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Aluminum 5052-H32 Material Notes

Component	Wt%	Component	Wt%	Component	Wt%
Al	95.70	Mg	2.2 – 2.8	Other, total	Max 0.15
Cr	0.15 – 0.35	Mn	Max 0.1	Si	Max 0.25
Cu	Max 0.10	Other, Each	Max 0.5	Zn	Max 0.10
Fe	Max 0.40				

Physical Properties	Metric	English	Comments
Density	2.68 g/cc	0.0968 lb/in ³	AA; Typical
Mechanical Properties			
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
Ultimate Tensile Strength	228 MPa	33000 psi	AA; Typical
Tensile Yield Strength	193 MPa	28000 psi	AA; Typical
Elongation at Break	12 %	12 %	AA; Typical; 1/16 in. (1.6 mm) Thickness
Elongation at Break	18 %	18 %	AA; Typical; 1/2 in. (12.7 mm) Diameter
Modulus of Elasticity	70.3 GPa	10200 ksi	AA; Typical; Average of tension and compression. Compression modulus is about 2% greater than tensile modulus.
Poisson's Ratio	0.33	0.33	
Fatigue Strength	117 MPa	17000 psi	AA; 500,000,000 cycles completely reversed stress; RR Moore machine/specimen
Shear Modulus	25.9 GPa	3760 ksi	
Shear Strength	138 MPa	20000 psi	AA; Typical
Electrical Properties			
Electrical Resistivity	4.99e-006 ohm-cm	4.99e-006 ohm-cm	AA; Typical at 68°F
Thermal Properties			
CTE, linear 68°F	23.8 μm/m-°C	13.2 μin/in-°F	AA; Typical; Average over 68-212°F range.
CTE, linear 250°C	25.7 μm/m-°C	14.3 μin/in-°F	Average over the range 20-300°C
Specific Heat Capacity	0.88 J/g-°C	0.21 BTU/lb-°F	Estimated from trends in similar Al alloys.
Thermal Conductivity	138 W/m-K	960 BTU-in/hr-ft ² -°F	AA; Typical at 77°F
Melting Point	607 - 649 °C	1125 - 1200 °F	AA; Typical range based on typical composition for wrought products 1/4 inch thickness or greater
Solidus	607 °C	1125 °F	AA; Typical
Liquidus	649 °C	1200 °F	AA; Typical
Processing Properties			
Annealing	343 °C	650 °F	holding at temperature not required

Temperature			
Hot-Working Temperature	260 - 510 °C	500 - 950 °F	