

# Gentle to the Skin – Tough on Bacteria

Eye shadow or make-up made with glass powder? It may sound implausible, but it is possible. Glass in powder form is very kind to the skin and even has anti-microbial properties. So it is no surprise that the cosmetic industry has welcomed “Vitryxx,” a bioactive glass powder from SCHOTT.

► If an opinion researcher were to carry out a survey to find out what people most associate with glass the three most common answers would probably be hardness, fragility and transparency. But chances are the people questioned have never spoken with Claire Buckwar of SCHOTT. She can offer a novel product that puts glass in an entirely different light. The product is called “Vitryxx” and Buckwar is responsible for its marketing. “Vitryxx” is neither hard nor sharp nor transparent. However, it does have a number of other surprising characteristics that could make this newcomer a very desirable base material for the cosmetic industry.

## An attractive prospect for cosmetic products

The new product is known as “bioactive glass.” For those who are unfamiliar with this term (and that means most of us at the present time), Claire Buckwar always has at

hand a white plastic tub with a blue lid. She shakes white powder out of the container and spreads a little on the back of the hand. The first impression of the substance’s texture can be described as somewhere between baby powder and baking powder.

It is, of course, glass – ground to a fine dust with grain sizes five times smaller than sugar crystals. The amazing fact is that in this micronized form glass is very soft and smooth to the skin, pleasant and soothing. This first impression is not misleading, as intense re-

search has now shown. The surprising bottom line, says Buckwar, is that “bioactive glass has a positive effect on human skin.”

This is the very effect that makes the white powder from Mainz so attractive for the cosmetics industry. With their strong focus on the care of the human skin, researchers



“Vitryxx” bioactive glass powder from SCHOTT has an anti-bacterial and anti-inflammatory effect in cosmetics.

in this industry see many potential applications for bioactive glass. The first products are already expected to reach the market in the near future, the first of them probably color cosmetics and deodorants. Trials have also produced an eye shadow based on glass powder

#### Glass has many positive effects

Associating glass with skin is more likely to bring to mind unpleasant accidents in the home where shards can cause cuts. And now we are supposed to believe that this material, whose broken edges are sharper

than anything else in the world, has a healing effect in its finely ground form?

It sounds incredible, and, of course, it is not quite as simple as that. But the medical profession has been aware of the uniquely beneficial effects of glass for about ten years. Physicians use pulverized glass to promote the healing process in bones and wounds.

Composed of silicon, calcium, sodium and phosphorus, the microscopically fine glass powder produced by SCHOTT is highly pure.



"In contrast to most other implant materials such as titanium and plastic, the human body does not seem to regard bioactive glass as a something foreign," says Buckwar. It binds to both bone and soft tissue without a problem.

Scientists believe a key reason for this could be that bioactive glass is composed of just four elements: silicon, calcium, sodium and phosphorus. These basic elements occur naturally in the human body in many combinations – and thus they are not foreign substances. Bioactive glass is the material of choice when it comes to healing and mineralizing bones. An example is in dentistry, when weakened jawbones need to be built up to provide a lasting anchor for tooth implants. The healing and mineralizing effect of the material is now to be used in cosmetics, for instance in products designed to strengthen nails and hair.

#### **A complex production process**

Strict manufacturing rules apply when glass powder is to be used in medical applications. Bioactive glass is based on a special mixture of the four basic elements, which must be combined without any impurities. Silicon, calcium, sodium and phosphorus can be blended in infinitely different ratios to produce various types of glass, but only a

few variations possess the required positive properties. "The great secret lies in getting the proportions of the primary materials right," says Buckwar.

SCHOTT employees involved in the production of glass powder are just as conscientious as their counterparts in the pharmaceutical industry. As part of a high-purity manufacturing process, the glass is produced in a melting furnace using the correct combination of elements. The irregular shaped pieces that form after the glass has cooled are the size of postcards and as thin as paper. In the final production phase, these pieces are ground down to a microscopically fine powder.

#### **Anti-microbial and anti-inflammatory**

The use of bioactive glass in the healing of bones may be well known, but SCHOTT only became aware of the further potential for the powder in skin-care products in the past three years – after additional properties were discovered. "The glass powders have an anti-microbial and anti-inflammatory effect," says Claire Buckwar. "When used as

The finely ground glass feels soft and soothing to the touch. It currently serves as a base material in cosmetic products and is going to be used in color cosmetics and deodorants in the near future.

the basis for deodorants, the powder kills the bacteria that generate odor."

The advantage over the ingredients currently used in deodorants, she says, is that "bioactive glass powder does not use chemical means to interfere with the metabolism of bacteria but relies on the pH mechanism and osmotic pressure."

And this is the very aspect that gives the SCHOTT researchers the greatest cause for optimism. In times when more and more people are reacting sensitively to their day-to-day environment, product safety is of prime importance for consumers. And what material could offer greater safety than one that is among the oldest monuments to the inventiveness of humankind? ◀