

# Zinc Alloy Properties

ALLOY	#3	#5	#7	#2	ZA-8	ZA-12	ZA-27
<b>Mechanical Properties</b>	Die Cast	Die Cast	Die Cast	Die Cast	Sand Cast / Perm Mold / Die Cast	Sand Cast / Perm Mold / Die Cast	Sand Cast / Perm Mold / Die Cast
Ultimate Tensile Strength							
psi x 10 <sup>3</sup>	41	48	41	52	38/32-37/54	40-46/45-50/58	58-64/45-47/61
Yield Strenght-0.2% Offset							
psi x 10 <sup>3</sup>	32	39	32	41	29/30/42	31/39/46	54/37/55
Elongation % in 2"	10	7	13	7	1-2/1-2/6-10	1-3/1-3/4-7	3-6/8-11/1-3
Shear Strenght psi x 10 <sup>3</sup>	31	38	31	46	na/35/40	37/na/43	42/33/47
Hardness Brinell	82	91	80	100	85/85-90/95-110	89-105/89-105/95-115	110-120/90-110/105-125
Impact Strenght ft-lb	43 <sup>^2</sup>	48 <sup>^2</sup>	43 <sup>^2</sup>	35 <sup>^2</sup>	15 <sup>6</sup> /na/31 <sup>3</sup>	19 <sup>3</sup> /na/21 <sup>3</sup>	35 <sup>3</sup> /43 <sup>3</sup> /9 <sup>3</sup>
Fatigue Strenght Rotary							
Bend (psi x 10 <sup>3</sup> )							
5 x 10 <sup>8</sup> cycles	6.9	8.2	6.8	8.5	na/7.5/15	15/na/17	25/15/21
Compressive Yield Strenght							
0.1% Offset psi x 10 <sup>3</sup>	60 <sup>^4</sup>	87 <sup>^4</sup>	60 <sup>^4</sup>	93 <sup>^4</sup>	29/31/37	33/34/39	48/37/52
Modulus of Elasticity							
psi x 10 <sup>6</sup>	12.4 <sup>^6</sup>	12.4 <sup>^6</sup>	12.4 <sup>^6</sup>	12.4 <sup>^6</sup>	12.4/12.4 <sup>7</sup> /na	na/12 <sup>^7</sup> /na	na/11.3 <sup>7</sup> /na
Poisson's Ratio	0.27	0.27	0.27	0.27	na/0.29/na	na/.3/na	na/.32/na
<b>Physical Properties</b>							
Density lb/cu in	0.24	0.24	0.24	0.24	0.227	0.218	0.181
Melting Range °F	719-728	717-727	718-728	715-734	707-759	710-810	708-903
Electrical Conductivity %IACS	27	26	27	25	27.7	28.3	29.7
Thermal conductivity							
BTU/ft/hr/ °F	65.3	62.9	65.3	60.5	66.3	67.1	72.5
Coefficiant of thermal Expan							
68-212 <sup>0</sup> F in/in/ °F	15.2	15.2	15.2	15.4	12.9	13.4	14.4
Specific Heat BTU/lb/ °F	0.1	0.1	0.1	0.1	0.104	0.107	0.125
Pattern or Die Shrinkage in/in	0.007	0.007	0.007	0.007	na/ 1/8 in/ft/ .007	1/8in/ft /5/32in /ft/.0075	5/32in/ft /5/32in/ft /.008