

# HP 3D Printing polymer materials portfolio selection guide<sup>1</sup>



	HP 3D HR PA 12 W	HP 3D HR PA 11	HP 3D HR PA 12 S, enabled by Arkema	HP 3D HR PA 12, enabled by Evonik	HP 3D HR PA 12 FR, enabled by Evonik	HP 3D HR PA 12 GB	HP 3D HR PP enabled by Forward AM
Rigid polymer							
Stiffness	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓✓	✓
Impact resistance	✓	✓✓	✓	✓	-	-	✓
Elongation	✓	✓✓	-		-	-	✓
Dimensional capability	✓✓✓	✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓	✓
Level of detail	✓✓✓	✓✓✓	✓✓✓	✓✓	✓✓✓	✓✓	✓
Flat part	✓✓	✓	✓✓	✓✓	✓✓	✓✓	-
Temperature resistance	✓	-	✓	✓	✓	✓✓	✓
Chemical resistance <sup>2,3</sup>	✓✓	✓✓	✓✓	✓✓	✓✓	n/a	✓✓✓
Low moisture absorption	-	-	-	-	-	-	✓✓✓
Lightweight	✓✓	✓✓	✓✓	✓✓	✓✓	✓	✓✓✓
Surface roughness	✓✓	✓✓	✓✓✓	✓✓	✓✓✓	✓✓	✓

	HP 3D HR TPA, enabled by Evonik	Forward AM Ultrasint® TPU01	ESTANE® 3D TPU M95A	ESTANE® 3D TPU M88A
Elastomeric polymer				
Rebound (%)	✓✓✓	✓✓	✓✓	✓✓
Elongation at break (%)	✓✓	✓✓	✓✓✓	✓✓
Tensile strength (MPa)	✓✓	✓✓	✓✓✓	✓✓
Abrasion resistance (mm)	✓✓	✓✓✓	✓✓	✓✓
Biocompatibility	-	✓✓✓	✓✓✓	✓✓✓

Best    
 Good    
 Acceptable    
 Not recommended

- Based on internal HP testing, October 2022. For testing methodology and results, see [hp.com/go/3Dprintingmaterialswhitepapers](https://hp.com/go/3Dprintingmaterialswhitepapers). Please consult your local sales representative for more information.
- For HP 3D High Reusability PA 11, PA 12, enabled by Evonik, PA 12 S enabled by Arkema and CB PA 12, based on internal HP testing, June 2017. Tested with diluted alkalis, concentrated alkalis, chlorine salts, alcohol, ester, ethers, ketones, aliphatic hydrocarbons, unleaded petrol, motor oil, aromatic hydrocarbons, toluene, and DOT 3 brake fluid. For HP 3D High Reusability PP enabled by Forward AM, based on internal HP testing, May 2020, with tests for mechanical property retention, dimensional stability, and weight change after 7- and 30-day immersion with acids, bases, organic solvents, and aqueous solutions. Due to the material characteristics, extra tuning is required in part design and printing, compared to other rigid HP 3D Printing materials. For Forward AM Ultrasint® TPU01, based on testing by Forward AM, April 2020, according to ASTM D471 for select IRM oils and Fuel A.
- For HP 3D High Reusability PP enabled by Forward AM, based on internal HP testing, May 2020, with tests for mechanical property retention, dimensional stability, and weight change after 7- and 30-day immersion with acids, bases, organic solvents, and aqueous solutions. Due to the material characteristics, extra tuning is required in part design and printing, compared to other rigid HP 3D Printing materials.