

DuraForm[®] EX Plastic

Selective Laser Sintering (SLS)

Manufacture tough, impact-resistant plastic prototypes or end-use parts requiring molded-part performance and capable of withstanding harsh environments.

General Properties

MEASUREMENT	CONDITION	METRIC	U.S.
Specific Heat Capacity	ASTM D792	1.01 g/cm ³	1.01 g/cm ³
Moisture Absorption - 24 hours	ASTM D570	0.48%	0.48%
Moisture Saturation	ASTM D570	1.15%	1.15%

Mechanical Properties

MEASUREMENT	CONDITION	METRIC	U.S.
Tensile Strength Yield (MPa/PSI)	ASTM D 638	37	5366
Tensile Strength Ultimate (MPa/PSI)	ASTM D 638	48	6961
Tensile Modulus (MPa/KSI)	ASTM D 638	1517	220
Elongation at Yield (%)	ASTM D 638	5	5
Elongation at Break (%)	ASTM D 638	47	47
Flexural Strength, Yield (MPa/PSI)	ASTM D 790	42	6091
Flexural Strength, Ultimate (MPa/PSI)	ASTM D 790	26	6672
Flexural Modulus (MPa/KSI)	ASTM D 790	1310	190
Hardness, Shore D	ASTM D2240	74	74
Hardness, Rockwell L	ASTM D785	69	69
Hardness, Rockwell M	ASTM D785	34	34
Impact Strength (J/m I ft-lb/in) (notched Izod, 23°C)	ASTM D256	74	1.4
Impact Strength (J/m I ft-lb/in) (unnotched Izod, 23°C)	ASTM D256	1486	27.8
Gardner Impact (J I ft-lb)	ASTM D5420	11.8	8.7

Data was generated by building parts under typical default parameters. DuraForm EX 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].

Features

- Outstanding toughness
- Excellent impact resistance
- Repeatable mechanical properties
- Easy-to-process
- Consistent black or natural color

Benefits

- Parts have the toughness of injection molded ABS and polypropylene
- Functional prototypes can be tested in “real life” environments
- Complex end-use parts can be economically manufactured in low and medium volumes
- No painting required for black parts
- Unique properties create new business opportunities for service bureaus

Applications

- Complex, thin-walled ductwork
 - Motorsports
 - Aerospace
 - Unmanned air vehicles (UAV's)
- Housings and enclosures
- Impellers
- Connectors
- Consumer sporting goods
- Vehicle dashboards and grilles
- Bumpers
- Snap-fit designs
- Living hinges



DuraForm® EX Plastic

Selective Laser Sintering (SLS)

Manufacture tough, impact-resistant plastic prototypes or end-use parts requiring molded-part performance and capable of withstanding harsh environments.

Thermal Properties

MEASUREMENT	CONDITION	METRIC	U.S.
Heat Deflection Temperature	ASTM D 648 @ 0.45 MPa @ 1.82 MPa	188 °C 48 °C	370 °F 118 °F
Coefficient of Thermal Expansion	ASTM E 831 0-50 °C 85-145 °C	120 µm/m-°C 342 µm/m-°C	66.7 µm/in-°F 190 µm/in-°F
Specific Heat Capacity	ASTM E1269	1.75 J/g-°C	0.418 BTU/lb-°F
Thermal Conductivity	ASTM E1225	0.51 W/m-K	3.5 BTU-in/hr-ft ² -°F
Flammability	UL 94	HB	HB

Electrical Properties

MEASUREMENT	CONDITION	METRIC	U.S.
Volume Resistivity	ASTM D257	1.3 X 10 ¹³ ohm-cm	1.3 X 10 ¹³ ohm-cm
Surface Resistivity	ASTM D257	4.9 X 10 ¹² ohm	4.9 X 10 ¹² ohm
Dissipation Factor, 1 KHz	ASTM D150	0.050	0.050
Dielectric Constant, 1 KHz	ASTM D150	4.5	4.5
Dielectric Strength	ASTM D149	18.5 kV/mm	470 kV/in

Data was generated by building parts under typical default parameters. DuraForm EX 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].

Minimum System Requirements

It is recommended that DuraForm® EX plastic be processed in a HiQ™-equipped system, which includes thermal controls. Software version 3.42 or higher (Sinterstation® HiQ™) or software version 3.545 or higher (Sinterstation® Pro) is required. SinterScan™ Software is highly recommended, and is required to maximize mechanical properties.



www.3dsystems.com

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

© 2020 by 3D Systems, Inc. All rights reserved. Specifications subject to change without notice. 3D Systems, DuraForm and Sinterstation are registered trademarks and sPro, HiQ and SinterScan are trademarks of 3D Systems, Inc.