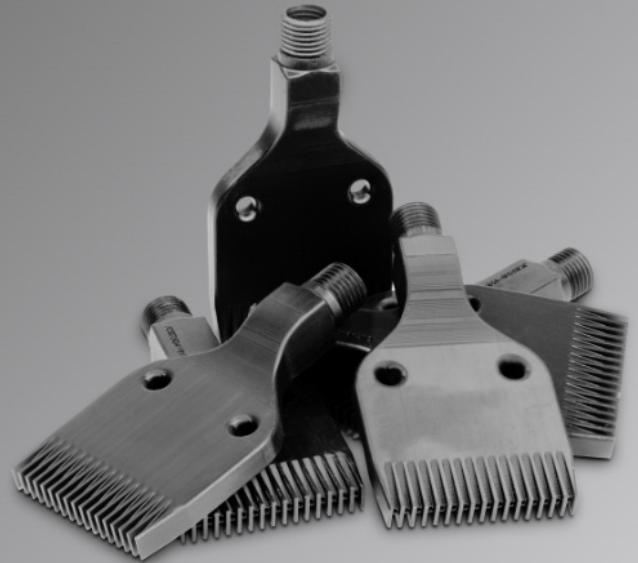


If you need functional prototypes or short production runs with strong mechanical properties, excellent surface finish and fast turnaround, Projection Stereolithography (PSLA) is likely the process you require.

PSLA produces accurate, high-quality resin parts quickly and consistently. Depending on your requirements, parts can typically be produced overnight for next day dispatch.

This process guide describes our approach to producing prototype parts using PSLA.



What is PSLA?

Projection Stereolithography is a high-speed resin 3D printing process that combines the accuracy and surface quality of stereolithography with the production speed advantages of projection-based curing. PSLA is well suited to functional prototypes, design verification parts and short production runs where both part quality and fast turnaround are important.

We offer PSLA using the 3D Systems PSLA 270, an industrial-grade machine with a build volume of 242x265x300 mm. Our expertise and technology enable us to deliver consistent, repeatable results across a wide range of engineering applications.

How does it work?

PSLA uses a projected light source to cure photopolymer resin layer by layer. Unlike traditional SLA, which traces each layer with a laser, PSLA cures an entire layer in a single exposure. This significantly improves production speed while maintaining the dimensional accuracy and smooth surface finish associated with stereolithography. Once parts are built, they undergo post-processing to remove supports and achieve the required finish.

Benefits

PSLA is a preferred choice for engineers and product developers due to its combination of speed and material performance:

- ▶ **Strong, functional parts:** Engineering-grade resin with thermoplastic-like mechanical properties.
- ▶ **Excellent surface finish:** Smooth sidewall quality with minimal post-processing required.
- ▶ **Fast lead times:** Overnight printing available for urgent projects.
- ▶ **Isotropic properties:** Parts print with consistent mechanical properties regardless of orientation.
- ▶ **Bridge manufacturing:** Ideal for production runs ahead of injection moulding tooling.



PSLA Material

PRO-BLK 10

Production-grade additive manufacturing material with thermoplastic-like mechanical properties and long-term environmental stability. Strong, durable black parts with excellent surface finish and dimensional accuracy, well suited to functional prototypes, housings, connectors, snap-fits and general engineering components. Biocompatible capable per ISO 10993-5 and ISO 10993-10.

PSLA and Injection Moulding

A part designed for injection moulding can be well suited to our PSLA process due to several shared design principles.

Both processes benefit from parts with uniform wall thickness and without large block areas of material. PSLA can produce highly detailed and complex geometries similar to those achievable with injection moulding, and the material is engineered to mimic the mechanical behaviour of injection-moulded thermoplastics, making it a practical choice for prototyping and low-volume production ahead of hard tooling.

