

Technical Information about Die Casting Aluminum Alloys

The following table will provide a general idea of the differences in Aluminum Die Cast alloys. [Our Die Casting](#) will help you any technical information. A little information about Die casting Company can be found on our profile page.

ALUMINUM ALLOY CHARACTORISTICS

Aluminum die casting alloys	<u>A360</u>	<u>A380</u>	<u>A383</u>	<u>A413</u>
Hardness	75	80	75	80
Elongation (% in.2 in.)	2.5	3.5	3.5	2.5
Shear Strength (ksi)	28	28	–	25
Tensile Yield Strength (ksi)	25	23	22	21
Ultimate Tensile Strength (ksi)	44	46	45	43
Thermal Conductivity	65	56	56	70
Electrical Conductivity (% copper)	30	27	23	31
Density (weight) Lbs./ in. ³	0.095	0.099	0.099	0.096

ALUMINUM ALLOY ADVANTAGES

Aluminum die casting alloys	<u>A360</u>	<u>A380</u>	<u>A383</u>	<u>A413</u>
(1= most desirable, 5= least desirable):				
Pressure Tightness	2	2	2	1
Die Filling Capacity	3	2	1	1
Anti-Soldering to Die	2	1	2	1
Corrosion Resistance	2	4	3	2
Machining ease & quality	3	3	2	4
Strength at high temperatures	1	3	2	3
Material cost	3	1	2	4

ALUMINUM ALLOY MATERIALS

Aluminum die casting alloys	A360	A380	A383	A413
Silicon (Si)	9.0–10.0	7.5–9.5	9.5–11.5	11.0–13.0
Iron (Fe)	2.0	2.0	1.3	2.0
Copper (Cu)	0.6	3.0–4.0	2.0–3.0	1.0
Manganese (Mn)	0.35	0.50	0.50	0.35
Magnesium (Mg)	0.4–0.6	0.10	0.10	0.10
Nickle (Ni)	0.50	0.50	0.30	0.50
Zinc (Zn)	0.50	3.0	3.0	0.50
Tin (Sn)	0.15	0.35	0.15	0.15
Others	0.25	0.50	0.50	0.25
Aluminum (Al)	Balance	Balance	Balance	Balance

Aluminum Die Cast Parts comply with the EU RoHS standards

Other Die Casting Alloy Materials Comparison

	Aluminum	Brass	Magnesium	Zinc
Tensile strength, psi x 1000	47	55	34	41
Yield strength, psi x 100 (0.2 pct offset)	23	30	23	?
Shear strength, psi x 1000	28	37	20	31
Fatigue strength, psi x 1000	20	25	14	7
Elongation, pct in 2 in.	3.50	15	3.0	10
Hardness (Brinell)	80	91	63	82
Specific gravity	2.71	8.30	1.80	6.60
Weight, lb/cu. in.	0.098	0.305	0.066	0.24
Melting point (liquid), °F	1100	1670	1105	728
Thermal conductivity, CG5	0.23	0.21	0.16	0.27
Thermal expansion, in./in./°F x 10 ⁶	12.1	12.0	15.0	15.2
Electrical conductivity, pct of copper standard	27	20	10	27
Modulus of elasticity, psi x 10 ⁶	10.3	15	6.5	?
Impact strength (Charpy), ft/lb	3.0	40	2.0	43.0