SIRAYA Tech

Roamr

TPU Air HR 80A

Noir **Beige**

Roamr TPU Air HR 80A is a professional-grade structural foaming filament engineered specifically for footwear comfort and cushioning.

It bridges the gap between experimental materials and production-ready shoes, offering a perfect balance of soft impact absorption and reactive energy return. Not just soft—but supportive for every mile.

Ideal for:

- Midsoles
- **Slides/Slippers**
- **Insoles**
- Comfort Liners

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Mechanical Properties

Specification	Value
Name	Roamr TPU Air HR 80A
Net Weight	800g Spool
Diameter	1.75mm (±0.03mm)
Filament Density g/cm³	1.05 g/cm3
Melt Index (MFI)	8 g/10min

The following properties were measured on specimens printed under controlled conditions.*

Properties vary significantly based on print temperature due to the active foaming mechanism. Since Roamr TPU Air HR foams differently with 0.4mm and 0.6mm, where 0.4mm is more commonly used and 0.6mm foaming easier. We are presenting two sets of tables.

Properties at 0.4mm Nozzle

Properties	Sample 1	Sample 2	Sample 3	Sample 4	Method
Print Temp	230℃	240℃	250℃	260℃	-
Flow Rate	90 %	83 %	70 %	60 %	-
Printed Part Density	0.92 g/cm³	0.83 g/cm³	0.7 g/cm³	0.6 g/cm³	ISO 845
Hardness	80 A	78 A	73 A	66 A	ISO 7619
Tensile Yield Strength (X-Y)	9 MPa	7.9 MPa	6 MPa	4 MPa	ISO 527
Elongation at Break (X-Y)	760 %	750 %	630 %	540 %	ISO 527
Bayshore Rebound	50 %	50 %	49 %	48 %	ASTM D2632

Mechanical Properties

Properties at 0.6mm Nozzle

Mechanical Properties	Sample 1	Sample 2	Sample 3	Sample 4	Method
Print Temp	220℃	230℃	240℃	250℃	-
Flow Rate	84 %	74 %	62 %	52 %	-
Printed Part Density	0.84 g/cm³	0.74 g/cm³	0.62 g/cm³	0.52 g/cm³	ISO 845
Hardness	80 A	76 A	70 A	64 A	ISO 7619
Tensile Yield Strength (X-Y)	7.7 MPa	7.1 MPa	5 MPa	3.5 MPa	ISO 527
Elongation at Break (X-Y)	770 %	730 %	610 %	500 %	ISO 527
Bayshore Rebound	50 %	50 %	49 %	48 %	ASTM D2632

** The flow rate percentage is directly proportional to the final printed part density; for example, a 80% flow rate will result in an approximate density of 0.8 g/cm³.*

**Specimens printed under the following conditions: Nozzle size 0.4mm / 0.6mm, Bed temp 45°C, Print speed 60mm/s, Infill 100%, Infill angle ±45°. Flow rate adjusted per temperature for optimal foaming*

Preparing for Printing

Drying	70–80°C for 4-6 hours
Nozzle Diameter	0.4mm–0.8mm
Nozzle Material	Brass nozzles will work, but hardened steel or higher grade nozzles are recommended
Recommended Build Surface	Glass (w/ PVP glue), PEI (w/ release agent), Steel Plate (w/ PVP glue), PC Film
Enclosure	No requirement

Work Flow

Printing with Roamr TPU Air HR 80A

For best results, it is recommended to print directly from a dry box or filament dryer, maintaining humidity below 15%.

Nozzle Temperature	220–260°C
Build Plate Temperature	35–50°C
Cooling Fan Speed	100
Print Speed	30–60mm/s
Flow Rate / Extrusion Mult.	See Table Above for Each Nozzle
Retraction Distance	Off Recommended
Retraction Speed	Off Recommended

Moisture Management

Storage Tip	Recommendation
Sealed Packaging	Store in a sealed aluminum foil bag to prevent moisture.
Use Desiccants	Add desiccants to absorb moisture and keep the material dry.
Avoid Sunlight & Heat	Keep away from direct sunlight and high temperatures to prevent degradation.
Temperature Control	Store at room temperature; avoid extreme heat or cold.