

STAINLESS STEEL

ALLOY 316Ti



Alloy 316Ti (UNS S31635) Wk 1.4571

316Ti (UNS S31635) is a titanium stabilised version of 316 molybdenum-bearing austenitic stainless steel. The 316 alloys are more resistant to general corrosion and pitting/crevice corrosion than the conventional chromium-nickel austenitic stainless steels such as 304. They also offer higher creep, stress-rupture and tensile strength at elevated temperature. High carbon Alloy 316 stainless steel can be susceptible to sensitisation, the formation of grain boundary chromium carbides at temperatures between approximately 900 and 1500°F (425 to 815°C) which can result in intergranular corrosion.

Resistance to sensitisation is achieved in Alloy 316Ti with titanium additions to stabilise the structure against chromium carbide precipitation, which is the source of sensitisation. This stabilisation is achieved by an intermediate temperature heat treatment, during which the titanium reacts with carbon to form titanium carbides. This significantly reduces susceptibility to sensitisation in service by limiting the formation of chromium carbides. Thus, the alloy can be used for extended periods at elevated temperatures without compromising its corrosion resistance. 316Ti has equivalent corrosion resistance to sensitisation as the low carbon version 316L.

AVAILABLE TUBE PRODUCT FORMS

STRAIGHT

COILED

SEAMLESS

SEAM WELDED, COLD REDRAWN AND ANNEALED

TYPICAL MANUFACTURING SPECIFICATIONS

ASTM A213

BS EN 10216 part 5

Also individual customer specifications.

TYPICAL APPLICATIONS

CHEMICAL PROCESSES

HIGH TEMPERATURE

AUTOMOTIVE

CONTROL LINES

INDUSTRIES PREDOMINANTLY USING THIS GRADE

CHEMICAL PROCESSES

OIL AND GAS

AUTOMOTIVE



Technical Data

MECHANICAL PROPERTIES

Temper	Annealed	
Tensile Rm	75	ksi (min)
Tensile Rm	515	MPa (min)
R.p. 0.2% Yield	30	ksi (min)
R.p. 0.2% Yield	205	MPa (min)
Elongation (2" or 4D gl)	35	% (min)

PHYSICAL PROPERTIES (Room Temperature)

Specific Heat (0-100°C)	500	J.kg ⁻¹ .°K ⁻¹
Thermal Conductivity	14.6	W.m ⁻¹ .°K ⁻¹
Thermal Expansion	16.5	mm/m/°C
Modulus Elasticity	193	GPa
Electrical Resistivity	7.4	μohm/cm
Density	7.99	g/cm ³

CHEMICAL COMPOSITION

(% by weight)

Element	Min	Max
C	-	0.08
Si	-	0.75
Mn	-	2
P	-	0.45
S	-	0.03
Cr	16	18
Mo	2	3
N	-	0.1
Fe	Balance	
Ni	10	14
Ti	5 x (C+N)	0.7