

Ti-6Al-4V

Ti-6Al-4V is one of the most widely used titanium alloys in Wire-arc Additive Manufacturing, and it is known for its excellent combination of strength, corrosion resistance, and even bio-compatibility. The alloy composition of Ti-6 provides a balance of mechanical properties and enables various applications across industries.

One of the key advantages of Ti-6Al-4V wire feedstock is its high strength-to-weight ratio. It exhibits excellent tensile strength, allowing production of lightweight components that can withstand demanding conditions. Ti-6Al-4V is highly suitable for Aerospace, Space, and Defence applications where weight reduction and structural integrity are critical.

Wire Classification

AMS 4954 Grade 5, AWS A5.16 ER-Ti-5

Wire Diameter

1.2 mm

Shielding Gas

Argon

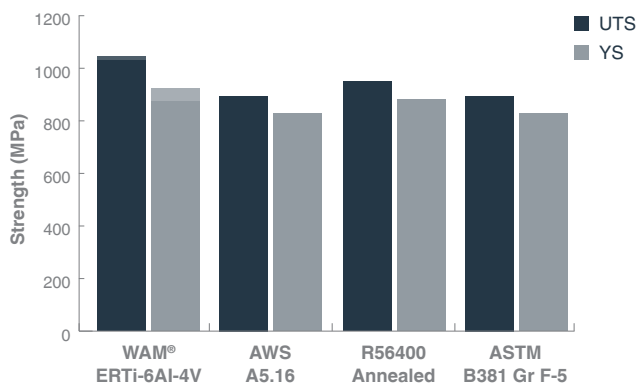
Process

WAM® – DED-Arc

Equivalent Designations

AMS 4928, AMS 4965, AMS 4967, MIL T-81915, MIL T-9046, AMS 4920, AMS 4954, ASTM B265, MIL T-81556, MIL T-9047, AMS 4911, AMS 4935, ASTM B348, MIL F-83142, SPS M618, AMS 4906, AMS 4934, ASTM B381, GE C50TF12, DMS 1570, AMS 4905, AMS 4930, DIN 3.7164

WAM® Ti-5 Tensile Strength Comparison

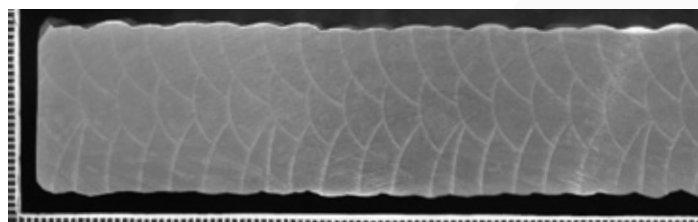


WAM® Test Number 210014AM-11. Mechanical property values for the 'as-deposited WAM' values are based on the median value and repeatability testing. Deposited density can be lower than wire density. AWS data source: D20.1/D20.1M:2019 Specification for Fabrication of Metal Components Using Additive Manufacturing.

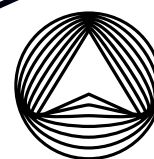
Properties

Composition	Amount %
Aluminium	5.50 - 6.75
Vanadium	3.50 - 4.50
Iron	≤ 0.22
Carbon	≤ 0.05
Nitrogen	≤ 0.03
Hydrogen	≤ 0.015
Oxygen	0.12 - 0.18
Each	≤ 0.05
Total	≤ 0.20
Titanium	Rest

Mechanical	WAM® X & Z Typical	AWS Typical
Ultimate Tensile Strength (MPa)	1040 - 1045	897
0.2% Proof stress (MPa)	920-922	828
Reduction in area (%)	-	-
Elongation (%)	7 - 9	10
Condition	as built	
Classification	AWS A5.16	
Density (kg/m³)	4430	
Fatigue Limit (MPa / Cycles)	400 - 450 @10 ⁷	
Stress Analysis (mm) (Neutron Detection)	Comp. > 25	



ERTi-6Al-4V Macro examination.



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