Technical Data Sheet (TDS)

Product Name: BioStruct Ch60

Redesigning Earth

Description

High-strength fungal chitin–chitosan dry powder blend, optimized for direct high-pressure extrusion. Designed for structural, biodegradable large-format 3D printing applications. Water-free, thermoplastic-reactive formulation suitable for high-temperature printing environments.

Composition

Component	Percentage (%w/w)	Source
Fungal Chitin	60%	Mycelium-based
Fungal Chitosan	35%	Mycelium-based
Plasticizer (Citric Acid + Glycerol mix)	5%	Plant-derived

Note: No synthetic polymers or water added. Plasticizer balance optimized for internal softening and hydrogen bonding under heat/pressure.

Physical Properties

Property	Value	Test Method
Appearance	Fine beige powder	Visual
Odor	Mild, neutral	Sensory
Particle Size (D90)	≤ 150 µm	Laser Diffraction
Bulk Density	~0.4 g/cm³	ISO 60
Moisture Content (pre-dried)	≤ 1.0%	Karl Fischer
pH (1% in acid)	5.0–6.5	ISO 1148
Melting onset (under pressure)	~190 °C	DSC under 100 bar
Shear Thinning Behavior	Strong	Rheometry

Thermal Processing Window

Parameter	Range
Extrusion Temp	180–210 °C
Extrusion Pressure	100–150 bar
Recommended Screw Speed	30–80 RPM
Feed Type	Direct powder feed (no pelletizing)
Layer Height	1–2 mm
Print Speed	up to 200 mm/s

Mechanical Potential (Printed, Estimated)

Property	Target Range	Conditions
Compression Strength	45–70 MPa	Post-cool (ambient)
Tensile Strength	20–35 MPa	Dry
Shore Hardness	D 60–70	ASTM D2240
Fire Resistance	Moderate (charring)	Self-extinguishing w/ additives optional

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Handling & Storage

- Store in **dry, cool environments** (<30 °C).
- Use sealed, **moisture-proof containers**.
- Avoid direct contact with water or humidity.
- Pre-dry material if exposed to ambient air for extended time.

Sustainability

- 100% **biodegradable**
- **Animal-free**, **vegan-friendly**
- Made from **fungal biomass byproducts**
- **Circular economy-compatible**