

MECHANICAL PROPERTIES

Alloy	#3	#5	#7	#2	ZA-8		
Mechanical Properties	Die Cast	Die Cast	Die Cast	Die Cast	Sand Cast	Perm Mold	Die Cast
Ultimate Tensile Strength: psi x 10³ (MPa)	41 (283)	48 (328)	41 (283)	52 (359)	38 (263)	32-37 (221-255)	54 (374)
Yield Strength - 0.2% Offset: psi x 10³ (MPa)	32 (221)	33 (228)	32 (221)	-	29 (200)	30 (206)	42 (290)
Elongation: % in 2"	10	7	13	7	1-2	1-2	6-10
Shear Strength: psi x 10³ (MPa)	31 (214)	38 (262)	31 (214)	46 (317)	-	35 (241)	40 (275)
Hardness: Brinell	82	91	80	100	85	85-90	95-110
Impact Strength: ft-lb (J)	43 (58)	48 (65)	43 (58)	35 (48)	15 (20)	-	31 (42)
Fatigue Strength Rotary Bend - 5 x 10⁸ cycles: psi x 10³ (MPa)	6.9 (48)	8.2 (57)	6.8 (47)	8.5 (59)	-	7.5 (52)	15 (103)
Compressive Yield Strength - 0.1% Offset: psi x 10³ (MPa)	60 (414)	87 (600)	60 (414)	93 (641)	29 (199)	31 (214)	37 (252)
Modulus of Elasticity - psi x 10⁶ (MPa x 10³)	12.4 (85.5)	12.4 (85.5)	12.4 (85.5)	12.4 (85.5)	12.4 (85.5)	12.4 (85.5)	-

PHYSICAL PROPERTIES

Alloy	#3	#5	#7	#2	ZA-8
Density: lb/cu in (g/cm ³)	.24 (6.6)	.24 (6.6)	.24 (6.6)	.24 (6.6)	.227 (6.3)
Melting Range: °F (°C)	718-728 (381-387)	717-727 (380-386)	718-728 (381-387)	715-734 (379-390)	707-759 (375-404)
Electrical Conductivity: % IACS	27	26	27	25	27.7
Thermal Conductivity: BTU/ft/hr/°F (W/m/hr/°C)	65.3 (113)	62.9 (108.9)	65.3 (113)	60.5 (104.7)	66.3 (114.7)
Coefficient of Thermal Expansion: 68-212°F μin/in/°F (100-200°C μm/mm/°C)	15.2 (27.4)	15.2 (27.4)	15.2 (27.4)	15.4 (27.8)	12.9 (23.3)
Specific Heat: BTU/lb/°F (J/kg/°C)	.1 (419)	.1 (419)	.1 (419)	.1 (419)	.104 (435)
Pattern of Die Shrinkage: in/in	.007	.007	.007	.007	1/8 in/ft .007

CHEMICAL SPECIFICATIONS

Alloy	#3		#5		#7		#2		ZA-8	
	Ingot	Casting	Ingot	Casting	Ingot	Casting	Ingot	Casting	Ingot	Casting
Chemical Specifications (per ASTM) (% by weight)	Ingot	Casting	Ingot	Casting	Ingot	Casting	Ingot	Casting	Ingot	Casting
Al	3.9-4.3	3.5-4.3	3.9-4.3	3.5-4.3	3.9-4.3	3.5-4.3	3.9-4.3	3.5-4.3	8.2-8.8	8-8.8
Mg	.025-.05	.02-.05	.03-.06	.03-.08	.01-.02	.005-.02	.025-.05	.02-.050	.02-.030	.015-.03
Cu	.1 max	.25 max	.75-1.25	.75-1.25	.1 max	.25 max	2.6-2.9	2.5-3	.8-1.3	.8-1.3
Fe (max)	.075	.1	.075	.1	.075	.075	.075	.1	.065	.075
Pb (max)	.004	.005	.004	.005	.002	.003	.004	.005	.005	.006
Cd (max)	.003	.004	.003	.004	.002	.002	.003	.004	.005	.006
Sn (max)	.002	.003	.002	.003	.001	.001	.002	.003	.002	.003
Ni (other)	-	-	-	-	.005-.02	.005-.02	-	-	-	-
Zn	Balance	Balance	Balance	Balance	Balance	Balance	Balance	Balance	Balance	Balance

INDUSTRY STANDARDS

Alloy	#3		#5		#7		#2		ZA-8	
	Ingot	Casting	Ingot	Casting	Ingot	Casting	Ingot	Casting	Ingot	Casting
ASTM	B240	B86	B240	B86	B240	B86	B240	B86	B669 (B240)	B791 (B86)
	AG40A	AG40A	AC41A	AC41A	AG40B	AG40B	AC43A	AC43A		
SAE	J468B	J468B	J468B	J468B	-	-	Former		-	-
	903	903	925	925			921			
UNS	Z33521	Z33520	Z35530	Z35531	Z33522	Z33523	Z35540	Z35541	Z35635	Z35636