

SPHERICAL METAL POWDER

High quality powder for additive manufacturing and more ...

Material class	Name	Alt. Name	Material characteristics
Copper alloys	MET Cu-OF	C10200/CW008A/2.0040	high purity oxygen-free copper with highest thermal and electrical conductivity (>99,9% Cu)
	MET CuNi2SiCr	C18000/CW111C/2.0855	thermally curable low-alloyed copper alloy; higher strength and hardness but slightly decreased thermal and electrical conductivity compared to CuCr1Zr
	MET CuCr1Zr	C18150/CW106C/2.1293	hardenable copper alloy, combining high strength and hardness with good thermal and electrical conductivity
	MET CuNi10	C70700/2.0811	high resistance copper alloy with increased sea water resistance through elevated Nickel content
	MET GRCop-42	GRCop-42/Cu3Cr3Nb	dispersion strengthened copper alloy with high strength, good conductivity and resistivity against low cycle fatigue
Stainless Steels	MET 1.4306	304L	austenitic chromium-nickel steel with a low carbon content (<0,030%); higher content of chromium and nickel results in increased corrosion resistance than 1.4301 or 1.4307
	MET 1.4404	316L	austenitic chromium-nickel-molybdenum steel with a low carbon content (<0,030%); good resistance to chloric media and non-oxidizing acids
	MET 1.4435	316L Med	austenitic chromium-nickel-molybdenum steel with a low carbon content; good resistance to chloric media and non-oxidizing acids in terms of medical applications
Nickel Alloys	MET Alloy K500	2.4375/N05500/NiCu30Al	high strength and hardness nickel-copper alloy with excellent corrosion resistance, suitable for marine technology and chemistry.
	MET IN718	2.4668/Inconel 718	nickel-chromium-iron alloy with niobium, molybdenum, aluminium, and titanium, leading to outstanding mechanical properties and corrosion resistance.
	MET IN625	2.4856/Inconel 625	low carbon nickel-chromium-molybdenum-niobium alloy enabling service temperatures from cryogenic to 982°C and outstanding corrosion resistance
Titanium Alloys	MET Ti Grade 5	Ti6Al4V/Ti64	age hardenable titanium-aluminium-vanadium alloy offering excellent combination of strength, toughness, and ductility with good biocompatibility
	MET Ti Grade 23	Ti6Al4V ELI/Ti64 ELI	"extra low interstitials" by reduced oxygen and nitrogen content, used for medical and aerospace applications
Molybdenum	MET Mo	Mo99%	high melting temperature and low thermal expansion coefficient enable operational temperatures up to 1900°C

Other materials on request

Any metal or alloy can be atomized with our proprietary process, according to your needs. All products can be produced in narrow particle size distributions (PSD), as shown below, other PSDs are available on request.

PSD [µm]	d10 _{min} [µm]	d90 _{max} [µm]
5 - 20	4	22
15 - 45	10	48
20 - 63	18	66
45 - 106	40	106

COMMISSION PROCESSING

Metalpine GmbH is your service partner for high quality production of spherical metal powders and related preparation processes.

Powder production

We developed a unique powder production process to provide perfect spherical powders (patent pending). Any metal or alloy can be atomized according to your needs. Our processes are run with Argon 5.0 as atomization gas in a dust-free production environment to guarantee maximum product quality. All subsequent processes (production, classifying, screening, packaging) can be done under Argon atmosphere, to ensure an oxygen-free production line.

Back-up powder production and R&D plant

Supplementary to our production site in Graz, we have a secondary production line in Niklasdorf, Austria. The secondary plant is mainly dedicated to R&D but is available as a back-up production line to increase flexibility for our customers.

Powder screening

With various screening technologies we can screen your powder at grain sizes ranging from 10 to 1000 microns.

Powder classifying

With our state-of-the-art classifiers we can provide narrow particle size distributions, produce ultrafine powders, or remove dust from your powders.

Packaging

With our 17 Sustainable Development Goals in mind, we try to reduce the amount of waste by offering different packaging than commonly used white bottles, which are thrown away after usage. Of course, we pack the powders according to our customers' needs and help to manage transport organization.

Laboratory Services

In our in-house laboratory, we measure particle size distributions with laser light scattering (Horiba LA-960 according to ISO 13320) and digital image processing (Camsizer X2 according to ISO 13322-2). Additionally, we offer tap density measurements (3P Instruments BeTensi T3 according to ISO3953, ASTM B527) as well as flowability measurements by Hall Flow Meter (ISO 4490, ASTM B213). For more sophisticated flowability problems, Schulze Ring Shear tests can be conducted by our university partners and additionally, we offer analysis of our products in collaboration with certified laboratories.

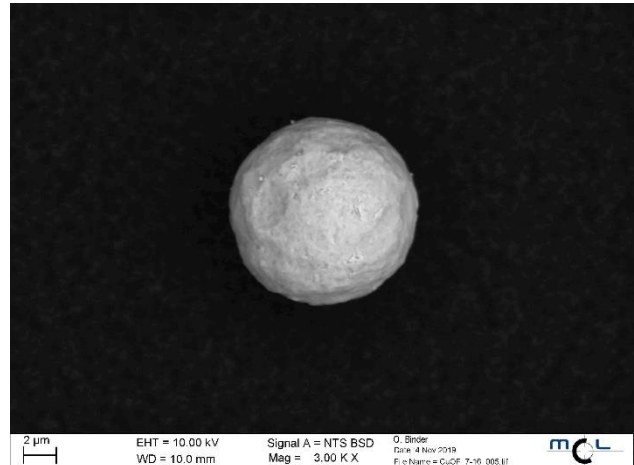
Send us your request

Cooper Alloy: MET Cu-OF 99,9%

Alternative designation: C10200 / CW008A / 2.0040

Description and general material properties

MET Cu-OF is pure, oxygen free Copper with minimum 99,9% Cu. It combines the advantages of Cu-ETP (= CW004A / 2.0065) and phosphor deoxidized Copper materials. The high pureness of the material combined with missing oxygen inclusions allows excellent electrical conductivity and is not affected from hydrogen embrittlement. Therefore, MET Cu-OF has a good deformability, combined with superior solder- and weldability than offered by Cu-ETP. Typical applications are electrical and electronic components for example in the communication industry.

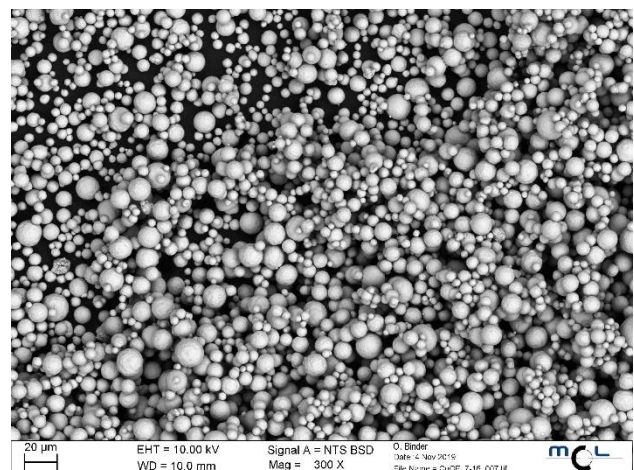


Powder characteristics

Chemical composition		
Element	Min [wt%]	Max [wt%]
Pb		0,005
O		0,05
Bi		0,005
Cu	99,9	Balance

Physical properties		
Properties*	Min	Max
Flow rate [s/50g]		20
Bulk density [g/cm ³]	4,5	

*exemplary values for PSD 15-45 µm



Cooper Alloy: MET CuNi2SiCr

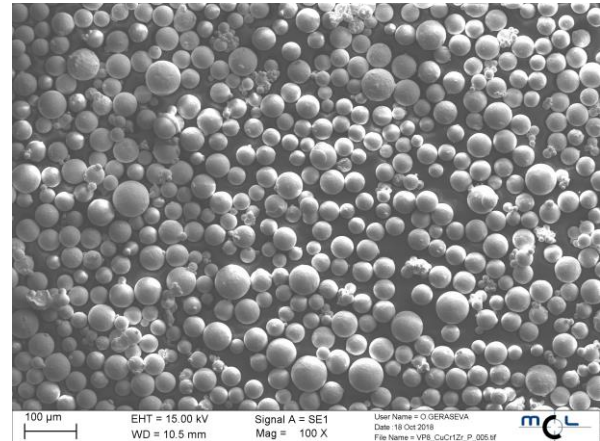
Alternative designation: C18000 / CW111C / 2.0855

Description and general material properties

MET CuNi2SiCr is a thermally curable low-alloyed copper material with high stiffness, also at elevated temperatures. It offers good thermal and electrical conductivity combined with high corrosion resistance and is well suited for wear and sliding applications.

The beryllium free copper alloy is used for tooling, as mold insert and for highly thermally stressed construction elements.

Powder characteristics



Chemical composition		
Element	Min. [wt%]	Max. [wt%]
Ni	2,0	3,0
Si	0,5	0,8
Cr	0,2	0,5
Fe		0,15
Mn		0,1
Pb		0,02
Others total		0,1
Cu	Balance	Balance

Physical properties		
Properties*	Min	Max
Flow rate [s/50g]		15
Bulk density [g/cm ³]	4,9	

*exemplary values for PSD 20 - 63 µm

Cooper Alloy: MET CuCr1Zr

Alternative designation: C18150 / CW106C / 2.1293

Description and general material properties

MET CuCr1Zr is a hardenable copper alloy, which combines high strength and hardness with a very good thermal resistance. It offers good thermal and electrical conductivity and a good wear resistance.

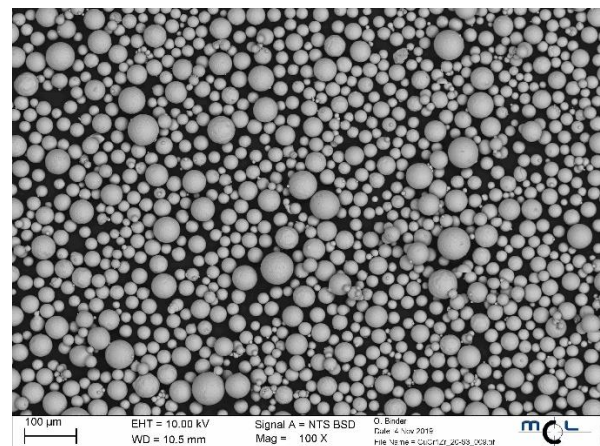
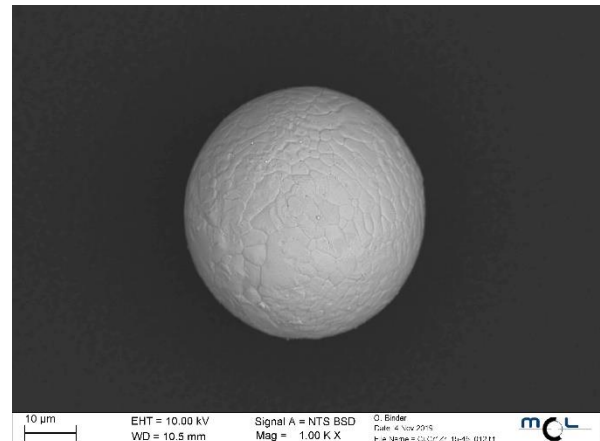
Typically, the alloy is used for machinery construction and electrical applications, mold cooling inserts and high-performance applications in the aerospace or automotive industry.

Powder characteristics

Chemical composition		
Element	Min. [wt%]	Max. [wt%]
Cr	0,5	1,2
Zr	0,03	0,3
Fe		0,08
Si		0,1
Others total		0,2
Cu	Balance	Balance

Physical properties		
Properties*	Min	Max
Flow rate [s/50g]		15
Bulk density [g/cm ³]	4,9	

*exemplary values for PSD 20 - 63 µm



Cooper Alloy: MET CuNi10

Alternative designation: C70700 / 2.0811

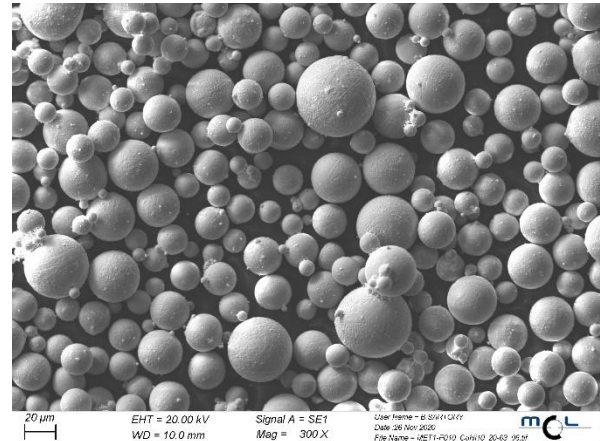
Description and general material properties

MET CuNi10 is an extremely resistant material with a very high seawater corrosion resistance.

Typical applications are shipbuilding, oil refining machinery, food processing industries and others.

Powder characteristics

Chemical composition		
Element	Min [wt%]	Max [wt%]
Ni	9,5	10,5
Fe		0,05
Mn		0,50
Cu	Balance	Balance



Cooper Alloy: MET GRCop-42

Alternative designation: GRCop-42 / Cu3Cr3Nb

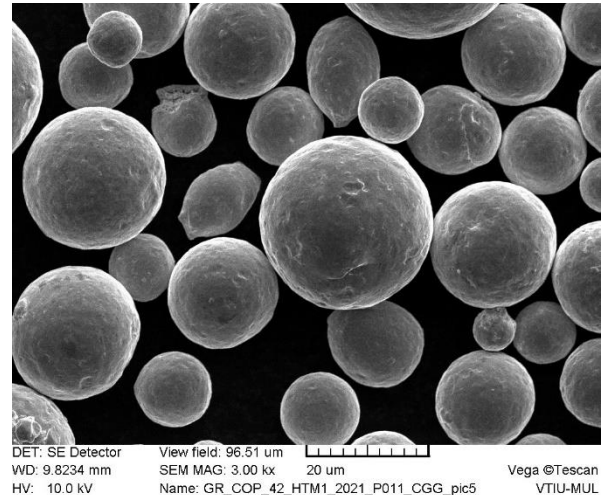
Description and general material properties

MET GRCop-42 is a dispersion strengthened copper alloy with high strength and a good resistivity against low cycle fatigue (LCF). With a conductivity reaching up to 75% of IACS, CuCrNb-alloys were originally designed for use in high heat flux applications, like for example in combustion chambers and nozzles, and therefore offer high oxidation resistance in harsh environment.

Powder characteristics

Chemical composition		
Element	Min [wt%]	Max [wt%]
Cr	3,1	3,4
Nb	2,7	3,0*
O		0,04
Al		0,005
Fe		0,005
Si		0,005
Cu	Balance	Balance

* Cr/Nb ratio of 1,12-1,15



Stainless Steel: MET 1.4306

Alternative designation: 304L

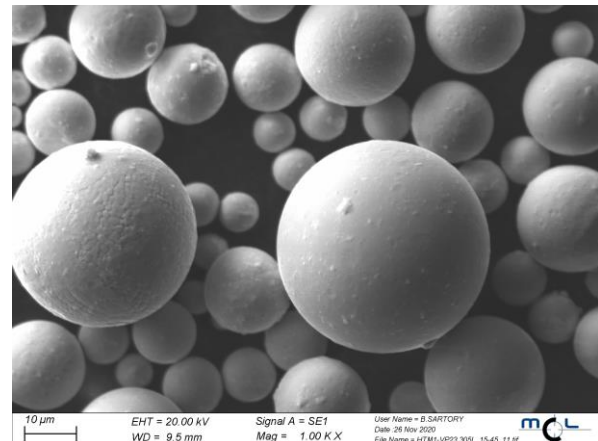
Description and general material properties

MET 304L is a stainless austenitic chromium-nickel steel with a low carbon content (<0,030%). The higher content of chromium and nickel results in increased corrosion resistance than 1.4301 or 1.4307

This steel is used mainly in the chemical and pharmaceutical industry. A high gloss surface finish can be achieved.

Powder characteristics

Chemical composition		
Element	Min [wt%]	Max [wt%]
Cr	17,5	20,0
Ni	8,0	12,0
Mn		2,0
Si		1,0
Others total		0,2
Fe	Balance	Balance



Stainless Steel: MET 1.4404

Alternative designation: 316L

Description and general material properties

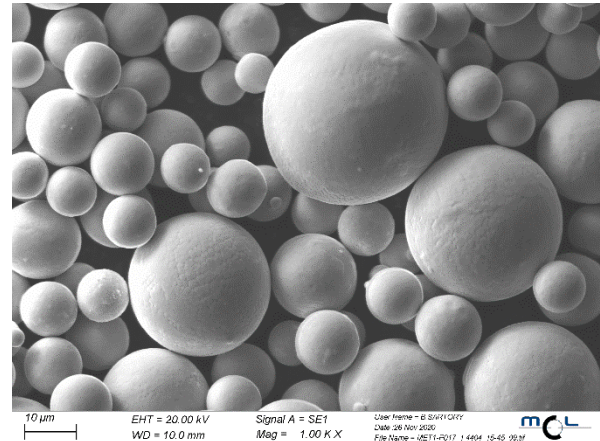
MET 316L is a stainless steel with a low carbon content and good corrosion resistance. It is commonly used in chemical and petrochemical industry, in food processing, pharmaceutical equipment, medical devices, in potable water, wastewater treatment, in marine applications and architectural applications near the seashore or in urban areas.

Powder characteristics

Chemical composition		
Element	Min [wt%]	Max [wt%]
Cr	16,5	18,0
Ni	10,0	15,0
Mo	2,0	2,5
Mn		2,0
Si		0,75
Cu		0,5
Others total		0,2
Fe	Balance	Balance

Physical properties		
Properties*	Min	Max
Flow rate [s/50g]		12
Bulk density [g/cm ³]	4,5	

*exemplary values for PSD 15 - 45 µm

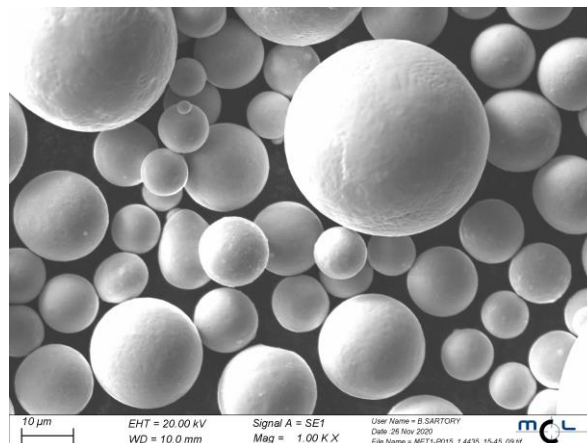


Stainless Steel: MET 1.4435

Alternative designation: 316L Med

Description and general material properties

MET 316L Medical is a stainless steel with a very low carbon content and high corrosion resistance. Due to its resistance to many forms of corrosion and the excellent surface quality that can be achieved, it is mainly used in medical technology. Furthermore, it is used in chemical and petrochemical industry, in food processing, pharmaceutical equipment, in potable water, wastewater treatment, in marine applications and architectural applications near the seashore or in urban areas.



Powder characteristics

Chemical composition		
Element	Min [wt%]	Max [wt%]
Cr	17,0	18,0
Ni	12,5	14,0
Mo	2,5	3,0
Mn		2,0
Si		0,75
Others total		0,2
Fe	Balance	Balance

Important note:

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In this respect, the limitations of liability pursuant to our General Terms and Conditions and the system sales or material contracts shall apply.

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Nickel based: MET Alloy K500

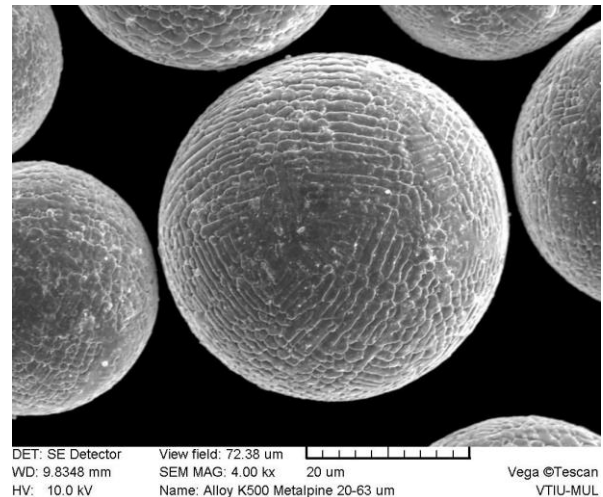
Alternative designation: 2.4375 / N05500 / NiCu30Al

Description and general material properties

MET Alloy K500 is a nickel-copper alloy which has extreme hardness and high tensile strength in the temperature range lower than 650°C (1.202°F). The melting point of this material is 1.350°C (2.462°F). Due to its excellent corrosion resistance the alloy is well suited for marine and chemical applications, Typical applications are springs, shafts and fasteners for marine propellers, oil handling equipment, knives, scrapers, or springs.

Powder characteristics

Chemical composition		
Element	Min. [wt%]	Max. [wt%]
Ni	63,0	
Cu	27,0	34,0
Al	2,2	3,5
Fe	0,5	2,0
Ti	0,3	1,0
Mn		1,5
Co		1,0
Si		0,5
C		0,2
Others total		0,17



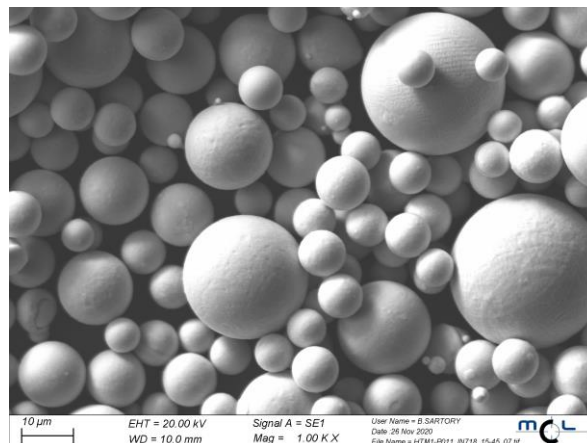
Nickel based: MET In718

Alternative designation: 2.4668 / Inconel 718

Description and general material properties

MET Inconel 718 is a high-strength, corrosion-resistant nickel chromium material used in a wide temperature range from cryogenic to high temperature applications. The age-hardenable alloy can be readily fabricated, even into complex parts. Its welding characteristics, especially its resistance to post-weld cracking, are outstanding.

The ease and economy with which MET IN718 can be fabricated, combined with good tensile, fatigue, creep, and rupture strength, have resulted in its use in a wide range of applications. Examples of these are components for liquid fueled rockets, rings, casings and various formed sheet metal parts for aircraft and land-based gas turbine engines, and cryogenic tankage. It is also used for fasteners and instrumentation parts.



Powder characteristics

Chemical composition		
Element	Min [wt%]	Max [wt%]
Ni	50,0	55,0
Cr	17,0	21,0
Nb	4,75	5,5
Mo	2,8	3,3
Ti	0,65	1,15
Co		1,0
Al	0,2	0,8
Si		0,35
Mn		0,35
Others total		0,5
Fe	Balance	Balance

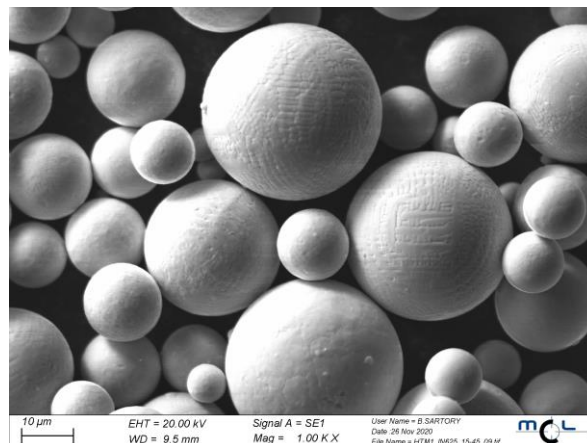
Nickel based: MET In625

Alternative designation: 2.4856 / N06625 / Inconel 625

Description and general material properties

MET Inconel 625 is a nickel-based superalloy that possesses high strength properties and resistance to elevated temperatures. It also demonstrates remarkable protection against corrosion and oxidation. Its ability to withstand high stress and a wide range of temperatures, both in and out of water, as well as being able to resist corrosion while being exposed to highly acidic environments makes it a fitting choice for nuclear and marine applications.

Typical applications are seawater components, flare stacks, aircraft ducting systems, specialized seawater equipment, chemical process equipment, turbine shroud rings, engine thrust-reverser systems, jet engine exhausts systems.



Powder characteristics

Chemical composition		
Element	Min [wt%]	Max [wt%]
Cr	20,0	23,0
Mo	8,0	10,0
Nb	3,15	4,15
Fe		5,0
Co		1,0
Si		0,5
Mn		0,5
Others total		1,0
Ni	Balance	Balance

Titanium alloy: MET Ti Grade 5

Alternative designation: Ti6Al4V / Ti64

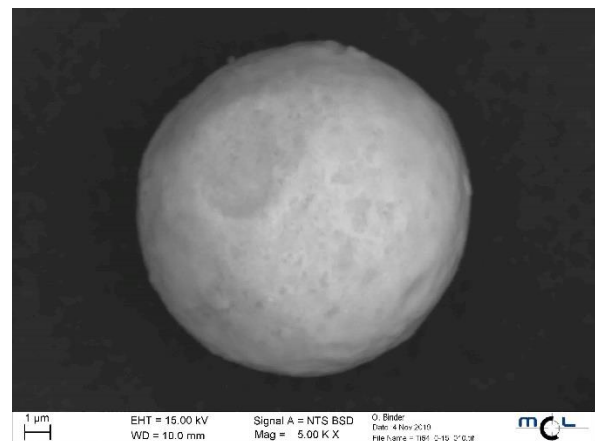
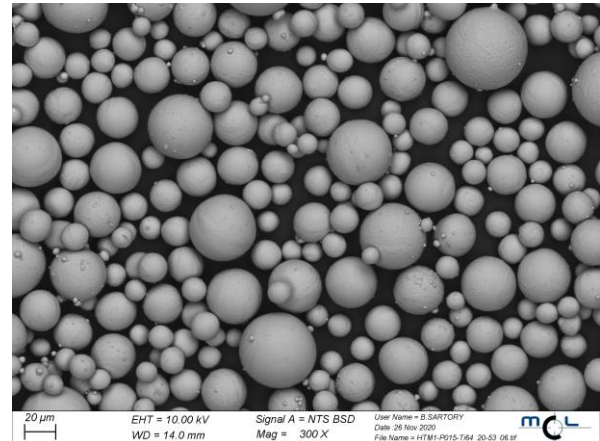
Description and general material properties

MET Ti6Al4V, or Grade 5 titanium, is the most used of all titanium alloys. Its usability lies in its many benefits. MET Ti6Al-4V may be heat treated to increase its strength. It can be used in welded construction at service temperatures of more than 300°C. This alloy offers its high strength at a light weight, useful formability and high corrosion resistance.

MET Ti6Al-4V is used in many industries such as aerospace, medical, marine and chemical processing industries, for example in aircraft turbines, engine components, aircraft structural components, aerospace fastener, high-performance automatic parts, marine applications, or even sports equipment.

Powder characteristics

Chemical composition		
Element	Min [wt%]	Max [wt%]
Al	5,5	6,75
V	3,5	4,5
Fe		0,4
O		0,2
C		0,08
N		0,05
Ti	Balance	Balance



Important note:

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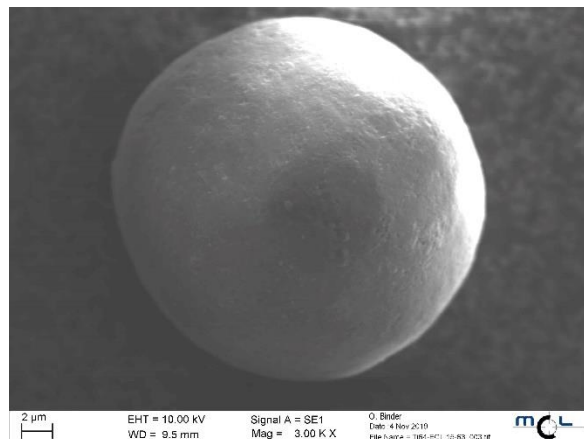
Titanium alloy: MET Ti Grade 23

Alternative designation: Ti6Al4V ELI/ Ti64-ELI

Description and general material properties

MET Ti6AL4V-ELI, or Grade 23 titanium, is the higher purity version of MET Ti6AL4V with a very good biocompatibility. It's the top choice for any sort of situation where a combination of high strength, light weight, good corrosion resistance and high toughness are required. It has a superior damage tolerance to other alloys.

These benefits make MET Ti6AL4V-ELI the most requested titanium grade for dental and medical applications. Due to its biocompatibility, good fatigue strength and low young's modulus, it can be used in biomedical applications or other surgical procedures such as implantable components.



Powder characteristics

Chemical composition		
Element	Min [wt%]	Max [wt%]
Al	5,5	6,5
V	3,5	4,5
Fe		0,25
O		0,13
C		0,08
N		0,05
Ti	Balance	Balance

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Titanium alloy: MET Mo

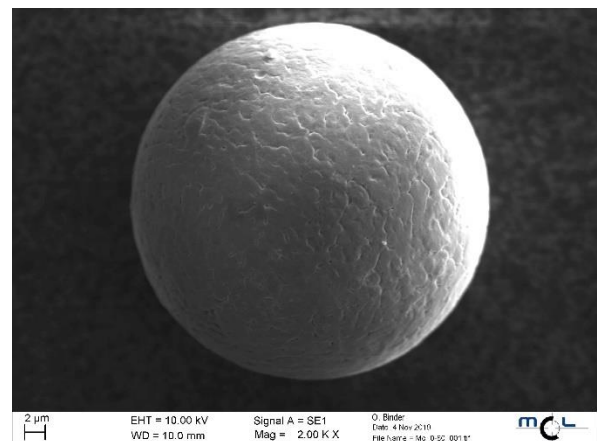
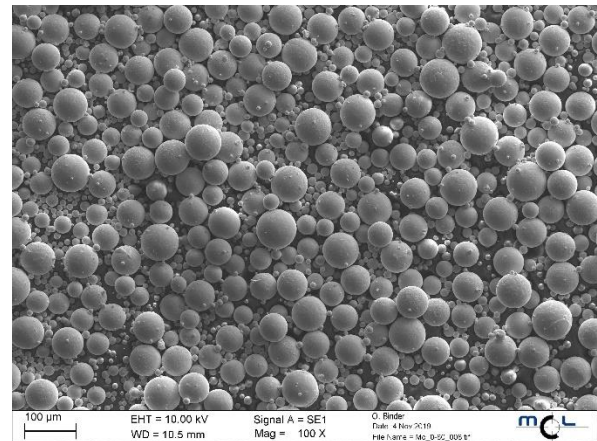
Alternative designation: Molybdenum / Mo99%

Description and general material properties

MET Mo 99% has one of the highest melting temperatures of all the elements (2.623°C), yet unlike most other high-melting point metals, its density is only 25% greater than iron's. Its coefficient of thermal expansion is the lowest of the engineering materials, while its thermal conductivity exceeds all but a handful of elements. The operating temperature is up to 1.900°C.

Powder characteristics

Chemical composition		
Element	Min [wt%]	Max [wt%]
Mo	99	



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