Abbreviated Name	EN Norm	ASTM / AISI	AFNOR	DIN Abbreviation	ISO	Other
X2CrNiTi18-10	1.4541	321	Z6CNT18-10	1.4541		

1.4541 Wire

Chemical analysis by European Norm EN 10088-1 in mass percent

C	Si	Mn	P	S	Cr	Ni	Ti	Fe
≤ 0.08	≤ 1.00	≤ 2.00	0.045	≤ 0.015	17.0-19.0	9.0-12.0	≤ 0.7	Rest

Diameter 0.02 – 4.00 mm

Application
1.4541 is categorized as stainless, austenitic, chrome nickel steel. This material cannot be hardened in the normal sense, but can be hardened through cold working. 1.4541 is the traditional version of the newer material: 1.4307. The development of titanium-stabilized materials negated the sensitivity to welding of those materials. Carbides, rather than being reduced, bond with the Titanium, effectively preventing intergranular corrosion (intergranular attack) during welding.
The resistance to intergranular corrosion in a titanium-stabilized austenitic steel, and that of a low carbon stainless austenitic steel (C max. 0.030%), is roughly the same. The potential occurrence of hairline corrosion and corrosion cracking during welding is greatly diminished in the modern, low carbon steels.
The addition of titanium can impair the surface finish quality; the formation of hard titanium carbides encumbers polishing and surface finishing.

Resistance to Corrosion
As described in the previous section, 1.4541 is very resistant to intergranular corrosion. This holds true in natural waters as long as the chlorine / chloride content is low.

Thermal Treatment / Weldability
1.4541 is annealed between 1050ºC and 1150ºC, after which it is rapidly quenched in water or air. It is easily welded without any filler material and requires no further heat treatment after the welding process. Cinder and scale however, must be removed and the surface passivated again.

Surface Finish

Drawn	Chemically purged	0.020 – 3.499 mm
Surface Ground	Chemically purged	3.500 – 4.000 mm

Delivery mode

As a ring

On assorted spools

Straightened

Axles

Diameter tolerances

Diameter (mm)	Tolerance (%)	Tolerance (µ)
0.020 – 0.249		± 1.0
0.250 – 0.399		± 1.5
0.400 – 1.500		± 2.0
1.500 – 4.000		± 2.5

Mechanical Properties

Condition at delivery (mm)	Ultimate Tensile Strength in cold-twisted delivery condition (N/mm^2)
0.005 – 0.019	
0.020 – 0.199	
0.200 – 0.499	650 - 1800 (Depends on diameter)
0.500 – 0.999	
1.000 – 1.999	
2.000 – 4.000	

Physical Properties

Density		7.90	g/cm^3
Coefficient of Thermal Expansion	20 ºC – 200 ºC	17.00	$10^{-6}/K$
Specific Heat Capacity	20 ºC	500	J/kgK
Thermal Conductivity	20 ºC	15.00	W/mK
Specific Electric Resistance	20 ºC	0.73	$\Omega\ mm^2/m$
Young's Modulus	20 ºC	200.00	GPa