

Polylactic Acid (PLA)

Polylactic Acid (PLA) is a biodegradable thermoplastic derived from renewable sources like corn starch and sugarcane. It is the most widely used filament in FDM 3D printing due to its ease of use and good mechanical properties. Thanks to its strong adhesion to various build surfaces, a heated bed is not strictly required, although using one lower temperatures (40–60 °C) can improve printing quality and minimize warping, especially for larger or more complex structures.

Specifications

PARAMETER	SPECIFICATION
Base component	Polylactic acid
Appearance	Opaque filament
Tensile modulus	2315 MPa
Notched Izod impact	118 J/m ²
Printing temperature	Print head: 200–220 °C Bed platform: 40–60 °C

Key properties

Biomechanical properties

PLA high mechanical strength makes it an ideal biomaterial for load-bearing applications.

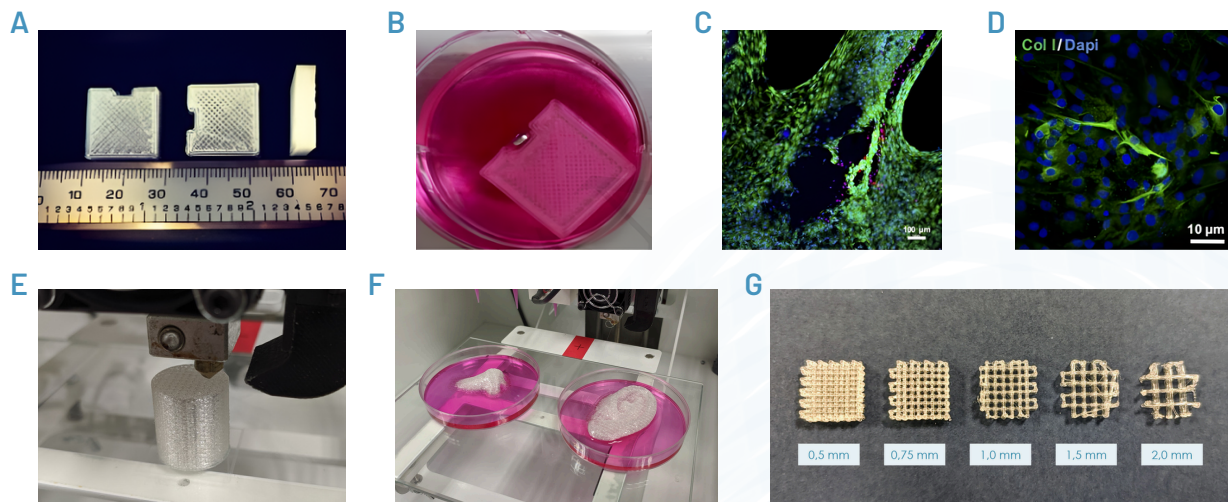
Biocompatibility

PLA has been approved by the FDA for a wide range of medical applications.

Biodegradability

PLA degrades into innocuous lactic acid monomers within 6 to 24 months depending on the environmental conditions and the characteristics of the 3D printed constructs.

Supportive Material



(A) 3D-printed PLA scaffolds [1]; **(B)** 3D-printed scaffold with a magnetic piece [1]; **(C)** Confocal microscopy images of live cells stained with green fluorescence (CTG) and dead cells identified by red-fluorescent propidium iodide staining [1]; **(D)** Confocal images showing cartilage-specific Col I staining (green) in human primary chondrocytes cultured on PLA scaffolds for 4 weeks [1]; **(E)** 3D-printed cylindrical scaffold (10 × 20 mm, diameter × height) using a 1 mm pore size and a triangular infill pattern [2]; **(F)** 3D-printed anatomical models (nose and ear) using R3D Bio V1 [2]; **(G)** 3D-printed scaffolds with pore sizes ranging from 0.5 to 2.0 mm using a diagonal infill pattern [2].

References

- [1] Melchor et al., *Sensors and Actuators B*, 2018; 266, 841–852.
- [2] REGEMAT 3D.

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 and below 40 °C.

Printing protocol

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

