

Materion AlBeCast₂ IC910 Aluminum Beryllium Composite

Category : Metal , Metal Matrix Composite , Nonferrous Metal , Beryllium Alloy

Material Notes:

Mechanical properties are typical values at RT. AlBeCast₂ IC910 is an aluminum-beryllium alloy that combines the advantages of a net shape casting technology, investment casting, with the stiffness, thermal performance, and weight savings of Al/Be materials. The casting process requires little change from Al or Ti casting. Please note that there are health hazards associated with beryllium, especially when present as airborne particles generated during processing. As with any material, be aware of hazards and take steps to reduce exposure to a safe level. Information provided by Brush Wellman. Brush Engineered Materials Inc. changed its name to Materion Corporation in March 2011.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Materion-AlBeCast-IC910-Aluminum-Beryllium-Composite.php

Physical Properties	Metric	English	Comments
Density	2.17 g/cc	0.0784 lb/in ³	

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	207 MPa	30000 psi	
Tensile Strength, Yield	158 MPa @Strain 0.200 %	22900 psi @Strain 0.200 %	
Elongation at Break	4.0 %	4.0 %	
Modulus of Elasticity	193 GPa	28000 ksi	in tension. Dynamic modulus is 192 GPa.
Compressive Yield Strength	147 MPa	21300 psi	
Poissons Ratio	0.154	0.154	
Fatigue Strength	117 MPa @# of Cycles 1.00e+7	17000 psi @# of Cycles 1.00e+7	R=0.05; Kt = 2.16 MPa
Fracture Toughness	7.30 - 14.6 MPa-m ^{1/2}	6.64 - 13.3 ksi-in ^{1/2}	K _Q
Shear Modulus	84.0 GPa	12200 ksi	dynamic
Shear Strength	181 MPa	26300 psi	double pin shear (ASTM B-789)

Thermal Properties	Metric	English	Comments
CTE, linear	14.6 Åµm/m-Å°C @Temperature 20.0 Å°C	8.11 Åµin/in-Å°F @Temperature 68.0 Å°F	

Thermal Properties	16.0 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$ Metric	8.89 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$ English	Comments
	@Temperature 250 $\text{Å}^\circ\text{C}$	@Temperature 482 $\text{Å}^\circ\text{F}$	
	18.2 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$	10.1 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$	
	@Temperature 500 $\text{Å}^\circ\text{C}$	@Temperature 932 $\text{Å}^\circ\text{F}$	
Specific Heat Capacity	1.56 J/g- $\text{Å}^\circ\text{C}$	0.373 BTU/lb- $\text{Å}^\circ\text{F}$	
Thermal Conductivity	110 W/m-K	763 BTU-in/hr-ft $\text{Å}^2\cdot\text{Å}^\circ\text{F}$	

Component Elements Properties	Metric	English	Comments
Aluminum, Al	38 %	38 %	As remainder
Beryllium, Be	57 - 63 %	57 - 63 %	
Iron, Fe	<= 0.30 %	<= 0.30 %	
Nickel, Ni	2.1 - 3.4 %	2.1 - 3.4 %	
Oxygen, O	<= 0.24 %	<= 0.24 %	
Silicon, Si	<= 0.50 %	<= 0.50 %	

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