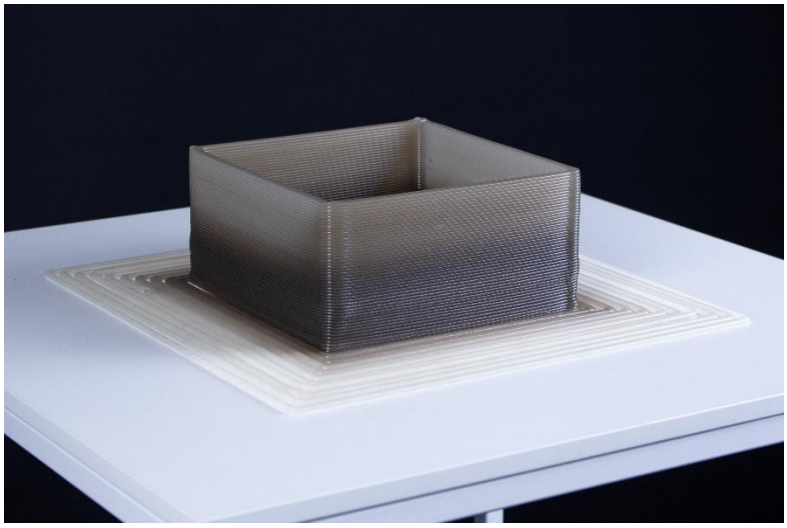
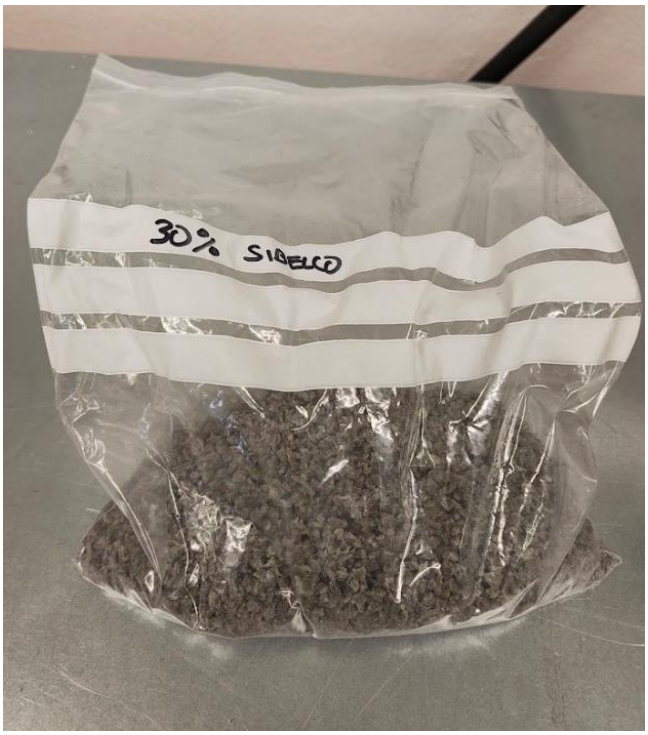
SAVONIA

PLA compounded with Sibelco - tailings print test





Purpose of the experiment

- The aim of this experiment was to evaluate whether mineral tailings from Sibelco can function as a viable additive in a pellet-based 3D printing process
- The goal was to observe how the material behaves during extrusion and how it affects the printing equipment

Manufacturing process

- The composite was prepared by combining 70% shredded PLA -plastic with 30% Sibelco tailings (Quartz), followed by the addition of 10% PLA granules to support stable extrusion.
- A box geometry was modeled in Rhino and converted into a robot program using the Adaone slicing software.
- The printing was carried out using a CEAD pellet extruder in combination with a KUKA KR120 R2700 robot arm.

Results

- Printing with PLA/tailings composite is feasible, but requires a uniform and well-mixed material for consistent extrusion
- For optimal results, the tailings should be compounded directly into the pellets to ensure an even mixture.

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