

AMPHISOL® K

K-ELEMENT

Ultimate stability for
multi formulations



April 2025

dsm-firmenich 

Multiple textures, multifunctional products and consumers increasingly in search of unique and innovative experiences.

In a world where people increasingly value experiences through the products they consume, the variety of cosmetic formulations grows.

Creams, sprays, mousses, among others with considerable quantity of pigments and skin actives like make-up and products with high SPF bring a series of technical challenges, especially when it comes to stabilization.



The importance of high quality and stable formulation until the last drop

Voice of consumers*



“Foundation and moisturizer separated a lot”

“I did not buy that brand again”

“It totally puts me off”

*dsm-firmenich Consumer Insights Hub – 2021

But how can we get completely stable formulations in less time?

How introducing a new emulsifier without jeopardizing the performance of the product and the image of the brand?

How to make sure that even most challenging formulations remain stable whatever the conditions?



dsm-firmenich, a pioneer in potassium cetyl phosphate technology,
presents a definitive emulsifying solution

AMPHISOL[®] K

Ultimate stability for
multi formulations



AMPHISOL® K

Ultimate stability for multi formulations.

- A high performing Potassium Cetyl Phosphate (PCP) emulsifier for **the most challenging formulations with higher proven performance vs main benchmarks.**
- A **unique solution for the creation of innovative textures and applications** which place you and your company in a **leading position** in an increasingly competitive market.
- This is possible through **the unique microdomains technology** capable of stabilizing **the most versatile combination of ingredients with high amounts of pigments, electrolytes, ethanol and oil from sunscreens to skin care and make-up.**
- AMPHISOL® K can also be used as a **co-emulsifier** to **rescue and beautify your formulations**, making processing easier.
- AMPHISOL® K brings **additional benefits to your products such as improved moisturization, SPF boosting and remarkable sensory signature.**



An extensive, uniform and unique formation of self-organizing molecules that guarantee maximum stability.



AMPHISOL® K is 3x MORE likely to be recommended by formulators than its main competitors*

Voice of customers (114 responses)

Low dosage and yet very effective, no residue on the skin

It gives emulsion stability in hopeless cases

High flexibility to formulate various products

Low use level fixes unstable formulations

Easy to work, low concentration and good stability, and helps the viscosity too

It's the best choice to use as a second emulsifier especially in sun care formulations

* Source: Internal survey with current AMPHISOL® K users and formers – Total of 114 responses – Net Promoter Score comparison – NPS main competitors = 5

AMPHISOL® K ID card

A unique composition

INCI:	Potassium Cetyl Phosphate
Type:	Anionic O/W emulsifier
Appearance:	White to beige powder
Cetyl alcohol:	Max 2%
Potassium:	7.0 – 12.0%
Theoretical HLB value:	9.6
Unique performance driver:	Typical phosphate content up to almost 100 times lower than competition

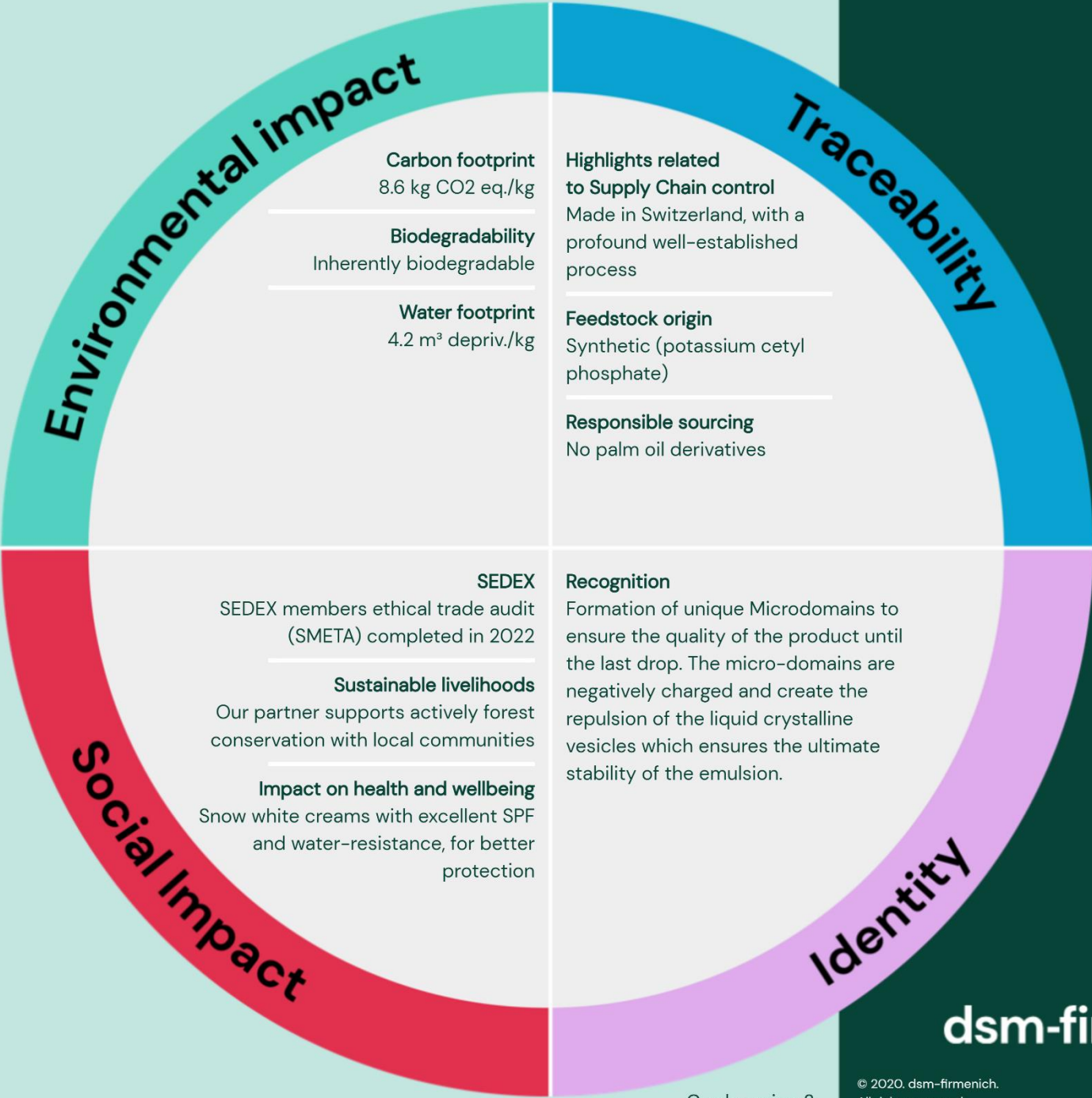


AMPHISOL® K

INCI name: POTASSIUM CETYL PHOSPHATE
Product codes: 0452130

GOLD STANDARD EMULSIFIER
for challenging high oil load
formulations (e.g. high SPF)

The carbon and water footprint calculations are based on internally conducted LCA according to ISO 14040/44 guidelines, dsm-firmenich LCA policy and validated by an internal reviewer. The biodegradability is based on relevant OECD tests.



Aligned with and contributing to the

**SUSTAINABLE
DEVELOPMENT
GOALS**

3 GOOD HEALTH
AND WELL-BEING



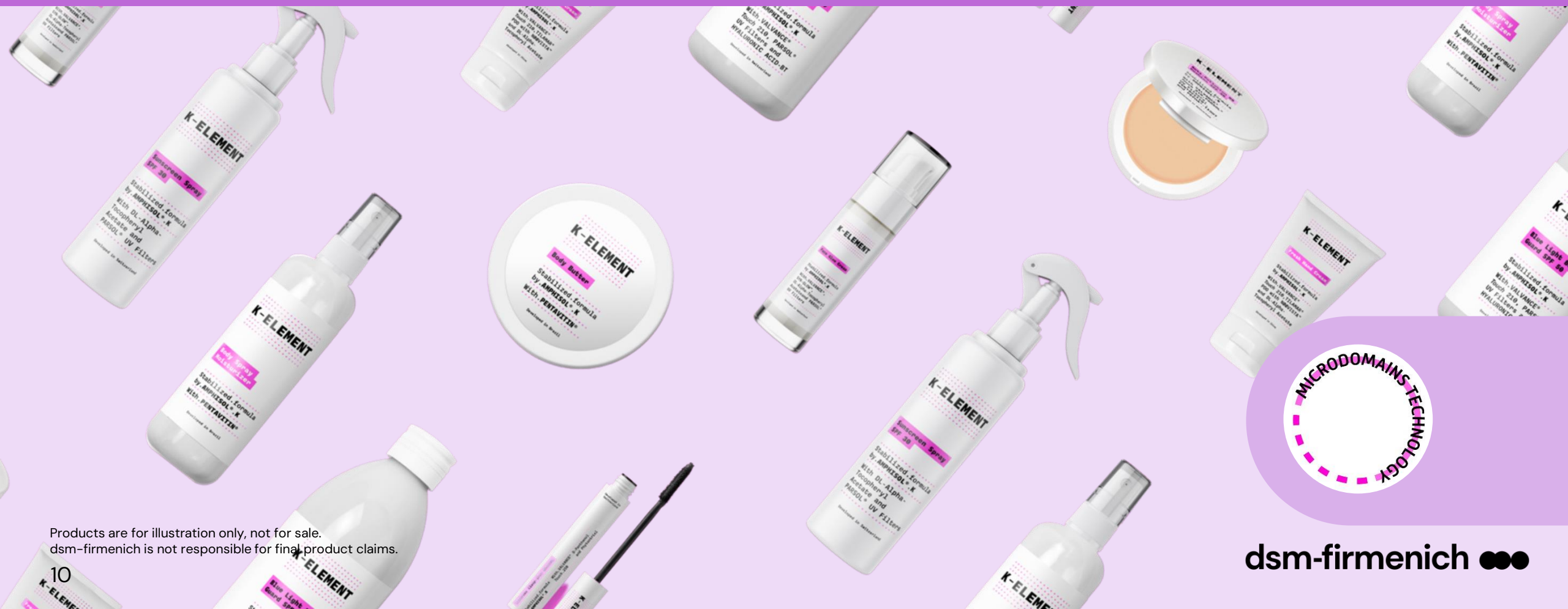
dsm-firmenich

Card version 3

© 2020, dsm-firmenich.
All rights reserved

Stabilized formula by AMPHISOL® K

Ultimate stability for multi formulations



Products are for illustration only, not for sale.
dsm-firmenich is not responsible for final product claims.

AMPHISOL® K

Ultimate stability for multi formulations

Multi textures and product types



Pump sprays



Dispensers



Bottles



Tubes



Jars

Multi applications



Skin



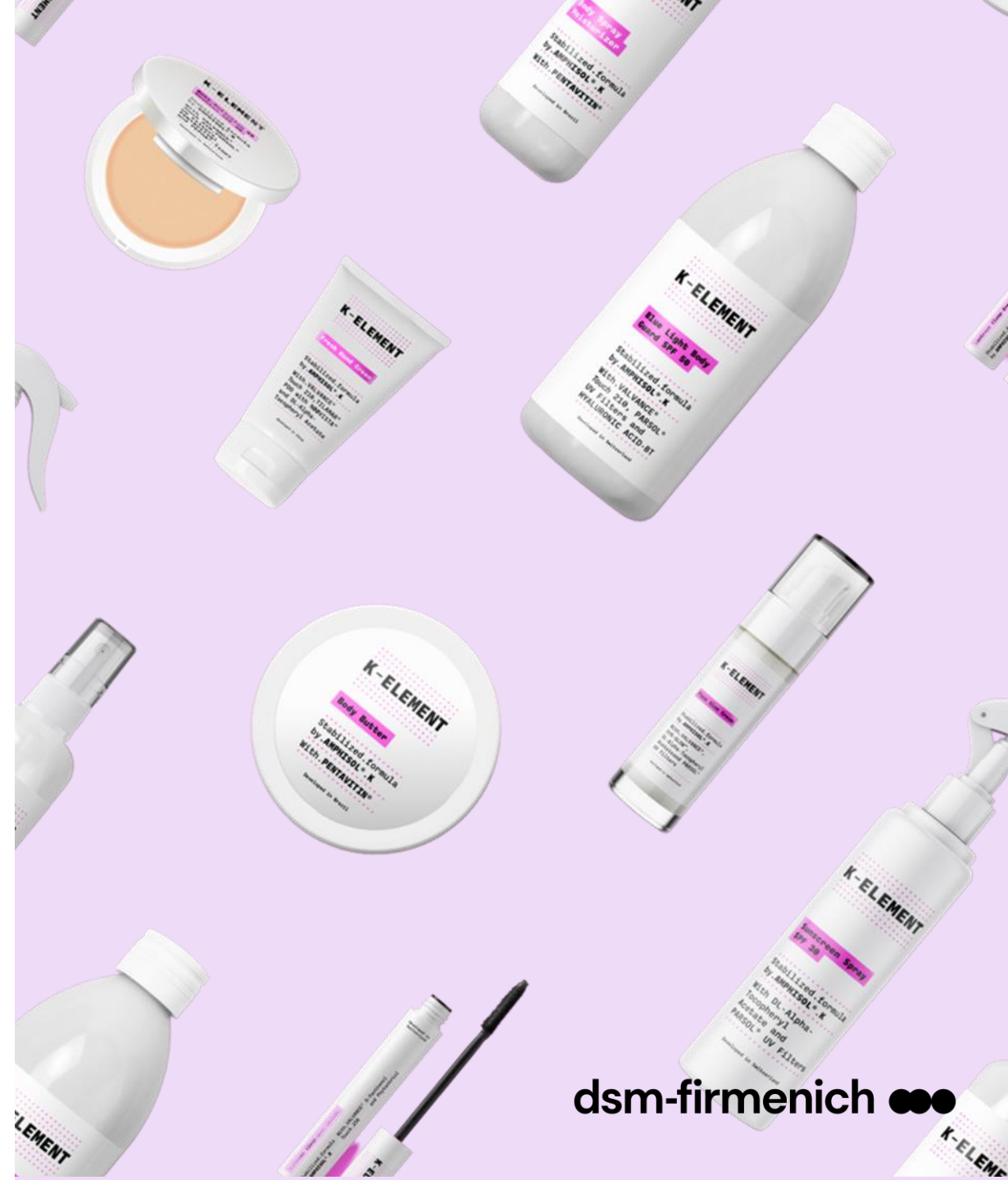
Sun



Make-up

Thanks to the unique microdomains technology capable of stabilizing the most challenging combination of ingredients

Products are for illustration only, not for sale.
dsm-firmenich is not responsible for final product claims.



AMPHISOL® K – Agenda

Discover the ultimate stability for multi formulations



The K-Element: High versatility from spray to cream for skin, sun and make-up application



Powerful co-emulsifier to rescue and secure your challenging formulations

- The proof with high electrolytes content, high temperature, in spray application
- The proof in O/W and gel cream examples



Unique microdomains technology to guarantee maximum stability



Additional benefits: SPF booster, moisturizer, sensory signature



High performance emulsifier for the most challenging formulations proven vs both benchmarks and PCP's

- The proof with high oil content
- The proof with high electrolyte content
- The proof with high pigment content including mascara formulations
- The proof in spray formulations



Formulation tips and tricks



An extensive, uniform and unique formation of self-organizing molecules that guarantee maximum stability.

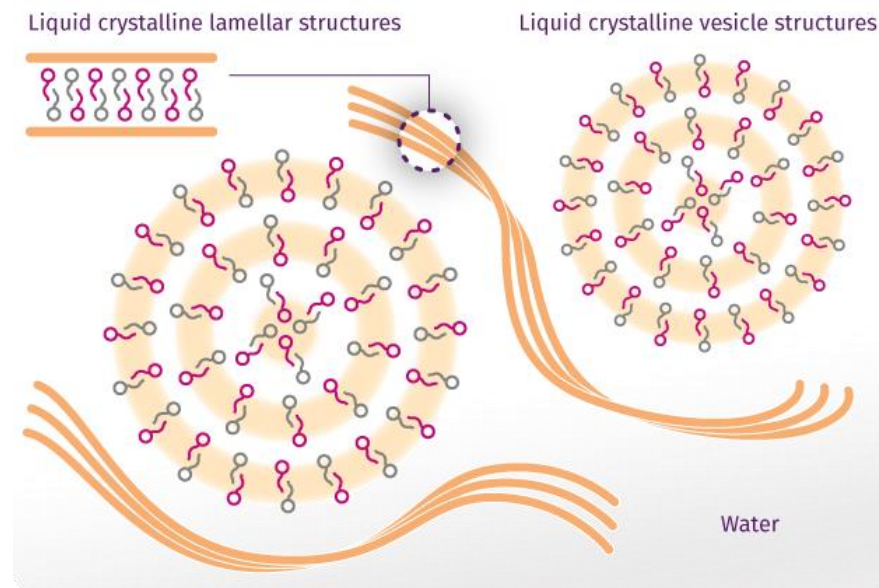


Liquid crystal structure and...

Unique presence of microdomains **for unique quality and experience until the last drop**

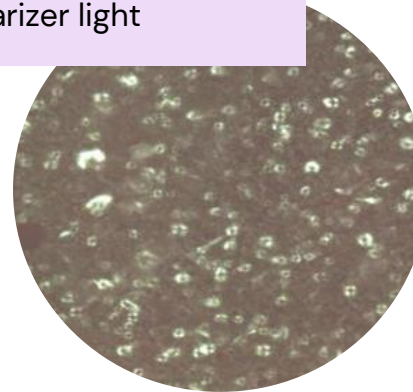


AMPHISOL® K does not only form both liquid crystalline lamellar and vesicle structures in your formulation...



Proven liquid crystalline structures under polarized light

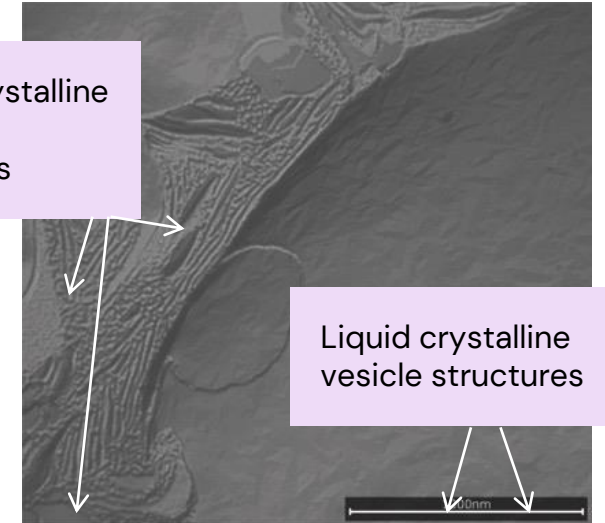
Formulation SK-E-101710-04 under polarizer light



Proven liquid crystalline structures with freeze fracture TEM

Liquid crystalline lamellar structures

Liquid crystalline vesicle structures



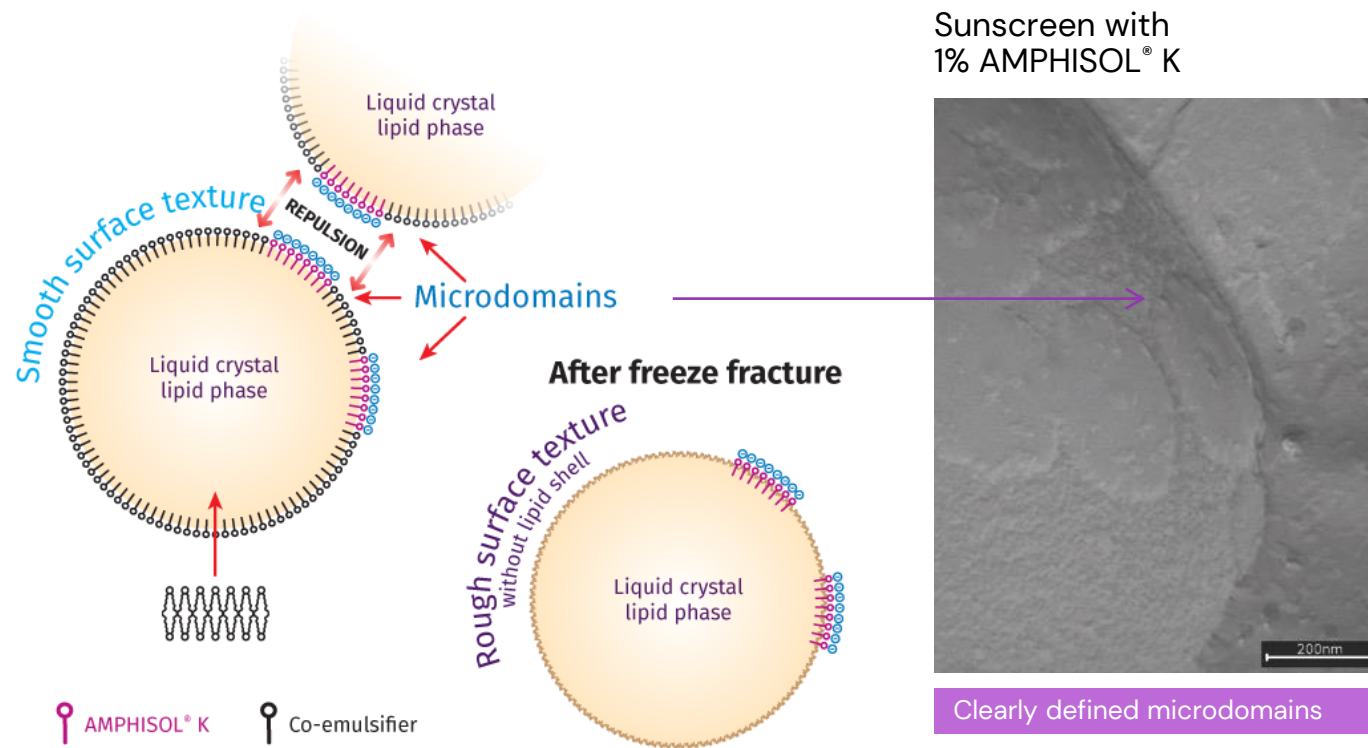
AMPHISOL® K forms a liquid crystalline gel network with both:

- Vesicle structures stabilizing oil droplets.
- Lamellar structures, which are membrane-like structures throughout the aqueous phase.

These Liquid crystals structures are essential to stabilize high oil content.

Proven high amount of liquid crystalline structures to guarantee better stability of your formulation and to bring additional benefits. (see slide 49 & 50)

AMPHISOL® K will also form unique microdomains to ensure the quality of your product until the last drop!



How does it work?

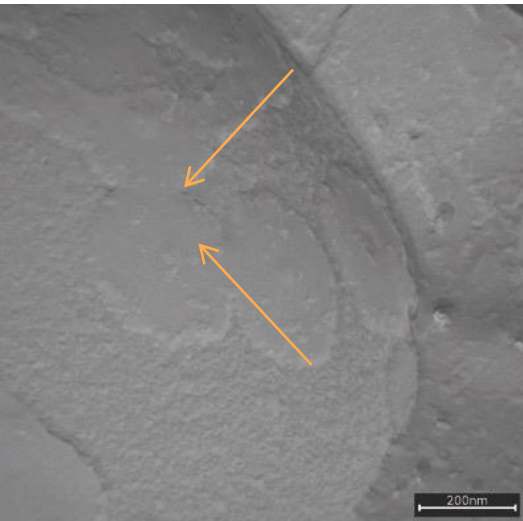
- The surface of the liquid crystalline vesicles is made of a mix of AMPHISOL® K and the co-emulsifiers.
- At some areas only AMPHISOL® K is present and forms clusters = microdomains.
- These microdomains made of AMPHISOL® K are negatively charged and create the repulsion of the vesicles (avoid the coalescence) which ensures the ultimate stability of the emulsion.

Unique microdomains technology by AMPHISOL® K: an extensive, uniform and unique formation of self-organizing molecules that guarantee maximum stability.

Proven unique microdomains presence to stabilize the most challenging formulation as main & co-emulsifier

Microdomains formed by AMPHISOL® K for ultimate stability

As a main emulsifier



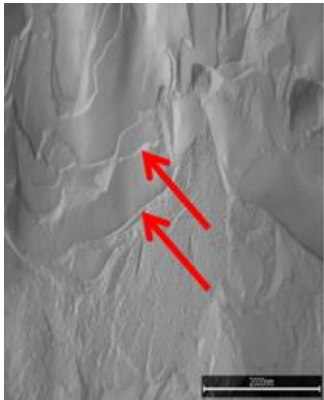
Sunscreen with 1% AMPHISOL® K

Clearly defined microdomains

AMPHISOL® K as main emulsifier forms microdomains that makes possible the stabilization of the most challenging formulation.

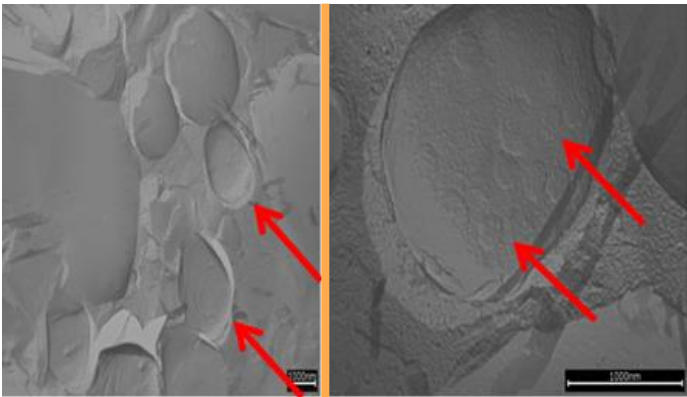
As a secondary emulsifier

PEG-100 Stearate/
Glyceryl Stearate



Lamellar structures

PEG-100 Stearate/Glyceryl Stearate+
AMPHISOL® K



Liquid crystalline vesicles with microdomains

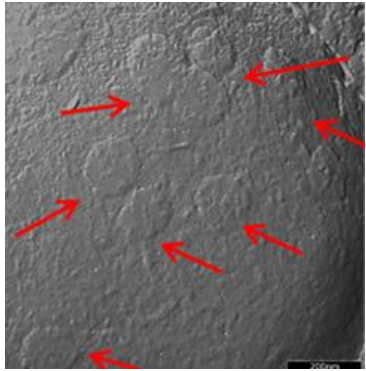
The addition of AMPHISOL® K as a co-emulsifier will create unique microdomains for ultimate stability.

Proven unique microdomains presence for stronger emulsification performance vs PCP's

Microdomains formed by AMPHISOL® K visualized by freeze fracture TEM

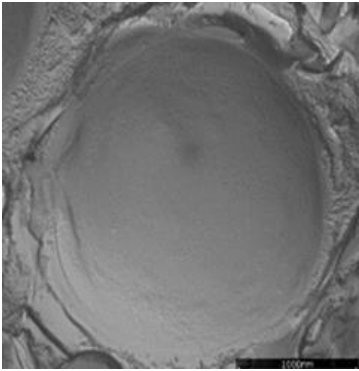


AMPHISOL® K



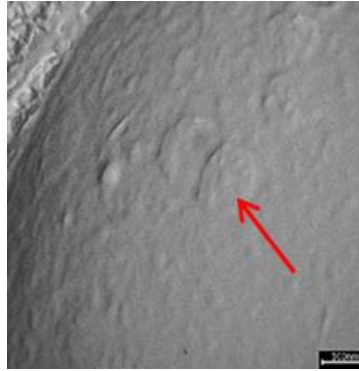
High amount and clearly defined microdomains

Competitor 1



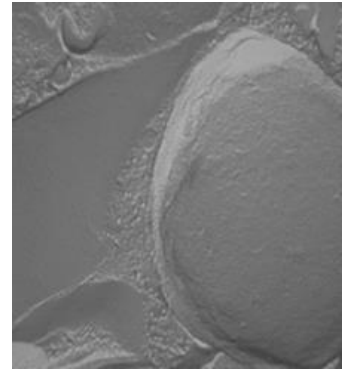
NO microdomains

Competitor 2



Only few and slightly defined microdomains

Competitor 3



NO microdomains

Testing procedure to visualize micro domains

- Comparing different PCP's in a complex sunscreen formulation
- PEG-100 Stearate & Glyceryl Stearate at 1.5% and all PCP's at 1%

Unlike competitors, AMPHISOL® K shows a high amount of microdomains that makes possible the stabilization of the most challenging formulations.

Higher performance in challenging conditions vs benchmarks and PCP



AMPHISOL® K overcomes each formulation challenge



Performance proof against:

- Emulsifier competitors
- PCP competitors



High oil
content



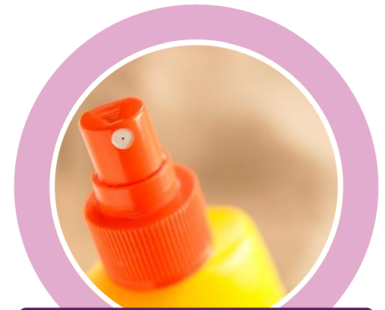
High salt,
electrolyte
content



High pigment
content



High ethanol
content

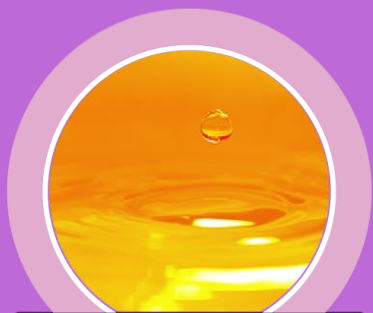


Spray



Skin care, make-up and sun care with high oil content like

High SPF products, balm, butter cream, BB & CC creams,...



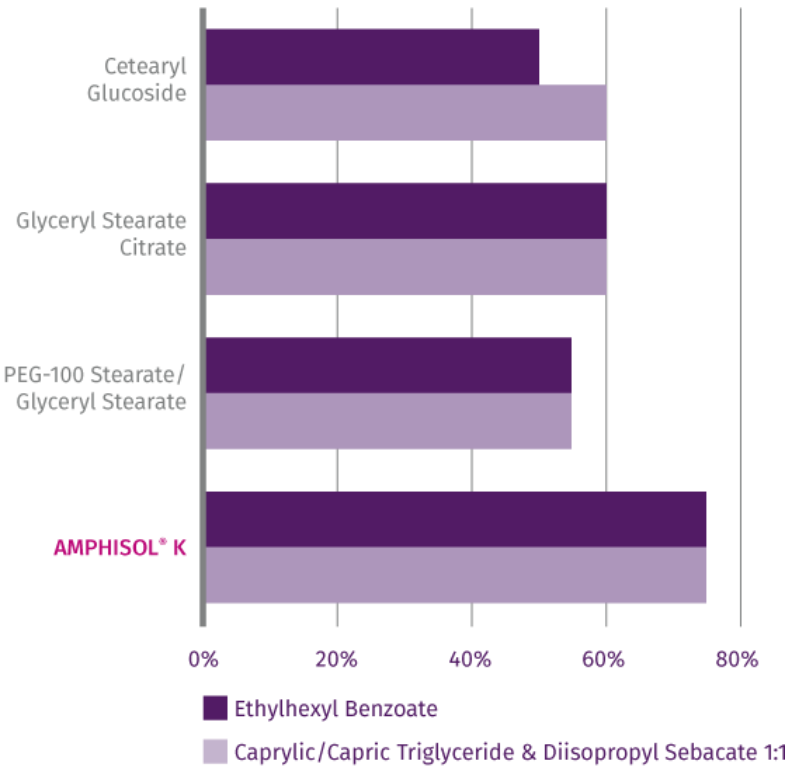
High oil
content



An extensive, uniform and unique formation of self-organizing molecules that guarantee maximum stability.

Overcome the challenge with high oil content

AMPHISOL® K allows stable emulsion with the highest oil content vs benchmarks



1% emulsifier – increased concentrations of oil, water ad 100% – evaluation after 48h



Peace of mind for the following types of formulations, where the oil or emollient content is high and critical for the stability:

- High SPF formulations
- BB or CC creams
- Butter cream
- Balm, etc...

AMPHISOL® K allows stable emulsion with the highest oil content vs benchmarks.

Skin care, make-up and suncare formulations with high electrolytes content like

- Actives with high salt residual content
- Actives with charges (AHA, DHA, STAY-C® 50)
- High presence of NaOH, NaCl,...



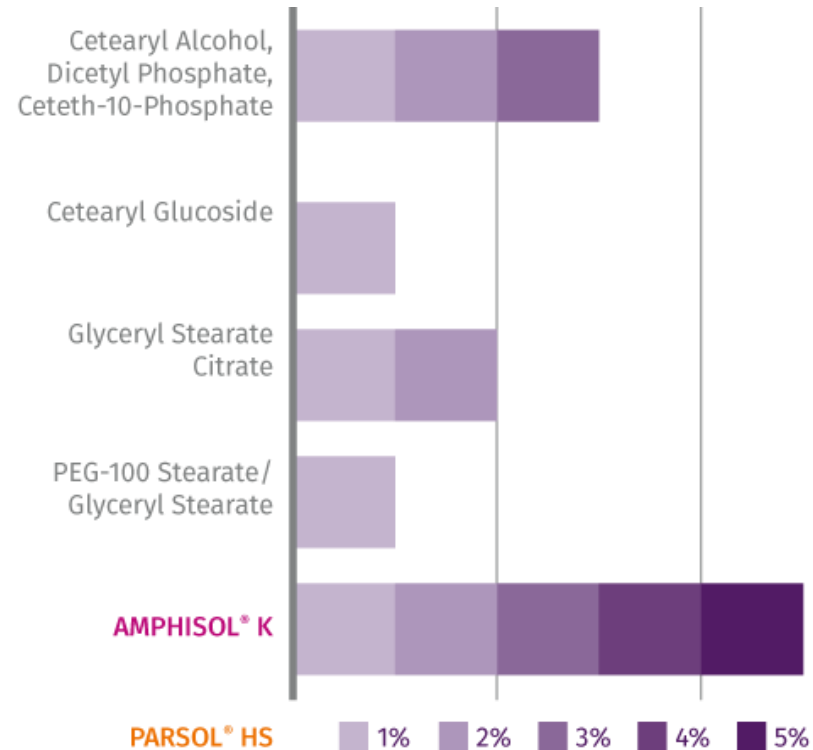
High salt,
electrolyte
content



An extensive, uniform and unique formation of self-organizing molecules that guarantee maximum stability.

Overcome the challenge with high electrolyte content vs benchmarks

AMPHISOL® K allows stable emulsion with the highest electrolyte content vs benchmarks



Testing procedure

- All emulsifiers at 1%
- Cetearyl Alcohol as stabilizer at 2.3%
- PARSOL® HS neutralized with triethanolamine, final pH 7.5
- Emulsion integrity evaluated after 48h at room temperature



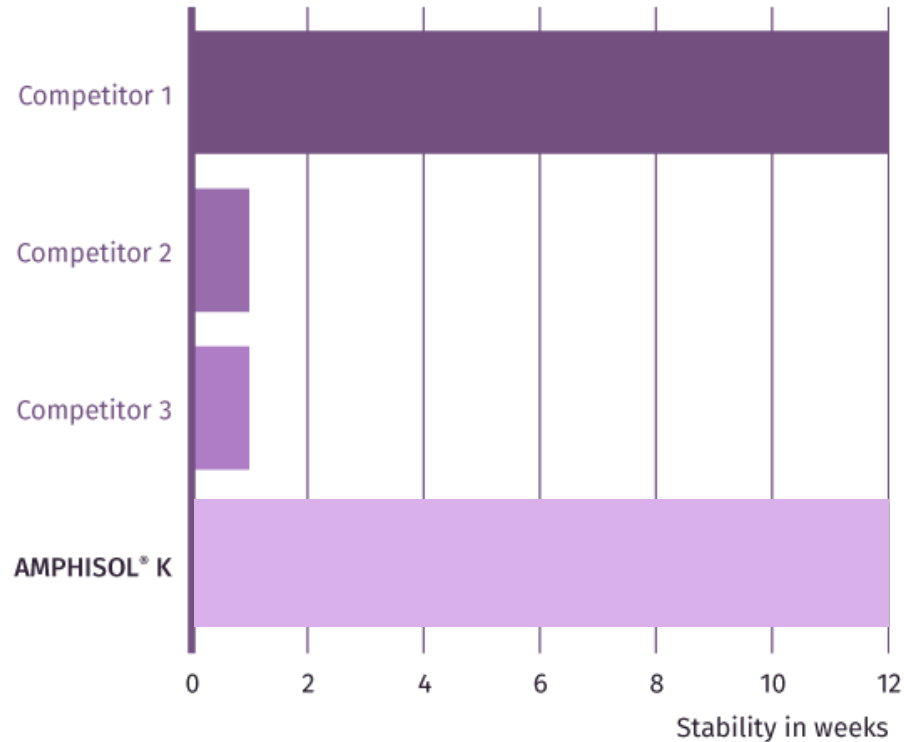
Peace of mind for the following types of formulations, where the electrolyte content is high and critical for the stability:

- High SPF formulation with organic acids as PARSOL® HS
- Skin care or hybrid products containing
 - Actives with high salt residual content
 - Vitamin C, STAY-C® 50
 - AHA, DHA
 - NaOH, NaCl, etc...

AMPHISOL® K at 1% is superior in stabilizing electrolytes (such as neutralized PARSOL® HS for example) compared to alternative emulsifiers.

Overcome the challenge with high electrolyte content vs PCP benchmarks

AMPHISOL® K allows stable emulsion with high electrolyte content vs PCP benchmarks



Testing procedure

- Basic formulation containing 3% PARSOL® HS neutralized with NaOH
- Emulsifiers at 2%
- Cetearyl Alcohol at 2.3%
- Emulsion integrity evaluated after 12 weeks at RT

Peace of mind for the following types of formulations, where the content of electrolytes is high and critical for the stability:

- High SPF formulation with organic acids as PARSOL® HS
- Skin care or hybrid products containing
 - Actives with high salt residual content
 - Vitamin C, STAY-C® 50
 - AHA, DHA
 - NaOH, NaCl, etc...

AMPHISOL® K at 2% is superior in stabilizing electrolytes (such as neutralized PARSOL® HS for example) compared to PCP benchmarks.

Skin care, make-up and suncare application with high pigment content like

- BB, CC cream, foundation, mascara
- High SPF product and Mineral Sunscreen
- Decorative make-up with pigments and glitters



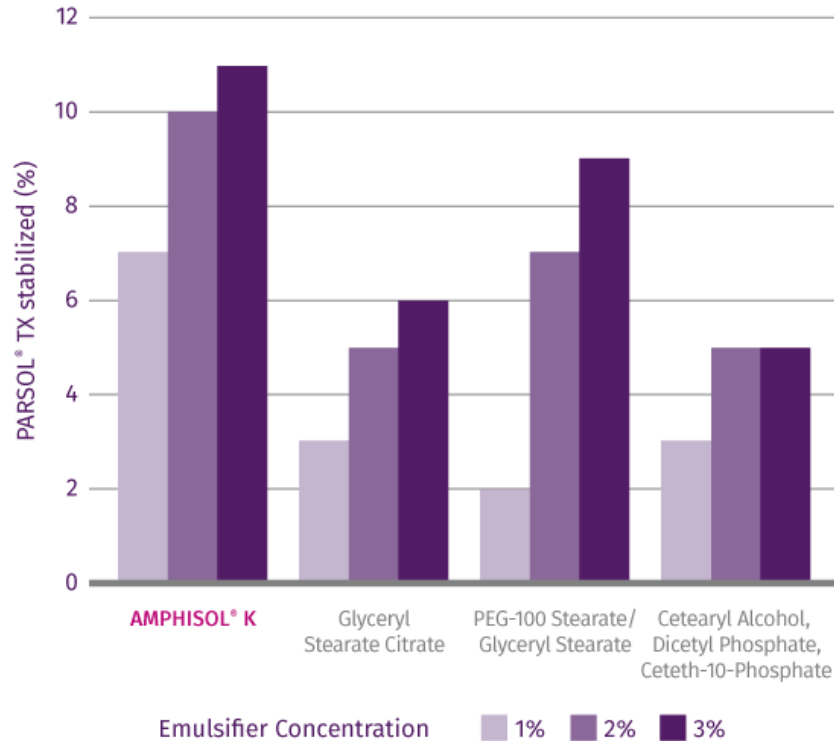
An extensive, uniform and unique formation of self-organizing molecules that guarantee maximum stability.



High pigment
content

Overcome the challenge with high TiO₂ pigment content

AMPHISOL® K allows stable emulsion with the highest pigment (such as TiO₂) content vs benchmarks



Testing procedure

- All emulsions contain cetearyl alcohol as stabilizer
- Oil phase: 17.5% diisopropyl sebacate, 17.5% caprylic capric triglyceride + increasing concentrations of TiO₂
- Evaluation after 2 months

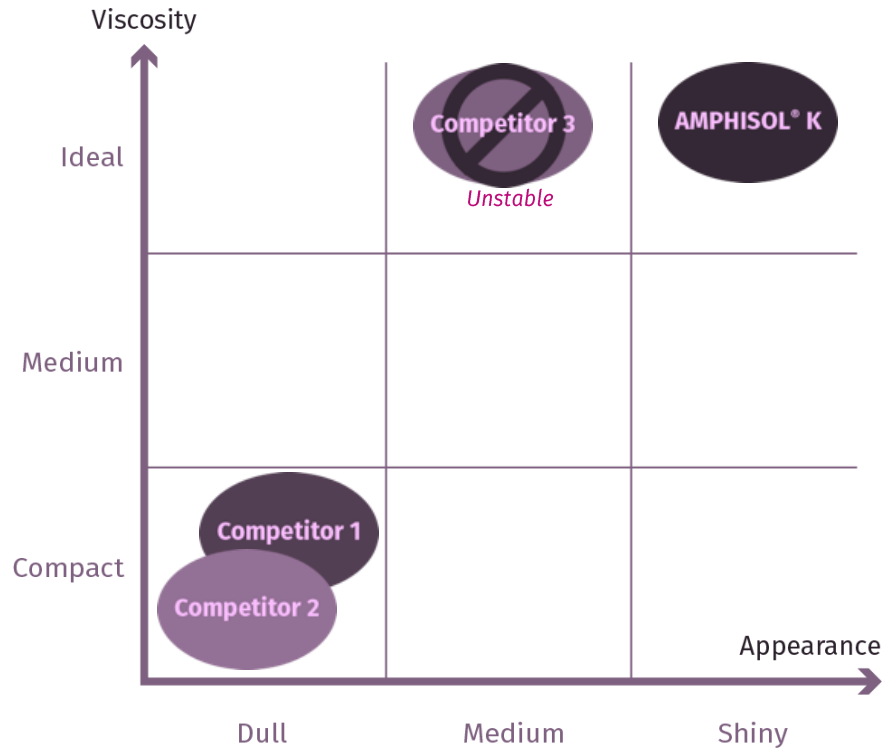
Peace of mind for the following types of formulations, where the inorganic particle content is high and critical for the stability:

- High SPF formulations including mineral UV filters
- Mineral sunscreens
- BB, CC creams, Highlighters including
 - Colored pigments
 - Glitters
 - Dyes
- Decorative make-up

AMPHISOL® K best ensures emulsion stability at high pigment concentrations such as TiO₂ (Mineral UV filters or inorganic pigments for make-up).

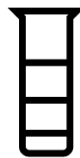
Overcome the challenge with Titanium Dioxide

High compatibility vs PCP benchmarks



Testing procedure

- Basic emulsion containing 6% PARSOL® TX
- Emulsifiers at 2%
- Cetyl Alcohol at 2.3%
- Emulsions are stable after the test period of 12 weeks at RT (except competitor 3)
- Viscosity and appearance has been evaluated after 12 weeks



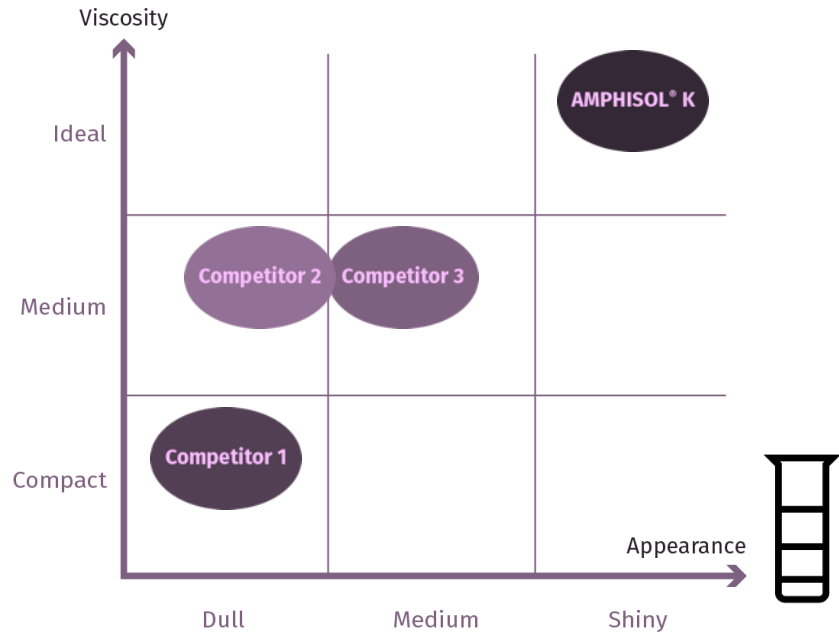
AMPHISOL® K outperforms competition in terms of stability, viscosity and appearance.

Peace of mind for the following types of formulations, where the inorganic particle content is high and critical for the stability:

- High SPF formulations including mineral UV filters
- Mineral sunscreens
- BB, CC creams, Highlighters including
 - Colored pigments
 - Glitters
 - Dyes
- Decorative make-up

Overcome the challenge with high colored pigment content Higher performance vs PCP benchmarks

AMPHISOL® K allows stable emulsion with the highest pigment (such as colored pigment) content vs benchmarks



Testing procedure

- Basic emulsion containing 10% white pigment (CI 77891 (and) Triethoxycaprylylsilane)
- Emulsifiers at 8%
- All emulsions are stable after the test period of 12 weeks at RT
- Viscosity and appearance have been evaluated after 12 weeks

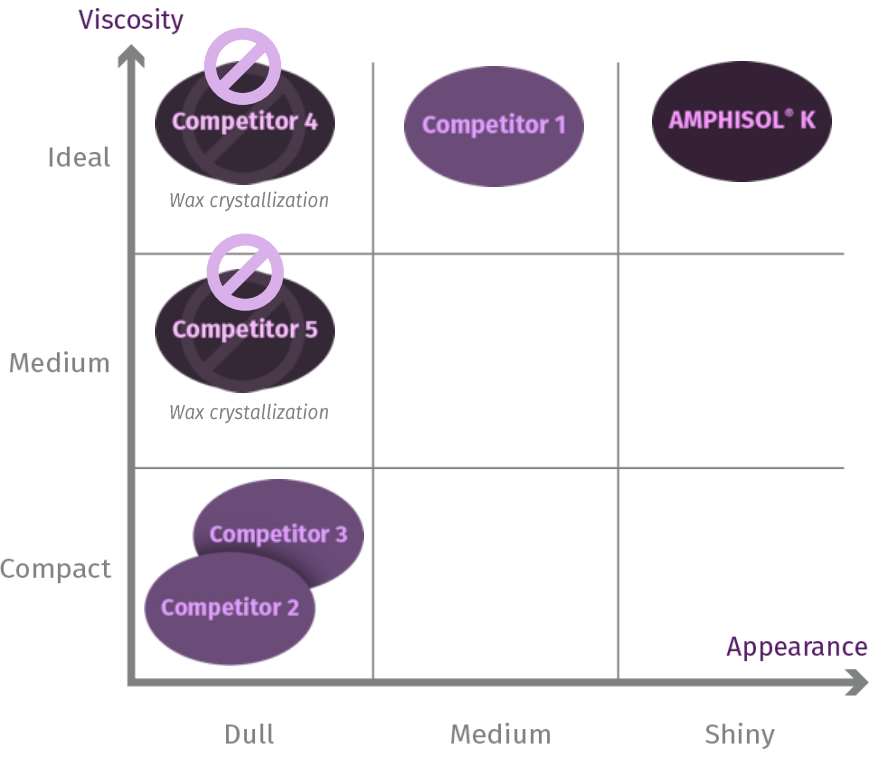
Peace of mind for the following types of formulations, where the inorganic particle content is high and critical for the stability:

- BB, CC cream with mineral sunscreens
- Colored pigments
- Dyes
- Decorative make-up

AMPHISOL® K shows the best viscosity and appearance with colored pigment in emulsion vs PCP benchmarks.

Overcome the challenge of mascara formulation Higher performance vs PCP benchmarks

Mascara in general contains a high concentration of pigments that are difficult to stabilize



Testing procedure

- Mascara formulation 1 contains 10% black iron oxides and emulsifiers at 8%
- Mascara formulation 2 contains 6% black iron oxides and emulsifiers at 3%
- All emulsions are stable after the test period of 12 weeks at RT and 40°C
- Viscosity and appearance have been evaluated after 12 weeks



View after 3-stroke application of each formulation

View after 3-stocke applications of each formulation on hair

Higher color homogeneity and intensity with AMPHISOL® K vs competitors.

AMPHISOL® K shows the best viscosity and appearance at mascara vs PCP benchmarks.

Skin care, make-up or sun care with high alcohol content used to

- Reduce greasiness and tackiness
- Bring a fresh effect
- Improve the preservative properties



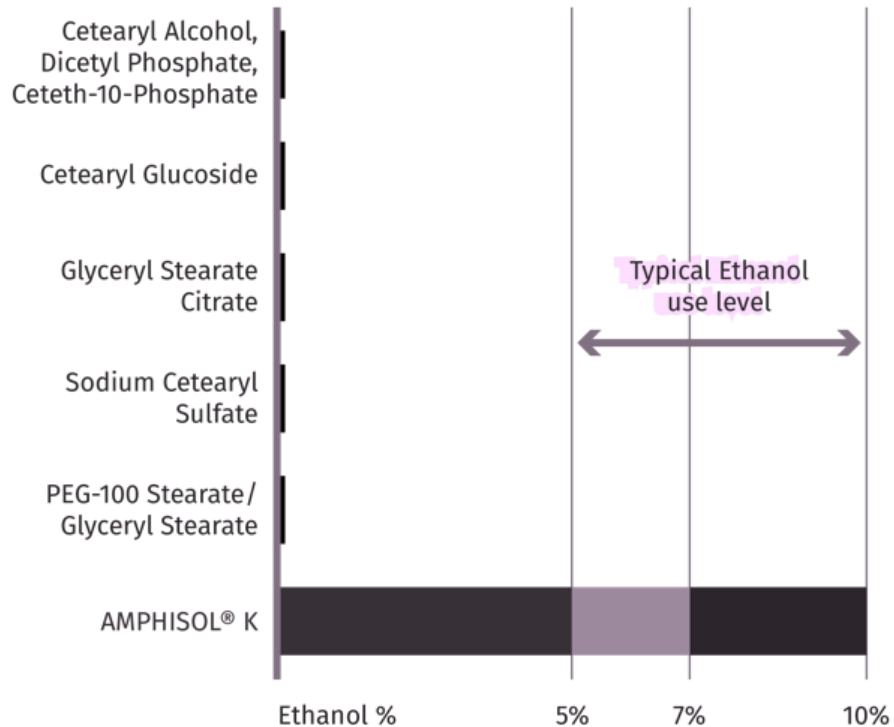
An extensive, uniform and unique formation of self-organizing molecules that guarantee maximum stability.



High ethanol content

Overcome the challenge with alcohol content Higher performance vs benchmarks

Ethanol is often used to get a light and refreshing effect but could lead to some instability



Testing procedure

- All emulsifiers at 1%
- Cetearyl Alcohol as Stabilizer
- Emulsion integrity evaluated after 8 weeks at 40°C

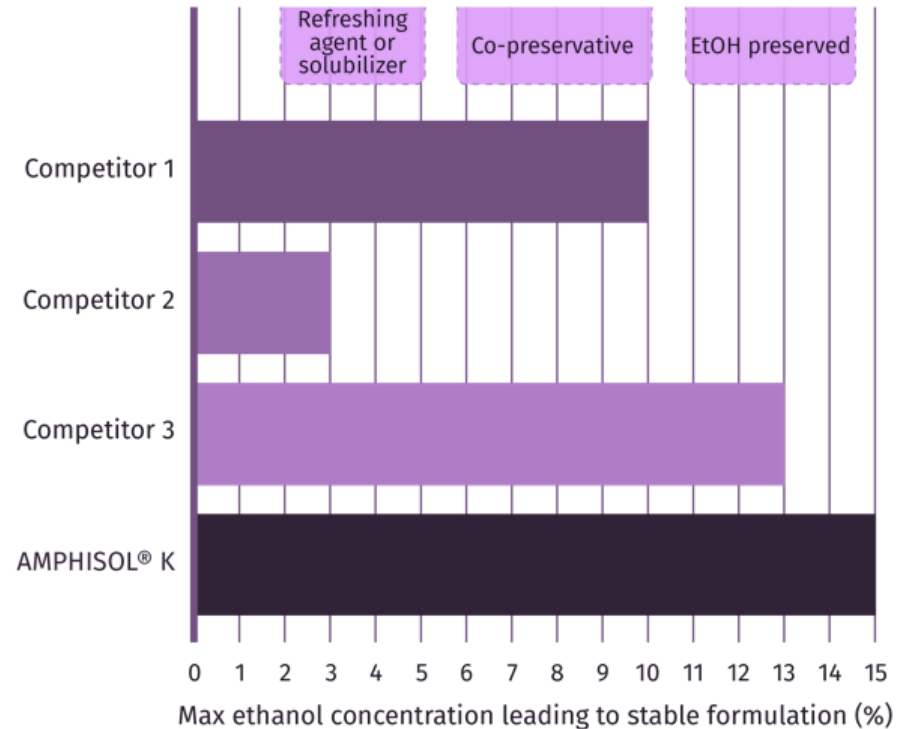
Peace of mind for the following types of formulations, where alcohol content is high and critical for the stability:

- Sun care, skin care and make-up products where alcohol will reduce the greasiness and tackiness
- Products where alcohol is used to create a fresh effect
- Slimming products

AMPHISOL® K already at 1% succeeds to stabilize up to 10% ethanol.

Overcome the challenge with alcohol content Higher performance vs PCP benchmarks

Ethanol is often used to get a light and refreshing effect or as a preservative but could lead to some formulation instabilities



Testing procedure

- Test with a basic formulation to evaluate emulsifying performance
- Emulsifiers at 2%
- Cetearyl Alcohol at 2.3%
- Emulsion integrity evaluated after 12 weeks at RT

Peace of mind for the following types of formulations, where alcohol content is high and critical for the stability:

- Sun care, skin care and make-up products where alcohol will reduce the greasiness and tackiness
- Products where alcohol is used to create a fresh effect
- Slimming products

AMPHISOL® K stabilizes the highest amount of ethanol among tested PCP benchmarks.

Skin care, make-up or sun care in spray application



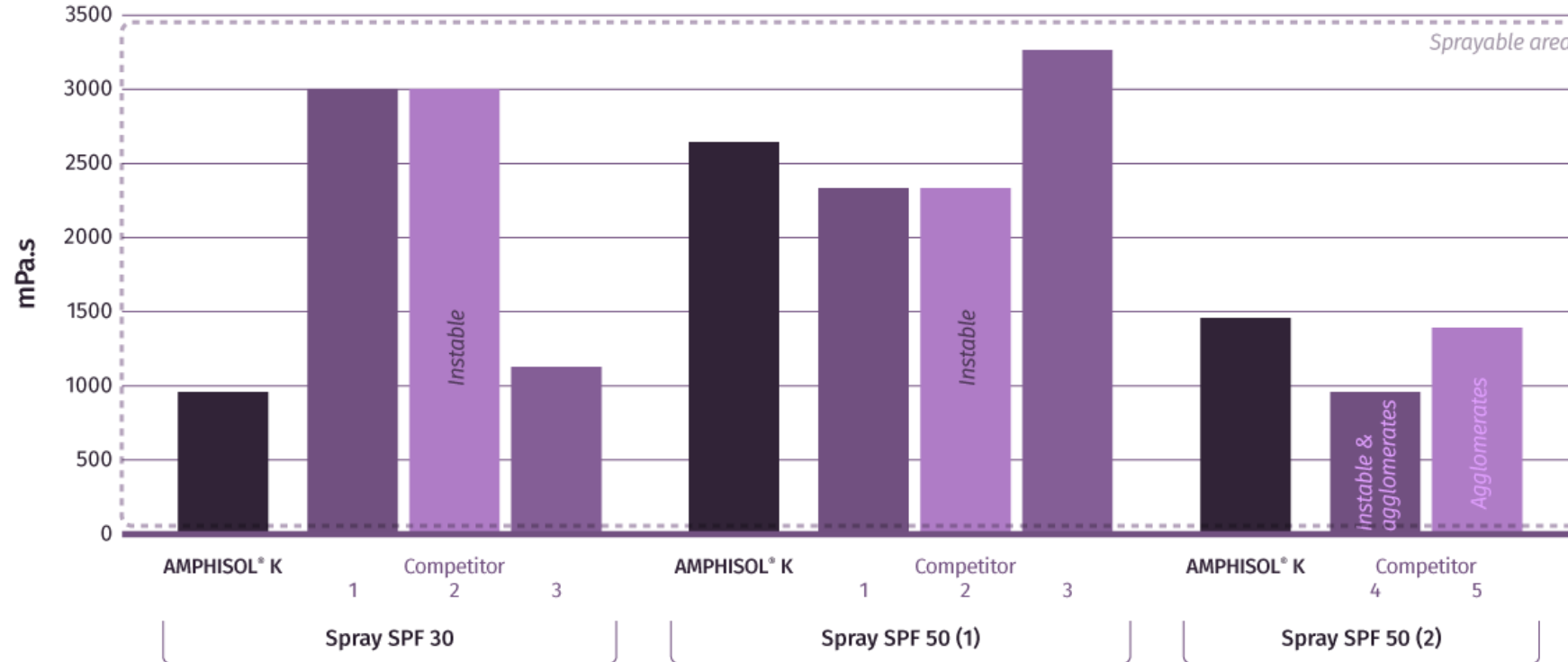
An extensive, uniform and unique formation of self-organizing molecules that guarantee maximum stability.



Spray

Overcome the challenge of spray application

AMPHISOL® K is able to stabilize challenging formulation at low viscosity vs PCP benchmarks



Testing procedure

- Spray SPF 50 (1):
 - Emulsifiers at 2.5%
 - Cetearyl Alcohol at 0.2%
 - Glyceryl Myristate at 0.2%
- Spray SPF50 (2):
 - Emulsifier at 2.5%
 - Cetearyl Alcohol at 0.2%
 - Glyceryl Behenate at 0.2%
- Spray SPF 30:
 - Emulsifiers at 0.75%
 - Cetyl Alcohol at 0.3%
- Different UV filters combination
- Emulsion integrity and viscosity evaluated after 12 weeks at 40°C

AMPHISOL® K is best in stabilizing low viscosity sprays with SPF.

Summary of higher performance in challenging conditions vs other PCPs



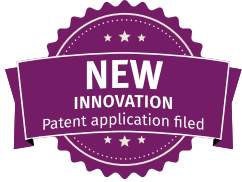
An extensive, uniform and unique formation of self-organizing molecules that guarantee maximum stability.

AMPHISOL® K outperforms PCP competition across cosmetic applications

Material	Market formulations					
	Ethanol compatibility	TiO2 compatibility	Pigment compatibility	Electrolyte compatibility	Sprays	Mascara
AMPHISOL® K						
Competitor 1						
Competitor 2						
Competitor 3						
Competitor 4						
Competitor 5						

AMPHISOL® K: the co-emulsifier of choice to secure your formulation making process easier

Rescue and secure your formulation until the last drop by adding 0.5% AMPHISOL® K



High performance to rescue challenging formulations:

- The proof with high electrolyte content, at high temperature & in spray application.
- The proof in O/W and gel cream examples.

High performance to create and beautify different types of formulation:

The proof in O/W (polyglyceryl mixture, cetearyl glucoside, sorbitan derivative mixture...) and in gel cream (acrylate-based polymer).

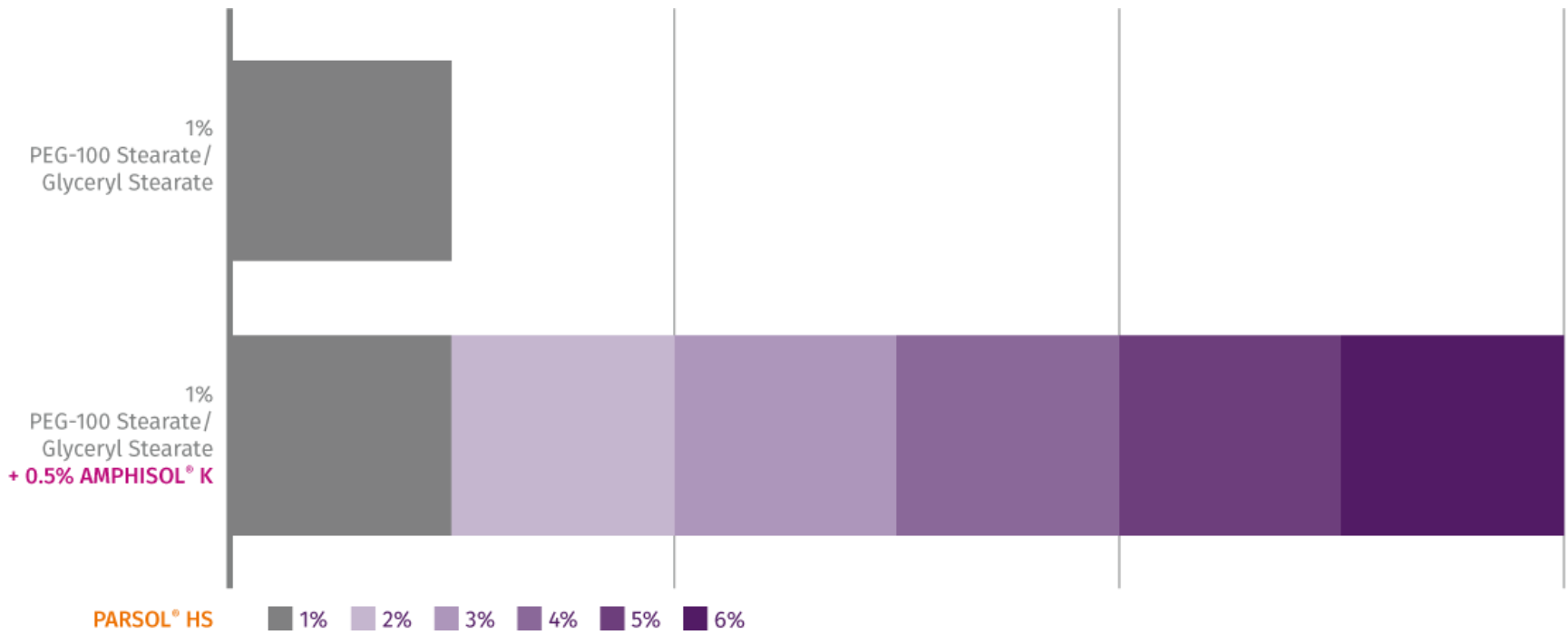
How does it work?

- The addition of AMPHISOL® K will reduce the emulsion droplet size and optimize the particle distribution.
- Its microdomains technology will lock the stability of the formulation.
- The formulation is creamier and shinier.
- AMPHISOL® K used as a co-emulsifier makes processing easier (minimal temperature of introduction 60°C to 85°C, following the main emulsifier recommendation).

Save your time, rescue and secure your unstable emulsion until the last drop by adding 0.5% AMPHISOL® K in your emulsifying system.

AMPHISOL® K as a co-emulsifier ensures the formulation stability with high electrolyte content

Alternative emulsifier system reaching their stability limits



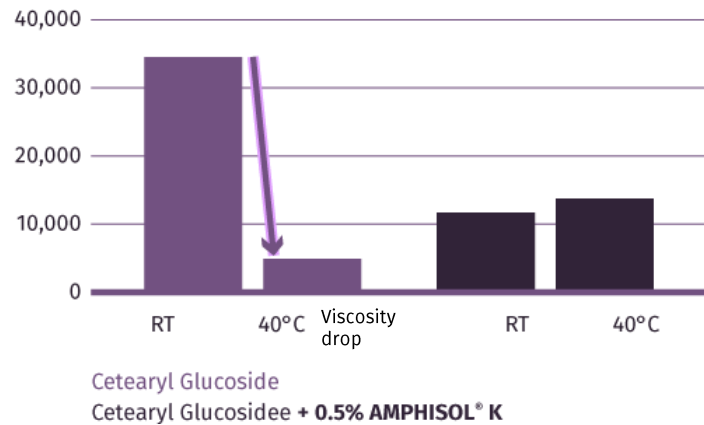
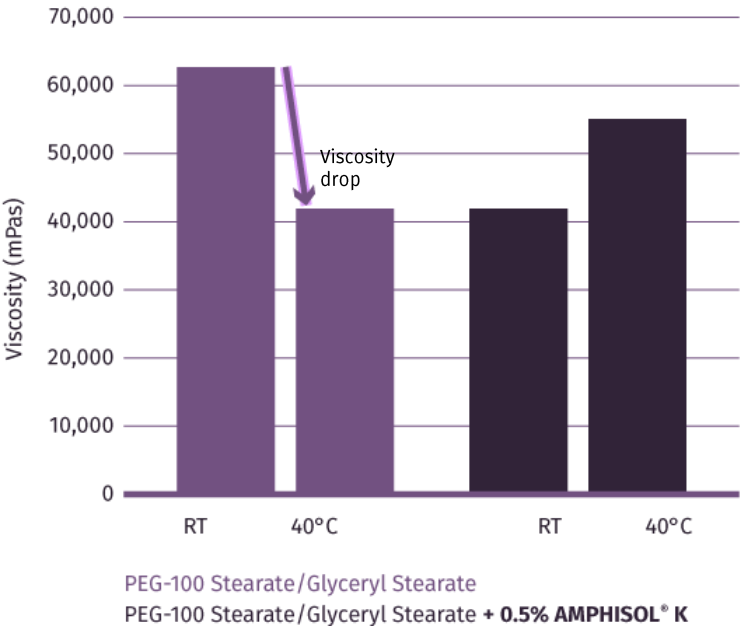
Testing procedure

- Emulsifier at 1% or combined with 0.5% AMPHISOL® K
- Cetearyl Alcohol as Stabilizer at 2.3%
- PARSOL® HS neutralized (pH 7.5) with triethanolamine
- Evaluated after 48h at RT

The addition of 0.5% AMPHISOL® K allows formulation with high electrolyte content.

AMPHISOL® K as a co-emulsifier ensures the formulation stability at high temperature

Add 0.5% of AMPHISOL® K in your emulsifying system to avoid the viscosity drop at high temperature and increase the long-term stability



Testing procedure

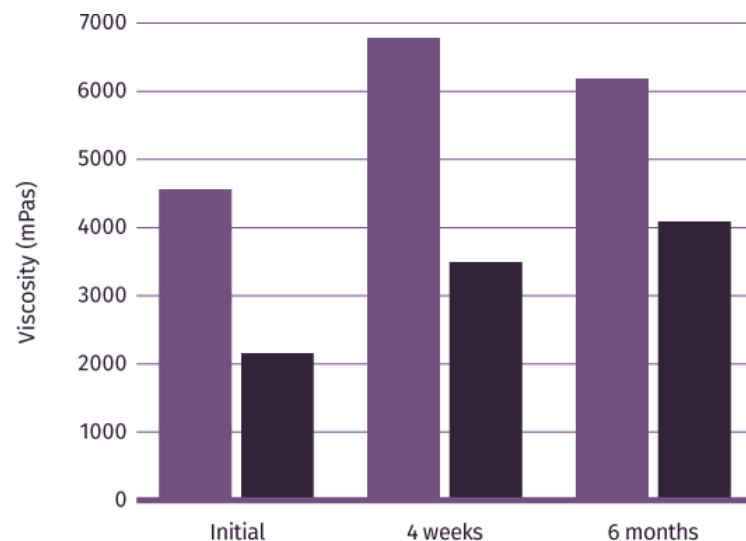
- 2 different emulsifier systems were formulated with and without 0.5% AMPHISOL® K
- SPF 30 sunscreen used as basis
- Assessment at RT and 40°C over 6 months



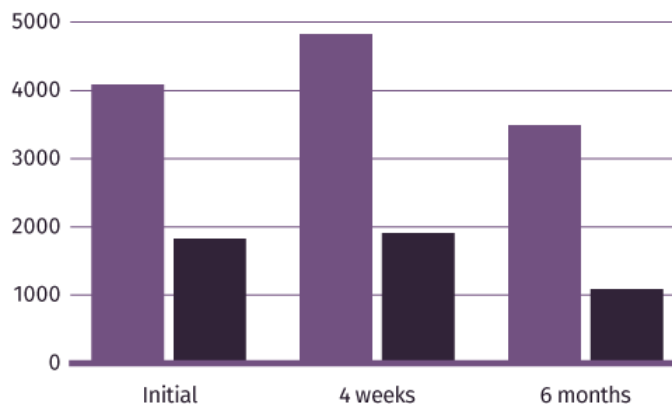
The addition of 0.5% AMPHISOL® K ensures the thermal (long-term) stability of the emulsions.

AMPHISOL® K as a co-emulsifier allows to create stable spray

Add 0.5% of AMPHISOL® K in your emulsifying system to decrease the viscosity without compromising on stability



PEG-100 Stearate/Glyceryl Stearate
PEG-100 Stearate/Glyceryl Stearate + 0.5% AMPHISOL® K



Cetearyl Glucoside
Cetearyl Glucoside + 0.5% AMPHISOL® K

Testing procedure

- 2 different emulsifier systems were formulated with and without 0.5% AMPHISOL® K
- SPF 30 sunscreen used as basis
- Assessment at RT up to 6 months

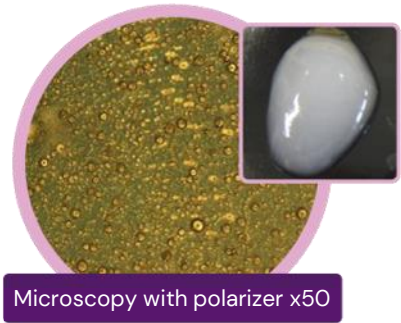


The addition of 0.5% AMPHISOL® K allows to decrease the viscosity of your emulsion and to create stable spray.

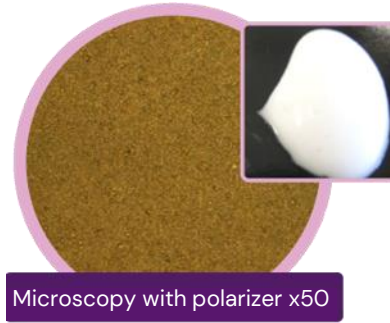
Rescue and beautify gel cream formulation

With the addition of AMPHISOL® K as co-emulsifier

Gel Cream 1 based on polyacrylate crosspolymer-11



+0.3% AMPHISOL® K in the emulsifier system at 60°C



- Inhomogeneous droplets distribution
- Not shiny white emulsion

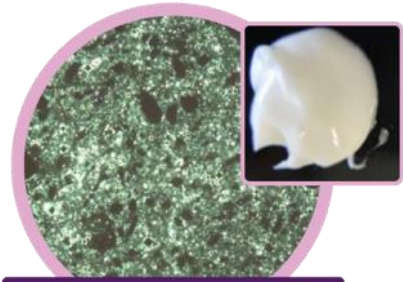
- Droplet size reduction and homogenous droplets distribution for improved stability
- Snow white cream

- Smaller droplet size and better distribution for higher stability
 - Better creamy appearance
- with the addition of 0.3% AMPHISOL® K in the emulsifying system of a gel cream

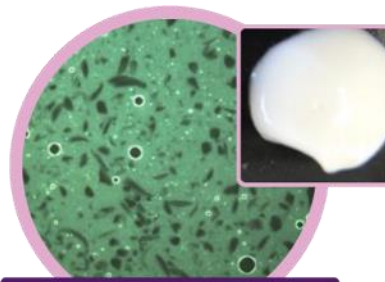
Rescue and beautify skin care O/W emulsion

With the addition of AMPHISOL® K as co-emulsifier

Emulsion 2 based on Polyglyceryl-6 distearate, jojoba esters, polyglyceryl-3 beeswax, cetyl alcohol



+0.5% AMPHISOL® K in the emulsifier system at 70°C



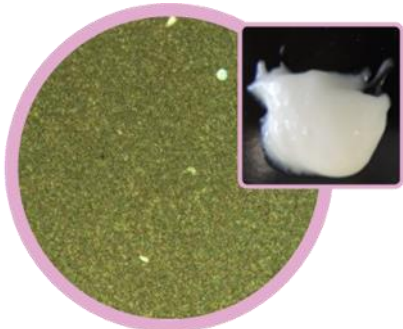
Microscopy without polarizer x50

- Strong wax crystallization
- Yellowish cream
- Oil release after 1 month at 50C

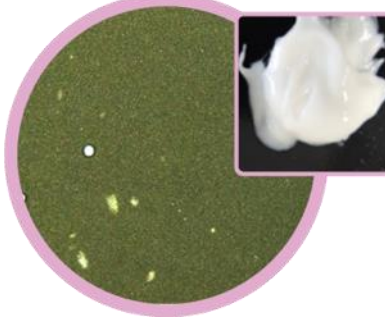
Microscopy without polarizer x50

- Reduction of waxes crystallization
- Snow white cream
- Droplets size distribution for improved stability

Emulsion 3 based on Cetearyl olivate, sorbitan olivate



+0.5% AMPHISOL® K in the emulsifier system at 70°C



- Regular droplets with few agglomerates
- Grainy cream

- Regular droplets distribution
- No agglomerate
- Smooth and shiny cream

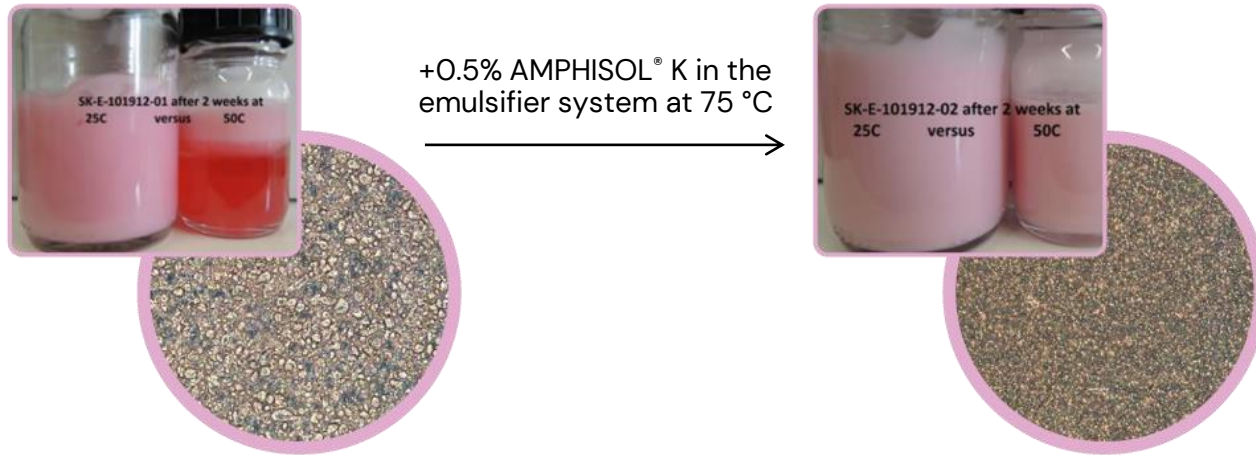
- Higher stability (no oil release)
- Smoother and shinier cream
- Reduction of the yellowish effect and wax crystallization
- No agglomeration

with the addition of 0.5% AMPHISOL® K in the emulsifying system of a O/W emulsion in our test conditions

Rescue and beautify O/W emulsion for higher stability at high and low temperature

With the addition of AMPHISOL® K as co-emulsifier

Frozen Cream based on Polyglyceryl-3 Methylglucose Distearate from -18°C to RT (stability at 50°C)



- Inhomogeneous droplets distribution
- Phase separation at 50C after 2 weeks

- Very fine droplets distribution

- No phase separation
- Smaller droplet size and better distribution for higher stability
- Thermal stability at high (50°C) and low temperature (-18°C)
- Smoother and shinier aspect of the cream

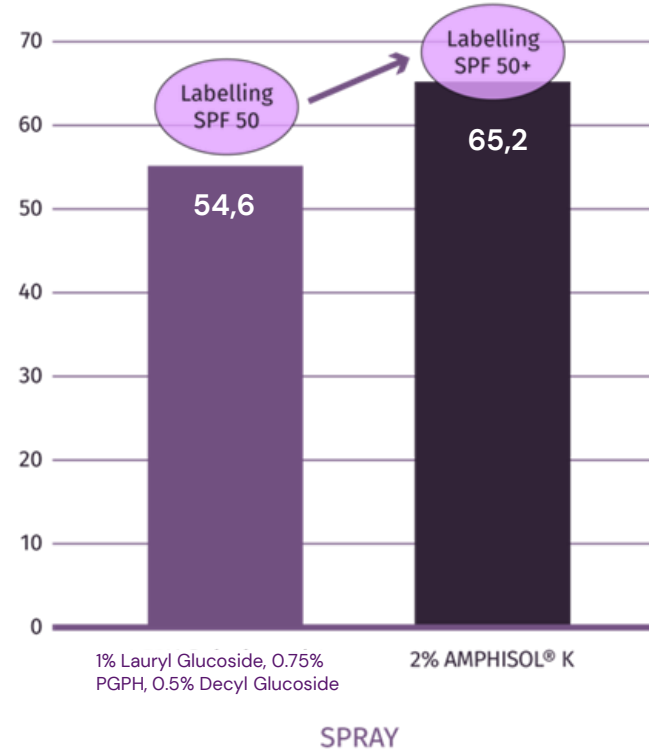
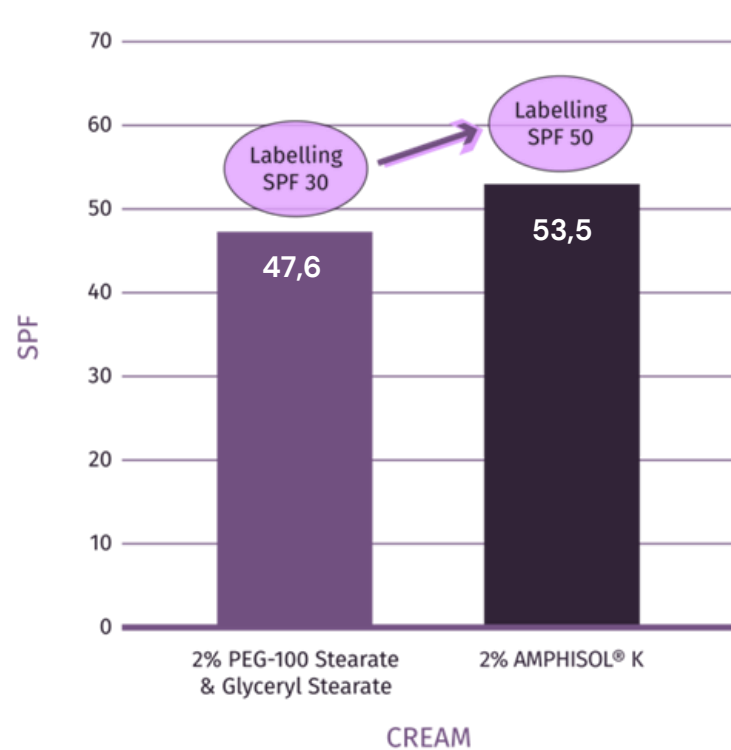
with the addition of 0.5% AMPHISOL® K in the frozen cream

Additional benefits:

- SPF boosting
- Moisturizing properties
- Sensory profile

SPF Boosting effect

Upgrade your suncare label



Testing procedure

- In vivo SPF tests with 10 volunteers
- The cream contains Cetearyl Alcohol/ Behenyl Alcohol as stabilizers
- The spray contains Cetearyl Alcohol/Glyceryl Myristate as stabilizers for AMPHISOL® K versus Decyl Glucoside/Lauryl Glucoside /Polyglyceryl-2 Dipolyhydroxystearate (PGPH) for the other one

AMPHISOL® K upgrades your SPF to reach the next protection level.

Moisturizing properties thanks to the proven liquid crystals structure of AMPHISOL® K

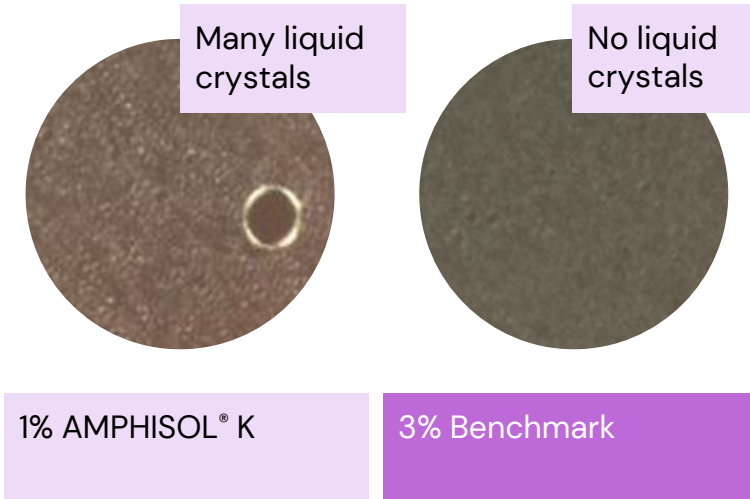
- **Liquid crystals** have an impact on stability and rheology of the formulations **but also on the skin.** ^{(3) (4)}
- **Liquid crystal's** structure **reduce the TEWL**, due to their specific organization: liquid crystals form multilayers ordered with oil components and hydrophilic groups of AMPHISOL® K. ^{(1) (3)}
- **Liquid crystals network and skin structure are similar** leading to a good **affinity** that extends the **hydration** and optimizes the action of functional actives like UV filters. ^{(2) (3)}

Reference:

- ⁽¹⁾ Liquid Crystal O/W Emulsions to Mimic Lipids and Strengthen Skin Barrier Function, July 18, 2013 Contact Author In-Young Kim, PhD; Sayaka Nakagawa; Kinka Ri, PhD; Satoru Hashimoto, PhD; and Hitoshi Masaki, PhD, Nikkol Group
- ⁽²⁾ Liquid Crystals and the Skin by STEVE HERMAN Chemical Reaction GCI February 2010
- ⁽³⁾ Study on the Formation and Properties of Liquid Crystal Emulsion in Cosmetic, Wanping Zhang*, Lingyan Liu, journal of Cosmetics, Dermatological Sciences and Applications, 2013, 3, 139-144
- ⁽⁴⁾ Role of liquid crystal in the emulsification of a gel emulsion with high internal phase fraction, Yihan Liu a,*, Stig E. Friberg b,a The Dow Corning Corporation, Midland, MI 48686, USA,b Chemistry Department, Clarkson University, Potsdam, NY 13676, USA , Journal of Colloid and Interface Science 340 (2009) 261-268

Visible higher film forming formation for higher moisturizing properties with visible liquid crystals versus benchmark

Formulation SK-E-101767 -1 & 2



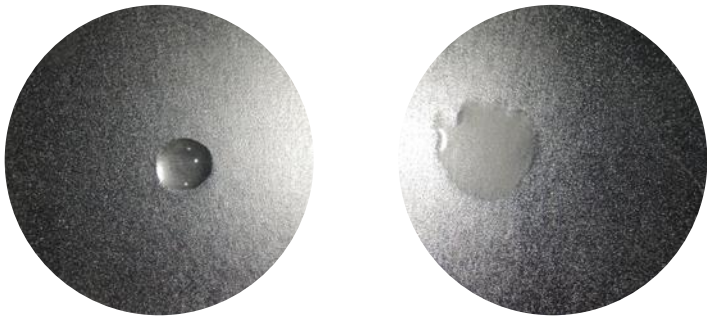
Microcopy under polarizer light x125



AMPHISOL® K with liquid crystals

Benchmark no liquid crystals

0.5g of cream in 50ml water



AMPHISOL® K with liquid crystals

Benchmark no liquid crystals

No diffusion of the water droplet on the product film

Immediate diffusion of the water droplet on the product film

Liquid crystals structure of AMPHISOL® K allows a film forming effect for higher moisturizing properties.

Test done on PMMA plate HD6

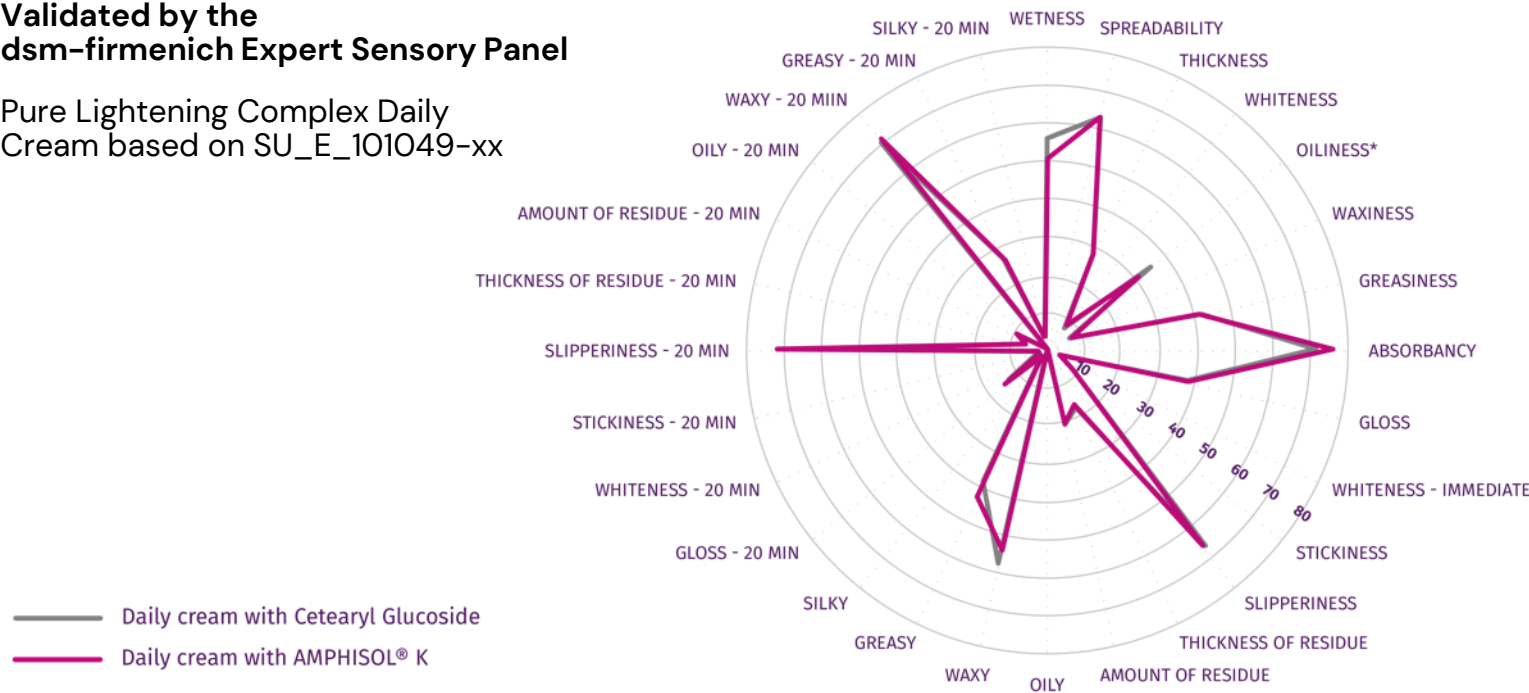
AMPHISOL® K sensory signature in a challenging daily cream

High wetness, spreadability, absorbency, slipperiness (immediate and after-feel) combined with a dry touch

Sensory profile of a Daily Cream with STAY®C 50 and UV Filters

Validated by the
dsm-firmenich Expert Sensory Panel

Pure Lightening Complex Daily
Cream based on SU_E_101049-xx



Good to know

With a sensory signature close to Cetearyl Glucoside, AMPHISOL® K is a good alternative to use where the formulation isn't stable. It will give your formulation higher stability without modifying the sensory profile recognized by consumers.

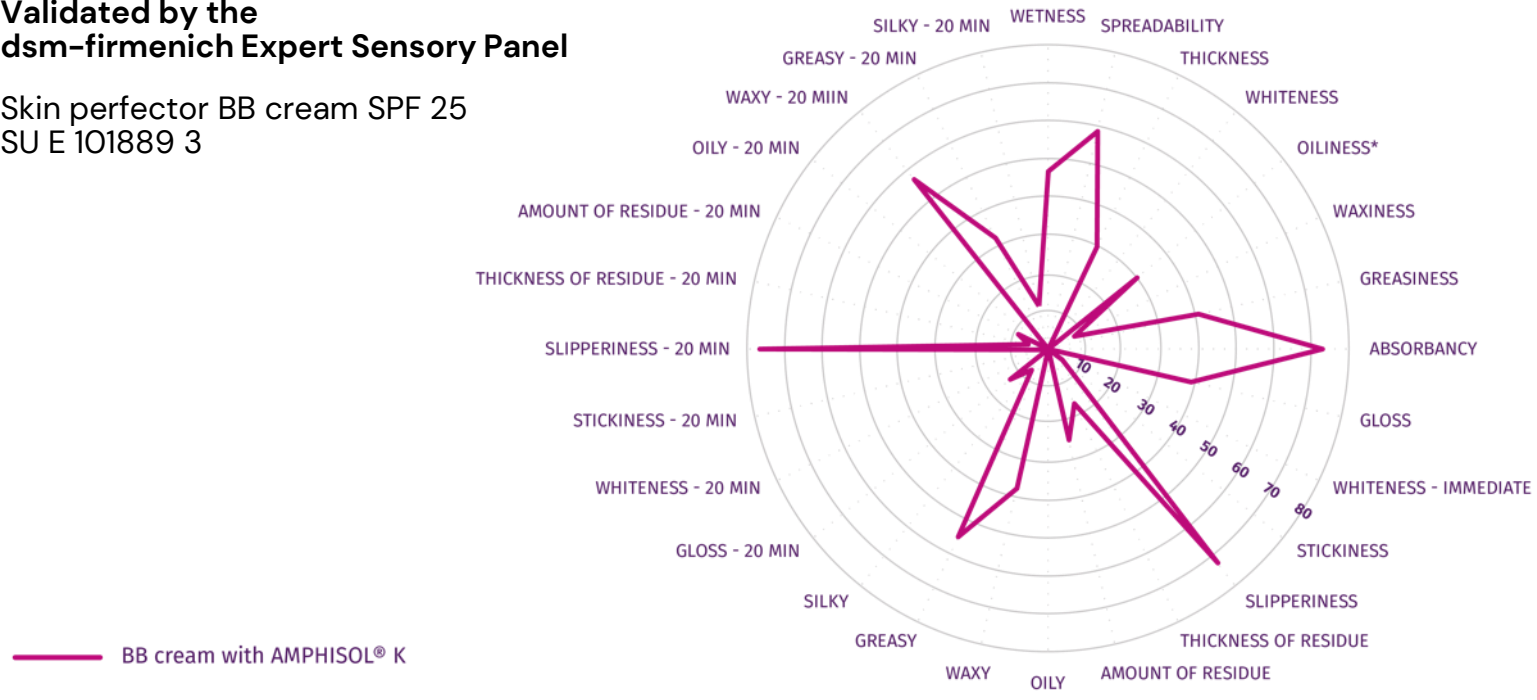
AMPHISOL® K sensory signature in a BB cream SPF 25 with pigments and UV filters

High wetness, spreadability, absorbency, slipperiness (immediate and after-feel) combined with a dry touch

BB cream sensory profile

Validated by the
dsm-firmenich Expert Sensory Panel

Skin perfector BB cream SPF 25
SU E 101889 3



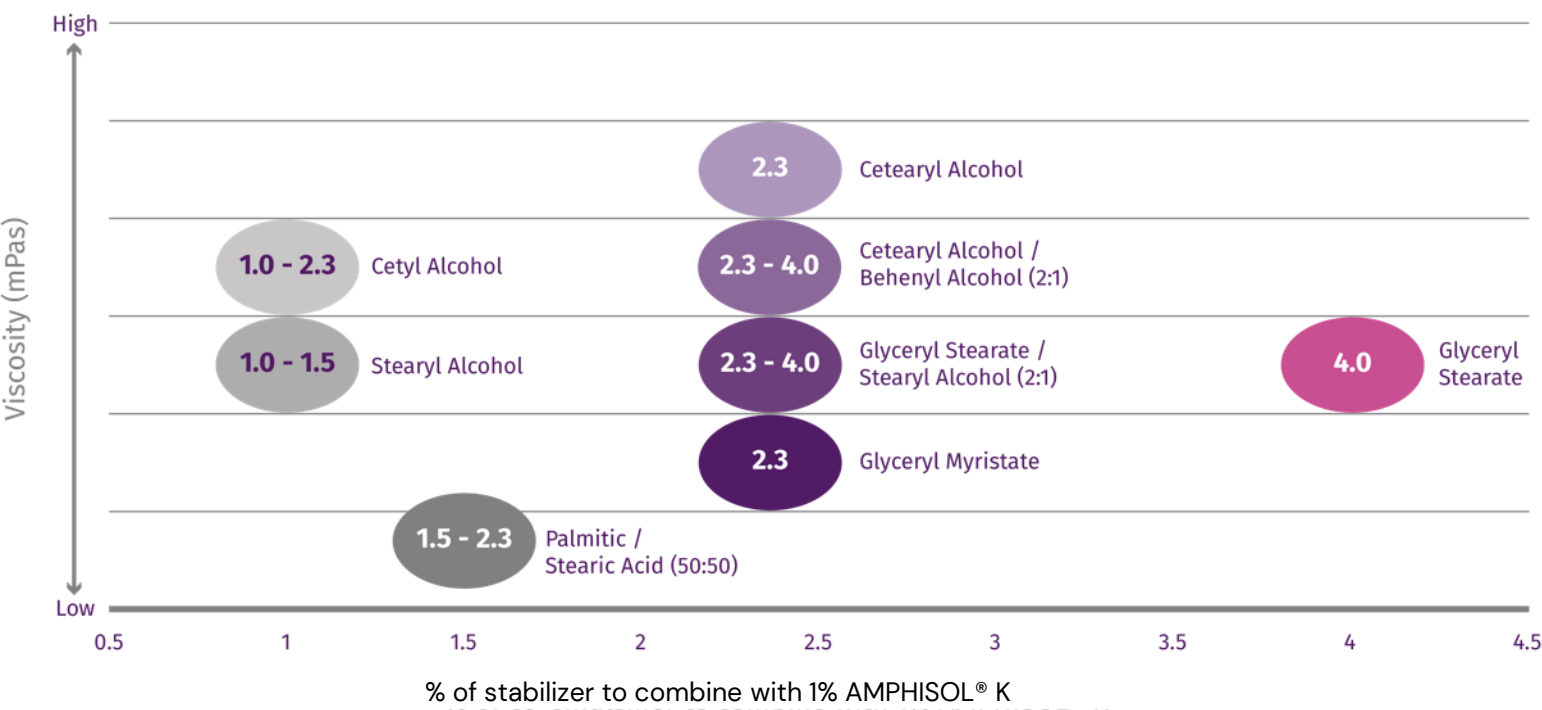
High stability with color pigments and UV filters with great sensory profile.

Key formulation tips

We recommend the combination with fatty alcohol

AMPHISOL® K (1%) is your main emulsifier, how much stabilizer should you add at the start?

Relation between AMPHISOL® K emulsion viscosity and selected stabilizers with optimal ratio



Save your time with AMPHISOL® K and selected stabilizers map.

Tested in a **basic system gel network**

Depending on the choice of stabilizer, AMPHISOL® K formulations can be liquid to cream.

Combination within optimal emulsifier / stabilizer range ensures best long-term stability.

Stable emulsions with typically use levels of 0.75 – 2.5% AMPHISOL® K.

Formulation tips & tricks

See video

- AMPHISOL® K needs to be dispersed under stirring at the following temperatures:
 - 80–85°C in water phase, 85–90°C in oil phase. (min 60°C when used as a co-emulsifier, see next slides).
- Neither in the heated oil phase nor in the water phase* AMPHISOL® K dissolves completely.
- Despite not completely dissolved in either phase, AMPHISOL® K will be oriented to form during the emulsification, liquid crystalline structures around the oil phase and at the oil/water interphase droplets in the first 24 hours.
- After combining both phases, we recommend a homogenization step and a second shorter one below 40°C.
- Below 40°C add neutralizing agents and temperature sensitive agent.
- AMPHISOL® K is not sensitive to shear forces and doesn't need strong shearing. But adapt shear force accordingly to production scale and shearing equipment.
- Stir while cooling down further.
- The formulations need 24–48h for ripening and to adjust themselves to the final viscosity.
- * Avoid filtration process with the phase containing AMPHISOL® K before emulsification, as main consequence would be the lost of part of the emulsifier.

dsm-firmenich recommendation: add AMPHISOL® K to the oil phase



See video



Additional special tips

pH range and other parameters

- AMPHISOL® K forms stable emulsion in a pH range from 5– 8.
- The resulting pH of a standard emulsion based on AMPHISOL® K without any base or acid is around pH 5 – 5.5.
- The pH can easily be adjusted to the desired value with any neutralizing agent (NaOH, KOH, Triethanolamine, Tromethamine, etc.).
- AMPHISOL® K can form insoluble salts in presence of calcium/magnesium salts, a chelating agent is recommended, and/or combine AMPHISOL® K with fatty alcohols to avoid the formation of insoluble crystals.
- Polyacrylate based thickeners can be added to the same phase as AMPHISOL® K. Neutralization will partly occur due to the potassium ion present and lead to slight thickening of the phase.



AMPHISOL® K as co-emulsifier: Formulation tricks

- Typical use level as co-emulsifier: 0.3–0.5% AMPHISOL® K
- To be added before the emulsification step
- No need to heat at high temperature: adjust the temperature to the main emulsifier with a minimum at 60°C

As a co-emulsifier, AMPHISOL® K will:

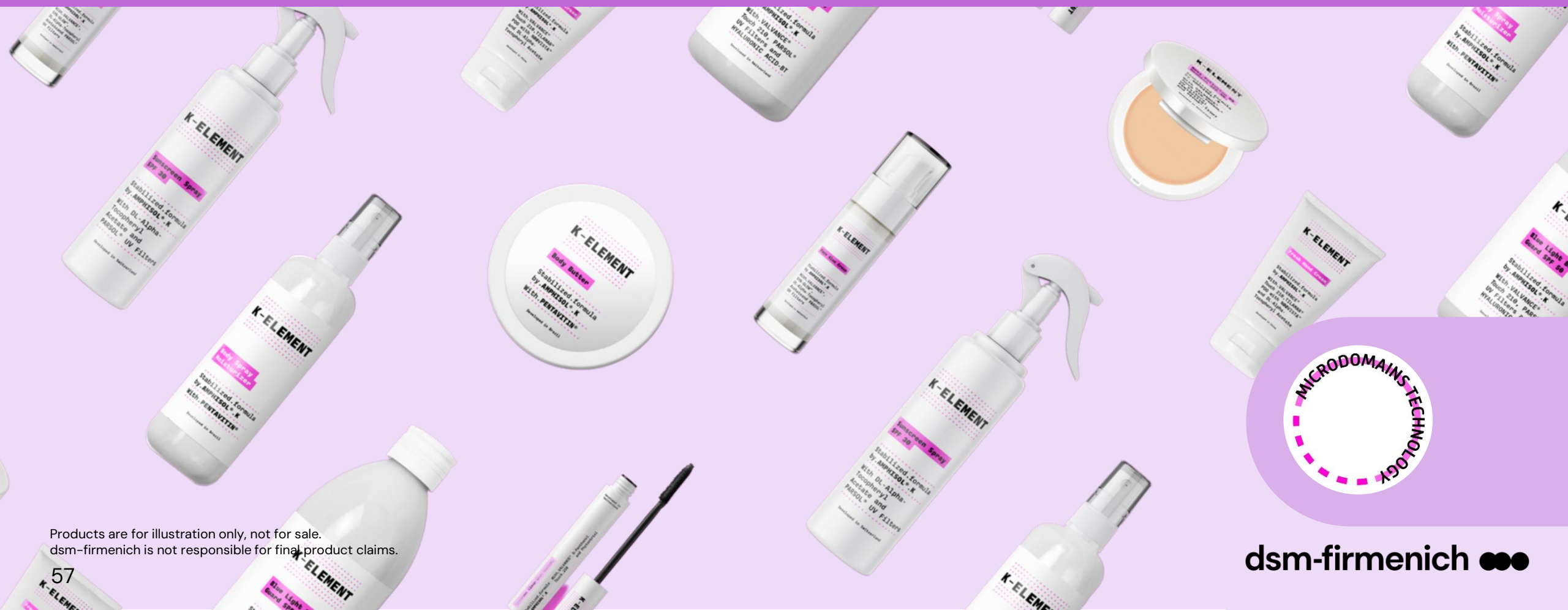
- Reduce yellowing effect by reducing the droplet size
- Increase the shine and the smoothness of the emulsion
- Increase the stability (no oil and pigments release)
- Improve the thermal stability (low and high) / cyclo test



K-Element Line-up

Stabilized formula by AMPHISOL® K

Ultimate stability for multi formulations



Products are for illustration only, not for sale.
dsm-firmenich is not responsible for final product claims.

Body Butter

Stabilized formula by AMPHISOL® K
With PENTAVITIN®

A feeling of comfort with a buttery yet non-sticky texture and, which envelops the skin with a velvety and comforting touch.



Products are for illustration only, not for sale.
dsm-firmenich is not responsible for final product claims.

K-ELEMENT



An extensive, uniform and unique formation of self-organizing molecules that guarantee maximum stability.

Phase	Ingredients	INCI Name	% w/w
A	Water Dem	AQUA	75,60
	Edeta BD	DISODIUM EDTA	0,10
	Carbopol Ultrez 10	CARBOMER	0,30
	Tris Amino Ultra PC	TROMETHAMINE	0,50
	Glycerin 99.5%	GLYCERIN	2,00
B	DUB MCT 5545	CAPRYLIC/CAPRIC TRIGLYCERIDE	8,00
	DUB B1215	C12-15 ALKYL BENZOATE	2,00
	BELSIL DM 100	DIMETHICONE	2,00
	Shea butter	BUTYROSPERMUM PARKII BUTTER	2,00
	DUB SHOREA T	SHOREA ROBUSTA SEED BUTTER	1,00
	AMPHISOL® K	POTASSIUM CETYL PHOSPHATE	2,00
	Lanette D	CETEARYL ALCOHOL	2,00
C	Euxyl PE 9010	PHENOXYETHANOL, ETHYLHEXYLGLYCERIN	1,00
D	PENTAVITIN®	SACCHARIDE ISOMERATE, AQUA, CITRIC ACID, SODIUM CITRATE	1,00
E	SHP Ambree Silver Prada	PARFUM	0,50

SK-L-101679-3

Procedure

1. In water phase, make Carbopol dispersion, and then add the Tromethamine. Heat up to 80°C under stirring.
2. Heat phase B up to 85°C under stirring. Add phase B to A and homogenize the emulsion.
3. Cool down to 40°C under gentle stirring. Add preservative, PENTAVITIN®, fragrance and homogenize.

Technical Data

pH: 7.0

Blue Light Body Guard SPF 50

Stabilized formula by AMPHISOL® K
With VALVANCE® Touch 210, PARSOL® UV Filters, and HYALURONIC ACID-BT

Your skin is totally protected from sunlight as well as blue light with this soft texture protector, dry to the touch and with all the hydrating power of hyaluronic acid.



Products are for illustration only, not for sale.
dsm-firmenich is not responsible for final product claims.

K-ELEMENT



An extensive, uniform and unique formation of self-organizing molecules that guarantee maximum stability.

Phase	Ingredients	INCI Name	% w / w
A	PARSOL® EHS	ETHYLHEXYL SALICYLATE	5,00
	PARSOL® HMS	HOMOSALATE	10,00
	Finsolv TN	C12-15 ALKYL BENZOATE	5,00
	Lexfeel WOW	C13-16 ISOPARAFFIN, TRIHEPTANOIN	2,00
B	UVAorb HEB	DIETHYLHEXYL BUTAMIDO TRIAZONE	4,00
C	Lanette 18	STEARYL ALCOHOL	0,40
	AMPHISOL® K	POTASSIUM CETYL PHOSPHATE	0,80
	Emulium Mellifera MB	POLYGLYCERYL-6 DISTEARATE, JOJOBA ESTERS, POLYGLYCERYL-3 BEESWAX, CETYL ALCOHOL	4,00
	Eldew SL-205	ISOPROPYL LAUROYL SARCOSINATE	5,00
	PARSOL® Shield	BIS-ETHYLHEXYLOXYPHENOL METHOXYPHENYL TRIAZINE	4,00
	PARSOL® 1789	BUTYL METHOXYDIBENZOYLMETHANE	5,00
	VALVANCE® Touch 210	SILICA	3,00
D	Sepinov EMT 10	HYDROXYETHYL ACRYLATE/SODIUM ACRYLOYLDIMETHYL TAURATE COPOLYMER	0,50
E	Keltrol CG-T	XANTHAN GUM	0,20
	1,3 Butylene Glycol cos grade	BUTYLENE GLYCOL	3,00
F	Edeta BD	DISODIUM EDTA	0,10
	WATER DEM.	AQUA	42,95
	PARSOL® MAX	METHYLENE BIS-BENZOTRIAZOLYL TETRAMETHYLBUTYLPHENOL, AQUA, DECYL GLUCOSIDE, PROPYLENE GLYCOL, XANTHAN GUM	4,00
	HYALURONIC ACID-BT	SODIUM HYALURONATE	0,05
	ADEKA NOL NHG	HEXYLGLYCERIN	0,50
	SymSave H	HYDROXYACETOPHENONE	0,50

SU-E-100116-55

Procedure

1. Mix Phase A
2. Add B to A under stirring to avoid aggregates and heat up to 85°C until a clear solution is obtained.
3. Add one by one ingredients of Phase C to A+B under stirring.
4. Add D to A+B+C under stirring.
5. Mix Phase E.
6. Mix Phase F and heat up to 85°C. Add E to F under stirring.
7. Add E+F to A+B+C+D and homogenize.
8. Cool down to room temperature under gentle stirring.

Technical Data

pH: 6.0 +/- 0.5
SPF*:50
Viscosity (Brookfield RV5/10rpm): 25000 mPa.s
In vitro UVAPF* (Colipa 2011): 19.8
UVAPF/SPF* (50 labeled); >= 0.33: 0.40
Critical Wavelength*: 380 nm
(Measurement done with Labsphere equipment)

UV filter combination does not comply with applicable EU Cosmetic Regulation

Lustrous Clump-free Mascara

Stabilized formula by AMPHISOL® K
With VALVANCE® Touch 250, D-Panthenol 75 L and Phytantriol

Powerful eyes with this great coverage pigment mask for high-definition eyelashes.



Products are for illustration only, not for sale.
dsm-firmenich is not responsible for final product claims.

K-ELEMENT



An extensive, uniform and unique formation of self-organizing molecules that guarantee maximum stability.

Phase	Ingredients	INCI Name	% w / w
A	Huile de Paraffine Codex AAB2	PARAFFINUM LIQUIDUM	5.00
	CERAUBA T1 Bio	COPERNICIA CERIFERA CERA	3.50
	Kahlwax 8104	CERA ALBA	5.00
	Tego® Alkanol 16	CETYL ALCOHOL	5.00
	AMPHISOL® K	POTASSIUM CETYL PHOSPHATE	3.00
B	Water dem.	AQUA	45.15
	Natrosol™ 250 HR	HYDROXYETHYLCELLULOSE	0.50
	Glycerin 99.5%	GLYCERIN	3.00
	SOLAGUM™ AX	ACACIA SENEGAL GUM, XANTHAN GUM	0.20
	Water dem.	AQUA	15.00
	Eastman AQ™ Polymer 55 S	POLYESTER-5, SODIUM ACETATE	5.00
	Unipure Black LC989 SGP	CI 77499, SODIUM GLYCEROPHOSPHATE	6.00
C	VALVANCE® Touch 250	SILICA, METHICONE	1.50
D	D-Panthenol 75 L	PANTHENOL, AQUA	0.50
E	Phytantriol	PHYTANTRIOL	0.50
	Euxyl® PE 9010	PHENOXYETHANOL, ETHYLHEXYLGLYCERIN	1.00
	Emprove® Sodium Hydroxide Pellets	SODIUM HYDROXIDE	0.15

SU-E-101219-01

Procedure

1. Weight components of phase A. Stir and heat up to 85°C until homogenous.
2. Weight water of phase B. Start stirring and heating. At 60°C, add slowly the hydroxyethylcellulose 250 HR while stirring for 20 minutes and heat up. At 75°C add premix Glycerin + Acacia Senegal Gum, Xanthan Gum and stir for 10 minutes.
3. Weigh water of phase B, stir and heat to 80°C. Solubilize Eastman AQ™ Polymer 55 S in water.
4. Then add C to B.
5. Add D to B+C, homogenize.
6. At 80°C, add A to B+C+D under stirring and homogenize strongly for 1 minute.
7. Start cooling down under gentle stirring.
8. At 50°C, introduce one by one components of phase E. Check the homogeneity between each step.
9. Homogenize for 30 seconds.
10. Cool down to RT, check the pH (5.0–6.0) and adjust if necessary.

Face Glow Cream

Stabilized formula by AMPHISOL® K
With VALVANCE®, SYN-GLOW®, DL-alpha-Tocopheryl Acetate, and PARSOL® UV Filters

For naturally tanned and healthy skin from the inside out, with a long-lasting effect, soft to the touch and high in hydration.



Products are for illustration only, not for sale.
dsm-firmenich is not responsible for final product claims.

K-ELEMENT



An extensive, uniform and unique formation of self-organizing molecules that guarantee maximum stability.

Phase	Ingredients	INCI Name	% w / w
A	WATER DEM.	AQUA	50,10
	Edeta BD	DISODIUM EDTA, AQUA	0,10
B	Makilene GC	BUTYLENE GLYCOL	3,00
	SILIGEL	XANTHAN GUM, SCLEROTIUM GUM, LECITHIN, PULLULAN	0,80
C	AMPHISOL® K	POTASSIUM CETYL PHOSPHATE	1,80
	PARSOL® HMS	HOMOSALATE	5,00
	PARSOL® EHS	ETHYLHEXYL SALICYLATE	5,00
	PARSOL® 1789	BUTYL METHOXYDIBENZOYLMETHANE	3,00
	PARSOL® 340	OCTOCRYLENE	6,00
	PARSOL® SLX	POLYSILICONE-15	0,90
	PARSOL® MCX	ETHYLHEXYL METHOXYCINNAMATE	3,00
	EMOGREEN L19	C15-19 ALKANE	2,50
	DL-alpha-Tocopheryl Acetate	TOCOPHERYL ACETATE	1,00
	Lanette O	CETEARYL ALCOHOL	2,00
D	Aristoflex Silk	SODIUM POLYACRYLOYLDIMETHYL TAURATE	0,50
	Hallbrite BHB	BUTYLOCTYL SALICYLATE	5,00
	VALVANCE® Touch 250	SILICA, DIMETHICONE	1,00
	VALVANCE® Touch 210	SILICA	1,00
E	Euxyl PE 9010	PHENOXYETHANOL, ETHYLHEXYLGLYCERIN	1,00
	Perfume Vanille douce RS86015	PARFUM	0,30
	SYN-GLOW®	GLYCERIN, AQUA, BENZOYL DIPEPTIDE-18 D-PHENYLALANYL ARGINYL D-TRYPTOPHAN DIPROPYLAMIDE MESYLATE	3,00
F	Cameleon Yellow	CELLULOSE ACETATE, TITANIUM DIOXIDE, CI 77492, PROPYLENE GLYCOL STEARATE, ACRYLATES/AMMONIUM METHACRYLATE COPOLYMER, MAGNESIUM STEARATE	2,250
	Cameleon Black	CELLULOSE ACETATE, TITANIUM DIOXIDE, CI 77499, PROPYLENE GLYCOL STEARATE, ACRYLATES/AMMONIUM METHACRYLATE COPOLYMER, MAGNESIUM STEARATE	0,075
	Cameleon Red	CELLULOSE ACETATE, TITANIUM DIOXIDE, CI 77491, PROPYLENE GLYCOL STEARATE, ACRYLATES/AMMONIUM METHACRYLATE COPOLYMER, MAGNESIUM STEARATE	0,675
	Cameleon White	CELLULOSE ACETATE, TITANIUM DIOXIDE, PROPYLENE GLYCOL STEARATE, ACRYLATES/AMMONIUM METHACRYLATE COPOLYMER, BORON NITRIDE	1,000

SK-E-101343-19

Procedure

1. Premix phase A under stirring.
2. Premix phase B and add it to phase A under stirring.
Heat phase A+B up to 85°C.
3. Mix phase C and heat it up to 85°C under stirring.
Add phase C into phase A+B and homogenize with high shear.
4. Cool the formulation down to room temperature under stirring.
5. Add phase D under stirring.
6. Below 40°C add the ingredients of phase E under stirring.
7. Premix phase F and carefully add it to the formulation under stirring.
8. Adjust the pH around 5.50 if necessary.

Technical Data

pH: 7 – 7.5
Viscosity (Brookfield RV6/10rpm): 29 000 mPa.s
SPF expected: 30

Fresh Hand Cream

Stabilized formula by AMPHISOL® K
With VALVANCE® Touch 210 and DL-alpha-Tocopheryl Acetate

A touch of softness for your hands with this refreshing cream.
Fast in absorption and high in nourishing power.



Products are for illustration only, not for sale.
dsm-firmenich is not responsible for final product claims.

Phase	Ingredients	INCI Name	% w/w
A	Tego Care 450 MB	POLYGLYCERYL-3 METHYLGLUCOSE DISTEARATE	1,20
	JNA-CS50	CETEARYL ALCOHOL	1,00
	Arlacel 165	GLYCERYL STEARATE, PEG-100 STEARATE	1,00
	SALACOS 816T	CETYL ETHYLHEXANOATE	8,00
	Shea butter	BUTYROSPERMUM PARKII BUTTER	2,00
	AMPHISOL® K	POTASSIUM CETYL PHOSPHATE	1,00
B	XIAMETER PMX-0345	CYCLOPENTASILOXANE, CYCLOHEXASILOXANE	5,00
C	Water Dem	AQUA	32,11
	Tris Amino Ultra PC	TROMETHAMINE	0,19
	Glycerin 99.5%	GLYCERIN	5,00
	Phenoxyethanol	PHENOXYETHANOL	0,35
	Sensiva SC 50	ETHYLHEXYLGLYCERIN	0,05
	Propanediol	PROPANEDIOL	1,00
	Edeta BD	DISODIUM EDTA	0,05
D	Gransil PSQ	POLYMETHYLSILSESQUOXANE	0,70
	VALVANCE® Touch 210	SILICA	1,00
E	Water Dem	AQUA	35,00
	Flogel FG 700	CARBOMER	0,35
F	DL-alpha-Tocopheryl Acetate	TOCOPHERYL ACETATE	5,00

SK-E-800040-1

K-ELEMENT



An extensive, uniform and unique formation of self-organizing molecules that guarantee maximum stability.

Procedure

1. Mix all ingredients of phase A and heat up to 75°C.
2. Mix all ingredients of phase C and heat up to 75°C.
3. Add phase C into phase A under homogenize with the speed of 5000rpm for 3min Add phase B into product under homogenize with the speed of 5000rpm for 1min.
4. Add each ingredient of phase D into product under homogenize with the speed of 5000rpm for 1min.
5. Mix all ingredients of phase E into product under stirring until uniform Add phase E into product under homogenize with the speed of 5000rpm for 2min.
6. Cool down under stirring add phase F into product below 40 °C.

Technical Data

pH: 6.2
Viscosity (Brookfield LV3/12rpm, 22,8°C): 8499 mPa.s

Body Spray Moisturizer

Stabilized formula by AMPHISOL® K
With PENTAVITIN®

A revitalizing touch for your day-to-day with this ultralight texture moisturizer with fast absorption, providing a wonderfully soft skin feeling.



Products are for illustration only, not for sale.
dsm-firmenich is not responsible for final product claims.

Phase	Ingredients	INCI Name	% w/w
A	WATER DEM.	AQUA	80,40
	Glycerin 99.5%	GLYCERIN	2,00
	Edeta BD	DISODIUM EDTA	0,10
B	DUB MCT 5545	CAPRYLIC/CAPRIC TRIGLYCERIDE	8,00
	DUB B1215	C12-15 ALKYL BENZOATE	2,00
	Phytosqualan	SQUALANE	2,00
	CETYL ALCOHOL PS	CETYL ALCOHOL	1,00
	AMPHISOL® K	POTASSIUM CETYL PHOSPHATE	1,00
C	Euxyl PE 9010	PHENOXYETHANOL, ETHYLHEXYLGLYCERIN	1,00
	SIMULGEL INS 100	HYDROXYETHYL ACRYLATE/SODIUM ACRYLOYLDIMETHYL TAURATE COPOLYMER, ISOHEXADECANE, POLYSORBATE 60	1,00
D	PENTAVITIN®	SACCHARIDE ISOMERATE, AQUA, CITRIC ACID, SODIUM CITRATE	1,00
E	SHPO407 Elixir Extreme	PARFUM	0,50

SK-L-101677-5

K-ELEMENT



An extensive, uniform and unique formation of self-organizing molecules that guarantee maximum stability.

Procedure

1. Heat phase A up to 80°C.
2. Heat phase B up to 85°C under stirring. Add phase B to A and homogenize the emulsion.
3. Cool down to 40°C under gentle stirring. Add phase C and homogenize.
4. Add PENTAVITIN®, fragrance and homogenize again.

Technical Data

pH: 6.0

Anti-Pollution BB Cushion SPF 30

Stabilized formula by AMPHISOL® K

With VALVANCE® Touch 210, PARSOL® UV Filters, PENTAVITIN®, and PEPHA®-TIGHT CB

Reveal your natural beauty with this BB Cushion that provides lightweight coverage and effective oil control.

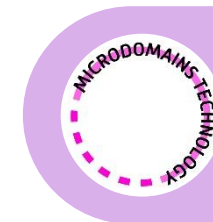


Products are for illustration only, not for sale.
dsm-firmenich is not responsible for final product claims.

Phase	Ingredients	INCI Name	% w / w
A	X-Tend 226	PHENETHYL BENZOATE	6.00
	PARSOL® EHS	ETHYLHEXYL SALICYLATE	3.00
	KAK TCIN	TRICYCLODECANEMETHYL ISONONANOATE	2.00
	Finsolv TN	CI2-15 ALKYL BENZOATE	1.00
	Tego Alkanol 1618	CETEARYL ALCOHOL	0.80
	PARSOL® SLX	POLYSILICONE-15	1.50
	PARSOL® Shield	BIS-ETHYLHEXYLOXYPHENOL METHOXYPHENYL TRIAZINE	2.00
	PARSOL® TX	TITANIUM DIOXIDE, SILICA, DIMETHICONE	2.50
	AMPHISOL® K	POTASSIUM CETYL PHOSPHATE	3.00
	Cutina GMS V	GLYCERYL STEARATE	2.00
B	WATER DEM.	AQUA	51.99
	Edeta BD	DISODIUM EDTA	0.10
	Rhodicare T	XANTHAN GUM	0.30
	Structure XL	HYDROXYPROPYL STARCH PHOSPHATE, AQUA	2.00
	Unipure White LC981 SGP	CI 77891, SODIUM GLYCEROPHOSPHATE	6.00
	Unipure Yellow LC 182 SGP	CI 77492, SODIUM GLYCEROPHOSPHATE	0.75
	Unipure Black LC989 SGP	CI 77499, SODIUM GLYCEROPHOSPHATE	0.10
	Unipure Red LC 381 SGP	CI 77491, SODIUM GLYCEROPHOSPHATE	0.18
C	Chlorphenesin BP 73	CHLORPHENESIN	0.20
D	Spectrastat PHL	CAPRYLHYDROXAMIC ACID, 1,2-HEXANEDIOL, PROPANEDIOL	1.00
	PENTAVITIN®	SACCHARIDE ISOMERATE, AQUA, CITRIC ACID, SODIUM CITRATE	1.50
	PEPHA®-TIGHT CB	NANNOCHLOROPSIS OCULATA EXTRACT, PULLULAN, PENTYLENE GLYCOL, CITRIC ACID, AQUA	1.00
	Forever RS67550	PARFUM	0.30
	Sodium Hydroxide 20% Solution	SODIUM HYDROXIDE	0.55
E	VALVANCE® Touch 210	SILICA	0.50
	DUB HELIOPTIMA	DIISOPROPYL ADIPATE, PROPYLENE GLYCOL DICAPRYLATE/DICAPRATE, CI2-15 ALKYL BENZOATE, DIISOPROPYL SEBACATE	1.20
F	WATER DEM.	AQUA	5.00
	Sodium Hydroxide 20% Solution	SODIUM HYDROXIDE	2.03
	PARSOL® HS	PHENYLBENZIMIDAZOLE SULFONIC ACID	1.50

SU-E-101220-2

K-ELEMENT



An extensive, uniform and unique formation of self-organizing molecules that guarantee maximum stability.

Procedure

Phase A: Introduce ingredients until Tego Alkanol included and heat up to 85°C.

Add one by one the rest of the ingredients.
Homogenize 2 minutes at 9500 rpm.

Phase B: Introduce Water, EDTA and heat to 50°C.

Add slowly Rhodicare T and heat to 75°C.

Add Structure XL, keep stirring until homogenous and heat to 80°C. Add one by one the pigments and homogenize 5 minutes at 9500 rpm.

Emulsification: Add A to B under stirring and start cooling down. At 75°C, add C and homogenize 2 minutes at 9500 rpm. Keep cooling down under gentle stirring. At 35°C, add one by one ingredients of phase D and adjust if necessary the pH to 7.0 minimum.

Phase E: Disperse VALVANCE™ Touch 210 in Dub Helioptima, homogenize if needed.

Add E to A+B+C+D and homogenize if necessary.

Phase F: Mix at RT and add it to A+B+C+D+E.
Check the pH (>7.0).

Technical Data

pH: 7 – 7.5

Viscosity (Brookfield RV5/20rpm): 5200 mPa.s

SPF in vivo: 47.2

(According to ISO SPF Test Method)

In vitro UVAPF (Colipa 2011): 11.0

UVAPF/SPF (30 labeled) >= 0.33: 0.37

Critical Wavelength (>370nm) : 382

(Measurement done with Labsphere equipment)

Sunscreen Spray

Stabilized formula by AMPHISOL® K
and DL-alpha-Tocopheryl Acetate and PARSOL® UV Filters

A gentle and light sunscreen spray with an immediately invisible finish.



Products are for illustration only, not for sale.
dsm-firmenich is not responsible for final product claims.

Phase	Ingredients	INCI Name	% w/w
A	PARSOL® 1789	BUTYL METHOXYDIBENZOYLMETHANE	3,00
	PARSOL® 340	OCTOCRYLENE	8,00
	PARSOL® EHS	ETHYLHEXYL SALICYLATE	5,00
	PARSOL® HMS	HOMOSALATE	10,00
	AMPHISOL® K	POTASSIUM CETYL PHOSPHATE	0,75
	Ecorol 16/98P	CETYL ALCOHOL	0,30
	Antaron V-220	VP/EICOSENE COPOLYMER	1,00
	Cetiol C5	COCO-CAPRYLATE	2,50
	Cetiol CC	DICAPRYLYL CARBONATE	3,00
	dl-alpha-Tocopheryl Acetate	TOCOPHERYL ACETATE	0,50
B	Pemulen TR-2	ACRYLATES/C10-30 ALKYL ACRYLATE CROSSPOLYMER	0,20
C	WATER DEM.	AQUA	5,45
	1,3-Butylenglycol	BUTYLENE GLYCOL	5,00
	Edeta BD	DISODIUM EDTA	0,10
D	Triethanolamine Care	TRIETHANOLAMINE	0,20
E	Euxyl PE 9010	PHENOXYETHANOL, ETHYLHEXYLGLYCERIN	1,00
F	Ethanol abs.	ALCOHOL	5,00

SU-E-101084-68

UV filter combination does not comply with applicable EU Cosmetic Regulation

K-ELEMENT



An extensive, uniform and unique formation of self-organizing molecules that guarantee maximum stability.

Procedure

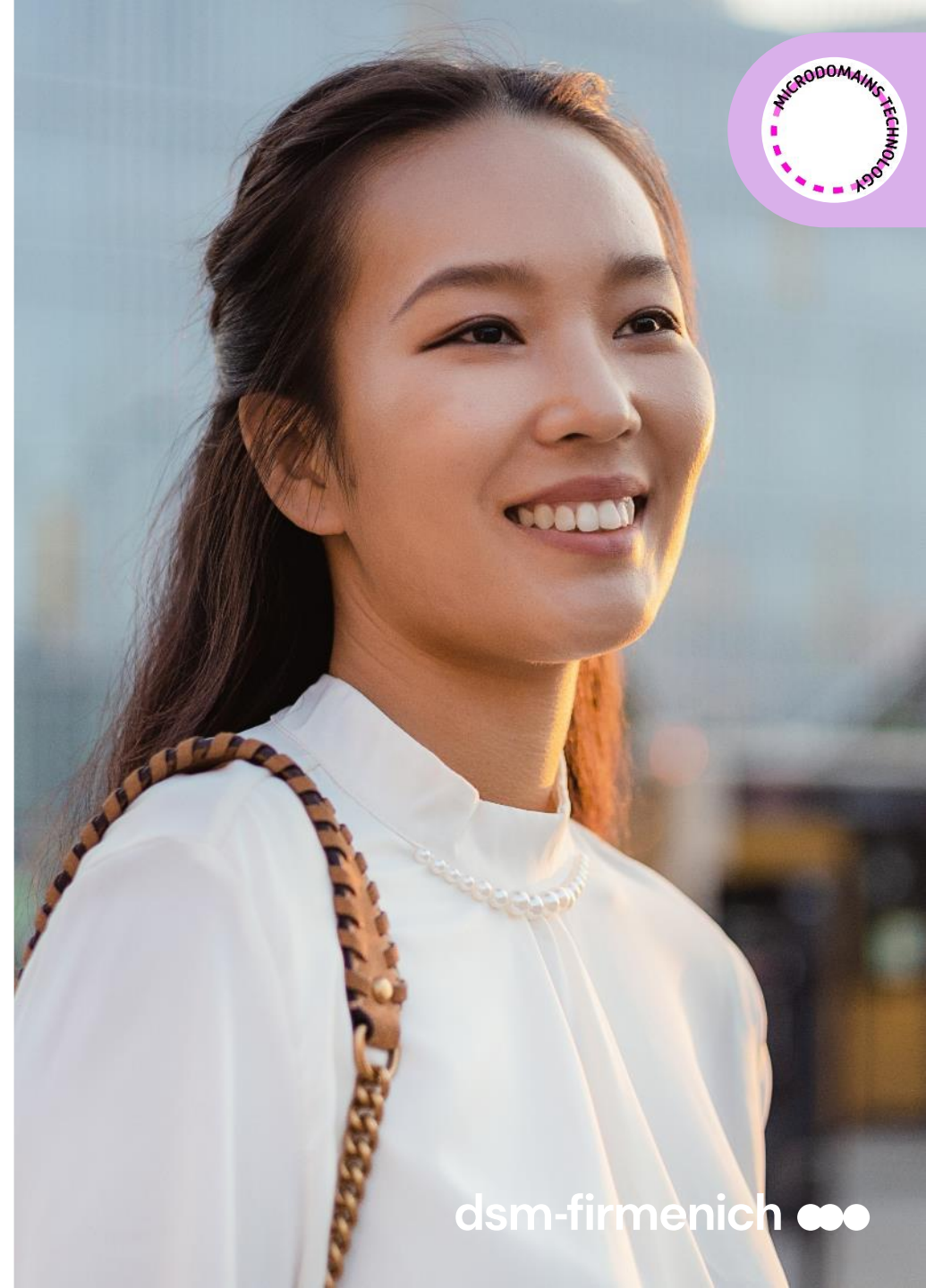
1. Heat part A to 90°C while stirring. Add part B.
2. Heat part C to 85°C and add to part AB while stirring and homogenizing the emulsion with high shear.
3. Cool down the emulsion <30°C and add part D, E and F. Homogenize again.
4. Keep stirring till RT.

Technical Data

pH: 6.5–6.7
Viscosity (Brookfield RV4/10rpm): 4000 mPa.s
SPF in vivo: 37.1
In vitro UVAPF (Colipa 2011): > 10.0
(According to FDA SPF Test Method) UVAPF/SPF (30 labeled); > 0.33: > 0.33
Critical Wavelength: < 370 nm
(Measurement done with Labsphere equipment)

Secure your brand image with AMPHISOL® K

- **Unique microdomains technology** capable of stabilizing the most challenging formulations with high amounts of **pigments, electrolytes, ethanol and oil** from **sunscreens to skin care and make-up**.
- **Unique PCP emulsifier** offering the **highest emulsifying performance** until the last drop where other benchmarks and PCP's fail.
- Particularly effective in **spray** formulations.
- AMPHISOL® K at 0.5% can also be used as a **co-emulsifier** to **rescue and beautify** your different types of formulation, making processing easier.
- AMPHISOL® K brings **additional benefits** to your products, such as improved **moisturization, SPF boosting and remarkable sensory signature**.





Products are for illustration only, not for sale.
dsm-firmenich is not responsible for final product claims.



dsm-firmenich 

Disclaimer

Copyright © DSM Nutritional Products Ltd 2025, 4002 Basel, Switzerland.
www.dsm-firmenich.com. All rights reserved.

dsm-firmenich has used diligent care to ensure that the information provided herein is accurate and up-to-date to the best of its knowledge. However, dsm-firmenich makes no representation or warranty, either expressly or implied, of the accuracy, reliability, completeness, or suitability thereof. The information provided herein contains scientific and product information for business-to-business use and does not constitute or provide scientific or medical advice, diagnosis or recommendation for treatment options. Country or region-specific information should be considered when labelling or advertising to final consumer. In no event shall dsm-firmenich be liable for any direct or indirect damages arising from or reliance upon, or use of, any information provided herein. The content of this document is subject to change without further notice. Please contact your local dsm-firmenich representative for the latest information. All trademarks listed in this document are either (registered) trademarks of, or trademarks licensed by, the dsm-firmenich group of companies, unless explicitly stated otherwise.

Disclaimer Formulation Guideline

The information provided herein is provided for information purposes only and has been prepared by dsm-firmenich in accordance with its own methodology. dsm-firmenich has used diligent care to ensure that it is accurate and up-to-date, however, dsm-firmenich makes no representation or warranty, either expressly or implied, of the accuracy, reliability, or completeness thereof. In no event shall dsm-firmenich be liable for any damages arising from or reliance upon, or use of, any information provided herein. Further, dsm-firmenich shall not bear any liability for the application and/or use of any processed material containing its product(s). The formulation of the finished product is the customer's sole responsibility. It is the customer's responsibility to determine the suitability of dsm-firmenich's products regarding user specific purposes, assess compatibility and stability of their finished product(s) and to ensure compliance of their finished product(s) with relevant laws and regulations. Any product, marketing or other claims made by customer are its sole responsibility. The content of this document is subject to change without further notice. Please contact your local dsm-firmenich representative for further details. © DSM Nutritional Products AG, 2025.

We bring progress to life

Rescue your formulation with just 0.5% AMPHISOL® K



Consumers' expectation for multiple textures and multifunctional products brings a series of technical challenges, especially when it comes to stabilization.



Secure your brand image

Ensure even your most challenging formulations remain stable and maintain your consumers' trust.

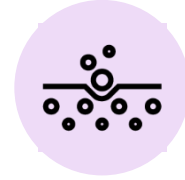


Save your time & costs and secure every last drop of your unstable emulsion by adding 0.5% AMPHISOL® K to your emulsifying system.

How AMPHISOL® K works:



It reduces the emulsion droplets and optimize the particle size distribution.



Its microdomains technology will lock the stability of the formulation.



Being used as a co-emulsifier makes processing easier (lower temperature of introduction 60–85°C).



The formulation is creamier and shinier.

Back up slide

Gel Cream 1

Phase	Ingredients	INCI	SK E 101873 1	SK E 101873 2
A	SODIUM GLUCONATE GRANULAR	SODIUM GLUCONATE;	0.2	0.2
A	Water Dem	AQUA;	88.8	88.5
A	Aristoflex® Velvet	POLYACRYLATE CROSSPOLYMER-11;	1.5	1.5
B	AMPHISOL® K	POTASSIUM CETYL PHOSPHATE;		0.3
B	Lanol 99	ISONONYL ISONONANOATE;	3	3
B	Euxyl PE 9010	PHENOXYETHANOL; ETHYLHEXYLGLYCERIN;	0.8	0.8
B	LexFeel 7	NEOPENTYL GLYCOL DIHEPTANOATE;	2.5	2.5
C	SYN®-TACKS	GLYCERIN; AQUA; PALMITOYL DIPEPTIDE-5 DIAMINO BUTYROYL HYDROXYTHREONINE; PALMITOYL DIPEPTIDE-5 DIAMINOHYDROXYBUTYRATE;	3	3
C	HYALURONIC ACID-BT	SODIUM HYALURONATE;	0.2	0.2

Back up slide

Emulsion 2

Phase	Ingredients	INCI	SK E 101874 1	SK E 101874 2
A	Water Dem	AQUA;	71.55	71.05
A	Euxyl PE 9010	PHENOXYETHANOL; ETHYLHEXYLGLYCERIN;	1	1
A	Dekaben CP	CHLORPHENESIN;	0.25	0.25
A	SODIUM GLUCONATE GRANULAR	SODIUM GLUCONATE;	0.3	0.3
B	Keltrol CG-T	XANTHAN GUM;	0.2	0.2
B	CremerGlyc Refined Glycerine Organic	GLYCERIN;	6	6
B	COVACRYL MV 60	SODIUM POLYACRYLATE;	0.5	0.5
C	Lanette O	CETEARYL ALCOHOL;	1	1
C	Eutanol G	OCTYLDODECANOL;	4	4
C	AMPHISOL® K	POTASSIUM CETYL PHOSPHATE;		0.5
C	Mixed Tocopherols 95	TOCOPHEROL;	0.05	0.05
C	Sepinov EMT 10	HYDROXYETHYL ACRYLATE/SODIUM ACRYLOYLDIMETHYL TAURATE COPOLYMER;	0.9	0.9
C	Cetiol C5	COCO-CAPRYLATE;	5	5
C	Emulium Mellifera MB	POLYGLYCERYL-6 DISTEARATE; JOJOBA ESTERS; POLYGLYCERYL-3 BEESWAX; CETYL ALCOHOL;	3	3
C	ACTICIRE MB	JOJOBA ESTERS; ACACIA DECURRENS FLOWER CERA; HELIANTHUS ANNUUS SEED CERA; POLYGLYCERIN-3;	1	1
D	SERICIN	SERICIN; AQUA; POTASSIUM SORBATE; CITRIC ACID;	3	3
D	ALPAFLOR® SCUTELLARIA AO	GLYCERIN; AQUA; CITRIC ACID; SODIUM BENZOATE; POTASSIUM SORBATE; SCUTELLARIA ALPINA FLOWER/LEAF/STEM EXTRACT;	2	2
F	Citric Acid 10% Solution	CITRIC ACID; AQUA;	0.25	0.25

Back up slide

Emulsion 3

Phase	Ingredients	INCI	SK E 101876 1	SK E 101876 2
A	SODIUM GLUCONATE GRANULAR	SODIUM GLUCONATE;	0.2	0.2
A	Water Dem	AQUA;	64.45	63.95
A	Euxyl PE 9010	PHENOXYETHANOL; ETHYLHEXYLGLYCERIN;	1	1
A	Dekaben CP	CHLORPHENESIN;	0.2	0.2
A	CremerGLYC Refined 99.5% Kosher	GLYCERIN;	6	6
C	Lanette O	CETEARYL ALCOHOL;	1	1
C	XIAMETER PMX-200 Silicone Fluid 100 CST	DIMETHICONE;	2	2
C	AMPHISOL® K	POTASSIUM CETYL PHOSPHATE;		0.5
C	Mixed Tocopherols 95	TOCOPHEROL;	0.15	0.15
C	Myritol 318	CAPRYLIC/CAPRIC TRIGLYCERIDE;	12	12
C	Sepinov EMT 10	HYDROXYETHYL ACRYLATE/SODIUM ACRYLOYLDIMETHYL TAURATE COPOLYMER;	0.5	0.5
C	Olivem 1000 MB	CETEARYL OLIVATE; SORBITAN OLIVATE;	3.5	3.5
C	STIMU-TEX® AS	ARGANIA SPINOSA KERNEL OIL; TOCOPHEROL; BUTYROSPERMUM PARKII BUTTER EXTRACT; SPENT GRAIN WAX;	3	3
C	Cetiol C5	COCO-CAPRYLATE;	5	5
D	PENTAVITIN®	SACCHARIDE ISOMERATE; AQUA; CITRIC ACID; SODIUM CITRATE;	1	1

Back up slide

Frozen cream

Phase	Ingredients	INCI	SK E 101912 1	SK E 101912 2
A	Propanediol	PROPANEDIOL	30	30
A	Biomer	POTATO STARCH MODIFIED;	0.5	0.5
A	Water Dem	AQUA;	39.91	39.59
A	Dermosoft® Octiol	CAPRYLYL GLYCOL;	0.2	0.2
A	SODIUM GLUCONATE GRANULAR	SODIUM GLUCONATE;	0.2	0.2
B	Cetiol SN	CETEARYL ISONONANOATE;	7	7
B	Lanette 18	STEARYL ALCOHOL;	1	1
B	Tegin M Pellets MB	GLYCERYL STEARATE;	2	2
B	Tego Care 450 MB	POLYGLYCERYL-3 METHYLGLUCOSE DISTEARATE;	3	3
B	AMPHISOL® K	POTASSIUM CETYL PHOSPHATE;	0	0.5
B	Cetiol 868	ETHYLHEXYL STEARATE;	7	7
B	ARGAN OIL	ARGANIA SPINOSA KERNEL OIL;	0.5	0.5
B	Xiameter PMX-200 Sil Fluid 100 CS	DIMETHICONE;	2	2
C	D-Panthenol 75 L	PANTHENOL; AQUA;	3	3
C	PENTAVITIN®	SACCHARIDE ISOMERATE; AQUA; CITRIC ACID; SODIUM CITRATE;	3	3
C	Perfume Sail Away 49454695	PARFUM;	0.5	0.5
C	Vitamin B12 Cryst Food Grade	CYANOCOBALAMIN	0.01	0.01
D	Citric Acid 10% Solution	CITRIC ACID; AQUA;	0.18	0

Ultimate stability for multi formulations

A unique solution for the creation of unique textures and applications



The right candidate to achieve stable SPRAY (stable formulation with low viscosity with the addition of 0.5% AMPHISOL® K)

AMPHISOL® K shows best viscosity and appearance at mascara

Formulation No.:
101084-70

Brookfield:
RV4/10rpm/16000mPas

Formulation No.:
101084-68

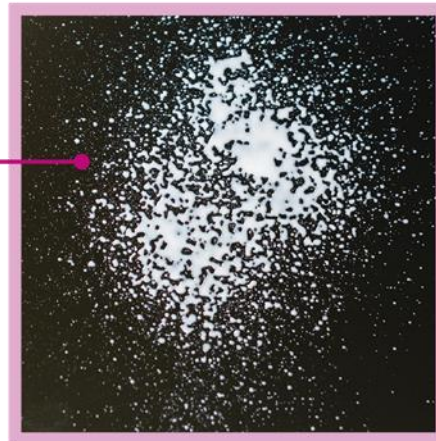
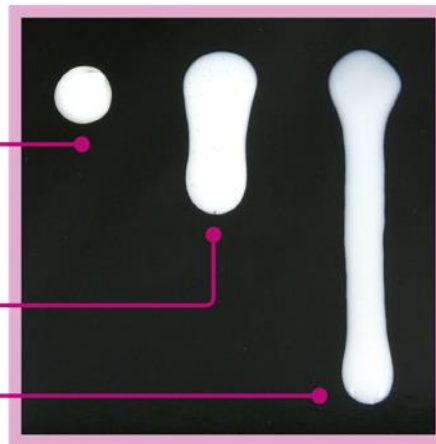
Brookfield:
RV4/10rpm/4800mPas

Formulation No.:
101084-64

Brookfield:
RV3/10rpm/750mPas

Formulation No.:
101084-5

Brookfield:
RV3/10rpm/780mPas



Easily meet various viscosities with AMPHISOL® K

- AMPHISOL® K is suitable for emulsions at a broad viscosity range
- Such as for various packaging types:
 - Pump sprays
 - Dispensers
 - Bottles
 - Tubes
 - Jars

From sun care to skin care and make-up all over the world

The recent launches with Potassium Cetyl Phosphate

