SOLUTION DATA SHEET

New ESTANE® 3D TPU M88A Powder for HP's Multi Jet Fusion 5200 Series

Markets	Orthotics and prosthetics, consumer goods, automotive interior parts, and industrial components
Polymer	ESTANE® thermoplastic polyurethane (TPU)
Key Benefits	• Ease of unpacking • Bright and vibrant raw part colors • Skin contact tests passed • High abrasion/puncture/chemical resistance

Lubrizol 3D Printing Solutions combines comprehensive knowledge and additive manufacturing capabilities. Our latest development ESTANE® 3D TPU M88A is a certified TPU powder solution specially designed for the HP Jet Fusion 5200 mass production printer platform.

This material is the ideal solution for soft or lightweight parts requiring high flexibility and skin contact. It has passed skin contact testing according to ISO 10993-5 and 10993-10 standards.

ESTANE 3D TPU M88A is very easy to unpack, including cold unpacking. This enables manufacturing parts with complex lattice design structures while at the same time improving operational efficiencies and reducing labor and cost per part.

Lubrizol's TPU is a high-performing polymer providing: low-temperature flexibility, high puncture, and high-temperature resistance. ESTANE 3D TPU also has outstanding chemical resistance, cushioning or dampening properties, and excellent surface finishing. All these technical advantages ensure high performance of ESTANE 3D TPU M88A 3D printed parts.

ESTANE 3D TPU M88A can achieve bright and vibrant finished raw part colors through dying, while applying a coating is also possible.

Additional key benefits of ESTANE 3D TPU M88A are:

- Very good abrasion resistance , making it suitable for use in tough environments.
- High operating temperatures up to 190°C
- Watertight parts can be produced
- Ideal 3D printing material for manufacturing scale-up applications
- Recyclability: Recommended mix ratio is 80% recycled and 20% fresh powder

ESTANE® 3D TPU M88A	Test Method	Full Print Bed
Tensile Strength (MPa)	ISO-37	10
Elongation at Break (%)	ISO-37	180
Abrasion Loss (mm^3)	DIN-53516	110
Hardness (solid part) Shore A	ASTM D2240	88

Parts were printed with 80% fresh powder and measured in XY orientation

Table 1: Overview of the properties of the commercial grade ESTANE® 3D TPU M88A

Main applications for this new grade are listed below:

- Orthotics and prosthetics (O&P)
  - Wrist/finder/ankle foot orthosis
  - Flexible socket inners
  - Supra-Malleolar-Orthosis (SMO)
  - Protective orthosis (helmets)

- Consumers goods
  - Bike saddles/grips
  - Grommets
  - Cycling shoes
  - Golf grips, club covers
- Automotive interior parts
  - Foam replacement (seating, cushions, part consolidation)
  - Customized touchpoints
  - Low temp. and pressure gaskets and seals
  - Assembly tooling for interiors
  - Noise, vibration, and harshness (NVH) reduction parts
- Industrial components
  - End of arm tooling (EOAT)
  - Jigs and fixtures
  - Dunnage
  - High-value part protection
  - High-end consumer goods packaging

Lubrizol 3D Printing Solutions features an extensive material portfolio covering flexible to rigid materials, including product ranges that can be used in powder bed fusion or fused filament fabrication 3D printers, including one biobased grade. ESTANE 3D M88A is the most recent product for powder bed fusion technology. For filaments, Lubrizol has also developed varioShoreTPU in cooperation with colorFabb (by using their foaming technology) featuring variable shore hardness, reduced weight and density, and soft touch.

With solutions that also include services ranging from prototyping to mass production; Lubrizol is equipped to be a collaborative partner to businesses looking for an end-to-end 3D printing solution provider.

For more information or to contact us for post-processing guidelines and application development support for ESTANE 3D TPU M88A, visit our website: www.lubrizol.com/3D-Printing

ABOUT LUBRIZOL

The Lubrizol Corporation, a Berkshire Hathaway company, is a market driven global company that combines complex, specialty chemicals to optimize the quality, performance and value of customers' products while reducing their environmental impact. It is a leader at combining market insights with chemistry and application capabilities to deliver valuable solutions to customers in the global transportation, industrial and consumer markets. Lubrizol improves lives by acting as an essential partner in our customers' success, delivering efficiency, reliability, or wellness to their end users.