

Ti-6Al-4V ELI alloy has higher strength and good processing performance, which are widely used in medical industry and covers a broad range of applications including joint replacement, dental implants, bone plate for fracture fixation and surgical instruments.

Table 1

Chemical Composition										
Ti	Al	V	Fe	C	N	H	O	Y	Other	
									Each	Total
Balance	5.6~6.5	3.4~4.5	≤0.25	≤0.08	≤0.05	≤0.0125	≤0.13	≤0.005	≤0.1	≤0.40

Table 2

Mechanical Properties						
Specification	Diameter (mm)	Direction	σ_b (MPa)	$\sigma_{0.2}$ (MPa)	δ_5 (%)	Ψ (%)
AMS4930	≤38.10	L	≥862	≥793	≥10	≥25
	>38.10-50.80	L	≥827	≥758	≥10	≥20
	>50.80-63.50	L	≥827	≥758	≥8	≥15
	>63.50-101.60	L	≥827	≥758	≥8	≥15
WS/D99/102	<44.45	L	≥860	≥795	≥10	≥25
INST5.0.11.1	44.45~<63.5	L	≥860	≥780	≥10	≥20
	63.5~75	L	≥860	≥780	≥10	≥15
	>75~101.6	L	≥825	≥760	≥8	≥15
FRM 6.1.0.45	<65.5	L	≥900	≥800	≥12	≥35
TIS380.Z	≤6.35	L	≥998	≥860	≥16	≥35
	>6.35	L	≥860	≥790	≥10	≥25
ASTM F136	<4.75	L	≥860	≥795	≥10	
	4.75-44.45	L	≥860	≥795	≥10	≥25
	>44.45-63.5	L	≥825	≥760	≥8	≥20
	>63.5-101.6	L	≥825	≥760	≥8	≥15

Table 3

Ultrasonic Test				
Diameter	Class	FBH (mm)	Noise Signal (dB)	Loss of Back Echo
≤60	AA	≤0.8	-6	≤50%
>60	A1	≤2.0	-6	≤50%



Fig. 1 Micrograph (200X)