



# DuraForm® AF plastic

for use with all selective laser sintering (SLS®) systems

**Polyamide (nylon) material with metallic appearance for real-world physical testing and functional use.**



## APPLICATIONS

- Housings and enclosures
- Consumer products
- Appropriate for low- to mid-volume rapid manufacturing
- Parts requiring machining or joining with adhesives
- Complex production and prototype plastic parts
- Form, fit or functional prototypes
- Parts requiring stiffness
- Thermally stressed parts
- Plastic parts requiring a metallic appearance

## FEATURES

- Metallic appearance with nice surface finish
- Good powder recycle characteristics
- Excellent mechanical stiffness
- Easy-to-process
- Dimensionally stable

## BENEFITS

- Excels in load bearing applications at higher temperatures
- Build prototypes and end-use parts without tooling
- Create accurate and repeatable parts as demanded by manufacturers
- Machinable for demonstration parts
- Improved isotropic shrinkage due to aluminum filler

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## TECHNICAL DATA

### General Properties

MEASUREMENT	METHOD/CONDITION	METRIC	U.S.
Specific Gravity	ASTM D792	1.42 g/cm <sup>3</sup>	1.42 g/cm <sup>3</sup>
Appearance	Visual	Light grey metallic	
Density (tap)	@ 25°C (77°F)	0.89 g/cm <sup>3</sup>	0.89 g/cm <sup>3</sup>
Density (bulk)	@ 25°C (77°F)	0.69 g/cm <sup>3</sup>	0.69 g/cm <sup>3</sup>

### Mechanical Properties

MEASUREMENT	METHOD/CONDITION	METRIC	U.S.
Tensile Strength, Ultimate	ASTM D638	35 MPa	5060 psi
Tensile Modulus	ASTM D638	3960 MPa	574 ksi
Elongation at Break	ASTM D638	1.5 %	1.5%
Flexural Strength, Ultimate	ASTM D790	44 MPa	6290 psi
Flexural Modulus	ASTM D790	3517 MPa	510 ksi
Hardness, Shore D	ASTM D5420	75	75
Impact Strength (notched Izod, 23°C)	ASTM D256	58.7 J/m	1.1 ft-lbs/in
Impact Strength (unnotched Izod, 23°C)	ASTM D256	122.8 J/m	2.3 ft-lbs/in

### Thermal Properties

MEASUREMENT	METHOD/CONDITION	METRIC	U.S.
Heat Deflection Temperature (HDT)	ASTM D648 @ 0.45 MPa	180 °C	356 °F
	@ 1.82 MPa	137 °C	279 °F
Coefficient of Thermal Expansion	ASTM E831 @ 35 - 172°C	109 µm/m-°C	60.5 µin/in-°F

### Electrical Properties

MEASUREMENT	METHOD/CONDITION	METRIC	U.S.
Volume Resistivity	ASTM D257	1.6 x 10 <sup>13</sup> ohm-cm	1.6 x 10 <sup>13</sup> ohm-cm
Surface Resistivity	ASTM D257	6.0 x 10 <sup>12</sup> ohm	6.0 x 10 <sup>12</sup> ohm
Dielectric Constant, 1 KHz	ASTM D150	14.5	14.5
Dielectric Strength	ASTM D149	1.8 kV/mm	45.7 kV/in

Data was generated by building parts under typical default parameters. DuraForm AF plastic was processed on a base-level HiQ™ SLS system at 12 watts laser power, 200 inches/sec (5 m/sec) scan speed, and a powder layer thickness of 0.004 inches (0.1mm).



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