Stereolithography 3D Printing

Stereolithography (SL, SLA®) is the original 3D printing process still widely used today for its accuracy and speed. The design freedom of SL makes iteration and validation easier than ever and allows you to get to market faster.

SL MANUFACTURING PROCESS

**SL build**
SL builds parts with a precise UV laser to cure and solidify thin layers of a photo-reactive resin.

**Support removal**
Parts are detached from the build plate and support structures are removed.

**Part finishing**
Parts are subjected to a secondary UV cure and any required post-processing.

**Quality inspection**
Our certified systems ensure parts are within the parameters defined by your requirements.

**Shipment**
Plastic parts are carefully packaged and shipped.

CHOOSING THE RIGHT PLASTIC

Our wide range of Stereolithography photopolymers serve our customer's requirements, from clear, strong plastics to special formulas for investment casting patterns, we can help you find the right solution to fulfill your project requirements. SL materials mimic properties of ABS, polycarbonate and polypropylene in layers as low as 0.002”.

- High Impact resistance
- Extraordinary clarity and transparency
- Water resistance

<table>
<thead>
<tr>
<th>SL materials</th>
<th>Applications</th>
<th>Water absorption</th>
<th>Elongation @ break</th>
<th>Tensile strength</th>
<th>Izod impact strength (notched)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Somos® ProtoGen 18420</td>
<td>Automotive parts, consumer products, housings</td>
<td>0.68%</td>
<td>12%</td>
<td>6,200 psi (43 MPa)</td>
<td>0.39 ft-lb/in (21 J/m)</td>
</tr>
<tr>
<td>Somos® WaterClear Ultra 10122</td>
<td>Automotive lenses, bottles, lenses</td>
<td>1.10%</td>
<td>7.5%</td>
<td>8,100 psi (56 MPa)</td>
<td>0.47 ft-lb/in (25 J/m)</td>
</tr>
<tr>
<td>Somos® WaterShed XC 11122</td>
<td>Consumer products, lenses, fluid flow analysis</td>
<td>0.35%</td>
<td>15.5%</td>
<td>7,300 psi (50.4 MPa)</td>
<td>0.47 ft-lb/in (25 J/m)</td>
</tr>
<tr>
<td>Somos® NeXt</td>
<td>Tough prototypes, snap-fit designs, jigs and fixtures</td>
<td>0.40%</td>
<td>9%</td>
<td>4,800 psi (32.8 MPa)</td>
<td>0.94 ft-lb/in (50 J/m)</td>
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<tr>
<td>SC 1000P</td>
<td>Investment casting patterns, large and lightweight models</td>
<td>0.36%</td>
<td>6.4%</td>
<td>6,100 psi (42 MPa)</td>
<td>0.41 ft-lb/in (22 J/m)</td>
</tr>
</tbody>
</table>
Design tips

Stereolithography can create parts with high dimensional accuracy as well as intricate designs and smooth surfaces. Our finishing experts take your 3D printed prototype and transform it into a replica of your finished product.

+ Affordable concept models  
+ Presentation models  
+ Prototypes for validation or testing  
+ Masters and patterns for tool and mold making

### SL Design Specifications

<table>
<thead>
<tr>
<th>SL Design Specifications</th>
<th>SDSL</th>
<th>HDSL</th>
<th>μHDSL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max part size (unsegmented)*</td>
<td>25” x 29” x 21”</td>
<td>25” x 29” x 21”</td>
<td>5” x 5” x 9.5”</td>
</tr>
<tr>
<td>Layer thickness</td>
<td>0.004”</td>
<td>0.004”</td>
<td>0.002”</td>
</tr>
<tr>
<td>Recommended min. feature size</td>
<td>0.025”</td>
<td>0.010”</td>
<td>0.005”</td>
</tr>
<tr>
<td>Standard tolerances</td>
<td>±0.020” or ±0.001”/”, whichever is greater</td>
<td>±0.010” or ±0.001”/”, whichever is greater</td>
<td>±0.005” or ±0.001”/”, whichever is greater</td>
</tr>
<tr>
<td>Minimum wall thickness</td>
<td>0.06”</td>
<td>0.06”</td>
<td>0.06”</td>
</tr>
</tbody>
</table>

### SL BENEFITS

**VIRTUALLY LIMITLESS SIZE**

Stratasys Direct can seamlessly bond individual sections into extremely large, industrial sized patterns.

**COSMETIC FINISHING**

SL is a popular choice for parts that need to be finishined or transformed to look like finished products. Any surface look is achievable with our expert finishers.

**CASTING PATTERNS**

SL is uniquely suited to manufacture investment casting patterns utilizing a sparse infill and honeycomb pattern.

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