Aluminum Die Cast Alloy Physical Properties

Typical values based on "as-cast" characteristics for separately die cast specimens, not specimens cut from production die castings
Courtesy of NADCA

	Aluminum Die Casting Alloys										
Commercial:	**360**	**A360**	**380**	**A380**	**383**	**384**	**390**	**13**	**A13**	**43**	**218**
ANSI/AA:	**360.0**	**A360.0**	**380.0**	**A380.0**	**383.0**	**384.0**	**B390.0**	**413.0**	**A413.0**	**C443.0**	**518.0**
Physical Properties											
Density											
lb/in^3	0.095	0.095	0.099	0.098	0.099	0.102	0.098	0.096	0.096	0.097	0.093
(g/cm^3)	(2.63)	(2.63)	(2.74)	(2.71)	(2.74)	(2.82)	(2.73)	(2.66)	(2.66)	(2.69)	(2.57)
Melting Range											
°F	1035-1105	1035-1105	1000-1100	1000-1100	960-1080	960-1080	950-1200	1065-1080	1065-1080	1065-1170	995-1150
(°C)	(557-596)	(557-596)	(540-595)	(540-595)	(516-582)	(516-582)	(510-650)	(574-582)	(574-582)	(574-632)	(535-621)
Specific Heat											
BTU/lb°F	0.230	0.230	0.230	0.230	0.230	—	—	0.230	0.230	0.230	—
(J/kg°C)	(963)	(963)	(963)	(963)	(963)	—	—	(963)	(963)	(963)	—
Coefficient of Thermal Expansion											
μ in./in./°F x 10^{-6}	11.6	11.6	12.2	12.1	11.7	11.6	10.0	11.3	11.9	12.2	13.4
(μ m/m°K)	(21.0)	(21.0)	(22.0)	(21.8)	(21.1)	(21.0)	(18.0)	(20.4)	(21.6)	(22.0)	(24.1)
Thermal Conductivity											
BTU/ft hr °F	65.3	65.3	55.6	55.6	55.6	55.6	77.4	70.1	70.1	82.2	55.6
(W/m°K)	(113)	(113)	(96.2)	(96.2)	(96.2)	(96.2)	(134)	(121)	(121)	(142)	(96.2)
Electrical Conductivity											
% IACS	30	29	27	23	23	22	27	31	31	37	24
Poisson's Ratio	0.33	0.33	0.33	0.33	0.33	—	—	—	—	0.33	—

Ⓐ 0.2% offset Ⓑ 500 kg load, 10mm ball Ⓒ Rotary Bend 5 x 10^8 cycles Ⓓ Notched Charpy. Sources: ASTM B85-92a; ASM; SAE; Wabash Alloys