

POLEMA JSC
Spherical powders of refractory metals for additive technologies



SPHERICAL TUNGSTEN POWDER



Physical properties of the powder

Material	Properties after plasma spheroidization
W milled after spheroidization	Flow rate: < 10 s Bulk density: > 10 g/cm ³ Tapped bulk density: > 11 g/cm ³ Oxygen content < 250 ppm The main element content > 99,9% Sphericity: > 90%, factually ~ 95%

Chemical composition of the powder

Element	Mass content, %, for the grades	
	Milled spheroidized powder-W99,9; Reduced spheroidized powder-W99,9	Reduced spheroidized powder-W99,95
Tungsten W, minimum	99,9	99,95
Sum of metal admixtures: aluminium Al, ferrum Fe, kalium K, calcium Ca, silicon Si, molybdenum Mo, arsenium As, sodium Na, nickel Ni, ppm, maximum	0,10	0,05
Oxygen O, maximum	0,025	0,025

Size of powder particles

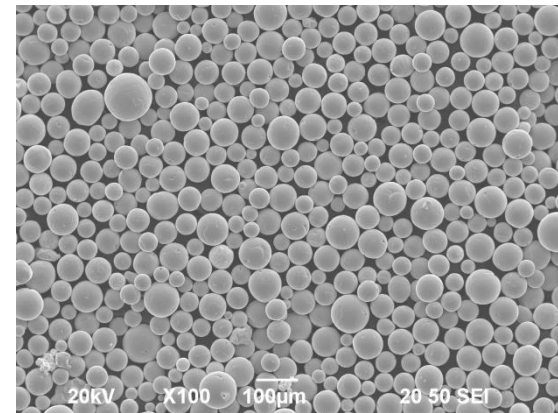
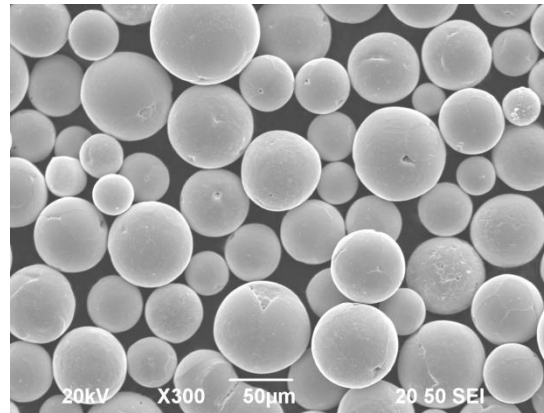
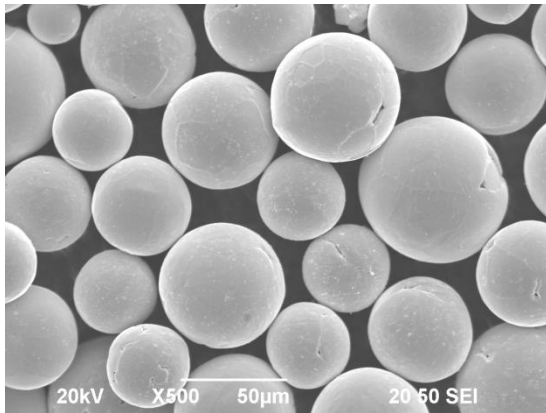
Particle size of the base fraction, µm	Allowed deviations from the base fraction while checking with dry sieving method, %, maximum	
	Oversize fraction	Minus fraction
0-25	10	-
15-45	5	-
45-90	5	10
75-150	5	10

Note – The sign «-» means that the content of this fraction isn't controlled via dry sieving method.

Application

- 3D
- MIM
- Manufacturing products via Powder Metallurgy methods
- Spraying and weld deposition

Photos of W powder spherical particles



SPHERICAL MOLYBDENUM POWDER



Physical properties of the powder

Material	Properties after plasma spheroidization
Mo milled after spheroidization	Flow rate: < 15 s Bulk density: > 6 g/cm ³ Tapped bulk density: > 7 g/cm ³ Oxygen content < 250 ppm The main element content > 99,9% Sphericity: > 90%, factually ~ 95%

Chemical composition of the Milled spheroidized powder Mo99,9

Element	Mass content, %
Molybdenum Mo, minimum	99,9
Sum of metal admixtures: aluminium Al, ferrum Fe, kalium K, calcium Ca, silicon Si, tungsten W, magnesium Mg, manganese Mn, sodium Na, nickel Ni, zinc Zn, ppm, maximum	0,10
Oxygen O, maximum	0,025

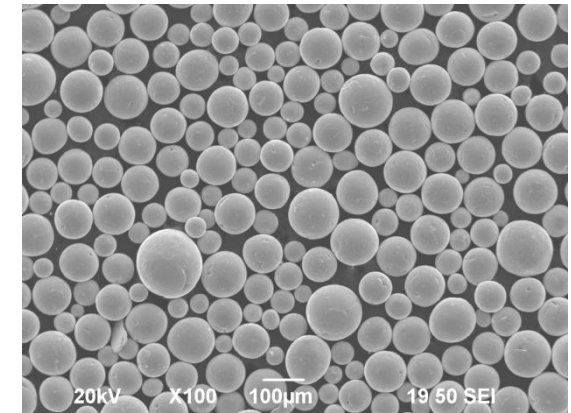
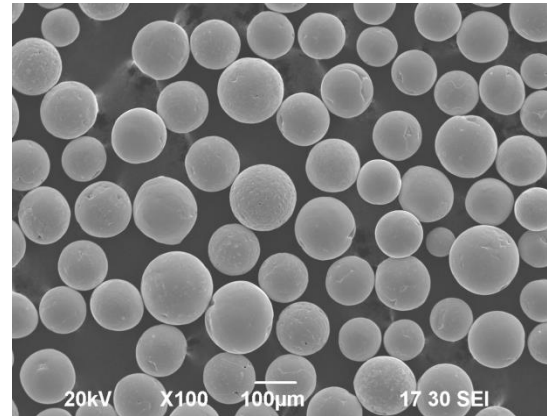
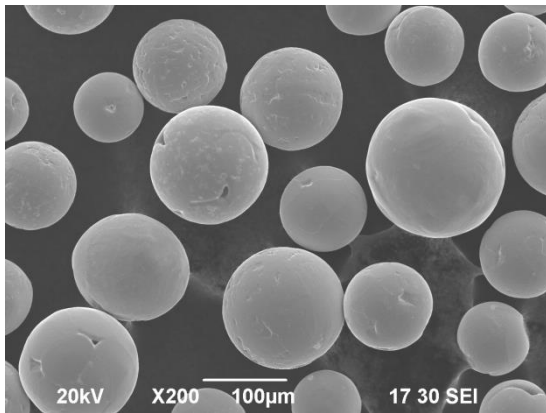
Size of powder particles

Particle size of the base fraction, µm	Allowed deviations from the base fraction while checking with dry sieving method, %, maximum	
	Oversize fraction	Minus fraction
0-40	5	-
40-100	5	10

Применение

- 3D
- MIM
- Plasma spraying

Photos of Mo powder spherical particles



SPHERICAL CHROMIUM POWDER



Physical properties of the powder

Material	Properties after plasma spheroidization
Cr milled after spheroidization	Flow rate: < 20 s Bulk density: > 4,0 g/cm ³ Tapped bulk density: > 4 g/cm ³ The main element content > 99,9% Sphericity: > 80%

Chemical composition of the Milled spheroidized powder ERCr99,95

Element	Mass content, %
Chromium Cr, %, minimum	99,95
Сумма металлических примесей: aluminium Al, ferrum Fe, copper Cu, nickel Ni, kalium K, calcium Ca, silicon Si, molybdenum Mo, vanadium V, titanium Ti, arsenium As, ppm, maximum	500
Other (gas-forming) admixtures, ppm, maximum: Carbon C, Oxygen O	100 300

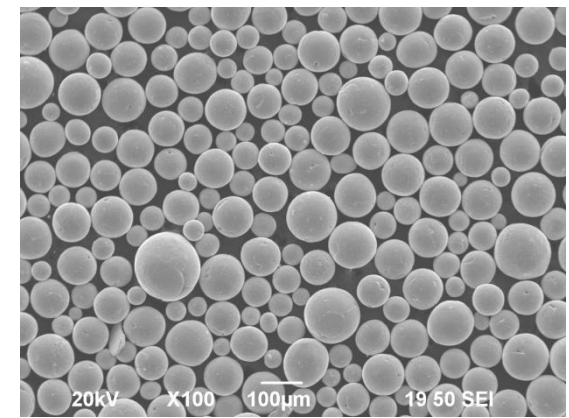
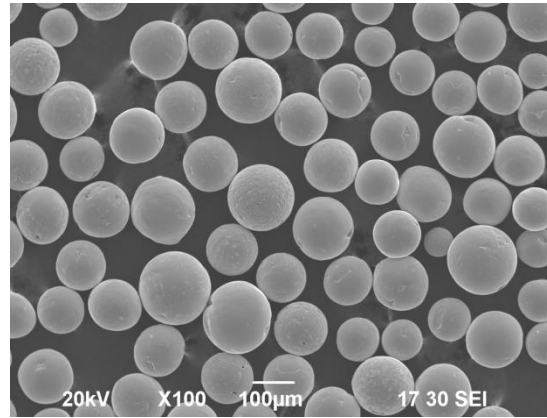
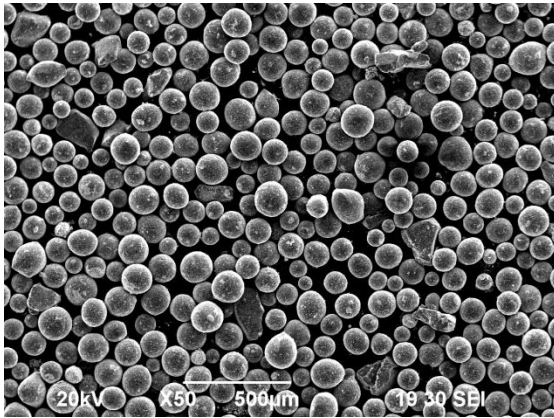
Size of powder particles

Particle size of the base fraction, μm	Allowed deviations from the base fraction while checking with dry sieving method, %, maximum	
	Oversize fraction	Minus fraction
56-100	5	10

Application

- Thermal spraying (fraction 56-100 μm)

Photos of Cr powder spherical particles



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