BIOHORIZONS®
biologics

Product catalog
Biomaterials

Valid from November 2021

biohorizons
camlog

Content

Biomaterials

for hard and soft tissue regeneration

BioHorizons and Camlog are setting standards in hard and soft tissue regeneration with the bone substitute MinerOss® XP and the collagen membranes Mem-Lok® RCM and Mem-Lok® Pliable. These xenogeneic products are suitable for a broad spectrum of applications.

MinerOss® XP is a highly porous, anorganic bone mineral of porcine origin used in bone grafting. Its high porosity provides optimal osteo-conductivity and sufficient space for new bone formation [1].

The resorbable **Mem-Lok® RCM** collagen membrane is made from highly purified, type I collagen derived from bovine achilles tendon. Mem-Lok® is an effective barrier membrane preventing epithelial cells from migrating into the bone defect site to support new bone formation.

Mem-Lok® Pliable is a collagen membrane made from highly purified, porcine peritoneum. It has a high suture pull-out strength. Mem-Lok® Pliable resorbs in 12 to 16 weeks. Both membranes are offered in three sizes (15 x 20; 20 x 30 and 30 x 40 mm).

Quality standards

Clinical proven

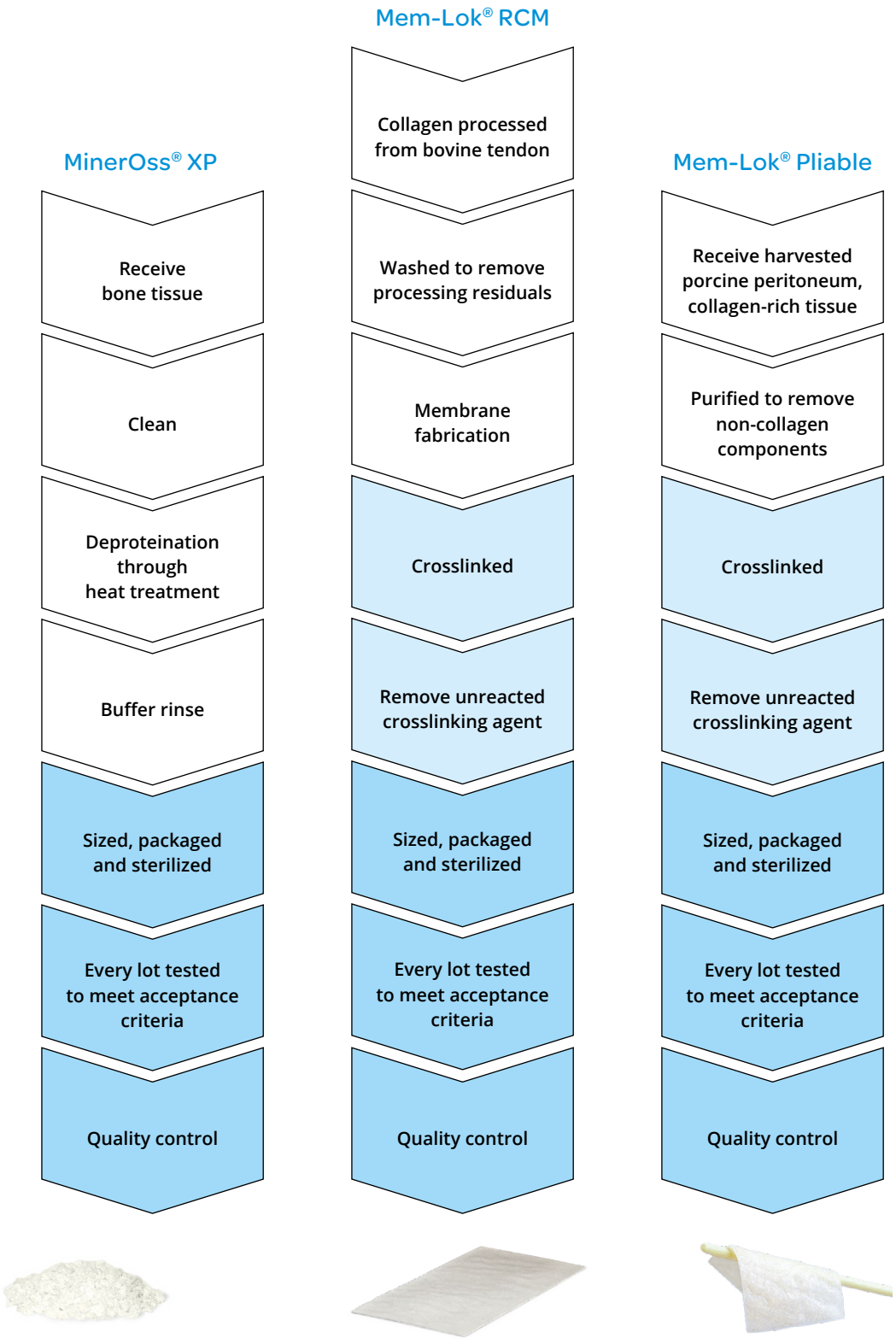
Novel solutions

Partner of success

Manufacturing process

MinerOss® XP and Mem-Lok® RCM/Pliable

The main process steps during manufacture are listed below. Both the product and the production process comply with the required safety standards and requirements of the German regulations, the EU regulations as well as those of the US health authorities (FDA) as well as the safety regulations required for xenogenic processing, including EN ISO 22442-1, EN ISO 22442-2 and EN ISO 22442-3.



Porcine xenogeneic bone graft substitutes

MinerOss® XP Cancellous

MinerOss® XP is an anorganic porcine bone mineral matrix designed for bone grafting. Its high porosity results in an optimal osteoconductivity and also provides adequate space for new bone buildup.

Intra and interparticle space [1]

- The highly porous structure of MinerOss® XP provides substantial space for the growth of new blood vessels and new bone.
- More intra and interparticular space is provided for osteoconduction and new bone formation than with comparable materials.

Rough surface [1]

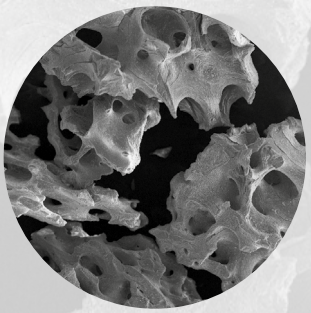
- Promotes cell adhesion and proliferation

Indication-related application options

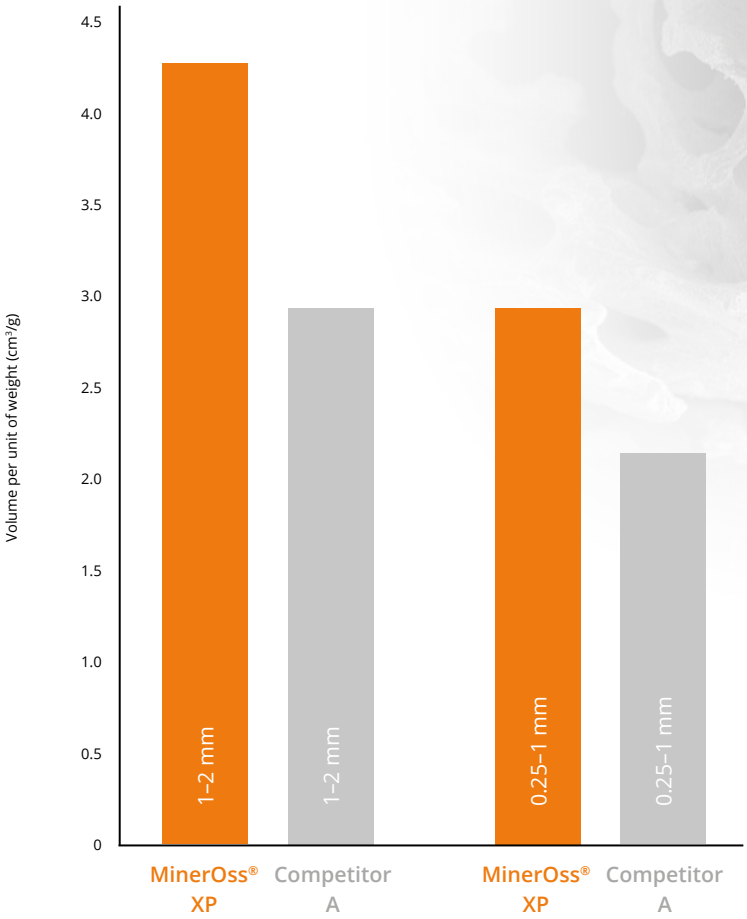
	Periodontal defects	Extraction sockets	Horizontal ridge enhancement	Sinus augmentation	Vertical ridge enhancement	Dehiscence defects	Block graft	Immediate implantation
MinerOss® XP Cancellous	✔ ✔	✔ ✔	✔ ✔	✔ ✔ ✔	✔	✔ ✔	✔	✔ ✔

✔ suitable ✔ ✔ well-suited ✔ ✔ ✔ very well-suited

More space for newly formed bone [1]

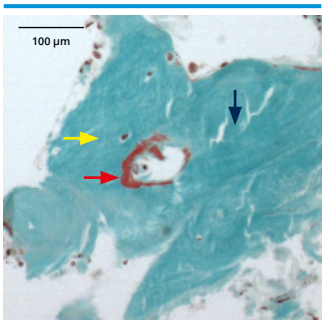


SEM: MinerOss® XP macropores
and micropores resemble human bone.

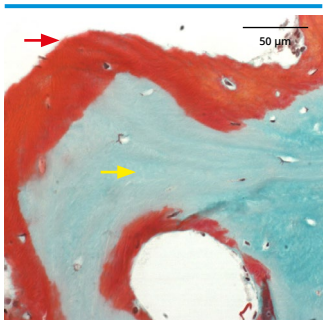


Of the compared materials, MinerOss® XP provides more intra and interparticle space for osteoconduction and formation of new bone [1].

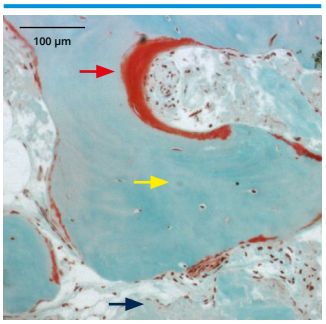
Histologic evaluation of bone healing of adjacent alveolar sockets grafted with bovine xenogeneic bone graft materials and MinerOss® XP six months post-op – integration and bone healing [6]



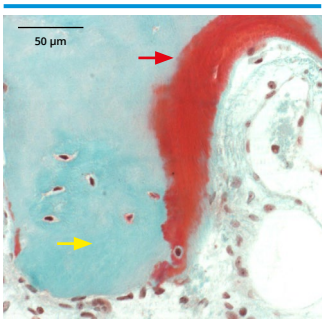
Histologic section of extraction socket grafted with bovine bone graft material
(Trichrome stain X 10):
blue arrow = bone graft material;
yellow arrow = vital bone;
red arrow = newly formed bone (osteoid)



Histologic section of extraction socket grafted with bovine bone graft material
(Trichrome stain X 20):
yellow arrow = vital bone;
red arrow = newly formed bone (osteoid)



Histologic section of extraction socket grafted with porcine bone graft material MinerOss® XP
(Trichrome stain X 10):
blue arrow = bone graft material;
yellow arrow = vital bone;
red arrow = newly formed bone (osteoid)



Histologic section of extraction socket grafted with porcine bone graft material MinerOss® XP
(Trichrome stain X 20):
yellow arrow = vital bone;
red arrow = newly formed bone (osteoid)

Bovine collagen membrane

Mem-Lok® RCM – durable and long-lasting

Mem-Lok® RCM is manufactured from highly purified, type I bovine collagen. Clinicians can be confident that Mem-Lok® RCM will serve as an effective barrier membrane for bone regeneration. Mem-Lok® RCM supports graft stabilization and bone growth by providing soft tissue support and space maintenance over a predictable timeframe. It is manufactured to ensure predictable resorption rates. Due to its *in-vivo* stability, it enables easy handling in demanding indications.

Special handling characteristics [3]

- Membrane only 0.3 mm thick, yet rigid
- Easy to use due to dimensional stability
- Easy placement since membrane is not side-specific
- Potentially reduced treatment time thanks to easy fixation
- Minimal hydration for optimal bio-adaptability

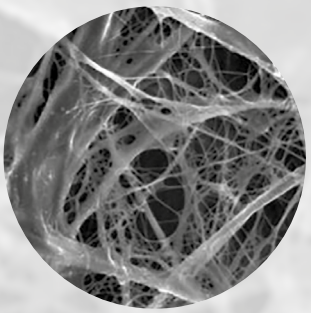
Properties

- Cell-occlusive for supporting bone regeneration
- Protecting the graft area from undesirable soft tissue infiltration during the initial healing phase
- Predictable resorption after 26 to 38 weeks [7] eliminates the need of a removal surgery

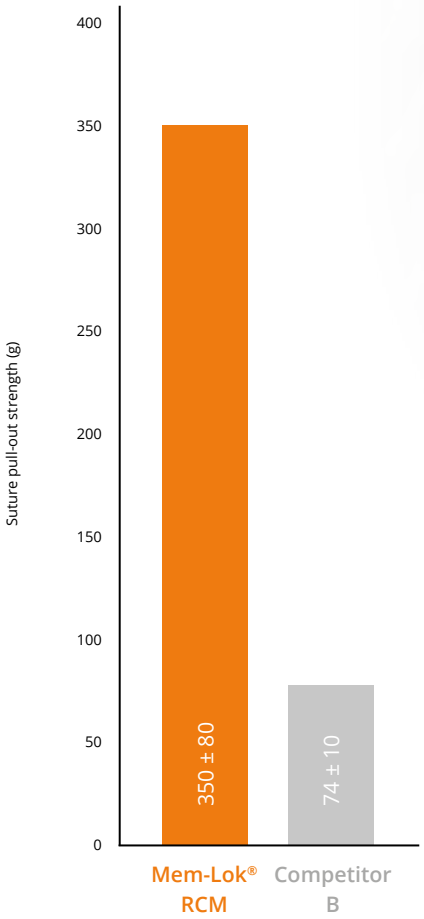
Flexible, to meet clinical needs

- Combined with MinerOss® XP, Mem-Lok® RCM maintains ideal space and long-term cell occlusion for maximum bone volume
- Permeability permits the exchange of essential nutrients during healing
- Easily adapts to whole range of bone defects

High mechanical strength [8]



SEM Mem-Lok® RCM Membrane



Mem-Lok® RCM:
Suture pull-out strength of the collagen membrane – dense fibres provide high mechanical strength [8].

Indication-related application options

	Periodontal defects	Extraction sockets	Horizontal ridge enhancement	Sinus augmentation	Vertical ridge enhancement	Dehiscence defects	Block graft	Immediate implantation
Mem-Lok® RCM	✔ ✔	✔ ✔ ✔	✔ ✔ ✔	✔ ✔	✔ ✔*	✔ ✔ ✔		✔
Mem-Lok® Pliable	✔ ✔ ✔	✔ ✔	✔ ✔	✔ ✔ ✔	✔*	✔ ✔		✔

✔ suitable ✔ ✔ well-suited ✔ ✔ ✔ very well-suited

* The Mem-Lok® RCM membrane is preferred. In case of larger defects, the non-resorbing (form-stable) membrane is required.

Porcine collagen membrane

Mem-Lok® Pliable – versatile and flexible

Mem-Lok® Pliable is a strong, conformable, collagen membrane made of highly purified, porcine tissue. Mem-Lok® Pliable offers flexibility and strength. It is easy to handle and simple to fixate. This barrier membrane supports soft tissue and stabilizes the grafting area. Meticulously manufactured from highly purified, intact, porcine collagen and minimally cross-linked, it is biocompatible and predictably resorbable. It is smoothly adaptable to defects and contours and can easily be repositioned. Due to its high suture pullout strength, it can be firmly anchored to the surrounding tissue. The risk of secondary infection due to BSE (bovine spongiform encephalopathy) is excluded.

Special handling characteristics [5]

- Not side-specific
- Can be placed dry or hydrated
- Does not adhere to gloves or instruments
- Easily repositionable for precise placement
- Simple, easy fixation
- Single layer, intact collagen
- Cell occlusive
- High tear strength

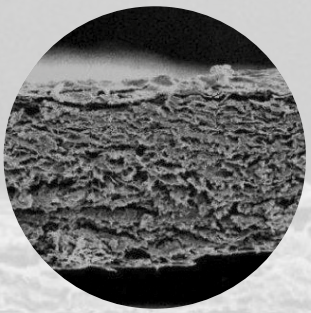
Supports wound healing [5]

- Reduced degree of inflammation and foreign body response confirmed in pre-clinical testing at early timepoints
- Protects the graft area from undesirable soft-tissue infiltration during initial healing phase
- Enables nutrient transfer
- Predictable resorption in 12 to 16 weeks
- Due to slower resorption rate of the compared materials, Mem-Lok® Pliable provides greater initial stability during the crucial weeks of early healing

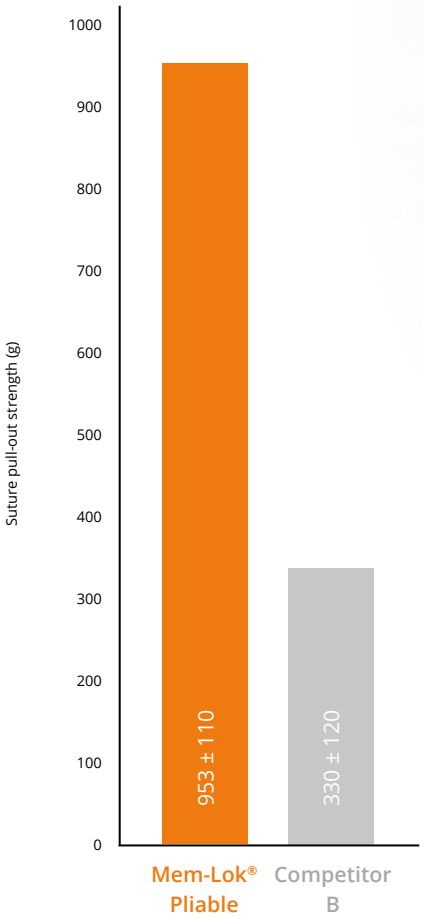
Dependable strength

- Proven biomechanical strength safeguards fixation
- In pre-clinical testing, suture pullout strength was three times higher than a comparable collagen membrane [5].

High mechanical strength [5]



SEM Mem-Lok® Pliable Membrane: not side-specific; dense, uniform single layer [2]



Mem-Lok® Pliable:
Suture pull-out strength of the collagen membrane – dense fibres provide high mechanical strength [8].

Indication-related application options

	Periodontal defects	Extraction sockets	Horizontal ridge enhancement	Sinus augmentation	Vertical ridge enhancement	Dehiscence defects	Block graft	Immediate implantation
Mem-Lok® RCM	✔ ✔	✔ ✔ ✔	✔ ✔ ✔	✔ ✔	✔ ✔*	✔ ✔ ✔		✔
Mem-Lok® Pliable	✔ ✔ ✔	✔ ✔	✔ ✔	✔ ✔ ✔	✔*	✔ ✔		✔

✔ suitable ✔ ✔ well-suited ✔ ✔ ✔ very well-suited

* The Mem-Lok® RCM membrane is preferred. In case of larger defects, the non-resorbing (form-stable) membrane is required.

Auxiliary products

Bone Fixation Screw Kit

Indicated for use in fixation of cortical onlay grafts and meshes and for membrane tenting used in Guided Bone Regeneration (GBR). The kit is compact and conveniently organized for efficient retrieval of instruments and screws. Includes cortical bone drills for both latch-type and friction-grip (FG) handpieces.

Das Bone Fixation Screw Kit includes

- Flexible micro mesh
- Screwdriver body
- Comprehensive instrument set
- Autoclavable screw block with lid
- 24 screws:
  – 6 Micro screws, 1.4 x 8.0 mm
  – 6 Micro screws, 1.4 x 10.0 mm
  – 6 Mini screws, 2.0 x 10.0 mm
  – 6 Mini screws, 2.0 x 12.0 mm

Instruments available for reordering

- Micro screwdriver shaft for screwdriver body
- Micro screwdriver shaft for latch-type handpieces
- Micro drill bit for latch-type handpieces, 1.0 mm
- Mini screwdriver shaft for screwdriver body
- Mini screwdriver shaft for latch-type handpieces
- Mini drill bit for latch-type handpieces, 1.6 mm
- Mini drill bit for handpieces with friction-grip shaft (Ø 2.35 mm), 1.6 x 67.0 mm
- Screwdriver body

Screws available for reordering

- Micro screws, 1.4 x 4.0 mm (pack of 6)
- Micro screws, 1.4 x 6.0 mm (pack of 6)
- Micro screws, 1.4 x 8.0 mm (pack of 6)
- Micro screws, 1.4 x 10.0 mm (pack of 6)
- Micro screws, 1.4 x 12.0 mm (pack of 6)
- Mini screws, 2.0 x 8.0 mm (pack of 6)
- Mini screws, 2.0 x 10.0 mm (pack of 6)
- Mini screws, 2.0 x 12.0 mm (pack of 6)
- Mini screws, 2.0 x 14.0 mm (pack of 6)

Mesh available for reordering

- Micro mesh for Guided Bone Regeneration 24 x 35 mm; 0.1 mm thick

Auxiliary products

Auto Tac Kit

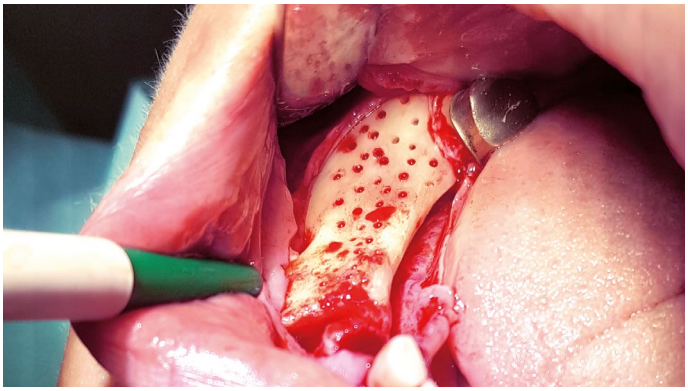
AutoTac is a membrane fixation system that allows you to effectively secure membranes with the push of a button. The proprietary delivery handle drives titanium alloy tacks that stabilize the membrane during the healing process.

Auto Tac Kit includes

- Delivery Handle
- Autoclavable Titanium Tack Cassette (pre-loaded with 21 Titanium Tacks)
- Manual Tack Driver
- Forceps
- Sterilization Tray with cover Handle

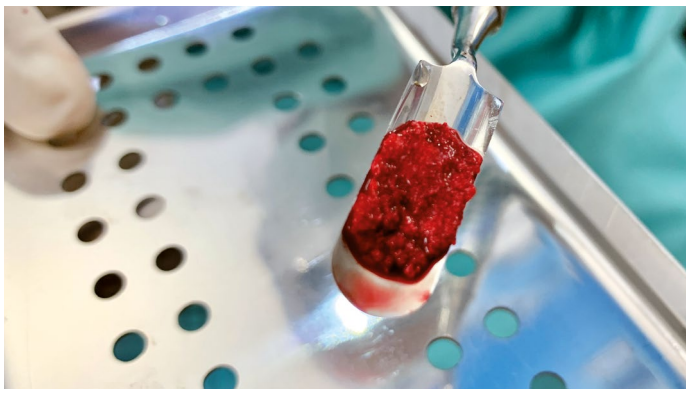
Case studies

Horizontal and vertical augmentation in the lower jaw with MinerOss® XP*

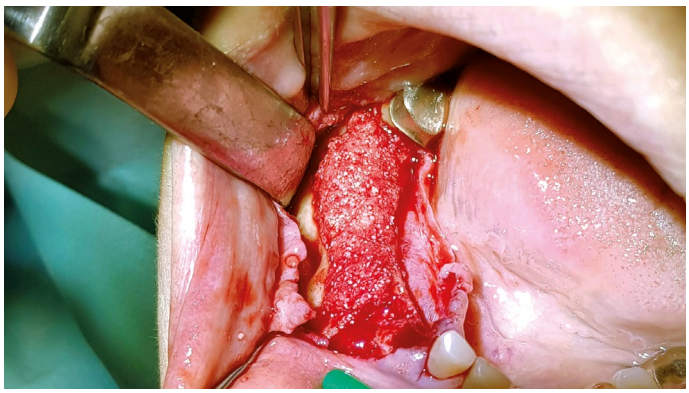


The interdental gap in the 4th quadrant was to be reconstructed with the aid of implants. To create a sufficiently stable implant bed, both horizontal as well as vertical bone augmentation was essential. After exposure of the alveolar bone, it was "freshened".

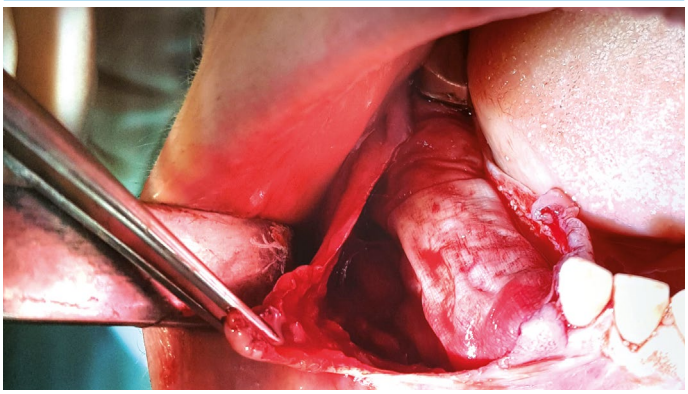
The bone substitute material (MinerOss® XP) was mixed with blood from the surgical site and wetted with liquid L-PRF. Autologous blood therapy not only supports wound healing and tissue regeneration, but also simplifies handling when inserting the bone particles.



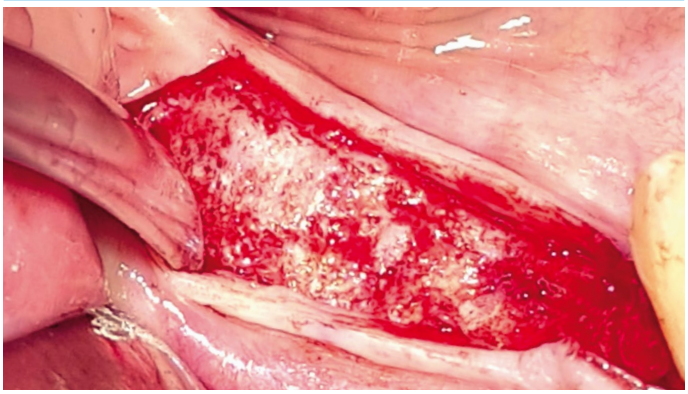
Saturation with liquid L-PRF was performed with a raspatory, by slightly lifting the mixture of blood and bone substitute material from all sides. This resulted in the shape of a "block", which stabilized and coagulated after a short period of time.



These malleable sticky "blocks" could be applied easily to the deficient alveolar bone and modeled. The advantage of this procedure is that a larger area can be augmented as the bone substitute particles are incorporated in the coagulum.



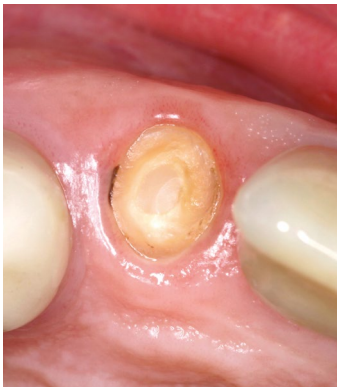
A resorbable barrier membrane (Mem-Lok® Pliable) was inserted. This has a service life of up to 16 weeks and prevents epithelial cells from growing into the augmentation.

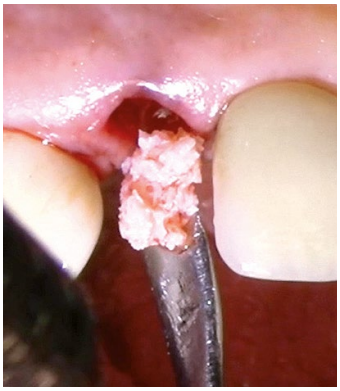


At the time of implant placement (four months after the augmentative measures), the alveolar bone had been clearly widened and was stable. The healthy, newly formed bone tissue formed the perfect basis for reconstruction with implants.

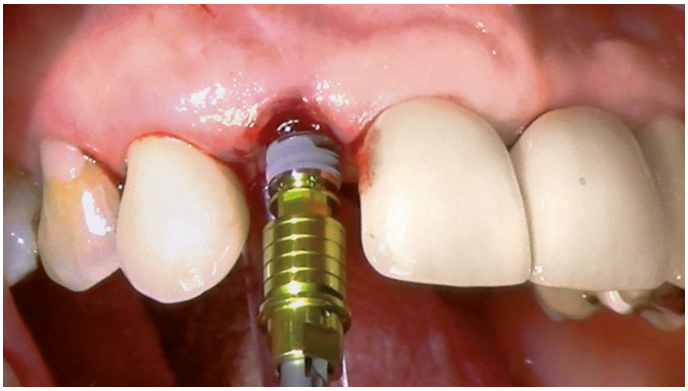
* Dr. Sangeeta Pai, Oldenburg

Soft tissue thickening with NovoMatrix™ – the pouch technique*

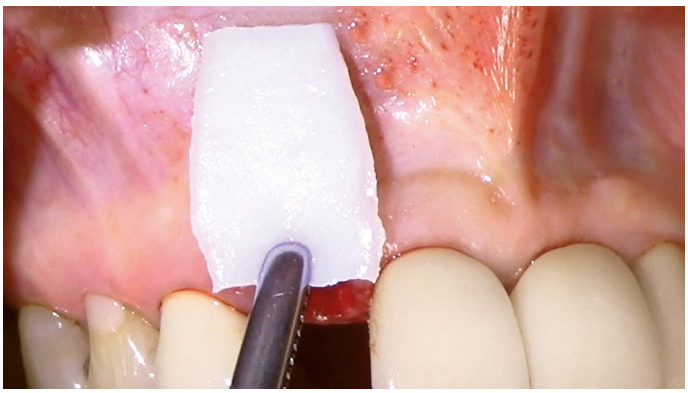




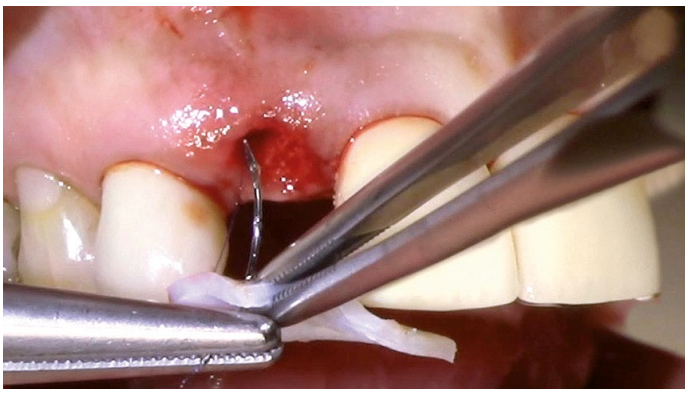
Initial situation: referral for an immediate restoration due to root remnants which were not worth preserving. After removal of the root and cleaning of the alveolus, bone replacement material was inserted to stabilize the facial lamella.



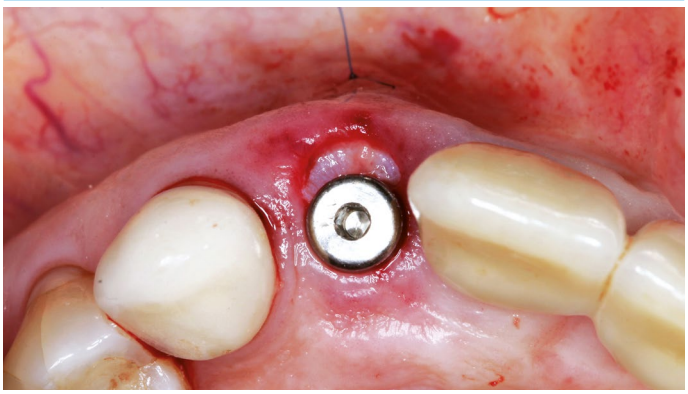
A CAMLOG® PROGRESSIVE-LINE Implant was placed prosthetically oriented into the palatal alveolar wall. At over 30 Ncm, primary stability was sufficient for the planned immediate restoration.



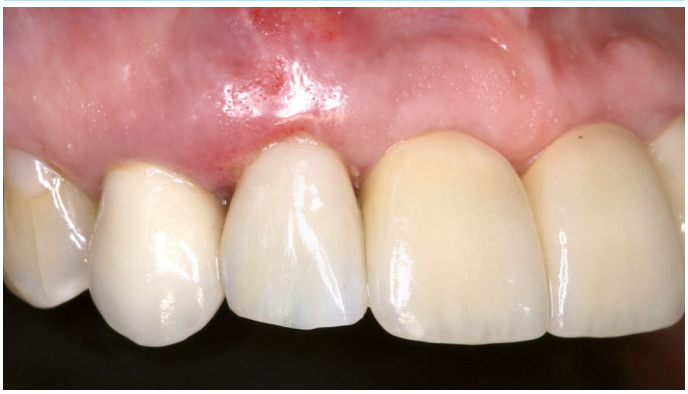
To thicken the vestibular mucosa and achieve attached soft tissue, NovoMatrix™ was cut to fit the defect size.



Using the crestal access, a pouch was prepared up to the mobile mucosa without a vertical incision. The NovoMatrix™ was pierced and pulled into the cavity using a suture.



The tear-resistant matrix was fixed deep in the vestibulum with a button suture and adapted to the alveolar bone. A gingiva former supported the tissue up to insertion of the temporary immediate restoration.



Six weeks after the surgical procedure, the peri-implant tissue was stable and the surgical site had almost completely healed. The definitive, palatally screw-retained hybrid abutment crown could be placed.

* Dr. Roman Beniashvili, Schorndorf

Product overview

Bone graft substitutes

MinerOss® XP Cancellous (porcine bone graft substitute)

Art. No.	Volume	Particle size
MINXP-CAN0.5SM	0.5 cm^3	250–1000 µm
MINXP-CAN1.0SM	1.0 cm^3	250–1000 µm
MINXP-CAN2.0SM	2.0 cm^3	250–1000 µm
MINXP-CAN4.0SM	4.0 cm^3	250–1000 µm
MINXP-CAN1.0LG	1.0 cm^3	1000–2000 µm
MINXP-CAN2.0LG	2.0 cm^3	1000–2000 µm

MinerOss® XP Cancellous Syringe (Applicator)

Art. No.	Volume	Particle size
MINXP-SYR0.5	0.5 cm^3	250–1000 µm

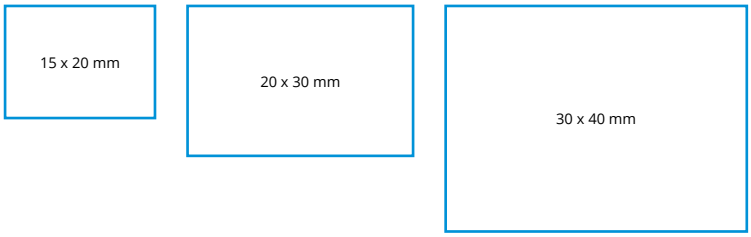
Collagen membranes

Mem-Lok® RCM (bovine collagen membrane)

Art. No.	Product size
RCM-ML1520	15 x 20 mm
RCM-ML2030	20 x 30 mm
RCM-ML3040	30 x 40 mm

Mem-Lok® Pliable (porcine collagen membrane)

Art. No.	Product size
PBLE-ML1520	15 x 20 mm
PBLE-ML2030	20 x 30 mm
PBLE-ML3040	30 x 40 mm



Product overview

Auxiliary Products

Auxiliary products

Bone Fixation Screw Kit

Art. No.	Contents
160-900	Micro mesh, screwdriver body, instrument set, screw block, screws

Instruments

Art. No.	Article
BS-MCSSFT-HND	Micro screwdriver shaft for screwdriver body
BS-MCSSFT-ANG	Micro screwdriver shaft for latch-type handpieces
BS-1MCDB-ANG	Micro drill bit for latch-type handpieces, 1.0 mm
BS-MNSSFT-HND	Mini screwdriver shaft for screwdriver body
BS-MNSSFT-ANG	Mini screwdriver shaft for latch-type handpieces
BS-16MMDB-ANG	Mini drill bit for latch-type handpieces, 1.6 mm
BS-16X67MDB-STR	Mini drill bit for handpieces with friction-grip shaft (Ø 2.35 mm), 1.6 x 67.0 mm
BS-SDRIVER	Screwdriver body

Screws

Art. No.	Article	Pack size
BSV-14X4	Micro screws, 1.4 x 4.0 mm	Pack of 6
BSV-14X6	Micro screws, 1.4 x 6.0 mm	Pack of 6
BSV-14X8	Micro screws, 1.4 x 8.0 mm	Pack of 6
BSV-14X10	Micro screws, 1.4 x 10.0 mm	Pack of 6
BSV-14X12	Micro screws, 1.4 x 12.0 mm	Pack of 6
BSV-2X8	Mini screws, 2.0 x 8.0 mm	Pack of 6
BSV-2X10	Mini screws, 2.0 x 10.0 mm	Pack of 6
BSV-2X12	Mini screws, 2.0 x 12.0 mm	Pack of 6
BSV-2X14	Mini screws, 2.0 x 14.0 mm	Pack of 6

Mesh

Art. No.	Article
BS-MMESH	Micro mesh for Guided Bone Regeneration 24 x 35 mm; 0.1 mm thick

Science

It's the cells that make the decision

Functionality of biomaterials results from their optimal biological interactions with tissue cells. Bone is a structure difficult to duplicate. Research in tissue engineering, especially in nano topography, can lead to improved biomaterials. There are numerous biomaterials available, some of natural origin, others of synthetic origin. When choosing a biomaterial, many factors come into play next to functionality. From a biological point of view, the ideal biomaterial should promote formation of a stable blood coagulum. It should be functional, biocompatible, and it should favor healing processes.

Autogenous bone is still the gold standard in grafting. However, it is linked to higher costs, longer treatment times and it requires an additional surgical procedure possibly leading to increased donor site morbidity. This needs to be considered when carrying out augmentation procedures. Therefore, the possibilty of reducing potential complications is an important factor. Easy handling of the materials is of advantage for the clinician. Aside from these decisive factors, it must not be forgotten that bone augmentation surgery is often performed as a part of dental implant surgery. Therefore, different biological aspects should be considered when choosing biomaterials.

Comparative studies have shown that different biomaterials can be safely used [7]. The needs and preferences of the treating clinician play as important a role as the indication, the requirements of the patient, as well as time and costs. In the end, selection of the appropriate biomaterial must be made with the knowledge of its properties and its clinical outcome. The goals are always predictable results and clinical success.

Conclusion: Prior to using a biomaterial, it is recommended to balance and consider the biological interaction between the biomaterial and the endogenous cells [24] – it's the cells that make the decision.

References

[1] Data on file, Shu-Thung Li, Ph. D. et al.: Isolation and Characterization of a Porous Carbonate Apatite From Porcine Cancellous Bone. Science, Technology, Innovation, Aug. 2014: 1–13.

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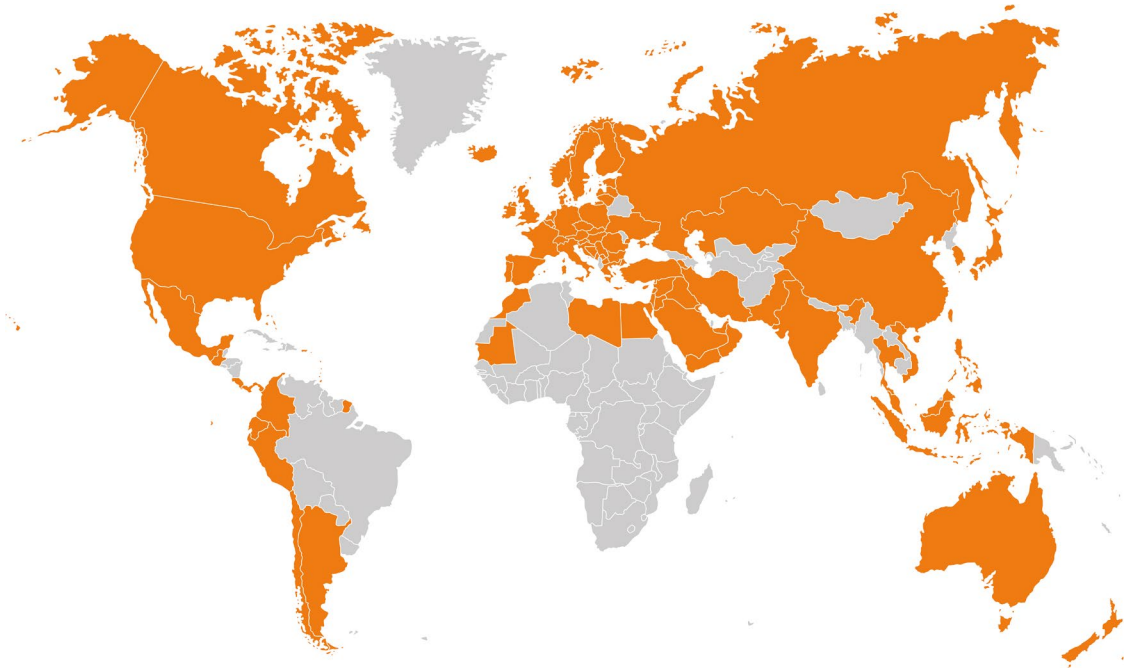

Headquarters
CAMLOG Biotechnologies GmbH | Margarethenstr. 38 | 4053 Basel | Switzerland
Phone +41 61 565 41 00 | Fax +41 61 565 41 01 | info@camlog.com | www.camlog.com

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