TECHNICAL DATA SHEET

PLA

The Smart Print PLA 3D printing filament has been developed using high-quality, plant-based raw materials such as corn and sugarcane to provide an eco-friendly solution without compromising precision or reliability. Compared to standard PLA, it offers smoother extrusion, lower shrinkage (1.5–2.5%), and a broad printing temperature range of 190–230 °C, ensuring easy and consistent performance even for beginners. Its refined formulation produces clean surfaces and fine details, making it ideal for decorative models, collectible figures, prototypes, and display components.

Product features

Superior Print Performance

Engineered for precision and reliability, Smart Print PLA ensures smooth extrusion and excellent thermal stability across a wide temperature range of 170–230 °C. Its refined formulation supports consistent flow, accurate layer deposition, and dependable results across various printer settings and applications.

Material Versatility and Resistance

Smart Print PLA demonstrates strong resistance to solvents and adapts well to multiple processing techniques such as extrusion, injection molding, or blow molding. This versatility allows it to be used in both prototyping and small-scale production environments requiring consistent quality and durability.

Mechanical and Surface Properties

With a balanced combination of strength, toughness, and surface gloss, PLA provides durable yet visually appealing prints. Its natural transparency and smooth finish make it suitable for decorative, packaging, and display applications, while its flame-retardant and UV-resistant characteristics enhance long-term stability.

Biocompatibility and Safety

Produced from renewable, plant-based sources, Smart Print PLA is biodegradable, non-toxic, and safe for human contact. Its mild surface acidity ensures skin compatibility, making it a reliable choice for educational, medical, and textile-related applications that require both safety and sustainability.

Printing guidelines

Based on a 0.4 mm nozzle. Printing conditions may vary with different nozzle diameters.

Nozzle temperature **180 - 220°C**	Build surface material **PEI, glass**	Build surface treatment **glue**
Build plate **40 - 60°C**	Cooling fan **turned on**	Printing speed: **30 - 70 mm/s**
Raft separation distance **0.2 mm**	Retraction distance **7 mm**	Retraction speed **20 mm/s**

Drying guidelines

To achieve the best printing performance and surface quality, it's recommended to dry Smart Print PLA filament before use - especially if it has been exposed to ambient humidity. As a hygroscopic material, PLA can absorb moisture from the air, leading to stringing, bubbling, or poor layer adhesion. For optimal results, use a dedicated filament dryer or a convection oven with precise temperature control. Avoid open heat sources or excessive temperatures that could deform the spool or damage the filament. After drying, store the filament in a sealed container with desiccant to prevent moisture reabsorption, particularly in humid environments or when working with previously opened spools.

Available colors

HS-PLA series filament

The Smart Print HS-PLA 3D printing filament represents the next generation of high-speed PLA materials, engineered for modern, performance-driven 3D printers. Through precise optimization of the polymer's melting point, glass transition temperature, and manufacturing process, it delivers exceptional flow characteristics, faster solidification, and enhanced resistance to thermal deformation. Compared to standard PLA, Smart Print HS-PLA enables significantly higher printing speeds, superior layer adhesion, and smoother surface quality—meeting the demanding requirements of professional high-speed printing environments.

Precautions

Printer Compatibility

Ensure that your 3D printer supports Smart Print PLA specifications. The filament performs optimally on standard FDM printers designed for PLA-based materials. Variations in nozzle size, temperature calibration, or feeding systems between printers may influence print results. Always verify the recommended settings to maintain stable extrusion and consistent quality.

Shrinkage Control

While Smart Print PLA ensures excellent dimensional accuracy, it has low heat resistance and may soften at temperatures above 60 °C. To preserve print integrity, avoid exposing the filament or finished parts to direct sunlight, heaters, or enclosed high-temperature environments.

Cooling Settings

PLA benefits from efficient cooling to achieve sharp details and a smooth surface finish. Use moderate to high fan speeds to ensure consistent solidification and prevent warping or stringing. For complex models, adjust fan power gradually to maintain a balance between adhesion and cooling.

Filament Storage

Store Smart Print PLA in a dry, airtight container with desiccant to protect it from humidity. As a hygroscopic material, it can absorb moisture from the air, which may cause bubbling or inconsistent extrusion. Although PLA is non-toxic and low-odor, always operate 3D printers in a well-ventilated area to ensure safe and comfortable printing conditions.

Disclaimer

The data and values presented in this document are intended solely for reference and comparison purposes. They should not be considered precise design specifications or used for quality control, as actual results may vary depending on printer settings, model geometry, and environmental conditions.
The performance and quality of printed parts depend on multiple factors, including material characteristics, print parameters, and application environment. Users are fully responsible for assessing the safety, regulatory compliance, technical suitability, and end-of-life handling (recycling or disposal) of Smart Print PLA materials for their intended use.
Smart Print makes no warranties, explicit or implied, regarding the suitability of this product for any particular purpose unless otherwise stated. The company assumes no liability for any loss, damage, or injury resulting from the use of this material. For optimal results, always follow the printing parameters specified on the filament spool rather than relying solely on this datasheet.