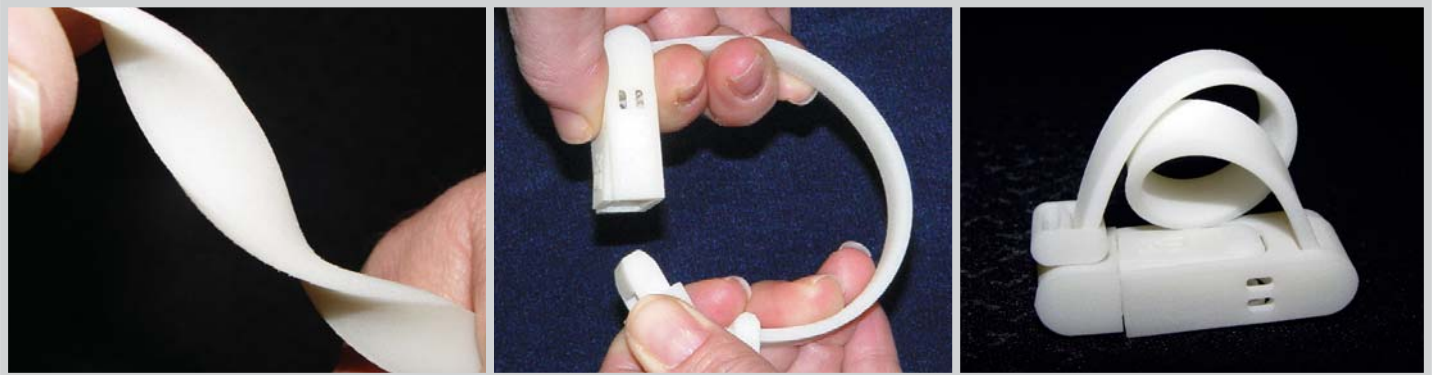




DuraForm[®] EX plastic

for use with all Sinterstation[®] Pro and Sinterstation HiQ[™] series SLS[®] systems

This impact-resistant plastic offers the toughness of injection-molded polypropylene and ABS and is suitable for Rapid Manufacturing.



Snap-fit connectors exhibit impressive toughness when exposed to repeated bending and twisting.

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
- Functional prototypes that require end-use performance properties
- Appropriate for low- to mid-volume rapid manufacturing

FEATURES

- Outstanding toughness
- Excellent impact resistance
- Repeatable mechanical properties
- Wide process window
- Good powder recycling characteristics

BENEFITS

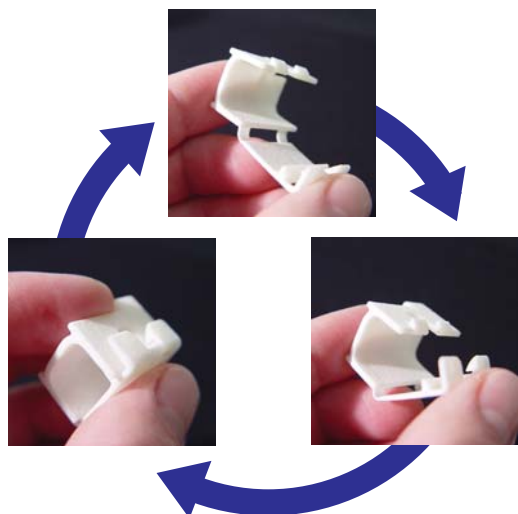
- Offers toughness of injection-molded ABS and polypropylene
- Build prototypes that withstand aggressive functional testing
- Produce durable end-use parts without tooling
- Create accurate and repeatable parts as demanded by manufacturers
- Increase market opportunities through enhanced properties

DuraForm® EX plastic

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

"Parts built with DuraForm EX are tougher and behave more like injection molded parts, than anything built with currently available materials. We introduced EX at a tradeshow, and the customer response was much stronger than expected. Our customers have been very impressed with their part's mechanical performance. We have built impellers that have been tested at speeds exceeding 10,000 rpm without failure. Flex points, living hinges, and snap fits represent the majority of the parts requested, however we find new apps that EX can address on a daily basis."

-- Phillip Conner, Accelerated Technologies, Inc.



Tear-resistant living hinges survive hundreds of open-close cycles.

Minimum System Requirements:

It is recommended that DuraForm EX plastic be processed in a HiQ-equipped system, which includes thermal controls. Software version 3.4 or higher is required. SinterScan™ software is highly recommended, and is required to maximize mechanical properties on Sinterstation HiQ+HS SLS systems.

TECHNICAL DATA

General Properties

MEASUREMENT	METHOD/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	METHOD/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	64 J/m	1.2 ft-lb/in
Impact Strength (unnotched Izod, 23°C)	ASTM D256	>854 J/m	>16 ft-lb/in
Gardner Impact	ASTM D5420	11.8 J	8.7 ft-lb

Thermal Properties

MEASUREMENT	METHOD/CONDITION	METRIC	U.S.
Heat Deflection Temperature (HDT)	ASTM D648 @ 0.45 MPa	188 °C	370 °F
	@ 1.82 MPa	48 °C	118 °F
Coefficient of Thermal Expansion	ASTM E831 @ 0 - 50 °C	120 µm/m-°C	66.7 µin/in-°F
	@ 85 - 145 °C	342 µm/m-°C	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	METHOD/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, 200 inches/sec [5 m/sec] scan speed, and a powder layer thickness of 0.004 inches [0.1 mm].



3D Systems Corporation
26081 Avenue Hall
Valencia, CA 91355 U.S.A.

Tel: 803.326.4080
Toll-free: 800.889.2964
Fax: 803.324.8810

moreinfo@3dsystems.com
www.3dsystems.com
NASDAQ: TSDC

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.

© 2006 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.