Zamak 5 Zinc

Die Casting Alloy Datasheet - ZnAl4Cu1, as-cast, hot-chamber die cast

KastMfg
Precision Die Casting

DESIGNATIONS & EQUIVALENTS

Standard	Designation
ASTM B86 (USA)	Alloy 5 / AC41A
UNS	Z35533
EN 12844 (Europe)	ZP0410 (ZnAl4Cu1; ingot per EN 1774)
JIS H5301 (Japan)	ZDC2

Note: UNS Z35533 per ASTM B86-22; EN 12844 ZP0410 applies to castings, ingot to EN 1774.

CHEMICAL COMPOSITION (WT%)

Element	Min %	Max %
Aluminum (Al)	3.7	4.3
Copper (Cu)	0.75	1.25
Magnesium (Mg)	0.020	0.060
Iron (Fe)	-	0.075
Lead (Pb)	-	0.005
Cadmium (Cd)	-	0.004
Tin (Sn)	-	0.003
Zinc (Zn)	Balance	

Note: composition per ASTM B86 (Alloy 5). Under EN 12844 ZP0410 the limits are Cu 0.70-1.20 and Fe 0.05 max.

MECHANICAL PROPERTIES (AS-CAST)

Property	Typical value
Tensile strength (UTS)	331 MPa (48,000 psi)
Yield strength (0.2% offset)	228 MPa (33,000 psi)
Elongation	7%
Hardness	91 HB
Impact strength (unnotched)	65 J (48 ft-lbf)

Note: typical as-cast values per ASTM B86 / NADCA Product Standards.

PHYSICAL PROPERTIES

Property	Typical value
Density	~6.6-6.7 g/cm3
Melting range	~380-386 C
Thermal conductivity	~105-115 W/mK
Electrical conductivity	~25-27% IACS
Coefficient of thermal expansion	~27-30 x10^-6/K

Note: typical values per published alloy data.

TYPICAL APPLICATIONS

- Higher-load hardware: gears, levers, brackets, lock bodies
- Automotive and industrial fittings, seat and door hardware
- Pneumatic fittings and press-fit / insert applications
- Parts requiring higher strength, hardness, and creep resistance than Zamak 3 (with lower ductility)

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