



TITANIUM ALLOY STEEL MATERIAL FLANGES

USAGE OF TITANIUM ALLOY FLANGES

Metals like titanium have been employed in manufacturing for many years. Titanium is most frequently utilized in the medical sector and is frequently used to create surgical implants. Additionally, titanium has been used in industrial products for aircraft, energy generation, transmission, and sporting goods industries.

To transport gas or liquid between two pipes or vessels, titanium flanges are commonly utilized for sealing purposes. In numerous additional situations where tightness and pressure resistance are required, they are also used.



WHAT IS A TITANIUM FLANGE

A titanium flange is a type of component which is utilized to join pipes that are attached to pipe ends and are constructed of the non-ferrous metal titanium or a titanium alloy. The titanium flange has holes, and bolts firmly fasten the two flanges together. The gasket is utilized to seal the flange. Pipe fittings with flanges are known as flange pipe fittings (flange or adapter).

Ti6Al4V, Ti-6Al-4V, or Ti 6-4 are some of the common names for titanium alloy grade 5, which is also the most common alloy. It has the same stiffness and thermal properties as commercially pure titanium while being stronger.

TITANIUM FOR WHEN YOU NEED HIGH STRENGTH

The majority of our titanium products will fall under the material specification ASTM/ASME B381 and are made to order per your application. Our customers love titanium parts for their project work when the strength to weight ratio is a considerable issue. There is no commercially available material as strong as titanium on a pound for pound basis.

Grade 2 titanium is the most commonly requested in the pipe valve and fitting industry, with great strength and corrosion resistance properties. The majority of our products will be ASTM B381 Grade 2 given its availability and resistance to oxidation, much like the marine equipment utilizing 316 stainless. We also offer titanium grade 12, which retains superior strength at higher temperatures and is known for its malleability and weldability. As we mentioned previously, Titanium is often used in applications requiring high temperature and pressure service but with reduced weight. Some excellent examples are components for the aerospace industry (air body frames) and the military's state of the art equipment. Given its excellent corrosion resistance properties in marine and chloride applications, titanium flanges are also popular as offshore drilling components and heat exchanger assemblies.

Choose titanium when you need a metal with good overall formability and workability. It has the ability to be hot or cold formed while retaining its excellent mechanical properties. For transportation to your job site, it's also good to know that titanium weighs much less than regular steel (approximately 40-45% less). Although not as light as aluminum, our titanium flanges and fittings are a bit easier to handle during the welding and installation process.

Titanium Alloy Flange Mechanical Properties

Density	Melting Point	Yield Strength (0.2%Offset)	Tensile Strength	Elongation
4.5 G/Cm3	1665 °C (3030 °F)	Psi – 39900 , MPa – 275	Psi – 49900 , MPa – 344	20 %
4.43 G/Cm3	1632 °C (2970 °F)	Psi – 128000 , MPa – 880	Psi – 138000 , MPa – 950	14 %

Equivalent Material of Titanium Alloy Flange

STANDARD	UNS	WERKSTOFF NR.
Titanium Gr 2	R50400	3.7035
Titanium Gr 5	R56400	3.7165

Weight Chart Of Titanium Wrought Alloy Flange

Standard	Class	Diameter	Bolt Circle Diameter	Number of Bolts	Bolt Size	Diameter of Bolt Hole
AS 4087 Flange	PN14 Flange	185	146	4	M16	18
PN16 Flange	185	146	4	M16	18	
PN21 Flange	205	165	8	M16	18	
PN35 Flange	205	165	8	M16	18	
AS 2129 Flange	Table C Flange	185	146	4	16	18
	Table D Flange	185	146	4	16	18
	Table E Flange	165	146	4	16	18
	Table F Flange	205	165	8	16	18
	Table H Flange	205	165	8	16	18
	Table J Flange	205	165	8	19	22
ANSI B16.5 Flange	ANSI 150 Flange	191	152	4	16	19
	ANSI 300 Flange	210	168	8	19	22
	ANSI 600 Flange	210	168	8	19	22
	ANSI 900 Flange	241	192	8	22	25
	ANSI 1500 Flange	267	203	8	29	32
ISO 7005 (DIN) Flange	PN6 Flange	190	150	4	M16	18
	PN10 Flange	200	160	8	M16	18
	PN16 Flange	200	160	8	M16	18
	PN20 Flange	190	152.5	4	M16	18
	PN25 Flange	200	160	8	M16	18
	PN40 Flange	185	160	8	M16	18

Chemical Compatibility of Alloy Titanium Flange

Grade	C	N	O	H	Ti	Fe
Titanium Grade 1	.08 Max	.03 Max	.18 Max	.015 Max	Bal	.20 Max
Titanium Grade 4	.08 Max	.05 Max	.40 Max	.015 Max	Bal	.50 Max
Titanium Grade 7	.08 Max	.03 Max	.25 Max	.015 Max	Bal	.30 Max
Titanium Grade 9	.08 Max	.03 Max	.15 Max	.015 Max	-	.25 Max
Titanium Grade 12	.08 Max	.03 Max	.25 Max	0.15 Max	-	.30 Max

