HSM Wire International, Inc

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REQUEST A QUOTATION

Aluminum 1199-0

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 1199-O; Refined Aluminum; Raffinal; Super-purity Aluminum; UNS A91199; AA1199-O

Physical Properties	Metric	English	Comments
Density	2.70 g/cc	0.0975 lb. / in³	AA; Typical

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	12	12	500 kg. load with 10 mm ball. Calculated Value
Ultimate Tensile Strength	45.0 MPa	6530 psi	AA; Typical
Tensile Yield Strength	10.0 MPa	1450 psi	AA; Typical
Elongation at Break	50.00%	50/0%	In 5 cm; Sample 1.6 mm thick
Modulus of Elasticity	62.0 GPa	8990 ksi	In Tension; Compressive Modulus is about 2% higher.
Poissons Ratio	0.33	0.33	
Fatigue Strength	34.5 MPa @# of cycles 5.00e+8	5000 psi @# of cycles 5.00e+8	Completely reversed stress; RR Moore machine/specimen
Shear Modulus	25.0 GPa	3630 ksi	
Shear Strength	34.0 MPa	4930 psi	Calculated Value

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.00000270 ohm-cm	0.00000270 ohm-cm	

Thermal Properties	Metric	English	Comments
Heat of Fusion	390 J/g	168 BTU/lb	
CTE, linear	23.6 µm/m-°C @Temp 20.0 -100 ° C	13.1 µin/in-°F @ Temp 68.0 - 212 ° F	Average
	25.5 µm/m-°C @Temp 20.0 - 300 ° C	14.2 µin/in-°F @ Temp 68.0 - 572 ° F	
Specific Heat Capacity	0.900 J/g-°C	0.215 BTU /lb-°F	
Thermal Conductivity	243 W/m-K	1690 BTU-in/hr-ft²-°F	
Melting Point	660 °C	1200 °F	
Solidus	660 °C	1200 °F	
Liquidus	660 °C	1200°F	

Material Components Properties	Metric	English	Comments
Aluminum, Al	>= 99.99 %	>= 99.99 %	
Gallium, Ga	<= 0.0050 %	<= 0.0050 %	
Copper, Cu	<= 0.0060 %	<= 0.0060 %	
Iron, Fe	<= 0.0060 %	<= 0.0060 %	
Magnesium, Mg	<= 0.0060 %	<= 0.0060 %	
Manganese, Mn	<= 0.0020 %	<= 0.0020 %	
Other, each	<= 0.0020 %	<= 0.0020 %	
Silicon, Si	<= 0.0060 %	<= 0.0060 %	
Titanium, Ti	<= 0.0020 %	<= 0.0020 %	
Vanadium, V	<= 0.0050 %	<= 0.0050 %	
Zinc, Zn	<= 0.0060 %	<= 0.0060 %	

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