

## SPECIFICATIONS

Commercial	2011
EN	2011

Aluminium alloy 2011 is a high mechanical strength alloy that machines exceptionally well. Often called a Free Machining Alloy or 'FMA' it is well suited to use in automatic lathes.

Machining at high speeds produces fine chips that are easily removed. The excellent machining characteristics allow the production of complex and detailed parts. In some circumstances 2011 can replace free machining brass without the need for alterations to tooling.

It has poor corrosion resistance, which means parts made from 2011 tend to be anodised to provide additional surface protection.

When higher levels of corrosion resistance are required, 6262 T9 may be a suitable replacement.

Applications - 2011 is typically used in applications that require parts manufactured by repetition machining. These applications may include:

Appliance parts & trim  
Automotive trim  
Fasteners and fittings  
Ordnance

## CHEMICAL COMPOSITION

BS EN 573-3:2009 Alloy 2011	
Element	% Present
Copper (Cu)	5.00 - 6.00
Bismuth (Bi)	0.20 - 0.60
Iron (Fe)	0.0 - 0.70
Lead (Pb)	0.20 - 0.40
Silicon (Si)	0.0 - 0.40
Zinc (Zn)	0.0 - 0.30
Others (Total)	0.0 - 0.15
Other (Each)	0.0 - 0.05
Aluminium (Al)	Balance

## ALLOY DESIGNATIONS

Aluminium alloy 2011 also corresponds to the following standard designations and specifications **but may not be a direct equivalent** :

AlCu6BiPb  
FC1  
A92011  
CB60  
3.1655  
AlCuBiPb:

## TEMPER TYPES

The most common temper for 2011 aluminium bar - extruded and drawn - is:

- T3 - Solution heat treated, cold worked and naturally aged

## SUPPLIED FORMS

- Bar

## GENERIC PHYSICAL PROPERTIES

Property	Value
Density	2.83 g/cm <sup>3</sup>
Melting Point	535 °C
Thermal Expansion	22.9 x10 <sup>-6</sup> /K
Modulus of Elasticity	70 GPa
Thermal Conductivity	151 W/m.K
Electrical Resistivity	0.038 x10 <sup>-6</sup> Ω .m

## MECHANICAL PROPERTIES

BS EN 755-2:2008 Extruded and Drawn Bar Up to 200mm Dia. or 60mm A/F	
Property	Value
Proof Stress	270 Min MPa
Tensile Strength	320 Min MPa
Hardness Brinell	90 Min HB
Elongation A	10 Min %

Properties above are for material in the T4 condition

#### WELDABILITY

Alloy 2011 has extremely poor weldability and thus welding is not recommended. However, as it is used for machined parts there is rarely a need to weld this alloy.

#### FABRICATION

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

#### CONTACT

Web: [www.dalsteel.com.au](http://www.dalsteel.com.au)

#### REVISION HISTORY

Datasheet Updated 18 July 2019

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