Ti-6Al-6V-2Sn

Ti-662 alloy is successfully researched by NewYork university in US and is a kind of high strength α＋β titanium alloy developed based on Ti-6Al-4V titanium alloy, which is famous with good comprehensive performance. Ti-662 alloy is of excellent oxidation resistance, weld ability and corrosion resistance. At the same time, the high V content and Sn element bring high strength and performance, which tensile strength can reach to 1050MPa in annealed condition and reach to 1175MPa after quench and aging treatment at 450℃ temperature. Hence, Ti-662 alloy is much better than Ti-6Al-4V alloy on hardening and effect of heat treatment. At the meanwhile, it is broader than Ti-6Al-4V alloy on performance tuning range. At present, this kind of alloy has attracted more and more attention.

Table 1

Chemical Composition

Ti	Al	V	Sn	Fe	Cu	C	O	N	H
balance	5.0-6.0	5.0-6.0	1.5-2.5	0.35-1.0	0.35-1.0	≤0.05	≤0.20	≤0.04	≤0.015
Y	Residual								
	Each	Total							
≤0.005	≤0.10	≤0.40							

Table 2

Mechanical Properties

	Diameter	Direction	σb (MPa)	σ0.2 (MPa)	A (%)	Z (%)
AMS 4978F	≤50.8	L	≥1034	≥965-1138	≥10	≥20
		T			≥8	≥15
	>50.8～101.6	L	≥1000	≥931-1103	≥10	≥15
		T			≥8	≥15

Table 3

Mechanical Properties

	Diameter	Size of cross section when heat treatment	Direction	σb (MPa)	σ0.2 (MPa)	A (%)	Z (%)
AMS 4971F	≤25.4	≤25.4	L	≥1207	≥1103	≥8	≥20
			T		≥1207	≥6	≥15
	>25.4~50.8	≤25.4	L	≥1207	≥1103	≥8	≥20
			T		≥1207	≥6	≥15
		>25.4~50.8	L	≥1172	≥1069	≥8	≥20
			T			≥6	≥15
	>50.8～76.2	≤25.4	L	≥1172	≥1103	≥8	≥20
			T			≥6	≥15
		>25.4~50.8	L	≥1138	≥1069	≥8	≥20
			T			≥6	≥15
		>50.8~76.2	L	≥1069	≥1000	≥8	≥20
			T			≥6	≥15
	>76.2~101.6	≤25.4	L	≥1138	≥1069	≥8	≥20
			T			≥6	≥15
		>25.4~50.8	L	≥1103	≥1034	≥8	≥20
			T			≥6	≥15
		>50.8~76.2	L	≥1069	≥1000	≥8	≥20
			T			≥6	≥15
		>76.2~101.6	L	≥1034	≥965	≥8	≥20
			T			≥6	≥15

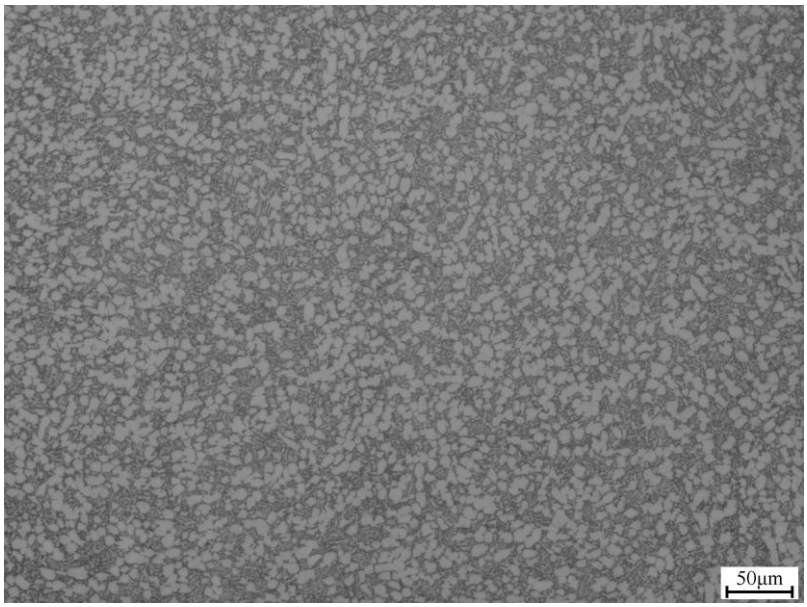

Fig.1 Micrograph 200X