

# SK-INFLUX® V

## A skin-identical lipid concentrate for enhanced skin moisturization and protection

### Intended use

Active for skin care

### Benefits at a glance

- Restores the protective barrier function of the skin
- Ideal for ageing skin, dry skin and sensitive skin
- Enhanced delivery and exchange of skin lipids
- SK-INFLUX® V is a new version of SK-influx, with non-animal cholesterol (vegetal-derived, semi-synthetic cholesterol)
- SK-INFLUX® V is paraben-free

### INCI (PCPC name)

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

For Chinese SFDA listed as:

Ceramide 3; Ceramide 6II; Ceramide 1;  
Phytosphingosine; Cholesterol; Sodium Lauroyl  
Lactylate; Carbomer; Xanthan Gum

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

Form	viscous liquid
Active matter	about 2.5%
Preservatives	Phenoxyethanol and Ethylhexylglycerin

### Properties

- SK-INFLUX® is a skin-identical lipid concentrate, which restores the protective barrier function of the 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.
- A concentrated mix of different types of ceramides, cholesterol, free fatty acids and phytosphingosine makes it an ideal ingredient for personal care products with unique restoring capabilities.
- Cholesterol is a key ingredient of SK-INFLUX® and essential for the performance of the product. However, its animal origin (sheep's woolgrease) prevents some customers from using SKINFLUX®. In order to fulfil market expectation, Degussa Goldschmidt Personal care has been looking for alternatives and testing them. As a result, SK-INFLUX® V is now available with vegetal derived, semi-synthetic cholesterol that is chemically and physically indistinguishable from the animal-based product.
- Application of SK-INFLUX® V will result in an enhanced moisturization and protection, ultimately leading to a less sensitive and less dry skin.
- Depending on the type of skin and desired effect, SK-INFLUX® V is used with concentrations varying from 1 – 15%. However, for typical applications such as ageing and dry skin a dosage level of 3 – 5% is

recommended.

## Efficacy studies

### *Uptake of Ceramide into Stratum Corneum*

#### *(Ex vivo incorporation study)*

**Introduction:** This study investigated the extent to which Ceramides can be incorporated into the natural lipid barrier of the stratum corneum when topically applied in different types of formulations.

**Study:** The study was performed by Prof. P.W. Wertz at the Dows Institute (University of Iowa, USA).

**Methods:** <sup>14</sup>C-radiolabeled Ceramide VI was formulated in three different systems at a concentration of 0.5% (specific activity of 59 000 dpm/nmol):

System 1: Oil/water with ethoxylated sorbitan ester

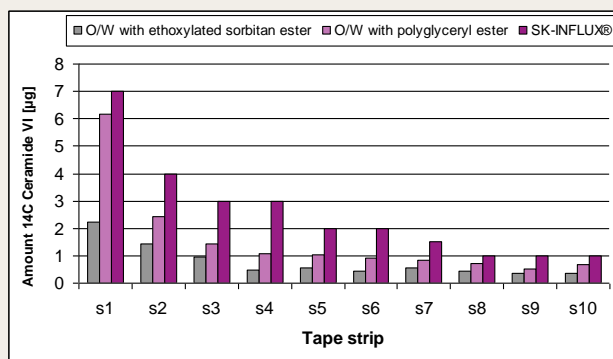
System 2: Oil/water with polyglyceryl ester

System 3: SK-INFLUX® system

Ceramide VI was chosen as a representative Ceramide for this study.

50 µl of each formulation was topically applied to isolated Stratum Corneum (1.5 cm x 1.5 cm). After 1 hour, excess formulation was removed and new formulation (50 µl) was applied. This was repeated after the second hour. After 3 hours, excess formulation was removed from the surface. Ten layers of Stratum Corneum were removed by successive stripping with tape. Radioactivity in each strip was determined by liquid scintillation counting. The residual Stratum Corneum was excised to calculate the total amount of Ceramide incorporated (strips plus residue radioactivity).

**Results:** The graph shows the amount of Ceramide VI incorporated in the layers of the Stratum Corneum. S1–S10 refer to ten sequential tape strips (fig. 1).



**Fig. 1: Ex vivo incorporation study with <sup>14</sup>C-radio-labeled Ceramide VI**

The largest amount of Ceramide VI, thus the best incorporation, can be found with the SK-INFLUX® system. The lower layers of the Stratum Corneum showed decreasing amounts of incorporated Ceramide VI.

Total amounts of incorporated Ceramide VI (strips plus residue) were 20, 31 and 44 µg/cm<sup>2</sup> for systems 1 to 3 respectively.

**Conclusion:** It was demonstrated that Ceramides are effectively incorporated into the lipid barrier of the Stratum Corneum when topically applied.

Furthermore, the SK-INFLUX® formulation increased the bioavailability of Ceramide VI by more than 38% compared to the other oil/water emulsions.

**Other efficacy studies are available on request.**

## Preparation

In emulsions SK-INFLUX® should be added to the water phase before the homogenisation step.

Adding SK-INFLUX® to an existing recipe of an O/W emulsion drops the viscosity significantly. The reason for this is a rearrangement of the liquid crystalline structures. But the emulsion is not necessarily less stable in spite of the lower viscosity. To increase the viscosity it is suggested to increase the amount of consistency enhancer, e. g. the amount of TEGO® Alkanol 18 (Stearyl Alcohol). Since SK-INFLUX® contains an anionic surfactant as a liposome builder cationic emulsifier systems should be avoided due to possible interactions.

## Application

Consequently SK-INFLUX® V has a wide range of applications, such as O/W creams and lotions of the segments:

- Moisturizing products
- Ageing and anti-wrinkle products
- Skin repair
- Skin protection

## Recommended usage concentration

Normal skin:	1.5 – 5% SK-INFLUX® V
Dry skin:	3 – 5% SK-INFLUX® V
Ageing skin:	3 – 5% SK-INFLUX® V
Skin repair/Protection:	3 – 15% SK-INFLUX® V

## Packaging

5 and 25 kg package

## Storage

- The product is stable for 2 years when stored at 10 – 15°C.
- Kept at room temperature the product is stable for 6 months.
- The product should not be stored at temperatures lower than 10°C.

## 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 case of accidents and fires
- toxicity and ecological effects

is given in our material safety data sheets.

## Guideline formulations

O/W Skin repair cream H 10/07-17		
<b>Phase A</b>		
TEGO® Alkanol S 2	(Steareth-2)	2.40%
TEGO® Alkanol S 20 P	(Steareth-20)	0.60%
TEGO® Alkanol 1618 (Cetearyl Alcohol)		3.00%
Stearic Acid		1.00%
Isohexadecane		6.00%
TEGOSOFT® APS (PPG-11 Stearyl Ether)		3.00%
Cyclomethicone		1.00%
<b>Phase B</b>		
Glycerin		3.00%
SK-INFLUX® V		2.00%
Water		77.00%
<b>Phase C</b>		
TEGO® Carbomer 134	(Carbomer)	0.20 %
TEGOSOFT® OP	(Ethylhexyl Palmitate)	0.80 %
<b>Phase D</b>		
Sodium Hydroxide (10% in water)		q.s.
Preservative, Perfume		q.s.
<b>Preparation:</b>		
1. Heat phase A and B separately to approx. 80°C.		
2. Add phase A to phase B with stirring. <sup>1)</sup>		
3. Homogenize.		
4. Cool with gentle stirring to approx. 60°C and add phase C.		
5. Homogenize for a short time.		
6. Cool with gentle stirring and add phase D below 40°C.		
<sup>1)</sup> Important: If phase A has to be charged into the vessel first, phase B must be added <b>without stirring</b> .		

Absolute moisture & protection lotion H 10/07-2	
<b>Phase A</b>	
AXOL® C 62 (Glyceryl Stearate Citrate)	2.00%
TEGOSOFT® CT (Caprylic/Capric Triglyceride)	8.00%
TEGOSOFT® G 20 (Octyldodecanol)	8.00%
TEGO® Alkanol 1618 (Cetearyl Alcohol)	1.50%
Tocopheryl Acetate	0.50%
<b>Phase B</b>	
Glycerin	3.00%
SK-INFLUX® V	5.00%
Water	70.50%
<b>Phase C</b>	
TEGO® Carbomer 141 (Carbomer)	0.30%
TEGOSOFT® OP (Ethylhexyl Palmitate)	1.20%
<b>Phase D</b>	
Sodium Hydroxide (10% in water)	q.s.
Preservative, Perfume	q.s.
<b>Preparation:</b>	
<ol style="list-style-type: none"> <li>Heat phase A and B separately to approx. 80°C.</li> <li>Add phase A to phase B with stirring.<sup>1)</sup></li> <li>Homogenize.</li> <li>Cool with gentle stirring to approx. 60°C and add phase C.</li> <li>Homogenize for a short time.</li> <li>Cool with gentle stirring and add phase D below 40°C.</li> </ol>	
<sup>1)</sup> Important: If phase A has to be charged into the vessel first, phase B must be added <b>without stirring</b> .	

Moisture-rich W/O lotion with light skin feel H 10/07-25	
<b>Phase A</b>	
ISOLAN® GPS (Polyglyceryl-4 Diisostearate/ Polyhydroxystearate/ Sebacate)	2.00%
Microcrystalline Wax (Paracera M; Paramelt B.V.)	0.10%
Hydrogenated Castor Oil	0.10%
TEGOSOFT® DEC Diethylhexyl Carbonate)	6.80%
TEGOSOFT® TN (C12-15 Alkyl Benzoate)	6.00%
TEGOSOFT® CT (Caprylic/Capric Triglyceride)	6.00%
<b>Phase B</b>	
Glycerin	3.00%
Magnesium Sulfate Heptahydrate	1.50%
SK-INFLUX® V	2.00%
Water	72.50%
<b>Phase Z</b>	
Preservative, Perfume	q.s.
<b>Preparation:</b>	
<ol style="list-style-type: none"> <li>Heat phase A to approx. 80°C.</li> <li>Add phase B (80°C or room temperature) slowly while stirring.</li> <li>Homogenize for a short time.</li> <li>Cool with gentle stirring below 30°C and homogenize again.</li> </ol>	
<b>Remark:</b>	
This formula is stable between -5 °C and 40 °C.	

G 06/15

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