



Roamr TPU Air HR 80A

TECHNICAL DATA SHEET (TDS)

Professional-grade structural foaming TPU filament engineered specifically for footwear comfort, cushioning and high rebound. The active foaming mechanism allows printed density and hardness to be tuned through print temperature and flow rate.

1. Introduction

- Designed to bridge the gap between experimental foaming materials and production-ready footwear.
- Balances soft impact absorption with reactive energy return.
- Ideal applications include midsoles, slides/slippers, insoles and comfort liners.

2. Specification

Specification	Value
Name	Roamr TPU Air HR 80A
Net Weight	800 g spool
Diameter	1.75 mm (+/-0.03 mm)
Filament Density	1.05 g/cm ³
Melt Index (MFI)	8 g/10 min

3. Mechanical Properties - 0.4 mm Nozzle

Property	230 C	240 C	250 C	260 C	Method
Flow Rate	90%	83%	70%	60%	-
Printed Part Density	0.92	0.83	0.70	0.60	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 - 0.6 mm Nozzle

Property	220 C	230 C	240 C	250 C	Method
Flow Rate	84%	74%	62%	52%	-
Printed Part Density	0.84	0.74	0.62	0.52	ISO 845

Property	220 C	230 C	240 C	250 C	Method
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 manufacturer's TDS notes that flow-rate percentage is directly proportional to final printed-part density; for example, an 80% flow rate results in an approximate density of 0.8 g/cm³.

Test conditions stated by Siraya Tech: 0.4/0.6 mm nozzle, 45 C bed, 60 mm/s print speed, 100% infill, +/-45 degree infill angle, with flow adjusted by temperature for optimal foaming.

4. Preparing for Printing

Parameter	Recommendation
Drying	70-80 C for 4-6 hours
Nozzle Diameter	0.4-0.8 mm
Nozzle Material	Brass works; hardened steel is not required but can also be used
Recommended Build Surface	Glass with PVP glue; PEI with release agent; steel plate with PVP glue; PC film
Enclosure	No requirement

5. Printing with Roamr TPU Air HR 80A

For best results, Siraya Tech recommends printing directly from a dry box or filament dryer while maintaining humidity below 15%.

Parameter	Recommended Setting
Nozzle Temperature	220-260 C
Build Plate Temperature	35-50 C
Cooling Fan Speed	100%
Print Speed	30-60 mm/s
Flow Rate / Extrusion Multiplier	Use the nozzle-specific mechanical-property tables above
Retraction Distance	Off recommended
Retraction Speed	Off recommended

6. Moisture Management

- **Sealed packaging:** Store in a sealed aluminum foil bag to prevent moisture uptake.
- **Desiccants:** Add desiccants to absorb moisture and keep the filament dry.
- **Sunlight and heat:** Keep away from direct sunlight and high temperatures to prevent degradation.
- **Temperature control:** Store at room temperature and avoid extreme heat or cold.

Source and Document Note

This PDF is a formatted reproduction of technical information published by Siraya Tech for Roamr TPU Air HR 80A. The mechanical-property values, test methods and printing recommendations are based on the manufacturer's TDS page. No unsupported values have been added.