TECHNICAL DATA SHEET

FILAFLEX 95A

Description

Filaflex 95A TPU (Medium-Flex) is the most user-friendly flexible filament in the Filaflex range, making it the ideal starting point for flexible 3D printing. With a Shore 95A hardness and an elongation of up to 500%, this semi-flexible TPU offers an excellent balance between flexibility and mechanical strength, while maintaining easy and reliable printability. Designed for universal compatibility, Filaflex 95A works seamlessly with all types of 3D printers, including Bowden and direct-drive extrusion systems. It delivers excellent bed adhesion without the need for a heated bed or adhesives, and is odorless, non-toxic, skin-safe, and resistant to fuels and solvents, ensuring consistent performance in both prototyping and end-use applications.

Key Features

- **Balanced Flexibility:** Shore 95A hardness with up to 500% elongation
- **Beginner Friendly:** Easiest flexible filament to print in the Filaflex range
- **Universal Compatibility:** Suitable for all 3D printers, including Bowden systems
- **Excellent Bed Adhesion:** No heated bed or adhesives required
- **Material Safety:** Odorless, non-toxic, and skin-safe formulation
- **Chemical Resistance:** Resistant to fuels and solvents

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	1240	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)	95	—	ISO 7619-1
Tensile strength	33	MPa	DIN 53504-S2
Stress at 100% elongation	11	MPa	DIN 53504-S2
Stress at 300% elongation	18	MPa	DIN 53504-S2
Tear strength	130	N/mm	ISO 34-1
Abrasion resistance	35	mm³	ISO 4649
Compression set (23 °C / 72 h)	20	%	ISO 815
Izod impact strength (23 °C notched)	NB	kJ/m²	ISO 180
Izod impact resistant (23 °C unnotched)	NB	kJ/m²	ISO 180

Thermal Property	Value	Unit	Test method according to
VST Vicat softening temperature (Method A, 10 N, 120 °C/h)	125	°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	0.38 mm
Volumetric Speed (mm³/s)	4.5 mm³/s
Temperature	245 °C
External Perimeter	50% - 29.61 mm/s
Internal Perimeters	75% - 44.41 mm/s
Infill	100% - 59.21 mm/s
Top/Bottom	60% - 35.53 mm/s
First Layer	30% - 17.76 mm/s
Retraction distance	1.8–2.5 mm
Retraction speed	40 mm/s
Retraction Z-Hop	0.2 mm

Nozzle 0.6 mm	
Layer Height	0.3 mm
Line Width	0.58 mm
Volumetric Speed (mm³/s)	10.1 mm³/s
Temperature	245 °C
External Perimeter	50% - 29.01 mm/s
Internal Perimeters	75% - 43.52 mm/s
Infill	100% - 58.02 mm/s
Top/Bottom	60% - 34.81 mm/s
First Layer	30% - 17.41 mm/s
Retraction distance	1.8–2.5 mm
Retraction speed	40 mm/s
Retraction Z-Hop	0.2 mm
Nozzle 0.8 mm	
Layer Height	0.4 mm
Line Width	0.78 mm
Volumetric Speed (mm³/s)	18.0 mm³/s
Temperature	248 °C
External Perimeter	50% - 28.85 mm/s
Internal Perimeters	75% - 43.27 mm/s
Infill	100% - 57.69 mm/s
Top/Bottom	60% - 34.62 mm/s
First Layer	30% - 17.31 mm/s
Retraction distance	2.0–3.0 mm
Retraction speed	40 mm/s
Retraction Z-Hop	0.2 mm
Nozzle 1.0 mm	
Layer Height	0.5 mm
Line Width	0.98 mm
Volumetric Speed (mm³/s)	28.1 mm³/s
Temperature	250 °C
External Perimeter	50% - 28.67 mm/s
Internal Perimeters	75% - 43.01 mm/s
Infill	100% - 57.35 mm/s
Top/Bottom	60% - 34.41 mm/s
First Layer	30% - 17.20 mm/s
Retraction distance	2.0–3.0 mm
Retraction speed	40 mm/s
Retraction Z-Hop	0.2 mm

3. Bed Temperature

Small parts	Room temperature (no heating)
Large parts	50–55 °C

4. Cooling

General Fan	0% (always off)
Force fan on overhangs/bridges	OFF
Layers < 20 seconds	50%
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.

RECREUS INDUSTRIES S.L. VAT: ESB54876479
C/El Envelope, F13-F14, Pol. Ind. Finca Lacy
03600, Elda (Alicante) - SPAIN

(0034) 865 777 966
info@recreus.com
www.recreus.com

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