

A conversation with Dr. Jochen Klock, Head of Global Marketing Sun Care, DSM

EURO COSMETICS: *Good sunscreens are more in demand now than ever. You presented the emulsifier AMPHISOL® K at the in-cosmetics show in Paris. How can emulsifiers improve sunscreens?*

Dr. Jochen Klock: AMPHISOL® K delivers outstanding long-term and heat stability, which combined with ease of product development, makes it the ideal solution for use in the formulation of high quality cosmetic products.

As an ingredient designed for difficult to stabilize emulsion types, AMPHISOL® K is suitable for all kinds of sun and skin care formulations. It can be incorporated into face care products, alphabet creams, and multifunctional creams, for instance, as well as conventional sunscreens. Because it is an oil-in-water emulsifier, AMPHISOL® K is capable of stabilizing emulsions at very low concentrations and also contributes to improved skin sensation.

AMPHISOL® K works well with both polar and non-polar oils and stabilizes formulations with high concentrations of challenging ingredients such as UV filters, pigments, salts, acids, and ethanol. At the same time it is also ideal for low viscosity sprays.

This ingredient can therefore save formulators development time and money, and help them achieve extremely stable skin care products over a broad range – from body lotions to make-up products and beyond. In fact, we have yet to discover the limits of its versatility.

EURO COSMETICS: *You were also able to reveal AMPHISOL® K's mechanism of action, thanks to state-of-the-art technology. Please tell us a bit more about this.*

Dr. Jochen Klock: Emulsions are thermodynamically unstable systems formed by a mixture of two immiscible liquid phases and a third phase, the emulsifier. The main reason for using emulsified systems for sunscreens – instead of single oil phase formulas, for instance – is to create a prod-



*Dr. Jochen Klock,
Head of Global Marketing Sun Care, DSM*

uct which is easy to apply and forms a non-oily, non-tacky, smooth film on the skin. This is crucial, because it encourages consumers to use sufficient product to achieve its full sun protection potential. Emulsions possess a variety of parameters for optimization of those features, and a good emulsion system can significantly improve consumer compliance.

Some constituents of cosmetic formulas are prone to causing stability problems. Electrolytes from water-soluble UV filters, for instance, can interact with the emulsifier and destabilize the system. In other cases, formulas require the incorporation of a high oil proportion into an oil-in-water system, which is generally a tough challenge. Empirically, alkyl phosphates, the group to which AMPHISOL® K belongs, have proved to be versatile in such cases. However, it is not well understood why these materials seem to be more robust than others in facing such challenges.

Using cutting edge technology known as freeze-fracture Transmission Electron Microscopy, DSM has now been able, for the first time, to visualize the mechanism of action of AMPHISOL® K. Uniquely, the

emulsifier was shown to form a large number of stabilizing liquid crystalline vesicular structures, as well as lamellar structures with very densely packed layers of water phase and liquid crystalline lipid phases. Also for the first time, DSM was able to demonstrate the presence of so-called microdomains in an emulsion. This unique feature of AMPHISOL® K is thought to be the key reason for its stabilizing vesicular liquid crystalline structures and responsible for its outstanding performance as regards stability. This technological confirmation of the presence of microdomains means that with AMPHISOL® K formulations can have absolute confidence that their formulations will remain stable.

EURO COSMETICS: *At the in-cosmetics show in April you were present in the Formulation Lab. Tell us a little about your experiences there.*

Dr. Jochen Klock: Even though AMPHISOL® K shows outstanding robustness as an emulsifier, there are a few things that need to be considered when handling it in the lab or during production in order to avoid potential pitfalls. With this in mind we set up a live demonstration to showcase just how to best formulate with AMPHISOL® K. This raised huge interest among visitors – in fact we had a capacity crowd, which goes to show how important this topic is. In addition to our live demonstration we screened a video which presents tips and tricks on dealing with the challenges involved in formulating all types of emulsions, and sunscreens in particular. This video will be made available to our customers' formulators and we hope that they will find it a very helpful tool.

EURO COSMETICS: *One of the most important criteria in the choice of sunscreen is how it feels on the skin. What can AMPHISOL® K do here?*

Dr. Jochen Klock: The highest sun protection is continuously demanded by the

market. However, higher UV filter concentration negatively influences the sensorial attributes. Developing consumer-acceptable formulations with high sun protection is therefore challenging and time-consuming.

AMPHISOL® K allows for stable emulsion systems with highest oil inclusion and has been shown to outperform competitive technologies. We tested the sun protection factor in-vivo and compared AMPHISOL® K with two other market typical emulsifiers in different application forms. Results revealed that AMPHISOL® K upgrades the sun protection factor to the next protection level.

Boosting the SPF means that the product requires less oily UV filters and feels less greasy on the skin. AMPHISOL® K itself has a good affinity to skin. The product is absorbed very quickly and leaves skin feeling dry and cared-for at the same time. Hence, you not only boost the sun protection effect, but also achieve a very good skin care effect, with skin looking and feeling soft and smooth.

EURO COSMETICS: *You were one of the first on the market last year at in-cosmetics to have developed a sunscreen for use specifically on men's skin. How was this received by customers and what else have you done to enhance it since then?*

Dr. Jochen Klock: We are extremely pleased with the response to our Men's Scalp Protection concept, which provides targeted sun protection to a vulnerable and often overlooked area of skin. The scalp may be exposed for a number of reasons, including the current trend among younger men, in particular, for short hairstyles and partings. Customers have been very appreciative of our identification of this lacuna in the landscape of sun protection, and of our efforts to meet the identified needs.

Since its launch, we have even been able to improve on the texture of the formulation, which needs to be light and spreadable. The end product must also be quickly absorbed, leaving no trace of oil to compromise the hairstyle and – also important – no oil on the fingertips to soil a good suit or expensive electronic device. These are at-

tributes that can be exploited for many other applications, and we have had very positive feedback from customers interested in harnessing them for a broad range of products.

In-cosmetics in April also saw the launch of another DSM concept specifically tailored to men's skin care needs: DSM's Aftershave Water Gel SPF 15, a fast-absorbing daily sun shield for men in a very light formulation. In addition to sun protection this provides an immediate skin-tightening effect and long-term skin firming, making it ideal for incorporation into novel aftershave products. It is moisturizing, easy to apply and rapidly absorbed – in other words, perfect for the typical man's daily care routine. The initial response to the concept at the launch was very encouraging, and we are convinced we have once again found an effective, consumer-friendly solution to an unmet skin protection need.

EURO COSMETICS: *What are the current trends in sunscreens?*

Dr. Jochen Klock: At DSM we have discerned three trends which call for innovation in sunscreens, and have developed applications to meet those needs:

- The first significant trend is for sun care oils with a shimmer effect. These are especially popular in Europe and Latin America or with darker-skinned women, for instance. To meet this need DSM has developed a new formulation – Invisible Sun Care Oil SPF 50. This targets the specific consumer group that appreciates oils for the glowing appearance they give to the skin. DSM's oil comes in the form of a transparent spray that – despite leaving the skin glowing – imparts a satin-smooth, dry-touch feel and nourishes skin.
- Inspired by the trend for refreshing face mists in Japan, DSM has developed a facial mist with SPF 25 sun protection. This is a pump spray that envelops the user in an ultra-fine mist as refreshing as a sea breeze. Ideal for on-the-go sunscreen protection renewal during a busy day, the mist can be applied over makeup without adverse effects. This formula-

tion is fast drying, weightless, and moisturizing – instant protection and refreshment at the touch of a button.

- The third innovation meets a very different need inspired by the Korean market: A Transparent Sunscreen Stick with SPF 50 enables targeted application of sun protection to defined areas of skin. These sticks are especially useful for ensuring that the sensitive area of skin around the eyes, for example, is adequately protected. Not everybody is happy to spray or spread cream around this area, and for them the Transparent Stick provides the perfect solution. It can be applied directly to the area of concern and will not smear. This is another application that is ideal for use on the go: it is pocket-sized, is applied without using the fingers, and is guaranteed not to spill in your purse or bag!

EURO COSMETICS: *In what direction is the development of sunscreen research heading?*

Dr. Jochen Klock: As indicated above, making sunscreens with lighter textures is a major goal for a variety of reasons. People will only apply sunscreens in sufficient quantities and as often as necessary if they are easy to use, comfortable on the skin and can be integrated into the daily skin care routine. So, for example, making sun protection compatible with make-up and hair styling is essential if people are to be consistently protected against harmful UV radiation.

The watchword here is versatility: sun protection products are already capable of offering complete UV protection. The stumbling block currently is consumer compliance. And this is where formulators have an invaluable role to play, to make sun protection ever more user-friendly, easy to formulate and hence cost-effective.

EURO COSMETICS: *Your slogan at this year's in-cosmetics show in Paris was "be brave". What do you want to express with this?*

Dr. Jochen Klock: Our in-depth research into consumer aspirations, as well as feedback from bloggers, personal care professionals and trend influencers on our

Beauty Connection Platform, has confirmed what we ourselves believe at DSM: there is no one-size-fits-all when it comes to beauty.

Beauty is individual. What's more, it is viewed differently in every era and culture. Today, people are increasingly questioning accepted notions of what beauty is. Rather than trying to fit in with prescribed norms, they are demanding that beauty care prod-

ucts conform to their expectations, helping them showcase their personal beauty and highlight their individuality. This takes courage and self-awareness and the desire to try something new for a change.

This new attitude presents a challenge for beauty product manufacturers! It requires products that are as varied and versatile as their users. At DSM we welcome this challenge and are dedicated to inspiring people

to capitalize on their uniqueness.

We also want our customers and ourselves to dare to stand out from the crowd. Our goal is to achieve excellence and undisputed leadership in everything we do – and show that we have the courage of our convictions.

EURO COSMETICS: *Dr. Klock, thank you for the conversation.* ■



DSM has, for the first time, visualized the mechanism of action of AMPHISOL® K.

Scan this code to watch the video NOW!