

# Aluminium Alloy 6005 & 6005A

Aluminium alloy 6005/6005A is a medium strength, heat treatable alloy with excellent corrosion resistance. Alloy 6005 has properties between those of alloys 6061 and 6082 and can sometimes be used interchangeably with these alloys, but 6005 has better extrusion characteristics and a better mill surface finish. It is difficult to produce thin-wall or complicated extrusions in 6005, but it is still more extrudable than 6082. 6005/6005A tube has very good bending properties.

## Applications

6005 and 6005A typically find application in intricate extrusions like:

- ◆ Tubing for furniture
- ◆ Railway and bus profile structures
- ◆ Pylons, platforms and pipelines
- ◆ Portable ladders
- ◆ Sections where greater strength is needed than given by 6060 and 6063.

## Chemical Composition

Element	% Present
Si	0.5-0.9%
Fe	0.35%
Cu	0.3%
Mn	0.5%
Mg	0.4-0.7%
Zn	0.2%
Ti	0.1%
Cr	0.3%
Mn+Cr	0.12-0.5%
Al	Balance

## Alloy Designations

Aluminium alloy 6005 also corresponds to the following standard designations and specifications:

A96005                      AISiMg  
AISI6Mg(A)

## Welding

The weldability of 6005/6005A is excellent. 4043 welding wire is recommended unless joining to one of the 7XXX series. In this case 5356 wire is the suggested alternative.

## Mechanical Properties

Temper	T5
Proof Stress 0.2% (MPa)	240
Tensile Strength (MPa)	260
Shear Strength (MPa)	205
Elongation A5 (%)	8
Hardness Vickers (HV)	100

## Physical Properties

Property	Value
Density	2.70 g/cm <sup>3</sup>
Melting Point	605°C
Modulus of Elasticity	70 GPa
Electrical Resistivity	0.034x10 <sup>-6</sup> Ω.m
Thermal Conductivity	188 W/m.K
Thermal Expansion	24x10 <sup>-6</sup> /K

## Temper

As 6005/6005A is usually supplied in tube or extruded form. Its' most common temper is T5. This temper denotes that the material has been cooled from an elevated temperature for the shaping process and then artificially aged.

## Fabrication

Process	Rating
Workability – Cold	Fair
Machinability	Fair
Weldability – Gas	Excellent
Weldability – Arc	Excellent
Weldability – Resistance	Excellent
Brazability	Excellent

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