Ti-8Al-1Mo-1V

Ti-811 alloy is a kind of near α titanium alloy with high content of Al element, which was successfully researched in USA in 1954. It has excellent mechanical properties at the room temperature and high temperature, which tensile strength at the room temperature is similar with that of Ti-6Al-4V and tensile strength and creep properties at 425℃ high temperature is better than other α and α＋β titanium alloy. Due to higher Young's modulus and good vibration damping performance, Ti-811 alloy can stably work for a long time at 450℃ temperature and is one of ideal material of the first three section of the blade on high pressure compressor of aero-engine. At present, WST can supply Ti-811 bars in size of dia.16-60mm with length of 500-3200mm according to AMS 4972G-2011.

Table 1

Chemical Composition

Ti	Al	V	Mo	Fe	C	N	H	O	Y	Residual	
										Each	Total
balance	7.35-8.35	0.75-1.25	0.75-1.25	≤0.30	≤0.08	≤0.05	≤0.0125	≤0.12	≤0.005	≤0.1	≤0.30

Table 2

Mechanical Properties

	Diameter	Temperature	σb (MPa)	σ0.2 (MPa)	A (%)	Z (%)
AMS 4972G-2011	16<Φ≤60mm	Room temperature	≥895	≥825	≥10	≥20
		425℃	≥620	≥485	≥10	≥25
		425℃/100h	≥895	≥825	≥9	≥18
		Creep	425℃/100h/410Mpa, ≥0.2%			
		KIc Φ<40mm	1035 MPa, ≥5h			
		Φ≥40mm	895 MPa, ≥5h			

Table 3

Ultrasonic Test		
Diameter	FBH(mm)	Noise Signal(dB)
16<Φ≤60mm	Φ≤0.8	-12

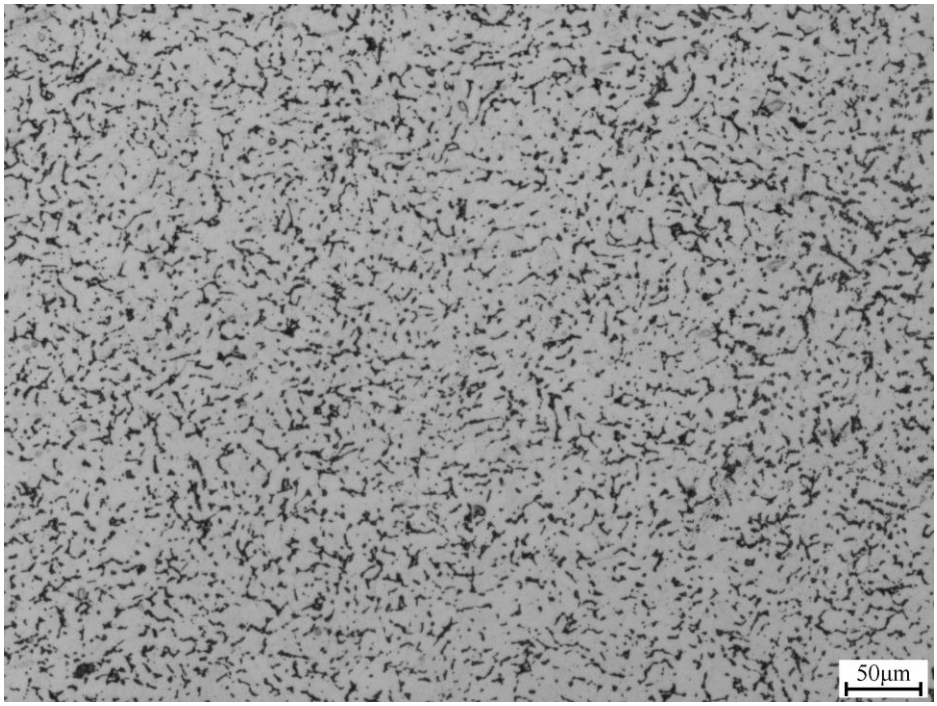

Fig.1 Micrograph 200X