

Tungsten Powders

Technical Information Bulletin

Powders That Shape Your World



Global Tungsten & Powders tungsten is manufactured to provide high purity and particle size uniformity required by manufacturers of tungsten products and cemented tungsten carbide. GTP's M type designations are classes of tungsten powder. Within these types, GTP will work with our customers to develop specifications that meet their requirements.

Wolframite is the most commonly used ore concentrate. GTP has the capability to process other types of ore as well as secondary materials (scrap) to recover pure tungsten and remove unwanted impurities. GTP maintains a vertically integrated supply chain, sourcing raw material from numerous locations around the world. Our raw material flexibility allows us to provide you with cost advantages and security of supply.

During chemical processing, critical control points are monitored to assure uniformity and quality of our tungsten powders. Precise chemical specifications have been set up for each of the control points. At the completion of the chemical cycle, ammonium paratungstate is calcined to oxide. The oxide is reduced in a hydrogen atmosphere to form the metal powder.

Particle size and particle size distribution are critical factors in the physical and mechanical properties of products produced from metal powders. GTP maintains average particle size within tenths of a micrometer by precisely controlling the manufacturing process. Frequent particle size checks are carried out at each reduction furnace. The average particle size is measured by the Fisher Sub-Sieve Sizer and control is maintained on a statistical basis.

After reduction, the tungsten powders are screened and blended. Single blend lots of up to 6,000 kilograms are available.

GTP Type	Physical Properties				Chemical Properties		
	Avg. Particle Size (μm) ¹		Bulk Density ² MIN MAX		Screen Size ³	LOR % ⁴	Purity % ⁵
	MIN	MAX					
M10	0.60	0.90	25	45	-100	0.40	99.95
M17	0.95	1.25	25	50	-100	0.25	99.95
M20	1.10	1.40	30	55	-100	0.25	99.95
M25	1.40	1.80	30	55	-100	0.25	99.95
M30	1.80	2.20	35	60	-100	0.25	99.95
M37	2.70	3.30	38	60	-100	0.25	99.95
M40	3.30	3.90	48	75	-100	0.10	99.95
M45	4.00	4.50	48	75	-100	0.10	99.95
M55	4.70	5.70	50	75	-100	0.10	99.95
M60	5.80	7.80	55	78	-100	0.10	99.95
M63	7.90	10.90	55	90	-100	0.10	99.95
M65	11.00	15.00	60	95	-100	0.10	99.95
M68	15.00	17.50	65	100	-40	0.10	99.95
M70	15.00	40.00	90	150	-40	0.10	99.95

Footnotes:

¹ Average particle size - FSSS (ASTM B 330)

² Bulk Density (ASTM B 329) is in grams / in³

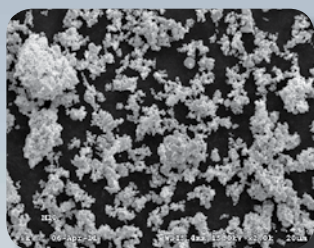
³ Standard screen mesh sizes

⁴ LOR (ASTM E 159) - Loss On Reduction (H₂O + O)

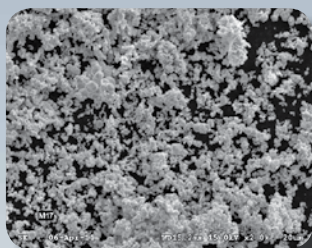
⁵ Analysis is not run on each lot. Purity content is monitored statistically.



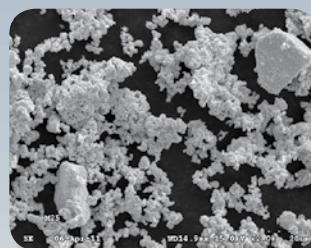
Type M10



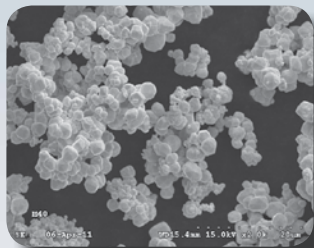
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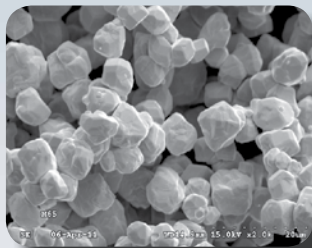
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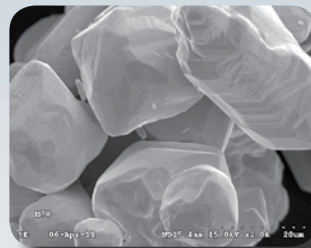
Type M40



Type M65



Type M70



Magnified 2,000 times

SEM's are available upon request and may incur an analysis fee.

Customization

GTP can customize our powders to specific applications. Customer specifications within each M type can be developed after technical discussions at time of inquiry.

Ordering

Specify desired powder type and required FSSS range, particle size distribution or sieve distribution.

Certification

Each shipment of powder is accompanied by a standard report, which includes FSSS average particle size, bulk density, loss on reduction, and purity level. SEM's are provided on an as requested basis.

Packaging

Each lot is packaged in plastic bags inside of metal pails at 50 kilograms per pail. Alternative packaging and quantities are available.

M10 – M37: Additional packaging costs for material rated flammable and those shipped by air.



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History of Global Tungsten & Powders:

For over 40 years, GTP in Towanda has been producing tungsten, molybdenum, cobalt, and tantalum powder products. GTP produces a wide range of materials, which are used in the manufacture of numerous products. These products include metal working tools for cutting, rolling, and stamping; high temperature jet engine components and protective coatings; circuit manufacturing chemicals for microelectronics; catalysts for petrochemical processing. In 2000 HMZ in the Czech Republic became a part of the Global Tungsten & Powders group providing a European hub for the production of high quality tungsten and tungsten carbide powders.