

category	project	Data/Description	Unit/Remarks
Basic Information	Material grade	Grade 11/UNS R52250/3.7225	-
	Nominal ingredients	Ti-0.12~0.25Pd	Balance Ti
	Standards and Specifications	ASTM B265, B337, B338, B348, B861, B862, B381, B863, etc.	Covering plates, pipes, bars, etc.
chemical composition	Titanium (Ti)	margin	%
(Maximum value or range)	Palladium (Pd)	0.12 - 0.25	%
	Iron (Fe)	≤0.20	%
	Oxygen (O)	≤0.18	%
	Carbon (C)	≤0.08 or ≤0.10	Different standards vary slightly
	Nitrogen (N)	≤0.03	%
	Hydrogen (H)	≤0.015	%
Physical properties	density	4.51 g/cm ³	0.163 lb/in ³
	Melting point	1670 °C	3038 °F
	β transition temperature	888 °C	1630 °F
	Elastic modulus (E)	103-112 GPa	room temperature
	Stiffness modulus (G)	41 GPa	room temperature
	Thermal conductivity (room temperature)	20.6-22.6 W/m·K	
	resistivity	53.3 μΩ·cm	
	Specific heat capacity	520 J/kg·K	
	coefficient of linear expansion	9.7 μm/m·°C (20-500°C)	
Mechanical properties	Tensile strength (Rm)	≥240 MPa (typically 345)	Annealed state
(Typical value/Minimum value)	Yield strength (Rp0.2)	≥170 MPa (typically 221-240)	Annealed state
	Elongation (A)	≥24% (typically 37%)	2-inch gauge
	Reduction of area	35%	typical
	Hardness (HB)	≤120	Brinell hardness
	Impact toughness (Charpy V-type)	109 J	typical
	Bending radius (thin plate)	1.5 × thickness	<0.070 inches

thermal properties	Thermal conductivity (room temperature)	20.6-22.6 W/m·K	
	Operating temperature range	-184°C to 540°C	-300°F to 1000°F
Heat treatment	softening annealing	650-750°C (protective atmosphere)	Time depends on the cross section
	Stress-relief annealing	450-600°C, 45 minutes	
	forging	Rough forging: 871°C; finish forging: 788-843°C	
Processing performance	Formability	Good (deep drawing possible)	-
	weldability	Excellent	Protective atmosphere required
Corrosion resistance	Features	Resistant to crevice corrosion in reducing acidic/chlorine-containing media.	Superior to pure titanium
Application areas	Main uses	Chemical equipment, marine engineering, chlorate manufacturing, seawater desalination, heat exchangers, aircraft fuselage components	-
Compared with other brands	vs Grade 1	Similar mechanical properties, but better corrosion resistance	-
	vs Grade 7	Similar composition but with stricter impurity control and better weldability	Grade 7 has a slightly higher oxygen content.
	vs Grade 5	Lower strength, but better corrosion resistance.	Grade 5 Intolerant to reducing acids
	vs Grade 17	Grade 17 is a low-palladium version (Pd 0.04-0.08%).	Lower cost