

# Standards of Titanium Products [Titanium Alloys]

Alloy classification	Nominal composition or company standard	Product form				Chemical composition(mass%)													Examples of Tensile properties at room temperature (minimum values)				Advantageous features	Main related standards, etc.	
		Plate	Sheet	Welded tube	Bar/wire rod	Al	V	Mo	Cr	Zr	Sn	Si	Cu	Nb	Fe	O	N	C	Heat treatment *	0.2%proof stress min.(MPa)	Tensile strength min.(MPa)	Elongation min. (%)			
$\alpha + \beta$ alloy	Ti-3Al-2.5V		○*	○*	○	2.5-3.5	2.0-3.0								≤0.25	≤0.15	≤0.03	≤0.08	Annealing	485	620	15	Good cold formability	JIS Class 61	
																				483	620	15		ASTM Gr.9	
	Ti-6Al-4V					○	5.50-6.75	3.50-4.50								≤0.30	≤0.20	≤0.05	≤0.08	Annealing	827	895	10	Versatility	AMS4928
							5.5-6.75	3.5-4.5								≤0.40	≤0.20	≤0.05	≤0.08	Annealing	1070	1140	10		AMS6930, 6931(AMS-T-9047)
																					825	895	10		JIS Class 60
																					828	895	10		ASTM Gr.5
	Ti-6Al-4V ELI					○	5.5-6.5	3.5-4.5								≤0.25	≤0.13	≤0.03	≤0.08	Annealing	755	825	10	Good low-temperature toughness	JIS Class 60E
																							ASTM Gr.23, ASTM F136		
Ti-6Al-6V-2Sn					○	5.00-6.00	5.00-6.00				1.50-2.50		0.35-1.00		0.35-1.00	≤0.20	≤0.04	≤0.05	Annealing STA	965 1105	1035 1205	10 8	Good hardenability	AMS4971, 6935, 6936	
Ti-6Al-2Sn-4Zr-2Mo-0.08Si					○	5.50-6.50		1.80-2.20		3.60-4.40	1.80-2.20	0.06-0.10			≤0.10	≤0.15	≤0.05	≤0.05	Annealing STA	825 860	895 930	10 10	Good heat resistance	AMS4975, 4976	
Ti-6Al-2Sn-4Zr-6Mo					○	5.50-6.50		5.50-6.50		3.60-4.40	1.75-2.25				≤0.15	≤0.15	≤0.04	≤0.04	STA	1105	1170	10	Good creep resistance	AMS4981, 6906	
$\beta$ alloy	Ti-3Al-8V-6Cr-4Mo-4Zr				○	3.0-4.0	7.5-8.5	3.5-4.5	5.5-6.5	3.5-4.5					≤0.30	≤0.14 ≤0.12	≤0.03	≤0.05	ST STA	759 1100	793 1170	15 4	Good cold formability Good age hardenability	AMS4957, 4958, 6920, 6921 ASTM Gr.19, $\beta$ -C	
	Ti-10V-2Fe-3Al				○*	2.6-3.4	9.0-11.0								1.6-2.2	≤0.13	≤0.05	≤0.05	STA	1103	1193	4	High strength and high toughness High fatigue strength Good hardenability	AMS4983, 4984, 4986, 4987	
	Ti-15V-3Cr-3Sn-3Al		○*		○	2.5-3.5	14.0-16.0		2.5-3.5		2.5-3.5				≤0.25	≤0.13	≤0.05	≤0.05	ST STA	689 965	703 1100	12 7	Good Cold formability Good age hardenability	AMS4914	
Company standard product	Super-TIX™800		○		○										0.50-1.50	0.25-0.45	≤0.02	≤0.08	Annealing	550	700	10	High strength between Class 61 (Gr.9) and Class 60 (Gr.5)	Original	
	Super-TIX™800N	○													0.50-1.50	0.20-0.40	0.02-0.05	≤0.08	Annealing	550	700	10	High strength between Class 61 (Gr.9) and Class 60 (Gr.5)	Original	
	Super-TIX™51AF(Ti-5Al-1Fe)		○		○	4.50-5.50									0.50-1.50	≤0.25	≤0.05	≤0.08	Annealing	700	800	10	High strength comparable to Class 60 (Gr.5)	Original	
	Super-TIX™523AFM(Ti-5Al-2Fe-3Mo)				○	4.50-5.50		2.5-3.5							1.50-2.50	≤0.25	≤0.05	≤0.08	Annealing	870	950	10	Strength superior to Class 60 (Gr.5)	Original	
	Super-TIX™05CU(Ti-0.5Cu)	○											0.40-0.70		≤0.03	0.02-0.06	≤0.03	≤0.08	Annealing	165	270	27	Homogeneous structure	Original	
	Super-TIX™10CU(Ti-1Cu)		○	○									0.80-1.20		≤0.06	0.02-0.07	≤0.01	≤0.08	Annealing	270	360	35	Good heat resistance	Original	
	Super-TIX™10CUNB(Ti-1Cu-0.5Nb)		○	○									0.80-1.20	0.40-0.60	≤0.06	0.02-0.07	≤0.01	≤0.08	Annealing	270	360	35	Good heat resistance	Original	
	Super-TIX™10CSSN(Ti-1Cu-1Sn-0.35Si-0.25Nb)		○	○								0.25-0.45	0.80-1.20	0.20-0.35	≤0.06	0.02-0.07	≤0.01	≤0.08	Annealing	270	395	20	Good heat resistance	Original	
	Ti-3Al-5V		○	○*		2.50-3.50	4.50-5.50								≤0.20	≤0.12	≤0.05	≤0.08	Annealing	670	810	10	Good cold formability	Original	
	Ti-20V-4Al-1Sn		○		○	3.0-3.6	19.0-22.5				0.80-1.20				≤0.20	≤0.20	≤0.05	≤0.08	ST STA	600 950	630 1050	15 10	Good cold formability	Original	

○\* : Please consult us when placing an order.

\* ST : Solution treatment STA : Solution treatment + aging