AUBERT&DUVAL

PYROGENESIS ADDITIVE

STELLAR
Metal powders by AUBERT & DUVAL

Stellar Ti6Al4V ELI

Powder for Additive Manufacturing

MATERIAL OVERVIEW

Stellar Ti6Al4V ELI is an alpha-beta type Titanium alloy with:

- low weight combined to high strength
- excellent corrosion resistance
- high fatigue, crack progation resistance compared to other lightweight alloys
- good creep up to 300°C

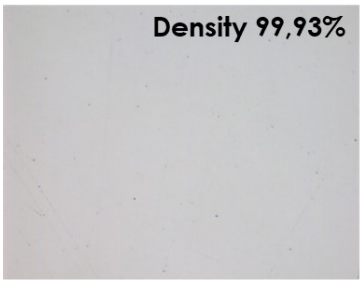
POWDER PRODUCTION

Titanium powder produced by plasma wire atomization by Pyrogenesis*. The process ensures:

- High purity
- Excellent sphericity
- Low oxygen content
- Excellent flowability

PRINTABILITY

Excellent metallurgical health after SLM process and heat treatment with Stellar Ti6Al4V ELI powders. (Reference EOS M290, optimized parameters, layer thickness: 30µm). Preheating of the base plate needed for production.



No cracks observed after building the sample. Heat treated at 800 °C for 2 hours in argon inert atmosphere.

CHEMICAL COMPOSITION

	Ti	Al	V	C	O	N
Mini	Bal.	5.5	3.5	-	-	-
Maxi		6.5	4.5	0.08	0.12	0.05

	H	Fe	Y	Others, each	Others, total
Mini	-	-	-	-	-
Maxi	0.012	0.25	0.005	0.1	0.4

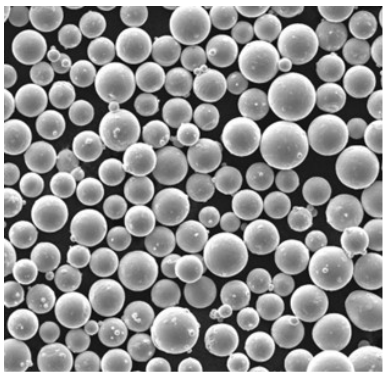
- ASTM F3001-14
- ASTM B348 gr23

POWDER CHARACTERISTICS

Particle size distributions:

Laser Powder Bed Fusion (LPBF): 20-53 µm
Electron Beam Melting (EBM): 45-106 µm
Directed Energy Deposition (DED): 45-106 µm
Custom size distributions available on request

Typical powder morphology, Stellar Ti6Al4V ELI atomized by plasma wire.



Contact: powder@aubertduval.com / www.aubertduval.com

Aubert & Duval is the exclusive distributor of Pyrogenesis titanium powders in Europe.

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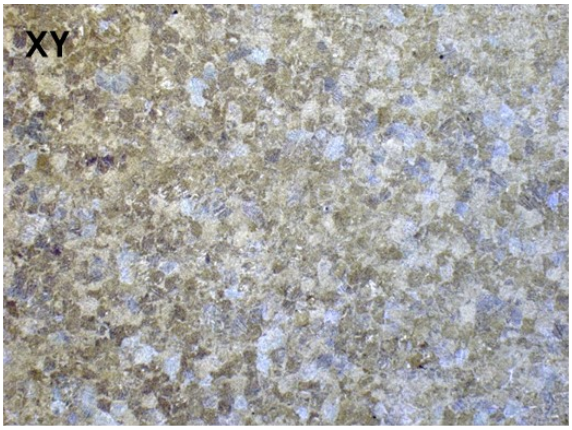
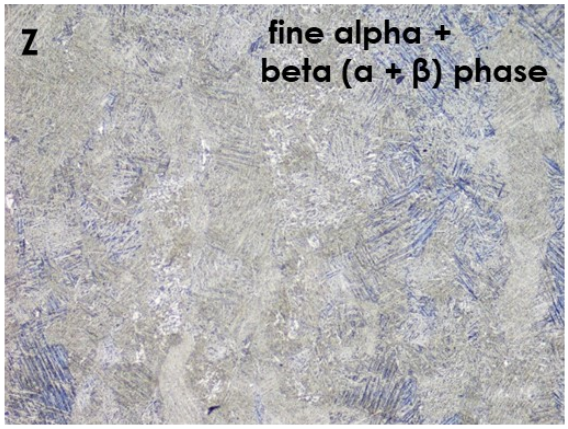
Stellar Ti6Al4V ELI



500 µm

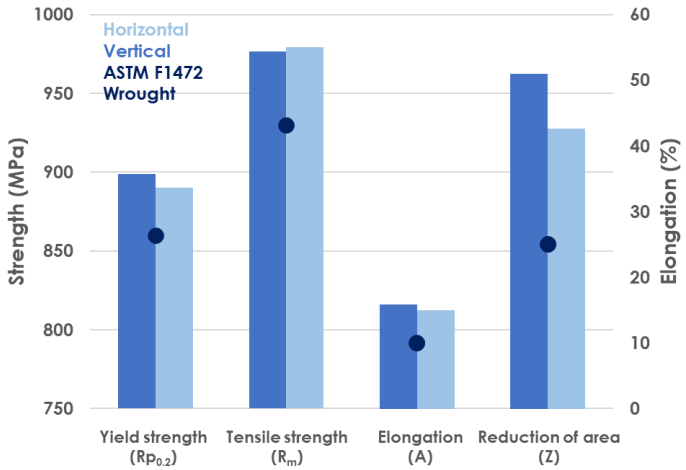


200 µm

Microstructure for Stellar Ti6Al4V ELI obtained after Kroll etching.

Hardness: 330 ±4 HV10 according to ASTM E384 or NF EN ISO6507-1.

TENSILE PROPERTIES, DUCTIBILITY & REDUCTION OF AREA



Tensile properties of additively manufactured Stellar Ti6Al4V ELI after heat treatment at 800 °C for 2 hours in argon inert atmosphere compared to ASTM F1472 Wrought. No HIP applied. Properties evaluated at a strain rate of 10^{-4} s^{-1}, all other test conditions in accordance to NF EN 2002-1 and NF EN 2002-2. Yield Strength (YS) shown is Rp0.2% stress, Ultimate Tensile Strength (UTS) is stress at maximum force. Elongation and Area Reduction were measured after failure as per the standards.

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