



E STEEL SDN BHD (891338-A)

NO 3, Lorong Sungai Puloh 7/KU 6,
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Stainless Steel - Grade 304 (UNS S30400), SUS304

Chemical Formula

Fe, <0.08% C, 17.5-20% Cr, 8-11% Ni, <2% Mn, <1% Si, <0.045% P, <0.03% S

Background

SUS304 is the standard "18/8" stainless; it is the most versatile and most widely used stainless steel, available in a wider range of products, forms and finishes than any other. It has excellent forming and welding characteristics. The balanced austenitic structure of Grade 304 enables it to be severely deep drawn without intermediate annealing, which has made this grade dominant in the manufacture of drawn stainless parts such as sinks, hollow-ware and saucepans. For these applications it is common to use special "304DDQ" (Deep Drawing Quality) variants. Grade 304 is readily brake or roll formed into a variety of components for applications in the industrial, architectural, and transportation fields. Grade 304 also has outstanding welding characteristics. Post-weld annealing is not required when welding thin sections.

Grade 304L, the low carbon version of 304, does not require post-weld annealing and so is extensively used in heavy gauge components (over about 6mm). Grade 304H with its higher carbon content finds application at elevated temperatures. The austenitic structure also gives these grades excellent toughness, even down to cryogenic temperatures.

Composition of SUS304 VS SUS304L

Grade		C	Mn	Si	P	S	Cr	Mo	Ni	N
SUS304	min.	-	-	-	-	-	18.0	-	8.0	-
	max.	0.08	2.0	0.75	0.045	0.030	20.0	-	10.5	0.10
SUS304L	min.	-	-	-	-	-	18.0	-	8.0	-
	max.	0.030	2.0	0.75	0.045	0.030	20.0	-	12.0	0.10

Mechanical Properties of SS304 VS 304L

Grade	Tensile Strength (MPa) min	Yield Strength 0.2% Proof (MPa) min	Elongation (% in 50mm) min	Hardness	
				Rockwell B (HR B) max	Brinell (HB) max
SS304	515	205	40	92	201
SS304L	485	170	40	92	201

Physical Properties

Grade	Density (kg/m ³)	Elastic Modulus (GPa)	Mean Coefficient of Thermal Expansion (µm/m/°C)			Thermal Conductivity (W/m.K)		Specific Heat 0-100°C (J/kg.K)	Electrical Resistivity (nΩ.m)
			0-100°C	0-315°C	0-538°C	at 100°C	at 500°C		
304/L/H	8000	193	17.2	17.8	18.4	16.2	21.5	500	720

Corrosion Resistance

Excellent in a wide range of atmospheric environments and many corrosive media. Subject to pitting and crevice corrosion in warm chloride environments, and to stress corrosion cracking above about 60°C. Considered resistant to potable water with up to about 200mg/L chlorides at ambient temperatures, reducing to about 150mg/L at 60°C.



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Heat Resistance

Good oxidation resistance in intermittent service to 870°C and in continuous service to 925°C. Continuous use of SUS304 in the 425-860°C range is not recommended if subsequent aqueous corrosion resistance is important. SUS304L is more resistant to carbide precipitation and can be heated into the above temperature range.

SUS 304H has higher strength at elevated temperatures so is often used for structural and pressure-containing applications at temperatures above about 500°C and up to about 800°C. SUS304H will become sensitised in the temperature range of 425-860°C; this is not a problem for high temperature applications, but will result in reduced aqueous corrosion resistance.

Dual Certification

It is common for SS304 and SS304L to be stocked in "Dual Certified" form, particularly in plate and pipe. These items have chemical and mechanical properties complying with both SS304 and SS304L specifications. Such dual certified product does not meet Ss304H specifications and may be unacceptable for high temperature applications.

Applications :

- Food processing equipment, particularly in beer brewing, milk processing & wine making.
- Kitchen benches, sinks, troughs, equipment and appliances
- Architectural panelling, railings & trim
- Chemical containers, including for transport
- Heat Exchangers
- Woven or welded screens for mining, quarrying & water filtration
- Threaded fasteners
- Springs

