

## Chemical Composition of Stainless Steel

Type	Alloy	Standard specifications			Chemical composition %						
		AISI ASTM	JIS	Others	C	Cr	Ni	Mo	Cu		
Austenitic	General use, corrosion and heat resistant	<b>304</b>	AISI ASTM 304	SUS 304	DIN W.NR 1.4301	≤0.08	18.00 ~20.00	8.00 ~10.50	-	-	
	Resistant to intergranular corrosion	<b>304L</b>	AISI ASTM 304L	SUS 304L	DIN W.NR 1.4306	≤0.030	18.00 ~20.00	9.00 ~13.00	-	-	
	Contains Mo	Heat resistant	<b>316</b>	AISI ASTM 316	SUS 316	DIN W.NR 1.4401	≤0.08	16.00 ~18.00	10.00 ~14.00	2.00 ~3.00	-
		Resistant to intergranular corrosion, for welding	<b>316L</b>	AISI ASTM 316L	SUS 316L	DIN W.NR 1.4404	≤0.030	16.00 ~18.00	12.00 ~15.00	2.00 ~3.00	-

## Physical & Mechanical Properties of Stainless Steel

Type	Alloy	Physical properties								Mechanical properties								
		Typical density kg/mm <sup>3</sup>	Volume resistivity ( $\mu\text{cm}$ )/20°C	Elastic modulus (N/mm <sup>2</sup> ) $\times 10^3$	Specific heat (J/g°C) 0-100°C	Thermal conductivity (W/cm . °C)		Mean thermal expansion coefficient ( $\times 10^{-6}/^\circ\text{C}$ )		Melting point (°C)	Tensile tests			Hardness tests				
						0-100°C	0-500°C	0-100°C	0-500°C		Yield strength (N/mm <sup>2</sup> )	Yield strength (N/mm <sup>2</sup> )	Elongation (%)	HB	HRB	HV		
Austenitic	General use, corrosion and heat resistant	<b>304</b>	7.93	72	193	0.50	0.17	0.21	15.7	18.4	1400 ~1450	≥205	≥520	≥40	≤187	≤90	≤200	
	Resistant to intergranular corrosion	<b>304L</b>	7.93	72	193	0.50	0.17	0.21	17.3	18.4	1400 ~1450	≥175	≥480	≥40	≤187	≤90	≤200	
	Contains Mo	Heat resistant	<b>316</b>	7.98	77	193	0.50	0.17	0.21	15.9	17.5	1370 ~1400	≥205	≥520	≥40	≤187	≤90	≤200
		Resistant to intergranular corrosion, for welding	<b>316L</b>	7.98	77	193	0.50	0.17	0.21	15.9	17.5	1370 ~1400	≥175	≥480	≥40	≤187	≤90	≤200

## Characteristics and Applications of Stainless Steel

- 304** : Typical austenitic stainless steel; kitchen and table utensils, building materials, facilities in food processing, chemical and nuclear industries, low-temperature equipment.
- 304L** : Low carbon content version of 304 and high intergranular corrosion resistance; welded construction materials.
- 316** : More resistant to acids; for a range of chemical plant equipment, the textile and pulp industry, desalination plants.
- 316L** : Alloy with low carbon content. Resistant to intergranular corrosion.

## Surface Finish Designation

No 1	No 2B	No 4
Hot rolled, annealed, decaled and pickled. Frosty white surface. Use for industrial purpose where appearance is of secondary importance.	This finish is produced by final light cold-rolling consequently. It is designed for general applications. The surface is excellent oft polishing.	The most popular of all polished finishes. Produced with abrasives of approximately 150-180 grit in its final stage. This finish is widely used where ease in cleaning, an attractive appearance and high corrosion resistance are required.
HL (HAIR LINE)	SB400	BA
This finish is obtained by continuous linear polishing. It produces a soft finish which is effective in dissipating glare. Most suitable for architectural purposes, vehicles, showcases, etc.	A bright surface, produced by buffing No. 2B finish, widely used in general applications.	Bight annealing after cold rolling. Used where a luster surface is required.
No 8		
The metal surface is completely polishe wet by using polishing substance. It achieves the condition with extremely high reflectivity which is equivalent to a mirror.		

Seamless/Welded Stainless Steel Pipe (ANSI-B36. 19)

ASTM A312 TP304 / 304L / 316 / 316L / 321 / 317 / 347 / 310, etc.

N.B.	OUTSIDE Diameter	SCH5S			SCH10S			SCH40S		
		THICK	I.D.	WEIGHT	THICK	I.D.	WEIGHT	THICK	I.D.	WEIGHT
Inch	mm	mm	mm	Kg/M	mm	mm	Kg/M	mm	mm	Kg/M
1/8	10.29	-	-	-	1.24	7.81	0.280	1.73	6.83	0.369
1/4	13.72	1.20	11.32	0.374	1.65	10.42	0.496	2.24	9.24	0.641
3/8	17.15	1.20	14.75	0.477	1.65	13.85	0.437	2.31	12.53	0.854
1/2	21.34	1.65	18.04	0.809	2.11	17.12	1.011	2.77	15.80	1.282
3/4	26.67	1.65	23.37	1.020	2.11	22.45	1.1291	2.87	20.93	1.702
1	33.40	1.65	30.10	1.305	2.77	27.86	2.114	3.38	26.64	2.528
1-1/4	42.16	1.65	38.86	1.665	2.77	36.62	2.718	3.56	35.04	3.424
1-1/2	48.26	1.65	44.96	1.916	2.77	42.72	3.139	3.68	40.90	4.067
2	60.33	1.65	57.03	2.412	2.77	54.79	3.972	3.91	52.21	5.496
2-1/2	73.03	2.11	68.81	3.728	3.05	66.93	5.317	5.16	62.71	8.725
3	88.90	2.11	84.68	4.562	3.05	82.80	6.523	5.49	77.92	11.41
3-1/2	101.60	2.11	97.38	5.230	3.05	95.50	7.488	5.74	90.12	13.71
4	114.30	2.11	110.08	5.897	3.05	108.20	8.453	6.02	102.26	16.24
5	141.30	2.77	135.76	9.560	3.40	134.50	11.68	6.55	128.20	21.99
6	168.28	2.77	162.74	11.42	3.40	161.48	13.97	7.11	154.06	28.55
8	219.08	2.77	213.54	14.93	3.76	211.56	20.17	8.17	202.72	42.98
10	273.05	3.40	266.25	22.84	4.19	264.67	28.07	9.27	254.51	60.92
12	323.85	3.96	315.93	31.56	4.57	314.71	36.35	9.52	304.81	74.55
14	355.60	3.96	347.68	34.69	4.78	346.04	41.78	-	-	-
16	406.40	4.19	398.02	41.99	4.78	296.84	47.83	-	-	-
18	457.20	4.19	448.82	47.29	4.78	447.64	53.88	-	-	-
20	508.00	4.78	498.44	59.93	5.54	496.92	69.36	-	-	-
22	558.80	4.78	549.24	65.98	5.54	547.72	76.36	-	-	-
24	609.60	5.54	598.52	83.37	6.35	596.90	95.43	-	-	-
26	762.00	6.35	749.30	119.54	7.92	746.16	148.79	-	-	-

N.B.	OUTSIDE Diameter	SCH80S			SCH160S			SCHXXS		
		THICK	I.D.	WEIGHT	THICK	I.D.	WEIGHT	THICK	I.D.	WEIGHT
Inch	mm	mm	mm	Kg/M	mm	mm	Kg/M	mm	mm	Kg/M
1/8	10.29	2.41	5.47	0.473	-	-	-	-	-	-
1/4	13.72	3.02	7.68	0.797	-	-	-	-	-	-
3/8	17.15	3.20	10.75	1.112	-	-	-	-	-	-
1/2	21.34	3.73	13.88	1.636	4.78	11.78	1.972	7.47	6.40	2.561
3/4	26.67	3.91	18.85	2.217	5.57	15.53	2.928	7.82	11.03	3.672
1	33.40	4.55	24.30	3.270	6.35	20.70	4.279	9.09	15.22	5.505
1-1/4	42.16	4.85	32.46	4.508	6.35	29.46	5.665	9.70	22.76	7.844
1-1/2	48.26	5.08	38.10	5.465	7.14	33.98	7.314	10.16	27.94	9.644
2	60.33	5.54	49.25	7.562	8.74	42.85	11.23	11.07	38.19	13.59
2-1/2	73.03	7.01	59.01	11.53	9.53	53.97	15.08	14.02	44.99	20.61
3	88.90	7.62	73.66	15.43	11.13	66.64	21.56	15.24	58.42	27.97
3-1/2	101.60	8.08	85.44	18.83	12.70	76.20	28.13	16.15	19.30	34.38
4	114.30	8.56	97.18	22.55	13.49	87.32	33.88	17.12	80.06	41.45
5	141.30	9.52	122.26	31.25	15.88	109.54	49.62	19.05	103.20	58.02
6	168.28	10.97	146.34	42.99	18.27	131.74	68.28	21.95	124.38	80.02
8	219.08	12.70	193.68	65.29	23.02	173.04	112.43	-	-	-
10	273.05	12.70	247.65	82.37	28.58	215.89	174.07	-	-	-
12	323.85	12.70	298.45	98.45	33.33	257.19	241.23	-	-	-