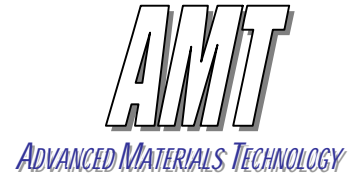


Titanium alloys



Category:

high temperature

Titanium alloy Ti-SF61

Titanium Ti-SF61 is a new generation high temperature Titanium alloys. Because of its alloying element Yttrium that forms high temperature stable Oxides, it shows high fatigue strength at elevated temperatures and excellent creep resistance. Standard processing is triple vacuum arc melting for rotor grade quality. Ti-SF61 is the most advanced conventional high temperature Titanium alloy. Developed to replace Ti-6242Si and Ti-834 for jet engine application. Due to its excellent properties it has also potential for high performance automotive applications.

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-5.9Al-2.7Sn-4Zr-0.45Mo-0.35Si-0.22Y

Mechanical properties

Alloy	Rt			600°C			760°C	Residual Strain*	E-Modulus	Microstructure
	UTS	YS	El	UTS	YS	El	Fatigue			
	Mpa	Mpa	%	Mpa	Mpa	%	Mpa, 10 ⁷	%	Gpa	
Ti-SF61	1068	1050	11	752	655	16	195	0.029	120	Equiaxed, a+btrans
Ti-SF60	1058	989	14	674	553	23	176	0.079	121	Bi-modal
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: 4.56 g/cm³
Elastic modulus: 120 GPa
CTE: 8.3x10⁻⁶
Thermal conductivity: 8 W/mK

Applications

- Inlet and outlet valves
- Compressor discs
- Compressor blades

Delivery form

- Bars
- Plates
- Forged valve blanks