## SPECIFICATIONS

| | |
|---|---|
| Commercial | 6082 |
| EN | 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

*BS EN 573-3:2009*
*Alloy 6082*

| Element | % Present |
|---|---|
| Silicon (Si) | 0.70 - 1.30 |
| Magnesium (Mg) | 0.60 - 1.20 |
| Manganese (Mn) | 0.40 - 1.00 |
| Iron (Fe) | 0.0 - 0.50 |
| Chromium (Cr) | 0.0 - 0.25 |
| Zinc (Zn) | 0.0 - 0.20 |
| Others (Total) | 0.0 - 0.15 |
| Titanium (Ti) | 0.0 - 0.10 |
| Copper (Cu) | 0.0 - 0.10 |
| Other (Each) | 0.0 - 0.05 |
| Aluminium (Al) | Balance |

## 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
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
- 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

## GENERIC PHYSICAL PROPERTIES

| Property | Value |
|---|---|
| Density | 2.70 g/cm³ |
| Melting Point | 555 °C |
| Thermal Expansion | 24 x$10^{-6}$ /K |
| Modulus of Elasticity | 70 GPa |
| Thermal Conductivity | 180 W/m.K |
| Electrical Resistivity | 0.038 x$10^{-6}$ Ω .m |

## MECHANICAL PROPERTIES

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

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

*Properties above are for material in the T6 condition*

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

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

*Properties above are for material in the T6 condition*

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

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

*Properties above are for material in the T6 condition*

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

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

*Properties above are for material in the T6 condition*

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

| 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 % |

*Properties above are for material in the T6 condition*

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

| 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 % |

*Properties above are for material in the T6 condition*

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

| 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 % |

*Properties above are for material in the T6 condition*

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

| 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 % |

*Properties above are for material in the T6 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

## CONTACT

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## REVISION HISTORY

Datasheet Updated 18 July 2019

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