RESINIFY – TECHNICAL DATA SHEET

Product Name: ToughFlex 90A **RT Code:** RT-TF900A **Category:** Engineering Resin – Tough Elastomer (90A Hardness)

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1. Product Description

ToughFlex 90A is a **high-strength flexible engineering resin** designed to simulate commercial-grade TPU with a Shore hardness of **90A**. This material provides strong tear resistance, high elongation, and excellent fatigue durability, making it ideal for functional parts that must flex under load while maintaining structural integrity. Compared with softer elastomers, ToughFlex 90A offers **greater toughness, better impact absorption, and superior dimensional accuracy**, while still remaining flexible enough for snap-fits and bending applications.

2. Key Features & Benefits

- Strong, durable 90A elastomer — TPU-like performance
- High tear resistance and fatigue durability
- Excellent tensile strength for a flexible resin
- Minimal creep under load
- Smooth surface finish and consistent elasticity
- Ideal for gaskets, seals, protective housings, and functional prototypes

3. Mechanical & Thermal Properties

Property	Value
Shore Hardness	**90A**
Tensile Strength	8–12 MPa
Tensile Modulus	50–80 MPa

Property	Value
Elongation at Break	100–160%
Tear Strength	25–40 kN/m
Impact Strength	High
Compression Set	Low
HDT @ 0.45 MPa	45–55°C
Density	1.05–1.15 g/cm³
Viscosity	800–1200 cP

Note: Optimized for snap-fit strength and long-term durability.

4. Recommended 3D Printing Parameters

Parameter	Setting
Printer Type	LCD / mSLA / DLP
Wavelength	385–405 nm
Layer Thickness	50–100 µm
Normal Exposure	2.8–3.6 sec
Bottom Layers	6–10
Bottom Exposure	45–65 sec

Parameter	Setting
Lift Speed	Slow–Medium (flexible resin)
Rest Time	Recommended to reduce suction forces

5. Post-Processing

1. **Wash**: Wash gently for **2–3 minutes** (avoid long IPA exposure).
2. **Dry**: Dry parts fully before curing.
3. **Cure**: UV post-cure for **10–20 minutes**; do not over-cure.
    - Optional: A mild heat cure at **45–50°C** can improve elasticity.
    - Avoid curing at high temperatures, as this may stiffen the resin.

6. Applications

- High-strength elastomer components, industrial gaskets & seals
- Protective covers, bumpers, and vibration dampeners
- Flexible mechanical parts requiring durability
- Robotics, consumer products, sports equipment, and snap-fit components requiring both rigidity and flex

7. Storage & Handling

- Store in a sealed container between **10–25°C**.
- Shake gently before use.
- **Shelf Life:** 12 months from the date of manufacture when stored properly.

8. Compliance

- RoHS
- REACH
- Tested in accordance with ASTM D412 (Elastomers), D638.

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