



ASM Aerospace Specification Metals Inc.



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Aluminum 2024-T851

Subcategory: 2000 Series Aluminum Alloy; Aluminum Alloy; Metal; Nonferrous Metal

Close Analogs:

Composition Notes:

A Zr + Ti limit of 0.20 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: Aluminium 2024-T851; AA2024-T851; UNS A92024

Component	Wt. %	Component	Wt. %	Component	Wt. %
Al	90.7 - 94.7	Mg	1.2 - 1.8	Si	Max 0.5
Cr	Max 0.1	Mn	0.3 - 0.9	Ti	Max 0.15
Cu	3.8 - 4.9	Other, each	Max 0.05	Zn	Max 0.25
Fe	Max 0.5	Other, total	Max 0.15		

Material Notes:

Weldability = C; Stress Corrosion Cracking Resistance = B; General Corrosion Resistance = D (A = best; E = worst). Good machinability and surface finish capabilities. A high strength material of adequate workability. Has largely superseded 2017 for structural applications.

Uses: Aircraft fittings, gears and shafts, bolts, clock parts, computer parts, couplings, fuse parts, hydraulic valve bodies, missile parts, munitions, nuts, pistons, rectifier parts, worm gears, fastening devices, veterinary and orthopedic equipment, structures.

Some data provided by Alcoa.

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>2.78 g/cc</u>	0.1 lb/in ³	AA; Typical

Mechanical Properties

Hardness, Brinell	128	128	500 kg load/10 mm ball
Hardness, Knoop	161	161	Estimated from Brinell
Hardness, Rockwell A	49	49	Estimated from Brinell
Hardness, Rockwell B	79	79	Estimated from Brinell
Hardness, Vickers	146	146	Estimated from Brinell
Tensile Strength, Ultimate	<u>Min 455 MPa</u>	Min 66000 psi	
Tensile Strength, Yield	<u>Min 400 MPa</u>	Min 58000 psi	
Elongation at Break	<u>5 %</u>	5 %	
Modulus of Elasticity	<u>72.4 GPa</u>	10500 ksi	Estimated from other heat treatments.
Poisson's Ratio	0.33	0.33	Estimated from other heat treatments.
Fatigue Strength	<u>117 MPa</u>	17000 psi	500,000,000 cycles; completely reversed; R. R. Moore Machine and specimen.
Machinability	<u>70 %</u>	70 %	0-100 Scale (A=90; B=70; C=50; D=30; E=10)
Shear Modulus	<u>27 GPa</u>	3920 ksi	Estimated from similar Al alloys.
Shear Strength	<u>296 MPa</u>	42900 psi	

Electrical Properties

Electrical Resistivity	<u>4.5e-006 ohm-cm</u>	4.5e-006 ohm-cm
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Thermal Properties

CTE, linear 68°F	<u>23.2 μm/m-°C</u>	12.9 μin/in-°F	AA; Typical; Average over 68-212°F range.
CTE, linear 250°C	<u>24.7 μm/m-°C</u>	13.7 μin/in-°F	Average over the range 20-300°C
Specific Heat Capacity	<u>0.875 J/g-°C</u>	0.209 BTU/lb-°F	
Thermal Conductivity	<u>151 W/m-K</u>	1050 BTU-in/hr-ft ² -°F	
Melting Point	502 - 638 °C	935 - 1180 °F	AA; Typical range based on typical composition for wrought products 1/4 inch thickness or greater. Eutectic melting is not eliminated by homogenization.
Solidus	<u>502 °C</u>	935 °F	AA; Typical
Liquidus	<u>638 °C</u>	1180 °F	AA; Typical

Processing Properties

Annealing Temperature	<u>413 °C</u>	775 °F
Solution Temperature	<u>256 °C</u>	493 °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.