

AMETEK[®]

SPECIALTY METAL PRODUCTS

TECHNICAL DATA SHEET

Ti 6Al 4V ELI

Ti 6Al 4V ELI sheet has found application in medical implants owing to its excellent biocompatibility, high strength, and MRI compatibility.

NOMINAL COMPOSITION: weight percent

Aluminum	5.5 – 6.5	Nitrogen	0.05 max
Vanadium	3.5 – 4.5	Oxygen	0.13 max
Iron	0.25 max	Hydrogen	0.015 max ¹
Carbon	0.08 max		

TYPICAL MECHANICAL PROPERTIES:²

	<u>ANNEALED</u>
Ultimate Tensile Strength	125,000 PSI min
Yield Strength (.2% Offset)	115,000 PSI min
Elongation in 2" *	10% min*
Modulus of Elasticity (Tension)	16.5 x 10 ⁶ PSI
Poisson's Ratio	.34

*The measured elongation will be less as thickness decreases to .005" and less.

¹ Material over 0.032" thick limited to hydrogen content of 0.012% max.

² These values may be adjusted by control of process variables – consult Ametek SMP for desired values.

Ti 6Al 4V ELI

PHYSICAL PROPERTIES:³

Density	-	0.16 lbs/cu.in.
Melting Point (Approx.)	-	1650° C
Electrical Resistivity @ R.T.	-	168 Microhm· cm
Thermal Expansion Coefficient		
(20 to 100° C)	-	8.6 x 10 ⁻⁶ /°C
(20 to 315° C)	-	9.2 x 10 ⁻⁶ /°C
Thermal Conductivity @ R.T.	-	6.7 W/m· K
Magnetic Attraction	-	None

GENERAL INFORMATION:

In the cold rolled and annealed temper the material will not exhibit a continuous alpha network at prior beta grain boundaries or a continuous alpha case layer on the surface. Owing to the alloy's high strength and low ductility, it is difficult to cold draw into finished shapes. Hot forming has been found to be effective. Any post cold work annealing must be done in vacuum to prevent oxygen, nitrogen and hydrogen contamination which will result in reduced formability. In addition, the annealing temperature must not exceed the beta transus temperature of the alloy, approximately 980°C.

AVAILABILITY:

Ti 6Al 4V ELI is available from Ametek Specialty Metal Products as sheet product from .005" to .020", widths up to 6.0" and lengths up to 18". The material conforms to ASTM F 136, ASTM B 265 grade 23 and UNS R56401.

³ Typical values to guide alloy selection but are not a guarantee of minimum or maximum