BonAlive® granules (composition by weight)

- 53% SiO_2, 23% Na_2O, 20% CaO, 4% P_2O_5

Small applicator

Ref. No	Granule size	Unit size
13110	0.5-0.8 mm (small)	1 cc
13120	0.5-0.8 mm (small)	2.5 cc

Large applicator

Ref. No	Granule size	Unit size
13130	0.5-0.8 mm (small)	5 cc
13140	0.5-0.8 mm (small)	10 cc
13330	1.0-2.0 mm (medium)	5 cc
13340	1.0-2.0 mm (medium)	10 cc
13430	2.0-3.15 mm (large)	5 cc
13440	2.0-3.15 mm (large)	10 cc

Medical education

Documentary

References

1. **In vitro antibiofilm activity of bioactive glass S53P4.** Drago L, Vassena C, Fenu S, De Vecchi E, Signori V, De Francesco R, Romanò CL. Future Microbiol. 2014;9(5):593-601.
2. **Bioactive glass S53P4 as bone graft substitute in treatment of osteomyelitis.** Lindfors NC, Hyvönen P, Nyyssönen M, Kirjavainen M, Kankare J, Gullichsen E, Salo J. Bone. 2010;47:212-218.
3. **A comparative study of the use of bioactive glass S53P4 and antibiotic-loaded calcium-based bone substitutes in the treatment of chronic osteomyelitis - a retrospective comparative study.** Romanò CL, Logoluso N, Meani E, Romanò D, De Vecchi E, Vassena C, Drago L. Bone Joint J 2014;96-B:845-850.
4. **Molecular basis for action of bioactive glasses as bone graft substitute.** Välimäki VV, Aro HT. Scand J Surg. 2006;95(2):95-102.
5. **Histomorphometric and molecular biologic comparison of bioactive glass granules and autogenous bone grafts in augmentation of bone defect healing.** Virolainen P, Heikkilä J, Yli-Urpo A, Vuorio E, Aro HT. J Biomed Mater Res. 1997;35A(1):9-17.

Manufacturer

BonAlive® BIOMATERIALS LTD

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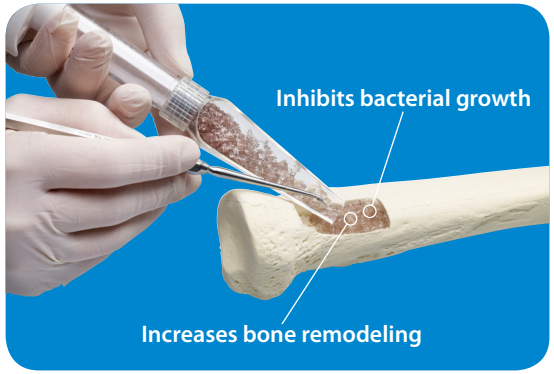
Distributor

91316h/2

BonAlive® granules

Product brief | *Septic bone surgery*



BonAlive® granules

BonAlive® granules (bioactive glass S53P4) is a CE-marked, Class III medical device that is used in surgical procedures to regenerate bone.

One of the most striking features of BonAlive® granules is its ability to inhibit bacterial growth.[1] Therefore, it is a unique product for septic bone surgery.

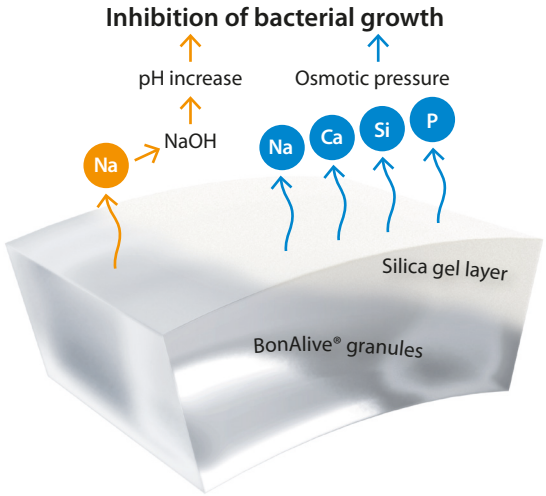
Indications (orthopedics)

- Bone cavity filling
- Bone cavity filling in the treatment of chronic osteomyelitis

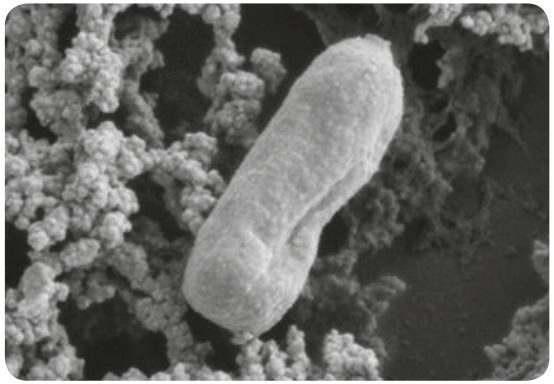
BonAlive® BIOMATERIALS LTD

Inhibition of bacterial growth

BonAlive® granules inhibits bacterial growth without containing antibiotics.[2,3] The mechanism works by leaching out ions leading to an alkaline environment (high pH) and increased osmotic pressure in the bone defect.[1]



The impact of bioactive glass S53P4 on methicillin-resistant *Klebsiella pneumoniae*. The inhibition of bacterial growth can be seen as changes in the morphology of the bacteria.

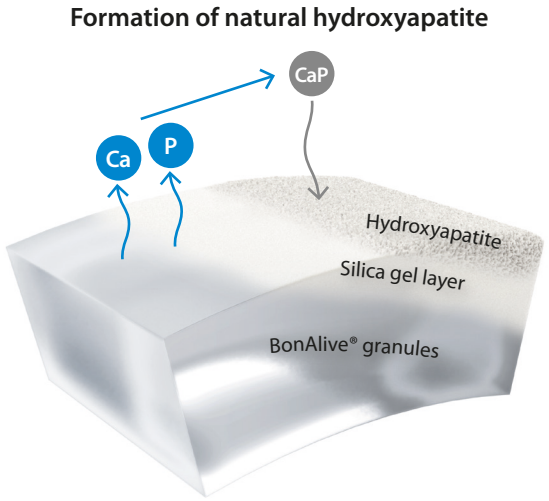


Courtesy of Prof. Lorenzo Drago, University of Milan, Italy

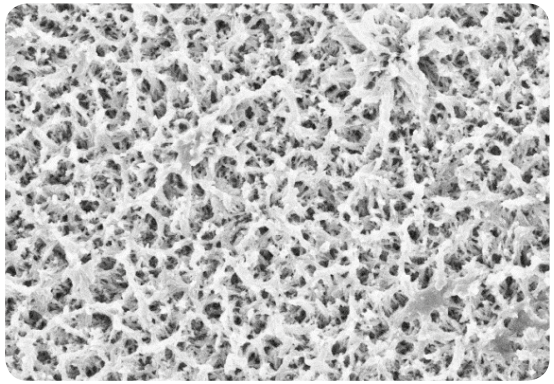
Effective bone formation

BonAlive® granules bonds chemically to bone and stimulates the growth of new bone.[4] The phenomenon is called osteostimulation* which means that it activates genes responsible for bone formation in osteogenic cells.[5]

**non-osteoinductive*



The natural hydroxyapatite layer on the bioactive glass surface is presented in the scanning electron microscopy (SEM) image (10 000x magnification).



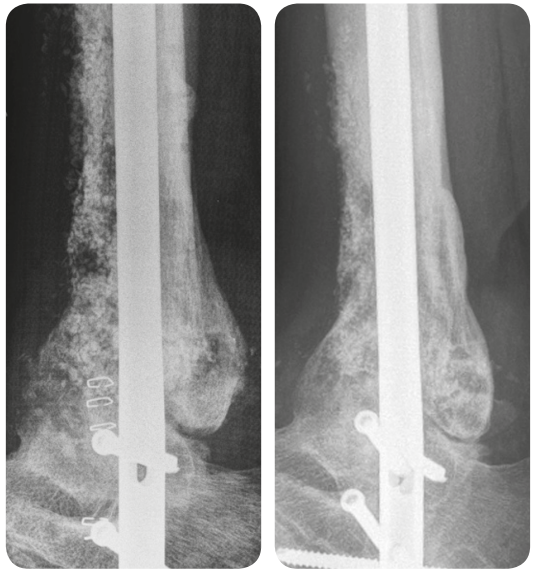
Chronic osteomyelitis in the distal tibia

Patient: 36-year old male with a chronic osteomyelitis in the distal tibia.

Operation: The patient received a pilon fracture in a car crash and the fracture was stabilized with an anterior plate in the distal tibia. The patient was diagnosed with severe chronic osteomyelitis with extensive pus formation in the distal tibia. The anterior fixation plate was removed and the area was surgically cleaned through radical debridement. After surgical debridement the defect size was 100 cc. The defect was filled with 48 cc/2.0-3.15 mm (large) BonAlive® granules mixed with an equal amount of autologous bone.

Clinical outcome: The soft tissue healed well. Although a significant part of the anterior cortex of the distal tibia was removed, new cortical bone was formed. At 2.5 years post-op the fusion was stabile and the patient outcome continued to be successful.

Immediate post-op **Post-op 2.5 years**



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