

Aluminium Alloy 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

Element	% Present
Cu	0.15%
Mg	1.7-2.4%
Si	0.4%
Fe	0.5%
Mn	0.1-0.5%
Zn	0.15%
Ti	0.15%
Cr	0.15%
Al	Balance

Physical Properties

Property	Value
Density	2.69 g/cm ³
Melting Point	625°C
Modulus of Elasticity	70 GPa
Electrical Resistivity	0.044x10 ⁻⁶ Ω.m
Thermal Conductivity	134 W/m.K
Thermal Expansion	25x10 ⁻⁶ /K

Mechanical Properties

Temper	H22	H24	H26	0
Proof Stress 0.2% (MPa)	165	190	215	80
Tensile Strength (MPa)	210	230	255	180
Shear Strength (MPa)	125	135	145	115
Elongation A5 (%)	14	13	9	26
Hardness Vickers (HV)	65	70	75	46

Alloy Designations

Aluminium alloy 5251 also corresponds to the following designations:

Al Mg2

Al 2.0Mg 0.3Mn

Temper

The common tempers for 5251 are:

- ◆ H22 - Work hardened and partially annealed to a quarter hard state
- ◆ H24 - Work hardened and partially annealed to a half hard state
- ◆ H26 - Work hardened and partially annealed to a three quarter hard state
- ◆ 0 - Wrought and fully annealed



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Fabrication

Process	Rating
Workability – Cold	Very Good
Machinability	Average
Weldability – Gas	Very Good
Weldability – Arc	Very Good
Weldability – Resistance	Very Good
Brazability	Poor
Solderability	-

Welding

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.

Supplied Forms

Aalco typically supplies 5251 in a H22 temper in the following forms:

- ◆ Plain sheet
- ◆ Plain sheet PVC coated on one side
- ◆ Shate.

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