



**ALLOY DATA SHEET**  
**ASTM 304**

**304 Quality Stainless Steel**

ASTM 304 (Quality 304) is the biggest stainless steel success story. It is used in almost all industrial applications, accounting for 50% of all stainless steel production and about half of stainless consumption. 304 is not just a stainless steel that can suit every application; it also provides an excellent basis for understanding the qualities of 304, a practical basis for defining the suitability of stainless steel in a desired application, and for comparing the materials of the austenitic stainless steel group. We all have a satisfying experience of using 304 and knowledge of deep drawing properties. The metallic part used in your cutlery sets (see markings 18/10 and 18/8), pressure cookers, sinks and even floppy disks is made of 304 stainless steel.

**Components**

Quality 304L (Please see Table-1) is a low carbon 304 that is used occasionally to prevent possible corrosion sensitivity in welded parts. Quality 304H (Please see our table of chemical values), increases strength, (especially at temperatures above 500 °C) contains a higher carbon than 304L. This quality is not used for applications with the possibility of sensitive corrosion.

(Table-1) **Components of 304 and Related Quality**

Name	Quality	%C	%Si	%Mn	%P	%S	%Ni
ASTM 304	304	0,08	1,0	2,0	0,045	18,0-20,0	8,0-10,5
ASTM 304	304L	0,03	1,0	2,0	0,045	18,0-20,0	8,0-12,0
ASTM 304	304H	0,04-0,10	1,0	2,0	0,045	18,0-20,0	8,0-12,0

Note-1: The % rates not given as a range represent the maximum rates.

Note-2: These values are defined in ASTM A240 for plate, sheet and roll. For some other products, the identification may differ slightly from these values.

Both 304L and 304H are suitable for plate (flat product) and pipe, but 304H may be less available before stock. 304L and 304H are sometimes stocked like standard 304. (Test certificates confirm that this is "L" or "H")

**Corrosion Resistance:**

Quality 304 has excellent corrosion resistance in a wide area. It does not rust in many architectural construction applications. In addition, it is easily cleaned and resistant to organic chemicals, inorganic chemicals and colored dyes in a wide area in many food production and processing environments. 304 Quality is subjected to stress corrosion cracking and nucleation and cracking corrosion, in which the tensile force is applied at temperatures above 50 °C in chlorite environments at medium temperature. In addition, it can be successfully applied at short intervals and in warm chlorite environments where cleaning is regularly performed and applied (eg in pots and some yacht connections).

**Physical and Mechanical Properties:**

Tensile Strength Min. 515 MPa

0.2% Yield Strength Min. 205 MPa

Elongation% Min. 40%

Hardness (Brinell) Max. 201 HB

Hardness (Rockwell) Max. 92 HRB

Hardness (Vickers) Max. 210 HV

**Heat Resistance:**

304 Quality has good oxidation resistance in places where it is worked at short intervals at 870 °C and continuously at 925 °C. It is not recommended in the range of 425 - 860 °C of 304, if the subsequent application is working in aqueous environments at room temperature. But sometimes it performs well in environments that change above or below this temperature range. Grade 304L is more resistant to carbide precipitation and can be used in the temperature range mentioned above. Where high material strength is important, high carbon values are needed. For example, AS1210 pressure vessels code limits the operating operation temperature of 304L to 425 °C, and the use of 304 quality is restricted to values of 0.04% and higher for temperatures above 550 °C. Quality 304 liquefied gases at low temperatures