

## Aluminum 5052-O

**Categories:** [Metal](#); [Nonferrous Metal](#); [Aluminum Alloy](#); [5000 Series Aluminum Alloy](#)

**Material Notes:** This alloy has good workability, very good corrosion resistance, high fatigue strength, weldability, and moderate strength. This leads to its use in aircraft fuel/oil lines, fuel tanks, other transportation areas, sheet metal work, appliances and lighting, wire, and rivets.

Data points with the AA note have been provided by the Aluminum Association, Inc. and are NOT FOR DESIGN.


### Composition Notes:

Composition information provided by the Aluminum Association and is not for design.

**Key Words:** UNS A95052; ISO AlMg2.5; Aluminium 5052-O; AA5052-O

**Vendors:** [Click here to view all available suppliers for this material.](#)

Please [click here](#) if you are a supplier and would like information on how to add your listing to this material.

Physical Properties	Metric	English	Comments
Density	2.68 g/cc	0.0968 lb/in <sup>3</sup>	AA; Typical
Mechanical Properties	Metric	English	Comments
Hardness, Brinell	47	47	AA; Typical; 500 g load; 10 mm ball
Tensile Strength, Ultimate	193 MPa	28000 psi	AA; Typical
Tensile Strength, Yield	89.6 MPa	13000 psi	AA; Typical
Elongation at Break	25.0 % @Thickness 1.59 mm	25.0 % @Thickness 0.0625 in	AA; Typical
	30.0 % @Diameter 12.7 mm	30.0 % @Diameter 0.500 in	AA; Typical
Modulus of Elasticity	70.3 GPa	10200 ksi	AA; Typical; Average of tension and compression. Compression modulus is about 2% greater than tensile modulus.
Ultimate Bearing Strength	345 MPa	50000 psi	Edge distance/pin diameter = 2.0
Bearing Yield Strength	131 MPa	19000 psi	Edge distance/pin diameter = 2.0
Poissons Ratio	0.330	0.330	
Fatigue Strength	110 MPa @# of Cycles 5.00e+8	16000 psi @# of Cycles 5.00e+8	completely reversed stress; RR Moore machine/specimen
Machinability	30 %	30 %	0-100 Scale of Aluminum Alloys
Shear Modulus	25.9 GPa	3760 ksi	
Shear Strength	124 MPa	18000 psi	AA; Typical
Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.00000499 ohm-cm @Temperature 20.0 °C	0.00000499 ohm-cm @Temperature 68.0 °F	AA; Typical
Thermal Properties	Metric	English	Comments
CTE, linear 	23.8 µm/m-°C @Temperature 20.0 - 100 °C	13.2 µin/in-°F @Temperature 68.0 - 212 °F	AA; Typical; average over range

	25.7 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$ @Temperature 20.0 - 300 $^\circ\text{C}$	14.3 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$ @Temperature 68.0 - 572 $^\circ\text{F}$	average
Specific Heat Capacity	0.880 J/g- $^\circ\text{C}$	0.210 BTU/lb- $^\circ\text{F}$	Estimated from trends in similar Al alloys.
Thermal Conductivity	138 W/m-K	960 BTU-in/hr-ft $^2$ - $^\circ\text{F}$	AA; Typical at 77 $^\circ\text{F}$
Melting Point	607.2 - 649 $^\circ\text{C}$	1125 - 1200 $^\circ\text{F}$	AA; Typical range based on typical composition for wrought products 1/4 inch thickness or greater
Solidus	607.2 $^\circ\text{C}$	1125 $^\circ\text{F}$	AA; Typical
Liquidus	649 $^\circ\text{C}$	1200 $^\circ\text{F}$	AA; Typical
<b>Processing Properties</b>	<b>Metric</b>	<b>English</b>	<b>Comments</b>
Annealing Temperature	343 $^\circ\text{C}$	650 $^\circ\text{F}$	holding at temperature not required
Hot-Working Temperature	260 - 510 $^\circ\text{C}$	500 - 950 $^\circ\text{F}$	
<b>Component Elements Properties</b>	<b>Metric</b>	<b>English</b>	<b>Comments</b>
Aluminum, Al	95.7 - 97.7 %	95.7 - 97.7 %	As remainder
Chromium, Cr	0.15 - 0.35 %	0.15 - 0.35 %	
Copper, Cu	$\leq$ 0.10 %	$\leq$ 0.10 %	
Iron, Fe	$\leq$ 0.40 %	$\leq$ 0.40 %	
Magnesium, Mg	2.20 - 2.80 %	2.20 - 2.80 %	
Manganese, Mn	$\leq$ 0.10 %	$\leq$ 0.10 %	
Other, each	$\leq$ 0.050 %	$\leq$ 0.050 %	
Other, total	$\leq$ 0.15 %	$\leq$ 0.15 %	
Silicon, Si	$\leq$ 0.25 %	$\leq$ 0.25 %	
Zinc, Zn	$\leq$ 0.10 %	$\leq$ 0.10 %	

[References](#) for this datasheet.

Some of the values displayed above may have been converted from their original units and/or rounded in order to display the information in a consistent format. Users requiring more precise data for scientific or engineering calculations can click on the property value to see the original value as well as raw conversions to equivalent units. We advise that you only use the original value or one of its raw conversions in your calculations to minimize rounding error. We also ask that you refer to MatWeb's disclaimer and terms of use regarding this information. [Click here](#) to view all the property values for this datasheet as they were originally entered into MatWeb.