



A3D – 006 – SLA

Introduction

Welcome to A3D Manufacturing's guide to Stereolithography (SLA) 3D Printing—a technology that excels in delivering high-resolution, aesthetic prototypes and models. This document outlines what you can expect from our SLA services, as well as some limitations to consider for optimal results.

Technology Overview - How It Works

1. **Resin Coating:** A recoating bar applies a thin layer of resin to the build plate.
2. **UV Laser Curing:** An ultraviolet laser scans the resin, solidifying the current layer of the part.
3. **Layer Building:** This process repeats for each layer until the part is complete.
4. **Support & Excess Resin Removal:** Once the build is complete, the parts are soaked in a solvent, and any supports are manually removed.
5. **UV Curing:** The part undergoes a curing cycle in a UV machine to improve the parts mechanical properties.

Common Applications

- Master patterns for cast urethane
- Highly cosmetic show models
- Prototypes focusing on form and fit
- Clear parts or light pipes
- Small silicone molds

Material Options

Accura ClearVue, Accura ABS Black, and Somos EvoLVE, Rigid 4000, Rigid 10K, BioMed Black, Black, Tough 2000, Grey Pro, Castable Wax, PU Rigid 1000, BioMed Clear, BioMed Amber, High Temp, BioMed White, Grey, Elastic 50A, PU Rigid 650, Draft, ESD, Tough 1500, White, Castable Wax 40, Flexible 80A, Durable V2, Clear

Expectations

Lead Time Standard: 3-5 days

Expedited: May be available within 24 hours in some cases

Standard Accuracy: +/- .203mm(.008”) or +/- .002 in/in, whichever is greater

Build Volume: Maximum Build Volume: 450 x 450 x 400 mm

Layer Thickness: 0.05-0.25mm

Finishes: Options include clear part finishing, painting, and sanding or bead blasting.



Limitations

Material Sensitivity: Materials may degrade with exposure to UV light or humidity.

Structural Integrity: SLA printed parts can be fragile and may not be ideal for load-bearing applications.

Clear SLA: Exposure to UV light will yellow and cloud clarity in parts. True optical clarity may not be achieved in most cases.

Support scaring and dimensions: Areas where supports are touching the final product may deviate from tolerances due to the manual sanding and labor needed to separate the part from supports.

Minimum Specifications

Wall Thickness: 1.016mm (0.040")

Clearance for Assemblies: .508mm (0.020")

Feature Size: .508mm (0.020")

Hole Diameter: .508mm (0.020")

SLA 3D Printing offers unparalleled aesthetics and high-resolution features, making it a top choice for prototyping where cosmetics are a priority. However, it's essential to be mindful of its limitations, especially concerning material degradation and fragility.

Thank you for considering A3D Manufacturing as your partner in advanced 3D printing services.