

Product Information

INFINAM® ST 6100 L

HIGH STRENGTH AND HEAT RESISTANT PHOTOPOLYMER FOR ADDITIVE MANUFACTURING



INFINAM® ST 6100 L resin is a black colored liquid photopolymer formulation, which is easy to process (low viscosity, 1-part system). The fully cured material exhibits excellent mechanical properties (high strength combined with elongation) and high temperature resistance.

Directions for use

INFINAM® ST 6100 L resin is a light-sensitive product protected by its original packaging. Exposure of the liquid formulation to daylight or UV light should be minimized or avoided at all during storage and handling to ensure consistent print quality. Special light sources shall be used instead. Store product in a dry location with optimum storage temperature of 10–30 °C. Storage beyond this recommended temperature range can adversely affect both print and product properties. It is recommended to shake INFINAM® ST 6100 L resin well before use. Degassing can be carried out before any print process. It is advisable not to store the unused resin in the vat, especially for prolonged period of usage. If the resin is left in the vat after printing, thoroughly mix and agitate the resin in the vat prior to any print processes. Do not return used resin from the vat back into the original INFINAM® ST 6100 L container.

Recommended print settings

INFINAM® ST 6100 L is designed to print on bottom-up digital light processing (DLP) machines. When printing with a light intensity of 11 mW/cm², the recommended layer exposure time for 100 µm thick layers is 5 s, with a base layer exposure time of 10 s. Working curve data for 405 nm wavelength and 11 mW/cm² intensity: Critical exposure energy $E_c = 4 \text{ mJ/cm}^2$ and Depth of penetration $D_p = 120 \text{ µm}$.

Recommended washing procedure

It is recommended to wash printed parts with isopropanol to remove uncured resin and use compressed air to accelerate the removal of residual solvent from the surface of the parts. When support structures are used, they should be removed before post-curing.

Recommended post-curing procedure

After washing, the parts should be submitted in a first step to ultraviolet (UV) light (intensity > 5 mW/cm²) for 120 min at 80 °C, followed in a second step by 120 min at 80 °C without UV light. In order to achieve a HDT of 120 °C, it is recommended, for the second step, to post-process at higher temperature (110 °C instead of 80 °C).

Mechanical testing measurements

The mechanical values reported in this document were obtained on specimens printed with a DLP printer at 405 nm (11 mW/cm², xy print with 5 s layer exposure time). Tensile bars were tested following ASTM D638, Type V, 1 mm/min. Notched impact bars were printed with notch.

Statement on reported mechanical and thermal properties

The mechanical and thermal values reported in this document derived from printing various parts with one specific bottom-up DLP machine and following the above-mentioned procedures. Those values reflect an approximation of the mean value of a range of values and are intended for reference and comparison purposes only.

Mechanical Properties	Value	Unit	Test Standard
Tensile Modulus	3200	MPa	ASTM D638
Ultimate Tensile Strength	89	MPa	ASTM D638
Elongation at Break	6	%	ASTM D638
Flexural Modulus	3400	MPa	ASTM D790
Flexural Stress at 5% Strain	145	MPa	ASTM D790
Izod Notched Impact	22	J/m	ASTM D256

Thermal Properties	Value	Unit	Test Standard
Heat Deflection Temperature, 0.455 MPa/66 psi	120	°C	ASTM D648
Glass Transition Temperature (tanδ)	140	°C	ASTM D4065

Physical Properties	Value	Unit	Test Standard
Liquid Density, 25 °C	1.1	g/cm ³	ASTM D1475
Liquid Viscosity, 25 °C / 1 Hz	450	mPa.s	ASTM D4287
Shore D Hardness	89	–	ASTM D2240
Water absorption (24 h)	0.3	%	ASTM D570

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Evonik Operations GmbH
Smart Materials
High Performance Polymers
 45772 Marl / Germany

Tel: +49 2365 49 – 9227
 evonik-hp@evonik.com