

Table 1. Titanium and Its Alloys

| | Description | Properties | Uses |
|---------------|---|---|--|
| Titanium (Ti) | <ul style="list-style-type: none"> ● Element ● Atomic number: 22 ● Common; ninth most abundant element in the Earth’s crust ● Not harmful to living things | <ul style="list-style-type: none"> ● Dark gray, shiny metal ● Melting point: 1,677 °C ● Density is 4.6 g/cm³ ● Malleable and ductile at higher temperatures ● Brittle at colder temperatures ● Unreactive at room temperature ● Non-corrosive ● Does not oxidize at room temperature | <ul style="list-style-type: none"> ● Making alloys ● Sometimes used in jewelry ● Sometimes used in bike frames |
| Ti Beta-C | <ul style="list-style-type: none"> ● Alloy ● Mostly composed of titanium, chromium and vanadium ● Strong and durable | <ul style="list-style-type: none"> ● Melting point: 1,760 °C ● Density is 4.8 g/cm³ ● Ductile at higher temperatures (1600 °C +) ● Non-corrosive if oxide layer is present ● Oxidizes at high temperatures | <ul style="list-style-type: none"> ● Aircraft and race car springs ● Underground tubes and pipes ● Casing equipment for gas and oil wells (such as an enclosed pipe) ● Fasteners (such as nuts and bolts) |
| 6al-4v | <ul style="list-style-type: none"> ● Alloy ● Mostly composed of titanium, aluminum and vanadium ● Most-commonly used titanium alloy ● Can be used in environments at temperatures of up to 350 °C ● High strength and lightweight ● When heated to approximately 430 °C, strength is weakened | <ul style="list-style-type: none"> ● Melting point: 1660 °C ● Density is 4.43 g/cm³ ● Non-oxidizing ● Non-corrosive ● Reactive with hydrogen ● Ductile at high temperatures (1600 °C +) | <ul style="list-style-type: none"> ● Aircraft turbine engine components ● Aircraft structural components ● Aerospace fasteners ● High-performance automotive parts ● Marine applications ● Medical devices ● Sports equipment |