



Aluminum 6061-0

Categories:	Metal; Nonferrous Metal; Aluminum Alloy; 6000 Series Aluminum		
Material Notes:	General 6061 characteristics and uses: Excellent joining characteristics, good acceptance of applied coats. 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. 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:	a16061, UNS A96061; ISO AlMg1SiCu; Aluminum 6061-O, AD-33 (Russia) AA6061-O		
Physical Properties	Metric	English	Comments
Density	2.70 g/cc	0.0975 lb. / in ³	AA; Typical
Mechanical Properties	Metric	English	Comments
Hardness, Brinell	30	30	AA; Typical; 500 g load; 10 mm ball
Ultimate Tensile Strength	124 MPa	18000 psi	AA; Typical
Tensile Yield Strength	55.2 MPa	8000 psi	AA; Typical
Elongation at Break	25.00% @ thickness 1.59 mm	25.00% @ thickness 0.0625 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	0.33	0.33	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	Metric	English	Comments
Electrical Resistivity	0.00000366 ohm-cm @ Temp 20.0° C	0.00000366 ohm-cm @ Temp 68.0° F	AA; Typical
Thermal Properties	Metric	English	Comments
CTE, linear	23.6 µm/m-°C @Temp 20.0 -100 ° C	13.1 µin/in-°F @ Temp 68.0 - 212 ° F	AA; Typical; Average over range
	25.2 µm/m-°C @Temp 20.0 - 300 ° C	14.0 µin/in-°F @ Temp 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	Metric	English	Comments
Solution Temperature	529 °C	985 °F	Holding at temperature not required
Aging Temperature	160 °C	320 °F	Rolled or Drawn products; hold at temperature for 18 hrs
	177 °C	350 °F	Extrusions or forgings; hold at temperature for 8 hrs.
Material Components Properties	Metric	English	Comments
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 %	