



Dear Our Future Partner,

Let me introduce you the services of our industrial SLS 3D printing center briefly.

We undertake 3D printing with short lead times, even within 24 hours. Whether it is contract printing, prototype production, 3D modelling, serial production or design.

### **Ideal applications for Laser Sintering**

- Prototypes with mechanical properties to rival those of injection-molded parts
- Series of small components as a cost-effective alternative to injection molding
- Large and complex functional parts up 290x 290x 290 mm in one piece
- Personalized manufacturing, the economical production of unique, complex, designs built as one-off products or in small batches
- Lightweight designs using complex lattice structures

### **Why choose Laser Sintering?**

With no need for support structures, this technology is suitable for interlocking parts, moving parts, living hinges and other highly complex designs. Whether you need fully functional prototypes or a series of complex end-use parts, the freedom offered by Laser Sintering design serves both.

### **How Does Laser Sintering Work?**

Laser Sintering is a laser-based technology that uses solid powder materials, typically plastics. A computer-controlled laser beam selectively binds together particles in the powder bed, by raising the powder temperature above the glass transition point after which the adjacent particles flow together. As the powder is self-supporting, no support structures are necessary.

### **Technical Specifications**

Standard lead time	Minimum of 2 working days (EU countries), depending on the part's size, the number of components and the finishing degrees
Standard accuracy	±0.3% (with lower limit on ±0.3 mm)
Layer thickness	0.10 mm
Minimum wall thickness	1 mm, but living hinges are possible at 0.3 mm
Minimum detail	0.3 mm
Minimum clearance	0.6 mm between parts that need to be assembled 0.5 – 0.6 mm between shells of an interlocking part
Maximum part dimensions	290 x 290 x 290 mm



Interlocking or enclosed parts?

Yes

Surface structure

Unfinished parts typically have a grainy surface but all kinds of fine finishes are possible. PA 12 parts can be sandblasted, painted.

#### Currently available raw materials:

**Polyamide (PA12):** High-performance raw material with excellent characteristics and high melting point, which is widely used in many areas.

#### Data sheet

MEASUREMENT	VALUE	STANDARD
Density	$0.95 \pm 0.03 \text{ g/cm}^3$	
Tensile Strength	$48 \pm 3 \text{ MPa}$	DIN EN ISO527
Tensile Modulus	1650 MPa	DIN EN ISO527
Flexural Strength	41 MPa	D790
Elongation at Break	$20 \pm 5\%$	DIN EN ISO527
Flexural Modulus	$1500 \text{ N/mm}^2$	DIN EN ISO178
Charpy – Impact strength	$53 \pm 3.8 \text{ kJ/m}^2$	DIN EN ISO179
Charpy – Notched Impact Strength	$4.8 \pm 0.3 \text{ kJ/m}^2$	DIN EN ISO179
Izod - Notched Impact Strength	$4.4 \pm 0.4 \text{ kJ/m}^2$	DIN EN ISO180
Ball Indentation Hardness	$77.6 \pm 2$	DIN EN ISO2039
Shore D/A-hardness	D75 $\pm 2$	DIN 53505
Heat Deflection Temperature	86°C	ASTM D648 @ 1.82MPa

The actual values may vary depending on the condition of printing.

Best regards,

The H3D team