AZ91D Magnesium

Die Casting Alloy Datasheet - MgAl9Zn1, as-cast, high-purity D grade, cold-chamber HPDC

KastMfg
Precision Die Casting

DESIGNATIONS & EQUIVALENTS

Standard	Designation
ASTM B94 (USA)	AZ91D
UNS	M11916
EN 1753 (Europe)	EN-MC21120

Note: UNS M11916 per ASTM B94; the D grade carries strict Fe, Ni, and Cu impurity limits for corrosion resistance.

CHEMICAL COMPOSITION (WT%)

Element	Min %	Max %
Aluminum (Al)	8.3	9.7
Zinc (Zn)	0.35	1.00
Manganese (Mn)	0.15	0.50
Silicon (Si)	-	0.10
Copper (Cu)	-	0.030
Nickel (Ni)	-	0.002
Iron (Fe)	-	0.005
Magnesium (Mg)	Balance	

Note: per ASTM B94 composition limits for the AZ91D high-purity grade.

MECHANICAL PROPERTIES (AS-CAST HPDC)

Property	Typical value
Tensile strength (UTS)	~230 MPa
Yield strength (0.2% offset)	~150-160 MPa
Elongation	~3%
Hardness	~63 HB
Impact strength (unnotched)	~3 J

Note: typical as-cast HPDC values per ASTM B94 / published alloy data; hardness on the Brinell (HB) scale per ASTM E10.

PHYSICAL PROPERTIES

Property	Typical value
Density	1.81 g/cm3
Melting range (solidus-liquidus)	~470-595 C
Thermal conductivity	~72.7 W/mK
Electrical conductivity	~7 MS/m (~12% IACS)
Coefficient of thermal expansion	~26.0 x10^-6/K

Note: typical values per published alloy data for as-cast AZ91D.

TYPICAL APPLICATIONS

- Lightweight electronic and instrument housings
- Hand-held equipment and power-tool housings
- Automotive interior and structural brackets
- Computer, camera, and mobile-device chassis and frames
- Applications exploiting inherent EMI shielding (60-100 dB at 1 GHz)

Typical values for separately cast test specimens, not guaranteed minimums. Contractual limits per the referenced standard.