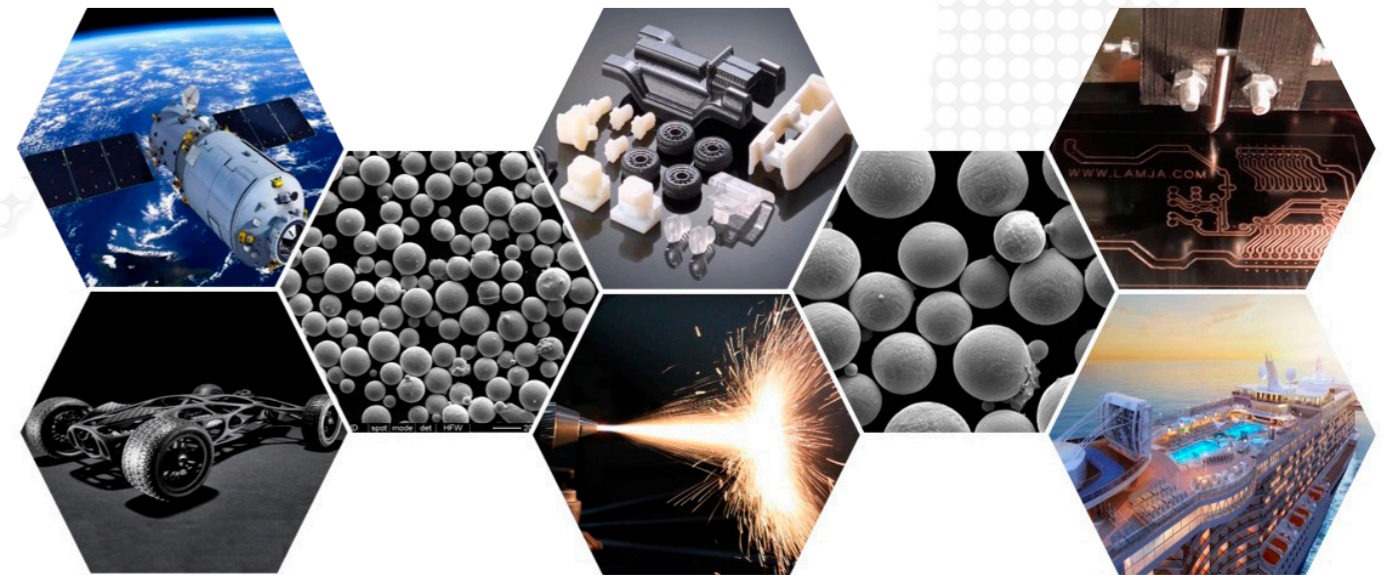


AMCP 3D:

ADVANCED MATERIALS — SYSTEMS



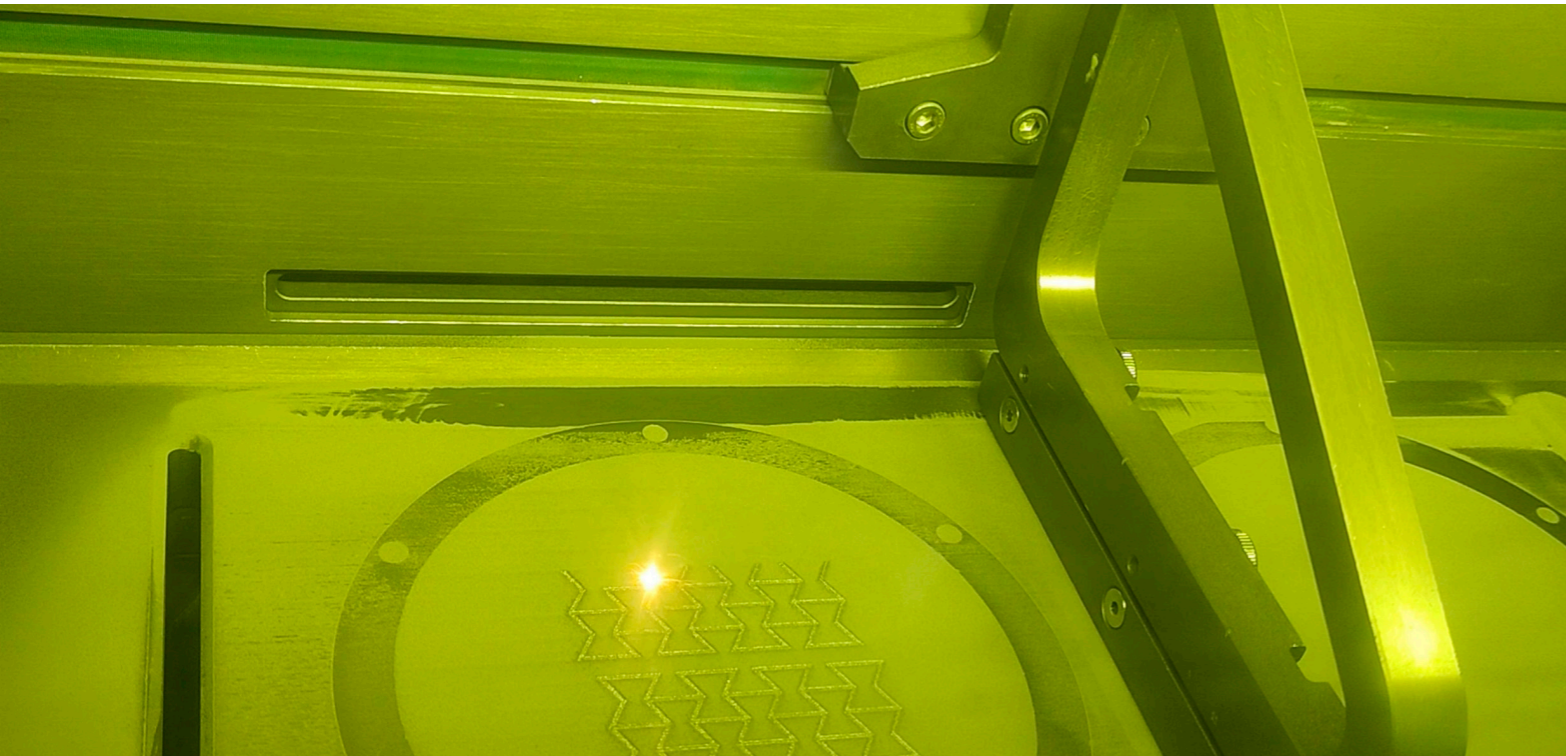
Over 1000 customers in the whole world.



Head Office

AMC Powders Co., Ltd.
Advanced Materials & Systems
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AMC POWDERS CO., LTD.



COMPANY PROFILE

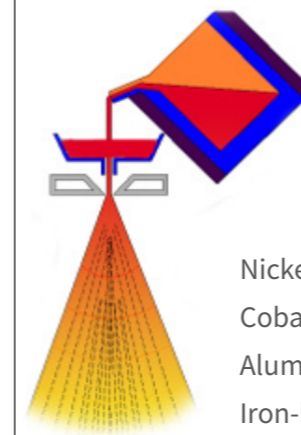
As an aeronautical material expert, AMC Powders Co., Ltd. (hereinafter abbreviated as AMCP 3D) was established in the famous Beijing Zhongguancun Industrial Park. In the past few years, it has served more than 1,000 customers at home and abroad. Its service areas include aerospace, automotive, medical, and many industries such as molds, electronics (5G new materials), and ships used in additive manufacturing, hot isostatic pressing, metal injection molding, cold/thermal spraying, and other processes. AMCP 3D applies a variety of production technologies to produce metal powder materials, including gas atomization, plasma spheroidization, and other technologies. The production of AMCP 3D is currently based in Northeast China, using local resource advantages to promote the development and application of metal materials. At present, the main metal powder materials of AMCP 3D include Ti6Al4V, CPTi, Inconel718, Inconel625, Hastelloy X, H188, CoCrMo, CoCrMoW, AlSi10Mg, AlSi7Mg, AlSi12, common alloy steel powder, customized metal powder, and many other metal powder materials. The metal powders provided by AMCP 3D have high sphericity, good flowability, and good compatibility with metal printers of different brands. AMCP 3D is based in China and serves the whole world.

Strive to provide high-quality metal powder materials for global customers. AMCP 3D, Make 3D Printing Easier!

MAIN TECHNOLOGY

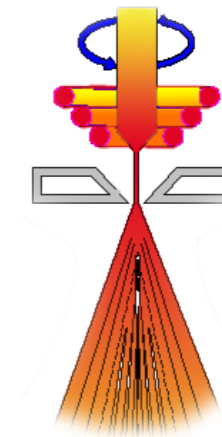
The scientific research team has nearly 30 years of research experience in aeronautical alloy powder, breaking through advanced alloy powder preparation technology such as VIGA, EIGA, PREP and RF Plasma Spheroidization System and developing and producing over 100 kinds of alloy grades such as titanium alloy, nickel-based alloy, cobalt-chromium alloy, tool and die steel. The powder has high sphericity, good fluidity, low oxygen content and high purity, which conforms to ISO and ASTM, AMS, GB/T and other relative standards.

Vacuum Induced Atomization (VIGA)



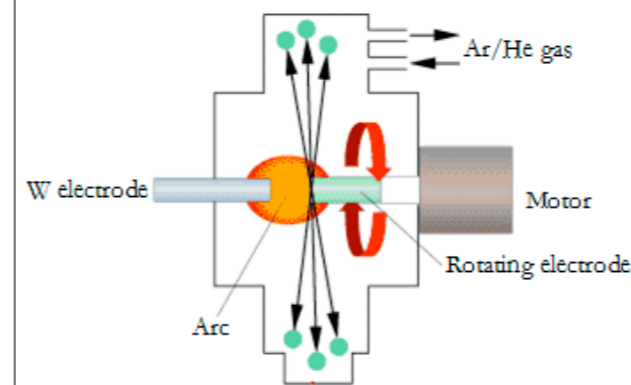
Nickel-based alloys
Cobalt-chromium-based alloys
Aluminum-based alloys
Iron-based alloys
...

Electrode Induction Atomization (EIGA)



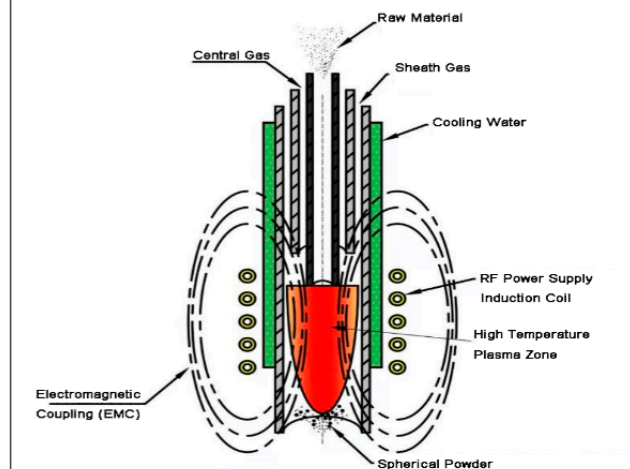
Titanium alloys,
Titanium-aluminium,
Nickel-titanium...

Plasma Rotating Electrode Process (PREP)



Titanium, Nickel, Cobalt, Steel...

RF Plasma Spheroidization System



W, Mo, Ta, Nb and other Refractory Metals...

MAIN PRODUCTS

MATERIAL LIST OF AMC POWDERS

Item No.	Grade	PSD	Mechanical Properties (As Built)			Mechanical Properties (Heat Treated)			Remark
			Tensile Strength	Yield Strength	Elongation	Tensile Strength	Yield Strength	Elongation	
1	Ti64 Gr5	15-53µm	1180MPa	1010MPa	15%	1000MPa	900MPa	12%	Heat Treated @850°C
2	Inconel718	15-53µm	1060MPa	780MPa	27%	1050MPa	900MPa	12%	Heat Treated @650°C
3	Inconel625	15-53µm	880MPa	430MPa	34%	310MPa	190MPa	35%	Heat Treated @815°C
4	Inconel939	15-53µm	1050MPa	740MPa	30%	1250MPa	750MPa	15%	Heat Treated
5	Hastelloy X	15-53µm	720MPa	310MPa	24.5%	230MPa	170MPa	30%	Heat Treated @1150°C
6	Co28Cr6Mo	15-53µm	1260MPa	840MPa	14%	--	--	--	
7	316L	15-53µm	650MPa	540MPa	40%	--	--	--	
8	Corrax	15-53µm	1080MPa	840MPa	14%	1760MPa	1670MPa	7%	Annealing @900°C
9	1.2709	15-53µm	1100MPa	1050MPa	12%	2020MPa	1900MPa	6%	Aging 6h @490°C
10	M2	15-53µm	710MPa	680MPa	--	--	--	--	
11	AlSi10Mg	15-53µm	470MPa	294Mpa	8%	320Mpa	200Mpa	12%	
12	AlSi7Mg	15-53µm	420Mpa	240Mpa	13%	300Mpa	200Mpa	13%	

Note:

- The performance of the material is finally determined by the powder, printing equipment, printing process, heat treatment process, etc.;
- The above properties are the data measured after the powder is printed by EOS M280/M290/M400, Concept Laser M2, SLM 125/SLM 280, Truprint 1000/Truprint3000, Renishaw REN AM400, Farsoon FS273M/FS271M, E-plus EP-M650H/EP-450H/EP-M260/EP-M450D, HBD 200/HBD350 and/or other brand equipment.
- The above data is for reference only and does not represent a final performance guarantee.
- The brands and product models mentioned above do not imply any association with AMC Powders.

NICKEL BASED POWDER

Nickel-based alloy powder is an alloy powder material made by mixing nickel powder with other metal elements. Nickel-based alloy powder has excellent properties such as high strength, high temperature strength, corrosion resistance and wear resistance, and is widely used in aerospace, automotive, electronics, chemical and other fields.

Material Properties

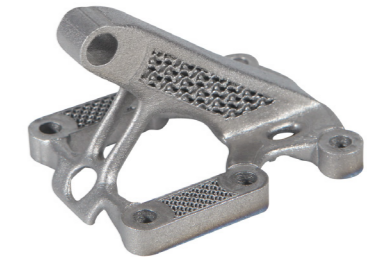
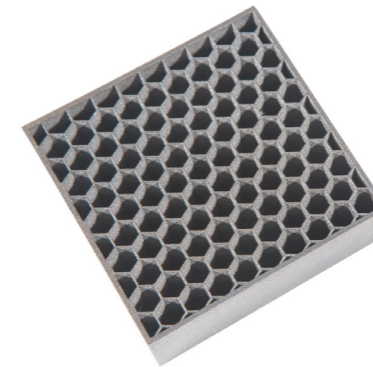
- Retains strength up to 650 ° C (In718)
- High creep resistance
- High corrosion resistance
- Excellent fatigue performance
- Excellent creep-rupture strength
- Without cracks in as-built condition
- Resistance to strain aging cracking

Applications

- Aerospace, defense and nuclear
- Gas turbine blades & Rocket motors
- Exhaust manifolds
- Heat exchangers
- Chemical process industry

Particle Size of the Powder

0-20µm, 15-45µm, 15-53µm, 20-63µm, 45-105µm, 50-150µm...and other customized PSD.



Spherical Ni-based Alloy Powders

Regular	Grade	Chemical Composition (wt%)			Reference Standard		
					ASTM	AMS	GB/T
Inconel 718	GH4169 N07718 Inconel 718	Cr 17.00-21.00 Mo 2.80-3.30 Ti 0.65-1.15 Al 0.20-0.80 Co 1.00 max	C 0.08 max Ni 50.00-55.00 Mn 0.35 max Si 0.35 max Nb 4.75-5.50	Cu 0.30 max Mg 0.01 max B 0.006 max Fe Balance	F3055	5596 5663 5664 5832	GB/T 14992-2005
Inconel 625	GH3625 N06625 Inconel 625	Cr 20.00-23.00 Mo 8.00-10.00 Co 1.00 max Nb 3.15-4.15	Al 0.40max Ni Balance Ti 0.40 max C 0.10 max	Fe 5.00 max Mn 0.50 max Si 0.50 max Cu 0.07 max	F3056	5599 5666	GB/T 14992-2005

Regular	Grade	Chemical Composition (wt%)			Reference Standard		
					ASTM	AMS	GB/T
Hastelloy X	GH3536 N06002 Hastelloy X	Cr 20.50-23.00 Mo 8.00-10.00 Co 0.50-2.50 W 0.20-1.00	Al 0.50 max Ti 0.15 max Fe 17.00-20.00 Mn 1.00 max	Si 1.00 max C 0.05-0.15 Cu 0.50 max Ni Balance	B 435 B 572	5536 5588 5798C 5798W	GB/T 14992-2005
Inconel 939	Inconel 939	C 0.13-0.17 Si 0.20 max Mn 0.20 max Cr 22.20-22.80 Ti 3.60-3.80 W 1.80-2.20	Fe 0.50 max Co 18.50-19.50 Nb 0.90-1.10 Ta 1.30-1.50 Al 1.80-2.00 B 0.004-0.014	Ni Balance Zr 0.05-0.14 O N/M N 0.005 max S 0.010 max			GB/T 14992-2005 AMCP Standard
Inconel 738LC	Inconel 738LC	C 0.09-0.13 Si 0.05 max Mn 0.20 max Cr 15.70-16.30 Ti 3.20-3.70 W 2.40-2.80 Fe 0.50 max	Co 8.00-9.00 Mo 1.50-2.00 Nb 0.60-1.10 Ta 1.50-2.00 Al 3.20-3.70 B 0.007-0.012 Cu 0.10 max	Ni Balance Zr 0.015-0.025 P 0.015 max S 0.015 max O 0.12 max N N/M			GB/T 14992-2005 AMCP Standard
Inconel 738C	Inconel 738C	C 0.15-0.20 Si 0.30 max Mn 0.20 max Cr 15.70-16.30 Ti 3.20-3.70 W 2.40-2.80	Fe 0.50 max Co 8.00-9.00 Mo 1.50-2.00 Nb 0.60-1.10 Ta 1.50-2.00 Al 3.20-3.70	Ni Balance Zr 0.015-0.025 P 0.015 max S 0.015 max O 0.12 max B 0.005-0.015 Cu 0.10 max			GB/T 14992-2005 AMCP Standard
NiCrSiNbMo	NiCrSiNbMo NiCr	Cr 22.0-27.00 Mo 10.00-13.00 Si 1.40-1.80 Fe ≤ 0.50	Nb ≤ 0.60 C <0.05 Mn 0.50max. S 0.015max.	P 0.015max. N 0.02max. O 0.05max. Ni Balance			AMCP Standard
Hastelloy C276	C276	Cr 14.50-16.50 Fe 4.00-7.00 Mo 15.00-17.00 W 3.00-4.50	Co 2.50 max C 0.01 max Mn 1.00 max S 0.01 max.	P 0.01 max Si 0.08 max Ni Balance O/N N/M			AMCP Standard UNS N10276

Customized	Grade	Chemical Composition (wt%)			Reference Standard		
					ASTM	AMS	GB/T
Inconel 713LC	Inconel 713LC K418B	C 0.03-0.07 Si 0.50 max Mn 0.50 max Cr 11.00-13.00 Ti 0.40-1.00 Fe 0.50 max	Co 1.0 max Mo 3.80-5.20 Nb 1.50-2.50 Al 5.50-6.50 B 0.005-0.015 Cu 0.50 max	Zr 0.05-0.15 Ni Balance P 0.015 max S 0.015 max O N/M N N/M		5377	GB/T 14992-2005
K418 (K18) 518	INCO713C	C 0.08-0.16 Si 0.50 max Mn 0.50 max Cr 11.50-13.50 Ti 0.50-1.00 Fe 0.50 max	Co 1.0 max Mo 3.80-4.80 Nb 1.80-2.50 Ta 0.15 max Al 5.50-6.40 B 0.008-0.02	Cu 0.50 max Zr 0.06-0.15 Ni Balance P 0.01 max S 0.01 max O/N N/M		5391	GB/T 14992-2005

Customized	Grade	Chemical Composition (wt%)			Reference Standard		
					ASTM	AMS	GB/T
Inconel690	UNS NO6690 W.Nr.2.4642 GH690 Inconel690	C 0.015-0.025 Si 0.50 max Mn 0.50 max Cr 28.5-31.0 Ti 0.35 max	Fe 9.0-11.0 Co 0.015 max Mo 0.20 max Nb+Ta 0.10 max Al 0.40 max B 0.002 max	Cu 0.05 max P 0.015 max S 0.015 max O N/M N N/M Ni 58.0 min	B564	5887	GB/T 14992-2005
GH3230 HA230	HAYNES 230 UNS N06230 GH3230 HA230	C 0.05-0.15 Si 0.25-0.75 Mn 0.30-1.00 Cr 20.00-24.00 Al 0.20-0.50	Mo 1.00-3.00 W 13.00-15.00 Co 5.00 max B 0.01 max La 0.005-0.05	P 0.015 max S 0.015 max O/N N/M Ni Balance	B435		GB/T 14992-2005
GH4099 GH99	ЭП693 XH68MBKTYOP GH4099 GH99	C 0.08 max Si 0.5 max Mn 0.4 max Cr 17.00-21.00 Fe 2.00 max Co 5.00-8.00	Mo 3.50-4.50 W 5.00-7.00 Ti 1.00-1.50 B 0.005 max Ce 0.020 max P 0.015 max.	S 0.015 max Al 1.70-2.40 Mg 0.01 max Ni Balance O/N N/M			GB/T 14992-2005
K648 EP648	ЭП648 EP648 XH50BMTЮБ	Cr 32.00-35.00 Nb 0.70-1.30 Mo 2.30-3.50 Ti 0.70-1.30 Al 0.70-1.30	B 0.008 max Ce 0.03 max C 0.03-0.10 Si 0.30 max Fe 0.50 max	W 4.30-5.50 S 0.01 max O/N N/M Ni Balance			GB/T 14992-2005
K465		Fe 1.00 max Cr 8.00-9.50 Mn 0.40 max Ti 2.00-2.90 Mo 1.20-2.40 Ni Balance Co 9.00-10.50	Al 5.10-6.00 Nb 0.80-1.20 Zr 0.04 max B 0.035 max Ce 0.02 max Y 0.10 max Si 0.40 max	Pb 0.0005 max Bi 0.0005 max C 0.13-0.20 P 0.015 max S 0.01 max O/N N/M			Q/KJ.J02.33 AMCP Standard
DZ125	DS Rene' 125	C 0.07-0.12 Cr 8.40-9.40 Co 9.50-10.50 W 6.50-7.50 Mo 1.50-2.50 B 0.01-0.02	Al 4.80-5.40 Ti 0.70-1.20 Fe 0.30 max Ta 3.50-4.10 Hf 1.20-1.80	Zr 0.08 max Si 0.15 max Mn 0.15 max Sn 0.001 max Ni Balance			GB/T 14992-2005
Rene 77	Rene 77	Ni Balance Cr 14.00-15.25 Co 14.00-16.00 Mo 3.90-4.50 Fe 1.00 max	Al 4.00-4.60 Ti 3.00-3.70 C 0.05-0.09 Si 0.50 max Mn 0.20 max	Zr 0.04 max Ce 0.1 max P 0.015 max S 0.01 max B 0.012-0.02			AMCP Standard
DD402	CMSX-2 NWC8TA6AK	C 0.006 max Cr 7.00-8.20 Co 4.30-4.90 W 7.60-8.40 Mo 0.30-0.70 Al 5.45-5.75 Ti 0.80-1.20	Fe 0.20 max Nb 0.15 max Si 0.040 max Hf 0.0075 max Mn 0.020 Ta 5.80-6.20 Yb 0.100 max	Cu 0.050 max Zn 0.0005 max Mg 0.008 max B 0.003 max P 0.005 max S 0.002 max Ni Balance			GB/T 14992-2005

Customized	Grade	Chemical Composition (wt%)			Reference Standard		
					ASTM	AMS	GB/T
DD406	DD6	Cr 3.80-4.80 W 7.00-9.00 Mo 1.50-2.50 Al 5.20-6.20 Hf 0.05-0.15 C 0.001-0.04 C 0.001-0.04 Co 8.50-9.50 Ta 6.00-8.50 Re 1.60-2.40	Nb 1.20 max. Ti 0.10 max. Fe 0.30 max. S 0.004 max. P 0.018 max. Si 0.20 max. Mn 0.15 max. Cu 0.1 max. Mg 0.003 max. H 0.001 max.	B 0.02 max. Zr 0.1 max. Sb 0.001 max. As 0.001 max. Sn 0.001 max. Bi 0.0005 max. Ag 0.0005 max. Pb 0.0005 max. Ni Balance			GB/T 14992-2005
CMSX -4	CMSX-4	Ni Balance Cr 6.00-7.00 Co 9.60-9.90 Al 5.00-6.00	Mo 0.40-0.80 Ti 0.70-1.30 Ta 6.00-7.00 W 5.50-6.50	Hf 0.06-0.14 Re 2.70-3.30 O 0.02 max N 0.02 max			GB/T 14992-2005 AMCP Standard
FGH 4095	Rene' 95	C 0.04-0.09 Cr 12.00-14.00 Co 7.00-9.00 W 3.30-3.70 Mo 3.30-3.70	Al 3.30-3.70 Ti 2.30-2.70 Nb 3.30-3.70 Zr 0.03-0.07	Si 0.20max Mn 0.15max Fe 0.50max Mo 3.30-3.70	Ni Balance		GB/T 14992-2005
FGH 4096	Rene' 88DT	C 0.02-0.05 Cr 15.00-16.50 Co 12.50-13.50 W 3.80-4.20	Mo 3.80-4.20 Al 2.00-2.40 Ti 3.50-3.90 Nb 0.60-1.00	Si 0.20max Mn 0.15 max Fe 0.50 max Ni Balance			GB/T 14992-2005
M247	M247	Cr 8.00-9.00 Co 9.50-10.50 Ti 0.50-1.00 Mo 0.40-1.00 W 9.50-10.50 Ta 2.50-3.50 Hf 0.50-2.00 Zr 0.01-0.07	Al 5.20-5.80 Si 0.03 max. Mn 0.05 max. S 0.01 max. P 0.01 max. Cu 0.05 max. V 0.01 max. O 0.03 max.	N 0.015 max. Nb 0.01 max. Re 0.01 max. Ca 0.005 max. Pb 0.01 max. Mg 0.005 max. C 0.15 max. B 0.005-0.015	Ni Balance		GB/T 14992-2005 AMCP Standard
Hymu 80	Hymu 80	Ni 79.00-81.00 Mo 4.50-5.20 Si 0.15-0.30 Mn 0.30-0.60	Cu 0.20 max. C 0.03 max. S 0.015 max. P 0.015 max.	N 0.03 max. O 0.05 max. Ni Balance			GB/T 14992-2005 AMCP Standard
Monel K400	Monel K400	Cu 28.00-34.00 Ni 63.00 min. Si 0.50 max.	Mn 2.00 max. S 0.024 max.	Fe 2.50 max. C 0.3 max.			GB/T 14992-2005 AMCP Standard
Monel K500	Monel K500	Cu 27.00-33.00 Ni 63.00 min. Al 2.30-3.15	C 0.18 max. S 0.01 max. Ti 0.35-0.85	Fe 2.00 max. Si 0.50 max. Mn 1.50 max.			GB/T 14992-2005 AMCP Standard
Pure Ni	Pure Nickel	C 0.05 max. S 0.035 max.	Si 0.5 max. Cr 0.5 max.	Fe 0.5 max. Ni Balance			GB/T 14992-2005 AMCP Standard

IRON BASED POWDER

Steel alloy powder is divided into low-alloy steel powder and high-alloy steel powder. According to different uses, nickel, chromium, molybdenum, tungsten, manganese and other elements are added to make it have different functions. For example, as a maraging steel, 1.2709, after aging, its performance is doubled compared with that of the built state; steel alloy materials such as 316L and Corrax have better corrosion resistance because of the addition of Cr; and high nitrogen steel with increased nitrogen content and super Duplex stainless steel has higher wear resistance and fatigue strength and so on. The excellent properties of these alloys make steel alloys widely used in many application scenarios.

Material Properties

- High strength and toughness
- High wear & corrosion resistance
- Excellent mechanical properties
- Easy to treat and machinable
- Can be highly polished

Applications

- Plastic injection and pressure die-casting molds, extrusion dies
- Automotive industry, aerospace, especially turbine industry
- Cutlery and kitchenware
- Maritime components , spindles and screws
- General engineering, like watches, jewelries, frames, decorations
- Entry-level material for Laser Sintering Technology

Particle Size of the Powder

0-20µm, 15-45µm, 15-53µm, 20-63µm, 45-105µm, 50-150µm...and other customized PSD.



Spherical Fe-based Alloy Powders

Regular	Grade	Chemical Composition (wt%)			Reference Standard		
					ASTM	AMS	GB/T
18Ni300	MS1 CL50WS ST2709 1.2709	C 0.03max Si 0.10max Mo 4.60-5.20	Mn 0.10 max Ni 18.0-19.0 Ti 0.50-0.80	Co 8.50-9.50 O N/M Fe Balance	A579-04	6514	GB/T14992-2005

Regular	Grade	Chemical Composition (wt%)			Reference Standard		
					ASTM	AMS	GB/T
CX	Corrax	Fe Balance Cr 11.00-13.00 Ni 8.40-10.00	Mo 1.10-1.70 Al 1.20-2.00 Mn 0.40max.	Si 0.40max. C 0.05max. O N/M			AMCP Standard
Invar 36	Invar 36 FeNi36 1.3912 Ni36	Ni 35.00-37.00 C 0.10 max Mn 0.20-0.60 P 0.025 max	Si 0.35 max Cr 0.50 max S 0.025 max	Mo 0.50 max Co 1.0 max Fe Balance	B752 B753 F1684		GB/T14992-2005
Super Duplex Stainless Steel 2205	UNS S31803 UNS S32205 318LN 1.4462	Ni 4.50-6.50 Cr 21.00-24.00 N 0.08-0.20 Mo 2.50-3.50	Mn 2.00 max. S 0.03 max. C 0.03 max.	P 0.04 max. Si 1.00 max. Fe Balance			GB/T 1299 AMCP Standard
Super Duplex Stainless Steel 2507	UNS S32750 1.4410 F53	Ni 6.00-8.00 Cr 24.00-26.00 N 0.24-0.32 Mo 3.00-5.00	Mn 1.20 max. S 0.02 max. C 0.03 max.	P 0.035 max. Si 0.80 max. Fe Balance			GB/T 1299 AMCP Standard
Super Duplex Stainless Steel 2707	UNSS32707	Ni 5.50-9.50 Cr 26.00-29.00 Mo 4.00-5.00 N 0.30-0.50	Cn 1.00 max. C 0.03 max. Si 0.50 max. Mn 1.50 max.	S 0.02 max. P 0.035 max. Fe Balance			GB/T 1299 AMCP Standard
Super Duplex Stainless Steel 3207	UNS S33207	Ni 6.00-9.00 Cr 29.00-33.00 Mo 3.00-5.00 N 0.40-0.60	Cu 1.00 max. C 0.03 max. Si 0.80 max. Mn 1.50 max.	S 0.01 max. P 0.035 max. Fe Balance			GB/T 1299 AMCP Standard
SUS316L	SUS 316L CL20ES 1.4404 S31603	C 0.03max Si 1.00 max Mn 2.00max	Cr 16.00-18.00 Ni 10.00-14.00 Mo 2.00-3.00	Cu 0.15-0.25 O 0.06 max. Fe Balance	F745 F138 F3184	5507 5648 5653	GB/T 20878 GB/T 1220 GB/T 3280
SUS304L	SUS304L 1.4307 S30403	C 0.03max Si 1.00max	Cr 18.00-20.00 Mn 2.00max	Ni 8.00-12.00 Fe Balance	A276	5647J	GB/T 20878 GB/T 1220 GB/T 3280
17-4PH	GP1 1.4542 S17400	C 0.07max Si 1.0max Mn 1.0max	Ni 3.0-5.0 Cr 15.50-17.50 Cu 3.0-5.0	Nb 0.15-0.45 O N/M Fe Balance	A276 A479 A582	5604 5643	GB4226-84 GB/T1220-2007
15-5PH	PH1 1.4545 S15500	C 0.07max Si 1.00max Mn 1.00max	Cr 14.00-15.50 Ni 3.50-5.50 Cu 2.50-4.50	Nb 0.15-0.45 O N/M Fe Balance	A705 S564 A693	5659 5862	
H13	1.2344 4Cr5MoSiV1 SKD61 T20813	C 0.33-0.45 Si 0.80-1.20 Cr 4.75-5.50	Mn 0.20-0.50 Mo 1.10-1.60	V 0.80-1.20 Fe Balance	A681	6408	GB/T 1299

Regular	Grade	Chemical Composition (wt%)			Reference Standard		
					ASTM	AMS	GB/T
HR-2	HR-2	Ni 5.50-8.00 Cr 19.00-21.50 N 0.20-0.34	Mn 8.00-10.00 C 0.04 max. Si 1.00 max.	S 0.015 max. P 0.025 max. Fe Balance			GB/T 1299 AMCP Standard
654SMO	654SMO	Ni 21.00-23.00 Cu 0.30-0.60 Cr 24.00-25.00 Mo 7.00-8.00	N 0.45-0.55 Mn 2.00-4.00 C 0.02 max. Si 0.05 max.	S 0.005 max. P 0.03 max. Fe Balance			GB/T 1299 AMCP Standard
4J32	FeNi32	C 0.05 max. Co 3.20-4.20 Cu 0.40-0.80 Si 0.02 max.	Mn 0.20-0.60 Ni 31.50-33.00 Total Res. 0.05 max.	S 0.02 max. P 0.02 max. Fe Balance			GB/T 1299 AMCP Standard

Customized	Grade	Chemical Composition (wt%)			Reference Standard		
					ASTM	AMS	GB/T
CPM10V	CPM10V	Cr 4.75-5.75 Mo 1.10-1.50	V 9.25-10.25 C 2.40-2.50	Si 0.75-1.10 Fe Balance			AMCP Standard
D2	1.2379 Cr12Mo1V1 D2	C 1.40-1.60 Si 0.40max	Mn 0.60max Cr 11.00-13.00	Mo 0.80-1.20 V 1.00 max. Fe Balance	A681		GB/T 1299
M2	1.3343 SKH51 W6Mo5Cr4V2	C 0.78-0.88 Mn 0.15-0.40 Si 0.20-0.45	Cr 3.75-4.50 V 1.75-2.20 W 5.50-6.75	Mo 4.50-5.50 Fe Balance	A600-92a		GB/T9943-2008
M4	M4	C 1.25-1.40 Si 0.2-0.45 Mn 0.15-0.4	Cr 3.75-4.5 Mo 4.50-5.50 W 5.25-6.50	V 3.75-4.50 O N/M Fe Balance	A600-92a		GB/T9943-2008
H11	1.2343 SKD6 4Cr5MoSiV	C 0.32-0.45 Si 0.60-1.00 Mn 0.20-0.50	Cr 4.70-5.20 Mo 0.80-1.20	V 0.20-0.60 Fe Balance	A681	6437H	GB/T 1299
4140	42CrMo4 1.7225 G41400	C 0.38-0.43 Si 0.15-0.35	Cr 0.8-1.1 Mn 0.7-0.9	Mo 0.15-0.25 Fe Balance	A29/A29M	6349 6382	GB/T 3077
4340	1.6511 40CrNi2Mo G41300	C 0.38-0.43 Si 0.15-0.35 Mn 0.60-0.80	Ni 1.65-2.00 Cr 0.70-0.90	Mo 0.20-0.30 Fe Balance	A29/A29M A519 A646/A646M	6414	GB/T 3077

Customized	Grade	Chemical Composition (wt%)			Reference Standard		
					ASTM	AMS	GB/T
410	1.4006 SUS 410	C 0.15 max Si 1.00 max	Cr 11.50-13.50 Mn 1.00 max	Ni 0.60 max Fe Balance	A182 A276 A479	5504, 5505 5591, 5613 5776	GB/T 1220-2007
420J1	1.4021 SUS 420J1 AISI 420L	C 0.15-0.25 Si 1.00 max	Cr 12.00-14.00 Mn 1.00 max	O N/M Fe Balance	A240 A276		GB/T 20878 GB/T 1220 GB/T 3280
420J2	1.4028 SUS 420J2 AISI 420M	C 0.30-0.40 Si 1.00max	Cr 12.00-14.00 Mn 1.00max	O N/M Fe Balance	A240 A276		GB/T 20878 GB/T 1220 GB/T 3280
430	1.4016 SUS 430	C 0.12 max Si 0.75 max	Cr 16.00-18.00 Mn 1.00 max	O N/M Fe Balance	A240 A276	5503	GB/T 20878 GB/T 1220 GB/T 3280
440C	1.4125 SUS 440C	C 0.90-1.25 Si 1.00 max	Cr 16.00-18.00 Mn 1.00 max	O N/M Fe Balance	A276/A276M A314 A493	5618 5630 5880	GB/T 1220
310S	1.4845 SUS 310S	C 0.08max Si 1.50 max	Cr 24.00-26.00 Mn 2.00 max	Ni 19.00-22.00 Fe Balance	A276, A314 A479/A479M A580/A580M	5521	GB/T 1220 GB/T 3280
AISI8620	1.6543 AISI8620 20CrNiMo	C 0.18-0.23 Si 0.15-0.35 Mn 0.70-0.90	Ni 0.40-0.70 Cr 0.40-0.60	Mo 0.15-0.25 Fe Balance	A29/A29M A322 A534	6274 6276 6277 6375	GB/T 3077
HK30	HK30	C 0.25-0.35 Si 1.50 max Mn 2.00 max	Ni 19.00-22.00 Cr 24.00-26.00	Mo 0.50 max Fe Balance	A351 A608		GB/T14976-2012
S136	1.2083 S136	C 0.20-0.45 Si 0.80-1.00	Mn 1.00 max Cr 12.0-14.0	V 0.15-0.4 Fe Balance	A681		GB/T 1299
M390	M390	C 1.85-1.95 Si 0.50-0.75 Fe Balance Mn 0.25-0.35	Cr 19.50-20.50 Mo 0.90-1.10 V 3.80-4.20 W 0.50-0.70	S 0.025 max P 0.025 max O N/M P N/M			AMCP Standard

COBALT BASED POWDER

Spherical Cobalt Based Alloy Powder is normally with high-strength and high-temperature resistance, and other great features which makes cobalt-based powder has great applications in magnetic, high-strength, wear resistant and corrosion resistant parts and components. It normally contains Co, Cr, Mo, Ni, W and/or some other elements.

Material Properties

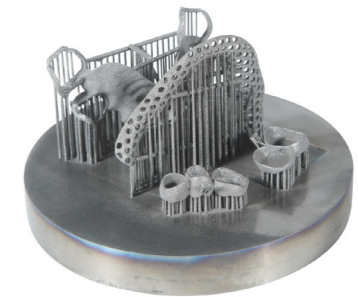
- High Elastic Modulus
- Superior wear & corrosion resistance
- High Tensile Strength
- High Temperature Resistance

Applications

- Highly used in Aerospace, especially to make gas turbine parts (nozzles)
- Orthopedic implants and other medical implants
- A wide variety of industrial applications

Particle Size of the Powder

0-20µm, 15-45µm, 15-53µm, 20-63µm, 45-105µm, 50-150µm...and other customized PSD.



Spherical Co-based Alloy Powders

Regular	Grade	Chemical Composition (wt%)		Reference Standard		
				ASTM	AMS	GB/T
Co28Cr6Mo	CoCrMo MP1	C 0.35 max Si 1.00 max Mn 1.00 max Cr 26.00-30.00 Co Balance Mo 5.00-7.00 Ni 0.10 max Fe 1.00 max	W 0.20 max P 0.02 max S 0.01 max Al 0.10 max Ti 0.10 max B 0.01 max N 0.25 max O N/M	F3213 F75		GB/T 14992-2005

Regular	Grade	Chemical Composition (wt%)		Reference Standard		
				ASTM	AMS	GB/T
Stellite 6	Stellite 6	Ni 2.50-4.20 Cr 28.00-32.00 W 3.00-6.00 Mo 1.50 max	Mn 1.00 max. C 0.90-1.40 Si 0.80-2.00 Fe 2.00-4.20 Co Balance		5387 5373 5788 7239	AMCP Standard UNS R30006 UNS R30106 UNS W73006 UNS W73036
Stellite 12	Stellite 12	Cr 27.00-32.00 W 7.50-9.50 C 0.50-2.00 Ni 2.50-4.20 V 0.35 max.	Fe 2.50-4.20 Si 2.50 max. Mn 1.50 max. Mo 2.00 max. Co Balance			AMCP Standard UNS R30012 UNS W73012 UNS W73042
Stellite 21	Stellite 21	C 1.00 max. Mn 1.50 max. Si 1.00-3.00 Cr 25.00-29.00 Ni 1.70-3.80	Mo 5.00-6.00 S 0.04 max. P 0.04 max. Fe 3.00 max. B 0.007 max.	A732	5385 5819	AMCP Standard UNS R30021 UNS W73041 UNS W73021
CoCrMoW	CoCrMoW	Cr 23.70-25.70 W 3.90-5.90 Mo 4.60-5.60 Si 2.00 max.	Fe 1.00 max Mn 1.00 max Co Balance			AMCP Standard
CoCrW	CoCrW	Cr 26.00-29.00 W 7.50-9.50 Si 0.65-2.50 Mn 0.50 max.	Fe 0.35-0.50 Be 0.01 max. Cd 0.01 max. Ni 0.10 max.			AMCP Standard
HiperCo50	FeCo50 iron-cobalt soft magnetic material	Co 49.00-51.00 V 0.80-1.80 C 0.03 max. Mn 0.30 max. Si 0.30 max.	P 0.02max. S 0.02max. Cr/Cu 0.20max. Ni 0.50max. Fe Balance			GB/T 1299 AMCP Standard
HiperCo27	FeCo27 iron-cobalt soft magnetic material	Co 26.50-28.50 Ni 0.75 max. C 0.025 max. Si 0.35 max. V 0.35 max.	Mn 0.15 max. S 0.015 max. P 0.015 max. Cr 0.75 max. Fe Balance			GB/T 1299 AMCP Standard
HA188	GH5188 Hastelloy A188 HA188	C 0.05-0.15 Cr 20.00-24.00 Ni 20.00-24.00 Co Balance W 13.00-16.00 Fe 3.00 max Cu 0.07 max	La 0.03-0.12 B 0.015 max Si 0.20-0.50 Mn 1.25 max P 0.020 max S 0.015 max O/N 0.03 max		5608 5801 5772	GB/T 14992-2005

COPPER BASED POWDER

Copper has excellent electrical conductivity. Common copper alloys include silver-copper alloy, nickel-copper alloy, tungsten-copper alloy, etc.; copper has high thermal conductivity and electrical conductivity, and its conductivity is second only to silver and gold. Copper and Copper alloys are with strong chemical stability, easy to dissolve, with good corrosion resistance in the atmosphere, fresh water and sea water, with good plasticity, and can well withstand various cold and hot pressure processing. They are widely used in high voltage contacts, shielding materials, circuit boards, high-end electronics, circuit printing, voltage materials, etc.

Material Properties

- Strong chemical stability
- Easy to dissolve
- Good corrosion resistance
- Great plasticity
- Excellent electrical conductivity

Applications

- Wires, cables, connectors
- Conductive coatings and electronic pastes
- Pigments, catalysts, plastic fillers
- Powder metallurgy parts, thermal management systems, organic silicon chemical industry, brazing materials, etc.

Particle Size of the Powder

0-20µm, 15-45µm, 15-53µm, 20-63µm, 45-105µm, 50-150µm...and other customized PSD.



Spherical Cu-based Alloy Powders

Regular	Grade	Chemical Composition (wt%)		Reference Standard		
				ASTM	AMS	GB/T
Pure Copper	Pure Copper	Cu 99.99 min.	--			AMCP Standard

Regular	Grade	Chemical Composition (wt%)		Reference Standard		
				ASTM	AMS	GB/T
CuAl10	CuAl10	Cu Balance Al 9.50-10.50	O 0.05 max.			AMCP Standard
CuCr1Zr	CuCr1Zr	Cu Balance Cr 0.50-1.20 Zr 0.03-0.30	Fe 0.08 max. Si 0.10 max. Other 0.20 max.			AMCP Standard
CuSn10	CuSn10	Cu Balance Sn 9.00-11.00 Fe 0.10 max. Al 0.01 max. Sb 0.05 max. Ni 0.10 max.	Si 0.02 max. Pb 0.25 max. Mn 0.05 max. P 0.20 max. S 0.05 max. O 0.06 max.			AMCP Standard
CuSn12Ni2	CuSn12Ni2	Cu Balance Sn 12.00	Ni 2.00 O N/M			AMCP Standard
CuNi2SiCr	CuNi2SiCr	Cu Balance Ni 2.00-3.00 Si 0.50-0.80 Cr 0.20-0.50	Fe 0.15 max. O 0.05 max. N N/M			AMCP Standard
CuCrNb	CuCrNb GRCop-42	Cu Balance Cr 3.10-3.40 Nb 2.70-3.00 Al 0.06 max.	Fe 0.025 max. Si 0.035 max. S 0.01 max. C/O/N N/M			AMCP Standard

Remark

AMCP 3D also customize CuAlNi with several different content of Al and Ni, may possess some properties of memory alloys, such as Cu11Al4Ni, Cu14Al4Ni, and some other CuAlNi alloys.

TITANIUM BASED POWDER

Titanium powder contains Ti6Al4V, CPTi, Ti48Al2Cr2Nb, Ti-Mo powder and so on.

Titanium powder is one of the early materials to be adopted in metal Additive Manufacturing for prototypes and small runs of components. High strength at low density and also excellent corrosion resistance allows a broad range of applications of titanium parts. Titanium and its alloys have been used successfully in the automotive and aerospace industry for quite long time. In the majority of other engineering applications, titanium replaces heavier, less serviceable or less cost-effective materials.

Material Properties

- High specific strength
- High corrosion resistance
- Good osseointegration
- Low thermal expansion
- Low thermal conductivity

Applications

- Medical & Dental
- Aerospace and military
- Motor sport
- Jeweler and art
- Maritime applications
- High-end sports equipment

Particle Size of the Powder

0-20µm, 15-45µm, 15-53µm, 20-63µm, 45-105µm, 50-150µm...and other customized PSD.



Spherical Ti & Ti-based Alloy Powders

Regular	Grade	Chemical Composition (wt%)		Reference Standard		
				ASTM	AMS	GB/T
Ti64 Gr5	Ti6Al4V Gr5 R56400	Ti Balance Al 5.5-6.75 V 3.5-4.5 Fe 0.30 max	C 0.08 max O 0.20 max N 0.05 max H 0.015 max	F136 B348 GR5 F2924-14	4928 4965 4967	GB/T 3620-2007
Ti64 Gr23	Ti6Al4V Gr23 R56407	Ti Balance Al 5.5-6.5 V 3.5-4.5 Fe 0.25 max	C 0.08 max O 0.13 max N 0.03 max H 0.0125 max	F136 B348 GR23 F3001-14	4907 4930 4931 4956	GB/T 3620-2007

Customized	Grade	Chemical Composition (wt%)		Reference Standard		
				ASTM	AMS	GB/T
CPTi Gr2	CPTi Gr2	Ti Balance. Fe 0.25 max C 0.06 max	N 0.03 max H 0.012 max O 0.15max	F67 B348 GR1	4900 4921	GB/T 3620-2007
TA15	TA15 (BT20)	Ti Balance. Al 5.8-7.0 Mo 2.8-3.8 Zr 0.8-2.0	Si 0.2-0.35 Fe 0.25max C 0.08max			GB/T 3620-2007
TiAl	Ti48Al2Nb2Cr (Ti4822)	Ti Balance. Al 32.0-34.0 Cr 2.2-3.2 Nb 4.2-5.2	Fe 0.04 max N 0.05 max O 0.13 max		7023	GB/T3620.1-2016
NiTi50	NiTi50	Ti Balance. Ni 54-56 Fe 0.2 max	C 0.1 max N 0.02 max O 0.1 max	F2063		AMCP Standard
TC11	BT9 BT9/L	Al 5.8-7.0 Mo 2.8-3.8 Zr 0.8-2.0 Si 0.2-0.35	Fe 0.25max C 0.08max Ti Balance	B348 F67 F136		GB/T 3620-2007
TC18	BT22	Al 4.5-5.7 Mo 4.0-5.5 V 4.0-5.5 Cr 0.5-1.5 Zr 0.3max	Fe 0.5-1.5 Si 0.15max C 0.08max Ti Balance			GB/T 3620-2007
TA19	Ti6Al2Sn4Zr2Mo (Ti6242)	Al 5.5-6.5 Sn 1.8-2.2 Mo 1.8-2.2 Fe 0.25max	Si 0.13max C 0.05max Zr 3.6-4.4 Ti Balance		4981	GB/T 3620-2007
Ti15Mo		Mo 14-16 Fe 0.10 max C 0.10 max	O 0.20max N 0.05 max Ti Balance	F2066		AMCP Standard

Remark

AMCP 3D also customize different Titanium Alloys, like Ti2AlNb, Ti13Al13Nb, Ti6Al7Nb, TiMo, and other Ti-Al-Nb-Zr alloy powders for customers.

ALUMINUM BASED POWDER

An alloy based on aluminum with a certain amount of other alloying elements added is one of the light metal materials. In addition to the general characteristics of aluminum, aluminum alloys also have specific characteristics of some alloys due to the different types and quantities of alloying elements added. The density of aluminum alloy is 2.63-2.85g/cm³, it has high strength (σ_b is 110-650MPa), its specific strength is close to that of high-alloy steel, its specific stiffness exceeds that of steel, it has good casting performance and plastic processing performance, and good electrical conductivity, thermal conductivity, good corrosion resistance and weldability, can be used as structural materials, and has a wide range of applications in aerospace, aviation, transportation, construction, electromechanical, light and daily necessities.

Material Properties

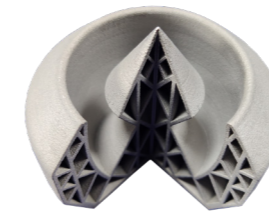
- Low density and light weighted
- Great wear & corrosion resistance
- Very good plasticity and castability
- High Thermal Conductivity

Applications

- Housing and Thin Walls
- Complex Geometries, Production Tools and Molds
- Prototype
- Jeweler and Art
- Aerospace and Automotive

Particle Size of the Powder

0-20 μ m, 15-45 μ m, 15-53 μ m, 20-63 μ m, 45-105 μ m, 50-150 μ m...and other customized PSD.



Spherical Al-based Alloy Powders

Regular	Grade	Chemical Composition (wt%)			Reference Standard		
					ASTM	AMS	GB/T
ZL104 AlSi10Mg	AlSi10Mg CL31Al	Si 9.00-11.00 Mg 0.20-0.45 Fe 0.55 max Cu 0.05 max	Ni 0.05 max Mn 0.45 max Zn 0.10 max Ti 0.15 max	Pb 0.05 max Sn 0.05 max O 0.08 max Al Balance	F3318	7018	GB/T 1173

Customized	Grade	Chemical Composition (wt%)			Reference Standard		
					ASTM	AMS	GB/T
AlSi7Mg	AlSi7Mg	Si 6.50-7.50 Mg 0.45-0.75 Ti 0.15 max Mn 0.10 max	Cu 0.10 max Fe 0.20 max Ni 0.05 max Zn 0.10 max	O 0.10 max Al Balance	B26 B108 B518	4289	GB/T 1173
ZL102 AlSi12	AlSi12 4047	Si 10.00-13.00 Cu 0.30 max Fe 0.70 max	Mn 0.50 max Zn 0.10 max Mg 0.10 max	O 0.10 max Al Balance	B247	4185	GB/T 1173
Al2024	2024	Zn 0.25 max Mg 1.20-1.80 Cu 3.80-4.90 Cr 0.10 max	Mn 0.30-0.90 Si 0.50 max Fe 0.50 max	Ti 0.15 max O 0.12 max Al Balance	B209 F468/F486M	4033 4034 4120 4339	GB/T3880.2-2006
Al6061	6061	Cu 0.15-0.40 Mn 0.15 max Mg 0.80-1.20 Zn 0.25 max	Cr 0.04-0.35 Ti 0.15 max Si 0.40-0.80 Fe 0.70 max	O 0.12 max Pb 0.05 max Sn 0.05 max Al Balance	B209 B211 B241 B308/B308M	4025 4117 4128	GB/T 3190-2008
Al7075	7075	Si 0.40 max Fe 0.50 max Cu 1.20-2.00 Mn 0.30 max	Mg 2.10-2.90 Cr 0.18-0.28 Zn 5.10-6.10	Ti 0.20 max O 0.20 max Al Balance	B209	4044 4045 4122	GB/T3880.2--2006
AlSi9Cu3	AlSi9Cu3	Cu 2.00-3.50 Si 8.00-11.00 Mg 0.10-0.50	Zn 1.20 max. Fe 0.80 max. Mn 0.10-0.50	O 0.20 max. Al Balance			GB/T3880.2--2006
Al-400	Medium Strength Al	Mg 2.50-4.00 Ti 1.00-1.50 Zr 1.00-2.00 Mn 0.50-1.50 Si 0.40 max.	Fe 0.40 max. Zn 0.25 max. Single Res. 0.05 max. Total Res. 0.15 max. Al Balance	Cu 0.10 max. V 0.10 max. O 0.09 max. N 0.08 max.	Tensile Strength 400 Mpa		AMCP Standard
Al580	High Strength Al	Al Balance Mg 4.00 Mn 1.50	Sc 0.30 Zr 0.30 Fe 0.08	Si 0.02 O N/M	Tensile Strength 580Mpa		AMCP Standard
Al622	Super High Strength Al	Mg 4.50-6.50 Sc 0.80-2.00 Zr 0.50-1.50 Mn 0.50-1.50 Si 0.40 max.	Fe 0.40 max. Zn 0.25 max. Cu 0.10 max. Single Res. 0.05 max. Total Res. 0.15 max.	Ti 0.10 max. V 0.10 max. O 0.09 max. N 0.08 max.	Tensile Strength 622 Mpa		AMCP Standard
Al4251	High Temper. Resistance Al	Si 6.00-12.00 Fe 2.00-5.00 Ni 1.00-3.00 Mn 1.00-4.00	Zn 0.25 max. Cu 0.10 max. Single Res. 0.05 max. Total Res. 0.15 max.	Ti 0.10 max. V 0.10 max. O 0.09 max. N 0.08 max.	Tensile Strength @ 250°C 260Mpa		AMCP Standard

REFRACTORY METAL POWDER

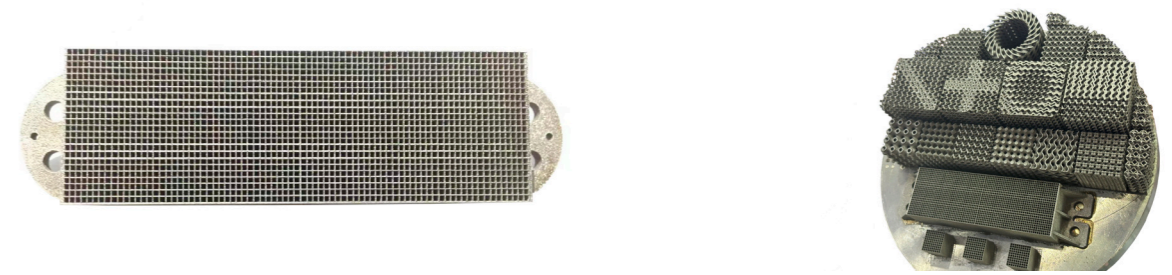
With plasma spheroidization process & plasma rotating electrode process, we prepare the refractory metal into powder, which can be applied to additive manufacturing (SLM process, EBM process, DED process, etc.), hot isostatic pressing, powder metallurgy and other processes.

The refractory metal powder prepared by such techniques are with very good characteristics of high sphericity, less internal defects, low oxygen content, extremely good flowability, high material purity and no satellite powder.

Alloy powders of the refractory metals are also available upon request, like W-Mo-Ta-Nb-V, WC, W-Ni-Fe, W-Mo, W-Re, and so on.

Particle Size of the Powder

0-20µm, 15-45µm, 15-53µm, 20-63µm, 45-105µm, 50-150µm...and other customized PSD.



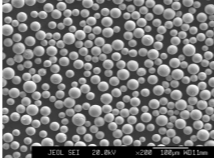
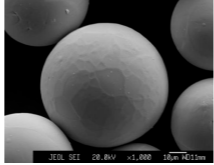
Pure Tungsten

Tungsten has excellent high temperature resistance and radiation shielding properties, and is widely used in defense and military industry, medical device, semiconductors and other industries. Chemical composition of the impurities might be slightly changed because of the raw material.

Regular	Grade	Chemical Composition (wt%)		Reference Standard			Morphology
				ASTM	AMS	GB/T	
Pure Tungsten	W	W 99.95 min. Other 0.05 max.	O 0.02max.			AMCP Standard	
Density (g/cm³)				Flowability (s/50g)			
Apparent Density	Tap Density	Ref. Standard	Value	Ref. Standard			
≥ 10.0	≥ 12.0	ASTM B212/B527	≤ 6.50	ASTM B213			

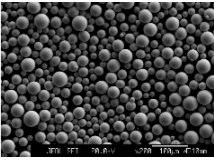
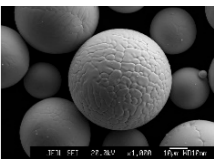
Pure Molybdenum

High-purity molybdenum powder is widely used in contact materials, aerospace high-temperature resistant components, target materials and other industries. Chemical composition of the impurities might be slightly changed because of the raw material.

Regular	Grade	Chemical Composition (wt%)		Reference Standard			Morphology
				ASTM	AMS	GB/T	
Pure Mo	Mo	Mo 99.95 min. Other 0.05 max.	O 0.02 max			AMCP Standard	
Density (g/cm ³)			Flowability (s/50g)				
Apparent Density	Tap Density	Ref. Standard	Value	Ref. Standard			
≥ 6.00	≥ 6.50	ASTM B212/B527	≤ 12.00	ASTM B213			

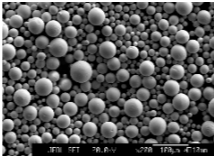
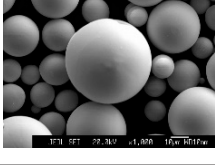
Pure Niobium

As the lightest refractory metal, niobium has the characteristics of high melting point, high high-temperature strength and specific strength, and no emission. It is the preferred thermal protection material and structural material for aerospace engines. Chemical composition of the impurities might be slightly changed because of the raw material.

Regular	Grade	Chemical Composition (wt%)		Reference Standard			Morphology
				ASTM	AMS	GB/T	
Pure Niobium	Nb	Nb Balance Other 0.05 max.	O 0.06 max			AMCP Standard	
Density (g/cm ³)			Flowability (s/50g)				
Apparent Density	Tap Density	Ref. Standard	Value	Ref. Standard			
≥ 4.50	≥ 5.50	ASTM B212/B527	≤ 15.00	ASTM B213			

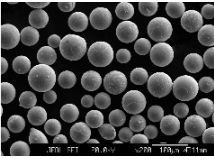
Pure Tantalum

Tantalum has excellent biocompatibility. The tantalum implant formed by 3D printing has the elastic modulus closest to that of human cartilage tissue, and is the most ideal orthopedic implant material. Chemical composition of the impurities might be slightly changed because of the raw material.

Regular	Grade	Chemical Composition (wt%)		Reference Standard			Morphology
				ASTM	AMS	GB/T	
Pure Tantalum	Ta	Ta 99.95 min. Other 0.05 max	O 0.03 max			AMCP Standard	
Density (g/cm ³)			Flowability (s/50g)				
Apparent Density	Tap Density	Ref. Standard	Value	Ref. Standard			
≥ 9.50	≥ 10.50	ASTM B212/B527	≤ 6.50	ASTM B213			

Pure Chromium

Chromium is a brittle metal and can be widely used in cemented carbide, diamond tools, welding materials, target materials and other fields. These materials are widely used in aviation, aerospace, nuclear reactors, automobiles, shipbuilding, chemical, military and other industries. Chemical composition of the impurities might be slightly changed because of the raw material.

Regular	Grade	Chemical Composition (wt%)		Reference Standard			Morphology
				ASTM	AMS	GB/T	
Pure Chromium	Cr	Cr 99.9 min. Other 0.05 max.	O 0.05 max.			AMCP Standard	
Density (g/cm ³)			Flowability (s/50g)				
Apparent Density	Tap Density	Ref. Standard	Value	Ref. Standard			
≥ 4.20	≥ 5.50	ASTM B212/B527	≤ 15.00	ASTM B213	