



ASM Aerospace Specification Metals Inc.



Contact Us

## Aluminum 5086-O

**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 AlMg4; Aluminium 5086-O; AA5086-O

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 <sup>3</sup>	AA; Typical

### Mechanical Properties

Hardness, Brinell	70	70	500 kg load with 10 mm ball. Calculated value.
Hardness, Knoop	93	93	Converted from Brinell Hardness Value
Hardness, Vickers	80	80	Converted from Brinell Hardness Value
Ultimate Tensile Strength	<u>262 MPa</u>	38000 psi	AA; Typical
Tensile Yield Strength	<u>117 MPa</u>	17000 psi	AA; Typical
Elongation at Break	<u>22 %</u>	22 %	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	
Notched Tensile Strength	<u>234 MPa</u>	33900 psi	2.5 cm width x 0.16 cm thick side-notched specimen, $K_t = 17$ .
Ultimate Bearing Strength	<u>483 MPa</u>	70100 psi	Edge distance/pin diameter = 2.0
Bearing Yield Strength	<u>193 MPa</u>	28000 psi	Edge distance/pin diameter = 2.0
Poisson's Ratio	0.33	0.33	
Fatigue Strength	<u>145 MPa</u>	21000 psi	5 E+8 cycles unnotched R. R. Moore rotating beam
Machinability	<u>30 %</u>	30 %	0-100 Scale of Aluminum Alloys
Shear Modulus	<u>26.4 GPa</u>	3830 ksi	
Shear Strength	<u>159 MPa</u>	23000 psi	AA; Typical

### Electrical Properties

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

### Thermal Properties

CTE, linear 68°F	<u>23.8 <math>\mu\text{m/m-}^\circ\text{C}</math></u>	13.2 $\mu\text{in/in-}^\circ\text{F}$	AA; Typical; Average over 68-212°F range.
CTE, linear 250°C	<u>25.8 <math>\mu\text{m/m-}^\circ\text{C}</math></u>	14.3 $\mu\text{in/in-}^\circ\text{F}$	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 <sup>2</sup> -°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.