



ASM Aerospace Specification Metals Inc.



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Aluminum 5086-H116; 5086-H32

Subcategory: 5000 Series Aluminum Alloy; Aluminum Alloy; Metal; Nonferrous Metal

Close Analogs:

Composition Notes:

Aluminum content reported is calculated as remainder.

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

Key Words: UNS A95086; ISO AIMg4; Aluminium 5086-H116; AA5086-H116, UNS A95086; ISO AIMg4; Aluminium 5086-H32; AA5086-H32

Component	Wt. %	Component	Wt. %	Component	Wt. %
Al	93 - 96.3	Mg	3.5 - 4.5	Si	Max 0.4
Cr	0.05 - 0.25	Mn	0.2 - 0.7	Ti	Max 0.15
Cu	Max 0.1	Other, each	Max 0.05	Zn	Max 0.25
Fe	Max 0.5	Other, total	Max 0.15		

Material Notes:

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>2.66 g/cc</u>	0.0961 lb/in ³	AA; Typical

Mechanical Properties

Hardness, Brinell	78	78	500 kg load with 10 mm ball. Calculated value.
Hardness, Knoop	101	101	Converted from Brinell Hardness Value
Hardness, Vickers	88	88	Converted from Brinell Hardness Value
Ultimate Tensile Strength	<u>290 MPa</u>	42000 psi	AA; Typical
Tensile Yield Strength	<u>207 MPa</u>	30000 psi	AA; Typical
Elongation at Break	<u>12 %</u>	12 %	AA; Typical; 1/16 in. (1.6 mm) Thickness
Modulus of Elasticity	<u>71 GPa</u>	10300 ksi	In Tension

Modulus of Elasticity	<u>71 GPa</u>	10300 ksi	AA; Typical; Average of tension and compression. Compression modulus is about 2% greater than tensile modulus.
Compressive Modulus	<u>72.4 GPa</u>	10500 ksi	
Ultimate Bearing Strength	<u>552 MPa</u>	80100 psi	Edge distance/pin diameter = 2.0
Bearing Yield Strength	<u>331 MPa</u>	48000 psi	Edge distance/pin diameter = 2.0
Poisson's Ratio	0.33	0.33	
Fatigue Strength	<u>150 MPa</u>	21800 psi	5 E+8 cycles unnotched R. R. Moore rotating beam
Fracture Toughness	<u>49 MPa-m^{1/2}</u>	44.6 ksi-in ^{1/2}	K _{IC} ; TL orientation.
Machinability	<u>30 %</u>	30 %	0-100 Scale of Aluminum Alloys
Shear Modulus	<u>26.4 GPa</u>	3830 ksi	
Shear Strength	<u>175 MPa</u>	25400 psi	Calculated value.

Electrical Properties

Electrical Resistivity	<u>5.49e-006 ohm-cm</u>	5.49e-006 ohm-cm	AA; Typical at 68°F
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Thermal Properties

CTE, linear 68°F	<u>23.8 μm/m-°C</u>	13.2 μin/in-°F	AA; Typical; Average over 68-212°F range.
CTE, linear 250°C	<u>25.8 μm/m-°C</u>	14.3 μin/in-°F	Average over the range 20-300°C
Specific Heat Capacity	<u>0.9 J/g-°C</u>	0.215 BTU/lb-°F	
Thermal Conductivity	<u>125 W/m-K</u>	870 BTU-in/hr-ft ² -°F	AA; Typical at 77°F
Melting Point	585 - 641 °C	1085 - 1185 °F	AA; Typical range based on typical composition for wrought products 1/4 inch thickness or greater
Solidus	<u>585 °C</u>	1085 °F	AA; Typical
Liquidus	<u>641 °C</u>	1185 °F	AA; Typical

Processing Properties

Annealing Temperature	<u>343 °C</u>	650 °F	holding at temperature not required
Hot-Working Temperature	316 - 482 °C	600 - 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.