

6063 - T6 Extrusions

Aluminium Alloy 6063

Aluminium alloy 6063 is a medium strength alloy commonly referred to as an architectural alloy. It is normally used in intricate extrusions.

It has a good surface finish, high corrosion resistance, is readily suited to welding and can be easily anodised. Most commonly available as T6 temper, in the T4 condition it has good formability.

Applications

6063 is typically used in:

- Architectural applications
- Extrusions
- Window frames
- Doors
- Shop fittings
- Irrigation tubing

In balustrading the rails and posts are normally in the T6 temper and formed elbows and bends are T4. T4 temper 6063 aluminium is also finding applications in hydroformed tube for chassis.

Aluminium Alloy 6063A

Aluminium alloy 6063A is a variation of 6063 with greater strength but retains the same good surface finish qualities and affinity for anodising.

Applications

6063A is used in the same applications as 6063. It is also used in:

Road transport

Rail transport

Extreme sports equipment

Chemical Composition

Spec: BS EN 573-3: 2009

Alloy 6063

Chemical Element	% Present
Manganese (Mn)	0.0 - 0.10
Iron (Fe)	0.0 - 0.35
Magnesium (Mg)	0.45 - 0.90
Silicon (Si)	0.20 - 0.60
Zinc (Zn)	0.0 - 0.10
Titanium (Ti)	0.0 - 0.10
Chromium (Cr)	0.0 - 0.10
Copper (Cu)	0.0 - 0.10
Other (Each)	0.0 - 0.05
Others (Total)	0.0 - 0.15
Aluminium (Al)	Balance

Properties

Physical Property	Value
Density	2.70 g/cm ³
Melting Point	655 °C
Thermal Expansion	23.5 x10 ⁻⁶ /K
Modulus of Elasticity	69.5 GPa
Thermal Conductivity	201 W/m.K
Electrical Resistivity	0.033 x10 ⁻⁶ Ω .m
Electrical Resistivity	52 % IACS

Spec: To BS EN 755-2: 2008

Rod & Bar - Up To 150mm Dia. & A/F

Mechanical Property	Value
Proof Stress	170 Min MPa
Tensile Strength	215 Min MPa
Hardness Brinell	75 HB
Elongation A	10 Min %
Elongation A50 mm	8 Min %

Spec: To BS EN 755-2: 2008

Rod & Bar - 150mm to 200mm Dia. & A/F

Mechanical Property	Value
Proof Stress	160 Min MPa
Tensile Strength	195 Min MPa
Hardness Brinell	75 HB
Elongation A	10 Min %

Spec: BS EN 755-2

Tube - Up To 25mm Wall Thickness

Mechanical Property	Value
Proof Stress	170 Min MPa
Tensile Strength	215 Min MPa
Elongation A50 mm	8 Min %
Hardness Brinell	75 HB
Elongation A	10 Min %

Spec: BS EN 755-2:2008

Profiles - Up to 10mm Wall Thickness

Mechanical Property	Value
Proof Stress	170 Min MPa
Tensile Strength	215 Min MPa
Elongation A50 mm	6 Min %
Hardness Brinell	75 HB
Elongation A	8 Min %

Spec: BS EN 755-2:2008

Profiles - 10mm to 25mm Wall Thickness

Mechanical Property	Value
Proof Stress	160 Min MPa
Tensile Strength	195 Min MPa
Elongation A50 mm	6 Min %
Hardness Brinell	75 HB
Elongation A	8 Min %

Alloy Designations

Aluminium alloy 6063/6063A corresponds to the following standard designations and specifications **but may not be a direct equivalent:**

- AA6063
- Al Mg0.7Si
- GS10
- AlMgSi0.5
- A-GS
- 3.32206
- ASTM B210
- ASTM B221
- ASTM B241 (Pipe- Seamless)
- ASTM B345 (Pipe- Seamless)
- ASTM B361
- ASTM B429
- ASTM B483
- ASTM B491
- MIL G-18014
- MIL G-18015
- MIL P-25995
- MIL W-85
- QQ A-200/9
- SAE J454
- UNS A96063
- HE19

Temper Types

The most common tempers for 6063 aluminium are:

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