

## Aluminum Die Cast Alloy Mechanical Properties

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

<b>Aluminum Die Casting Alloys</b>											
<b>Commercial:</b>	<b>360</b>	<b>A360</b>	<b>380</b>	<b>A380</b>	<b>383</b>	<b>384</b>	<b>390</b>	<b>13</b>	<b>A13</b>	<b>43</b>	<b>218</b>
<b>ANSI/AA:</b>	<b>360.0</b>	<b>A360.0</b>	<b>380.0</b>	<b>A380.0</b>	<b>383.0</b>	<b>384.0</b>	<b>B390.0</b>	<b>413.0</b>	<b>A413.0</b>	<b>C443.0</b>	<b>518.0</b>
<b>Mechanical Properties</b>											
<b>Ultimate Tensile Strength</b>											
ksi	44	46	46	47	45	48	46	43	42	33	45
(MPa)	(300)	(320)	(320)	(320)	(310)	(330)	(320)	(300)	(290)	(230)	(310)
<b>Yield Strength<sup>Ⓐ</sup></b>											
ksi	25	24	23	23	22	24	36	21	19	14	28
(MPa)	(170)	(170)	(160)	(160)	(150)	(170)	(250)	(140)	(130)	(100)	(190)
<b>Elongation</b>											
% in 2 in. (51 mm)	2.5	3.5	3.5	3.5	3.5	2.5	<1	2.5	3.5	9.0	5.0
<b>Hardness<sup>Ⓑ</sup></b>											
BHN	75	75	80	80	75	85	120	80	80	65	80
<b>Shear Strength</b>											
ksi	28	26	28	27	—	29	—	25	25	19	29
(MPa)	(190)	(180)	(190)	(190)	—	(200)	—	(170)	(170)	(130)	(200)
<b>Impact Strength</b>											
ft-lb	—	—	3	—	3 <sup>Ⓒ</sup>	—	—	—	—	—	7
(J)	—	—	(4)	—	(4)	—	—	—	—	—	(9)
<b>Fatigue Strength<sup>Ⓒ</sup></b>											
ksi	20	18	20	20	21	20	20	19	19	17	20
(MPa)	(140)	(120)	(140)	(140)	(145)	(140)	(140)	(130)	(130)	(120)	(140)
<b>Young's Modulus</b>											
psi x 10 <sup>5</sup>	10.3	10.3	10.3	10.3	10.3	—	11.8	10.3	—	10.3	—
(GPa)	(71)	(71)	(71)	(71)	(71)	—	(81.3)	(71)	—	(71)	—

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