



ALGICA

The algae-based silica material with unique and powerful properties developed by nature



Swedish Algae Factory – company origin

Angela Wulff, a professor in marine ecology and Sofie Allert, a biotech engineer with a passion for sustainable business founded Swedish Algae Factory in 2016. The drive of Swedish Algae Factory is to use algae to produce valuable high-tech materials that are good for our planet and our health. The production process of Algica is natural, absorbs carbon dioxide, cleans water and produces organic by-products for animal feed and soil fertilizers. The production thereby reduces global warming and eutrophication and contributes to a more sustainable food chain.

Algica for personal care

Diatoms' unique porous silica shells have evolved for millions of years for efficient uptake and release of chemical substances such as nutrients, vitamins and minerals. The abundance of hydroxyl groups on the shell surface, comparable to hyaluronic acid, helps the algae to efficiently regulate water levels. The shell also protects diatoms from UV light and pollutants. At Swedish Algae Factory we cultivate and extract this shell material whilst preserving its properties and call it **Algica**[®]. Today we produce Algica in Kungshamn, a small town on the West Coast of Sweden.

In personal care Algica can be claimed as an efficient moisturizer, cleanser, rheology modifier, booster of other active substances and anti-pollution agent. Algica's multifunctional properties can provide value in a wide variety of products where Algica can replace several ingredients in one product. Algica is today used in everything from face creams and face masks to serums.

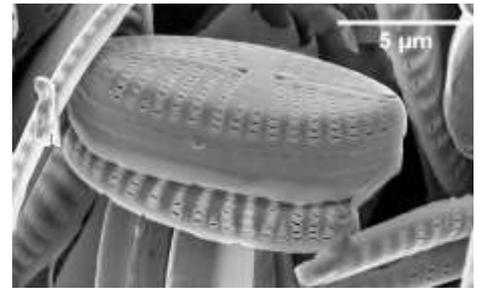
Additionally, Algica has UV light blocking properties. The UV light blocking effect has been confirmed in scientific studies by our team and published in the elite journal Nature. More studies are being conducted towards being able to claim these properties in personal care products.

Properties of Algica for personal care

- Improved moisture retention by its ability to bind water, similar to hyaluronic acid
- Cleanses the skin by absorption of sweat, oil, bacteria and other impurities
- Anti-pollution agent
- Rheology modification
- Boost the effect of other actives by acting as an efficient carrier material

Algica – microsized but as efficient as a nano material

Absorption and carrying properties of a material are all about surface area, where Algica's intrinsic pore structure has a surface area of around 100 m²/g. Only the smallest nano-sized materials will have a surface area comparable to Algica, but nanomaterials have questionable effects on our health and the environment.



Algica can absorb **over 20 times more sweat, oil, bacteria and other impurities** than synthetic micro-sized materials. Also, the highly developed funnel structure of Algica with intertwined layers of pores, makes the absorption **3 times faster** compared to synthetic silica. The surface area also provides Algica with great carrying properties that help to boost the effect of other actives.

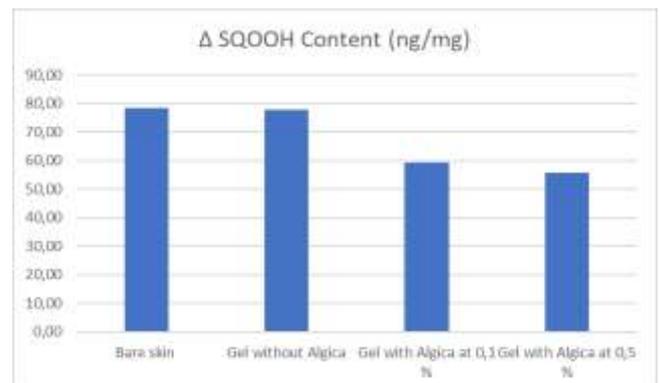
The moisturizing capacity of Algica

The moisturizing properties of Algica and hyaluronic acid were compared in a controlled, double-blind and randomized study. The study concluded that **Algica has at least as good moisturising properties as hyaluronic acid** (as measured by capacitance and TEWL). Furthermore, the cosmetic evaluation revealed a preference for Algica over hyaluronic acid, where Algica was perceived as easier to apply and more easily absorbed by the skin.



Algica protects skin from outer pollution.

In a pilot study conducted by Proderm a clear anti-pollution effect of Algica could be measured. In the study the increased content of Squalene Monohydroperoxide (SQOOH) in the skin was measured after exposure to pollution. Reactive Oxygen Species (ROS) as contained in the pollutant can react with the different major components of the skin (lipids, DNA and proteins). The action of ROS on lipids lead to peroxidation products in skin sebum like Squalene Monohydroperoxide (SQOOH).



(Oxidization of squalene, a human skin lipid: a new and reliable marker of environmental pollution studies D.-M. Pham et al. International Journal of Cosmetic Science, 2015, 37, 357–365)

The results show an in average 24 % lower SQOOH content in skin exposed to a gel with 0,1 % Algica and an **average 29 % lower SQOOH content** in skin exposed to a gel with 0,5 % Algica. The 0,1 % Algica gel showed a 47 % lower SQOOH content and the 0,5 % Algica gel showed a **48 % lower SQOOH content as best**.

How to use Algica in personal care

Algica is available as a dry powder and as a water-based cream. The dry material is preferred for oil-based formulations and serums, while the cream is easy to formulate into water-based formulations. Typical dosage is 1-6 ml of the water-based cream per 100 ml of cream and 0,05-0,3 g of dry powder per 100 ml cream formulation.

We are happy to answer your questions!

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