



PLASMA BIOTAL LIMITED

TEXTURED TITANIUM COATING

HYDROXYLAPATITE COATING

CP TITANIUM COATING

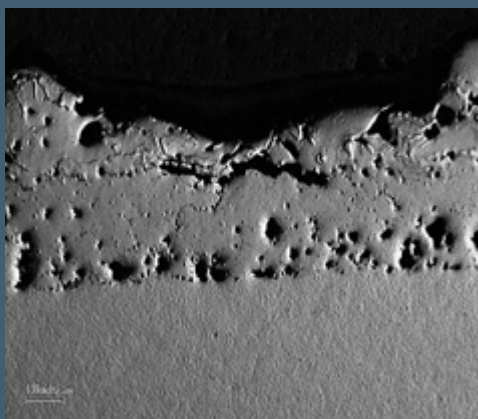
The rough texture of the commercially pure Titanium Coating offered by Plasma Biotat Ltd helps achieve improved anchorage compared to a device with a smooth finished surface.

The surface roughness can be controlled to give a texture to suit various designs of implants, according to the design aims of the manufacturer.

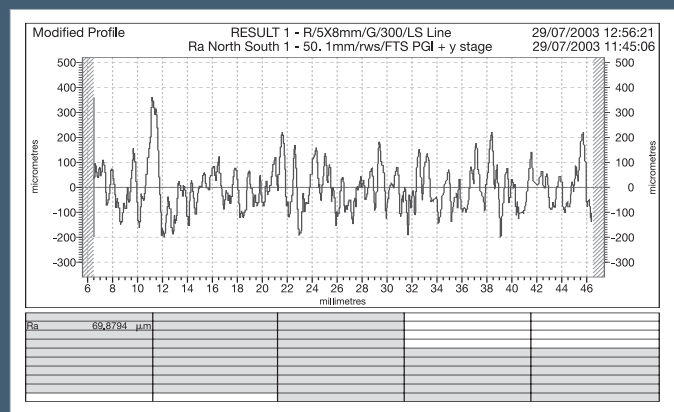
Textured CP Titanium can be offered on the following substrates: Titanium 318 (6Al/4V alloy); Cobalt Chrome alloys.

Commercially pure Titanium metal is applied under an Argon shield. The Titanium is naturally passive, provided that the protective oxide layer present on the surface after exposure to air is not damaged. Our products are passivated prior to despatch, using Nitric acid solution to ensure a fully passive surface.

SEM OF SECTION THROUGH COATING



ROUGHNESS PROFILE



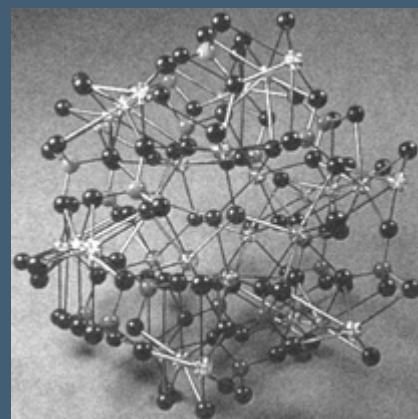
CAPTAL® - SYNTHETIC BONE MINERAL

High-purity synthetic Calcium Hydroxylapatite (HA) is used to coat implants. It is thermally stable in air to 1300°C, retaining a highly crystalline structure.

Capital® coatings have been proven to be highly bio-compatible in clinical use over a period of more than 15 years. Please contact us for a bibliography.

MODEL OF HA CRYSTAL LATTICE.

We can provide a quotation if supplied with a sample or a drawing of the device. Please state the required turn-around time (e.g. 24-hour, 5-day or 10-day service) and estimated quantities of devices per year.



DUAL COATING - CP TITANIUM PLUS CAPTAL® HYDROXYLAPATITE

For cement-less fixation of orthopaedic implants, we offer a dual coating, comprising a base layer of CP Titanium with a thin layer of Hydroxylapatite ceramic. This encourages bony in-growth over the surface of the implant.

The rough finish, ~ 40 to 80μ Ra, achieved by using the additional CP Titanium coating, may reduce the need for expensive machining of the surface to produce a suitable surface topography on the implant.





PLASMA BIOTAL LIMITED

HYDROXYLAPATITE POWDERS

TRI-CALCIUM ORTHOPHOSPHATE POWDERS

CAPTAL® REACTOR HA POWDERS TYPE 'R'



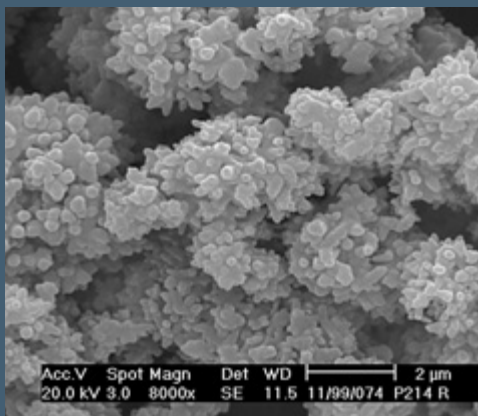
AMORPHOUS CAPTAL® TYPE 'ACP'



Captal® Hydroxylapatite is a high-purity synthetic bone mineral powder, with a Ca:P ratio of 1.67:1, an hexagonal crystal lattice, and a high surface area of 6m²/gm to 20m²/gm. It is suitable for sintering into a variety of bioactive ceramic products, or for blending with polymers to form bioactive composites.

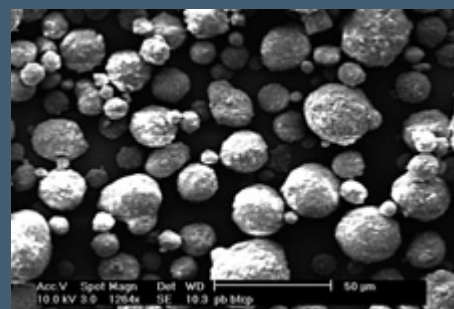
Captal® Amorphous Calcium Phosphate is a high-purity non-crystalline product, with a nominal Ca:P ratio of 1.5:1. When heated above 900°C it crystallises to Beta Tri- Calcium Orthophosphate, with a rhombohedral lattice structure. When heated above 1200°C, this structure becomes progressively converted to the orthorhombic lattice.

It has a typical particle size distribution of d(10) ~ 2µ, d(50) ~ 4µ, d(90) ~ 6µ, and is designed to be non-resorbable *in vivo*.



SCANNING ELECTRON MICROGRAPH OF CAPTAL® 'R'

The surface area of Captal® ACP is high (50 to 90m²/gram), reflecting its porous nature. It is used in applications where further heat processing crystallises the lattice once the powder is formed into the required product.

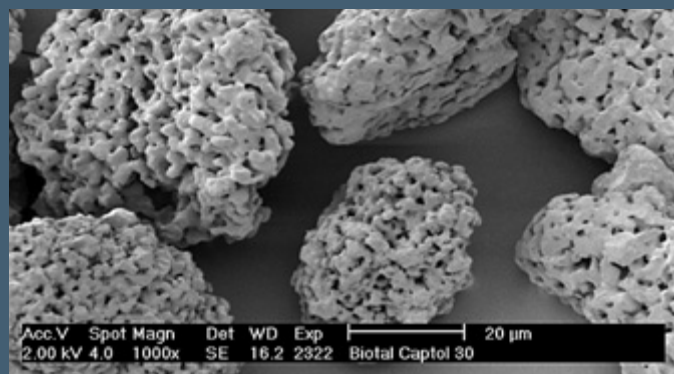


SCANNING ELECTRON MICROGRAPH OF CAPTAL® 'ACP'

CAPTAL® - SINTERED HA POWDER TYPE 'S'

High-purity synthetic Calcium Hydroxylapatite is used to coat implants. It is thermally stable in air to 1300°C, retaining a highly crystalline structure. It is pale blue in colour and is available as granules in a choice of distributions Captal® 'S' Fines' 30, 60, 90 µ. All meet the requirements of BS EN ISO 13779:2000.

SEM OF CAPTAL® 30



Captal® ACP is available as spherical spray-dried particles, d(50) ~ 15 to 30 µ, or as angular particles, d(50) ~ 60 µ up to 500 µ.

CRYSTALLINE-TYPE CAPTAL® 'BETA WHITLOCKITE'

Beta TCP is a highly crystalline white powder and has been shown to resorb in the relatively short period of 3 to 6 months *in vivo* (depending upon various factors). The purity of these products meets the requirements of ASTM 1087-88 [re-approved 1992]. The products have a particle size distribution of between d(50) ~ 15 µ to 30 µ. βTCP can be used in the manufacture of bioactive composites. All powders can be supplied milled to approximately 1 to 3 µ for special applications.



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HYDROXYLAPATITE COATING

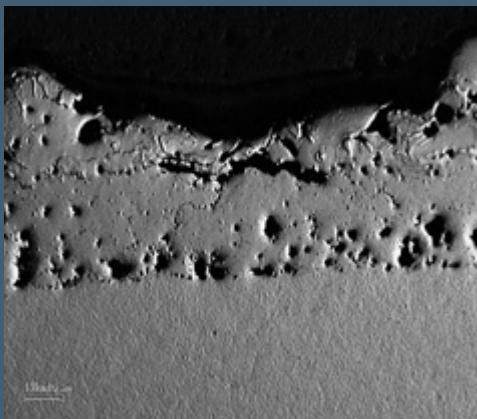
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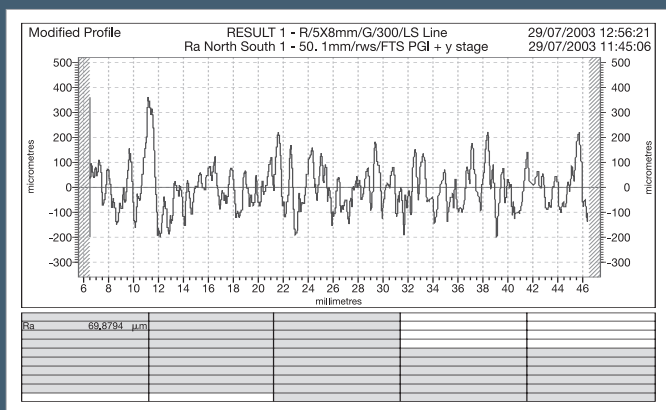
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ROUGHNESS PROFILE



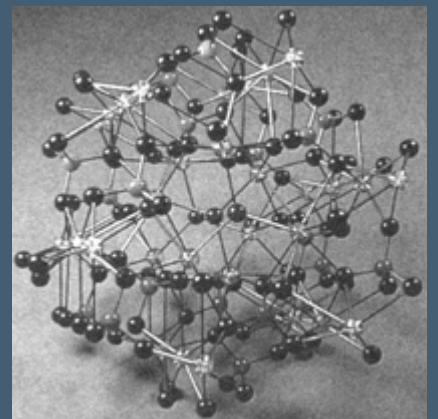
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TRI-CALCIUM ORTHOPHOSPHATE POWDERS

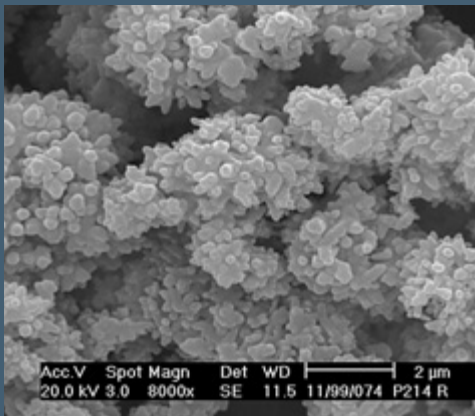
CAPTAL® REACTOR HA POWDERS TYPE 'R' $Ca_{10}(PO_4)_6(OH)_2$

AMORPHOUS CAPTAL® TYPE 'ACP' $Ca_3(PO_4)_2$

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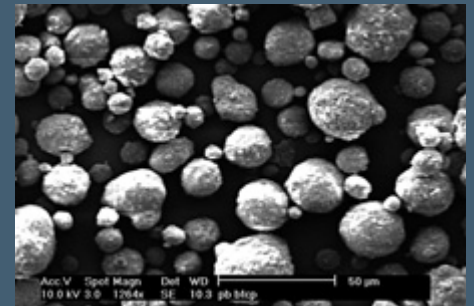
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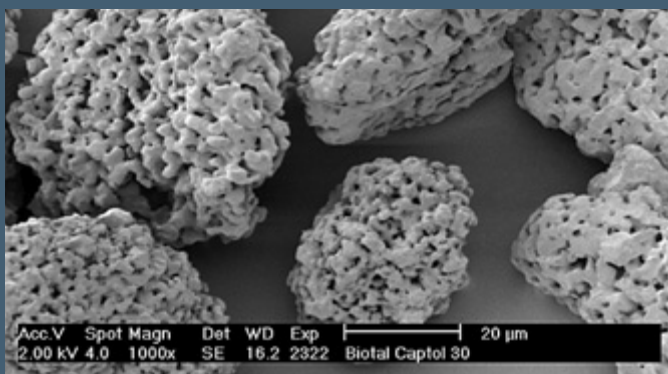
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