



DuraForm[®] EX

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 Gravity	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	ASTM D638	37 MPa	5366 psi
Tensile Strength, Ultimate	ASTM D638	48 MPa	6961 psi
Tensile Modulus	ASTM D638	1517 MPa	220 ksi
Elongation at Yield	ASTM D638	5%	5%
Elongation at Break	ASTM D638	47%	47%
Flexural Strength, Yield	ASTM D790	42 MPa	6091 psi
Flexural Strength, Ultimate	ASTM D790	46 MPa	6672 psi
Flexural Modulus	ASTM D790	1310 MPa	190 ksi
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

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

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Thermal Properties

MEASUREMENT	CONDITION	METRIC	U.S.
Heat Deflection Temperature (HDT)	ASTM D648 @ 0.45 MPa @ 1.82 MPa	188 °C 48 °C	370 °F 118 °F
Coefficient of Thermal Expansion	ASTM E831 @ 0 - 50 °C @ 85 - 145 °C	120 µm/m-°C 342 µm/m-°C	66.7 µin/in-°F 190 µin/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].

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

Minimum System Requirements

It is recommended that DuraForm[®] EX plastic be processed in 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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