

Parkway Products Thixomolded® AZ91D Magnesium

Category : Metal , Nonferrous Metal , Magnesium Alloy

Material Notes:

Thixomolding® is a fabrication technique, similar to injection molding, that uses magnesium alloys as the "resin" instead of plastic. Solid magnesium alloy pellets are fed into the machine, heated to high temperatures and injected into a closed die / mold. Parts from the machine usually need no additional machining, finishing or puttying. Information provided by Parkway Products.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Parkway-Products-Thixomolded-AZ91D-Magnesium.php

Physical Properties	Metric	English	Comments
Density	1.80 g/cc	0.0650 lb/in ³	
Porosity	0.0 - 1.1 %	0.0 - 1.1 %	
	0.0 - 1.10 %	0.0 - 1.10 %	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell E	75	75	
Tensile Strength, Ultimate	248 MPa	36000 psi	
Tensile Strength, Yield	159 MPa	23000 psi	
Elongation at Break	6.0 %	6.0 %	
Modulus of Elasticity	44.8 GPa	6500 ksi	
Poissons Ratio	0.35	0.35	
Shear Modulus	17.0 GPa	2470 ksi	calculated
Impact Test	4.75 J	3.50 ft-lb	

Thermal Properties	Metric	English	Comments
CTE, linear	24.8 µm/m-°C	13.8 µin/in-°F	
	@Temperature 21.1 °C	@Temperature 70.0 °F	
Specific Heat Capacity	1.05 J/g-°C	0.250 BTU/lb-°F	
Thermal Conductivity	72.0 W/m-K	500 BTU-in/hr-ft ² -°F	
Melting Point	596.1 °C	1105 °F	
Deflection Temperature at 1.8 MPa (264 psi)	>= 371 °C	>= 700 °F	

Component Elements Properties	Metric	English	Comments
Aluminum, Al	8.3 - 9.7 %	8.3 - 9.7 %	
Copper, Cu	<= 0.030 %	<= 0.030 %	
Iron, Fe	<= 0.0050 %	<= 0.0050 %	
Magnesium, Mg	90 %	90 %	As Remainder
Manganese, Mn	>= 0.13 %	>= 0.13 %	
Nickel, Ni	<= 0.0020 %	<= 0.0020 %	
Silicon, Si	<= 0.10 %	<= 0.10 %	
Zinc, Zn	0.35 - 1.0 %	0.35 - 1.0 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000140 ohm-cm	0.0000140 ohm-cm	

Descriptive Properties	Value	Comments
Across Parting Line Dimensions	+ 0.0015 in	Tolerance (0 - 10 in ²)
	+ 0.0025 in	Tolerance (11 - 20 in ²)
	+ 0.004 in	Tolerance (21 - 50 in ²)
	+ 0.006 in	Tolerance (51 - 100 in ²)
Flatness Across Largest Dimension	+/- 0.001 in	Tolerance (each inch beyond 1 in)
	+/- 0.002 in	Tolerance (0 - 3 in)
Ignition Temperature at One Atmosphere	>900°F	
Linear Dimension in same Die Half	+/- 0.0005 in	Tolerance (0 to 1 in)
	+/- 0.0010 in	Tolerance (each inch beyond 1 in)
Mil 117B Salt Spray Corrosion	2.8 Mils per Year	
Moving Die Component Tolerances	+ 0.004 in	Tolerance (0 - 10 in ²)
	+ 0.006 in	Tolerance (11 - 20 in ²)
	+ 0.008 in	Tolerance (21 - 50 in ²)
	+ 0.010 in	Tolerance (51 - 100 in ²)
Shielding Effectiveness 0.020" thk	>85 dB	100MHz

Descriptive Properties	Value	Comments
Surface Finish	32 RMS or better	
Thickness	0.015 - 2.0 in	
UL94 Flame Exposure Results	DNB	

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