



UNIT-3- LIQUID BASED AND SOLID BASED ADDITIVE MANUFACTURING

Stereo lithography Apparatus (SLA)

Stereo lithography (SLA or SL; also known as vat photo polymerization, optical fabrication, photo-solidification, or resin printing) is a form of 3D printing technology used for creating models, prototypes, patterns, and production parts in a layer by layer fashion using photochemical processes by which light causes.

Stereo lithography (SLA) is **the first commercialized 3D printing technology**, invented by 3D Systems' Co-Founder and Chief Technology Officer Chuck Hull in the 1980s. It uses an ultraviolet laser to precisely cure photopolymer cross-sections, transforming them from liquid to solid.

SLA is also known as resin 3D printing (or) vat polymerization. SLA uses **a light source and a photopolymer resin** to fabricate 3D constructs. The light source can be UV (or) visible light, and resin should be light sensitive.

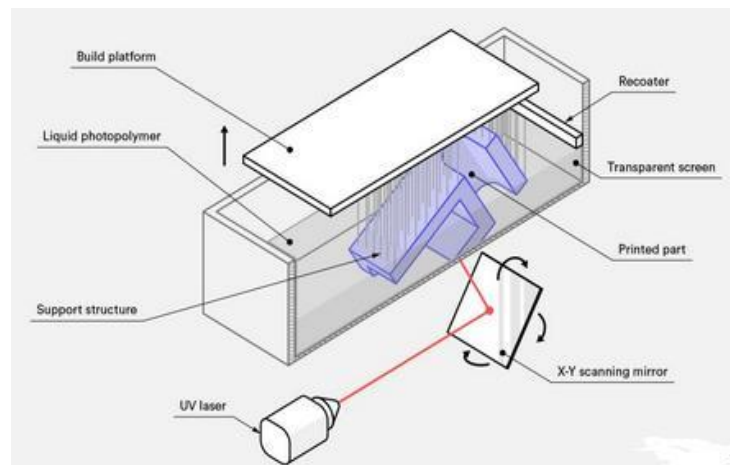
Stereo lithography is good for producing accurate prototypes and models. Stereo lithography is well used for **creating accurate 3D models of anatomical regions of a patient, used to aid in diagnosis and for pre-planning and implant design and manufacture**. It is also good for use in concept models and scale models.

Industries from dental to manufacturing depend on SLA 3D printing to repeatedly create accurate, precise components. For a print process to produce accurate and precise parts, multiple factors must be tightly controlled.

What are the three types of SLAs?

There are three basic types of SLAs: **customer, internal and multilevel service-level agreements**. A customer service-level agreement is between a service provider and its external customers. It is sometimes called an external service agreement.

The two main types of SLA systems are **desktop (prototyping) and industrial printers**. Industrial SLA machines can produce more accurate components than their desktop counterparts (and maintain better accuracy over larger builds), and often make use of higher-cost materials.



Stereolithography provides advantages in **speed, cost-effectiveness, flexibility, and precision**. These advantages make stereo lithography for medical device design, among many other industries, a vital process for creating models and prototypes that help refine and prove designs.

Stereolithography was the first commercial SFF process developed by 3D Systems Inc. and is **based on layer-by-layer polymerization of photosensitive resin using ultraviolet (UV) light**.

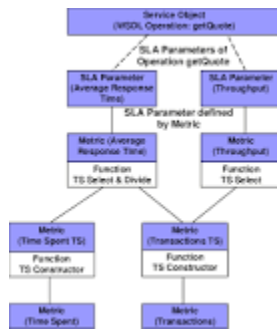
What materials are used in stereo lithography?

Modern stereo lithography machines offer a range of thermoplastic like materials. Different variants mimic polypropylene, ABS and glass filled polycarbonate.

Does SLA use filament?

SLA is the abbreviation for Stereo lithography Equipment, or just stereo lithography. Like FDM, SLA is an additive method: models are built layer by layer. **Instead of using plastic filament, Stereo lithography uses a liquid resin material.**

What is SLA parameters?



SLA parameters are **observable properties of a service object that are used to define the service level objectives of an SLA.** ... Context 2 formats of measurement directives strongly depends on the measurement method, and the monitoring and test interfaces of the service provider's system.