Zinc Die Casting Alloys

Zamak 5

Zamak 5 is a very common alloy throughout the world due to its combination of strength, ductility and fluidity, and the most commonly zinc die casting alloy in Europe. The 1% additional copper added to the alloy improves the alloys strength and hardness.

Summary of Benefits:

- Very common alloy used worldwide, the most common zinc die casting alloy used in Europe.
- Is over 69% stronger (yield) than Al380 at room temperature.
- 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)	48 (328)
Yield Strength: ksi (MPa)	39 (269)
Elongation: % in 2”	7
Hardness: Brinell	91
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)	717-727 (380-386)
Electrical Conductivity: %IACS	26
Thermal Conductivity: BTU/ft/hr/deg F	62.9
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 5 (ASTM AC41A):

	Al	Mg	Cu	Fe	Pb	Cd	Sn	Ni	Zn
Ingot (ASTM B240)	3.9-4.3	.03-.06	0.7-1.1	0.035 max	0.0040 max	.0030 max	.0015 max	-	Bal
Die Cast (ASTM B86)	3.7-4.3	.02-.06	0.7-1.2	.05 max	.005 max	.004 max	.002 max	-	Bal

Bundle Color Code: [redacted]