

Aluminum 6061-O

Categories: [Metal](#); [Nonferrous Metal](#); [Aluminum Alloy](#); [6000 Series Aluminum Alloy](#)

Material Notes: 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.


Composition Notes:

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

Key Words: al6061, UNS A96061; ISO AlMg1SiCu; Aluminium 6061-O, AD-33 (Russia); AA6061-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	2.70 g/cc	0.0975 lb/in ³	AA; Typical
Mechanical Properties			
Hardness, Brinell	30	30	AA; Typical; 500 g load; 10 mm ball
Tensile Strength, Ultimate	124 MPa	18000 psi	AA; Typical
Tensile Strength, Yield	55.2 MPa	8000 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	68.9 GPa	10000 ksi	AA; Typical; Average of tension and compression. Compression modulus is about 2% greater than tensile modulus.
Ultimate Bearing Strength	228 MPa	33100 psi	Edge distance/pin diameter = 2.0
Bearing Yield Strength	103 MPa	14900 psi	Edge distance/pin diameter = 2.0
Poissons Ratio	0.330	0.330	Estimated from trends in similar Al alloys.
Fatigue Strength	62.1 MPa @# of Cycles 5.00e+8	9000 psi @# of Cycles 5.00e+8	completely reversed stress; RR Moore machine/specimen
Machinability	30 %	30 %	0-100 Scale of Aluminum Alloys
Shear Modulus	26.0 GPa	3770 ksi	Estimated from similar Al alloys.
Shear Strength	82.7 MPa	12000 psi	AA; Typical
Electrical Properties			
Electrical Resistivity	0.00000366 ohm-cm @Temperature 20.0 °C	0.00000366 ohm-cm @Temperature 68.0 °F	AA; Typical
Thermal Properties			
CTE, linear 	23.6 µm/m-°C @Temperature 20.0 - 100 °C	13.1 µin/in-°F @Temperature 68.0 - 212 °F	AA; Typical; average over range
	25.2 µm/m-°C @Temperature 20.0 - 300 °C	14.0 µin/in-°F @Temperature 68.0 - 572 °F	
Specific Heat Capacity	0.896 J/g-°C	0.214 BTU/lb-°F	
Thermal Conductivity	180 W/m-K	1250 BTU-in/hr-ft ² -°F	AA; Typical at 77°F
Melting Point	582 - 651.7 °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	582 °C	1080 °F	AA; Typical
Liquidus	651.7 °C	1205 °F	AA; Typical
Processing Properties			
Solution Temperature	529 °C	985 °F	
Aging Temperature	160 °C	320 °F	Rolled or drawn products; hold at temperature for 18 hr
	177 °C	350 °F	Extrusions or forgings; hold at temperature for 8 hr
Component Elements Properties			
Aluminum, Al	95.8 - 98.6 %	95.8 - 98.6 %	As remainder
Chromium, Cr	0.040 - 0.35 %	0.040 - 0.35 %	
Copper, Cu	0.15 - 0.40 %	0.15 - 0.40 %	
Iron, Fe	<= 0.70 %	<= 0.70 %	
Magnesium, Mg	0.80 - 1.20 %	0.80 - 1.20 %	

Manganese, Mn	<= 0.15 %	<= 0.15 %
Other, each	<= 0.050 %	<= 0.050 %
Other, total	<= 0.15 %	<= 0.15 %
Silicon, Si	0.40 - 0.80 %	0.40 - 0.80 %
Titanium, Ti	<= 0.15 %	<= 0.15 %
Zinc, Zn	<= 0.25 %	<= 0.25 %

[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 [terms of use](#) regarding this information. [Click here](#) to view all the property values for this datasheet as they were originally entered into MatWeb.