

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

Fabrication

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



Amari is a registered trademark of Amari Metals Ltd

© Copyright: Amari Metals Ltd, 25 High Street, Cobham, Surrey, KT11 3DH

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

5251 in a H22 temper is typically supplied in the following forms:

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

All Data is indicative only and must not be seen as a substitute for the full specification from which it is drawn. In particular, the mechanical property requirements vary widely with temper, product form and product dimensions. For more complete details please refer to the relevant specification – The BS EN Specifications for aluminium are listed on a separate Datasheet.

This information is based on our present knowledge and is given in good faith. However, no liability will be accepted by the Company in respect of any action taken by any third party in reliance thereon. As the products detailed may be used for a wide variety of purposes and as the Company has no control over their use; the Company specifically excludes all conditions or warranties expressed or implied by statute or otherwise as to dimensions, properties and/or fitness for any particular purpose. Any advice given by the Company to any third party is given for that party's assistance only and without liability on the part of the Company. Any contract between the Company and a customer will be subject to the Company's Conditions of Sale. The extent of the Company's liabilities to any customer is clearly set out in those Conditions; a copy of which is available on request.



Amari is a registered trademark of Amari Metals Ltd

© Copyright: Amari Metals Ltd, 25 High Street, Cobham, Surrey, KT11 3DH