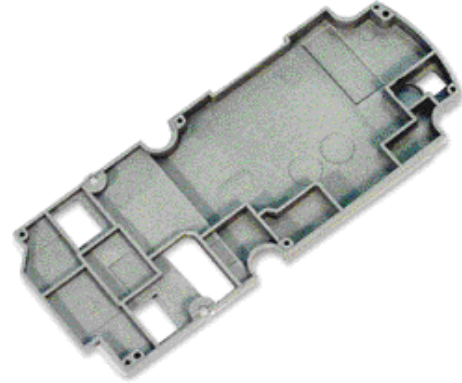


ThixoForming™



7040 Weld County Road 20
Longmont, Colorado 80504
303.833.6000
Fax: 303.833.6464
www.pcc-aft.com

ISO 9001/QS 9000 Registered



Next Generation Technology

The ThixoForming process offers an opportunity to manufacture high density, complex injection molded components from magnesium alloys for medium to high volume applications. The process offers excellent part detail, metallurgical structure and tolerance capability when compared to conventional die casting. ThixoForming also offers added strength and thin wall capability when compared to plastic injection molded applications.

ThixoForming



Advantages To ThixoForming

- Dimensional Precision
- Lightweight
- Complex Net Shapes
- Low Porosity
- High Volume
- Thin Wall Capability
- Variety of Finishes Available
- Competitive Pricing
- 10-20 Times Stiffer than Plastic
- Superior Corrosion Resistance than Aluminum
- EMI/RFI Shielding

ThixoForming Markets:

- Automotive
- Computer Peripherals
- Consumer
- Electronic
- Firearm
- Medical

Guaranteed Top Quality Products From Initial Design To High Volume Manufacturing.

ThixoForming™

Magnesium Alloys¹ Properties



Next Generation Technology

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PHYSICAL PROPERTIES ²	AZ91D	AM60B	AM50A
Rockwell Hardness E Scale	75	62	57
Density lb/in ³ (g/cm ³)	.066 (1.81)	.065 (1.79)	.064 (1.78)
Therm.Cond. Btu/ft-hr-°F (W/m-K)	41.8 (72)	36 (61)	36 (61)
Therm.Exp. μin-°F (μm/m-K)	13.8 (25.0)	14.2 (25.6)	14.4 (26.0)
Specific Heat Btu/lb-°F (kJ/kg-K)	0.25 (1.05)	0.25 (1.05)	0.25 (1.05)
Latent Heat of Fusion Btu/lb (kJ/kg)	160 (373)	160 (373)	160 (373)
Elec.Resistivity μ-in (μ-cm)	35.8 (14.1)	31.8 (12.5)	31.8 (12.5)
Elec.Conductivity Mhos/cm ³	6.8 x 10 ⁴	7.9 x 10 ⁴	-
Soldus Temp. °F (°C)	875 (470)	1005 (540)	1010 (543)
Liquidus Temp. °F (°C)	1105 (595)	1140 (615)	1150 (620)
CHEMICAL COMPOSITION ⁴	AZ91D	AM60B	AM50A
Aluminum	8.3 - 9.7	5.5 - 6.5	4.4 - 5.4
Zinc	0.35 - 1.0	0.22 max.	0.22 max.
Magnanese	15.0 - 0.50	0.24 - 0.60	0.26 - 0.60
Silicon	0.10 max.	0.10 max.	0.10 max.
Iron	0.005	0.005	0.004
Copper, Max	0.030	0.10	0.010
Nickel,Max	0.002	0.002	0.002
Rare Earth, Total	-	-	-
Others,Metallic Impurities,			
Max.,Each	0.02	0.02	0.02
Magnesium	remainder	remainder	remainder
MECHANICAL PROPERTIES ²	AZ91D	AM60B	AM50A
Ultimate Strength ³ ksi (MPa)	35.0 (241)	36.5 (252)	34.5 (238)
Yield Strength ³ ksi (MPa)	22.5 (155)	18.2 (125)	17.0 (117)
Percent Elongation at Fracture ³	4.0 - 6.0	9.0 - 11.0	11.0 - 13.0
Elastic Modules ³ Msi (GPa)	6.5 (45)	6.5 (45)	6.5 (45)
Poissons's Ratio*	0.35	0.35	0.35
Shear Strength* ksi (Mpa)	20 (140)	-	-
Fatigue Strength* ksi (MPa)	10 (70)	10 (70)	10 (70)
Impact Strength* ksi (MPa)	1.6 (2.2)	4.5 (6.1)	7.0 (9.5)
Creep Strength* ksi (MPa)	2.8 (20)	-	-

All chemistry values given are typical.

PCC Advanced Forming Technology does not guarantee results or warranty that these materials are fit for any particular purpose. All materials require customer testing to assure minimum performance criteria has been met.

SPECIAL PROPERTIES CHART NOTES

¹ This data represents typical values and is presented for informational purposes only. PCC Advanced Forming Technology recommends that further testing be performed when evaluating these properties as design criteria.

² All values are at room temperature.

³ Measured by PCC Advanced Forming Technology.

⁴ Composition weight percent.

* Courtesy of Dow Magnesium.

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