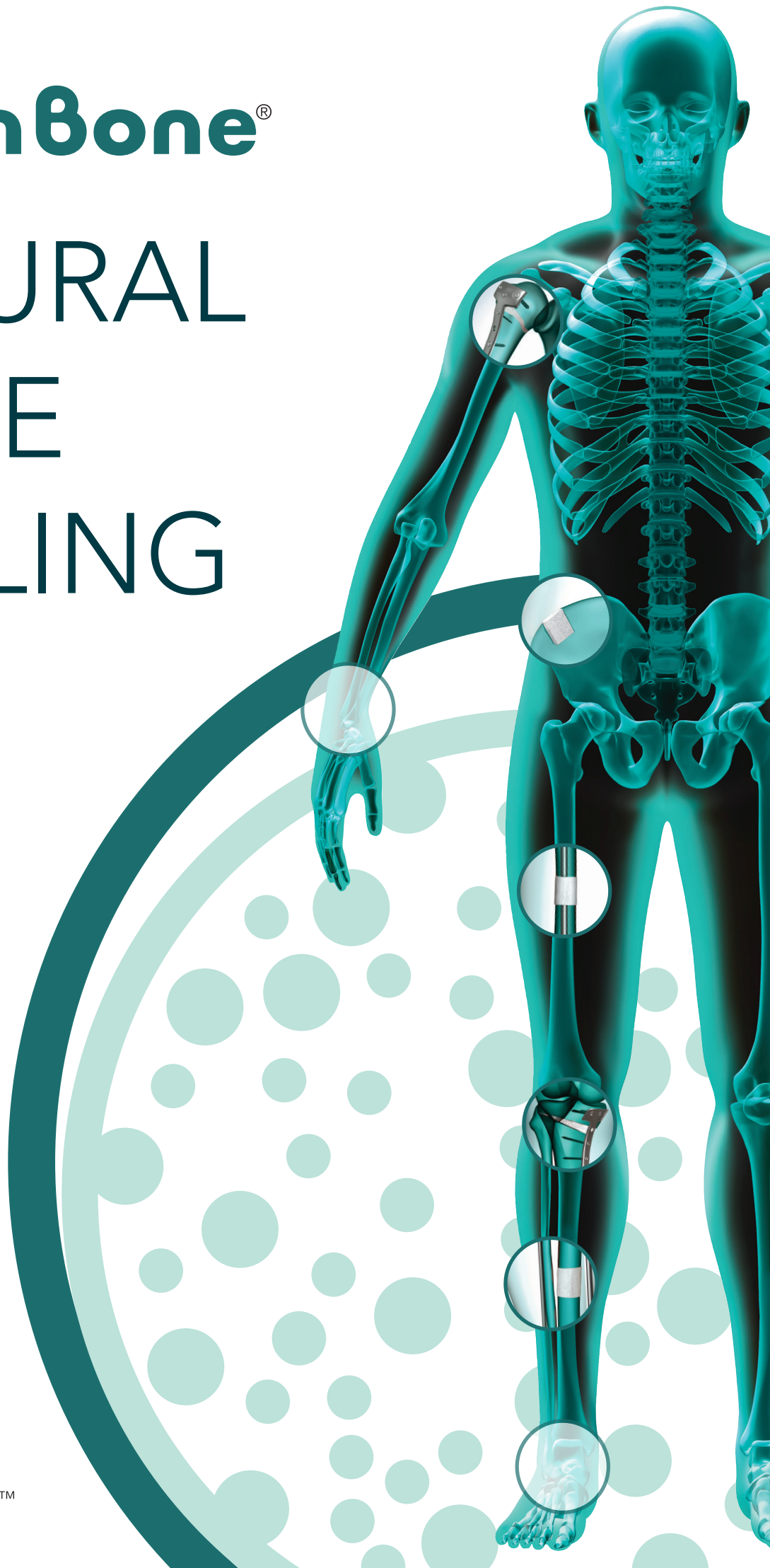


GreenBone®

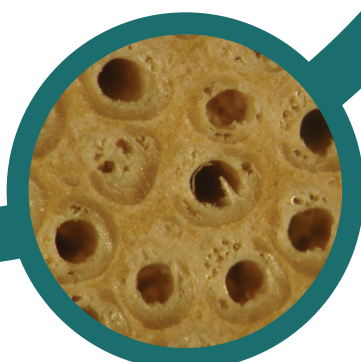
NATURAL BONE HEALING



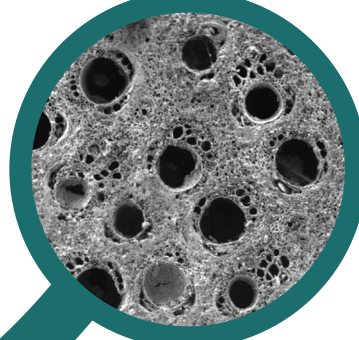
b.Bone™



Innovation to enhance bone healing



Typical human
bone structure.
Scale 200 μ m.



b.Bone structure.
Scale 200 μ m.

BIOMIMETIC ⁽¹⁾

Rattan wood exhibits a morphology and hierarchical structure that closely resemble human bone. **b.Bone** is produced through a biomimetic transformation process, which maintains the original structure of rattan wood.

This biomimetic property enables effective cellular infiltration and vascularization within the graft material, promoting natural bone healing.

1. Tampieri A, Sprio S, Ruffini A, Celotti G, Lesci IG, Roveri N. From wood to bone: multi-step process to convert wood hierarchical structures into biomimetic hydroxyapatite scaffolds for bone tissue engineering. J. Mater. Chem., 2009, 19, 4973–4980

BIOACTIVE ⁽²⁾

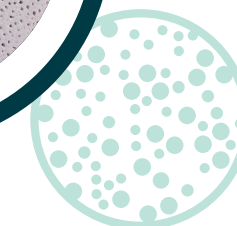
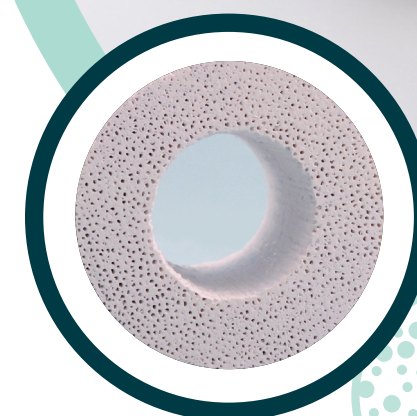
b.Bone structure, with its interconnected porosity and nanostructural properties, along with its composition of HA and β -TCP components, which include CO_3^{2-} , Mg^{2+} , and Sr^{2+} , mimics the structure of human bone.

This unique structure facilitates crosstalk between cells in the signaling pathway to enhance bone healing.

2. Tampieri A, Ruffini A, Ballardini A, Montesi M, Panseri S, Salamanna F, Fini M, Sprio S. Heterogeneous chemistry in the 3-D state: an original approach to generate bioactive, mechanically-competent bone scaffolds. Biomater. Sci., 2019, 7, 307–321



Putting innovation into practice



NOVEL MULTI-STEP PROCESS able to transform rattan wood into inorganic biomaterial maintaining the original morphology and hierarchical structure of rattan.

OSTEOINDUCTIVE PROPERTIES ⁽³⁾

The osteoinductive properties of **b.Bone** have been demonstrated through in vivo laboratory testing.

Note: the performance of these properties in humans has not yet been established.

3. Kon E., Salamanna F, Filardo G, Di Matteo B, Shabshin N, Shani J, Fini M, Perdisa F, Parrilli A, Sprio S, Ruffini A, Marcacci M, Tampieri A. Bone Regeneration in Load-Bearing Segmental Defects, Guided by Biomimetic, Hierarchically Structured Apatitic Scaffold. Front Bioeng Biotechnol. 2021 Sep 27;9:734486.

UNRIVALED EASE OF USE ⁽⁴⁾

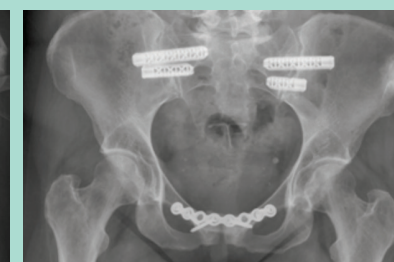
4. Bigoni D, Cavuoto R, Misseroni D, Paggi M, Ruffini A, Sprio S, Tampieri A. Ceramics with the signature of wood: a mechanical insight. Mater Today Bio. 2019 Oct 24;5:100032

CLINICAL EVIDENCE

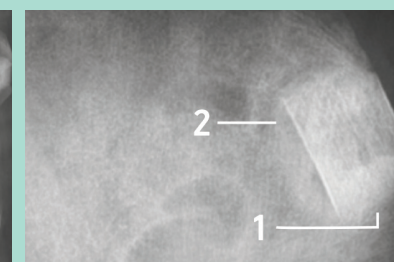
GreenBone conducts and promotes clinical research to introduce our technology through studies demonstrating safety and performance, and to provide long term clinical outcomes data.



Post op x-rays: pelvic fusion and SI joints.
Replacement of left iliac crest bone defect with b.Bone.

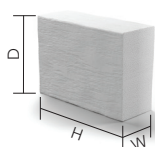


Post op x-rays at 6 months follow up.



Magnification at 6 months follow up demonstrates complete integration of the graft material (1) with mineralization similar to the pelvic bone texture (2).

Courtesy of prof. P. Giannoudis (Leeds, UK)

**BLOCK**

Available size

PRODUCT CODE	WIDTH (W)	DEPTH (D)	HEIGHT (H)
HP401020PS	10 mm	20 mm	40 mm

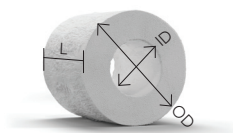
BLOCK

Upon request

WIDTH (W) - RANGES	DEPTH (D) - RANGES	HEIGHT (H) - RANGES
5 mm - 10 mm - 15 mm	10 mm - 20mm - 30 mm	20 mm - 30 mm - 40 mm - 50 mm

CYLINDER

Available sizes



PRODUCT CODE	OUTER DIAMETER (OD)	INNER DIAMETER (ID)	LENGTH (L)
HC100030PS	10 mm	0 mm	30 mm
HC150630PS	15 mm	6 mm	30 mm
HC201030PS	20 mm	10 mm	30 mm
HC251330PS	25 mm	13 mm	30 mm
HC301530PS	30 mm	15 mm	30 mm
HC100060PS	10 mm	0 mm	60 mm
HC150660PS	15 mm	6 mm	60 mm
HC201060PS	20 mm	10 mm	60 mm
HC251360PS	25 mm	13 mm	60 mm
HC301560PS	30 mm	15 mm	60 mm

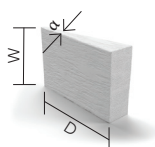
CYLINDER

Upon request

LENGTH (L)
10 mm - 20 mm - 40 mm - 50 mm for each external diameter

WEDGE

Available sizes



PRODUCT CODE	ANGLE (α)	DEPTH (D)	WIDTH (W)
WE093015PS	9°	30 mm	15 mm
WE113015PS	11°	30 mm	15 mm
WE133015PS	13°	30 mm	15 mm
WE094030PS	9°	40 mm	30 mm
WE114030PS	11°	40 mm	30 mm
WE134030PS	13°	40 mm	30 mm

GRANULES

Available sizes



PRODUCT CODE	RANGE	QUANTITY
GR051005PS	0.5 - 1 mm	5 g
GR102005PS	1 - 2 mm	5 g
GR204005PS	2 - 4 mm	5 g
GR407105PS	4 - 7.1 mm	5 g

b.Bone is intended for use as a bone graft for voids or gaps that are not intrinsic to the stability of the bony structure.

The device can be soaked up or combined with biological materials such as blood and bone marrow aspirate. **b.Bone** granules configuration could be used to expand the volume of autologous bone graft.

It is indicated in the treatment of surgically created osseous defects or osseous defects resulting from traumatic injury to the bone.

b.Bone is intended to be implanted into bony voids or gaps of the skeletal system as a bone substitute, in the extremities and pelvis.

GreenBone® is a patented technology (WO 2021/063201 and WO 2017/021894). The design and production processes of the product comply with EN ISO 13485:2016/A11:2021 requirements.

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