

HIGHLY SPHERICAL – PORE FREE METAL POWDER

High-quality powder for additive manufacturing and more ...



Material class	Name	Alt. Name	Material characteristics
Copper alloys	<u>MET Cu-OF</u>	C10200/CW008A/2.0040	High purity oxygen-free copper with the highest thermal and electrical conductivity (>99,9% Cu).
	<u>MET CuNi2SiCr</u>	C18000/CW111C/2.0855	Thermally curable low-alloyed copper alloy; higher strength and hardness but slightly decreased thermal and electrical conductivity compared to CuCr1Zr.
	<u>MET CuCr1Zr</u>	C18150/CW106C/2.1293	Hardenable copper alloy, combining high strength and hardness with good thermal and electrical conductivity.
	<u>MET GRCop-42</u>	GRCop-42/Cu2Cr4Nb	Dispersion-strengthened copper alloy with high strength, good conductivity, and resistivity against low cycle fatigue.
Stainless Steels	<u>MET 1.4306</u>	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.
	<u>MET 1.4404</u>	316L	Austenitic chromium-nickel-molybdenum steel with a low carbon content (<0,030%); good resistance to chloric media and non-oxidizing acids.
	<u>MET 1.4435</u>	316L	Austenitic chromium-nickel-molybdenum steel with a low carbon content; good resistance to chloric media and non-oxidizing acids.
Nickel Alloys	<u>MET Ni</u>	Nickel/Pure Nickel	Highly electrical and thermal conductible material, is employed in extensive corrosive environments.
	<u>MET Alloy K500</u>	2.4375/N05500/NiCu30Al	High strength and hardness nickel-copper alloy with excellent corrosion resistance, suitable for marine technology and chemistry.
	<u>MET IN718</u>	2.4668/Inconel 718	Nickel-chromium-iron alloy with niobium, molybdenum, aluminium, and titanium, leading to outstanding mechanical properties and corrosion resistance.
	<u>MET IN625</u>	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	<u>MET Ti Grade 5</u>	Ti6Al4V/Ti64	Age hardenable titanium-aluminium-vanadium alloy offering an excellent combination of strength, toughness, and ductility with good biocompatibility
	<u>MET Ti Grade 23</u>	Ti6Al4V ELI/Ti64 ELI	"Extra low interstitials" by reduced oxygen and nitrogen content, used for medical and aerospace applications
	<u>MET Ti Grade 2</u>	Pure Ti / CP Ti	Pure titanium with excellent biocompatibility and a favourable strength to density ratio for high mechanical performance.
Molybdenum	<u>MET Mo</u>	Mo99%	High melting temperature and low thermal expansion coefficient enable operational temperatures up to 1900°C
Niobium	<u>MET Nb</u>	Nb99,8%	For high-temperature applications exceeding 1200°C and the biomedical field due to its high melting point (2468 °C), with outstanding osteogenic properties and low cytotoxicity.

Other materials on request

According to your needs, any metal or alloy can be atomized with our proprietary process. 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]	Technology
5 - 20	4	22	Metal Injection Moulding
15 - 45	10	48	Binder Jetting/Laser Powder Bed Fusion
20 - 63	18	66	Laser Powder Bed Fusion
45 - 116	40	118	Electron Beam Powder Bed Fusion/DED
50 - 150	58	133	Directed Energy Deposition



COMMISSION PROCESSING

Metalpine GmbH is your service partner for the 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.

Backup powder production and R&D plant

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

Powder screening

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

Powder classifying

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

Pore Free & highly spherical

"Pore Free" is defined with 0% pores and with "highly spherical" we understand a sphericity >0,9.

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 customer's needs and help to manage transport organization.

Laboratory Services

Our in-house laboratory measures particle size distributions with laser light scattering (ISO 13320) and digital image processing (ISO 13322-2). Additionally, we offer tap density measurements (ISO3953, ASTM B527) and flowability measurements by Hall Flow Meter (ISO 4490, ASTM B213). For more complex 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.

Certification

Quality Management System according to **ISO 9001**

Aerospace accreditation **EN9100**

Comment for additional note

"Medical" Note 1:

This powder has not been developed, tested, or certified as a medical device according to Directive 93/42/EEC (MDD) or Regulation (EU) 2017/745 (MDR). It is not intended as a medical device, particularly for the purposes specified in Art. 2 No. 1 MDR. Insofar as you intend to use the powder as raw material for the manufacture of pharmaceutical products or medical devices (e.g., as raw material, which as material must meet the requirements of Annex 1, Chapter II MDR), the responsibility and liability for all analyses, tests, evaluations, procedures, risk assessments, conformity assessments, approval, and certification procedures as well as for all other official and regulatory measures required for this purpose shall lie solely with you both concerning the pharmaceutical product and/or medical device manufactured by you and about the properties, suitability, testing, evaluation, risk assessment, other requirements for the use of the powder as raw material. In this respect, the limitations of liability under our General Terms and Conditions and the system sales or material contracts shall apply.

"Dual Use" Note 2:

These goods are subject to the European or Austrian export license requirement when exported from the EU. Please note that a licensing requirement may also result from the final destination and the intended use of the goods (**dual use**).

Please send us your request

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go to Website:



The information given in this document shall be in no event regarded as guarantee of conditions or characteristic. We always recommend the user to test our products on his own responsibility. Extensive research is ongoing, which is why Metalpine reserves the right to change the specification, information and data without notice.

Stainless Steel: MET 1.4404

Alternative designation: 316L

[overview - product table](#)

Description and general material properties

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

Powder characteristics

Chemical composition ¹		
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

Powder characteristics		
Properties*	Min	Max
Flow rate [s/50g] ²		18
Apparent density [g/cm ³] ³	4.5	

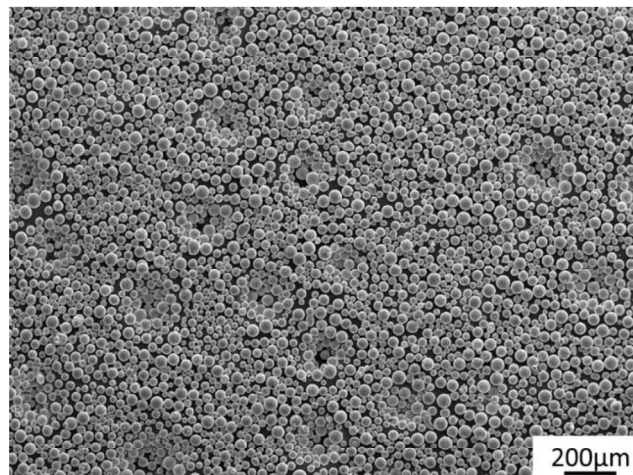
*exemplary values for PSD 15 - 45 µm⁴

1 – values taken from the powder material

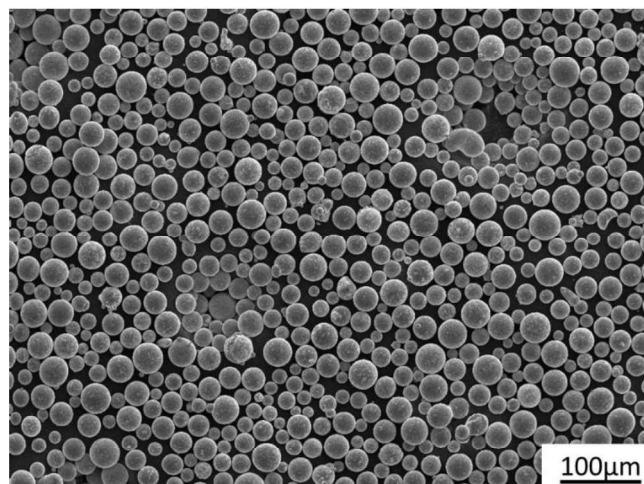
2 – according to ASTM B213

3 – according to ASTM B212

4 – according to ASTM B214



Scanning electron microscopy image of 316L powder (137x)



Scanning electron microscopy image of 316L powder (300x)

