

LUBRIZOL AND ADDITIVE MANUFACTURING

Lubrizol is a market leader of innovative engineered polymer solutions and is dedicated and committed to expanding its portfolio of thermoplastic polyurethane (TPU) solutions suitable for 3D printing (3DP) technologies.

This in-depth portfolio can be offered either in pellet form for filament extrusion purposes or powder TPU (MJF*, SLS or HSS) to meet strict market requirements for printed parts, such as high strength and high abrasion resistance, high mechanical properties and outstanding surface/haptic properties.

A bio-based** solution is also available for FFF.

Filament, powder and pellet TPU solutions for:

- Fused Filament Fabrication (FFF)
- Multi Jet Fusion™ (MJF)*

Active powder TPU developments for:

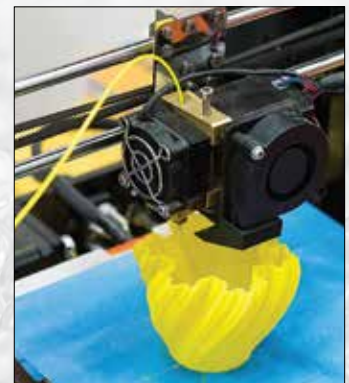
- Selective Laser Sintering (SLS)
- High Speed Sintering (HSS)

*Proprietary HP® technology

**Bio-based content as certified in accordance with ASTM D-6866.

3DP MARKETS

- Footwear
- Electronics
- Automotive
- Medical
- Aerospace
- Industrial
- Consumer Goods



LUBRIZOL ESTANE® 3D TPU SOLUTIONS FOR FUSED FILAMENT FABRICATION APPLICATIONS

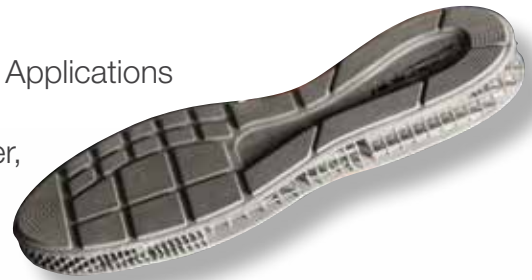
Product Name	Shore Hardness	Key Benefits
ESTANE® 3D TPU F70D-065TR UV PL*	70D	Low temperature flexibility, high stiffness, impact resistance and UV stability
ESTANE® 3D TPU F50D-021SR GP PL	50D	Low temperature flexibility with excellent chemical and oil resistance
ESTANE® 3D TPU F98A-030CR HC PL*	98A	Excellent mechanical properties, transparency, low warpage and shrinkage
ESTANE® 3D TPU F95A-030 BR ECO PL	95A	Sustainable, plant-based solution with broad printing window
ESTANE® 3D TPU F94A-055 OR HH PL*	94A	Durable with high heat temperature performance



*This grade is also available under the Ultimaker Material Alliance program.

HP® PARTNERSHIP

In 2017, Lubrizol became an official HP Open Materials and Applications Platform partner. In collaboration with HP, Lubrizol released ESTANE® 3D TPU M95A thermoplastic polyurethane powder, the only TPU certified material approved for use in HP's Jet Fusion™ 4200 3D Printing Solution. To learn more about additional developments with HP, please contact us.



LUBRIZOL ESTANE® 3D TPU SOLUTIONS FOR MULTI JET FUSION™ APPLICATIONS

Product Name	Shore Hardness	Key Benefits
ESTANE® 3D TPU M95A-545 OR UV	95A	Excellent flexibility and elasticity on HP® Jet Fusion 4200 3D Printing Solution

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.



LUBRIZOL
ENGINEERED
POLYMERS

**ADVANCING MATERIALS.
ELEVATING PERFORMANCE.**

