

# Selective Laser Sintering (SLS)

SLS uses a high-powered CO2 laser to fuse small particles of powdered material to create 3 dimensional parts.



SLS is capable of producing highly durable parts, ideal for end use as well as functional testing, rapid prototyping, small batch production and applications requiring high temperature or chemical resistance.

The base nylon powder can be filled with a variety of additional materials, such as fiberglass or carbon, to add additional properties to the parts, such as higher temperature capability, stiffness or abrasion resistance.

- Own range of printers, materials and software
- Special materials (HST and EX)



## Lead Times

Standard: 3 to 5 days

Special: Next day



## Applications

### General

- Functional Proof of Concept Models
- Design Evaluation Models (Form & Fit)
- Engineering Design Verification
- Product Performance and Testing
- Wind-Tunnel Test Models

### Rapid Manufacturing

- Aerospace Hardware
- Medical and Healthcare
- Electronics; Packaging, Connectors
- Homeland Security
- Military Hardware

### Tooling and Patterns

- Jigs and Fixtures
- Investment Casting Patterns

### Additive Manufacturing

- Short run end use components
- Complex plastic parts
- Part consolidation exercises



## Dimensional Limitations

550 x 550 x 750mm / 22 x 22 x 30 in a single piece.

Larger parts are possible using a variety of mechanical and chemical bonding techniques.

### General Properties

- Able to produce parts with highly complex geometries
- No support structure necessary
- Durable, high-heat and chemically resistant applications
- Impact-resistant parts for rigorous use
- Ideal for snap fits and living hinges
- Low-volume production solutions
- Major time and cost benefits
- Large build platforms available





## Materials

3D Systems offers six core SLS materials:

**DuraForm PA** is an excellent all-round engineering polymer. It is a durable polyamide (nylon) material for real-world physical testing and functional use with excellent surface resolution and feature detail. It is compliant with USP Class VI testing, compatible with autoclave sterilization and has good chemical resistance and low moisture absorption.

**DuraForm ProX GF** builds on the generally applicable nature of DuraForm PA and adds in a glass fill for enhanced thermal and mechanical properties. Its best-in-class properties make it ideal for automotive/under the hood, intake manifolds and other rigid high temperature components, aerospace/aviation, enclosures, cases and covers, power tools and small engine components, jigs and fixtures, thermoforming and hydroforming.



## Finishing & Post Processing

SLS parts can be finished in a variety of ways, from simple color dyeing (to either standard colors or to your requirements), through polishing and into full prime, paint and color matching services where needed.

**DuraForm HST** is a durable polyamide (nylon) material with high stiffness, enhanced temperature resistance that achieves anisotropic mechanical properties just like fiber-filled, injection molded materials. It is also non-conductive and RF transparent, making it ideal for small batch, specialist hardware projects.

**DuraForm FR1200** is a flame-retardant nylon 12 material with high accuracy and excellent surface finish. It is ideally suited for direct 3D production of components in aerospace, transportation and consumer goods applications where reliable fire retardancy and reduced smoke and toxicity are required.

3D Systems also offers two elastomeric materials, **DuraForm TPU Elastomer** and **Duraform Flex**. Both have rubber-like flexibility and functionality and are ideal for both prototyping and direct end part production of flexible parts, hoses, seals, gaskets, as well as a consumer products such as footwear.



Contact our team to explore the options best suited to your project's requirements