H&D STEEL CO., LTD





Aluminium Alloy 7075 T6 / T651

SPECIFICATIONS

Commercial	7075A
EN /ASTM	7075A / AA7075

7075 is an aluminum alloy with zinc as the primary alloying element. It is strong, with a strength comparable to many steels, and has good fatigue strength and average machinability, but has less resistance to corrosion than many other Al alloys. Due to its high strength, low density, thermal properties and its ability to be highly polished, 7075 is widely used in mold tool manufacture.

Applications

Aircraft fittings, gears and shafts, fuse parts, meter shafts and gears, missile parts, regulating valve parts, worm gears, keys, aircraft, aerospace and defense applications; bike frames, all terrain vehicle (ATV) sprockets.

CHEMICAL COMPOSITION

Element	% Present
Iron (Fe)	Max 0.50
Silicon (Si)	Max 0.40
Zinc (Zn)	5.1-6.1
Magnesium (Mg))	2.1-2.9
Manganese (Mn)	Max 0.30
Copper (Cu)	1.2-2.0
Crom (Cr)	0.18 – 0.28
Titanium (Ti)	Max 0.2
Other (Each)	0.05
Other - Total	Max 0.15
Aluminium (Al)	Balance

SUPPLIED FORMS

Aluminium Alloy 7075 is available in Bar (Flat, Hexagon, Round, Square) Sheet, Plate, Strip, Wire, Forging Stock and Tube.

GENERIC PHYSICAL PROPERTIES

Property	Value
Density	2.81 g/cm^3
Melting Point	477 - 635 °C
Thermal expansion	23.2 (10-6/ºC)
Modulus of Elasticity	71.7 GPa
Thermal Conductivity	130 W/m.K
Electrical Resistivity	51.5 e – 06 Ω.m

MECHANICAL PROPERTIES

Property	Value
Tensile Yield Strength	502 Min MPa
Ultimate Tensile Strength	572 MPa
Hardness Brinell /Vicker	150 HB /175 HV
Elongation at Break	11%

Properties above are for material in the T6 / T651 condition

WELDABILITY

Aluminum 7075 alloy can be welded using resistance welding method. Gas welding method is not preferred for welding this alloy. Arc welding method should also be avoided as it results in degradation of corrosion resistance property of this alloy.

FABRICATION AND HEATTREATMEN

Machinability

Aluminum 7075 alloy can be machined in the annealed condition. Oil lubricants are used for performing machining operations.

Forming

Aluminum 7075 alloy can be formed in the annealed condition. It can be warmed at 94 to 122°C (200 to 250°F) if any difficulty is encountered.

Heat Treatment

Aluminum 7075 alloy is annealed at (900°F) for 2 h followed by water quenching and precipitation hardening heat treatment.

Forging

Aluminum 7075 alloy is forged at 372 to 483°C (700 to 900°F).

Hot Working

Aluminum 7075 alloy can be hot worked at 122°C (250°F)





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Cold Working

Aluminum 7075 alloy can be cold worked using conventional methods in soft and annealed condition.

Annealing

Aluminum 7075 alloy is annealed at 413°C (775°F) for 3 h followed by controlled cooling at 10 to 260° C (50 to 500°F) per hour, and cooling in air.

Aging

Aluminum 7075 alloy can be aged at 122°C (250°F) for 24 h to obtain the T 6 temper. The T 73 temper can be heated at 108°C (225°F) for 8 h and at 163°C (325°F) for 24 h followed by air cooling.

Hardening

Aluminum 7075 alloy can be hardened by precipitation heat treatment.