TECHNICAL DATA SHEET

CONDUCTIVE FILAFLEX

Description

Conductive Filaflex TPU is a flexible, electrically conductive filament developed for the production of conductive components and wearable electronic devices. With a Shore 92A hardness, this innovative TPU combines electrical conductivity with flexibility, enabling the creation of functional electronic parts and interactive components through flexible 3D printing.
Designed for professional applications, Conductive Filaflex offers reliable printability, excellent bed adhesion without the need for a heated bed or adhesives, and is odorless and safe for skin contact. Its unique material formulation makes it suitable for both prototyping and end-use parts in low-current applications where flexibility and conductivity are required.

Key Features

- **Dual Properties:** Electrical conductivity combined with flexible TPU behavior
- **Functional Flexibility:** Shore 92A hardness for a balance between flexibility and mechanical stability
- **Easy Printing:** No hardened nozzle required
- **Reliable Performance:** Suitable for functional prototyping and end-use applications

Professional Applications

- **Flexible Electronics:** Conductive tracks, contacts, and pressure-sensitive buttons
- **Wearable Technology:** Direct printing on textiles and flexible wearable components
- **Interactive Devices:** Keypads, trackpads, joysticks, and input interfaces
- **Medical Applications:** ECG patches and flexible monitoring devices
- **Functional Prototyping:** Low-current conductive components

Resources

- Print Settings
- How it works

Physical Property	Value	Unit	Test method according to
Material density	1330	kg/m³	ISO 1183

Mechanical Property	Value	Unit	Test method according to
Hardness (Shore A, 3 s)	92	—	ISO 7619-1
Tensile modulus	100	MPa	ISO 527
Elongation at break after storage in water (80 °C, 42 d)	>50	%	DIN 53504-S2

Notched impact strength (Charpy, +23 °C)	NB	kJ/m²	ISO 179

Thermal Property	Value	Unit	Test method according to
HDT (1,82MPa)	50	°C	ISO 75-2
VST Vicat softening temperature (Method A, 10 N, 120 °C/h)	50	°C	ISO 306

Conductive Property	Value	Unit	Test method according to
Surface electrical resistivity	0.9-1.65E+01	Ω·cm	Internal Recreus validated test method (1.75 mm filament)

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)	4.0 mm³/s
Temperature	250 °C
External Perimeter	50% - 26.32 mm/s
Internal Perimeters	75% - 39.47 mm/s
Infill	100% - 52.63 mm/s
Top/Bottom	60% - 31.58 mm/s
First Layer	30% - 15.79 mm/s
Retraction distance	1.5–2.0 mm
Retraction speed	20 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)	9.0 mm³/s
Temperature	250 °C
External Perimeter	50% - 25.86 mm/s
Internal Perimeters	75% - 38.79 mm/s
Infill	100% - 51.72 mm/s
Top/Bottom	60% - 31.03 mm/s
First Layer	30% - 15.52 mm/s

Retraction distance	1.5–2.0 mm
Retraction speed	20 mm/s
Retraction Z-Hop	0.2 mm
Nozzle 0.8 mm	
Layer Height	0.4 mm
Line Width	0.78 mm
Volumetric Speed (mm^3/s)	16.0 mm^3/s
Temperature	252 °C
External Perimeter	50% - 25.64 mm/s
Internal Perimeters	75% - 38.46 mm/s
Infill	100% - 51.28 mm/s
Top/Bottom	60% - 30.77 mm/s
First Layer	30% - 15.38 mm/s
Retraction distance	1.5–2.0 mm
Retraction speed	20 mm/s
Retraction Z-Hop	0.2 mm
Nozzle 1.0 mm	
Layer Height	0.5 mm
Line Width	0.98 mm
Volumetric Speed (mm^3/s)	25.0 mm^3/s
Temperature	255 °C
External Perimeter	50% - 25.51 mm/s
Internal Perimeters	75% - 38.27 mm/s
Infill	100% - 51.02 mm/s
Top/Bottom	60% - 30.61 mm/s
First Layer	30% - 15.31 mm/s
Retraction distance	1.5–2.0 mm
Retraction speed	20 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 < 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.

Processing Recommendations

To ensure superior surface finish and optimal layer adhesion, it is recommended to utilize reduced printing speeds in accordance with the specified parameters. A thorough extruder purge is mandatory after each material change to prevent cross-contamination and ensure the consistency of the filament's mechanical and conductive properties.

Electrical Guidelines

When integrating Conductive Filaflex into electronic applications, the electrical resistance of the circuit must be calculated and verified. Please note that this filament is engineered specifically for low-current applications; exceeding these limits may affect performance or part integrity.

Disclaimer and Operational Guidelines

The information and printing parameters provided herein are intended for reference purposes only, as raw materials may vary and results are subject to environmental conditions, printer hardware, and specific part geometry. These settings should be treated as an initial baseline; we encourage users to fine-tune and calibrate parameters according to their specific requirements.

Furthermore, as raw materials may originate from multiple sources, it is the customer's responsibility to perform comprehensive inspections and testing prior to full-scale use. Recreus shall not be held liable for the material's suitability in applications beyond the provided specifications.

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

Date / Revised: 13.01.2026 (REF. 25112015)

Product: Filaflex Conductive

RECREUS INDUSTRIES S.L.