Product Information

INFINAM® RG 2000 L

CLEAR AND TOUGH PHOTOPOLYMER FOR ADDITIVE MANUFACTURING

INFINAM® RG 2000 L resin is a clear liquid photopolymer formulation, which is fast-curing and easy to process (1-part system). The fully cured material exhibits excellent mechanical properties (high toughness) and low water absorption.

Directions for use

INFINAM® RG 2000 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® RG 2000 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® RG 2000 L** container.

Recommended print settings

INFINAM® RG 2000 L is designed to print on bottom-up digital light processing (DLP) machines. When printing with a light intensity of 9 mW/cm² at 385 nm, the recommended layer exposure time for 100 µm thick layers is 2 s, with a base layer exposure time of 3 s. Working curve data for 385 nm wavelength and 9 mW/cm² intensity: Critical exposure energy E_c = 6-9 mJ/cm² and Depth of penetration D_p = 300-400 µm.

Recommended washing procedure

It is recommended to wash printed parts with isopropanol to remove uncured resin. When support structures are used, they should be removed before post-curing. To achieve higher clarity in complex geometry objects, it is recommended to wash the parts in tripropylene glycol methyl ether. 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 385 nm (9 mW/cm², XY or XZ print with 2 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	1940	MPa	ASTM D638
Ultimate Tensile Strength	53	MPa	ASTM D638
Elongation at Break	48	%	ASTM D638
Flexural Modulus	1900	MPa	ASTM D790
Flexural Stress at 5% Strain	80	MPa	ASTM D790
Izod Notched Impact	44	J/m	ASTM D256

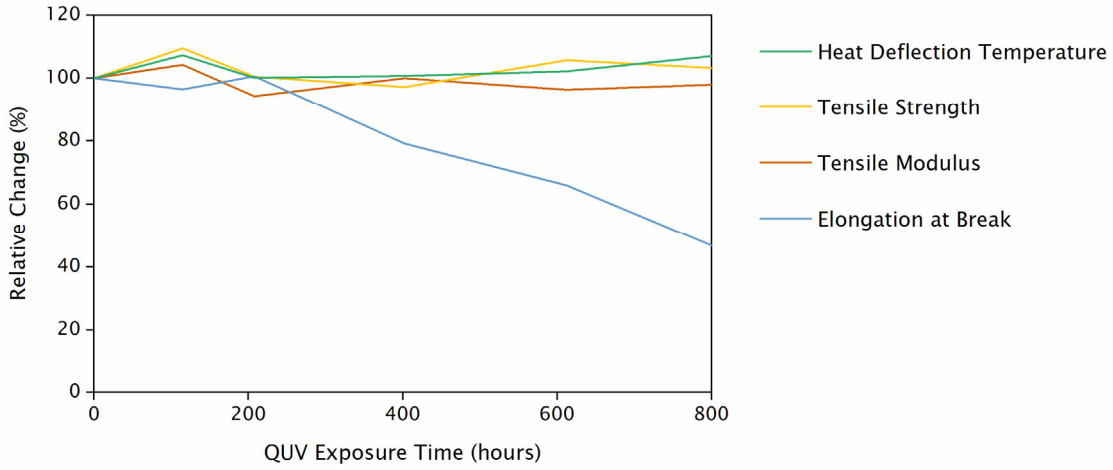
Thermal Properties	Value	Unit	Test Standard
Heat Deflection Temperature, 0.455 MPa/66 psi	78	°C	ASTM D648
Glass Transition Temperature (tanδ)	107	°C	ASTM D4065

Biocompatibility	Value	Unit	Test Standard
Cytotoxicity	Comply	-	ISO 10993-5

Physical Properties	Value	Unit	Test Standard
Liquid Density, 25 °C	1.03	g/cm³	ASTM D1475
Liquid Viscosity, 25 °C / 1 Hz	3,060	mPa.s	ASTM D4287
Shore D Hardness	85	-	ASTM D2240
Water absorption (24 h)	0.36	%	ASTM D570

Optical Properties	Value	Unit	Test Standard
Transmittance	98	%	ASTM E1348
Haze (C)	68	-	ASTM D1003
L*	99.04	-	ASTM E1348
a*	0.24	-	ASTM E1348
b*	1.01	-	ASTM E1348
C* (C)	1.04	-	ASTM E1348
h (C)	76.49	-	ASTM E1348

Accelerated Outdoor Weathering (ASTM G154 Cycle 1, QUV): thermal and mechanical properties



Accelerated Outdoor Weathering (ASTM G154 Cycle 1, QUV): optical properties

QUV Exposure Time (hours)	L*	a*	b*	Haze (C)
0	100.72	0.52	1.44	86.62
115	100.53	0.37	2.09	86.49
208	100.54	0.40	1.96	86.62
402	100.50	0.45	1.83	87.24
612	100.50	0.47	1.78	86.58
800	100.67	0.50	1.73	86.88

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

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