



ELASTIC TOUGH**RUBBER™**

A Tough Printable Elastomer For All Seasons

CHALLENGE

In the past, it has been nearly impossible to additively manufacture elastomeric materials with rubber and polyurethane-like performance. FFF and SLS printing of elastomeric thermoplastics result in poor properties and parts that are only good for prototyping. DLP and SLA printing requires viscous materials with low tear elasticity, poor tear strength and little strain. Until now!

SOLUTION

Elastic ToughRubber™ (ETR) unlocks the benefits of additive manufacturing to those in the rubber, polyurethane and foam industries. Elastic ToughRubber™ is simply the toughest AM elastomer on the market. With a tear strength of 38 kN/m, 190% elongation and ultimate tensile strength of 14 MPa, ETR mimics leading injection molded thermoplastic polyurethanes like PEBAX® and Elastollan®. If you make parts from technical foams, rubbers or polyurethanes, ETR is your solution to additive manufacturing end parts and products.

USES AND APPLICATIONS

Elastic ToughRubber™ can already be found in parts and products that are sold on store shelves. It is perfect for shoe midsoles and heel cups, seals, door boots, bellows, foam-like lattice structures and impact parts.

MANUFACTURING, PROCESSING AND QUALITY

Unlike similar materials in DLP printing, Elastic ToughRubber™ is a one part one pot polymer system. This means there is no mixing of two materials in the proper ratios, which can lead to poor quality if not done correctly. ETR is also pot stable so there is no wasted resin at the end of the print. You simply use the left over resin to print your next part!

Key Features & Benefits

- Flexibility and simplicity in design
- New design geometries and wow factor
- Modulus and performance comparable to foamed TPU
- Stable performance in all weather
- Durable and long lasting for end use

Applications & Use Cases

- Midsoles
- Heel cups
- Foam-like lattice structuring
- Lifestyle running shoe
- High performance hiking boot
- Casual sneaker

ETR PROPERTIES

PARAMETER	ETR70	ETR90
Hardness	Shore A 70	SHORE A 90
Bayshore Resilience	40%	49%
Tear Strength	31 kN/m	38 kN/m
Elongation	400%	190%
Toughness	17.4 MJ/m ³	17.9 MJ/m ³
Ultimate Tensile Strength	7.6MPa	14MPa
Glass Transition Temperature	-60°C to +63°C	-62°C to +86°C

Test	Test Result	Grade	Test Site
ETR90 - Cytotoxicity	ISO - 10993-5	Pass	NAMSA
ETR90 - Irritation	ISO - 10993-10	Pass	NAMSA
ETR90 - Sensitization	ISO - 10993-10	Pass	NAMSA

 **GET IN TOUCH TODAY!**

Contact us today to see what Adaptive3D and **Elastic ToughRubber** can do for you and your business! **469.573.0024**



Size US 13 Men's Midsole



Bellow, O-Rings, Bushing, Lattices



Automotive door boot surviving flex and strain



Automotive door boot

Elastic ToughRubber™ 70

ETR70-TD-385-B

TYPE	STANDARD	PARAMETER	UNIT	VALUE
Liquid	ASTM D2196	Viscosity	cP	4350
Liquid	ASTM D792	Liquid Density	g/mL	1.056
Print	ASTM D2240	Hardness - 0 s	Shore A	75
Print	ASTM D2240	Hardness - 10 s	Shore A	64
Print	ASTM D4065	Glass Transition (DMA) - Low	°C	-60
Print	ASTM D4065	Glass Transition (DMA) - High	°C	63
Print	ASTM D4065	Storage Modulus @ 25 C	MPa	14
Print	ASTM D638 Type V	Fracture Toughness	MJ/m ³	17.4
Print	ASTM D638 Type V	Elongation at Break	%	400
Print	ASTM D638 Type V	Ultimate Tensile Strength	MPa	7.6
Print	ASTM D624 Die C	Tear Strength	kN/m	31
Print	ASTM D395 Method B Type 1	Compression Set - 25 C/25%/22hrs	%	34
Print	ASTM D395 Method B Type 1	Compression Set - 70 C/25%/22hrs	%	50
Print	ASTM D2632	Bayshore Resilience	%	40

The data provided are typical values when following the described testing parameters and recommended processing and post processing steps on standard prints. 3D Printing materials properties can change based on any changes to the above.