

Alloy Data: Aluminum Die Casting Alloy Properties

Aluminum Die Casting Alloys				
Commercial:	360	380	383	13
ANSI/AA:	360.0	380.0	383.0	413.0
Mechanical Properties				
Ultimate Tensile Strength				
ksi	44	46	45	43
(MPa)	(300)	(320)	(310)	(300)
Yield Strength^A				
ksi	25	23	22	21
(MPa)	(170)	(160)	(150)	(140)
Elongation				
% in 2 in. (51 mm)	2.5	3.5	3.5	2.5
Hardness^B				
BHN	75	80	75	80
Shear Strength				
ksi	28	28	—	25
(MPa)	(190)	(190)		(170)
Impact Strength				
ft-lb	—	3	3 ^D	—
(J)		(4)	(4)	
Fatigue Strength^C				
ksi	20	20	21	19
(MPa)	(140)	(140)	(145)	(130)
Young's Modulus				
psi x 10 ⁶	10.3	10.3	10.3	10.3
(GPa)	(71)	(71)	(71)	(71)
Physical Properties				
Density				
lb/in ³	0.095	0.099	0.099	0.096
(g/cm ³)	(2.63)	(2.74)	(2.74)	(2.66)
Melting Range				
°F	1035-1105	1000-1100	960-1080	1065-1080
(°C)	(557-596)	(540-595)	(516-582)	(574-582)
Specific Heat				
BTU/lb°F	0.230	0.230	0.230	0.230
(J/kg°C)	(963)	(963)	(963)	(963)
Coefficient of Thermal Expansion				
μ in./in./°F x 10 ⁻⁶	11.6	12.2	11.7	11.3
(μ m/m°C)	(21.0)	(22.0)	(21.1)	(20.4)
Thermal Conductivity				
BTU/ft hr °F	65.3	55.6	55.6	70.1
(W/m°C)	(113)	(96.2)	(96.2)	(121)
Electrical Conductivity				
% IACS	30	27	23	31
Poisson's Ratio	0.33	0.33	0.33	—

^A 0.2% offset ^B 500 kg load, 10 mm ball ^C rotary bend 5×10⁸ cycles ^D notched charpy.

Source: "Alloy Data." NADCA Product Specification Standards for Die Casting. Wheeling, IL. NADCA Publication #402. 7th Edition. 2009. Section 3. Table A-3-2 Typical Material Properties: Al Alloys.