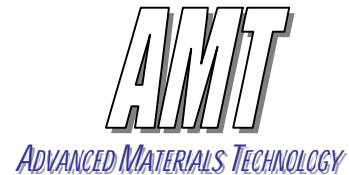


Titanium alloys

Category:

Intermetallic, high temperature



Titanium alloy Ti-Ti3Al-NT

The intermetallic Titanium alloy Ti-Ti3Al-NT from the family of the intermetallic phase Ti3Al is a high temperature Titanium alloy. Maximum service temperature is 700°C for long and up to 850°C for short term use. The properties of this Ti3Al phase alloy were significantly improved compared to other Ti3Al alloys. Very high strength and ductility are the main features. The density is lower than that of the counterpart orthorhombic Ti2AlNb alloy class. It was developed to replace Nickel based alloys for high temperature applications.

General properties:

- Very high strength at elevated temperatures
- Very high fatigue strength at room and elevated temperatures
- Low density

Comparison with Standard alloy In-625, In-718:

- Advantages:**
- Higher fatigue strength
 - 40% lower density
- Disadvantages:**
- Expensive
 - More difficult to weld

Chemical Composition: Ti-23Al-11Nb+1Mo at.%

Mechanical properties, 1.5mm sheet.

Heat treatment	UTS, Rt	Elong., Rt	UTS, 650°C	Elong, 650°C
	MPa	%	MPa	%
As-rolled	1286	15	798	31
Solution	1176	20	-	-
Solution and aged	1255	10	-	-

Physical data

Density: 4.92 g/cm³ CTE: 11.3x10⁻⁶
Elastic modulus: 136 GPa Thermal conductivity: 27 W/mK

Oxidation resistance: Layer thickness 5µm after 750°C Air for 50h.

Applications

- Exhaust systems
- Compressor discs and blades
- Ultra high strength fasteners
- Transmission shafts
- Exhaust valves (high performance engines)

Delivery form

- Bars, plates, sheets, forgings