VisiJet® Armor Max (M2G-JF)

Clear, ABS-like engineering plastic

Ideal for applications requiring a balance of strength and toughness with a clear aesthetic

MultiJet Printing

TOUGH, ABS-LIKE MATERIAL THAT BLANACES STRENGTH, STIFFNESS, AND ELONGATION

VisiJet Armor Max (M2G-JF) is a tough, ABS-like clear performance plastic material for the ProJet MJP 2500 Plus printer. It exhibits an exceptional mix of tensile strength and flex. Being versatile across a wide range of applications, VisiJet Armor Max delivers advanced prototyping performance to meet almost any engineering need. The clarity of VisiJet Armor Max is superior flow visualization and its printed parts are suitable for post-processing steps like dye-tinting.

APPLICATIONS

- Snap-fits
- Plumbing and fixture prototypes
- Jigs and fixtures
- Water pressure applications
- Bicycle components and functional prototypes
- Sprockets and gears
- Microfluidics, capillary fluidics
- Rapid prototyping of plastic injection molded screw bosses
- Translucent flow visualization and dye-tinted applications

BENEFITS

- Balance of strength, stiffness and elongation
- Low water absorption
- Supports watertight applications
- Excellent option for flow visualization applications

FEATURES

- Smooth surface finish
- High impact strength and elongation at break
- High accuracy
- High feature fidelity
- Prints sharp corners and edges
- Suitable for functional prototypes

3D SYSTEMS®

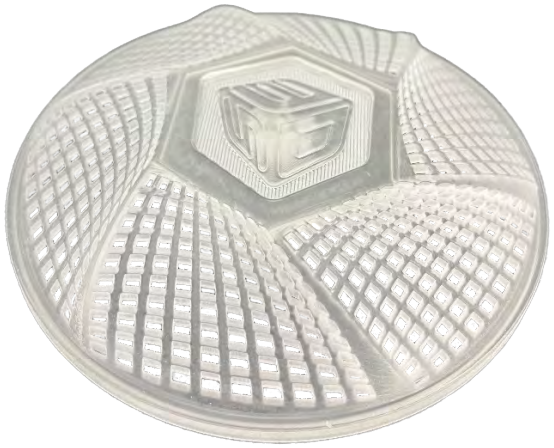
VisiJet® Armor Max (M2G-JF)

MATERIAL PROPERTIES

The full suite of mechanical properties is given per ASTM and ISO standards where applicable. Properties like flammability, dielectric properties and 24-hour water absorption are also provided for better understanding of material capabilities to help design decisions using the material. All parts are conditioned per ASTM recommended standards for a minimum of 40 hrs at 23°C, 50% RH. Solid material properties reported were printed along the vertical axis (ZX-orientation). As detailed in the Isotropic Properties section, material properties are relatively uniform across print orientations. Parts do not need to be oriented in a particular direction to exhibit these properties.

LIQUID MATERIAL			
METRIC	**METHOD**	**METRIC**	**US**
Viscosity (@25C)	Brookfield viscometer	130 cPs	314 lb/ft·h
Color		Colorless	
Liquid Density (@25C)	Kruss K11 Force Tensiometer	1.1 g/cm³	0.04 lb/in³

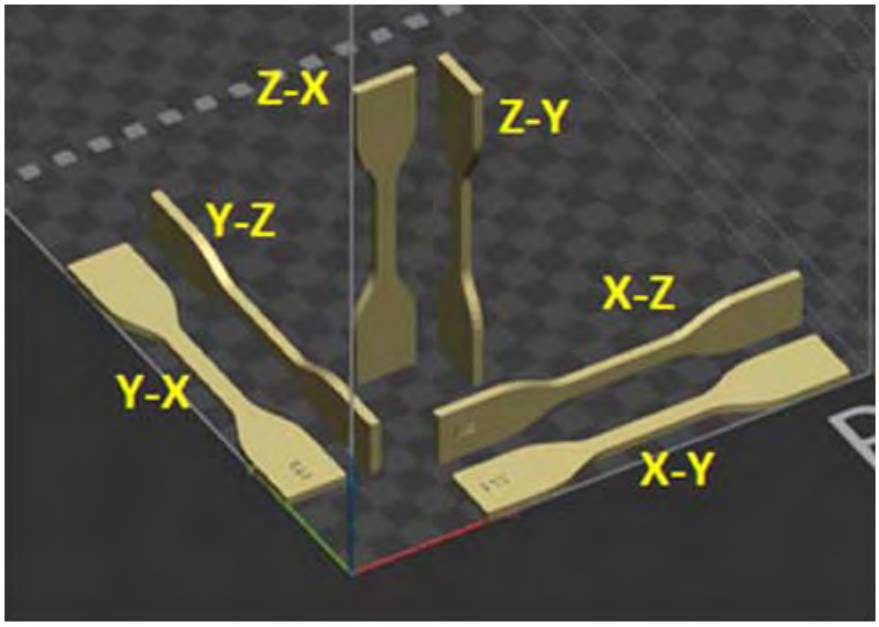
SOLID MATERIAL						
METRIC	**ASTM METHOD**	**METRIC**	**US**	**ISO METHOD**	**METRIC**	**US**
PHYSICAL				**PHYSICAL**		
Solid Density	ASTM D792	1.18 g/cm³	0.042 lb/in³	ISO 1183	1.18 g/cm³	0.042 lb/in³
24 Hour Water Absorption	ASTM D570	0.5 %	0.5 %	ISO 62	0.5 %	0.5 %
MECHANICAL				**MECHANICAL**		
Tensile Strength Ultimate	ASTM D638 Type IV	34 MPa	4900 psi	ISO 527 -1/2	26 MPa	3800 psi
Tensile Strength at Yield	ASTM D638 Type IV	34 MPa	4900 psi	ISO 527 -1/2	26 MPa	3800 psi
Tensile Modulus	ASTM D638 Type IV	1600 MPa	230 ksi	ISO 527 -1/2	1500 MPa	210 ksi
Elongation at Break	ASTM D638 Type IV	36.4 %	36.4 %	ISO 527 -1/2	35.7 %	35.7 %
Elongation at Yield	ASTM D638 Type IV	4.5 %	4.5 %	ISO 527 -1/2	4.5 %	4.5 %
Flex Strength	ASTM D790	41 MPa	5900 psi	ISO 178	37 MPa	5400 psi
Flex Modulus	ASTM D790	1200 MPa	170 ksi	ISO 178	1200 MPa	174 ksi
Izod Notched Impact	ASTM D256	23 J/m	0.4 ft-lb/in	ISO 180-A	3 kJ/m²	0.0014 ft-lb/in²
Izod Unnotched impact	ASTM D4812	310 J/m	6 ft-lb/in	ISO 180-U	20 kJ/m²	0.0091 ft-lb/in²
Shore Hardness	ASTM D2240	76 D	76 D	ISO 7619	76 D	76 D
THERMAL				**THERMAL**		
Tg (DMA E")	ASTM E1640 (E"Peak)	44 °C	111 °F	ISO 6721-1/11 (E" Peak)	44 °C	111 °F
HDT 0.455MPa/66PSI	ASTM D648	45 °C	114 °F	ISO 75- 1/2 B	44 °C	111 °F
HDT 1.82MPa/264 PSI	ASTM D648	39 °C	103 °F	ISO 75-1/2 A	39 °C	102 °F
CTE -20 TO 50C	ASTM E831	110 ppm/°C	61 ppm/°F	ISO 11359-2	110 ppm/°C	61 ppm/°F
CTE 75 TO 180C	ASTM E831	191 ppm/°C	106 ppm/°F	ISO 11359-2	191 ppm/°C	106 ppm/°F



ISOTROPIC PROPERTIES

MultiJet Printing (MJP) technology prints parts that are generally isotropic in mechanical properties meaning the parts printed along either the XYZ axis will give similar results. Parts do not need to be oriented to get the highest mechanical properties, further improving the degree of freedom for part orientation for mechanical properties.

SOLID MATERIAL								
METRIC	METHOD	METRIC						
MECHANICAL								
		ZX	XZ	YX	YZ	Z45	ZX	ZY
Tensile Strength Ultimate	ASTM D638 Type IV	34 MPa	30 MPa	32 MPa	31 MPa	30 MPa	29 MPa	30 MPa
Tensile Strength at Yield	ASTM D638 Type IV	34 MPa	30 MPa	32 MPa	31 MPa	30 MPa	29 MPa	30 MPa
Tensile Modulus	ASTM D638 Type IV	1600 MPa	1500 MPa	1800 MPa	1500 MPa	1900 MPa	1500 MPa	1500 MPa
Elongation at Break	ASTM D638 Type IV	36.4 %	40 %	34 %	37.3 %	32 %	19 %	25.4 %
Elongation at Yield	ASTM D638 Type IV	4.5 %	4.8 %	4.5 %	4 %	4.5 %	5 %	5 %
Flex Strength	ASTM D790	41 MPa	30 MPa	39 MPa	35 MPa	37 MPa	30 MPa	32 MPa
Flex Modulus	ASTM D790	1200 MPa	900 MPa	1200 MPa	1028 MPa	1000 MPa	900 MPa	1000 MPa
Izod Notched Impact	ASTM D256	23 J/m	23 J/m	21 J/m	25 J/m	20 J/m	22 J/m	20 J/m
Shore D Hardness	ASTM D2240	76 D	78 D	77 D	77	76 D	75 D	74 D



STRESS-STRAIN CURVE

The graph represents the stress-strain curve for VisiJet Armor Max (M2G-JF) per ASTM D638 testing.