Aluminum 7075-T73; 7075-T735x

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: AA7075-T73; AA7075-T735, UNS A97075; ISO AlZn5.5MgCu; Aluminium 7075-T73; Aluminium 7075-T735x

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	2.81 g/cc	0.102 lb/in³	AA; Typical
Mechanical Properties			

Hardness, Brinell	135	135	500 kg load with 10 mm ball. Calculated value.
Hardness, Knoop	120	120	Converted from Brinell Hardness Value
Hardness, Rockwell A	50.5	50.5	Converted from Brinell Hardness Value
Hardness, Rockwell B	82	82	Converted from Brinell Hardness Value
Hardness, Vickers	155	155	Converted from Brinell Hardness Value
Tensile Strength, Ultimate	505 MPa	73200 psi	
Tensile Strength, Yield	435 MPa	63100 psi	
Elongation at Break	13 %	13 %	In 5 cm; Sample 1.6 mm thick
Modulus of Elasticity	72 GPa	10400 ksi	Average of Tension and Compression. In Aluminum alloys, the compressive modulus is typically 2% greater than the tensile modulus
Poisson's Ratio	0.33	0.33	
Fatigue Strength	150 MPa	21800 psi	500,000,000 Cycles
Fracture Toughness	20 MPa-m½	18.2 ksi-in½	Plate. K(IC) in SL direction
Fracture Toughness	20 MPa-m½	18.2 ksi-in½	Plate. K(IC) in T-L direction
Fracture Toughness	32 MPa-m½	29.1 ksi-in½	Plate. K(IC) in L-T Direction
Machinability	70 %	70 %	0-100 Scale of Aluminum Alloys
Shear Modulus	26.9 GPa	3900 ksi	
Shear Strength	300 MPa	43500 psi	Calculated value.

Electrical Properties

Electrical Resistivity	4.3e-006 ohm-cm	4.3e-006 ohm-cm	

Thermal Properties

CTE, linear 68°F	23.6 µm/m-°C	13.1 µin/in-°F	AA; Typical; Average over 68-212°F range.
CTE, linear 250°C	25.2 µm/m-°C	14 µin/in-°F	Average over the range 20-300ºC
Specific Heat Capacity	0.96 J/g-°C	0.229 BTU/lb-°F	
Thermal Conductivity	155 W/m-K	1080 BTU-in/hr-ft²-°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	477 °C	890 °F	AA; Typical
Liquidus	635 °C	1175 °F	AA; Typical

Processing Properties

Annealing Temperature	413 °C	775 °F	
Solution Temperature	466 - 482 °C	870 - 900 °F	
Aging Temperature	107 °C	225 °F	two stage treatment - second stage 325 to 350°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 consistant 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.