Geistlich
Bio-Oss®

Topography – a key factor for the Biofunctionality of Geistlich Bio-Oss®

swiss made

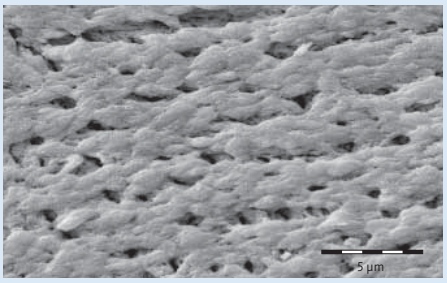
LEADING REGENERATION

The unique Topography of Geistlich Bio-Oss® is one of the key factors …

The peerless Geistlich Bio-Oss® pore structure leads to better bone regeneration

Micropores

1 Ultraporous surface

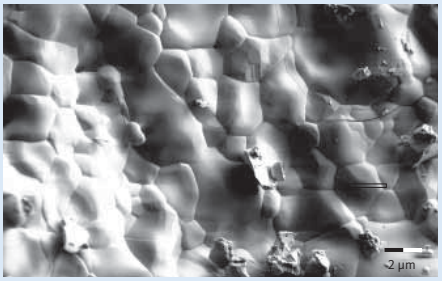


The micropores (5000×) ensure the high capillary action, and consequently the fast liquid uptake in Geistlich Bio-Oss®.

› Ideal environment for new bone formation[1]

› Excellent handling properties

1 Dense Surface

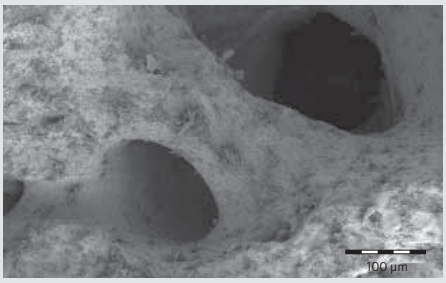


A dense, pitted surface impedes liquid uptake (13000×).

› Suboptimal environment for new bone formation[3]

Macropores

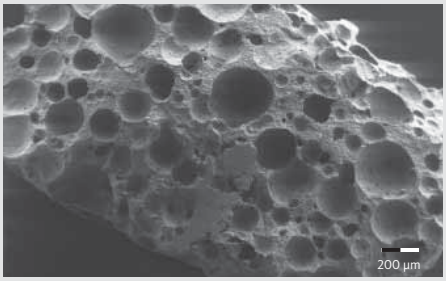
2 Internal Macropore Network



The interconnected macropores (200×) allow blood cells, osteoblasts, osteoclasts and proteins to enter into the Geistlich Bio-Oss® particles enabling effective osseointegration of Geistlich Bio-Oss® particles.

› Excellent osseointegration[2]

2 No interconnected pores



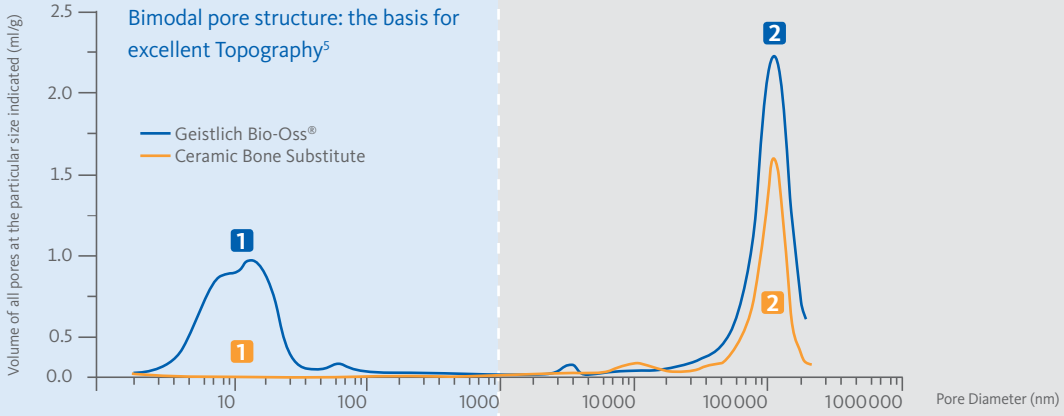
Crater-like structure with no interconnected macropore system (107×).

› Reduced penetration of fluids and cells[4]

Geistlich Bio-Oss®

Ceramic Bone Substitute

Bimodal pore structure: the basis for excellent Topography[5]



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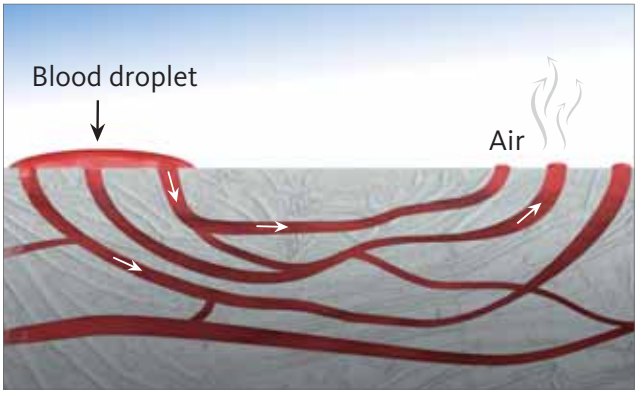
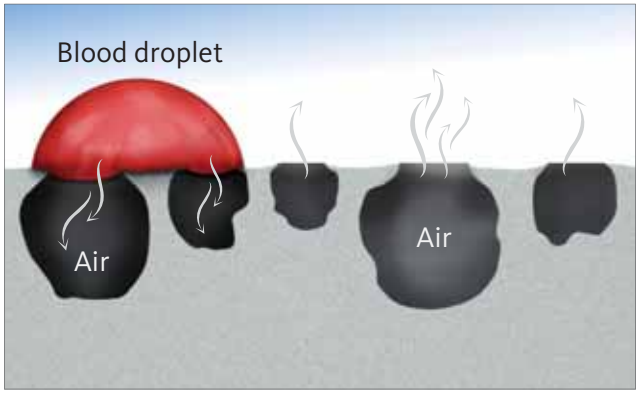
… for the outstanding clinical success[6]

Benefits of the interconnective pore system of Geistlich Bio-Oss®

Geistlich Bio-Oss®



Ceramic bone substitute



Interconnective pore system

› Fast and complete wetting of the whole structure[4]
› Binding and storing of proteins and growth factors[7]
› Right conditions for de novo bone synthesis[1, 8]
› Effective bone regeneration and implant stability[9]

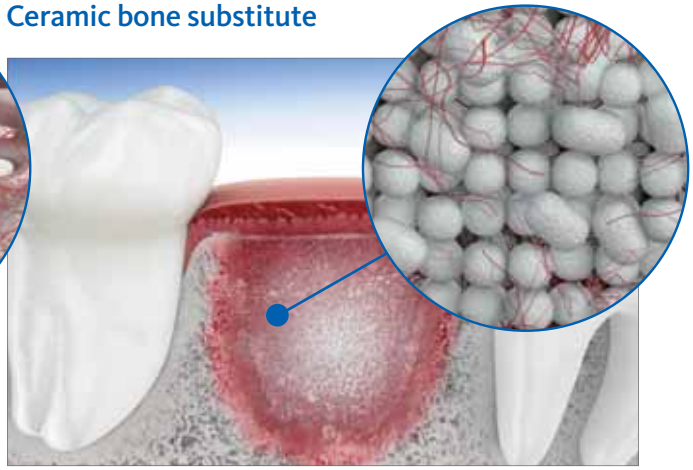
Non-interconnective pores

› Low porosity and interconnectivity[3, 4]
› Degassing not possible

Geistlich Bio-Oss® provides the space vascularisation needs[10]

› The blood clot stabilisation and early vascularisation is crucial for a good bone formation[10, 13]

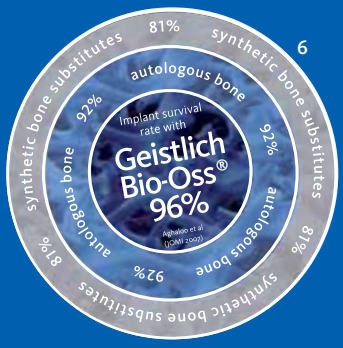
Ceramic bone substitute



› Reduced volume of newly-formed bone deposited in the dense ceramic particles
› Inferior vascularisation of the ceramic material[3]

Geistlich Bio-Oss® Topography:

› Unique pore structure provides better bone regeneration
› More space for vascularisation
› More space for new bone



Biofunctionality of Geistlich Bio-Oss® for outstanding success in bone regeneration.

Geistlich
Biomaterials

Geistlich Bio-Oss® spongiosa granules

Geistlich Bio-Oss® Collagen

Geistlich Combi-Kit Collagen

Topography – a key factor for the **Biofunctionality of Geistlich Bio-Oss®**

The **Biofunctionality** of Geistlich Bio-Oss® is the sum of its characteristics and is the basis for its clinical success. One of the most important biofunctional characteristics is Topography. The **Topography** of Geistlich Bio-Oss® plays a decisive role in guiding bone regeneration. In addition to Hydrophilicity, Topography is part of the family of characteristics that define the Biofunctionality of Geistlich Bio-Oss®. Topographical features, such as an **ultraporous surface**, an **interconnecting pore system** and a structure that provides precisely the right conditions for de novo bone synthesis, synergize and induce a chain of events that lead to the long-term benefits associated with Geistlich Bio-Oss®.

The **ultraporous surface** of Geistlich Bio-Oss® functions like a microsponge and is the portal for biofunctional bone-forming interactions. While the micropores facilitate rapid liquid uptake from the biological environment in vivo, the large interconnected macropore system[12] ensures complete fluid permeation of the biomaterial. A three-dimensional microenvironment created by the **unique surface structure** of Geistlich Bio-Oss® leaves space for new bone while filling the defect.

With its osteoconductive, biomimetic[2] stable structure, Geistlich Bio-Oss® protects newly formed bone from premature resorption[11] and leads to reliable long-term space maintenance of the augmented region.

Topography and **Hydrophilicity** are not the only characteristics that determine the Biofunctionality of Geistlich Bio-Oss®. The third chapter in the Biofunctionality trilogy will unravel how **Biological Interactions** with Geistlich Bio-Oss® lead to effective **osseointegration** and enable **superior bone regeneration**. Stay tuned!

Biofunctionality of Geistlich Bio-Oss®
Clinical success through unique characteristics

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