

## Data sheet stainless steel 316/316L

Stainless steel types 1.4401 and 1.4404 are also known as grades 316 and 316L respectively. Grade 316 is an austenitic grade second only to 304 in commercial importance.

316 stainless steel contains an addition of molybdenum that gives it improved corrosion resistance. This is particularly apparent for pitting and crevice corrosion in chloride environments.

316L, the low carbon version of 316 stainless steel, is immune to grain boundary carbide precipitation (sensitisation). This makes it suited to use in heavy gauge (over about 6mm) welded components.

For elevated temperature applications the high carbon variant, 316H stainless steel and the stabilised grade 316Ti stainless steel should be employed.

The austenitic structure of 316 stainless steel gives excellent toughness, even at cryogenic temperatures.

Property data given in this document is typical for flat rolled products covered by ASTM A240/A240M. ASTM, EN or other standards may cover all products sold. It is reasonable to expect specifications in these standards to be similar but not necessarily identical to those given in this datasheet.

Stainless steel grade 316Ti contains a small amount of titanium. Titanium content is typically only around 0.5%. The titanium atoms stabilise the structure of the 316 at temperatures over 800°C. This prevents carbide precipitation at the grain boundaries and protects the metal from corrosion. The main advantage of 316Ti is that it can be held at higher temperatures for a longer period without sensitisation (precipitation) occurring. 316Ti retains physical and mechanical properties similar to standard grades of 316.

### Alloy Designations

Stainless Steel Grade 1.4404/316L also corresponds to the following designations

UNS S31603

316S11

### Supplied Forms

■ Sheet/bar

■ Strip/plate

■ Tube/pipe

## DP Alloys stainless steel data sheet 316/316L

<u>Chemical Element</u>	<u>% Present</u>
Carbon (C)	0.0 - 0.03
Chromium (Cr)	16.50 - 18.50
Molybdenum (Mo)	2.00 - 2.50
Silicon (Si)	0.0 - 1.00
Phosphorous (P)	0.0 - 0.05
Sulphur (S)	0.0 - 0.01
Nickel (Ni)	10.00 - 13.00
Manganese (Mn)	0.0 - 2.00
Iron (Fe)	Balance

<u>Physical Property</u>	<u>Value</u>
Density	8.0 Kg/m <sup>3</sup>
Melting Point	1400 °C
Thermal Expansion	15.9 x10 <sup>-6</sup> /K
Modulus of Elasticity	193 GPa
Thermal Conductivity	16.3 W/m.K
Electrical Resistivity	0.074 x10 <sup>-6</sup> Ω .m

<u>Mechanical Property</u>	<u>Value</u>
Proof Stress	220 Min MPa
Tensile Strength	520 to 680 MPa
Elongation	40 Min %

DP Alloys  
Unit 2 Hobble End Lane  
Walsall  
West Midlands  
WS6 6AS  
United Kingdom.:  
01922-409148  
Fax 08701 290810

[www.dpalloys.com](http://www.dpalloys.com)

[info@dpalloys.com](mailto:info@dpalloys.com)

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