

### SPECIFICATIONS

Commercial	2014A
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#### Applications:

High strength structural components: aircraft (e.g. fittings and wheels), military vehicles and bridges, forgings for trucks and machinery (hydraulic etc.). Weapons manufacture, structural applications.

#### Characteristic Properties:

Heat treatable alloy. High mechanical strength slightly higher than 2011 and 2017A.

### CHEMICAL COMPOSITION

BS 2L77(1971) Alloy 2L77	
Element	% Present
Copper (Cu)	3.9 - 5
Manganese (Mn)	0.4 - 1.2
Silicon (Si)	0.5 - 0.9
Magnesium (Mg)	0.2 - 0.8
Iron (Fe)	0.5 max
Zinc (Zn)	0.2 max
Titanium + Zirconium (Ti+Zr)	0.2 max
Nickel (Ni)	0.2 max
Chromium (Cr)	0.1 max
Tin (Sn)	0.05 max
Lead (Pb)	0.05 max
Aluminium (Al)	Balance

*Forging Stock: Cast billets and slabs for hot working and extruded bars, sections and hot-rolled plate for forging shall be supplied non-heat treated.*

*Forgings: Unless otherwise agreed between the manufacturer and the purchaser and stated on the order, forgings shall be supplied solution treated and precipitation treated.*

### ALLOY DESIGNATIONS

Aluminium alloy 2L77 - 2014A is covered by standard BS EN 4L77 (1971)

### TEMPER TYPES

The most common temper for 2L77 - 2014A aluminium forging stock is:

- T6 - Solution heat treated and artificially aged

### SUPPLIED FORMS

2L77 - 2014A aluminium is supplied as forging stock made from cast billet, extruded stock or rolled plate.

- Forgings
- Bar
- Castings
- Extrusions
- Plate

### GENERIC PHYSICAL PROPERTIES

Property	Value
Density	2.80 g/cm <sup>3</sup>
Melting Point	640 °C
Thermal Expansion	22.8 x10 <sup>-6</sup> /K
Thermal Conductivity	134-155 W/m.K
Modulus of Elasticity	73 GPa

*Solution treat by heating at a temp of 500C +/- 5C and quenching in water at a temperature not less than 40C nor more than 70C, unless otherwise agreed by the parent design firm and the manufacturer. If a water quenching temperature below 40 C is used, high residual stress and cracking may result, particularly in large and / or complicated forgings. For this reason it is desirable to quench in water at as high a temperature as is practicable.*

### MECHANICAL PROPERTIES

BS 2L77(1971)	
Property	Value
Proof Stress	395 Min MPa
Tensile Strength	450 Min MPa
Elongation A50 mm	6 Min %
Hardness Brinell	134 Min HB

*This specification covers forging stock and forgings of aluminium-copper-magnesium-silicon-manganese alloy in the solution treated and precipitation treated condition.*

*The values shown in the mechanical properties apply to test pieces prepared by forging covering extruded forging stock and forgings made from cast billets, hot-rolled plate and extruded stock in all sizes.*

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## REVISION HISTORY

Datasheet Updated 07 January 2014

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