

# Titanium Flexible Hose

Former Titanium flexible Hose used to be pointed out some defects such as stiff to install, easy to crack when bending, or weak against vibration, etc. However, our products solved these defects and have the following features:

- Easy to install.
- Strong against vibration.
- Good flexibility.
- Cleared bending crack problem.

Besides, followings are available:

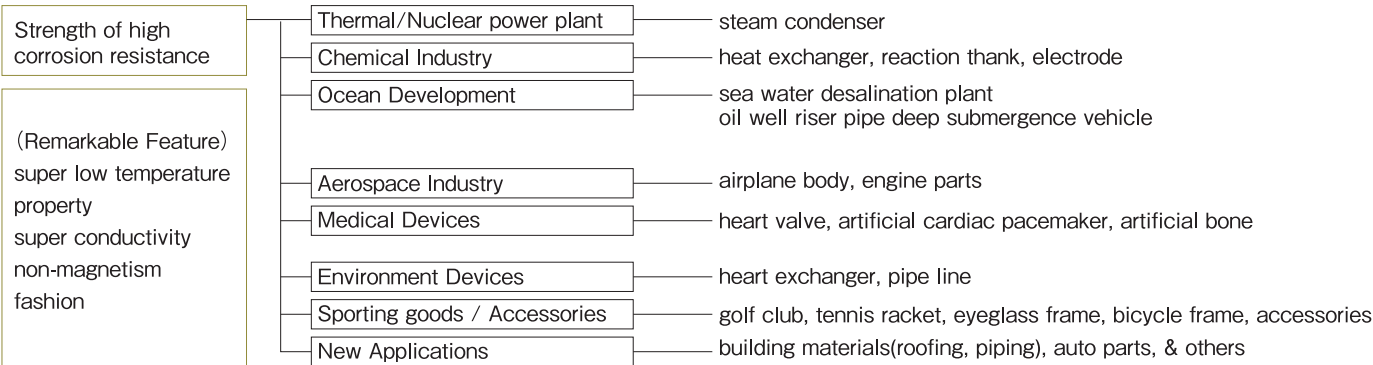
- Flange or other fittings can be selected.
- Length can be changed upon arrangement.
- All fluid contact portions are titanium as standard.
- Special packing type is also available.

Excellent in life cycle cost:

Titanium has high corrosion resistance, namely long life. Less or no expense for replacement and compensation for business suspension. Thus, titanium can be advantageous according to condition.

## Feature and Use of Titanium

- Titanium is hard to be ionized and excellent in corrosion resistance. It shows excellent efficiency against galvanic action, corrosion, solvent, chemicals, sea water, and for biological non-toxicity. So, it can be used at places where stainless steel or copper alloy are not suitable. Especially in sea water, it shows high anti-corrosion effect which is equivalent to platinum. It is suitable for those equipments in peculiar fields like severe condition required atomosphere, place, machine, or plant, such as salt water damage place, hot spring, industrial plants of chemicals, organic synthetic chemistry, petrochemistry, or IC industry. Further, efficiency drop by temperature in titanium is lower than that in Teflon. So, it can be used in wide range of temperature which Teflon cannot cover.
- Titanium has light and strong character. Specifie gravity of pure titanium is 4.51, which is about 60% of stainless steel. Tensile strength is 270~510N/mm<sup>2</sup> which is equivalent to low carbon steel.
- It is excellent in biological suitability, and hard to incur metallic allergy. It is a gentle-to-mankind metal.
- It has particular characters which other metals do not have, such as super low temperature property, super conductivity, or non-magnetism.
- It is a material which can be recycled.



## Corrosion resistance of Titanium

## comparison with other metals

corrosive media	composition (%)	temperature (°C)	corrosive resistance		
			titanium	SUS 304	SUS 316L
HYDROCHLORIC ACID	10	24	○	×	×
	30	24	×	×	×
	10	80	×	—	—
	30	80	×	—	—
SULFURIC ACID	10	24	△	—	○
	50	24	×	×	×
	10	100	×	—	×
	50	100	×	—	×
NITRIC ACID	10	24	◎	◎	◎
	50	24	◎	◎	◎
	10	100	◎	◎	◎
	50	100	◎	○	○
AQUA REGIA	Hcl:HNO <sub>3</sub>	24	◎	×	×
	3:01	100	○	—	—
CHROMIC ACID	5	24	◎	—	○
HYDROGEN FLUORIDE	5	30	×	×	×
PHOSPHORIC ACID	10(ventilation)	24	○	◎	◎
	50(ventilation)	24	△	◎	◎
	10(ventilation)	100	×	◎	◎
	50(ventilation)	100	×	○	○
IRON(III) CHLORIDE	10	24	◎	×	×
	30	24	◎	×	×
	10	100	◎	—	—
	30	100	◎	—	—
COPPER(II) CHLORIDE	10	24	○	×	×
	30	24	○	×	×
	10	100	○	—	—
	30	100	○	—	—
SODIUM CHLORIDE	10	24	◎	○	○
	40	24	◎	○	○
	10	100	◎	○	○
	40	100	◎	○	○
CALCIUM CHLORIDE	10	24	◎	◎	◎
	50	24	◎	○	○
	10	100	◎	—	—
	50	100	◎	×	—
AMMONIUM CHLORIDE	10	24	◎	△	◎
	40	24	◎	—	—
	10	100	◎	—	◎
	40	100	◎	—	—
MAGNESIUM CHLORIDE	10	24	◎	△	○
	40	24	◎	○	○
	10	100	◎	△	—
	40	100	◎	—	—
IRON(II) SULFATE	10	24	◎	○	○
	50	24	◎	○	○
	10	100	◎	—	○
	50	100	◎	—	—

corrosive media	composition (%)	temperature (°C)	corrosive resistance		
			titanium	SUS 304	SUS 316L
AMMONIA	10	24	◎	◎	◎
	30	24	◎	◎	◎
	10	80	◎	○	○
	30	80	◎	○	○
SODIUM HYDROXIDE	10	24	◎	◎	◎
	50	24	◎	◎	◎
	10	100	◎	◎	◎
	50	100	○	○	○
SODIUM CARBONATE	10	24	◎	◎	◎
	30	24	—	—	—
	10	100	◎	◎	◎
	30	100	◎	◎	◎
HYDROGEN SULFIDE	dry gas	24	◎	△	○
	wet gas	24	◎	○	◎
SULFUR DIOXIDE	dry gas	30-60	◎	—	—
	wet gas	30-60	◎	—	—
CHLORINE	dry gas	24	×	—	○
	wet gas	24	◎	—	×
	dry gas	100	—	◎	○
	wet gas	90	◎	—	×
SEAWATER	high speed flow	24	◎	—	◎
	calm water	100	◎	—	—
ACETIC ACID	10	24	◎	◎	◎
	60	24	◎	◎	◎
	10	100	◎	◎	◎
	60	100	◎	○	○
FORMIC ACID	10	24	○	○	△
	50	24	○	○	△
	10	100	○	×	△
	30	100	×	×	△
LACTIC ACID	10	24	◎	○	◎
	50	24	◎	○	◎
	10	100	◎	○	○
	50	100	◎	×	○
OXALIC ACID	10	24	○	○	○
	20	52	×	—	—
	50	24	—	○	○
	10	100	—	—	×
CITRIC ACID	50	100	—	×	×
	10	24	◎	○	◎
	50	24	◎	○	◎
	10	100	◎	○	◎
	50	100	×	×	◎

meaning of marks [ mm/year ]  
◎: <0.051    ○: <0.508    △: 0.508-1.27    ×: >1.27



Having spirally continued salient portions, easy to transform when bending and less stress concentration. Can make straight portions.