REGEDENT
smart regeneration

SMARTBRANE

Resorbable Pericardium Membrane

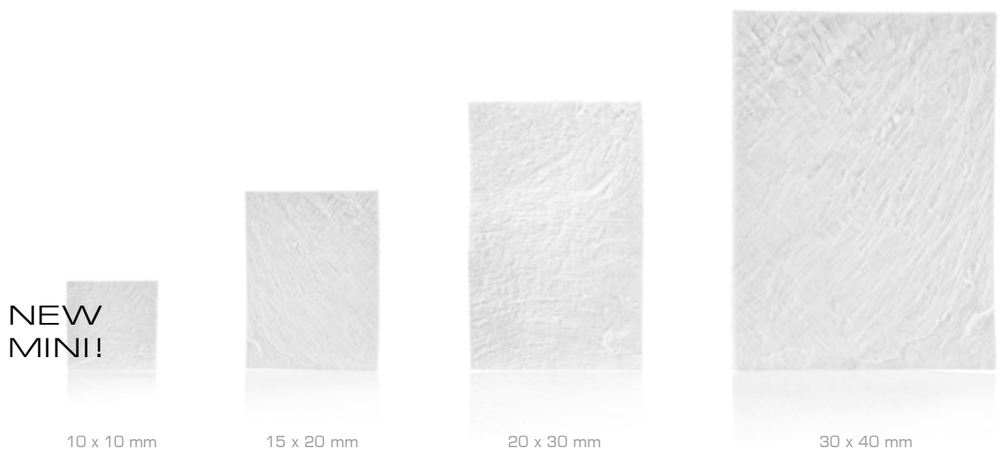
NEW!
THE SMALLEST MEMBRANE
10 x 10 mm

SIMPLE

RELIABLE

PURE

MORE
ECONOMIC



MORE ECONOMIC

The smallest membrane 10 x 10 mm

SMARTBRANE is a resorbable collagen membrane made of porcine pericardium. Thus, it features all benefits of a modern native collagen membrane.

In addition to the standard membrane sizes, it is available in a mini format of 10 x 10 mm. This offers a more economic membrane solution especially for regeneration of small bone defects to optimize your cost-benefit structure.

NEW!
THE SMALLEST MEMBRANE
10 x 10 mm

SIMPLE

Optimized handling properties ensuring straight-forward application

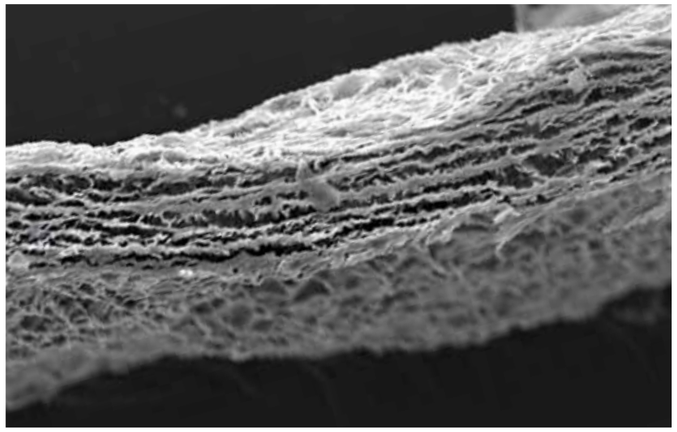
The supercritical carbon dioxide ($scCO_2$) cleaning process is gently removing unwanted materials (e.g. cells, lipids) while preserving the natural collagen matrix as well as the natural crosslinking of the collagen fibers.[1,2]

As a result, SMARTBRANE is characterized by optimal material stability as the biomechanical characteristics of porcine pericardium tissue are preserved.[3]

SMARTBRANE...

- features an adequate tensile strength
- is very adaptable to bony surfaces without sticking to the graft or instrument
- is very thin (< 0,4mm) for facilitated augmentation and wound closure

SMARTBRANE rehydrated: Excellent adaptation to surfaces without sticking to graft or instrument.



SMARTBRANE cross-section

(magnification x 40) featuring intact structure as well as a natural interconnective porous system.

RELIABLE

RELIABLE

Natural collagen matrix preserved by $scCO_2$ cleaning technology for enhanced graft performance

SMARTBRANE is made of porcine pericardium and thus presents optimal matrix composition and a natural dense 3D-network collagen structure optimally preserved after $scCO_2$ purification.

The preserved natural collagen matrix plays an important role for blood clotting and promotes cell attachment.[5]

The membrane has a resorption time of 8-12 weeks providing adequate barrier function for usage in standard GBR cases.[6]

PURE

PURE

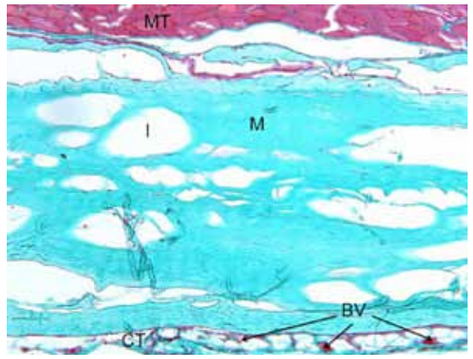
Excellent biocompatibility for improved wound healing

SMARTBRANE is manufactured using an innovative and highly effective cleaning technology based on supercritical carbondioxide ($scCO_2$).

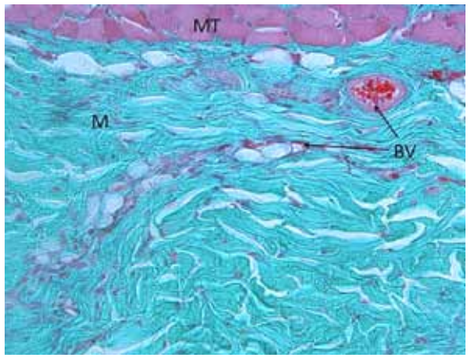
This process results in a higher purity and creates a biocompatible base for immediate new bone ingrowth.[1,2]

It provides highest possible biocompatibility characteristics due to it's porcine origin and the $scCO_2$ cleaning process.

Histological examination in vivo[4]



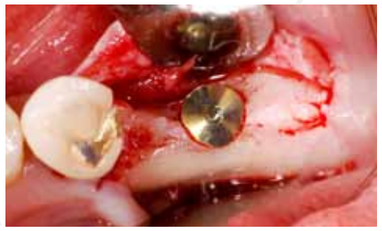
After 1 week of subcutaneous implantation in a rat muscle: SMARTBRANE (M) is already connected to the muscular tissue (MT), no signs of inflammatory reactions.



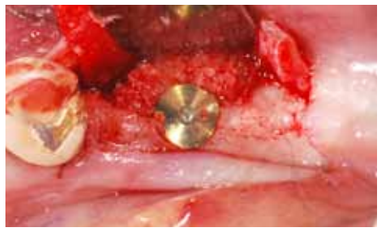
After 2 weeks the first blood vessels (BV) are invading SMARTBRANE (M), no signs of inflammatory reactions.

CASE REPORT

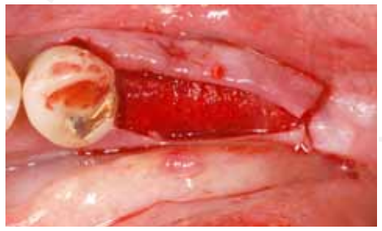
CASE REPORT
Augmentation of a dehiscence-type defect around dental implant



Surgery
Dehiscence defect around bone level implant.



Augmentation with Xenograft bone.



Coverage of bone graft material with SMARTBRANE – the membrane can be easily positioned and is adapting ideally to the defect geometry.

Suture removal
Optimal initial healing pattern: no signs of irritation.

TECHNOLOGY

TECHNOLOGY
$scCO_2$ cleaning process as basis for optimal matrix properties and maximal graft safety

STEP 1 $scCO_2$ Processing → **STEP 2** Chemical Treatment → **STEP 3** Freeze-Drying → **STEP 4** γ-Sterilization

STEP 1
Supercritical Carbon Dioxide ($scCO_2$) Processing

- Carbon dioxide is in its supercritical state when both the temperature and pressure equal or exceed the critical point of 31°C and 73 atm.
- In this supercritical state, CO_2 has both gas-like and liquid-like qualities.
- By it's effective tissue perfusion and removing capabilities of unwanted substances it provides ideal conditions for cleaning and sterilising tissues.[1,2]
- Furthermore, $scCO_2$ is known to be highly efficient against all kinds of pathogens.[7]

Step 2
Chemical Treatment

- Various chemical treatment steps are applied to provide a pure membrane matrix by inactivating and removing residual non-collagenous proteins and enzymes. This results in a further increased safety level for pathogen inactivation.[8]

Step 3
Freeze-Drying

- Freeze-drying allows gentle preservation, retaining the original 3D structure of the xenograft.
- After freeze-drying, products can be stored at room temperature and generally have a longer shelf-life.

Step 4
Gamma-Sterilization

- The combination of $scCO_2$ cleaning process and terminal gamma-sterilization provides highest possible viral and bacterial inactivation and results in a sterile ($SAL>10^{-6}$) and highly biocompatible bone graft.[1,9]

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Clinical pictures by courtesy Dr. Kai Fischer (Germany).

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