

PRODUCTS, USES & DESCRIPTIONS

	Product	Form	Avionics	Optical & Satellite Structures	Nuclear	Description
Beryllium	S-200-F (AMS7906)	Vacuum Hot Pressed (VHP) Material Rod, Bar, Block	Inertial Guidance Systems RLG Guidance 10 Piga Trident	Nickel-Plated Optical substrates NPOESS/CRIS Structures, gimbals, mechanisms Spacecraft structures, small rocket nozzles	Reflector and moderator of neutrons in nuclear environments Materials test reactors like the Advanced Test Reactor (ATR) & Japan Materials Test Reactor (JMTR)	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. Also certifies to AMS7906.
	S-200-FH (AMS7908)	Hot Isostatic Pressed Material Near Net Shapes (NNS) Rod, Bar, Block		High First Mode Frequencies, 3X over Al, Doubles operating speed of bar code readers, laser printers, & other scanners Optical Sensors: NPOESS/CRIS, APL-5, Mass Mounted Sites, Sniper, SNIPER Mechanisms, Gimbals, Yokes	Reflector and moderator of neutrons in nuclear environments Materials test reactors	A lightweight, high stiffness material, while maintaining typical metal properties. Selected when weight & inertia factors exceed those of lower cost aluminum. Also certifies to AMS7908.
	S-200-FC (AMS7910)	Cold Isostatic Pressed (CIP) Material NNS		Optical Substrate for Fire control systems in tanks and aircraft Mirrors	JET RF Antenna and Belt Limiter Tiles	Useful for NNS apps requiring lesser properties than obtained by HIP or VHP material. Tooling is reusable, good for parts required in the hundreds. Also certifies to AMS7910.
	S-65	VHP Material Rod, Bar, Block			Nuclear Reflectors Fusion energy applications: First wall in ITER and breeder pebbles	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.
	S-65-H	HIP Material NNS Rod, Bar, Block			Nuclear Reflectors Tiles for JET ITER-like wall project	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.
	I-70-H	HIP Material NNS Rod, Bar, Block		Low Scatter Optics Cryogenic Optical Substrates High Thermal Isotropy Optical Benches, Metering Rods		Low oxide composition, optical grade with good polishing characteristics and better isotropy than other compositions.
	I-220-H	HIP Material NNS Rod, Bar, Block		Used as optical substrate for high dimensional stability; Telescope support for exploring deep space; VLT Optics, LIDARS		Has the highest tensile and microyield strength of beryllium for low creep.
AIBeMet®	AMI62-H (AMS7911)	Hot Isostatic Pressed Near Net Shapes Rod, Bar, Block Rolled Sheet, Extruded Bar, Rod	Minimizes stress from vibration on leads, solder joints & substrates, increases fatigue life of electronic packages, reduced section thickness, adjusts for platform req. Faster designs versus composites	Higher first mode frequencies, improved Line-of-Sight (LOS), more room inside housing. Lighter, stiffer, thermally-stable vs. Al, Flying on 150 satellites, Not susceptible to Sulfide Stress Cracking. IFTS, APACHE, SPIRITT, JSF, F18/22, FLIR, ATP, Damocles, Tammac, AEHF, KAP	Potential use as holder for reflector material in test reactors Beam pipe material in high energy particle physics applications	Contains 62 wt.% commercially pure beryllium and 38 wt.% commercially pure aluminum Electron-Beam (EB) weldable, Dip and Vacuum brazing. Machines like aluminum can be coated like aluminum. Also certifies to AMS 7911, 7912, 7913.

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Product	Form	Avionics	Optical & Satellite Structures	Nuclear	Description
SupremEX®	225XE (AMS4355)	HIP Block, Forged or Extruded	Chassis, heat sinks	Structures, gimbals, mechanisms, titanium replacement	225XE material is 2124 aluminum alloy matrix with 2- 3 micron Silicon Carbide (SiC) particles mechanically alloyed together using a proprietary process. This produces an even distribution of the SiC these particles in the aluminum matrix.
	640XA (AMS4368)	HIP Block, Forged or Extruded	Chassis, heat sinks, electronic packages	Structures, gimbals, mechanisms, mirrors	640XA material is 6061 aluminum alloy matrix with 2- 3 micron Silicon Carbide (SiC) particles mechanically alloyed together using a proprietary process. This produces an even distribution of the SiC these particles in the aluminum matrix.
	620XF	HIP Block, Forged, Extruded or Rolled	Extruded rails and frames, chassis covers, heat sinks		620XF material is 6061 aluminum alloy matrix with 0.7 micron Silicon Carbide (SiC) particles mechanically alloyed together using a proprietary process. This produces an even distribution of the SiC these particles in the aluminum matrix.

MATERIAL PROPERTY COMPARISON

Property	Beryllium S200F (AMS7906)	Beryllium S200FH (AMS7908)	AlBeMet AM162H (AMS7911)	SupremEX 225XE (AMS 4355)	SupremEX 640XA (AMS4368)	SupremEX 620XF	Magnesium AZ80A T6	Aluminum 6061 T6	Stainless Steel 304	Titanium
Density, lbs/in3 (g/ml)	0.067 (1.85)	0.067 (1.85)	0.076 (2.10)	0.104 (2.88)	0.104 (2.90)	0.101 (2.80)	0.065 (1.80)	0.098 (2.70)	0.29 (8.0)	0.163 (4.5)
Modulus, MSI (GPa)	44 (303)	44 (303)	28 (193)	16.7 (115)	20 (140)	14.9 (103)	6.5 (45)	10 (69)	30 (205)	15.2 (105)
Ultimate Tensile Strength, KSI (MPa)	47 (324)	60 (414)	38 (262)	88 (610)	83 (570)	71.1 (490)	49 (340)	45 (310)	75 (515)	95.7 (660)
Yield Strength, KSI (MPa)	35 (241)	43 (296)	28 (193)	64 (440)	70 (480)	58 (400)	36 (250)	40 (275)	30 (205)	85.6 (590)
Elongation %	2	3	2	2.5	1.5	8	5	12	40	20
Fatigue Strength, KSI (MPa)	39 (261)	39 (261)	14 (97)	45 (310)	39 (271)		14.5 (100)	14 (95)	N/A	N/A
Thermal Conduct Btu/hr/ft/°F (W/m.K)	125 (216)	125 (216)	121 (210)	150	130	150	44 (76)	104 (180)	9.4 (16)	9.75 (16.9)
Heat Capacity, Btu/lb.°F (J/g.K)	0.46 (1.95)	0.46 (1.95)	0.373 (1.56)	0.200 (0.836)	0.191 (0.800)	0.203 (0.850)	0.251 (1.05)	0.214 (0.896)	0.12 (0.5)	0.129 (0.54)
CTE, ppm/°F (ppm/K)	6.3 (11.3)	6.3 (11.3)	7.7 (13.9)	8.9 (16.1)	7.4 (13.4)	9.4 (17.0)	14.4 (26)	13 (24)	9.6 (17.3)	4.8 (8.6)
Electrical Resistivity, ohm-cm (x 106)	4.2	4.2	3.5				14.5	4	72	60

*Specification Minimum (Other Properties Given are Typical) MED024 1-2018

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