipids
- Water soluble
- Product form: viscous liquid
- In vivo and in vitro effi

## APPLICATIONS

- Body care
- Eye care
- Face and neck care
- Hand and foot care
- Wet wipes and face mask

## APPLICATION OF SK-INFLUX®

- Filling the gaps in the lipid layer
- Improved skin moisturization
- Reduced transepidermal water loss (TEWL) and skin scaliness
- **SK-INFLUX®prevents damages of the skin barrier and restores affected skin barrier structures**



# II ENHANCE SKIN MOISTURIZATION WITH BODYFLUX® OLIVE

Bodyflux® Olive is a ceramide complex derived from organic olive oil for body and skin care applications. It is based on an environmentally friendly, biotechnology-based production process. It improves epidermal moisturization and offers the well-known benefits of Ceramide NP.

**INCI (PCPC NAME):**
Ceramide NP

## BENEFITS AT A GLANCE:

- Improves epidermal moisturization
- Ceramide complex with skin barrier strengthening properties
- Biotechnological-based production process using organic olive oil
- COSMOS approved

## APPLICATIONS

- Moisturizing body products
- Protecting hand and foot care
- Natur-oriented skin care



# III REPAIR THE HAIR STRUCTURE WITH HAIRFLUX®

Hairflux® is a bio-inspired hair and scalp ingredient, combining relevant sphinganine-based ceramides and natural oils to achieve mild and well tolerated efficacy. Hairflux® is the best in class multifunctional olive-based ceramide, for the care of both: hair and scalp, with proven efficacy on different types of damaged hair and affected scalp.

**INCI:** Ceramide NG; Olea Europaea (Olive) Fruit Oil; Ricinus Communis (Castor) Seed Oil

## BENEFITS AT A GLANCE:

- Improvement of irritated scalp conditions
- Anti-inflammatory capacity to calm down irritated scalp conditions
- Repair of the inner hair structure of bleached hair
- Reduced hair breakage of straightened hair
- Reduced hair breakage after hot drying and combing
- Improvement on dry skin
- Protection of hair fibers against mechanical and thermal stress

## APPLICATIONS

- Scalp care treatments (serums, tonics)
- Post-chemical and repairing hair masks
- Conditioners
- Shampoos



# FURTHER INFORMATION REQUIRED?

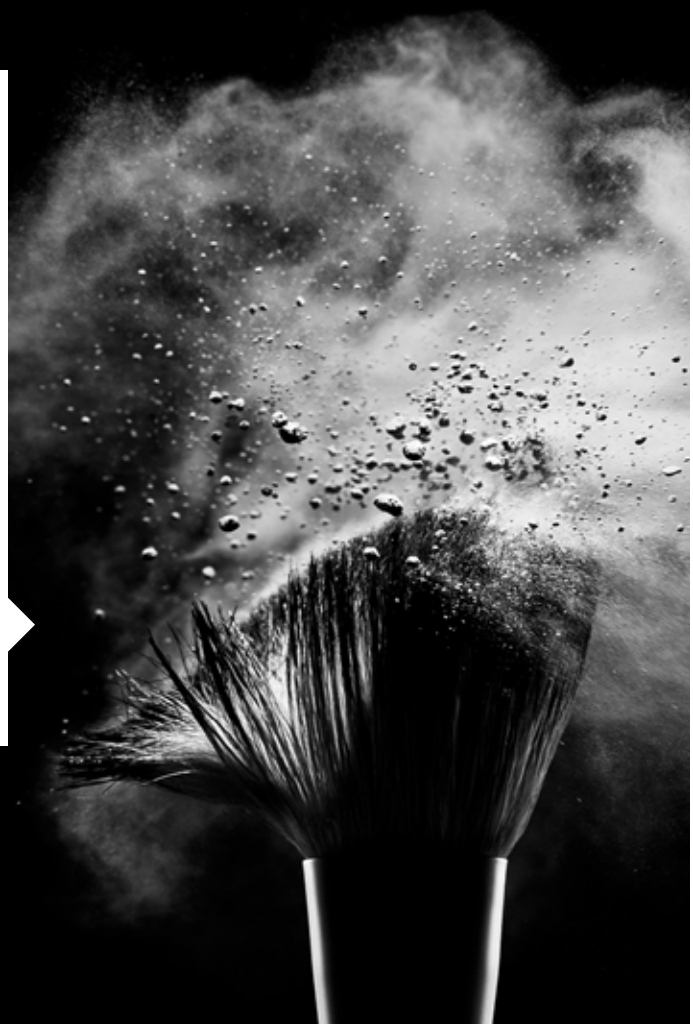

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