

TECHNICAL DATA SHEET



TPU

The Smart Print TPU 3D printing filament combines elasticity, strength, and precision, offering exceptional performance in both functional and decorative applications. Thanks to advanced material engineering, it ensures excellent flexibility, impact resistance, and dimensional stability during printing. Compared to standard TPU, it provides smoother extrusion, reduced stringing, and consistent layer bonding, resulting in durable, high-quality prints. Its high-grade pigments deliver long-lasting, vibrant colors resistant to wear, stretching, and external conditions.

Product features

Superior Flexibility and Performance

Developed through advanced material engineering, Smart Print TPU delivers outstanding elasticity and impact resistance while maintaining excellent print stability. The filament ensures smooth, consistent extrusion with precise flow control, minimizing stringing and printing interruptions. It allows for accurate reproduction of flexible and detailed designs, ensuring professional-quality results across a variety of applications.

Exceptional Elasticity and Tear Resistance

Smart Print TPU combines high stretchability with remarkable durability. Printed parts can be repeatedly bent, stretched, or compressed and still return to their original shape without cracking or deformation. Its superior tear resistance ensures long-lasting performance even under mechanical stress, making it ideal for producing flexible phone cases, protective components, and wearable accessories.

Chemical and Abrasion Resistance

Formulated for demanding conditions, this TPU filament offers excellent resistance to many common chemicals, oils, and abrasion. It retains both its color and mechanical properties over time, even in challenging environments. This makes it a reliable choice for parts exposed to friction, repeated use, or external factors.

Stable and Reliable Printing

Smart Print TPU provides optimal adhesion both to the print bed and between layers, ensuring strong layer bonding and consistent dimensional accuracy. Its controlled flexibility reduces the risk of warping or detachment during printing, enabling smooth workflows and dependable results, even on longer prints.

Printing guidelines

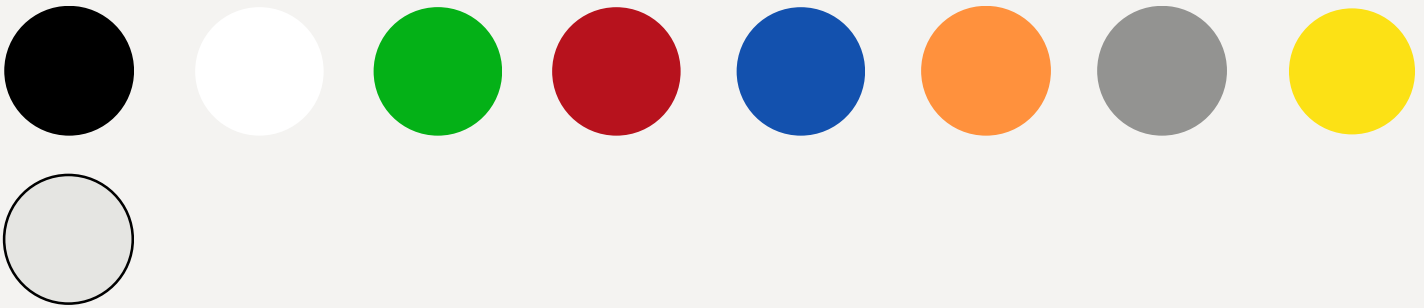
Based on a 0.4 mm nozzle. Printing conditions may vary with different nozzle diameters.

Nozzle temperature 205 - 235°C	Build surface material PEI, glass	Build surface treatment glue
Build plate 50 - 60°C	Cooling fan 1	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 results, it's recommended to dry Smart Print TPU filament before use. As a highly hygroscopic material, TPU easily absorbs moisture from the air, which can cause printing defects such as stringing, poor layer adhesion, or uneven surfaces. For optimal results, use a dedicated filament dryer set to approximately 60°C for about one hour. If a dryer isn't available, a household oven can be used as an alternative - just ensure precise temperature control to avoid overheating or deformation of the filament.

Available colors



Precautions

Printer Compatibility

Before printing, ensure that your 3D printer is compatible with Smart Print TPU. Due to its flexible nature, TPU requires an extruder capable of handling soft filaments—preferably a direct drive system. Verify the recommended nozzle diameter, as a slightly larger nozzle can improve flow stability and reduce the risk of clogging during extrusion.

Shrinkage Control

While TPU offers excellent elasticity, it can deform under unstable printing conditions. Maintain consistent printing temperatures and use a heated build plate to enhance adhesion and reduce warping. Printing in a semi-enclosed or enclosed chamber helps minimize temperature fluctuations, allowing the material to solidify evenly and retain its intended shape.

Cooling Settings

TPU has unique cooling requirements. Excessive or rapid cooling can create internal stress and cause distortion. Set the cooling fan speed to low or medium, and for thin-walled or complex models, reduce it further or temporarily disable cooling during critical stages to ensure proper layer bonding and surface quality.

Filament Storage

Store Smart Print TPU filament in a dry, cool, and dark environment. The material easily absorbs moisture and can degrade when exposed to humidity or direct sunlight. Keep unused spools sealed in airtight containers with desiccant packs to preserve their quality and ensure optimal printing performance.

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 assurance, as actual results may vary depending on printer settings, model geometry, and environmental conditions.

The performance of printed parts depends on various factors, including material characteristics, printing parameters, and application requirements. Users are fully responsible for evaluating the safety, regulatory compliance, technical suitability, and end-of-life handling (recycling or disposal) of Smart Print TPU materials within their intended applications.

Smart Print makes no warranties, explicit or implied, regarding the suitability of this filament for any particular use unless otherwise stated. The company assumes no liability for any damage, loss, or injury resulting from the use of the material. For optimal results, always refer to the printing parameters provided on the filament spool rather than relying solely on this datasheet.