LIPEX® SheaSolve™, a new tool for UV protection formulas

AAK Personal care

INCI: Shea butter ethyl esters or
Ethyl oleate (and) Ethyl stearate (and) Ethyl linoleate (and) Ethyl palmitate (and) Butyrospermum Parkii (shea butter) unsaponfiables

Products with UV protection claims are expected to grow

- The global sun care market is projected to grow at CAGR of **3,5%** by 2027 to reach 16.84 billion$, enhanced by Covid-19: more travel and more time outside
- The face care market is expected to reach $17.43 billion at a CAGR of **8%** by 2025, multi-benefits being one of the key drivers (including UV protection claims)

- Consumers are becoming more and more aware of the risks of not applying proper protection to the skin

2-3 million skin cancer cases occur every year

Daily use of SPF15 or higher can reduce the risk of melanoma **by 40%**

UV exposure is responsible for **80%** of visible aging signs

However, there are still some barriers for consumers to use sunscreen regularly

IN FRANCE

40%

Consumers never use sunscreen or don't use enough

IN US

56%

Consumers rarely or never use sunscreen

Why?
(key reasons)

1. Fear towards certain ingredients being toxic to health
2. Belief that sunscreen products pollute the environment

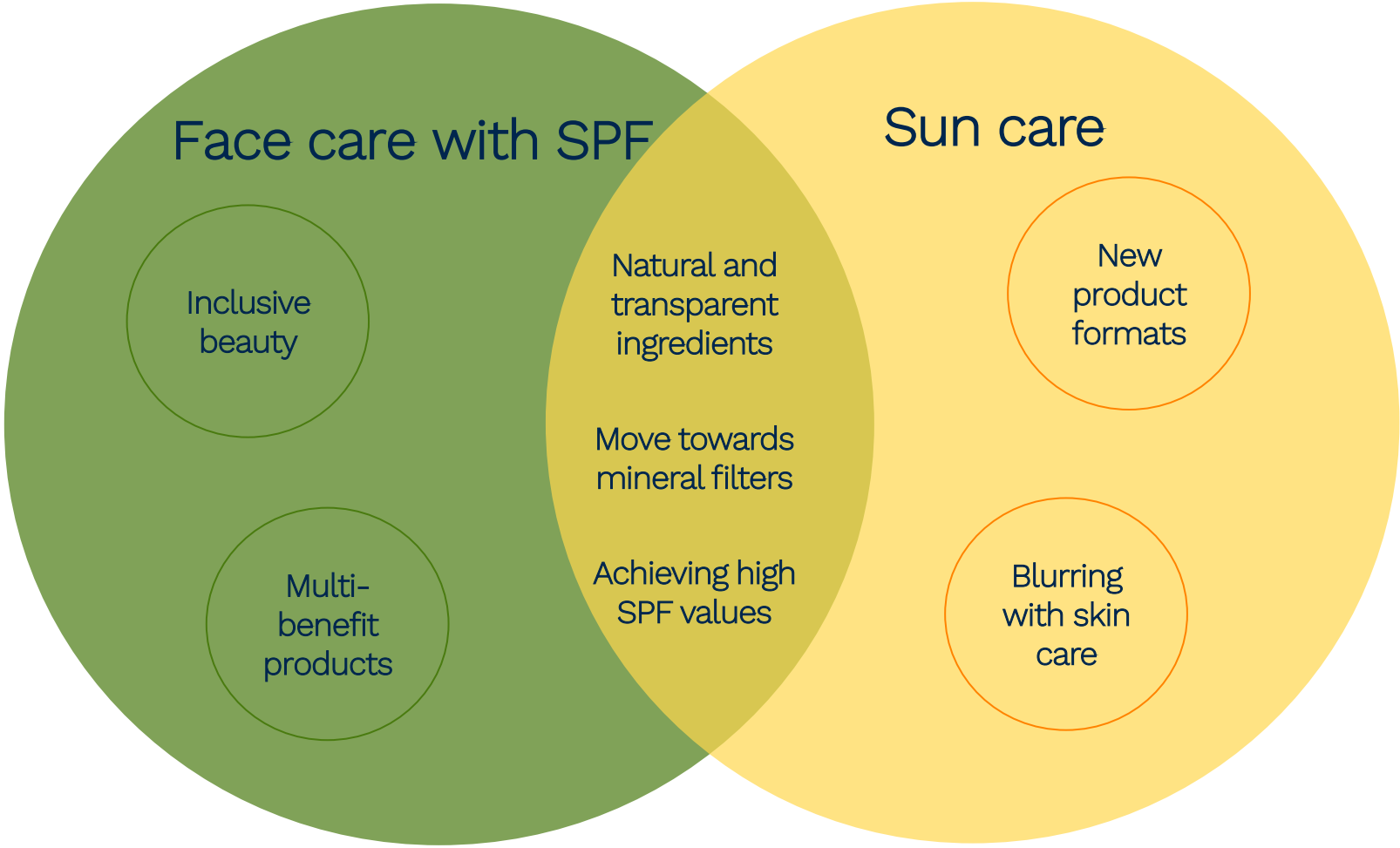
1. Dislike the way the product feels

How can you tap into this potential?

What are consumers looking for?

Let's have a look at the trends...

There are trends that are common to sunscreen and face care products, but few are unique to the application



Personal care players are moving towards a more inclusive beauty.

New products are appearing to minimize whitening residue on high-melanin skin types

Unilever evolves skin care portfolio to embrace a more inclusive vision of beauty

Our SPF 30 face moisturizer combines broad spectrum (UVA/UVB) protection with Vitamin C, a powerhouse antioxidant known for brightening skin tone, and diminishing signs of sun damage. It dries on clear without leaving chalky off-white residue. Bolden products are made without sulfates, parabens or phthalates.

Absolute JOI Launches SPF for Dark Skin Tones

The Daily Hydrating Moisturizing Cream is a two-in-one tinted moisturizer specifically crafted for women of color and leaves no white cast.

The formula is made with skin healthy mineral sunscreen and iron oxides and is said to block 98% of harmful UV radiation and up to 59% of hyperpigmentation-causing high energy visible (HEV) blue light.

HYDRA VIZOR INVISIBLE MOISTURIZER BROAD SPECTRUM SPF 30 SUNSCREEN WITH NIACINAMIDE + KALAHARI MELON

In face care, consumers demand products with multi-benefits to simplify their routine but without compromising on performance

"I want to use fewer products"

Average consumers have less time and want a simpler daily routine

"I want more benefits"

- Products need to convey several benefits. The hero ingredients will bring a broad range of claims
- Examples of top benefits: good for microbiome, blue light protection, SPF, anti-pollution, anti-aging, calming/relaxing

Coola Mineral Mineral Sun Silk Moisturizer SPF 30 provides a plant-derived, full spectrum 360° complex to help mitigate the effects of UVA/UVB, blue light, HEV light, IR and pollution.

"I want results"

The pandemic has accelerated the purchase of products with well-recognized, highly effective and trusted ingredients

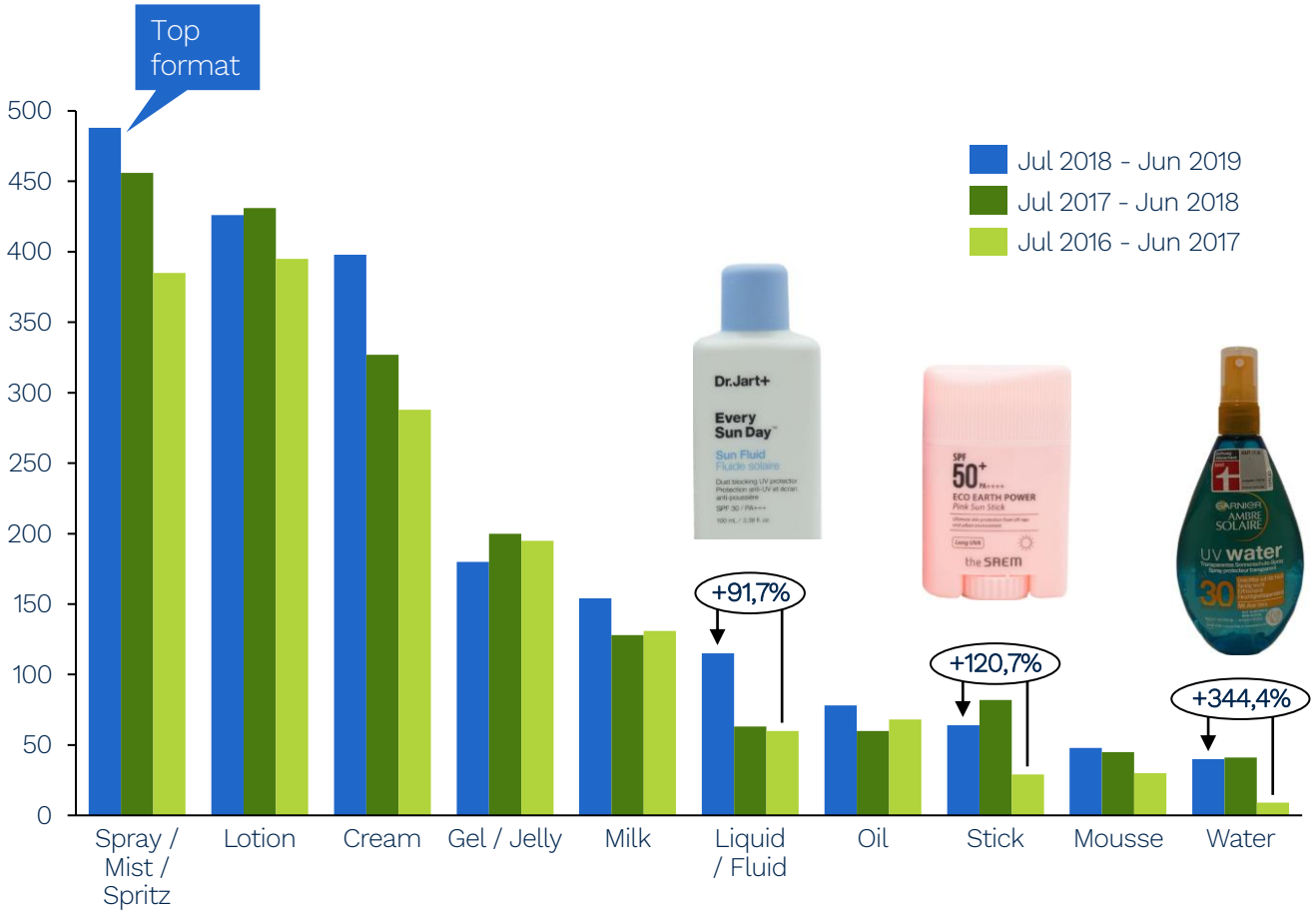
Clinically proven, plant-powered biotech solutions for healthy skin and microbiome support.

Efficacy test printed on pack

Source: Mintel report – The future of facial skincare 2021

Light textures and convenience are drivers for new growing formats in sun care

Number of launches vs. format within sun care globally



Examples of launches carrying environmental claims and featuring light or convenient format

Source: Mintel GNPD database. Definitions by Mintel

Sun care is blurring with skincare

Consumers

IN THE US

50%

of skincare users expect their skincare routine to protect their skin from the sun

The market

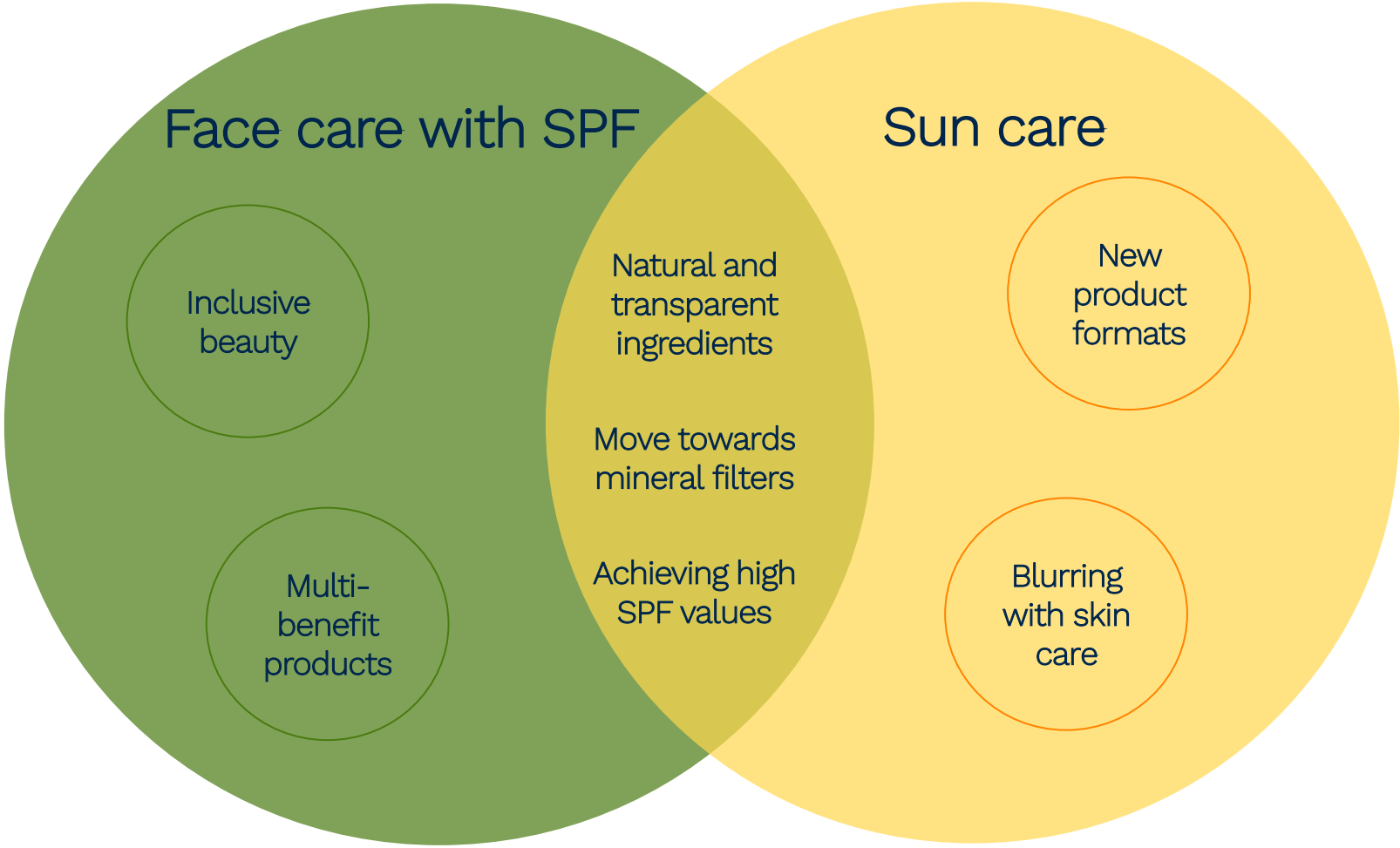
Before Covid hit the market, the number of launches within Face/Neck care containing UV filter was growing at **13% CAGR** in Europe

Sun care players

Sun care brands are adding other values to minimize competition from skincare brands that include SPF in their formulas

Source: Mintel reports: A year of innovation in suncare 2021. Redifne sun protection to promote skin health. Mintel GNPD database

There are trends that are common to sunscreen and face care products, but few are unique to the application



Like in skin care, consumers will demand naturality, ingredient transparency and responsible sourcing

- Product safety and transparency scrutiny is increasing after the pandemic. This is specially demanded by the younger generations
- Many customers are researching ingredients online before purchase.

Skin care

IN FRANCE

Consumers will purchase products that are more natural, responsibly sourced, and kind to the environment

IN ITALY

45%

of BPC shoppers are interested in using products made from natural ingredients replacing synthetics

- Minimalistic formulations are also emerging in sun care
- According to Euromonitor, sun care products that communicate natural ingredients are likely to drive growth

Sun care

IN CHINA

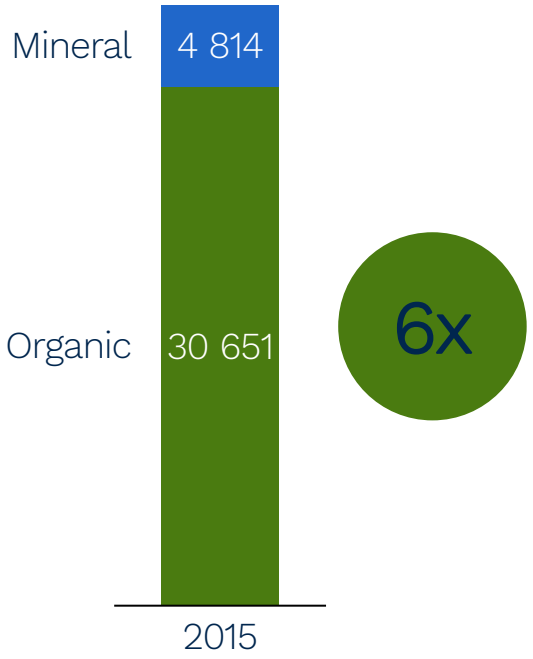
56%

of sunscreen users associate sunscreens from natural sources with safety

Source:
Mintel report: Attitudes towards Natural Beauty - Europe – 2020. What is next in sun care 2021
.Euromonitor report: Sun care in France. April 2021

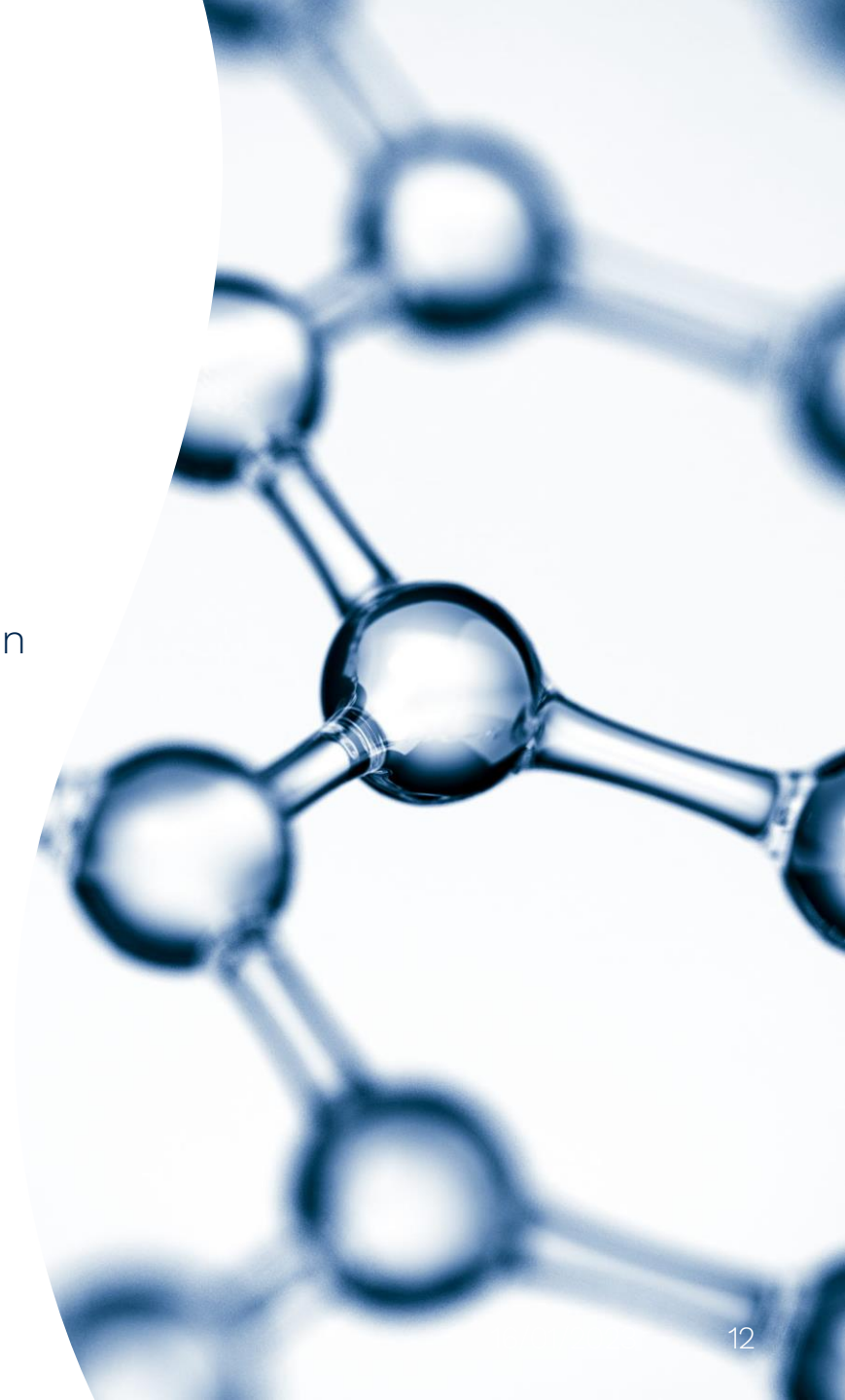
There is a move towards mineral filters, but organic filters are still the most used

Sales of UV filters (metric tons)



Key benefits

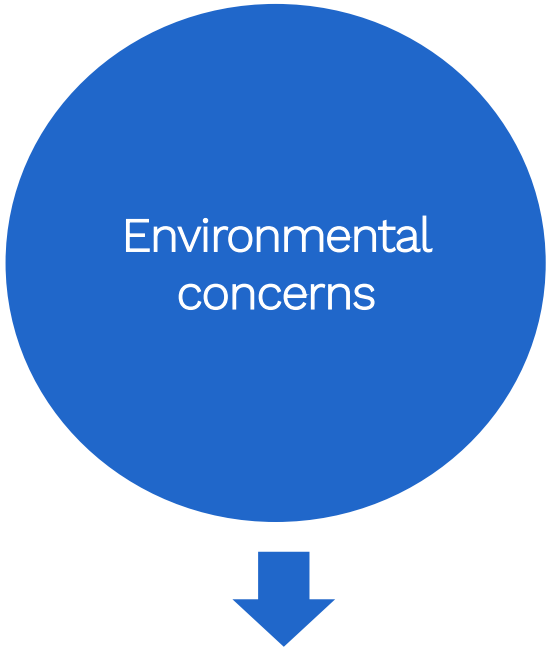
- Organic UV filters are cost effective
- Easier to formulate
- They do not leave white cast on skin
- In vitro SPF methods show more accurate results using organic UV filters



Source: Kline report, 2015

So, what is the hassle with organic filters?

Affecting all categories
(face care, sun care and more)



Affecting mostly sun care but slowly impacting face care as well

Due to the health and environmental concerns of organic filters, a new claim has arisen in the market: “chemical-free”

The FDA has only classified as GRASE: ZnO and TiO2. While 12 organic filters widely used are classified as Non-GRASE III where more testing about their safety as topical agents is required.

Additionally, in 2020, research studies showed that six chemical UV filters were systemically absorbed into the blood flow at "concentrations that surpassed the Food and Drug Administration (FDA) recommendations”

And brands and other organizations started promoting mineral filters instead

10 Chemical-Free Sunscreens We Love

By now you know sunscreen (all day, every day) is a nonnegotiable. One thing that's totally up for debate? The type of sunscreen you're using. Here, our picks for broad-spectrum protection, minus the chemical actives.

Sources:
International Journal of Women´s dermatology. *Sunscreens: UV filters to protect us: Part 1: Changing regulations and choices for optimal sun protection*.
Allure.com. Doctorschoiceintegrative.com

With regards to the environmental concerns of organic filters

Coral reefs as natural breakwaters, but they are under threat due to bleaching.
Two main causes have been documented*

Climate change
Water temperature is increasing

Organic UV filters
In areas with high number of swimmers

This has led to legislative action to limit the use of certain organic UV filters

Region	Prohibited UV filters	Effective year
Hawaii, US	Oxybenzone, Octinoxate	2021
US virgin islands	Oxybenzone, Octinoxate, Octocrylene	2020
Palau	Oxybenzone, Octinoxate, Octocrylene, 4-methyl-benzylidene camphor	2020
Bonaire	Oxybenzone, Octinoxate	2021
Aruba	Oxybenzone	2020

Sources: HPC magazine. May/June 2021. *Coral reefs and ZnO balancing hazards vs risks**
Mintel report: What is next in sun care 2021. Mintel GNPD database

These concerns have led to a new claim that consumers are looking for: Coral-safe

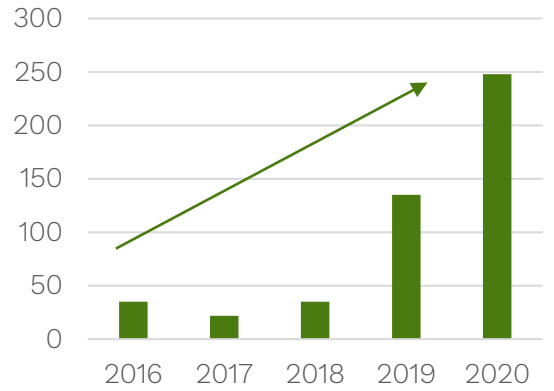
- Risks assessments have so far concluded that the use of ZnO as UV filter in sunscreens does not harm corals*
- Mineral sunscreens are not linked to the same environmental concerns and are perceived as safer for consumers and the planet
- More and more products formulated with TiO_2 and ZnO are being launched and some of them feature “coral-safe” claims

15,8%

of sunscreen launched Jan2020 to Dec 2021 used mineral sunscreens only

This represents an 89,7% increase over a 5-year period

Nr launches in skincare claiming coral/ocean/reef and safe/friendly



Sunscreen is the dominant category followed by Neck/Face care

- However mineral sunscreens are provided in micro and nano-form. And while there is no evidence that these particles penetrate the skin, there are concerns regarding toxicity due to inhalation risks when using spray products.

Sources: HPC magazine. May/June 2021. *Coral reefs and ZnO balancing hazards vs risks**
Mintel report: What is next in sun care 2021. Mintel GNPD database

Consumers are looking for products with high levels of SPF

A high level of UV protection is sought by many consumers in order to protect skin from cancer and ageing – driving high-SPF innovation

Sun care

IN EUROPE

60%

of sunscreen launches between May 20 to May 21 feature SPF levels of over 39 (vs 40% 5 years ago)

IN AMERICAS

71%

of sunscreen launches between June 20 to May 21 feature SPF levels of over 39 (vs 57% 5 years ago)

Face care

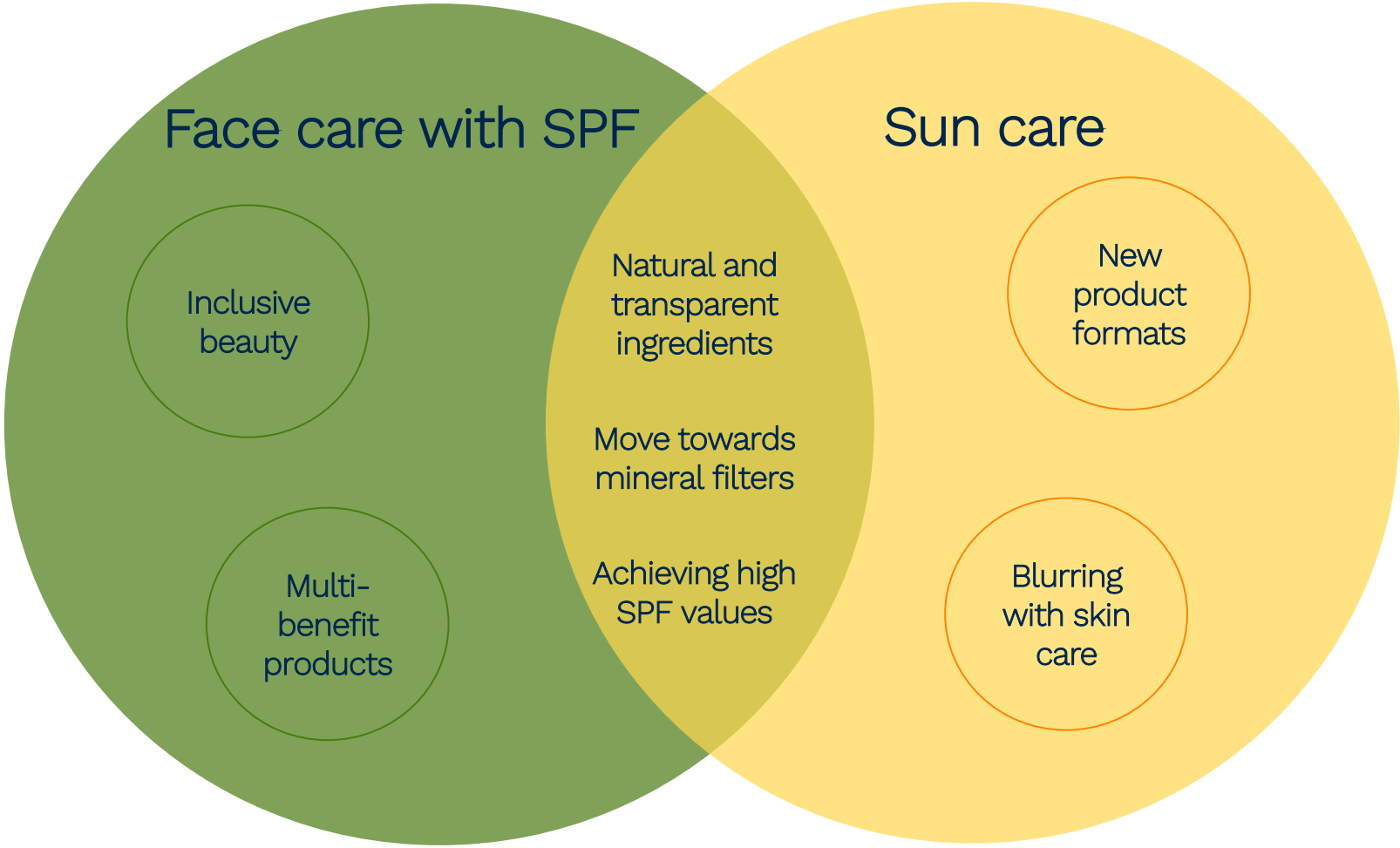
IN EUROPE

2x

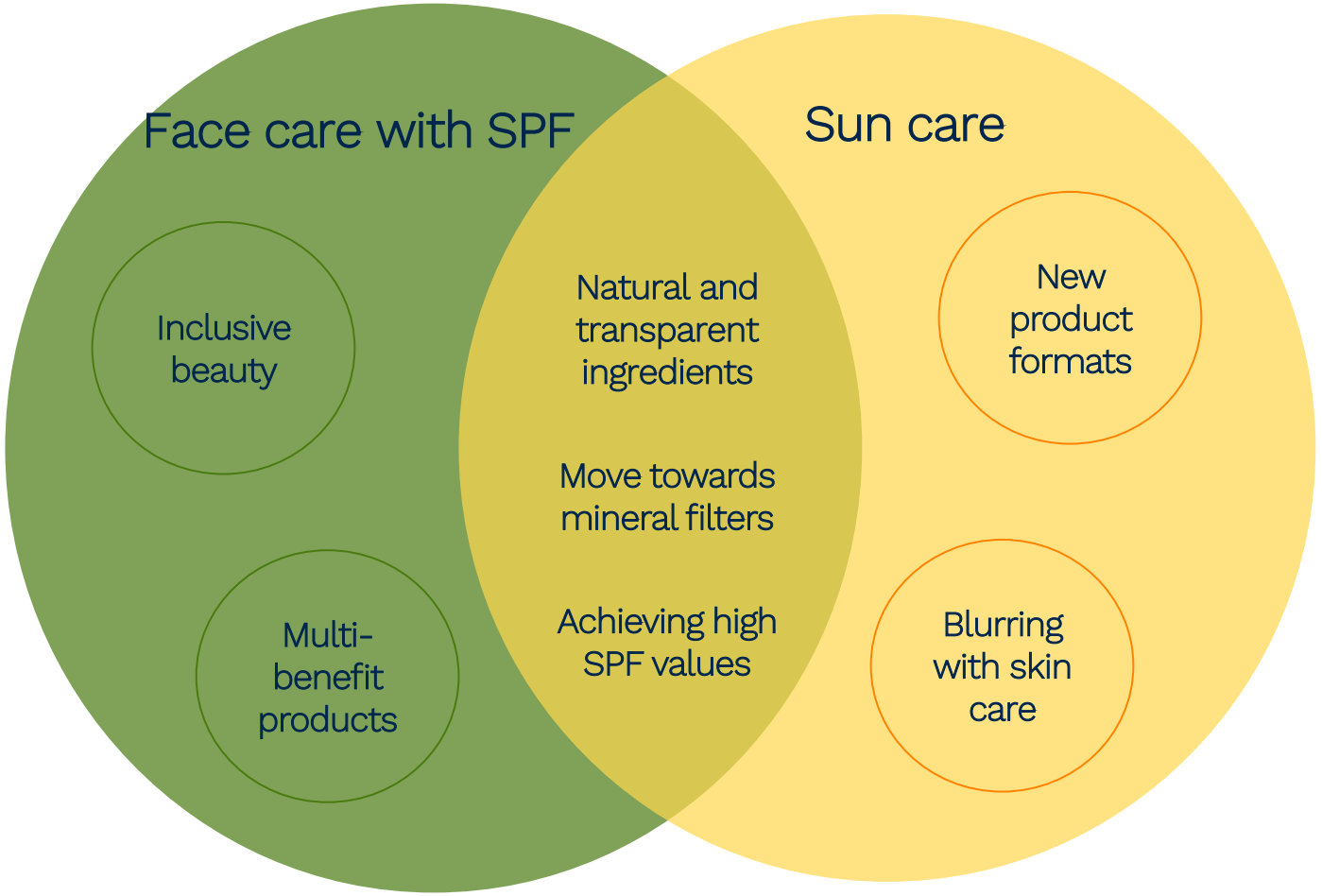
The number of Face/Neck products launched containing a SPF factor higher than 39 has doubled during the last 5 years

Source: Mintel report, a year of innovation in suncare 2021.

In summary, all these trends impact NPD of products carrying SPF claims and the overlap between the categories is increasing



What are the challenges that these trends pose when developing products with carrying SPF claims?



Challenges

1. Reduce the use of organic filters and increase mineral filter use
2. Reduce/Avoid ghosting
3. Offer products with high SPF levels
4. Offer formulations that are light and easy to apply
5. Formulate with more natural and responsibly sourced ingredients
6. Be aware of regulatory compliance depending on the market
7. Find compromise to keep an affordable formula

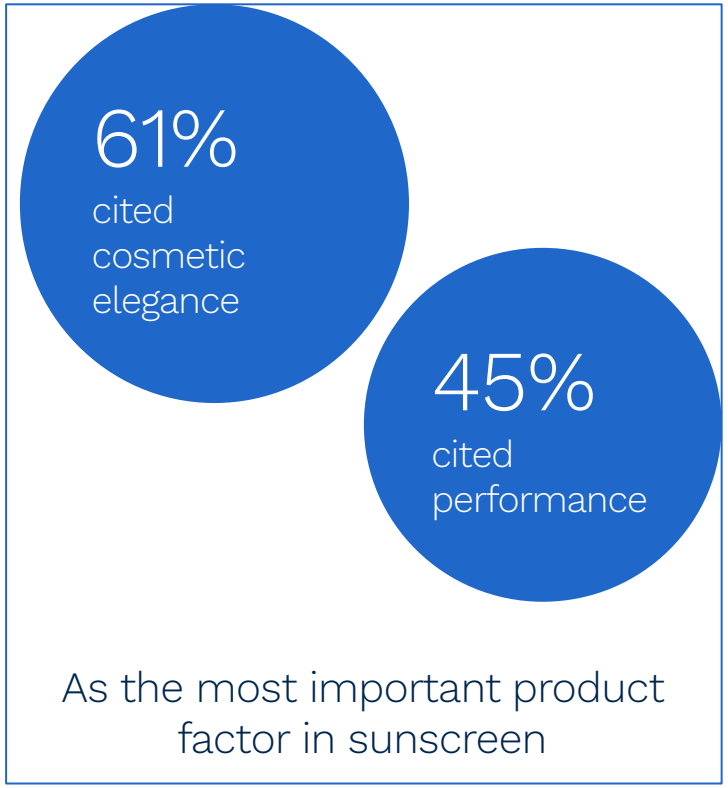
Introducing LIPEX® SheaSolve™

- Ethically sourced shea derived emollient ester
- Eco-designed, derived from 100% natural and renewable sources
- Low viscosity and polarity which gives it a light texture
- Offers excellent wetting, dispersing and solubilizing properties which makes it particularly suitable for sun care and UV protection formulations.
- Effectively solves complex formulation challenges, such as combining appealing texture and other sensory benefits with high SPF.

INCI name: Shea Butter Ethyl Esters
Appearance: clear, slightly yellow liquid
Viscosity: 10 mPas @20°C, 6mPas @40 °C
Polarity: surface tension (25mN/m), interfacial tension (13mN/m)

Sensory aspects are a key purchase criteria & barrier to sunscreen usage. Companies actively communicate about them on pack

Cosmetic elegance is as important as performance in a sunscreen for consumers

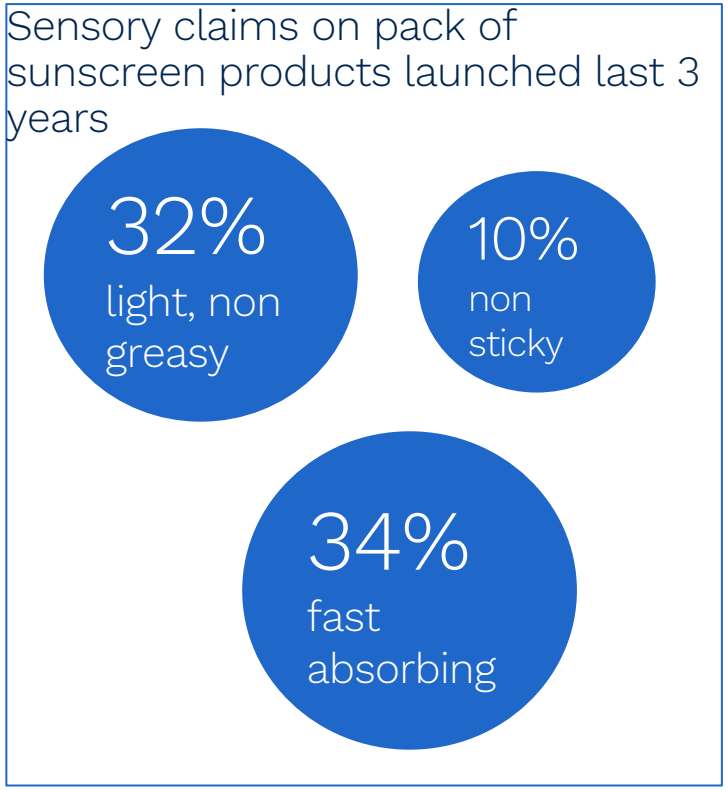


Sunscreen cosmetic elegance is more important than performance to consumers (healio.com)

Sensory aspects are important barriers to sun care usage

Sunscreen: Consumer Attitudes and Concerns. Choice, 2018

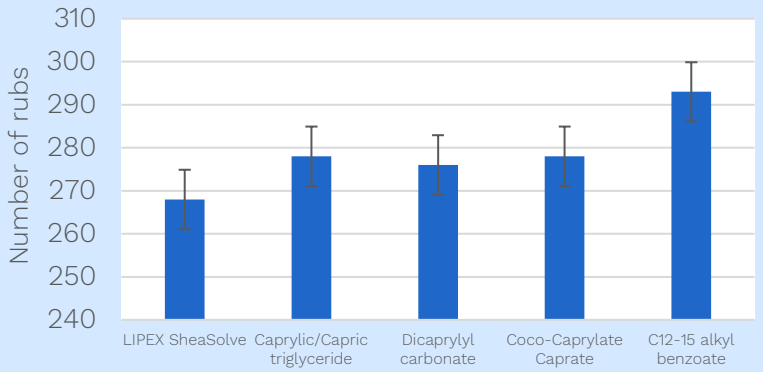
Companies are aware about this and actively communicate on sensorial aspects on pack



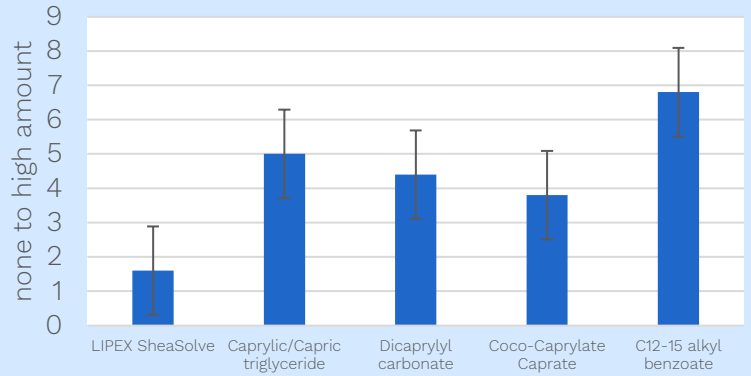
Mintel

LIPEX® SheaSolve™ is perceived on par or better in key comparative sensory aspects: stickiness, greasiness and speed of absorption

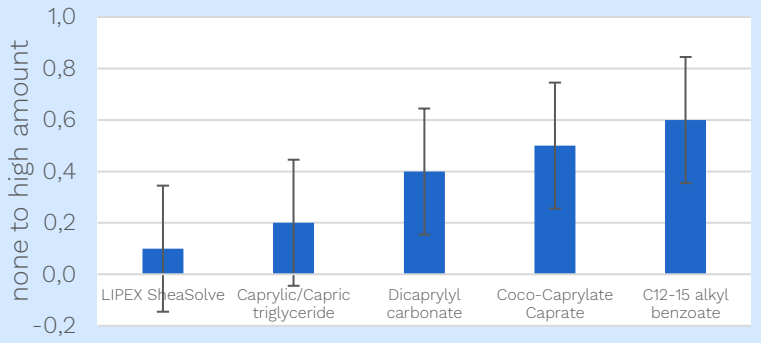
Absorbency - Number of rubs at which the product changes its viscosity and/or texture



Greasy – amount of grease perceived during application



Stickiness – Degree to which fingers adhere to residual product



- During application
  - LIPEX®SheaSolve™ is more easily abosrbed than dicaprylyl carbonate and C12-15 alkyl benzoate – and on par with the other compounds
  - LIPEX®SheaSolve™ is perceived as less greasy than the rest of the compounds

- The **immediate after feel** of LIPEX®SheaSolve™ has a tendency to be less sticky than the rest – although differences can't be considered significant.

AAK

Emollients are evaluated by the Sensory Spectrum Skinfeel Descriptive Panel for sensory attributes. 10 panelists, trained in Spectrum Skinfeel Descriptive Analysis method and oriented to the study protocol. Randomized Complete Block Design. Sample presentation is randomized among panelists, with each sample evaluated twice. All evaluations are performed using a customized evaluation protocol created for AAK in 2012 and updated in 2022 to increase max rubs to absorbency from 200 to 300.

The benefits of LIPEX® SheaSolve™

Low viscosity

- Mineral filter dispersions
- Low agglomeration
- Light textures

Ethical

- Eco-designed
- Contains 100% carbon from renewable sources
- Kolo Nafaso mass balance shea

SPF booster

- Mineral filter dispersions
- Good cost/benefit ratio

Good solubilizer

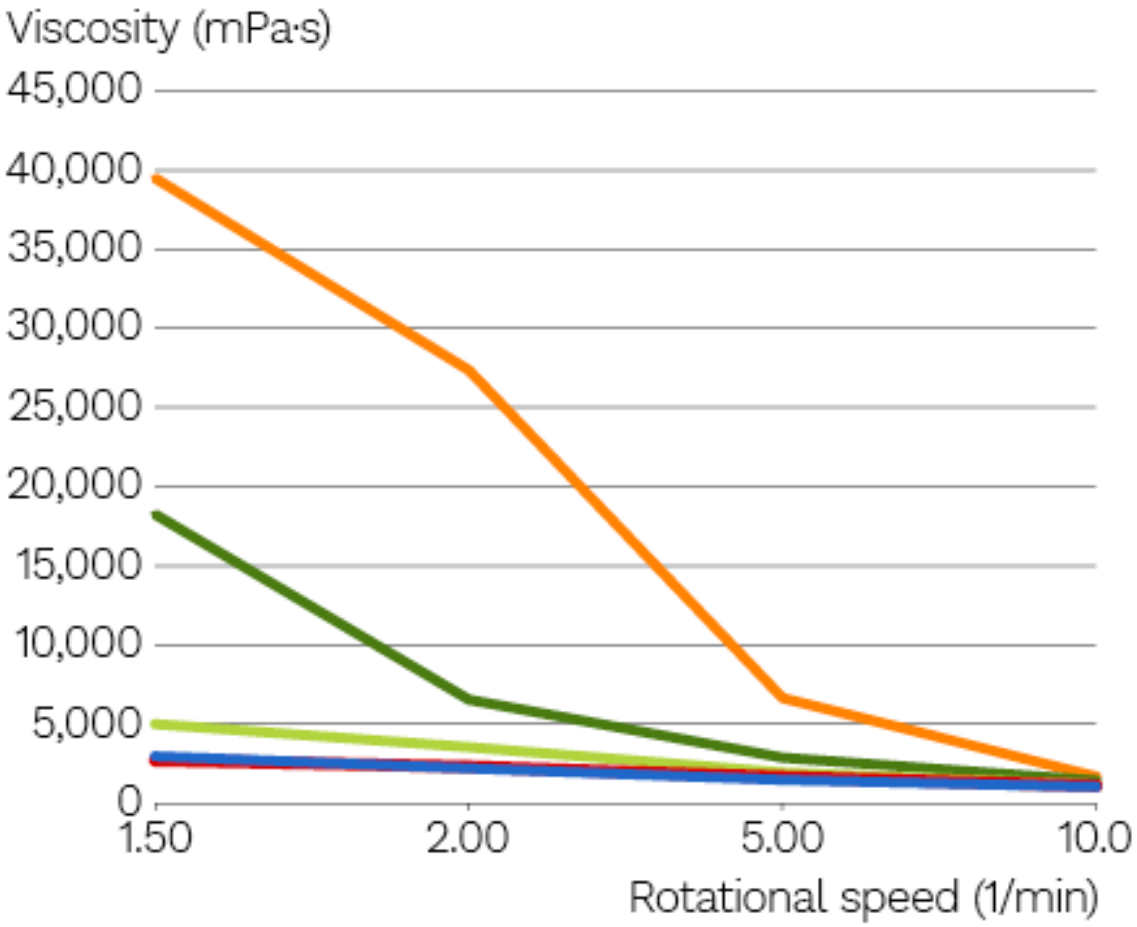
- Organic filters
- Natural alternative

Emollients and mineral UV filters

- In sunscreens based on mineral UV filters, the filters need to be dispersed in the emollient phase
- To achieve an even coverage, these filters need to fully dispersed in emollient phase
- Mineral UV filters are particles that are prone to agglomeration
- Agglomeration of the primary particles will cause whitening when applied to the skin
- The most appropriate emollient is the one that fully wets the surface of the filter and form a low viscosity of the dispersion
- A lower viscosity of the dispersion indicates a better wetting
- A lower viscosity of the dispersion will also enhance the formulation aesthetics and enable to formulate light texture

Source: Lim Henry W and Draelos Zoe Diana (editors), 2009, Clinical Guide to Sunscreens and Photoprotection, New York: Informa Healthcare USA Inc.

Lipex SheaSolve shows superior wetting of mineral filters compared to traditional dispersants

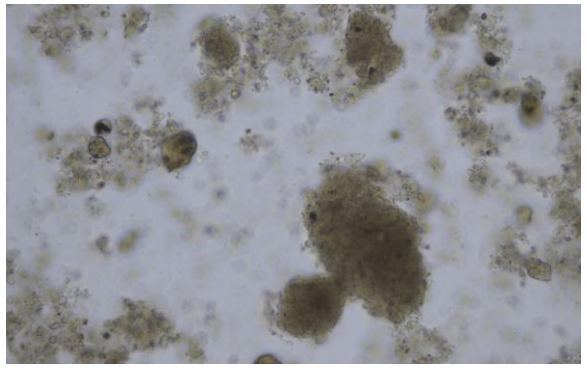


- Viscosity at 20°C of 40% dispersion of a Triethoxycaprylylsilane coated Zinc Oxide measured by an Anton Paar RheoCompass.
- The selected benchmarks are within the top 5 dispersants used in NA and Europe in sun care launches in the period 2015-2019. Mintel GNPD search

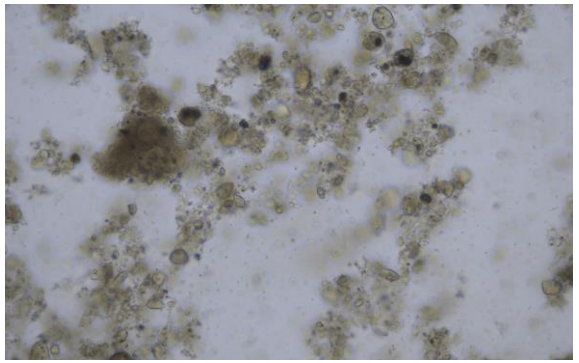
	Naturalness*
Caprylic/Capric Triglycerides	100%, based on palm/coconut
C12-15 Alkyl Benzoate	0%, synthetic
Coco-Caprylate/Caprate	100%, based on palm/coconut
LIPEX® SheaSolve™	100%, based on shea
Dicaprylyl Carbonate	70%, based on palm

*Share of C-atoms from renewable sources

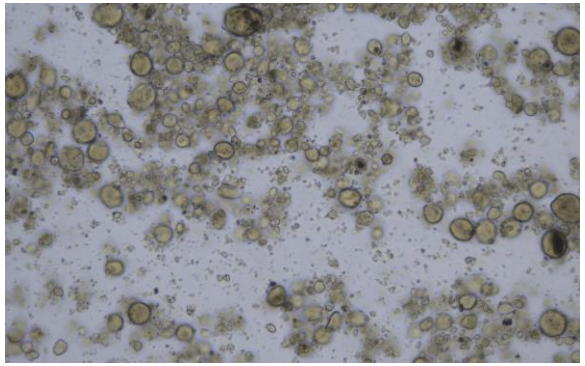
Lipex SheaSolve forms more uniform dispersions and therefore reduces the risk of agglomeration



Caprylic/Capric Triglyceride



C12-C15 Alkyl Benzoate



LIPEX® SheaSolve™

Microscopy pictures of zinc oxide dispersions using the x40 objective of a Nikon Eclipse Ci microscope.

See for yourself the wetting capacity of Lipex SheaSolve

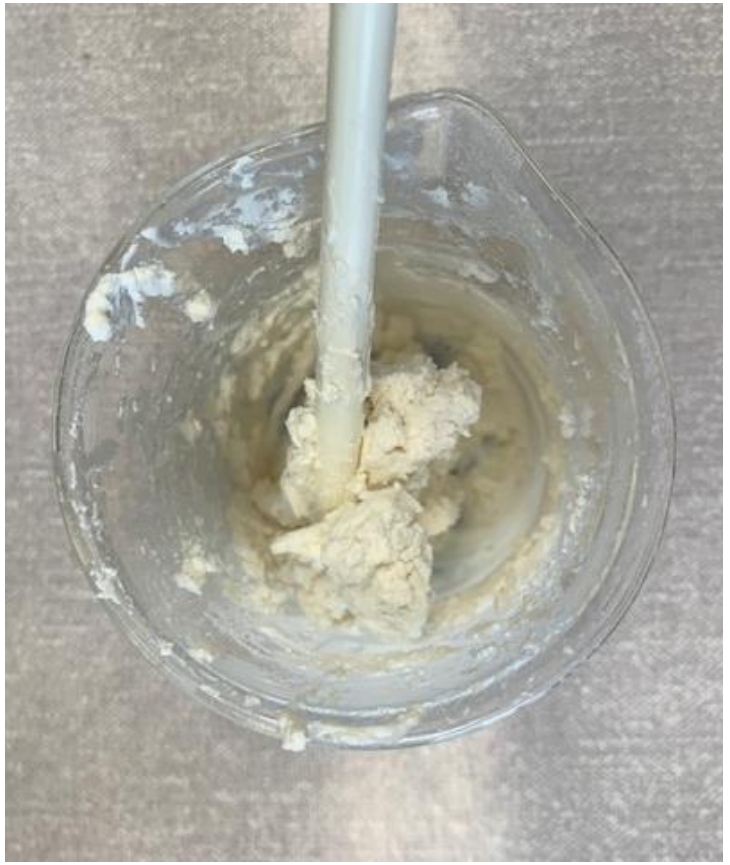
Lipex SheaSolve demonstrates a three times faster uptake in zinc oxide powder than Caprylic/Capric Triglycerides and C12-15 Alkyl Benzoate, which indicates a better wetting capacity, making it an excellent potential choice for mineral sunscreen applications.

Watch the following video to learn more!

Follow this link to access the video: Lipex SheaSolve comparative wetting of zinc oxide powder - YouTube

When formulating with mineral filters, efficient dispersants are needed

- When formulating with mineral UV filters dispersions may turn very viscous, which makes it very difficult to work with in the lab
- The higher the SPF value to achieve, the higher the amount of mineral filter to be dispersed; and the higher the chances that the final formulation will be thick and with “poor sensorial” benefits for consumers.
- To tackle this challenge, we want a very efficient dispersant. I.e., we want to select one that can disperse the amount of filter that gives the set SPF level but using as little dispersant as possible.
- In an emulsion, the lower the amount of dispersant (part of the oil phase) the more room there will be for the water phase, making the final product lighter and more appealing, as well as cheaper to produce.



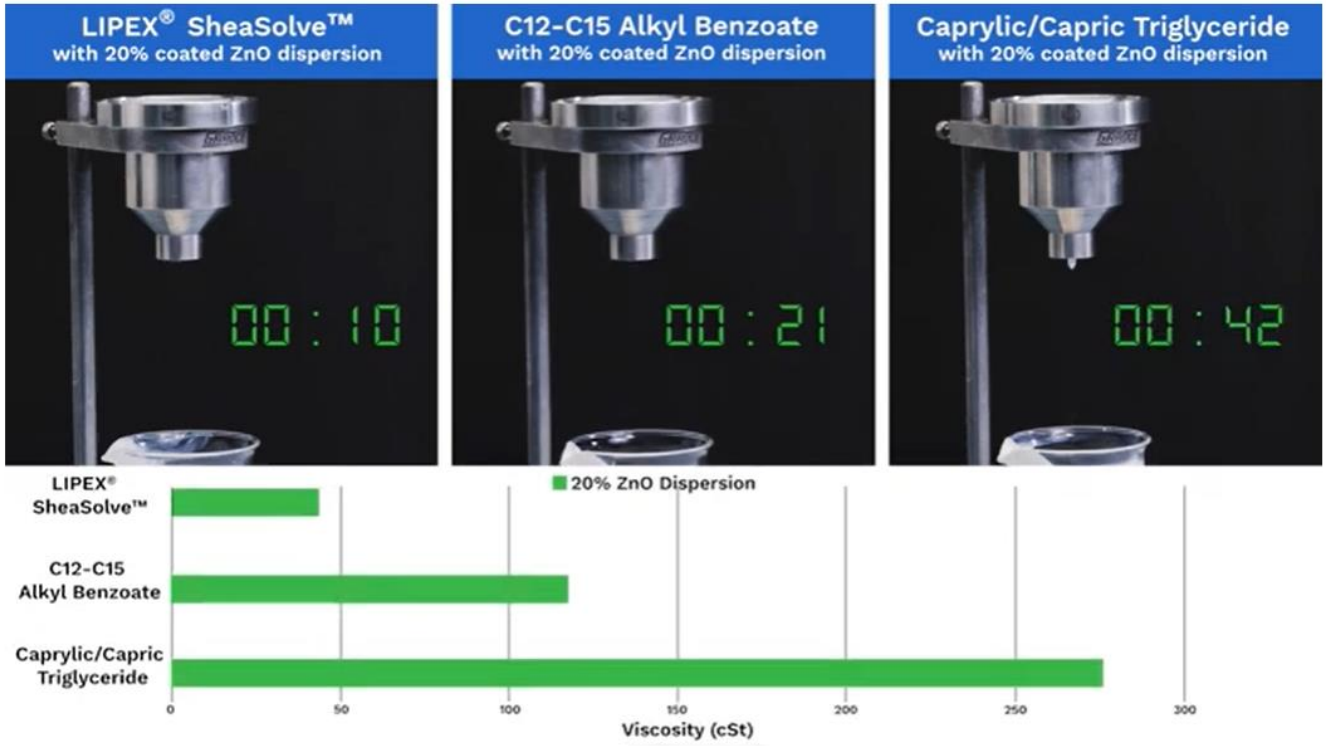
See for yourself how to achieve low viscosity and high flowability Mineral UV filter dispersions

The viscosity of a 20% zinc oxide dispersion in Lipex SheaSolve is significantly lower than that of an equivalent dispersion in other emollients.

That translates into:

- Easier handling and upscaling
- Less agglomeration leading to reduced ghosting
- Less amount of emollient needed to achieve a workable viscosity: lighter & cheaper formulations

Watch the following video to learn more!



Follow this link to access the video: [Lower Viscosity with Lipex.SheaSolve - Youtube]

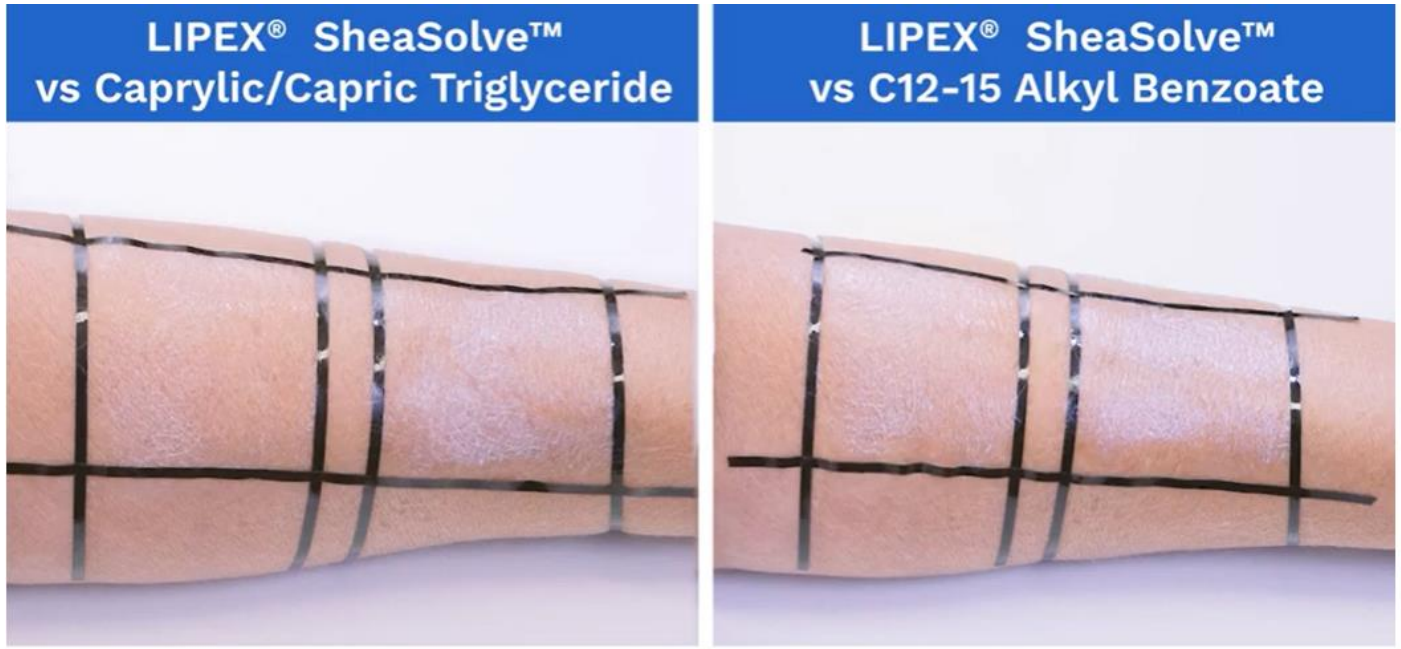
Better wetting, lower agglomeration and lower viscosity result into reduced ghosting of Mineral UV filter dispersions

We have previously seen that a 20% zinc oxide dispersion in Lipex SheaSolve delivers:

- Improved wetting
- Lower agglomeration
- Lower viscosity

This translates into reduced ghosting when applied to the skin.

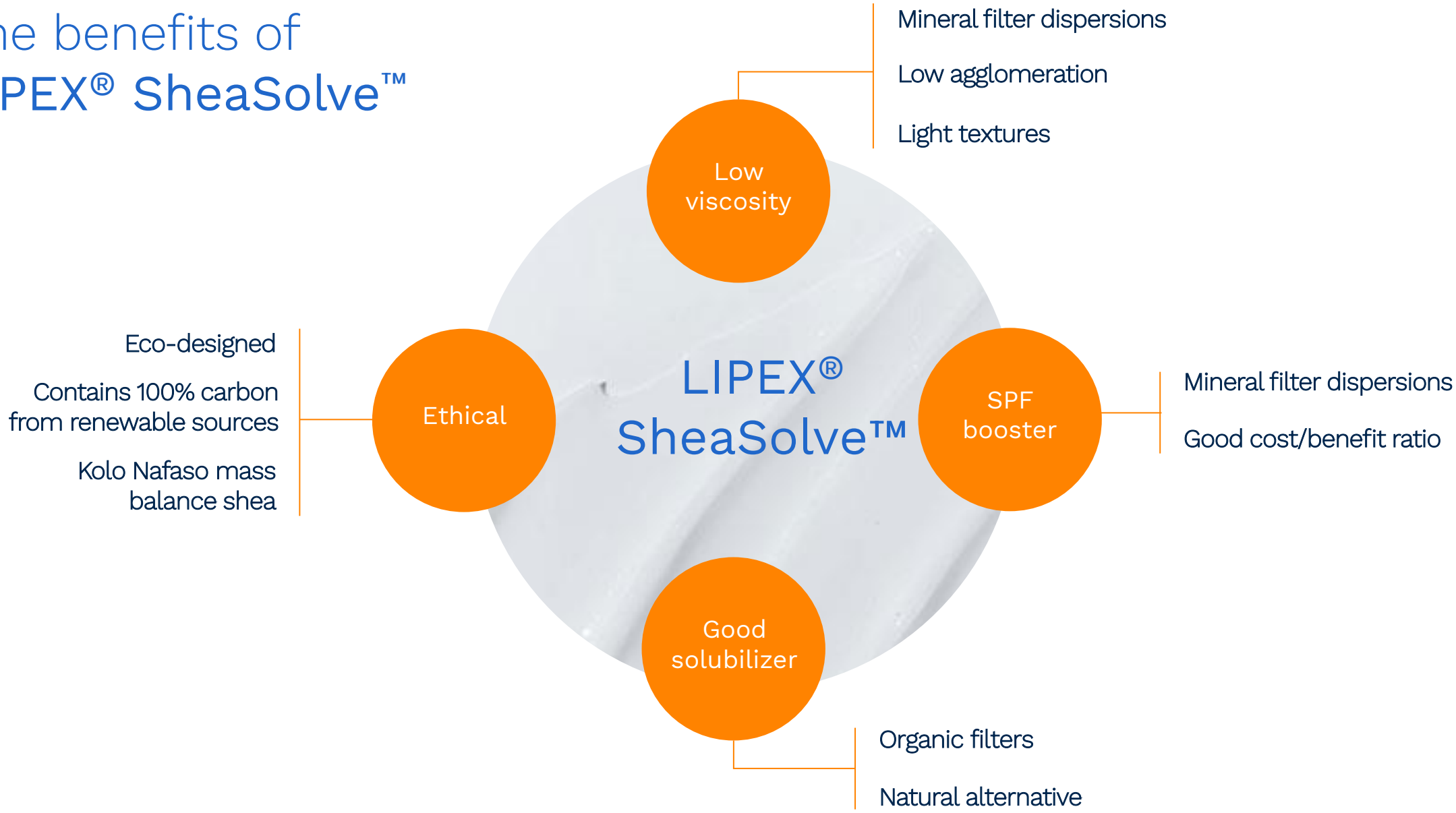
Watch the following video to learn more!



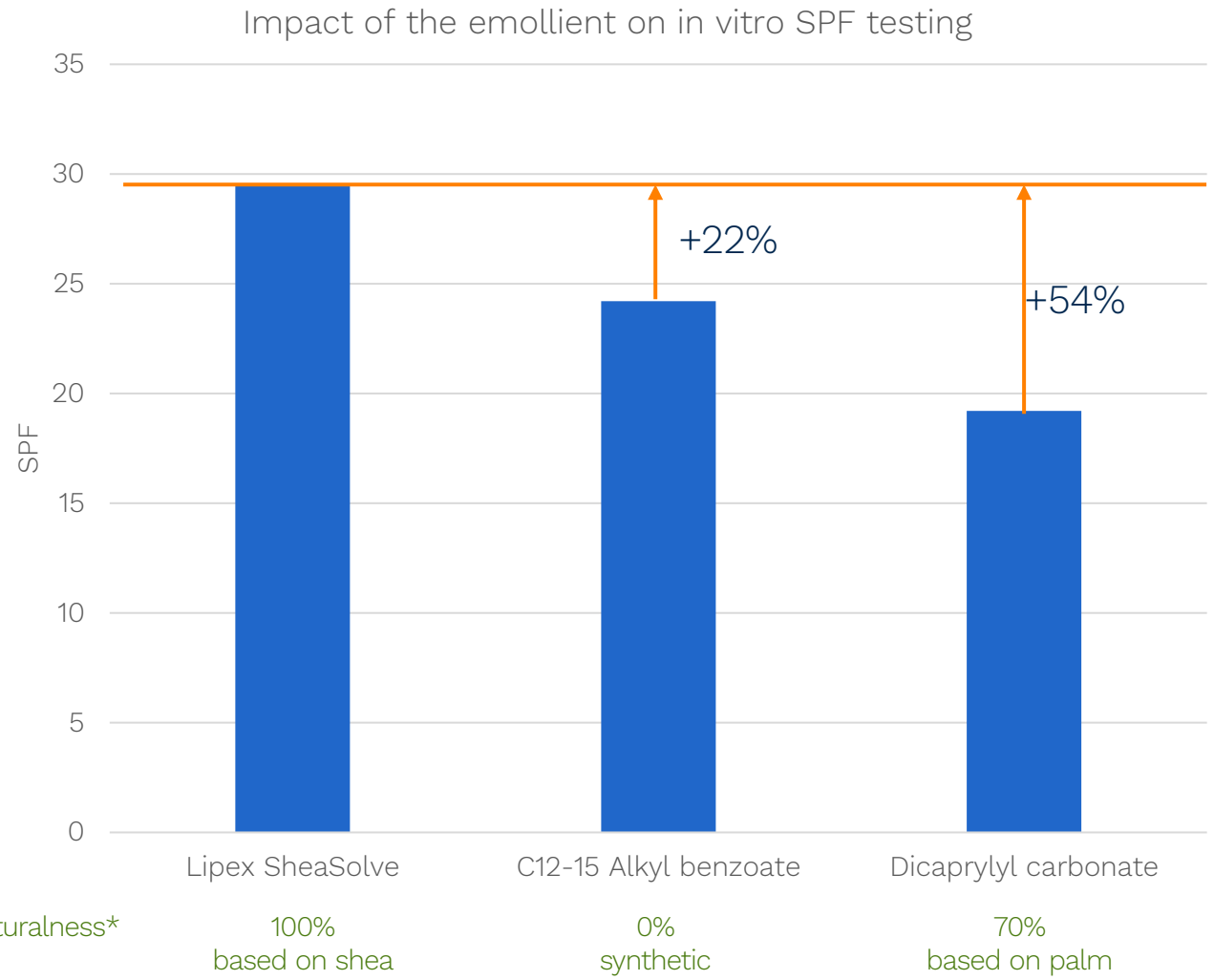
These benefits mean Lipex SheaSolve will deliver an improved skin appearance and feel in mineral sunscreen formulations.

Follow this link to access the video: [Reduced whitening effect of mineral UV filters with LIPEX® SheaSolve™ - Youtube]

The benefits of LIPEX® SheaSolve™



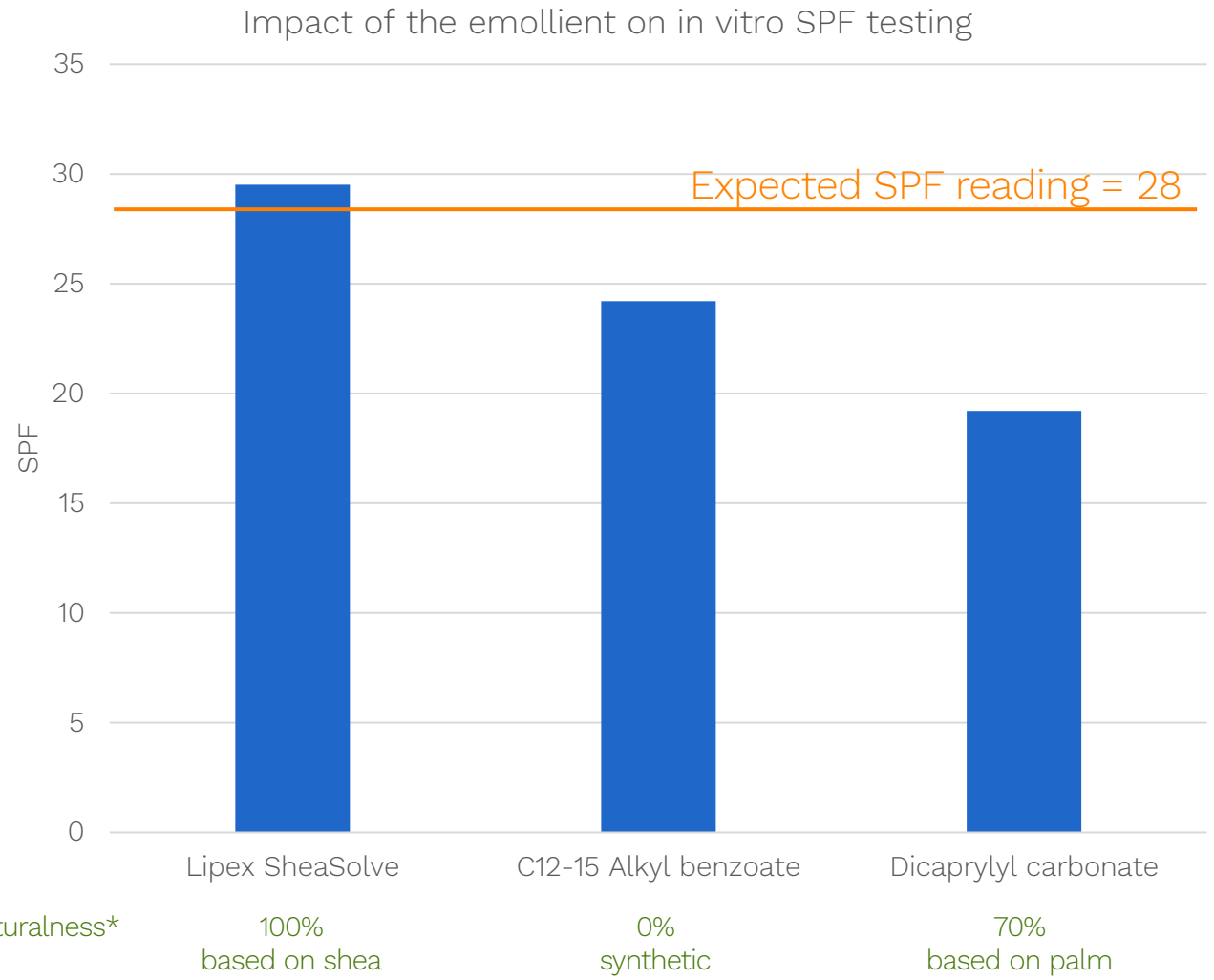
Lipex SheaSolve provides SPF boosting compared to other common alternatives in the market



- Test matrix is a 20% dispersion of zinc oxide with triethoxycaprylyl silane coating stabilized by Silica Dimethicone Silylate.
- SPF study conducted by Helioscience using an adapted in vitro method for mineral sunscreens with good correlation with in vivo SPF method.

*Share of C-atoms from renewable sources

Lipex SheaSolve provides the SPF value that you formulate for



- Based on the amount and the type of UV filter the expected SPF reading for all dispersions was 28
- Only Lipex SheaSolve delivers towards that expectation, which provides assurance for formulators that they can achieve the SPF value they need for their cosmetic formulae.
- Lipex SheaSolve is a more effective emollient compared to the alternatives since higher amounts of UV filters would be needed with the other emollients to achieve the same SPF value

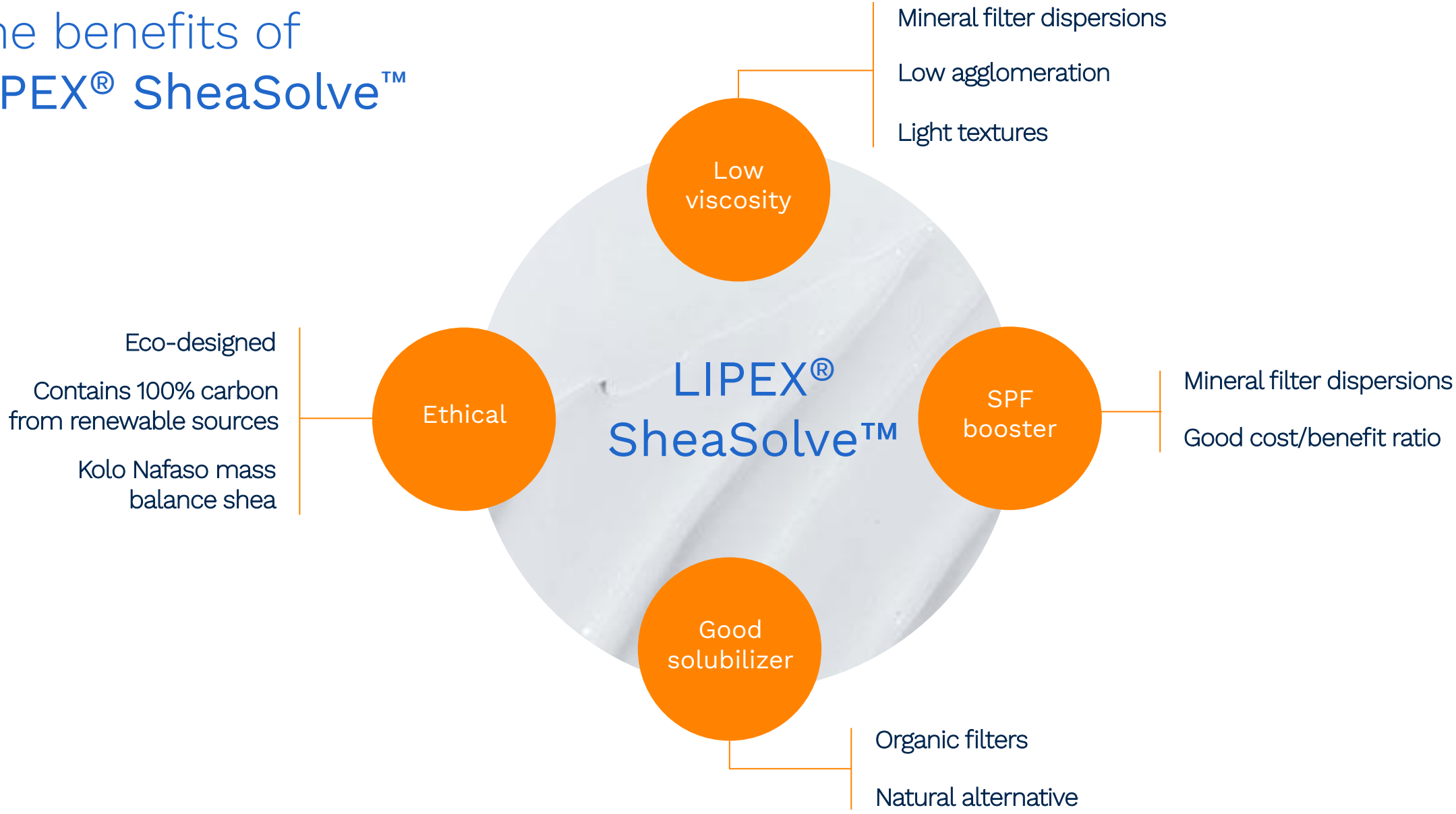
The story of Sun and Shea

*Shea is known for its inherent UV absorbing properties**, therefore a shea derivative such as Lipex SheaSolve is a great fit for formulations carrying sun protection claims*

**Source: Sarruf Fernanda, Sauce Rafel, Candido Thalita, Oliviera Camila, Rosado Catarina, Velasco Maria, Baby André, Journal of Cosmetic Dermatology, May 2020, Butyrospermum parkii butter increased the photostability and in vivo SPF of a molded sunscreen system.

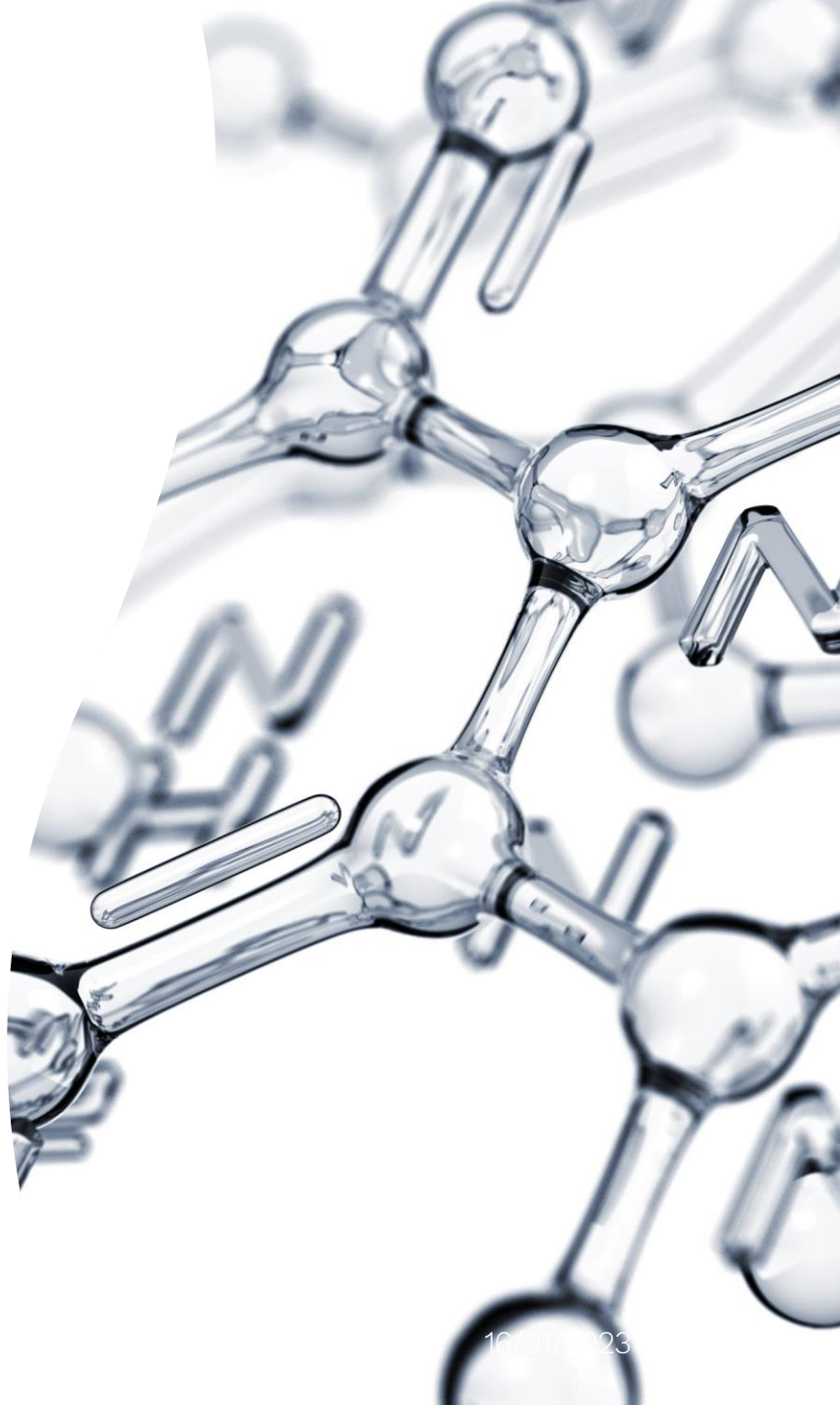
*Share of C-atoms from renewable sources

The benefits of LIPEX® SheaSolve™



Emollients and organic UV filters

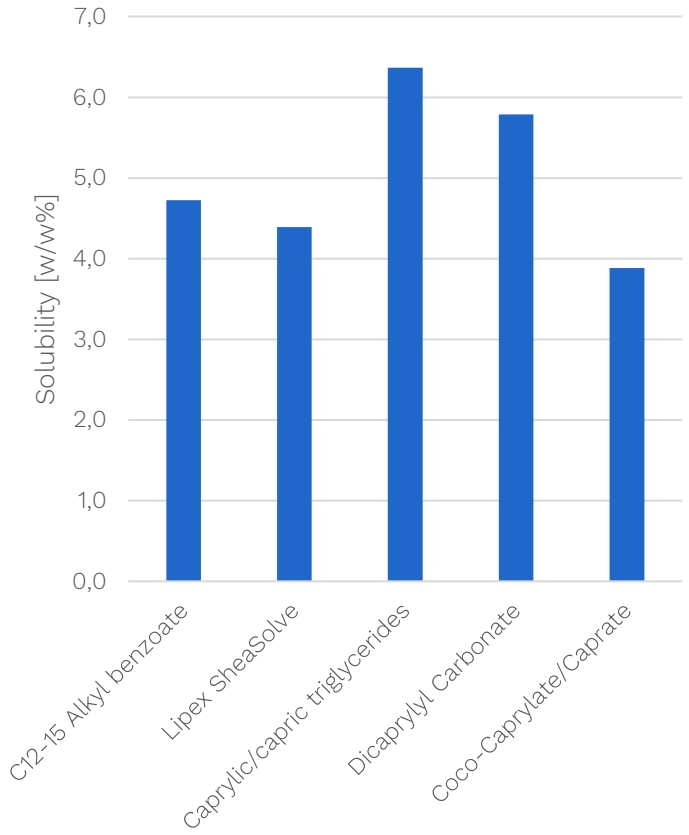
- Organic UV filters are provided either in liquid or crystalline form
- In sun care formulations based on organic UV filters, the emollient play the role as a solubilizer of the crystalline filters
- There is a need to choose the emollient wisely to allow for high inclusion of organic filters in the formulation
- The efficacy of the final sunscreen formulation is highly linked to the solubility of the organic UV filter in the emollient
- An effective solubilization will also prevent precipitation of the organic filters during the product shelf life



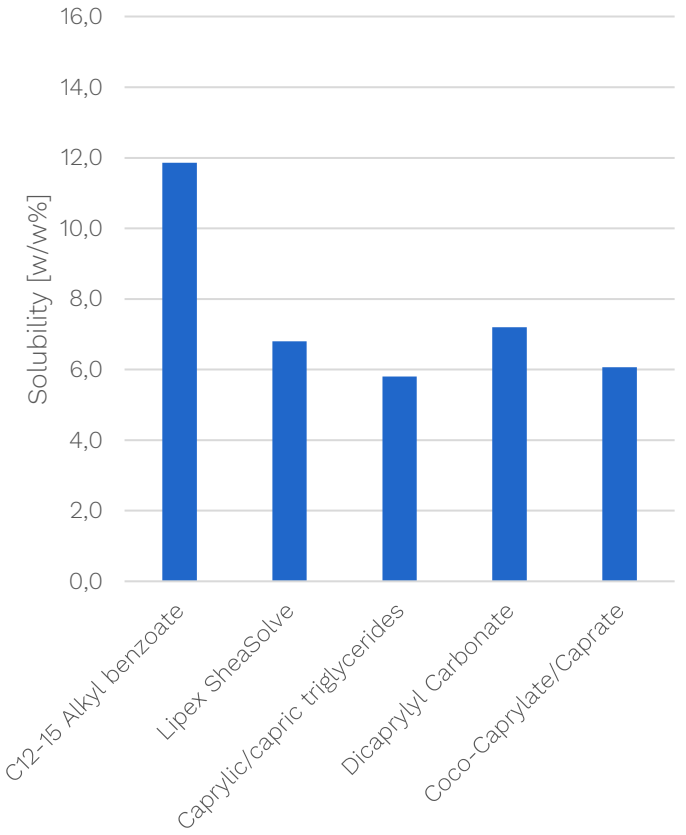
Source: Lim Henry W and Draelos Zoe Diana (editors), 2009, Clinical Guide to Sunscreens and Photoprotection, New York: Informa Healthcare USA Inc.

Lipex SheaSolve provides solubilization of organic filters

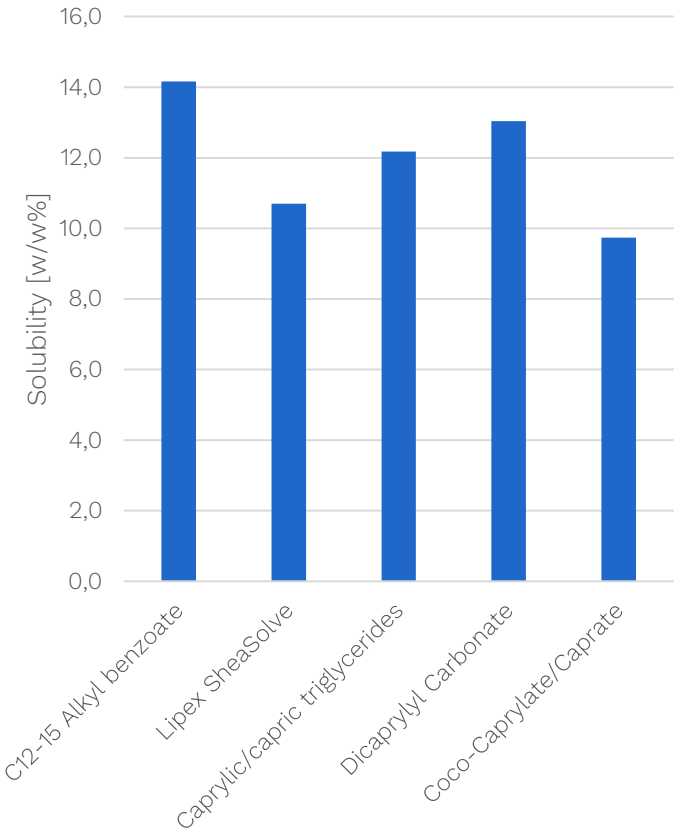
Solubility of Uvinul T150



Solubility of Tinosorb S

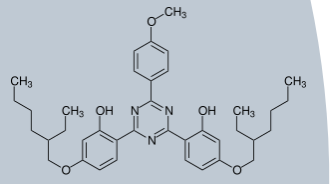


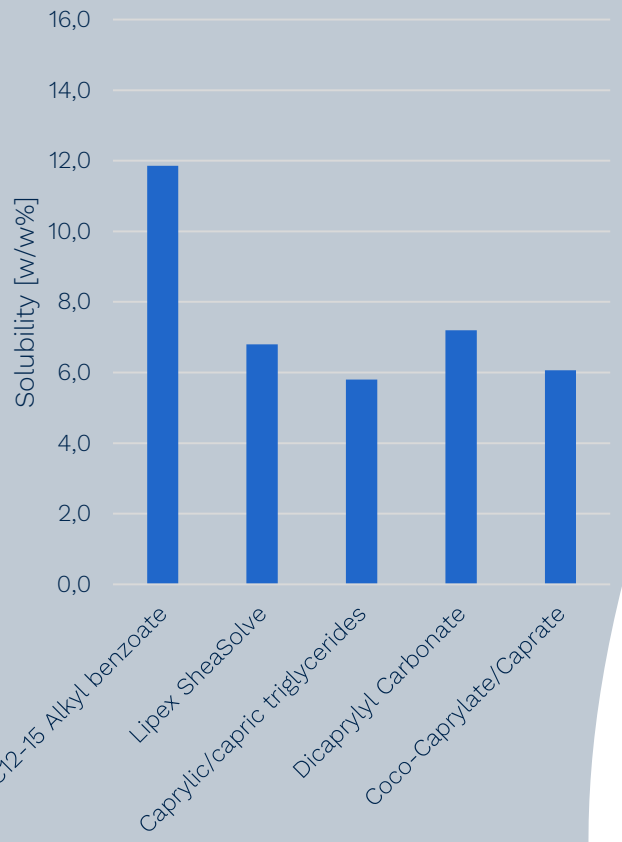
Solubility of Parsol 1789



Solubility study using a spectrophotometric method. Study conducted by Q&Q Labs.
Uvinul T150 (Ethylhexyl Triazone), Tinosorb S (Bis-Ethylhexyloxyphenol Methoxyphenyl Triazine), Parsol 1789 (Butyl Methoxydibenzoylmethane)

Solubility of Tinosorb S
in different emollients





What is behind the differences seen?

- There is no one solution that fits all, emollients show different solubility properties depending on the organic filter used. This is due to the chemical interaction between the UV filter and the emollient.
- Additionally, cosmetic formulations would contain combinations of different emollients but also a mix of organic UV filters. It is known that emollients can impact the SPF performance of organic UV filters*
- We can conclude that Lipex SheaSolve can solubilize organic UV filters as good as C12-C15 alkyl benzoate or other natural alternatives depending on which UV filter is chosen.

*Source: Sohn Myriam, Amorós-Galicia Lola , Krus Stanislaw, Martin Karine, Herzog Bernd, Journal of Photochemistry & Photobiology, February 2020, Effect of emollients on UV filter absorbance and sunscreen efficiency.

We have also tested the photostability and phototoxicity of Lipex SheaSolve

Based on internal testing made by AAK, where samples were exposed to UV light (max 4.5 kW/m2) for 8 hours at RT, we can conclude that Lipex SheaSolve **does not break down under UV exposure**.

There was no oxidation detected after the irradiation.

Based on external testing carried out by ProDerm Institute for applied dermatological research, we can conclude that Lipex SheaSolve **does not provide any phototoxic reaction.**

The in-vivo study carried out with 28 panelists showed no evidence of erythema on skin.

CreamUp Sun Care Spray SPF 30

Pop this practical sprayable sun care lotion into your beach bag for fast, fuss-free creaming up on the go! The light, fast-spreading texture absorbs evenly into the skin, and the mix of mineral and organic sunscreen filters provide effective UV protection.

Non-greasy, non-sticky, and with no white residue, it leaves skin looking and feeling beautifully soft and smooth. Suitable for all skin tones and use on the face and body.

Meeting trends:

- Light texture
- Carrying skin care benefits
- Natural formulation
- Inclusion beauty

CreamUp Sun Care Spray SPF 30

Raw material	INCI Name	w/w %
Phase A		
Neo Heliopan Hydro	Phenylbenzimidazole Sulfonic Acid	5.00
Sodium Gluconate	Sodium Gluconate	0.20
Water	Aqua, Aqua	62.87
Phase B		
L-Arginine C-Grade	Arginine	3.10
Phase C		
Actigum VSX 20	Scleroglucan Polysaccharide	0.50
Zemea Propanediol	Propanediol	1.00
Phase D		
LIPEX® SheaSolve™	**Shea Butter Ethyl Esters**	**2.71**
ZnO-660-ASGP7	Zinc Oxide, Polyhydroxystearic Acid, Stearoyl Glutamic Acid	5.04
Phase E		
Covi-ox T 90 C	Tocopherol, Helianthus Annuus (Sunflower) Seed Oil	0.20
Emogreen L15	C15-19 Alkane	2.80
Eumulgin VL 75	Lauryl Glucoside, Polyglyceryl-2 Dipolyhydroxystearate, Glycerin	6.00
LIPEX® SheaTris™	**Butyrospermum Parkii Butter Extract**	**0.50**
Tinosorb S	Bis-Ethylhexyloxyphenol Methoxyphenyl Triazine	2.00
Uvinul A Plus Granular	Diethylamino Hydroxybenzoyl Hexyl Benzoate	2.00
Uvinul T150	Ethylhexyl Triazone	2.00
Phase F		
Sunhancer Eco SPF Booster	Oryza Sativa (Rice) Bran Wax, Copernica Cerifera (Carnauba) Wax	3.00
Phase G		
Euxyl PE9010	Phenoxyethanol, Ethylhexylglycerin	1.00
Phase H		
NaOH 20% in water	Sodium Hydroxide, Sodium Hydroxide	0.08

Functional and technical benefits

LIPEX® SheaSolve™ disperses mineral UV filters efficiently enabling the creation of low viscous emulsions for sprayable format; and it solubilizes the lipophilic organic UV filters.

LIPEX® SheaTris™, our shea butter triterpene ester concentrate strengthens the skin barrier function to improve moisture retention and help protect against environmental aggressors.

For download and ingredient samples please go to: www.aakpersonalcare.com for customers
For distributors, please use AAK PC Portal

SunSafe Mineral Stick SPF 50

Free from chemical filters, this reef-friendly stick is formulated with titanium dioxide and zinc oxide to act as an effective physical protective barrier against UV light.

The neat format is easy to apply to areas such as the nose, ears and shoulders, which tend to burn quickly in the sun.

So whether it is the beach or back garden, this handy stick is an absolute summer must-have for all the family!

Meeting trends

- Convenient format
- High SPF
- Multi-benefit
- Natural formulation

SunSafe Mineral Stick SPF 50

Raw material	INCI Name	w/w %
Phase A		
LIPEX® SheaSolve™	Shea Butter Ethyl Esters	27.50
Phase B		
A15-TiO2-SA-ASGP12	Aluminum Hydroxide, Titanium Dioxide, Hydrated Silica, Stearoyl Glutamic Acid, Polyhydroxystearic Acid	14.00
ZnO-660-ASGP7	Zinc Oxide, Polyhydroxystearic Acid, Stearoyl Glutamic Acid	25.00
Phase C		
Candelilla Wax E00017	Euphorbia Cerifera (Candelilla) Wax	11.40
Carnauba Wax T1 E00018	Copernicia Cerifera (Carnauba) Wax	3.10
Covi-ox T 90 C	Tocopherol, Helianthus Annuus (Sunflower) Seed Oil	0.20
Emogreen L15	C15-19 Alkane	1.90
Emullium Illustro	Polyglyceryl-6 Polyhydroxystearate, Polyglyceryl-6 Polyricinoleate	0.50
LIPEX® Bassol C™	Canola Oil, Canola oil	6.15
LIPEX® SheaTris™	Butyrospermum Parkii Butter Extract	0.50
LIPEX® SMP™	Hydrogenated Vegetable Oil, Hydrogenated Vegetable Oil	6.25
Phase D		
Silica MSS-500/3H	Silica	3.00
Phase E		
Geogard 221	Dehydroacetic Acid, Benzyl Alcohol	0.50

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Functional and technical benefits

LIPEX® SheaSolve™ disperses the high load of zinc oxide and titanium dioxide.

LIPEX® SMP™ creates structure to this anhydrous formulation but melt quickly in contact with skin and thereby imparts a softness during application.

LIPEX® Bassol C™ balances the texture of this stick and is with its unique oxidative stability an excellent choice for sun care applications.

LIPEX® SheaTris™ , our shea butter triterpene ester concentrate, it strengthens the skin barrier function to improve moisture retention and help protect against inflammation.

The benefits of LIPEX® SheaSolve™

Low viscosity

- Mineral filter dispersions
- Low agglomeration
- Light textures

Ethical

- Eco-designed
- Contains 100% Carbon from renewable sources
- Kolo Nafaso mass balance shea

SPF booster

- Mineral filter dispersions
- Good cost/benefit ratio

Good solubilizer

- Organic filters
- Natural alternative

Lipex SheaSolve is an eco-designed ester which is derived from 100% natural and renewable sources

Shea
mass Balance Kolo Nafaso program

Ethanol
from vegetable sources
from low-risk supply chain

LIPEX® SheaSolve™

100% Natural

We do not use synthetics as reactants

Milder temperatures are used compared to other ester production processes

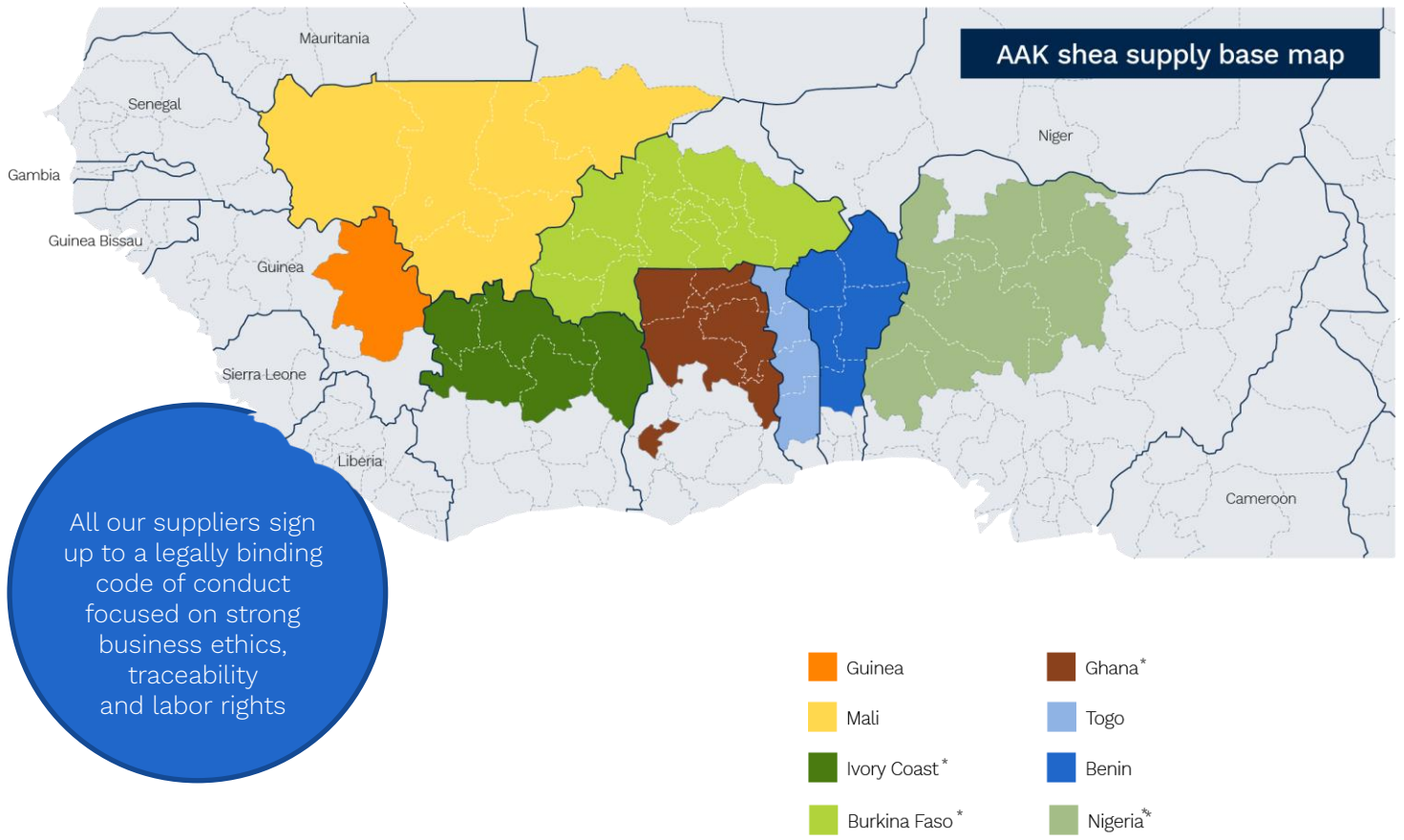
Catalysts that are non-toxic to the environment are used

Shea-derived ester containing 100% carbon from renewable sources

AAK provides ingredients derived from ethically sourced shea through two supply chains

Our AAK shea is sourced from eight West African countries using two parallel supply chains to serve our food, confectionery and personal care divisions.

We work directly with the women's groups engaged in our AAK Kolo Nafaso program and with conventional shea traders, who play an important logistical function in transporting kernels from remote areas to big towns.



All our suppliers sign up to a legally binding code of conduct focused on strong business ethics, traceability and labor rights

*Countries with Kolo Nafaso program

A short intro to our direct sourcing program: Kolo Nafaso

Kolo Nafaso

- Established in 2009 by AAK
- The largest verified shea sustainability program in West Africa focusing on: poverty alleviation and women empowerment
- Through direct trade, interest free micro-credits and training.

Social and economic impact

- 4 countries: Burkina Faso, Ghana, Ivory Coast, Nigeria
- Engaging more than 320,000 women shea collectors, which equates to 8% of the 4 million estimated to work in the shea export trade

Link to video in Youtube AAK PC channel

The difference between a 100% traceable and a mass balance shea-derived ingredient

The continued growth of our AAK direct sourcing program and an established, responsible conventional supply chain has enabled AAK to offer Kolo Nafaso segregated (traceable) and mass balance shea-based products to its Personal Care customers.

Watch the following video to learn more!

Link to video in Youtube AAK PC channel

Other relevant parameters and certifications

Parameter	Lipex SheaSolve
Halal approved	ongoing
Natrue approved	Yes, pending official document
Cosmos approved	Yes
Natural derived ester according to ISO 16128	Yes, 100%
Vegan friendly	Yes
Biodegradability according to OECD 301 F	Readily biodegradable
EWG rating	1

INCI: Shea butter ethyl esters or
Ethyl oleate (and) Ethyl stearate (and) Ethyl linoleate (and) Ethyl palmitate (and) Butyrospermum Parkii (shea butter) unsaponfiables

If you formulate with Lipex SheaSolve, which is Mass Balance Kolo Nafaso, these are possible claims on pack

Ethically sourced shea
Or,
Responsibly sourced shea
Or,
Sustainably sourced shea

Option 1

Option 2

Supporting women shea collectors
Or,
Empowering women through shea
Or,
Supporting the future of shea

Full guidelines on mass-balance messaging, claim definitions, proof points and impact are available separately.

To sum up: Lipex SheaSolve is the new tool for your SPF formulation challenges!

Ingredient features

- It lowers the viscosity of mineral UV filter dispersions.
- It provides better UV filter wetting than traditional dispersants.
- It provides SPF boosting by 20-50% compared to other dispersants.
- It is a good solubilizer for organic filters.

Formulation benefits

- It enables formulating with more water and therefore achieves lighter textures while keeping the formulation cost down.
- Due to the lower risk of agglomeration, it makes the work in the lab and the scale-up easier.
- It delivers above the expected SPF value, which is an assurance for formulators.

Sustainable benefits

- It is from ethically sourced shea: AAK provides a mass-balance claim from our verified sourcing program Kolo Nafaso.
- It is produced in an eco-designed process selected by AAK and contains 100% carbon from renewable sources.