

# SmartSponges.

Our SmartSponges are comprised of our proprietary microspheres embedded in a starch matrix and dehydrated through our in-house developed process. This formulation allows unhindered diffusion of solutes of practically any size. We can control amylase degradation of the SmartSponges over longer or shorter periods, keeping dressing changes to a minimum.

## Advantages

- The combination of microspheres in the SmartSponge provides sustained antimicrobial activity for the duration of contact with the wound
- Effectively reduces the bacterial load in the wound
- Conforms easily to the wound bed when wet
- Reduces healing time
- Has shown effectiveness at removing and preventing biofilm
- Bio-absorbable in the wound
- Non-sensitizing and non-irritating for wounds
- The area in contact with the wound surface is non-adhesive for easy removal.
- The SmartSponge is non-allergenic and non-sensitizing

## Performance

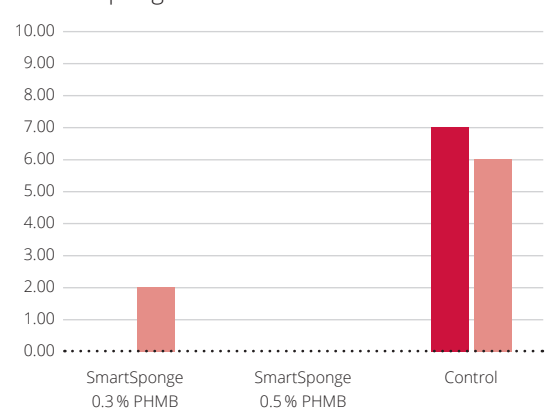
The SmartSponges contain 0.3% PHMB (poly-hexamethylene biguanide) allowing a quick and slower release to prevent bacterial growth and further infection.

Our pre-clinical studies prove that the SmartSponges act as smart dressings by providing maximum antimicrobial effect while delivering the benefits of a sponge dressing at the same time. The SmartSponges are proven at protecting the wound from outside influences while delivering optimal wound care and bacterial control.

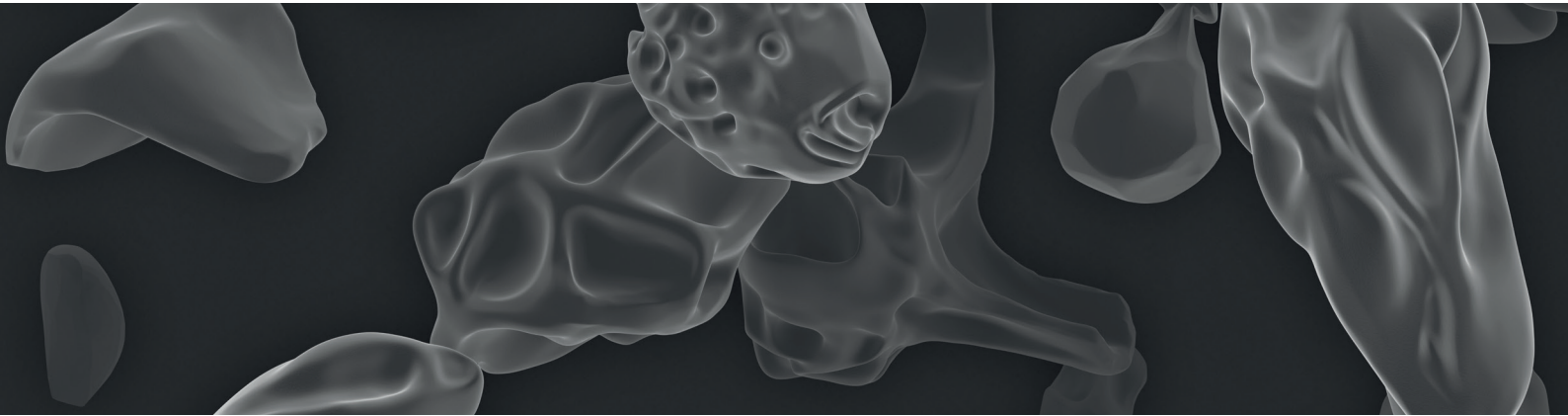
During use of the SmartSponge there is no evidence of microbial growth, biofilm formation or infection. The SmartSponges offer flexible options that are transposable and applicable across a wide range of chronic wound types.

## SmartSponges in vivo study

Recoverable log CFUs of total bacteria per gram of tissue



**The antimicrobial effect of SmartSponges, 0.3% resp. 0.5% were tested in acute wounds infected with *S. epidermidis* (MSA) and *Ps. aeruginosa* (PIA) after 4 and 24 hrs.**



**Our proprietary bio-degradable starch microspheres, here loaded with an antimicrobial compound.**

### **From idea to product**

We pride ourselves in coming up with solutions to complex healthcare challenges. Magle Chemoswed has over 40 years of combined knowledge and experience across the whole value chain, in both pharmaceuticals and medical devices. We have unique knowledge of how to formulate drug delivery systems combined with an expertise in drug development and manufacturing. We bring innovations from idea to product.

### **The technology**

The technology base of the Company is microporous polysaccharide Microspheres. These are derived from purified plant starch that is transformed through a unique chemical process developed in-house, which allows us to control microsphere size from 10  $\mu\text{m}$  to 2000  $\mu\text{m}$ . Our microspheres are naturally bio-absorbable.

We have developed thirteen microsphere families with varying characteristics for wide use across our strategic markets. To give an idea of how versatile this technology is; one of our microsphere families in size ranges 500  $\mu\text{m}$  to 1200  $\mu\text{m}$  can be squeezed through a catheter without compromising the integrity of the microsphere and can be used in combination with drug delivery. A second family has a high absorbency rate of x25 for absorption of blood and exudate. All our microspheres have a proven controllable degradation time between 10 minutes to 48 hours.

The technology has been successfully used to incorporate substances up to the size of 6.6k Dalton and in earlier experiments peptides the size of 300k Dalton. We have wide patent protection on our microsphere technologies covering all our strategic markets.

### **Formulations**

We are experts in formulating our technology, and we currently have formulations with applications in Advanced Wound Care, Surgical and Diagnostics and Drug Delivery. Our research and development teams have adapted our technologies to create gels, sponges, unwoven absorbable fibers, naturally degradable films and microporous polysaccharide microspheres.

The technology has been successfully used in combination with active pharmaceutical ingredients, peptides, antimicrobials, polymers, proteins and growth factors, among others. All our microsphere families and formulations are manufactured in our wholly owned FDA inspected and GMP approved manufacturing facilities.

Two of our microsphere technologies have been approved for sale worldwide in specific indications of hemostasis and vascular occlusion. We continue and endeavor, based on our proprietary technology, to find innovative solutions to pressing medical needs. One formulation might act as a vessel for detecting enzymatic leakage in surgery, another can help treat infected serious wounds.

We have a rich and exciting pipeline that will provide valuable solutions to patients and healthcare providers in the future.