

STAINLESS STEEL 316Ti

EN 1.4571 Material (X6CrNiMoTi17-12-2 /316TiStainless Steel)

DIN EN 1.4571 material (X6CrNiMoTi17-12-2) is made by adding titanium (Ti) to EN 1.4401 stainless steel (X5CrNiMo17-12-2) to improve the resistance to intergranular corrosion. Titanium can improve the corrosion resistance of stainless steel, especially intergranular corrosion, effectively prevent the sensitization of stainless steel, and also improve the stability of steel in high temperature and high pressure. When the mass fraction of titanium is between 0.03% and 0.1%, the yield strength of the steel is improved. Therefore, EN 1.4571

material has higher temperature resistance, corrosion resistance and sensitization resistance than 1.4401.

Chemical Composition

The typical chemical composition of 1.4571 is given in the table below.

Chemical Composition %											
Country (Regions)	Standard	Steel Name (Material Number)	C ≤	Si ≤	Mn ≤	P ≤	S ≤	Cr	Ni	Mo	Ti
European Union	EN 10088-3	X6CrNiMoTi17-12-2 (1.4571)	0.08	1.00	2.00	0.045	0.015	16.5-18.5	10.5-13.0	2.00-2.50	5xC-0.70

Mechanical Properties

Mechanical properties (solution annealed)									
Country (Regions)	Standard	Steel Grade (Steel Number)	Diameter (d) or Thickness (t) in mm	Hardness (HB)	0.2% yield strength (N/mm ²)	1% yield strength (N/mm ²)	Tensile strength (N/mm ²)	Elongation (%)	Impact energy (J)
European Union	EN 10088-3	X6CrNiMoTi17-12-2 (1.4571)	d≤160	≤ 215	≥ 200	≥ 235	500-700	≥ 40	≥ 100
			160<t≤250					≥ 30	≥ 60

Physical Properties

Density: 8.0 g/cm³

Electrical resistance: 0.75 (Ω.mm²/m) at 20 °C

Specific heat capacity: 500 (J/kg.K) at 20 °C

Thermal conductivity: 15 (W/m.K) at 20 °C

Modulus of elasticity (GPa):

200 (at 20 °C)

194 (at 100 °C)

186 (at 200 °C)

179 (at 300 °C)

172 (at 400 °C)

165 (at 500 °C)

Thermal expansion (10⁻⁶.K⁻¹):

16.5 (20 – 100 °C)

17.5 (20 – 200 °C)

18.0 (20 – 300 °C)

18.5 (20 – 400 °C)

19.0 (20 – 500 °C)

Notes: 10⁻⁶.K⁻¹ = 10⁻⁶/K = (μm/m)/°C

Equivalent

Stainless steel 1.4571 equivalent to US ASTM AISI, ISO, Japanese JIS and Chinese GB standard.

EU EN	USA -	Germany DIN, WNr	Japan JIS	France AFNOR	England BS	Italy UNI	China GB	Sweden SS	Poland PN	Czechia CSN	Finland SFS	Austria ONORM	Russia GOST
X6CrNiMoTi17-12-2	316Ti	X10CrNiMoTi18-10 X6CrNiMoTi17-12-2	316Ti SUS316Ti	Z6CNDT17-12 Z6CNT17-12	320S31 321S12	X6CrNiMoTi17-12	0Cr18Ni12Mo2Ti 1Cr18Ni12Mo2Ti	2350 2350-02	H17N13M2T	17348	761	X6CrNiMoTi17-12-2S	08KH17N13M2T 10KH17N13M2T

Standard:	EN 10088-2: 2005 Stainless steels. Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purposes EN 10088-3: 2005 Stainless steels. Technical delivery conditions for semi-finished products, bars, rods, wire, sections and bright products of corrosion resisting steels for general purposes EN 10028-7: 2007 Flat products made of steels for pressure purposes. Stainless steels EN 10222-5: 2000 Steel forgings for pressure purposes. Martensitic, austenitic and austenitic-ferritic stainless steels EN 10216-5: 2014 Seamless steel tubes for pressure purposes. Technical delivery conditions. Stainless steel tubes EN 10217-7: 2005 Welded steel tubes for pressure purposes. Stainless steel tubes EN 10296-2: 2005 Welded circular steel tubes for mechanical and general engineering purposes. Stainless steel. Technical delivery conditions EN 10253-3: 2008 Butt-welding pipe fittings. Wrought austenitic and austenitic-ferritic (duplex) stainless steels without specific inspection requirements EN 10253-4: 2008 Butt-welding pipe fittings. Wrought austenitic and austenitic-ferritic (duplex) stainless steels with specific inspection requirements EN 10272: 2007 Stainless steel bars for pressure purposes EN 10263-5: 2001 Steel rod, bars and wire for cold heading and cold extrusion. Technical delivery conditions for stainless steels EN 10250-4: 2000 Open steel die forgings for general engineering purposes. Stainless steels EN 10297-2: 2005 Seamless circular steel tubes for mechanical and general engineering purposes. Stainless steel. Technical delivery conditions EN 10088-1: 2005 Stainless steels. List of stainless steels EN 10088-3: 2009 Stainless steels. Technical delivery conditions for bars, rods, wire, sections and bright products of corrosion resisting steels for construction purposes EN 10088-4: 2009 Stainless steels. Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for construction purposes
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