



ASM Aerospace Specification Metals Inc.



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## Aluminum 5052-H38

**Subcategory:** 5000 Series Aluminum Alloy; Aluminum Alloy; Metal; Nonferrous Metal

### Close Analogs:

### Composition Notes:

Aluminum content reported is calculated as remainder.

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

**Key Words:** UNS A95052; ISO AlMg2.5; Aluminium 5052-H38; AA5052-H38

Component	Wt. %	Component	Wt. %	Component	Wt. %
Al	95.7 - 97.7	Mg	2.2 - 2.8	Other, total	Max 0.15
Cr	0.15 - 0.35	Mn	Max 0.1	Si	Max 0.25
Cu	Max 0.1	Other, each	Max 0.05	Zn	Max 0.1
Fe	Max 0.4				

### Material Notes:

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

Physical Properties	Metric	English	Comments
Density	<u>2.68 g/cc</u>	0.0968 lb/in <sup>3</sup>	AA; Typical

### Mechanical Properties

Hardness, Brinell	77	77	AA; Typical; 500 g load; 10 mm ball
Hardness, Knoop	100	100	Converted from Brinell Hardness Value
Hardness, Vickers	87	87	Converted from Brinell Hardness Value
Ultimate Tensile Strength	<u>290 MPa</u>	42000 psi	AA; Typical
Tensile Yield Strength	<u>255 MPa</u>	37000 psi	AA; Typical
Elongation at Break	<u>7 %</u>	7 %	AA; Typical; 1/16 in. (1.6 mm) Thickness
Elongation at Break	<u>8 %</u>	8 %	AA; Typical; 1/2 in. (12.7 mm) Diameter

Modulus of Elasticity	<u>70.3 GPa</u>	10200 ksi	AA; Typical; Average of tension and compression. Compression modulus is about 2% greater than tensile modulus.
Ultimate Bearing Strength	<u>538 MPa</u>	78000 psi	Edge distance/pin diameter = 2.0
Bearing Yield Strength	<u>386 MPa</u>	56000 psi	Edge distance/pin diameter = 2.0
Poisson's Ratio	0.33	0.33	
Fatigue Strength	<u>138 MPa</u>	20000 psi	AA; 500,000,000 cycles completely reversed stress; RR Moore machine/specimen
Machinability	<u>50 %</u>	50 %	0-100 Scale of Aluminum Alloys
Shear Modulus	<u>25.9 GPa</u>	3760 ksi	
Shear Strength	<u>165 MPa</u>	24000 psi	AA; Typical

### Electrical Properties

Electrical Resistivity	<u>4.99e-006 ohm-cm</u>	4.99e-006 ohm-cm	AA; Typical at 68°F
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### Thermal Properties

CTE, linear 68°F	<u>23.8 μm/m-°C</u>	13.2 μin/in-°F	AA; Typical; Average over 68-212°F range.
CTE, linear 250°C	<u>25.7 μm/m-°C</u>	14.3 μin/in-°F	Average over the range 20-300°C
Specific Heat Capacity	<u>0.88 J/g-°C</u>	0.21 BTU/lb-°F	Estimated from trends in similar Al alloys.
Thermal Conductivity	<u>138 W/m-K</u>	960 BTU-in/hr-ft <sup>2</sup> -°F	AA; Typical at 77°F
Melting Point	607 - 649 °C	1125 - 1200 °F	AA; Typical range based on typical composition for wrought products 1/4 inch thickness or greater
Solidus	<u>607 °C</u>	1125 °F	AA; Typical
Liquidus	<u>649 °C</u>	1200 °F	AA; Typical

### Processing Properties

Annealing Temperature	<u>343 °C</u>	650 °F	holding at temperature not required
Hot-Working Temperature	260 - 510 °C	500 - 950 °F	

### 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.