TECHNICAL DATA

P726

Product Demonstration

Kings 3D Printing

Material Overview

Wood-based biodegradable 3D printing material is a biodegradable, semi-crystalline, bio-based aliphatic polyester supplied in granular form for 3D printing applications. The material offers high rigidity, good heat resistance, hydrolysis resistance, product stability, good processability and colorability, and high molecular weight for recyclability. In terms of compatibility, it is not compatible with conventional plastics such as PE, PP, PET and PS, but it can be blended with biodegradable materials, including PLA and other aliphatic polyesters such as PBS, PBSA and PBAT, as well as TPS. When this material is blended with other materials, relevant testing is strongly recommended to evaluate the quality of the final product.

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Kings 3D Printing

Key Characteristics

1. **Biodegradability**: A biodegradable, semi-crystalline, bio-based aliphatic polyester material for 3D printing.
2. **Mechanical Performance:** Offers high rigidity, good heat resistance, and product stability.
3. **Processing Performance:** Good processability and colorability; suitable for processing on ordinary machines.
4. **Compatibility:** Not compatible with conventional plastics such as PE, PP, PET and PS; can be blended with biodegradable materials such as PLA, PBS, PBSA, PBAT and TPS.
5. **Hydrolysis Resistance:** Designed with good hydrolysis resistance, helping maintain material stability.
6. **Testing Requirement:** When blended with other materials, testing is strongly recommended to evaluate final product quality.
7. **Storage & Drying:** Should be stored in a dry, well-ventilated warehouse; pre-drying is recommended if moisture content exceeds 0.3%.

Common Applications

- Interior Decoration: Vases, lamps, and decorative art.
- Prototyping & Models: Architectural models and prototypes.
- Furniture & Fixtures: Custom connectors and fittings.
- Concrete Formwork: 3D-printed, biodegradable formwork for cast-in-place concrete structures.

Form

- Pellets, 25 kg/bag

Typical Properties

Wood-based biodegradable raw material offers good rigidity and heat resistance. Its main features are as follows:

1. High rigidity
2. Excellent heat resistance and short processing cycle
3. Excellent hydrolysis resistance and product stability
4. Good processability and colorability
5. High molecular weight and good recyclability

Property	Unit	Test Method	Typical Value
Density	g/cm^3	ASTM D-792	1.23
Melt Flow Index (170℃, 2160g)	g/10 min	ASTM D-1238	2–7
Melting Point	℃	DSC	150–170
Vicat Softening Point A/120	℃	ASTM D-648	65
Tensile Strength	MPa	ASTM D-638	45
Elongation at Break	%	ASTM D-638	3
Notched Impact Strength	kJ/m^2	ASTM D-256	5
Mold Shrinkage	%	ASTM D-955	0.3–0.5
Water Absorption	%	ASTM D-570	<0.5

※ The above data are typical values and should not be nterpreted as technical specificatic ns for quality determination.

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Storage

1. During transportation and storage, the temperature should not exceed 60℃.
2. The product should be stored in a dry and well-ventilated warehouse. Moisture protection is required, and the product should be kept away from soil, seawater, and sludge.
3. At an ambient temperature of 23℃, the shelf life of this product is 2 years.
4. Before processing, it is recommended to test the moisture content of the resin. If the moisture content exceeds 0.3%, pre-drying is required.
5. Typical drying conditions: 2–3 hours at 212℉ / 100℃

Drying Procedure

- Pre-drying is recommended before processing to ensure good material processability.
- The material should be kept sealed before use. Any unused material should be resealed immediately after use.

Production Equipment

- Wood-based biodegradable raw material can usually be processed on conventional equipment. A suitable processing temperature is critical to obtaining good product quality.

Machine Purging Procedure

- Wood-based biodegradable raw material is not compatible with traditional petroleum-based materials. If the machine has previously processed traditional petroleum-based resins, it must be cleaned before use.
- To clean the machine thoroughly, please follow the purging procedure below:

1. Heat the extruder to the original processing temperature of the previously used resin.
2. Purge the machine with low-viscosity, low-melting-point LDPE while gradually reducing the temperature to 150–180℃.
3. Clean the feeding system thoroughly to prevent contamination.
4. Add the wood-based biodegradable raw material into the extruder. After the residual material is fully purged with this material, reduce the barrel temperature to the recommended processing temperature listed below.
5. Production can begin once the machine reaches the required temperature.

Processing Parameters

- Wood-based biodegradable raw material is temperature-sensitive. At the beginning of processing, the extruder temperature should be kept as low as possible.
- If the temperature is too low, it can be adjusted upward in increments of 5℃ each time.

Reference Temperatures for Cast Sheet Extrusion		
Feeding Zone	320–329℉	160–165℃
Compression Zone	329–338℉	165–170℃
Metering Zone	329–338℉	165–170℃
Die	329–347℉	165–175℃

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