

explore ... Stereolithography

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SL for RAPID TOOLING

After nearly 20 years of application and market development, AM rapid tooling is finding utility at the intersection of stereolithography (SL) process technology, material performance evolution, and fresh business model thinking.

The SL advantage for rapid tooling

Stereolithography has always offered the ability to efficiently manufacture a matched die set for injection molding within days. SL offers many advantages for this application over direct CNC machining.

- Exceptionally smooth, porosity-free surfaces
- High accuracy and fine resolution for detailed parts
- Duplication of fine surface features
- Ability to create finer radii

- Highly silica filled with thermal expansion characteristics less than 50% of typical unfilled SL materials
- High heat-handling capability
- Superior stiffness
- Modulus of 10 GPa with a heat deflection temperature of over 500 °F

Today's SL materials for tooling

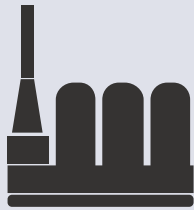
SL provides the best material options of any AM process today. These capabilities are now delivered in an SL formulation optimized for ease of processing, overcoming filled formulation issues of earlier generations.



SL is an ideal process for rapid tooling: it offers the ability to manufacture a matched die set for injection molding within days, with unparalleled surface quality, high accuracy, and fine resolution.

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Integrated AM + injection
molding capabilities
installed at OEMs and
service bureaus



Rapid production of injection
molded thermoplastics



Prototyping capability
maximized, leading to
internal innovation

The real prototype demand is for injection molded parts, not tooling. A fresh business model, demonstrated above, can lead to internal innovation that further enhances the use of SL for rapid tooling. Expertise has developed that allows processing of common plastics ranging from polypropylene, ABS, polycarbonate, and glass-filled nylon to produce injection molded parts. Reliable production volumes range from tens to hundreds of parts depending on material type and tool complexity.

Teccluster Industrial SL Equipment

- 250 mm x 250 mm platform size is well matched to typical tool size
- Proven processing with specially formulated stereolithography photopolymer
- Exceptionally smooth sidewalls with layer thickness capability of 0.05 mm to 0.15 mm
- High accuracy and precision



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