



ASM Aerospace Specification Metals Inc.



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Aluminum 6061-O

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: a16061, UNS A96061; ISO AlMg1SiCu; Aluminium 6061-O, AD-33 (Russia); AA6061-O

Component	Wt. %	Component	Wt. %	Component	Wt. %
Al	95.8 - 98.6	Mg	0.8 - 1.2	Si	0.4 - 0.8
Cr	0.04 - 0.35	Mn	Max 0.15	Ti	Max 0.15
Cu	0.15 - 0.4	Other, each	Max 0.05	Zn	Max 0.25
Fe	Max 0.7	Other, total	Max 0.15		

Material Notes:

Aluminum composition calculated as remainder. Information provided by Alcoa and the references. General 6061 characteristics and uses: Excellent joining characteristics, good acceptance of applied coatings. Combines relatively high strength, good workability, and high resistance to corrosion; widely available. The T8 and T9 tempers offer better chipping characteristics over the T6 temper.

Uses: Aircraft fittings, camera lens mounts, couplings, marines fittings and hardware, electrical fittings and connectors, decorative or misc. hardware, hinge pins, magneto parts, brake pistons, hydraulic pistons, appliance fittings, valves and valve parts.

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	30	30	AA; Typical; 500 g load; 10 mm ball
Ultimate Tensile Strength	<u>124 MPa</u>	18000 psi	AA; Typical

Tensile Yield Strength	<u>55.2 MPa</u>	8000 psi	AA; Typical
Elongation at Break	<u>25 %</u>	25 %	AA; Typical; 1/16 in. (1.6 mm) Thickness
Elongation at Break	<u>30 %</u>	30 %	AA; Typical; 1/2 in. (12.7 mm) Diameter
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>228 MPa</u>	33100 psi	Edge distance/pin diameter = 2.0
Bearing Yield Strength	<u>103 MPa</u>	14900 psi	Edge distance/pin diameter = 2.0
Poisson's Ratio	0.33	0.33	Estimated from trends in similar Al alloys.
Fatigue Strength	<u>62.1 MPa</u>	9000 psi	AA; 500,000,000 cycles completely reversed stress; RR Moore machine/specimen
Machinability	<u>30 %</u>	30 %	0-100 Scale of Aluminum Alloys
Shear Modulus	<u>26 GPa</u>	3770 ksi	Estimated from similar Al alloys.
Shear Strength	<u>82.7 MPa</u>	12000 psi	AA; Typical

Electrical Properties

Electrical Resistivity	<u>3.66e-006 ohm-cm</u>	3.66e-006 ohm-cm	AA; Typical at 68°F
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Thermal Properties

CTE, linear 68°F	<u>23.6 $\mu\text{m/m-}^\circ\text{C}$</u>	13.1 $\mu\text{in/in-}^\circ\text{F}$	AA; Typical; Average over 68-212°F range.
CTE, linear 250°C	<u>25.2 $\mu\text{m/m-}^\circ\text{C}$</u>	14 $\mu\text{in/in-}^\circ\text{F}$	Estimated from trends in similar Al alloys. 20-300°C.
Specific Heat Capacity	<u>0.896 J/g-°C</u>	0.214 BTU/lb-°F	
Thermal Conductivity	<u>180 W/m-K</u>	1250 BTU-in/hr-ft ² -°F	AA; Typical at 77°F
Melting Point	582 - 652 °C	1080 - 1205 °F	AA; Typical range based on typical composition for wrought products 1/4 inch thickness or greater; Eutectic melting can be completely eliminated by homogenization.
Solidus	<u>582 °C</u>	1080 °F	AA; Typical
Liquidus	<u>652 °C</u>	1205 °F	AA; Typical

Processing Properties

Solution Temperature	<u>529 °C</u>	985 °F	
Aging Temperature	<u>160 °C</u>	320 °F	Rolled or drawn products; hold at temperature for 18 hr
Aging Temperature	<u>177 °C</u>	350 °F	Extrusions or forgings; 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.