

# Effect of infill pattern on mechanical properties of 3D printed PLA and cPLA

## Abstract

PLA are the most sustainable alternatives and can fit in a wide-range of applications of electronics, nonwoven fabrics and food packaging. With these PLA's adaptability and suitability in many techniques of production such as injection moulding, extrusion, and blow moulding, PLA has become high interest in the production process. Besides, PLA as a thermoplastic polyester that mostly obtained from renewable materials [1]. Infill patterns can affect the mechanical properties of 3D printed PLA and cPLA. PLA with zig zag infill pattern has higher tensile strength of 23.409 MPa compared to PLA with grid and concentric infill pattern. Meanwhile, cPLA with grid infill pattern has higher tensile strength of 30.5638 MPa compared to cPLA with concentric and zig zag infill pattern. By using the suitable infill pattern parameter, the 3D printed PLA and cPLA can have good mechanical properties and can be applied in packaging, pharmaceuticals, textiles, automotive, biomedical and tissue engineering. It has been widely investigated for biomedical applications due to its biodegradability and biocompatibility.