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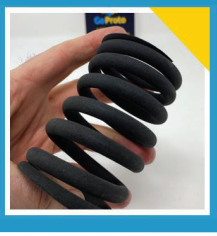
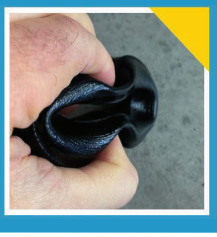
# TPA - 3D ElastoPrint

## HP 3D HR TPA enabled by Evonik



TPA 3D ElastoPrint is a highly durable 91A durometer elastomeric material for prototyping and producing final production parts printed on HP's Multi Jet Fusion printing systems. 3D ElastoPrint is lightweight, has highly isotropic mechanical properties, has high energy return as well as elongation and performs very well in both cold and warm environments. This material is similar to injection-molded versions of TPA material – it is just slightly reformulated so it can be powdered for use in 3D printing. TPA parts can be finished in matte gray, dyed black or vapor smoothed black (as pictured above).

| Mechanical Properties | Test Method | English | Metric |
|---|---|---|---|
| Tensile Strength, Max Load - XY, Z | ASTM D638 | 1450 psi, 1160 psi | 10 MPa, 8 MPa |
| Tensile Modulus - XY, Z | ASTM D638 | 9.4 ksi, 10.9 ksi | 65 MPa, 75 MPa |
| Elongation at Break - XY, Z | ASTM D638 | 370%, 160% | 370%, 160% |
| Tear Strength | ASTM D624 | 286 lbs/in, 228.4 lbs/in. | 50 KN/m, 40 KN/m |
| Rebound | ASTM D7121 | 72% | 72% |
| Compression Set | ASTM D395 | 40% | 40% |

| Thermal Properties | Test Method | English | Metric |
|---|---|---|---|
| Vicat Softening Temperature (10N, 50k/h) - Unsmoothed X | ASTM Method A | 230.7 °F | 110.4 °C |
| Vicat Softening Temperature (10N, 50k/h) - Smoothed X | ASTM Method A | 222.8 °F | 106.0 °C |
| Vicat Softening Temperature (10N, 50k/h) - Unsmoothed Z | ASTM Method A | 235.6 °F | 113.1 °C |
| Vicat Softening Temperature (10N, 50k/h) - Smoothed Z | ASTM Method A | 227.7 °F | 108.7 °C |

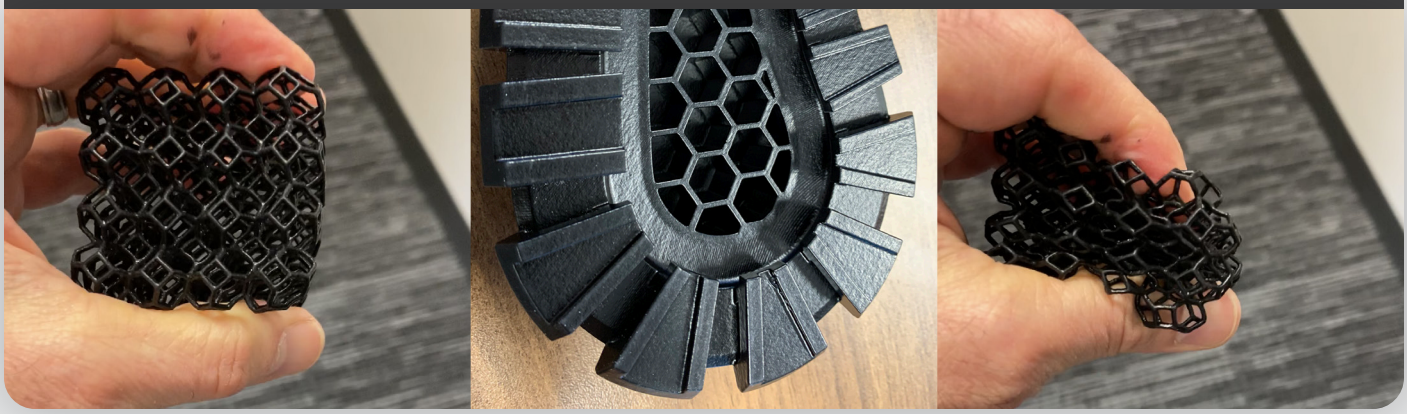
| General Properties | Test Method | English | Metric |
|---|---|---|---|
| Density of parts | ASTM D792 | 0.036 lbs/in$^3$ | 1.00 g/cm$^3$ |
| Hardness (Shore A) | ASTM D2240 | 91 | 91 |

Actual part properties may vary slightly from those listed above based on processing parameters, operating conditions, and material usage. GoProto makes no warranties of materials for any particular application, nor does it make a warranty of any type, expressed or implied, including, but not limited to, the warranties of merchantability for a particular purpose.

Located in San Diego, CA, GoProto exists to solve your problems. We provide turnkey solutions in rapid prototyping (MJF, MMFDM, SLA, Cast Urethane, SLS, DMLS & Objet) and custom manufacturing (CNC Machining, Rapid tooling, Custom molding and Sheet Metal).

# TPA (Thermoplastic Polyamide) Elastomer

Parts printed on HP's Multi Jet Fusion (MJF) printer can now be made at GoProto in TPA* (Thermoplastic Polyamide). This material is a production-grade elastomer that is more capable than any previously-released 3D printing elastomeric material.



*HP 3D High Reusability TPA enabled by Evonik

## Key attributes

- Soft 90A durometer
- High energy return
- Fast Lead Times
- Very low fatigue
- High tear strength
- High abrasion resistance

- Isotropic mechanical strength
- Light molecular weight makes light parts
- High performance in wide range of temps from cold to hot
- 3D Printing allows for lattices, tubes, bellows, parts with huge undercuts & trapped volumes

## TPA is Vapor Smoothable

- Increases tear strength
- Elongation of 300+% without smoothing and 400+% with smoothing

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## ON-DEMAND · CUSTOM · QUICK TURN MANUFACTURING

### 3D Printing / Additive Manufacturing

MJF
FDM
SLA
DMLS
Full DFAM & Quality Plan

### CNC Machining

Plastic and Metal
Low Quantity / High Quality
3 & 5 Axis
Tapping & Threading

### Sheet Metal

Low to Medium Quantity
Flat and Round Profile
Formed Features
Welding

### Cast Urethane

Cast-in Color & Texture
Rigid & Elastomeric Materials
High Quality Clear/Tint
Overmolds

### Injection Tooling & Molding

Rapid Tooling
Bridge Tooling
Production Tooling
Short Run Injection Molding
Production Injection Molding
Full DFM & Inspection

### Finishing

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Hydrographics & Texture
Cerakote & Metallization
Dye, Paint & Silkscreen
Inserts & Fasteners
Inspection Reports

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