

FilamentOss (FOss)

FilamentOss (FOss) is a bioactive composite filament composed of biodegradable polylactic acid (PLA) and an inorganic phase with osteoinductive properties, specifically designed for bone tissue engineering. PLA provides mechanical strength, while the inorganic phase –hydroxyapatite (FOss HA) or magnesium (FOss Mg)– enhances biological performance. The composition is fully customizable, allowing incorporation of the inorganic component up to 50% of the total volume. At this maximum concentration, the composite can be thermally sintered to produce a stable, fully inorganic scaffold that retains the geometry of the original printed construct (FOss HASint).

Specifications

PARAMETER	SPECIFICATION
Base component	PLA with up to 50% (v/v) inorganic phase
Appearance	FOss HA: White to grey filament/pellets FOss Mg: Black filament/pellets
Particle diameter	FOss HA: 3 µm FOss Mg: 29 µm
Particle density	FOss HA: 3.16 gr/cm ³ FOss HASint: 2.19 gr/cm ³ FOss Mg: 1.74 gr/cm ³
Printing temperature	Print head: 155 – 165 °C Bed platform: 40 °C

Key properties

Bioactivity

The particulate inorganic components of FOss HA and FOss Mg confer to the 3D printed constructs excellent osteoinductive properties.

Biocompatibility

FOss supports *in vitro* cell adhesion and cell growth, making it suitable for cell cultures

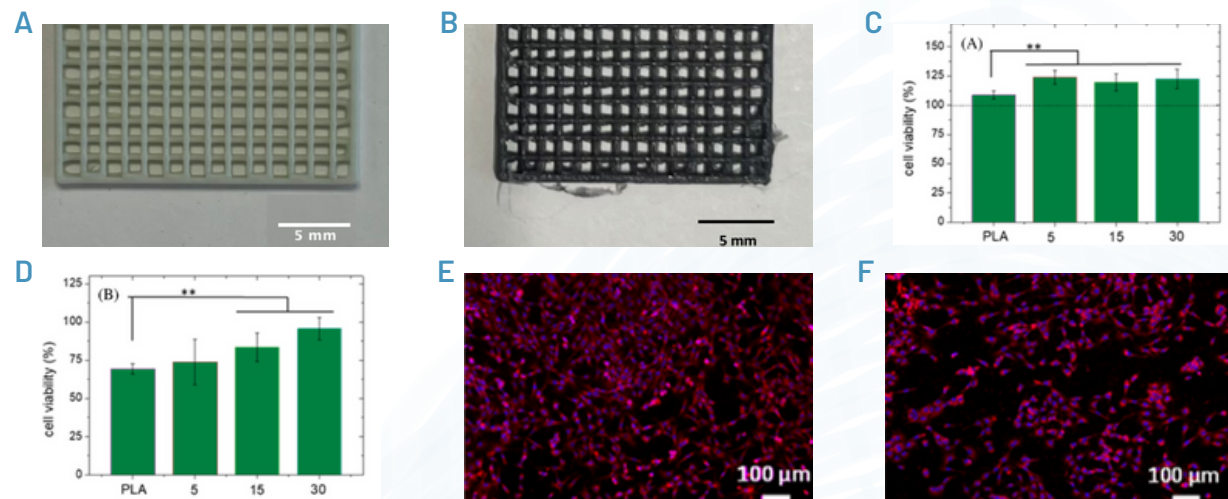
Available concentrations

The inorganic phase (HA or Mg) is available in concentrations of 5%, 10%, 15%, and 20% (wt)

Sterilization

FOss can be sterilized by UV irradiation.

Supportive Material



(A) Macroscopic image of FOss 15% HA printed scaffold [1]; (B) Macroscopic image of FOss 15% Mg printed scaffold [1]; (C) Cell viability of mouse embryonic fibroblasts (MEF) cultured in degradation media from composites (PLA incorporating 5, 10, and 15% HA vol%) after 24 h [1]; (D) Cell viability of MEF cultured on the composite films [1]; (E) Fluorescent images of MEF cells on film FOss 5HA [1]; (F) FOss 15HA after 24 h of culture [1].

References

[1] A. Ferrández-Montero et al., *Polymer Composites*, 2024, 45 (8), 7237.

Intended use

Research Use Only. Not for use in diagnostic procedures or for administration to humans.

Shelf life

The product remains stable when stored and handled according to the recommended conditions.

Storage conditions

Keep container tightly closed. Store in a dry, well-ventilated area, protected from atmospheric agents.

Recommended storage temperature: Below 40 °C.

Printing protocol

3D printing protocol can be downloaded from our website. Scan the QR code to reach the product webpage.

