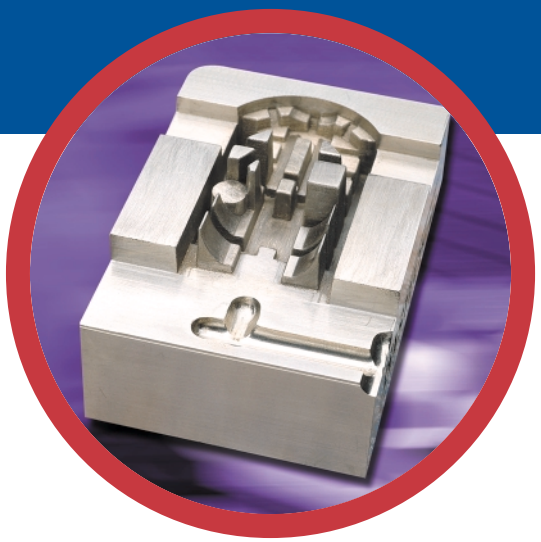
LaserForm™ ST-100

Material for the SLS® systems

Technology:	Selective Laser Sintering, SLS
Material Class:	Powder; Stainless Steel



Mold Insert - Electronic Housing Unit
Courtesy of Bastech Engineering Services

Build durable metal parts and mold inserts — directly from CAD files, without casting or machining

LaserForm ST-100, a metal material developed exclusively for SLS® systems, is ideal for creating functional, durable metal prototypes, parts, and tooling inserts directly from CAD files — without costly time-consuming casting, machining, or CNC programming.

Build metal parts in two steps. Based on data from your CAD file, the SLS system deposits layer after layer of LaserForm ST-100 powder, sintering (heating and bonding) select portions to create the part. When the process is complete, sinter the part and infiltrate it with bronze, for a fully dense part with characteristics similar to P20 steel.

Churn out up to 100,000 parts per tool. Tool inserts made with LaserForm ST-100 material are so durable that they can produce over 100,000 plastic parts, depending on the molding material. LaserForm ST-100 material's high thermal conductivity results in fast cycle times and increased productivity.

Streamline most metal-part applications. LaserForm ST-100 material parts meet or exceed the resolution and tolerances of metal parts made via investment casting. Easily finish and polish parts with conventional methods.

Use LaserForm ST-100 material for:

- Metal parts and tools directly from CAD files
- Durable metal mold inserts
- Bridge tooling
- Short runs of metal parts and prototypes (no casting or tooling required)
- Complex geometries and features

Benefits

- More productivity from existing skilled labor
- Durability
- Characteristics similar to P20 steel
- High thermal conductivity
- Heat resistance

3® SYSTEMS

LaserForm ST-100 Material Typical Properties
for the SLS systems

Powder Properties

	Units	Test Method	
Density			
23°C	g/cm^3	ASTM D792	7.7

Thermal Properties

	Units	Test Method	
Thermal conductivity			
100°C	W/m/°K	ASTM E457	49
200°C	W/m/°K	ASTM E457	56
Coefficient Thermal Expansion x10^{-6}			
51 - 150°C	m/m/°C	ASTM E831	12.4

Mechanical Properties

	Units	Test Method	
Tensile - Yield strength (0.2%)	MPa	ASTM E8	305
Strength	MPa	ASTM E8	510
Elongation	%	ASTM E8	10
Young Modulus	GPa	ASTM E8	137
Compression - Yield Strength (0.2%)	MPa	ASTM E9	317
Hardness - Rockwell "B"			
as infiltrated	-	ASTM E18	87
as machined	-	ASTM E18	79

Data was generated from the testing of parts produced with the LaserForm ST-100 powder under typical processing conditions. (New materials processed at 35 watts laser power, 380 cm/sec scan speed, 0.075 mm scan spacing, 0.075 mm layer thickness on a Sinterstation® 2500 *plus* system and then debinded, sintered and bronze infiltrated in an oven). Final composition is approximately 40% bronze and 60% 420 stainless steel.

Expected shelf life of this product is at least twelve months, when stored in dry conditions at ambient temperatures.

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.

3D Systems
26081 Avenue Hall
Valencia, CA 91355 USA
telephone 661.295.5600, ext. 2882
fax 661.294.8406
toll free 888.337.9786
email moreinfo@3dsystems.com

www.3dsystems.com
Nasdaq: TDSC

France
telephone +33 1 69 35 17 17

Germany
telephone +49 6151 357 303

Hong Kong
telephone +852 2923 5077

Italy
telephone +39 039 68 904 00

Japan
telephone +03 5288 5951

Spain
telephone +34 93 751 49 49

UK
telephone +44 1442 282600

P/N 70456