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Aluminium Alloy - 5251 - H14/H24

Last Updated **18 July 2019**

SPECIFICATIONS

Commercial	5251
EN	5251

Aluminium alloy 5251 is a medium strength alloy possessing good ductility and therefore good formability. Alloy 5251 is known for work hardening rapidly and is readily weldable. It also possesses high corrosion resistance particularly in marine environments.

Applications

5251 is typically used in:

Boats
Panelling and pressings
Marine structures
Aircraft parts
Vehicle panels
Furniture tubing
Silos
Containers .

CHEMICAL COMPOSITION

BS EN 573-3:2009 Alloy 5251	
Element	% Present
Magnesium (Mg)	1.70 - 2.40
Manganese (Mn)	0.10 - 0.50
Iron (Fe)	0.0 - 0.50
Silicon (Si)	0.0 - 0.40
Chromium (Cr)	0.0 - 0.15
Titanium (Ti)	0.0 - 0.15
Zinc (Zn)	0.0 - 0.15
Copper (Cu)	0.0 - 0.15
Others (Total)	0.0 - 0.15
Other (Each)	0.0 - 0.05
Aluminium (Al)	Balance

ALLOY DESIGNATIONS

Alloy 5251 also corresponds to the following standard designations and specifications ***but may not be a direct equivalent:***

Al Mg2
Al 2.0Mg 0.3Mn

TEMPER TYPES

The most common tempers for 5251 aluminium are:

- O - Soft
- H22 - Work hardened by rolling then annealed to quarter hard
- H24 - Work hardened by rolling then annealed to half hard
- H26 - Work hardened by rolling then annealed to three-quarter hard

SUPPLIED FORMS

- Plate
- Sheet
- Coil

GENERIC PHYSICAL PROPERTIES

Property	Value
Density	2.69 g/cm³
Melting Point	625°C
Thermal Expansion	25 x10^{-6} /K
Modulus of Elasticity	70 GPa
Thermal Conductivity	134 W/m.K
Electrical Resistivity	0.044 x10^{-6} Ω .m

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MECHANICAL PROPERTIES

BS EN 485-2:2008 sheet and plate 0.2mm to 12.5mm	
Property	Value
Proof Stress	140 Min MPa
Tensile Strength	210 - 250 MPa
Hardness Brinell	62 HB

Properties above are for material in the H24 condition

WELDABILITY

Aluminium alloy 5251 is a readily weldable alloy. The recommended filler wire is 5356 when welding alloy 5251 to itself, 6XXX series alloys, 7XXX series alloys and most other 5XXX alloys. When welding alloy 5251 to 5005, 5020, 1XXX series or 3XXX series alloys, the recommended filler wire is 4043.

Weldability – Gas: Very Good
Weldability – Arc: Very Good
Weldability – Resistance: Very Good
Brazability: Poor

FABRICATION

Workability - Cold: Very Good
Machinability: Average

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