TECHNICAL DATA SHEET

FILAFLEX 60A

Description

Filaflex 60A TPU is the softest and most elastic filament in the Filaflex range, setting a new standard in flexible 3D printing. With up to 950% elongation and an ultra-soft Shore 60A hardness, this premium TPU delivers exceptional flexibility and elastic recovery, returning to its original shape without deformation. Designed for professional 3D printing applications, it offers excellent bed adhesion without a heated bed or adhesives and is odorless, skin-safe, and resistant to fuels and solvents — the perfect blend of performance, reliability, and flexibility, specially developed for 3D printing applications.

Key Features

- **Extreme Flexibility:** Ultra-soft Shore 60A hardness with up to 950% elongation
- **Elastic Recovery:** Returns to original shape after deformation
- **Professional Grade:** For high-elasticity 3D printing applications
- **Excellent Bed Adhesion:** Prints without heated bed or additional adhesives
- **Material Safety:** Non-toxic and skin-safe formulation
- **Chemical Resistance:** Resistant to solvents and fuels

Professional Applications

- **Medical & Orthopedic:** Custom insoles and prosthetic components
- **Surgical Training:** Anatomical models for operation simulation
- **Industrial Components:** Buffers, gaskets, tires, and grippers
- **Fashion & Accessories:** Textile printing, bags, and wearable items
- **Footwear Production:** Soles, custom shoes, and sandals

Certifications - ISO 10993 Tested & Regulatory Compliance

- ISO 10993-5: 2009 - In Vitro Cytotoxicity Test with Filaflex
- ISO 10993-23: 2021 - Acute Skin Irritation Test with Filaflex
- ISO 10993-10: 2013 - Skin Sensitization Test with Filaflex
- Food & Skin Contact Regulatory Statement – EU 10/2011 & FDA 21 CFR 177.2600

Resources

- Complete Guide: How to Print with Filaflex Flexible Filament
- Troubleshooting Guide: Common Issues with Flexible Filaments
- Research and Innovation with Filaflex
- Filaflex
- Print Settings

Physical Property	Value	Unit	Test method according to
Material density	1070	kg/m³	ISO 1183
Melt flow rate (230 °C / 2.16 kg)	—	g/10 min	ISO 1133

Mechanical Property	Value	Unit	Test method according to
Hardness (Shore A, 3 s)	63	—	ISO 7619-1
Tensile strength	26	MPa	DIN 53504-S2
Elongation at break	950	%	DIN 53504-S2
Stress at 20% elongation	1	MPa	DIN 53504-S2
Stress at 100% elongation	2,5	MPa	DIN 53504-S2
Stress at 300% elongation	4,5	MPa	DIN 53504-S2
Tear strength	40	N/mm	ISO 34-1
Abrasion resistance	45	mm³	ISO 4649
Compression set (23 °C / 72 h)	40	%	ISO 815
Compression set (70 °C / 24 h)	25	%	ISO 815

Thermal Property	Value	Unit	Test method according to
Glass transition temperature (10 °C/min)	-54	°C	ISO 11357-1/-2
VST Vicat softening temperature (Method A, 10 N, 120 °C/h)	70	°C	ISO 306

Printing Properties	Recommended

1. Material Preparation

Drying Temperature	55 °C
Minimum Time	1 hour
Note	Drying is crucial for optimal results

2. Basic Parameters, Speed Settings and Retraction Settings

Nozzle 0.4 mm	
Layer Height	0.2 mm
Line Width	0.34 mm
Volumetric Speed (mm³/s)	2.0 mm³/s
Temperature	235 °C
External Perimeter	50% - 15.15 mm/s
Internal Perimeters	75% - 22.73 mm/s

Infill	100% - 30.30 mm/s
Top/Bottom	60% - 18.18 mm/s
First Layer	30% - 9.09 mm/s
Retraction distance	1.5–2.0 mm
Retraction speed	30 mm/s
Retraction Z-Hop	0.2 mm
Nozzle 0.6 mm	
Layer Height	0.3 mm
Line Width	0.54 mm
Volumetric Speed (mm^3/s)	4.5 mm^3/s
Temperature	235 °C
External Perimeter	50% - 14.15 mm/s
Internal Perimeters	75% - 21.23 mm/s
Infill	100% - 28.30 mm/s
Top/Bottom	60% - 16.98 mm/s
First Layer	30% - 8.49 mm/s
Retraction distance	1.5–2.5 mm
Retraction speed	30 mm/s
Retraction Z-Hop	0.2 mm
Nozzle 0.8 mm	
Layer Height	0.4 mm
Line Width	0.74 mm
Volumetric Speed (mm^3/s)	8.0 mm^3/s
Temperature	235 °C
External Perimeter	50% - 13.70 mm/s
Internal Perimeters	75% - 20.55 mm/s
Infill	100% - 27.40 mm/s
Top/Bottom	60% - 16.44 mm/s
First Layer	30% - 8.22 mm/s
Retraction distance	2.0–3.5 mm
Retraction speed	30 mm/s
Retraction Z-Hop	0.2 mm
Nozzle 1.0 mm	
Layer Height	0.5 mm
Line Width	0.94 mm
Volumetric Speed (mm^3/s)	12.5 mm^3/s
Temperature	235 °C
External Perimeter	50% - 13.44 mm/s
Internal Perimeters	75% - 20.16 mm/s
Infill	100% - 26.88 mm/s
Top/Bottom	60% - 16.13 mm/s
First Layer	30% - 8.06 mm/s
Retraction distance	2.0–3.5 mm
Retraction speed	30 mm/s

Retraction Z-Hop	0.2 mm

3. Bed Temperature

Small parts	Room temperature (no heating)
Large parts	40–45 °C

4. Cooling

General Fan	0% (always off)
Force fan on overhangs/bridges	OFF
Layers < 10 seconds	40%
First layer	0%

5. Troubleshooting

Irregular extrusion	1. Dry the filament 2. Check extruder 3. Reduce printing speed
Poor adhesion	1. Dry the filament 2. Use adhesive 3. Adjust first layer
Stringing	1. Dry the filament 2. Adjust retraction 3. Increase travel speed 4. Check temperature

6. Best Practices

- Keep filament dry – store and dry before use.
- Preferably use a direct drive extruder system.
- Print multiple small parts simultaneously for better results.
- Use maximum travel speed to minimize stringing.

Disclaimer

PLEASE NOTE: These printing parameters are initial recommendations based on our experience. They may need adjustment depending on your specific 3D printer, environmental conditions, and the geometry of the part you are printing. Use these settings as a starting point and fine-tune them according to your specific needs.

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