

Aluminium alloy 6082

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, 6082 is the alloy most commonly used for machining. As a relatively new alloy, the higher strength of 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. It is difficult to produce thin walled, complicated extrusion shapes in alloy 6082. The extruded surface finish is not as smooth as other similar strength alloys in the 6000 series.

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

Applications

6082 is typically used in:

- ~ Highly stressed applications
- ~ Trusses
- ~ Bridges
- ~ Cranes
- ~ Transport applications
- ~ Ore skips
- ~ Beer barrels
- ~ Milk churns

CHEMICAL COMPOSITION

Manganese (Mn) 0.40 - 1.00

Iron (Fe) 0.0 - 0.50

Magnesium (Mg) 0.60 - 1.20

Silicon (Si) 0.70 - 1.30

Copper (Cu) 0.0 - 0.10

Zinc (Zn) 0.0 - 0.20

Titanium (Ti) 0.0 - 0.10

Chromium (Cr) 0.0 - 0.25

Aluminium (Al) Balance

ALLOY DESIGNATIONS

Aluminium alloy 6082 also corresponds to the following standard designations and specifications:

AA6082

HE30

DIN 3.2315

EN AW-6082

ISO: Al Si1MgMn

A96082

TEMPER TYPES

The most common tempers for 6082 aluminium are:

- T6 - Solution heat treated and artificially aged
- O - Soft

T4 - Solution heat treated and naturally aged to a substantially stable condition

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T651 - Solution heat treated, stress relieved by stretching then artificially aged

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SUPPLIED FORMS

Alloy 6082 is typically supplied as Channel, Angle, Tee, Square bar, Square box section, Rectangular box section, Flat bar, Tube and Sheet

Plate and shate can also be supplied as 6082-T651

- Extrusions
- Bar
- Plate
- Sheet
- Tube

PHYSICAL PROPERTIES

Density 2.70 Kg/m³

Melting Point 555 °C

Thermal Expansion 24 x10⁻⁶ /K

Modulus of Elasticity 70 GPa

Thermal Conductivity 180 W/m.K

Electrical Resistivity 0.038 x10⁻⁶ Ω .m

MECHANICAL PROPERTIES

Proof Stress 60 MPa

Tensile Strength 130 MPa

Elongation 27 %

Shear Strength 85 MPa

Hardness Vickers 35 HV

Properties above are for material in the Soft O condition

WELDABILITY

6082 has very good weldability but strength is lowered in the weld zone. When welded to itself, alloy 4043 wire is recommended. If welding 6082 to 7005, then the wire used should be alloy 5356.

Weldability – Gas: Good

Weldability – Arc: Good

Weldability – Resistance: Good

Brazability: Good

Solderability: Good

FABRICATION

Workability - Cold: Good

Machinability: Good

DISCLAIMER

This Data is indicative only and must not be seen as a substitute for the full specification from which it is drawn. In particular, the mechanical property requirements vary widely with temper, product and product dimensions. The information is based on our present knowledge and is given in good faith. However, no liability will be accepted by the Company in respect of any action taken by any third party in reliance thereon.

As the products detailed may be used for a wide variety of purposes and as the Company has no control over their use; the Company specifically excludes all conditions or warranties expressed or implied by statute or otherwise as to dimensions, properties and/or fitness for any particular purpose.

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