

# DuraForm® PA Plastic



*DuraForm® PA Plastic is available in Natural color.*

Durable polyamide (nylon) material for real-world physical testing and functional use.

## Applications

- Complex, thin-wall ductwork
- Functional prototypes that approach end-use performance properties
- Appropriate for low- to mid-volume rapid manufacturing
- Medical applications requiring USP Class VI compliance, or biocompatibility
  - Motorsports
  - Aerospace
- Housing and enclosures
- Impellers and connectors
- Consumer sporting goods
- Vehicle dashboards and grilles
- Snap-fit designs
- Parts requiring machining or joining with adhesives

## Features

- Excellent surface resolution and feature detail
- Easy-to-process
- Compliant with USP Class VI testing
- Compatible with autoclave sterilization
- Good chemical resistance and low moisture absorption

## Benefits

- Nicely balanced mechanical properties and processability
- Build prototypes that withstand functional testing
- Produce durable end-use parts without tooling
- Create accurate and repeatable parts as demanded by manufacturers
- Machinable and paintable for demonstration parts



Automotive Center Dashboard



# DuraForm<sup>®</sup> PA Plastic

For use with all selective laser sintering (SLS<sup>®</sup>) systems



## Technical Data

### General Properties

Measurement	Condition	Metric	U.S.
Specific Gravity	ASTM D792	1.00 g/cm <sup>3</sup>	1.00 g/cm <sup>3</sup>
Moisture Absorption - 24 hours	ASTM D570	0.07%	0.07%

### Mechanical Properties

Measurement	Condition	Metric	U.S.
Tensile Strength, Yield	ASTM D638	N/A*	N/A*
Tensile Strength, Ultimate	ASTM D638	43 MPa	6237 psi
Tensile Modulus	ASTM D638	1586 MPa	230 ksi
Elongation at Yield	ASTM D638	N/A*	N/A*
Elongation at Break	ASTM D638	14%	14%
Flexural Strength, Yield	ASTM D790	N/A*	N/A*
Flexural Strength, Ultimate	ASTM D790	48 MPa	6962 psi
Flexural Modulus	ASTM D790	1387 MPa	201 ksi
Hardness, Shore D	ASTM D2240	73	73
Impact Strength (notched Izod, 23°C)	ASTM D256	32 J/m	0.6 ft-lb/in
Impact Strength (unnotched Izod, 23°C)	ASTM D256	336 J/m	6.3 ft-lb/in
Gardner Impact	ASTM D5420	2.7 J	2.0 ft-lb

### Thermal Properties

Measurement	Condition	Metric	U.S.
Heat Deflection Temperature (HDT)	ASTM D648 @ 0.45 MPa @ 1.82 MPa	180 °C	356 °F
		95 °C	203 °F
Coefficient of Thermal Expansion	ASTM E831 @ 0 - 50 °C @ 85 - 145 °C	82.6 µm/m-°C	45.9 µin/in-°F
		179.2 µm/m-°C	99.6 µin/in-°F
Specific Heat Capacity	ASTM E1269	1.64 J/g-°C	0.392 BTU/lb-°F
Thermal Conductivity	ASTM E1225	0.70 W/m-K	4.86 BTU-in/hr-ft <sup>2</sup> -°F
Flammability	UL 94	HB	HB

### Electrical Properties

Measurement	Condition	Metric	U.S.
Volume Resistivity	ASTM D257	5.9 X 10 <sup>13</sup> ohm-cm	5.9 X 10 <sup>13</sup> ohm-cm
Surface Resistivity	ASTM D257	7.0 X 10 <sup>13</sup> ohm	7.0 X 10 <sup>13</sup> ohm
Dissipation Factor, 1 KHz	ASTM D150	0.044	0.044
Dielectric Constant, 1 KHz	ASTM D150	2.73	2.73
Dielectric Strength	ASTM D149	17.3 kV/mm	439 kV/in

\* N/A = Data not applicable for this test condition

Data was generated by building parts under typical default parameters. DuraForm<sup>®</sup> PA Plastic was processed on a base-level HiQ<sup>™</sup> SLS<sup>®</sup> System at 13 watts laser power, 5 m/sec [200 inches/sec] scan speed, and a powder layer thickness of 0.1 mm [0.004 inches].



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