



DESCRIPTION

Aluminium Alloy - Commercial Alloy - 6082 - T6 Extrusions

6082 - T6 Extrusions

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

Chemical Element	% Present
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

Chemical Composition

Chemical Element	% Present
Zinc (Zn)	0.0 -0.20
Titanium (Ti)	0.0 - 0.10
Chromium (Cr)	0.0 - 0.25
Other (Each)	0.0 - 0.05
Others (Total)	0.0 - 0.15
Aluminium (Al)	Balance

Properties

Physical Property	Value
Density	2.70 g/cm3
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

Rod & Bar - Up to 20mm Dia. & A/F Spec: BS EN 755-2:2008

Mechanical Property	Value
Proof Stress	250 Min MPa
Tensile Strength	295 Min MPa
Elongation A50 mm	6Min %
Hardness Brinell	95 HB
Elongation A	8 Min%

Rod & Bar - 20mm to 150mm Dia. & Spec: BS EN 755-2:2008 A/F

Mechanical Property	Value
Proof Stress	260 Min MPa
Tensile Strength	310 Min MPa
Hardness Brinell	95 HB
Elongation A	8 Min%

Bar - 150mm to 200mm Dia. & A/F Spec: BS EN 755-2:2008

Mechanical Property	Value
Proof Stress	240 Min MPa
Tensile Strength	280 Min MPa
Hardness Brinell	95 HB
Elongation A	6 Min%

Bar - 200mm to 250mm Dia. & A/F Spec: BS EN 755-2:2008

Mechanical Property	Value
Proof Stress	200 Min MPa
Tensile Strength	270 Min MPa
Hardness Brinell	95 HB
Elongation A	6 Min%

Tube - Up to 5mm Wall Thickness Spec: BS EN 755-2:2008

Mechanical Property	Value
Proof Stress	250 Min MPa
Tensile Strength	290 Min MPa
Hardness Brinell	95 HB
Elongation A	8 Min%

Tube - 5mm to 25mm Wall Thickness Spec: BS EN 755-2:2008

Mechanical Property	Value
Proof Stress	260 Min MPa
Tensile Strength	310 Min MPa
Elongation A50 mm	8 Min%
Hardness Brinell	95 HB
Elongation A	10 Min%

Open & Hollow Profile - Up To 5mm Wall Thickness Spec: BS EN 755-2:2008

Mechanical Property	Value
Proof Stress	250 Min MPa
Tensile Strength	290 Min MPa
Elongation A50 mm	6 Min%
Hardness Brinell	95 HB
Elongation A	8 Min%

Open & Hollow Profile -5mm to 25mm Wall Thickness Spec: BS EN 755-2:2008

Mechanical Property	Value
Proof Stress	260 Min MPa
Tensile Strength	310 Min MPa
Elongation A50 mm	8 Min%
Hardness Brinell	95 HB
Elongation A	10 Min%

Alloy Designations

Aluminium alloy 6082 also corresponds to the following standard designations and specifications **but may not be a direct equivalent:**

- AA6082
- HE30
- DIN 3.2315
- ENAW-6082
- ISO: Al Si1 MgMn
- 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
- T651 - Solution heat treated, stress relieved by stretching then artificially aged

Supplied Forms

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

- Extrusions
- Bar
- Tube

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