HIGH PURITY TANTALUM SPHERICAL POWDERS FOR ADDITIVE MANUFACTURING

SPHERICAL POWDERS

Spherical powders produced by Global Advanced Metals (GAM) for additive manufacturing (AM) are up to 6N purity with high flow. The powder particles are free of voids and carry no satellites. Through use of GAM propriety technology, oxygen levels for the spherical powders are extremely low. Achieved packing densities are greater than 99%.

GLOBAL ADVANCED METALS

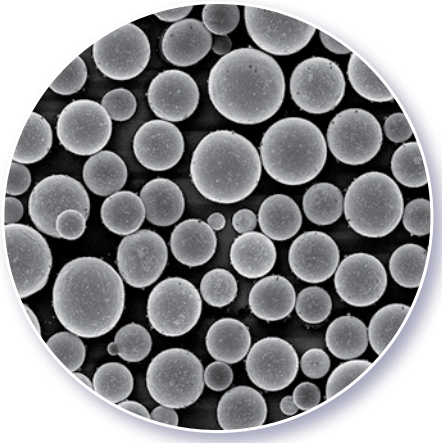
GAM produces spherical powders with customized particle size distributions and properties for use with the most commonly used 3D metal printing technologies.

ADVANTAGES OF TANTALUM POWDER FOR AM

Tantalum has high strength and ductility with excellent corrosion resistance and thermal conductivity. Independent third party scientific studies have indicated tantalum has high biocompatibility, and as a pure metal, no measurable toxicity.* Tantalum possesses osteointegration and elastic modulus properties similar to bone.*

CHEMICAL AND PHYSICAL PROPERTIES†

ANALYSIS	AM 150	AM 325	AM CLS
C (ppm)	<40	<40	<40
O (ppm)	50 – 200	100 – 400	300 – 600
N (ppm)	<50	<50	<50
Fe (ppm)	<50	<50	<50
Ni (ppm)	<50	<50	<50
Cr (ppm)	<50	<50	<50
D10 (microns)	38 – 50	10 – 20	2 – 12
D50 (microns)	60 – 80	20 – 30	5 – 20
D90 (microns)	100 – 150	30 – 45	10 – 25
Hall Flow (sec/25g)	5 – 11	6 – 12	8 – 15
Apparent Density (g/cc)	8 – 10	8 – 10	8 – 10



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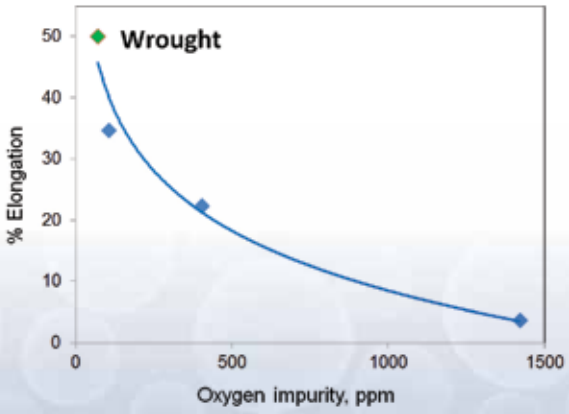
Microstructure of printed tantalum

TYPICAL PROPERTIES OF PRINTED PARTS†

GRADE	WROUGHT	SINTER BAR	AM 325
Ultimate Tensile, MPa (Ksi)	276 (40)	531 (77)	634 (92)
Yield, MPa (Ksi)	172 (25)	462 (67)	601 (87)
Elongation, %	50	20	35
Hardness	35 (Rockwell B)	194 (Vickers)	149 (Vickers)

OXYGEN CONTROL†



GLOBAL ADVANCED METALS (GAM) is the world's only fully integrated supplier of tantalum products. For almost 70 years GAM has been a leader in safety, health, environment and social responsibility while delivering best-in-industry technology and product quality. GAM is certified "Conflict-Free" since 2010 with exclusive rights to the world's largest tantalum reserves in Western Australia. GAM maintains a global presence with facilities and offices in Western Australia, the United States and Japan.

† *Source: Internal testing; Results vary with specific test conditions*

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