

MATERIAL PROPERTIES DATA

Silicone 40A Resin

	METRIC	IMPERIAL	METHOD
	Post-Cured ^{1,2,3}	Post-Cured ^{1,2,3}	
Mechanical Properties			
Ultimate Tensile Strength	5 MPa	725 psi	ASTM D 412-06 Type C, 500 mm/min
Elongation at Break	230%	230%	ASTM D 412-06 Type C, 500 mm/min
Tear Strength	12 kN/m	68 lbf/in	ASTM D 624-00, Type C
Stress at 50% elongation	0.4 MPa	58 psi	ASTM D 412-06 Type C, 500 mm/min
Stress at 100% elongation	1 MPa	145 psi	ASTM D 412-06 Type C, 500 mm/min
Stress at 150% elongation	2.1 MPa	305 psi	ASTM D 412-06 Type C, 500 mm/min
Compression Set 23 °C for 22 hours	20%	20%	ASTM D 395-03 (B)
Bayshore Resilience	34%	34%	ASTM D2632
Ross Flexing Fatigue at 23 °C	> 500,000 cycles		ASTM D1052, (notched), 60° bending, 100 cycles/minute
Ross Flexing Fatigue at -10 °C	> 500,000 cycles		ASTM D1052, (notched), 60° bending, 100 cycles/minute
General Properties			
Shore Hardness	40A		ASTM 2240
Color	Dark grey		
Viscosity (@ 35 °C)	7800 cP		
Thermal Properties			
Glass Transition Temperature	-107 °C	-161 °F	ASTM D4065

Biocompatibility

Silicone 40A Resin is being evaluated as a skin contacting device in accordance with ISO 10993-1 for the following biocompatibility endpoints:

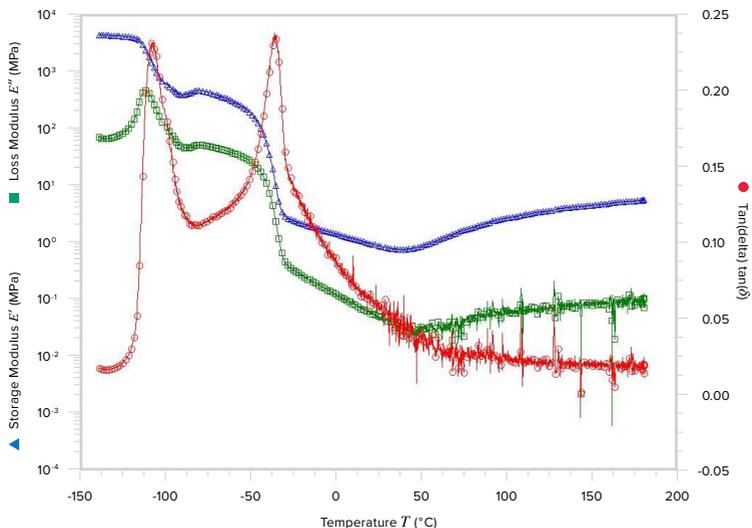
ISO Standard	Description
ISO 10993-5:2009	Pending test data
ISO 10993-23:2021	Pending test data
ISO 10993-10:2021	Pending test data

¹ The measured properties have been determined through internal testing and will be updated with results from an external lab.

² Material properties may vary based on part geometry, print orientation, print settings, temperature, and disinfection or sterilization methods used.

³ Data for post-cured samples were measured on Type C tensile bars printed on a Form 3 printer with 100 µm Silicone 40A Resin settings, washed in a Form Wash for 20 minutes in 80% Isopropyl Alcohol / 20% Butyl Acetate, and post-cured at 60 °C for 30 minutes submerged in water in a Form Cure.

Silicone 40A Resin Dynamic Mechanical Analysis (DMA)



A DMA curve from -150 deg C to 180 °C at 3 °C/min is shown. A glass transition is observed at -107 °C, and a crystalline melting transition is observed at -37 °C followed by a rubbery plateau to the conclusion of the test at 180 °C.

SOLVENT COMPATIBILITY

Percent weight gain over 24 hours for a printed and post-cured 1 x 1 x 1 cm cube immersed in respective solvent:

Cleaning Chemicals	24 hr weight gain, %	Industrial Fluids	24 hr weight gain, %
Acetone	11.5	Gasoline (ISO 1817, liquid C)	69.8
Bleach ~5% NaOCl	< 0.1	Diesel (Chevron #2)	32.9
Distilled Water	< 0.1	Skydrol 5	23.2
Strong Acid/Base/Alcohol	24 hr weight gain, %	Hydraulic Oil	10
Acetic Acid (5%)	< 0.1	Diethyl glycol monomethyl ether	2.5
Hydrochloric Acid (10%)	0.4	Mineral oil (Heavy)	1.6
Sodium hydroxide solution (0.025% pH = 10)	< 0.1	Mineral oil (Light)	2
Salt Water (3.5% NaCl)	< 0.1		
Isopropyl Alcohol	5.9		
Hydrogen peroxide (3%)	< 0.1		
Butyl Acetate	92.3		



If there's any other data that you want us to consider for future versions of the material's technical data sheet please fill out [this survey form](#). For specific questions about how to evaluate the fit of the current material for your application, please reach out to the sales and support teams at Formlabs.