VET

IXOBONE®

BIOMATERIALS

BIOMIMETIC | OSTEOSTIMULATIVE | STRENGTH | READY TO USE | EXCELLENT HANDLING

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The Swiss Bone Architect

Bone Composition

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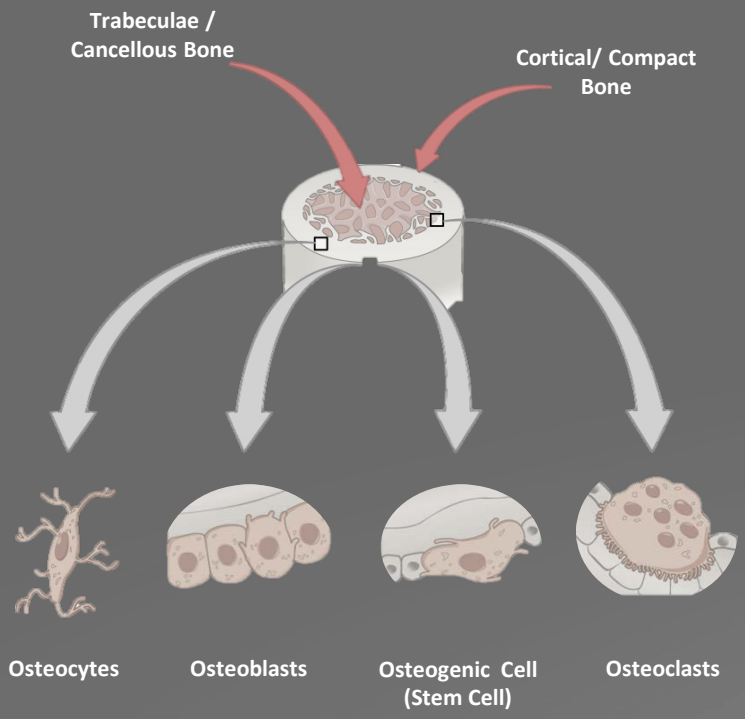

The two major components of bone are:

- Calcium phosphate
- Collagen

Four types of cell are present in bone:

- Osteoblasts – synthesise and deposit new bone matrix
- Osteocytes – maintains bone tissue
- Osteoclasts - resorb bone by direct chemical and enzymatic attack
- Undifferentiated stem cells transform into osteoblasts under appropriate stimuli

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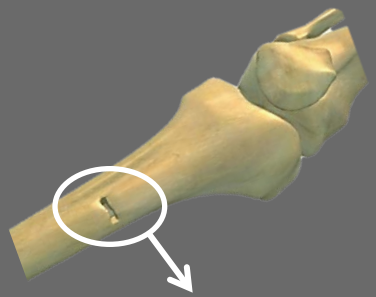
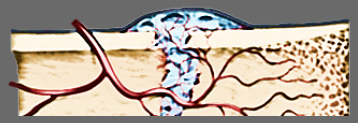
Bone Repair



Stage 1: Inflammatory molecules present in the blood clot recruit cells essential for the repair process.

IXOBONE biomaterials can be mixed with bone marrow aspirate or autologous bone.

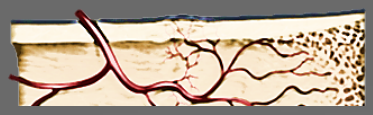


Stage 2: Connective tissue infiltrates into the defect forming a bridge between the bone surfaces. New blood vessels form and penetrate the defect.

IXOBONE biomaterials act as a bridge between the bone surface, encouraging rapid cell colonisation and angiogenesis

Stage 3: Osteoblasts form woven bone fully bridging the gap.

IXOBONE biomaterials act as scaffolds both promoting and supporting new bone formation.



Stage 4: The new bone is remodelled replacing woven bone with cortical bone.

IXOBONE biomaterials will be resorbed or remodelled overtime.

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IXOBONE® Product Range

IXOBONE® HA/TCP
BLOCKS/DISCS/WEDGES/GRANULES

COMPOSITION:	60% HA, 40% TCP
POROSITY:	81%
MACROPOROSITY:	200 µm – 800 µm
FULLY INTERCONNECTED:	YES
MICROPOROSITY:	1.0 µm – 10 µm
STRENGTH:	5.5 to 7.5 Mpa
STERILITY:	Gamma irradiated

IXOBONE® PASTE

HIGH SURFACE AREA:	Approx. 100 m^2/g
HYDROXYAPATITE CONTENT:	38%
HA NANOTECHNOLOGY:	30-50 nm particles
PRODUCT VOLUME:	0.5 cc to 15 cc
STERILITY:	Gamma irradiated

IXOBONE® PUTTY

HYDROXYAPATITE CONTENT:	38%
HIGH SURFACE AREA:	100 m^2/g
HA NANOTECHNOLOGY:	30-50 nm particles
MICRO-SCAFFOLDS CONTENT:	16.5%
GRANULAR MICRO-SCAFFOLDS:	0.5-1.0 mm
PRODUCT VOLUME:	0.5 cc to 15 cc
STERILITY:	Gamma irradiated

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IXOBONE® Product Range
Technical Overview

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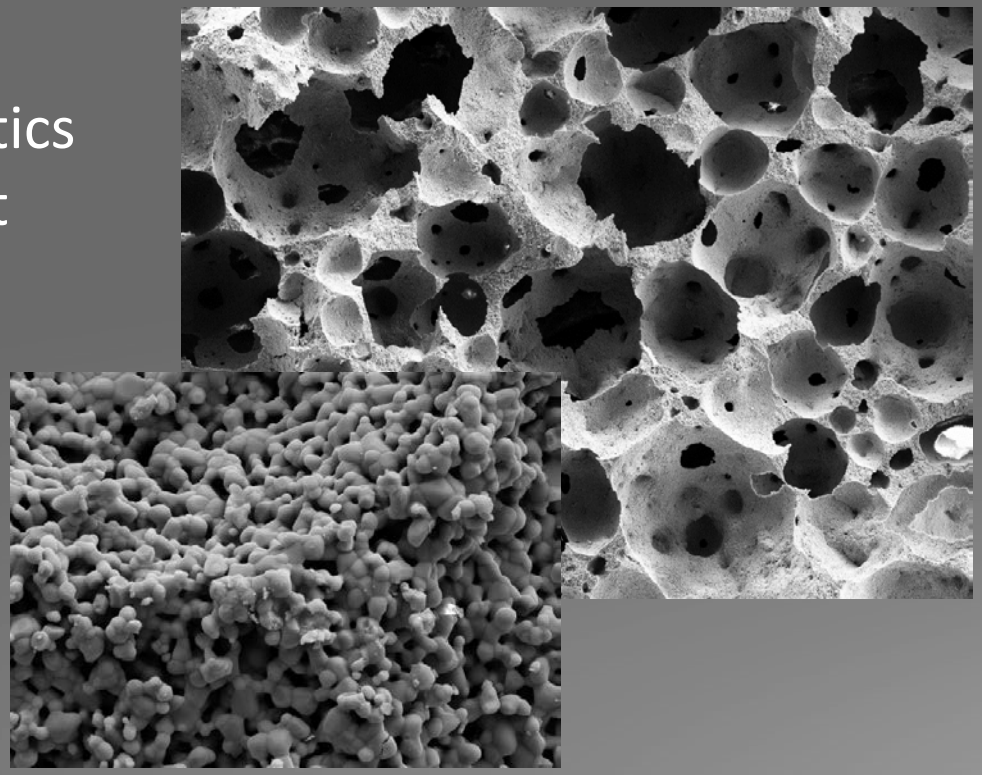
IXOBONE® HA/TCP

- High Porosity
- Physico-chemical characteristics tailored for maximum benefit
- Interconnected pores
- Excellent Integral Strength
- Resorbable
- Osteoconductive



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IXOBONE® HA/TCP

Indications for Use

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IXOBONE® HA/TCP – Features

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- Similarity of the internal structure to that of cancellous bone
- Exceptional porosity versus strength ratio due to proprietary technology
- Pre-shaped in standard sizes, sterile and easy to handle
- Greater interconnected structure than in other synthetic products
- Both macro and micro porosity
- High integral strength

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IXOBONE® HA/TCP – Product Benefits

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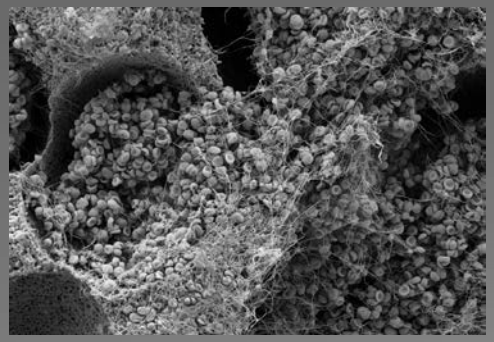
- Easy to use
- Blocks and wedges can be easily cut and shaped to fit the defect
- Can be soaked with blood or bone marrow aspirate
- Granules can be mixed with autologous bone
- No risk of disease transmission
- Synthetic - available in unlimited quantities
- May eliminate the need for the harvesting of autologous bone



SEM showing IXOBONE® HA/TCP soaked with blood

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IXOBONE® HA/TCP – Instructions for Use

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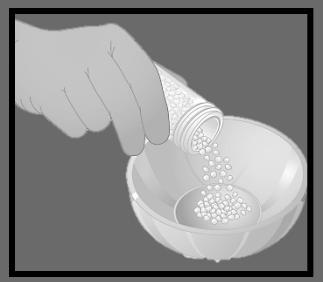
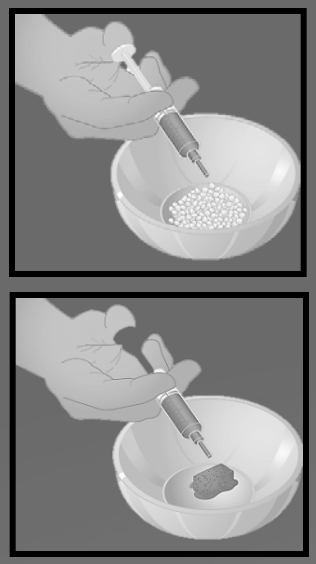
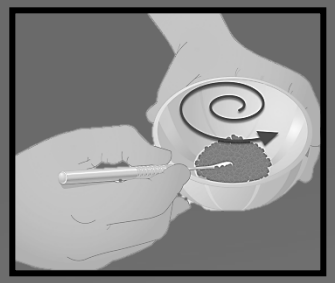


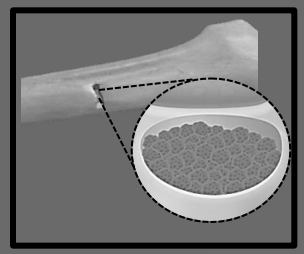
Step 1: Remove product from packaging

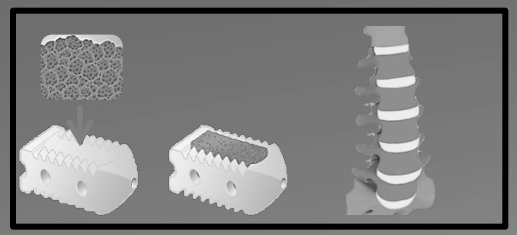


Step 2 (optional): The implant may be mixed with saline, blood, bone marrow aspirate or autograft



Step 3: Ensure product is fully soaked





Step 4: Fill the defect with the bone graft ensuring contact with existing healthy bone. Close the wound

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IXOBONE® HA/TCP – Contraindications include:

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- Must **not** be used to provide structural support or to gain screw fixation
- Existing acute or chronic infections
- Severe vascular, neurological, degenerative disease or uncontrolled diabetes
- Hypercalcemia, abnormal calcium metabolism
- Inflammatory bone disease or malignant tumours
- Severely impaired renal function

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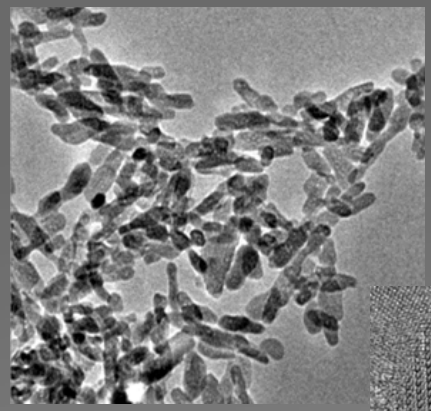
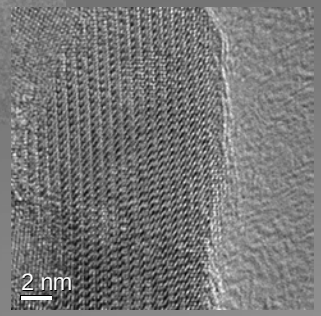
IXOBONE® PASTE

- 30 - 50nm hydroxyapatite particles
- Ultra-high surface area (~100M^2/g)
- Easy to use injectable formulation
- Readily resorbable
- Osteostimulative





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IXOBONE® PASTE

Indications for Use

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IXOBONE® PASTE - Features

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- Mouldable/injectable
- Sticky consistency maximises the bone-implant interface
- Ultra-high surface area – adsorbs the biomolecules essential for bone repair
- Osteostimulative effect
- Highly resorptive nature results in locally elevated levels of Ca^{+} and PO_4^{-} ions encouraging bone regeneration

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IXOBONE® PASTE - Product Benefits

VET

- Ready to use
- Delivery device allows for application directly into the defect
- Can be mixed with bone marrow aspirate and/or autologous bone
- No risk of disease transmission
- Available in unlimited quantities
- May eliminate the need for the harvesting of autologous bone and donor site morbidity

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IXOBONE® PASTE – Instructions for Use

VET

Step 1: Remove product from packaging and unscrew cap

Step 2: Securely screw the most appropriate cannula onto syringe

Step 3: Inject product directly into the defect site

Step 4: Remove any remaining product from the cannula using the clearance tool

Step 5: Ensure the defect is fully filled. Close the wound

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IXOBONE® PASTE – Contraindications include:

VET

- Must **not** be used to provide structural support or to gain screw fixation
- Existing acute or chronic infections
- Severe vascular, neurological, degenerative disease or uncontrolled diabetes
- Hypercalcemia, abnormal calcium metabolism
- Inflammatory bone disease or malignant tumours
- Severely impaired renal function

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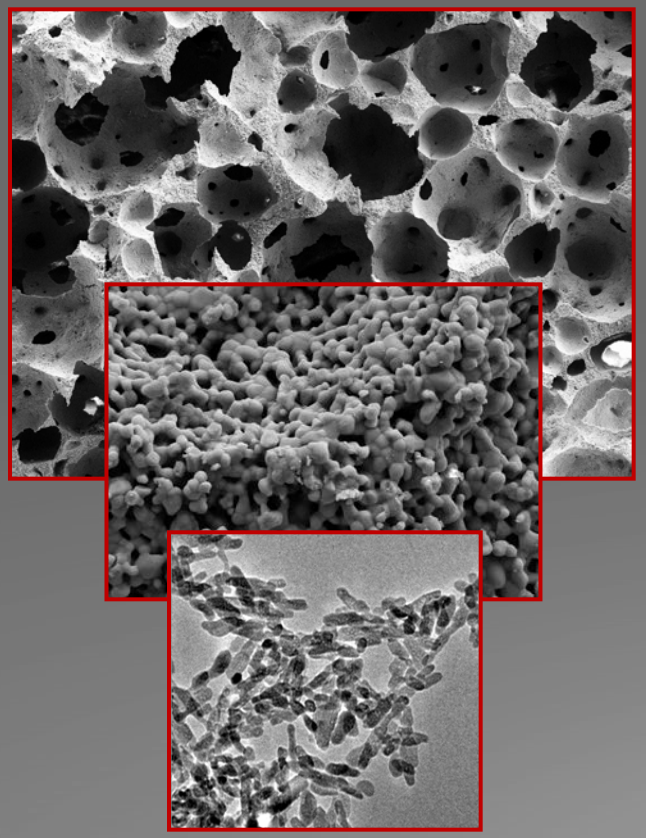
IXOBONE® PUTTY

- Easy to use injectable putty
- Positive osteostimulative effect
- Multi-phasic regenerative activity
- Stratified resorption provides longer term support during bone formation and remodeling phases



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IXOBONE® PUTTY

Indications for Use

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IXOBONE® PUTTY - Features

VET

- Synthetic mix of hydroxyapatite/tri-calcium phosphate granules in an osteostimulative carrier
- Delivery device allows for application directly into the defect
- Non-setting formula
- Sticky formula provides excellent contact with host bone
- Stratified resorption at a controlled rate

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IXOBONE® PUTTY - Product Benefits

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- Ready to use – putty-like consistency for injection directly into defect site
- Additive free
- Synthetic, sterile and reliable alternative to autograft or allograft
- Resorption rate providing structural support throughout the regenerative process and maintaining bone volume
- Can be mixed with bone marrow aspirate and/or autologous bone

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IXOBONE® PUTTY – Instructions for Use

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Step 1: Remove product from packaging and unscrew cap

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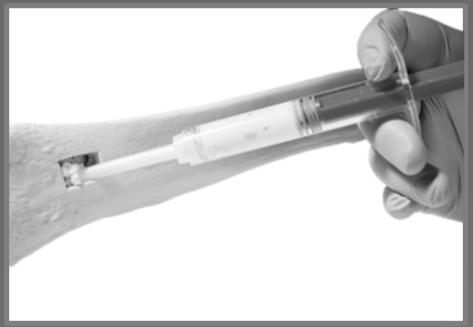

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Step 5: Ensure the defect is fully filled. Close the wound

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