

# Ni718

## Nickel Superalloy Powder

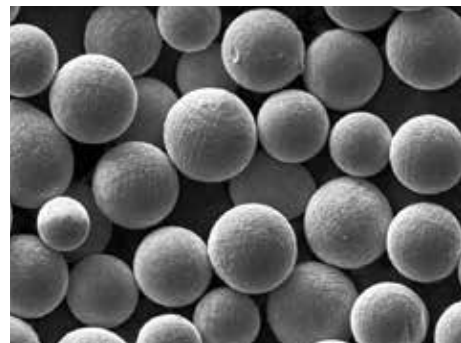


### HIGH PERFORMANCE PARTS START WITH HIGH PERFORMANCE POWDER

From 6K's UniMelt® process, the world's only microwave plasma production system comes the highest performing and most versatile set of powders. Nickel Alloy Ni718 has been a workhorse material for traditional component manufacturing and has quickly become a popular alloy for additive manufacturing.

Ni718 is Ni-Cr-Mo-Ti precipitation hardening alloy with high temperature strength and corrosion properties. Ni718's properties make this alloy an attractive material for applications where high temperature oxidation is a concern such as aerospace, land-based turbine components and other high temperature industrial parts.

Ni718 is available in a variety of sizes, the representative properties are shown below for a fine cut.



#### NOMINAL CHEMISTRY

Nickel	50.00-55.00%	Carbon (Max)	0.08%
Chromium	17.00-21.00%	Silicon (Max)	0.35%
Niobium+Tantalum	4.75-5.50%	Nitrogen (Max)	0.03%
Molybdenum	2.80-3.30%	Oxygen (Max)	0.03%
Cobalt (Max)	1.00%	Sulfur (Max)	0.015%
Titanium	0.65-1.15%	Phosphorous (Max)	0.015%
Manganese (Max)	0.35%	Boron	0.006%
Copper (Max)	0.30%	Iron	Balance
Aluminum	0.20-0.80%		

#### PHYSICAL PROPERTIES (TYPICAL)

	15-45µm
Apparent Density	4.5 g/cm <sup>3</sup>
Tap Density	5.2 g/cm <sup>3</sup>
Hall Flow	17 s/50g

#### TENSILE PROPERTIES - Ni718

	Powder	YS (MPa)	UTS (MPa)	EL (%)
XY	6K <sup>1</sup>	1227	1455	19
	6K <sup>2</sup>	1220	1413	23
	ASTM F3055 <sup>1,2</sup>	940	1240	12
Z	6K <sup>1</sup>	1241	1372	22
	6K <sup>2</sup>	1282	1413	24
	ASTM F3055 <sup>1,2</sup>	940	1240	12

<sup>1</sup>Solution & Dual-Age

<sup>2</sup>HIP, Solution & Dual-Age

### 6K Premium Nickel Powders

- Ultra clean
- No satellites
- High sphericity
- Free flowing
- High apparent density
- Low porosity
- Exceptional lot to lot consistency
- Conforms to AMS7006
- Conforms to ASTM F3055

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## Nickel Superalloy Powder

**6K**  
ADDITIVE



### HIGH DENSITY POWDER

Unlike competitive technologies, 6K's process delivers highly dense, highly spherical powders without satellites, as shown in microCT of the particle.



### DERIVED FROM SUSTAINABLE SOURCES

At 6K our powders are produced from sustainable sources including used powders and machine turnings. We leverage these input streams as feedstock for the UniMelt process, essentially turning scrap into high value AM powder. This process enables your organization to get value back from your past powder investment by participating in 6K Additive's powder buy-back program. We will buy your used powder, provide you a credit towards new premium powder for a wide variety of applications.



### Ni718 Printed Rocket Nozzle

*Printed using 6K Additive plasma spheroidized powders at Castheon on a Concept Laser M2 printer.*



### HIGH UNIMELT YIELD AND TUNABLE PSD

6K's UniMelt process can deliver the highest yield in the industry for your target PSD. With our unique microwave plasma technology our production run can be tailored for any additive manufacturing (AM) platform including powder bed fusion, EBM, Binder Jet, direct energy deposition and cold spray plus PM processes like MIM and HIP.

With 6K's UniMelt breakthrough technology we have the capability of producing almost limitless material combinations, allowing you to design with infinite possibilities for your application.

6K Additive's production team has extensive experience in powder production, alloys and metal reclamation. Our 80,000 sq. ft. facility is ISO9001 certified and AS9100 certification is in process.

#### 6K CORPORATE HEADQUARTERS

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#### 6K ADDITIVE, GLOBAL MANUFACTURING CENTER

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