

Beryllium Products, Descriptions & Uses

Learn more about our different high-performance beryllium product options and how they can improve the performance of your application.

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Product	Description	Form	Usage in Nuclear	Usage in Optical & Satellite Structures	Usage in Avionics	
Beryllium	S200F (AMS 7906)	A versatile material selected when weight & inertia factors exceed those of lower cost aluminum. With its low mass, it can be driven through the scanning cycle much faster, with lower power requirements. Certifies to AMS 7906.	Vacuum Hot Pressed (VHP) Material Rod, Bar, Block	<ul style="list-style-type: none"> • Reflector & moderator of neutrons in nuclear environments • Materials test reactors 	<ul style="list-style-type: none"> • Nickel-plated optical substrates • Structures, gimbals, mechanisms • Spacecraft structures, small rocket nozzles 	<ul style="list-style-type: none"> • Inertial guidance systems
	S200FH (AMS 7908)	A lightweight, high stiffness material that maintains typical metal properties. Selected when weight & inertia factors exceed those of lower cost aluminum. Certifies to AMS 7908.	Hot Isostatic Pressed Material (HIP) Near Net Shapes (NNS) Rod, Bar, Block	<ul style="list-style-type: none"> • Reflector & moderator of neutrons in nuclear environments • Materials test reactors 	<ul style="list-style-type: none"> • High first mode frequencies (3x more than aluminum) • Doubles operating speed of bar code readers, laser printers, & other scanners • Optical sensors: gimbals, yokes 	
	S200FC (AMS 7910)	Useful for NNS applications requiring lesser properties than obtained by HIP or VHP material. Tooling is reusable, good for parts required in the hundreds. Certifies to AMS 7910.	Cold Isostatic Pressed Material (CIP) Near Net Shapes	<ul style="list-style-type: none"> • JET RF antenna & belt limiter tiles 	<ul style="list-style-type: none"> • Optical substrate for aircraft mirrors and fire control systems in tanks 	
	S65	Where high purity is a consideration, or a high neutron flux is desired, beryllium is very useful as both a moderator and reflector of neutrons.	Vacuum Hot Pressed Material Rod, Bar, Block	<ul style="list-style-type: none"> • Nuclear reflectors • Fusion energy applications: first wall in ITER and breeder pebbles 		
	S65H	Where high purity is a consideration, or a high neutron flux is desired, beryllium is very useful as both a moderator and reflector of neutrons.	Hot Isostatic Pressed Material Near Net Shapes Rod, Bar, Block	<ul style="list-style-type: none"> • Nuclear reflectors • Tiles for Joint European Torus ITER-like wall project 		
	I-70-H	Low oxide composition. Optical grade with good polishing characteristics and better isotropy than other compositions.	Hot Isostatic Pressed Material Near Net Shapes Rod, Bar, Block		<ul style="list-style-type: none"> • Low scatter optics • Cryogenic optical substrates • High thermal isotropy • Optical benches • Metering rods 	

Beryllium Products, Descriptions & Uses continued

Product	Description	Form	Usage in Nuclear	Usage in Optical & Satellite Structures	Usage in Avionics	
Beryllium	I-220-H	The highest tensile and micro yield strength of beryllium for low creep.	Hot Isostatic Pressed Material Near Net Shapes Rod, Bar, Block	<ul style="list-style-type: none"> Optical substrate for high dimensional stability Deep space telescope support VLT optics LIDAR 		
AlBeMet®	AM 162H (AMS 7911)	Contains 62 wt% commercially pure beryllium and 38 wt% commercially pure aluminum. Electron-Beam weldable. Dip and vacuum brazing machines like aluminum. Can be coated like aluminum. Certifies to AMS 7911, 7912, and 7913.	Hot Isostatic Pressed Material Near Net Shapes Rod (AMS 7912), Bar, Block (AMS 7911) Rolled Sheet (AMS 7913) Extruded Bar	<ul style="list-style-type: none"> Potential use as holder for reflector material in test reactors Beam pipe material in high energy particle physics applications 	<ul style="list-style-type: none"> Higher first mode frequencies Improved line-of-sight More room inside housing Lighter, stiffer, & more thermally stable vs. aluminum On 150 satellites, not susceptible to sulfide stress cracking 	<ul style="list-style-type: none"> Minimizes stress from vibration on leads, solder joints, and substrates Increases fatigue life of electronic packages Reduced section thickness Adjusts for platform req Faster designs vs. composites

Material Property Comparison

Property	Beryllium S200F (AMS 7906)	Beryllium S200FH (AMS 7908)	AlBeMet AM162H (AMS 7911)	Magnesium AZ80A T6	Aluminum 6061 T6	Stainless Steel 304	Ti-6Al-4V
Density, lb./in ³ (g/cm ³)	0.067 (1.85)	0.067 (1.85)	0.076 (2.10)	0.065 (1.80)	0.098 (2.70)	0.29 (8.0)	0.160 (4.43)
Modulus, msi (GPa)	42 (290)	44 (303)	28 (193)	6.5 (45)	10 (69)	29 (200)	16.5
Ultimate tensile strength, ksi (MPa)	47 (324)*	60 (414)*	38 (262)*	49 (340)	45 (310)	73 (505)	138 (950)
Yield strength, ksi (MPa)	35 (241)*	43 (296)*	28 (193)*	36 (250)	40 (276)	31 (215)	128 (880)
Elongation, %	2*	3*	2*	5	12	45	14
Fatigue strength, ksi (MPa)	38 (262)	31 (214)	18 (124)	14.5 (100)	14 (97)	35 (24)	74 (510)
Thermal conduct, Btu*hr*ft*°F (W/m*K)	125 (216)	125 (216)	121 (210)	44 (76)	97 (167)	9.4 (16)	3.87 (6.7)
Heat capacity, Btu/lb*°F (J/g*K)	0.46 (1.95)	0.46 (1.95)	0.373 (1.56)	0.251 (1.05)	0.214 (0.896)	0.12 (0.5)	0.126 (0.53)
CTE, ppm/°F (ppm/K)	6.3 (11.3)	6.3 (11.3)	7.7 (13.9)	14.4 (26)	13 (24)	9.6 (17.3)	4.8 (8.6)
Electrical conductivity (%IACS)	45	45	49	11	44	2.4	1

*Specification minimum (other given properties are typical values).

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