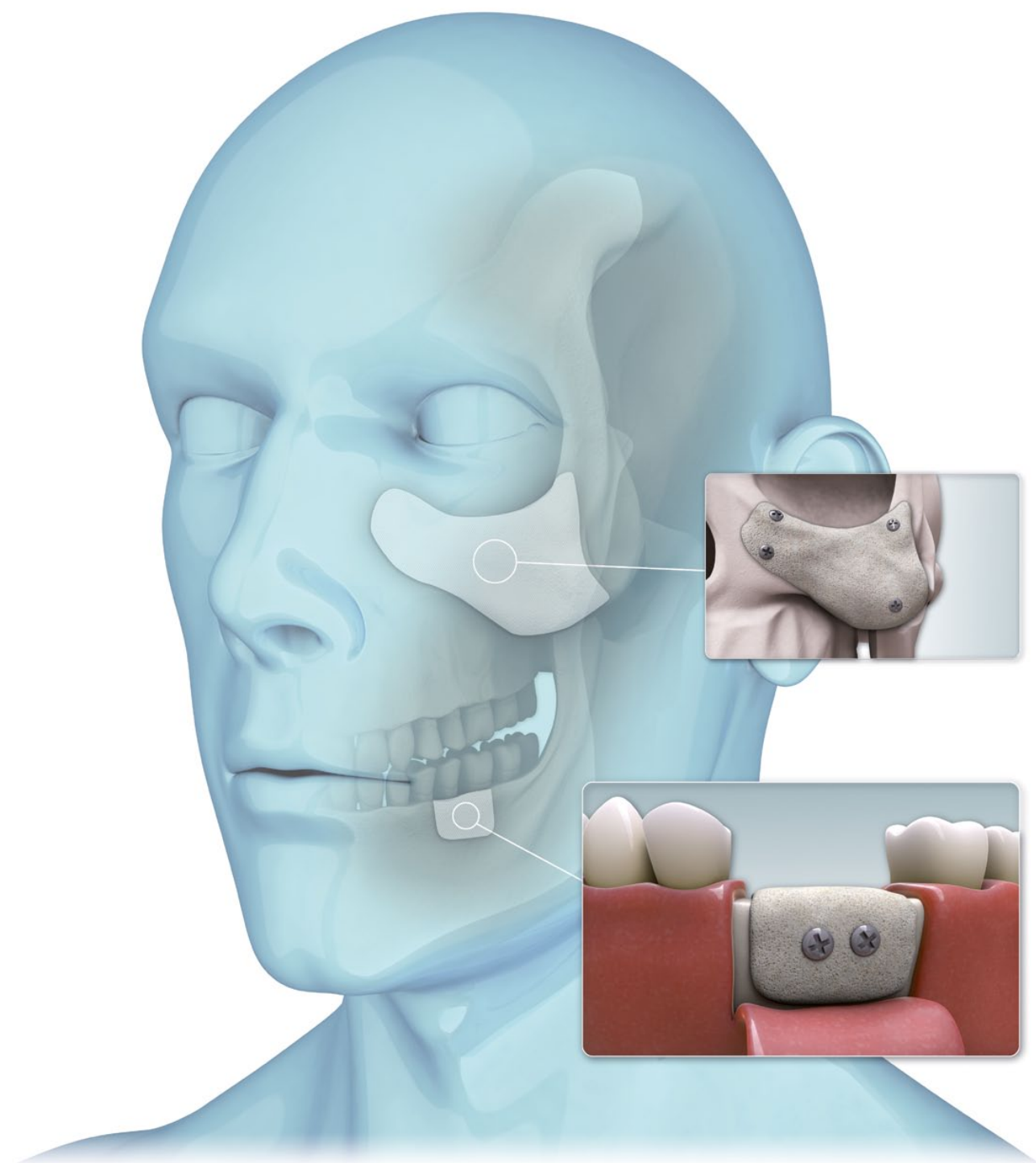


smartbone®

THE NEXT FRONTIER OF BONE REGENERATION

where Technology meets Nature

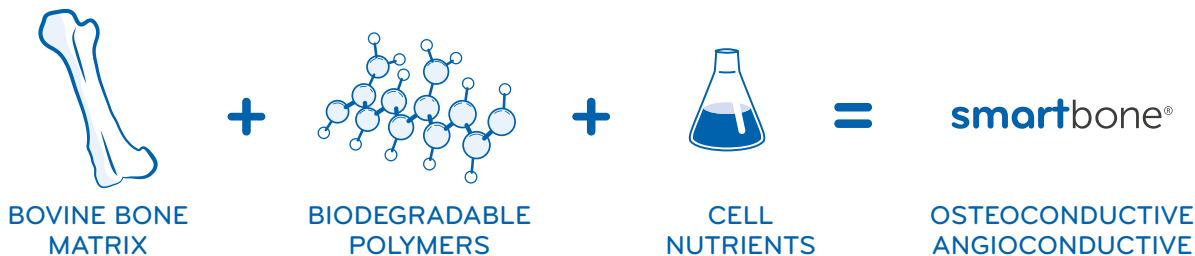


 **swiss made** 

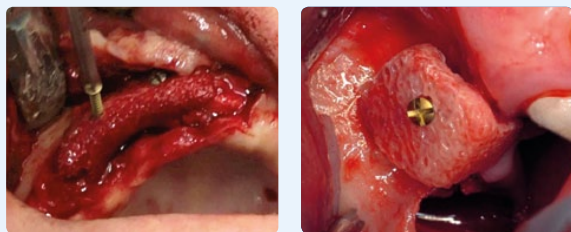
smartbone®

SmartBone is a new **hybrid bioactive** bone substitute specifically developed for **bone regeneration** in **reconstructive surgery**.

SmartBone is produced by combining a bovine mineral bone matrix with bioactive resorbable polymers and cell nutrients. This new concept of composite biomaterial promotes a quick growth of the patient's cells into SmartBone while its biopolymers degrade, providing perfect **integration** and **osteogenesis**.



BIODEGRADABLE POLYMERS



Give SmartBone:

- high loading resistance
- high volumetric stability (>95%); the polymers protect the bone from early resorption
- high tenacity to screws fixation

CELL NUTRIENTS

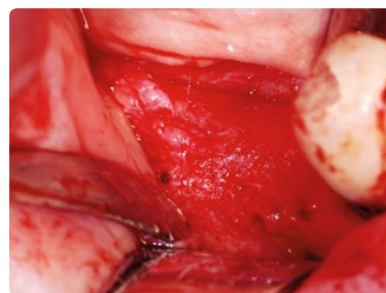
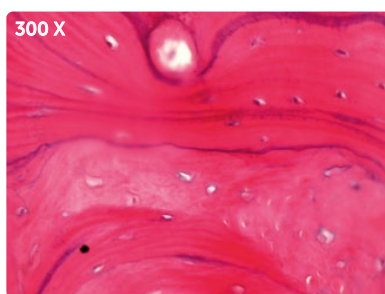


Help SmartBone to:

- promote blood cell adhesion and colonization
- guarantee a high hydrophilicity thus enhancing the chemical cascade of signals that promotes the osteogenic process

smartbone®
PROMOTES

OSTEOINTEGRATION and VASCULARIZATION



Clinical case: 4 months after surgery

SmartBone is completely resorbed and replaced by the patient's own bone within 1-2 years: this excellent outcome grants a vital, functional bone-implant integration. SmartBone is extremely biocompatible and is fully compliant with **ISO 10993-1** requirements.

PERFECT FOR:

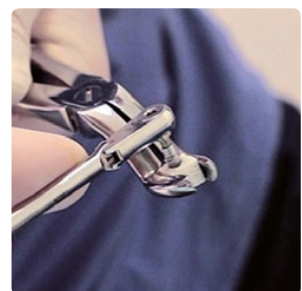
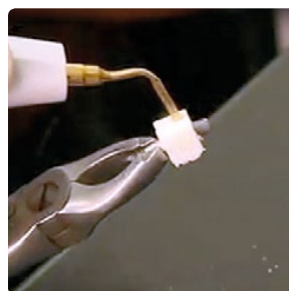
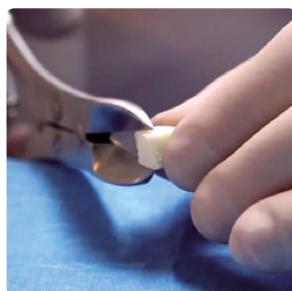
- Sinus lift procedures
- Intrabony defects
- Peri-implant defects
- Socket preservation
- Vertical and horizontal bone augmentations
- Craniofacial and maxillofacial applications
- Custom-made applications

FROM CHIPS TO CUSTOM-MADE GRAFTS



ADVANTAGES OF SMARTBONE BLOCKS:

- Easy dust free shaping with any type of surgical tool (bone cutter, drill, piezo)
- Resistant to extreme loads and to heavy surgical maneuvering
- Far better stability of the augmented bone graft vs the loose granules
- Strongly osteogenic
- Bigger defects do not need autologous bone, thus reducing the patient's morbidity
- No resorption: the polymeric coating protects the graft during the first healing/osteointegration period
- Readily absorb blood

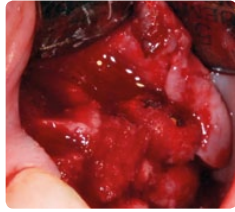


smartbone® IN ACTION

Filling of a bone gap after extraction and vertical increase using SmartBone Block



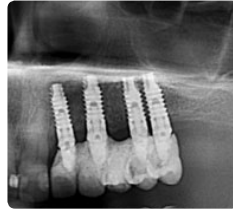
Patient's initial conditions



Insertion of a cone shaped SmartBone in 23 and placement of Microchips (1 - 2 mm) in position 22



4 months: the graft has maintained the volume and an excellent bone formation permits the placement of four implants



2 years: a complete bone maturation is achieved



3 years: the bone surrounding the implants has a very good quality and density

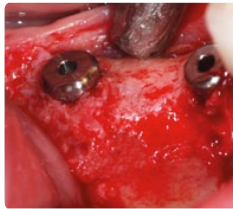
Lateral augmentation in 45-46 using SmartBone Block



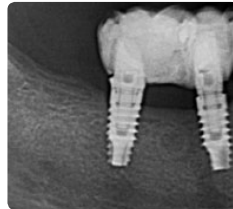
Patient's initial conditions



Due to its high fixation tenacity, the block is fixed with two osteosynthesis screws to obtain a perfect primary stability



4 months: perfect three-dimensional bone reconstruction accompanied by an adequate bone density for the placement of two implants



2 years: a good osteointegration is achieved



3 years: the implants are surrounded by excellent bone quality

Large bone loss due to fracture treated using SmartBone Granules (2-4 mm)



Patient's initial conditions



Filling of the defect with SmartBone Granules for bone augmentation and fast blood absorption



5 months: good bone regeneration for implant placement



8 months: good osteointegration around the implant



2 years: perfect bone maturation and stable bone volume

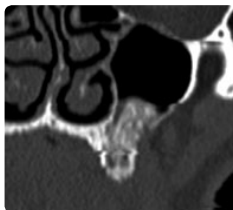
Sinus lift and vertical bone augmentation using SmartBone Microchips (1-2 mm)



Patient's initial conditions



SmartBone Microchips application both for sinus lift and vertical bone augmentation



5 months: average bone density 500 HU, adequate for the placement of three implants



2 years: complete osteointegration and maturation of soft and hard-tissues

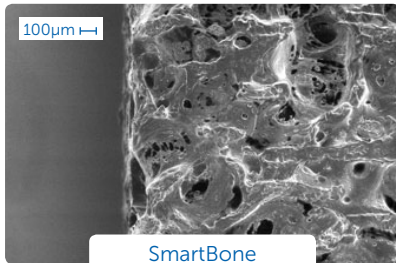


3 years: a very good bone quality around the implants ensures a perfect stability

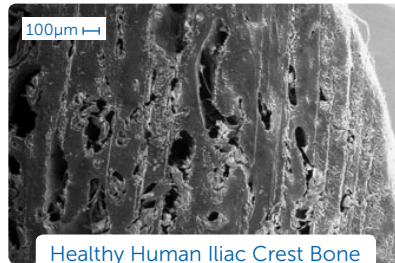
KEY FEATURES

OPEN POROSITY AND MICROSTRUCTURE

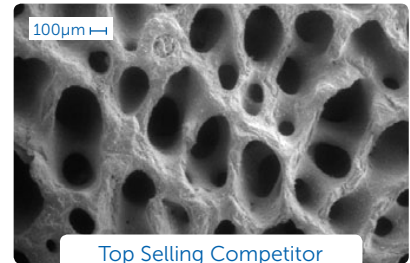
The microstructure of SmartBone's composite matrix strongly resembles the human bone in terms of open and mid-sized 27% porosity.



SmartBone



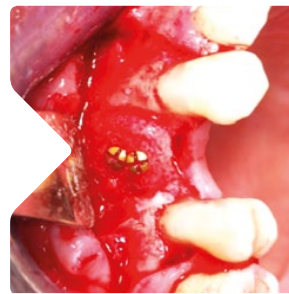
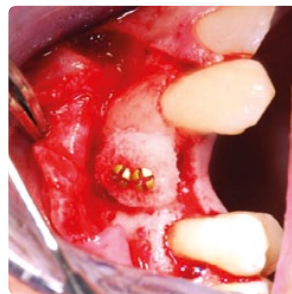
Healthy Human Iliac Crest Bone



Top Selling Competitor

HIGH MECHANICAL PERFORMANCES

SmartBone has a rigid pseudoelastic behaviour. It bears 3 times the competitor's maximum load and is 4 times more rigid.



HIGH HYDROPHILICITY

Thanks to its microcomposition, SmartBone quickly reaches an av. 38% w/w blood swelling, thereby allowing a robust osteointegration.

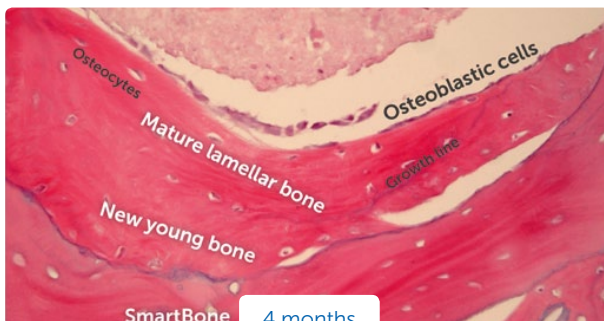


6 months after surgery

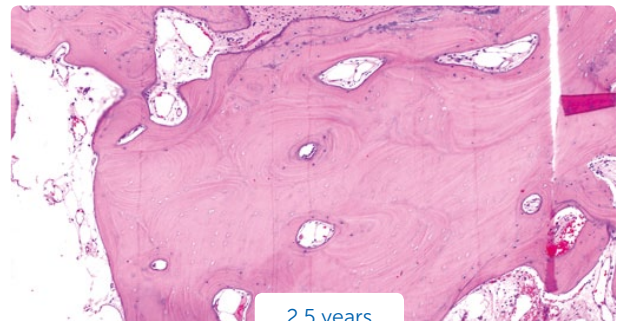
HIGH TISSUE INTEGRATION

SmartBone's microstructure and composition favour cell colonization.

The electronic microscopy analysis of in vitro cell colonization tests evidenced the presence of wide and well-structured cell formations inside SmartBone.



SmartBone 4 months



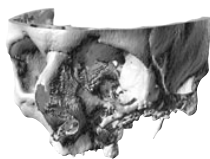
2.5 years

SmartBone is progressively replaced by new young bone: osteoblasts are visible both in the active and in the quiescent state, when, after having formed mature lamellar bone, they become osteocytes, as evidenced inside the lacunae. After 2.5 years the graft has been completely replaced and the osteogenesis has formed a lamellar bone with cement lines; there is evidence of a great amount of osteocytes inside the lacunae and of a good angiogenesis.

SmartBone combined with the native bone forms an osteoinductive system.

smartbone[®] on demand[™]

Custom made grafts for oral and maxillofacial reconstructive surgery
are only four steps away



1.
**DIAGNOSIS
PRESCRIPTION**

The doctor sends the patient's CT Scan with a brief clinical description



2.
**DIGITAL
PLANNING**

IBI designs the graft in accordance with the doctor's prescriptions



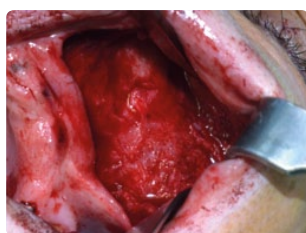
3.
**CUSTOM MADE
BONE GRAFT**

IBI produces the custom made graft based on the stl file



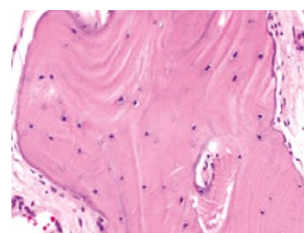
4.
SURGERY

The doctor receives the graft and is ready for surgery



2.5 YEARS AFTER SURGERY

the graft has been completely replaced and a **mature lamellar bone** has formed



SMARTBONE ON DEMAND GUARANTEES YOUR SUCCESS:

- custom-made to the specific needs of each of your patients
- ensures a perfect contact between the graft and the recipient site for improved integration
- ensures a precise creation of the desired shape
- helps you to resolve complex situations
- saves your time during surgery
- reduces your patient's risks
- helps you to reduce surgical costs



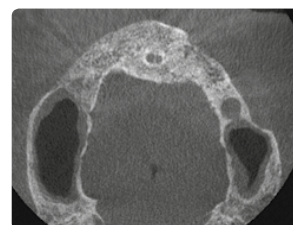
Digital planning



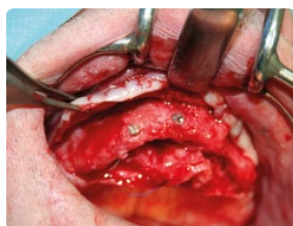
Surgery



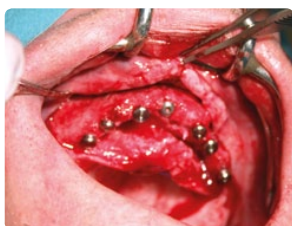
Surgery



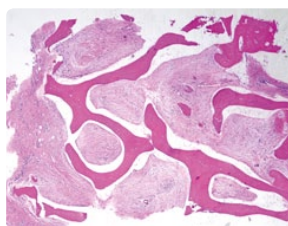
CT scan
8 months



Post-op
8 months



Implant placement
8 months



Histological analysis
8 months



Follow up
1 year

smartbone® CATALOGUE

SmartBone Microchips	0.25 - 1 mm 0.5 cc (~0.3 g)	SMC010050
	0.25 - 1 mm 1 cc (~0.6 g)	SMC010100
	0.25 - 1 mm 2 cc (~1.2 g)	SMC010110
	0.25 - 1 mm 5 cc (~3 g)	SMC010190
	1 - 2 mm 1 cc (~0.38 g)	SMC010221
	1 - 2 mm 2 cc (~0.75 g)	SMC010200
	1 - 2 mm 4 cc (~1.5g)	SMC010201



SmartBone Granules	2 - 4 mm 5 cc (~1.6g)	SMC010300
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SmartBone Block	7 x 7 x 7 mm	SMB011005
	10 x 10 x 10 mm	SMB011010
	10 x 10 x 20 mm	SMB011020
	10 x 20 x 20 mm	SMB011030
	14 x 12 x 6 mm	SMB011110
	14 x 12 x 7 mm	SMB011120
	14 x 12 x 8 mm	SMB011130
	14 x 12 x 9 mm	SMB011140
	14 x 12 x 10 mm	SMB011150
	16 x 14 x 6 mm	SMB011310
	14 x 12 x 12 mm	SMB011160
	14 x 12 x 16 mm	SMB011170
	14 x 12 x 20 mm	SMB011180
	14 x 12 x 24 mm	SMB011190
	14 x 12 x 24mm	SMB011210
	15 x 30 x 20 mm	SMB011220
	15 x 30 x 30 mm	SMB011230
	15 x 30 x 40 mm	SMB011240
	15 x 30 x 50 mm	SMB011250
	16 x 14 x 7 mm	SMB011320
	16 x 14 x 8 mm	SMB011330
	16 x 14 x 9 mm	SMB011340



SmartBone Plate	3 x 25 x 15 mm	SMP013010
	3 x 10 x 10 mm	SMP013030
	4 x 10 x 10 mm	SMP013040

SmartBone Wedge	35 x 22 x 5 mm	SMW014010
	35 x 22 x 8 mm	SMW014020
	35 x 25 x 10 mm	SMW014030
	35 x 25 x 12 mm	SMW014040
	40 x 25 x 12 mm	SMW014050
	40 x 25 x 14 mm	SMW014060



SmartBone Cylinder	Ø 11 x h. 20 mm	SMC012010
	Ø 12 x h 20 mm	SMC012020
	Ø 14 x h 20 mm	SMC012030
	Ø 11 x h 10 mm	SMC012050
	Ø 14 x h 14 mm	SMC012060



SmartBone Rod	35 x 4 x 3 mm	SMR015010
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SmartBone Special U Shape	15 x 6 x 4 mm	SMS016010
	15 x 7 x 3.5 mm	SMR016020

SmartBone Special L Shape	15 x 7 x 6 mm	SMS016210
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SmartBone Special C Shape	Ø 8 x h 12 mm	SMS016110
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All products in this page are  0434 marked

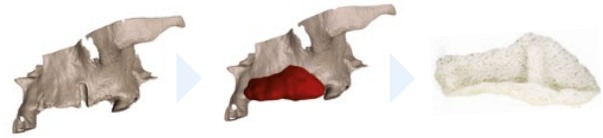
The codes in blue are available immediately.
The codes in black are available upon request.

IBI'S PRODUCTS



smartbone®

SmartBone is a **CE**₀₄₃₄ marked class III medical device



smartbone® on demand™



smartscrews™

SmartScrews are **CE**₀₄₃₄ marked class IIb medical devices



smarttools™

SmartTools Drills are **CE**₀₄₃₄ marked class IIa medical devices



smartkit™



THE NEXT FRONTIER OF OSTEOGENIC BIOMATERIALS

IBI is an innovative hi-tech Swiss biomedical company focused on research, development and on the production of medical devices for tissue engineering and regenerative medicine: substitutes, grafts, 3D matrixes and 2D scaffolds. IBI believes that regenerative medicine and tissue engineering represent the future in healthcare. IBI has advanced competencies and core skills in processing materials for biomedical applications, which are used to develop proprietary technologies to build new and innovative products. IBI commits to safety and quality management: IBI Quality System is **ISO 13485** and **ISO 9001** compliant.



**Industrie
Biomediche
Insubri SA**

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Mezzovico-Vira
CH-6805
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Ph. +41 91 93 06 640

www.ibi-sa.com
info@ibi-sa.com
www.smartbone.ch



CAUTION: The law restricts the sales of these devices made by, or on the order of, a dentist or physician.

Warning: Possible complications which may occur with any surgery include swelling at the surgical site, flap sloughing, bleeding, local inflammation, bone loss, infection or pain. Since SmartBone contains collagen, cases of allergic reactions may occur in very rare circumstances.

Instructions for Use at: www.ibi-sa.com/products/smartbone/download/

This brochure is for healthcare professionals only, therefore the distribution to the general public is forbidden.

IBI-SBD002UK rev6