

Product Information

# INFINAM® TI 3100 L

HIGH-TOUGHNESS, HIGHLY IMPACT RESISTANT PHOTOPOLYMER FOR ADDITIVE MANUFACTURING



**INFINAM® TI 3100 L** resin is a black colored liquid photopolymer formulation, which is easy to process (1-part system). The fully cured material exhibits excellent mechanical properties (high toughness and high impact resistance).

#### Directions for use

**INFINAM® TI 3100 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® TI 3100 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® TI 3100 L** container.

#### Recommended print settings

**INFINAM® TI 3100 L** is designed to print on bottom-up digital light processing (DLP) machines. When printing with a light intensity of 11 mW/cm<sup>2</sup>, the recommended layer exposure time for 100 µm thick layers is 10 s, with a base layer exposure time of 20 s. Working curve data for 405 nm wavelength and 11 mW/cm<sup>2</sup> intensity: Critical exposure energy  $E_c = 20 \text{ mJ/cm}^2$  and Depth of penetration  $D_p = 160 \text{ µm}$ .

#### Recommended washing procedure

It is recommended to wash printed parts with tripropylene glycol monomethyl ether (TPM) to remove uncured resin, and afterwards wash with isopropanol to remove residual TPM. Compressed air can be used 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 to ultraviolet (UV) light (intensity > 5 mW/cm<sup>2</sup>) for 120 min at 60 °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/cm<sup>2</sup>, xy print with 10 s layer exposure time). Tensile bars were tested following ASTM D638, Type V, 10 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.

<b>Mechanical Properties</b>	<b>Value</b>	<b>Unit</b>	<b>Test Standard</b>
Tensile Modulus	<b>1500</b>	MPa	ASTM D638
Ultimate Tensile Strength	<b>35</b>	MPa	ASTM D638
Elongation at Break	<b>120</b>	%	ASTM D638
Izod Impact	<b>350</b>	J/m	ASTM D4812
Izod Notched Impact	<b>40</b>	J/m	ASTM D256

<b>Thermal Properties</b>	<b>Value</b>	<b>Unit</b>	<b>Test Standard</b>
Heat Deflection Temperature, 0.455 MPa/66 psi	<b>47</b>	°C	ASTM D648
Glass Transition Temperature (tanδ)	<b>74</b>	°C	ASTM D4065

<b>Physical Properties</b>	<b>Value</b>	<b>Unit</b>	<b>Test Standard</b>
Liquid Density, 25 °C	<b>1.1</b>	g/cm <sup>3</sup>	ASTM D1475
Liquid Viscosity, 25 °C / 1 Hz	<b>1060</b>	mPa.s	ASTM D4287
Shore D Hardness	<b>80</b>	-	ASTM D2240

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