



Aluminium Alloy 6005A - T6 Extrusion

SPECIFICATIONS

Commercial	6005A
EN	6005A

Aluminium alloy 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.

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

BS EN 573-3:2009 Alloy 6005	
Element	% Present
Silicon (Si)	0.50 - 0.90
Magnesium (Mg)	0.40 - 0.70
Manganese + Chromium (Mn+Cr)	0.12 - 0.50
Manganese (Mn)	0.0 - 0.50
Iron (Fe)	0.0 - 0.35
Copper (Cu)	0.0 - 0.30
Chromium (Cr)	0.0 - 0.30
Zinc (Zn)	0.0 - 0.20
Others (Total)	0.0 - 0.15
Titanium (Ti)	0.0 - 0.10
Other (Each)	0.0 - 0.05
Aluminium (Al)	Balance

ALLOY DESIGNATIONS

Aluminium alloy 6005A also corresponds to the following standard designations and specifications but may not be a direct equivalent: A96005 AlSiMg AlSiMg(A)

TEMPER TYPES

The most common temper for 6005 aluminium is:

- T6 - Solution heat treated and artificially aged

SUPPLIED FORMS

Alloy 6005 is supplied as

- Extrusions
- Tube

GENERIC PHYSICAL PROPERTIES

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

MECHANICAL PROPERTIES

BS EN 755-2:2008 Rod & Bar up to 25mm Dia. & A/F	
Property	Value
Proof Stress	225 Min MPa
Tensile Strength	270 Min MPa
Elongation A50 mm	8 %
Shear Strength	205 MPa
Hardness Brinell	90 HB
Elongation A	10 Min %

Above values are for T6 temper



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BS EN 755-2:2008 **Rod & Bar** **25mm to 50mm Dia. & A/F**

Property	Value
Proof Stress	225 Min MPa
Tensile Strength	270 Min MPa
Hardness Brinell	90 HB
Elongation A	8 Min %

Above values are for T6 temper

BS EN 755-2:2008 **Bar** **50mm to 100mm Dia. & A/F**

Property	Value
Proof Stress	215 Min MPa
Tensile Strength	260 Min MPa
Hardness Brinell	85 HB
Elongation A	8 Min %

Above values are for T6 temper

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

Property	Value
Proof Stress	225 Min MPa
Tensile Strength	270 Min MPa
Elongation A50 mm	6 Min %
Hardness Brinell	90 HB
Elongation A	8 Min %

Above values are for T6 temper

BS EN 755-2:2008 **Tube** **5mm to 10mm Wall Thickness**

Property	Value
Proof Stress	215 Min MPa
Tensile Strength	260 Min MPa
Elongation A50 mm	6 Min %
Hardness Brinell	85 HB
Elongation A	8 Min %

Above values are for T6 temper

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

Property	Value
Proof Stress	225 Min MPa
Tensile Strength	270 Min MPa
Elongation A50 mm	6 Min %
Hardness Brinell	90 HB
Elongation A	8 Min %

Above values are for T6 temper

BS EN 755-2:2008 **Open Profile** **5mm to 10mm Wall Thickness**

Property	Value
Proof Stress	215 Min MPa
Tensile Strength	260 Min MPa
Elongation A50 mm	6 Min %
Hardness Brinell	85 HB
Elongation A	8 Min %

Above values are for T6 temper

BS EN 755-2:2008 **Open Profile** **10mm to 25mm Wall Thickness**

Property	Value
Proof Stress	200 Min MPa
Tensile Strength	250 Min MPa
Elongation A50 mm	6 Min %
Hardness Brinell	85 HB
Elongation A	8 Min %

Above values are for T6 temper

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

Property	Value
Proof Stress	215 Min MPa
Tensile Strength	255 Min MPa
Elongation A50 mm	6 Min %
Hardness Brinell	85 HB
Elongation A	8 Min %

Above values are for T6 temper



Aluminium Alloy 6005A - T6 Extrusion

BS EN 755-2:2008
Hollow Profile
5mm to 15mm Wall Thickness

Property	Value
Proof Stress	200 Min MPa
Tensile Strength	250 Min MPa
Elongation A50 mm	6 Min %
Hardness Brinell	85 HB
Elongation A	8 Min %

Above values are for T6 temper

WELDABILITY

The weldability of 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.

Weldability – Gas: Excellent
Weldability – Arc: Excellent
Weldability – Resistance: Excellent
Brazability: Excellent