



Vat polymerization

STEREOLITHOGRAPHY (SLA)

SLA uses light to create parts in a pool of UV-curable resin by selectively solidifying the layers on a build platform. The light is focused very finely in a laser, so this method can produce an exceptional surface finish. It's good for high-resolution parts with a limited lifespan and mechanical load.

Industry applications	Prototyping, dental, jigs / fixtures, jewelry
Material types	Thermoset, ceramic
Environment / certification	N/A
Material options	Many (high temperature, clear, castable, dental)
Isotropy	Isotropic
Multi-material printing	No
Process type	Batch
Process design / NRE required	Significant
Recommended part size	Tennis ball to golf ball
Throughput / annual volume	Medium (1,000s)
Part color	In-process (single color), post-finishing *Exact color-matching not available
As-built texture	Smooth
Support material required	Required, tear-away
Minimum feature size	Extra small
Benefits: Very fine features; specialty materials for dental, jewelry, etc.	

DIGITAL LIGHT SYNTHESIS (DLS)

Digital Light Synthesis (DLS) is a proprietary technology from Carbon®. The process uses digital light projection, oxygen-permeable optics, and liquid resins to produce parts with excellent mechanical properties, resolution, and surface finish. It's good for a wide range of applications including automotive, dental, industrial, medical, and consumer goods.

Industry applications	Automotive, medical, dental, industrial, CPG
Material types	Thermoset
Environment / certification	UV, chemical, flame (HB, V-0)
Material options	Many (high temperature, elastomers, epoxies, polyurethanes)
Isotropy	Isotropic
Multi-material printing	No
Process type	Batch
Process design / NRE Required	Significant
Recommended part size	Tennis ball to golf ball
Throughput / annual volume	High (10,000s)
Part color	In-process (single color) *Exact color-matching not available
As-built texture	Smooth
Support material required	Required, tear-away
Minimum feature size	Extra small / small
Benefits: Large material selection; long material life; injection molding-like finish; highly detailed; process has been validated, production-ready	