



Lower carbon footprint compared to fossil-based 3D printing material

- Wood-based, cellulose reinforced biocomposite
- Up to 80 % lower carbon footprint compared to fossil-based 3D printing material
- Natural fibres from PEFC-certified, sustainably managed forest
- Wood like post-processing properties
- High definition production
- Easy to use, drop-in solution

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UPM Formi 3D

TECHNICAL SPECIFICATION

UPM Formi 3D20/19

MATERIAL	UPM Formi 3D20/19 is cellulose fiber filled biocomposite. Principal ingredients are specially selected cellulose fibers and native polylactide acid.
APPLICATIONS	UPM Formi 3D20/19 is grade developed especially for large scale additive manufacturing. Recommended applications include: Furnitures, Moulds (e.g. concrete casting, vacuum infusion), Art and decor, Prototyping.
ENVIRONMENT	UPM Formi 3D is manufactured from renewable cellulose fibers. Material can be recycled or burned for energy. All cellulose fibres are from certificated forests.

PROPERTY	Property	Test method	Injection moulded	3D printed*
PHYSICAL AND MECHANICAL PROPERTIES	Density, g/cm ³	EN ISO 1183	1,2	1,2
	Tensile strength, N/mm ²	ISO 527	39	32
	Tensile strength (z-direction), N/mm ²	ISO 527		10
	Tensile modulus, N/mm ²	ISO 527	3600	3200
	Tensile modulus (z-direction), N/mm ²	ISO 527		2000
	Strain (tensile), %	ISO 527	4	4
	Impact Strength, Charpy, kJ/m ²	ISO 179/1eU	20	13
	Peak melt temperature, °C	ISO 11357	135-180	135-180
	Glass transition temperature, °C	ISO 11357	65	65
	Melt flow index (190 °C/10kg)	ISO 1133	16	16
	Fibre content (%)		20	20

* 3D printed with 4mm nozzle / 1,5mm layer

COLOURS	Lignin free fibres enable richer colors which, whilst gently lightening over time. The light color remain bright. In 3D extrusion, it is recommended to use PLA-based color masterbatch for coloring.
POST PROCESSING	3D printed parts can be post processed by conventional wood post processing methods including: milling, sawing, sanding, staining, waxing, varnishing, painting
PRETREATMENT	UPM Formi contains cellulose fibres which may absorb moisture if the package is open. Close the package at all times when possible. UPM Formi composite should be dried for minimum of 3 hours at 80 °C (dehumidifying dryer preferred).
SAFETY	Maximum recommended processing temperature is 200 °C. Overheating may cause risk of thermal degradation. Auto-ignition of UPM Formi material is possible after purging the moulding machine. Recommended to purge into cool water. Product is non-flammable under normal conditions of storage, manipulation and use. In the case of inflammation as a result of improper manipulation, or storage, it is preferable to use polyvalent powder extinguishers (ABC powder) or water, in accordance with fire protection system regulations.
STORAGE	UPM Formi granulates should be protected from UV-light and stored in closed packages in dry conditions at temperature below 50 °C. Air humidity can increase moisture content of the material and have negative effects on the end product properties.

