PRELIMINARY

# DuraForm® Flex plastic

Flexible plastic material for use with all SLS® systems

**An elastomeric plastic with outstanding rubber-like performance characteristics used to produce functional prototypes or end-use parts where flexible characteristics are a key requirement.**

*Above:* Radiator hose prototype withstands bending without permanent damage or deformation (shown without infiltrant).

*Left:* Primary infiltrant colors of red, yellow and blue can be mixed to create custom colors (black and neutral infiltrants also available).

## APPLICATIONS

- Functional rubber-like prototypes and parts without tooling
  - Gaskets, hoses, seals, and other rubber-like parts
  - Watertight parts
  - Athletic shoes and equipment
- Rapid pre-production testing and optimization
- Demonstration models
- Low-volume manufacturing

## BENEFITS

**Rubber-like flexibility and functionality**
- Use in place of urethane, silicone, or rubber parts

**Durability and stability**
- Accomodates harsh environmental conditions such as heat and chemicals

**Superior surface finish and fine feature detail**
- Minimizes finishing and renders even fine details
- Builds thin 0.004 in (0.1 mm) layer thickness for improved surface finish*

**Superior tear resistance compared to competitive materials**
- Resilient material withstands bends and deformation

**Wide processing latitude**
- Excellent output yield

**Fluid-tight, even under pressure**
- Easy-to-apply infiltration fluid seals parts for functional applications

**Array of color options**
- Simulate end-use coloration with colored infiltrants — red, yellow, blue or black
- Neutral infiltrant also available
- Easily mix custom colors

* See back side for details.

# **DuraForm** Flex plastic

**For use with all Sinterstation SLS systems**

**"DuraForm Flex is a significant leap forward in material development," said Fabio Ciciani, CEM's partner. "With DuraForm Flex, producing flexible parts is simple -- there are no special requirements. The possibility to infiltrate and color parts easily, make this material very interesting for our automotive, appliance and shoe-sole markets."**

**— Fabio Ciciani, CEM**

## TECHNICAL DATA (PRELIMINARY)

### Powder Properties

| MEASUREMENT | CONDITION | VALUE: |
|---|---|---|
| Appearance | visual | opaque white |
| Density (tap) | ASTM D4164 | 0.44 g/cm$^3$ |
| Particle Size Ave. $d_{50}$ | Laser Diffraction | 85 µm |
| Particle Size Range 90% | Laser Diffraction | 21 - 138 µm |
| Melting Point: $T_m$ | DSC | 192 °C (378 °F) |

### Sintered Properties

| MEASUREMENT | METHOD/CONDITION | VALUE (AS PRODUCED) | VALUE (INFILTRATED)** |
|---|---|---|---|
| Tensile Strength | ASTM D638 | 1.6 MPa (228 PSI) | 2.0 MPa (293 PSI) |
| Tensile Modulus | ASTM D638 | 6.4 MPa (926 PSI) | 9.9 MPa (1440 PSI) |
| Elongation at Break (%) | ASTM D638 | 104 % | 117% |
| Flexural Modulus at 23 °C (73 °F) | ASTM D790 | 5.9 MPa (860 PSI) | 9.4 MPa (1360 PSI) |
| Initial Tear Resistance Die C at 23 °C (73 °F) | ASTM D624 | 15.1 kN/m (86 lb/lin) | 16.8 kN/m (96 lb/lin) |
| Abrasion Resistance Taber, CS-17 wheel, 1 kg (2.2 lb) load | ASTM D4060 | (per 1000 cycles) 83.5 mg | |
| Bursting Strength (Straight) @ 23 °C (25 mm ID x 2 mm thick x 300 mm long hose) | | 0 PSI | 11 PSI (with FlexSeal infiltration)<br>>30 PSI (with two-part polyurethane infiltration) |
| Shore A Hardness at 23 °C | ASTM D2240 | 60 | 67 |

Chemical Resistance - Material doesn't dissolve in hydrocarbons, ketones, ethers or alcohols. May swell in some solvents or solvent mixtures.

Detailed test conditions are available upon request. Performance characteristics may vary according to product application and/or operating conditions. Test samples were produced on a HiQ+HS SLS system, using new material.

* Owners of Sinterstation 2000, 2500 and 2500ci SLS systems are limited to 0.005 in (0.125 mm) build layer thickness rather than the 0.004 in (0.10 mm) layer thickness used by Sinterstation 2500plus or later SLS systems.

** Infiltration method for burst strength values with FlexSeal infiltrant used 8-dip processing method, all other FlexSeal values were 1-dip processing method.

3D SYSTEMS

Transform Your Products

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

661.295.5600, ext. 2882
Toll-free: 888.337.9786
Fax: 661.294.8406

moreinfo@3dsystems.com
www.3dsystems.com
Nasdaq: TDSC



PN 70618 Issue Date - 27 Apr 05