

Aluminum 5052-H32

Categories: [Metal](#); [Nonferrous Metal](#); [Aluminum Alloy](#); [5000 Series Aluminum Alloy](#)


Material Notes: This alloy has good workability, very good corrosion resistance, high fatigue strength, weldability, and moderate strength. This leads to its use in aircraft fuel/oil lines, fuel tanks, other transportation areas, sheet metal work, appliances and lighting, wire, and rivets.

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: UNS A95052; ISO AIMg2.5; Aluminium 5052-H32; AA5052-H32

Physical Properties	Metric	English	Comments
Density	<u>2.68</u> g/cc	<u>0.0968</u> lb/in ³	AA; Typical
Mechanical Properties	Metric	English	Comments
Hardness, Brinell	60	60	AA; Typical; 500 g load; 10 mm ball
Hardness, Knoop	83	83	Converted from Brinell Hardness Value
Hardness, Vickers	68	68	Converted from Brinell Hardness Value
Tensile Strength, Ultimate	<u>228</u> MPa	<u>33000</u> psi	AA; Typical
Tensile Strength, Yield	<u>193</u> MPa	<u>28000</u> psi	AA; Typical
Elongation at Break	12.0 % @Thickness 1.59 mm	12.0 % @Thickness 0.0625 in	AA; Typical
	18.0 % @Diameter 12.7 mm	18.0 % @Diameter 0.500 in	AA; Typical
Modulus of Elasticity	<u>70.3</u> GPa	<u>10200</u> ksi	AA; Typical; Average of tension and compression. Compression modulus is about 2% greater than tensile modulus.
Poissons Ratio	0.330	0.330	
Fatigue Strength	<u>117</u> MPa @# of Cycles 5.00e+8	<u>17000</u> psi @# of Cycles 5.00e+8	completely reversed stress; RR Moore machine/specimen
Shear Modulus	<u>25.9</u> GPa	<u>3760</u> ksi	
Shear Strength	<u>138</u> MPa	<u>20000</u> psi	AA; Typical
Electrical Properties	Metric	English	Comments
Electrical Resistivity	<u>0.00000499</u> ohm-cm @Temperature 20.0 °C	<u>0.00000499</u> ohm-cm @Temperature 68.0 °F	AA; Typical
Thermal Properties	Metric	English	Comments
 CTE, linear	<u>22.1</u> µm/m-°C @Temperature -50.0 - 20.0 °C	<u>12.3</u> µin/in-°F @Temperature -58.0 - 68.0 °F	
	<u>23.8</u> µm/m-°C @Temperature 20.0 - 100 °C	<u>13.2</u> µin/in-°F @Temperature 68.0 - 212 °F	AA; Typical; average over range
	<u>23.8</u> µm/m-°C @Temperature 20.0 - 100 °C	<u>13.2</u> µin/in-°F @Temperature 68.0 - 212 °F	
	<u>24.8</u> µm/m-°C @Temperature 20.0 - 200 °C	<u>13.8</u> µin/in-°F @Temperature 68.0 - 392 °F	
	<u>25.7</u> µm/m-°C @Temperature 20.0 - 300 °C	<u>14.3</u> µin/in-°F @Temperature 68.0 - 572 °F	
	<u>25.7</u> µm/m-°C @Temperature 20.0 - 300 °C	<u>14.3</u> µin/in-°F @Temperature 68.0 - 572 °F	average
	<u>0.880</u> J/g-°C	<u>0.210</u> BTU/lb-°F	Estimated from trends in similar Al alloys.
	Specific Heat Capacity		
Thermal Conductivity	<u>138</u> W/m-K	<u>960</u> BTU-in/hr-ft ² -°F	AA; Typical at 77°F

Melting Point	<u>607.2</u> - <u>649</u> °C	<u>1125</u> - <u>1200</u> °F	AA; Typical range based on typical composition for wrought products 1/4 inch thickness or greater
Solidus	<u>607.2</u> °C	<u>1125</u> °F	AA; Typical
Liquidus	<u>649</u> °C	<u>1200</u> °F	AA; Typical

Processing Properties	Metric	English	Comments
Annealing Temperature	<u>343</u> °C	<u>650</u> °F	holding at temperature not required
Hot-Working Temperature	<u>260</u> - <u>510</u> °C	<u>500</u> - <u>950</u> °F	

Component Elements Properties	Metric	English	Comments
Aluminum, Al	95.7 - 97.7 %	95.7 - 97.7 %	As remainder
Chromium, Cr	0.15 - 0.35 %	0.15 - 0.35 %	
Copper, Cu	<= 0.10 %	<= 0.10 %	
Iron, Fe	<= 0.40 %	<= 0.40 %	
Magnesium, Mg	2.20 - 2.80 %	2.20 - 2.80 %	
Manganese, Mn	<= 0.10 %	<= 0.10 %	
Other, each	<= 0.050 %	<= 0.050 %	
Other, total	<= 0.15 %	<= 0.15 %	
Silicon, Si	<= 0.25 %	<= 0.25 %	
Zinc, Zn	<= 0.10 %	<= 0.10 %	

[References](#) for this datasheet.

This data is for reference only and is not intended for engineer or design. Please consult a Clinton aluminum authorized representative.



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