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# Bioactive Glass

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## Bioglass

Bioglass is a material using silica (glass) as the host material, incorporated with calcium and phosphorous to fuse broken bones. It mimics bone material and stimulates the regrowth of new bone material. Thus, due to its biocompatibility and osteogenic capacity it came to be known as “bioactive glass” or “bioglass”. Bioglass stimulates more bone regeneration than other bioactive ceramics such as hydroxyapatite, which is attributed to their dissolution products stimulating cells at the genetic level. The other advantages of bioglass over synthetic hydroxyapatite are the biological fixation, and the capability of bonding to both hard and soft tissues, whereas hydroxyapatite binds only to hard tissues and also needs an exogenous covering to hold the implants in place. By varying its components, different forms of bioactive glasses have been made. The conventional 45S5 bioglass, signifies glass with 45%wt of SiO<sub>2</sub> and 5:1 molar ratio of calcium to phosphorus. At Matexcel, we provide 45s, 58s, 63s, 77s, 85s, S53P4, 19-93B3 borate-based as well as custom-made bioglass with different particle sizes.

## Applications

- The 45S5 bioglass has been found really widespread use in orthopedics, having regenerated the bones of more than 1.5 million patients.
- Bioglass as a coating on substrates to provide the properties needed for orthodontic and dental devices.
- It is recently used in reconstructive middle ear surgery, such as obliterate and reconstruct the mastoid cavity.
- Bioglass formulated toothpaste may better protect sensitive teeth by reacting with saliva in the mouth to form a protective layer of hydroxyapatite on teeth.

Matexcel provides bioglass in different particle sizes.



## Products List

### Bioactive glass

Cat.No.: CER-0012

Particle Size: 38 $\mu$ m-90 $\mu$ m

**Application:** Bone-filling materials, bio-coating, bone damage repair and high-temperature adhesives, etc.

**Chemical Composition:** SiO<sub>2</sub> 45 $\pm$ 3.0%; P<sub>2</sub>O<sub>5</sub> 6 $\pm$ 2.0%; CaO 24.5 $\pm$ 3.0%; Na<sub>2</sub>O 24.5 $\pm$ 3.0%; Pb  $\leq$ 50ppm

### 58s Bioglass Powder

Cat.No.: CER-0013

Particle Size: 0.2-20 $\mu$ m

Purity: &gt;99%

**Application:** Bone-filling materials; Toothpaste additives; Dressings and other wound repair products.

**Chemical Composition:** SiO<sub>2</sub>: 58%; P<sub>2</sub>O<sub>5</sub>: 6%; CaO: 36%

### 63s Bioglass Powder

Cat.No.: CER-0014

Particle Size: 0.2 $\mu$ m-20 $\mu$ m

Purity: &gt;99%

**Application:** Scaffolds for artificial bone repair materials; Toothpaste additives; Dressings and other wound repair products.

**Chemical Composition:** SiO<sub>2</sub>: 63%; P<sub>2</sub>O<sub>5</sub>: 6%; CaO: 31%

### 45s Bioglass Powder

Cat.No.: CER-0015

Particle Size: 0.2-500 $\mu$ m

Purity: &gt;98%

**Application:** Bone-filling materials; Toothpaste additives; Dressings and other wound repair products.

**Chemical Composition:** SiO<sub>2</sub>: 45 $\pm$ 3.0%; P<sub>2</sub>O<sub>5</sub>: 6 $\pm$ 2.0%; CaO: 24.5 $\pm$ 3.0%; Na<sub>2</sub>O: 24.5 $\pm$ 3.0%



### 77s Bioglass Powder

Cat.No.: CER-0037	Particle Size: 0.2-20µm
Purity: >97%	Application: Bone-filling materials; Toothpaste additives; Dressings and other wound repair products.
Chemical Composition: SiO <sub>2</sub> : 77%; P <sub>2</sub> O <sub>5</sub> : 6%; CaO: 17%	

### 80s Bioglass Powder

Cat.No.: CER-0038	Particle Size: 0.2-20µm
Purity: >97%	Application: Bone-filling materials; Toothpaste additives; Dressings and other wound repair products.
Chemical Composition: SiO <sub>2</sub> : 80%; P <sub>2</sub> O <sub>5</sub> : 6%; CaO: 13%	

### 85s Bioglass Powder

Cat.No.: CER-0039	Particle Size: 0.2-20µm
Purity: >97%	Application: Bone-filling materials; Toothpaste additives; Dressings and other wound repair products.
Chemical Composition: SiO <sub>2</sub> : 85%; P <sub>2</sub> O <sub>5</sub> : 6%; CaO: 9%	

### S53P4 Bioglass Powder

Cat.No.: CER-0042	Particle Size:
Application: Bone grafting biomaterials, repair of periodontal defects, cranial and maxillofacial repair, wound care, blood loss control, stimulation of vascular regeneration, nerve repair.	
Chemical Composition: SiO <sub>2</sub> : 50-56%; CaO: 18-22%; P <sub>2</sub> O <sub>5</sub> : 3-5%; Na <sub>2</sub> O: 21-25%	



**13-93 Bioglass Powder****Cat.No.:** CER-0043**Particle Size:** 10 $\mu$ m; 20 $\mu$ m; 40 $\mu$ m; 80 $\mu$ m

**Application:** Bone grafting biomaterials, repair of periodontal defects, cranial and maxillofacial repair, wound care, blood loss control, stimulation of vascular regeneration, nerve repair.

**Chemical Composition:** SiO<sub>2</sub>: 50-56%; CaO: 17-32%; P<sub>2</sub>O<sub>5</sub>: 3-5%; Na<sub>2</sub>O: 5-7%; K<sub>2</sub>O: 10-14%; MgO: 4-6%

