



ASM Aerospace Specification Metals Inc.



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Aluminum 6063-T6

Subcategory: 6000 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 A96063; ISO AlMg0.5Si; Aluminium 6063-T6; AA6063-T6

Component	Wt. %	Component	Wt. %	Component	Wt. %
Al	Max 97.5	Mg	0.45 - 0.9	Si	0.2 - 0.6
Cr	Max 0.1	Mn	Max 0.1	Ti	Max 0.1
Cu	Max 0.1	Other, each	Max 0.05	Zn	Max 0.1
Fe	Max 0.35	Other, total	Max 0.15		

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>2.7 g/cc</u>	0.0975 lb/in ³	AA; Typical

Mechanical Properties

Hardness, Brinell	73	73	AA; Typical; 500 g load; 10 mm ball
Hardness, Knoop	96	96	Converted from Brinell Hardness Value
Hardness, Vickers	83	83	Converted from Brinell Hardness Value
Ultimate Tensile Strength	<u>241 MPa</u>	35000 psi	AA; Typical
Tensile Yield Strength	<u>214 MPa</u>	31000 psi	AA; Typical
Elongation at Break	<u>12 %</u>	12 %	AA; Typical; 1/16 in. (1.6 mm) Thickness
Modulus of Elasticity	<u>68.9 GPa</u>	10000 ksi	AA; Typical; Average of tension and compression. Compression modulus is about 2% greater than tensile modulus.

Ultimate Bearing Strength	<u>434 MPa</u>	62900 psi	Edge distance/pin diameter = 2.0
Bearing Yield Strength	<u>276 MPa</u>	40000 psi	Edge distance/pin diameter = 2.0
Poisson's Ratio	0.33	0.33	
Fatigue Strength	<u>68.9 MPa</u>	10000 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>25.8 GPa</u>	3740 ksi	
Shear Strength	<u>152 MPa</u>	22000 psi	AA; Typical

Electrical Properties

Electrical Resistivity	<u>3.32e-006 ohm-cm</u>	3.32e-006 ohm-cm	AA; Typical at 68°F
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Thermal Properties

CTE, linear 68°F	<u>23.4 μm/m-°C</u>	13 μin/in-°F	AA; Typical; Average over 68-212°F range.
CTE, linear 250°C	<u>25.6 μm/m-°C</u>	14.2 μin/in-°F	Average over the range 20-300°C
Specific Heat Capacity	<u>0.9 J/g-°C</u>	0.215 BTU/lb-°F	
Thermal Conductivity	<u>200 W/m-K</u>	1390 BTU-in/hr-ft ² -°F	AA; Typical at 77°F
Melting Point	616 - 654 °C	1140 - 1210 °F	AA; Typical range based on typical composition for wrought products 1/4 inch thickness or greater
Solidus	<u>616 °C</u>	1140 °F	AA; Typical
Liquidus	<u>654 °C</u>	1210 °F	AA; Typical

Processing Properties

Annealing Temperature	<u>413 °C</u>	775 °F	hold at temperature for 2 to 3 hr; cool at 50°F per hour from 775 to 500°F
Solution Temperature	<u>521 °C</u>	970 °F	
Aging Temperature	<u>177 °C</u>	350 °F	hold at temperature for 8 hr

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.