

## General

### Designation

Ti Alloys

Density	4360	-	4840	kg/m <sup>3</sup>
Price	* 137.2	-	365.8	FRF/kg
Production Energy	* 855	-	945	
Recycle Fraction	* 0.55	-	0.65	

## Composition

### Composition (Summary)

Ti + alloying elements, e.g. Al, Zr, Mo, Si, Sn, Ni, Fe, V

Base	Ti (Titanium)		
Al (Aluminium)	0		%
Fe (Iron)	0		%
Mo (Molybdenum)	0		%
Ni (Nickel)	0		%
Si (Silicon)	0		%
Sn (Tin)	0		%
Ti (Titanium)	100		%
V (Vanadium)	0		%
Zr (Zirconium)	0		%

## Mechanical

Bulk Modulus	100	-	176	GPa
Compressive Strength	130	-	1395	MPa
Elongation	1	-	40	%
Elastic Limit	172	-	1245	MPa
Endurance Limit	* 175	-	705	MPa
Fracture Toughness	14	-	120	MPa.m <sup>1/2</sup>
Hardness - Vickers	60	-	380	HV
Loss Coefficient	1e-4	-	5e-3	
Modulus of Rupture	130	-	1300	MPa
Poisson's Ratio	0.35	-	0.37	
Shape Factor	23			
Shear Modulus	32	-	51	GPa
Tensile Strength	240	-	1625	MPa
Young's Modulus	90	-	137	GPa

## Thermal

Maximum Service Temperature	300	-	700	°C
Melting Point	1477	-	1682	°C
Minimum Service Temperature	-273			°C
Specific Heat	510	-	650	J/kg.K
Thermal Conductivity	3.8	-	20.7	W/m.K
Thermal Expansion	7.9	-	11	µstrain/°C

## Electrical

Resistivity	41.7	-	202	µohm.cm
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## Optical

Transparency	Opaque
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## Environmental Resistance

Flammability	Very Good
Fresh Water	Very Good
Organic Solvents	Very Good
Oxidation at 500C	Good
Sea Water	Very Good
Strong Acid	Good
Strong Alkalis	Good
UV	Very Good
Wear	Average
Weak Acid	Very Good
Weak Alkalis	Very Good

## Notes

**Typical Uses**

Aircraft turbine blades; general aerospace applications; chemical engineering; heat exchangers; bioengineering; medical.

**Warning**

In powder form: very flammable and an irritant if ingested.

**Reference Sources**

Data compiled from multiple sources. See links to the References table.

**Links**

[Reference](#)

[Shape](#)

[Structural Sections](#)

[Producers](#)

[ProcessUniverse](#)