



304

304L

Description

304 is the original "18-8" stainless. It is produced in greater quantity than any other austenitic stainless steel. 304 provides useful resistance to corrosion in many environments ranging from moderately reducing to moderately oxidizing. Through the controlled addition of nitrogen, it is common for 304L to meet the mechanical properties of 304 straight grade. As a result, most products are dual certified as 304 and 304/304L.

Typical Applications

- General purpose grade
- Beer Barrels
- Bulk milk coolers
- Food processing equipment
- Fire extinguisher parts
- Tube skelp
- Wine storage tanks
- Chemical containers
- Heat exchangers
- Winding wire

Corrosion Resistance

Excellent. exceeding that of type 302 in a wide variety of corrosive media including hot petroleum products, steam combustion gasses.

Heat Resistance

Good oxidation resistance in intermittent service to 1600°F and in continuous service to 1700°F. Continuous use of 304 in 800-1575°F range not recommended but often performs well in temperatures fluctuating above and below this range. Type 304L is more resistant to carbide precipitation and can be used in the above temperature range.

Heat Treatment

Annealing - heat to 1850-2050 °F and cool rapidly. These grades cannot be hardened by thermal treatment.

Welding

Excellent. All standard methods. Use 308 rods or electrodes. Heavy welded sections in Type 304 may require post-weld annealing for maximum corrosion resistance. This is not required if Type 304L is used.

Chemical Analysis		C	Mn	P	S	Si	Cr	Ni
	304	0.08	2.0	0.045	0.03	1.0	18.0-20.0	8.0-10.5
Max values	304L	0.03	2.0	0.045	0.03	1.0	18.0-20.0	8.0-12.0

Typical Mechanical Properties- Annealed	Yield Strength ksi	Tensile Strength ksi	Elongation % in 2"	Hardness		Impact Charpy Ft. - lbs	Modulus of Elasticity in Tension - ksi
				R b	BHN		
	35	84	55	80	149	135	28000

Other Properties	Creep Strength 1% flow 10,000 hours at 1000°F -ksi	Magnetic Permeability at 200H- Annealed	Electrical Resistivity - Microhm -Cm At 68°F	Coefficient of Thermal expansion: (ln/ln°F x 10 ⁻⁶) 32°- 212°F	Thermal Conductivity BTU/ft. ² /Hr./°F/ft.	
					At 212°F	At 932°F
	17.3	1.02	72	9.6	9.4	12.4

