

Product Information

INFINAM® TI 5400 L

HIGH TOUGHNESS AND HIGH DUCTILITY WHITE PHOTOPOLYMER FOR ADDITIVE MANUFACTURING



INFINAM® TI 5400 L resin is a white colored liquid photopolymer formulation, which is easy to process (1-part system). The fully cured material exhibits excellent mechanical properties (high toughness and high ductility).

Directions for use

INFINAM® TI 5400 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 5400 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 5400 L** container.

Recommended print settings

INFINAM® TI 5400 L is designed to print on bottom-up digital light processing (DLP) machines. When printing with a light intensity of 2.4 mW/cm² at 405 nm, the recommended layer exposure time for 100 µm thick layers is 2.4 s. Working curve data for 405 nm wavelength and 2.4 mW/cm² intensity: Critical exposure energy $E_c = 2.0\text{--}2.5$ mJ/cm² and Depth of penetration $D_p = 200\text{--}250$ µm.

Recommended washing procedure

It is recommended to wash printed parts with tripropylene glycol methyl ether (TPM) to remove uncured resinous materials. Recommend wash cycle: use 2 to 3 rinse buckets (from dirty soak to clean soak), each rinse for 2 to 5 minutes. Lastly, wash the 3D-printed object with isopropanol (IPA) for 2 minutes to remove excess TPM. After IPA wash, allow parts to dry for at least 30 minutes in order for the IPA to fully evaporate before the next post-curing process. Over-soaking or over-washing may result in loss in the mechanical properties. 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 at ca. 5 mW/cm²) for 120 min at 80 °C, followed by 180 min at 80 °C without UV light.

Mechanical testing measurements

The mechanical values reported in this document were obtained on specimens printed with a DLP printer at 405 nm (2.4 mW/cm², XY or XZ print with 2.4 s layer exposure time, 100 µm thick layers). Tensile bars were tested following ASTM D638, Type V, 10 mm/min using an automated extensometer. Specimens are notched using a manual notching machine.

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	1500	MPa	ASTM D638
Ultimate Tensile Strength	40	MPa	ASTM D638
Elongation at Break	210	%	ASTM D638
Flexural Modulus	1080	MPa	ASTM D790
Flexural Stress at 5% Strain	44	MPa	ASTM D790
Izod Notched Impact	27	J/m	ASTM D256

Thermal Properties	Value	Unit	Test Standard
Heat Deflection Temperature, 0.455 MPa/66 psi	56	°C	ASTM D648
Glass Transition Temperature (tanδ)	101	°C	ASTM D4065

Physical Properties	Value	Unit	Test Standard
Liquid Density, 25 °C	1.07	g/cm ³	ASTM D4052
Liquid Viscosity, 25 °C / 1 Hz	1,130	mPa.s	ASTM D4287
Shore D Hardness	80	-	ASTM D2240
Water absorption (24 h)	5.4	%	ASTM D570

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