Technical Data Sheet

Ice9™ TPU

Thermally conductive, electrically non-insulating plastic

Filament product code: TC-TPU-175-1000
Pellet product code: TC-TPU-000-1000

Properties based on 3D printed samples

GENERAL PROPERTIES	VALUE
Base Material	Thermoplastic polyurethane
Color	Dark gray
Density	1500 kg/m^3

THERMAL PROPERTIES	METRIC		ENGLISH		ASTM
Thermal conductivity, in-plane	6	W/m-K	42	BTU·in/hr·ft^2·°F	E1461
Thermal conductivity, through-plane	2	W/m-K	14	BTU·in/hr·ft^2·°F	E1461
Specific heat	1300	J/kg-K	0.31	BTU/lb·°F	E1269
Coefficient of thermal expansion	80	ppm/ °C	44	ppm/°F	E831
Heat deflection temperature, 0.45 MPa	65	°C	149	°F	D648
Max. continuous temperature	110	°C	230	°F	*

MECHANICAL PROPERTIES	METRIC		ENGLISH		ASTM
Shore Hardness	88	A			D2240
Flexural modulus	95	MPa	15	ksi	D638
Tensile strength, Break	27	MPa	4	ksi	D638
Elongation at break	10	%	10	%	D638
Impact strength, Izod notched	No	break	No	break	D256

ELECTRICAL PROPERTIES	METRIC		ASTM
Volume resistivity	>10^5	Ω-cm	D257

* Highest temperature recommended for operation of more than 1 hour and is based internal testing and not any recognized standard.

Recommended FDM Print Settings

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GENERAL PROPERTIES	VALUE
Base Material	Thermoplastic polyurethane
Color	Dark gray
Filament diameter	1.75 ± 0.1 mm

TEMPERATURE SETTINGS	VALUE	UNITS
Extruder temperature	230-270	°C
Bed temperature	0-50	°C
Cooling fan	Bridging only, 60	%

SLICING SETTINGS	VALUE	UNITS
Print speed	20-125	mm/s
Layer height	0.2-0.7	mm
Retraction distance	6	mm
Extra restart distance	0.5	mm
Infill for best thermal performance	95-100	%

ADDITIONAL GUIDELINES	
Nozzle diameter	0.4-1.0 mm
Extruder type	Direct drive, dual gear highly suggested
Print bed preparation	Painters tape with glue stick if no heated bed
Part removal from bed	Heat bed to 70°C then gently remove with spatula
Storage instructions	Sealed bag
Drying instructions	4 hour @ 70°C
PEI flex sheet	50°C during print, flex sheet to pop off