Data Sheet
6Al-4V STA Titanium

Ti 6Al-4V STA (Solution Treated and Aged) is a modified version of Ti 6Al-4V. It may be heat treated for high strength in sections under 4" thick. Ti-6Al-4V has excellent hardenability in sections up to 1" thick with strengths as high as 165 ksi.

For maximum strength: solution-treated and aged (STA) condition is: For sheet, 1675-1725°F 5 to 25 minutes, water quench. Age 975°F 4 to 6 hours, air cool. For bars and forgings, 1650-1775°F 1 hour, water quench. Age 900-1150°F 4 to 8 hours, air cool.

Ti 6Al-4V is resistant to general corrosion but may be quickly attacked by environments that cause breakdown of the protective oxide. These include hydrofluoric (HF), hydrochloric (HCl), sulfuric and phosphoric acids. Inhibitors may help for the last three but not for HF. Ti 6Al-4V resists attack by pure hydrocarbons, and most chlorinated and fluorinated hydrocarbons (provided water has not caused formation of small amounts of HCl and HF).

Ti 6Al-4V is susceptible to chloride stress corrosion cracking (SCC), although being among the better of the titanium alloys in this regard. For marine environments silver plated bolts are not used, as silver bonds easily with chlorine in this environment. Ti 6Al-4V is also susceptible to SCC in environments such as methyl alcohol, red fuming HNO_3, and N_2O_4. In the case of red fuming nitric acid, the problem is limited to environments containing less than 1.5% water, or more than 6% NO_2. Failure in N_2O_4 has occurred when oxygen and chlorides were present as impurities.

Specifications

UNS: R56400 **W. Nr./EN:** 3.7164, 3.7165 **AMS:** 4965, 6930, T-9047, T-9046

Chemical Composition, %

	Al	V	C	N	O	H	Fe	Y	Others, Each	Others, total	Ti
MIN	5.5	3.5	–	–	–	–	–	–	–	–	–
MAX	6.75	4.5	0.08	0.05	0.2	0.0125	0.3	0.005	0.1	0.4	balance

Features

- High strength to 750°F
- Excellent general corrosion resistance
- High strength-to-weight ratio

Applications

- Aerospace, turbine engines and airframe application
- Fasteners
- Medical and dental implants
- High performance Automotive

Physical Properties

Density: 0.160 lb/inch³ **Melting Range:** 2920-3020°F **Beta Transus:** 1825±25°F

Temperature, °F	70	200	400	600
Coefficient of Thermal Expansion, in/in°F x 10^{-6}	–	5.3	5.4	5.5
Thermal Conductivity, Btu • Ft/Ft² • Hr°F STA	4.0	4.3	5.2	6.1
Modulus of Elasticity, psi X 10^6 STA	16.7	16.0	15.0	14.0

Mechanical Properties

Specified, STA Plate (Dependant on cross section and configuration)

Ultimate Tensile Strength, ksi	130-165
0.2% Yield Strength, ksi	120-155
Elongation in 2", %	8-10

INTERNATIONAL TRADE WINDS LLC

Exclusive Representative of Rolled Alloys®

INTERNATIONAL TRADE WINDS LLC

Exclusive Representative of Rolled Alloys®, Inc.

CLAUDIO CZARNOBAI
COMMERCIAL MANAGER
ClaudioCzarnobai@intwinds.com
F +55 11 3825 2966
C +55 11 99112 2703

ROLLED ALLOYS