purefil
of Switzerland

Thermoplastic polyurethane (**TPU**)

General

TPU is an elastic material with very good wear resistance, coupled with high resilience. TPU is very abrasion-resistant and has good resistance to oils and greases and is therefore often used in the field of hydraulics and pneumatics. TPU has very good tensile properties. TPU is perfect for FDM 3D printing due to its relatively low shrinkage and excellent adhesion properties. TPU can even be printed on a cold printing plate without significant distortion. The material also adheres very well to other plastics, which is why it can be easily processed in dual 3D printing.
With this thermoplastic elastomer, too, the smaller the filling, the more elastic the printed component remains. The same applies to the wall thickness. The thinner the more elastic.
The TPU has a Shore hardness of 53D/95A

advantage

- No heating plate necessary
- high resilience
- well suited for dual extrusion
- low shrinkage/warping
- good resistance to oils and fats
- Can also be used at temperatures down to -40°C

disadvantage

- Only printable with Direct Drive Extruder
- low printing speed
- only available in transparent

Processing data

Printing temperature
195-235 °C
Heated bed temperature
not necessary, recommended 60°C
Drying temperature
80°C
Drying time
2-3h

Technical specifications

Shrinkage	-	**%**
MFR	-	g/10min
Yield stress (ASTM D638)	38	MPa
Elongation at yield (ASTM D638)	470	%
Elongation at break (ASTM D638)	470	%
Tensile modulus (ASTM D412)	12.6	MPa
Heat deflection temperature 0.45 MPa	-	°C
Vicat softening temperature A	-	°C
Thermal conductivity 23°C	-	W/(K*m)
Flammability (UL 94)	HB	
Density (ISO 1183)	1.17	g/cm^3

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