

Material Data Sheet: Platinum Powder



Powder specification data

Powder Chemical composition [wt.%]	95.5% Pt & 4.5 Ru%
Particle size d50	29µm
Particle size d90	68µm
Basic Flowability Energy	1963.3 mJ
Application	LPBF
Atomization	Argon Gas Atomized

Material description

Platinum (Pt) is distinguished by its exceptional material properties. It boasts a high density and a melting point of 1,768°C, which provide it with significant thermal and structural stability. Its excellent thermal conductivity and electrical conductivity make it highly effective for applications requiring efficient heat and electrical transfer. Platinum's remarkable resistance to corrosion and oxidation, coupled with its chemical inertness, ensures long-lasting performance even in harsh environments. This makes it an ideal material for use in chemical processing and aerospace components.

In the jewelry industry, platinum's lustrous appearance and resistance to tarnish add both beauty and durability to high-end pieces. In the medical field, platinum's biocompatibility is critical for implants and surgical instruments. Additionally, platinum is extensively utilized in catalytic converters for automobiles and in various electronic devices, where its stability and conductivity are key. To further enhance its properties, other precious metals such as ruthenium (Ru), rhodium (Rh), and iridium (Ir) can be alloyed with platinum, improving its hardness, durability, and overall performance.

Material properties	Applications
High Temperature Strength	Space and Aerospace
High Corrosion Resistance	Sensors and Instrumentation
High melting point of (1768°C)	Electronics
Good ductility at extremely high temperature	Catalytic converters
Excellent electrical conductivity	Chemical Processing
Biocompatibility	Medical Devices

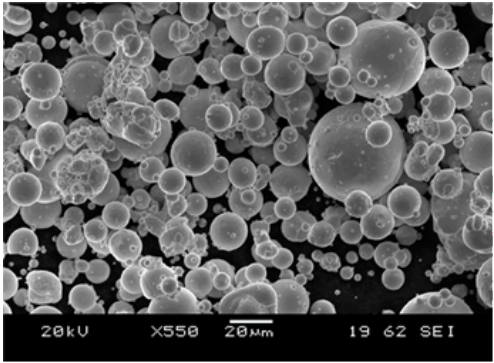


FIGURE 1—SEM IMAGE OF TYPICAL Pt POWDER

Mechanical Properties of additively manufactured components

Part Density	19.98 g/cm3
Ultimate tensile strength (MPa)	205.18 ± 2.11
Hardness (Vickers)	76.5 ± 1.5
Porosity %	0.02%