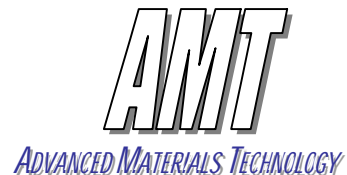


Titanium alloys

Category:

High temperature



Titanium alloy Ti-SF60

Titanium Ti-SF60 is a new generation high temperature Titanium alloy. It is in service for many high temperature aerospace applications. It is also available for casting application.

General properties:

- High strength at elevated temperatures
- Excellent creep resistance
- Wide processing window

Comparison with Standard alloy Ti-6242Si:

- Advantages:**
- Higher fatigue strength
 - Higher creep resistance
- Disadvantages:**
- None

Material composition

Chemical Composition: Ti-5.8Al-4.2Sn-1.5Ta-1.0Nb-0.3Si

Mechanical properties

| Alloy | UTS | YS | EI | UTS | YS | EI | Fatigue | Residual | E-Modulus | Microstructure |
|----------------|-------------|------------|-----------|------------|------------|-----------|----------------------|--------------|------------|--------------------|
| | Rt | | | 600°C | | | 760°C | Strain* | | |
| | Mpa | Mpa | % | Mpa | Mpa | % | Mpa, 10 ⁷ | % | Gpa | |
| Ti-SF60 | 1058 | 989 | 14 | 674 | 553 | 23 | 176 | 0.079 | 121 | Bi-modal |
| Ti-SF61 | 1068 | 1050 | 11 | 752 | 655 | 16 | 195 | 0.029 | 120 | Equiaxed, a+btrans |
| Timetal-834 | 1040 | 945 | 12 | 654 | 510 | 15 | 142 | 0.082 | 119 | Equiaxed, a+btrans |
| Ti-6242 | 1020 | 910 | 12 | 560 | 485 | 15 | 138 | 0.154 | 116 | - |

*After creep exposure at 600°, 150 Mpa, 100h.

Physical data

Hardness: 32-35 HRC

Density: 4.604 g/cm³

Elastic modulus 20°C: 121 GPa

Elastic modulus 200°C: 110 GPa

Elastic modulus 300°C: 106 GPa

Elastic modulus 400°C: 101 GPa

Elastic modulus 500°C: 97 GPa

Elastic modulus 600°C: 92 GPa

Elastic modulus 700°C: 87 GPa

CTE: 8.6x10⁻⁶

Thermal conductivity: 8 W/mK

Applications

- Inlet and outlet valves
- Compressor discs
- Compressor blades

Delivery form

- Bars, Plates, Forgings
- Forged valve blanks