

# DuraForm<sup>®</sup> 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/cm <sup>3</sup>	1.01 g/cm <sup>3</sup>
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

## 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

Data was generated by building parts under typical default parameters. DuraForm<sup>®</sup> 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].





# DuraForm<sup>®</sup> EX Plastic

For use with all Sinterstation<sup>®</sup> Pro and Sinterstation<sup>®</sup> HiQ<sup>™</sup> series SLS Systems

## Thermal Properties

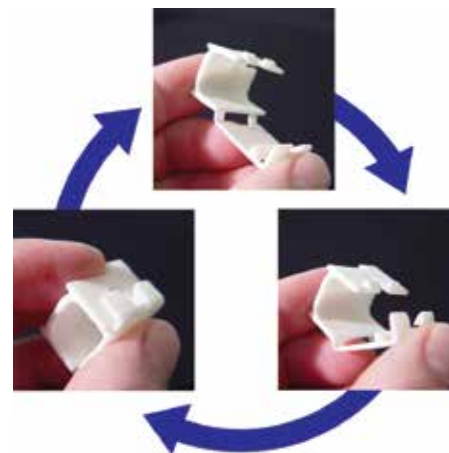
MEASUREMENT	CONDITION	METRIC	U.S.
Heat Deflection Temperature	ASTM D 648	188 °C	370 °F
	@ 0.45 MPa @ 1.82 MPa	48 °C	118 °F
Coefficient of Thermal Expansion ( $\mu\text{m}/\text{m}\cdot^{\circ}\text{C}$ / $\mu\text{m}/\text{in}\cdot^{\circ}\text{F}$ )	ASTM E 831	120	66.7
	0-50 °C 85-145 °C	342	190
Specific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

## Electrical Properties

MEASUREMENT	CONDITION	METRIC	U.S.
Volume Resistivity	ASTM D257	$1.3 \times 10^{13}$ ohm-cm	$1.3 \times 10^{13}$ ohm-cm
Surface Resistivity	ASTM D257	$4.9 \times 10^{12}$ ohm	$4.9 \times 10^{12}$ 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



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