



Properties of Titanium

• Physical Properties

Properties	TW340 (Pure Titanium)	Ti-6Al-4V (64 Titanium)	Ti-15-3-3-3 (β Titanium)
Specific Gravity	4.51	4.43	4.8
Melting Point (°C)	1668	1540	–
Longitudinal Elastic Modulus (GPa)	106	113	90
Thermal Conductivity (W/(m·K))	17.16	7.5	–
Linear Expansion Coefficient (K ⁻¹)	8.4×10 ⁻⁶	8.8×10 ⁻⁶	–
Electric Resistance (μΩ·m)	0.55	1.7	–
Amplitude Permeability (μ)	1.0001	1.0002	1.0002

• Values in chart are for reference only. They are not guaranteed values.

• Mechanical Properties

Properties	TW340 (Pure Titanium)	Ti-6Al-4V (64 Titanium)	Ti-15-3-3-3 (β Titanium)	SUSXM7*
Tensile Strength (N/mm ²)	340 - 510	895 or Higher	705 - 945	500
0.2% Proof Stress (N/mm ²)	215 or Higher	825 or Higher	690 - 835	210
Elongation (%)	23 or Higher	10 or Higher	12 or Higher	–

* Values for Strength Class A2 - 50.

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• Tension Rupture Load (N)

Thread	TW340 (Pure Titanium)	Ti-6Al-4V (64 Titanium)	Ti-15-3-3-3 (β Titanium)	SUSXM7*
M3	3210	5240	4170	2500
M4	5610	8850	7520	4400
M5	9080	14700	11900	7100
M6	12800	20800	–	10100
M8	–	33700	–	18300
M10	–	58900	–	29000

* Values for Strength Class A2 - 50.

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• Magnetic Flux Density

	Titanium	SUSXM7
Magnetic Flux Density (T)	0	5×10 ⁻⁵

Measuring device : 5080 Gauss (Tesla) Meter by F.W.BELL

Measuring conditions : DC magnetic field measuring mode Probe and sample separation distance: 5 mm

• Chemical Resistance

(Partially excerpted from "World of Titanium" by Japan Titanium Society)

Chemical Name	Composition (%)	Corrosion Resistibility		
		Pure Titanium	SUS304	Hastelloy*
Hydrochloric Acid	10	○	×	◎
	30	×	×	◎
Sulfuric Acid	10	△	–	◎
	50	×	×	◎
Nitric Acid	10	◎	◎	◎
	50	◎	◎	–
Nitrohydrochloric Acid (HCl:HNO ₃)	3:01	◎	×	△
Chromic Acid	5	◎	–	◎
Hydrofluoric Acid	5	×	×	△
Phosphoric Acid (Ventilation)	50	△	◎	◎
Ferric Chloride	10 - 30	◎	×	◎
Cupric Chloride	10 - 30	○	×	○
Sodium Chloride	10 - 40	◎	○	○
Calcium Chloride	50	◎	○	◎
Ammonium Chloride	40	◎	–	◎
Magnesium Chloride	40	◎	○	◎
Ferrous Sulfate	10 - 50	◎	○	○
Ammonia	10 - 30	◎	◎	◎
Sodium Hydroxide	50	◎	◎	–
Sodium Carbonate	10	◎	◎	◎
Hydrogen Sulfide	Dry Gas	◎	△	◎
	Wet Gas	◎	○	○
Hydrogen Sulfide	Dry Gas	×	–	◎
	Wet Gas	◎	–	△
Sulfur Dioxide	Dry Gas	◎	–	–
	Wet Gas	◎	–	–
Seawater	High Speed Stream	◎	–	–
Formic Acid	10 - 50	○	○	◎
Lactic Acid	50	◎	○	◎
Oxalic Acid	20	×	–	○
Citric Acid	10 - 50	◎	○	◎

Testing Temperature : Room Temperature

◎ : <0.127 mm/year △ : 0.508 - 1.27 mm/year

○ : 0.127 - 0.508 mm/year × : >1.27 mm/year

*Hastelloy is a registered trademark of Haynes International, Inc.



Important Information about Chemical Resistance Data

- A test piece was used to acquire the test data.
- Chemical resistance changes with performance conditions. Always carry out tests under performance conditions similar to actual conditions in advance.