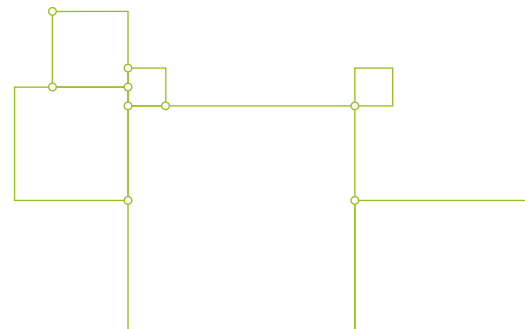


reconstructivesurgery

biotrics
BIOIMPLANTS

biocade[®]

Collagen Matrix for
Soft Tissue Reconstruction



biotrics

BIOIMPLANTS


biotrics bioimplants AG is a private, German, biomedical company, specialized in clinical regeneration of human bone and soft tissues. Biotrics develops, produces and markets innovative and established regeneration matrices made of collagen and magnesium for various surgical applications.

Our innovative, indication-optimized technologies and products are based on many years of academic and industrial research, together with leading clinicians, research institutes and universities. All products are manufactured in our own factory in Berlin-Tempelhof under highest quality and scientific standards and are accordingly certified.

Our expertise lies in the biological functionality, safety and reliability of our products – and thus in reliable treatment.

As an innovative biotech company, we invest substantially in research, production and clinical exchange – The result is innovative products such as biocade® and biocade® dura.

Join us on our mission “Regenerate instead of substitute”. We invite you to share your experiences, suggestions and also criticisms with us. Together we can develop new product and treatment concepts that will optimally support you in your daily clinical challenges.



“At biotrics, innovation is combined with many years of expertise – everything makes sense, which convinced me to work with the team”

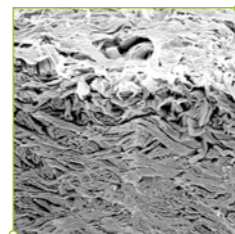
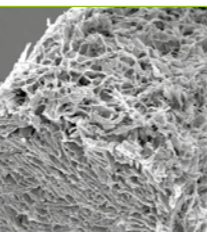
Dr. Ignacio Stöwe

biocade®:
in rehydrated state
extremely tear resistant
and flexible

Integrative collagen matrix for plastic and reconstructive Surgery

The biocade® collagen matrix was designed to optimally support surgeons in their daily challenges in hernia repair and breast reconstruction.

Therefore, biocade® is not only easy and broadly applicable in plastic and reconstructive surgery, but also offers reliable biological functionality.

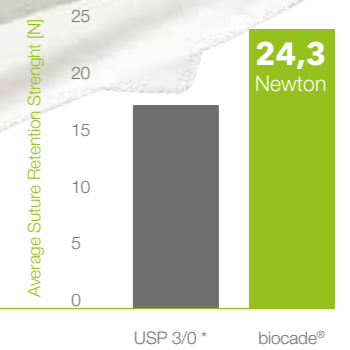


Scanning electron microscope (SEM) images of the biocade® show a compact but yet an open-pore collagen network for early cell migration and revascularization

Suture retention strenght

biocade® can be securely sewn and even has a significantly higher average thread suture retention strength than the commonly used thread material USP 3/0*.

* Resorbable and sythetic



PROPERTIES

- native, porcine collagen matrix similar to human dermis
- no preservatives or cross-linking agents
- rapid healing due to early cell migration and revascularization
- short rehydration
- extremely tear resistant, yet flexible and malleable
- easy handling, securely suturable

Due to its compact structure biocade® is characterized by a long resorption profile.

biocade®

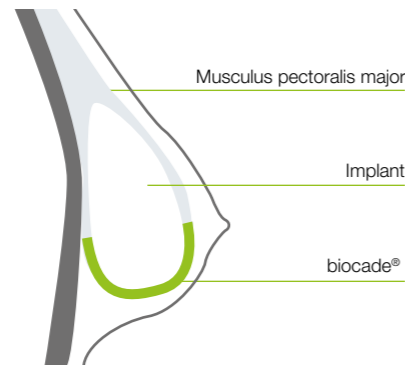
biocade® is versatile and can be used in a wide range of indications – especially in the case of breast reconstruction when a weak subcutaneous fat tissue has to be strengthened

biocade® is also excellently suitable for hernia repair

Collagen – An essential component of tissues

Excellent integration

After implantation of biocade®, regenerative cells are attracted and their proliferation and migration is promoted by the native collagen. biocade® serves as a scaffold structure for the formation of new soft tissue and is completely resorbed.

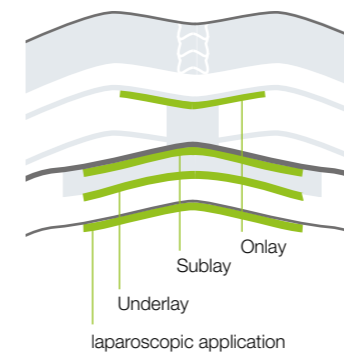


“Due to their high biocompatibility and excellent biomechanical properties, I expect collagen matrices such as biocade® to be a safer and more patient-friendly band tolerable alternative to synthetic meshes.”

Dr. med. Alba Fricke

Impressive biomechanical strength

biocade® can be used with standard hernia repair techniques. Since biocade® does not stick to itself, it is even suitable for laparoscopic placement.



“Reliable and safe collagen matrices that do not require any crosslinkers or preservatives and achieve the best outcome for my patients – that is what I wish for!”

Dr. med. Juri Wagner

breast reconstruction

hernia repair

biocade®

From the product idea
to the certified product –

**EVERYTHING FROM
A SINGLE SOURCE.**

At biotrics we combine more than 10 years of experience in the development and production of collagen matrices. Our development always follows the needs of the user and is adapted to the clinical requirements.

Dermis:
highest collagen content, highest stability

“Our tissues consist largely of collagen - so for me, alternative collagen matrices that are similar to this tissue are “indispensable” in order to achieve physiological integration of the replacement material and healing with few complications and thus regeneration.”

Dr. rer. nat. Mike Barbeck

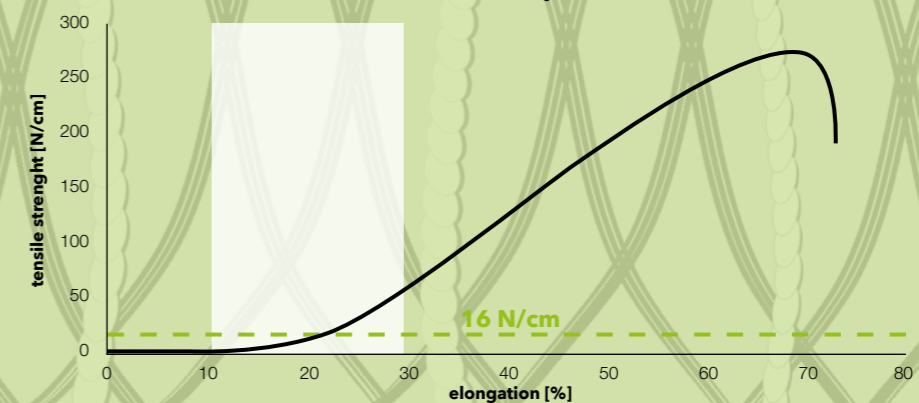
PRESERVATION OF THE OUTSTANDING PROPERTIES of porcine dermis

Our unique manufacturing process specifically isolates the collagen-containing layers of skin and gently removes all non-collagenous components of the dermis (e.g. foreign proteins, bacteria, viruses, etc.). This preserves the native collagen structure and maintain the very high tear resistance. The deliberate avoidance of artificial crosslinking agents and preservatives ensures the proven tissue-friendliness of biocade®.

TENSILE STRENGTH

The tensile tests show that biocade® provides sufficient tensile strength to withstand physiological stress.

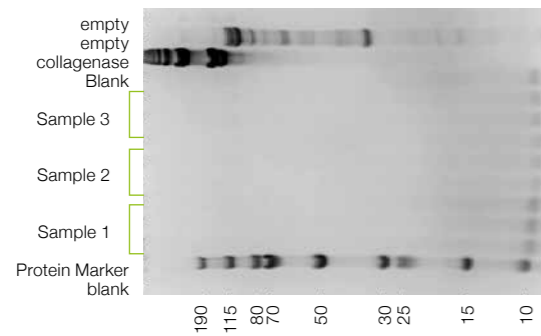
$$\text{tensile strength } R_m = \frac{\text{maximum tensile force } F_{\max}}{\text{cross-sectional area } S_0}$$



With $23.4 \pm 9.2\%$ elongation at 16 N/cm, the rehydrated biocade® fulfills the elongation criterion of 10 - 30% elongation established for hernia meshes.

Free from foreign proteins

Proof of protein purity (SDS-PAGE) of biocade®

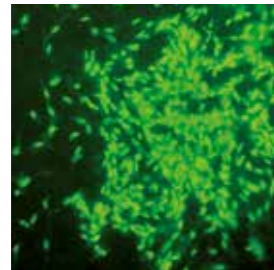


(Sample 1-3: 3-fold determination in each case from enzymatically digested biocade®; Blank: undigested/intact biocade®)

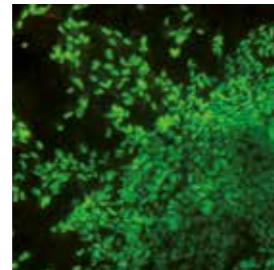
biocade®

Good integration and long absorption profile

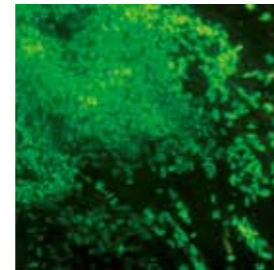
Biocompatibility and cell migration



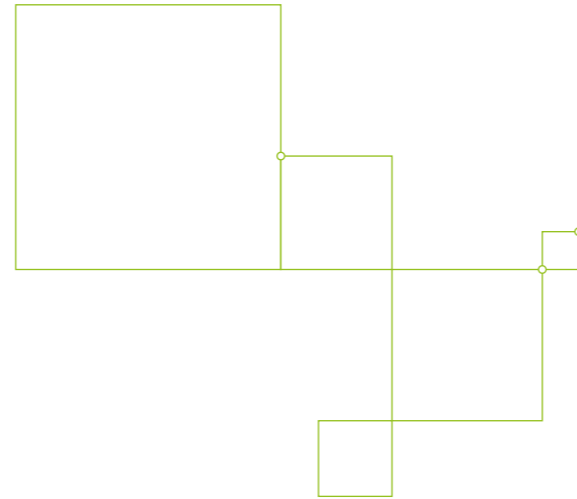
Gingival fibroblasts on similar product



Human endothelial cells (HUVEC) on similar product

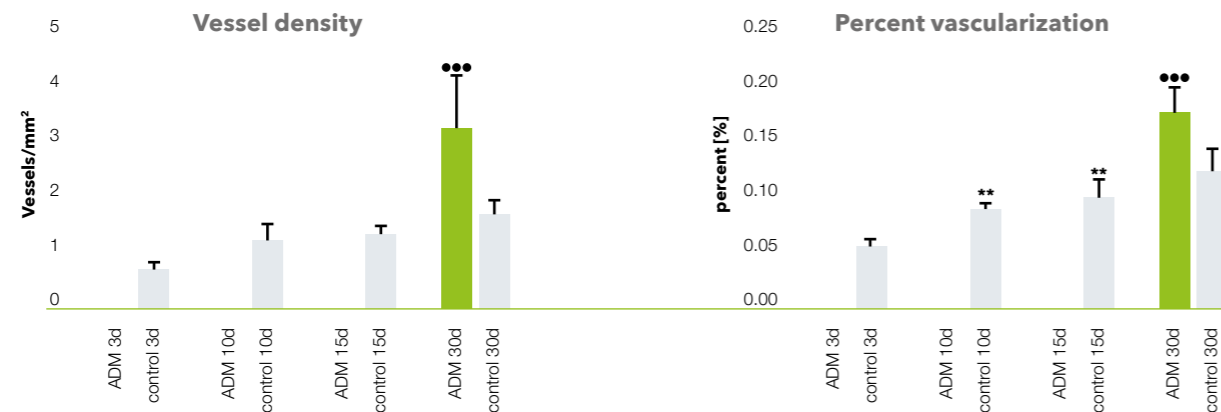


Osteoblasts on similar product



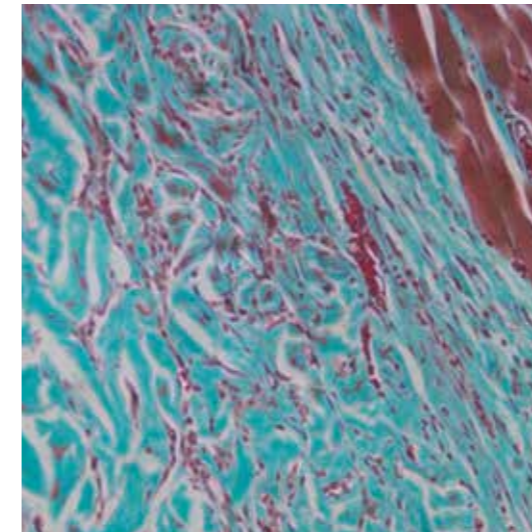
Pabst AM, Happe A, Callaway A, et al. In vitro and in vivo characterization of porcine acellular dermal matrix for gingival augmentation procedures. J Periodontol Res. 2014 Jun;49(3):371-81

Early vascularization

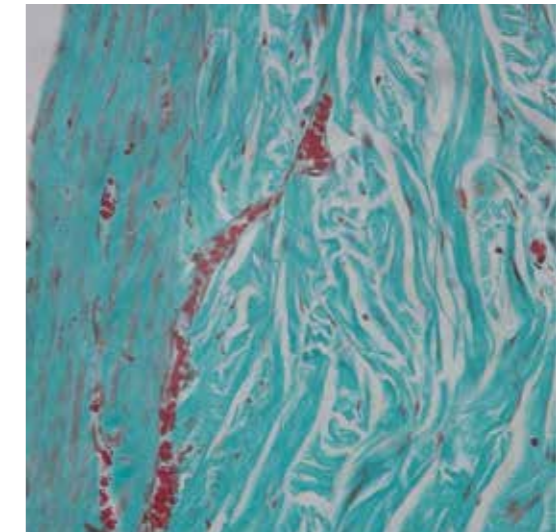


ADM = acellular dermal matrix, ** = p-value < 0.01 compared to ADM (same time point); *** = p-value < 0.001 compared to previous time point.

Adapted with permission: Barbeck M, Lorenz J, Kubesch A, et al. Porcine Dermis-Derived Collagen Membranes Induce Implantation Bed Vascularization Via Multinucleated Giant Cells: A Physiological Reaction? J Oral Implantol. 2015 Dec;41(6):e238-51.



Acellular dermal matrices (ADM) such as biocade® show cell ingrowth and good tissue integration in vivo after just two weeks.



After 12 weeks, the ADM is fully integrated into the recipient tissue and is free of inflammation.

Rothamel D, Benner M, Fienitz T, et al. Biodegradation pattern and tissue integration of native and cross-linked porcine collagen soft tissue augmentation matrices – an experimental study in the rat. Head and Face 2014, 10:10

In vivo studies demonstrate the successful vascularization and early integration due to the open-pored structure of freeze-dried ADMs such as biocade®.

Porcine Dermis **AS BIOMATERIAL**

> **37 SCIENTIFIC AND CLINICAL PUBLICATIONS**

Publications for integrative collagen matrices from porcine dermis



INTENSIVELY RESEARCHED,
WIDELY USED

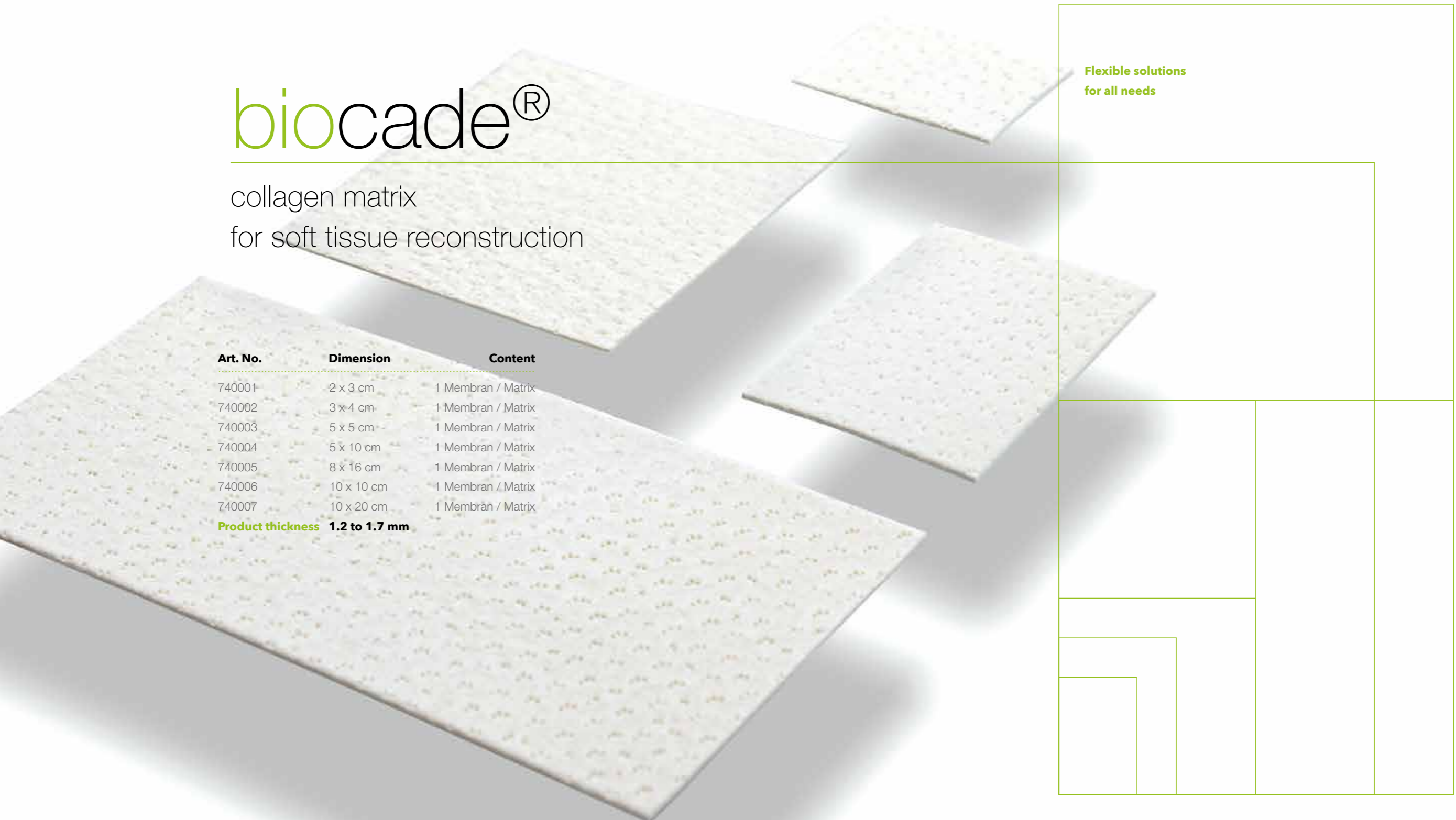
biocade®

collagen matrix
for soft tissue reconstruction

Art. No.	Dimension	Content
740001	2 x 3 cm	1 Membran / Matrix
740002	3 x 4 cm	1 Membran / Matrix
740003	5 x 5 cm	1 Membran / Matrix
740004	5 x 10 cm	1 Membran / Matrix
740005	8 x 16 cm	1 Membran / Matrix
740006	10 x 10 cm	1 Membran / Matrix
740007	10 x 20 cm	1 Membran / Matrix

Product thickness 1.2 to 1.7 mm

Flexible solutions
for all needs





Innovation. Regeneration. Strictly biologic.

biotrics bioimplants AG
Ullsteinstraße 108
12109 Berlin
Germany

Tel.: +49 30 34 64 945 00
Fax: +49 30 34 64 945 99
www.biotrics.com