

DuraForm® PA Plastic



FIVE STAR PLASTICS

engineering • rapid prototyping • tooling • injection molding • assembly

Turning your ideas into reality.™



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[®] PA Plastic

For use with all selective laser sintering (SLS[®]) systems



Technical Data

General Properties

Measurement	Condition	Metric	U.S.
Specific Gravity	ASTM D792	1.00 g/cm ³	1.00 g/cm ³
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	180 °C	356 °F
	@ 1.82 MPa	95 °C	203 °F
Coefficient of Thermal Expansion	ASTM E831 @ 0 - 50 °C	82.6 µm/m-°C	45.9 µin/in-°F
	@ 85 - 145 °C	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 ² -°F
Flammability	UL 94	HB	HB

Electrical Properties

Measurement	Condition	Metric	U.S.
Volume Resistivity	ASTM D257	5.9 X 10 ¹³ ohm-cm	5.9 X 10 ¹³ ohm-cm
Surface Resistivity	ASTM D257	7.0 X 10 ¹³ ohm	7.0 X 10 ¹³ 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[®] PA Plastic was processed on a base-level HIQ[™] SLS[®] 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].



Five Star Plastics
1339 Continental Drive
Eau Claire, WI 54701 USA

Tel: +1 715.831.1682
Fax: +1 715.831.6075
www.five-star-plastics.com

Warranty/Disclaimer: All data shown above is the property of 3D Systems. The performance characteristics of these products may vary according to product application, operating conditions, material combined with, or with end use. Five Star Plastics makes no warranties of any type, express or implied, including, but not limited to, the warranties of merchantability or fitness for a particular use.

© 2010 by 3D Systems, Inc. All rights reserved. Specifications subject to change without notice. HIQ and SinterScan are trademarks, and the 3D logo, DuraForm, Sinterstation and SLS are registered trademarks of 3D Systems, Inc.