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TPU 90A

Basic info

KINGROON TPU 90A — Flexible, Durable, and Built for High-Demand Applications

KINGROON TPU 90A features higher hardness that provides enhanced structural integrity, making it ideal for applications requiring both flexibility and strength, such as shoe soles, RC tires, protective parts, and functional mechanical components.

With excellent wear resistance and long-lasting durability, KINGROON TPU 90A maintains reliable performance even under repeated bending and continuous mechanical stress—making it the perfect choice for demanding, high-performance projects.

Specifications

Subjects	Data
Diameter	1.75mm
Net Filaments Weight	1kg
Spool Material	ABS (Temperature resistance 90 °C)
Spool Size	Diameter: 200 mm; Height: 67 mm

Recommended Printing Settings

Subjects	Data
Drying Settings before Printing	Blast Drying Oven: 70 °C, 8 h Printer Heatbed: 90 °C, 16 h
Printing and Storage Humidity	< 20% RH (Sealed, with desiccant)
Nozzle Size	0.4, 0.6, 0.8 mm
Nozzle Temperature	200- 250 °C
Bed Type	Smooth PEI Plate, Textured PEI Plate
Bed Surface Preparation	Glue
Bed Temperature	30- 35°C
Cooling Fan	Turn on
Printing Speed	< 200mm/s
Retraction Length	0.4- 0.8 mm
Retraction Speed	10- 30mm/
Chamber Temperature	25- 45°C
Max Overhang Angle	40°
Max Bridging Length	10mm
Support Material	Turn on

Properties

KINGROON TPU 90A Material Performance Testing

KINGROON has evaluated the performance of TPU 90A across various aspects, including its physical, mechanical, and chemical properties.

Physical Properties		
Subjects	**Testing Methods**	**Data**
Density	ISO 1183	1.24g/cm³
Melt Index	210°C,2.16kg	9.36±2.6g/10min
Melting Temperature	DSC, 10 °C/min	180°C
Glass Transition Temperature	DSC, 10 °C/min	N/A
Crystallization Temperature	DSC, 10 °C/min	N/A
Vicar Softening Temperature	ISO 306, GB/T 1633	N/A
Heat Deflection Temperature	ISO 75 1.8 Mpa	N/A
Heat Deflection Temperature	ISO 75 0.45 Mpa	N/A
Saturated Water Absorption Rate	25 °C, 55% RH	0.0061

Mechanical Properties		
Subjects	**Testing Methods**	**Data**
Young's Modulus(X-Y)	ISO 527, GB/T 1040	5.3±0.7MPa
Young's Modulus (Z)	ISO 527, GB/T 1040	4.4±0.6MPa
Tensile Strength (X-Y)	ISO 527, GB/T 1040	12.5±0.8MPa
Tensile Strength (Z)	ISO 527, GB/T 1040	10.1±0.6MPa
Breaking Elongation Rate (X-Y)	ISO 527, GB/T 1040	>650%
Breaking Elongation Rate (Z)	ISO 527, GB/T 1040	>350%
Bending Modulus (X-Y)	ISO 178, GB/T 9341	N/A
Bending Modulus (Z)	ISO 178, GB/T 9341	N/A
Bending Strength (X-Y)	ISO 178, GB/T 9341	N/A
Bending Strength (Z)	ISO 178, GB/T 9341	N/A
Impact Strength (X-Y)	ISO 179, GB/T 1043	124.2kJ/m²
Impact Strength (Z)	ISO 179, GB/T 1043	87.3kJ/m²

Other Physical and Chemical Properties

Subjects	Data
Odor	Odorless
Composition	Thermoplasticpolyurethane
Skin Hazards	No hazard
Chemical Stability	Stable under normalstorage and handling conditions
Solubility	Insoluble in water
Resistance to Acid	Not resistant

Resistance to Alkali	Not resistant
Resistance to Organic Solvent	Not resistant to some organic solvents
Resistance to Oil and Grease	Not resistant to some kinds of oil and grease
Flammability	Flammable
Combustion Products	Water, carbon oxides, nitrogen oxides
Odor of Combustion Products	Pungent odor

Specimen Test

Specimen Printing Conditions	
Subjects	**Data**
Nozzle Temperature	225°C
Bed Temperature	35°C
Printing Speed	34mm/s
Infill Density	100%

All KINGROON TPU test specimens were printed with the following settings: nozzle temperature 225 °C, printing speed 34 mm/s, bed temperature 35 °C, and 100% infill density. Before testing, all specimens were dried at 70 °C for 12 hours. Annealing is not recommended for TPU prints, as models with anything other than very simple shapes or structures may deform significantly during the process.

When drying TPU filament, it is essential to use an oven with sufficient internal volume and even temperature distribution, such as a forced-air (blast drying) oven, ensuring the filament is kept away from direct heat sources. Microwave ovens and kitchen ovens should not be used, as uneven heating can damage both the filament and the prints.