



CNC DIRECT

SUPPLIERS OF QUALITY CNC MACHINES & ACCESSORIES



Aluminium 6082 Properties and Applications

Background

Aluminium alloy 6082 is a medium strength alloy with excellent corrosion resistance. It has the highest strength of the 6000 series alloys. Alloy 6082 is known as a structural alloy. In plate form, Aluminium alloy 6082 is the alloy most commonly used for machining. As a relatively new alloy, the higher strength of Alluminium alloy 6082 has seen it replace 6061 in many applications. The addition of a large amount of manganese controls the grain structure which in turn results in a stronger alloy. The tighter chemical band ensures more consistent anodising between batches.

In the T6 and T651 temper, Aluminium alloy 6082 machines well and produces tight coils of swarf when chip breakers are used.

Typical Chemical Composition

Element	% Present
Si	0.7 – 1.3
Fe	0.0 – 0.5
Cu	0.0 – 0.1
Mn	0.4 – 1.0
Mg	0.6 – 1.2
Zn	0.0 – 0.2
Ti	0.0 – 0.1
Cr	0.0 – 0.25
Al	Balance

Typical Mechanical Properties

Temper	O	T4	T6 / T651
Proof Stress 0.2% (MPa)	60	170	310
Tensile Strength (MPa)	130	260	340
Shear Strength (MPa)	85	170	210
Elongation A5 (%)	27	19	11
Hardness Vickers (HV)	35	75	100

Typical Physical Properties

Property	Value
Density	2700 km/m3
Melting Point	555 °C
Modulus of Elasticity	70 GPa
Electrical Resistivity	0.038x10 ⁻⁶ ohm.m
Thermal Conductivity	180 W/m.K
Thermal Expansion	24x10 ⁻⁶ /K

Typical Fabrication Response

Process	Rating
Workability - Cold	Good
Machinability	Good
Weldability – Gas	Good
Weldability – Arc	Good
Weldability – Resistance	Good
Brazability	Good
Solderability	Good

The most common tempers for Aluminium alloy 6082 are:

- O – annealed wrought alloy
- T4 – Solution heat treated and naturally aged
- T6 – Solution heat treated and artificially aged
- T651 – Solution heat treated, stress relieved by stretching and then artificially aged

Applications

Aluminium alloy 6082 is typically used in:

- High stress applications
- Trusses
- Bridges
- Cranes
- Transport applications
- Ore skips
- Beer barrels
- Milk churns

CNC DIRECT LTD & HIGH GRADE METALS LTD

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Aluminium 6082

Sizes stocked

Rolled Plate

10mm x 3000 x 1500

15mm x 2520 x 1270

20mm x 3020 x 1520

25mm x 3020 x 1520

30mm x 2520 x 1270

35mm x 2520 x 1270

40mm x 2520 x 1270

50mm x 2520 x 1270

60mm x 2520 x 1270

70mm x 2520 x 1270

75mm x 2520 x 1270

80mm x 2520 x 1270

90mm x 2520 x 1270

100mm x 2520 x 1270

110mm x 2520 x 1270

120mm x 2520 x 1270

130mm x 2520 x 1270

Round Bar

20 mm dia 120 mm dia

25 mm dia 130 mm dia

30 mm dia 140 mm dia

35 mm dia 150 mm dia

40 mm dia 160 mm dia

45 mm dia 180 mm dia

50 mm dia 200 mm dia

55 mm dia 220 mm dia

60 mm dia 230 mm dia

70 mm dia 250 mm dia

75 mm dia 260 mm dia

80 mm dia 280 mm dia

90 mm dia 300 mm dia

100 mm dia 330 mm dia

110 mm dia 350 mm dia

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