SynthoGraft
Pure Phase Beta-Tricalcium Phosphate

THE NEXT GENERATION OF REGENERATION™
Why SynthoGraft?

**SynthoGraft** offers a unique structure which provides stability, while its micro-porosity allows for rapid vascularization and subsequent resorption. Although several varieties of beta-tricalcium phosphate are now commercially available, their bone regenerating capabilities are not equal. The differences can affect not only the rate and quality of bone regeneration, but also the rate of resorption and replacement with autogenous bone during the healing process.

**SynthoGraft offers:**

- Increased patient acceptance
- Elimination of the inherent risks associated with biologically-derived bone graft materials
- Rapid vascularization and subsequent resorption when mixed with the patient’s own blood
- Available in two particle sizes: 50–500µm and 500–1000µm
The Dentist and Patient

SynthoGraft offers clinicians and patients the confidence of knowing that they have a completely synthetic bone graft material. SynthoGraft eliminates the inherent uncertainties and risks associated with bone graft materials that are derived from humans or animals. Patients have benefited from pure phase Beta-Tricalcium Phosphate, SynthoGraft, since 1981.

“Mr. Driskell (inventor of βTCP bone graft materials) has improved the stoichiometric chemistry, the characteristics of this particular tricalcium phosphate compared to the material that we have investigated previously and, by all indications, is a significant improvement for applications in dentistry.”

Jack E. Lemons, Ph.D., University of Alabama at Birmingham

“What happens at six to nine months is that the fibrous materials, as well as the grafting materials, are no longer present and the cortical bone is much thicker and much more stabilized. In my opinion, any time after three months it is a very stable site.”

Ziedonis Skobe, Ph.D., Forsyth Institute and Harvard University

HISTORY OF SYNTHOGRAFT

The next generation of regeneration.

1968
Initial research begins on Beta-Tricalcium Phosphate as a possible synthetic bone grafting material.

1970
Tom Driskell begins biomedical research on dental implants and bone structural replacement materials.

1971
Tom Driskell was the first to develop calcium phosphate ceramics for use as synthetic bone grafting materials.

1981
Tom Driskell received an Industrial Research Magazine IR 100 award for SynthoGraft, one of the "100 most significant technological developments of the year, worldwide."

1982
Synthetic resorbable bone grafting material (beta phase tricalcium phosphate) introduced and receives FDA clearance.

2005
An optimized formulation of SynthoGraft Pure Phase Beta-Tricalcium Phosphate is introduced.

Future
Ongoing research and development continues, using SynthoGraft in various applications.
CLINICAL APPLICATIONS

**INTERNAL SINUS LIFT**
- Pre-Operative
- Placement
- One Year
- Pre-Operative
- Placement
- Two Years
- Pre-Operative
- Placement
- Four Years
- Pre-Operative
- Placement
- Three Years

**CREST AUGMENTATION**
- Graft In Place
- Post Graft

**PERIODONTAL DEFECT**
- Site Of Defect
- Graft In Place

**EXTRACTION SITE**
- Failed Root Canal
- Extraction
- Post Graft

**LATERAL SINUS LIFT**
- Graft In Place
- Post Graft
CLINICAL STUDIES

Extensive human and animal studies have shown the osteoconductive properties of SynthoGraft:

- Rapid bone regeneration in critical size defects at early implantation times has been observed.
- Micro-computed tomographic analysis of retrieved human cores at 3, 6, and 12 months following sinus lift procedures have shown bone-to-grafting material volume ratios ranging from 78 to 98% as early as 3 months.
- No foreign body responses were detected.

A transmission electron micrograph (TEM) showing the structurally interconnected micrometer-scale porosity of SynthoGraft.

Histologic 3D core reconstruction analysis showed significant new bone formation in sinus grafted regions.

3 month histology
Retrieval of sinus elevations after 3 and 6 months showed progressive resorption of SynthoGraft particles and increasing bone regeneration.

Selected Research:
Extensive laboratory studies have demonstrated the unique physical properties of SynthoGraft:

- Micrometer-scale porosity
- Pure, synthetic material
- Cellular-level biocompatibility

Micrometer and nanometer pore size for optimized material dissolution and bone regeneration rates.

In vitro cytotoxicity assays confirmed the cellular-level biocompatibility of SynthoGraft.

A series of physico/chemical analyses showed that SynthoGraft is 99% pure β-TCP.