



# 5052

## Aluminium Alloy Data sheet

**Material NOTE:** The following data is for general reference only and NOT FOR DESIGN.

### Description

Alloy 5052 is a Magnesium bearing alloy suitable for higher strength and saline and caustic corrosion environments. Similar to all 5 series aluminium it is readily hardenable by cold working to achieve high strengths known as H tempers and are non heat treatable.  
Hardness range from H0 Annealed to H38 Tensile strength of 270Mpa.

### Alloy designations

5052-0, UNS A95052, AA5052-0, ISO AlMg2.5

### Applications

- Food processing equipment
- Marine vessels and fabrications
- Desalination equipment
- Pressure vessels
- Trailers, tool boxes , fabrications and cold forged components

### Substitutable Alloys

Alloys that can be easily substituted for 5052 include 5251 and 5154

### Chemical Composition<sup>1</sup>

| Alloy | Si   | Fe   | Cu   | Mn   | Mg      | Cr   | Ni | Zn  | Ti | Others | Al(min) |
|-------|------|------|------|------|---------|------|----|-----|----|--------|---------|
| 5052  | 0.25 | 0.40 | 0.10 | 0.10 | 2.2-2.8 | 0.25 | -  | 0.1 | -  | 0.15   | 96.4 %  |

NB: Assays in % max.

### Alternatives alloys comparison

| Alloy | Si   | Fe  | Cu   | Mn   | Mg      | Cr   | Ni | Zn   | Ti   | Others | Al(min) |
|-------|------|-----|------|------|---------|------|----|------|------|--------|---------|
| 5154  | 0.25 | 0.4 | 0.10 | 0.10 | 3.1-3.9 | 0.25 |    | 0.20 | 0.20 | 0.15   | 94.8%   |

<sup>1</sup> Complying with ASTM Aluminium Association

## Physical Properties

| Property                       | Value            |
|--------------------------------|------------------|
| Density                        | 2.68 g/ cc       |
| Melting point                  | 607-649 °C       |
| Modulus if Elasticity          | 70.3 GPA         |
| Resistivity                    | 4.99e-006 ohm-cm |
| <b>Electrical Conductivity</b> | <b>35 % IACS</b> |

## Mechanical properties #

AS1865 Aluminium & Alloys – drawn wire, rod bar & strip

| Temper            | Ultimate Tensile strength |     | Elongation |
|-------------------|---------------------------|-----|------------|
|                   | Mpa                       | Ksi | %          |
| H0 ( Annealed)    | 193                       |     | 13         |
| H32               | 245                       |     | 5          |
| H34               | 265                       |     | 3          |
| H36               | 270                       |     | 2          |
| H38 ( Hard drawn) | 270min                    |     | < 2%       |

#: Typical averages

The alloy marginally age softens at ambient after cold work.

## Physical performance

|                  |   |
|------------------|---|
| Weldability      | Readily weldable using commercial filler metals. Filler metals usually 5356 alloy   |
| Machinability    | Machinability of HO annealed metal is Poor.<br>Harder tempers machinability considered acceptable   |
| Corrosion        | 5xxx series aluminium has a wide range of resistance to corrosion in aggressive environments. 5 series is particular resistant to caustic and marine /saline environments . |
| Appearance       | Bright chrome like appearance in drawn condition.<br>Annealed metal is dull in appearance.  |
| Heat Treatment   | 5052 alloy is annealed at 345°C with controlled cooling required to stabilise temper.<br>Alloy is not hardened by heat treatment.   |
| Surface cleaning | Wire surface can be cleaned readily with mineral solvents.<br>Heavily contaminated surfaces can be cleaned using hot +70°C diluted caustic solution                         |

## References

ASTMB209M-10 Standard Specification for Aluminium and Aluminium Alloy Sheet & plate