

STEREOLITHOGRAPHY (SLA)

What Is Stereolithography (SLA)

Stereolithography is an additive manufacturing process that focuses an ultraviolet (UV) light on a vat of photopolymer resin. It offers higher resolution printing than many other 3D printing technologies, allowing customers to print parts with fine details and surface finishes. Stereolithography 3D printing is a highly recommended technology for making custom parts in prototype and production settings, often acting as a stand-in for injection molded plastic parts.

How Does SLA Works?

The SLA 3D printer begins by drawing the layers of the support structures, followed by the object itself, with an ultraviolet laser aimed onto the surface of a liquid photopolymer resin. After a layer is imaged on the resin surface, the build platform shifts down and a recoating bar moves across the platform to apply the next layer of resin. The process is repeated layer by layer until the object is complete.

The finished object is taken out of platform and into a lab where solvents are used to remove any additional resins. When the object is completely clean, the support structures are manually removed. From there, parts will be enhanced again by a UV-curing device. Now, it is ready for any customized surface finishes.

Common SLA Applications

- Housings and casings
- Concept models
- Prototyping
- Display models
- Connectors
- Medical models and prototypes

Design Requirements

Minimum wall thickness	0.5mm
Minimum hole diameter	0.5mm
Minimum feature size	0.5mm
Minimum printable font size	6pt
Minimum space and clearance	0.5mm
Minimum slit between walls	0.5mm

Available materials for SLA 3D Printing

SLA produces parts from a very wide range of engineering thermoplastics. Here is a list of the SLA materials available on 3Dtechnologies4U.

Materials	Applications
ABS-like	Housings and casings, concept models, prototypes, display models
DSM waterclear, clear	Automotive lenses, bottles, fluid flow analysis, packaging prototypes, light duty pipes
PP-like	Housings and casings, consumer products, jigs and fixtures
Somos 8000,128	Aerospace and automotive applications, consumer products
Somos Taurus	Customised end-use parts, tough functional parts, automotive parts (under the hood), connectors for electronics
Formlab Resin	Scale models, miniatures, jewellery prototypes, mold masters
Cast-able resin	High detailed prototypes, jewellery
Red-wax	High detailed prototypes, jewellery, art applications, decorations