Directions for Use
Lifeink® 500

CALCIUM PHOSPHATE BIOINK

Catalog Number **#5231-1KIT**

Product Description

Lifeink® 500 is a novel bioink that allows for the creation of compact or porous scaffolds with high dimensional accuracy. The ink consists of synthetic calcium phosphates, which transform into microcrystalline, calcium deficient hydroxyapatite, which makes them ideal substrates for cell culture in the field of bone regeneration.

Lifeink® 500 is chemically stable in neutral or alkaline medium. The final printed structures have high compressive/mechanical strength, due to a "self-setting" of the calcium phosphate paste.

Scaffolds can be seeded directly with cells. Cells can also be suspended in a pre-hydrogel material (such as collagen type I). Dispense the pre-hydrogel over the printed scaffolds and then gel the suspension to encapsulate your cells within the hydrogel/calcium phosphate scaffold. Cells can also be added by using multichannel printers or core/shell needles.

The Lifeink® 500 kit consists of the following:

Table 1:

Item	Catalog No.	Package Size
Calcium Phosphate	5232-5ML	5 mL
Sterile 10cc Syringe (1/kit)		
Sterile Syringe Coupler (2/kit)		
Syringe Cap (2/kit)		

Characterization and Testing

The formulated Lifeink® 500 bioink has the following characteristics as shown in Table 2.

Table 2:

Test	Specifications
Compressive Strength after setting	≥ 15 MPa
Cohesion/Particle Release	≤ 2%
Extrusion Force	< 100 PSI
Printed Shape Stability	< 15 minutes

Storage/Stability:

The product ships and is stored at room temperature. The higher the temperature the lower the viscosity.

Preparation Instructions for Lifeink® 500

1. Transfer the calcium phosphate bioink into the desired printing syringe using the luer connector provided.

2. Print.

Printing Recommendations:

1. Dispensing tip diameter: 0.4-0.8 mm, tapered or cylindrical.

2. Print head speed: 1-20 mm/s (8 mm/s recommended).

3. Pressure: 30-90 PSI (depending on tip and speed)

4. Do not physically touch the printed structure until after the setting process has occurred.

5. Induce "self-setting" by incubating scaffolds in water-saturated atmosphere, or immerse in aqueous liquid for approximately 3 days.

6. Wash and dry scaffolds in acetone for three times, for 20 minutes each followed by air drying.

7. Dry scaffolds can be sterilized via gamma or autoclave.

8. Close lid on printer cartridge after printing to avoid setting of the calcium phosphate bioink in the syringe.

