



# AlBeMet162 Material Properties

Properties for AlBeMet162. AlBeMet162 is a metal matrix composite of 62% beryllium and the balance aluminum.

## Mechanical:

	HIP'd	Extruded	Rolled
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### Specification Minimums

	ksi		MPa		ksi		MPa	
	ksi	MPa	ksi	MPa	ksi	MPa	ksi	MPa
Ultimate Tensile Strength	38	262	55	379	50	345	56	386
Yield Strength	28	193	40	276	40	276	40	276
Elongation (spec. minimum)	2%	2%	7%	7%	2%	2%	5%	5%

### Typical Values

	ksi		MPa		ksi		MPa	
	ksi	MPa	ksi	MPa	ksi	MPa	ksi	MPa
Young's Modulus	28500	196500	29 300	202 000	28 900	199 000	28 000	193 000
Ultimate Tensile Strength	44.3	305	65.5	452	56.2	387.499	62.1	428
Yield Strength	32.8	226	47	324	45.7	315.102	45.6	314
Elongation	4.7%	4.7%	11.0%	11.0%	5.1%	5.1%	8.7%	8.7%

## Physical:

Room Temperature (all vary with temperature)

Density	2.1 g/cm <sup>3</sup>	0.0757992 lb./in <sup>3</sup>
Electrical Conductivity	49% IACS (ASTM B193)	
Thermal Conductivity	212 W / m <sup>o</sup> C	
Poisson's Ratio	0.17	
CTE, Coefficient of Thermal Expansion	13.86 ppm / <sup>o</sup> C	
Specific Heat @ 20 <sup>o</sup> C J/Kg* <sup>o</sup> K (BTU/lb* <sup>o</sup> F)	1506 (0.36)	
Melting Point <sup>o</sup> C ( <sup>o</sup> F)	1082 (1980)	
(Al/Be Eutectic at 643 <sup>o</sup> C or 1190 <sup>o</sup> F)		
Damping Capacity Q-1		
@25 <sup>o</sup> C and 500 HZ	1.5 x 10 <sup>-3</sup>	

## Chemical Composition

	Min.	Max.
Beryllium %	60	64
Aluminum %	Balance	
Oxygen	---	1.0%
Carbon	---	0.1%
Other metallics, each	---	0.2%

## Fabrication Notes

Minimum Bend Radius	For thicknesses under .100" 5T. For thicknesses over .100" 10T
Coatings	
Heat Treating	AlBeMet162 can be stress relieved at 925 OF for 2 hours and furnace cooled There is no temperature-dependent strengthening mechanism



# Coatings for AIBeMet<sup>®</sup> AM 162

THE FOLLOWING COATINGS HAVE BEEN APPLIED AND TESTED IN A SALT FOG CHAMBER WITH A 5% SALT SOLUTION AT 95°F

## MARCH 2000

Coating	Specification		After 500 Hours	Being Qualified
1. Conversion Coat	MIL-C-5541E, Class 3		AOTCO AXSYS Technologies Epner	
2. Anodize w/Nickel Acetate Seal	MIL-A-8625F	Type III, Class 1	Alumiplate <sup>1</sup> MAFCO	
		Type III, Class 2		
3. Teflon Impregnated Anodize w/Duplex Seal	MIL-A-63576A Type I			
4. Teflon Impregnated Anodize	MIL-A-63576A Type III			
5. Electroless Nickel	MIL-C-26074E Class 4 Grade A		AOTCO Epner Specific Plating AXSYS	
6. Electroless Nickel w/Cad Overcoat	MIL-C-26074E Class 4 QQ-P-416 Type II, Class 2		AOTCO California Tech. Plating <sup>3</sup> Epner Fountain Plating <sup>2</sup> Prime Plating <sup>3</sup> Specific Plating <sup>3</sup>	
7. Epoxy Paint	BR-127		Electrofusion (BWI) Fountain Plating <sup>3</sup> Speedring	
8a. Chromic Anodize Non-Sealed	Meets MIL-A08625F Type 1 or 1B, Class 1		Alumiplate <sup>1</sup> AOTCO AXSYS	MAFCO
8b. Chromic Anodize Nickel Acetate Seal	Alternative (variation) to above		AOTCO	
8c. Sulfuric Acid Anodize	MIL-A08625F Type II	Class 1		MAFCO
		Class 2		
9. Electrolytic Nickel (Sulfamate Bath)	MIL-P-27418 (QQ-N-290A)			AOTCO
10. Electrolytic Nickel w/Gold Overcoat	MIL-P-27418 (QQ-N-290A)			AOTCO
11. Kerenoite 3000			Poeton	

1. Alumiplate first, then anodized.

2. Qualified as a substitute black coating called F-Kote II.

3. Passed MIL spec salt fog test only.