DuraForm® EX Plastic

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/cm3	1.01 g/cm3
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 (notched Izod, 23°C)	ASTM D256	74 J/m	1.4 ft-lb/in
Impact Strength (unnotched Izod, 23°C)	ASTM D256	1486 J/m	27.8 ft-lb/in
Gardner Impact	ASTM D5420	11.8 J	8.7 ft-lb

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” enviroments
- 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

For use with all Sinterstation® Pro and Sinterstation® HiQ™ series SLS Systems

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 (µm/m-°C / µm/in-°F)	ASTM E 831 0-50 °C 85-145 °C	 120 342	 66.7 190
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-ft2-°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

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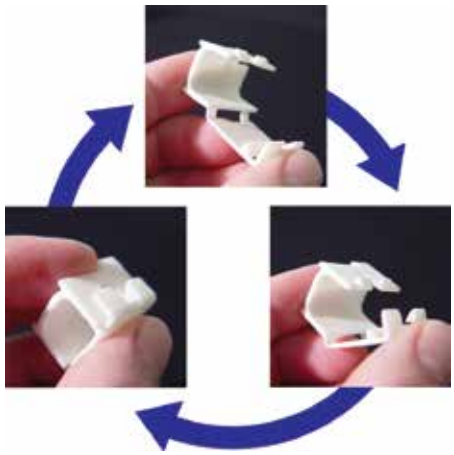
Minimum System Requirements

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.



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