

Aluminum 356.0-T6, Sand Cast

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

Material Notes: Data points with the AA note have been provided by the Aluminum Association, Inc. and are NOT FOR DESIGN.

Composition Notes:


If iron exceeds 0.45%, manganese content shall not be less than one-half iron content.
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Key Words: Aluminium 356.0-T6; UNS A03560; ISO 3522 and R2147 AISi7Mg; AA356.0-T6

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Physical Properties	Metric	English	Comments
Density	2.68 g/cc	0.0968 lb/in ³	AA; Typical
Mechanical Properties	Metric	English	Comments
Hardness, Brinell	55 - 90	55 - 90	AA; Typical; 500 g load; 10 mm ball
Hardness, Knoop	96	96	Estimated from Brinell Hardness.
Hardness, Vickers	83	83	Estimated from Brinell Hardness.
Tensile Strength, Ultimate	>= 207 MPa	>= 30000 psi	AA
Tensile Strength, Yield	>= 138 MPa @Strain 0.200 %	>= 20000 psi @Strain 0.200 %	AA
Elongation at Break	>= 3.0 %	>= 3.0 %	AA; in 2 in. (50 mm) or 4D
Modulus of Elasticity	72.4 GPa	10500 ksi	In Tension; elastic modulus in compression is typically about 2% higher for aluminum alloys.
Compressive Yield Strength	170 MPa	24700 psi	
Poissons Ratio	0.33	0.33	
Fatigue Strength	60.0 MPa @# of Cycles 5.00e+8	8700 psi @# of Cycles 5.00e+8	Notch Status unknown, R.R. Moore Test
Machinability	50 %	50 %	0-100 Scale (100=best)
Shear Modulus	27.2 GPa	3950 ksi	
Shear Strength	180 MPa	26100 psi	
Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.00000440 ohm-cm	0.00000440 ohm-cm	AA; Typical 39% IACS Conductivity
Thermal Properties	Metric	English	Comments
Heat of Fusion	389 J/g	167 BTU/lb	
CTE, linear 	21.4 µm/m-°C @Temperature 20.0 - 100 °C	11.9 µin/in-°F @Temperature 68.0 - 212 °F	AA; Typical
	23.2 µm/m-°C @Temperature 20.0 - 300 °C	12.9 µin/in-°F @Temperature 68.0 - 572 °F	AA; Typical; average over range
Specific Heat Capacity	0.963 J/g-°C	0.230 BTU/lb-°F	
Thermal Conductivity	151 W/m-K	1040 BTU-in/hr-ft ² -°F	AA; Typical at 25°C
Melting Point	557.2 - 612.8 °C	1035 - 1135 °F	AA; Typical
Solidus	557.2 °C	1035 °F	AA; Typical
Liquidus	612.8 °C	1135 °F	AA; Typical
Processing Properties	Metric	English	Comments
Melt Temperature	677 - 816 °C	1250 - 1500 °F	
Solution Temperature	535 - 540.6 °C	995 - 1005 °F	hold at temperature for 12 hr; cool in water at 150 to 212°F
Aging Temperature	152 - 157 °C	305 - 315 °F	hold at temperature 2 - 5 hrs; start with solution heat-treated material
Casting Temperature	677 - 788 °C	1250 - 1450 °F	
Component Elements Properties	Metric	English	Comments
Aluminum, Al	90.1 - 93.3 %	90.1 - 93.3 %	As remainder
Copper, Cu	<= 0.25 %	<= 0.25 %	
Iron, Fe	<= 0.60 %	<= 0.60 %	
Magnesium, Mg	0.20 - 0.45 %	0.20 - 0.45 %	
Manganese, Mn	<= 0.35 %	<= 0.35 %	
Other, each	<= 0.05 %	<= 0.05 %	
Other, total	<= 0.15 %	<= 0.15 %	

SILICON, Si	0.5 - 1.5 %	0.5 - 1.5 %
Titanium, Ti	<= 0.25 %	<= 0.25 %
Zinc, Zn	<= 0.35 %	<= 0.35 %

[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.