Materion AlBeMet® AM 162 Extruded Bar, Annealed

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

Material Notes:

Mechanical property values below are in the longitudinal direction; transverse values generally lower. This is a powder metallurgical product produced by gas atomization available as rod, bar, tube and sheet. These shapes are derived by consolidating the Al/Be powder by hot isostatic pressing (HIP) and cold isostatic pressing (CIP) followed by extrusion. The extruded bar is fabricated by CIP'ing the isotropic spherical Al/Be powder into semi-dense billets and then canning the billet for subsequent extrusion with a minimum of 4:1 reduction ratio.Used for heat sinks and structural parts in aircraft and satellite avionics because of its low density, high modulus, high thermal conductivity, low CTE, thermal stability and isotropic properties.Health hazards are associated with beryllium, especially when present as airborne particles generated during processing. Be aware of hazards and take steps to reduce exposure to a safe level.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-AlBeMet-AM-162-Extruded-Bar-Annealed.php

Physical Properties	Metric	English	Comments
Density	2.071 g/cc	0.07482 lb/in³	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell B	68	68	
	84	84	as-extruded
Tensile Strength, Ultimate	>= 379 MPa	>= 55000 psi	Minimum; longitudinal direction. (Transverse values generally lower).
	447 MPa	64800 psi	Typical; longitudinal direction. (Transverse values generally lower).
Tensile Strength, Yield	>= 276 MPa	>= 40000 psi	Minimum; longitudinal direction. (Transverse values generally lower).
	322 MPa	46700 psi	Typical; longitudinal direction. (Transverse values generally lower).
Elongation at Break	>= 7.0 %	>= 7.0 %	Minimum; longitudinal direction. (Transverse values generally lower).
	11 %	11 %	Typical; longitudinal direction. (Transverse values generally lower).
Modulus of Elasticity	193 GPa	28000 ksi	
Notched Tensile Strength	435 MPa	63100 psi	Sharp notch 'Longitudinal-Transverse' Average
	513 MPa	74400 psi	Sharp Notch Longitudinal Average Values
Ultimate Bearing Strength	333 MPa	48300 psi	Average value longitudinal-transverse is 333 MPa w/ bearing

Mechanical Properties	Metric	English	Comments
			strain 6.4%, e/D = 1.5.
	349 MPa	50600 psi	Average value longitudinal with bearing strain 8.9%.
Poissons Ratio	0.17	0.17	
Fatigue Strength	165 MPa @# of Cycles 1.00e+7	23900 psi @# of Cycles 1.00e+7	Transverse, R.R. Moore rotating beam, fully reversed cycles with R = 0.1
	207 MPa @# of Cycles 1.00e+7	30000 psi @# of Cycles 1.00e+7	Longitudinal, R.R. Moore rotating beam, fully reversed cycles with R = 0.1
Fracture Toughness	10.2 MPa-m½	9.28 ksi-in½	Average value K_{IC} SL orientation.
	10.8 MPa-m½	9.83 ksi-in½	Average value K_{IC} ST orientation.
	11.3 MPa-m½	10.3 ksi-in½	Average value K_{IC} TL orientation.
	23.9 MPa-m½	21.8 ksi-in½	Average value K_{IC} LT orientation.
Shear Modulus	82.0 GPa	11900 ksi	calculated
Shear Strength	260 MPa	37700 psi	Average transverse
	275 MPa	39900 psi	Average longitudinal

Thermal Properties	Metric	English	Comments
CTE, linear	13.91 µm/m-°C @Temperature 25.0 °C	7.728 µin/in-°F @Temperature 77.0 °F	
Specific Heat Capacity	1.56 J/g-°C @Temperature 20.0 °C	0.373 BTU/lb-°F @Temperature 68.0 °F	
Thermal Conductivity	210 W/m-K	1460 BTU-in/hr-ft²-°F	
Melting Point	644 - 1180 °C	1190 - 2160 °F	
Solidus	644 °C	1190 °F	
Liquidus	1180 °C	2160 °F	

Component Elements Properties	Metric	English	Comments
Aluminum, Al	38 %	38 %	As remainder
Beryllium, Be	60 - 64 %	60 - 64 %	
Carbon, C	0.00 - 0.10 %	0.00 - 0.10 %	

Component Elements Properties	Metric	English	Comments
Other, each	0.00 - 0.20 %	0.00 - 0.20 %	
Oxygen, O	0.00 - 1.0 %	0.00 - 1.0 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.00000350 ohm-cm @Temperature 20.0 °C	0.00000350 ohm-cm @Temperature 68.0 °F	

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