

OptiPowder Ti-6Al-4V Grade 5

Lightweight, High-Strength Titanium Alloy for Advanced Manufacturing Production

Overview

OptiPowder Ti-6Al-4V Grade 5 (UNS R56400) is a widely used $\alpha+\beta$ titanium alloy powder valued for its high strength-to-weight ratio, strong fatigue behavior, and excellent corrosion resistance. As the standard Ti64 grade across aerospace and industrial applications, Grade 5 is a go-to choice for parts that require durability, lightweighting, and repeatable mechanical performance in demanding environments.

Continuum Powders produces OptiPowder Ti-6Al-4V Grade 5 using our proprietary M2P Gas Atomization System, a plasma-based process that converts reclaimed metal revert streams into high-quality spherical powder in a single step. Powered by green energy, M2P supports a lower-carbon approach to premium titanium powder production while delivering consistent chemistry and strong flow characteristics for additive manufacturing.

Engineered for additive manufacturing (AM), OptiPowder Ti-6Al-4V Grade 5 is well-suited for LPBF applications as well as Directed Energy Deposition (DED) repair and refurbishment, where robust performance and reliable powder behavior are required.

Typical Applications

OptiPowder Ti-6Al-4V Grade 5 is a proven workhorse titanium alloy for AM, selected for parts that demand high strength-to-weight performance, corrosion resistance, and reliable mechanical properties, including:



Aerospace and aviation components (lightweight structural brackets, housings, ducting, and assemblies).



Defense and mission-critical hardware requiring durable, high-strength titanium performance.



Oil, gas, and marine components exposed to corrosive environments.



Automotive and motorsports parts for lightweighting and high-performance structural applications.

Nominal Composition (wt.%)

Element	Min	Max
Al	6.00	6.75
V	3.50	4.50
Fe	-	0.40
O	0.13	0.20
H	-	0.015
Ni	-	0.05
C	-	0.08
Ti	Remainder	

Data Representative of 15-53 μm .

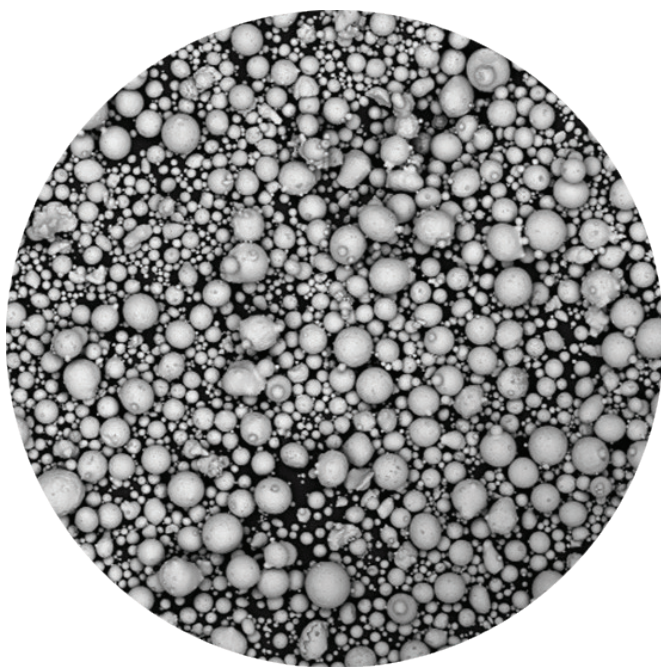
Powder Physical Properties

Property	Unit	Max
Flow (Hall)	Conforms to ASTM B213 or ASTM B964	
Apparent Density (Hall)	Conforms to ASTM B212	
+63 μm	wt. %	0
+53 μm	wt. %	≤ 1
+45 μm	wt. %	≤ 5
- 15 μm	wt. %	$\leq 5 \text{ vol}\%$

Data Representative of 15-53 μm .

Available PSDs & Customization

OptiPowder Ti-64 Grade 5 is offered in a range of particle size distributions matched to common AM platforms and build processes, for example, 15–45 μm and 15–53 μm for LPBF/EBM, with coarser fractions available for binder jetting or HIP. Additional PSD options, blended distributions, and program-specific supply agreements can be provided upon request to meet unique process windows, part requirements, or qualification needs.



Morphology

Powder morphology is generally spherical with minimal satellites. Powder is free from hollow particles, excessive agglomeration, and foreign object defects visible in micrographs at $\sim 300\times$ magnification. Representative acceptable morphology is shown in the accompanying figure.

Blending

Several heats are allowed to be blended into a single lot provided individual heats meet the chemical and interstitial composition. The individual heats shall have similar PSD. Composition adjustment by blending is not allowed.

Certification

Each shipment includes a certificate of analysis reporting chemical composition, particle size distribution, and any additional agreed-upon test results demonstrating conformance to specifications.



For detailed specifications, current availability,
or to discuss custom PSDs and program-based supply:

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