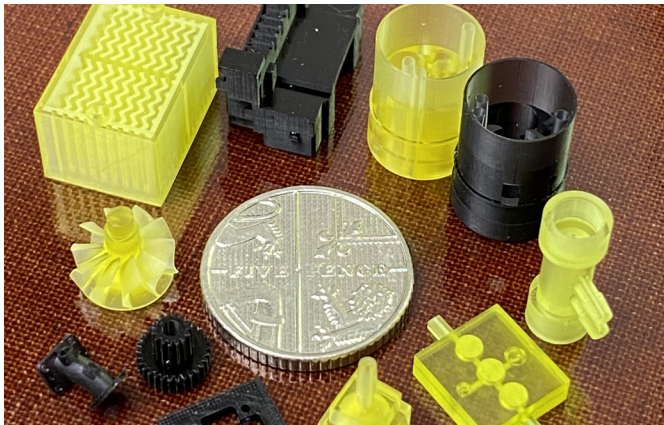


BIO Resin

A biocompatible resin used for Projection Micro Stereo Lithography (PµSL) 3D printing

BIO is a biocompatible resin suitable for non-implantable medical applications. Bio can undergo sterilisation and has passed numerous ISO 10993 biocompatibility tests for skin irritation and sensitisation, toxicity, cytotoxicity, pyrogenicity, and in vitro hemolysis.



Selection of parts in BMF Materials - HTL (black), BIO (yellow), RG (yellow)

ISO Standard	Test Description
ISO 10993-10: 2010; ISO 10993-12: 2012; ISO 10993-2: 2006	Skin Irritation Test
ISO 10993-10: 2010; ISO 10993-12: 2012; ISO 10993-12: 2006	Skin Sensitisation Test
ISO 10993-4: 2017	In Vitro Hemolytic Test
ISO 10993-11: 2017; ISO 10993-12: 2012; ISO 10993-2: 2006	Pyrogen Test
ISO 10993-5: 2009; ISO 10993-12: 2012	In Vitro Cytotoxicity Test
ISO 10993-11: 2017; ISO 10993-12: 2012; ISO 10993-2: 2006	Acute Systemic Toxicity Test

		Cured parts	Standard
Tensile Properties	Tensile Strength	56.0 MPa	ASTM D638
	Elastic Modulus	1614 MPa	ASTM D638
	Elongation at Break	6.2%	ASTM D638
Flexural Properties	Flexural Strength	106.6 MPa	ASTM D790
	Flexural Modulus	3.5 GPa	ASTM D790
Thermal Properties	CTE @ 60C	170.3 µm/m/°C	
	HDT @ 0.45 MPa	85.7 °C	ASTM D648 - 07
General properties	Contact Angle	50-70°	ASTM D7334
	Water Absorption (24h)	0.69%	ASTM D570
	Dialectic Constant (10 GHz)	2.75	-
	DF	0.0458	
	Hardness	84 Shore D	ASTM D785
	Viscosity	300 cP	-
	Standard Colour	Yellow trans	-
Cell Culture Survival Rate In Vitro	75%	-	

¹ Final properties are dependent on print conditions, post-processing operations, and part geometry.

² Test samples were UV cured and heat cured.

Design features for P μ SL

Design feature	Recommended
Maximum part size	100 x 100 x 75 mm
Minimum part size	1 mm ³
Minimum feature size	0.05 mm
Minimum hole diameter (vertical)	0.05 mm
Minimum hole diameter (horizontal)	0.15 mm
Maximum unsupported hole diameter (horizontal)	2.0 mm
Minimum wall thickness (supported)	0.05 mm
Minimum wall thickness (unsupported)	0.1 mm
Minimum unsupported overhang angle	30°
Maximum bridged overhang length	1.5 mm
Maximum non-bridged overhang length	0.3 mm
Aspect ratio for channels	100:01:00
Aspect ratio for pins & pillars	40:01:00
Minimum feature clearance	0.1 mm
Recommended channel shape > Ø 100 μ m	Rectangular or circular
Recommended channel shape < Ø 100 μ m	Circular
Part-to-part spacing	0.1 mm
Layer height	0.01- 0.05 mm
Support structure shape	Cone
Support structure cone top diameter	0.08 - 0.2 mm
Support structure cone base diameter	0.1mm-1 mm

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