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## Aluminum 1350-0

Categories:	Metal; Nonferrous Metal; Aluminum Alloy; 1000 Series Aluminum		
Material Notes:	Data points with the AA note have been provided by the Aluminum Association, Inc. and are NOT FOR DESIGN.		
Composition Notes:	The aluminum content for unalloyed aluminum not made by a refining process is the difference between 100.00% and the sum of all other analyzed metallic elements present in amounts of 0.010% of more each, expressed to the second decimal before determining the sum. For alloys and unalloyed aluminum not made by refining process, when the specified maximum limit is 0.XX, an observed value or a calculated value greater than 0.005 but less than 0.010% is rounded off and shown as "less than 0.01%".		
Key Words:	Composition information provided by the Aluminum Association and is not for design. Aluminum 1350-0; Electrical Conductor Grade (EC); UNS A91350; NF A5/L (France); AA1350-0, BS1E (UK); DIN E-A199.5		
<b>Physical Properties</b>	<b>Metric</b>	<b>English</b>	<b>Comments</b>
Density	2.705 g/cc	0.09772 lb. / in <sup>3</sup>	AA; Typical
<b>Mechanical Properties</b>	<b>Metric</b>	<b>English</b>	<b>Comments</b>
Hardness, Brinell	23	23	500 kg. load with 10 mm ball. Calculated vaule.
Ultimate Tensile Strength	82.7 MPa	12.0 ksi	AA; Typical
Tensile Yield Strength	27.6 MPa	4.00 ksi	AA; Typical
Elongation at Break	> = 23.0 %	> = 23.0 %3	AA; Wire in 10 inches.
Modulus of Elasticity	68.9GPa	10000 ksi	AA; Typical: Average of tension and compression. Compression modulus is about 2% greater than tensile modulus.
Poissons Ratio	0.33	0.33	
Machinability	10.00%	10.00%	0 - 1000 Scale of Aluminum Alloys
Shear Modulus	26.0 GPa	3770 ksi	Calculated
Shear Strength	55.2 MPa	8000 ksi	AA; Typical
<b>Electrical Properties</b>	<b>Metric</b>	<b>English</b>	<b>Comments</b>
Electrical Resistivity	0.00000283 ohm-cm	0.00000283 ohm-cm	AA; Typical at 68 <sup>o</sup> F
<b>Thermal Properties</b>	<b>Metric</b>	<b>English</b>	<b>Comments</b>
Heat of Fusion	390 J/g	168 BTU/lb	
CTE, linear 68 <sup>o</sup> F	23.8 $\mu\text{m/m}\cdot\text{A}^{\circ}\text{C}$	13.2 $\mu\text{in/in}\cdot\text{A}^{\circ}\text{F}$	AA; Typical; Average over 68-212 <sup>o</sup> F range.
CTE, linear 250 <sup>o</sup> C	25.5 $\mu\text{m/m}\cdot\text{A}^{\circ}\text{C}$	14.2 $\mu\text{in/in}\cdot\text{A}^{\circ}\text{F}$	Average over the range 20-300 <sup>o</sup> C
Specific Heat Capacity	0.900 J/g $\cdot\text{A}^{\circ}\text{C}$	0.215 BTU /lb $\cdot\text{A}^{\circ}\text{F}$	
Thermal Conductivity	234.2 W/m-K	1625 BTU-in/hr-ft <sup>2</sup> $\cdot\text{A}^{\circ}\text{F}$	AA; Typical at 77 <sup>o</sup> F
Melting Point	646.1 - 657.2 $\text{A}^{\circ}\text{C}$	1195 - 1215 $\text{A}^{\circ}\text{F}$	AA; Typical range based on typical composition for wrought products 1/4 inch thickness or greater.
Solidus	646.1 $\text{A}^{\circ}\text{C}$	1195 $\text{A}^{\circ}\text{F}$	AA; Typical
Liquidus	646.1 $\text{A}^{\circ}\text{C}$	1215 $\text{A}^{\circ}\text{F}$	AA; Typical
<b>Processing Properties</b>	<b>Metric</b>	<b>English</b>	<b>Comments</b>
Annealing Temperature	343 $\text{A}^{\circ}\text{C}$	650 $\text{A}^{\circ}\text{F}$	
<b>Material Components Properties</b>	<b>Metric</b>	<b>English</b>	<b>Comments</b>
Aluminum, Al	>= 99.5 %	>= 99.5 %	
Boron, B	<= 0.0500 %	<= 0.0500 %	
Chromium, Cr	<= 0.0100 %	<= 0.0100 %	
Copper, Cu	<= 0.0500 %	<= 0.0500 %	
Gallium, Ga	<= 0.0300 %	<= 0.0300 %	
Iron, Fe	<= 0.400 %	<= 0.400 %	
Manganese, Mn	<= 0.0100 %	<= 0.0100 %	
Other, each	<= 0.0300 %	<= 0.0300 %	
Other, total	<= 0.100 %	<= 0.100 %	
Silicon, Si	<= 0.100 %	<= 0.100 %	
V+Ti	<= 0.0200 %	<= 0.0200 %	
Zinc, Zn	<= 0.0500 %	<= 0.0500 %	

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