



# Zinc Die Casting Alloys

## Zamak 7

Zamak 7 was last alloy developed in the Zamak family of alloys. Although Magnesium was used to suppress corrosion due to elevated levels of impurities, it was also found to reduce fluidity. Magnesium was replaced by Nickel allowing for improved fluidity.

### Summary of Benefits:

- Should be considered in applications requiring higher fluidity (thin walls or complex shapes).
- Similar properties of Zamak 3, but improved fluidity.
- Ability to cast complex/net shape components.
- Highest ductility of all Zinc Die Casting Alloys.

### Properties:

#### **Mechanical Properties:**

Ultimate Tensile Strength: ksi (MPa)	41 (283)
Yield Strength: ksi (MPa)	32 (221)
Elongation: % in 2"	13
Hardness: Brinell	80
Modulus of Elasticity: psi x 10 <sup>6</sup>	12.4

#### **Physical Properties:**

Density: lb/cu in (g/cc)	0.240 (6.6)
Melting Range: deg F (deg C)	718-728 (381-387)
Electrical Conductivity: %IACS	27
Thermal Conductivity: BTU/ft/hr/deg F	65.3
Coefficient of Thermal Expansion: $\mu\text{in/in/F}$ – 68-212 deg F	15.2
Specific Heat: BTU/lb/deg F	0.10
Pattern or Die Shrinkage: in/in	0.007

*Note: The above properties are published "typical" values tested on net shaped die cast test bars. The information found in these tables should be used for initial reference and for comparative purposes only. This data should not be used to establish design limits or as a reason for quality acceptance or rejection.*

### Chemical Analysis of Zamak 3 (ASTM AG40A):

	Al	Mg	Cu	Fe	Pb	Cd	Sn	Ni	Zn
<b>Ingot</b> (ASTM B240)	3.9-4.3	.010- .020	.10 max	.035 max	.003 max	.002 max	.001 max	.005- .020	Bal
<b>Die Cast</b> (ASTM B86)	3.7-4.3	.005- .020	0.1 max	.05 max	.003 max	.002 max	.001 max	.005- .020	Bal

