

# SILICA GEL FIBERS PROMOTE CELL REGENERATION IN CHRONIC WOUNDS

A silica gel based fiber formula was developed in cooperation with Bayer Innovation GmbH for the regeneration of chronic skin wounds. The fiber can be woven into a 3D fiber fleece. Fraunhofer scientists Walther Glaubitt and Dr. Jörn Probst were awarded the renowned Joseph-von-Fraunhofer Price in 2008 for their development of the fiber fleece production method.

## Spinning technology

A wet chemical synthesis method allows to produce fine filaments and to process them directly into a fiber fleece. The fiber diameter of 50  $\mu\text{m}$  and the mesh size of the fleece offer a perfect scaffold for the ingrowth of skin cells.

## Therapeutic approach

The optimized mesh size helps healthy skin cells migrate from the wound edge into the fiber fleece and proliferate on the fiber surface. Simultaneous to the ingrowth of cells into the three dimensional fleece scaffold, the resorption of the material begins to take place. But despite an ongoing resorption, the fiber fleece does not shrink during the treatment phase so that the migration of healthy cells is ensured at all times.

The fine-tuned balance between cell ingrowth into the scaffold and fiber degradation enables the regeneration of the wound.

## Property profile

- Composed of defined silica clusters
- Fiber diameter: 50  $\mu\text{m}$
- Optimized mesh size
- Degradation rate: approx. 3 m%/day
- Degradation products: ortho-silicic acid, ethanol
- Dimensionally stable under physiological conditions

## Medical approval

Since October 2010, a CE certification for the silica gel fiber fleece has been available for the regeneration of diabetic wounds and second-degree burns.



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