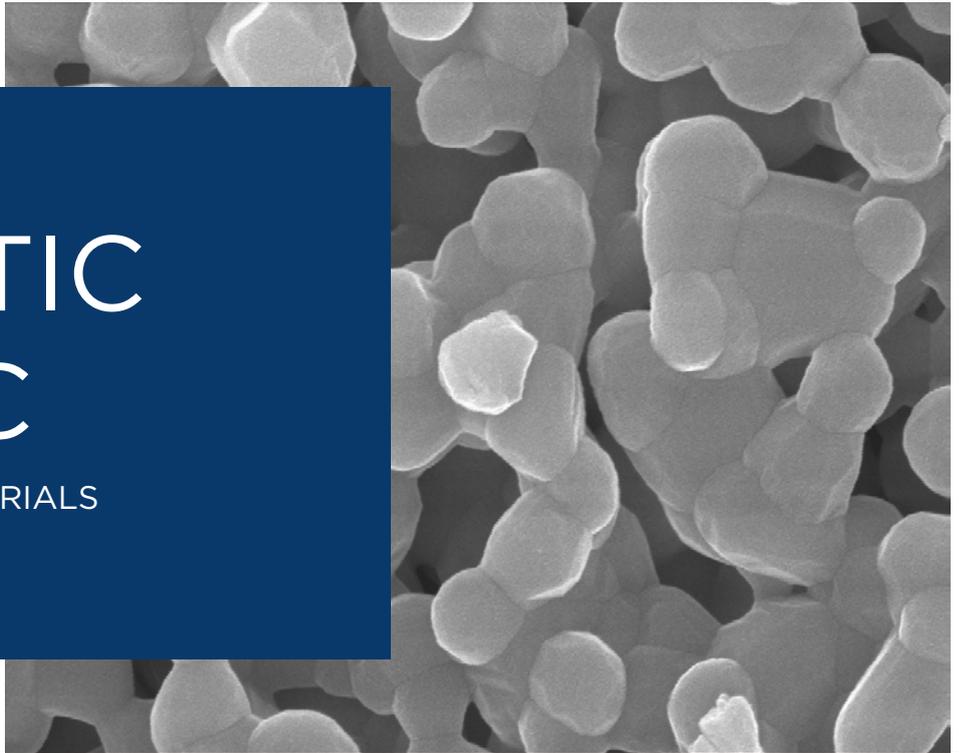


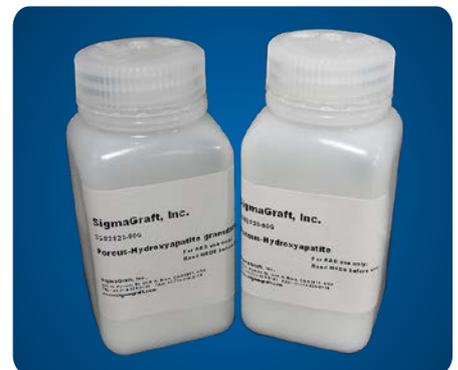
# SYNTHETIC CERAMIC

MEDICAL GRADE RAW MATERIALS



## WHAT IS SYNTHETIC CERAMIC

SigmaGraft Inc., provides synthetic ceramic materials such as hydroxyapatite (HAp), beta-tricalcium phosphate ( $\beta$ -TCP), and biphasic calcium phosphate (BCP) for various skeletal repair application fields. All products are manufactured to meet ASTM F1185 and ASTM F1088 standards. They are supplied non-sterile.



	Hydroxyapatite (HAp)	Beta-Tricalcium Phosphate ( $\beta$ -TCP)	Biphasic Calcium Phosphate (BCP)
Particle Size	200-600 nm	0.2-500 $\mu$ m	

\* Custom size and composition available



# SIGMAGRAFT

## THE BONE GRAFT SUBSTITUTE SPECIALISTS

### Hydroxyapatite (HAp)

Hydroxyapatite (HAp) is a calcium phosphate similar to the human hard tissues in morphology and composition. The chemical formula of HAp is  $\text{Ca}_5(\text{PO}_4)_3(\text{OH})$ . Particularly, it has a hexagonal crystal structure and a Ca/P ratio of 1.67 that is identical to human bone. HAp is the most stable calcium phosphate with low solubility in physiological environments defined by temperature, pH, body fluids, etc.

\*Synonyms: Calcium phosphate tribasic, calcium hydroxyapatite

### Beta-tricalcium phosphate ( $\beta$ -TCP)

$\beta$ -TCP is a biodegradable bioceramic with the chemical formula  $\text{Ca}_3(\text{PO}_4)_2$  with a Ca/P ratio of 1.5.  $\beta$ -TCP has a faster degradation rate and higher solubility than hydroxyapatite. It has a high resorption rate and is widely used to increase biocompatibility.

### Biphasic calcium phosphate (BCP)

BCP generally combine two more incompatible calcium phosphates, such as the more stable HAp and the more soluble  $\beta$ -TCP with different compositions. BCP have been used as bone grafts, bone substitute materials, and dental materials. The mixture of HAp and  $\beta$ -TCP can be used to stimulate the osteogenic differentiation, increase cell adhesion, and enhance mechanical properties.

### The synthetic bioceramic materials have various applications below:

- ✔ 3D bioprinting
- ✔ Bone tissue engineering
- ✔ Drug and gene delivery systems
- ✔ Remineralizing agent in toothpastes
- ✔ Orthopedic and dental implant coating
- ✔ Desensitizing agent in post teeth bleaching
- ✔ Bone void fillers for orthopaedic, traumatology, spine, maxillofacial and dental surgery.
- ✔ Fillers for reinforcing restorative glass ionomer cement (GIC) and restorative composite resin

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