SMARTBRANE
Resorbable Pericardium Membrane

NEW!
The Smallest Membrane
10 x 10 mm

Simple
Reliable
Pure

More Economic
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.

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.

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

SMARTBRANE...

- features an adequate tensile strength
- is very adaptable to bony surfaces without sticking to the graft or instrument
- is very thin (< 0.4 mm) for facilitated augmentation and wound closure

SMARTBRANE rehydrated: Excellent adaptation to surfaces without sticking to graft or instrument.
**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.\(^1\)

The membrane has a resorption time of 8-12 weeks providing adequate barrier function for usage in standard GBR cases.\(^1\)

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**PURE**
Excellent biocompatibility for improved wound healing

SMARTBRANE is manufactured using an innovative and highly effective cleaning technology based on supercritical carbon dioxide (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 its porcine origin and the scCO\(_2\) cleaning process.

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**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
Augmentation of a dehiscence-type defect around dental implant

Surgery
Dehiscence defect around bone level implant.

Augmentation with Xanograft 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
scCO₂ cleaning process as basis for optimal matrix properties and maximal graft safety

STEP 1
Supercritical Carbon Dioxide (scCO₂) 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, CO₂ has both gas-like and liquid-like qualities.
- By its effective tissue perfusion and removing capabilities of unwanted substances it provides ideal conditions for cleaning and sterilising tissues.²
- Furthermore, scCO₂ 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
γ-Sterilization
- The combination of scCO₂ 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.⁹
REFERENCES


3. Internal testing results, data on file.

4. SMARTBRANE subcutaneous implantation test, data on file.


6. Internal testing results, data on file.


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

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