



ASM Aerospace Specification Metals Inc.



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## Aluminum 7075-O

**Subcategory:** 7000 Series Aluminum Alloy; Aluminum Alloy; Metal; Nonferrous Metal

### Close Analogs:

### Composition Notes:

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.

Aluminum content reported is calculated as remainder.

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

**Key Words:** UNS A97075; ISO AlZn5.5MgCu(A); Aluminium 7075-O; AA7075-O

Component	Wt. %	Component	Wt. %	Component	Wt. %
Al	87.1 - 91.4	Mg	2.1 - 2.9	Si	Max 0.4
Cr	0.18 - 0.28	Mn	Max 0.3	Ti	Max 0.2
Cu	1.2 - 2	Other, each	Max 0.05	Zn	5.1 - 6.1
Fe	Max 0.5	Other, total	Max 0.15		

### Material Notes:

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.

**Uses:** Aircraft fittings, gears and shafts, fuse parts, meter shafts and gears, missile parts, regulating valve parts, worm gears, keys, aircraft, aerospace and defense applications.

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>2.81 g/cc</u>	0.102 lb/in <sup>3</sup>	AA; Typical

### Mechanical Properties

Hardness, Brinell	60	60	AA; Typical; 500 g load; 10 mm ball
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Hardness, Knoop	80	80	Converted from Brinell Hardness Value
Hardness, Vickers	68	68	Converted from Brinell Hardness Value
Ultimate Tensile Strength	<u>228 MPa</u>	33000 psi	AA; Typical
Tensile Yield Strength	<u>103 MPa</u>	15000 psi	AA; Typical
Elongation at Break	<u>16 %</u>	16 %	AA; Typical; 1/2 in. (12.7 mm) Diameter
Elongation at Break	<u>17 %</u>	17 %	AA; Typical; 1/16 in. (1.6 mm) Thickness
Modulus of Elasticity	<u>71.7 GPa</u>	10400 ksi	AA; Typical; Average of tension and compression. Compression modulus is about 2% greater than tensile modulus.
Poisson's Ratio	0.33	0.33	
Shear Modulus	<u>26.9 GPa</u>	3900 ksi	
Shear Strength	<u>152 MPa</u>	22000 psi	AA; Typical

### Electrical Properties

Electrical Resistivity	<u>3.8e-006 ohm-cm</u>	3.8e-006 ohm-cm
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### Thermal Properties

CTE, linear 68°F	<u>23.6 <math>\mu\text{m}/\text{m}\cdot^\circ\text{C}</math></u>	13.1 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$	AA; Typical; Average over 68-212°F range.
CTE, linear 250°C	<u>25.2 <math>\mu\text{m}/\text{m}\cdot^\circ\text{C}</math></u>	14 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$	Average over the range 20-300°C
Specific Heat Capacity	<u>0.96 J/g<math>\cdot^\circ\text{C}</math></u>	0.229 BTU/lb $\cdot^\circ\text{F}$	
Thermal Conductivity	<u>173 W/m-K</u>	1200 BTU-in/hr-ft $^2\cdot^\circ\text{F}$	
Melting Point	477 - 635 °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	<u>477 °C</u>	890 °F	AA; Typical
Liquidus	<u>635 °C</u>	1175 °F	AA; Typical

### Processing Properties

Annealing Temperature	<u>413 °C</u>	775 °F
Solution Temperature	466 - 482 °C	870 - 900 °F

### 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.