



Zinc Die Casting Alloys–ZA-12 (ZnAl11Cu1、ZP1110)

ZA Alloys were originally a family of Zinc-based gravity casting alloys, but introduced as die casting alloys in the 1970's. Research showed these alloys to have improved mechanical performance and lower density over most of the Zamak alloys.

Summary of Benefits:

- Can be die cast and gravity cast.
- Lighter than Zamak alloys.
- ZA-12 is the most common zinc gravity cast alloy due to its combination of strength and casting ability.
- Due to higher aluminum content, this alloy must be Cold-chamber cast
- Improved performance as a die cast alloy.

Properties:

Mechanical Properties:

Property	Die Casting	Permanent Mold	Sand Cast
Ultimate Tensile Strength: ksi (MPa)	58(400)	45-50(310-345)	40-46 (276-317)
Yield Strength: ksi (MPa)	46 (317)	39 (269)	31 (214)
Elongation: % in 2"	4-7	1-3	1-3
Hardness: Brinell	95-115	89-105	89-105
Modulus of Elasticity: psi x 10 ⁶	12.0	12.0	12.0

Physical Properties:

Property	Value
Density: lb/cu in (g/cc)	0.218 (6.0)
Melting Range: deg F (deg C)	710-810 (377-432)
Electrical Conductivity: %IACS	28.3
Thermal Conductivity: BTU/ft/hr/deg F	67.1
Coefficient of Thermal Expansion: $\mu\text{in/in/F}$ 68 212 deg F	13.4
Specific Heat: BTU/lb/deg F	0.107
Pattern or Die Shrinkage: in/in	0.0075

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 ZA-12 (GB/T 8738-2014):

	Al	Mg	Cu	Fe	Pb	Cd	Sn	Ni	Zn
Ingot (GB/T 8738-2014)	10.8-11.5	0.02-0.03	0.5-1.2	0.05max	0.005max	0.005max	0.002max	-	Bal
Die Cast (GB/T 13821-2023)	10.5-11.5	0.01-0.03	0.5-1.2	0.075max	0.006max	0.006max	0.003max	-	Bal

Bundle Color Code: **Blue**