

<b>Aluminum 7075-T6; 7075-T651</b>	
<b>Categories:</b>	<a href="#">Metal</a> ; <a href="#">Nonferrous Metal</a> ; <a href="#">Aluminum Alloy</a> ; <a href="#">7000 Series Aluminum Alloy</a>
<b>Material Notes:</b>	<p>General 7075 characteristics and uses (from Alcoa): Very high strength material used for highly stressed structural parts. The T7351 temper offers improved stress-corrosion cracking resistance.</p> <p><b>Applications:</b> Aircraft fittings, gears and shafts, fuse parts, meter shafts and gears, missile parts, regulating valve parts, worm gears, keys, aircraft, aerospace and defense applications; bike frames, all terrain vehicle (ATV) sprockets.</p> <p>Data points with the AA note have been provided by the Aluminum Association, Inc. and are NOT FOR DESIGN.</p> <p><b>Composition Notes:</b> A Zr + Ti limit of 0.25 percent maximum may be used with this alloy designation for extruded and forged products only, but only when the supplier or producer and the purchaser have mutually so agreed. Agreement may be indicated, for example, by reference to a standard, by letter, by order note, or other means which allow the Zr + Ti limit. Composition information provided by the Aluminum Association and is not for design.</p>
<b>Key Words:</b>	Aluminium 7075-T6; Aluminium 7075-T651, UNS A97075; ISO AlZn5.5MgCu; Aluminium 7075-T6; Aluminium 7075-T651; AA7075-T6
<b>Vendors:</b>	<p><a href="#">Click here</a> to view all available suppliers for this material.</p> <p>Please <a href="#">click here</a> if you are a supplier and would like information on how to add your listing to this material.</p>

<b>Physical Properties</b>	<b>Metric</b>	<b>English</b>	<b>Comments</b>
Density	<a href="#">2.81</a> g/cc	<a href="#">0.102</a> lb/in <sup>3</sup>	AA; Typical
<b>Mechanical Properties</b>	<b>Metric</b>	<b>English</b>	<b>Comments</b>
Hardness, Brinell	150	150	AA; Typical; 500 g load; 10 mm ball
Hardness, Knoop	191	191	Converted from Brinell Hardness Value
Hardness,	53.5	53.5	Converted from Brinell Hardness Value

Rockwell A			
Hardness, Rockwell B	87	87	Converted from Brinell Hardness Value
Hardness, Vickers	175	175	Converted from Brinell Hardness Value
Ultimate Tensile Strength	572 MPa	83.0 ksi	AA; Typical
Tensile Yield Strength	503 MPa	73.0 ksi	AA; Typical
Elongation at Break	11.0 %	11.0 %	AA; Typical; 1/16 in. (1.6 mm) Thickness
	11.0 %	11.0 %	AA; Typical; 1/2 in. (12.7 mm) Diameter
Modulus of Elasticity	71.7 GPa	10400 ksi	AA; Typical; Average of tension and compression. Compression modulus is about 2% greater than tensile modulus.
Poissons Ratio	0.330	0.330	
Fatigue Strength	159 MPa @# of Cycles 5.00e+8	23000 psi @# of Cycles 5.00e+8	completely reversed stress; RR Moore machine/specimen
Fracture Toughness	20.0 MPa-m <sup>1/2</sup>	18.2 ksi-in <sup>1/2</sup>	K(IC) in S-L Direction
	25.0 MPa-m <sup>1/2</sup>	22.8 ksi-in <sup>1/2</sup>	K(IC) in T-L Direction
	29.0 MPa-m <sup>1/2</sup>	26.4 ksi-in <sup>1/2</sup>	K(IC) in L-T Direction
Machinability	70 %	70 %	0-100 Scale of Aluminum Alloys
Shear Modulus	26.9 GPa	3900 ksi	
Shear Strength	331 MPa	48000 psi	AA; Typical
<b>Electrical Properties</b>	<b>Metric</b>	<b>English</b>	<b>Comments</b>
Electrical Resistivity	0.00000515 ohm-cm	0.00000515 ohm-cm	AA; Typical at 68°F
<b>Thermal Properties</b>	<b>Metric</b>	<b>English</b>	<b>Comments</b>
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	average

Specific Heat Capacity	0.960 J/g-°C	0.229 BTU/lb-°F	
Thermal Conductivity	130 W/m-K	900 BTU-in/hr-ft <sup>2</sup> -°F	AA; Typical at 77°F
Melting Point	477 - 635.0 °C	890 - 1175 °F	AA; Typical range based on typical composition for wrought products 1/4 inch thickness or greater. Homogenization may raise eutectic melting temperature 20-40°F but usually does not eliminate eutectic melting.
Solidus	477 °C	890 °F	AA; Typical
Liquidus	635.0 °C	1175 °F	AA; Typical
<b>Processing Properties</b>	<b>Metric</b>	<b>English</b>	<b>Comments</b>
Annealing Temperature	413 °C	775 °F	
Solution Temperature	466 - 482 °C	870 - 900 °F	
Aging Temperature	121 °C	250 °F	
<b>Material Components Properties</b>	<b>Metric</b>	<b>English</b>	<b>Comments</b>
Aluminum, Al	87.1 - 91.4 %	87.1 - 91.4 %	As remainder
Chromium, Cr	0.18 - 0.280 %	0.18 - 0.280 %	
Copper, Cu	1.20 - 2.0 %	1.20 - 2.0 %	
Iron, Fe	<= 0.50 %	<= 0.50 %	
Magnesium, Mg	2.10 - 2.90 %	2.10 - 2.90 %	
Manganese, Mn	<= 0.30 %	<= 0.30 %	
Other, each	<= 0.050 %	<= 0.050 %	
Other, total	<= 0.15 %	<= 0.15 %	
Silicon, Si	<= 0.40 %	<= 0.40 %	
Titanium, Ti	<= 0.20 %	<= 0.20 %	
Zinc, Zn	5.10 - 6.10 %	5.10 - 6.10 %	