

Aluminum 319.0-F, 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:

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

Key Words: Aluminium 319.0-F; UNS A03190; AA319.0-F, ISO 3522: AISi5Cu3, AISi5Cu3Mn; AISi6Cu4; AISi6Cu4Mn. ISO R164: AISi5Cu3; AISi5Cu3Fe; AISi6Cu4; ISO 3522: AISi5Cu3

Vendors: No vendors are listed for this material. Please [click here](#) if you are a supplier and would like information on how to add your listing to this material.

Physical Properties	Metric	English	Comments
Density	2.79 g/cc	0.101 lb/in ³	AA; Typical

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	55.0 - 85.0	55.0 - 85.0	AA; Typical; 500 g load; 10 mm ball
Hardness, Knoop	93	93	Estimated from Brinell Hardness.
Hardness, Vickers	80	80	Estimated from Brinell Hardness.
Ultimate Tensile Strength	>= 159 MPa	>= 23.0 ksi	AA
Tensile Yield Strength	>= 89.6 MPa	>= 13.0 ksi	AA; 0.2% Offset
Elongation at Break	>= 1.50 %	>= 1.50 %	AA; in 2 in. (50 mm) or 4D
Modulus of Elasticity	74.0 GPa	10700 ksi	In Tension; elastic modulus in compression is typically about 2% higher for aluminum alloys.
Compressive Yield Strength	130 MPa	18900 psi	
Poissons Ratio	0.330	0.330	
Fatigue Strength	70.0 MPa @# of Cycles 5.00e+8	10200 psi @# of Cycles 5.00e+8	Notch Status unknown, R.R. Moore Test
Machinability	50 %	50 %	0-100 Scale (100=best)
Shear Modulus	28.0 GPa	4060 ksi	
Shear Strength	150 MPa	21800 psi	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.00000640 ohm-cm	0.00000640 ohm-cm	AA; Typical 27% 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
	22.9 µm/m-°C @Temperature 20.0 - 300 °C	12.7 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	109 W/m-K	754 BTU-in/hr-ft ² -°F	AA; Typical at 25°C
Melting Point	516 - 604 °C	960 - 1120 °F	AA; Typical
Solidus	516 °C	960 °F	AA; Typical
Liquidus	604 °C	1120 °F	AA; Typical

Processing Properties	Metric	English	Comments
Melt Temperature	677 - 816 °C	1250 - 1500 °F	
Solution Temperature	502 - 507 °C	935 - 945 °F	hold at temperature 12 hr, cool in water at 150 to 212°F
Casting Temperature	677 - 788 °C	1250 - 1450 °F	

Material Components Properties	Metric	English	Comments
Aluminum, Al	85.8 - 91.5 %	85.8 - 91.5 %	As remainder
Copper, Cu	3.0 - 4.0 %	3.0 - 4.0 %	
Iron, Fe	<= 1.0 %	<= 1.0 %	
Magnesium, Mg	<= 0.10 %	<= 0.10 %	
Manganese, Mn	<= 0.50 %	<= 0.50 %	
Nickel, Ni	<= 0.35 %	<= 0.35 %	
Other, total	<= 0.50 %	<= 0.50 %	
Silicon, Si	5.50 - 6.50 %	5.50 - 6.50 %	
Titanium, Ti	<= 0.25 %	<= 0.25 %	
Zinc, Zn	<= 1.0 %	<= 1.0 %	

[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 disclaimer and terms of use regarding this information. [Click here](#) to view all the property values for this datasheet as they were originally entered into MatWeb.