Zinc Die Casting Alloys

Zamak 3

North America's most common Zinc Die Casting Alloy

Zamak 3 is the Zinc die casting industry's most common alloy in North America. It is the most economical alloy with an impressive combination of fluidity, and mechanical properties. Zamak 3 is typically the first choice when designating a zinc die casting alloy.

Summary of Benefits:

- Most Common Zinc Die Casting Alloy in North America.
- Most economical zinc-based die casting alloy.
- Is over 39% stronger (yield) than Al380.
- Ability to cast complex/net shape components.
- Excellent combination of tensile strength, impact strength, elongation, hardness and casting ability.

Properties:

Mechanical Properties:	
Ultimate Tensile Strength: ksi (MPa)	41 (283)
Yield Strength: ksi (MPa)	32 (221)
Elongation: % in 2"	10
Hardness: Brinell	82
Modulus of Elasticity: psi x 10^6	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: µin/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
Ingot (ASTM B240)	3.9-4.3	.03-.06	.10 max	0.35 max	0.0040 max	.0030 max	.0015 max	-	Bal
Die Cast (ASTM B86)	3.7-4.3	.02-.06	.1 max	.05 max	.005 max	.004 max	.002 max	-	Bal

Bundle Color Code: None